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Soil Mechanics Report

Plum Creek FRS No. 21 Rehabilitation Design
Caldwell County, Texas

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Texas State Soil and Water Conservation Board
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1. Introduction

1.1 Project Overview

The Plum Creek Watershed Floodwater Retarding Structure (FRS) No. 21 (Plum Creek 21) was designed and constructed as a low hazard dam for the primary purposes of watershed protection and flood prevention. Plum 21 was constructed in 1962 on Dry Creek, a tributary of Plum Creek, located 5 miles north-northeast of Lockhart, Caldwell County, Texas. The National Inventory of Dams (NID) Identification Number is TX03428. Plum 21 is shown on the "Lockhart North" United States Geological Survey (USGS) quadrangle map at coordinates Latitude 29.9572°N, Longitude 97.6543°W.

The Sponsoring Local Organizations (SLOs) of the project are the Caldwell-Travis Soil and Water Conservation District (SWCD), Hays County Soil and Water Conservation District (SWCD), and Plum Creek Conservation District (PCCD). The Texas State Soil and Water Conservation Board (TSSWCB) and Natural Resources Conservation Service (NRCS) is assisting the sponsors with rehabilitation of the dam.

Since construction of the Plum Creek 21 ("dam") in 1962, residential and commercial structures, major highways, and utilities have been constructed downstream of the dam. As a result, a catastrophic failure of the dam would result in property and infrastructure damages and potential loss of life. As such, the dam has been reclassified by NRCS as a high hazard dam. The existing dam does not meet current safety criteria and performance standards for high hazard dams.

The TSSWCB is responsible for the dam, and has contracted AECOM Technical Services, Inc. (AECOM) to design proposed improvements that will rehabilitate the dam to meet high-hazard criteria. AECOM's scope of work for this project includes engineering analyses, permitting, and preliminary and final design services to develop the dam rehabilitation construction documents.

1.2 Proposed Improvements

The proposed rehabilitation of Plum Creek 21 is intended to mitigate identified dam safety deficiencies associated with the dam's reclassification as a high hazard dam. The proposed modifications to the dam include the following major components:

- Remove the existing principal spillway inlet and abandon the 30-inch diameter conduit by grouting in-place;
- Replace the existing principal spillway with a new principal spillway inlet riser, new 42-inch diameter conduit, and new impact basin outlet structure;
- Abandon the existing earthen auxiliary spillway using a closure section of new embankment fill with a maximum height of approximately 10 to 11 feet;
- Construct a new roller compacted concrete (RCC) overtopping auxiliary spillway structure and outlet works;
- Raise the crest of the existing embankment by approximately 4.3 feet to Elevation (El.) 527.0 for the top of compacted earthfill (El. 528 for the top of topsoil), and flatten the downstream embankment slope to 3H:1V (horizontal:vertical);
- Install a foundation/embankment drain system; and
- Install rock riprap wave protection on the upstream embankment slope.

1.3 Objective and Scope of Work

As part of the dam rehabilitation design, AECOM's scope of work included geological investigation and geotechnical engineering evaluation of the dam and proposed improvements. Specifically, this included a site-specific field Geologic Investigation (GI), preparation of a Geologic Investigation Report (GIR), and preparation of a Soil Mechanics Report (SMR).

The primary objective of the GI was to collect geotechnical information about the existing earthen embankment, foundation materials, outlet structures, and potential borrow sources for use in rehabilitation planning and design. The scope of the GI was developed by AECOM in conjunction with our geotechnical subcontractor, Balcones Geotechnical, PLLC (Balcones). Balcones performed the field investigation with periodic oversight by an AECOM geologist and guidance from AECOM geotechnical staff. The GIR was prepared by Balcones and reviewed by AECOM, and is provided under separate cover in the Design Folder (Balcones, 2021).

The objectives of this SMR are to present the findings of the geotechnical laboratory testing program and geotechnical engineering analyses, and to provide geotechnical recommendations for design and construction of the proposed improvements. Tasks associated with the SMR included the following:

1. Development of a laboratory testing program for soil and rock samples collected during the field GI;
2. Analysis and interpretation of laboratory data;
3. Geotechnical characterization of the embankment and foundation materials;
4. Evaluate suitability of potential on-site borrow sources for embankment fill and backfill;
5. Seismic characterization of the site and estimates of seismic loading;
6. Seepage and slope stability analyses for the existing embankment and proposed modifications;
7. Geotechnical recommendations for the proposed principal spillway modification including new conduit pipe and foundation support;
8. Geotechnical engineering analyses and recommendations for the proposed structures (i.e., principal spillway and RCC spillway), including bearing capacity, lateral earth pressures, sliding friction, swell/heave, and settlement analyses;
9. Recommendations for internal drainage and filter compatibility analyses for proposed aggregate drains/filters;
10. Geotechnical recommendations for design and construction including groundwater management, temporary excavations, subgrade preparation; fill material specifications, and fill placement and compaction criteria;.and
11. Preparation of this SMR.

1.4 Authorization

The work herein was completed by AECOM for the TSSWCB in accordance with the Statement of Work described in Work Order No. 79017-1 and executed under the terms and conditions of the existing Contract No. IDIQ-AECOM-2018-79017.

2. Site Description

2.1 Dam Structure

The Plum Creek FRS No. 21 is located in Caldwell County, Texas about 5 miles north and 1 mile east of downtown Lockhart. The site is located approximately 800 feet north of FM 1185 or about 1.3 miles east of the intersection of Highway 183 and FM 1185. The dam is situated on Dry Creek, within the Plum Creek Watershed district. Access to the site is by private road off FM 1185. Within the site, access to some areas is via pastures with none to marginal unimproved roads.

The dam was originally constructed in 1962 as a homogeneous earthen embankment. The dam has a maximum height of 30 feet, a dam length of 2,982 feet, total storage of 3,283 acre-feet, and is comprised of about 207,350 cubic yards of earth and rock fill. The dam is a homogeneous earthfill embankment with no distinct zoning, and no existing internal filters or drainage measures. The upstream and downstream slopes of the dam are inclined at 2.5H:1V, and an intermediate toe berm extending to approximately 1/3 the height of the embankment is present on both slopes. A minimum 12-ft wide cutoff trench, up to about 8 feet deep, was constructed under the crest of the dam. The as-built embankment crest elevation is reported as El. 522.3[1]. Topographic survey conducted by AECOM's subcontracted surveyor in early 2019 indicated the embankment crest varies from approximately El. 520 to 523.

The vegetated earthen auxiliary spillway (ASW) is located around the left abutment and is 300 feet wide with a designed discharge of 8,512 cubic feet per second (cfs). The principal spillway (PSW) consists of a drop inlet tower and 30-inch ID conduit pipe discharging to a rock riprap-lined stilling basin. The as-built existing principal spillway has a crest elevation of 505.3 and a lower port elevation of 500.4 (normal pool), while the auxiliary spillway crest elevation is reported as El. 517.0.

The proposed dam improvements will increase the embankment crest elevation to El. 527 (top of compacted fill, and El. 528 for top of topsoil), requiring approximately 4 feet of new fill over much of the embankment and up to 7 feet of new fill near the abutments. The existing ASW channel will be abandoned, and fill height for the embankment closure section through the ASW will be approximately 11 feet. A new RCC overtopping spillway will serve as the new ASW, and the crest will be at El. 518.8 which is a raise of 1.8 feet from current conditions. The new PSW inlet structure will have crest at El. 500.7 which is 4.6 feet lower than current conditions . Additionally, the new PSW will also feature a low-flow port at El. 498.8, which will lower the normal pool elevation by 1.6 feet.

2.2 Geology

Detailed description of site geology is contained in the 2021 GI Report. In summary, the project site is located within the Blackland Prairies of the Gulf Coastal Plains physiographic region of Texas. The region features low, rolling terrain with beds tilted south and east. The bedrock of chalk and marls weather to a deep clay soil in this region (BEG, 1996).

Published geologic mapping indicates the site is underlain by Quaternary-age Leona high gravel terrace deposits, clay of the Eocene-age Midway formation, and sand and clay of the Eocene-age Wilcox formation. The Leona Formation is described as an alluvial deposit composed mostly of dark brown clay with layers of gravel. The upper portion of the Wilcox and Midway Groups are described as clay and sand strata derived from in-place weathering of the underlying parent clayshale, shale, and weakly-cemented sandstone.

[1] The as-built elevations reported herein have been converted from NGVD29 to NAVD88 by adding +0.37 feet.

The project site is located within the proximity of two surface expression faults mapped approximately 2,000 ft. southeast and approximately 1.25 miles northwest of the site, respectively. While faults are generally not considered to be active in Central Texas, they are known transmit groundwater and can contain fault gouge. While no faulting is specifically mapped at the project site, the geologic contact between the Midway and Wilcox Groups is mapped generally coincident with the position of Dry Creek, and may be representative of a bedrock fault concealed by the overlying younger Leona formation (Balcones, 2021)..

2.3 Previous Geotechnical Studies

Previous geologic investigations and geotechnical studies conducted for the project are described below.

2.3.1 Geologic Investigation (SCS 1961)

The original investigation for the design of dam was conducted by the NRCS predecessor Soil Conservation Service (SCS) in 1961. A partial version of this GI report was available to AECOM, , which included the report text, tables, and GI sheets with stick logs of the borings. The original boring logs were not available. The 1961 GI included soil borings drilled along the proposed dam centerline, principal spillway, auxiliary spillway, stream channels, and borrow area located upstream of the dam in the sediment pool area. The borings did not include in situ testing (e.g. Standard Penetration Test [SPT]). The report characterized the geology of the site as the Wilcox Group of Lower Tertiary age. Foundation materials encountered in the borings generally consisted of an upper horizon of sandy fat clay (CH) underlain by slightly laminated sand and fat clay (CH) with some gypsum. The underlying parent material was described as laminated sand and shale. Exceptions included near-surface clayey sand (SC) materials encountered to the left of the original creek alignment in a few borings, and a persistent thin (<5 feet thick) layer of clayey gravel (GC) located to the right of the original creek alignment and present-day principal spillway. The report recommended an embankment cutoff trench under the embankment centerline and long the principal spillway alignment to intercept the more coarse-grained and pervious materials near the surface and to fully-penetrate the GC layer right of the creek alignment. The report noted high groundwater in the creek channel downstream of the dam and potential difficulty in excavating materials, as well as potential difficultly for considerable fluctuations in groundwater levels. The report also provided recommendations for embankment zoning, which included placement of SC-CH, GC, and GC-CH materials in the shell or downstream section, and either excluding materials with high gypsum concentration from the embankment or selectively placing them in interior zones of the embankment above the sediment pool level. The report recommended the high-plasticity clays from the borrow area could be used anywhere in the dam. No additional internal drainage measures were recommended.

2.3.2 Soil Mechanics Report (SCS 1961)

The original SMR for the site was completed by NRCS on September 29, 1961. The report contained results of laboratory testing on samples retrieved from the 1961 GI, including gradation, Atterberg limits, dispersion, and Proctor compaction. Index test results from the borings indicated liquid limits (LL) between 34 and 76, plasticity index (PI) between 12 and 46, and fines content exceeding 50%.

The SMR concluded that the clays had low dispersion potential, and CH materials should be reserved for the interior portion of the embankment. The SMR specified recommended embankment slopes of 2.5H:1V for a minimum safety factor of 1.5, with consideration of the possibility of delayed embankment slides experienced in the same clay soil series located in a

separate watershed. Recommended cutoff depths for the dam embankment ranged from 5 to 11 feet below original grade. Estimated settlement resulting from embankment construction was predicted to be less than 2.4 feet at STA 28+00, but the report recommended an overbuild of 2.8 feet. Settlement under the principal spillway conduit was predicted to be less than 0.5 feet. No internal drainage system was recommended.

2.3.3 Geologic Investigation (NRCS 2014)

A geologic investigation (GI) was performed in 2014 by the NRCS to provide additional geotechnical information for the existing auxiliary spillway. A complete GIR was not prepared as part of the investigation; information made available to AECOM included a boring location plan, boring logs, sample inventory sheet, and maps with geologic, soils, and topographic data. The investigation consisted of seven (7) borings drilled along the inside edge of the ASW designated as Hole Nos. 250 through 256 with depths ranging from 5.5 to 31 ft bgs. The locations are shown on the GI Plan in **Appendix A**. The borings were drilled using hollow stem auger methods, and sampling consisted primarily of Shelby tubes.

The generalized stratigraphy encountered in the borings along the spillway alignment consisted of a thin veneer of topsoil and about 2 to 8 feet of stiff silty lean clay (CL) to fat clay (CH) overlying variable layers of soft to moderately soft claystone and siltstone to borehole termination depths. The upper clay layers were described as highly weathered residuum of the parent claystone/siltstone. The claystone and siltstone layers were reported to be thinly bedded to laminated, slightly to very highly weathered, blocky, and were readily broken down to clay- and silt-sized particles with manual pressure. Relatively thin alluvial soils consisting of silt to gravel were encountered in the two borings nearest to the outlet channel (Hole 255 and 256), and a sandstone seam was encountered in Hole 254. Field dispersion (crumb) tests indicated no reaction in any of the samples.

2.3.4 Soil Mechanics Report (NRCS 2015)

An SMR was completed by the NRCS on June 22, 2015 using the data developed in the 2014 GI by NRCS. The purpose of the SMR was to provide recommendations for the headcut erodibility index, K_h, of soil materials in the existing ASW for use in SITES analysis. The results were ultimately incorporated into the dam assessment and rehabilitation alternatives analysis. The evaluation did not address the existing embankment.

The report included results of laboratory testing performed by the NRCS Soil Mechanics Laboratory Soil in Lincoln, NE on select soil and rock samples collected during the 2014 GI. Laboratory testing consisted of moisture, gradation, plasticity, natural unit weight, crumb, double hydrometer, and unconfined compressive strength.

While the borings in 2015 study were located within the existing auxiliary spillway to be abandoned and most were located relatively far from the existing embankment and proposed improvements in the current study, the laboratory test results were considered as being generally representative of the foundation materials at the site and the data were used to supplement purpose-specific investigations for the current investigation.

Of particular relevance to the current investigation is Hole 251, which is located within the footprint of the dam raise, and Holes 250 and 252 which are located upstream and downstream of the embankment, respectively (see **Appendix A**). Based on the results of 14 unconfined compression tests in these 3 borings, the undrained shear strength of foundation soils ranged from about 878 to 6,005 psf and averaged 2,349 psf (slightly less than the overall average of 2,747 psf from 26 test samples from Holes 250 through 256). The strain at failure in each of the compression tests was at or slightly above 5%. A slight decrease in shear strength with depth

was noted in Holes 251, 252, and 254. The relatively undisturbed Shelby tube samples were found to be somewhat dry with degree of saturation ranging from about 26 to 88% and averaged 63%.

Index test results from the borings were similar to earlier studies, and indicated LL ranging from 30 to 66 (average 50), PI ranging from 14 to 45 (average 30), fines content ranging from 75 to 98%, and clay fraction ranging from 23 to 45%.

Dispersion testing generally indicated non-dispersive soils on the basis of double-hydrometer testing, except for two samples with values of 31% (Hole 250) and 41% (Hole 254) which indicated potentially dispersive soils. Most crumb tests also indicated low dispersion potential, with the exception of 4 test results in Holes 250, 251, and 254.

3. Geologic Investigation

3.1 Field Explorations

The project-specific GI was conducted by AECOM's subconsultant, Balcones. The field investigation was conducted between November 25, 2018 and February 2, 2019. Balcones was responsible for performing the drilling and sampling activities, borehole logging, piezometer installation, packaging and transporting samples retrieved from the borings, preparing boring logs, and preparing the GIR.

Locations of the borings are shown in the GIR. Boring locations are also shown on the GI plan sheet in the design drawings, which is provided in **Appendix A**. The general scope of the field GI performed by Balcones is summarized as follows:

- Embankment Crest: Nine (9) borings designated as B-01 through B-09 were drilled on the top of the dam. Borings were advanced to depths which ranged from 30 to 70 feet below ground surface (bgs) using solid-stem auger drilling methods. Sampling consisted of Standard Penetration Testing (SPT) and thin-walled Shelby tubes. Pocket penetrometer testing was conducted on recovered tube samples. Stand-pipe piezometers were installed at borings B-04P and B-06P for the purposes of monitoring the phreatic surface through the dam.
- Embankment Slopes: Six (6) hand auger borings designated as HA-01 through HA-06 were drilled on the upstream and downstream embankment slopes. Borings were advanced to 5 feet bgs. Bag samples were collected at regular intervals. Dynamic Cone Penetration (DCP) testing was also conducted in the hand auger borings to provide an approximate measure of in-situ strength.
- Downstream Toe: Five (5) borings designated as B-601 through B-605 were drilled along the downstream toe of the dam. Borings were advanced to depths which ranged from 25 to 45 feet bgs using auger drilling methods. Sampling consisted of SPT) and thin-walled Shelby tubes. Pocket penetrometer testing was conducted on recovered tube samples.
- Proposed Downstream Channel: One (1) boring designated as B-606 was drilled approximately 400 feet downstream of the dam centerline in the proposed auxiliary spillway channel excavation. The boring was advanced to a depth of 20 feet bgs using auger drilling methods. Sampling consisted of SPT and thin-walled Shelby tubes. Pocket penetrometer testing was conducted on recovered tube samples.
- Upstream Toe: Two (2) borings designated as B-301 and B-302 were drilled along the upstream toe of the dam. Borings were advanced to 25 feet bgs using auger methods. Sampling consisted of SPT and thin-walled Shelby tubes. Pocket penetrometer testing was conducted on recovered tube samples.
- Borrow Area #1: Four (4) borings were drilled in a potential borrow area in the reservoir on the left bank of the normal operating pool, designated as B-101 through B-105. Planned borings B-103 and B-106 were deleted from the investigation scope, as those were determined to be too close to the existing dam limits. Borings were advanced to depths which ranged from 8 to 10 feet using direct-push methods which allowed continuous sampling of disturbed soil samples. From each boring, similar soil samples were packaged into 2 bulk samples from specified depth intervals.
- Borrow Area #2: Four (4) borings were drilled in a potential borrow area in the reservoir on the right bank of the normal operating pool, designated as B-107 through B-110. Borings were advanced to depths which ranged from 8 to 10 feet using direct-push methods which

allowed continuous sampling of disturbed soil specimens. From each boring, similar soil samples were packaged into 2 bulk samples from specified depth intervals.

3.1.1 Generalized Subsurface Conditions

A detailed discussion of the various soil and rock units encountered during the field investigation is provided in the GIR (Balcones, 2021). In general, the findings were consistent with those of previous investigations at the site. A brief overview of the generalized site stratigraphy characterized in the GIR is summarized below.

It is noted that the GIR states that it was difficult to discern between the Midway and Wilcox formations due to their general similarities, and so “Midway” was used as the default description for residual soils and bedrock based on published geologic mapping. The exception is B-01 which is located in an area mapped as the Wilcox formation, and thus the residuum/bedrock materials were designated as such. Additionally, the GIR infers a possible north/south trending fault between boring B-01 and other borings drilled for the project that may be responsible for the mapped Wilcox/Midway contact.

1. Existing Embankment Fill: Medium stiff to hard, lean to fat clays with minor sand, silt, and/or gravel content, and occasional calcareous nodules comprise the homogenous earthfill embankment dam.
2. Valley Fill: Relatively thin layers of suspected fill materials in the lower alluvial valley (hereafter “valley fill”) consisting of soft to hard fat clays were encountered in some boreholes located immediately upstream and downstream of the embankment, likely associated with original dam construction.
3. Leona Gravel: Medium dense to dense, subangular to subrounded, alluvial-derived clayey gravel of the Leona Formation was encountered in several borings upstream and downstream of the embankment, located in the area between Dry Creek and the right abutment. The lack of this unit in nearby embankment centerline borings suggests that the Leona was likely removed during construction of the cutoff trench. Where encountered, the Leona underlies a thin layer of fill and directly overlies the Midway Residuum.
4. Alluvium: Stiff to hard, alluvial fat clay with silt partings and seams, ferrous staining, and calcareous inclusions, was encountered in several borings upstream and downstream of the embankment, located in the area between Dry Creek and the left abutment. Alluvial gravelly clay in boring B-603 represents an apparent transition from fine-grained Alluvium to coarse-grained Leona formation. The lack of this unit in nearby embankment centerline borings suggests that the Alluvium was likely removed during construction of the cutoff trench. Where encountered, the Alluvium underlies a thin layer of fill and directly overlies the Midway Residuum.
5. Midway Residuum: Stiff to hard, blocky, lean to fat clay with sand seams, silt partings, ferrous staining, and occasional calcareous nodules and inclusions represents the residuum weathered from the parent Midway formation. This material was encountered in most borings throughout the site, except for B-01 which encountered Wilcox formation. The Midway Residuum underlies either fill, Alluvium, or Leona units at the site, and directly overlies the Midway Clayshale.
6. Midway Clayshale: Hard, fissile, laminated clayshale with sand and silt seams and partings and variable degree of weathering represents the parent material of the Midway formation. The material breaks down to a fat clay with manual pressure and/or water. This material was encountered throughout most of the site; exceptions are B-09 and B-606 which terminated in residuum, and B-01 which encountered Wilcox.

7. Wilcox Residuum: Stiff to hard fat clay with sand seams and silt partings, ferrous staining, and occasional cemented layers represents the residuum weathered from the parent Wilcox formation. This material was encountered only in boring B-01, which is located along the dam centerline in the outer edge of the existing earthen ASW, near the left abutment. The material was present under a thin veneer of topsoil.
8. Wilcox Clayshale: Hard, fissile, laminated clayshale with silt seams and partings represents the parent material of the Wilcox Formation. This material was encountered only in boring B-01 in the existing ASW, directly underlying the residuum.

Subsurface profiles of the boring logs, including the field classification, pocket penetrometer values, and SPT N-values, are illustrated on the GI sheets in the design drawings. The profiles are also provided in **Appendix A**.

Further discussion of the physical and engineering characteristics of these materials, including laboratory test results, are provided in the following sections of this report.

3.1.2 Groundwater Observations

Groundwater observations are discussed in detail in the GIR. In general, most borings were dry at the time of drilling and 24 hours after drilling. A brief summary of groundwater measurements is provided below, which includes piezometer readings collected by AECOM in early 2020.

Stabilized (i.e., 24-hour) groundwater level in upstream boreholes B-301 and B-302 was encountered at a depth of 5.9 ft bgs (El. 494.1) and 18.5 ft bgs (El. 481.6 ft), respectively. Stabilized groundwater level in downstream borings B-601 and B-602 was encountered at depths 13.4 ft bgs (El. 487.3 ft) and 10.3 ft bgs (El. 484.7 ft).

Along the embankment centerline, measured groundwater depths in the two piezometers B-04P and B-06P were 30.8 ft bgs (El. 495.2 ft) and 32.1 ft bgs (El. 492.9 ft), respectively, approximately 6 months after drilling in June 2019; note that these holes were dry at the time of drilling in November 2018. Subsequent piezometer readings in February 2020 were similar, measuring El. 491.8 and 492.3 in borings B-04P and B-06P, respectively. Stabilized groundwater level in B-01, located in the proposed embankment extension at the existing auxiliary spillway, was at depth 12 ft bgs (El. 527.9 ft), possibly due to perched groundwater.

In Borrow Area #1, stabilized groundwater was encountered at 5.5 feet bgs (El. 495.3) in boring B-102, and after drilling boring B-104 caved to 4.5 feet bgs (El. 498.2) which may be indicative of groundwater and/or sandy seams. The observed groundwater and caved elevations in these two borings and upstream boring B-301 were within a few feet of the reservoir normal pool level. None of the other borings in Borrow Areas #1 or #2 encountered groundwater or experienced significant caving.

Table 3-1. Summary of Groundwater Measurements

	At the Time of Drilling			Delayed Readings*			Piezometer Readings			
Boring ID	Date	Depth (ft)	Elev. (ft)	Date	Depth (ft)	Elev. (ft)	Date	Depth (ft)	Elev. (ft)	Reservoir WSE (ft)**
B-01	2/26/19	12	503.9	2/27/19	---	---	---	---	---	---
B-04P	11/29/18	---	---	11/30/18	---	---	6/7/19 2/13/20	30.8 34.2	495.2 491.8	n/a 493.5
B-06P	11/29/18	---	---	11/30/18	---	---	6/7/19 2/13/20	32.1 32.7	492.9 492.3	n/a 493.5
B-301	11/27/18	18.9	481.2	11/28/18	5.9	494.1	---	---	---	---
B-302	11/29/18	---	---	11/30/18	18.5	485.3	---	---	---	---
B-601	11/27/18	---	---	11/28/18	13.4	487.3	---	---	---	---
B-602	11/27/18	---	---	11/28/18	10.3	484.7	---	---	---	---
B-102	11/26/18	---		11/28/18	5.5	495.3	---	---	---	---

Notes:
*Delayed readings were taken in open boreholes a minimum of 24 hours after the completion of drilling.
**Reservoir water surface elevation (WSE) estimated visually relative to known elevations on the PSW inlet tower,

4. Laboratory Investigation

4.1 Overview

Soil and rock samples recovered from the borings were labeled, packaged, and transported by Balcones to their geotechnical laboratory in Austin, Texas for further classification and testing. Following review of the draft boring logs prepared by Balcones, AECOM prepared a laboratory test assignment sheet listing the samples to be tested. The assignment sheet specified the number and types of tests, as well the testing parameters for advanced testing methods.

Based on the test assignments, Balcones packaged the selected test samples and delivered them to the NRCS-Texas State Geologist for transport to the NRCS Soil Mechanics laboratory in Lincoln, Nebraska. The majority of laboratory testing for this project was conducted by the NRCS Soil Mechanics laboratory. Laboratory summary **Table B.1**, as well as individual data sheets, are provided in **Appendix B**. Discussion of the testing program is provided in the following sections.

The remainder of the samples were retained at Balcones' laboratory and index testing was performed. Testing by Balcones included moisture content on the remaining samples, and soil classification tests consisting of Atterberg limit tests and partial grain-size analyses for the hand-auger boring samples. These results are presented on the boring logs in the 2019 GIR, and included on the laboratory summary **Table B.1** in **Appendix B**.

In April 2020, Balcones transport several of the remaining samples to the laboratory of TRI-Environmental, Inc. (TRI) in Austin, Texas at AECOM's request. These samples were subjected to soluble sulfate content testing to further evaluate suitability of lime treatment for on-site soils. In July 2021, several borrow area samples were shipped from the NRCS lab to Balcones for supplemental soluble sulfate testing, which was performed by Arias & Associates (Arias) at their Austin, Texas laboratory. The sulfate test results are provided in **Appendix B**, and are discussed in the following sections.

4.2 Borrow Source Testing

Bulk samples of similar strata from potential on-site borrow areas and required excavation areas were composited to obtain sufficient sample volume for engineering properties testing on remolded samples. Two composite samples were produced for each of Borrow Area #1 (COMP-1 and COMP-2) and Borrow Area #2 (COMP-3 and COMP-4). Additional composite samples were produced to represent the required excavation materials for the RCC spillway (COMP-5 and COMP-6) and PSW (COMP-7). The borrow areas are shown on the GI Plan Sheet in **Appendix A**. The samples were composited to represent a generalized upper and lower stratum identified in the borings. A summary is provided in the following section.

4.2.1 COMP-1

The COMP-1 sample was composited from the upper 0 to 4 feet in borings B-101 through B-105 in Borrow Area #1. The in-situ material in this interval was described in the field as light gray to dark grayish brown to light brown to dark brown to reddish brown, soft to very stiff, moist, fat clay (CH) with sand, silt, calcareous pockets, and organics. The in-situ pocket penetrometer values ranged from 0.75 to 4.0 tsf; the lower values indicate potential disturbance/fill from previous site grading operations.

This composite sample is from the nearest source on-site of borrow, and may be preferred due to relatively short haul distance. Due to shallow depths, this sample is also considered to be the

most readily accessible from an excavation standpoint. For these reasons, a significant number of advanced laboratory testing was performed on this sample.

4.2.2 COMP-2

The COMP-2 sample was composited from the depth intervals of 4 to 10 feet bgs in borings B-101 through B-104, and 5.5 to 10 feet bgs in boring B-105 in Borrow Area #1. The in-situ material in this interval was described in the field as tan and gray to light gray, stiff to hard, moist, blocky fat clay (CH) with sand, silt seams and partings, and calcareous pockets. Some scattered gravel, some ferrous staining, and occasionally blocky structure were observed. The in-situ pocket penetrometer values ranged from 0.75 to 4.5+ tsf. The material is generally representative of the Midway Residuum. The relatively lower pocket penetrometer values found in B-102 are likely associated with the relatively shallow groundwater encountered at this location (i.e., 24-hour groundwater level of 5.5 feet bgs).

This composite sample is from the nearest source of borrow, but will be somewhat less readily accessible than COMP-1 materials due to the deeper excavation depths and possibility of encountering groundwater at B-102 and/or other boring locations. Based on proximity to the dam, advanced laboratory testing was performed on this sample.

4.2.3 COMP-3

The COMP-3 sample was composited from the upper 0 to 3 feet in borings B-107 through B-110 in Borrow Area #2. The in-situ material in this interval was described in the field as dark brown to grayish brown to light brown, soft to very stiff, moist, fat clay (CH) with sand, small gravel, calcareous nodules, and organics. The in-situ pocket penetrometer values ranged from 0.5 to 4.0 tsf, the lowest of which were at B-109.

This composite sample is from the most distant source of on-site borrow, and may be less desirable due to longer haul distance and possible need for haul road improvement. However, advanced laboratory testing was performed on this sample in the event that additional material is needed.

4.2.4 COMP-4

The COMP-4 sample was composited from depth interval of 3 to 8 feet bgs in borings B-107 through B-110 in Borrow Area #2. The in-situ material in this interval was described in the field as tan and gray to light brownish gray and dark gray to grayish brown, very stiff to hard, fat clay (CH) with sand, silt seams and partings, calcareous pockets, ferrous staining. The material exhibited blocky structure below about 5 feet bgs. The in-situ pocket penetrometer values ranged from 1.75 to 4.5 tsf. The material is generally representative of the Midway Residuum, but the lower pocket penetrometer values (primarily from B-110) may be indicative of disturbance/fill associated with previous grading operations.

This composite sample is from the most distant source of on-site borrow, and may be less desirable due to longer haul distance, possible need for haul road improvement, and depth below ground surface. Consequently, advanced testing on this composite sample was relatively limited as compared to the other 3 borrow area composite samples.

4.2.5 COMP-5

The COMP-5 sample was intended to represent materials in the required embankment excavation for construction of the new RCC spillway crest and chute structures. The COMP-5 sample was composited from depth intervals of 10 to 12 feet bgs in boring B-04 and 7.5 to 14 feet bgs in boring

B-05. Materials in these depth intervals were described on the boring logs as existing Embankment Fill consisting of light brown sandy lean clay with scattered gravel and organics to light brown, tan, and gray fat clay with sand and silt seams, calcareous nodules, and small gravel. Possible re-use of these excavated materials as fill will be desirable from the perspective of materials handling and to limit waste.

4.2.6 COMP-6

The COMP-6 sample was intended to represent materials in the required downstream toe excavation for construction of the new RCC spillway stilling basin. The COMP-6 sample was composited from depth intervals of 13.5 to 15.5 feet bgs in boring B-603 and 20 to 21 feet bgs in boring B-604. Materials in these depth intervals were described on the borings logs brown and gray as fat clay of the Midway Residuum with ferrous staining, calcareous inclusions, and silt partings and seams. Possible re-use of these excavated materials as fill will be desirable from the perspective of materials handling and to limit waste.

4.2.7 COMP-7

The COMP-7 sample was intended to represent materials in the required downstream toe excavation for construction of the new PSW impact basin. The COMP-7 sample was composited from the depth interval of 15 to 19 feet bgs in boring B-602. Materials in this depth interval were described on the borings logs as tan and gray fat clay of the Midway Residuum with ferrous staining, calcareous inclusions, and silt partings and seams. Possible re-use of these excavated materials as fill will be desirable from the perspective of materials handling and to limit waste.

4.3 Summary of Testing and Results

Testing performed for this project included index properties (moisture, unit weight, gradation, plasticity, and specific gravity), dispersion (crumb and hydrometer), one-dimensional consolidation, strength, and constant-volume swell testing. Strength testing included unconfined compression (UC), unconsolidated-undrained triaxial (UU), consolidated-undrained triaxial (CU) with pore pressure measurement, and consolidated-drained direct shear (CDDS).

A summary of tests performed for each stratum is provided in the **Table 4-1**. Discussion of test methods and specific tests results are presented in the following sections. A tabulated summary of all index, dispersion, and undrained shear strength test results is provided as **Table B.1** of **Appendix B**, which includes test data from the Balcones, NRCS, TRI, and Arias laboratories. Individual laboratory test data sheets are included in **Appendix B**.

Table 4-1. Summary of Tests Performed by Stratum

Stratum or Location [1]	Index	Dispersion	Swell	Consol.	Strength	Hydraulic Cond-uctivity	Other
Embankment Fill	X	X	X	X	UC, UU, CIU'		Sulfates
Valley Fill	X	X			UC, UU		
Alluvium	X	X			UU, CIU'		
Leona Formation	X	X					
Midway Residuum	X	X	X	X	UU, CIU'		
Midway Clayshale	X	X			UC, CDDS, CIU[2]		
Wilcox Residuum	X	X					Sulfates
Wilcox Clayshale	X	X					
Borrow Area #1 (COMP-1)	X	X	X	X	CIU', UU	X	Proctor, Chemical, Lime Series
Borrow Area #1 (COMP-2)	X	X			CIU', UU	X	Proctor, Chemical, Lime Series
Borrow Area #2 (COMP-3)	X	X	X	X			Proctor, Chemical, Lime Series
Borrow Area #2 (COMP-4)	X	X					Proctor, Chemical, Lime Series
Required RCC Spillway Excavation – Embankment (COMP-5)	X						Lime Series
Required RCC Spillway Excavation – Foundation (COMP-6)	X						Lime Series
Required PSW Excavation – Foundation (COMP-7)	X						Lime Series

Notes:
1. See text for location and depth intervals of composite samples.
2. CIU testing could not be completed on Clayshale samples due to brittle nature of material.

4.3.1 Index Testing

4.3.1.1 Natural Moisture Content and Unit Weight

Natural moisture content tests (ASTM D2216) were performed on the majority of collected soil samples. Natural moisture contents performed by Balcones' laboratory are tabulated at the sample depth on the boring logs in the 2019 GIR. Moisture content tests performed by the NRCS laboratory are provided in **Appendix B**. Both data sets are summarized in **Table B.1** in **Appendix B.**

Natural unit weight tests (ASTM D2937) were performed on the undisturbed soil samples subjected to advanced testing, as well as select intervals of relatively undisturbed samples in each geologic stratum to characterize in-situ unit weight. Natural moisture content and unit weight tests were also performed on clayshale samples subjected to strength testing. A summary of the results for each geologic stratum are presented and discussed in **Section 5.2**.

4.3.1.2 Specific Gravity

Specific gravity testing (ASTM D854) was performed on the majority of collected soil samples. Test results are provided in **Appendix B**. Results indicate the specific gravity of the materials tested ranges from 2.62 to 2.82, with the majority of values between 2.68 and 2.75.

4.3.1.3 Atterberg Limits

Atterberg Limits testing (ASTM D4318) was performed on representative soil and rock samples from each geologic stratum to measure the liquid limit (LL), plastic limit (PL), and plasticity index (PI), and to determine the USCS soil classification of each fine-grained sample tested. Tested samples of clayshale were disaggregated to a soil-like consistency prior to conducting the tests.

Test results for the hand auger borings are tabulated on the boring logs in the 2019 GIR, and summarized in **Table B.1**. The other test results are provided in **Table B.1** and **Appendix B**. A summary of the results for each geologic stratum are presented and discussed in **Section 5.2**.

4.3.1.4 Gradation

Grain-size distribution (ASTM D422) of the various soil and rock materials were investigated by the determination of the percent of soil passing the noted sieves by washing or sieving. Hydrometer tests were performed on minus #200-sieve material from selected soil samples to determine the clay-size fraction. Tested samples of clayshale were disaggregated to a soil-like consistency prior to conducting the tests.

Test results for the hand auger borings are tabulated on the boring logs in the 2019 GIR, and summarized in **Table B.1**. The other test results are provided in **Table B.1** and **Appendix B**. A summary of the results for each geologic stratum are presented and discussed in **Section 5.2**.

4.3.2 Dispersion Testing

4.3.2.1 Crumb

To evaluate the potential dispersive characteristics of site soils, crumb dispersion tests (ASTM D6572) on fragments of discrete soil samples obtained from the borings. The test is performed by immersing a small fragment (crumb) of soil, at the natural moisture content, into about 150 ml of distilled water. After a few minutes, the sample is viewed and graded based on the colloidal suspension. Grades are summarized and interpreted as follows:

- Grade 1: No Reaction (Nondispersive)
- Grade 2: Slight Reaction (Intermediate)
- Grade 3: Moderate Reaction (Dispersive)
- Grade 4: Severe Reaction Highly Dispersive (Highly Dispersive)

It is noted that the crumb test is generally used a screening test to identify potentially dispersive soils, and is generally not relied upon exclusively for evaluating dispersion potential. Results are supplemented with more reliable test methods such as double-hydrometer or pinhole testing.

The test results are provided in **Appendix B**. A summary of the results for each geologic stratum are presented and discussed in **Section 5.2**.

4.3.2.2 Double-Hydrometer

The double-hydrometer test (ASTM D4221 and ASTM D8928) was performed to further evaluate the dispersive characteristics of the soil. The test is performed on both a natural soil specimen and a specimen artificially dispersed by sodium hexametaphosphate and thorough agitation. The result is reported as a percent dispersion, defined as the percent finer than 0.005 mm without dispersant to that with dispersant. The interpretation of the results is as follows:

- < 30% Dispersion: Nondispersive
- 30 – 60 % Dispersion: Intermediate, more testing required
- > 60% Dispersion: Dispersive

The test results are provided in **Appendix B**. A summary of the results for each geologic stratum are presented and discussed in **Section 5.2**.

4.3.3 Moisture-Density Relationship (Proctor Compaction)

Standard Proctor compaction testing (ASTM D698, Method A) was performed to evaluate moisture-density relationships for the borrow composite samples. Results are provided in **Table 4-2**. Note that composite samples from Borrow Area #1 classified as lean clay (CL) as compared to field classifications of fat clay (CH).

Table 4-2. Summary of Moisture-Density Relationship Test Results

Boring ID	Top Depth (ft)	Bottom Depth (ft)	Stratum	USCS	Fines Content (%)	LL	PI	Gs	Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)
Comp-1	0	4	Borrow #1	CL	80	43	25	2.70	107.0	18.0
Comp-2	4/5.5*	10	Borrow #1	CL	67	39	23	2.72	111.5	15.5
Comp-3	0	3	Borrow #2	CH	76	50	31	2.70	102.0	20.0
Comp-4	3	8	Borrow #2	CH	91	57	37	2.74	101.5	21.0
*Top depth was 5.5 ft for B-105 portion of composite sample.										

4.3.4 Swell / Collapse Testing

Testing of relatively undisturbed thin-walled tube samples and remolded bulk samples was performed to evaluate the swell or collapse potential of select soil samples. The tests were conducted as constant-volume swell tests to estimate swell pressure (ASTM D4546, Method B). An additional unloading cycle was included to evaluate percent swell at various confining pressures less than the swell pressure (ASTM D2435). Specifically, the procedure included loading test specimens to the initial confining pressure (nominal 250 psf) and inundated with water. The load was progressively increased as required to prevent swelling from occurring. Upon reaching the swell pressure (i.e. confining pressure at which zero swell occurs), the load was incrementally reduced and the corresponding percent swell was measured at each step load. Results of the test are reported as maximum percent swell at the lowest confining pressure, and swell pressure at the highest confining pressure.

Remolded bulk samples were compacted to target 95% of maximum dry density (MDD) at optimum moisture content (OMC) per ASTM D698. The target density and moisture content represent the unfavorable range of a typical embankment compaction specification with respect to swell potential (i.e., dry).

The test results are provided in **Appendix B** and summarized in **Table 4-3**. In general, the swell test results were variable, but swell pressures and percent-swell were correlated. The swell pressures ranged from 472 to 5,760 psf, but most of the results were between 1,000 and 2,000 psf. Final percent swell at the minimum confining pressure ranged from 0.02 to 3.32%, but was typically between 0.5 and 1.5%. The two highest swell pressure values recorded were 5,760 psf for one embankment sample (B-07, 15-17.5 feet) and 5,540 psf for one residuum sample (B-604, 20-21 feet), both exhibiting greater than 3% swell. No strong correlation was evident between index properties (LL, PI, or CF) and swell potential. However, from test results available, samples with swell pressure greater than 2,000 psf and percent swell greater than 1.25% at 250 psf confining pressure all had the following characteristics:

- LL ≥ 50
- PI > 30
- CF > 30%

Based on the test results, the Embankment Fill and the Midway Residuum range from low-expansive to highly expansive. Therefore, expansive soils mitigation will be needed for the project, particularly for lightly-loaded structures that are more susceptible to shrink/swell movements.

Table 4-3. Summary of Swell/Collapse Test Results

Boring ID	Top Depth (ft)	Bott. Depth (ft)	Stratum	USCS	LL	PI	CF (%)	Swell Pressure (psf) [1]	%Swell at σ=250 psf (2)	Swelling Strain Index, Csε (3)	Est. Free Swell (%) (4)
B-05	7.5	10	Embankment	CL	48	27	27	1,538	+0.68	0.011	+1.9
B-05	15	17.5	Embankment	CH	82	55	53	1,716	+1.12	0.016	+1.1
B-06P	15	17.5	Embankment	CL	46	23	22	472	No swell	0.005	+0.4
B-07	10	12	Embankment	CL	46	24	23	1,074	+0.37	0.013	+1.8
B-07	15	17.5	Embankment	CH	52	32	32	5,760	+3.02	0.023	+5.5
B-301	18	20	Midway Residuum	CL	47	24	27	1,850	+0.74	0.011	+2.0
B-601	10	12.5	Midway Residuum	CH	52	32	35	802	No swell	0.006	+0.7
B-601	19	20.5	Midway Residuum	CH	58	35	33	1,250	+0.40	0.011	+1.6
B-602	15	17	Midway Residuum	CH	57	34	31	1,942	+1.08	0.014	+2.6
B-603	15.5	17.5	Midway Residuum	CH	65	41	41	2,440	+1.06	0.015	+2.7
B-604	20	21	Midway Residuum	CH	68	43	40	5,540	+3.10	0.024	+5.7
Comp-1	0	4	Borrow #1	CL	43	25	35	1,828	+0.94	0.014	+2.5
Comp-3	0	3	Borrow #2	CH	50	31	41	2,020	No swell	0.019	+2.1

Notes:
1) Constant-volume procedure.
2) Maximum swell at 250 psf vertical confining pressure following incremental unloading from swell pressure.
3) Swelling strain index is the slope of the unloading curve, $Cs\varepsilon = (\varepsilon_2 - \varepsilon_1) / \log(p_2/p_1)$
4) Estimated swell at 20 psf vertical confining pressure based on Csε.

4.3.5 One Dimensional Consolidation

One-dimensional consolidation tests (ASTM D2435) were performed on relatively undisturbed samples and remolded bulk samples. In this test method, a soil specimen is restrained laterally and axially drained while subjected to applied vertical loadings. A seating stress of 100 psf is

applied and the sample is inundated. Additional load is placed on the sample to maintain a constant volume and to determine the swell pressure. Once the sample stabilizes (does not change in height), the sample is loaded/unloaded incrementally to obtain the virgin compression and rebound curves. The stress where the sample changes from rebound compression to virgin compression is referred to as the preconsolidation pressure (P'c), which represents the maximum stress to which the soil has previously been subject (geologic timeframe). Following loading and unloading increments, measurements are made of the change in the specimen height and the data are used to determine the relationship between applied stress and void ratio.

The test samples were about 2 inches in diameter and 0.75 inches in height. Test samples were either trimmed from relatively undisturbed Shelby tubes, or remolded from bulk samples to target compaction of 95% of MDD at moisture content +3% of OMC per ASTM D698. The target density and moisture content represent the unfavorable range of a typical embankment compaction specification with respect to consolidation (i.e., wet and low density). Laboratory test results are provided in **Appendix B** and are summarized in **Table 4-4**.

The consolidation test data was analyzed using both the Casagrande (1936) and Boone (2010) graphical methods to estimate the overconsolidation ratio (OCR). The methods gave reasonably good agreement, with OCR ranging from 1.9 to 8.8 using the Casagrande Method and 1.7 to 8.8 using the Boone Method. Test results on undisturbed samples yielded an estimated OCR greater than 3.0 and P'c greater than 5,000 psf, with the exception of the test result on sample B-601 from 10-12.5 feet which had an OCR of 1.3 to 1.7 and P'c of 1,800 to 2,300 psf, respectively, depending on interpretation method Compression index (Cc) for these materials was between 0.10 and 0.24, and Recompression index (Cr) was between 0.020 and 0.035. Test results on remolded samples of proposed borrow material had a minimum P'c of 3,000 psf, Cc between 0.22 and 0.26, and Cr of 0.023 in both cases.

Test results on undisturbed samples indicate the existing embankment and natural materials are moderately to highly overconsolidated and are not overly susceptible to settlement for the anticipated structure loading. Test results suggest well-compacted proposed borrow material (minimum 95% MDD of Standard Proctor) will be moderately overconsolidated, and remain within the recompression range for applied stresses less than 3,000 psf. Settlement calculations for proposed structures are included in later sections of this report.

Table 4-4. Summary of Consolidation Test Results

Boring ID	Top Depth (ft)	Bottom Depth (ft)	Stratum	USCS	Cc	Cr	σ'v (psf)	P'c (psf)		OCR		e0
								CG	Boone	CG	Boone	
B-05	15	17.5	Embankment	CH	0.24	0.032	1,968	6,200	6,100	3.2	3.1	0.90
B-06P	7.5	10	Embankment	CL	0.16	0.026	1,046	9,200	9,200	8.8	8.8	0.62
B-06P	15	17.5	Embankment	CL	0.18	0.035	1,968	6,000	6,000	3.0	3.0	0.75
B-07 (2)	15	17.5	Embankment	CH	0.16	0.027	1,968	10,600	8,900	5.4	4.5	0.61
B-301	18	20	Midway Residuum	CL	0.12	0.017	1,526	9,000	8,400	5.9	5.5	0.66
B-601	10	12.5	Midway Residuum	CH	0.24	0.025	1,353	1,800	2,300	1.3	1.7	0.88
B-601	18	19	Midway Residuum	CH	0.14	0.029	1,963	12,000	11,200	6.1	5.7	0.64
B-601	19	20.5	Midway Residuum	CH	0.10	0.021	2,023	9,800	8,700	4.8	4.3	0.76
B-602	15	17	Midway Residuum	CH	0.15	0.020	1,594	5,600	5,150	3.5	3.2	0.72
B-603	15.5	17.5	Midway Residuum	CH	0.15	0.031	1,624	8,200	9,800	5.0	6.0	0.77
B-604	20	21	Midway Residuum	CH	0.14	0.023	2,084	9,800	8,600	4.7	4.1	0.73
Comp-1 (3)	0	4	Borrow #1	CL	0.22	0.023	1,968	3,000	---	---	---	0.66
Comp-3 (4)	0	3	Borrow #2	CH	0.26	0.023	1,046	3,000	---	---	---	0.73

Notes:

1) Abbreviations:
   a) Cc – Compression index (void ratio basis)
   b) Cr – Recompression index (void ratio basis)
   c) σ'v – Estimated in situ effectives overburden pressures based on estimated long-term groundwater levels
   d) P'c – Estimated preconsolidation pressure
   e) CG – Casagrande method
   f) OCR – Estimated overconsolidation ratio
   g) e0 – Initial void ratio
2) Swelled 2.2% at end of unloading beyond initial sample height.
3) Swelled 0.5% at end of unloading beyond initial sample height.
4) Compacted to 95% of maximum dry density at optimum moisture content per ASTM D698. Swell pressure of 1,650 psf during inundation phase of test (constant-volume).
5) Compacted to 95% of maximum dry density at optimum moisture content per ASTM D698. Swell pressure of 1,870 psf during inundation phase of test (constant-volume).

4.3.6 Consolidated-Undrained Triaxial Compression

In the isotopically consolidated-undrained (CIU') triaxial compression test (ASTM D4767), a 2.8-inch diameter by 5.5-inch long specimen is loaded into a triaxial test chamber, seated, and backpressure saturated. Pore water pressure measurements are made until the sample is saturated (zero air voids). Following backpressure saturation, the sample is subjected to a selected confining pressure and allowed to consolidate. Once the sample sufficiently consolidates, the sample is sheared, and pore water pressures are measured. The load applied (stress) and the sample deformation (strain) is measured.

For a conventional multi-specimen shear test, a separate sample sheared to failure for each confining pressure. From the resulting stress vs. strain and pore water measurements at three different confining pressures, the following strength parameters can be deduced: total stress friction angle (ϕu), effective stress friction angle (ϕ'), total stress cohesion intercept (cu), and effective stress cohesion intercept (c'). Note that in some cases, insufficient sample quantity was

available to provide 3 confining stresses, in which case the resulting strength envelopes were based on 2 confining stress.

The CIU' triaxial test results are included in **Appendix B** and summarized in **Table 4-5**. The reported c and ϕ values were obtained from the Mohr-Coulomb slope intercept data reduction technique. Further discussion of results is provided in **Section 5.2**.

4.3.7 Consolidated-Drained Direct Shear

Consolidated-drained direct shear (CDDS) testing (ASTM D3080) was performed on relatively undisturbed samples of the Midway clayshale. The test samples are trimmed to 2.5-inch diameter and 1.0-inch in height, and consolidated to a specified effective normal stress. After primary consolidation is complete, the sample is sheared in a horizontal direction to a maximum displacement of 0.3 inches. The shear strain rate is based on consolidation rate, and is assumed to be slow enough to inhibit excess pore water pressure during shear. Drainage is allowed through both the top and bottom of the sample. From each Shelby tube sample, three (3) individual samples were tested at different effective normal stresses to obtain a strength envelope. Based on the post-peak shear stress at 0.3 inches of horizontal displacement, the Mohr-Coulomb slope intercept data reduction techniques was used to fit an effective stress (drained) shear strength envelope. The interpreted effective friction angle and cohesion intercept (ϕ', c') are provided in **Table 4-5**. Laboratory test results, including data sheets and displacement curves, are provided in **Appendix B**.

Table 4-5. Summary of Shear Test Results

Boring ID	Top Depth (ft)	Bottom Depth (ft)	Stratum	USCS	LL	Test Type [see notes]	No. Norm. Stress Pts	Total Stress (CU-Envelope)		Effective Stress (CD-Envelope)	
								Cohesion, Cu (psf)	Friction Angle, ϕu (deg)	Cohesion, C' (psf)	Friction Angle, ϕ' (deg)
B-05	30	32.5	Embankment	CL	45	CIU' (undisturbed)	3 pts	631	18.5	485	27.1
B-07	17.5	19.5	Embankment	CH	65	CIU' (undisturbed)	2 pts	171	22.7	132	29.2
B-301 (1)	4	10	Alluvium	CL-CH	40-51	CIU' (undisturbed)	2 pts	908	10.3	763	19.5
B-08	35.0	37.5	Midway Residuum	CL	47	CIU' (undisturbed)	3 pts	84	20.4	36	30.3
B-603	15.5	17.5	Midway Residuum	CH	65	CIU' (undisturbed)	2 pts	201	28.4	88	35.3
B-602	25.0	26.0	Midway Clayshale	CH	62	CDDS (undisturbed)	3 pts	---	---	346	35.4
B-603	30.0	31.0	Midway Clayshale	CH	66	CDDS (undisturbed)	3 pts	---	---	624	24.2
B-604	30.0	31.0	Midway Clayshale	CH	65	CDDS (undisturbed)	3 pts	---	---	181	32.5
Comp-1	0	4	Borrow Area #1	CL	43	CIU' (remolded)	3 pts	275	14.7	140	27.5
Comp-2	4	10	Borrow Area #1	CL	39	CIU' (remolded)	3 pts	288	13.8	202	24.2

Notes:

1) Shear envelope was estimated based on samples tested from 3 shelby tubes. The sample tested at the lowest normal stress had an anomalously high shear strength and was neglected in developing the shear envelope.
2) The reported effective stress envelope for consolidated-drained direct shear is post-peak strength (i.e., 0.3 inches of shear displacement).

4.3.8 Undrained Shear Strength

Unconsolidated-Undrained Triaxial Compression (ASTM D2850) or Unconfined Compression (ASTM D2166) tests were performed on relatively undisturbed Shelby tube samples of cohesive soils to obtain estimates of undrained shear strength (Su). The effective confining pressure applied to UU test samples was generally equal to the estimated in-situ effective overburden pressure based on estimated groundwater levels. The reported values of Su are taken as one-half of the unconfined compressive strength in UC tests, or one-half the maximum deviator stress for UU tests. Results are summarized in **Table B.1** of **Appendix B**, and laboratory data sheets are provided in **Appendix B**.

Tests were performed on samples of most of the various geologic strata encountered, and generally indicate stiff to hard soils. Two UC test results in the near-surface samples of Embankment Fill and Fill had peak Su less than 1,300 psf, while the remainder of test samples had peak Su between about 2,000 and 11,000 psf.

4.3.9 Hydraulic Conductivity

Hydraulic conductivity testing (ASTM D5084) was performed on two remolded borrow samples. Specimen saturation is achieved through back pressuring at a low effective confining stress. The specimen was isotopically consolidated after saturation. Once the specimen was consolidated to the assigned stress, a gradient was applied from the bottom to the top drainage boundary and volume of flow was recorded over time and the hydraulic conductivity calculated. The results are presented in **Appendix B** and summarized in the table below.

Results indicate the proposed borrow materials are of relatively low hydraulic conductivity, and should be suitable for relatively impervious zones of the proposed earthen embankment fill.

Table 4-6. Hydraulic Conductivity Test Results

Boring ID	Top Depth (ft)	Bottom Depth (ft)	Stratum	USCS	Effective Confining Pressure (psf)	Hydraulic Conductivity (cm/s)
Comp-1	0	4	Borrow #1	CL	1,000	4.6E-08
Comp-2	4/5.5*	10	Borrow #1	CH	1,000	1.5E-07
*Top depth was 5.5 ft for B-105 portion of composite sample.						

4.3.10 Lime Series Testing

Lime series testing (ASTM D4318-MOD and D6276) was conducted on bulk composite samples from the proposed borrow areas. The testing included mixing natural bulk soil samples with lime at different percentages by weight ranging from 1% to 6%, and measuring the change in PI. The change in pH was also measured for COMP-1, COMP-2, and COMP-5 through COMP-7 samples (note the pH results for COMP-5 through COMP-7 were not available at the time of this report). The purpose of the testing is to identify the lime application rate required to reduce the shrink/swell properties of expansive soils below an established threshold (e.g., typically PI less than 15 to 20). The design lime application rate should also produce a stable pH of typically at least 12.4 for long-term durability according to the Eades and Grim test method (ASTM D6276). Lime treatment can also used to reduce the dispersion potential of dispersive clay soils.

The lime series testing indicates that the soil PI can be reduced to 15 or less with a lime application rate of between 1 and 3% for the composite samples from the borrow area. This is based on natural PI between 25 and 37. Lime application rates of between 2 and 4% were adequate to

reduce the PI to 15 or less for composite samples representative of materials in required excavations for the new PSW and RCC spillway, which had natural PI ranging from 26 to 40. Soils with higher natural PI would be expected to require additional lime to reach a PI of 15 or less. Non-plastic behavior was noted in COMP-2 when the lime application rate was greater than 4%. The pH of lime-treated samples was found to be stable at around 12.5 and 12.6 for COMP-1 and COMP-2, respectively, at application rates of 3% and 4%. While pH was not measured on samples treated with less than 3% lime, results suggest that it is possible a stable pH > 12.4 could be obtained in COMP-1 and COMP-2 at lime application rates less than 3%. The results are provided in **Appendix B** and summarized in **Table 4-7**.

Table 4-7. Summary of Lime Series Testing

Boring ID	Depth (feet)		Stratum	USCS	Soil Properties at specified Lime Application Percentage by Weight*							
	Top	Bott.			Property	Natural	1%	2%	3%	4%	5%	6%
Comp-1	0	4	Borrow #1	CL	LL	43	**45**	43	41	41	41	41
					PI	25	**15**	9	9	8	7	7
					pH	-	-	-	12.5	12.5	12.5	12.5
Comp-2	4 to 5.5	10	Borrow #1	CL	LL	39	**39**	39	39	NP	NP	NP
					PI	23	**10**	7	7	NP	NP	NP
					pH	-	-	-	12.5	12.6	12.6	12.6
Comp-3	0	3	Borrow #2	CH	LL	50	50	**48**	46	46	---	---
					PI	31	17	**12**	9	7	---	---
Comp-4	3	8	Borrow #2	CH	LL	57	57	**54**	52	---	---	---
					PI	37	24	**15**	12	---	---	---
Comp-5	7.5 to 10	12.5 to 14	RCC Spillway Embank. Excav.	CL	LL	45	---	---	**45**	---	---	45
					PI	26	---	---	**9**	---	---	8
Comp-6	13.5 to 20	15.5 to 21	RCC Spillway Fndn. Excav.	CH	LL	62	---	60	---	**58**	---	57
					PI	40	---	17	---	**14**	---	12
Comp-7	15	19	PSW Fndn. Excav.	CH	LL	54	---	**54**	---	54	---	52
					PI	34	---	**15**	---	12	---	7

*Bolded values indicates lowest tested lime application rate which produces PI ≤ 15.

4.3.11 Analytical Testing

Analytical testing was performed to provide information on chemical compatibility of soils for lime treatment, and to assess corrosion potential of various embankment and natural soils at the site to buried metal and/or concrete. The tests performed by the NRCS laboratory included total soluble salts on bulk composite samples from the borrow areas. Soluble sulfates testing (ASTM D516/C1580) was performed by TRI-Environmental on several samples of existing Embankment Fill, Residuum, and Clayshale within depth intervals of required excavation for the proposed overtopping spillway. Supplemental soluble sulfates testing (Tex-145-E Part II) was performed by Arias Associates on bulk samples from Borrow Areas #1 and #2, including both composite bulk samples and bulk samples from discrete depth intervals of individual borings. The results are provided in **Appendix B** and summarized in **Table 4-8**.

The presence of soluble sulfate salts in soils treated with calcium-based additives (e.g., lime or Portland cement) can be problematic. In excessive concentrations, the sulfate reacts adversely with calcium, water, and alumina in the clay to form the mineral ettringite. The formation of

ettringite causes substantial volume increase (swelling) of 2 to 2.5 times its initial volume, and can cause significant heaving and distress to adjacent structures, a process commonly referred to as “sulfate-induced heave”. Soluble sulfates are generally not problematic at concentrations less than 3,000 ppm. At concentrations between 3,000 and 5,000 ppm, special precautions are needed to reduce the risk of sulfate-induced heave (extended mellowing time, additional water, etc.). Sulfate concentrations greater than 5,000 ppm are considered high risk for sulfate-induced heave, and multiple applications of lime and mellowing periods are typically required (NLA, 2004). The Texas Department of Transportation (TxDOT) does not permit lime treatment of soils with sulfate concentration exceeding 7,000 ppm (TxDOT, 2014).

The presence of relatively high measured soluble sulfate content (greater than 200 ppm) may be corrosive to buried metal and concrete (FHWA, 2010). Test results indicate sulfate content ranges from 88 to 5,600 ppm, with six of sixteen results greater than 2,000 ppm. Based on the sulfate test results, the sulfate exposure is classified as ranging from “negligible” (<150 ppm) to “severe” (1,500-10,000 ppm) according to ACI 350 Table 4.3.1. The ACI 350 recommends no restriction on cement type for “negligible” and Type V cement for “severe” sulfate exposure. Considering the elevated sulfates contents and variable distribution in site soils, the use of sulfate-resistant cement is recommended for concrete to mitigate sulfate degradation.

Soluble sulfate testing on existing Embankment Fill materials in the vicinity of the proposed RCC overtopping spillway indicate a concentration range of 300 to 900 ppm (average 660 ppm), which is considered suitable for lime treatment with low risk of sulfate-induced heave. Limited sulfate testing of the native Residuum and Clayshale at the downstream toe in the vicinity of the proposed ASW stilling basin yielded elevated sulfate concentrations ranging from 3,500 to 5,600 ppm (average 4,667 ppm). The elevated sulfate content of the Residuum and Clayshale is within the allowable range for lime treatment near structures according to TxDOT, but special precautions (multiple applications, extended mellowing time, etc.) will be needed to reduce the risk of sulfate-induced heave. Soluble sulfate testing performed on samples from Borrow Areas #1 and #2 yielded sulfate concentrations ranging from 88 to 3,396 ppm (average 1,337 ppm), with 5 of 8 tests yielding concentrations below 2,000 ppm. No pattern was evident regarding the trend in sulfate distribution in the borrow area. In general, the sulfate concentrations of borrow area soils are sufficiently low to permit lime treatment with low-risk of sulfate-induced heave. However, one of the test results was above the 3,000 ppm TxDOT threshold as requiring special precautions, and indicates that other untested samples could have elevated sulfate concentrations. Therefore, considering the high-hazard nature of this dam and potentially significant adverse effects of sulfate-induced heave on spillway structures, special precautions (multiple applications, extended mellowing, etc.) are suggested for lime treatment of borrow area soils.

Due to the inherent variability of soils and sometimes erratic distribution of sulfate concentrations in natural materials, a robust construction quality assurance and quality control (QA/QC) testing program and additional pre-construction testing by the Contractor is recommended if lime treatment is implemented for this project, particularly for lime-treated soils to be placed in contact with concrete and RCC structures.

Table 4-8. Summary of Chemical Compatibility Testing

Boring ID	Top Depth (ft)	Bottom Depth (ft)	Stratum	USCS	Total Soluble Salts (ppm)** [%]	pH	Soluble Sulfates (ppm)
Comp-1	0	4	Borrow #1	CL	5,000 [0.5%]	6.9	2,542
Comp-2	4/5.5*	10	Borrow #1	CL	4,000 [0.4%]	7.4	1,300
B-105	0	3	Borrow #1	CL	---	---	88
B-105	4	10	Borrow #1	CL	---	---	806
Comp-3	0	3	Borrow #2	CH	8,000 [0.8%]	7.2	2,268
Comp-4	3	8	Borrow #2	CH	24,000 [2.4%]	7.2	3,396
B-110	0	3	Borrow #2	CH	----	---	146
B-110	3	8	Borrow #2	CH	---	---	148
B-05	10.0	12.0	Embankment Fill	CL/CH	---	---	700
B-06	12.0	14.0	Embankment Fill	CL/CH	---	---	800
B-07	12.0	14.0	Embankment Fill	CL/CH	---	---	900
HA-01	3.0	4.0	Embankment Fill	CH	---	---	600
HA-02	3.0	4.0	Embankment Fill	CL/CH	---	---	300
B-602	13.0	15.0	Residuum	CH	---	---	3,500
B-603	18.0	19.0	Residuum	CH	---	---	5,600
B-604	24.5	26.0	Clayshale	CH	---	---	4,900

*Top depth was 5.5 ft for B-105 portion of composite sample.
**Converted from % to parts-per-million (ppm) using conversion factor of 10,000.

5. Site Characterization

5.1 Characterization of Analysis Sections

5.1.1 Embankment Section Reaches

For the purposes of engineering analysis, the dam embankment was divided into generalized reaches of similar proposed cross-section geometry and subsurface stratigraphy. The various reaches are described below with respect to the embankment centerline stationing, which is illustrated in the GI Plan sheet in **Appendix A**.

5.1.1.1 Reach A: New Embankment Closure Section – Left Abutment (STA 4+00 to 9+00)

Improvements for this reach include construction of a new embankment section across the existing earthen auxiliary spillway to be abandoned.

Based on boring B-01, foundation conditions along the embankment centerline consist of about 20 feet of stiff to hard Wilcox Residuum underlain by at least 10 feet of hard Wilcox Clayshale. The 24-hour groundwater level was 5.9 feet bgs (El. 510), but may be associated with perched groundwater based on the normal pool elevation. Based on the existing ground surface elevation of about El. 516 and proposed embankment crest elevation of El. 527 (top of compacted fill excluding additional 12 inches of topsoil), the maximum fill height for the new embankment is approximately 12 feet.

Previous (2014) NRCS Hole No. 251 within the proposed embankment footprint indicates 3 feet of clay overlying 17.5 feet of soft to very soft claystone, followed by 8 feet of soft to very soft siltstone overlying at least 3 feet of claystone. Based on material descriptions, the claystone/siltstone layers are believed to be largely equivalent to the residuum and clayshale described units described in the current borings. Similar conditions were noted in upstream and downstream NRCS Hole Nos. 250 and 252, respectively.

5.1.1.2 Reach B: Embankment Raise – Left Abutment to PSW (STA 9+00 to 16+00)

Improvements for this reach include a downstream raise of the existing embankment to proposed crest elevation El. 527 (top of compacted fill excluding additional 12 inches of topsoil) between the left abutment and PSW. Downstream slopes will be 3H:1V.

The existing Embankment Fill is 30 to 35 feet thick, and consists of stiff to hard clay based on borings B-02 and B-03. Foundation conditions under the embankment centerline consist of about 7 to 13 feet of hard Midway Residuum underlain by at least 7 to 10 feet of hard Midway Clayshale. Based on existing crest elevation which ranges from about El. 523 to 525, the proposed maximum thickness of new embankment fill is about 4 feet.

Downstream ground surface elevation varies from about El. 516 to 495, for a proposed maximum dam height of about 32.3 feet. Based on boring B-601, foundation conditions consist of 6 feet of stiff Valley Fill underlain by 4 feet of stiff to hard Alluvium, followed by 13 feet of Midway Residuum underlain by at least 3 feet of Midway Clayshale. The 24-hour groundwater level was at depth of 13.4 feet (El. 487.3).

Based on B-301, upstream foundation conditions consist of 4 feet of medium stiff Valley Fill underlain by 6 feet of stiff to hard Alluvium, followed by 12 feet of stiff to hard Midway Residuum and at least 4 feet of hard Midway Clayshale. The 24-hour groundwater was measured at depth 18.5 feet (El. 481.6), but long-term readings are expected to be higher and closely associated with the elevation of the normal pool.

5.1.1.3 Reach C: New Embankment – PSW Replacement (STA 16+00 to 19+30)

Improvements for this reach include excavating a notch through the existing embankment to install the replacement principal spillway (PS), and then re-constructing the embankment to the proposed crest elevation El. 527 (top of compacted fill excluding additional 12 inches of topsoil) with 3H:1V downstream slope.

The existing Embankment Fill is 35 to 45 feet thick, and consists of stiff to hard clay based on boring B-04P. Foundation conditions under the embankment centerline consist of about 13 feet of hard Midway Residuum underlain by at least 7 feet of hard Midway Clayshale. Based on existing crest elevation of about El. 526, the proposed maximum thickness of new embankment fill is less than 1.5 feet. The phreatic surface in the embankment was measured at depth of 30.8 feet (El. 495.2).

Downstream ground surface elevation varies from about El. 495 to 489, for a proposed maximum dam height of about 38.3 feet. Based on boring B-602, foundation conditions consist of 5 feet of stiff Valley Fill underlain by 5 feet of stiff to hard Alluvium, followed by 11 feet of stiff to hard Midway Residuum underlain by at least 14 feet of hard Midway Clayshale. The 24-hour groundwater level was at depth of 10.3 feet (El. 484.7), but long-term groundwater has been assumed to be approximately El. 488.

No borings were drilled on the upstream side of this reach, but surface elevations are expected to be similar to the downstream side. Foundation conditions are anticipated to be generally similar to that of Reach B.

5.1.1.4 Reach D: Overtopping Spillway – Left Portion of New RCC Spillway (STA 19+30 to 22+00)

Improvements for this reach include excavating approximately 7 feet into the existing embankment to El. 516, and then constructing an RCC overtopping with crest elevation of El. 519. The ASW will consist of a roller-compacted concrete (RCC) chute with RCC training walls on either side, which will accommodate the adjacent earthen embankment crest elevation raise to El. 527 (top of compacted fill excluding additional 12 inches of topsoil) with 3H:1V downstream slopes. The downstream toe will be excavated approximately 9 to 14 feet deep to El. 485.9 to construct the RCC stilling basin with top-of-slab finish grade of El. 488.9.

The existing Embankment Fill is 45 to 35 feet thick, and consists of stiff to hard clay based on boring B-05. Foundation conditions under the embankment centerline consist of about 18 feet of hard Midway Residuum underlain by at least 7 feet of hard Midway Clayshale. Based on piezometer readings from adjacent B-04P and B-06P, the phreatic surface in the embankment is likely to be at depth of between 31 and 32 feet (El. 495 to 493).

Existing downstream ground surface elevation varies from about El. 495 to 500. Proposed finish elevation inside the stilling basin is El. 490, for a proposed maximum dam height of about 29 feet inside the RCC chute. Based on boring B-603, foundation conditions consist of 7 feet of very stiff to hard Valley Fill underlain by 5 feet of very stiff Alluvium/clayey Leona Formation, followed by 10 feet of stiff to hard Midway Residuum underlain by at least 23 feet of Midway Clayshale. Groundwater was not encountered in B-603, but long-term level has been estimated to be at approximately El. 488.

No borings were drilled on the upstream side for this reach, but it is anticipated that surface elevations and foundation conditions are similar to those on the downstream side (i.e., Valley Fill overlying Alluvium followed by Residuum overlying Clayshale).

5.1.1.5 Reach E: Overtopping Spillway – Right Portion of New RCC Spillway (STA 22+00 to 23+00)

Proposed improvements for this reach are the same as Reach D.

The existing Embankment Fill is 35 to 30 feet thick, and consists of very stiff to hard clay based on boring B-06. Foundation conditions under the embankment centerline consist of about 7.5 feet of very stiff to hard Midway Residuum underlain by at least 22.5 feet of hard Midway Clayshale.

Existing downstream ground surface elevation varies from about El. 500 to 502. Proposed finish elevation inside the stilling basin is El. 490, for a proposed maximum dam height of about 29 feet inside the RCC chute. Based on boring B-604, foundation conditions consist of 3 feet of soft Valley Fill underlain by 2 feet of medium dense gravelly Leona Formation, followed by 17 feet of stiff to hard Midway Residuum underlain by at least 23 feet of Midway Clayshale. Groundwater was not encountered in B-604, but long-term level is estimated to be at approximately El. 488.

No borings were drilled on the upstream side for this reach, but it is anticipated that surface elevations and foundation conditions are similar to that on the downstream side (i.e., Fill overlying Leona Formation followed by Residuum overlying Clayshale).

5.1.1.6 Reach F: Embankment Raise – Right of New RCC Spillway (STA 23+00 to 33+00)

Improvements for this reach include a downstream raise of the existing embankment to proposed crest elevation El. 527 (top of compacted fill) between the new RCC spillway and right abutment. Downstream slopes will be 3H:1V.

The existing Embankment Fill is 32 to 34 feet thick, and consists of very stiff to hard clay based on borings B-07 and B-08. Foundation conditions under the embankment centerline consist of about 13 to 7 feet of very stiff to hard Midway Residuum underlain by at least 15 to 10 feet of hard Midway Clayshale. Based on existing crest elevation which ranges from about El. 525 to 526, the proposed maximum thickness of new embankment fill is less than 2.5 feet.

Downstream ground surface elevation varies from about El. 503 to 497, for a proposed maximum dam height of about 30.3 feet. Based on boring B-605, foundation conditions consist of 4 feet of stiff Valley Fill underlain by 4 feet of medium dense Leona Formation, followed by at least 17 feet of Midway Residuum. Groundwater was not encountered in the boring, but long-term groundwater is estimated to be at approximately El. 488.

Based on B-302, upstream foundation conditions consist of 2 feet of soft Valley Fill underlain by 6 feet of medium dense to dense Leona Formation, followed by 16 feet of stiff to hard Midway Residuum and at least 1 foot of hard Midway Clayshale. Groundwater was not encountered in the boring, but long-term groundwater has been assumed to be similar to the normal pool level.

5.1.1.7 Reach G: New Embankment Extension – Right Abutment (STA 33+00 to 40+00)

Improvements for this reach include construction of a new embankment section and extension of the right abutment to accommodate the embankment crest raise.

The existing Embankment Fill is 30 to 35 feet thick, and consists of stiff to hard clay based on borings B-02 and B-03. Foundation conditions under the embankment centerline consist of about 7 to 13 feet of hard Midway Residuum underlain by at least 7 to 10 feet of hard Midway Clayshale. Based on existing crest elevation which ranges from about El. 523 to 525, the proposed maximum thickness of new embankment fill is about 4 feet.

Based on boring B-09, the existing Embankment Fill is about 15 feet thick, and consists of stiff to hard clay. Foundation conditions along the embankment centerline consist of about 13 feet of hard Midway Residuum. Groundwater was not encountered. Based on the existing ground surface elevation of about El. 523 to 524 and proposed embankment crest elevation of El. 527 (top of compacted fill), the maximum new embankment fill height is approximately of 4 feet.

5.1.2 Principal Spillway Alignment

The new PSW alignment centerline will be located at STA. 17+35 as indicated on the GI Plan Sheet in **Appendix A**. The various components of the PSW and respective subsurface conditions are described below.

5.1.2.1 Inlet Tower

A new upstream inlet tower will be constructed at the upstream toe of the embankment. The tower will be supported on a 12.5-foot by 18.5-foot shallow foundation with bearing surface at about El. 487 (approximately 10 feet below existing grade). Foundation embedment will be approximately 5.5 feet below the lowest surrounding finished grade (approximately El. 492.5). Based on preliminary structural design calculations, the maximum gross bearing pressure is 1,530 psf.

Based on boring B-301, the anticipated bearing stratum for the proposed foundation is the stiff to hard Midway Residuum beginning at El. 490. However, depending on the slope of the Alluvium/Residuum contact on the upstream side of the dam, the stiff to hard Alluvium may instead serve as the bearing stratum. Long-term groundwater surface will be above the ground surface, associated with proposed normal pool elevation (El. 498.8).

5.1.2.2 Conduit Pipe

A new 42-inch Inside Diameter (ID) conduit pipe approximately 225 feet in length will be constructed by open cut methods through the base of the dam, and be will covered with up to 35 feet of new embankment fill. Invert elevation will vary from about El. 486 to 489. A concrete cradle will be provided under the pipe.

Subsurface conditions are represented by Embankment Reach C. Portions of the conduit pipe are expected to be below the long-term groundwater table.

5.1.2.3 Impact Basin

A new impact basin will be constructed at the downstream toe of the embankment at the PSW outlet. The impact basin will be supported on a 17.67-foot by 23.17-foot shallow foundation with bearing surface at about El. 482.5 (approximately 12.5 feet below existing grade). The existing grade will be lowered within the footprint of the impact basin, and the impact basin will retain surrounding soil with wingwalls and a headwall. Foundation embedment will be approximately 3 feet below the lowest surrounding finished grade. Maximum gross bearing pressure is 2,310 psf based on preliminary structural design calculations.

Subsurface conditions are represented by the downstream section of Embankment Reach C. The bearing stratum for the proposed foundation is anticipated to be the stiff to hard Midway Residuum beginning at El. 485. Long-term groundwater elevation is estimated to be at approximately El. 488, about 5.5 feet above the foundation bearing surface.

5.1.3 RCC Overtopping Auxiliary Spillway Alignment

The new RCC overtopping ASW alignment will be located between dam centerline STA. 19+28 and 22+52 (centerline at STA 20+90), as indicated on the GI Plan Sheet in **Appendix A**. The various components of the RCC spillway and respective subsurface conditions are described below.

5.1.3.1 RCC Crest Structure

The proposed crest structure will be founded on top of the existing embankment, and measures 324 feet wide by 51.2 feet long parallel to and perpendicular to the dam alignment, respectively. The crest weir will be constructed entirely from RCC. The proposed crest slab invert elevation is El. 518.9. The RCC crest interior slab width will be 300 feet, and the RCC slab will be 3 feet thick with a bearing elevation of El. 515.9 (approximately 6.5 feet below existing ground surface).

Training walls on both sides of the crest chute will be RCC gravity-type retaining structures. Each training wall will be a maximum of 13 feet tall with a retained height of 12 feet and base width of 12 feet. Foundation embedment will be approximately 3 feet below the lowest surrounding finished grade. The maximum bearing pressure from the crest structure will be immediately below the inside edge of the training walls due to lateral earth pressures and eccentric loading from the retained embankment fill. Based on updated structural design calculations provided by the design team (July 2021 via email), the gross bearing pressure distribution across the wall base is a maximum of 2,431 psf and minimum of 1,048 psf for usual conditions (i.e., saturated soil, no uplift or hydrostatic pressure). For unusual conditions (i.e., saturated soils, uplift under spillway, and no spillway flow), the maximum gross bearing pressure increases to 2,858 psf.

Subsurface conditions will be a mixture of Embankment Reaches D and E. The bearing stratum for the foundation will be the existing Embankment Fill.

5.1.3.2 RCC Chute Structure

The proposed RCC chute structure will transmit flow from the crest structure to the proposed stilling basin at the downstream toe of the embankment. The proposed chute is 87 feet in length and 324 feet in width (300-foot interior width). The finished surface will be parallel to the surrounding finished grade of the downstream embankment slopes inclined at 3.0H:1V. The bottom of the RCC slab and foundation will be within about ±1 foot of current grade on the existing downstream slope face, but will extend deeper on the proposed cut section below the existing toe of the dam.

Similar to the crest structure, RCC training walls will be provided on both sides of the RCC stepped chute slab. Maximum wall height for the chute structure is 11.5 feet with a retained height of 10.5 to 11 feet and base width of 12 feet. The maximum foundation bearing pressures for the stepped chute will occur immediately below the inside edges of the training walls. Based on updated structural design calculations provided by the design team (July 2021 via email), the gross bearing pressure distribution across the wall base at the middle of the chute structure is a maximum of 1,429 psf and minimum of 1,174 psf for usual conditions (i.e., saturated soil, no uplift or hydrostatic pressure). For unusual conditions (i.e., saturated soils, uplift under spillway, and no spillway flow), the maximum gross bearing pressure increases to 1,685 psf.

Subsurface conditions will be a mixture of Embankment Reaches D and E. The primary bearing stratum for the foundation is anticipated to be the existing Embankment Fill, but will transition through various foundation units below the existing downstream toe including Valley Fill, Alluvium, Leona Formation, and Residuum. Groundwater may be encountered when excavating below the existing downstream toe of the dam; estimated groundwater level for design purposes is El. 488.

Seepage inflows could be substantial if the gravelly Leona formation is encountered below the groundwater table.

5.1.3.3 RCC Stilling Basin

The proposed RCC stilling basin structure will be located at the downstream toe of the dam and dissipate water flow energy from the overtopping stepped chute. The stilling basin measures 324 feet wide (300-foot interior width) by 24 feet long parallel to and perpendicular to the dam alignment, respectively. The stilling basin will be constructed entirely from RCC. The proposed RCC slab invert elevation is El. 488.9 on the interior chute area. The RCC stilling basin slab will be 3 feet thick with a bearing elevation of El. 485.9 (approximately 10 to 12 feet below existing grade).

Training walls on both sides of the stilling basin will be RCC gravity-type retaining structures. Each training wall will have a maximum height of 18 feet, retained height of 11.5 feet, and base width of 12 feet. Foundation embedment will be approximately 3 feet below the lowest surrounding finished grade. The maximum bearing pressure from the crest weir will be immediately below the inside edge training walls due to lateral earth pressures and eccentric loading. Based on preliminary structural design calculations, the maximum gross bearing pressure distribution across the footing is a maximum of 2,858 psf and minimum of 2,362 psf for usual conditions (i.e., saturated soil, no uplift or hydrostatic pressure). For unusual conditions (i.e., saturated soils, uplift under spillway, and no spillway flow), the maximum gross bearing pressure increases to 3,658 psf.

Subsurface conditions will be a mixture of Embankment Reaches D and E. The bearing stratum for the foundation is anticipated to be primarily Residuum. The long-term groundwater elevation is estimated to be at approximately El. 488, about 2.1 feet above the foundation bearing surface.

5.2 Material Characterization

5.2.1 Embankment Fill

The existing Embankment Fill was generally described on the boring logs as tan and gray, gray and brown, light to dark brown, or reddish tan; dry to moist; medium stiff to hard fat clay with trace to some sand, silt, and/or gravel, scattered organics, and occasional calcareous nodules and pockets of dark gray fat clay. One exception was the upper 20 feet in B-04P described as light brown, sandy lean clay. The maximum thickness of Embankment Fill, including the cutoff trench, is approximately 44 feet. Three SPT N-values ranged from 11 to 20 blows-per-foot (bpf). Pocket penetrometer values ranged from 0.75 to 4.5+ tons-per-square-foot (tsf), with values less than 1.0 tsf only recorded in the upper 2 feet of B-05 and most values greater than 3.0 tsf. The consistency was relatively uniform across borings drilled on the embankment crest, and was observed to be relatively independent of depth.

Results of laboratory index testing indicate that the Embankment Fill generally classifies as moderately plastic sandy lean clay (CL) to clay with sand, with occasional zones of sandy fat clay (CH) to fat clay mostly in the lower portions of the embankment. The measured LL ranges from 42 to 64, PI ranges from 23 to 40, fines content ranges from 67 to 94%, clay fraction ranges from 22 to 43%, and gravel content ranges from 0 to 10%. The total unit weight ranges from 116.5 to 131.0 pcf, and the moisture content is generally within –2 to +3% of the PL. Index properties results are presented in **Table 5-1**.

Dispersion Potential

A total of 11 crumb tests and 2 double-hydrometer tests were performed on existing Embankment Fill, which are presented in**Table 5-1**. Test results indicate the Embankment Fill is non-dispersive, with Crumb Grades of 1 or 2 and dispersion less than 11%.

Shear Strength Properties

Shear strength testing performed on the Embankment Fill included 2 UC, 5 UU, and 1 CU triaxial tests. Results presented previously in **Section 4** indicate the Embankment Fill behaves as a cohesive material during shearing with defined short-term and long-term strength properties.

In general, measured values of Su for Embankment Fill were found to be relatively independent of depth / confining stress. The lowest Su value of 1,260 psf was from a UC test in the upper 12.5 feet; strain at failure was 2.7%. The Su values from UU tests, conducted on samples between depths of 12 and 37.5 feet, were between 2,192 and 5,265 psf (average 4,578 psf); the lowest value was obtained in a sample from the embankment cutoff trench. Shear behavior in the UU tests was mostly strain-hardening, with strain at failure ranging from 9.8 to 18.1%. For the purposes of engineering analysis, reduced values of Su were used in design, which were selected based on the shear strength developed at an axial strain of about 3 to 6% based on the specific stress-strain curves. The strain-limited Su values ranged from 1,533 to 4,541 psf (3,033 psf average).

One conventional CIU' triaxial shear test was conducted on a sample of Embankment Fill at a depth of 30 feet bgs, as discussed previously. The resulting total stress and effective stress envelopes were considered to be reasonable. As a check, the interpreted ϕ' value was found to be similar to estimates of the fully-softened value based on correlations with liquid limit and clay-size fraction (Stark and Hussain, 2013; Stark and Gamez, 2014). Thus, the results of the CIU' triaxial test were adopted for design.

Swell/Collapse Properties

Results of 5 swell tests presented previously indicate the Embankment Fill exhibits variable swelling behavior ranging from non-expansive to highly expansive. Maximum swell at 250 psf effective confining pressure ranged from 0.0 to 3.02% (1.04% average), and swell pressure ranged from 472 to 5,760 psf (2,112 psf average). Consequently, structures founded on Embankment Fill may be subject to shrink/swell movements associated with fluctuations in soil moisture content.

Consolidation Properties

Results of 4 consolidation tests presented previously indicate the Embankment Fill is moderately overconsolidated with an OCR between 2.9 and 7.3 (average 4.5) using the Casagrande method, and between 2.7 and 5.9 (average 3.7) using the Boone method. The highest OCR value was obtained in the upper 10 feet of the embankment (possibly associated with desiccation), while the other 3 values were obtained at depth interval of 15 to 17.5 feet (i.e., approximately the foundation bearing elevation of the proposed auxiliary spillway RCC crest weir). The average OCR value from the deeper tests was 3.5 and 2.9 using Casagrande and Boone methods, respectively. The interpreted values of Cc ranged from 0.16 to 0.24 (average 0.19), while values of Cr ranged from 0.010 to 0.035 (average 0.022). The results were considered to be reasonable based on relative stiffness of the soils as indicated by laboratory strength and in-situ testing.

Table 5-1. Analysis of Laboratory Test Results for Embankment Fill

Parameter	Min. Test Value	Max. Test Value	Average	Standard Deviation	Number of Tests
Classification and Index Properties					
Field USCS	CL, CH				---
Lab USCS	CL, CH				---
Liquid Limit, LL	42	82	51	8.6	33
Plasticity Index, PI	19	55	30	7.2	33
Plastic Limit, PL	16	27	21	2.5	33
Physical Properties					
Natural Water Content, WC (%)	11.9	31.0	19.9	4.5	124
Natural Dry Unit Weight, DD (pcf)	89.8	114.9	102.9	6.5	34
Natural Total Unit Weight, TD (pcf)	107.1	132.5	123.3	6.4	34
Specific Gravity, Gs	2.62	2.82	2.71	0.03	34
Void Ratio, e0	0.48	0.88	0.65	0.11	34
Degree of Saturation, S (%)	52	100	84	12.6	34
Liquidity Index, LI	-0.35	0.11	-0.01	0.09	32
Gradation					
Clay Fraction, CF (%) (1)	20.0	53.0	32.7	7.7	29
Fines Content (%) (2)	60.0	100.0	85.0	8.8	33
Sand Content (%)	0.0	27.0	13.2	6.8	32
Gravel Content (%)	0.0	21.0	1.7	4.5	32
Dispersion					
Crumb Test	Gr 1	Gr 3	Gr 1-2	---	27
Double Hydrometer	2.0	66.0	13.7	17.1	13
Shear Strength					
Undrained Shear Strength, Su (psf)	1,260	5,620	3,768	1,563	10
Compressibility					
Overconsolidation Ratio, OCR	3.0	8.8	5.0	2.7	4
Compression Index, Cc	0.16	0.24	0.19	0.04	4
Recompression Index, Cr	0.026	0.035	0.030	0.004	4
Coeff. of Consol., cv – Comp. (in^2/sec)	1.0E-06	1.5E-04	4.7E-05	---	4
Coeff. of Consol., cv – Recomp. (in^2/sec)	4.3E-03	9.3E-03	6.3E-03	---	4
Hydraulic Conductivity					
Hydraulic Conductivity, k (cm/s)	---	---	---	---	0
Swell					
Swell Index, Cs (from consol tests)	0.04	0.11	0.06	0.03	4
Swelling Strain Index, Csε (from swell tests)	0.005	0.023	0.012	0.007	5
Percent Swell at 250 psf Vertical Load (%)	No swell	3.0	1.3	1.2	5
Swell Pressure (psf)	472	5,760	2,112	2,095	5

Notes:
1) Percent by weight finer than 0.002 mm (clay fraction)
2) Percent by weight finer than the #200 sieve (silt and clay fraction)

5.2.2 Valley Fill

Relatively thin layers of suspected fill material in the valley bottom encountered at the ground surface upstream and downstream of the embankment. These materials were described on the boring logs as light to dark brown, tan, or gray; moist to very moist; soft to medium stiff fat clays to sandy fat clays with trace to some silt, sand, and/or gravel, organics, and occasional calcareous nodules. The thickness ranged from 2 to 4 feet on the upstream side, and 3 to 7 feet on the downstream side.

Upstream of the embankment in borings B-301 and B-302, the pocket penetrometer values ranged from 0.5 to 2.5 tsf. Values less than 1.0 tsf were only recoded in the upper 2 feet of B-302. Downstream of the embankment in borings B-601 through B-606, the pocket penetrometer values ranged from 0.25 to 4.5+ tsf. Values less than 1.25 tsf were only recorded in the upper 2 feet of B-604. No SPT samples were collected in the Valley Fill.

Results of laboratory index testing indicate that the Valley Fill generally classifies as sandy fat and lean clays (CH, CL). The measured LL ranges from 27 to 53, PI ranges from 11 to 33, fines content ranges from 60 to 88%, and clay fraction ranges from 18 to 35%. Based on limited testing, the total unit weight ranges from 126.9 to 127.9 pcf, and the moisture content is about +2 to +2.5% of the PL. Index test results are provided in **Table 5-2**.

<u>Dispersion Potential</u>

A total of 5 crumb tests and 2 double-hydrometer tests were performed on the Valley Fill, which are presented in **Table 5-2**. While 3 of the crumb results indicate the Valley Fill may be dispersive, double hydrometer test results on 2 of these samples indicate generally non-dispersive fill with dispersion less than 27%.

<u>Shear Strength Properties</u>

One UC test was performed on a sample from the upstream side of the dam in boring B-301 at a depth of 2 to 4 feet. The resulting Su was 1,157 psf with strain at failure of 9.7%. One UU test was performed downstream of the dam at a depth of 5 to 6.5 feet in material that could not be distinguished between Valley Fill or Alluvium, but yielded an Su of 1,796 psf at failure strain of 18.0%.

In general, the relatively lower Su of the Valley Fill does not pose significant issues because many of the proposed structure foundations bear below this unit, and its shallow thickness is amenable to overexcavate/replace (discussed later in **Section 8**). No CU testing was performed on the Fill, but total and effective stress envelopes were assumed to be similar to that of the Embankment Fill for analysis purpose.

<u>Swell/Collapse Properties</u>

No swell testing was performed on the Valley Fill, but based on the slightly higher sand content and slightly lower PI value relative to the Embankment Fill, this material would generally be expected to exhibit non-expansive to slightly expansive behavior. However, based on the typical heterogeneity of fill materials, this material should also be considered as potentially expansive.

<u>Consolidation Properties</u>

No consolidation testing was performed on the Valley Fill, but based on the results of laboratory strength and in-situ testing, this material is expected to be slightly to moderately overconsolidated

and exhibit long-term consolidation properties less favorable than the Embankment Fill. Similar to the shear strength considerations discussed above, compressibility of the Valley Fill does not pose significant design issues because proposed structure foundations bear below this unit. Settlement of embankment raise sections may be influenced by these materials, but to a relatively small degree since the Valley Fill is relatively thin and the embankment raise is not particularly sensitive to settlement (see further discussion in **Section 8**).

Hydraulic Conductivity

No hydraulic conductivity testing was performed on the Valley Fill, but based on the gradation and index properties, the material is expected to behave as relatively low permeability with properties similar to Embankment Fill.

Table 5-2. Analysis of Laboratory Test Results for Valley Fill

Parameter	Min Test Value	Max Test Value	Average	Standard Deviation	Number of Tests
Classification and Index Properties					
Field USCS	CL, CH				---
Lab USCS	CL, CH				---
Liquid Limit, LL	27	53	42	9.0	6
Plasticity Index, PI	11	33	24	7.8	6
Plastic Limit, PL	16	21	18	2.1	6
Physical Properties					
Natural Water Content, WC (%)	14.0	26.0	20.6	3.4	15
Natural Dry Unit Weight, DD (pcf)	104.3	114.9	108.4	4.0	5
Natural Total Unit Weight, TD (pcf)	123.6	131.4	128.2	2.9	5
Specific Gravity, Gs	2.65	2.70	2.68	0.02	6
Void Ratio, e0	0.44	0.59	0.54	0.06	5
Degree of Saturation, S (%)	83.7	94.5	90.6	5.0	5
Liquidity Index, LI	-0.15	0.24	0.06	0.13	6
Gradation					
Clay Fraction, CF (%) (1)	18.0	35.0	28.7	6.2	6
Fines Content (%) (2)	60.0	88.0	70.7	10.3	6
Sand Content (%)	12.0	40.0	29.3	10.3	6
Gravel Content (%)	0.0	0.0	0.0	0.0	6
Dispersion					
Crumb Test	Gr 1	Gr 4	Gr 2	---	6
Double Hydrometer	10.0	27.0	---	---	2
Shear Strength					
Undrained Shear Strength, Su (psf)	1,157	1,796	---	---	2
Compressibility					
Overconsolidation Ratio, OCR	---	---	---	----	0
Compression Index, Cc	---	---	---	----	0
Recompression Index, Cr	---	---	---	----	0
Coeff. of Consol., cv – Comp. (in^2/sec)	---	---	---	----	0
Coeff. of Consol., cv – Recomp. (in^2/sec)	---	---	---	----	0
Hydraulic Conductivity					
Hydraulic Conductivity, k (cm/s)	---	---	---	----	0
Swell					
Swell Index, Cs (from consol tests)	---	---	---	---	0
Swelling Strain Index, Csε (from swell tests)	---	---	----	---	0
Percent Swell at 250 psf Vertical Load (%)	---	---	---	---	0
Swell Pressure (psf)	---	---	---	---	0

Notes:
1) Percent by weight finer than 0.002 mm (clay fraction)
2) Percent by weight finer than the #200 sieve (silt and clay fraction)

5.2.3 Alluvium

Alluvium was generally described on the boring logs as light brown, tan, and gray; slightly moist to moist; stiff to hard fat clay with silt seams and partings, ferrous staining, and calcareous inclusions. Upstream of the embankment in boring B-301, pocket penetrometer values ranged from 2.75 to 4.5 tons-per-square-foot (tsf). Downstream of the embankment in borings B-601 through B-606, the pocket penetrometer values ranged from 0.25 to 4.5+ tsf, with values less than 1.25 tsf only recorded in the upper 2 feet of B-604. No SPT samples were obtained in this material.

Results of laboratory index testing indicate that the Alluvium generally classifies as moderately plastic, sandy lean to fat clays (CL, CH). The measured LL ranges from 39 to 51, PI ranges from 24 to 32, fines content ranges from 65 to 81%, clay fraction ranges from 30 to 36%, and negligible gravel content. The total unit weight ranges from 124.0 to 131.4 pcf, and the moisture content is generally within –3 to +3% of the PL. A summary of index properties is provided in **Table 5-3**.

Dispersion Potential

A total of 4 crumb tests and 4 double-hydrometer tests were performed on the Alluvium, which are presented in**Table 5-3**. While the crumb test results indicate the Alluvium may be dispersive, only 1 double hydrometer test result indicates dispersive material with a dispersion of 61%. Pinhole testing may be warranted for this material to confirm dispersion potential.

Shear Strength Properties

One UU test was performed on the downstream side of the dam in boring B-602 at a depth of 5 to 7 feet. The resulting Su was 3,639 psf with strain at failure of 5.1%. One UU test was performed downstream of the dam at a depth of 5 to 6.5 feet in material that could not be distinguished between possible Fill or Alluvium, but yielded an Su of 1,796 psf at failure strain of 18.0%.

One CU test was performed to evaluate total stress and effective stress shear strength envelopes. The sample interval was taken from 4 to 10 feet (3 different samples) in B-301, as presented earlier. However, the shear strength from the sample tested at the lowest normal stress was significantly higher than other points, and thus the final envelope was based on only 2 points. The results were considered to be somewhat inconclusive, because the envelope exhibits a higher cohesion intercept and lower friction angle than would be expected of moderately-plastic clay for both total and effective stress envelopes. Consequently, conservative total and effective stress envelopes were adopted for this material based on the CU test envelope, correlations with index properties, and CU test envelopes on other materials considering a representative range of normal stresses.

Consolidation Properties

No consolidation testing was performed on the Alluvium, but based on the results of laboratory strength and in-situ testing, this material is expected to be potentially compressible and exhibit long-term consolidation behavior. The Alluvium is expected to be moderately overconsolidated, with consolidation properties similar to but slightly less favorable than that of the Residuum. Additional discussion is provided in **Section 8**.

Swell/Collapse Properties

No swell tests were performed on the Alluvium. However, based on the fines content and the similarity of index properties to other materials that exhibit expansive behavior, the Alluvium should be treated as potentially expansive (similar to Embankment Fill).

Hydraulic Conductivity

No hydraulic conductivity testing was performed on the Alluvium, but based on the gradation and index properties, the material is expected to behave as relatively low permeability with properties similar to Residuum.

Table 5-3. Analysis of Laboratory Test Results for Alluvium

Parameter	Min Test Value	Max Test Value	Average	Standard Deviation	Number of Tests
Classification and Index Properties					
Field USCS	CL, CH				---
Lab USCS	CL, CH				---
Liquid Limit, LL	39	51	44	5.7	4
Plasticity Index, PI	24	32	28	4.1	4
Plastic Limit, PL	15	19	17	1.7	4
Physical Properties					
Natural Water Content, WC (%)	14.1	22.0	17.5	2.6	6
Natural Dry Unit Weight, DD (pcf)	101.8	115.5	109.6	6.0	4
Natural Total Unit Weight, TD (pcf)	124.2	131.8	128.4	3.9	4
Specific Gravity, Gs	2.68	2.75	2.72	0.03	4
Void Ratio, e0	0.48	0.67	0.55	0.09	4
Degree of Saturation, S (%)	79.0	91.6	85.0	6.5	4
Liquidity Index, LI	-0.10	0.09	0.02	0.08	4
Gradation					
Clay Fraction, CF (%) (1)	30.0	36.0	32.8	3.2	4
Fines Content (%) (2)	65.0	81.0	73.3	6.6	4
Sand Content (%)	19.0	35.0	26.8	6.6	4
Gravel Content (%)	0.0	0.0	0.0	0.0	4
Dispersion					
Crumb Test	Gr 3	Gr 4	Gr 4	---	4
Double Hydrometer	5.0	61.0	21.8	26.3	4
Shear Strength					
Undrained Shear Strength, Su (psf)	3,638	3,638	---	---	1
Compressibility					
Overconsolidation Ratio, OCR	---	---	---	----	0
Compression Index, Cc	---	---	---	----	0
Recompression Index, Cr	---	---	---	----	0
Coeff. of Consol., cv – Comp. (in^2/sec)	---	---	---	----	0
Coeff. of Consol., cv – Recomp. (in^2/sec)	---	---	---	----	0
Hydraulic Conductivity					
Hydraulic Conductivity, k (cm/s)	---	---	---	----	0
Swell					
Swell Index, Cs (from consol tests)	---	---	---	---	0
Swelling Strain Index, Csε (from swell tests)	---	---	----	---	0
Percent Swell at 250 psf Vertical Load (%)	---	---	---	---	0
Swell Pressure (psf)	---	---	---	---	0

Notes:
1) Percent by weight finer than 0.002 mm (clay fraction)
2) Percent by weight finer than the #200 sieve (silt and clay fraction)

5.2.4 Leona Formation

The Leona Formation was generally described on the boring logs as variable in color (tan, brown, dark brown, grayish or reddish brown, and/or red), wet, medium dense to dense, subangular to subrounded clayey gravel with occasional sand and clay pockets. In a few instances, it was described as stiff to very stiff gravelly fat clay with sand and calcareous nodules and pockets, and subangular to subrounded gravel fraction.

The SPT N-values in this material ranged from 20 to 36 bpf. No Shelby tubes were collected in this unit, and no pocket penetrometer tests were performed.

Results of laboratory index testing indicate that the Leona generally classifies as clayey gravel (GC) with one sample testing as fat clay with sand (CH). The measured LL ranges from 46 to 58, PI ranges from 28 to 36, fines content ranges from 14 to 26% with one sample at 84%, clay fraction ranges from 8 to 14% with one samples at 42%, and gravel content ranging from 49 to 64% with ones samples at 0%. The moisture content of the Leona Formation is typically less than about 10%, and liquidity index is less than -0.20. A summary of index properties is provided in **Table 5-4**.

<u>Dispersion Potential</u>

Two crumb tests were performed on the Leona Formation, and both indicated the material as non-dispersive. A summary is provided in **Table 5-4**.

<u>Engineering Properties</u>

No advanced engineering tests were performed on the Leona. However, considering the relatively low fines content on most samples (generally less than about 25%) and relatively high N-values, this material is expected to largely behave as a cohesionless soil with relatively high strength, low compressibility, low swell potential, and moderate to high permeability.

Table 5-4. Analysis of Laboratory Test Results for Leona Formation

Parameter	Min Test Value	Max Test Value	Average	Standard Deviation	Number of Tests
Classification and Index Properties					
Field USCS	GC, CH				---
Lab USCS	GC, CH				---
Liquid Limit, LL	46	58	54	4.5	5
Plasticity Index, PI	28	36	33	3.2	5
Plastic Limit, PL	18	22	20	1.7	5
Physical Properties					
Natural Water Content, WC (%)	7.6	13.1	9.4	1.8	8
Natural Dry Unit Weight, DD (pcf)	117.4	124.9	---	---	2
Natural Total Unit Weight, TD (pcf)	132.8	137.4	---	---	2
Specific Gravity, Gs	2.70	2.73	---	---	2
Void Ratio, e0	0.35	0.45	---	---	2
Degree of Saturation, S (%)	77.4	79.3	---	---	2
Liquidity Index, LI	-0.38	-0.20	-0.32	0.07	5
Gradation					
Clay Fraction, CF (%) (1)	8.0	42.0	16.0	12.9	6
Fines Content (%) (2)	14.0	84.0	31.7	26.0	6
Sand Content (%)	12.0	29.0	22.2	6.7	6
Gravel Content (%)	0.0	64.0	46.2	23.3	6
Dispersion					
Crumb Test	Gr 1	Gr 1	---	---	2
Double Hydrometer (%)	---	---	---	----	0
Shear Strength					
Undrained Shear Strength, Su (psf)	---	---	---	----	0
Compressibility					
Overconsolidation Ratio, OCR	---	---	---	----	0
Compression Index, Cc	---	---	---	----	0
Recompression Index, Cr	---	---	---	----	0
Coeff. of Consol., cv – Comp. (in^2/sec)	---	---	---	----	0
Coeff. of Consol., cv – Recomp. (in^2/sec)	---	---	---	----	0
Hydraulic Conductivity					
Hydraulic Conductivity, k (cm/s)	---	---	---	----	0
Swell					
Swell Index, Cs (from consol tests)	---	---	---	----	0
Swelling Strain Index, Csε (from swell tests)	---	---	----	---	0
Percent Swell at 250 psf Vertical Load (%)	---	---	---	---	0
Swell Pressure (psf)	---	---	---	---	0

Notes:
1) Percent by weight finer than 0.002 mm (clay fraction)
2) Percent by weight finer than the #200 sieve (silt and clay fraction)

5.2.5 Residuum

Both Midway Residuum and Wilcox Residuum were encountered in the borings, but due to the prevalence of the Midway and the similarities between the two materials, these units are generally considered as “Residuum” for the purposes of this analysis. Residuum was generally described on the boring logs as tan, brown, and/or gray; dry to moist; blocky; stiff to hard fat clay (occasionally sandy fat clay) with sand and silt partings and seams, ferrous staining, and calcareous inclusions.

The SPT N-values generally ranged from 9 to 37 bpf with one test of 50/2” in B-01 (cemented zone). Values less than 10 bpf were encountered in B-09, and values greater than 20 bpf were encountered in the deepest portions of B-05 and B-606. Pocket penetrometer values ranged from 1.5 to 4.5+ tsf; the majority of values were greater than 4.0 tsf, and the lowest values generally encountered in borings along the embankment centerline.

Results of laboratory index testing indicate that the Residuum generally classifies as sandy fat clay (CH) to fat clay with sand, and fewer instances of sandy lean clay (CL). The measured LL ranges from 43 to 77 (typically about 60 to 70), PI ranges from 26 to 50 (typically about 35 to 45), fines content ranges from 73 to 100%, clay fraction ranges from 31 to 51%, and gravel content ranges from 0 to 20% (typically 0%). The total unit weight ranges from 115.1 to 126.6 pcf, and the moisture content is generally within -2 to +3% of the PL. Index properties are summarized in **Table 5-5**.

<u>Dispersion Potential</u>

Dispersion testing included 19 crumb tests and 10 double-hydrometer tests. Crumb tests indicated the material as non-dispersive (Grade 1 or 2). One hydrometer test had a result of 33% dispersion, but all others were less than 30% indicating low dispersion potential. Results are summarized in **Table 5-5**.

<u>Shear Strength</u>

Based on the results of 11 UU tests, the measured values of Su were between 1,948 and 8,464 psf (average 4,636 psf). Strain at failure ranged from 3.1 to 12.5%. For the purposes of engineering analysis, reduced values of Su were considered in design, which were selected based on the shear strength developed at an axial strain of about 3 to 6% based on the specific stress-strain curves. The strain-limited Su values were generally similar to the peak Su values.

One CU test was performed to evaluate total stress and effective stress shear strength envelopes. The sample interval was 15.5 to 17.5 feet in B-603, as presented earlier. Due to limited quantity of testable sample from the tube, the strength envelope was based on only 2 normal stress points. The results were considered to be somewhat inconclusive, because the envelope exhibits a lower cohesion intercept and higher friction angle than would be expected of a fat clay material for both total and effective stress envelopes, and were significantly different form the strength envelopes for the Alluvium which was relatively more sandy and less plastic. Consequently, conservative total and effective stress envelopes were adopted for this material based on the CU test envelope, correlations with index properties, and CU test envelopes on other materials considering a representative range of normal stresses.

<u>Swell/Collapse Properties</u>

Result of 6 swell tests presented previously indicate the Residuum exhibits non-expansive to expansive soil behavior. Maximum swell at 250 psf effective confining pressure ranged from 0.0 to 3.10% (1.06% average), and swell pressure ranged from 802 to 5,540 psf (2,304 psf average). Consequently, structures founded on this material may be subject to shrink/swell movements associated with fluctuations in soil moisture content.

Consolidation Properties

Result of 6 consolidation tests presented previously indicate the Residuum is moderately overconsolidated with an OCR generally between 3.5 and 6.2 (average 4.8) using the Casagrande method, and between 2.9 and 6.0 (average 4.4) using the Boone method. One exception was the sample from boring B-601 at 10-12.5 feet, which had an average OCR of about 1.5 and average P'c of about 2,050 psf. One of the tests was performed in the upstream toe boring B-301 at depth of 18 to 20 feet bgs, while all the remaining tests were performed on samples from downstream toe borings and at depths between 10 and 21 feet bgs (i.e., within about 10 feet below the foundation bearing elevations for the proposed principal spillway impact basin and auxiliary spillway RCC stilling basin). The OCR was similar on both the upstream and downstream sides of the dam. The values of Cc ranged from 0.10 to 0.24 (average 0.15), and the Cr values which ranged from 0.010 to 0.031 (0.024).

Hydraulic Conductivity Properties

No hydraulic conductivity testing was performed on the Residuum, but based on the gradation and index properties, the material is expected to behave as relatively low permeability with properties similar to Alluvium.

Table 5-5. Analysis of Laboratory Test Results for Residuum

Parameter	Min Test Value	Max Test Value	Average	Standard Deviation	Number of Tests
Classification and Index Properties					
Field USCS	CH				---
Lab USCS	CH, CL				---
Liquid Limit, LL	43	77	59	8.7	30
Plasticity Index, PI	24	50	36	6.7	30
Plastic Limit, PL	17	27	23	2.5	30
Physical Properties					
Natural Water Content, WC (%)	16.0	32.4	23.6	3.5	62
Natural Dry Unit Weight, DD (pcf)	89.3	114.2	97..7	5.6	32
Natural Total Unit Weight, TD (pcf)	111.8	133.7	121.1	4.5	32
Specific Gravity, Gs	2.63	2.79	2.72	0.03	32
Void Ratio, e0	0.48	0.91	0.74	0.10	32
Degree of Saturation, S (%)	67.5	97.8	88.6	8.0	32
Liquidity Index, LI	-0.17	0.43	0.02	0.11	29
Gradation					
Clay Fraction, CF (%) (1)	26.0	51.0	36.6	6.5	30
Fines Content (%) (2)	73.0	100.0	90.9	7.5	30
Sand Content (%)	0.0	24.0	7.5	6.0	30
Gravel Content (%)	0.0	20.0	1.6	4.6	30
Dispersion					
Crumb Test	Gr 1	Gr 2	Gr 1 - 2	---	28
Double Hydrometer (%)	2.0	33.0	13.1	8.7	17
Shear Strength					
Undrained Shear Strength, Su (psf)	1,948	8,461	4,844	1,728	16
Compressibility					
Overconsolidation Ratio, OCR	1.3	6.1	4.4	1.5	7
Compression Index, Cc	0.10	0.24	0.15	0.04	7
Recompression Index, Cr	0.017	0.031	0.024	0.005	7
Coeff. of Consol., cv – Comp. (in^2/sec)	4.7E-05	4.8E-04	---	---	7
Coeff. of Consol., cv – Recomp. (in^2/sec)	3.6E-03	6.1E-02	---	---	7
Hydraulic Conductivity					
Hydraulic Conductivity, k (cm/s)	---	---	---	---	0
Swell					
Swell Index, Cs (from consol tests)	0.035	0.055	0.047	0.007	6
Swelling Strain Index, Csε (from swell tests)	0.006	0.024	0.014	0.006	6
Percent Swell at 250 psf Vertical Load (%)	None	3.10	1.22	---	6
Swell Pressure (psf)	802	5,540	2,304	1,684	6

Notes:
1) Percent by weight finer than 0.002 mm (clay fraction)
2) Percent by weight finer than the #200 sieve (silt and clay fraction)

5.2.6 Clayshale

Both Midway Clayshale and Wilcox Clayshale were encountered in the borings, but due to the prevalence of the Midway and the similarities between the two materials, these units are generally considered as “Clayshale” for the purposes of this analysis. The Clayshale was described on the borings logs as gray to dark gray, dry to moist, hard, weathered, laminated and fissile clayshale with light gray silt seams and partings.

The SPT N-values in the Clayshale ranged from 26 bpf to 50/1”, with most values between 30 and 45 bpf. Pocket penetrometer values ranged from 3.5 to 4.5+ tsf, with most values of 4.5+ tsf.

Mechanically disaggregated samples of the Clayshale were subjected to index testing, which is summarized in **Table 5-6**. The disaggregated samples classified as fat clay (CH) with LL and PI values similar to the Resdiuum. Natural total unit weights ranged from 94.3 to 124.8 pcf, and natural moisture contents are on the order of 2 to 5% less than the PL.

<u>Shear Strength</u>

A total of 5 UC tests were performed on the Clayshale to estimate compressive strength and undrained shear strength. The resulting Su values were between 1,984 and 10,596 psf, with most values greater than 5,000 psf. Shear behavior in the UC tests had a fairly well-defined peak, with strain at failure ranging from 3.3 to 6.5%.

In general, the shear strength of the Clayshale was judged to be sufficiently high so as to not control the design. Effective stress strength parameters were considered to be similar to the Residuum with higher cohesion.

<u>Other Engineering Properties</u>

No additional engineering properties testing was performed on the Clayshale, as it is located well below the proposed bearing elevation of most structures, and swelling properties were considered to be irrelevant. The material was judged to be relatively incompressible for the purposes of consolidation analysis. The hydraulic conductivity was judged to be similar to Residuum for analysis purposes.

Table 5-6. Analysis of Laboratory Test Results for Clayshale

Parameter	Min Test Value	Max Test Value	Average	Standard Deviation	Number of Tests
Classification and Index Properties					
Field USCS	CH				---
Lab USCS	CH				---
Liquid Limit, LL	54	67	63	4.2	11
Plasticity Index, PI	33	41	38	2.5	11
Plastic Limit, PL	21	29	25	2.2	11
Physical Properties					
Natural Water Content, WC (%)	13.0	25.0	21.9	2.1	39
Natural Dry Unit Weight, DD (pcf)	90.4	103.0	97.5	3.8	11
Natural Total Unit Weight, TD (pcf)	108.2	125.0	118.7	5.0	11
Specific Gravity, Gs	2.70	2.77	2.74	0.02	11
Void Ratio, e0	0.67	0.86	0.76	0.06	11
Degree of Saturation, S (%)	61.6	89.0	79.4	8.5	11
Liquidity Index, LI	-0.17	-0.03	-0.09	0.04	11
Gradation					
Clay Fraction, CF (%) (1)	32.0	43.0	38.5	3.3	11
Fines Content (%) (2)	85.0	100.0	96.9	4.6	11
Sand Content (%)	0.0	15.0	3.1	4.6	11
Gravel Content (%)	0.0	0.0	0.0	0.0	11
Dispersion					
Crumb Test	Gr 1	Gr 2	Gr 1	---	8
Double Hydrometer (%)	9.0	9.0	---	---	1
Shear Strength					
Undrained Shear Strength, Su (psf)	1,984	10,595	7,303	3,187	6
Compressibility					
Overconsolidation Ratio, OCR	---	---	---	----	0
Compression Index, Cc	---	---	---	----	0
Recompression Index, Cr	---	---	---	----	0
Coeff. of Consol., cv – Comp. (in^2/sec)	---	---	---	----	0
Coeff. of Consol., cv – Recomp. (in^2/sec)	---	---	---	----	0
Hydraulic Conductivity					
Hydraulic Conductivity, k (cm/s) (from consol.)	---	---	---	----	0
Swell					
Swell Index, Cs (from consol tests)	---	---	---	----	0
Swelling Strain Index, Csε (from swell tests)	---	---	----	---	0
Percent Swell at 250 psf Vertical Load (%)	---	---	---	---	0
Swell Pressure (psf)	---	---	---	---	0

Notes:
1) Percent by weight finer than 0.002 mm (clay fraction)
2) Percent by weight finer than the #200 sieve (silt and clay fraction)

5.3 Borrow Materials Characterization

Potential on-site borrow material sources include Borrow Areas #1 and #2 in the reservoir area, as well as areas of planned excavation including the proposed downstream alignment of the auxiliary spillway channel (e.g. B-606) and excavations into the embankment and downstream toe. Discussion of these sources is provided below.

5.3.1 Borrow Area #1

Borrow Area #1 is located relatively close to the proposed dam improvements, within about 300 to 650 feet upstream of the left side of the embankment. Composite, remolded bulk samples were prepared from depth intervals of 0 to 4 feet (COMP-1), and from either 4 or 5.5 to 10 feet depth (COMP-2). Both samples classified as lean clays (CL) with PI less than 25.

Based on index test results the COMP-1 had LL of 43, PI of 25, fines content of 80%, clay content of 35%, and negligible gravel. The COMP-2 had LL of 39, PI of 23, fines content of 67%, clay content of 30%, and negligible gravel. The samples were found to be non-dispersive on the basis of crumb and double-hydrometer testing. The results of two supplemental Atterberg limits tests on the upper soil layer representative of COMP-1 were LL=44 and 45 and PI=27 and 28 (borings B-102 and B-104). The results of two supplemental Atterberg limits tests on the lower soil layer representative of COMP-2 were LL=35 and 42 and PI=21 and 27.

Shear testing on both composite samples included UU and CU trixial. The UU results were similar, with Su between 1,555 and 1,715 psf. The total and effective strength envelopes from CU test results, presently earlier, were also similar and were judged to be reasonable. Samples for strength testing were remolded to target 95% of maximum dry density (MDD) at +3% of optimum moisture content (OMC) per ASTM D698 to represent the least favorable range of a typical embankment compaction specification with respect to shear strength.

Consolidation testing was performed on COMP-1 only. The sample was remolded to same target density and moisture content (“wet”) as the shear test samples. The estimated P’c was 3,000 psf, and Cc and Cr were 0.23 and 0.037, respectively. The sample was remolded to target 95% of MDD at +3% of OMC per ASTM D698.

Hydraulic conductivity testing was performed on both composite samples. Results were similar, between $1.5x10^{-7}$ and $4.6x10^{-8}$. The sample was remolded to a target 95% MDD at 0% OMC per ASTM D698 to represent the least favorable range of a typical embankment compaction specification with respect to hydraulic conductivity.

One swell test conducted on COMP-1 only indicates potential expansive soil properties (swell pressure of 2,000 psf with 0.94% maximum swell at 250 psf confining pressure). The sample was remolded to target 95% of MDD at 0% of OMC per ASTM D698.

5.3.2 Borrow Area #2

Borrow Area #2 is located relatively farther from the dam improvements, within about 800 to 1,300 feet upstream of the right side of the embankment but with a longer haul distance. Composite, remolded bulk samples was prepared from depth interval 0 to 3 feet (COMP-3), and from 3 to 8 feet (COMP-4). Both samples classified as sandy fat clays (CH) to clays with sand.

Based on index test results the COMP-3 had LL of 50, PI of 31, fines content of 76%, clay content of 41%, and negligible gravel. The COMP-4 had LL of 57, PI of 37, fines content of 91%, clay

content of 54%, and negligible gravel. The samples were found to be non-dispersive on the basis of crumb and double-hydrometer testing. The results of two supplemental Atterberg limits tests on the upper soil layer representative of COMP-3 were LL=60 and 51 and PI=38 and 33 (borings B-107 and B-109). The results of two supplemental Atterberg limits tests on the lower soil layer representative of COMP-4 were LL=69 and 68 and PI=46 and 46.

Consolidation testing was performed on COMP-3 only. The sample was remolded to same target density and moisture content ("wet") as the shear test samples. The estimated P'c was 3,000 psf, and Cc and Cr were 0.26 and 0.050, respectively. The sample was remolded to target 95% of MDD at +3% of OMC per ASTM D698.

One swell test on COMP-3 indicated non-expansive properties (0% swell at 250 psf confining pressure), but these clays are of relatively high plasticity and testing of additional samples could indicate swell potential. The sample was remolded to target 95% of MDD at 0% of OMC per ASTM D698.

5.3.3 Downstream RCC Outlet Channel Area

Materials within the required excavation for construction of the proposed RCC auxiliary spillway outlet channel downstream of the spillway was also evaluated as a potential borrow source. Planned excavation depth for the outlet channel is a maximum of about 5 feet bgs. Boring B-606 was drilled in the proposed outlet channel, and encountered sandy lean clay (CL) in the upper 6 feet, and fat clay (CH) from depths of 6 to 20 feet bgs. The upper layer considered for potential borrow had measured LL=43-44 and PI=26-27. Below a depth of 6 feet, the measured LL=59 and PI=36.

No engineering properties testing was performed on remolded samples from this area, but properties from the upper 6 feet of this area are expected to be similar to that of Borrow Area #1 based on the general similarity of index properties.

5.3.4 Excavation for RCC Overtopping Spillway

Materials within the required excavation for construction of the overtopping RCC auxiliary spillway into existing embankment and foundation materials at the downstream toe was evaluated as a a potential source of borrow. Excavations in these areas are likely to encounter existing Embankment Fill, Valley Fill, Alluvium, Leona Formation, and Residuum. Index and engineering properties of these materials in natural state are described in previous sections.

No engineering properties testing was performed on remolded samples of these materials, but are expected to be similar to engineering properties of the Borrow Area #1 and #2 materials based on the general similarity of index properties. Specifically, the intervals of Embankment Fill, Valley Fill, and Alluvium would be most similar to Borrow Area #1 samples, while the Residuum would be most similar to Borrow Area #2 samples.

5.3.5 Excavation for PSW Replacement

Required excavations for abandonment of the existing PSW and installation of the new PSW was evaluated as a potential borrow source. The planned excavations are expected to encounter primarily existing Embankment Fill, with anticipated Valley Fill and native foundation materials (Alluvium and Residuum) below about El. 499±. Index and engineering properties of these materials in natural state are described in previous sections. Testing was not performed on remolded samples of these materials, but borrow material from these sources would be expected to have somewhat similar engineering properties of the Borrow Area #1 and #2 materials.

6. Seismic Analysis

6.1 NRCS Seismic Screening Procedure

Seismic site characterization was performed according to the guidance in the most recent NRCS TR-210-60 (2019). The document specifies that conventional seismic analysis be evaluated for sites with PGA equal to or greater than 0.07g for the seismic event associated with the dam's consequence of seismic failure (conservatively taken as the dam's hazard potential classification herein). Since this dam has been upgraded to high hazard, the 0.5% in 50 year earthquake event (10,000-year return period) is appropriate for design-level evaluations. Based on a de-aggregation of seismic hazard using the online USGS National Seismic Hazards Mapping Tool, the PGA for this 10,000-year event is 0.058g for the top of competent rock. The PGA was adjusted for site class assuming Site Class D based on SPT N-values in the upper 100 feet of below the dam and corresponding site coefficient F_{PGA} of 1.6 (sites with top of rock PGA less than 0.1, per ASCE 7-10), which yields a design PGA_{Design} = PGA x F_{PGA} = 0.09g.

Based on the relatively low seismicity of the site and distance from mapped faults and faults systems, and the relative stiffness and cohesive nature of site soils, the risks of seismic hazards such as liquefaction, cyclic strain softening, and fault-rupture are considered to be negligible. While the PGA_{Design} exceeds the referenced 0.07g cited in the TR-210-60, the document also has a provision which waives the requirement for seismic analysis of "well-built" embankment dams with limited potential loss of strength at sites with PGA_{Design} less than 0.2g. The TR-210- 60 defines "well-built" embankments as those constructed from well-compacted earth or rock fill, founded on rock or dense soil (particularly clay) foundations, with adequate static factors of safety, with seepage control and free-board, and constructed under controlled conditions.

Based on review of historical design information, the results of this field investigation, and the geotechnical analyses contained herein, AECOM believes that the dam meets the criteria for well-built embankment dams based on the following factors:

1. As-built drawings specify modern compaction criteria for the embankment, and results of field (SPT, pocket penetrometer) and laboratory strength tests (UC, UU, CIU') confirm relatively stiff cohesive soils indicative of well-compacted fill;
2. Embankment foundation consists of stiff to hard alluvial and residual clay, medium dense to dense clayey gravel, and clayshale which are not subject to significant strength loss during earthquake loading;
3. While no seepage control is currently provided in the dam, no observed seepage has been reported to date and the rehabilitation design will include seepage control in the form of filter diaphragms around the existing PSW conduit to be abandoned in-place and around the new PSW conduit and a new toe drain;
4. The original design included embankment freeboard of 17 feet for normal pool (PSW crest) and 5.3 feet for flood pool (ASW crest) conditions, and freeboard will increase as part of the proposed rehabilitation;
5. Calculated static slope stability factors of safety in the original design documents and the current rehab project are above minimum values, and there is no documented evidence of prior slope instability; and
6. The dam was designed by NRCS predecessor (SCS) and presumably built under controlled conditions with appropriate oversight.

Therefore, further seismic evaluation is not required per NRCS criteria.

6.2 TCEQ Seismic Screening Procedure

Site seismicity was also evaluated with respect to guidelines provided by Texas Commission on Environmental Quality, *Design & Construction Guidelines for Dams in Texas* (2009). The guidance states that seismic evaluations of dam stability must be conducted for high- and significant-hazard dams near “seismically active” faults, which are defined as faults recognized by and included in the USGS Quaternary Fault and Fold Database. Based on AECOM’s review of the USGS database, the nearest active fault zone is the Gulf-margin normal faults system located more than 30 miles to the east of the site. This system is considered as “latest Quaternary” (active within the last 15,000 years) and consists of a compilation of numerous individual unmapped faults. The faults are decoupled from the underlying crust, and assigned as Class B structures due to their low seismicity (Wheeler, 1999). Based on this information and the discussion in **Section 6.1**, AECOM judges that seismic stability is not required per TCEQ screening guidelines.

6.3 Conclusions

Based on the relatively low seismicity of the site and distance from recently-active faults and faults systems, detailed investigation and evaluation of seismic hazard is not required for the project site. Based on this information, and the relative stiffness and cohesive nature of site soils, the risks of seismic hazards such as liquefaction, cyclic softening, and fault-rupture are considered to be negligible and no further analysis is needed.

7. Embankment Seepage and Stability Analysis

7.1 Analysis Sections

Seepage and slope stability analyses were performed to evaluate the proposed improvements for compliance with the current NRCS TR-210-60 requirements for earth embankment dams.

Three embankment sections were selected for analysis as follows:

- Reach C (i.e., PSW replacement), with specific cross-section at embankment centerline STA 17+35, was evaluated because it represents a full-height reconstruction of the embankment using on-site borrow material.
- Reach D (i.e., the left portion of the proposed RCC overtopping spillway), with specific cross-section at embankment centerline STA 19+30, was deemed to be a critical section because it corresponds to the maximum height of the embankment within the spillway footprint, and the deepest depth of Clayshale. This section is also located in close proximity to the original creek alignment. In addition to modelling the overtopping spillway section, this section was also used to conservatively model the earthen embankment raise immediately adjacent to the left side of the spillway.
- Reach E (i.e., the right portion of the proposed RCC overtopping spillway), with specific cross-section at embankment centerline STA 22+50, was evaluated to model the effects of the gravelly Leona Formation materials which may be present within the planned excavation for the right side of the RCC ASW stilling basin. The focus is to evaluate potential seepage through the Leona Formation (consisting largely of GC materials) and possible related effects on design/construction.

Embankment piezometers B-04P and B-05P were used to calibrate the analysis model phreatic surfaces to the measured static groundwater levels. Description of the analyses procedures, as well as presentation and discussion of results, are providing in the following sections.

7.2 Seepage Analysis

7.2.1 Design Criteria

The current version of NRCS TR-210-60 requires that the effects of seepage be evaluated for all dams. This evaluation must consider potential embankment and foundation seepage-related failure modes, includes the potential for internal erosion, erosive flow along defects, internal instability, and uplift pressures to damage the embankment, its foundation, and appurtenant structures. The TR-210-60 provides the following design criteria related to seepage:

1. Design seepage reduction measures to limit seepage and embankment saturation as necessary to address seepage failure modes, provide adequate static and dynamic stability, and limit water loss to the extent required by project function.
2. Minimum factor of safety (FOS) = 4.0 for vertical exit gradients at sites with cohesionless soils at the downstream toe;
3. Minimum FOS = 3.0 for a blanket-aquifer condition in soil using effective stress methods;
4. Include a filter diaphragm around any structure extending through the embankment to the downstream slope (e.g., conduit pipes);

5. Include filtration and drainage features for all significant and high hazard embankment dams unless the designers establish rationale for less filter and drain protection for rehabilitation of existing embankments; and
6. Provide seepage integrity for all reservoir stages up to the freeboard hydrograph water surface.

Criteria #2 and #3 only apply to sections where the gravelly Leona Formation are present, which may be covered by relatively thin impervious blanket materials. To satisfy Criteria #4 and #5, this project will require a filter diaphragm around the proposed PSW conduit and internal drainage layers, respectively. Criteria #1 and #6 are inherent to the seepage and stability evaluations described in the following sections of this report. Depending on structure complexity, the TR-210-60 allows the use of qualitative methods, analytical methods, graphical methods, and/or numerical methods to evaluate seepage effects.

7.2.2 Methodology

Steady-state seepage analyses were performed using numerical methods to estimate the phreatic conditions within the embankment and internal pore water pressures for use in slope stability computations. Additionally, the seepage analyses were conducted to estimate seepage flow volumes for the sizing of the internal drainage system(s). Potential for through-seepage was examined based on position of the calculated phreatic surface.

The general analysis conditions that were considered are described as follows:

- Existing conditions: A steady-state seepage analysis was performed for existing conditions to calibrate the material parameters using known reservoir elevation and limited piezometer readings at various points in time. This analysis considered a reservoir surface equal to the existing normal pool (El. 498.8), and a downstream water level based on 24-hour readings from borings (El. 485). The material parameters were iteratively adjusted until the phreatic surface through the embankment centerline approximated by the model was similar to the groundwater levels measured in piezometer B-04P and B-06P during similar reservoir levels (on the order of El. 493 to 496).
- Proposed Normal Pool: A steady-state seepage analysis was performed for the proposed embankment raise section, including the proposed internal drainage elements (i.e., toe drain for embankment raise section and RCC chute underdrain for overtopping ASW section, see **Section 9)**, with the reservoir at the proposed PSW crest elevation (El. 498.8). This analysis was used to establish the design phreatic surface for steady-state slope stability analyses, and post-drawdown surface for rapid drawdown analyses (see **Section 7.3.3**).
- Proposed Flood Pool: A steady-state seepage analysis was performed for the proposed embankment raise section, including the proposed internal drainage elements, with the reservoir at the proposed ASW crest elevation (El. 518.9). This conservative case was analyzed primarily for drain sizing, and to evaluate potential for seepage issues during an extended flood pool condition. This resulting phreatic surface was also considered in rapid drawdown slope stability analyses (see discussion in **Section 7.3.3**).
- Proposed FBH Pool: A steady-state seepage analysis was performed for the proposed embankment raise section, including the proposed internal drainage elements, with the reservoir at the proposed Freeboard Hydrograph (FBH) pool level (El. 526.6). This very conservative case was used primarily for drain sizing, and the resulting hypothetical phreatic surface was also considered as a simulated uplift pressure applied to saturated material zones for the flood surcharge slope stability analyses (see discussion in **Section 7.3.3**).

7.2.3 Model Setup and Boundary Conditions

The computer program SEEP/W by Geo-Slope International (Geostudio 2020, , Version 10.2.2.20559) was used to perform the steady-state seepage analyses. SEEP/W utilizes a two-dimensional finite element method to compute seepage flow and piezometric head. A finite element mesh was generated for the proposed embankment and existing foundation considering global element sizes of 2.5 feet within the embankment and near-surface materials, and 5 to 10 feet size in other areas of the model.

In order to limit boundary effects, the modelled foundation materials were extended horizontally approximately 1,000 feet from the upstream dam toe and 600 feet from the downstream toe. The analysis assumed the foundation overburden soils were laterally continuous throughout the reservoir, but this assumption could not be confirmed from available data. The Clayshale stratum included in the model was extended down to El. 400 (i.e., approximately 60 feet thick).

On the upstream ground surface of the model, a total head boundary condition equal to the elevation of the corresponding reservoir level was applied. Similarly, a total head boundary condition was applied to the downstream vertical edge of the model equal to the assumed far-field groundwater level (El. 485). A no-flow boundary was applied to the left vertical edge and bottom of the model. A potential seepage face was applied to the downstream slope of the embankment and ground surface. In analyses with the proposed toe drain, an outlet pipe was modeled as a point at the location of the toe drain pipe with a zero-pressure-head boundary condition. Similarly, for analyses with the proposed RCC ASW chute underdrain, an outlet pipe was modeled as a point with zero-pressure-head boundary at the elevation of the stilling basin invert (El. 483.9)

7.2.4 Selected Seepage Parameters

Material parameters for the seepage analysis were developed based on the results of laboratory hydraulic conductivity testing, and published correlations with soil type. Selected material properties include the saturated vertical hydraulic conductivity (k_v) and the anisotropy ratio (k_h/k_v) which is used to calculate the saturated horizontal hydraulic conductivity (k_h). These parameters are provided in **Table 7-1**. As discussed in **Sections 4** and **5**, two permeability tests were performed on remolded samples of borrow material for the future embankment fill. The saturated hydraulic conductivity for the other subsurface materials, and anisotropy ratios for all materials, were estimated using published values and correlations based on soil types and index properties.

Material input parameters for the SEEP/W model are provided in **Table 7-2**. For materials that are partially saturated and/or will not remain saturated, the “saturated / unsaturated” model was used for seepage modelling. The “saturated only” model was used only for soils that will always remain below the phreatic surface. The saturated/unsaturated model require 2 functions: hydraulic conductivity function and volumetric water content function. The hydraulic conductivity function describes how the hydraulic conductivity varies with changes in suction (i.e. negative pore-water pressure) present in unsaturated soils. The volumetric water content function describes how the suction varies with changes in water content in the soil. Unsaturated functions for hydraulic conductivity and volumetric water content were based on SEEP/W default relationships.

Table 7-1. Selected Design Material Properties

Material Properties				
Material	USCS	Kv (cm/sec)	Ratio Kh/Kv	Kh (cm/sec)
Existing Embankment	CL, CH	1.0E-07	5	5.0E-07
Leona Gravel	GC	2.0E-04	10	2.0E-03
Residuum/Alluvium	CL, CH	1.0E-06	4	4.0E-06
Bedrock (Clayshale)	---	1.0E-06	4	4.0E-06
New Earth Fill	CH	1.0E-07	5	5.0E-07
Filter Drain	---	1.0E-03	1	1.0E-03
Rock Riprap	---	1.0E-01	1	1.0E-01
RCC	---	1.0E-07	1	1.0E-07

Table 7-2. Selected Design SEEP/W Input Parameters

	SEEP/W Input Parameters							
Material	Model Type	Ksat = Kh (feet/day)	Ksat = Kh (feet/sec)	Ratio Kv/Kh	Mv (psf/psf)(2)	Θw-sat (1)	K-Function	VWC-Function
Existing Embankment	Sat. / Unsat.	0.00142	1.60E-08	0.2	1.00E-06	0.43	Sandy Silty Clay	Clay/Silt
Leona Gravel	Sat. / Unsat.	5.6693	6.60E-05	0.1	1.00E-09	0.23	Gravelly Clay	Glacial Till (Compacted)
Residuum/Alluvium	Sat. / Unsat.	0.0113	1.30E-07	0.25	1.00E-06	0.43	Sandy Silty Clay	Clay/Silt
Bedrock (Clayshale)	Sat. Only	0.0113	1.30E-07	0.25	5.00E-07	0.25	---	---
New Earth Fill	Sat. / Unsat.	0.00142	1.60E-08	0.2	5.00E-06	0.45	Sandy Silty Clay	Clay/Silt
Filter Drain	Sat. / Unsat.	2.8346	3.30E-05	1	5.00E-06	0.35	Sand	Sand
Rock Riprap	Sat. Only	283.4646	3.30E-03	1	5.00E-06	0.25	---	---
RCC	Sat. / Unsat.	0.000283	3.30E-09	1	5.00E-06	0.35	Sandy Silty Clay	Clay/Silt

Notes:

1. θw = Saturated Volumetric Water Content = Porosity x Degree of Saturation
2. M_v = Coefficient of Volume Compressibility = I / Modulus of Elasticity
3. Unsaturated functions for volumetric water content and hydraulic conductivity based on default SEEP/W relationships.

7.2.5 Results and Discussion

Steady-state seepage analysis results were primarily used to estimate the location of the phreatic surface for use in the steady-state slope stability models. Examination of the predicted phreatic surface and associated exit gradients do not indicate seepage problems for existing or proposed conditions. Specifically, the phreatic surfaces do not daylight above the embankment toe and/or on the embankment slope, calculated factors of safety for exit gradients are well above 3.0 (even

for conservative FBH case), and calculated slope stability factors of safety for exit gradients are well above 3.0 (even for conservative FBH case), and calculated slope stability (discussed in **Section 7.3**) are not adversely affected by phreatic surface. Examination of vertical exit gradients at the toe do not appear problematic for existing or proposed conditions, and will be further improved due to the presence of proposed internal drainage elements for both embankment raise (toe drain) and overtopping spillway (RCC underdrain) sections. Graphical output for the seepage analyses are included in **Appendix E**.

Estimated inflow rates into the various internal drainage elements, based on the seepage analysis, are summarized below in **Table 7-3**. In general, the estimated inflow rates are relatively low for both the toe drain and RCC underdrain elements, even for the conservative assumption of a steady-state FBH reservoir level (about 0.6 gpm for the worst case section with the Leona Formation gravel modeled in Reach E). Drain pipe sizing calculations were performed for both the toe drain and RCC underdrain based on the worst case results from the Reach E analysis, and are included in **Appendix E**. The calculations indicate that conventional 6-inch diameter drain pipes flowing 25% full provide a factor of safety well in excess of 10 for flow capacity. Therefore, 6-inch diameter drain pipes surrounded by two-stage aggregate filter is expected to be sufficient to adequately convey seepage inflows.

For the proposed filter diaphragm planned for the new PSW conduit (Reach C), the estimated inflow for strip drain sizing is less than 0.1 gpm for the conservative FBH steady-state phreatic surface based on the 117-LF length indicated in the design drawings.

Table 7-3 Selected Design Material Properties

Cross-Section	Phreatic Surface	Proposed Toe Drain (Embankment Raise Section) (1)		Proposed RCC Underdrain (Overtopping Spillway Section) (2)	
		Unit Flux per LF of Dam Length (ft^3/day/LF)	Total Toe Drain Flow Rate (gpm) (3)	Unit Flux per LF of Dam Length (ft^3/day/LF)	Total Toe Drain Flow Rate (gpm) (3)
Reach C	Normal Pool (PSW crest)	0.015	0.025	n/a	n/a
“	Flood Pool (ASW crest)	0.019	0.031	n/a	n/a
“	FBH	0.027	0.046	n/a	n/a
Reach D	Normal Pool (PSW crest)	0.025	0.026	0.010	0.015
“	Flood Pool (ASW crest)	0.077	0.080	0.047	0.074
“	FBH	0.093	0.097	0.008	0.124
Reach E	Normal Pool (PSW crest)	0.010	0.038	0.017	0.026
“	Flood Pool (ASW crest)	0.105	0.403	0.093	0.146
“	FBH	0.140	0.538	0.127	0.199

Notes:
1) Length of proposed toe drain is 322 LF left of new PSW (Reach C), 200 LF between new PSW and new ASW (Reach D), and 738 LF right of new ASW (Reach E).
2) Length of proposed RCC underdrain is 300 LF along dam axis. The full length of 300 LF was used for both Reach D and Reach E for comparison purposes.
3) Conversion: 7.48 gal = 1 CF

7.3 Slope Stability Analysis

7.3.1 Design Criteria

Design criteria for slope stability is provided in the current version of the NRCS TR-210-60. The criteria require analysis of the following loading conditions for the proposed dam modification:

- End of Construction;
- Steady-State Seepage;
- Flood Surcharge;
- Rapid Drawdown; and
- Dynamic stability (if applicable).

The required factors of safety for each condition are provided later in this section (see **Section 7.3.5**). Based on the discussion provided in **Section 6**, no further consideration of dynamic stability (i.e., seismic loading) is required.

7.3.2 Model Development

AECOM performed slope stability analyses using the software SLOPE/W by Geo-Slope International (GeoStudio 2020, Version 10.2.2.20559). The limit-equilibrium program allows use of Spencer's method of slices, a method that satisfies all conditions of equilibrium.

Analyses were conducted for the same three cross-sections evaluated in the seepage analysis. Slope stability analyses were conducted for existing conditions to calibrate the models, and for the proposed embankment raise conditions to estimate the Factor of Safety (FOS) for the various loading conditions required by the current version of the NRCS TR-210-60.

7.3.3 Analysis Cases

7.3.3.1 End of Construction

For the end-of-construction conditions (EOC), stability of the proposed final dam section was calculated conservatively assuming no dewatering of the reservoir. The phreatic surface was estimated based on the steady-state seepage phreatic surface developed at the existing normal pool level (El. 498.8 feet). Unconsolidated-undrained (UU) strengths were used to model slow-draining new earthfill and existing materials in accordance with TR-210-60 guidance. Free-draining materials were modeled using consolidated-drained (CD) strengths.

7.3.3.2 Steady-State Seepage

For steady-state seepage conditions, the phreatic surface corresponding to the proposed highest normal pool elevation (i.e., proposed PSW crest of El. 498.8) was used. Per current TR-210-60 guidance, effective stress CD shear strength envelopes were assigned to modeled materials. For the proposed RCC Overtopping Spillway Section, an external nonuniform vertical surcharge with a maximum pressure of 2,800 psf was applied to the top of the embankment to simulate static loading associated with the proposed RCC crest structure training walls. It is noted that this is a conservative analysis procedure, considering that the actual bearing pressure from the training walls acts over a limited area (i.e., 12-foot width along the embankment centerline) while the bearing pressure associated with the much larger RCC crest slab (i.e., 300-foot width along the embankment centerline) is generally less than 500 psf and due to slab self-weight only.

7.3.3.3 Flood Surcharge

For flood surcharge conditions, the embankment and foundation materials were divided into saturated and unsaturated embankment zones based on an estimated steady-state phreatic surface corresponding to the proposed normal pool level (El. 498.8). While the current TR-210-60 does not provide specific analytical guidance for this case, AECOM adopted an approach similar to the steady-state seepage case in the prior (2005) version of the TR-210-60 modified for the flood surcharge condition. In this modified approach, saturated materials were subjected to pore pressures associated with a hypothetical steady-state phreatic surface developed at the proposed FBH pool level (El. 526.6) to simulate uplift pressures associated with the highest possible flood pool level. The FBH phreatic surface was not applied to unsaturated material zones (i.e. above the normal pool phreatic surface), due to the unlikelihood that an elevated phreatic surface could develop over the relatively short duration of a flood event. This approach is conservative, because while desiccated near-surface soils on the upstream slope may become saturated during such an event, the limited duration of elevated pool level is unlikely to produce a wetting front that penetrates a significant distance into the embankment. This is particularly likely given that this homogenous embankment dam consists of compacted, moderate- to high-plasticity clay with modest slopes and no history of through-seepage or evident embankment cracking. Consequently, there is expected to be no appreciable effect on embankment saturation associated with the FBH flood pool.

Slow-draining material zones were assigned a bi-linear strength envelope corresponding to the lower of the CD and consolidated-undrained (CU) strength envelopes. Free-draining soil zones were modeled with CD strengths. For the RCC Overtopping Spillway Section, a nonuniform vertical surcharge with a maximum pressure of 2,800 psf was applied to the top of the embankment.

7.3.3.4 Rapid Drawdown

The current NRCS TR-210-60 requires rapid drawdown be assessed from the highest normal pool level to the lowest gated or ungated outlet. For this site, the highest normal pool will be the proposed PSW inlet riser crest elevation (El. 498.8), and the lowest outlet is the proposed PSW conduit with invert El. 488.7 at the inlet riser. Given the limited amount of drawdown (e.g. 10.1 feet), a more conservative case was analyzed to check rapid drawdown conditions associated with a reservoir drawdown from the proposed ASW pool level (El. 518.9) to the normal pool level (El. 498.8).

For the proposed RCC Overtopping Spillway Section only, the analysis incorporated an external nonuniform vertical surcharge with maximum pressure of 2,800 psf that was applied to the top of the embankment to simulate static loading associated with the proposed RCC crest structure.

Rapid drawdown analyses were conducted according to the NRCS procedure using a 1-stage analysis. In that analysis, slow-draining saturated material zones are assigned a bi-linear strength envelope corresponding to the lower of the CU and CD strength envelopes per TR-210-60 guidance. Free-draining materials, and materials above the phreatic surface, are assigned CD strength parameters. The phreatic surface used in the rapid drawdown stability analysis was developed considering a reservoir drawdown as described above: the ASW pool phreatic surface was used within the embankment, but the phreatic surface was lowered to be coincident with the ground surface of the upstream embankment slope above the PSW crest level. As a check, rapid drawdown evaluation was also conducted according to the 3-stage method as presented by Duncan, Wright, and Wong (1990). Two steady-state seepage phreatic surfaces are incorporated into the analysis: pre-drawdown and post-drawdown. Both the CU and CD envelopes are evaluated in the 3-stage analysis. The method has been shown to reasonably predict instability

conditions for several case histories, and has indicated that other methods tend to over-predict the occurrence of slope instability.

7.3.4 Material Parameters

Design unit weights and selected total stress and effective stress strength envelopes are provided in Table 7-4. These values were developed from the results of laboratory strength tests, correlations with in-situ tests and index properties, and/or engineering judgment based on experience with similar materials. For each geologic unit with available CIU' or CDDS shear test results, the CD strength envelopes from individual CIU' tests were compared on a plot of shear stress versus effective normal stress. The values of c' and ϕ' used for design were selected to produce a CD envelope that plotted near the middle of the individual CIU' results. A similar procedure was used for the CU strength envelopes. Plots are provided in **Appendix F**.

The resulting NRCS bilinear strength envelopes are provided in **Table 7-5**. Selected strengths for unconsolidated-undrained conditions (Su) were developed based on the results of UU and UC testing, supplemented by correlations with pocket penetrometer and SPT N-values. Plots of Su versus depth and elevations are provided in **Appendices C** and **F**, and selected design values are provided in **Table 7-6**.

Table 7-4. Selected Material Parameters

Material	USCS	Total Unit Weight (pcf)	Effective Stress (CD Envelope)		Total Stress (CU Envelope)	
			c' (psf)	ϕ ' (deg)	c_u (psf)	ϕ_u (deg)
Embankment Fill (existing)	CL, CH	123	250	28	450	20
Residuum / Alluvium	CL, CH	120	200	26	300	20
Leona Formation	GC	135	50	35	---	---
Clayshale	---	120	500	26	---	---
New Embankment	CL, CH	125	250	26	350	16
Filter Drain	SP, GP	120	0	33	---	---
Rock Riprap	---	110	0	40	---	---
RCC	---	145	200	45	---	---

Table 7-5. NRCS Bilinear Strength Envelopes for Flood Surcharge and Rapid Drawdown

Material	USCS	Initial Envelope		Bi-Linear Envelope for Flood Surcharge		Bi-Linear Envelope for Rapid Drawdown	
		c (psf)	ϕ_1 (deg)	σ_n (psf)	$\phi_{2\text{-FBH}}$ (deg)	σ_n (psf)	$\phi_{2\text{-RDD}}$ (deg)
Embankment (existing)	CL, CH	250	28	1,192	24	1,192	20
Residuum / Alluvium	CL, CH	200	26	808	23	808	20
Leona Formation	GC	50	35	---	---	---	---
Clayshale	CH	500	26	---	---	---	---
New Embankment	CL, CH	250	26	498	21	498	16
Filter Drain	SP, GP	0	33	---	---	---	---
Rock Riprap	---	0	40	---	---	---	---
RCC	---	200	45	---	---	---	---

Table 7-6. Unconsolidated Undrained Shear Strengths

Material	USCS	Undrained Shear Strength, Su (psf)
Embankment Fill (existing)	CL, CH	2,000
Residuum / Alluvium	CL, CH	1,800
Leona Formation	GC	---
Clayshale	CH	5,000
New Embankment	CL, CH	1,500
Filter Drain	SP, GP	---
Rock Riprap	---	---
RCC	---	---

7.3.5 Analysis Results

A summary of calculated slope stability FOS is provided in the series of tables below. For information purposes, calculated steady-state seepage FOS values for existing conditions are provided in **Table 7-7** through **Table 7-12**. Graphical model output is provided in **Appendix F**. Given the proposed 3H:1V downstream embankment slopes, the calculated factors of safety meet or exceed the NRCS criteria at each analyzed cross-section.

Table 7-7. Slope Stability Results – Existing Conditions

Section	Loading Condition	Slope	Minimum FOS	Calculated FOS	Figure Reference
Reach C	Steady-State Seepage	Downstream	1.5	2.1	F.1
Reach D	Steady-State Seepage	Downstream	1.5	2.1	F.8
Reach E	Steady-State Seepage	Downstream	1.5	2.3	F.21

Table 7-8. Slope Stability Results – Embankment Raise Section (Reach C)

Loading Condition	Slope	Minimum FOS	Calculated FOS	Appendix Figure Reference
End of Construction (Deep)	Upstream	1.4	3.2	F,2
End of Construction (Deep)	Downstream	1.4	2.8	F.3
Steady-State Seepage	Downstream	1.5	1.9	F.4
Rapid Drawdown (NRCS)	Upstream	1.2	1.5	F.5
Rapid Drawdown (3-stage)	Upstream	1.2	1.9	F.6
Flood Surcharge	Downstream	1.4	1.7	F.7

Table 7-9. Slope Stability Results – Embankment Raise Section (Reach D)

Loading Condition	Slope	Minimum FOS	Calculated FOS	Appendix Figure Reference
End of Construction (Deep)	Downstream	1.4	2.9	F.9
End of Construction (Deep)	Upstream	1.4	3.1	F.10
Steady-State Seepage	Downstream	1.5	2.3	F.11
Rapid Drawdown (NRCS)	Upstream	1.2	1.7	F.12
Rapid Drawdown (3-stage)	Upstream	1.2	2.1	F.13
Flood Surcharge	Downstream	1.4	2.0	F.14

Table 7-10. Slope Stability Results – Overtopping Spillway Section (Reach D)

Loading Condition	Slope	Minimum FOS	Calculated FOS	Appendix Figure Reference
End of Construction (Deep)	Downstream	1.4	1.9	F.15
End of Construction (Deep)	Upstream	1.4	2.2	F.16
Steady-State Seepage	Downstream	1.5	1.6	F.17
Rapid Drawdown (NRCS)	Upstream	1.2	1.5	F.18
Rapid Drawdown (3-stage)	Upstream	1.2	2.0	F.19
Flood Surcharge	Downstream	1.4	1.5	F.20

Table 7-11. Slope Stability Results – Embankment Raise Section (Reach E)

Loading Condition	Slope	Minimum FOS	Calculated FOS	Appendix Figure Reference
End of Construction (Deep)	Upstream	1.4	3.7	F.22
End of Construction (Deep)	Downstream	1.4	3.5	F.23
Steady-State Seepage	Downstream	1.5	2.4	F.24
Rapid Drawdown (NRCS)	Upstream	1.2	1.8	F.25
Rapid Drawdown (3-stage)	Upstream	1.2	2.1	F.26
Flood Surcharge	Downstream	1.4	2.2	F.27

Table 7-12. Slope Stability Results – Overtopping Spillway Section (Reach E)

Loading Condition	Slope	Minimum FOS	Calculated FOS	Appendix Figure Reference
End of Construction (Deep)	Upstream	1.4	2.5	F.28
End of Construction (Deep)	Downstream	1.4	2.0	F.29
Steady-State Seepage	Downstream	1.5	1.6	F.30
Rapid Drawdown (NRCS)	Upstream	1.2	1.5	F.31
Rapid Drawdown (3-stage)	Upstream	1.2	1.9	F.32
Flood Surcharge	Downstream	1.4	1.5	F.33

8. Embankment and Foundation Design

8.1 Embankment Settlement

Estimates of settlement associated with the proposed embankment raise were developed to evaluate need for potential overbuild and assess potential for differential settlement on the existing and proposed PSW conduit pipe. Selected consolidation parameters for analysis are provided in **Table 8-1**.

Settlement analyses were conducted using software program Settle3D by RocScience. The first settlement analysis was conducted to consider only the settlement of foundation materials under the embankment fill in the area of the proposed PSW conduit. Analyses were conducted to estimate total settlement in foundation materials (i.e., below ground surface El. 495±), and settlement only in the foundation soils below the existing PSW conduit to examine potential differential settlement risk (i.e., below El. 487±). This analysis modeled a flat existing ground surface (due to limitations of the program), and a two-stage settlement analysis was performed. The first stage modeled the existing embankment as a non-uniform distributed load to estimate ground settlement associated with the original construction. The second stage modeled the proposed finish grade as a non-uniform distributed load to estimate hypothetical settlement disregarding the existing embankment. The difference in calculated settlement at each analysis point was considered to be the potential new consolidation settlement associated with the dam raise. The maximum fill-induced consolidation settlement under the existing PSW pipe alignment was estimated to range from about 0.25 to 1.0 inches, with the maximum settlement occurring under the embankment downstream midslope. A plot of estimated settlement along the conduit profile is provided in **Appendix G**.

The second analysis conducted was to estimate the required overbuild needed to maintain a post-settlement minimum crest elevation. This analysis modeled a flat existing ground surface with the existing embankment materials modeled as “inverted” below the ground surface (due to limitations of the program). The proposed embankment raise was modeled as a non-uniform distributed load equal to the proposed height increase at various points on the embankment multiplied by the estimated unit weight of the embankment. The analysis indicates that the maximum estimated settlement of existing embankment / foundation materials occurs just downstream of the proposed embankment crest where the new fill height is the highest, corresponding to a fill height of about 14 feet and an estimated settlement of 3.1 inches (i.e., up to about 2.1 inches of settlement occurring in existing embankment fill). Self-weight consolidation of the new fill is expected to be on the order of about 1.0% of the fill height (i.e. about 1.6 inches), for a combined settlement total of about 4.7 inches. Consequently, AECOM recommends the new embankment fill include an overbuild of 6 inches (0.5) feet to compensate for potential settlement.

AECOM recommends the connection between the new and existing PSW pipe be designed to accommodate the stated potential differential settlement of about 1 inch. The designer should also check to confirm that the pipe joints under the existing embankment can safely tolerate the additional settlement due to the added fill.

Settlement estimates for each of the proposed spillway structures are discussed in **Section 8.2.5**.

Table 8-1. Selected Consolidation Parameters for Settlement Analysis

Material	γ (pcf)	e_0	Min. OCR	Minimum P'_c (psf)	C_c	C_r	E_s (ksf)	Cv (in^2/sec)
Embankment Fill - Existing	123	0.65	3.0	3,000	0.20	0.030	---	1E-6 to 9E-3
Valley Fill / Alluvium	128	0.55	3.0	3,000	0.20	0.030	---	1E-6 to 9E-3
Residuum	120	0.75	4.0	3,000	0.15	0.024	---	4E-5 to 6E-2
Clayshale	120	0.78	8.0	3,000	0.15	0.024	---	4E-5 to 6E-2
New Embankment Fill	125	0.70	2.0	3,000	0.24	0.023		---
New Lime-Treated Fill	120	0.80	2.0	3,000	0.12	0.012	---	---

Notes:

3. Abbreviations legend:
   1) γ – Total Moist Unit Weight
   2) e_0 – Initial Void Ratio;
   3) OCR – Overconsolidation Ratio (applies to zones where the P'c is greater than minimum value);
   4) P'_c – Maximum Past Pressure (minimum value accounts for near-surface desiccated "crust");
   5) C_c – Compression Index from e-log(p) curve;
   6) C_r – Recompression Index from e-log(p) curve
   7) E_s – Elastic Modulus for immediate settlement (not used)
   8) Cv – Coefficient of consolidation

Table 8-2. Settlement Results for Proposed PSW Conduit Due to Embankment Raise

Analysis Location	Approximate Fill Thickness (feet)	Subgrade Consolidation Settlement (inch)
Existing U/S Toe	2	0.5
Existing U/S Midslope	5	0.8
Existing U/S Crest	Cut 2	0.3
Proposed U/S Crest	7	0.3
Proposed D/S Crest	13	0.4
Proposed D/S Midslope	11	0.9
Existing D/S Toe	11	0.9
Proposed D/S Toe	0	0.4

Table 8-3. Settlement Analysis Results for Proposed Embankment Crest Raise

Analysis Location	Proposed Embankment Raise Analysis Section				Embankment Reconstruction at New PSW Section			
	Approx. New Fill Thickness (feet)	Consol. Settlement (inch) (1)	Fill Self-Weight Compress (inch) (2)	**Total Surface Settlement (inch)**	Approx. New Fill Thickness (feet)	Consol. Settlement (inch) (3)	Fill Self-Weight Compress (inch) (2)	**Total Surface Settlement (inch)**
Existing U/S Toe	2	1.0	0.2	**1.2**	2	0.5	0.2	**0.7**
Existing U/S Midslope	5	1.2	0.6	**1.8**	16	0.8	1.9	**2.7**
Existing U/S Crest	Cut 2	0.7	0.0	**0.7**	25	.0.3	3.0	**3.0**
Proposed U/S Crest	7	0.9	0.8	**1.7**	27	0.3	3.2	**3.5**
Proposed D/S Crest	13	1.4	1.6	**3.0**	27	0.4	3.2	**3.6**
Proposed D/S Midslope	11	1.5	1.3	**2.8**	16	0.9	1.9	**2.8**
Existing D/S Toe	11	1.4	1.3	**2.7**	11	0.9	1.3	**2.2**
Proposed D/S Toe	0	0.8	0.0	**0.8**	0	0.4	0.0	**0.4**

Notes:

1. Consolidation settlement of existing embankment and foundation materials.
2. Self-weight compression of new embankment fill assumed as 1% of the fill height.
3. Consolidation settlement of existing foundation materials below the planned breach excavation for construction of the new PSW conduit.

8.2 Foundation Design Analyses

Preliminary results of geotechnical analysis for foundations of the various proposed structures are provided in the following sections. The recommended parameters for foundation design assume that foundation subgrade preparation will be consistent with requirements presented in the **Section 8.3**.

8.2.1 Expansive Soils

8.2.1.1 Risk and Mitigation Options

As discussed previously, laboratory swell test results indicate that on-site soils range from low-expansive to highly expansive (see **Section 4.3.4**). This includes both existing Embankment Fill and Midway Residuum upon which the proposed overtopping RCC spillway will be founded. Consequently, lightly loaded structures (e.g. overtopping RCC spillway chute) may be susceptible to shrink/swell movements and related distress. In general, mitigation options may include one or more of the following:

- Overexcavation of expansive soils to a specified depth below the foundation grade, and replacement with non-expansive materials. The intent of such an approach is to reduce the thickness of expansive soils, and to use the non-expansive material's self-weight to counteract swelling. Possible replacement materials include imported non-expansive borrow, additional RCC thickness, lime-treated on-site soils, and/or moisture-conditioned on-site soils.

- Anchored slabs designed to resist swelling pressures and related uplift. This type of system would include grouted soil or rock anchors connected to the slab at uniform pattern spacing and bonded in materials below the zone of seasonal moisture fluctuation. The slab would be designed to span between anchors and resist shear and flexural loads resulting from the swelling pressure. A composite slab with reinforced concrete and RCC would likely be required to provide adequate flexural and shear resistance.

For this project, AECOM has assumed overexcavation/replacement is the preferred mitigation approach. Accordingly, preliminary subgrade preparation recommendations utilizing this approach are provided specific to each proposed structure in **Table 9-2**. If an anchored slab is preferred for one or more proposed structures, supplemental designed recommendations can be provided in a subsequent revision of this report.

Expansive soils should also not be used as backfill against retaining walls, as the expansive soils can generate significant additional lateral pressures due to swelling. Special attention is needed to internal drains/underdrain design to minimize the amount of excess moisture accessible to expansive soils that could exacerbate swelling (see **Section 9**).

8.2.1.2 Expansive Soil Heave Analysis Procedure

Results of laboratory swell tests were used to estimate the range of potential vertical heave that the various structures may experience due to expansive soil shrink/swell movement. The analysis was conducted as a “reverse consolidation” analysis which considered the swelling response of the soils and compared it to the effective stresses under the proposed foundations with depth. The effective stress at a given depth was based on the sustained foundation pressure, self-weight of overlying soil layers, and pore water pressures due to groundwater. The simplified 2-1 stress distribution method was used to estimate the foundation load-induced stress increase versus depth below the footing base. For a given soil layer, no heave occurs when the effective stress is greater than the swell pressure (SP) estimated from laboratory swell tests. At effective stresses less than the SP, the magnitude of swell in the given soil layer is estimated according to the swelling strain index, $C_{s\varepsilon}$ (i.e., the slope of the strain vs. log-pressure curve from laboratory swell tests). The total heave is the summation of calculated swell in each layer below the foundation base.

For the purposes of this analysis, heave was assumed to occur only within the “active zone” (i.e., the zone of seasonal moisture fluctuation) which is commonly taken as the upper 15 feet below finished ground surface in Central Texas. For several structures, a reduced active zone thickness was considered appropriate based on estimated minimum groundwater elevation. Heave calculations for the PSW inlet tower, which will be founded on subgrade materials that are currently saturated by the reservoir pool and will remain below the proposed permanent pool, considered a reduced active zone thickness of 8 feet to account for temporary reservoir drawdown and potential subgrade drying associated with the construction phase.

Based on the variability in swell test results in the existing Embankment Fill, Residuum, and proposed Borrow materials, each proposed structure was evaluated based on individual swell test results from the corresponding bearing stratum (as opposed to assigning swell properties from each test to specific depth intervals). This approach was believed to better reflect variability and uncertainty in the estimated magnitude of expansive soil heave. Additionally, the analyses assumed a minimum 2-foot overexcavation/replacement with non-expansive soils under the base of each structure foundation.

8.2.1.3 Heave Analysis Results and Recommendations

The results of the heave analysis using site-specific laboratory swell data, as well as options for potential non-expansive fill materials to be used in the overexcavation / replacement zones, are summarized in **Table 8-2**. Calculations are provided in **Appendix K**.

Calculated total heave for the RCC training walls ranged from 0 to 0.7 inches, which is expected to be tolerable. However, calculated total heave for the RCC chute on the embankment and in the stilling basin ranged from 0 to 3 inches, which may exceed tolerable limits. The range of calculated total heave for the principal spillway impact basin and inlet tower were 0 to 1.2 and 0 to 2.1 inches, respectively, which may also exceed tolerable limits. These results indicate the need for expansive soils mitigation discussed above.

Overexcavation and replacement with non-expansive fill is believed to be a feasible option for addressing potential expansive soil heave and related distress on proposed spillway structures. The required depth of overexcavation/replacement depends on the sustained bearing pressure of the structure, expansive properties of the subgrade, and tolerable total and differential heave specific to each structure. No specific design criteria regarding tolerable heave was available at the time of this report. Consequently, analyses were repeated considering varying depths of overexcavation/replacement to achieve maximum total heave of a) 1 inch or less; b) 1.5 inch or less; and c) 2 inch or less for all individual laboratory test results.

The results of this analysis are summarized in Table **8-2**, which also includes recommendations for non-expansive fill material. It is noted that that the two worst-case swell test samples (one in Embankment Fill and one in Residuum) control the results of the heave analysis. Based on the results of the other 11 swell tests, a relatively minor overexcavation / replacement depth of 2 feet or less is adequate to limit vertical to 1 inch or less. This comparison is illustrated in the calculations and tables contained in **Appendix K**.

The magnitude of differential heave is more difficult to estimate, but is commonly assumed to be about one-half (1/2) the total heave over a distance of about 30 to 50 feet. Larger values of differential movement are possible at abutting structures, particularly where a lightly-loaded structure is expected to heave and a heavily-loaded structure is expected to settle.

Table 8-4. Required Overexcavation/Replacement Depths to Limit Total Heave

Proposed Structure	Assumed Active Zone Depth (feet)	Estimated Remove / Replace Depths (feet) required to Limit Total Heave to Specified Amount			Recommended Non-Expansive Replacement Material
		2 inch	1.5 inch	1 inch	
ASW RCC Chute – Embankment Crest/Slopes	15	3	5	8	Import embankment fill, lime-treated site soils, or RCC
ASW RCC Chute – Stilling Basin	15	6	8.5	10	Import embankment fill, lime-treated site soils, or RCC
ASW RCC Walls – Embankment Crest /Slopes	15	none(1)	1(1)	5	Import embankment fill, lime-treated site soils, or RCC
ASW RCC Walls – Stilling Basin	15	none(1)	none(1)	2	Import embankment fill, lime-treated site soils, or RCC
PSW Impact Basin	15	none(1)	1(1)	6	Import embankment fill, lime-treated site soils, or RCC
PSW Inlet Tower	8	none(1)	1(1)	2	Import embankment fill, lime-treated site soils, or flexbase

Notes:
(1) Minimum 2 feet is recommended for all structures regardless of estimated and tolerable heave.

8.2.2 Lateral Earth Pressures

The principal spillway inlet tower, impact basin, and training walls of the proposed RCC overtopping spillway structures will be subjected to lateral earth pressures. Due to the need to provide hydraulic barrier around the outside of the overtopping ASW , low-permeability soil materials will be required as wall backfill for sections of the ASW RCC training walls located upstream of the existing downstream embankment crest. Inclusion of an underdrain system in this area is not recommended due to the risk of developing a hydraulic connection between the reservoir and the wall drainage system, which could otherwise lead to excessive hydraulic gradient and seepage pressures via shortened seepage path through the dam. Accordingly, the recommended embankment fill material specifications should be consistent with those specified in **Section 10**. Because wall underdrains cannot be provided in these areas, design lateral earth pressures will need to account for hydrostatic pressures. Further, the back side of the training walls should be battered slightly to allow proper compaction of the fine-grained backfill materials to reduce the risk of a preferential seepage path alongside the wall.

For portions of the RCC spillway training walls located downstream of the existing downstream embankment crest (i.e., including the training walls on the embankment slopes and in stilling basin), an aggregate chimney drain is permissible to provide wall drainage, if required. Recommendations for the wall drainage is provided in **Section 9**.

For design, compacted embankment fill should consider a moist total unit weight of 127 pcf, and saturated total unit weight of 131 pcf. A drained friction angle of 25 degrees is recommended for embankment fill materials based on results of shear strength tests on undisturbed embankment samples, shear tests on remolded samples from on-site borrow sources, and published correlations with Atterberg limits and clay fraction. Calculations for lateral earth pressures are provided in **Appendix H**. The resulting earth pressure coefficients are summarized as follows:

- Active earth pressure coefficient, $K_A = 0.41$ (horizontal backfill)
- Active earth pressure coefficient, $K_A = 0.55$ (3H:1V sloping backfill)
- At-rest earth pressure coefficient, $K_0 = 0.58$ (horizontal backfill)
- At-rest earth pressure coefficient, $K_0 = 0.76$ (3H:1V sloping backfill)
- Passive earth pressure coefficient, $K_P = 2.46$ (horizontal backfill)

In cases where the design groundwater level is above the bottom of the wall, hydrostatic pressures should be included in lateral pressure calculations. Design groundwater levels are provided for each structure in **Table 9-2**.

8.2.3 Sliding Resistance

For resistance against lateral loads, the recommended ultimate coefficient of sliding friction between the base of the concrete foundation and subgrade is 0.35. This is based on a design internal friction angle of 25 degrees for subgrade soils, and the assumption that the interface friction between the soil and concrete/RCC is 75% of the internal shear strength of the soil, i.e., $0.75\tan(\phi')$.

The coefficient of sliding friction can be increased to that of the soil's internal strength if shear keys are provided to preclude a slip plane from forming between the soil and foundation. In this case, the ultimate coefficient of sliding friction is recommended as 0.47.

A minimum factor of safety of 1.5 should be applied to the calculated ultimate sliding resistance based on buoyant unit weights.

8.2.4 Bearing Capacity

Allowable bearing capacity was calculated for each proposed structures according to the equations for general bearing capacity theory considering both undrained (short-term) and drained (long-term) strength parameters of the various subgrade materials presented previously in **Section 7.3.4**. Material parameters for lime-treated clay and flexbase planned within the various overexcavation and replacement zones are summarized below. Strength parameters of flexbase are based on prior experience. Strength parameters of lime-treated clay are conservative estimates based on literature values and typical laboratory results from other project in Central Texas furnished by NRCS. The undrained strength lime-treated clay is based on a specified unconfined compressive strength (UCS) of 50 psi (7,200 psf) and assumption of cu=UCS/2, and the drained strength cohesion is based on 10% of the UCS with no appreciable change to the friction angle of the natural material.

- Lime-treated clay:
  - Undrained Strength: γt = 120 pcf, cu=3,600 psf, ϕu=0 degrees.
  - Drained Strength: γt = 120 pcf, c'=360 psf, ϕ'=25 degrees.
- Flexbase (drained strength only): γt = 135 pcf, c'=0 psf, ϕ'=35 degrees.

Allowable bearing capacity was based on a factor of safety of 3.0 against general shear.

In general, the calculated allowable bearing pressures meet or exceed the design maximum bearing pressures. One exception is the RCC stilling basin wall foundations, in which case the existing Residuum and/or untreated clay embankment fill does not provide adequate bearing capacity based on proposed maximum design pressures. Adequate bearing capacity can be achieved for the RCC stilling basin if the planned 8-foot thick overexcavation/replacement zone under the proposed RCC stilling basin training walls consists of lime-treated clay or well-graded structural fill, which will allow stresses to dissipate to acceptable levels at the top of the Residuum.

The results are summarized in Table **8-3**. Calculations are provided in **Appendix I**.

8.2.5 Settlement

Foundation settlement for each of the proposed structures was estimated according to Terzaghi's theory of one-dimensional consolidation. Settlement calculations were based on the net stress increase above the existing in situ effective stress associated with design maximum gross bearing pressure at the proposed footing depth. Stress distribution with depth into the subsurface layers was calculated according to Boussinesq's equations based on the design footing dimensions and net stress increase at the base of the foundations.

In general, estimated settlement is less than 1 inch for most of the proposed structures, which is generally within tolerable limits. However, for the proposed training walls on the downstream embankment slope, which will be founded with little embedment below existing ground surface, settlement was estimated to be about 2 inches, which will require mitigation measures (i.e., subgrade removal and replacement on the order of 2 to 4 feet) to limit settlement to tolerable levels.

The results are summarized in **Table 8-3**. Calculations are provided in **Appendix J**.

8.2.6 Hydrostatic Uplift

The foundations for several structures will bear below the estimated groundwater table. Consequently, these foundations will be subject to hydrostatic uplift forces. In the event that factor of safety against uplift for the foundation (i.e., the ratio of sustained downward forces to hydrostatic uplift force) is less than 1.5, uplift mitigation will be required. Uplift mitigation may include extending the slab laterally to provide additional downward forces from soil overburden, thickening the slab to increase downward forces, and/or using grouted soil or rock anchors to restrain the slab from uplift (similar to approach for expansive soils). In particular, this may be an issue for the RCC chute in the stilling basin structure.

Recommended groundwater levels to be used in hydrostatic uplift calculations are provided in Table **8-3**. These values indicate hydrostatic differential of about 2.1 feet at the proposed ASW stilling basin, and about 5.5 feet at the proposed PSW impact basin. The recommended groundwater elevation for the proposed ASW crest walls and PSW inlet tower were assumed to be equal to the reservoir level associated with the proposed ASW crest.

8.2.7 Foundation Design Recommendations Summary

A summary of the geotechnical design parameters and calculation results discussed in this section is provided in the table below.

Table 8-5. Summary of Foundation Design Analysis Results

Location	Structure	Foundation Bearing Elev. (ft NAVD88)	Minimum. Overexcavation / Replacement		Foundation Bearing Depth Below Existing (ft)	Design Groundwater Elev. for Buoyancy (ft NAVD88) (1)	Design Bearing Pressure (psf) (2)	Allowable Bearing Capacity (psf) (3)	Calc'd. Max. Total Settlement (inch) (4)	Calc'd. Expansive Soil Heave (inch) (4)(5)
			Depth Below Slab (ft)	Replacement Material						
RCC Auxiliary Spillway (new)	RCC Training Walls (Crest)	El. 515.8	5	Import (U/S), Lime Treat (D/S)	0.0 – 9.2	El. 518.8 (U/S) El. 490 (D/S)	2,812	2,850(6)(7)	1.1 – 1.8(7)	0.0 – 1.4(7)
	RCC Training Walls (D/S Slope)	Varies	5	Lime-Treat	2 above to 12 below	El. 490	1,429	2,850(7)	0.4 – 1.7(7)	0.0 – 0.7(7)
	RCC Training Walls (Stilling Basin)	El. 485.8	8	Lime Treat	12.0	El. 488	3,658	4,000(8)	1.6(8)	0.0 – 0.9(8)
	RCC Chute Slab (On Embankment)	Varies	8	Lime Treat	2 above to 12 below	El. 490	450	OK	Negligible	0.0 – 1.5
	RCC Chute Slab (Stilling Basin)	El. 485.8	8	Lime Treat	10 – 12	El. 488	450	OK	Negligible	0.0 – 1.6
Principal Spillway (new)	PSW Impact Basin	El. 482.5	2	Flexbase	3.0	El. 488	2,310	3,000	0.5	0.0 – 1.4
	PSW Inlet Tower	El. 487.0	2	Flexbase	11.5	El. 518.8	1,530	2,500	0.6	0.0 – 1.4
	Conduit Pipe	El. 486-489	Varies	Import	Varies	Varies (518.8-488)	n/a	n/a	1.0	Negligible

Notes:

(1) Design groundwater for bearing capacity and settlement differs in some cases.
(2) Per structural calcs provided by AECOM design team, reported as the maximum of either usual or unusual loading case.
(3) Based on FOS=3 for against general shear failure for static loading. Reported value is lower of drained vs. undrained strengths considering the weakest soil layer underlying the structure. In some cases, the reported bearing capacity has been reduced to meet settlement and/or slope stability criteria.
(4) Settlement and heave analyzed for design bearing pressure instead of allowable bearing pressure (where provided). Includes settlement within new overexcavation / replacement fill and underlying subgrade materials.
(5) Based on analysis of each individual swell test result applied to various structures' loading and geometry.
(6) Slope stability was analyzed with 2,800 psf per structural calcs and factors of safety are adequate, but needs to be re-checked if design bearing pressures will increase above 2,900 psf.
(7) Results reflect minimum 5-foot thick overexcavation under the slab and replacement with lime-treated clay.
(8) Results reflect minimum 8-foot thick overexcavation under the slab and replacement with lime-treated clay.

8.3 Foundation Subgrade Preparation

8.3.1 RCC Auxiliary Spillway Structures

Recommendations for subgrade preparation for the RCC spillway chute slab and walls on the include over-excavating below the proposed bottom-of-slab elevation and replacing with non-expansive fill. Natural imported fill is recommended in the upstream section to serve as a hydraulic barrier, and lime-treated fill is recommended elsewhere to provide improve bearing capacity. The required minimum depths of overexcavation below the bottom of the RCC slab is shown in **Table 8-2**. Excavated materials may be stockpiled and tested to confirm they will be suitable for re-use as compacted earthfill elsewhere on the site (see **Section 10.2**).

The subgrade should be excavated to the planned elevation, and be inspected by a qualified representative of the Engineer as specified in **Section 11.5.1**. The representative of the Engineer may require additional overexcavation to remove unsuitable materials. Prior to receiving fill material, the subgrade should be scarified, moisture conditioned, and recompacted as specified in **Section 11.5.2**. Fill placement and compaction should be in accordance with recommendations in **Section 10.4**. The finished subgrade surface for foundation construction should be maintained throughout construction prior to concrete placement, and should be periodically moistened during dry periods and protected from erosion and ponding during wet periods to maintain the target compaction moisture content. A final inspection of the subgrade by a qualified representative of the Engineer is recommended immediately prior to RCC placement.

For the RCC crest structure and stilling basin (i.e., flat areas), an alternative to continued moisture maintenance of the finished embankment surface would be construction of a lean concrete seal slab (mud mat), which would serve to maintain soil moisture and reduce rutting. The seal slab would also provide a uniform working surface for the crest foundation construction. If used, the seal slab should be placed shortly after completing the embankment surface (i.e., within 1 to 2 days or less). This approach would likely require inclusion of a construction joint at the interface between the RCC crest weir and RCC chute to accommodate differing foundation support. Additionally, the foundation slab should be provided with a cutoff extending through the mud mat to interrupt the relatively smooth material interface.

In locations where earth fill (embankment fill) will be placed directly onto the prepared sloping subgrade, horizontal benched excavations each less than 1 feet in height and at least 2 feet in width cut into the downstream slope face to preclude development of preferential slip planes at the materials interface. The subgrade surface of the benches should be inspected by a qualified professional as specified in **Section 11.5.1**. Prior to receiving fill material, the prepared subgrade should be scarified, moisture conditioned, and recompacted as specified in **Section 11.5.2**. Benched excavations are not required for subgrade areas to receive drainfill.

The excavated subgrade on the left half of the stilling basin is expected to be Residuum, while Clayshale is likely to be exposed on the right half of the basin. Based on the field and laboratory strength tests, the upper portion of the Clayshale within this depth interval is likely soft enough to be prepared as a soil-like subgrade. Differential foundation support is not expected to be problematic due to the relatively stiff consistency of the Residuum, as well as the 8-foot thick overexcavation and replacement zone at this location which should attenuate differential settlements.

Groundwater seepage may be encountered in the excavations for the lower portion of the RCC chute structure and stilling basin. Dewatering should be employed by the Contractor to maintain dry excavation as recommended in **Section 11.3**.

8.3.2 PSW Inlet Tower

The existing location for the proposed PSW inlet tower is currently submerged by the reservoir pool, and borings could not be drilled in close proximity to this planned structure. Consequently, inspection of the subgrade by a qualified geotechnical engineer or engineering geologist will be critical to assure a suitable foundation bearing stratum.

Recommendations for subgrade preparation for the PSW inlet tower include over-excavating below the proposed bottom-of-slab elevation and replacing with compacted flexbase fill materials. The minimum required depth of overexcavation below the bottom of the reinforced concrete slab is shown in **Table 8-2**. The overexcavation may need to be deepened at the direction of the field engineer/geologist to remove soft/compressible materials that could not be identified during the field GI. Excavated materials may be stockpiled and tested to confirm they will be suitable for re-use as compacted earthfill elsewhere on the site (see **Section 10.2**).

The subgrade should be excavated to the planned elevation, and be inspected by a qualified representative of the Engineer as specified in **Section 11.5.1**. The representative may require additional overexcavation to remove unsuitable materials. Prior to receiving fill material, the subgrade should be scarified, moisture conditioned, and recompacted as specified in **Section 11.5.2**. Fill placement and compaction should be in accordance with recommendations in **Section 10.4**. The finished subgrade surface for foundation construction should be maintained throughout construction prior to concrete placement, and should be periodically moistened during dry periods and protected from erosion and ponding during wet periods to maintain the target compaction moisture content. A final inspection of the subgrade by a qualified representative of the Engineer is recommended immediately prior to rebar and concrete placement.

Groundwater seepage may be encountered in the excavation. Dewatering should be employed by the Contractor to maintain dry excavation as recommended in **Section 12.3**.

8.3.3 Conduit Pipe

New sections of PSW conduit pipe should be placed onto an unreinforced concrete pipe cradle, cast up to the spring line of the pipe. The pipe cradle addresses the difficulty of compacting fill under the haunches of the pipe, which could otherwise lead to loosened soil zones or voids creating preferential seepage paths and presenting risk for internal piping erosion. Design of the PSW conduit joints/connections should account for potential consolidation settlements discussed in **Section 8.1** and **Section 8.2**.

The subgrade should be excavated to the planned elevation, and be inspected by a qualified professional as specified in **Section 11.5.1**. The representative of the Engineer may require additional overexcavation to remove unsuitable materials. Where final grading indicates less the 10 feet of cover soil (i.e. near both ends of the pipe), overexcavation / replacement with non-expansive fill to a depth of at least 2 feet below the bottom of the pipe cradle should be performed. Excavated materials may be stockpiled and tested to confirm they will be suitable for re-use as compacted earthfill elsewhere on the site (see **Section 10.2**).

Prior to receiving fill material, the subgrade should be scarified, moisture conditioned, and recompacted as specified in **Section 9.3**. Placement and compaction of any required fill should be in accordance with recommendations in **Section 10.4**. The finished subgrade surface for foundation construction should be maintained throughout construction prior to concrete placement, and should be periodically moistened during dry periods and protected from erosion and ponding during wet periods to maintain the target compaction moisture content. A final inspection of the subgrade by a qualified representative of the Engineer is recommended immediately prior to rebar and concrete placement.

Groundwater seepage may be encountered in the excavation. Dewatering should be employed by the Contractor to maintain dry excavation as recommended in **Section 11.3**.A filter diaphragm is required around the conduit pipe (see **Section 9.3**).

8.3.4 PSW Impact Basin

Recommendations for subgrade preparation for the PSW impact basin includes over-excavating below the proposed bottom-of-slab elevation and replacing with flexbase fill materials. The minimum required depth of overexcavation below the bottom of the reinforced concrete slab is shown in **Table 8-2**. Excavated materials may be stockpiled and tested to confirm they will be suitable for re-use as compacted earthfill elsewhere on the site (see **Section 10.2**).

The subgrade should be excavated to the planned elevation, and be inspected by a qualified representative of the Engineer as specified in **Section 11.5.1**. The representative may require additional overexcavation to remove unsuitable materials. Prior to receiving fill material, the subgrade should be scarified, moisture conditioned, and recompacted as specified in **Section 11.5.2**. Fill placement and compaction should be in accordance with recommendations in **Section 10.4**. The finished subgrade surface for foundation construction should be maintained throughout construction prior to concrete placement, and should be periodically moistened during dry periods and protected from erosion and ponding during wet periods to maintain the target compaction moisture content. A final inspection of the subgrade by a qualified representative of the Engineer is recommended immediately prior to rebar and concrete placement.

Groundwater seepage may be encountered in the excavation. Dewatering should be employed by the Contractor to maintain dry excavation as recommended in **Section 11.3**.

9. Internal Drainage Design

Internal drainage is intended to intercept potential seepage along preferential pathways (e.g., lift boundaries or more pervious layers) within the embankment. In the event that the flood pool raise generates a seepage front within the embankment, internal drainage would serve to increase slope stability in earthen embankment sections by lowering the phreatic surface. Additionally, internal drainage will reduce hydrostatic lateral pressures and uplift forces acting on proposed structures. Internal drainage elements included in the design are discussed below.

9.1 Filter Compatibility

Filter compatibility analyses were conducted to estimate the necessary gradations for filter materials associated with the proposed construction. Filter compatibility between drainage layers and surrounding materials is essential to reduce the risk of particle migration (piping), maintain particle segregation, and to not restrict seepage flows.

Filter compatibility for the existing embankment and foundation materials was checked according to *NEH Part 633, Chapter 26 Gradation Design of Sand and Gravel Filters* (NRCS 2017). Base soil materials were considered as non-dispersive based on the vast majority of laboratory crumb and double-hydrometer testing. The detailed filter compatibility analysis and results are provided in **Appendix L**.

Results of the filter compatibility analysis indicate ASTM C-33 Fine Aggregate (a standardized commercial gradation commonly available) is suitable as fine filter material when placed in contact with Alluvium, Valley Fill, Leona Formation, and Borrow materials. However, ASTM C-33 Fine Aggregate is slightly coarser than the design filter band for the Embankment Fill and Residuum materials. This is primarily attributed to the relatively small d_{85} particle sizes of these materials. For constructability reasons, a single fine filter gradation that meets filter compatibility criteria for each of base soil materials is recommended. The recommended fine filter gradation for design is a modified version of the ASTM C-33 Fine Aggregate with an adjusted coarse band, and is shown in **Table 9-1**.

Filter compatibility analyses indicate that standard ASTM C-33 No. 89 aggregate will serve as a suitable coarse filter material, and is recommended for design. Based on NRCS criteria, the maximum slot/perforation size for drainpipes should be the less of d85/2 or d50 of the surrounding aggregate. Considering the fine side band of ASTM C-33 No. 89 aggregate, the recommended maximum perforation/slot size for drain pipes included within the Coarse Filter material is 3.9 mm (0.15 inches). Perforated/slotted drain pipe should not be placed in contact with other materials.

Table 9-1. Recommended Fine Filter Gradation

Sieve Size	Particle Size (mm)	Recommended Gradation of Fine Filter for Design – Percent Finer	
		Coarse Band	Fine Band
3/8”	9.5	100	---
#4	4.75	95	---
#8	2.36	80	100
#16	1.18	50	85
#30	0.6	35	60
#50	0.3	20	30
#100	0.15	0	10
#200	0.074	0	3

9.2 Embankment Toe Drain

The existing embankment does not have a toe drain. The proposed embankment raise section of the dam will include installation of a toe drain under the proposed the downstream toe to provide seepage control. According to the design drawings, approximately 322 LF of toe drain is planned to be installed left of the proposed PSW alignment (i.e., STA 14+00 to 17+22), and approximately 738 LF of toe drain right of the proposed overtopping ASW alignment (i.e., STA 22+62 to 30+00). No toe drain will be included under the new ASW, which will be furnished with its own underdrain system (see **Section 9.4**).

A third section of toe drain is planned for the approximately 200 LF section of embankment between the proposed PSW and ASW (i.e., STA 17+35 to 19+28), through which the alignment of existing PSW conduit to be abandoned crosses. Coordination will be needed between abandonment of the existing PSW conduit and layout of the new toe drain.

The minimum thickness of the toe drain should be 3 feet in any direction. The embankment toe drain should consist of a two-stage filter and drain pipe. The drain pipe should be minimum 6-inch diameter, slotted Schedule 80 PVC piping surrounded by a layer of coarse aggregate on all sides. Fine aggregate should be placed between the coarse aggregate and surrounding subgrade/fill materials. Drain pipe slots should be placed at the 3, 6, 9, and 12 o'clock positions. The bottom of PVC piping should extend at least 6 inches above the bottom of the strip drain aggregate. Piping should discharge at locations where flow volumes can be easily monitored (e.g., headwall or sidewalls of the PSW outlet structure, riprap slopes at ASW stilling basin). Gradations for the fine and coarse aggregate are provided in **Section 9.1**.

Based on current and historic borings at the site, an approximately 3- to 8-foot thick layer of the Leona Formation is likely to be present right of the original stream channel at the downstream toe of the dam between varying elevations of El. 490 to El. 510. Although seepage modeling did not indicate significant flow volumes through this layer, there exists a potential for seepage through this relatively coarse-grained unit. Based on the proposed design grades for the toe drain, it is expected to be feasible to adjust the elevation of the toe drain to intercept the Leona Formation to provide seepage collection and conveyance. This is particularly important where excavation for the toe drain completely cuts through the relatively thin Leona Formation and interrupts potential seepage flow paths. The upper and lower limits of the Fine filter aggregate should be adjusted to intercept the full height of the gravelly Leona Formation soils to provide a filtered exit for seepage and seepage collection and conveyance to provide hydrostatic pressure relief. .

9.3 PSW Filter Diaphragm

A filter diaphragm is required around the existing PSW to be abandoned in-place, and the new PSW conduit to control seepage flow and prevent a piping condition from developing. The following is recommended for filter diaphragm design:

1. Design of filter diaphragms should be in accordance with the latest version of the *NEH Part 628, Chapter 45, Filter Diaphragms* (NRCS, 2007).
2. Filter diaphragm materials should consist of fine aggregate (see **Section 10.6**).
3. Filter diaphragm should be located downstream of the embankment crest centerline, and maintain a minimum cover of 2 feet of embankment material in all directions.
4. Top of filter diaphragm should extend to the normal pool elevation, or to a height of 3 times the diameter of the principal spillway conduit above the top of the principal spillway conduit, whichever is higher. Minimum 2-foot cover of embankment material should be maintained in all directions.

5. Foundation soils are expected to exhibit low compressibility due to presence of generally stiff to hard clays. Accordingly, the bottom of the filter diaphragm should extend at least 2 feet below the bottom of the principal spillway conduit's installation trench.
6. The filter diaphragm should extend laterally from the outer edges of the principal spillway conduit by at least 3 times the diameter of the principal spillway conduit.
7. The thickness of the filter diaphragm should be a minimum of 3 feet in all directions.

Strip drains should be provided to drain off seepage that collects in the filter diaphragm. Strip drains should extend from the filter diaphragm and discharge into the proposed PSW stilling basin. The following is recommended for strip drain design:

1. Strip drain materials should consist of fine aggregate (see **Section 9.1**).
2. Strip drains should be a minimum of 2-foot width in all directions.
3. Strip drains should be graded to drain by gravity towards stilling basin structure (minimum 1% grade).
4. Minimum 6-inch diameter, slotted Schedule 80 PVC piping should be provided in each strip drain surrounded by a layer of coarse aggregate on all sides. Slots should be placed at the 3, 6, 9, and 12 o'clock positions. The bottom of PVC piping should extend at least 6 inches above the bottom of the strip drain aggregate. Piping should outlet through the headwall or sidewalls of the principal spillway outlet structure at locations where flow volumes can be easily monitored.
5. Ductile iron pipe should be used at the end section of the strip drains to protect against damage in the riprap lined stilling basin. The ductile iron pipe should protrude slightly from face of the riprap slopes such that flows can be measured and monitored.

Note that the existing PSW conduit to be abandoned has a series of concrete anti-seep collars, but does not have a filter diaphragm/collar. Because both ends of the conduit will be removed (2 sections on upstream side, and 3 sections on the downstream side) and backfilled with a minimum 5-foot thick cover of relatively low-permeability embankment fill, a filter diaphragm is not needed for existing PSW conduit.

9.4 Underdrain for RCC Spillway

A continuous underdrain providing both filtering and drainage functions will be included under the RCC spillway. The underdrain will consist of a continuous aggregate blanket with transverse perforated collection pipes at regular vertical intervals (no greater than 10 feet). The collection pipes will connect to near-horizontal weep-holes consisting of solid PVC pipe laterals discharging through the RCC surface will be constructed at regular horizontal spacing to drain seepage that could accumulate within the underdrain. The underdrain will be constructed over the full height of the exposed slope face, and should terminate at the invert of the stilling basin to allow free drainage and prevent accumulation of water below the stilling basin to minimize effect of expansive soils.

The RCC chute underdrain should consist of a fine aggregate layer placed onto the prepared subgrade, and a coarse aggregate layer between the fine aggregate and RCC. The inclusion of a layer of coarse filter directly under the RCC slab is recommended to provide filter protection against subgrade piping and/or scour through cracks which may develop through the unreinforced RCC slab. A cover of coarse aggregate should be provided around all PVC piping. The underdrain will be designed to satisfy filter compatibility requirements and sized for estimated seepage flows. Gradation design for fine and coarse aggregates is provided in **Section 9.1**.

The underdrain should not be located upstream of the proposed embankment crest centerline in order to preclude development of a shortened seepage path from the reservoir into the underdrain. Thus, the underdrain should begin near the downstream end of the proposed RCC crest structure, and continue downstream under the RCC chute structure. To provide uniform bearing surface, the full underdrain thickness should be provided below the entire plan footprint of both the RCC slab and RCC walls. The outside edges of the underdrain fill should slope downward from the back of the wall footings at a 1H:1V slope or flatter away from the footing as needed for constructability in order to allow for suitable stress distribution of footing pressures.

The selected termination point of the underdrain at the downstream end of the chute structure should be carefully considered. If the underdrain extends under the below-grade RCC stilling basin slab, it may allow seepage/infiltration to accumulate (i.e., “bath tub” effect) and access the expansive clay soils below the RCC stilling basin which may cause soil swelling and related heave. As discussed previously, the recommended 8-foot thickness of overexcavation / replacement below the stilling basin slab (which includes the approximately 3-foot thick aggregate underdrain), will provide a proposed 5-foot thick layer of non-expansive clayey soil between the underdrain and the potentially-expansive subgrade soils. This 5-foot thick non-expansive clayey layer will provide a low-permeability barrier which will reduce the rate of seepage from the underdrain into the underlying expansive soils, thereby reducing the risk of moisture-induced swelling. On this basis, installing the underdrain below the RCC stilling basin slab may be an appropriate means for reducing hydrostatic uplift on the stilling basin slab due to spillway flows and/or fluctuating shallow groundwater.

However, if higher-permeability soils are used in the overexcavation / replacement fill, or if the thickness of the overexcavation / replacement is reduced to less than 8 feet, the risk of seepage/infiltration to the underlying expansive soils is significantly increased. In such case, consideration should be given to terminating the underdrain at the invert of the stilling basin to allow free drainage and prevent accumulation of water below the stilling basin to minimize effect of expansive soils. If this option is selected, the lack of an underdrain system will increase hydrostatic uplift on the stilling basin slab. Hydrostatic uplift will need to be counteracted by either adding additional thickness (i.e., weight) to the RCC slab, or by providing soil/rock anchors in the stilling basin slab.

Based on consultation with the design team, no underdrain system will be provided under the stilling basin for this project. This is intended to limit the amount of seepage/infiltration that can access the expansive clay units below the stilling basin foundation, thereby limiting potential swelling and related heave. The structural design team has found that sufficient resistance to hydrostratic uplift is provided by the self-weight of the RCC slab. Note that the absence of an underdrain under the stilling basin will remove filter protection provided by the fine and coarse filter materials in the event that a fully-penetrating crack develops through the unreinforced RCC slab. Therefore, it is recommended that a filter-compatible non-woven geotextile be placed under the entire RCC stilling basin slab and lower portions of the RCC chute structure without an underdrain to reduce the risk of piping erosion of underlying subgrade through potential cracks in the RCC.

9.5 Chimney Drain for RCC Training Walls

Similar to the underdrain for the RCC spillway, it is recommended that no wall drainage system be provided for the sections of the ASW RCC training walls which are located upstream of the existing downstream embankment crest. This is intended to limit the potential for a hydraulic connection between the reservoir and the RCC chute underdrain system, which could otherwise lead to excessive hydraulic gradient and seepage pressures via shortened seepage path through the dam.

However, for portions of the RCC spillway training walls located downstream of the existing downstream embankment crest (including the embankment slopes and stilling basin walls), an aggregate chimney drain may be provided behind the exterior training walls to provide wall drainage. The chimney drain will serve to drain off accumulated infiltration behind the walls, reduce lateral hydrostatic pressures, and will be easier to properly compact with lightweight equipment behind the wall. The chimney drain should be at least 2 feet thick and consist of a coarse aggregate drain against the back of the wall, surrounded by a fine aggregate filter compatible with embankment fill. A minimum 2-foot thick cap of compacted embankment fill should be placed above the chimney drain to minimize surface water infiltration. Gradation design of the fine and coarse filter material is provided in **Section 9.1**. A slotted or perforated underdrain pipe within the coarse aggregate layer may be used to discharge seepage to the stilling basin.

9.6 Seepage Design Considerations for RCC Spillway Walls

The upstream portions of the RCC spillway crest structure will be in direct contact with the reservoir pool during spillway flow events. Because the RCC training walls extend through the full cross-section of the embankment, the walls should be designed to minimize the risk of developing preferential seepage path(s) at the interface with adjacent embankment fill. Preferential seepages paths can develop in zones of poorly-compacted backfill adjacent to the walls. Shrinkage of backfill away from the wall following compaction can also result in the development of preferential seepage paths.

One method to reduce the risk of seepage at the wall/backfill interface is to batter the back side of the RCC walls for the crest structure. This allows each lift of embankment fill to be compacted directly above and across the RCC-soil interface of the prior lift, assuring good compaction against the back of the wall. This also reduces the risk of shrinkage of the backfill away from the wall, which is more likely to develop for non-battered walls. However, battered RCC walls generally require formwork, and can be more difficult to construct. From a seepage control standpoint, battered walls would not be necessary for downstream sections of the RCC spillway (i.e., chute structure and stilling basin).

If vertical (non-battered) RCC walls are preferred for the spillway, a filter diaphragm is recommended due to the higher degree of difficulty in compacting backfill against a vertical interface, and the greater likelihood of backfill shrinkage away from the wall. The filter diaphragm is intended to intercept and filter potential preferential seepage paths that may develop along the RCC-backfill interface. Similar to the design of filter diaphragms for PSW conduits, the filter diaphragm for the RCC spillway walls should be oriented parallel to the embankment crest with a minimum thickness of 3 feet, and located downstream of the proposed embankment crest centerline. The filter diaphragm should be installed in an excavated trench extending below and laterally beyond the limits of mass-grading excavations and backfill according to the guidance in *NEH Part 628, Chapter 45, Filter Diaphragms* (NRCS, 2007). A minimum 2-foot thick “cap” of low permeability embankment fill should be placed above the top of the filter diaphragm to limit surface water infiltration and erosion.

10. Borrow Sources and Fill Zoning

10.1 Embankment Fill Zoning

In general, lower-plasticity materials should be used for embankment fill placed under and adjacent to proposed structures (i.e., RCC spillway and PSW structures) to reduce the risk of soil swelling and related adverse affects on structures. Note that natural high-plasticity clay soils placed as compacted embankment fill often experience shrink/swell behavior and long-term softening in response to cycles of wetting and drying, which can lead to desiccation cracking and/or wet-weather slides years after construction. Accordingly, the material zoning should also place lower-plasticity materials in the exterior zones of embankment fill. Higher-plasticity materials should be reserved for interior zones of the dam embankment fill and other less-critical fill zones (e.g., backfills and earthfill berms downstream of the dam).

Lime-treated earthfill from on-site sources is also proposed in some areas adjacent/under structures to provide high-strength, non-expansive, and relatively low permeability fill material to optimize usage of available high-plasticity clay borrow.

Recommended fill zoning is provided in **Table 10-1**. Geotechnical engineering analyses contained herein assume the material requirements for proposed embankment fill will meet those provided in **Table 10-1**.

10.2 Embankment Fill Material Specifications

Based on the results of field borrow investigation, suitable on-site materials for embankment fill will consist of USCS designations CL or CH with at least 50% fines (i.e., material passing the No. 200 sieve by weight) and less than 20% gravel (i.e., material retained on the No. 4 sieve by weight). Imported fill materials with USCS designations of CL or SC and at least 40% fines and less than 20% gravel are recommended near some structures to provide a non-expansive, low-permeabilty hydraulic barrier. Lime-treated fill materials from on-site sources are also included in the proposed embankment fill zoning.

The fill should be free of debris, vegetation, or other deleterious materials, and oversize particles (defined later) . All fill materials should be non-dispersive. Non-dispersive soils are considered to be those which have a percent dispersion less than 40% in the double-hydrometer test (ASTM D4221), and ND1 or ND2 per pinhole test (ASTM D4647). Crumb testing (ASTM D6572) should be performed to screen for potentially dispersive soils.

Fill materials placed under or adjacent to structures should also be non-expansive. Non-expansive soils are considered to be those which experience less than 1% swell at a confining pressure of 250 psf according to ASTM D4546, Method B (One-Dimensional Swell/Collapse) when remolded to at least 95% maximum dry density (MDD) at optimum moisture content (OMC) according to ASTM D698.

A higher degree of compaction is also required under structure foundations to provide adequate bearing capacity. Placement moisture contents should be above optimum to limit the potential for wetting-induced swell near structures, and to provide low-permeability characteristics of the fill.

Recommended material properties for the various fill zones are provided in **Table 10-1**. Discussion of recommended borrow sources to supply the required volumes of the various earthfill materials are provided in the following sections.

10.3 Borrow Source Recommendations

Two dedicated on-site borrow areas, denoted as Borrow Area #1 and #2, were investigated at the left and right banks of the normal operating pool, respectively. Areas of required excavation for construction of proposed improvements were also evaluated as potential borrow sources. Discussion is provided below.

10.3.1 Borrow Area #1

Borrow Area #1 is located relatively close to the proposed dam improvements, within about 300 to 650 ft upstream of the left side of the embankment. Two generalized strata were encountered: an upper sandy lean clay (CL) from about 0 to 4 feet bgs, and a lower sandy lean clay (CL) from about 4 to 10 feet bgs. The upper layer had measured LL=43-45 and PI=25-28, and lower layer had LL=35-42 and PI=21-27. Soluble sulfate content ranged from 88 to 2,542 ppm with similar variability in both layers. Based on the relatively low plasticity of the Borrow Area #1 materials, they been designated for use in exterior zones of the proposed embankment fill.

The plasticity of the Borrow Area #1 materials is higher than recommended for placement under/adjacent to the RCC auxiliary spillway. Therefore, these materials should be placed outside the footprint of the RCC structures, and placement will be restricted to minimum horizontal clear distance of no less than the wall height or 5 feet (whichever is greater) from the retained side of RCC walls.

While the laboratory testing indicates lime treatment of the Borrow Area #1 materials is feasible to reduce plasticity and allow placement directly under/adjacent to the RCC spillway, this should not be performed in order to optimize usage of this available natural low-plasticity borrow source.

10.3.2 Borrow Area #2

Borrow Area #2 is located relatively farther from the dam improvements, within about 800 to 1,300 ft upstream of the right side of the embankment but with a longer haul distance. Two generalized strata were encountered: an upper layer of Alluvium classified as sandy fat clay (CH) from about 0 to 3 feet bgs, and a lower layer of Residuum classified as fat clay (CH) from about 3 to 8 feet bgs. The upper layer had measured LL=50-60 and PI=31-38, and lower layer had LL=57-69 and PI=37-46. Soluble sulfate content ranged from 146 to 3,396 ppm with similar variability in both layers.

Based on the moderate to high plasticity of the Borrow Area #2 materials, the upper layer is recommended for use in interior zones of the embankment fill to be protected from seasonal wetting/drying. The natural plasticity of the upper layer is higher than recommended for placement under/adjacent to the RCC auxiliary spillway. Therefore, unless amended by lime treatment, these materials should be placed outside the footprint of the RCC structures, and placement should be restricted to minimum horizontal clear distance of no less than the wall height or 5 feet (whichever is greater) from the retained side of RCC walls.

The plasticity of the lower layer from Borrow Area #2 is too high to allow placement in the embankment without lime treatment. The laboratory testing indicates lime treatment of the Borrow Area #2 materials (both upper and lower layers) is feasible to reduce plasticity and allow placement directly under/adjacent to the RCC spillway. In order to optimize available borrow usage, the lower layer of Borrow Area #2 should be lime-treated and placed adjacent to the RCC spillway walls in the downstream portions of the embankment. If required, the lower layer of Borrow Area #2 may be lime-treated and used in interior and/or exterior zones of the embankment to provide additional source of low-plasticity on-site borrow material. A minimum lime application

rate of 4% by dry weight of soil and 7-day mellowing period has been incorporated into the project specifications for the Borrow Area #2 lower layer materials.

10.3.3 Excavation for Principal Spillway Replacement

Materials within the required excavation limits for abandonment of the existing PSW and construction of the proposed new PSW were evaluated as potential sources of borrow. Excavations will primarily encounter existing Embankment Fill above about El. 495, below which various foundation materials will be encountered (with the exception of the embankment cutoff trench location which extends deeper).

Based on laboratory testing on samples from borings drilled on the dam embankment near the existing and proposed PSW alignments (B-04, B-05, HA-01, and HA-04), the existing Embankment Fill material within the proposed excavation limits generally has LL=42-52 and PI=24-28, with the exception of two sample outliers (i.e., LL=82 and PI=55 in the central zone of the embankment, and LL=70 and PI=44 in the outer zone of topsoil). Measured soluble sulfate content range from 600 to 700 ppm. Based on the relatively low plasticity of the existing Embankment Fill materials in this location, they should be prioritized for use in exterior zones of the proposed embankment fill. Surplus volumes of this material may be used in interior zones of the proposed embankment fill. While the laboratory testing indicates lime treatment of existing Embankment Fill located in the area of the PSW replacement is feasible to reduce plasticity, available data suggests this should not be necessary and should not be performed in order to optimize usage of this natural low- to moderate-plasticity borrow source.

Based on laboratory testing on samples from borings drilled at the downstream toe of the dam near the proposed PSW replacement (B-602 and B-603), the foundation materials are expected to include 5 to 7 feet of Valley Fill underlain by about 5 feet of Alluvium (B-602) or 5 feet of Leona formation gravels (B-603). An additional 5 to 7 feet of underlying Residuum is anticipated within the planned maximum excavation depth of 17 feet bgs (incorporating foundation overexcavation requirements discussed later for the inlet riser and impact basin). The following fill zoning has been recommended for these foundation materials:

- The upper 7 to 10 feet of foundation materials (Valley Fill and Alluvium) have moderate plasticity (LL=39-55 and PI=24-33) and have been designated for use in interior zones of the proposed embankment fill. It is noted that in general, the composition of fill materials and alluvium tend to be somewhat variable (particularly if construction of the Valley Fill was not well-controlled), and should need to be closely monitored by quality control and quality assurance personnel for visual changes and tested accordingly during construction.
- The gravelly Leona formation materials encountered in B-603 from 7 to 12 feet bgs should be excluded from the new fill due to a high proportion of gravel- and cobble-sized fragments and relatively high PIs, and should be placed in designated on-site waste areas.
- The underlying Residuum encountered at about 10 to 12 feet bgs has relatively high plasticity (LL=51-65 and PI=28-41), and results of two soluble sulfates content tests were 3,500 and 5,600 ppm. These materials should be designated for interior zones of the proposed embankment fill. While the laboratory testing indicates that lime treatment of the Residuum from the depth intervals considered at this location is feasible to reduce plasticity, lime treatment is not currently recommended due to the elevated sulfates and the relatively limited volume of materials from this location (roughly 2,000 CY).

10.3.4 Downstream RCC Outlet Channel Excavation

Materials within the required excavation limits for construction of the proposed RCC auxiliary spillway outlet channel was also evaluated as a potential borrow source. Planned excavation

depth for the outlet channel is a maximum of about 5 feet bgs. Boring B-606 was drilled in the proposed outlet channel, and encountered suspected fill materials generally classified as sandy lean clay (CL) in the upper 6 feet, and Residuum classified as fat clay (CH) from depths of 6 to 20 feet bgs. The upper layer fill considered for borrow had measured LL=43-44 and PI=26-27. Below a depth of 6 feet, the measured LL=59 and PI=36.

Based on the relatively low plasticity of the materials within the proposed RCC outlet channel excavation (upper 6 feet), they are recommended for use in exterior zones of the embankment fill. If excavations are required to extend deeper into the underlying high-plasticity residual clays, those materials should be placed in interior zones of the embankment or in other less critical fill areas.

10.3.5 Excavation for Overtopping RCC Auxiliary Spillway

Materials within the required excavation limits for construction of the proposed overtopping RCC auxiliary spillway were evaluated as a potential source of borrow. Excavations for the RCC Crest Structure and upper portion of the RCC Chute Structure will encounter existing embankment fill, while excavations for the lower portion of the RCC Chute Structure and Stilling Basin will encounter various foundation materials.

Based on borings drilled on the dam embankment near the proposed RCC auxiliary spillway (B-05 through B-07, HA-01, HA-02, and HA-04 through HA-06), the existing embankment fill material within the proposed excavation limits generally has LL=46-52 and PI=25-28, with the exception of two sample outliers as noted in Section 2.4.5.4 (i.e., LL=82 and PI=55 in the central zone of the embankment, and LL=70 and PI=44 in the outer zone of topsoil) (i.e., LL=82 and PI=55 in the central zone of the embankment, and LL=70 and PI=44 in the outer zone of topsoil). Measured soluble sulfate content ranges from 300 to 900 ppm. Based on proximity to the proposed RCC auxiliary spillway and favorable results of laboratory lime series and sulfates content testing, these materials are recommended for lime-treatment and placement under and/or adjacent to the RCC spillway structures. A minimum lime application rate of 4% by dry weight of soil and 7-day mellowing period is recommended for these materials.

Based on borings drilled at the downstream toe of the dam near the proposed RCC auxiliary spillway (B-603 and B-604), the foundation materials are expected to include 3 to 7 feet of Valley Fill underlain by 2 to 5 feet of Leona formation gravels/clays, and further underlain by Residuum to planned maximum excavation depth of 19 feet bgs (incorporating foundation overexcavation requirements discussed later). The following fill zoning has been designated for these foundation materials:

- The upper 3 to 7 feet of foundation materials (Valley Fill) have moderate plasticity (LL=53-55 and PI=33-35) and have been designated for use in interior zones of the proposed embankment fill. It is noted that in general, the composition of fill materials and alluvium tend to be somewhat variable (particularly if construction of the Valley Fill was not well-controlled), and should need to be closely monitored by quality control and quality assurance personnel for visual changes and tested accordingly during construction.
- The Leona formation gravels should be excluded from potential fill due to a large proportion of gravel- and cobble-sized fragments and relatively high PIs, and should be placed in designated on-site waste areas.
- The underlying Residuum encountered at about 5 to 10 feet bgs in this area had relatively high plasticity (LL=63-65 and PI=41-43), with a single elevated soluble sulfate measurement of 5,600 ppm (an additional elevated sulfate measurement of 4,900 ppm was obtained in the parent Clayshale at this location). While the laboratory testing indicates that lime treatment of the Residuum from the depth intervals considered at this location is feasible to reduce

plasticity, lime treatment is not currently planned due to the relatively high measured sulfate concentration and relatively limited number of tests which present an increased risk of sulfate-induced heave if placed under/adjacent to structures. Consequently, the Residuum encountered in excavations for the RCC chute and stilling basin structures has been reserved for placement in less critical areas of the required fill such as the training berms for the RCC outlet channel, and required backfill for abandonment of the existing PSW plunge pool and outlet channel located nearby.

Lime treatment of the Residuum from this location may be permitted to provide an additional source of low-plasticity fill in the exterior and/or interior zones of the embankment fill (away from structures due to elevated sulfates) if available quantities of low-plasticity natural material is insufficient. If Residuum from excavations for the RCC chute/stilling basin structures are used for this purpose, a minimum lime application rate of 4% by dry weight of soil and minimum 7-day mellowing period is required for lime-treated Residuum.

10.4 Embankment Placement Criteria

The fill should be placed in loose lifts not exceeding 9 inches thick, and moisture conditioned and compacted with reference to ASTM D698 (Standard Proctor) to meet the requirements of **Table 8-5**. The surface of each lift should be roughened prior to placement of subsequent lifts to promote inter-lift bonding and preclude development of preferential seepage paths or planes of weakness.

Fill materials placed within a horizontal distance of 3 feet from structures, or the first 3 feet placed on top of buried structures, should be compacted with lightweight equipment to avoid damage to structures.

10.5 Flexbase Specifications and Placement Criteria

Overexcavation and replacement with compacted flexbase materials is recommended below the foundations for the PSW Inlet Tower and Impact Basin. Flexbase should consist of a well-graded, crushed aggregate material meeting the requirements of TxDOT Item 247, Type A, Grade 1-2. The flexbase should be placed in maximum 9-inch loose lifts and compacted to a minimum of 100% of maximum dry density at a moisture content ±2% of optimum moisture according to Standard Proctor energy (ASTM D698). Flexbase should be sourced from a commercial aggregate supplier approved by TxDOT.

Where the final embankment cover on the new PSW conduit pipe is less than 10 feet, a minimum of 2 feet of overexcavation and replacement is required. Flexbase is permissible as replacement below the conduit pipe in these zones but should be isolated to the upstream toe and downstream toe of the dam (i.e. within about 20 feet). Flexbase should <u>not</u> be used as bedding under the conduit pipe because it would serve as a preferential seepage path. Alternatively, non-expansive embankment fill may also be used in the overexcavation/replacement zone under the PSW conduit pipe.

Flexbase should be isolated from adjacent filter materials using non-woven geotextile to preclude issues with filter incompatibility between these materials (e.g., potential clogging of filter layers). Additionally, a non-woven geotextile separation layer should be provided between the flexbase and clayey embankment/foundation soils at the PSW Impact Basin to preclude filter incompatibility issues (e.g., fines migration) associated with planned drain outlets and potential seepage path outlets into the creek channel at this location.

10.6 Filter Material Specifications and Placement Criteria

Fine and coarse filter materials should meet the gradations specified in **Section 8.4.1** and the requirements of ASTM C-33. Fine and coarse filter materials should be sourced from an approved commercial supplier.

Fine filter materials should be compacted to 65 to 70% relative density, or a minimum of 98% of maximum dry density from one-point Standard Proctor testing (ASTM D698) on an oven-dried sample. To ensure repeatability, the reference maximum density should be based on the average of three (3) one-point Proctor tests. In order to prevent bulking, fine filter materials will require near saturation (water applied immediately in front of a vibratory roller) during field compaction. The fine filter materials should not be contaminated by fines from the surrounding embankment fill or foundation materials.

Coarse filter materials should be compacted to 65 to 70% relative density. Given the difficulty in compaction testing clean coarse aggregate materials, suitable compaction may be achieved by specifying a minimum number of passes by the compaction equipment. At minimum, compaction should consist of no less than four (4) overlapping passes by a vibratory roller or more until no further densification is observed. A field test section is recommended to confirm whether additional passes should be required during compaction.

10.7 Lime Treatment

Lime treatment is recommended to reduce shrink-swell potential for fill material from on-site borrow sources and required excavations adjacent and under the proposed RCC spillway. Due to the relatively high bearing pressures of the stilling basin walls, lime-treated earthfill is required to provide adequate bearing capacity.

Based on preliminary laboratory lime series testing on bulk composite samples, a lime application rate of 1-4% may be adequate to reduce the PI to 15 or less. For planning purposes, AECOM recommends a minimum lime application rate of 4% by dry weight for quicklime or 5% by dry weight for hydrated lime for this project. Preconstruction and/or construction phase testing of lime-treated soils from designated borrow sources is suggested to confirm the minimum lime application rate produces the required compressive strength of the lime-treated soil.

Laboratory testing indicates elevated sulfate concentrations (i.e., 3,000 to 7,000 ppm) may be present in some of the native soil materials at the site. In accordance with recommendations in TXDOT 2014 Standard Specifications for Construction, an extended mellowing time of 7 days is recommended for lime-treated earthfill prior to placement, as opposed to the standard 3-day mellowing period as required by NRCS standard specifications for lime-treated earthfill. Soils with sulfate concentration greater than 7,000 ppm should not be used for lime-treated earthfill.

Routine confirmatory laboratory testing should be performed as part of the quality control testing program for both untreated soils proposed for lime treatment, and lime-treated soils. Laboratory quality control testing should confirm the following for lime-treated earthfill:

- Reduction in PI ≤ 15;
- Stable pH of ≥12.4;
- Unconfined compressive strength of 25 psi or greater (7 day);
- Unconfined compressive strength of 50 psi or greater (28 day); and

- Reduction in soluble sulfate concentration to less than 3,000 ppm after mellowing period and prior to placement.

Table 10-1. Recommended Zoning and Criteria for Earth Fill

Proposed Fill Materials			Fill Material Requirements														
Material Type	Description	Placement Location	Required USCS Group Symbol (See Note 5)	Required Atterberg Limits		Percent Finer than No. 200 Sieve (%)	Max. Particle Size (See Note 5)	Maximum Uncompacted Lift Thickness (See Note 7)	Specified Compaction Class	Crumb Test	Pinhole Dispersion	Field Moisture Density Test		Required Relative Compaction (%)	Compaction Moisture Limits (±Optimum)	
				LL	PI							ASTM No.	Method			
A	Imported Fill	Adjacent to RCC Spillway (See Note 1)	CL, SC	< 45	7 - 20	> 40	2"	9"	A	Grade 1 or 2	ND1 or ND2	D698	A	95 - 100	OPT	+4%
B	Imported Fill	Under RCC Spillway (See Note 2)	CL, SC	< 45	7 - 20	> 40	2"	9"	A	Grade 1 or 2	ND1 or ND2	D698	A	98 min.	OPT	+4%
C	On-Site Fill	Exterior Zone of Embankment (See Notes 3 and 4)	CL, CH, SC	< 55	10 - 30	> 40	3"	9"	A	Grade 1 or 2	ND1 or ND2	D698	A	95 - 100	OPT	+4%
D	On-Site Fill	Interior Zone of Embankment (See Notes 3)	CH, CL	< 60	10 - 40	> 50	2"	9"	A	Grade 1 or 2	ND1 or ND2	D698	A	95 - 100	OPT	+4%
E	On-Site Fill	Berms for RCC Outlet Channel, Backfill for Existing PSW Plunge Pool and Downstream Channel	CH, CL	< 65	10 - 50	> 40	3"	9"	A	Grade 1 or 2	ND1 or ND2	D698	A	95 - 100	OPT	+4%
F	Lime-Treated On-Site Fill	Adjacent to RCC Spillway (See Note 1)	(See Note 6)	< 55	7 - 15	> 50	2"	9"	A	Grade 1 or 2	ND1 or ND2	D698	A	95 - 100	OPT	+4%
G	Lime-Treated On-Site Fill	Under RCC Spillway (See Note 2)	(See Note 6)	< 55	7 - 15	> 50	2"	9"	A	Grade 1 or 2	ND1 or ND2	D698	A	98 min.	OPT	+4%
H (optional)	Lime-Treated On-Site Fill	Exterior Zone of Embankment (See Notes 3, 4, and 8)	(See Note 6)	< 55	7 - 15	> 50	2"	9"	A	Grade 1 or 2	ND1 or ND2	D698	A	95 - 100	OPT	+4%

Notes:

1. Applies to fill zones located within a horizontal distance equal to the wall height (1H) from the retained-side face of proposed spillway walls.
2. Applies to fill zones located under and within 2-foot horizontal distance of the RCC spillway structures footprint as shown on the drawings.
3. Applies to fill zones located a distance greater than 1H from the retained-side face of wall structures.
4. Applies to fill zones located in the outer 5 feet (vertical) of the embankment. Minimum lift placement width of 10 feet (horizontal).
5. All materials should have no greater than 20% gravel (i.e., percent coarser than the US No. 4 sieve by weight). Soils of the Leona formation which classify as clayey gravel (GC) and typically contain oversize particles are not suitable for use as embankment fill.
6. Required Atterberg limits refer to material after modification by lime treatment.
7. Earthfills and backfills to be compacted by hand tamping or with manually-directed power tampers or plate vibrators behind walls should be placed in layers not exceeding 4 inches in thickness before compaction, and maximum allowable particle size for such material should be 2 inches. Each layer should be carefully bonded to the preceding layer.
8. Material Type H is an optional contingency for supplemental borrow volume if actual available volume for Material Type C and/or Material D is less than expected.

Table 10-2. Borrow Source Recommendations for Earth Fill

Proposed Fill Materials			Material Source Information								Fill Volumes		
Material Type	Description	Placement Location	Material Source	Typical Depths (feet)		Applicable Borings	Description and USCS Group Symbol	Measured Index Properties			Available by Area (CY)	Available by Material (CY)	Required (CY)
				Top	Bottom			LL	PI	Pass #200			
A	Imported Fill	Adjacent to RCC Spillway	Off-site Borrow Area	---	---	n/a	---	---	---	---	---		1,800
B	Imported Fill	Under RCC Spillway (See Note 2)	Off-site Borrow Area	---	---	n/a	---	---	---	---	---		11,746
C	On-Site Fill	Exterior Zone of Embankment (See Notes 3 and 4)	Borrow Area 1 (Upper)	1	4	B-101, B-102, B-104, B-105, COMP-1	Alluvium (CL)	43 - 45	25 - 28	80	19,622	90,867	88,950
			Borrow Area 1 (Lower)	4	10	B-101, B-102, B-104, B-105, COMP-2	Residuum (CL)	35 - 42	21 - 27	67	39,244		
			PSW Embankment Excavation (see Note 2)	1	39	B-04P, B-05, HA-01, HA-04	Embank. Fill (CL, CH)	42 - 52*	24 - 28*	67 - 100	20,000		
			RCC Outlet Channel Excavation	1	5	B-606	Fill (CL,CH), Residuum (CL,CH)	43 - 44	26 - 27	71 - 76	12,000		
D	On-Site Fill	Interior Zone of Embankment (See Notes 3)	PSW Embankment Excavation (see Note 2)	1	39	B-04P, B-05, HA-01, HA-04	Embank. Fill (CL, CH)	42 - 52*	24 - 28*	67 - 100	2,000	23,768	22,150
			PSW Downstream Toe Excavation	1	10 to 13.5	B-602, B-603	Fill (CL,CH), Alluvium (CH)	39 - 55	24 - 33	65 - 88	2,000		
			PSW Downstream Toe Excavation	10 to 13.5	17	B-602, B-603	Resid. (CL,CH)	51 - 65	28 - 41	87 - 94	2,000		
			RCC Downstream Toe Excavation	1	2.5 to 6.5	B-603, B-604	Fill (CH), Alluvium (CH)	53 - 55	33 - 35	84 - 88	5,375		
			Borrow Area 2 (Upper)	1	3	B-107, B-108, B-109, B-110, COMP-3	Alluvium (CH)	50 - 60	31 - 38	76	12,393		
E	On-Site Fill	Berms for RCC Outlet Channel, Backfill for Existing PSW Plunge Pool and Downstream Channel	RCC Spillway Downstream Toe Excavation	5 to 13.5	19	B-603, B-604	Residuum (CH)	62 - 65	40 - 43	93 - 100	16,125	16,125	8,000
F	Lime-Treated On-Site Fill	Adjacent to RCC Spillway	Borrow Area 2 (Lower)	3	8	B-107, B-108, B-109, B-110, COMP-4	Residuum (CH)	57 - 69	37 - 46	91	7,745	7,745	1,800
			Other Areas (See Note 1)	---	---	---	---	---	---	---	---	---	---
G	Lime-Treated On-Site Fill	Under RCC Spillway	RCC Spillway Embankment Excavation	1	4 to 14	B-05, B-06, B-07, HA-01, HA-02, HA-04, HA-05, HA-06	Embank. Fill (CL, CH)	45 - 52**	25 - 28**	81 - 95	13,000	13,000	11,746
			Other Areas (See Note 1)	---	---	---	---	---	---	---	---	---	---
H (optional)	Lime-Treated On-Site Fill	Exterior Zone of Embankment	Borrow Area 2 (Lower)	3	8	B-107, B-108, B-109, B-110, COMP-4	Residuum (CH)	57 - 69	37 - 46	91	23,236	23,236	
			Other Areas (See Note 1)	---	---	---	---	---	---	---	---	---	
										Total:	**174,741**		**135,235**

Notes:

1. Borrow sources for Materials F and G are interchangeable. If supplemental volume of lime-treated soils is required, lime-treated borrow from other on-site areas may be acceptable if sulfates meet project criteria.
2. Prioritize borrow source for Material C.
3. * - Reported range excludes two sample outliers: Embankment Core (LL=82, PI=55, and Pass #200 = 100%) and Embankment Shell/Topsoil (LL=70, PI=44, and Pass #200 = 95%).
4. ** - Reported ranged excludes one sample outlier: Embankment Shell/Topsoil (LL=70, PI=44, and Pass #200 = 95%).

11. Construction Considerations

11.1 Clearing and Grubbing

Before site grading and excavating, existing vegetation, topsoil, and any debris should be cleared and disposed of outside the construction limits. The clearing and grubbing depths are generally 6 inches unless organic soils or tree roots are encountered. Where concentrations of organic soils and tree roots are found, deeper clearing may be required. The geotechnical engineer may be consulted to provide additional recommendations for removal of deeper organics, if encountered. Topsoil and debris should not be incorporated into any engineered fill.

11.2 Excavations

11.2.1 Excavation Potential

Planned excavations should proceed without difficulty using modern earth-moving equipment, and can be classified as “common” excavation for bidding purposes per NRCS Construction Specification 21. Within the planned depths of excavation, common excavation classification also applies to the upper portion of the Clayshale.

11.2.2 Temporary Excavation Slopes

Temporary excavations are the sole responsibility of the Contractor. All temporary excavations should comply with OSHA guidelines. In no case shall excavations into the dam embankment exceed an inclination of 2H:1V (and preferably 3H:1V or flatter). The downstream side of Excavations that cannot be sloped to a stable configuration will require shoring. All shoring designs, and any excavations deeper than 20 feet, should be designed by a Professional Civil Engineer licensed in the State of Texas. The Contractor’s submittals related to temporary excavation should be formally reviewed and approved by the Engineer of Record prior to the start of construction.

As noted in previous sections, temporary overexcavation / replacement at the downstream toe is required to mitigate expansive soil movements. Maximum permissible slope angles flatter than those dictated by OSHA guidelines may be required as part of the project design. The contract documents may also set additional requirements for the contractor’s design related to temporary excavations (e.g., reservoir operations and flood routing, construction sequence, duration for open excavation, weather considerations, backfill tie-in, etc.).

11.3 Groundwater Control and Dewatering

Groundwater may be encountered in excavations required for construction of the PSW replacement, RCC auxiliary spillway stilling basin and lower portion of the RCC chute structure, and/or upstream borrow area excavations. Temporary dewatering is an important consideration for construction of the proposed PSW impact basin and RCC stilling basin, which will be founded near or below the groundwater levels measured during the field investigation in borings B-601 and B-602. The possible presence of the gravelly Leona Formation within the proposed excavations to the right of the existing creek channel may generate appreciable groundwater inflows which will need to be managed during construction. Therefore, construction dewatering by the Contractor is anticipated for this project, and dewatering requirements should be incorporated into the project specifications.

The reservoir level should be lowered to the maximum extent possible prior to construction to reduce the required magnitude of dewatering at the downstream toe. Groundwater controls will be necessary for the entire duration of the earthwork operation until constructed internal drains have proper outlets. Groundwater levels should be maintained at least 2 feet below the proposed excavation bottom for trafficability and stability. Temporary dewatering is the responsibility of the Contractor.

Groundwater levels can fluctuate depending on rainfall, changes in reservoir level, runoff conditions, and other factors. The Contractor should verify groundwater conditions before construction. The Contractor should prepare and submit a dewatering plan for review as part of the contract documents.

11.4 RCC Construction Considerations

The RCC should be constructed in horizontal lifts, including the steps of the chute structure.

Consideration may be given to including contraction joints in the RCC slab to control crack development. If included, each contraction joint should include an underlayment of geosynthetic filter fabric with apparent opening size (AOS) compatible with the underlying soil and/or drainfill materials.

For the RCC Crest structure, continuous reinforced concrete turn-down keys should be cast into the slab on the upstream end of the crest weir to provide under-seepage cutoff. The turn-down keys should be constructed in an excavated trench that extends at least 1 foot deeper than the surrounding excavation limits, if possible. The turn-down keys may require steel reinforcement to prevent crack development, and waterstops may be needed at joints.

If extension of the turn-down key into undisturbed material below planned overecavation / replacement zone is not feasible, an embankment key trench should be constructed to penetrate 2 feet below the surrounding subgrade elevation to provide seepage cutoff along the excavated subgrade/fill interface.

11.5 Geotechnical Instrumentation

11.5.1 Piezometers

Installation of open-well (stand-pipe) piezometers is recommended to permit future measurement of piezometric levels within the embankment and near the toe of the dam. The purposes of the piezometers are to: 1) confirm design assumptions for phreatic surface and stability analysis; 2) monitor uplift pressures on the new spillway structure; and 3) monitor fluctuations in phreatic surface over time that could be indicative of possible adverse dam performance.

Each piezometer will be furnished as a nested piezometer with two isolated screened intervals tipped in either Embankment Fill or Alluvium/Residuum depending on location. Two (2) piezometers should be installed on the crest of the dam near the outside edge of each side of the RCC spillway crest structure. Two (2) additional piezometers should be installed at the toe of the dam immediately adjacent to the outside edge of each side of the RCC stilling basin. Proposed piezometer screen intervals and tip depths will be specified as part of the design package. Piezometers should be constructed and monitored daily for at least 3 weeks prior to raising the reservoir normal pool above existing conditions.

Based on planned excavation grading, the existing piezometers at borings B-04P and B-06P will likely need to be decommissioned as part of the construction contract to accommodate the planned improvements.

11.5.2 Reservoir Staff Gauge

AECOM recommends the proposed dam rehabilitation include installation of a reservoir staff gauge(s) to permit accurate measurements of reservoir level. This will allow future comparison of reservoir level versus piezometric levels surface to better understand the response of the phreatic surface to changes in reservoir level. If feasible, an automated reservoir stage recorder could be included in the construction.

11.5.3 Survey Monitoring Points

Installation of survey monitoring points is recommended to monitor structure settlement and/or heave movement over time. The survey monitoring points should be established on the RCC overtopping spillway structures (including on both the walls and chute slabs for the crest structure, chute structure, and stilling basin), on the PSW inlet tower, and on the PSW impact basin Monitoring points should be established, and initial readings taken, at least 2 weeks prior to backfilling against the training walls and reservoir filling. Monitoring points should be surveyed weekly until the substantial completion of construction and initial filling of the reservoir, after which point readings should continue for at least 2 months. Frequency of readings may be reduced if no significant movement is observed. Follow-up readings conducted at 6 and 12 months following substantial completion are suggested. Subsequent readings should be conducted are part of routine dam safety inspections, typically every 1 to 2 years.

11.6 Construction Quality Assurance and Quality Control

11.6.1 Subgrade Inspections

A qualified geotechnical engineer or engineering geologist (Field Representative) should inspect foundation subgrades to confirm bearing strata are consistent with the design assumptions stated herein. This includes subgrades associated with the foundations for the proposed RCC auxiliary spillway (crest weir, stepped chute, stilling basin); proposed principal spillway (inlet tower, conduit pipe, impact basin); downstream toe of the earth fill embankment raise, and planned embankment cutoff trench excavations for embankment extension towards the left and right abutments..

The Field Representative should observe the excavated subgrade for these areas to verify potentially compressible soils are not present. Before the start of construction of structures or placement of fill, the subgrade should be proof-rolled with a minimum of six complete passes of a minimum of 10-ton (static) vibratory roller or equivalent. If pockets of unsuitable materials encountered in this process cannot be satisfactorily compacted at the subgrade, these soils should be removed and replaced with embankment fill or other material approved by the geotechnical engineer, and compacted as recommended in **Section 11.2**. The contractor should be prepared to provide a small excavator for shallow test pits. The finished subgrade should be clean and free of unsuitable materials (trash, organics, wood, and other degradable or deleterious materials).

Particular attention should be paid to identifying and removing the gravelly Leona formation if exposed in excavations to minimize seepage conveyance under the dam that may adversely affect planned structures.

11.6.2 Subgrade Compaction

Following excavation to the lowest subgrade elevation and inspection/proof-rolling activities are completed, the subgrade should be compacted prior to placement of fill or structure foundations. The cut subgrade surface should be graded level, scarified to a minimum depth of 6 inches, and

moisture conditioned to between optimum and +4% of optimum moisture according toe ASTM D698 (Standard Proctor).

Subgrades underlying the footprint of proposed structures and within 5 feet horizontal distance of foundations should be recompacted to at least 98% of maximum dry density in accordance with ASTM D698. Subgrades outside these areas (e.g., proposed embankment raise section) should be recompacted to at least 95% of maximum dry density in accordance with ASTM D698.

The moisture content of the prepared subgrade should be regularly maintained by the Contractor until subsequent placement of directly overlying fill material or structures.

11.6.3 Instrumentation Installation

A qualified engineer or geologist should be present full-time during the installation of piezometers to log soils encountered, record groundwater observations, and document well materials and depths. Piezometer installation should be conducted under the direction of a licensed Professional Engineer.

Survey monitoring points should be installed and surveyed by a licensed Professional Land Surveyor. The data should be periodically reviewed and interpreted by a licensed Professional Engineer.

11.6.4 Fill Placement and Testing

Each lift of compacted fill should be tested to confirm it has the specified moisture and compaction. One moisture/density verification test should be performed for every compacted lift at a rate of 1 per 10,000 SF of compacted area or every 500 LF per lift of dam embankment, whichever requires most testing. For smaller areas, a minimum of three verification tests should be provided for every lift. Subsequent lifts should not be placed until the exposed lift has the specified moisture and density. Lifts failing to meet the moisture and density requirements should be reworked to meet the required specifications.

Sampling of the as-placed fill material should be performed periodically to confirm the consistency of material from borrow sources meets the range of acceptable index properties provided in **Section 10**. Sampling and testing should occur at the following minimum frequencies:

- LL, PI, Minus #200: 1 test per 2,500 CY; and
- Crumb test: 1 test per 2,500 CY.
- Pinhole test: 1 test per 10,000 CY Foundation

12. Limitations

This report was prepared by AECOM using the degree of care and skill ordinarily exercised under similar circumstances by responsible engineers and geologists practicing in the same general location. No other warranty or representation, either expressed or implied, is made as to the findings and professional advice in this report.

The opinions, conclusions, and recommendations contained in this report are based on the field observations and subsurface explorations, laboratory tests, and present understanding of the proposed improvements. The findings in this report are believed to describe site conditions to the extent practical given the scope of the investigation. However, this investigation, like all such investigations, can directly explore subsurface conditions only at the boring locations within the site. Soil and geologic conditions can vary greatly between or beyond the exploration sites, and different conditions may be found during subsequent investigations or project construction.

The conclusions and recommendations contained herein are based in part upon information provided by others (including our subcontractors) and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information provided to AECOM has not been independently verified by AECOM, unless otherwise stated.

There is no intention that this report addresses any environmental issues (for example, environmentally-affected soil or groundwater, or historic site uses) related to this site. Such evaluations are outside the scope of this work and should be addressed in separate studies. In the event that changes are made to the nature, design, or location of the proposed construction layout or design criteria, the conclusions and recommendations presented herein should not be considered valid, unless AECOM has reviewed the changes and addresses their impact to the recommendations provided.

13. References

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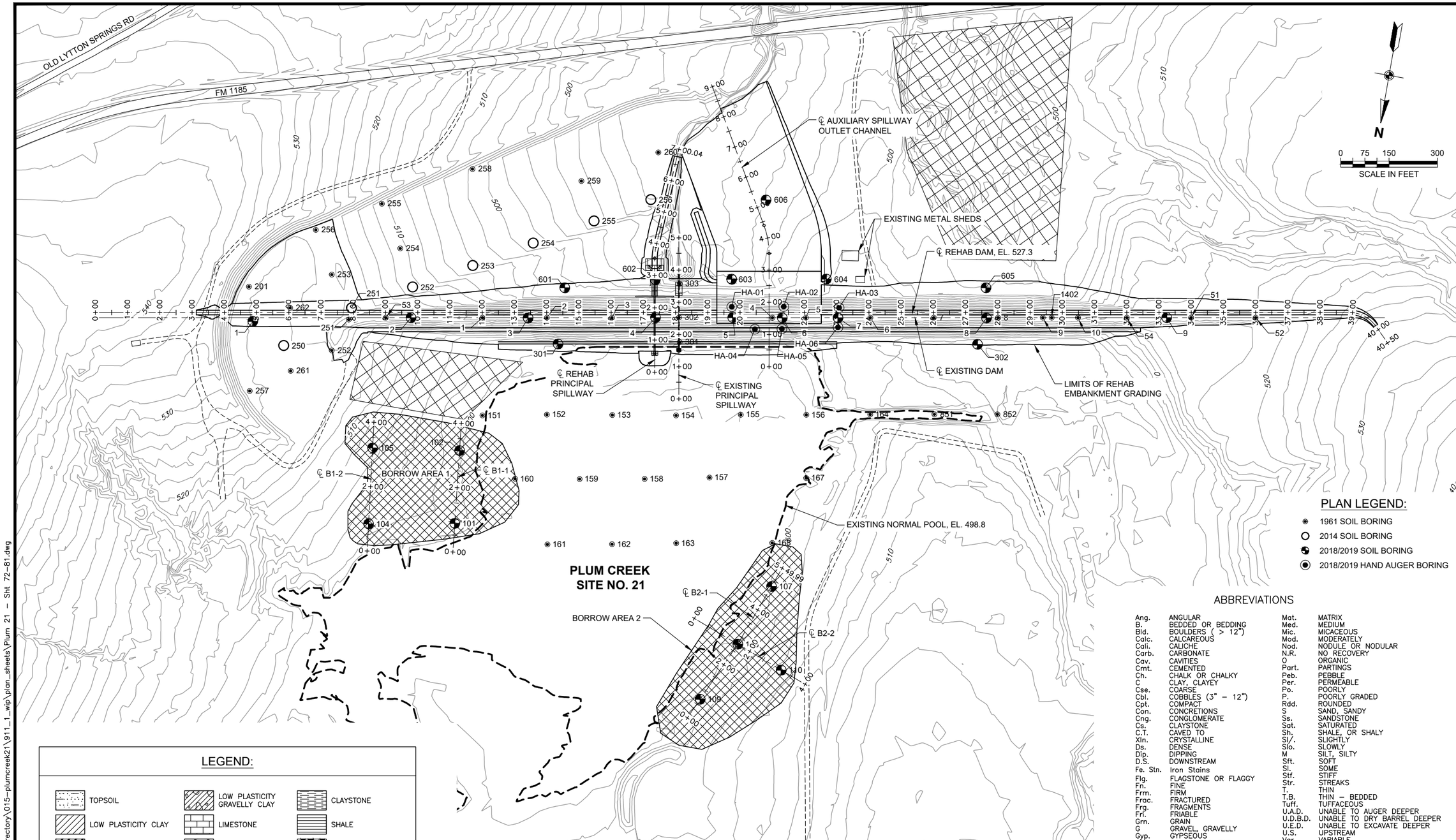
Appendix A Geologic Investigation Profiles



PLAN LEGEND:

- 1961 SOIL BORING
- 2014 SOIL BORING
- 2018/2019 SOIL BORING
- 2018/2019 HAND AUGER BORING

LEGEND:

- TOPSOIL
- LOW PLASTICITY CLAY
- HIGH PLASTICITY CLAY
- LOW PLASTICITY SANDY CLAY
- CLAYEY SAND
- LOW PLASTICITY GRAVELLY CLAY
- LIMESTONE
- CLAYSHALE
- CLAYEY GRAVEL
- CLAYSTONE
- SHALE
- SILTY GRAVEL
- INTERBEDDED SHALE OR LIMESTONE 1

N = SPT BLOWS PER 6" INCREMENT (N-VALUE, BPF)
P = POCKET PENETROMETER (TSF)
RC = CORE RECOVERY (%) – RQD (%)
LL = LIQUID LIMIT
PI = PLASTICITY INDEX
N200 = FINES CONTENT
U = UNCONFINED COMPRESSIVE STRENGTH

▽ WATER LEVEL AT TIME DRILLING, OR AS SHOWN
▼ WATER LEVEL AT END OF DRILLING, OR AS SHOWN
▼ WATER LEVEL AFTER 24 HOURS, OR AS SHOWN

TEST HOLE NUMBERING SYSTEM

	COMBINATION RIG	POWER AUGER	HAND BORINGS	TRENCH OR PIT EXCAVATIONS	NATURAL OUTCROPS, STREAMBANKS, AND GULLIES
CENTERLINE OF DAM	1–49	51–99	1001–1099	2001–2099	3001–3099
BORROW AREA	101–149	151–199	1101–1199	2101–2199	3101–3199
EMERGENCY SPILLWAY	201–249	251–299	1201–1299	2201–2299	3201–3299
PRINCIPAL SPILLWAY	301–349	351–399	1301–1399	2301–2399	3301–3399
STREAM CHANNELS	401–449	451–499	1401–1499	2401–2499	3401–3499
EXPLORATORY BORINGS	501–549	551–599	1501–1599	——	——
FOUNDATION DRAIN	601–649	651–699	1601–1699	2601–2699	3601–3699
MISCELLANEOUS	701–749	751–799	1701–1799	2701–2799	3701–3749

CLASSIFICATION	RANGE OF GRAIN SIZE U.S. standard sieve size
BOULDERS	ABOVE 12"
COBBLES	12" TO 3"
GRAVEL Course Fine	3" to No. 4 3" to 3/4" 3/4" to No. 4
SAND Coarse Medium Fine	No. 4 to No. 200 No. 4 to No. 10 No. 10 to No. 40 No. 40 to No. 200
SILT & CLAY	Below No. 200

ABBREVIATIONS

Ang.	ANGULAR
B.	BEDDED OR BEDDING
Bld.	BOULDERS (> 12")
Calc.	CALCAREOUS
Cali.	CALICHE
Carb.	CARBONATE
Cav.	CAVITIES
Cmt.	CEMENTED
Ch.	CHALK OR CHALKY
C	CLAY, CLAYEY
Cse.	COARSE
Cbl.	COBBLES (3" – 12")
Cpt.	COMPACT
Con.	CONCRETIONS
Cng.	CONGLOMERATE
Cs.	CLAYSTONE
C.T.	CAVED TO
Xln.	CRYSTALLINE
Ds.	DENSE
Dip.	DIPPING
D.S.	DOWNSTREAM
Fe. Stn.	Iron Stains
Flg.	FLAGSTONE OR FLAGGY
Fn.	FINE
Frm.	FIRM
Frac.	FRACTURED
Frg.	FRAGMENTS
Fri.	FRIABLE
Grn.	GRAIN
G	GRAVEL, GRAVELLY
Gyp.	GYPSEOUS
Hd.	ROCK HARDNESS
H.	HIGHLY
Int.	INTERBEDDED
Lam.	LAMINATED
Lay.	LAYER OR LAYERS
Len.	LENS OR LENSES
Lig.	LIGNITE
Ls.	LIMESTONE
Lse.	LOOSE
Ma.	MARL, OR MARLY
Mas.	MASSIVE
Mat.	MATRIX
Med.	MEDIUM
Mic.	MICACEOUS
Mod.	MODERATELY
Nod.	NODULE OR NODULAR
N.R.	NO RECOVERY
O	ORGANIC
Part.	PARTINGS
Peb.	PEBBLE
Per.	PERMEABLE
Po.	POORLY
P.	POORLY GRADED
Rdd.	ROUNDED
S	SAND, SANDY
Ss.	SANDSTONE
Sat.	SATURATED
Sh.	SHALE, OR SHALY
Sl/.	SLIGHTLY
Slo.	SLOWLY
M	SILT, SILTY
Sft.	SOFT
Sl.	SOME
Stf.	STIFF
Str.	STREAKS
T.	THIN
T.B.	THIN – BEDDED
Tuff.	TUFFACEOUS
U.A.D.	UNABLE TO AUGER DEEPER
U.D.B.D.	UNABLE TO DRY BARREL DEEPER
U.E.D.	UNABLE TO EXCAVATE DEEPER
U.S.	UPSTREAM
Var.	VARIABLE
V/.	VERY
Vug.	VUGULAR
Wtr.	WATER LEVEL AS ENCOUNTERED DURING DRILLING PROCESS
W	WELL GRADED
W/.	WITH
Wea.	WEATHERED
▽	(DATE) STATIC WATER LEVEL

NOTES:

1. THE SOIL CLASSIFICATIONS SHOWN ON THIS SHEET ARE FIELD CLASSIFICATIONS. THEY MAY NOT IN ALL CASES AGREE WITH THE CLASSIFICATIONS MADE BY THE SOIL MECHANICS LABORATORY. REFER TO THE LABORATORY REPORT FOR FURTHER INFORMATION. A COPY IS AVAILABLE ONLINE AT WWW.PCCD.ORG JOBS BID TAB ALONG WITH SITE 21 REHABILITATION BID DOCUMENTS.
2. ADDITIONAL SOIL MECHANICS AND FOUNDATION INVESTIGATION DATA WILL BE AVAILABLE ONLINE AT WWW.PCCD.ORG JOBS BID TAB ALONG WITH SITE 21 REHABILITATION BID DOCUMENTS.

REVISIONS		
DATE	APPROVED	TITLE

STATE OF TEXAS — LANCE T. FINNEFROCK — 111398 — PROFESSIONAL ENGINEER — 8/4/21

DESIGNED BY: LTF
DRAWN BY: MDE
CHECKED BY: TEA
FILE NAME: Plum 21 – Sht 72–81.dwg
DATE CHECKED: 8/4/2021

PLAN OF GEOLOGIC INVESTIGATIONS

FLOODWATER RETARDING STRUCTURE SITE NO. 21 REHABILITATION
PLUM CREEK WATERSHED
IN
CALDWELL COUNTY, TEXAS

United States Department of Agriculture
Natural Resources Conservation Service

DRAWING NO. TX–EN–0754
SHEET NO. 73
OF 83

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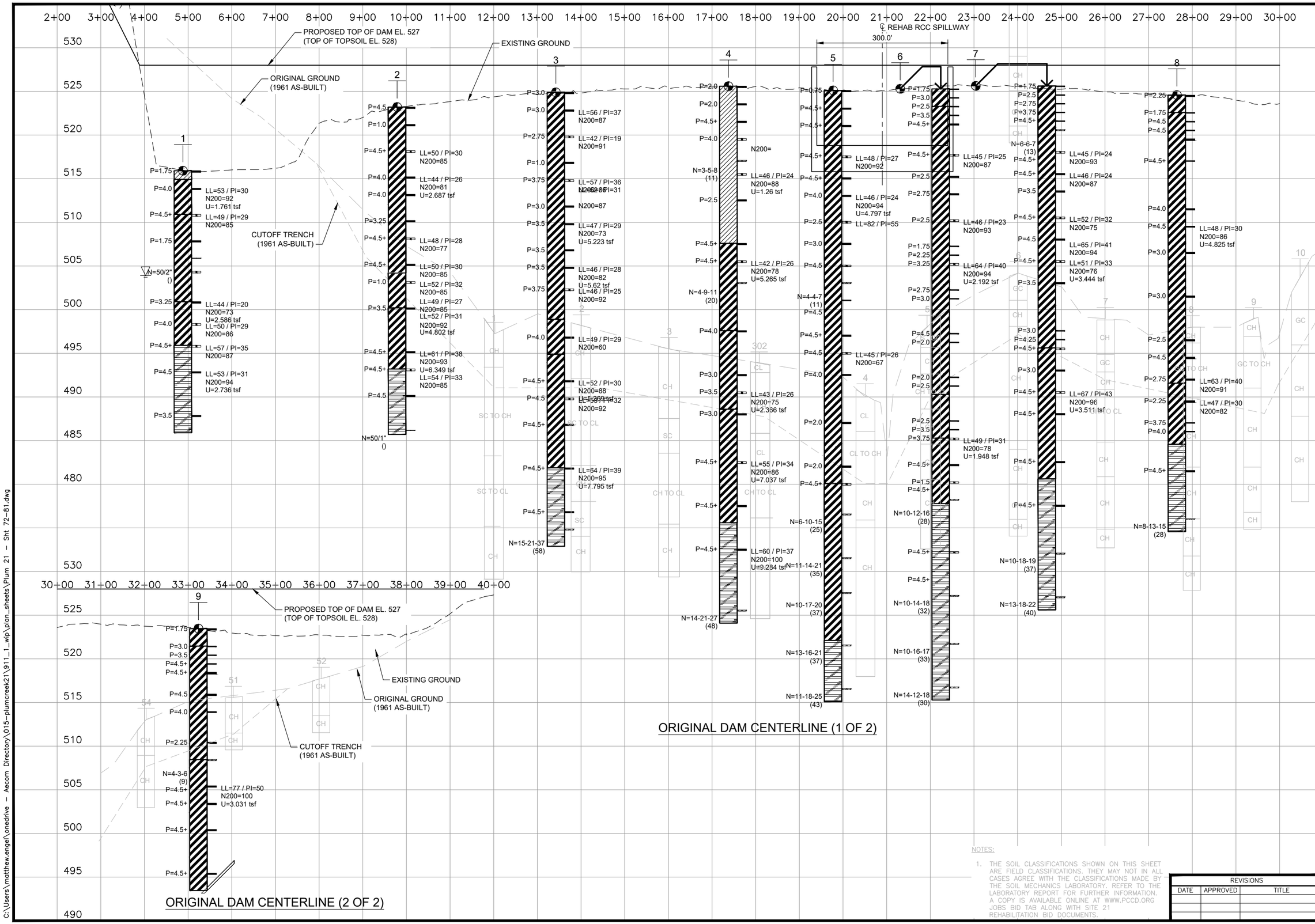

NOTES:

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REVISIONS		
DATE	APPROVED	TITLE

DESIGNED BY: LTF
DRAWN BY: MDE
CHECKED BY: TEA
FILE NAME: Plum 21 – Sht 72–81.dwg
DATE CHECKED: 8/4/2021

GEOLOGIC INVESTIGATIONS – PROFILES (1 OF 9)

FLOODWATER RETARDING STRUCTURE SITE NO. 21 REHABILITATION
PLUM CREEK WATERSHED
IN
CALDWELL COUNTY, TEXAS

United States Department of Agriculture
Natural Resources Conservation Service

DRAWING NO. TX–EN–0754
SHEET NO. 74
OF 83

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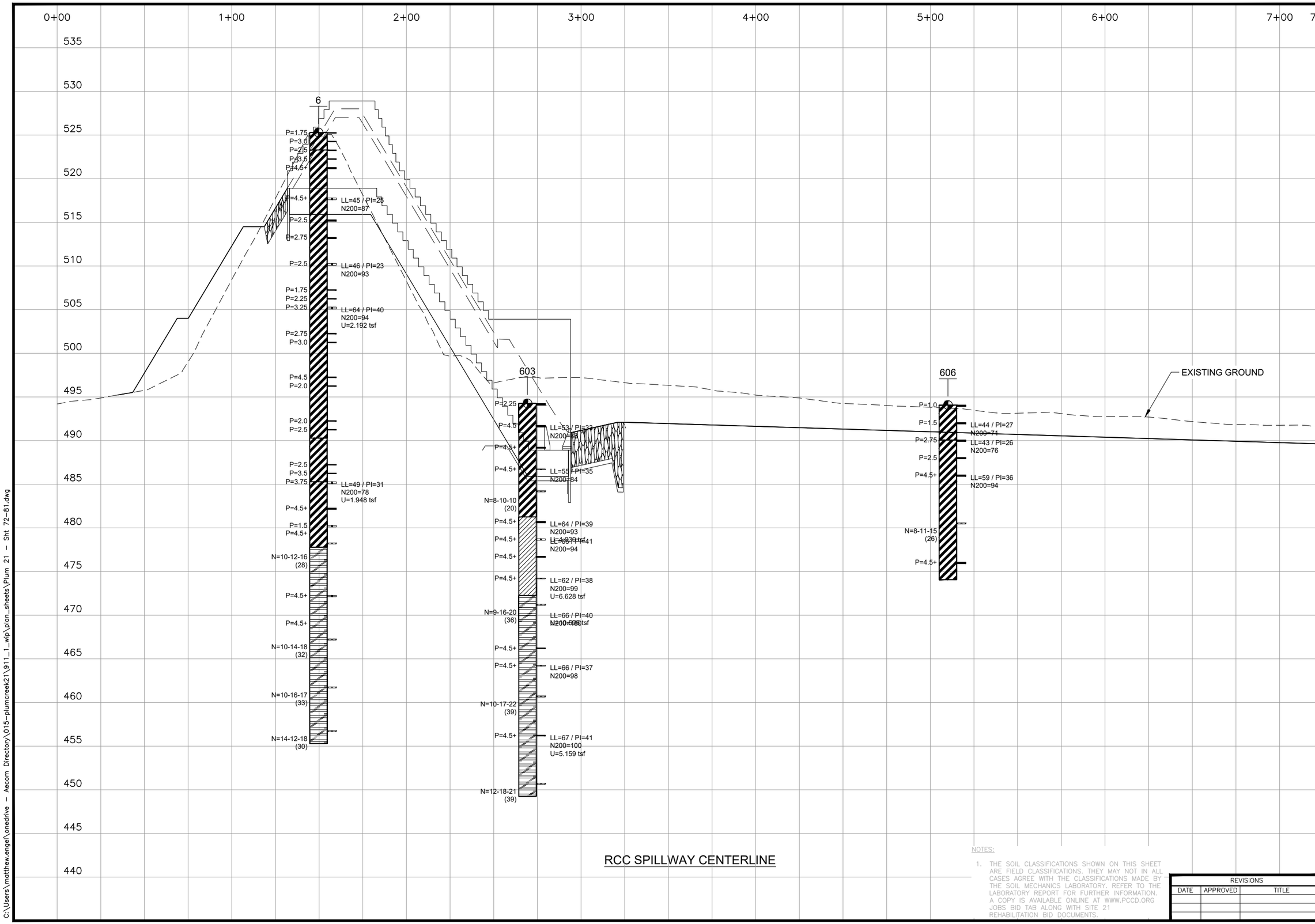

NOTES:

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REVISIONS		
DATE	APPROVED	TITLE

STATE OF TEXAS
LANCE T. FINNEFROCK
111398
LICENSED PROFESSIONAL ENGINEER
8/4/21

DESIGNED BY: LTF
DRAWN BY: MDE
CHECKED BY: TEA
FILE NAME: Plum 21 – Sht 72–81.dwg
DATE CHECKED: 8/4/2021

GEOLOGIC INVESTIGATIONS – PROFILES (2 OF 9)

FLOODWATER RETARDING STRUCTURE SITE NO. 21 REHABILITATION
PLUM CREEK WATERSHED
IN
CALDWELL COUNTY, TEXAS

USDA United States Department of Agriculture
Natural Resources Conservation Service

DRAWING NO. TX–EN–0754

SHEET NO. 75
OF 83

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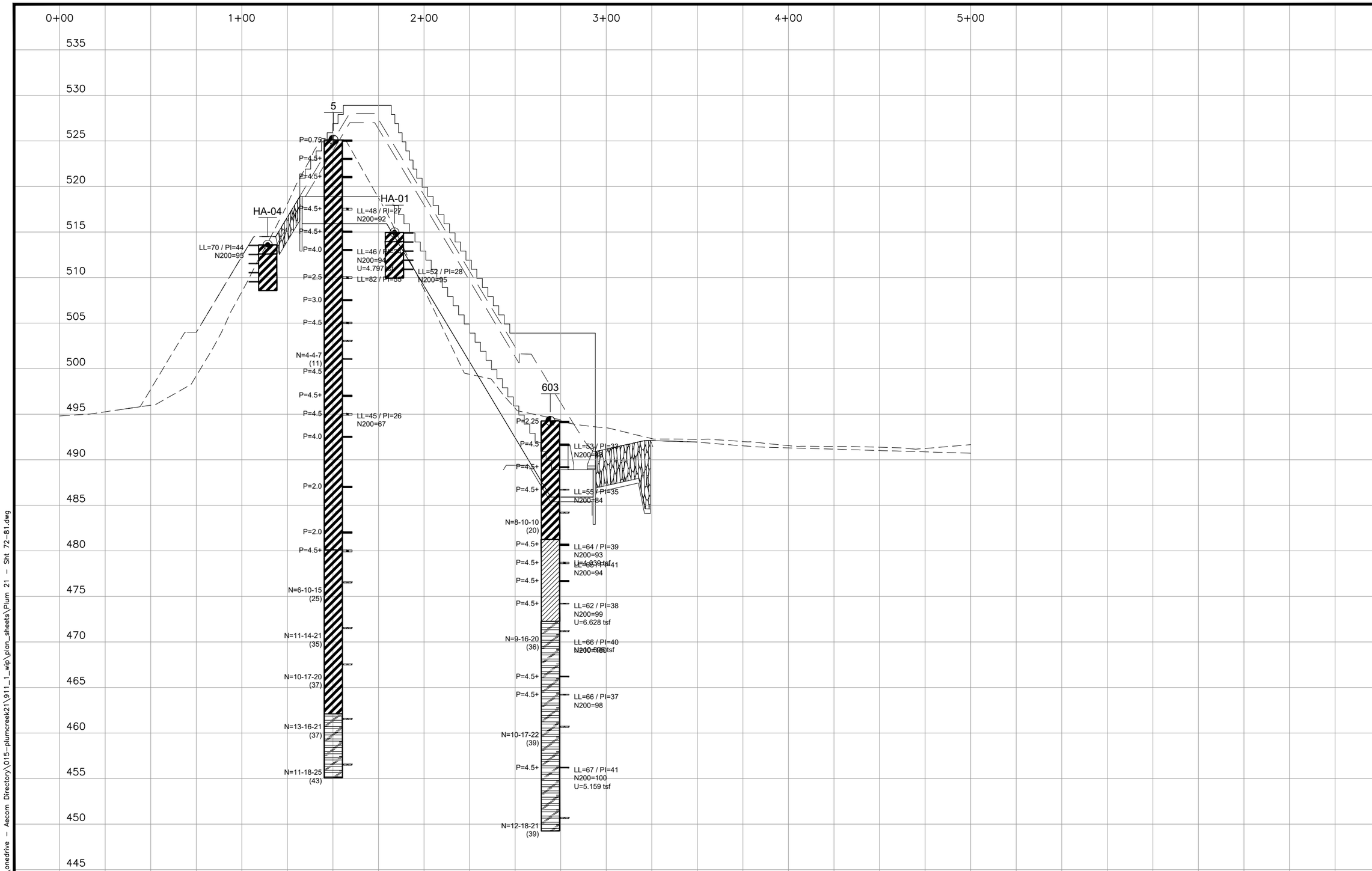

RCC SPILLWAY LEFT WALL

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GEOLOGIC INVESTIGATIONS – PROFILES (3 OF 9)

FLOODWATER RETARDING STRUCTURE SITE NO. 21 REHABILITATION
PLUM CREEK WATERSHED
IN
CALDWELL COUNTY, TEXAS

United States Department of Agriculture
Natural Resources Conservation Service

DRAWING NO. TX–EN–0754

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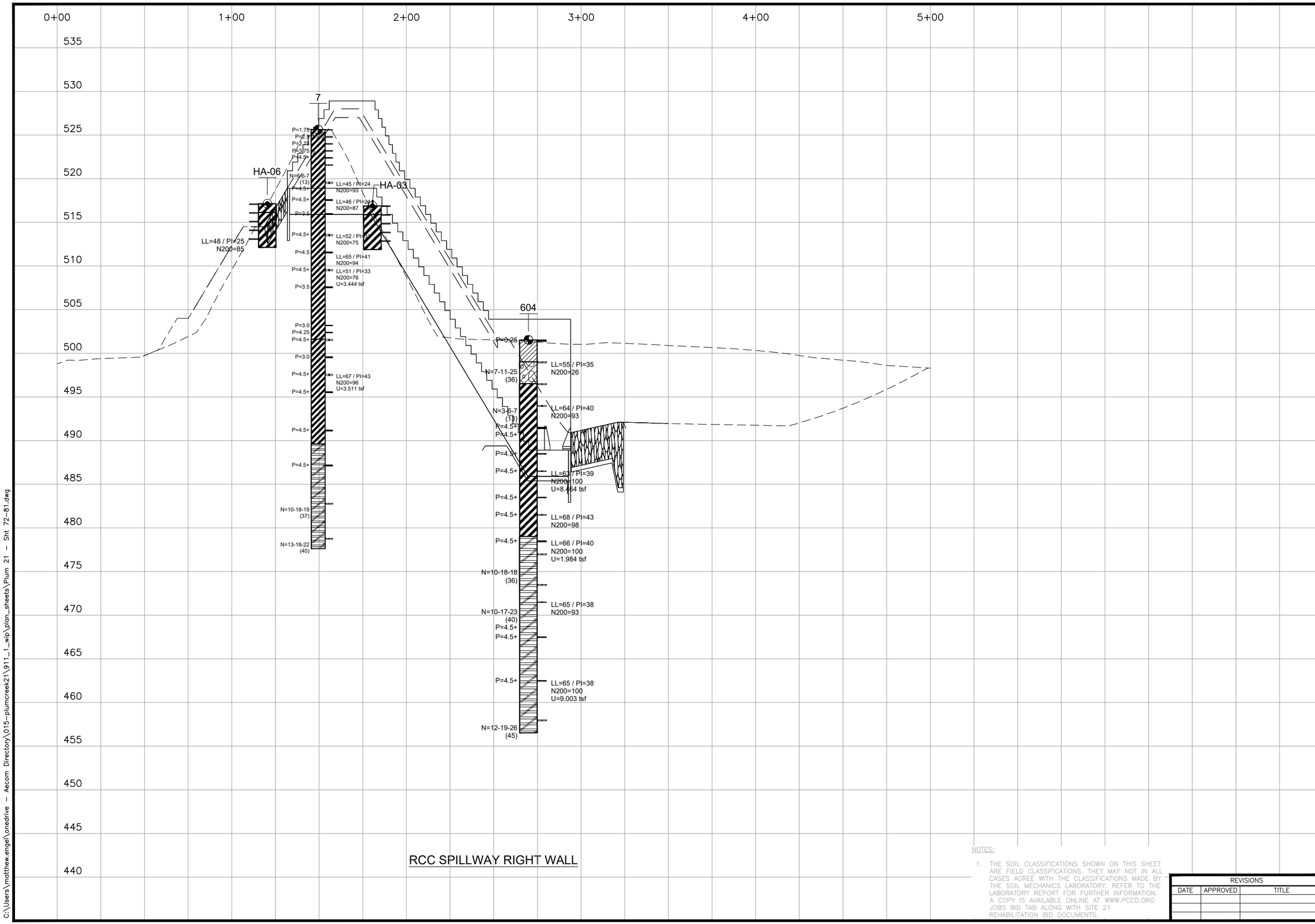

RCC SPILLWAY RIGHT WALL

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GEOLOGIC INVESTIGATIONS – PROFILES (4 OF 9)

FLOODWATER RETARDING STRUCTURE SITE NO. 21 REHABILITATION
PLUM CREEK WATERSHED
IN
CALDWELL COUNTY, TEXAS

United States Department of Agriculture
Natural Resources Conservation Service

DRAWING NO. TX–EN–0754

SHEET NO. 77 OF 83

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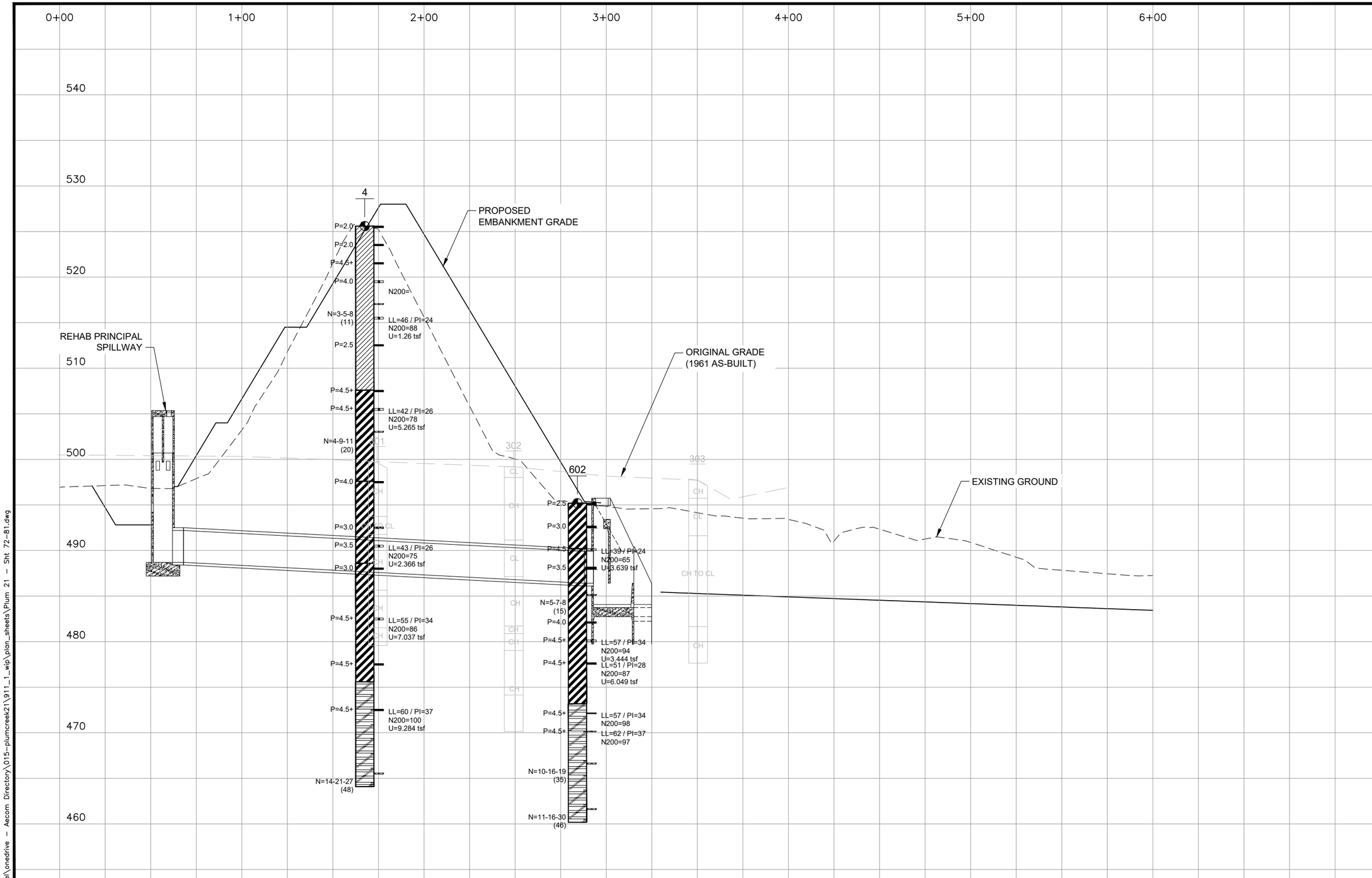

PRINCIPAL SPILLWAY PROFILE

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GEOLOGIC INVESTIGATIONS – PROFILES (5 OF 9)

FLOODWATER RETARDING STRUCTURE SITE NO. 21 REHABILITATION
PLUM CREEK WATERSHED
IN
CALDWELL COUNTY, TEXAS

United States Department of Agriculture
Natural Resources Conservation Service

DRAWING NO. TX–EN–0754

SHEET NO. 78

OF 83

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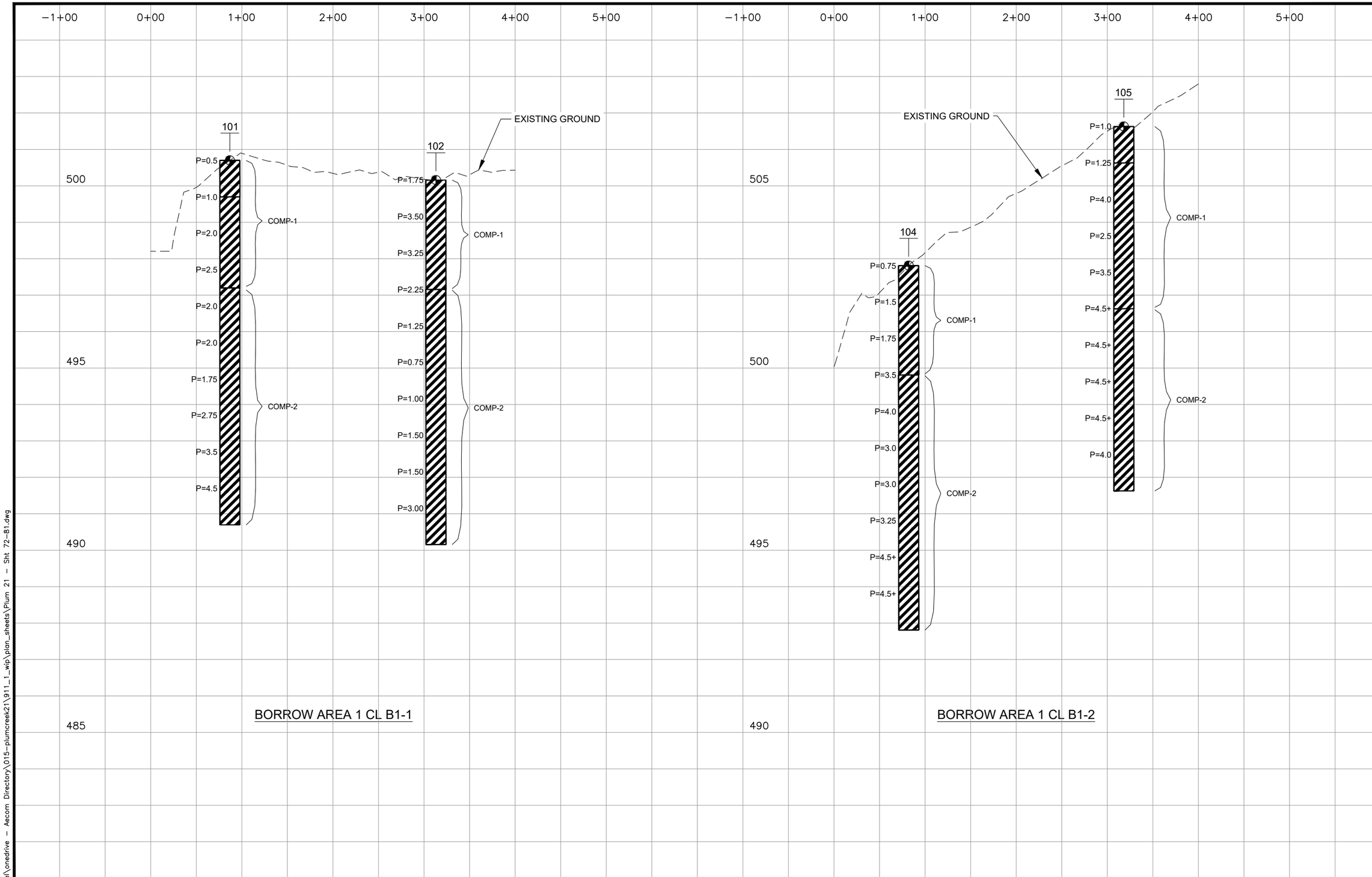

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GEOLOGIC INVESTIGATIONS – PROFILES (6 OF 9)

FLOODWATER RETARDING STRUCTURE SITE NO. 21 REHABILITATION
PLUM CREEK WATERSHED
IN
CALDWELL COUNTY, TEXAS

United States Department of Agriculture
Natural Resources Conservation Service

DRAWING NO. TX–EN–0754

SHEET NO. 79 OF 83

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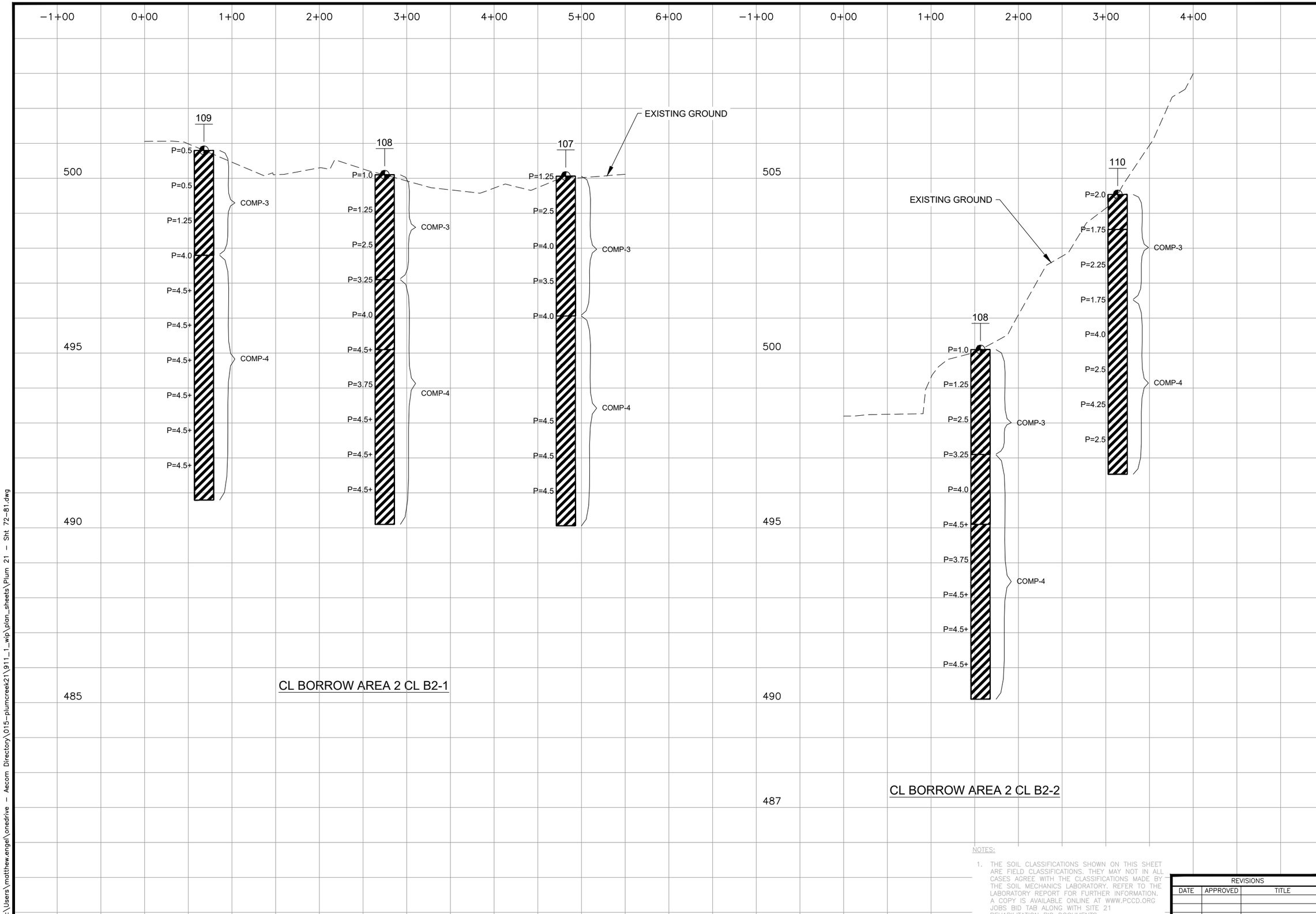

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GEOLOGIC INVESTIGATIONS – PROFILES (7 OF 9)

FLOODWATER RETARDING STRUCTURE SITE NO. 21 REHABILITATION
PLUM CREEK WATERSHED
IN
CALDWELL COUNTY, TEXAS

United States Department of Agriculture
Natural Resources Conservation Service

DRAWING NO. TX–EN–0754
SHEET NO. 80
OF 83

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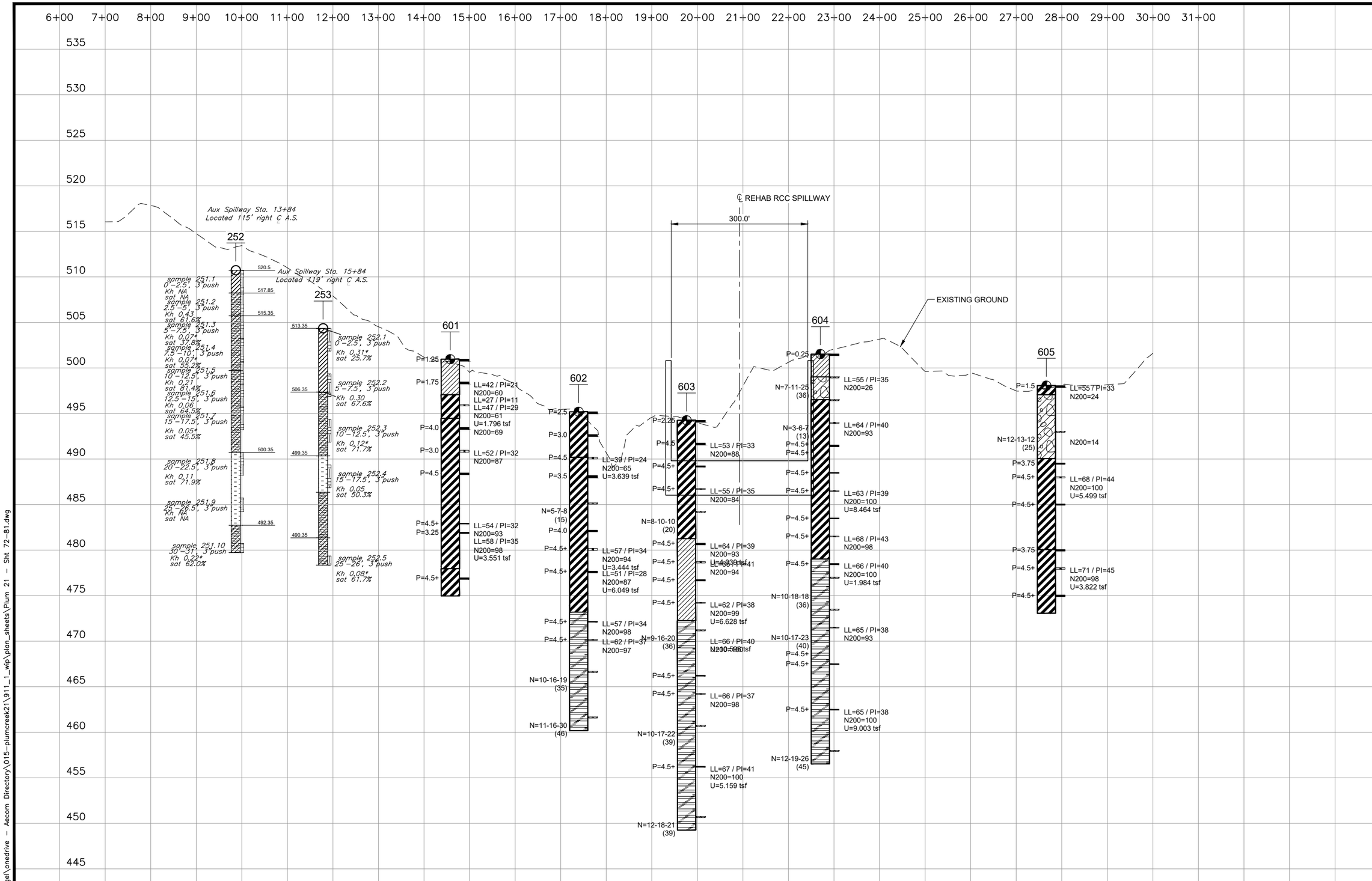

DOWNSTREAM TOE OF SLOPE PROFILE

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GEOLOGIC INVESTIGATIONS – PROFILES (8 OF 9)

FLOODWATER RETARDING STRUCTURE SITE NO. 21 REHABILITATION
PLUM CREEK WATERSHED
IN
CALDWELL COUNTY, TEXAS

United States Department of Agriculture
Natural Resources Conservation Service

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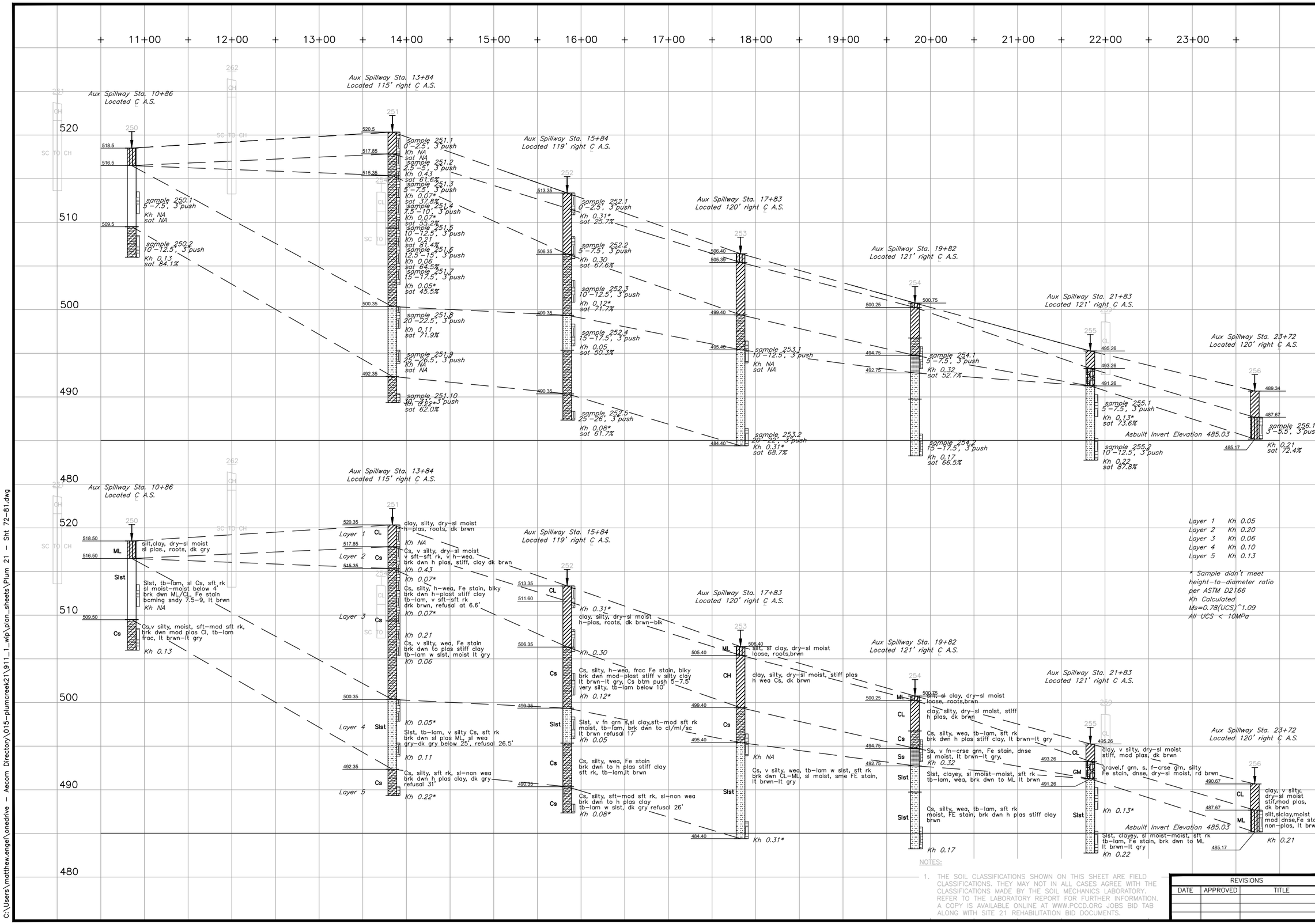

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GEOLOGIC INVESTIGATIONS – PROFILES (9 OF 9)

FLOODWATER RETARDING STRUCTURE SITE NO. 21 REHABILITATION
PLUM CREEK WATERSHED
IN
CALDWELL COUNTY, TEXAS

United States Department of Agriculture
Natural Resources Conservation Service

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SHEET NO. 82 OF 83

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Appendix B Laboratory Test Results

B.1 Laboratory Summary Table

Sample Information						Soil Index												Shear Strength									Dispersion			Proctor		Chemical					Other Tests Performed
																		Test Type	No. Norm. Stress Pts	UU-Triaxial or UCS			Total Stress		Effective Stress												
Boring ID	Top Depth (ft)	Bottom Depth (ft)	Sample ID	Interpreted Stratum	Field Classify	Lab USCS	WC (%)	DD (pcf)	WD (pcf)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Clay Content (%)	LL	PL	PI	Gs			sig3 (psf)	ef (%)	Su (psf)	Cu (psf)	ϕu (deg)	C' (psf)	ϕ' (deg)	Crumb Test Grade	Double Hydro (%)	Pinhole Grade	Ddmax (pcf)	wopt (%)	pH	Resistivity (ohm-cm)	Soluble Salts (%)	Sulfates (ppm)	Chlorides (ppm)	
B-1	0.0	2.0	-	Residuum (Wilcox)	CL		28.0																														
B-1	2.0	4.0	696	Residuum (Wilcox)	CH	CH	26.1	95.9	120.9	0	8	92	28	53	23	30	2.69	UC	1 pt	0	4.67	1,761					2	28									
B-1	5.0	7.5	697	Residuum (Wilcox)	CH	CL	23.7	91.3	112.9	0	15	85	26	49	20	29	2.71										3	27									
B-1	8.0	10.0	-	Residuum (Wilcox)	CH		25.0																														
B-1	10.0	10.5	-	Residuum (Wilcox)	CH																																
B-1	11.5	14.0	-	Residuum (Wilcox)	CH																																
B-1	15.0	17.0	698	Residuum (Wilcox)	CH	CL	22.4	99.9	122.3	0	27	73	28	44	24	20	2.73	UU	1 pt	714	10.1	2,586					1										
B-1	17.5	20.0	699	Residuum (Wilcox)	CH	CH	27.4	95.1	121.2	0	14	86	31	50	21	29	2.70										1										
B-1	20.0	22.5	700	Clayshale	Shale	CH	24.8	97.0	121.1	0	13	87	35	57	22	35	2.69										1										
B-1	23.0	25.0	701	Clayshale	Shale	CH	21.8	92.0	112.1	0	6	94	33	53	22	31	2.70	UU	1 pt	1,437	5.07	2,736					1										
B-1	28.0	30.0	-	Clayshale	Shale		17.0																														
B-2	0	2	-	Embankment	CH		13.0																														
B-2	2	4	-	Embankment	CH		15.0																														
B-2	5.0	7.5	702	Embankment	CH	CH	20.0	108.0	129.6	0	15	85	33	50	20	30	2.82										2	10									
B-2	8.0	10.0	703	Embankment	CH	CL	18.5	107.9	127.9	0	19	81	32	44	18	26	2.70	UC	1 pt	0	11.67	2,687					2	12									
B-2	10.0	12.0	-	Embankment	CH		16.0																														
B-2	13.0	15.0	-	Embankment	CH		16.0																														
B-2	15.0	17.5	704	Embankment	CH	CL	19.3	109.5	130.6	7	16	77	30	48	20	28	2.68										3	5									
B-2	18.0	20.0	705	Core Trench	CH	CH	18.0	109.8	129.6	0	15	85	39	50	20	30	2.67										2	9									
B-2	20.0	22.0	706A	Core Trench	CH	CH				0	15	85	38	52	20	32											1										
B-2	22.0	22.5	706B	Residuum (Midway)	CH	CL				0	15	85	26	49	22	27											2	24									
B-2	23.0	25.0	707	Residuum (Midway)	CH	CH	20.0	93.2	111.8	0	8	92	28	52	21	31	2.68	UU	1 pt	1,436	7.14	4,802					2	9									
B-2	28.0	30.0	708	Residuum (Midway)	CH	CH	19.4	95.1	113.5	0	7	93	35	61	23	38	2.67	UU	1 pt	2,159	6.16	6,349					2	7									
B-2	30.0	32.5	709	Clayshale	Shale	CH	19.7	90.4	108.2	0	15	85	32	54	21	33	2.70										1										
B-2	33.0	35.0	-	Clayshale	Shale		13.0																														
B-2	37.0	37.5	-	Clayshale	Shale																																
B-3	0.0	2.0	-	Embankment	CH		16.0																														
B-3	2.0	4.0	710	Embankment	CH	CH	18.7	96.9	115.0	0	13	87	28	56	19	37	2.69										3	66									
B-3	5.0	7.5	711	Embankment	CH	CL	18.9	99.7	118.5	0	9	91	20	42	23	19	2.71										2	28									
B-3	8.0	10.0	-	Embankment	CH		12.0																														
B-3	10.0	10.5	712A	Embankment	CH	CH	20.3	102.6	123.4	0	14	86	45	57	21	36	2.67										2	8									
B-3	10.5	12.5	712B	Embankment	CH	CH	19.3	89.8	107.1	0	13	87	33	52	21	31	2.70										1										
B-3	13.0	15.0	-	Embankment	CH		16.0																														
B-3	15.0	17.0	713	Embankment	CH	CL	18.0	107.0	126.3	0	27	73	38	47	18	29	2.62	UU	1 pt	720	12.1	5,223					2	3									
B-3	18.0	20.0	-	Embankment	CH																																
B-3	20.0	22.0	714	Embankment	CH	CL	17.0	112.0	131.0			82	35	46	18	28	2.68	UU	1 pt	1,439	6.14	5,620					1										
B-3	22.5	25.0	715	Embankment	CH	CL	21.6	97.1	118.1	0	8	92	24	46	21	25	2.69										1										
B-3	28.0	30.0	716	Core Trench	CH	CL	19.4	108.2	129.2	21	19	60	27	49	20	29	2.67										2	10									
B-3	33.0	35.0	717	Residuum (Midway)	CH	CH	22.3	101.0	123.5	0	12	88	28	52	22	30	2.70	UU	1 pt	2,159	4.63	5,269					2	12									
B-3	35.0	37.5	718	Residuum (Midway)	CH	CH	24.7	98.6	123.0	0	8	92	32	53	21	32	2.70										1										
B-3	43.0	45.0	719	Clayshale	Shale	CH	22.9	99.6	122.4	0	5	95	37	64	25	39	2.71	UU	1 pt	2,880	3.21	7,795					1										
B-3	48.0	50.0	-	Clayshale	Shale		19.0																														
B-3	50.0	51.5	-	Clayshale	Shale		21.0																														
B-04P	0.0	2.0	-	Embankment	CL		14.0																														
B-04P	2.0	4.0	-	Embankment	CL		19.0																														
B-04P	4.0	6.0	-	Embankment	CL		17.0																														
B-04P	6.0	8.5	247	Embankment	CL		21.2	94.9	115.0								2.70																				
B-04P	8.5	10.0	-	Embankment	CL		19.0																														
B-04P	10.0	12.5	248	Embankment	CL	CL	20.8	94.3	113.9	0	12	88	29	46	22	24	2.70	UC	1 pt	0	2.67	1,260					1										
B-04P	13.0	15.0	-	Embankment	CL		22.0																														
B-04P	18.0	20.0	-	Embankment	CH		16.0																														
B-04P	20.0	22.5	249	Embankment	CH	CL	16.5	102.4	119.3	0	22	78	34	42	16	26	2.73	UU	1 pt	2,588	18.1	5,265					1										
B-04P	22.5	24.0	-	Embankment	CH		18.0																														
B-04P	28.0	30.0	-	Embankment	CH		17.0																														
B-04P	33.0	35.0	-	Core Trench	CH		21.0																														
B-04P	35.0	37.5	250	Core Trench	CH	CL	19.9	108.6	130.2	0	25	75	34	43	17	26	2.72	UU	1 pt	4,461	17.5	2,366					1										
B-04P	37.5	39.5	-	Residuum (Midway)	CH		26.0																														
B-04P	43.0	45.5	251	Residuum (Midway)	CH	CH	24.0	101.8	126.2	0	14	86	34	55	21	34	2.72	UU	1 pt	5,324	4.35	7,037					2	24									
B-04P	48.0	50.0	-	Residuum (Midway)	CH		23.0																														
B-04P	53.0	55.0	252	Clayshale	Shale	CH	21.9	94.9	115.7	0	0	100	37	60	23	37	2.73	UC	1 pt	0	6.33	9,284															
B-04P	60.0	61.5		Clayshale	Shale		21.0																														
B-05	0.0	2.0	-	Embankment	CH		16.0																														
B-05	2.0	4.0	-	Embankment	CH		22.0																														
B-05	4.0	6.0	-	Embankment	CH		12.0																														
B-05	7.5	10.0	253	Embankment	CH	CL	18.3	99.2	117.4	0	8	92	27	48	21	27	2.70										1										SW
B-05	10.0	12.0	-	Embankment	CH		17.0																											700			
B-05	12.0	14.0	254	Embankment	CH	CL	19.8	102.4	122.7	0	6	94	28	46	22	24	2.72	UU	1 pt	1,580	9.83	4,797					1										
B-05	15.0	17.5	255	Embankment	CH	CH	29.9	91.1	118.3	0	0	100	53	82	27	55	2.72										2	12									CON, SW
B-05	17.5	19.5	-	Embankment	CH		20.0																														
B-05	20.0	22.0	256	Embankment	CH		21.5	104.9	127.5								2.71																				
B-05	22.0	23.5	-	Embankment	CH		20.0																														
B-05	24.0	25.0	-	Embankment	CH		16.0																														
B-05	28.0	30.0	-	Embankment	CH		22.0																														
B-05	30.0	32.5	257	Embankment	CH	CL	21.6	104.7	127.3	10	23	67	27	45	19	26	2.70	CIU'	3 pts	-	-	-	631	18.5	485	27.1	2	11									
B-05	32.5	34.5	-	Embankment	CH		18.0																														
B-05	38.0	40.0	-	Embankment	CH		19.0																														
B-05	43.0	45.0	-	Embankment	CH		27.0																														
B-05	45.0	47.5	258	Residuum (Midway)	CH		32.4	89.3	118.2								2.73																				
B-05	48.5	50.0	-	Residuum (Midway)	CH		24.0																														
B-05	53.5	55.0	-	Residuum (Midway)	CH		24.0																														
B-05	57.5	59.0	-	Residuum (Midway)	CH		23.0																														
B-05	63.5	65.0	-	Clayshale	Shale		22.0																														

Sample Information						Soil Index												Shear Strength									Dispersion			Proctor		Chemical					Other Tests Performed
																				UU-Triaxial or UCS			Total Stress		Effective Stress												
Boring ID	Top Depth (ft)	Bottom Depth (ft)	Sample ID	Interpreted Stratum	Field Classify	Lab USCS	WC (%)	DD (pcf)	WD (pcf)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Clay Content (%)	LL	PL	PI	Gs	Test Type	No. Norm. Stress Pts	sig3 (psf)	ef (%)	Su (psf)	Cu (psf)	ϕu (deg)	C' (psf)	ϕ' (deg)	Crumb Test Grade	Double Hydro (%)	Pinhole Grade	Ddmax (pcf)	wopt (%)	pH	Resistivity (ohm-cm)	Soluble Salts (%)	Sulfates (ppm)	Chlorides (ppm)	
B-05	68.5	70.0	-	Clayshale	Shale		21.0																														
B-06P	0.0	2.0	-	Embankment	CH		13.0																														
B-06P	2.0	4.0	-	Embankment	CH		22.0																														
B-06P	4.0	6.0	-	Embankment	CH		14.0																														
B-06P	7.5	10.0	259	Embankment	CH	CL	19.8	104.9	125.7	0	13	87	26	45	20	25	2.72										1										CON
B-06P	10.0	12.0	-	Embankment	CH		17.0																														
B-06P	12.0	14.0	-	Embankment	CH		21.0																												800		
B-06P	15.0	17.5	260	Embankment	CH	CL	24.4	92.4	114.9	0	7	93	22	46	23	23	2.75										1										CON, SW
B-06P	18.0	20.0	-	Embankment	CH		28.0																														
B-06P	20.0	22.5	261	Embankment	CH	CH	26.4	95.5	120.7	0	6	94	43	64	24	40	2.73	UU	1 pt	2,589	18.1	2,191					1										
B-06P	23.0	25.0	-	Embankment	CH		19.0																														
B-06P	28.0	30.0	-	Embankment	CH		17.0																														
B-06P	33.0	35.0	-	Embankment	CH		19.0																														
B-06P	38.0	40.0	-	Core Trench	CH		21.0																														
B-06P	40.0	42.5	262	Residuum (Midway)	CH	CL	20.6	104.9	126.5	0	22	78	38	49	18	31	2.72	UU	1 pt	5,033	13.53	1,948					2	2									
B-06P	43.0	45.0	-	Residuum (Midway)	CH		27.0																														
B-06P	45.0	47.0	263	Residuum (Midway)	CH		28.8	89.9	115.8								2.75																				
B-06P	47.0	48.5	-	Clayshale	Shale		25.0																														
B-06P	53.0	55.0	-	Clayshale	Shale		21.0																														
B-06P	58.0	59.5	-	Clayshale	Shale		22.0																														
B-06P	63.5	65.0	-	Clayshale	Shale		23.0																														
B-06P	68.5	70.0	-	Clayshale	Shale		24.0																														
B-07	0.0	2.0	-	Embankment	CH		12.0																														
B-07	2.0	4.0	-	Embankment	CH		17.0																														
B-07	4.0	5.0	-	Embankment	CH		13.0																														
B-07	5.0	6.5	-	Embankment	CH		15.0																														
B-07	7.5	10.0	264	Embankment	CH	CL	18.7	105.5	125.2	0	7	93	27	45	21	24	2.73										1										
B-07	10.0	12.0	265	Embankment	CH	CL	13.6	98.9	112.4	8	5	87	23	46	22	24	2.71																				SW
B-07	12.0	14.0	-	Embankment	CH		17.0																												900		
B-07	15.0	17.5	266	Embankment	CH	CH	19.2	109.3	130.3	8	17	75	32	52	20	32	2.76																				CON, SW
B-07	17.5	19.5	720	Embankment	CH	CH	20.3	102.7	123.5	0	6	94	43	65	24	41	2.70	CIU'	2 pts	-	-	-	171	22.7	132	29.2	2	2									
B-07	20.0	22.5	267	Embankment	CH	CH	20.8	103.6	125.1	0	24	76	41	51	18	33	2.70	UU	1 pt	2,591	15.2	3,445					1										
B-07	22.5	24.5	-	Embankment	CH		24.0																														
B-07	28.0	30.0	-	Embankment	CH		26.0																														
B-07	30.0	32.5	268	Residuum (Midway)	CH		27.2	96.1	122.2								2.75																				
B-07	32.5	34.5	-	Residuum (Midway)	CH		20.0																														
B-07	35.0	37.5	269	Residuum (Midway)	CH	CH	25.7	96.1	120.8	0	4	96	47	67	24	43	2.73	UU	1 pt	4,460	9.69	3,511					1										
B-07	37.5	39.5	-	Residuum (Midway)	CH		25.0																														
B-07	43.0	45.0	-	Residuum (Midway)	CH		25.0																														
B-07	48.0	50.0	-	Clayshale	Shale		21.0																														
B-07	53.5	55.0	-	Clayshale	Shale		24.0																														
B-07	58.5	60.0	-	Clayshale	Shale		22.0																														
B-08	0.0	2.0	-	Embankment	CH		22.0																														
B-08	2.0	4.0	-	Embankment	CH		16.0																														
B-08	4.0	5.0	-	Embankment	CH		12.0																														
B-08	5.0	7.5	270	Embankment	CH		15.3	114.9	132.5								2.72																				
B-08	7.5	9.5	-	Embankment	CH		19.0																														
B-08	13.0	15.0	-	Embankment	CH		15.0																														
B-08	15.0	17.5	271	Embankment	CH	CL	19.4	108.0	129.0	0	14	86	37	48	18	30	2.68	UU	1 pt	2,015	17.3	4,826					2	2									
B-08	18.0	20.0	-	Embankment	CH		18.0																														
B-08	20.0	22.5	272	Embankment	CH		28.9	94.9	122.3								2.74																				
B-08	23.0	25.0	-	Embankment	CH		18.0																														
B-08	28.0	30.0	-	Embankment	CH		19.0																														
B-08	30.0	32.5	273	Embankment	CH		20.9	107.4	129.8								2.69																				
B-08	32.5	34.5	721	Residuum (Midway)	CH	CH	16.2	113.1	131.4	0	9	91	41	63	23	40	2.71										1										
B-08	35.0	37.5	274	Residuum (Midway)	CH	CL	29.8	90.6	117.6	14	4	82	39	47	17	30	2.70	CIU'	3 pts	-	-	-	84	20.4	36	30.3											
B-08	37.5	39.5	-	Residuum (Midway)	CH		28.0																														
B-08	43.0	45.0	-	Clayshale	Shale		23.0																														
B-08	48.5	50.0	-	Clayshale	Shale		24.0																														
B-09	0.0	1.0	-	Embankment	CH		16.0																														
B-09	1.0	2.0	-	Embankment	CH		21.0																														
B-09	2.0	3.0	-	Embankment	CH		18.0																														
B-09	3.0	4.0	-	Embankment	CH		12.0																														
B-09	4.0	5.0	-	Embankment	CH		13.0																														
B-09	5.0	7.5	275	Embankment	CH		11.9	109.2	122.2								2.71																				
B-09	7.5	9.5	-	Embankment	CH		16.0																														
B-09	9.5	11.0	-	Embankment	CH		15.0																														
B-09	13.0	15.0	-	Embankment	CH		15.0																														
B-09	15.0	16.5	-	Residuum (Midway)	CH		16.0																														
B-09	18.0	20.0	276	Residuum (Midway)	CH	CH	27.8	92.4	118.1	0	0	100	51	77	27	50	2.72	UU	1 pt	2,301	7.38	3,032					1										
B-09	20.0	22.0	-	Residuum (Midway)	CH		27.0																														
B-09	23.0	25.0	-	Residuum (Midway)	CH		22.0																														
B-09	28.0	30.0	-	Residuum (Midway)	CH		23.0																														
B-301	0.0	2.0	-	Fill	CH		24.0																														
B-301	2.0	4.0	277	Fill	CH	CL	18.5	104.3	123.6	0	25	75	28	36	16	20	2.65	UC	1 pt	0	9.33	1,157					3	10									
B-301	4.0	6.0	278	Alluvium	CL	CL	14.1	115.5	131.8	0	26	74	36	47	17	30	2.75		disregard								4	5									
B-301	6.0	8.0	279	Alluvium	CH	CL	16.7	108.0	126.0	0	27	73	30	40	16	24	2.73	CIU'	2 pts	-	-	-	908	10.3	763	19.5	4	9									
B-301	8.0	10.0	280	Alluvium	CH	CH	22.0	101.8	124.2	0	19	81	35	51	19	32	2.72										4	61									
B-301	13.5	15.0	281	Residuum (Midway)	CH	CH	27.3	96.8	123.2	0	0	100	43	73	25	48	2.75										2	33									
B-301	18.0	20.0	282	Residuum (Midway)	CH	CL	25.9	94.9	119.5	5	8	87	27	47	23	24	2.73																				CON, SW
B-301	23.5	25.0	-	Clayshale	CH		24.0																														

Sample Information						Soil Index												Shear Strength									Dispersion			Proctor		Chemical					Other Tests Performed
																		Test Type	No. Norm. Stress Pts	UU-Triaxial or UCS			Total Stress		Effective Stress												
Boring ID	Top Depth (ft)	Bottom Depth (ft)	Sample ID	Interpreted Stratum	Field Classify	Lab USCS	WC (%)	DD (pcf)	WD (pcf)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Clay Content (%)	LL	PL	PI	Gs			sig3 (psf)	ef (%)	Su (psf)	Cu (psf)	ϕu (deg)	C' (psf)	ϕ' (deg)	Crumb Test Grade	Double Hydro (%)	Pinhole Grade	Ddmax (pcf)	wopt (%)	pH	Resistivity (ohm-cm)	Soluble Salts (%)	Sulfates (ppm)	Chlorides (ppm)	
B-302	0.0	2.0	-	Fill	CH		19.0																														
B-302	2.0	3.5	-	Leona	GC		8.0																														
B-302	4.0	5.5	283	Leona	GC	GC	8.3			49	27	24	14	58	22	36																					
B-302	5.5	7.0	284	Leona	GC	GC	8.4			53	29	18	9	46	18	28																					
B-302	8.0	10.0	-	Residuum (Midway)	CH		28.0																														
B-302	13.0	15.0	285	Residuum (Midway)	CH	CH	25.3	98.6	123.5	9	10	81	39	68	26	42	2.72	UU	1 pt	1,146	2.06	4,058					2	7									
B-302	18.0	20.0	286	Residuum (Midway)	CH	CH	25.1	98.0	122.6	20	7	73	31	66	25	41	2.71										1										
B-302	22.0	23.5	-	Residuum (Midway)	CH		28.0																														
B-302	23.5	25.0	-	Clayshale	CH		24.0																														
B-601	0.0	2.5	-	Fill	CL		24.0																														
B-601	2.5	3.5	287A	Fill	CL	CL	26.0			0	40	60	26	42	21	21	2.69										1										
B-601	3.5	5.0	287B	Fill	CL	CL	14.4	114.9	131.4	0	39	61	18	27	16	11	2.65										3										
B-601	5.0	6.5	288	Fill	CH	CL	19.7	106.8	127.8	0	31	69	33	47	18	29	2.67	UU	1 pt	719	18	1,796					4	27									
B-601	7.5	10.0	-	Alluvium	CH		18.0																														
B-601	10.0	12.5	289	Residuum (Midway)	CH	CH	22.6	95.5	117.1	0	13	87	35	52	20	32	2.73										2	24									CON, SW
B-601	12.5	14.5	-	Residuum (Midway)	CH		23.0																														
B-601	18.0	19.0	722	Residuum (Midway)	CH	CH	19.8	99.8	119.6	0	7	93	33	54	22	32	2.63										2	3									CON
B-601	19.0	20.5	290	Residuum (Midway)	CH	CH	24.3	92.6	115.1	0	2	98	33	58	23	35	2.73	UU	1 pt	1,866	10.3	3,552					2	19									CON, SW
B-601	24.0	26.0	-	Clayshale	CH		24.0																														
B-602	0.0	2.5	-	Fill	CH		22.0																														
B-602	2.5	5.0	-	Fill	CH		21.0																														
B-602	5.0	7.0	291	Alluvium	CH	CL	16.4	113.0	131.5	0	35	65	30	39	15	24	2.68	UU	1 pt	719	13.5	3,638					3	12									
B-602	7.5	10.0	-	Alluvium	CH		18.0																														
B-602	10.0	11.5	-	Residuum (Midway)	CH		19.0																														
B-602	13.5	15.0	-	Residuum (Midway)	CH		24.0																											3,500			
B-602	15.0	17.0	292	Residuum (Midway)	CH	CH	26.2	96.1	121.3	0	6	94	31	57	23	34	2.72	UU	1 pt	1,581	12.5	3,444					2	10									CON, SW
B-602	17.5	19.0	723	Residuum (Midway)	CH	CH	19.3	101.0	120.5	0	13	87	28	51	23	28	2.77	UU	1 pt	1,436	2.62	6,049					1										
B-602	23.0	24.0	293	Clayshale	Shale	CH	20.1	96.1	115.4	0	2	98	34	57	23	34	2.74										2	9									
B-602	25.0	26.0	294	Clayshale	Shale	CH	21.9	99.9	121.8	0	3	97	39	62	25	37	2.74	CDDS	3 pt	-	-	-	-	-	346	35.4											
B-602	28.5	30.0	-	Clayshale	Shale		18.0																														
B-602	33.5	35.0	-	Clayshale	Shale		21.0																														
B-603	0.0	2.5	-	Fill	CH		23.0																														
B-603	2.5	5.0	295	Fill	CH	CH	19.8	107.4	128.7	0	12	88	35	53	20	33	2.70										2										
B-603	5.0	6.5	-	Fill	CH		14.0																														
B-603	7.5	8.5	296	Leona	CH	CH	13.1	117.4	132.8	0	16	84	42	55	20	35	2.73										1										
B-603	10.0	11.5	-	Leona	CH		10.0																														
B-603	13.5	15.5	724	Residuum (Midway)	CH	CH	23.2	96.4	118.8	0	7	93	42	64	25	39	2.66			719	8.24	4,039					2	12									
B-603	15.5	17.5	297	Residuum (Midway)	CL	CH	27.8	94.9	121.3	0	6	94	41	65	24	41	2.72	CIU'	2 pts				201	28.4	88	35.3	2	13									CON, SW
B-603	18.0	19.0	-	Residuum (Midway)	CL		24.0																											5,600			
B-603	20.0	21.0	298	Residuum (Midway)	CL	CH	24.8	98.0	122.3	0	1	99	36	62	24	38	2.72	UU	1 pt	1,866	4.54	6,628					2	6									
B-603	22.0	23.5	-	Clayshale	Shale		23.0																														
B-603	24.0	25.0	299	Clayshale	Shale	CH	20.7	103.0	124.3	0	0	100	41	66	26	40	2.75	UC	1 pt	0	4.67	10,596					1										
B-603	30.0	31.0	300	Clayshale	Shale	CH	22.7	96.1	117.9	0	2	98	41	66	29	37	2.74	CDDS	3 pt	-	-	-	-	-	624	24.2											
B-603	33.5	35.0	-	Clayshale	Shale		23.0																														
B-603	38.0	39.0	301	Clayshale	Shale	CH	22.0	99.9	121.9	0	0	100	41	67	26	41	2.75	UC	1 pt	0	3.33	5,160					1										
B-603	43.5	45.0	-	Clayshale	Shale		24.0																														
B-604	0.0	2.5	-	Fill	CL		23.0																														
B-604	2.5	4.0	302	Leona	GC	GC	9.5			51	23	26	13	55	20	35																					
B-604	5.0	6.5	-	Residuum (Midway)	CH		19.0																														
B-604	7.5	9.0	303	Residuum (Midway)	CH	CH	23.7	99.9	123.6	0	7	93	43	64	24	40	2.79										1										
B-604	10.0	12.0	-	Residuum (Midway)	CH		22.0																														
B-604	15.0	16.0	304	Residuum (Midway)	CH	CH	21.8	98.6	120.1	0	0	100	41	63	24	39	2.68	UU	1 pt	1,580	4.9	8,461					2	8									
B-604	18.0	19.0	-	Residuum (Midway)	CH		22.0																														
B-604	20.0	21.0	305	Residuum (Midway)	CH	CH	22.0	98.0	119.6	0	2	98	40	68	25	43	2.73										1										CON, SW
B-604	23.0	24.5	306	Clayshale	Shale	CH	21.9	94.3	115.0	0	0	100	40	66	26	40	2.76	UC	1 pt	0	5.36	1,984					1										
B-604	24.5	26.0	-	Clayshale	Shale		24.0																											4,900			
B-604	28.0	29.5	-	Clayshale	Shale		22.0																														
B-604	30.0	31.0	307	Clayshale	Shale	CH	23.0	96.1	118.2	0	7	93	39	65	27	38	2.75	CDDS	3 pt	-	-	-	-	-	181	32.5	1										
B-604	34.0	35.0	-	Clayshale	Shale		22.0																														
B-604	39.0	40.0	308	Clayshale	Shale	CH	22.1	102.4	125.0	0	0	100	43	65	27	38	2.77	UC	1 pt	0	3.83	9,003					1										
B-604	43.5	45.0	-	Clayshale	Shale		21.0																														
B-605	0.0	2.5	309	Leona	CH/GC	GC	10.0	124.9	137.4	64	12	24	10	55	22	33	2.70										1										
B-605	5.0	6.5	310	Leona	GC		7.6			60	26	14	8																								
B-605	8.5	10.0	-	Residuum (Midway)	CH		22.0																														
B-605	10.0	11.5	311	Residuum (Midway)	CH	CH	24.2	98.0	121.7	0	0	100	42	68	24	44	2.68	UU	1 pt	1,290	3.11	5,499					1										
B-605	13.0	14.5	-	Residuum (Midway)	CH		21.0																														
B-605	18.0	20.0	-	Residuum (Midway)	CH		26.0																														
B-605	20.0	22.0	312	Residuum (Midway)	CH	CH	30.1	91.1	118.5	0	2	98	47	71	26	45	2.71	UU	1 pt	1,872	4.61	3,821					1										
B-605	23.0	25.0	-	Residuum (Midway)	CH		24.0																														
B-606	0.0	2.0	-	Fill	CH		22.0																														
B-606	2.0	4.0	313	Fill	CH	CL	19.3	108.6	129.6	0	29	71	32	44	17	27	2.70										1										
B-606	4.0	6.0	314	Residuum (Midway)	CH	CL	17.1	114.2	133.7	0	24	76	34	43	17	26	2.71										1										
B-606	6.0	8.0	-	Residuum (Midway)	CH		18.0																														
B-606	8.0	10.0	315	Residuum (Midway)	CH	CH	22.1	101.1	123.4	0	6	94	34	59	23	36	2.73										1	10									
B-606	13.5	15.0	-	Residuum (Midway)	CH		20.0																														
B-606	18.0	20.0	-	Residuum (Midway)	CH		21.0																														
HA-01	0	1	-	Embankment	CH		24.0																														
HA-01	1	2	-	Embankment	CH		22.0																														
HA-01	2	3	-	Embankment	CH		23.0																														
HA-01	3	4	-	Embankment	CH		25.0																														
HA-01	4	5	-	Embankment	CH	CH	27.0			0	5	95		52	24	28																		600			

Sample Information						Soil Index												Shear Strength									Dispersion			Proctor		Chemical					Other Tests Performed
																				UU-Triaxial or UCS			Total Stress		Effective Stress												
Boring ID	Top Depth (ft)	Bottom Depth (ft)	Sample ID	Interpreted Stratum	Field Classify	Lab USCS	WC (%)	DD (pcf)	WD (pcf)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Clay Content (%)	LL	PL	PI	Gs	Test Type	No. Norm. Stress Pts	sig3 (psf)	ef (%)	Su (psf)	Cu (psf)	ϕu (deg)	C' (psf)	ϕ' (deg)	Crumb Test Grade	Double Hydro (%)	Pinhole Grade	Ddmax (pcf)	wopt (%)	pH	Resistivity (ohm-cm)	Soluble Salts (%)	Sulfates (ppm)	Chlorides (ppm)	
HA-02	0	1	-	Embankment	CH		20.0																														
HA-02	1	2	-	Embankment	CH		24.0																														
HA-02	2	3	-	Embankment	CH		31.0																														
HA-02	3	4	-	Embankment	CH		23.0																														
HA-02	4	5	-	Embankment	CH		21.0																														
HA-03	0	1	-	Embankment	CH		20.0																														
HA-03	1	2	-	Embankment	CH		24.0																														
HA-03	2	3	-	Embankment	CH		31.0																														
HA-03	3	4	-	Embankment	CH		23.0																														
HA-03	4	5	-	Embankment	CH		21.0																														
HA-04	0	1	-	Embankment	CH	CH	29.0			0	5	95		70	26	44																					
HA-04	1	2	-	Embankment	CH		23.0																														
HA-04	2	3	-	Embankment	CH		25.0																														
HA-04	3	4	-	Embankment	CH		28.0																														
HA-04	4	5	-	Embankment	CH		29.0																														
HA-05	0	1	-	Embankment	CH		20.0																														
HA-05	1	2	-	Embankment	CH	CL	22.0			0	19	81		46	21	25																					
HA-05	2	3	-	Embankment	CH		25.0																														
HA-05	3	4	-	Embankment	CH		27.0																														
HA-05	4	5	-	Embankment	CH		27.0																														
HA-06	0	1	-	Embankment	CH		18.0																														
HA-06	1	2	-	Embankment	CH		23.0																														
HA-06	2	3	-	Embankment	CH		29.0																														
HA-06	3	4	-	Embankment	CH		23.0																												300		
HA-06	4	5	-	Embankment	CH	CL	23.0			1	14	85		48	23	25																					
COMP-1	(0'-4' of B-101, B-102, B-104, and B-105)			Borrow #1	CH	CL	18.6	101.4	120.2	0	20	80	35	43	18	25	2.70	CIU'	3 pts	-	-	-	275	14.7	140	27.5	2	14		107	18	6.9		0.5	2,542		CON, SW, HC
							20.4	102.0	122.8									UU	1 pt	1,007	10	1,633	1,555	2.5													
							20.4	102.0	122.8									UU	1 pt	2,015	10	1,777															
							20.8	102.0	123.2									UU	1 pt	4,032	10	1,788															
COMP-2	(4-10' of B-101, B-102, and B-104 & 5.5'-10' of B-105)			Borrow #1	CH	CL	20.2	106.0	127.4	0	33	67	30	39	16	23	2.72	CIU'	3 pts	-	-	-	288	13.8	202	24.2	2	26		111.5	15.5	7.4		0.4	1,300		HC
							18.4	106.0	125.5									UU	1 pt	1,007	10	1,871															
							18.0	106.0	125.1									UU	1 pt	2,015	10	2,153	1,714	4.6													
							18.0	106.0	125.1									UU	1 pt	4,031	10	2,161															
COMP-3	(0'-3' of B-107, B-108, B-109, B-			Borrow #2	CH	CH	19.9	96.9	116.2	0	24	76	41	50	19	31	2.70										1	9		102	20	7.2		0.8	2,268		CON, SW
COMP-4	(3'-8' of B-107, B-108, B-109, and			Borrow #2	CH	CH				0	9	91	54	57	20	37	2.74										1	15		101.5	21	7.2		2.4	3,396		
COMP-5	(10'-12.5' of B-04, 7.5'-14' of B-05)			Req'd Embak. Excav.		CL								45	19	26																					
COMP-6	(13.5'-15.5' of B-603, 20'-21' of B-604)			Req'd Found. Excav.		CH								62	22	40																					
COMP-7	(15'-19' of B-602)			Req'd Found. Excav.		CH								54	20	34																					
B-101	0.0	4.0	-	Borrow #1	CH																																
B-101	4.0	10.0	-	Borrow #1	CH																																
B-102	0.0	4.0	-	Borrow #1	CH									44	17	27																					
B-102	4.0	10.0	-	Borrow #1	CH									35	14	21																					
B-104	0.0	4.0	-	Borrow #1	CH									45	17	28																					
B-104	4.0	10.0	-	Borrow #1	CH									42	15	27																					
B-105	1.0	5.5	-	Borrow #1	CH																														88		
B-105	5.5	10.0	-	Borrow #1	CH																														806		
B-107	0.0	3.0	-	Borrow #2	CH									60	22	38																					
B-107	3.0	10.0	-	Borrow #2	CH									69	23	46																					
B-108	0.0	3.0	-	Borrow #2	CH																																
B-108	3.0	10.0	-	Borrow #2	CH																																
B-109	0.0	4.0	-	Borrow #2	CH									51	18	33																					
B-109	4.0	10.0	-	Borrow #2	CH									68	22	46																					
B-110	0.0	3.0	-	Borrow #2	CH																														146		
B-110	3.0	8.0	-	Borrow #2	CH																														148		

Abbreviations:

USCS - Unified Soil Classification System
WC - Moisture Content
DD - Dry Unit Weight
WD - Moist Unit Weight
%Gravel - Gravel content (percent coarser than the US No. 4 sieve by weight)
%Sand - Sand content (percent finer than the US No. 4 sieve and coarser than the US No. 200 sieve by weight)
FC - Fines content (percent finer than the US No. 200 sieve by weight, i.e. silt and clay fraction)
%Clay - Clay content (percent finer than 0.002 mm)

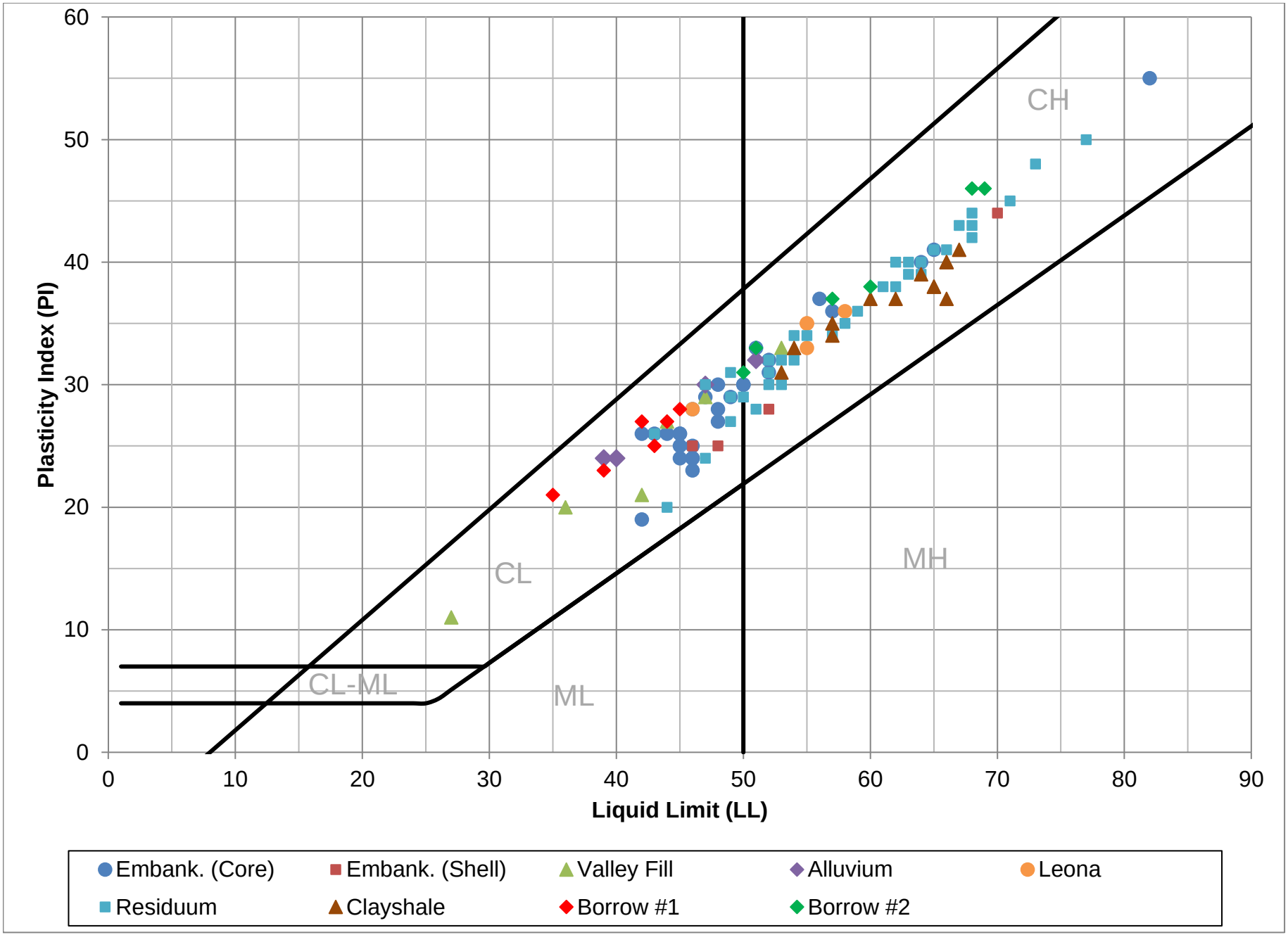
LL - Liquid limit
PI - Plasticity Index
PL - Plastic Limit
Gs - Specific Gravity
Test Type UC - Unconfined Compression
UU - Unconsolidated-Undrained Triaxial Compression
CIU' - Isotropically Consolidated-Undrained Triaxial Compression with pore pressure measurements
CDDS - Consolidated-drained direct shear

Sig3 - Effective consolidation pressure
ef(%) - Strain at failure
Su - Undrained shear strength
cu - Total stress cohesion intercept
ϕu - Total stress angle of internal friction
c' - Effective stress cohesion intercept
ϕ' - Effective stress angle of internal friction

Ddmax - Maximum dry density per ASTM D698
wopt(%) - Optimum moisture content per ASTM D698
CON - One dimensiontal Incremental Consolidatoin
SW - One dimensional Swell
HC - Hydraulic Conductivity

Sample Information						Soil Index												Shear Strength									Dispersion			Proctor		Chemical					Other Tests Performed
																		Test Type	No. Norm. Stress Pts	UU-Triaxial or UCS			Total Stress		Effective Stress												
Boring ID	Top Depth (ft)	Bottom Depth (ft)	Sample ID	Interpreted Stratum	Field Classify	Lab USCS	WC (%)	DD (pcf)	WD (pcf)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Clay Content (%)	LL	PL	PI	Gs			sig3 (psf)	ef (%)	Su (psf)	Cu (psf)	ϕu (deg)	C' (psf)	ϕ' (deg)	Crumb Test Grade	Double Hydro (%)	Pinhole Grade	Ddmax (pcf)	wopt (%)	pH	Resistivity (ohm-cm)	Soluble Salts (%)	Sulfates (ppm)	Chlorides (ppm)	

B.2 Atterberg Limits Plots


Plasticity Index (PI)
Liquid Limit (LL)
0
10
20
30
40
50
60
70
80
90
CH
CL
MH
CL-ML
ML
Embank. (Core)
Embank. (Shell)
Valley Fill
Alluvium
Leona
Residuum
Clayshale
Borrow #1
Borrow #2

B.3 NRCS Laboratory Report (December 2019)

USDA United States Department of Agriculture
Natural Resources Conservation Service

Natural Resources Conservation Service

National Design, Construction, and Soil Mechanics Center

Lincoln Soil Mechanics Laboratory
512 S. 7th Street
Lincoln, NE
68508-2919

Phone:
402-437-5337

Subject: ENG – Soil Mechanics – Texas (WHRB)
Plum Creek Site 21, Caldwell County

Date: OCT 18 2019

To: Brian Wenberg
State Conservation Engineer
NRCS, Temple, Texas

File Code: 210-22
Job No.: 19-043WB & 19-086WB

BACKGROUND

The soil mechanics tests requested for the samples submitted from the subject site have been completed and the test results are summarized on the attached reporting form NRCS-ENG-354. Sixty-Nine Shelby tube core samples, some of the samples had been previously extruded, and sixteen disturbed samples were submitted to the NDCSMC- Lincoln Soil Mechanics Laboratory for testing. The sixteen disturbed samples were combined into four large samples and soil mechanics testing was performed on these combined samples. An additional 29 Shelby tube core samples were submitted to the NDCSMC – Lincoln Soil Mechanics Laboratory at a later date.

Tests performed on each of the samples included the following:

- Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass (ASTM D2216)
- Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis (ASTM D6913)
- Liquid Limit, Plastic Limit, and Plasticity Index of Soils (ASTM D4318)
- Classification of Soils for Engineering Purposes - Unified Soil Classification System (ASTM D2487)
- Dispersive Characteristics of Clay Soil by Double Hydrometer (ASTM 4221)
- Dispersive Characteristics of Clayey Soils by the Crumb Test (ASTM D6572)

Additional testing performed on select samples included the following:

- Specific Gravity of Soil Solids by Water Pycnometer (ASTM D854)
- Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (ASTM D698)
- Unconfined Compressive Strength of Cohesive Soil (ASTM D2166)
- Consolidated Undrained Triaxial Compression Test for Cohesive Soils (ASTM D4767)
- Direct Shear Test of Soils Under Consolidated Drained Conditions (ASTM D3080)
- One-Dimensional Consolidation Properties of Soils Using Incremental Loads (ASTM D2435)
- One-Dimensional Swell or Collapse of Soils (ASTM 4546C)
- Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (ASTM D5084)
- Laboratory Determination of Density (Unit Weight) of Soil Specimens (ASTM D7263)

The laboratory tests are summarized on the attached NRCS-ENG-354. Also attached are the shear test results, consolidation test results and the visual description and photos of the undisturbed samples.

Further testing and analysis for this project was not requested. If you have any questions about the test results or require any further testing or analysis for this project, please contact the NDCSMC-Lincoln at 402-470-8915.

Prepared by:

RANDY R. MOSES, PE
Engineer, Soil Mechanics Laboratory

Concurred by:

STEPHEN D. REINSCH, P.E.
Co-Director, NDCSMC, Soil Mechanics

Attachments:

1. Summary of Test Data, Form NRCS-ENG-354, 18 sheets
2. CU' Triaxial Shear Tests, 7 tests, 179 sheets
3. UU Triaxial Shear Tests, 30 test, 169 sheets
4. Qu Shear Tests, 9 tests, 45 sheets
5. Consolidation Test Data, 11 tests, 216 sheets
6. Swell Test Data, 13 tests, 177 sheets
7. Direct Shear Data, 3 tests, 39 sheets
8. Undisturbed Sample Characteristics, Form NRCS-ENG-129, 98 sheets
9. Undisturbed Sample Photographs, 109 photos, 55 sheets

cc: (electronic distribution)

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Soil Mechanics Laboratory Data

Sheet _1__ of _13__

01/18/19		TEXAS (WHRB) (REGULATED)			Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight																Atterberg Limits					Moisture-Density Relationships □ Standard □ Modified						Special Tests			
Lab. Sample No.	Field Number	Location and Description	Sample Type	Depth ft.	Fines					Sand						Gravel							Unified Classification	Crumb	Dispersion %	Curve No.	Max γ_d p.c.f.	w_0 %	As Received Moisture	Soluble Salts %	G_S <#4	pH		Triaxial Shear Testing (Untreated Soils)	
		Plum Creek Site 21 Caldwell County			0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	#140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	L.L.	P.I.													
Comp		Borrow	LB	0-4	35	37	48	72	80					100								43	25	CL	2	14	1	107.0	18.0	4.0	0.5	2.70	6.9			
1		B-101,102,104,&105																																		
		w/ 1% Lime																			45	15														
		w/ 2% Lime																			43	9														
		w/ 3% Lime																			41	9										12.5				
		w/ 4% Lime																			41	8										12.5	Permeability (cm/sec)			
		w/ 5% Lime																			41	7										12.5	$k = 4.6x10^{-8}$			
		w/ 6% Lime																			41	7										12.5				
Comp		Borrow	LB	4-10	30	35	45	61	67	78	97	99	99	100							39	23	CL	2	26	2	111.5	15.5	3.3	0.4	2.72	7.4			
2		B-101,102,104,&105																																		
		w/ 1% Lime																			39	10														
		w/ 2% Lime																			39	7														
		w/ 3% Lime																			37	7										12.5				
		w/ 4% Lime																			—	NP										12.6	Permeability (cm/sec)			
		w/ 5% Lime																			—	NP										12.6	$k = 1.5x10^{-7}$			
		w/ 6% Lime																			—	NP										12.6				
Comp		Borrow	LB	0-3	41	45	56	73	76												50	31	CH	1	9	3	102.0	20.0	3.4	0.8	2.70	7.2			
3		B-107,108,109, & 110																																		
		w/ 1% Lime																			50	17														
		w/ 2% Lime																			48	12														
		w/ 3% Lime																			46	9														
		w/ 4% Lime																			46	7														
Comp		Borrow	LB	3-8	54	62	75	86	91					100							57	37	CH	1	15	4	101.5	21.0	4.2	2.4	2.74	7.2			
4		B-107,108,109, & 110																																		
		w/ 1% Lime																			57	24														
		w/ 2% Lime																			54	15														
		w/ 3% Lime																			52	12														

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Soil Mechanics Laboratory Data

01/18/19		TEXAS (WHRB) (REGULATED)			Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight																Atterberg Limits					Moisture-Density Relationships □ Standard □ Modified			Undisturbed Sample Data			Special Tests				
					Fines					Sand						Gravel																			
Lab. Sample No. 19-	Field Number	Location and Description **Plum Creek Site 21** Caldwell County	Sample Type	Depth ft.	0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	#140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	L.L.	P.I.	Unified Classification	Crumb	Dispersion %	Curve No.	Max γ_d p.c.f.	w_0 %	γ_d p.c.f.	w_C %	G_S <#4	W_{Sat} %				
247		B-04P	ST	6-8.5																										94.9	21.2	2.70					
248		B-04P	ST	10-12.5	29	30	56	85	88					100								46	24	CL	1					94.3	20.8	2.70					
249		B-04P	ST	20-22.5	34	35	48	73	78					100								42	26	CL	1					102.4	16.5	2.73					
250		B-04P	ST	35-37.5	34	35	52	68	75					100								43	26	CL	1					108.6	19.9	2.72					
251		B-04P	ST	43-45.5	34	37	49	78	86					100								55	34	CH	2	24				101.8	24.0	2.72					
252		B-04P	ST	53-55	37	47	69	94	100													60	37	CH						94.9	21.9	2.73					

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01/18/19 — TEXAS (WHRB) (REGULATED)

Location and Description: **Plum Creek Site 21**, Caldwell County

Lab. Sample No. 19-	Field Number	Location and Description	Sample Type	Depth ft.	Fines 0.002 mm	Fines 0.005 mm	Fines 0.02 mm	Fines 0.05 mm	Fines #200 0.074 mm	Sand #140 0.105 mm	Sand #60 0.250 mm	Sand #40 0.42 mm	Sand #20 0.84 mm	Sand #10 2.0 mm	Sand #4 4.76 mm	Gravel 3/8" 9.525 mm	Gravel 1/2" 12.7 mm	Gravel 3/4" 19.05 mm	Gravel 1" 25.4 mm	Gravel 1 1/2" 38.1 mm	Gravel 3" 76.2 mm	Atterberg Limits L.L.	Atterberg Limits P.I.	Unified Classification	Crumb	Dispersion %	Moisture-Density Relationships □ Standard □ Modified: Curve No.	Max γ_d p.c.f.	w_0 %	Undisturbed Sample Data γ_d p.c.f.	w_C %	G_S <#4	Special Tests W_{Sat} %				
253		B-05	ST	7.5-10	27	32	54	85	92					100								48	27	CL	1					102.4	20.0	2.70					
254		B-05	ST	12-14	28	35	56	86	94					100								46	24	CL	1					102.4	19.8	2.72					
255		B-05	ST	15-17.5	53	68	94	100														82	55	CH	2	12				91.1	29.9	2.72					
256		B-05	ST	20-22																										104.9	21.5	2.71					
257		B-05	ST	30-32.5	27	28	42	59	67	73	77	78	78	78	90	94	97	99	100			45	26	CL	2	11				104.7	21.6	2.70					
258		B-05	ST	45-47.5																										89.3	32.4	2.73					

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					Fines					Sand						Gravel																				
Lab. Sample No. 19-	Field Number	Location and Description **Plum Creek Site 21** Caldwell County	Sample Type	Depth ft.	0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	#140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	L.L.	P.I.	Unified Classification	Crumb	Dispersion %	Curve No.	Max γ_d p.c.f.	w_0 %	γ_d p.c.f.	w_C %	G_S <#4	W_{Sat} %				
259		B-06P	ST	7.5-10	26	29	48	80	87					100								45	25	CL	1					104.9	19.8	2.72					
260		B-06P	ST	15-17.5	22	28	47	87	93					100								46	23	CL	1					92.4	24.4	2.75					
261		B-06P	ST	20-22.5	43	54	75	92	94					100								64	40	CH	1					95.5	26.4	2.73					
262		B-06P	ST	40-42.5	38	41	54	73	78	84	98	99	99	100								49	31	CL	2	2				104.9	20.6	2.72					
263		B-06P	ST	45-47																										89.9	28.8	2.75					
264		B-07	ST	7.5-10	27	30	53	87	93					100								45	24	CL	1					105.5	18.7	2.73					

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Soil Mechanics Laboratory Data

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01/18/19		TEXAS (WHRB) (REGULATED)			Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight																	Atterberg Limits					Moisture-Density Relationships □ Standard □ Modified			Undisturbed Sample Data			Special Tests				
					Fines					Sand						Gravel																					
Lab. Sample No. 19-	Field Number	Location and Description **Plum Creek Site 21** Caldwell County	Sample Type	Depth ft.	0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	#140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	L.L.	P.I.	Unified Classification	Crumb	Dispersion %	Curve No.	Max γ_d p.c.f.	w_0 %	γ_d p.c.f.	w_C %	G_S <#4	W_{Sat} %				
265		B-07	ST	10-12	23	30	49	79	87	91	92	92	92	92	92	92	92	92	100			46	24	CL						98.9	13.6	2.71					
266		B-07	ST	15-17.5	32	37	51	67	75	79	88	89	89	90	92	95	97	100				52	32	CH						109.3	19.2	2.76					
267		B-07	ST	20-22.5	41	43	54	73	76					100								51	33	CH	1					103.6	20.8	2.70					
268		B-07	ST	30-32.5																										96.1	27.2	2.75					
269		B-07	ST	35-37.5	47	56	68	94	96					100								67	43	CH	1					96.1	25.7	2.73					
270		B-08	ST	5-7.5																										114.9	15.3	2.72					

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TEXAS (WHRB)
(REGULATED)

Lab. Sample No. 19-	Field Number	Location and Description: **Plum Creek Site 21** Caldwell County	Sample Type	Depth ft.	Mechanical Analysis, Grain Size Distribution Expressed as Percent Finer by Dry Weight: Fines 0.002 mm	Fines 0.005 mm	Fines 0.02 mm	Fines 0.05 mm	Fines #200 0.074 mm	Sand #140 0.105 mm	Sand #60 0.250 mm	Sand #40 0.42 mm	Sand #20 0.84 mm	Sand #10 2.0 mm	Sand #4 4.76 mm	Gravel 3/8" 9.525 mm	Gravel 1/2" 12.7 mm	Gravel 3/4" 19.05 mm	Gravel 1" 25.4 mm	Gravel 1 1/2" 38.1 mm	Gravel 3" 76.2 mm	Atterberg Limits L.L.	Atterberg Limits P.I.	Unified Classification	Crumb	Dispersion %	Moisture-Density Relationships □ Standard □ Modified: Curve No.	Max γ_d p.c.f.	w_0 %	Undisturbed Sample Data γ_d p.c.f.	Undisturbed Sample Data w_C %	G_S <#4	Special Tests				
271		B-08	ST	15-17.5	37	41	56	78	86					100								48	30	CL	2	2				108.0	19.4	2.68					
272		B-08	ST	20-22.5																										94.9	28.9	2.74					
273		B-08	ST	30-32.5																										107.4	20.9	2.69					
274		B-08	ST	35-37.5	39	46	67	77	82	82	82	82	82	82	86	88	89	90	91	93	100	47	30	CL						90.6	29.8	2.70					
275		B-09	ST	5-7.5																										109.2	11.9	2.71					
276		B-09	ST	18-20	51	68	90	98	100													77	50	CH	1					92.4	27.8	2.72					

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01/18/19		TEXAS (WHRB) (REGULATED)			Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight																	Atterberg Limits					Moisture-Density Relationships □ Standard □ Modified			Undisturbed Sample Data			Special Tests				
					Fines					Sand						Gravel																					
Lab. Sample No. 19-	Field Number	Location and Description **Plum Creek Site 21** Caldwell County	Sample Type	Depth ft.	0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	#140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	L.L.	P.I.	Unified Classification	Crumb	Dispersion %	Curve No.	Max γ_d p.c.f.	w_0 %	γ_d p.c.f.	w_C %	G_S <#4					
277		B-301	ST	2-4	28	30	43	68	75					100								36	20	CL	3	10				104.3	18.5	2.65					
278		B-301	ST	4-6	36	41	50	68	74					100								47	30	CL	4	5				115.5	14.1	2.75					
279		B-301	ST	6-8	30	33	41	61	73					100								40	24	CL	4	9				108.0	16.7	2.73					
280		B-301	ST	8-10	35	41	54	75	81					100								51	32	CH	4	61				101.8	22.0	2.72					
281		B-301	ST	13.5-15	43	54	80	99	100													73	48	CH	2	33				96.8	27.3	2.75					
282		B-301	ST	18-20	27	31	45	76	87	91	94	94	95	95	95	95	95	96	100			47	24	CL						94.9	25.9	2.73					

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01/18/19		TEXAS (WHRB) (REGULATED)			Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight																	Atterberg Limits					Moisture-Density Relationships □ Standard □ Modified			Undisturbed Sample Data			Special Tests				
Lab. Sample No. 19-	Field Number	Location and Description **Plum Creek Site 21** Caldwell County	Sample Type	Depth ft.	Fines					Sand						Gravel						L.L.	P.I.	Unified Classification	Crumb	Dispersion %	Curve No.	Max γ_d p.c.f.	w_0 %	γ_d p.c.f.	w_C %	G_S <#4					
					0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	#140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm																
283		B-302	ST	4-5.5	14	15	18	24	24	25	31	33	35	41	51	63	79	88	100			58	36	GC							8.3						
284		B-302	ST	5.5-7	9	10	12	16	18	21	27	29	32	36	47	61	68	77	89	100		46	28	GC							8.4						
285		B-302	ST	13-15	39	50	69	80	81	82	82	83	83	83	91	95	98	100				68	42	CH	2	7				98.6	25.3	2.72					
286		B-302	ST	18-20	31	33	56	70	73	74	75	76	76	76	80	86						66	41	CH	1					98.0	25.1	2.71					
287A		B-601	ST	2.5-5	26	28	35	54	60	82	98	99	99	100								42	21	CL	1					96.8	25.0	2.69					
287B		B-601	ST	2.5-5	18	22	34	53	61	73	97	99	100									27	11	CL	3					114.9	14.4	2.65					

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					Fines					Sand						Gravel																				
Lab. Sample No. 19-	Field Number	Location and Description **Plum Creek Site 21** Caldwell County	Sample Type	Depth ft.	0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	#140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	L.L.	P.I.	Unified Classification	Crumb	Dispersion %	Curve No.	Max γ_d p.c.f.	w_0 %	γ_d p.c.f.	w_C %	G_S <#4				
288		B-601	ST	5-6.5	33	37	43	63	69	80	97	99	100									47	29	CL	4	27				106.8	19.7	2.67				
289		B-601	ST	10-12.5	35	38	52	80	87					100								52	32	CH	2	24				95.5	22.6	2.73				
290		B-601	ST	19-20.5	33	43	65	93	98					100								58	35	CH	2	19				92.4	24.4	2.73				
291		B-602	ST	5-7	30	33	41	61	65	74	97	100										39	24	CL	3	12				113.0	16.4	2.68				
292		B-602	ST	15-17	31	40	58	91	94					100								57	34	CH	2	10				96.1	26.2	2.72				
293		B-602	ST	23-24	34	43	65	94	98					100								57	34	CH	2	9				96.1	20.1	2.74				

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TEXAS (WHRB)
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Location and Description
Plum Creek Site 21
Caldwell County

Lab. Sample No. 19-	Field Number	Location and Description	Sample Type	Depth ft.	Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight: Fines 0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	Sand #140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	Gravel 3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	Atterberg Limits L.L.	P.I.	Unified Classification	Crumb	Dispersion %	Moisture-Density Relationships □ Standard □ Modified Curve No.	Max γ_d p.c.f.	w_0 %	Undisturbed Sample Data γ_d p.c.f.	w_C %	G_S <#4	Special Tests				
294		B-602	ST	25-26	39	51	73	94	97					100								62	37	CH						99.9	21.9	2.74					
295		B-603	ST	2.5-5	35	41	56	80	88					100								53	33	CH	2					107.4	19.8	2.70					
296		B-603	ST	7.5-8.5	42	48	63	80	84					100								55	35	CH	1					117.4	13.1	2.73					
297		B-603	ST	15.5-17.5	41	48	73	92	94					100								65	41	CH	2	13				94.9	27.8	2.74					
298		B-603	ST	20-21	36	49	71	96	99					100								62	38	CH	2	6				98.0	24.8	2.72					
299		B-603	ST	23-24	41	56	75	99	100													66	40	CH	1					103.0	20.7	2.75					

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Soil Mechanics Laboratory Data

01/18/19		TEXAS (WHRB) (REGULATED)			Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight																Atterberg Limits					Moisture-Density Relationships □ Standard □ Modified			Undisturbed Sample Data			Special Tests				
					Fines					Sand						Gravel																				
Lab. Sample No. 19-	Field Number	Location and Description **Plum Creek Site 21** Caldwell County	Sample Type	Depth ft.	0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	#140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	L.L.	P.I.	Unified Classification	Crumb	Dispersion %	Curve No.	Max γ_d p.c.f.	w_0 %	γ_d p.c.f.	w_C %	G_S <#4					
300		B-603	ST	30-31	41	54	83	95	98					100								66	37	CH						96.1	22.7	2.74					
301		B-603	ST	38-39	41	55	78	99	100													67	41	CH	1					99.9	22.0	2.75					
302		B-604	ST	2.5-4	13	14	18	25	26	28	33	35	37	41	49	65	75	83	94	100		55	35	GC							9.5					
303		B-604	ST	7.5-9	43	53	68	92	93					100								64	40	CH	1					99.9	23.7	2.79					
304		B-604	ST	15-16	41	53	75	94	100													63	39	CH	2	8				98.6	21.8	2.68					
305		B-604	ST	20-21	40	53	76	98	98					100								68	43	CH	1					98.0	22.0	2.73					

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01/18/19		TEXAS (WHRB) (REGULATED)			Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight																Atterberg Limits					Moisture-Density Relationships □ Standard □ Modified						Special Tests				
					Fines					Sand						Gravel																				
Lab. Sample No. 19-	Field Number	Location and Description **Plum Creek Site 21** Caldwell County	Sample Type	Depth ft.	0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	#140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	L.L.	P.I.	Unified Classification	Crumb	Dispersion %	Curve No.	Max γ_d p.c.f.	w_0 %	γ_d p.c.f.	w_C %	G_S <#4					
306		B-604	ST	23-24.5	40	51	75	98	100													66	40	CH	1					94.3	21.9	2.76					
307		B-604	ST	30-31	39	48	69	91	93					100								65	38	CH	1					96.1	23.0	2.75					
308		B-604	ST	39-40	43	60	82	94	100													65	38	CH	1					102.4	22.1	2.77					
309		B-605	ST	0-2.5	10	12	17	22	24	25	26	27	27	29	36	43	50	57	64	67	100	55	33	GC	1					124.9	10.0	2.70					
310		B-605	ST	5-6.5	8	9	11	13	14	14	16	18	21	27	40	54	66	83	100			NES <#40									7.6						
311		B-605	ST	10-11.5	42	54	73	92	100													68	44		1					98.0	24.2	2.68					

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01/18/19		TEXAS (WHRB) (REGULATED)			Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight																Atterberg Limits					Moisture-Density Relationships □ Standard □ Modified			Undisturbed Sample Data			Special Tests				
					Fines					Sand						Gravel																				
Lab. Sample No. 19-	Field Number	Location and Description **Plum Creek Site 21** Caldwell County	Sample Type	Depth ft.	0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	#140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	L.L.	P.I.	Unified Classification	Crumb	Dispersion %	Curve No.	Max γ_d p.c.f.	w_0 %	γ_d p.c.f.	w_C %	G_S <#4					
312		B-605	ST	20-22	47	60	82	95	98					100								71	45	CH	1					91.1	30.1	2.71					
313		B-606	ST	2-4	32	33	45	65	71					100								44	27	CL	1					108.6	19.3	2.70					
314		B-606	ST	4-6	34	35	45	65	76					100								43	26	CL	1					114.2	17.1	2.71					
315		B-606	ST	8-10	34	41	58	94	94					100								59	36	CH	1	10				101.1	22.1	2.73					

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TEXAS (WHRB)
(REGULATED)
Location and Description
Plum Creek Site 21
Caldwell County

Lab. Sample No. 19-	Field Number	Location and Description	Sample Type	Depth ft.	Fines 0.002 mm	Fines 0.005 mm	Fines 0.02 mm	Fines 0.05 mm	Fines #200 0.074 mm	Sand #140 0.105 mm	Sand #60 0.250 mm	Sand #40 0.42 mm	Sand #20 0.84 mm	Sand #10 2.0 mm	Sand #4 4.76 mm	Gravel 3/8" 9.525 mm	Gravel 1/2" 12.7 mm	Gravel 3/4" 19.05 mm	Gravel 1" 25.4 mm	Gravel 1 1/2" 38.1 mm	Gravel 3" 76.2 mm	Atterberg Limits L.L.	Atterberg Limits P.I.	Unified Classification	Crumb	Dispersion %	Moisture-Density Relationships □ Standard □ Modified Curve No.	Max γ_d p.c.f.	w_0 %	Undisturbed Sample Data γ_d p.c.f.	w_C %	G_S <#4	Special Tests W_{Sat} %				
696		B-1	ST	2-4	28	32	60	85	92					100								53	30	CH	2	28				95.9	26.1	2.69					
697		B-1	ST	5-7.5	26	30	46	73	85					100								49	29	CL	3	27				91.3	23.7	2.71					
698		B-1	ST	15-17	28	31	43	63	73					100								44	20	CL	1					99.9	22.4	2.73					
699		B-1	ST	17.5-20	31	35	48	69	86					100								50	29	CH	1					95.1	27.4	2.70					
700		B-1	ST	20-22.5	35	41	61	83	87					100								57	35	CH	1					97.0	24.8	2.69					
701		B-1	ST	23-25	33	40	60	77	94					100								53	31	CH	1					92.0	21.8	2.70					

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TEXAS (WHRB) (REGULATED)

Location and Description: **Plum Creek Site 21** Caldwell County

Lab. Sample No. 19-	Field Number	Location and Description	Sample Type	Depth ft.	Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight: Fines 0.002 mm	Fines 0.005 mm	Fines 0.02 mm	Fines 0.05 mm	Fines #200 0.074 mm	Sand #140 0.105 mm	Sand #60 0.250 mm	Sand #40 0.42 mm	Sand #20 0.84 mm	Sand #10 2.0 mm	Sand #4 4.76 mm	Gravel 3/8" 9.525 mm	Gravel 1/2" 12.7 mm	Gravel 3/4" 19.05 mm	Gravel 1" 25.4 mm	Gravel 1 1/2" 38.1 mm	Gravel 3" 76.2 mm	Atterberg Limits L.L.	Atterberg Limits P.I.	Unified Classification	Crumb	Dispersion %	Moisture-Density Relationships □ Standard □ Modified: Curve No.	Max γ_d p.c.f.	w_0 %	Undisturbed Sample Data γ_d p.c.f.	w_C %	G_S <#4	Special Tests W_{Sat} %				
702		B-2	ST	5-7.5	33	39	53	76	85					100								50	30	CH	2	10				108.0	20.0	2.82					
703		B-2	ST	8-10	32	34	48	73	81					100								44	26	CL	2	12				107.9	18.5	2.70					
704		B-2	ST	15-17.5	30	36	48	71	77	85	90	90	91	91	93	94	94	94	94	94	100	48	28	CL	3	5				109.5	19.3	2.68					
705		B-2	ST	18-20	39	45	58	78	85					100								50	30	CH	2	9				109.8	18.0	2.67					
706		B-2 A	ST	20-22.5	38	43	58	78	85					100								52	32	CH	1												
		B-2 B			26	33	48	77	85					100								49	27	CL	2	24											
707		B-2	ST	23-25	28	33	54	84	92					100								52	31	CH	2	9				93.2	20.0	2.68					

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01/18/19		TEXAS (WHRB) (REGULATED)			Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight																	Atterberg Limits					Moisture-Density Relationships □ Standard □ Modified			Undisturbed Sample Data			Special Tests				
					Fines					Sand						Gravel																						
Lab. Sample No. 19-	Field Number	Location and Description **Plum Creek Site 21** Caldwell County	Sample Type	Depth ft.	0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	#140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	L.L.	P.I.	Unified Classification	Crumb	Dispersion %	Curve No.	Max γ_d p.c.f.	w_0 %	γ_d p.c.f.	w_C %	G_S <#4	W_{Sat} %				
708		B-2	ST	28-30	35	43	68	90	93					100								61	38	CH	2	7				95.1	19.4	2.67					
709		B-2	ST	30-32.5	32	39	57	78	85					100								54	33	CH	1					90.4	19.7	2.70					
710		B-3	ST	2-4	28	32	52	77	87					100								56	37	CH	3	66				96.9	18.7	2.69					
711		B-3	ST	5-7.5	20	25	41	82	91					100								42	19	CL	2	28				99.7	18.9	2.71					
712		B-3 A	ST	10-12.5	45	49	64	76	86					100								57	36	CH	2	8				102.6	20.3	2.67					
		B-3 B			33	40	53	79	87					100								52	31	CH	1					89.8	19.3	2.70					
713		B-3	ST	15-17	38	40	54	67	73					100								47	29	CL	2	3				107.0	18.0	2.62					

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01/18/19		TEXAS (WHRB) (REGULATED)			Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight																	Atterberg Limits					Moisture-Density Relationships □ Standard □ Modified			Undisturbed Sample Data			Special Tests				
					Fines					Sand						Gravel																						
Lab. Sample No. 19-	Field Number	Location and Description **Plum Creek Site 21** Caldwell County	Sample Type	Depth ft.	0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	#140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	L.L.	P.I.	Unified Classification	Crumb	Dispersion %	Curve No.	Max γ_d p.c.f.	w_0 %	γ_d p.c.f.	w_C %	G_S <#4	W_{Sat} %				
714		B-3	ST	20-22	35	36	48	66	82					100								46	28	CL	1					112.0	17.0	2.68					
715		B-3	ST	22.5-25	24	31	48	81	92					100								46	25	CL	1					97.1	21.6	2.69					
716		B-3	ST	28-30	27	31	40	54	60	68	75	75	76	77	79	81	86	87	87	100		49	29	CL	2	10				108.2	19.4	2.67					
717		B-3	ST	33-35	28	33	47	80	88					100								52	30	CH	2	12				101.0	22.3	2.70					
718		B-3	ST	35-37.5	32	38	54	85	92					100								53	32	CH	1					98.6	24.7	2.70					
719		B-3	ST	43-45	37	47	71	92	95					100								64	39	CH	1					99.6	22.9	2.71					

Date Reported: _____ Initials: _____

NRCS-ENG-354
Rev. June 2004
File Code ENG-210-22

U.S. Department of Agriculture
Natural Resources Conservation Service

Soil Mechanics Laboratory Data

Sheet _5__ of _5__

01/18/19

TEXAS (WHRB)
(REGULATED)

Lab. Sample No. 19-	Field Number	Location and Description: **Plum Creek Site 21**, Caldwell County	Sample Type	Depth ft.	Mechanical Analysis, Grain Size Distribution Expressed as Percent Finer by Dry Weight: Fines 0.002 mm	Fines 0.005 mm	Fines 0.02 mm	Fines 0.05 mm	Fines #200 0.074 mm	Sand #140 0.105 mm	Sand #60 0.250 mm	Sand #40 0.42 mm	Sand #20 0.84 mm	Sand #10 2.0 mm	Sand #4 4.76 mm	Gravel 3/8" 9.525 mm	Gravel 1/2" 12.7 mm	Gravel 3/4" 19.05 mm	Gravel 1" 25.4 mm	Gravel 1 1/2" 38.1 mm	Gravel 3" 76.2 mm	Atterberg Limits L.L.	Atterberg Limits P.I.	Unified Classification	Crumb	Dispersion %	Moisture-Density Relationships □ Standard □ Modified: Curve No.	Max γ_d p.c.f.	w_0 %	Undisturbed Sample Data γ_d p.c.f.	w_C %	G_S <#4	Special Tests W_{Sat} %				
720		B-7	ST	17.9-19.5	43	51	73	92	94					100								65	41	CH	2	2				102.7	20.3	2.70					
721		B-8	ST	32.5-34.5	41	52	73	90	91					100								63	40	CH	1					113.1	16.2	2.71					
722		B-601	ST	18-19	33	39	54	85	93					100								54	32	CH	2	3				99.8	19.8	2.63					
723		B-602	ST	17.5-19	28	34	48	79	87					100								51	28	CH	1					101.0	19.3	2.77					
724		B-603	ST	13.5-15.5	42	52	73	92	93					100								64	39	CH	2	12				96.4	23.2	2.66					

Date Reported: _____ Initials: _____

ATTACHMENT 2

CU' TRIAXIAL SHEAR TEST DATA

NRCS Soil Mechanics Center
Lincoln, NE

4/16/2019
3:04 PM

Mohr Circle Program

SITE NAME: Plum Creek Site 21
STATE: TX
SAMPLE NO: 19-257

Failure Criterion:
- ☐ Maximum Dev. Stress
- ☑ Maximum Stress Ratio
- ☐ Max. Pore Pressure
- ☐ <= 10% Strain
- ☐ Selected Points

Total Strength Parameters:

			Zero Cohesion:
PHI:	18.5 degrees	18.5 degrees	Slope y=
C :	631 psf	4.38 psi	

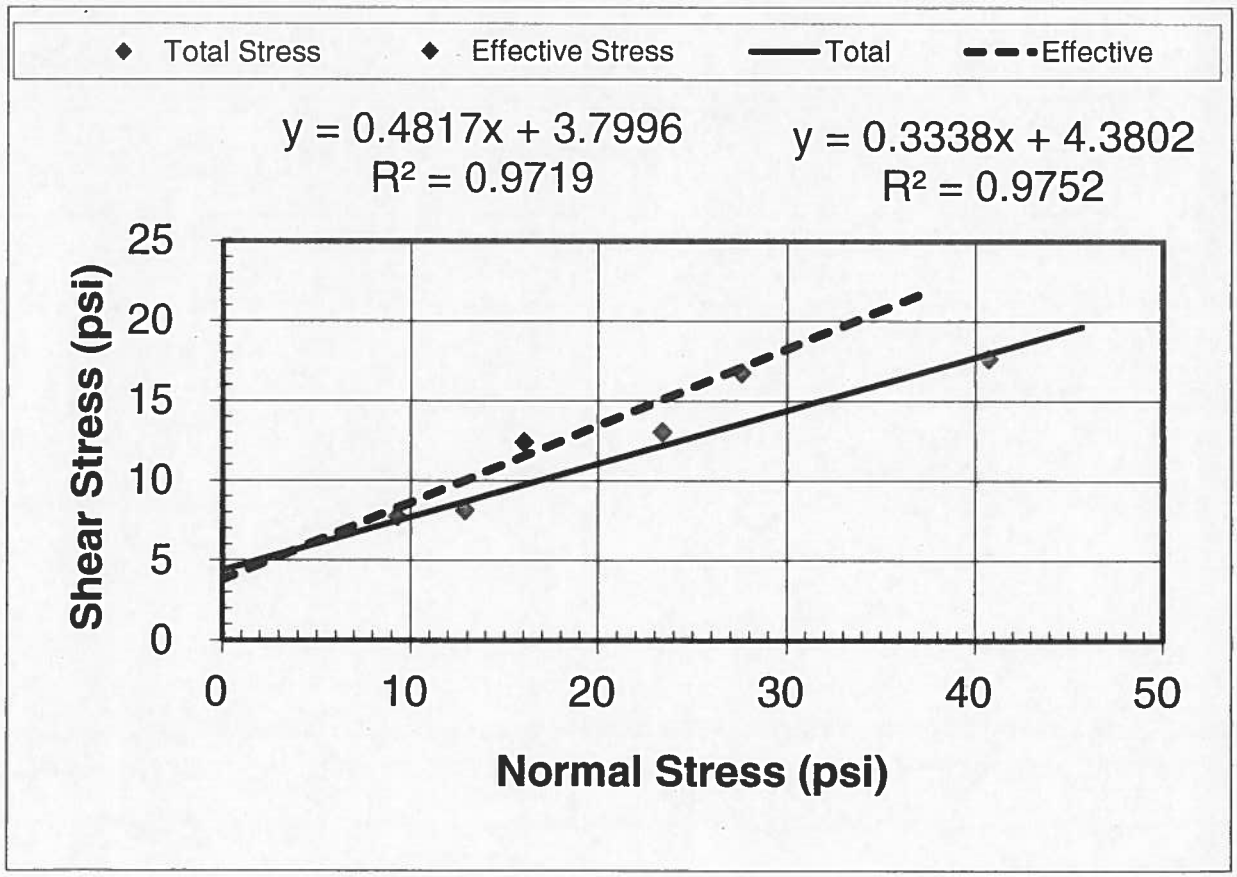
Effective Strength Parameters:

PHI' :	~~25.7~~ degrees	25.7 degrees	Slope y=
C':	~~547~~ psf	3.80 psi	

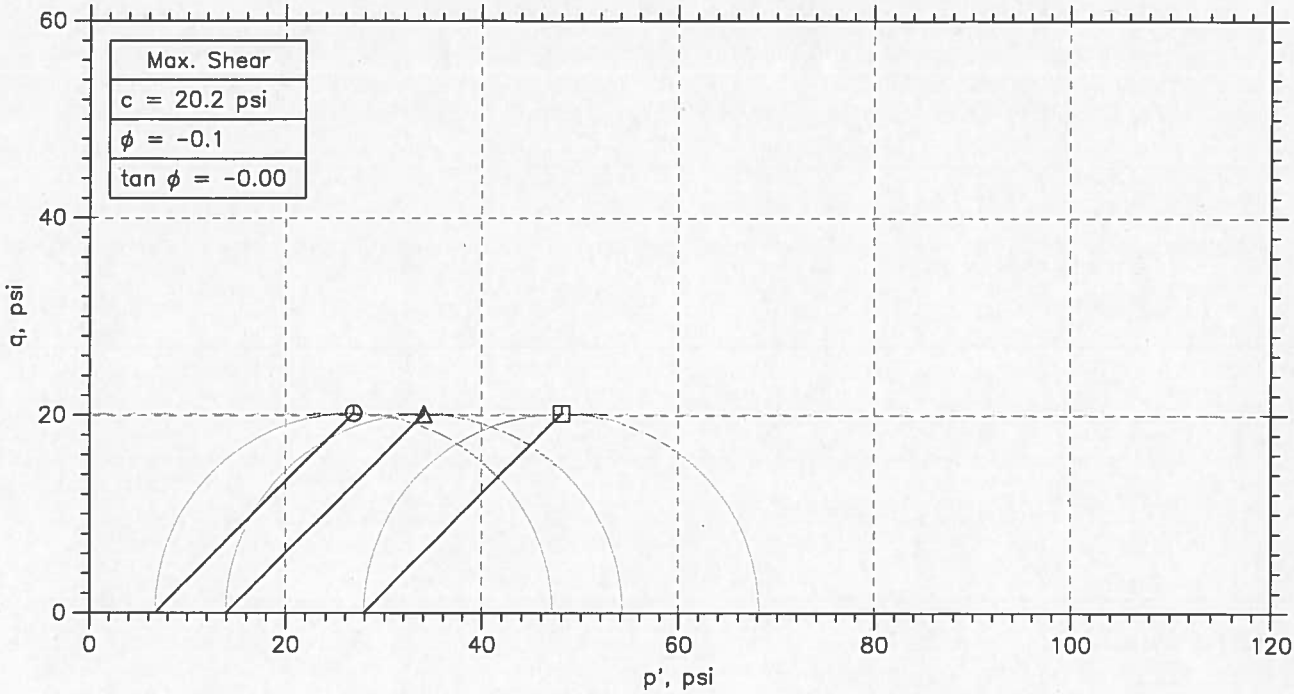
Stress path analysis from p-q plot:
PHI' : 27.1 degrees
C' : 485 psf

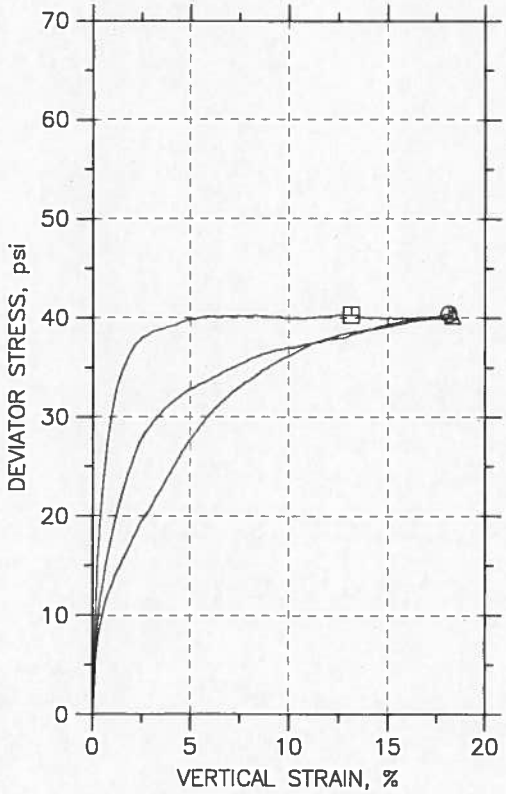
(All inputed values in the chart are in psi)

CELL PRESSURE	DEVIATOR STRESS AT FAILURE	PORE PRESSURE AT FAILURE	PERCENT STRAIN (Optional Entry)
7	17.17	2.56	1.92
14	27.51	5.74	2.41
28	37.21	10.96	2.12



CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⊙	△	⊡	
Sample No.		19-257	19-257	19-257	
Test No.		1	2	3	
Depth		30-32.5'	30-32.5'	30-32.5'	
Initial	Diameter, in	1.391	1.4	1.392	
	Height, in	3.023	3.006	3.026	
	Water Content, %	20.4	18.2	22.7	
	Dry Density, pcf	105.3	112.1	104.1	
	Saturation, %	91.8	97.7	99.2	
	Void Ratio	0.601	0.503	0.619	
Before Shear	Water Content, %	23.7	20.1	23.6	
	Dry Density, pcf	102.9	109.3	103.	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.639	0.542	0.637	
	Back Press., psi	100.3	100.1	100.1	
Ver. Eff. Cons. Stress, psi		6.663	13.94	27.88	
Shear Strength, psi		20.19	20.11	20.15	
Strain at Failure, %		18.1	18.3	13.1	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-257

Boring No.: B-05

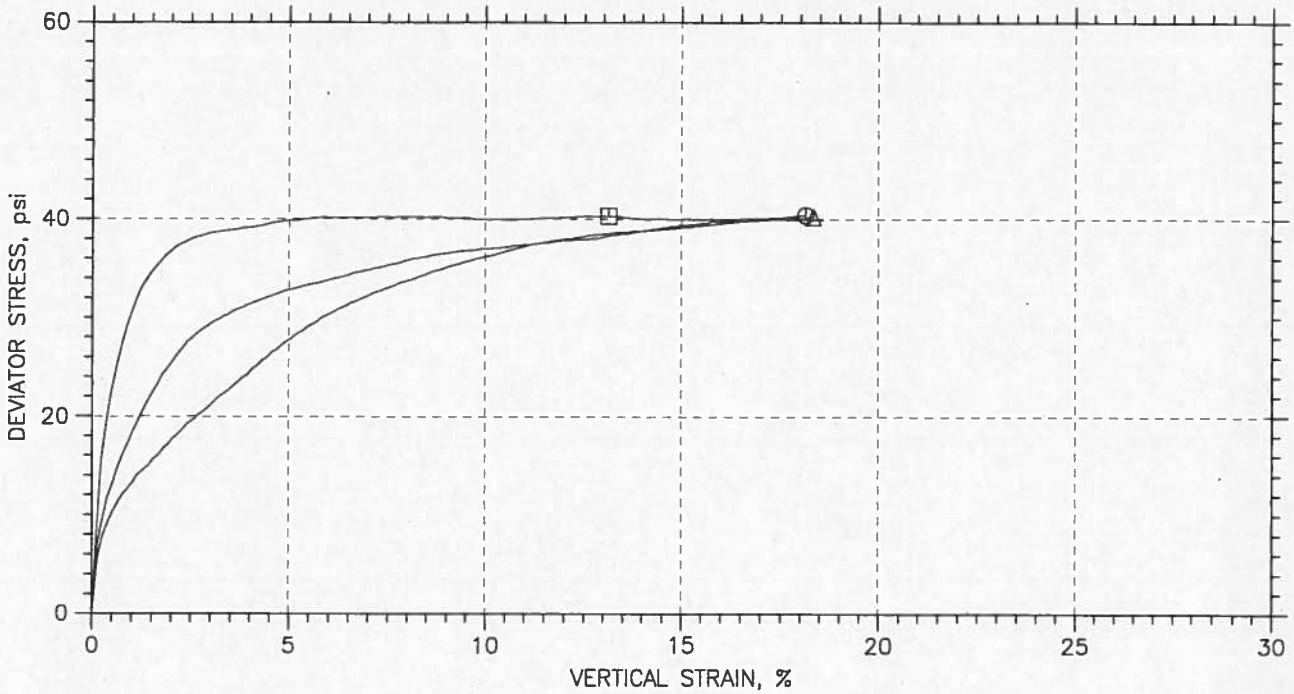
Sample Type: CORE

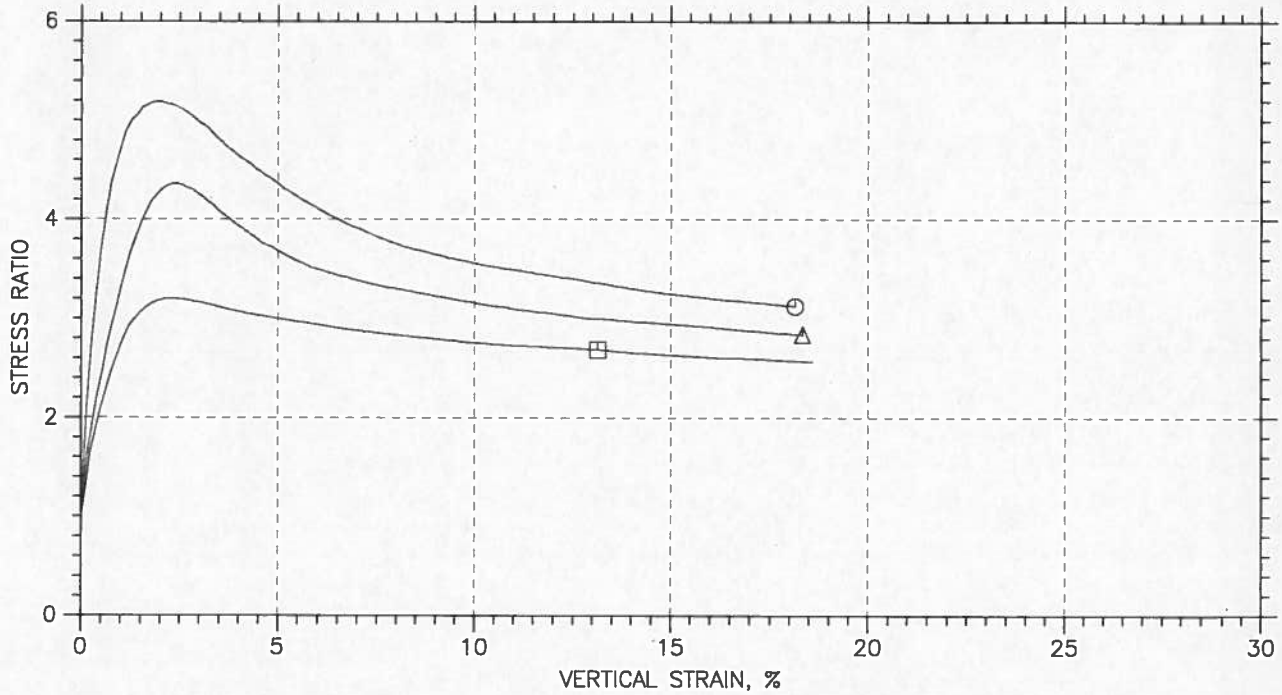
Description:

Remarks: @ Maximum Shear

Tue, 16-APR-2019 14:19:57

CONSOLIDATED UNDRAINED TRIAXIAL TEST



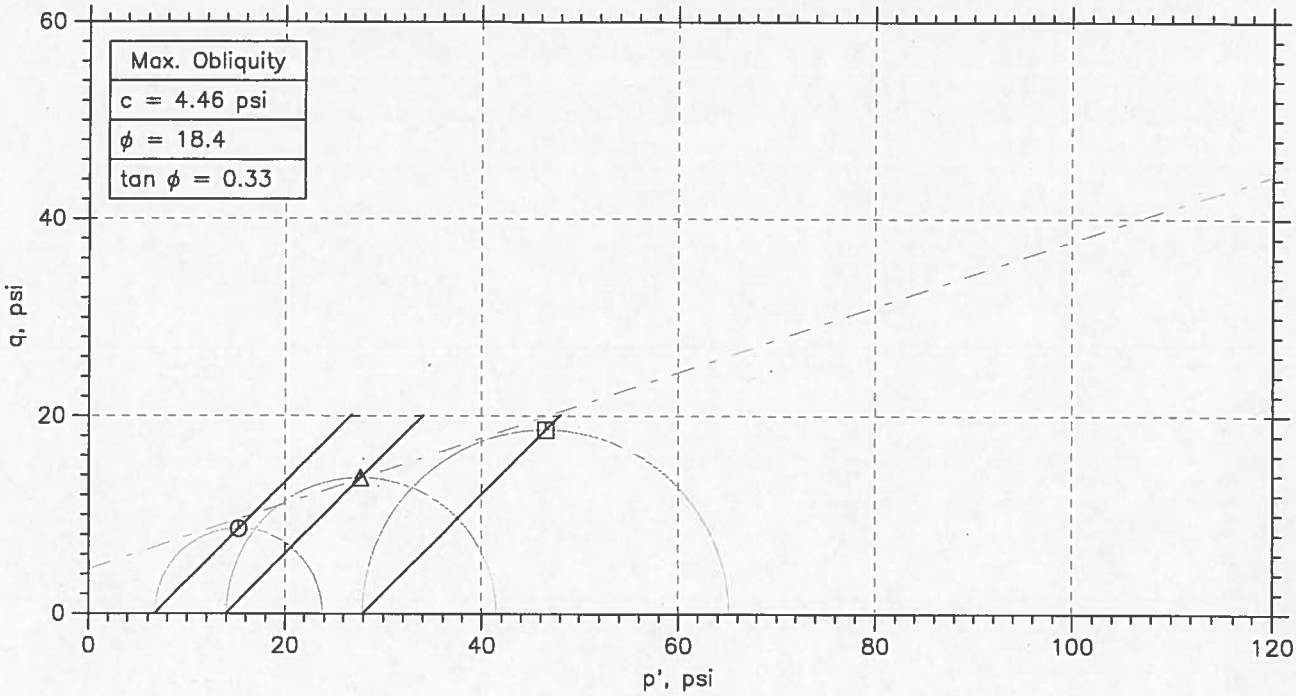


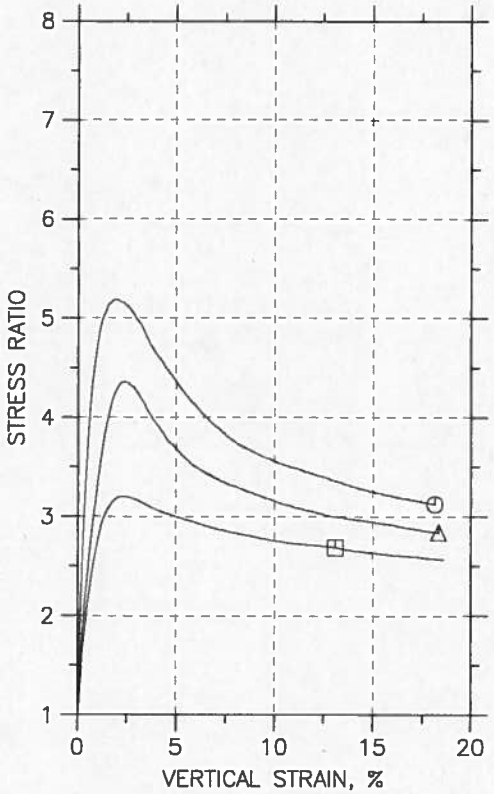
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	19-257	1	30-32.5'	SKK	3/14/19	SKK		19-257-07eng.dat
△	19-257	2	30-32.5'	SKK	3/14/19	SKK		19-257-14eng.dat
⊡	19-257	3	30-32.5'	SKK	3/14/19	SKK		19-257-28eng.dat

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-257
Boring No.: B-05	Sample Type: CORE	
Description:		
Remarks:		

Tue, 16-APR-2019 14:21:04

CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⊙	△	⊡	
Sample No.		19-257	19-257	19-257	
Test No.		1	2	3	
Depth		30-32.5'	30-32.5'	30-32.5'	
Initial	Diameter, in	1.391	1.4	1.392	
	Height, in	3.023	3.006	3.026	
	Water Content, %	20.4	18.2	22.7	
	Dry Density, pcf	105.3	112.1	104.1	
	Saturation, %	91.8	97.7	99.2	
	Void Ratio	0.601	0.503	0.619	
Before Shear	Water Content, %	23.7	20.1	23.6	
	Dry Density, pcf	102.9	109.3	103.	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.639	0.542	0.637	
	Back Press., psi	100.3	100.1	100.1	
Ver. Eff. Cons. Stress, psi		6.663	13.94	27.88	
Shear Strength, psi		20.19	20.11	20.15	
Strain at Failure, %		18.1	18.3	13.1	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-257

Boring No.: B-05

Sample Type: CORE

Description:

Remarks: @ Maximum obliquity

Tue, 16-APR-2019 14:21:32

TRIAXIAL TEST

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-257
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 3/14/19
Sample Type: CORE

Project No.: 19-257
Checked By: SKK
Depth: 30-32.5'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 3.02 in
Specimen Area: 1.52 in^2
Specimen Volume: 75.28 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

Liquid Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
Container ID		---		
Wt. Container + Wet Soil, gm	152.91	152.91	157	227.31
Wt. Container + Dry Soil, gm	126.97	126.97	126.97	197.28
Wt. Container, gm	0	---	0	70.31
Wt. Dry Soil, gm	126.97	126.97	126.97	126.97
Water Content, %	20.43	20.43	23.65	23.65
Void Ratio	---	0.60	0.64	---
Degree of Saturation, %	---	91.81	100.00	---
Dry Unit Weight, pcf	---	105.29	102.87	---

Initial

End of Initialization

End of Consolidation/A

End of Saturation

End of Consolidation/B

End of Shear

At Failure

TRIAXIAL TEST

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-257
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 3/14/19
Sample Type: CORE

Project No.: 19-257
Checked By: SKK
Depth: 30-32.5'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 3.02 in
Specimen Area: 1.52 in^2
Specimen Volume: 75.28 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

Liquid Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	1.5083	0	0	100.34	107	107
2	2.0004	0.13577	1.5104	8.6928	5.7488	101.82	107	112.75
3	4.0014	0.25765	1.5122	11.775	7.7744	102.54	107	114.77
4	6.0019	0.39034	1.5143	13.933	9.1827	102.96	107	116.18
5	8.004	0.51068	1.5161	15.629	10.284	103.22	107	117.28
6	10.003	0.63256	1.5179	17.047	11.2	103.36	107	118.2
7	12.004	0.75753	1.5199	18.31	12.012	103.44	107	119.01
8	14.003	0.90101	1.5221	19.359	12.676	103.47	107	119.68
9	16.001	1.0337	1.5241	20.376	13.32	103.47	107	120.32
10	18.002	1.1309	1.5256	21.362	13.949	103.42	107	120.95
11	20.001	1.279	1.5279	22.256	14.506	103.38	107	121.51
12	22.003	1.4086	1.5299	23.058	15.005	103.3	107	122
13	24.001	1.5305	1.5318	24.044	15.625	103.22	107	122.62
14	26.001	1.6801	1.5341	24.876	16.136	103.12	107	123.14
15	28.003	1.7912	1.5359	25.709	16.655	103.01	107	123.65
16	30.003	1.9239	1.5379	26.541	17.167	102.9	107	124.17
17	32.003	2.0273	1.5396	27.342	17.665	102.78	107	124.66
18	34.001	2.1569	1.5416	28.113	18.135	102.65	107	125.14
19	36.002	2.2896	1.5437	28.976	18.664	102.51	107	125.66
20	38.004	2.4037	1.5455	29.808	19.175	102.37	107	126.18
21	40.003	2.5457	1.5477	30.579	19.639	102.23	107	126.64
22	42	2.6814	1.5499	31.35	20.102	102.07	107	127.1
23	44.004	2.8249	1.5522	32.059	20.523	101.92	107	127.52
24	46.003	2.9437	1.5541	32.737	20.928	101.76	107	127.93
25	48.001	3.0671	1.5561	33.538	21.411	101.59	107	128.41
26	50.002	3.1829	1.5579	34.309	21.875	101.43	107	128.87
27	52.001	3.314	1.56	34.987	22.274	101.25	107	129.27
28	54.001	3.442	1.5621	35.604	22.633	101.07	107	129.63
29	56.001	3.5686	1.5642	36.343	23.071	100.9	107	130.07
30	58.002	3.6827	1.566	36.96	23.432	100.72	107	130.43
31	60.003	3.8123	1.5681	37.761	23.905	100.53	107	130.91
32	62.001	3.9466	1.5703	38.409	24.278	100.34	107	131.28
33	64.004	4.0545	1.5721	39.179	24.736	100.16	107	131.74
34	66.004	4.198	1.5744	39.95	25.182	99.972	107	132.18
35	68.002	4.306	1.5762	40.69	25.618	99.786	107	132.62
36	70.001	4.4387	1.5784	41.368	26.006	99.583	107	133.01
37	72.001	4.5498	1.5802	42.139	26.458	99.396	107	133.46
38	74.004	4.6994	1.5827	42.786	26.819	99.202	107	133.82
39	76.001	4.8105	1.5846	43.495	27.23	99.015	107	134.23
40	78.001	4.9355	1.5867	44.142	27.597	98.821	107	134.6
41	80.001	5.0697	1.5889	44.728	27.92	98.626	107	134.92
42	82.001	5.1824	1.5908	45.375	28.289	98.431	107	135.29
43	84.001	5.3289	1.5933	45.961	28.606	98.245	107	135.61
44	86.004	5.4431	1.5952	46.578	28.953	98.05	107	135.95
45	88.004	5.5665	1.5973	47.132	29.257	97.872	107	136.26
46	90.001	5.6899	1.5993	47.687	29.56	97.686	107	136.56
47	92.004	5.8026	1.6013	48.335	29.924	97.499	107	136.92
48	94.001	5.9399	1.6036	48.859	30.201	97.321	107	137.2
49	96.004	6.0664	1.6058	49.352	30.462	97.142	107	137.46
50	98.002	6.1883	1.6078	49.845	30.724	96.972	107	137.72
51	100	6.3148	1.61	50.307	30.964	96.794	107	137.96
52	102	6.4413	1.6122	50.801	31.222	96.631	107	138.22
53	104	6.557	1.6142	51.294	31.484	96.461	107	138.48

54	106	6.6943	1.6166	51.664	31.66	96.299	107	138.66
55	108	6.8116	1.6186	52.126	31.901	96.137	107	138.9
56	110	6.9458	1.6209	52.558	32.115	95.983	107	139.12
57	112	7.0785	1.6232	53.051	32.368	95.837	107	139.37
58	114	7.1911	1.6252	53.452	32.57	95.683	107	139.57
59	116	7.3284	1.6276	53.791	32.724	95.529	107	139.72
60	118	7.438	1.6296	54.222	32.945	95.383	107	139.95
61	120	7.5645	1.6318	54.531	33.084	95.229	107	140.08
62	122	7.6879	1.634	54.931	33.279	95.091	107	140.28
63	124	7.7913	1.6358	55.332	33.482	94.953	107	140.48
64	126	7.924	1.6382	55.671	33.635	94.815	107	140.64
65	128	8.0551	1.6405	56.01	33.788	94.677	107	140.79
66	130	8.177	1.6427	56.349	33.945	94.54	107	140.94
67	132	8.3035	1.6449	56.781	34.155	94.41	107	141.15
68	134	8.4377	1.6473	57.12	34.305	94.28	107	141.3
69	136	8.5503	1.6494	57.521	34.5	94.159	107	141.5
70	138	8.6861	1.6518	57.983	34.723	94.029	107	141.72
71	140	8.825	1.6543	58.26	34.832	93.907	107	141.83
72	142	8.9376	1.6564	58.6	34.989	93.786	107	141.99
73	144	9.0595	1.6586	59	35.178	93.664	107	142.18
74	146	9.1922	1.661	59.309	35.307	93.55	107	142.31
75	148	9.3233	1.6634	59.617	35.435	93.429	107	142.44
76	150	9.439	1.6656	59.987	35.607	93.315	107	142.61
77	152	9.5779	1.6681	60.295	35.732	93.202	107	142.73
78	154	9.7121	1.6706	60.665	35.894	93.096	107	142.89
79	156	9.8386	1.6729	60.973	36.023	92.991	107	143.02
80	158	9.9651	1.6753	61.22	36.114	92.877	107	143.11
81	160	10.076	1.6774	61.497	36.23	92.772	107	143.23
82	162	10.204	1.6798	61.775	36.338	92.675	107	143.34
83	164	10.332	1.6822	62.145	36.501	92.569	107	143.5
84	166	10.446	1.6843	62.453	36.632	92.472	107	143.63
85	168	10.575	1.6867	62.792	36.775	92.375	107	143.78
86	170	10.696	1.689	63.069	36.884	92.277	107	143.88
87	172	10.809	1.6911	63.408	37.034	92.18	107	144.03
88	174	10.946	1.6938	63.717	37.153	92.083	107	144.15
89	176	11.071	1.6961	64.056	37.295	92.002	107	144.3
90	178	11.193	1.6985	64.364	37.42	91.913	107	144.42
91	180	11.318	1.7009	64.518	37.453	91.823	107	144.45
92	182	11.459	1.7036	64.857	37.587	91.734	107	144.59
93	184	11.559	1.7055	65.011	37.63	91.645	107	144.63
94	186	11.692	1.708	65.32	37.749	91.564	107	144.75
95	188	11.817	1.7105	65.566	37.834	91.475	107	144.83
96	190	11.94	1.7129	65.751	37.884	91.402	107	144.88
97	192	12.082	1.7156	66.029	37.979	91.313	107	144.98
98	194	12.21	1.7181	66.213	38.026	91.232	107	145.03
99	196	12.327	1.7204	66.491	38.131	91.15	107	145.13
100	198	12.464	1.7231	66.768	38.227	91.077	107	145.23
101	200	12.58	1.7254	67.015	38.314	90.996	107	145.31
102	202	12.702	1.7278	67.2	38.363	90.907	107	145.36
103	204	12.832	1.7304	67.416	38.425	90.826	107	145.43
104	206	12.966	1.7331	67.539	38.432	90.753	107	145.43
105	208	13.1	1.7357	67.786	38.509	90.672	107	145.51
106	210	13.217	1.7381	67.971	38.558	90.599	107	145.56
107	212	13.345	1.7406	68.217	38.638	90.518	107	145.64
108	214	13.466	1.7431	68.34	38.65	90.445	107	145.65
109	216	13.602	1.7458	68.433	38.637	90.372	107	145.64
110	218	13.716	1.7481	68.68	38.722	90.299	107	145.72
111	220	13.839	1.7506	68.895	38.785	90.226	107	145.78
112	222	13.963	1.7531	68.988	38.777	90.145	107	145.78
113	224	14.081	1.7556	69.234	38.859	90.072	107	145.86
114	226	14.236	1.7587	69.327	38.835	90.007	107	145.84
115	228	14.348	1.761	69.512	38.885	89.926	107	145.88
116	230	14.469	1.7635	69.728	38.948	89.861	107	145.95
117	232	14.597	1.7661	69.882	38.971	89.796	107	145.97
118	234	14.725	1.7688	70.098	39.03	89.723	107	146.03
119	236	14.854	1.7715	70.252	39.052	89.642	107	146.05
120	238	14.982	1.7742	70.498	39.127	89.586	107	146.13
121	240	15.109	1.7768	70.714	39.185	89.521	107	146.19
122	242	15.254	1.7798	70.868	39.199	89.456	107	146.2
123	244	15.371	1.7823	71.207	39.33	89.391	107	146.33
124	246	15.493	1.7849	71.331	39.338	89.318	107	146.34
125	248	15.63	1.7878	71.485	39.355	89.253	107	146.35
126	250	15.737	1.79	71.731	39.438	89.188	107	146.44

127	252	15.865	1.7928	71.885	39.459	89.123	107	146.46
128	254	16.002	1.7957	72.132	39.527	89.059	107	146.53
129	256	16.115	1.7981	72.317	39.572	88.986	107	146.57
130	258	16.243	1.8009	72.502	39.609	88.929	107	146.61
131	260	16.365	1.8035	72.718	39.666	88.856	107	146.67
132	262	16.49	1.8062	72.964	39.739	88.799	107	146.74
133	264	16.629	1.8092	73.149	39.769	88.742	107	146.77
134	266	16.752	1.8119	73.427	39.859	88.678	107	146.86
135	268	16.872	1.8145	73.581	39.881	88.613	107	146.88
136	270	16.999	1.8173	73.827	39.951	88.556	107	146.95
137	272	17.124	1.82	73.951	39.954	88.491	107	146.95
138	274	17.235	1.8224	74.259	40.065	88.426	107	147.07
139	276	17.381	1.8257	74.506	40.123	88.361	107	147.12
140	278	17.482	1.8279	74.598	40.121	88.296	107	147.12
141	280	17.624	1.831	74.814	40.165	88.232	107	147.16
142	282	17.756	1.834	75.122	40.263	88.167	107	147.26
143	284	17.86	1.8363	75.215	40.258	88.102	107	147.26
144	286	17.991	1.8392	75.554	40.373	88.037	107	147.37
145	288	18.108	1.8419	75.677	40.378	87.988	107	147.38
146	288.39	18.133	1.8424	75.708	40.382	87.972	107	147.38

TRIAXIAL TEST

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-257
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 3/14/19
Sample Type: CORE

Project No.: 19-257
Checked By: SKK
Depth: 30-32.5'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 3.02 in
Specimen Area: 1.52 in^2
Specimen Volume: 75.28 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

Liquid Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	107	107	0	0.000	6.6631	6.6631	1.000	6.6631	0
2	0.14	112.75	107	1.4838	0.258	10.928	5.1794	2.110	8.0538	2.8744
3	0.26	114.77	107	2.2054	0.284	12.232	4.4578	2.744	8.345	3.8872
4	0.39	116.18	107	2.627	0.286	13.219	4.0361	3.275	8.6275	4.5914
5	0.51	117.28	107	2.8784	0.280	14.069	3.7848	3.717	8.9269	5.1421
6	0.63	118.2	107	3.0243	0.270	14.839	3.6389	4.078	9.2388	5.6
7	0.76	119.01	107	3.1054	0.259	15.569	3.5578	4.376	9.5635	6.0058
8	0.90	119.68	107	3.1297 > Peak pp	0.247	16.209	3.5334	4.587	9.8714	6.338
9	1.03	120.32	107	3.1297	0.235	16.854	3.5334 = 13.32	4.770	10.194	6.6601
10	1.13	120.95	107	3.0811	0.221	17.531	3.5821	4.894	10.557	6.9745
11	1.28	121.51	107	3.0405	0.210	18.129	3.6226	5.004	10.876	7.2531
12	1.41	122	107	2.9675	0.198	18.701	3.6956	5.060	11.198	7.5025
13	1.53	122.62	107	2.8784	0.184	19.409	3.7848	5.128	11.597	7.8123
14	1.68	123.14	107	2.7811	0.172	20.018	3.8821	5.157	11.95	8.0682
15	1.79	123.65	107	2.6756	0.161	20.642	3.9875	5.177	12.315	8.3274
16	1.92-1.9	124.17	107	2.5621 -2.56	0.149	21.268	4.101 = 17.17	5.186 — Max SR	12.685	8.5836
17	2.03	124.66	107	2.4405	0.138	21.888	4.2226	5.183	13.055	8.8325
18	2.16	125.14	107	2.3108	0.127	22.488	4.3524	5.167	13.42	9.0677
19	2.29	125.66	107	2.173	0.116	23.154	4.4902	5.157	13.822	9.3319
20	2.40	126.18	107	2.0351	0.106	23.803	4.628	5.143	14.216	9.5876
21	2.55	126.64	107	1.8892	0.096	24.413	4.774	5.114	14.593	9.8193
22	2.68	127.1	107	1.7351	0.086	25.03	4.928	5.079	14.979	10.051
23	2.82	127.52	107	1.5811	0.077	25.605	5.0821	5.038	15.343	10.261
24	2.94	127.93	107	1.4189	0.068	26.173	5.2442	4.991	15.708	10.464
25	3.07	128.41	107	1.2567	0.059	26.817	5.4064	4.960	16.112	10.706
26	3.18	128.87	107	1.0946	0.050	27.443	5.5686	4.928	16.506	10.937
27	3.31	129.27	107	0.91621	0.041	28.021	5.7469	4.876	16.884	11.137
28	3.44	129.63	107	0.73783	0.033	28.558	5.9253	4.820	17.242	11.317
29	3.57	130.07	107	0.55945	0.024	29.174	6.1037	4.780	17.639	11.535
30	3.68	130.43	107	0.38108	0.016	29.714	6.2821	4.730	17.998	11.716
31	3.81	130.91	107	0.19459	0.008	30.374	6.4686	4.696	18.421	11.953
32	3.95	131.28	107	0.008108	0.000	30.933	6.655	4.648	18.794	12.139
33	4.05	131.74	107	-0.17838	-0.007	31.577	6.8415	4.616	19.209	12.368
34	4.20	132.18	107	-0.36486 NEG	-0.014	32.21	7.028	4.583	19.619	12.591
35	4.31	132.62	107	-0.55135	-0.022	32.832	7.2145	4.551	20.023	12.809
36	4.44	133.01	107	-0.75405 PP	-0.029	33.423	7.4172	4.506	20.42	13.003
37	4.55	133.46	107	-0.94053	-0.036	34.062	7.6037	4.480	20.833	13.229
38	4.70	133.82	107	-1.1351	-0.042	34.617	7.7983	4.439	21.208	13.409
39	4.81	134.23	107	-1.3216	-0.049	35.215	7.9848	4.410	21.6	13.615
40	4.94	134.6	107	-1.5162	-0.055	35.776	8.1793	4.374	21.978	13.798
41	5.07	134.92	107	-1.7108	-0.061	36.294	8.3739	4.334	22.334	13.96
42	5.18	135.29	107	-1.9054	-0.067	36.857	8.5685	4.301	22.713	14.144
43	5.33	135.61	107	-2.0919	-0.073	37.361	8.755	4.267	23.058	14.303
44	5.44	135.95	107	-2.2865	-0.079	37.903	8.9496	4.235	23.426	14.477
45	5.57	136.26	107	-2.4648	-0.084	38.385	9.128	4.205	23.757	14.629
46	5.69	136.56	107	-2.6513	-0.090	38.875	9.3145	4.174	24.095	14.78
47	5.80	136.92	107	-2.8378	-0.095	39.425	9.501	4.150	24.463	14.962
48	5.94	137.2	107	-3.0162	-0.100	39.88	9.6793	4.120	24.78	15.101
49	6.07	137.46	107	-3.1946	-0.105	40.32	9.8577	4.090	25.089	15.231
50	6.19	137.72	107	-3.3648	-0.110	40.752	10.028	4.064	25.39	15.362
51	6.31	137.96	107	-3.5432	-0.114	41.17	10.206	4.034	25.688	15.482
52	6.44	138.22	107	-3.7054	-0.119	41.591	10.369	4.011	25.98	15.611

53	6.56	138.48	107	-3.8756	-0.123	42.023	10.539	3.987	26.281	15.742
54	6.69	138.66	107	-4.0378	-0.128	42.361	10.701	3.959	26.531	15.83
55	6.81	138.9	107	-4.2	-0.132	42.764	10.863	3.937	26.814	15.951
56	6.95	139.12	107	-4.354	-0.136	43.133	11.017	3.915	27.075	16.058
57	7.08	139.37	107	-4.5	-0.139	43.531	11.163	3.900	27.347	16.184
58	7.19	139.57	107	-4.654	-0.143	43.887	11.317	3.878	27.602	16.285
59	7.33	139.72	107	-4.8081	-0.147	44.195	11.471	3.853	27.833	16.362
60	7.44	139.95	107	-4.954	-0.150	44.562	11.617	3.836	28.09	16.473
61	7.56	140.08	107	-5.1081	-0.154	44.855	11.771	3.811	28.313	16.542
62	7.69	140.28	107	-5.2459	-0.158	45.188	11.909	3.794	28.549	16.64
63	7.79	140.48	107	-5.3837	-0.161	45.529	12.047	3.779	28.788	16.741
64	7.92	140.64	107	-5.5216	-0.164	45.82	12.185	3.760	29.002	16.818
65	8.06	140.79	107	-5.6594	-0.167	46.111	12.323	3.742	29.217	16.894
66	8.18	140.94	107	-5.7972	-0.171	46.405	12.46	3.724	29.433	16.972
67	8.30	141.15	107	-5.927	-0.174	46.745	12.59	3.713	29.667	17.077
68	8.44	141.3	107	-6.0567	-0.177	47.024	12.72	3.697	29.872	17.152
69	8.55	141.5	107	-6.1783	-0.179	47.342	12.841	3.687	30.092	17.25
70	8.69	141.72	107	-6.308	-0.182	47.694	12.971	3.677	30.333	17.362
71	8.82	141.83	107	-6.4297	-0.185	47.925	13.093	3.660	30.509	17.416
72	8.94	141.99	107	-6.5513	-0.187	48.203	13.214	3.648	30.709	17.494
73	9.06	142.18	107	-6.6729	-0.190	48.514	13.336	3.638	30.925	17.589
74	9.19	142.31	107	-6.7864	-0.192	48.756	13.45	3.625	31.103	17.653
75	9.32	142.44	107	-6.908	-0.195	49.007	13.571	3.611	31.289	17.718
76	9.44	142.61	107	-7.0216	-0.197	49.292	13.685	3.602	31.488	17.804
77	9.58	142.73	107	-7.1351	-0.200	49.53	13.798	3.590	31.664	17.866
78	9.71	142.89	107	-7.2405	-0.202	49.798	13.904	3.582	31.851	17.947
79	9.84	143.02	107	-7.3459	-0.204	50.032	14.009	3.571	32.02	18.011
80	9.97	143.11	107	-7.4594	-0.207	50.236	14.123	3.557	32.179	18.057
81	10.08	143.23	107	-7.5648	-0.209	50.458	14.228	3.546	32.343	18.115
82	10.20	143.34	107	-7.6621	-0.211	50.663	14.325	3.537	32.494	18.169
83	10.33	143.5	107	-7.7675	-0.213	50.931	14.431	3.529	32.681	18.25
84	10.45	143.63	107	-7.8648	-0.215	51.16	14.528	3.522	32.844	18.316
85	10.57	143.78	107	-7.9621	-0.217	51.401	14.625	3.515	33.013	18.388
86	10.70	143.88	107	-8.0594	-0.219	51.607	14.723	3.505	33.165	18.442
87	10.81	144.03	107	-8.1567	-0.220	51.853	14.82	3.499	33.337	18.517
88	10.95	144.15	107	-8.254	-0.222	52.07	14.917	3.491	33.493	18.576
89	11.07	144.3	107	-8.3351	-0.223	52.293	14.998	3.487	33.646	18.648
90	11.19	144.42	107	-8.4242	-0.225	52.508	15.087	3.480	33.798	18.71
91	11.32	144.45	107	-8.5134	-0.227	52.63	15.177	3.468	33.903	18.726
92	11.46	144.59	107	-8.6026	-0.229	52.853	15.266	3.462	34.059	18.793
93	11.56	144.63	107	-8.6918	-0.231	52.985	15.355	3.451	34.17	18.815
94	11.69	144.75	107	-8.7729	-0.232	53.185	15.436	3.445	34.31	18.874
95	11.82	144.83	107	-8.8621	-0.234	53.359	15.525	3.437	34.442	18.917
96	11.94	144.88	107	-8.935	-0.236	53.482	15.598	3.429	34.54	18.942
97	12.08	144.98	107	-9.0242	-0.238	53.666	15.687	3.421	34.677	18.989
98	12.21	145.03	107	-9.1053	-0.239	53.794	15.768	3.412	34.781	19.013
99	12.33	145.13	107	-9.1864	-0.241	53.981	15.85	3.406	34.915	19.066
100	12.46	145.23	107	-9.2594	-0.242	54.149	15.923	3.401	35.036	19.113
101	12.58	145.31	107	-9.3404	-0.244	54.318	16.004	3.394	35.161	19.157
102	12.70	145.36	107	-9.4296	-0.246	54.456	16.093	3.384	35.274	19.181
103	12.83	145.43	107	-9.5107	-0.248	54.599	16.174	3.376	35.386	19.213
104	12.97	145.43	107	-9.5837	-0.249	54.678	16.247	3.365	35.463	19.216
105	13.10	145.51	107	-9.6648	-0.251	54.837	16.328	3.358	35.582	19.254
106	13.22	145.56	107	-9.7377	-0.253	54.959	16.401	3.351	35.68	19.279
107	13.35	145.64	107	-9.8188	-0.254	55.12	16.482	3.344	35.801	19.319
108	13.47	145.65	107	-9.8918	-0.256	55.205	16.555	3.335	35.88	19.325
109	13.60	145.64	107	-9.9648	-0.258	55.265	16.628	3.324	35.946	19.318
110	13.72	145.72	107	-10.038	-0.259	55.423	16.701	3.319	36.062	19.361
111	13.84	145.78	107	-10.111	-0.261	55.559	16.774	3.312	36.166	19.392
112	13.96	145.78	107	-10.192	-0.263	55.632	16.855	3.301	36.243	19.388
113	14.08	145.86	107	-10.265	-0.264	55.787	16.928	3.296	36.357	19.43
114	14.24	145.84	107	-10.33	-0.266	55.828	16.993	3.285	36.411	19.418
115	14.35	145.88	107	-10.411	-0.268	55.959	17.074	3.277	36.516	19.442
116	14.47	145.95	107	-10.476	-0.269	56.086	17.139	3.272	36.613	19.474
117	14.60	145.97	107	-10.54	-0.270	56.175	17.204	3.265	36.689	19.486
118	14.72	146.03	107	-10.613	-0.272	56.306	17.277	3.259	36.791	19.515
119	14.85	146.05	107	-10.694	-0.274	56.41	17.358	3.250	36.884	19.526
120	14.98	146.13	107	-10.751	-0.275	56.542	17.414	3.247	36.978	19.564
121	15.11	146.19	107	-10.816	-0.276	56.665	17.479	3.242	37.072	19.593
122	15.25	146.2	107	-10.881	-0.278	56.743	17.544	3.234	37.144	19.6
123	15.37	146.33	107	-10.946	-0.278	56.939	17.609	3.234	37.274	19.665
124	15.49	146.34	107	-11.019	-0.280	57.02	17.682	3.225	37.351	19.669
125	15.63	146.35	107	-11.084	-0.282	57.101	17.747	3.218	37.424	19.677

126	15.74	146.44	107	-11.149	-0.283	57.25	17.812	3.214	37.531	19.719
127	15.86	146.46	107	-11.213	-0.284	57.336	17.877	3.207	37.606	19.73
128	16.00	146.53	107	-11.278	-0.285	57.468	17.941	3.203	37.705	19.763
129	16.11	146.57	107	-11.351	-0.287	57.587	18.014	3.197	37.8	19.786
130	16.24	146.61	107	-11.408	-0.288	57.68	18.071	3.192	37.876	19.805
131	16.36	146.67	107	-11.481	-0.289	57.811	18.144	3.186	37.977	19.833
132	16.49	146.74	107	-11.538	-0.290	57.94	18.201	3.183	38.07	19.869
133	16.63	146.77	107	-11.594	-0.292	58.027	18.258	3.178	38.142	19.885
134	16.75	146.86	107	-11.659	-0.293	58.181	18.322	3.175	38.252	19.929
135	16.87	146.88	107	-11.724	-0.294	58.269	18.387	3.169	38.328	19.941
136	17.00	146.95	107	-11.781	-0.295	58.395	18.444	3.166	38.42	19.976
137	17.12	146.95	107	-11.846	-0.296	58.463	18.509	3.159	38.486	19.977
138	17.23	147.07	107	-11.911	-0.297	58.639	18.574	3.157	38.606	20.033
139	17.38	147.12	107	-11.976	-0.298	58.762	18.639	3.153	38.7	20.062
140	17.48	147.12	107	-12.04	-0.300	58.825	18.704	3.145	38.764	20.061
141	17.62	147.16	107	-12.105	-0.301	58.933	18.768	3.140	38.851	20.082
142	17.76	147.26	107	-12.17	-0.302	59.096	18.833	3.138	38.965	20.131
143	17.86	147.26	107	-12.235	-0.304	59.157	18.898	3.130	39.027	20.129
144	17.99	147.37	107	-12.3	-0.305	59.336	18.963	3.129	39.15	20.187
145	18.11	147.38	107	-12.349	-0.306	59.39	19.012	3.124	39.201	20.189
146	18.13	147.38	107	-12.365	-0.306	59.409	19.028	3.122	39.219	20.191

TRIAXIAL TEST

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-257
Boring No.: B-05	Tested By: SKK	Checked By: SKK
Sample No.: 19-257	Test Date: 3/14/19	Depth: 30-32.5'
Test No.: 2	Sample Type: CORE	Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 3.01 in	Piston Area: 0.00 in^2	Filter Strip Correction: 0.00 psi
Specimen Area: 1.54 in^2	Piston Friction: 0.00 lb	Membrane Correction: 1.65 lb/in
Specimen Volume: 75.83 cc	Piston Weight: 0.00 lb	Correction Type: Uniform
Liquid Limit: ---	Plastic Limit: ---	Measured Specific Gravity: 2.70

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
Container ID		---		
Wt. Container + Wet Soil, gm	160.98	160.98	163.54	234.03
Wt. Container + Dry Soil, gm	136.18	136.18	136.18	206.67
Wt. Container, gm	0	---	0	70.49
Wt. Dry Soil, gm	136.18	136.18	136.18	136.18
Water Content, %	18.21	18.21	20.09	20.09
Void Ratio	---	0.50	0.54	---
Degree of Saturation, %	---	97.67	100.00	---
Dry Unit Weight, pcf	---	112.11	109.28	---

Initial

End of Initialization

End of Consolidation/A

End of Saturation

End of Consolidation/B

End of Shear

At Failure

TRIAXIAL TEST

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-257
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/14/19
Sample Type: CORE

Project No.: 19-257
Checked By: SKK
Depth: 30-32.5'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 3.01 in
Specimen Area: 1.54 in^2
Specimen Volume: 75.83 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

Liquid Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	1.511	0	0	100.06	114	114
2	2.0013	0.13933	1.5131	10.798	7.1295	102.02	114	121.13
3	4.0023	0.27084	1.5151	14.896	9.8192	103.33	114	123.82
4	6.0039	0.38513	1.5168	17.894	11.779	104.23	114	125.78
5	8.0018	0.53699	1.5191	20.402	13.405	104.86	114	127.4
6	10.002	0.64188	1.5207	22.605	14.834	105.33	114	128.83
7	12.004	0.77025	1.5227	24.623	16.134	105.7	114	130.13
8	14.002	0.90802	1.5248	26.52	17.349	105.96	114	131.35
9	16.002	1.0333	1.5267	28.324	18.503	106.17	114	132.5
10	18.002	1.1507	1.5285	29.915	19.516	106.31	114	133.52
11	20.003	1.2744	1.5305	31.597	20.585	106.41	114	134.59
12	22.003	1.3933	1.5323	33.096	21.533	106.46	114	135.53
13	24.002	1.5249	1.5344	34.595	22.475	106.48	114	136.47
14	26.001	1.6564	1.5364	36.002	23.354	106.46	114	137.35
15	28.004	1.7675	1.5381	37.287	24.158	106.41	114	138.16
16	30.004	1.9209	1.5406	38.541	24.927	106.34	114	138.93
17	32.002	2.0399	1.5424	39.703	25.645	106.23	114	139.64
18	34.001	2.1683	1.5444	40.804	26.318	106.11	114	140.32
19	36.002	2.292	1.5464	41.844	26.952	105.97	114	140.95
20	38.003	2.4078	1.5482	42.762	27.507	105.81	114	141.51
21	40.004	2.5519	1.5505	43.557	27.972	105.64	114	141.97
22	42.001	2.6583	1.5522	44.291	28.41	105.45	114	142.41
23	44	2.8133	1.5547	45.087	28.869	105.25	114	142.87
24	46.003	2.9385	1.5567	45.668	29.199	105.05	114	143.2
25	48.002	3.0638	1.5587	46.28	29.548	104.84	114	143.55
26	50.004	3.1953	1.5608	46.738	29.796	104.64	114	143.8
27	52.001	3.3315	1.563	47.32	30.12	104.42	114	144.12
28	54.004	3.4474	1.5649	47.717	30.332	104.2	114	144.33
29	56.002	3.5632	1.5668	48.268	30.642	103.98	114	144.64
30	58.004	3.6963	1.569	48.696	30.866	103.77	114	144.87
31	60	3.8325	1.5712	49.124	31.089	103.55	114	145.09
32	62.002	3.9577	1.5732	49.553	31.315	103.34	114	145.31
33	64.004	4.0939	1.5755	49.981	31.536	103.13	114	145.54
34	66.003	4.227	1.5776	50.348	31.719	102.92	114	145.72
35	68.003	4.3554	1.5798	50.745	31.922	102.72	114	145.92
36	70.002	4.4697	1.5817	51.051	32.072	102.52	114	146.07
37	72.001	4.5808	1.5835	51.388	32.242	102.33	114	146.24
38	74.001	4.7264	1.5859	51.816	32.456	102.15	114	146.46
39	76.004	4.8626	1.5882	52.244	32.673	101.96	114	146.67
40	78.001	4.9675	1.5899	52.52	32.806	101.78	114	146.81
41	80.002	5.1194	1.5925	52.764	32.9	101.6	114	146.9
42	82.001	5.2321	1.5944	53.07	33.048	101.42	114	147.05
43	84.001	5.3589	1.5965	53.376	33.189	101.25	114	147.19
44	86.003	5.4669	1.5983	53.59	33.28	101.09	114	147.28
45	88.001	5.6047	1.6007	53.896	33.417	100.93	114	147.42
46	90.004	5.7315	1.6028	54.08	33.481	100.77	114	147.48
47	92.002	5.8427	1.6047	54.355	33.608	100.62	114	147.61
48	94	5.9851	1.6071	54.722	33.779	100.47	114	147.78
49	96.003	6.1135	1.6093	55.058	33.936	100.32	114	147.94
50	98.003	6.2481	1.6117	55.303	34.033	100.18	114	148.03
51	100	6.3796	1.6139	55.64	34.188	100.04	114	148.19
52	102	6.4939	1.6159	55.915	34.311	99.896	114	148.31
53	104	6.6082	1.6179	56.282	34.491	99.76	114	148.49

54	106	6.7585	1.6205	56.588	34.618	99.631	114	148.62
55	108	6.8759	1.6225	56.863	34.739	99.495	114	148.74
56	110	7.0153	1.625	57.108	34.831	99.366	114	148.83
57	112	7.1468	1.6273	57.444	34.983	99.238	114	148.98
58	114	7.2595	1.6292	57.658	35.067	99.117	114	149.07
59	116	7.3972	1.6317	57.934	35.177	98.989	114	149.18
60	118	7.5053	1.6336	58.24	35.318	98.868	114	149.32
61	120	7.6352	1.6359	58.484	35.413	98.748	114	149.41
62	122	7.762	1.6381	58.729	35.508	98.635	114	149.51
63	124	7.9029	1.6406	59.127	35.69	98.523	114	149.69
64	126	8.0219	1.6427	59.432	35.825	98.41	114	149.82
65	128	8.1409	1.6449	59.738	35.959	98.298	114	149.96
66	130	8.274	1.6473	59.891	35.994	98.185	114	149.99
67	132	8.407	1.6496	60.228	36.14	98.081	114	150.14
68	134	8.5072	1.6515	60.35	36.17	97.976	114	150.17
69	136	8.6246	1.6536	60.656	36.303	97.872	114	150.3
70	138	8.7828	1.6564	60.901	36.381	97.768	114	150.38
71	140	8.897	1.6585	61.115	36.46	97.663	114	150.46
72	142	9.0379	1.6611	61.298	36.508	97.567	114	150.51
73	144	9.1475	1.6631	61.574	36.624	97.462	114	150.62
74	146	9.2869	1.6656	61.788	36.691	97.366	114	150.69
75	148	9.4199	1.6681	61.971	36.741	97.27	114	150.74
76	150	9.5264	1.6701	62.094	36.767	97.173	114	150.77
77	152	9.6751	1.6728	62.277	36.809	97.077	114	150.81
78	154	9.791	1.675	62.491	36.885	96.988	114	150.89
79	156	9.935	1.6776	62.736	36.966	96.9	114	150.97
80	158	10.052	1.6798	62.797	36.949	96.804	114	150.95
81	160	10.186	1.6823	63.011	37.016	96.707	114	151.02
82	162	10.322	1.6849	63.134	37.026	96.627	114	151.03
83	164	10.45	1.6873	63.348	37.095	96.539	114	151.09
84	166	10.574	1.6896	63.531	37.147	96.45	114	151.15
85	168	10.696	1.6919	63.807	37.254	96.37	114	151.25
86	170	10.824	1.6944	64.021	37.321	96.282	114	151.32
87	172	10.939	1.6965	64.112	37.322	96.193	114	151.32
88	174	11.062	1.6989	64.265	37.355	96.105	114	151.36
89	176	11.202	1.7016	64.51	37.435	96.024	114	151.43
90	178	11.324	1.7039	64.724	37.504	95.944	114	151.5
91	180	11.45	1.7063	64.908	37.552	95.864	114	151.55
92	182	11.585	1.7089	65.061	37.579	95.783	114	151.58
93	184	11.715	1.7115	65.305	37.661	95.703	114	151.66
94	186	11.828	1.7136	65.581	37.769	95.623	114	151.77
95	188	11.966	1.7163	65.764	37.811	95.534	114	151.81
96	190	12.088	1.7187	65.917	37.842	95.462	114	151.84
97	192	12.21	1.7211	66.039	37.856	95.382	114	151.86
98	194	12.344	1.7237	66.254	37.916	95.302	114	151.92
99	196	12.484	1.7265	66.376	37.921	95.221	114	151.92
100	198	12.601	1.7288	66.529	37.954	95.149	114	151.95
101	200	12.717	1.7311	66.712	38.004	95.061	114	152
102	202	12.844	1.7336	66.865	38.032	94.98	114	152.03
103	204	12.974	1.7362	67.171	38.146	94.908	114	152.15
104	206	13.102	1.7388	67.508	38.278	94.844	114	152.28
105	208	13.221	1.7412	67.783	38.379	94.763	114	152.38
106	210	13.367	1.7441	67.967	38.414	94.691	114	152.41
107	212	13.47	1.7462	68.272	38.539	94.619	114	152.54
108	214	13.606	1.7489	68.364	38.525	94.546	114	152.52
109	216	13.731	1.7515	68.639	38.621	94.474	114	152.62
110	218	13.85	1.7539	68.884	38.702	94.402	114	152.7
111	220	13.977	1.7565	69.129	38.779	94.322	114	152.78
112	222	14.106	1.7591	69.282	38.803	94.257	114	152.8
113	224	14.226	1.7616	69.588	38.917	94.185	114	152.92
114	226	14.359	1.7643	69.802	38.973	94.113	114	152.97
115	228	14.47	1.7666	70.077	39.073	94.048	114	153.07
116	230	14.596	1.7692	70.291	39.132	93.976	114	153.13
117	232	14.715	1.7717	70.536	39.211	93.904	114	153.21
118	234	14.862	1.7747	70.689	39.223	93.832	114	153.22
119	236	14.973	1.777	71.056	39.374	93.759	114	153.37
120	238	15.103	1.7798	71.148	39.36	93.695	114	153.36
121	240	15.242	1.7827	71.392	39.427	93.631	114	153.43
122	242	15.36	1.7852	71.545	39.454	93.558	114	153.45
123	244	15.497	1.7881	71.821	39.538	93.486	114	153.54
124	246	15.615	1.7906	71.974	39.563	93.422	114	153.56
125	248	15.749	1.7934	72.341	39.7	93.358	114	153.7
126	250	15.878	1.7961	72.432	39.685	93.293	114	153.68

127	252	16.025	1.7993	72.677	39.746	93.229	114	153.75
128	254	16.136	1.8017	72.738	39.722	93.165	114	153.72
129	256	16.268	1.8045	72.952	39.774	93.092	114	153.77
130	258	16.401	1.8074	73.044	39.756	93.028	114	153.76
131	260	16.523	1.81	73.228	39.794	92.964	114	153.79
132	262	16.648	1.8127	73.319	39.78	92.9	114	153.78
133	264	16.778	1.8156	73.503	39.814	92.843	114	153.81
134	266	16.9	1.8182	73.595	39.801	92.787	114	153.8
135	268	17.018	1.8208	73.931	39.925	92.731	114	153.92
136	270	17.168	1.8241	74.023	39.897	92.667	114	153.9
137	272	17.299	1.827	74.206	39.929	92.602	114	153.93
138	274	17.426	1.8298	74.329	39.93	92.53	114	153.93
139	276	17.544	1.8324	74.512	39.968	92.466	114	153.97
140	278	17.688	1.8356	74.574	39.926	92.402	114	153.93
141	280	17.802	1.8382	74.879	40.033	92.345	114	154.03
142	282	17.94	1.8413	75.063	40.06	92.289	114	154.06
143	284	18.059	1.844	75.216	40.08	92.225	114	154.08
144	286	18.181	1.8467	75.461	40.148	92.169	114	154.15
145	288	18.323	1.8499	75.736	40.221	92.112	114	154.22
146	288.23	18.336	1.8502	75.675	40.181	92.096	114	154.18

TRIAXIAL TEST

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-257
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/14/19
Sample Type: CORE

Project No.: 19-257
Checked By: SKK
Depth: 30-32.5'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 3.01 in
Specimen Area: 1.54 in^2
Specimen Volume: 75.83 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

Liquid Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	114	114	0	0.000	13.935	13.935	1.000	13.935	0
2	0.14	121.13	114	1.952	0.274	19.113	11.983	1.595	15.548	3.5648
3	0.27	123.82	114	3.2694	0.333	20.485	10.666	1.921	15.575	4.9096
4	0.39	125.78	114	4.161	0.353	21.553	9.774	2.205	15.663	5.8894
5	0.54	127.4	114	4.7956	0.358	22.544	9.1394	2.467	15.842	6.7023
6	0.64	128.83	114	5.2695	0.355	23.499	8.6655	2.712	16.082	7.4169
7	0.77	130.13	114	5.631	0.349	24.438	8.304	2.943	16.371	8.0671
8	0.91	131.35	114	5.8961	0.340	25.388	8.0389	3.158	16.713	8.6745
9	1.03	132.5	114	6.105	0.330	26.333	7.8301	3.363	17.082	9.2516
10	1.15	133.52	114	6.2495	0.320	27.202	7.6855	3.539	17.444	9.7581
11	1.27	134.59	114	6.3459	0.308	28.174	7.5891	3.712	17.882	10.293
12	1.39	135.53	114	6.3941	0.297	29.074	7.5409	3.855	18.307	10.766
13	1.52	136.47	114	6.4102 Peak PP	0.285	30	7.5248 = 22.48	3.987	18.762	11.237
14	1.66	137.35	114	6.3941	0.274	30.895	7.5409	4.097	19.218	11.677
15	1.77	138.16	114	6.3459	0.263	31.747	7.5891	4.183	19.668	12.079
16	1.92	138.93	114	6.2736	0.252	32.588	7.6614	4.254	20.125	12.464
17	2.04	139.64	114	6.1692	0.241	33.411	7.7658	4.302	20.588	12.822
18	2.17	140.32	114	6.0487	0.230	34.204	7.8863	4.337	21.045	13.159
19	2.29	140.95	114	5.9041	0.219	34.982	8.0309	4.356	21.507	13.476
20	2.41	141.51	114	5.7435 -5.74	0.209	35.698	8.1915 = 27.51	4.358 Max SR	21.945	13.753
21	2.55	141.97	114	5.5748	0.199	36.333	8.3602	4.346	22.346	13.986
22	2.66	142.41	114	5.382	0.189	36.963	8.553	4.322	22.758	14.205
23	2.81	142.87	114	5.1892	0.180	37.615	8.7458	4.301	23.18	14.434
24	2.94	143.2	114	4.9804	0.171	38.154	8.9547	4.261	23.554	14.6
25	3.06	143.55	114	4.7795	0.162	38.704	9.1555	4.227	23.93	14.774
26	3.20	143.8	114	4.5707	0.153	39.16	9.3643	4.182	24.262	14.898
27	3.33	144.12	114	4.3538	0.145	39.701	9.5812	4.144	24.641	15.06
28	3.45	144.33	114	4.1369	0.136	40.13	9.7981	4.096	24.964	15.166
29	3.56	144.64	114	3.912	0.128	40.665	10.023	4.057	25.344	15.321
30	3.70	144.87	114	3.7031	0.120	41.098	10.232	4.017	25.665	15.433
31	3.83	145.09	114	3.4862	0.112	41.538	10.449	3.975	25.993	15.544
32	3.96	145.31	114	3.2774	0.105	41.973	10.658	3.938	26.315	15.657
33	4.09	145.54	114	3.0685	0.097	42.402	10.866	3.902	26.634	15.768
34	4.23	145.72	114	2.8597	0.090	42.794	11.075	3.864	26.935	15.859
35	4.36	145.92	114	2.6589	0.083	43.198	11.276	3.831	27.237	15.961
36	4.47	146.07	114	2.458	0.077	43.549	11.477	3.794	27.513	16.036
37	4.58	146.24	114	2.2653	0.070	43.912	11.67	3.763	27.791	16.121
38	4.73	146.46	114	2.0805	0.064	44.311	11.855	3.738	28.083	16.228
39	4.86	146.67	114	1.8957	0.058	44.713	12.039	3.714	28.376	16.337
40	4.97	146.81	114	1.711	0.052	45.03	12.224	3.684	28.627	16.403
41	5.12	146.9	114	1.5343	0.047	45.301	12.401	3.653	28.851	16.45
42	5.23	147.05	114	1.3575	0.041	45.625	12.577	3.628	29.101	16.524
43	5.36	147.19	114	1.1889	0.036	45.935	12.746	3.604	29.341	16.595
44	5.47	147.28	114	1.0282	0.031	46.187	12.907	3.579	29.547	16.64
45	5.60	147.42	114	0.86755	0.026	46.484	13.067	3.557	29.776	16.708
46	5.73	147.48	114	0.70689	0.021	46.709	13.228	3.531	29.968	16.74
47	5.84	147.61	114	0.55427	0.016	46.988	13.381	3.512	30.185	16.804
48	5.99	147.78	114	0.40164	0.012	47.312	13.533	3.496	30.423	16.889
49	6.11	147.94	114	0.25705	0.008	47.614	13.678	3.481	30.646	16.968
50	6.25	148.03	114	0.11246	0.003	47.856	13.823	3.462	30.839	17.017
51	6.38	148.19	114	-0.024098 NEG PP	-0.001	48.147	13.959	3.449	31.053	17.094
52	6.49	148.31	114	-0.16869	-0.005	48.415	14.104	3.433	31.259	17.156

53	6.61	148.49	114	-0.30525	-0.009	48.731	14.24	3.422	31.486	17.246
54	6.76	148.62	114	-0.43377	-0.013	48.986	14.369	3.409	31.678	17.309
55	6.88	148.74	114	-0.57033	-0.016	49.244	14.505	3.395	31.875	17.369
56	7.02	148.83	114	-0.69886	-0.020	49.465	14.634	3.380	32.049	17.415
57	7.15	148.98	114	-0.82738	-0.024	49.745	14.762	3.370	32.254	17.491
58	7.26	149.07	114	-0.94787	-0.027	49.949	14.883	3.356	32.416	17.533
59	7.40	149.18	114	-1.0764	-0.031	50.188	15.011	3.343	32.6	17.589
60	7.51	149.32	114	-1.1969	-0.034	50.45	15.132	3.334	32.791	17.659
61	7.64	149.41	114	-1.3174	-0.037	50.665	15.252	3.322	32.959	17.706
62	7.76	149.51	114	-1.4298	-0.040	50.873	15.365	3.311	33.119	17.754
63	7.90	149.69	114	-1.5423	-0.043	51.167	15.477	3.306	33.322	17.845
64	8.02	149.82	114	-1.6548	-0.046	51.414	15.59	3.298	33.502	17.912
65	8.14	149.96	114	-1.7672	-0.049	51.661	15.702	3.290	33.682	17.979
66	8.27	149.99	114	-1.8797	-0.052	51.808	15.815	3.276	33.812	17.997
67	8.41	150.14	114	-1.9841	-0.055	52.059	15.919	3.270	33.989	18.07
68	8.51	150.17	114	-2.0885	-0.058	52.193	16.024	3.257	34.108	18.085
69	8.62	150.3	114	-2.193	-0.060	52.431	16.128	3.251	34.28	18.152
70	8.78	150.38	114	-2.2974	-0.063	52.614	16.232	3.241	34.423	18.191
71	8.90	150.46	114	-2.4018	-0.066	52.797	16.337	3.232	34.567	18.23
72	9.04	150.51	114	-2.4982	-0.068	52.941	16.433	3.222	34.687	18.254
73	9.15	150.62	114	-2.6026	-0.071	53.162	16.538	3.215	34.85	18.312
74	9.29	150.69	114	-2.699	-0.074	53.325	16.634	3.206	34.979	18.345
75	9.42	150.74	114	-2.7954	-0.076	53.472	16.73	3.196	35.101	18.371
76	9.53	150.77	114	-2.8918	-0.079	53.593	16.827	3.185	35.21	18.383
77	9.68	150.81	114	-2.9882	-0.081	53.733	16.923	3.175	35.328	18.405
78	9.79	150.89	114	-3.0766	-0.083	53.897	17.012	3.168	35.454	18.443
79	9.94	150.97	114	-3.1649	-0.086	54.066	17.1	3.162	35.583	18.483
80	10.05	150.95	114	-3.2613	-0.088	54.145	17.196	3.149	35.671	18.474
81	10.19	151.02	114	-3.3577	-0.091	54.309	17.293	3.141	35.801	18.508
82	10.32	151.03	114	-3.4381	-0.093	54.399	17.373	3.131	35.886	18.513
83	10.45	151.09	114	-3.5264	-0.095	54.556	17.461	3.124	36.009	18.547
84	10.57	151.15	114	-3.6148	-0.097	54.697	17.55	3.117	36.123	18.573
85	10.70	151.25	114	-3.6951	-0.099	54.884	17.63	3.113	36.257	18.627
86	10.82	151.32	114	-3.7835	-0.101	55.039	17.718	3.106	36.379	18.66
87	10.94	151.32	114	-3.8718	-0.104	55.129	17.807	3.096	36.468	18.661
88	11.06	151.36	114	-3.9602	-0.106	55.25	17.895	3.087	36.573	18.678
89	11.20	151.43	114	-4.0405	-0.108	55.41	17.976	3.083	36.693	18.717
90	11.32	151.5	114	-4.1208	-0.110	55.559	18.056	3.077	36.808	18.752
91	11.45	151.55	114	-4.2012	-0.112	55.688	18.136	3.071	36.912	18.776
92	11.59	151.58	114	-4.2815	-0.114	55.795	18.217	3.063	37.006	18.789
93	11.72	151.66	114	-4.3618	-0.116	55.958	18.297	3.058	37.127	18.83
94	11.83	151.77	114	-4.4422	-0.118	56.146	18.377	3.055	37.262	18.884
95	11.97	151.81	114	-4.5305	-0.120	56.276	18.466	3.048	37.371	18.905
96	12.09	151.84	114	-4.6028	-0.122	56.38	18.538	3.041	37.459	18.921
97	12.21	151.86	114	-4.6831	-0.124	56.474	18.618	3.033	37.546	18.928
98	12.34	151.92	114	-4.7635	-0.126	56.615	18.698	3.028	37.657	18.958
99	12.48	151.92	114	-4.8438	-0.128	56.7	18.779	3.019	37.739	18.96
100	12.60	151.95	114	-4.9161	-0.130	56.805	18.851	3.013	37.828	18.977
101	12.72	152	114	-5.0045	-0.132	56.944	18.939	3.007	37.942	19.002
102	12.84	152.03	114	-5.0848	-0.134	57.052	19.02	3.000	38.036	19.016
103	12.97	152.15	114	-5.1571	-0.135	57.238	19.092	2.998	38.165	19.073
104	13.10	152.28	114	-5.2213	-0.136	57.434	19.156	2.998	38.295	19.139
105	13.22	152.38	114	-5.3017	-0.138	57.615	19.237	2.995	38.426	19.189
106	13.37	152.41	114	-5.374	-0.140	57.722	19.309	2.989	38.516	19.207
107	13.47	152.54	114	-5.4463	-0.141	57.92	19.381	2.988	38.651	19.269
108	13.61	152.52	114	-5.5186	-0.143	57.978	19.454	2.980	38.716	19.262
109	13.73	152.62	114	-5.5909	-0.145	58.147	19.526	2.978	38.836	19.31
110	13.85	152.7	114	-5.6631	-0.146	58.3	19.598	2.975	38.949	19.351
111	13.98	152.78	114	-5.7435	-0.148	58.458	19.678	2.971	39.068	19.39
112	14.11	152.8	114	-5.8077	-0.150	58.546	19.743	2.965	39.144	19.402
113	14.23	152.92	114	-5.88	-0.151	58.732	19.815	2.964	39.274	19.459
114	14.36	152.97	114	-5.9523	-0.153	58.86	19.887	2.960	39.374	19.486
115	14.47	153.07	114	-6.0166	-0.154	59.025	19.952	2.958	39.488	19.537
116	14.60	153.13	114	-6.0889	-0.156	59.156	20.024	2.954	39.59	19.566
117	14.71	153.21	114	-6.1612	-0.157	59.307	20.096	2.951	39.702	19.605
118	14.86	153.22	114	-6.2335	-0.159	59.392	20.168	2.945	39.78	19.612
119	14.97	153.37	114	-6.3058	-0.160	59.615	20.241	2.945	39.928	19.687
120	15.10	153.36	114	-6.37	-0.162	59.665	20.305	2.938	39.985	19.68
121	15.24	153.43	114	-6.4343	-0.163	59.797	20.369	2.936	40.083	19.714
122	15.36	153.45	114	-6.5066	-0.165	59.895	20.442	2.930	40.168	19.727
123	15.50	153.54	114	-6.5789	-0.166	60.052	20.514	2.927	40.283	19.769
124	15.61	153.56	114	-6.6432	-0.168	60.142	20.578	2.923	40.36	19.782
125	15.75	153.7	114	-6.7074	-0.169	60.342	20.642	2.923	40.492	19.85

126	15.88	153.68	114	-6.7717	-0.171	60.392	20.707	2.917	40.549	19.842
127	16.03	153.75	114	-6.8359	-0.172	60.517	20.771	2.914	40.644	19.873
128	16.14	153.72	114	-6.9002	-0.174	60.558	20.835	2.907	40.696	19.861
129	16.27	153.77	114	-6.9725	-0.175	60.681	20.908	2.902	40.794	19.887
130	16.40	153.76	114	-7.0368	-0.177	60.728	20.972	2.896	40.85	19.878
131	16.52	153.79	114	-7.101	-0.178	60.83	21.036	2.892	40.933	19.897
132	16.65	153.78	114	-7.1653	-0.180	60.88	21.1	2.885	40.99	19.89
133	16.78	153.81	114	-7.2215	-0.181	60.97	21.157	2.882	41.063	19.907
134	16.90	153.8	114	-7.2777	-0.183	61.014	21.213	2.876	41.113	19.901
135	17.02	153.92	114	-7.334	-0.184	61.194	21.269	2.877	41.231	19.962
136	17.17	153.9	114	-7.3982	-0.185	61.23	21.333	2.870	41.282	19.949
137	17.30	153.93	114	-7.4625	-0.187	61.326	21.398	2.866	41.362	19.964
138	17.43	153.93	114	-7.5348	-0.189	61.399	21.47	2.860	41.435	19.965
139	17.54	153.97	114	-7.5991	-0.190	61.502	21.534	2.856	41.518	19.984
140	17.69	153.93	114	-7.6633	-0.192	61.524	21.598	2.849	41.561	19.963
141	17.80	154.03	114	-7.7196	-0.193	61.687	21.655	2.849	41.671	20.016
142	17.94	154.06	114	-7.7758	-0.194	61.77	21.711	2.845	41.741	20.03
143	18.06	154.08	114	-7.84	-0.196	61.855	21.775	2.841	41.815	20.04
144	18.18	154.15	114	-7.8963	-0.197	61.979	21.831	2.839	41.905	20.074
145	18.32	154.22	114	-7.9525	-0.198	62.109	21.888	2.838	41.998	20.111
146	18.34	154.18	114	-7.9686	-0.198	62.085	21.904	2.834	41.994	20.091

TRIAXIAL TEST

'roject: PLUM CREEK SITE 21
oring No.: B-05
ample No.: 19-257
'est No.: 3

Location: TX
Tested By: SKK
Test Date: 3/14/19
Sample Type: CORE

Project No.: 19-257
Checked By: SKK
Depth: 30-32.5'
Elevation: N/A

oil Description:
emarks:

pecimen Height: 3.03 in
pecimen Area: 1.52 in^2
pecimen Volume: 75.46 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

iquid Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
ontainer ID		---		
t. Container + Wet Soil, gm	154.46	154.46	155.52	226.01
t. Container + Dry Soil, gm	125.84	125.84	125.84	196.33
t. Container, gm	0	---	0	70.49
t. Dry Soil, gm	125.84	125.84	125.84	125.84
ater Content, %	22.74	22.74	23.59	23.59
oid Ratio	---	0.62	0.64	---
egree of Saturation, %	---	99.18	100.00	---
ry Unit Weight, pcf	---	104.1	102.98	---

nitial

nd of Initialization

nd of Consolidation/A

nd of Saturation

nd of Consolidation/B

nd of Shear

t Failure

TRIAXIAL TEST

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-257
Test No.: 3

Location: TX
Tested By: SKK
Test Date: 3/14/19
Sample Type: CORE

Project No.: 19-257
Checked By: SKK
Depth: 30-32.5'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 3.03 in
Specimen Area: 1.52 in^2
Specimen Volume: 75.46 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

Liquid Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	1.4748	0	0	100.12	128	128
2	2.0031	0.11151	1.4765	11.825	8.0037	101.49	128	136
3	4.0036	0.22772	1.4782	22.694	15.341	104.14	128	143.34
4	6.0002	0.36279	1.4802	28.776	19.423	106	128	147.42
5	8.0005	0.48529	1.482	33.408	22.518	107.38	128	150.52
6	10.001	0.61721	1.484	37.02	24.916	108.42	128	152.92
7	12.003	0.73028	1.4857	40.17	27.002	109.23	128	155
8	14.001	0.84964	1.4875	42.887	28.79	109.86	128	156.79
9	16.004	0.97999	1.4894	45.233	30.322	110.36	128	158.32
10	18.002	1.0978	1.4912	47.209	31.605	110.71	128	159.61
11	20.002	1.2234	1.4931	49.154	32.862	110.98	128	160.86
12	22.002	1.3538	1.4951	50.575	33.762	111.14	128	161.76
13	24.004	1.4826	1.497	51.841	34.557	111.24	128	162.56
14	26.004	1.6223	1.4992	52.921	35.222	111.29	128	163.22
15	28.003	1.7605	1.5013	53.94	35.845	111.3	128	163.84
16	30.003	1.8783	1.5031	54.774	36.351	111.24	128	164.35
17	32	2.0134	1.5052	55.515	36.787	111.17	128	164.79
18	34.002	2.1233	1.5068	56.225	37.211	111.08	128	165.21
19	36.001	2.2537	1.5089	56.688	37.463	110.96	128	165.46
20	38.002	2.3856	1.5109	57.12	37.692	110.84	128	165.69
21	40.002	2.5207	1.513	57.645	37.98	110.7	128	165.98
22	42.001	2.6384	1.5148	57.985	38.153	110.55	128	166.15
23	44.003	2.7735	1.5169	58.263	38.277	110.4	128	166.28
24	46.001	2.8929	1.5188	58.602	38.448	110.26	128	166.45
25	48.004	3.0295	1.5209	58.942	38.61	110.12	128	166.61
26	50.001	3.1583	1.5229	59.127	38.675	109.96	128	166.67
27	52.002	3.3028	1.5252	59.374	38.772	109.81	128	166.77
28	54.002	3.4425	1.5274	59.56	38.831	109.66	128	166.83
29	56.001	3.5698	1.5294	59.745	38.895	109.51	128	166.89
30	58.001	3.697	1.5315	59.93	38.958	109.37	128	166.96
31	60.002	3.8195	1.5334	60.208	39.084	109.23	128	167.08
32	62.004	3.9608	1.5357	60.362	39.121	109.09	128	167.12
33	64.003	4.0849	1.5377	60.579	39.205	108.95	128	167.2
34	66.002	4.2027	1.5396	60.764	39.272	108.82	128	167.27
35	68.004	4.3377	1.5417	61.011	39.37	108.68	128	167.37
36	70.004	4.4649	1.5438	61.289	39.492	108.55	128	167.49
37	72.001	4.5859	1.5457	61.567	39.616	108.43	128	167.62
38	74.003	4.7209	1.5479	61.783	39.693	108.31	128	167.69
39	76.002	4.8403	1.5499	61.999	39.777	108.19	128	167.78
40	78	4.9722	1.552	62.153	39.816	108.07	128	167.82
41	80.003	5.112	1.5543	62.338	39.87	107.95	128	167.87
42	82.004	5.2423	1.5564	62.462	39.888	107.85	128	167.89
43	84	5.3727	1.5586	62.709	39.986	107.75	128	167.99
44	86.002	5.5062	1.5608	62.833	40.002	107.64	128	168
45	88.003	5.613	1.5626	63.08	40.11	107.55	128	168.11
46	90.004	5.7323	1.5645	63.141	40.093	107.45	128	168.09
47	92.001	5.88	1.567	63.357	40.162	107.35	128	168.16
48	94.003	5.9915	1.5688	63.357	40.109	107.26	128	168.11
49	96.004	6.1281	1.5711	63.512	40.143	107.17	128	168.14
50	98.003	6.2663	1.5734	63.574	40.117	107.08	128	168.12
51	100	6.3904	1.5755	63.635	40.097	106.98	128	168.1
52	102	6.5192	1.5777	63.79	40.134	106.9	128	168.13
53	104	6.6354	1.5797	63.913	40.157	106.82	128	168.16

54	106	6.7563	1.5817	64.006	40.158	106.74	128	168.16
55	108	6.8914	1.584	64.098	40.152	106.66	128	168.15
56	110	7.0406	1.5866	64.222	40.159	106.59	128	168.16
57	112	7.1568	1.5885	64.253	40.123	106.51	128	168.12
58	114	7.2809	1.5907	64.5	40.219	106.43	128	168.22
59	116	7.4034	1.5928	64.562	40.199	106.36	128	168.2
60	118	7.5494	1.5953	64.654	40.187	106.29	128	168.19
61	120	7.6782	1.5975	64.716	40.164	106.22	128	168.16
62	122	7.7944	1.5995	64.87	40.204	106.15	128	168.2
63	124	7.9169	1.6017	64.932	40.184	106.09	128	168.18
64	126	8.0567	1.6041	65.056	40.194	106.03	128	168.19
65	128	8.1619	1.6059	65.148	40.201	105.96	128	168.2
66	130	8.2954	1.6083	65.303	40.232	105.91	128	168.23
67	132	8.4493	1.611	65.303	40.158	105.84	128	168.16
68	134	8.5671	1.613	65.395	40.158	105.78	128	168.16
69	136	8.7006	1.6154	65.55	40.189	105.73	128	168.19
70	138	8.8184	1.6175	65.642	40.189	105.67	128	168.19
71	140	8.9644	1.6201	65.642	40.119	105.61	128	168.12
72	142	9.0901	1.6223	65.735	40.115	105.55	128	168.11
73	144	9.2298	1.6248	65.766	40.066	105.5	128	168.07
74	146	9.3414	1.6268	65.889	40.088	105.45	128	168.09
75	148	9.4827	1.6294	66.074	40.133	105.39	128	168.13
76	150	9.6099	1.6316	66.013	40.033	105.34	128	168.03
77	152	9.7575	1.6343	65.982	39.942	105.3	128	167.94
78	154	9.8738	1.6364	66.136	39.98	105.24	128	167.98
79	156	10.012	1.6389	66.167	39.931	105.19	128	167.93
80	158	10.152	1.6415	66.321	39.957	105.14	128	167.96
81	160	10.276	1.6438	66.476	39.99	105.1	128	167.99
82	162	10.405	1.6461	66.507	39.946	105.05	128	167.95
83	164	10.535	1.6485	66.599	39.938	105	128	167.94
84	166	10.673	1.6511	66.723	39.945	104.96	128	167.95
85	168	10.814	1.6537	66.846	39.951	104.91	128	167.95
86	170	10.931	1.6558	66.97	39.968	104.86	128	167.97
87	172	11.064	1.6583	67.155	40.014	104.81	128	168.01
88	174	11.198	1.6608	67.279	40.023	104.76	128	168.02
89	176	11.334	1.6634	67.402	40.029	104.72	128	168.03
90	178	11.443	1.6654	67.618	40.106	104.68	128	168.11
91	180	11.593	1.6683	67.711	40.086	104.62	128	168.09
92	182	11.719	1.6706	67.834	40.098	104.58	128	168.1
93	184	11.848	1.6731	67.989	40.126	104.53	128	168.13
94	186	11.97	1.6754	68.174	40.176	104.48	128	168.18
95	188	12.074	1.6774	68.267	40.179	104.44	128	168.18
96	190	12.236	1.6805	68.452	40.208	104.4	128	168.21
97	192	12.344	1.6825	68.606	40.246	104.35	128	168.25
98	194	12.471	1.685	68.73	40.255	104.31	128	168.26
99	196	12.589	1.6873	68.915	40.306	104.27	128	168.31
100	198	12.721	1.6898	68.977	40.276	104.22	128	168.28
101	200	12.861	1.6925	69.1	40.279	104.17	128	168.28
102	202	12.993	1.6951	69.255	40.303	104.13	128	168.3
103	204	13.129	1.6978	69.378	40.307	104.09	128	168.31
104	206	13.233	1.6998	69.378	40.254	104.04	128	168.25
105	208	13.374	1.7026	69.533	40.273	104	128	168.27
106	210	13.5	1.705	69.471	40.173	103.96	128	168.17
107	212	13.637	1.7077	69.471	40.104	103.91	128	168.1
108	214	13.753	1.71	69.471	40.045	103.88	128	168.05
109	216	13.885	1.7126	69.563	40.032	103.83	128	168.03
110	218	14.014	1.7152	69.625	40.003	103.79	128	168
111	220	14.139	1.7177	69.656	39.957	103.75	128	167.96
112	222	14.288	1.7207	69.903	40.025	103.7	128	168.03
113	224	14.386	1.7227	69.996	40.03	103.66	128	168.03
114	226	14.526	1.7255	70.057	39.994	103.62	128	167.99
115	228	14.642	1.7278	70.15	39.989	103.58	128	167.99
116	230	14.769	1.7304	70.243	39.977	103.53	128	167.98
117	232	14.898	1.733	70.274	39.929	103.5	128	167.93
118	234	15.036	1.7359	70.459	39.965	103.46	128	167.97
119	236	15.162	1.7384	70.644	40.008	103.41	128	168.01
120	238	15.301	1.7413	70.613	39.918	103.38	128	167.92
121	240	15.43	1.7439	70.798	39.958	103.34	128	167.96
122	242	15.556	1.7465	70.86	39.929	103.3	128	167.93
123	244	15.674	1.749	71.015	39.957	103.26	128	167.96
124	246	15.826	1.7521	71.138	39.949	103.21	128	167.95
125	248	15.936	1.7544	71.231	39.945	103.18	128	167.94
126	250	16.074	1.7573	71.293	39.909	103.15	128	167.91

127	252	16.197	1.7599	71.416	39.916	103.1	128	167.92
128	254	16.336	1.7628	71.632	39.966	103.08	128	167.97
129	256	16.464	1.7655	71.787	39.987	103.04	128	167.99
130	258	16.602	1.7684	71.972	40.02	103	128	168.02
131	260	16.731	1.7712	72.126	40.041	102.97	128	168.04
132	262	16.872	1.7742	72.219	40.019	102.93	128	168.02
133	264	16.994	1.7768	72.342	40.025	102.9	128	168.02
134	266	17.122	1.7795	72.466	40.028	102.86	128	168.03
135	268	17.25	1.7823	72.651	40.064	102.83	128	168.06
136	270	17.4	1.7855	72.62	39.968	102.79	128	167.97
137	272	17.522	1.7882	72.744	39.973	102.75	128	167.97
138	274	17.648	1.7909	72.805	39.942	102.71	128	167.94
139	276	17.802	1.7943	72.929	39.93	102.67	128	167.93
140	278	17.945	1.7974	73.052	39.923	102.63	128	167.92
141	280	18.069	1.8001	73.238	39.961	102.6	128	167.96
142	282	18.183	1.8026	73.299	39.935	102.56	128	167.93
143	284	18.323	1.8057	73.423	39.929	102.52	128	167.93
144	286	18.431	1.8081	73.516	39.923	102.49	128	167.92
145	287.88	18.571	1.8112	73.608	39.9	102.45	128	167.9

TRIAXIAL TEST

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-257
Test No.: 3

Location: TX
Tested By: SKK
Test Date: 3/14/19
Sample Type: CORE

Project No.: 19-257
Checked By: SKK
Depth: 30-32.5'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 3.03 in
Specimen Area: 1.52 in^2
Specimen Volume: 75.46 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

Liquid Limit: ---

Plastic Limit: ---

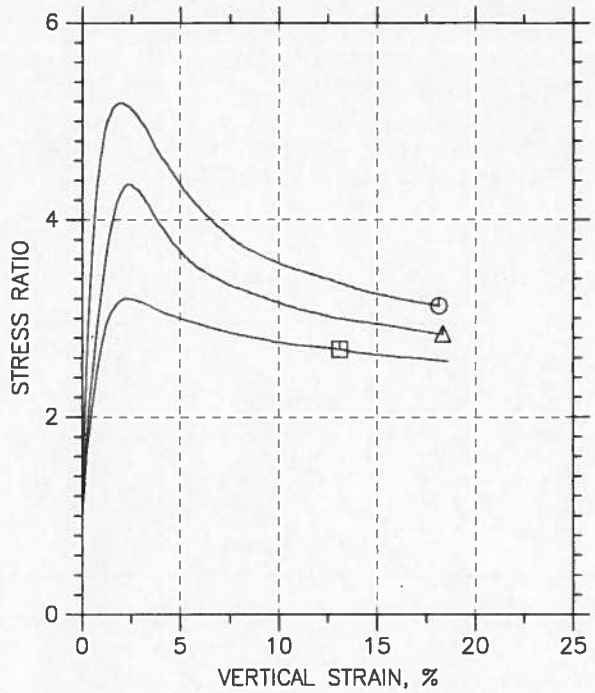
Measured Specific Gravity: 2.70

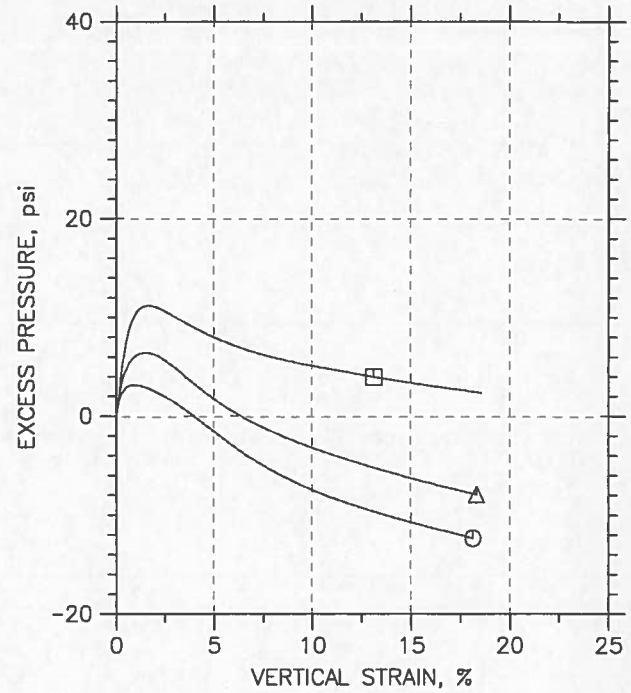
	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	128	128	0	0.000	27.878	27.878	1.000	27.878	0
2	0.11	136	128	1.3731	0.172	34.509	26.505	1.302	30.507	4.0018
3	0.23	143.34	128	4.0136	0.262	39.206	23.864	1.643	31.535	7.6705
4	0.36	147.42	128	5.8742	0.302	41.427	22.004	1.883	31.715	9.7115
5	0.49	150.52	128	7.2554	0.322	43.141	20.623	2.092	31.882	11.259
6	0.62	152.92	128	8.2954	0.333	44.499	19.583	2.272	32.041	12.458
7	0.73	155	128	9.1079	0.337	45.772	18.77	2.439	32.271	13.501
8	0.85	156.79	128	9.7416	0.338	46.927	18.136	2.587	32.532	14.395
9	0.98	158.32	128	10.237	0.338	47.963	17.641	2.719	32.802	15.161
10	1.10	159.61	128	10.587	0.335	48.897	17.292	2.828	33.094	15.803
11	1.22	160.86	128	10.855	0.330	49.885	17.023	2.930	33.454	16.431
12	1.35	161.76	128	11.017	0.326	50.623	16.861	3.002	33.742	16.881
13	1.48	162.56	128	11.123	0.322	51.313	16.755	3.062	34.034	17.279
14	1.62	163.22	128	11.172	0.317	51.929	16.707	3.108	34.318	17.611
15	1.76	163.84	128	11.18 - Peak PP	0.312	52.543	16.698 = 35.85	3.147	34.621	17.922
16	1.88	164.35	128	11.123	0.306	53.106	16.755	3.170	34.931	18.175
17	2.01	164.79	128	11.05	0.300	53.615	16.828	3.186	35.222	18.393
18	2.12	165.21	128	10.96	0.295	54.129	16.918 - 37.21	3.200 - Max SR	35.523	18.606
19	2.25	165.46	128	10.838	0.289	54.502	17.04	3.199	35.771	18.731
20	2.39	165.69	128	10.717	0.284	54.853	17.162	3.196	36.007	18.846
21	2.52	165.98	128	10.578	0.279	55.28	17.3	3.195	36.29	18.99
22	2.64	166.15	128	10.432	0.273	55.599	17.446	3.187	36.522	19.076
23	2.77	166.28	128	10.278	0.269	55.877	17.6	3.175	36.739	19.138
24	2.89	166.45	128	10.14	0.264	56.186	17.738	3.167	36.962	19.224
25	3.03	166.61	128	9.9935	0.259	56.495	17.885	3.159	37.19	19.305
26	3.16	166.67	128	9.8391	0.254	56.714	18.039	3.144	37.376	19.337
27	3.30	166.77	128	9.6929	0.250	56.957	18.185	3.132	37.571	19.386
28	3.44	166.83	128	9.5385	0.246	57.17	18.34	3.117	37.755	19.415
29	3.57	166.89	128	9.3923	0.241	57.381	18.486	3.104	37.933	19.447
30	3.70	166.96	128	9.246	0.237	57.59	18.632	3.091	38.111	19.479
31	3.82	167.08	128	9.1079	0.233	57.854	18.77	3.082	38.312	19.542
32	3.96	167.12	128	8.9698	0.229	58.029	18.908	3.069	38.469	19.56
33	4.08	167.2	128	8.8235	0.225	58.259	19.055	3.058	38.657	19.602
34	4.20	167.27	128	8.6935	0.221	58.456	19.185	3.047	38.82	19.636
35	4.34	167.37	128	8.5554	0.217	58.693	19.323	3.038	39.008	19.685
36	4.46	167.49	128	8.4254	0.213	58.944	19.453	3.030	39.199	19.746
37	4.59	167.62	128	8.3117	0.210	59.182	19.566	3.025	39.374	19.808
38	4.72	167.69	128	8.1898	0.206	59.381	19.688	3.016	39.535	19.847
39	4.84	167.78	128	8.0679	0.203	59.588	19.81	3.008	39.699	19.889
40	4.97	167.82	128	7.9461	0.200	59.748	19.932	2.998	39.84	19.908
41	5.11	167.87	128	7.8323	0.196	59.915	20.046	2.989	39.981	19.935
42	5.24	167.89	128	7.7267	0.194	60.04	20.151	2.979	40.096	19.944
43	5.37	167.99	128	7.6292	0.191	60.235	20.249	2.975	40.242	19.993
44	5.51	168	128	7.5154	0.188	60.365	20.363	2.964	40.364	20.001
45	5.61	168.11	128	7.4261	0.185	60.562	20.452	2.961	40.507	20.055
46	5.73	168.09	128	7.3286	0.183	60.643	20.55	2.951	40.596	20.047
47	5.88	168.16	128	7.2311	0.180	60.809	20.647	2.945	40.728	20.081
48	5.99	168.11	128	7.1336	0.178	60.854	20.745	2.933	40.799	20.055
49	6.13	168.14	128	7.0442	0.175	60.977	20.834	2.927	40.905	20.071
50	6.27	168.12	128	6.9548	0.173	61.04	20.923	2.917	40.982	20.058
51	6.39	168.1	128	6.8573	0.171	61.118	21.021	2.907	41.069	20.049
52	6.52	168.13	128	6.7761	0.169	61.236	21.102	2.902	41.169	20.067

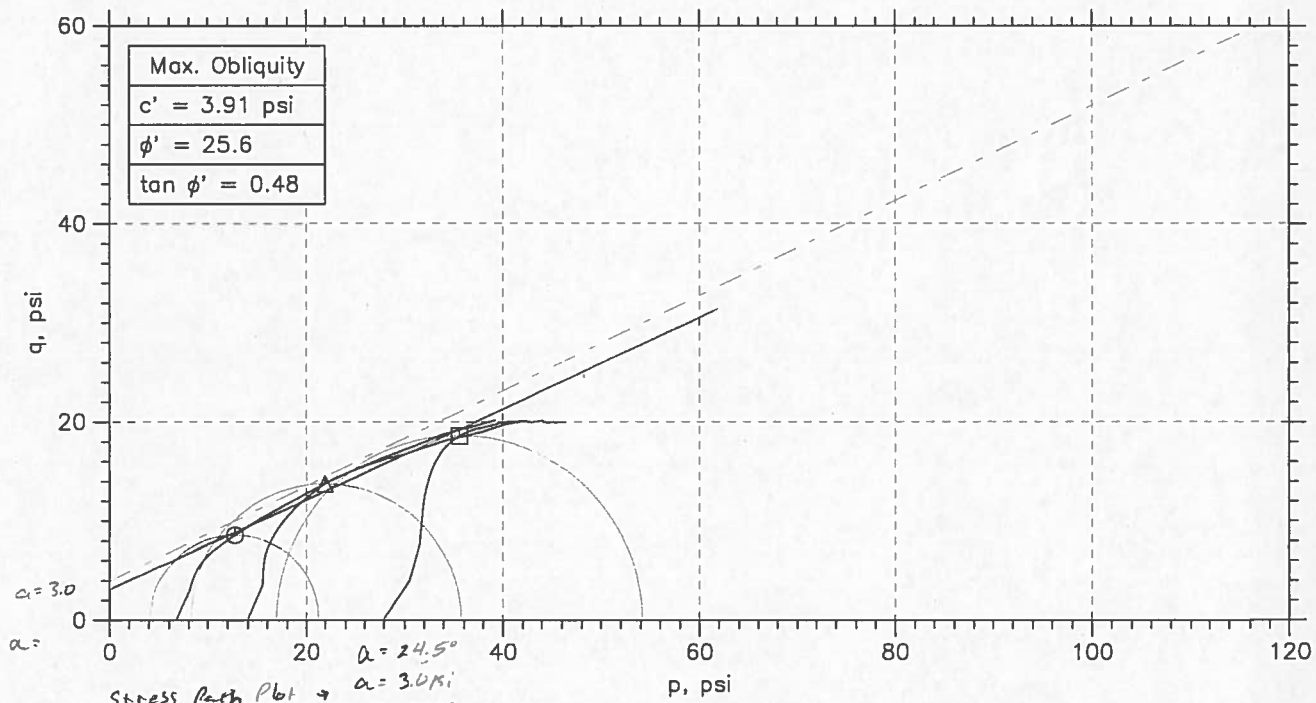
53	6.64	168.16	128	6.6948	0.167	61.34	21.183	2.896	41.262	20.078
54	6.76	168.16	128	6.6136	0.165	61.422	21.265	2.888	41.343	20.079
55	6.89	168.15	128	6.5405	0.163	61.49	21.338	2.882	41.414	20.076
56	7.04	168.16	128	6.4673	0.161	61.57	21.411	2.876	41.49	20.079
57	7.16	168.12	128	6.3861	0.159	61.615	21.492	2.867	41.553	20.061
58	7.28	168.22	128	6.313	0.157	61.784	21.565	2.865	41.675	20.109
59	7.40	168.2	128	6.2398	0.155	61.837	21.638	2.858	41.738	20.099
60	7.55	168.19	128	6.1667	0.153	61.898	21.711	2.851	41.805	20.093
61	7.68	168.16	128	6.0936	0.152	61.948	21.785	2.844	41.866	20.082
62	7.79	168.2	128	6.0286	0.150	62.054	21.85	2.840	41.952	20.102
63	7.92	168.18	128	5.9636	0.148	62.099	21.915	2.834	42.007	20.092
64	8.06	168.19	128	5.9067	0.147	62.165	21.971	2.829	42.068	20.097
65	8.16	168.2	128	5.8417	0.145	62.237	22.036	2.824	42.137	20.1
66	8.30	168.23	128	5.7849	0.144	62.326	22.093	2.821	42.209	20.116
67	8.45	168.16	128	5.7199	0.142	62.316	22.158	2.812	42.237	20.079
68	8.57	168.16	128	5.663	0.141	62.373	22.215	2.808	42.294	20.079
69	8.70	168.19	128	5.6061	0.139	62.461	22.272	2.804	42.367	20.095
70	8.82	168.19	128	5.5492	0.138	62.518	22.329	2.800	42.424	20.095
71	8.96	168.12	128	5.4924	0.137	62.504	22.386	2.792	42.445	20.059
72	9.09	168.11	128	5.4274	0.135	62.565	22.451	2.787	42.508	20.057
73	9.23	168.07	128	5.3786	0.134	62.565	22.5	2.781	42.532	20.033
74	9.34	168.09	128	5.3299	0.133	62.636	22.548	2.778	42.592	20.044
75	9.48	168.13	128	5.2649	0.131	62.746	22.613	2.775	42.68	20.066
76	9.61	168.03	128	5.2161	0.130	62.695	22.662	2.767	42.678	20.016
77	9.76	167.94	128	5.1755	0.130	62.645	22.703	2.759	42.674	19.971
78	9.87	167.98	128	5.1186	0.128	62.739	22.76	2.757	42.749	19.99
79	10.01	167.93	128	5.0699	0.127	62.739	22.808	2.751	42.774	19.966
80	10.15	167.96	128	5.0211	0.126	62.814	22.857	2.748	42.835	19.978
81	10.28	167.99	128	4.9805	0.125	62.888	22.898	2.746	42.893	19.995
82	10.40	167.95	128	4.9236	0.123	62.9	22.955	2.740	42.927	19.973
83	10.53	167.94	128	4.8749	0.122	62.942	23.003	2.736	42.972	19.969
84	10.67	167.95	128	4.8343	0.121	62.989	23.044	2.733	43.017	19.973
85	10.81	167.95	128	4.7855	0.120	63.043	23.093	2.730	43.068	19.975
86	10.93	167.97	128	4.7368	0.119	63.11	23.141	2.727	43.125	19.984
87	11.06	168.01	128	4.688	0.117	63.204	23.19	2.725	43.197	20.007
88	11.20	168.02	128	4.6393	0.116	63.262	23.239	2.722	43.25	20.011
89	11.33	168.03	128	4.5986	0.115	63.309	23.279	2.720	43.294	20.015
90	11.44	168.11	128	4.558	0.114	63.426	23.32	2.720	43.373	20.053
91	11.59	168.09	128	4.5011	0.112	63.463	23.377	2.715	43.42	20.043
92	11.72	168.1	128	4.4605	0.111	63.515	23.418	2.712	43.467	20.049
93	11.85	168.13	128	4.4118	0.110	63.592	23.466	2.710	43.529	20.063
94	11.97	168.18	128	4.363	0.109	63.691	23.515	2.709	43.603	20.088
95	12.07	168.18	128	4.3143	0.107	63.743	23.564	2.705	43.653	20.09
96	12.24	168.21	128	4.2736	0.106	63.813	23.604	2.703	43.709	20.104
97	12.34	168.25	128	4.233	0.105	63.891	23.645	2.702	43.768	20.123
98	12.47	168.26	128	4.1843	0.104	63.949	23.694	2.699	43.822	20.128
99	12.59	168.31	128	4.1436	0.103	64.04	23.734	2.698	43.887	20.153
100	12.72	168.28	128	4.0949	0.102	64.059	23.783	2.693	43.921	20.138
101	12.86	168.28	128	4.0461	0.100	64.111	23.832	2.690	43.971	20.139
102	12.99	168.3	128	4.0055	0.099	64.176	23.873	2.688	44.024	20.152
103	13.13	168.31	128	3.9649	0.098	64.22	23.913	2.686	44.067	20.153
104	13.23	168.25	128	3.9162	0.097	64.216	23.962	2.680	44.089	20.127
105	13.37	168.27	128	3.8755	0.096	64.276	24.003	2.678	44.139	20.137
106	13.50	168.17	128	3.8349	0.095	64.217	24.043	2.671	44.13	20.087
107	13.64	168.1	128	3.7862	0.094	64.196	24.092	2.665	44.144	20.052
108	13.75	168.05	128	3.7537	0.094	64.17	24.124	2.660	44.147	20.023
109	13.88	168.03	128	3.713	0.093	64.198	24.165	2.657	44.181	20.016
110	14.01	168	128	3.6643	0.092	64.217	24.214	2.652	44.215	20.002
111	14.14	167.96	128	3.6237	0.091	64.212	24.254	2.647	44.233	19.979
112	14.29	168.03	128	3.583	0.090	64.32	24.295	2.647	44.308	20.013
113	14.39	168.03	128	3.5424	0.088	64.365	24.336	2.645	44.35	20.015
114	14.53	167.99	128	3.5018	0.088	64.37	24.376	2.641	44.373	19.997
115	14.64	167.99	128	3.4612	0.087	64.405	24.417	2.638	44.411	19.994
116	14.77	167.98	128	3.4124	0.085	64.443	24.466	2.634	44.454	19.989
117	14.90	167.93	128	3.3799	0.085	64.427	24.498	2.630	44.463	19.965
118	15.04	167.97	128	3.3393	0.084	64.504	24.539	2.629	44.521	19.983
119	15.16	168.01	128	3.2905	0.082	64.595	24.588	2.627	44.591	20.004
120	15.30	167.92	128	3.258	0.082	64.538	24.62	2.621	44.579	19.959
121	15.43	167.96	128	3.2174	0.081	64.619	24.661	2.620	44.64	19.979
122	15.56	167.93	128	3.1768	0.080	64.63	24.701	2.616	44.666	19.965
123	15.67	167.96	128	3.1362	0.078	64.699	24.742	2.615	44.72	19.978
124	15.83	167.95	128	3.0874	0.077	64.74	24.791	2.611	44.765	19.974
125	15.94	167.94	128	3.063	0.077	64.76	24.815	2.610	44.788	19.972

126	16.07	167.91	128	3.0305	0.076	64.756	24.848	2.606	44.802	19.954
127	16.20	167.92	128	2.9818	0.075	64.812	24.896	2.603	44.854	19.958
128	16.34	167.97	128	2.9574	0.074	64.887	24.921	2.604	44.904	19.983
129	16.46	167.99	128	2.9168	0.073	64.949	24.961	2.602	44.955	19.994
130	16.60	168.02	128	2.8762	0.072	65.022	25.002	2.601	45.012	20.01
131	16.73	168.04	128	2.8437	0.071	65.075	25.034	2.599	45.055	20.02
132	16.87	168.02	128	2.8112	0.070	65.086	25.067	2.596	45.076	20.01
133	16.99	168.02	128	2.7787	0.069	65.124	25.099	2.595	45.112	20.012
134	17.12	168.03	128	2.7381	0.068	65.168	25.14	2.592	45.154	20.014
135	17.25	168.06	128	2.7056	0.068	65.237	25.173	2.592	45.205	20.032
136	17.40	167.97	128	2.6731	0.067	65.174	25.205	2.586	45.189	19.984
137	17.52	167.97	128	2.6324	0.066	65.219	25.246	2.583	45.232	19.987
138	17.65	167.94	128	2.5918	0.065	65.228	25.286	2.580	45.257	19.971
139	17.80	167.93	128	2.5512	0.064	65.257	25.327	2.577	45.292	19.965
140	17.94	167.92	128	2.5106	0.063	65.291	25.368	2.574	45.329	19.962
141	18.07	167.96	128	2.4781	0.062	65.361	25.4	2.573	45.381	19.98
142	18.18	167.93	128	2.4374	0.061	65.375	25.441	2.570	45.408	19.967
143	18.32	167.93	128	2.3968	0.060	65.411	25.481	2.567	45.446	19.965
144	18.43	167.92	128	2.3643	0.059	65.437	25.514	2.565	45.475	19.962
145	18.57	167.9	128	2.3318	0.058	65.447	25.546	2.562	45.497	19.95

CONSOLIDATED UNDRAINED TRIAXIAL TEST





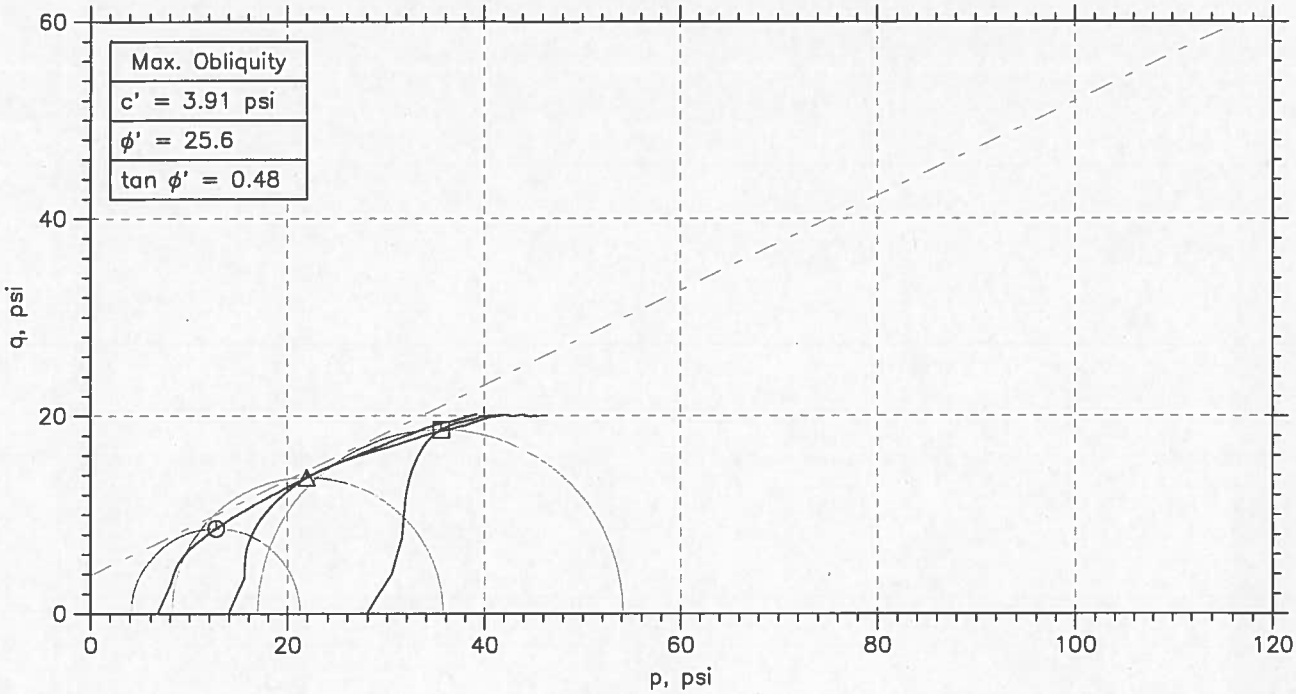


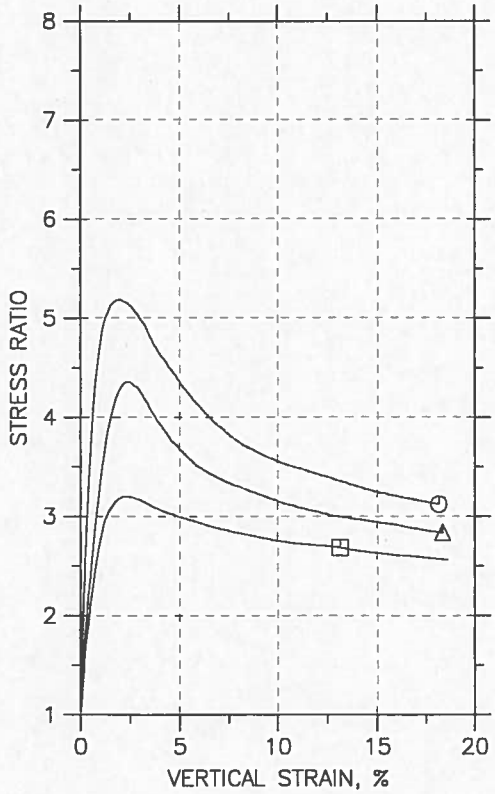
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	19-257	1	30-32.5'	SKK	3/14/19	SKK		19-257-07eng.dat
△	19-257	2	30-32.5'	SKK	3/14/19	SKK		19-257-14eng.dat
⊡	19-257	3	30-32.5'	SKK	3/14/19	SKK		19-257-28eng.dat

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-257
Boring No.: B-05	Sample Type: CORE	
Description:		
Remarks:		

Tue, 16-APR-2019 14:21:03

CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⊙	△	⊡	
Sample No.		19-257	19-257	19-257	
Test No.		1	2	3	
Depth		30-32.5'	30-32.5'	30-32.5'	
Initial	Diameter, in	1.391	1.4	1.392	
	Height, in	3.023	3.006	3.026	
	Water Content, %	20.4	18.2	22.7	
	Dry Density, pcf	105.3	112.1	104.1	
	Saturation, %	91.8	97.7	99.2	
	Void Ratio	0.601	0.503	0.619	
Before Shear	Water Content, %	23.7	20.1	23.6	
	Dry Density, pcf	102.9	109.3	103.	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.639	0.542	0.637	
	Back Press., psi	100.3	100.1	100.1	
Ver. Eff. Cons. Stress, psi		6.663	13.94	27.88	
Shear Strength, psi		20.19	20.11	20.15	
Strain at Failure, %		18.1	18.3	13.1	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-257

Boring No.: B-05

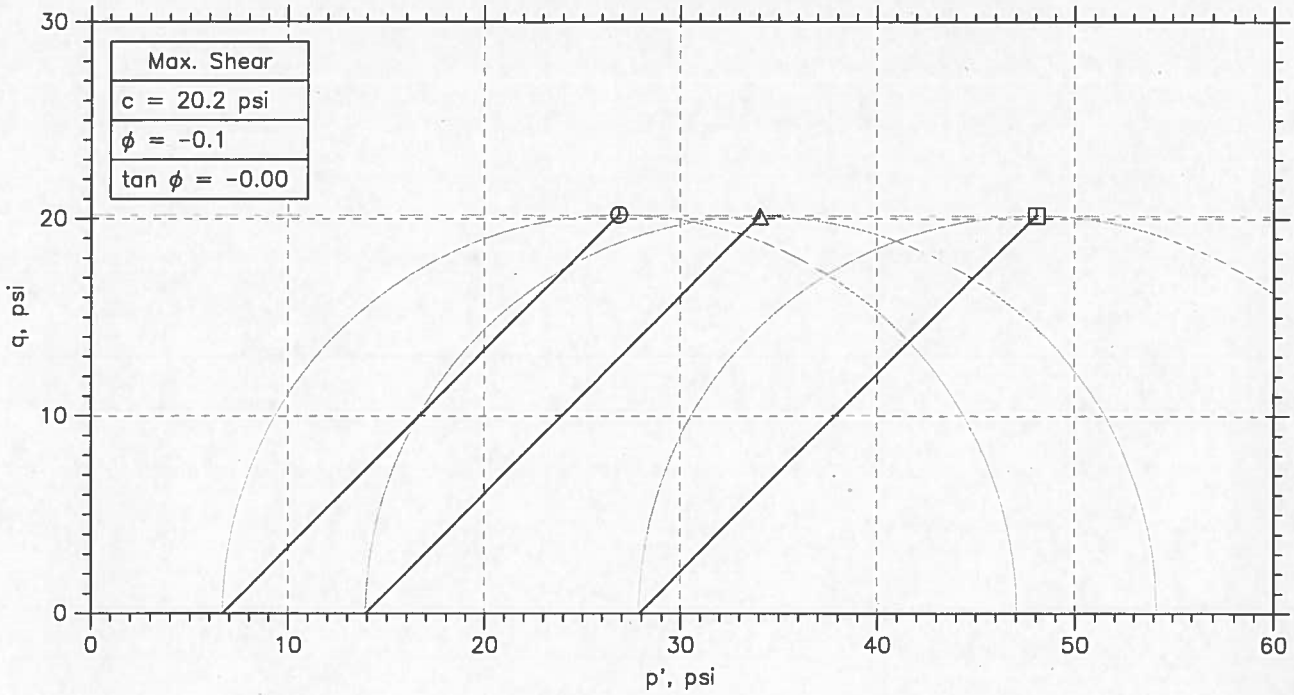
Sample Type: CORE

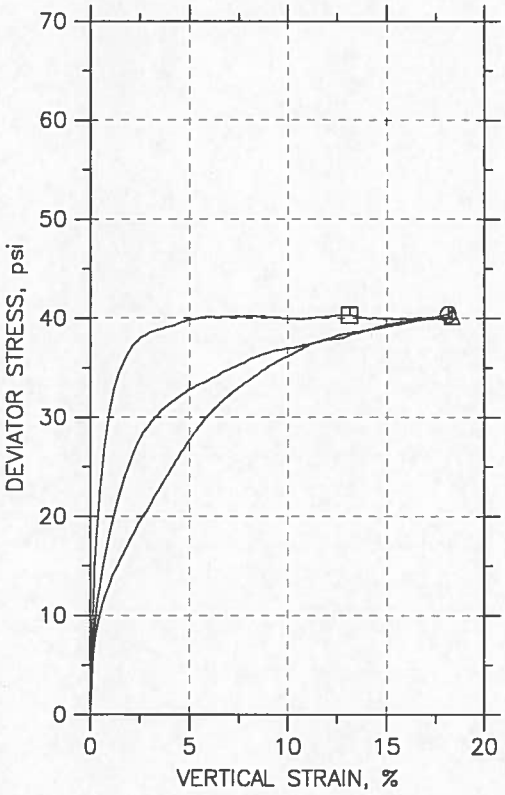
Description:

Remarks:

Tue, 16-APR-2019 14:21:02

CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⏲	△	⊡	
Sample No.		19-257	19-257	19-257	
Test No.		1	2	3	
Depth		30-32.5'	30-32.5'	30-32.5'	
Initial	Diameter, in	1.391	1.4	1.392	
	Height, in	3.023	3.006	3.026	
	Water Content, %	20.4	18.2	22.7	
	Dry Density, pcf	105.3	112.1	104.1	
	Saturation, %	91.8	97.7	99.2	
	Void Ratio	0.601	0.503	0.619	
Before Shear	Water Content, %	23.7	20.1	23.6	
	Dry Density, pcf	102.9	109.3	103.	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.639	0.542	0.637	
	Back Press., psi	100.3	100.1	100.1	
Ver. Eff. Cons. Stress, psi		6.663	13.94	27.88	
Shear Strength, psi		20.19	20.11	20.15	
Strain at Failure, %		18.1	18.3	13.1	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21
Location: TX
Project No.: 19-257
Boring No.: B-05
Sample Type: CORE
Description:
Remarks:

Fri, 29-MAR-2019 07:40:26

NRCS Soil Mechanics Center
Lincoln, NE

9/25/2019
3:44 PM

Mohr Circle Program

SITE NAME: Plum Creek Site 21
STATE: TX
SAMPLE NO: 19-274

Failure Criterion:
- ☐ Maximum Dev. Stress
- ☑ Maximum Stress Ratio
- ☐ Max. Pore Pressure
- ☐ <= 10% Strain
- ☐ Selected Points

Total Strength Parameters:

			Zero Cohesion:
PHI:	20.4 degrees	20.4 degrees	Slope y=
C :	84 psf	0.58 psi	

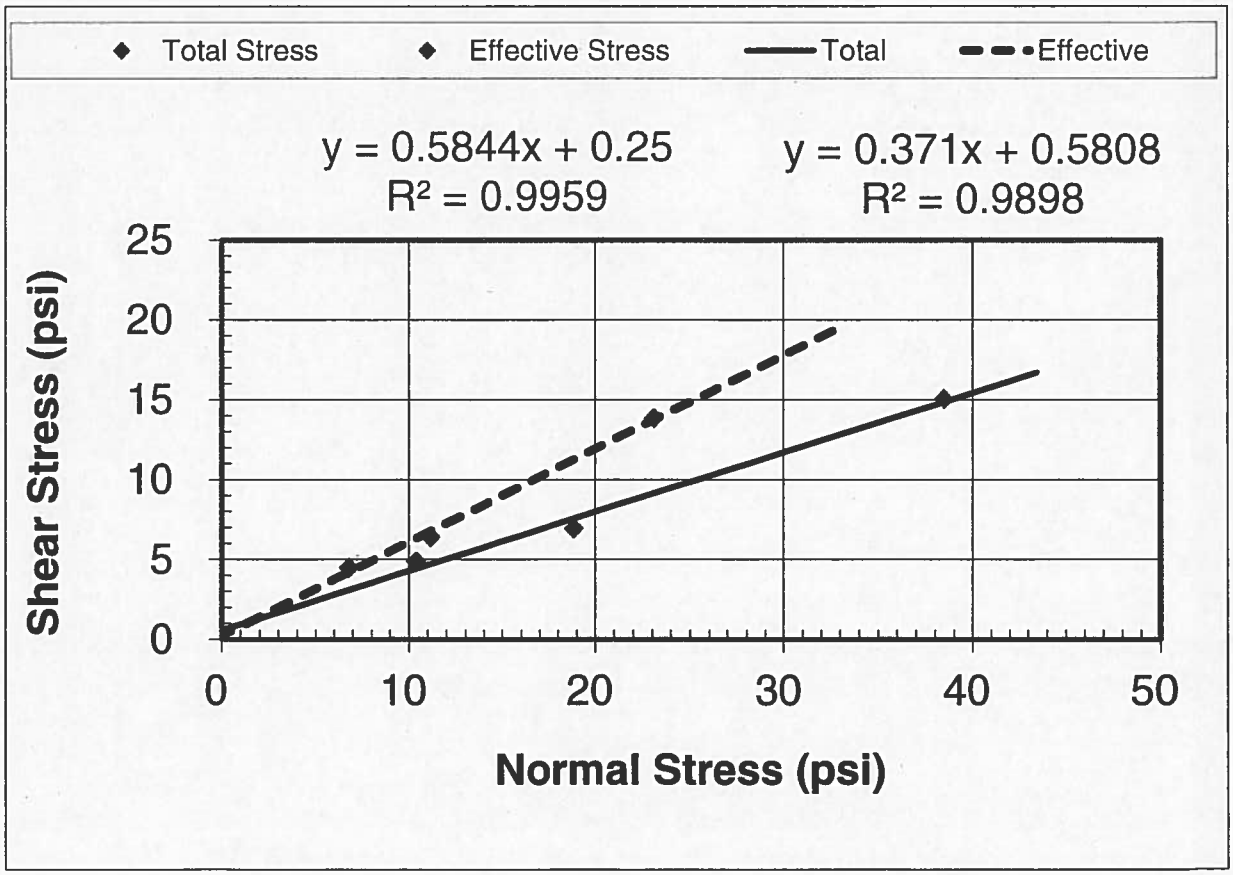
Effective Strength Parameters:

PHI' :	30.3 degrees	30.3 degrees	Slope y=
C':	36 psf	0.25 psi	

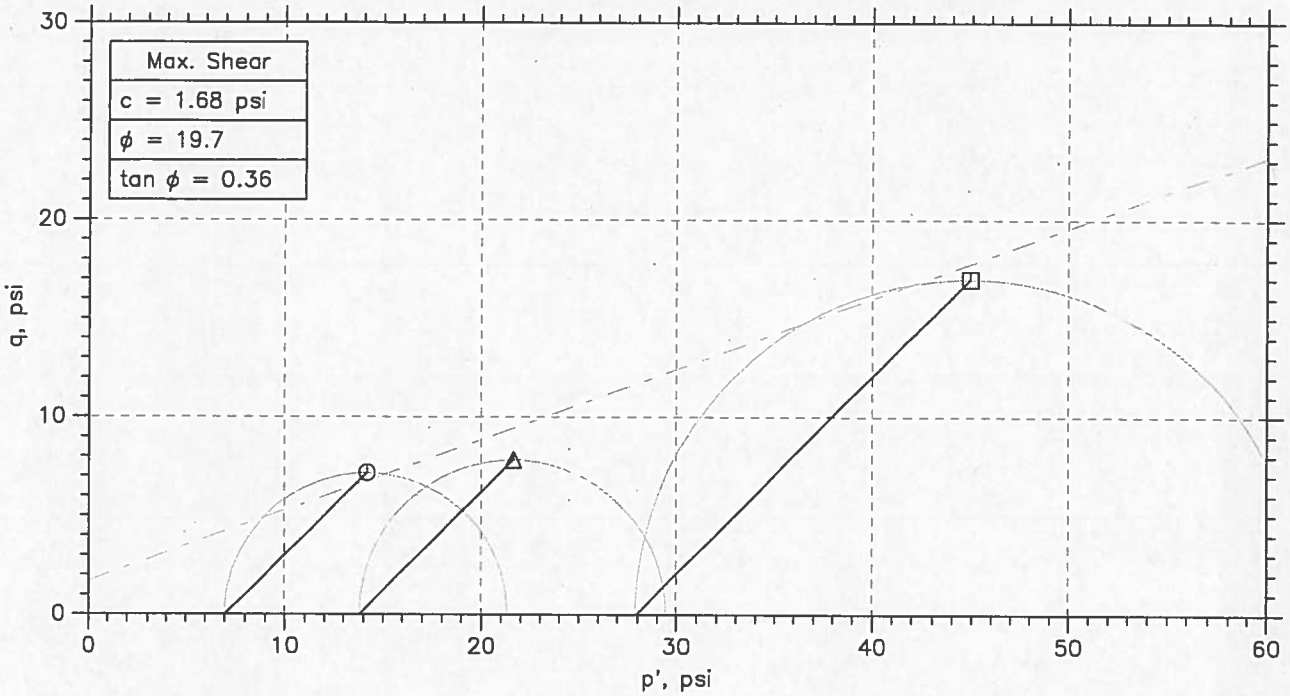
Stress path analysis from p-q plot:
PHI' : degrees
C' : psf

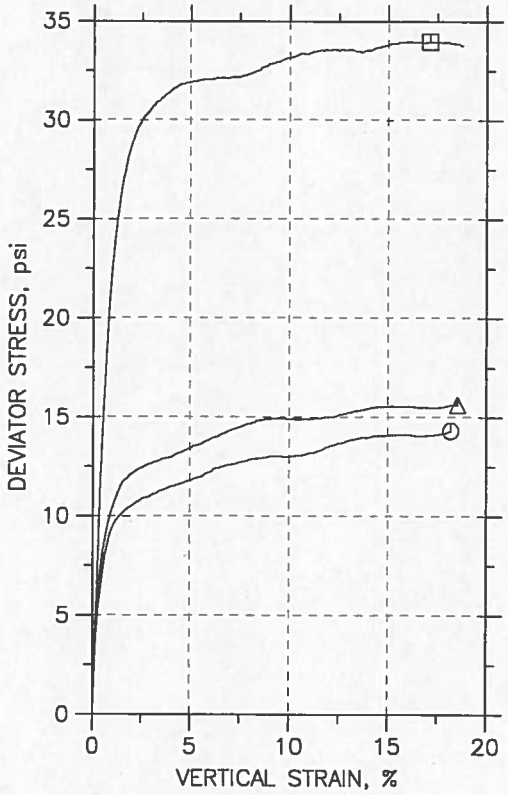
(All inputed values in the chart are in psi)

CELL PRESSURE	DEVIATOR STRESS AT FAILURE	PORE PRESSURE AT FAILURE	PERCENT STRAIN (Optional Entry)
7	10.36	2.78	1.77
14	14.85	6.53	8.38
28	32.07	12.85	5.70



CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⊙	△	⊡	
Sample No.		19-274	19-274	19-274	
Test No.		1	2	3	
Depth		35-37.5'	35-37.5'	35-37.5'	
Initial	Diameter, in	1.391	1.389	1.398	
	Height, in	3.029	3.032	3.012	
	Water Content, %	30.5	30.9	28.0	
	Dry Density, pcf	90.01	88.82	92.84	
	Saturation, %	94.3	92.9	92.6	
	Void Ratio	0.873	0.898	0.816	
Before Shear	Water Content, %	33.8	33.1	29.7	
	Dry Density, pcf	88.15	88.97	93.56	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.912	0.895	0.802	
	Back Press., psi	99.99	100.2	100.1	
Ver. Eff. Cons. Stress, psi		7.012	13.8	27.93	
Shear Strength, psi		7.161	7.821	16.99	
Strain at Failure, %		18.2	18.6	17.1	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-274

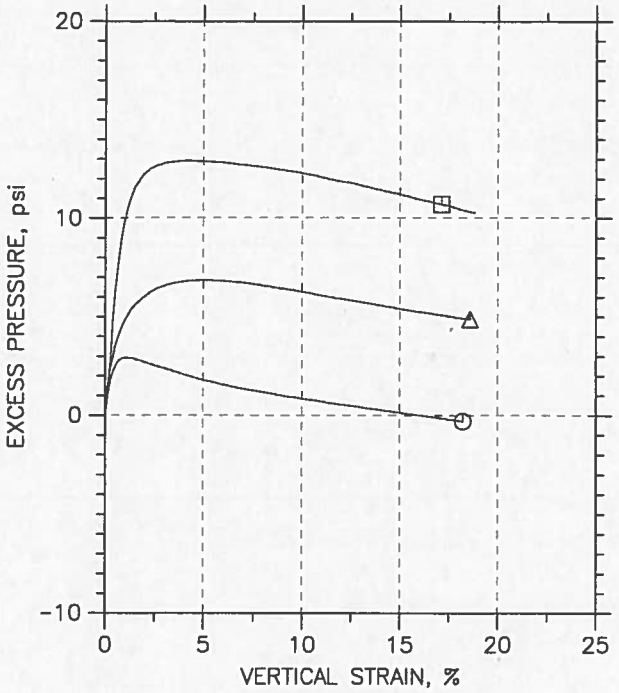
Boring No.: B-08

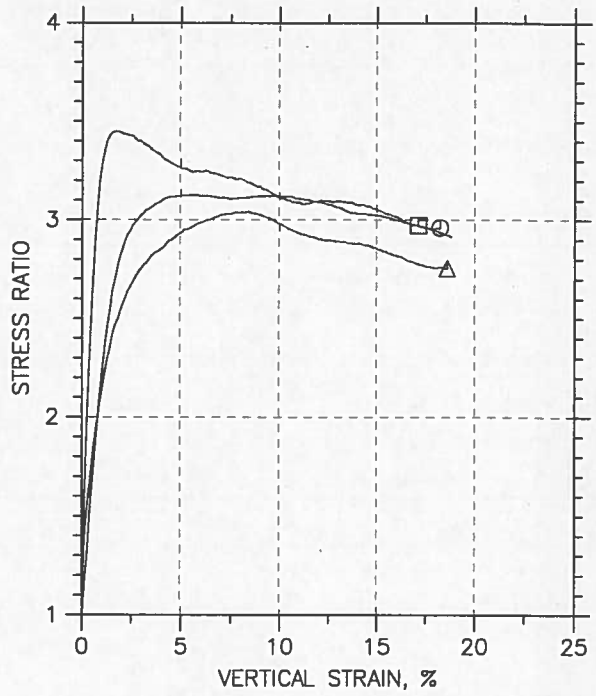
Sample Type: CORE

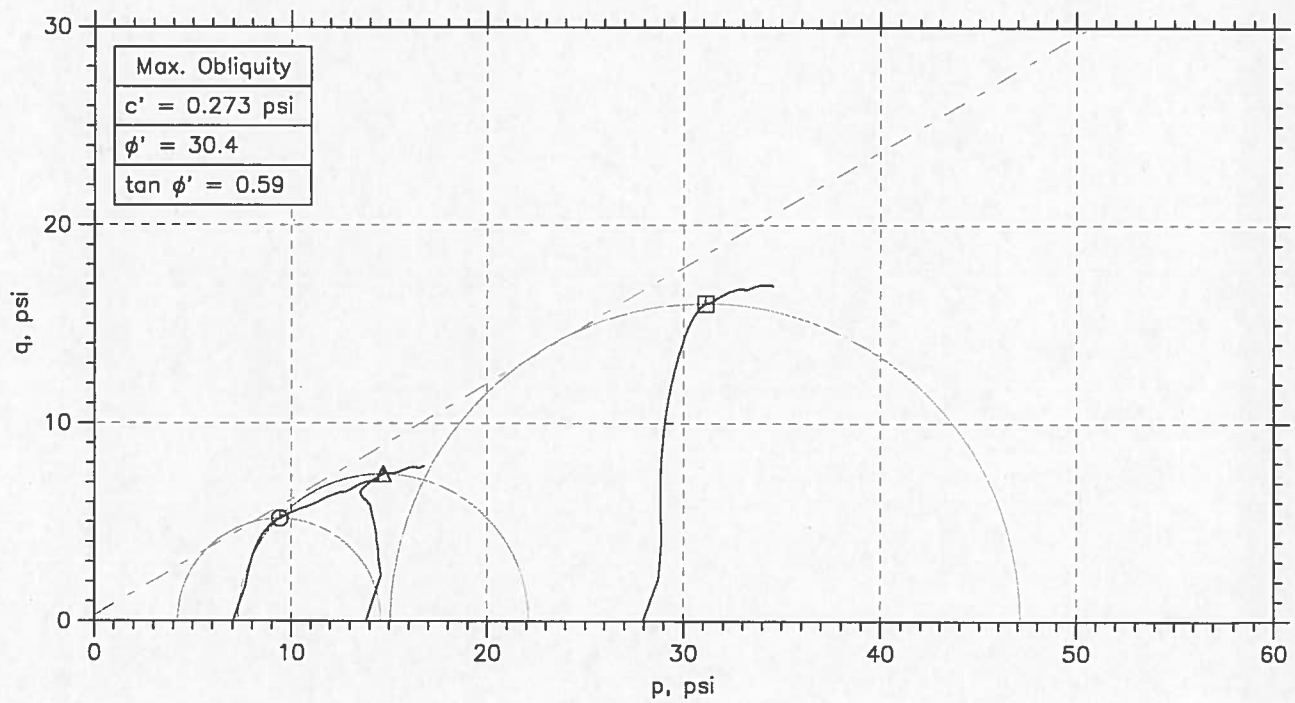
Description:

Remarks:

CONSOLIDATED UNDRAINED TRIAXIAL TEST



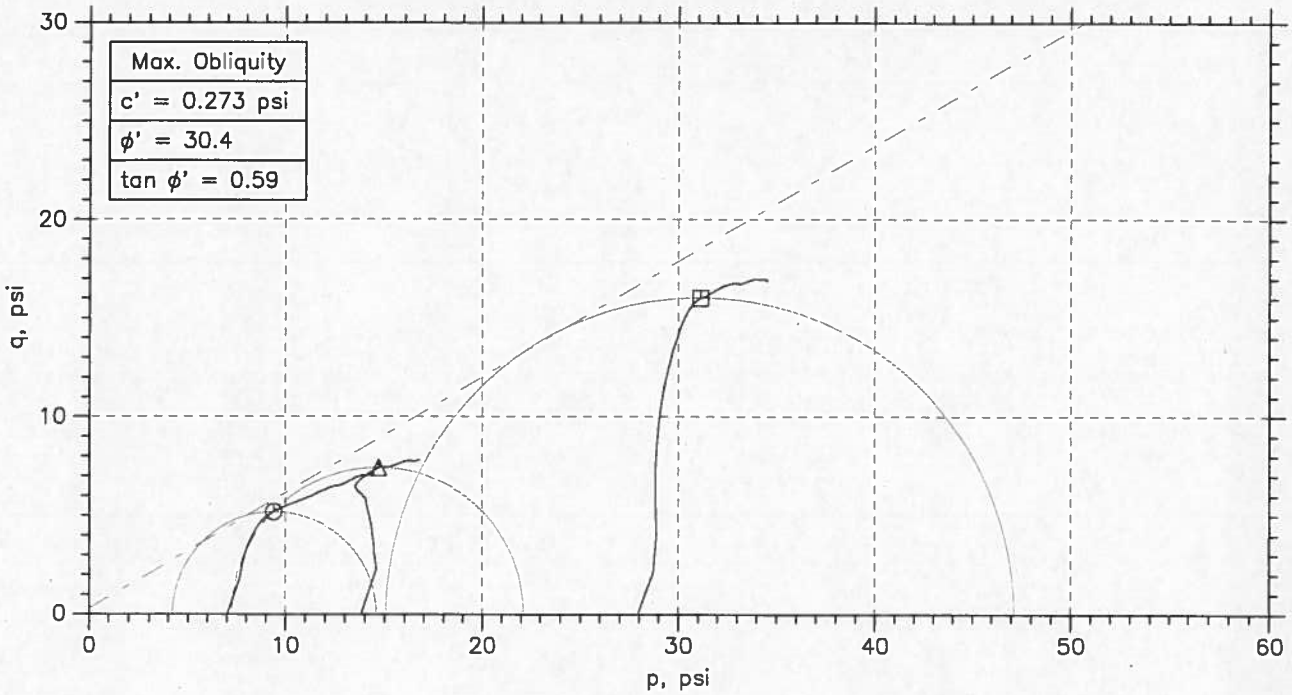




	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
○	19-274	1	35-37.5'	SKK	7/24/19	SKK		19-274-07eng.dat
△	19-274	2	35-37.5'	SKK	7/24/19	SKK		19-274-14eng.dat
□	19-274	3	35-37.5'	SKK	7/24/19	SKK		19-274-28eng.dat

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-274
Boring No.: B-08	Sample Type: CORE	
Description:		
Remarks:		

CONSOLIDATED UNDRAINED TRIAXIAL TEST



Symbol		⊙	△	⊡	
Sample No.		19-274	19-274	19-274	
Test No.		1	2	3	
Depth		35-37.5'	35-37.5'	35-37.5'	
Initial	Diameter, in	1.391	1.389	1.398	
	Height, in	3.029	3.032	3.012	
	Water Content, %	30.5	30.9	28.0	
	Dry Density, pcf	90.01	88.82	92.84	
	Saturation, %	94.3	92.9	92.6	
	Void Ratio	0.873	0.898	0.816	
Before Shear	Water Content, %	33.8	33.1	29.7	
	Dry Density, pcf	88.15	88.97	93.56	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.912	0.895	0.802	
	Back Press., psi	99.99	100.2	100.1	
Ver. Eff. Cons. Stress, psi		7.012	13.8	27.93	
Shear Strength, psi		7.161	7.821	16.99	
Strain at Failure, %		18.2	18.6	17.1	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-274

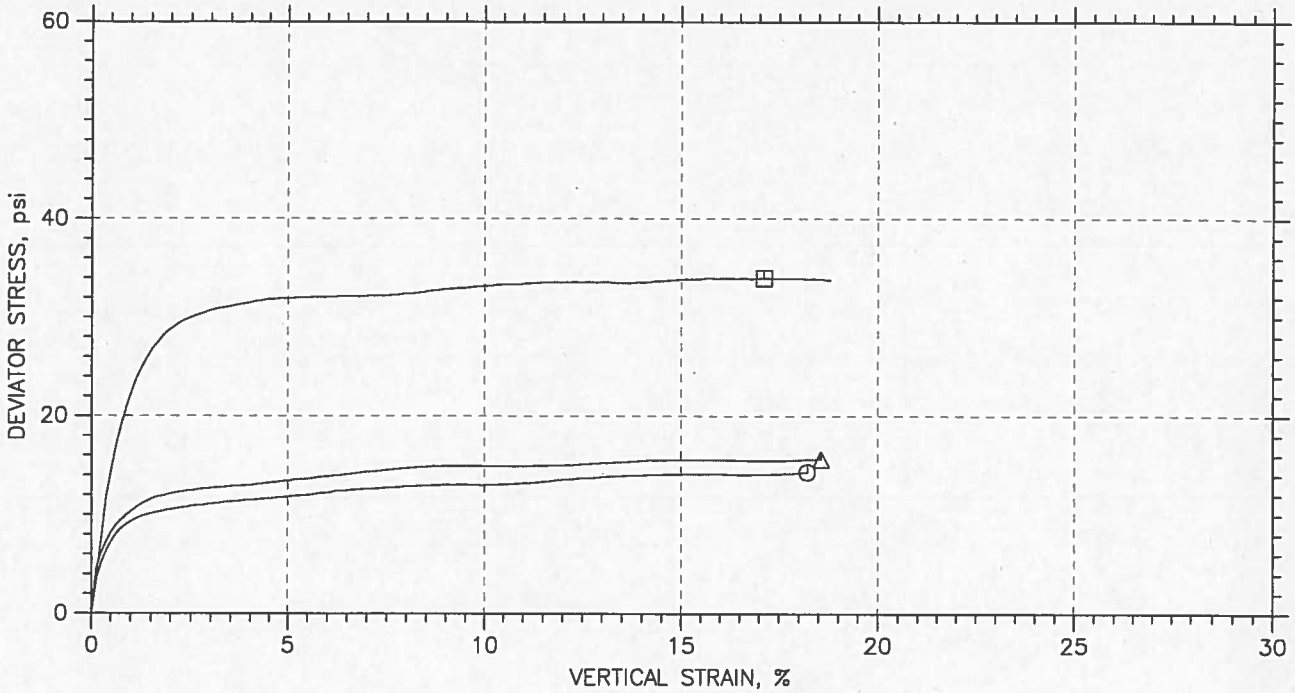
Boring No.: B-08

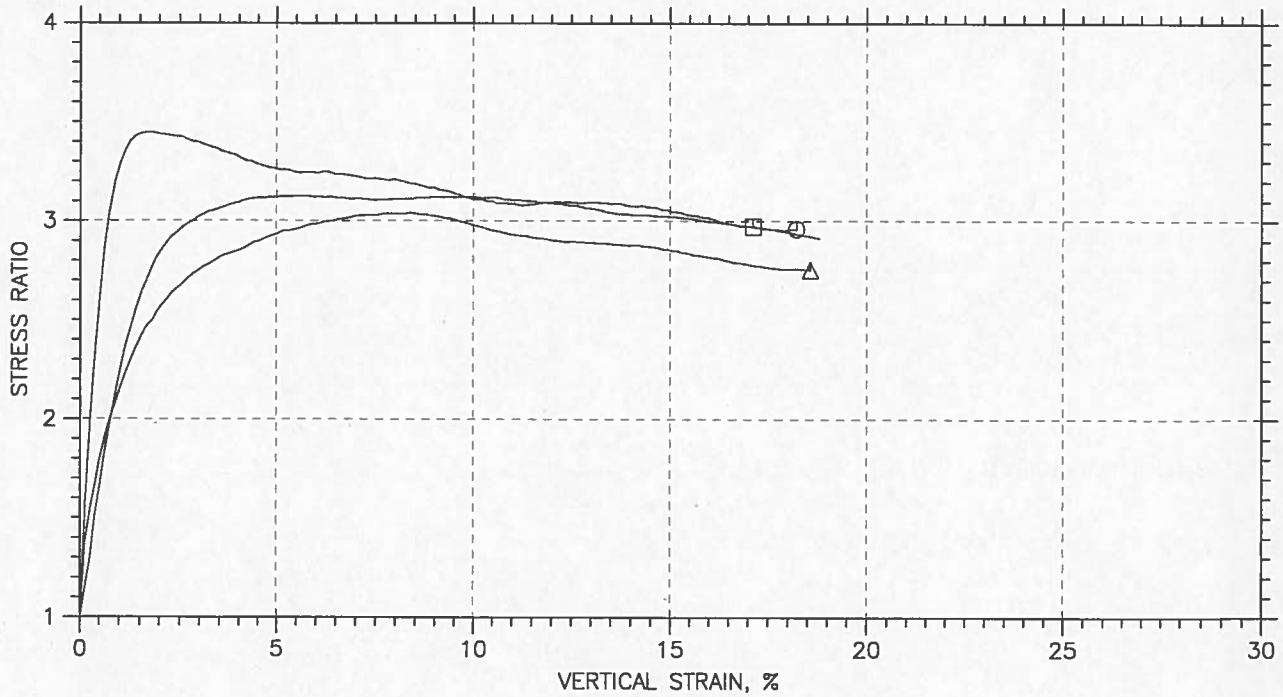
Sample Type: CORE

Description:

Remarks:

CONSOLIDATED UNDRAINED TRIAXIAL TEST





	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	19-274	1	35-37.5'	SKK	7/24/19	SKK		19-274-07eng.dat
△	19-274	2	35-37.5'	SKK	7/24/19	SKK		19-274-14eng.dat
⊡	19-274	3	35-37.5'	SKK	7/24/19	SKK		19-274-28eng.dat

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-274
Boring No.: B-08	Sample Type: CORE	
Description:		
Remarks:		

TRIAXIAL TEST

t: PLUM CREEK SITE 21	Location: TX	Project No.: 19-274
No.: B-08	Tested By: SKK	Checked By: SKK
No.: 19-274	Test Date: 7/24/19	Depth: 35-37.5'
).: 1	Sample Type: CORE	Elevation: N/A

escription:
::

en Height: 3.03 in	Piston Area: 0.00 in^2	Filter Strip Correction: 0.00 psi
en Area: 1.52 in^2	Piston Friction: 0.00 lb	Membrane Correction: 1.65 lb/in
en Volume: 75.43 cc	Piston Weight: 0.00 lb	Correction Type: Uniform
Limit: ---	Plastic Limit: ---	Measured Specific Gravity: 2.70

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
ner ID		---		
ntainer + Wet Soil, gm	141.92	141.92	145.5	201.52
ntainer + Dry Soil, gm	108.76	108.76	108.76	164.78
ntainer, gm	0	---	0	56.02
Soil, gm	108.76	108.76	108.76	108.76
Content, %	30.49	30.49	33.78	33.78
ntio	---	0.87	0.91	---
of Saturation, %	---	94.34	100.00	---
t Weight, pcf	---	90.013	88.153	---

Initialization

Consolidation/A

Saturation

Consolidation/B

Shear

ure

TRIAXIAL TEST

:: PLUM CREEK SITE 21
No.: B-08
No.: 19-274
).: 1

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-274
Checked By: SKK
Depth: 35-37.5'
Elevation: N/A

escription:
::

en Height: 3.03 in
en Area: 1.52 in^2
en Volume: 75.43 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
0	0	1.5023	0	0	99.988	107	107
2.0007	0.13763	1.5044	5.3637	3.5587	101.13	107	110.56
4.0028	0.25516	1.5062	7.7681	5.1453	101.77	107	112.15
6.0015	0.39743	1.5083	9.7101	6.4187	102.23	107	113.42
8.0043	0.52888	1.5103	11.159	7.3632	102.52	107	114.36
10.001	0.65259	1.5122	12.269	8.082	102.7	107	115.08
12.004	0.77012	1.514	13.101	8.6166	102.82	107	115.62
14.001	0.89384	1.5159	13.779	9.0473	102.88	107	116.05
16.003	1.0284	1.5179	14.303	9.3739	102.92	107	116.37
18.002	1.1428	1.5197	14.704	9.6213	102.92	107	116.62
20.003	1.2634	1.5215	15.043	9.8267	102.91	107	116.83
22.004	1.4057	1.5237	15.351	10.008	102.88	107	117.01
24.001	1.5186	1.5255	15.567	10.133	102.85	107	117.13
26.002	1.6516	1.5276	15.783	10.254	102.81	107	117.25
28.003	1.7707	1.5294	15.968	10.357	102.77	107	117.36
30.003	1.9052	1.5315	16.153	10.457	102.72	107	117.46
32.004	2.032	1.5335	16.307	10.538	102.68	107	117.54
34.001	2.1434	1.5352	16.461	10.621	102.64	107	117.62
36.004	2.2655	1.5372	16.615	10.703	102.6	107	117.7
38.004	2.4032	1.5393	16.769	10.781	102.56	107	117.78
40.004	2.5253	1.5412	16.954	10.882	102.52	107	117.88
42.003	2.6552	1.5433	17.047	10.921	102.48	107	117.92
44.004	2.8052	1.5457	17.139	10.957	102.44	107	117.96
46.004	2.9212	1.5475	17.324	11.058	102.4	107	118.06
48.003	3.0496	1.5496	17.416	11.098	102.36	107	118.1
50.004	3.1748	1.5516	17.54	11.157	102.32	107	118.16
52.004	3.3016	1.5536	17.663	11.216	102.27	107	118.22
54.004	3.4068	1.5553	17.786	11.278	102.23	107	118.28
56.001	3.5429	1.5575	17.879	11.315	102.19	107	118.32
58.003	3.6697	1.5596	17.971	11.354	102.16	107	118.35
60.002	3.8042	1.5617	18.095	11.411	102.12	107	118.41
62.002	3.9233	1.5637	18.218	11.47	102.08	107	118.47
64.001	4.0424	1.5656	18.28	11.49	102.04	107	118.49
66.004	4.1908	1.568	18.372	11.524	102	107	118.52
68.004	4.3115	1.57	18.495	11.582	101.97	107	118.58
70.001	4.4414	1.5722	18.588	11.62	101.93	107	118.62
72	4.579	1.5744	18.68	11.655	101.89	107	118.66
74.002	4.6996	1.5764	18.804	11.713	101.85	107	118.71
76.004	4.8079	1.5782	18.896	11.754	101.82	107	118.75
78.003	4.9347	1.5803	18.989	11.791	101.8	107	118.79
80.003	5.0661	1.5825	19.081	11.827	101.76	107	118.83
82.001	5.1929	1.5846	19.235	11.902	101.73	107	118.9
84	5.3166	1.5867	19.328	11.94	101.71	107	118.94
86.002	5.4496	1.5889	19.42	11.975	101.67	107	118.97
88.003	5.5888	1.5913	19.513	12.009	101.64	107	119.01
90.001	5.7017	1.5932	19.698	12.106	101.61	107	119.11
92.002	5.8192	1.5952	19.821	12.163	101.59	107	119.16
94.004	5.96	1.5975	19.944	12.215	101.55	107	119.22
96.001	6.0914	1.5998	20.067	12.269	101.53	107	119.27
98.003	6.2012	1.6016	20.283	12.385	101.5	107	119.38
100	6.328	1.6038	20.376	12.42	101.47	107	119.42
102	6.4703	1.6063	20.437	12.433	101.44	107	119.43

106	6.71	1.6104	20.653	12.525	101.39	107	119.52
108	6.8229	1.6123	20.746	12.562	101.37	107	119.56
110	6.9574	1.6147	20.838	12.595	101.34	107	119.59
112	7.0734	1.6167	20.9	12.612	101.33	107	119.61
114	7.2048	1.619	20.961	12.627	101.3	107	119.63
116	7.3378	1.6213	21.054	12.66	101.28	107	119.66
118	7.4677	1.6236	21.177	12.712	101.26	107	119.71
120	7.5837	1.6256	21.239	12.729	101.24	107	119.73
122	7.7136	1.6279	21.331	12.762	101.22	107	119.76
124	7.8482	1.6303	21.424	12.794	101.2	107	119.79
126	7.9564	1.6322	21.578	12.869	101.18	107	119.87
128	8.0894	1.6346	21.64	12.882	101.16	107	119.88
130	8.2301	1.6371	21.701	12.894	101.13	107	119.89
132	8.3647	1.6395	21.763	12.907	101.11	107	119.91
134	8.4791	1.6415	21.855	12.942	101.08	107	119.94
136	8.6291	1.6442	21.917	12.951	101.06	107	119.95
138	8.7404	1.6462	21.979	12.968	101.03	107	119.97
140	8.8703	1.6486	22.04	12.981	101.01	107	119.98
142	8.9801	1.6505	22.164	13.036	100.99	107	120.04
144	9.0838	1.6524	22.164	13.016	100.97	107	120.02
146	9.2276	1.655	22.225	13.027	100.95	107	120.03
148	9.3482	1.6572	22.287	13.041	100.94	107	120.04
150	9.4889	1.6598	22.318	13.034	100.91	107	120.03
152	9.608	1.662	22.318	13.011	100.9	107	120.01
154	9.7456	1.6645	22.349	13.004	100.88	107	120
156	9.8724	1.6669	22.379	12.999	100.86	107	120
158	9.9961	1.6692	22.41	12.994	100.84	107	119.99
160	10.114	1.6714	22.503	13.027	100.82	107	120.03
162	10.237	1.6737	22.564	13.041	100.81	107	120.04
164	10.366	1.6761	22.626	13.054	100.78	107	120.05
166	10.496	1.6785	22.719	13.084	100.77	107	120.08
168	10.619	1.6808	22.749	13.079	100.74	107	120.08
170	10.743	1.6831	22.842	13.111	100.73	107	120.11
172	10.896	1.686	22.965	13.155	100.7	107	120.15
174	11.012	1.6882	23.088	13.206	100.68	107	120.21
176	11.142	1.6907	23.119	13.199	100.66	107	120.2
178	11.26	1.6929	23.212	13.231	100.64	107	120.23
180	11.372	1.6951	23.335	13.282	100.62	107	120.28
182	11.502	1.6976	23.458	13.33	100.6	107	120.33
184	11.632	1.7001	23.582	13.378	100.59	107	120.38
186	11.758	1.7025	23.736	13.444	100.57	107	120.44
188	11.867	1.7046	23.859	13.495	100.56	107	120.49
190	11.993	1.707	23.952	13.524	100.54	107	120.52
192	12.113	1.7094	24.106	13.591	100.52	107	120.59
194	12.254	1.7121	24.167	13.599	100.51	107	120.6
196	12.382	1.7146	24.321	13.664	100.48	107	120.66
198	12.514	1.7172	24.414	13.692	100.47	107	120.69
200	12.637	1.7196	24.476	13.703	100.45	107	120.7
202	12.764	1.7221	24.568	13.732	100.43	107	120.73
204	12.879	1.7244	24.691	13.78	100.42	107	120.78
206	12.998	1.7268	24.815	13.828	100.4	107	120.83
208	13.131	1.7294	24.938	13.872	100.38	107	120.87
210	13.262	1.732	25	13.882	100.36	107	120.88
212	13.408	1.7349	25.092	13.906	100.34	107	120.91
214	13.514	1.7371	25.154	13.92	100.33	107	120.92
216	13.633	1.7395	25.277	13.966	100.31	107	120.97
218	13.763	1.7421	25.37	13.993	100.3	107	120.99
220	13.884	1.7445	25.37	13.968	100.28	107	120.97
222	14.017	1.7472	25.462	13.994	100.26	107	120.99
224	14.15	1.7499	25.554	14.02	100.24	107	121.02
226	14.278	1.7526	25.678	14.064	100.23	107	121.06
228	14.399	1.755	25.709	14.057	100.22	107	121.06
230	14.516	1.7574	25.77	14.068	100.2	107	121.07
232	14.665	1.7605	25.863	14.09	100.18	107	121.09
234	14.793	1.7632	25.863	14.063	100.17	107	121.06
236	14.928	1.7659	25.955	14.088	100.15	107	121.09
238	15.024	1.7679	25.986	14.086	100.13	107	121.09
240	15.158	1.7707	26.079	14.11	100.1	107	121.11
242	15.283	1.7734	26.14	14.119	100.09	107	121.12
244	15.402	1.7759	26.171	14.112	100.06	107	121.11
246	15.542	1.7788	26.233	14.118	100.04	107	121.12
248	15.675	1.7816	26.294	14.125	100.04	107	121.12

252	15.925	1.7869	26.418	14.141	99.996	107	121.14
254	16.047	1.7895	26.448	14.133	99.98	107	121.13
256	16.174	1.7922	26.448	14.107	99.964	107	121.11
258	16.303	1.7949	26.448	14.08	99.948	107	121.08
260	16.432	1.7977	26.479	14.07	99.931	107	121.07
262	16.567	1.8006	26.51	14.059	99.915	107	121.06
264	16.678	1.803	26.572	14.07	99.899	107	121.07
266	16.8	1.8057	26.572	14.045	99.883	107	121.04
268	16.938	1.8087	26.695	14.084	99.875	107	121.08
270	17.046	1.811	26.757	14.096	99.858	107	121.1
272	17.19	1.8142	26.818	14.099	99.834	107	121.1
274	17.319	1.817	26.88	14.106	99.818	107	121.11
276	17.441	1.8197	26.972	14.131	99.794	107	121.13
278	17.564	1.8224	27.034	14.139	99.777	107	121.14
280	17.694	1.8253	27.157	14.179	99.761	107	121.18
282	17.833	1.8284	27.219	14.184	99.745	107	121.18
284	17.96	1.8312	27.342	14.224	99.721	107	121.22
286	18.082	1.8339	27.466	14.265	99.713	107	121.27
288	18.192	1.8364	27.558	14.292	99.696	107	121.29
288.22	18.211	1.8368	27.62	14.322	99.696	107	121.32

TRIAXIAL TEST

:: PLUM CREEK SITE 21
No.: B-08
No.: 19-274
.: 1

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-274
Checked By: SKK
Depth: 35-37.5'
Elevation: N/A

scription:
:

n Height: 3.03 in
n Area: 1.52 in^2
n Volume: 75.43 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
0.00	107	107	0	0.000	7.0118	7.0118	1.000	7.0118	0
0.14	110.56	107	1.1432	0.321	9.4273	5.8686	1.606	7.6479	1.7794
0.26	112.15	107	1.7838	0.347	10.373	5.228	1.984	7.8007	2.5726
0.40	113.42	107	2.2378	0.349	11.193	4.774	2.345	7.9833	3.2093
0.53	114.36	107	2.5297	0.344	11.845	4.4821	2.643	8.1637	3.6816
0.65	115.08	107	2.7162	0.336	12.378	4.2956	2.881	8.3366	4.041
0.77	115.62	107	2.8297	0.328	12.799	4.1821	3.060	8.4904	4.3083
0.89	116.05	107	2.8946	0.320	13.165	4.1172	3.197	8.6409	4.5237
1.03	116.37	107	2.927 Pmax	0.312	13.459	4.0848	3.295	8.7717	4.6869
1.14	116.62	107	2.927 Pore P	0.304	13.706	4.0848 = 9.62	3.355	8.8954	4.8107
1.26	116.83	107	2.9189	0.297	13.92	4.0929	3.401	9.0063	4.9134
1.41	117.01	107	2.8946	0.289	14.125	4.1172	3.431	9.1213	5.0041
1.52	117.13	107	2.8621	0.282	14.282	4.1497	3.442	9.216	5.0664
1.65	117.25	107	2.8216	0.275	14.444	4.1902	3.447	9.3172	5.127
1.77	117.36	107	2.7811 - 2.78	0.269	14.588	4.2307 = 10.36	3.448 - Max SR	9.4092	5.1785
1.91	117.46	107	2.7324	0.261	14.737	4.2794	3.444	9.508	5.2286
2.03	117.54	107	2.6919	0.255	14.858	4.3199	3.439	9.589	5.2691
2.14	117.62	107	2.6513	0.250	14.982	4.3605	3.436	9.6712	5.3107
2.27	117.7	107	2.6108	0.244	15.104	4.401	3.432	9.7524	5.3514
2.40	117.78	107	2.5702	0.238	15.223	4.4415	3.427	9.8322	5.3907
2.53	117.88	107	2.5297	0.232	15.364	4.4821	3.428	9.9231	5.4411
2.66	117.92	107	2.4892	0.228	15.444	4.5226	3.415	9.9834	5.4607
2.81	117.96	107	2.4486	0.223	15.521	4.5632	3.401	10.042	5.4787
2.92	118.06	107	2.4081	0.218	15.662	4.6037	3.402	10.133	5.5292
3.05	118.1	107	2.3675	0.213	15.742	4.6442	3.390	10.193	5.5488
3.17	118.16	107	2.327	0.209	15.842	4.6848	3.382	10.263	5.5784
3.30	118.22	107	2.2865	0.204	15.941	4.7253	3.374	10.333	5.6079
3.41	118.28	107	2.2459	0.199	16.044	4.7659	3.366	10.405	5.639
3.54	118.32	107	2.2054	0.195	16.122	4.8064	3.354	10.464	5.6576
3.67	118.35	107	2.173	0.191	16.193	4.8388	3.346	10.516	5.6769
3.80	118.41	107	2.1324	0.187	16.29	4.8794	3.339	10.585	5.7053
3.92	118.47	107	2.0919	0.182	16.39	4.9199	3.331	10.655	5.7349
4.04	118.49	107	2.0513	0.179	16.45	4.9605	3.316	10.705	5.7448
4.19	118.52	107	2.0108	0.174	16.525	5.001	3.304	10.763	5.7619
4.31	118.58	107	1.9784	0.171	16.616	5.0334	3.301	10.825	5.7912
4.44	118.62	107	1.9378	0.167	16.693	5.074	3.290	10.884	5.8098
4.58	118.66	107	1.9054	0.163	16.762	5.1064	3.282	10.934	5.8276
4.70	118.71	107	1.8648	0.159	16.86	5.1469	3.276	11.004	5.8566
4.81	118.75	107	1.8324	0.156	16.933	5.1794	3.269	11.056	5.8768
4.93	118.79	107	1.8081	0.153	16.994	5.2037	3.266	11.099	5.8953
5.07	118.83	107	1.7757	0.150	17.063	5.2361	3.259	11.15	5.9134
5.19	118.9	107	1.7432	0.146	17.171	5.2686	3.259	11.22	5.9512
5.32	118.94	107	1.7189	0.144	17.232	5.2929	3.256	11.263	5.9698
5.45	118.97	107	1.6865	0.141	17.3	5.3253	3.249	11.313	5.9875
5.59	119.01	107	1.654	0.138	17.367	5.3578	3.241	11.362	6.0046
5.70	119.11	107	1.6216	0.134	17.496	5.3902	3.246	11.443	6.0529
5.82	119.16	107	1.5973	0.131	17.577	5.4145	3.246	11.496	6.0813
5.96	119.22	107	1.5648	0.128	17.662	5.4469	3.243	11.555	6.1077
6.09	119.27	107	1.5405	0.126	17.741	5.4713	3.243	11.606	6.1347
6.20	119.38	107	1.5081	0.122	17.889	5.5037	3.250	11.696	6.1924
6.33	119.42	107	1.4838	0.119	17.948	5.528	3.247	11.738	6.21

6.59	119.49	107	1.427	0.114	18.074	5.5848	3.236	11.829	6.2445
6.71	119.52	107	1.4027	0.112	18.134	5.6091	3.233	11.871	6.2623
6.82	119.56	107	1.3784	0.110	18.195	5.6334	3.230	11.914	6.2809
6.96	119.59	107	1.354	0.108	18.253	5.6578	3.226	11.955	6.2974
7.07	119.61	107	1.3378	0.106	18.286	5.674	3.223	11.98	6.3061
7.20	119.63	107	1.3135	0.104	18.325	5.6983	3.216	12.012	6.3133
7.34	119.66	107	1.2892	0.102	18.382	5.7226	3.212	12.052	6.3298
7.47	119.71	107	1.273	0.100	18.451	5.7388	3.215	12.095	6.356
7.58	119.73	107	1.2567	0.099	18.484	5.755	3.212	12.119	6.3644
7.71	119.76	107	1.2324	0.097	18.541	5.7794	3.208	12.16	6.381
7.85	119.79	107	1.2081	0.094	18.598	5.8037	3.204	12.201	6.3971
7.96	119.87	107	1.1919	0.093	18.689	5.8199	3.211	12.254	6.4344
8.09	119.88	107	1.1676	0.091	18.726	5.8442	3.204	12.285	6.441
8.23	119.89	107	1.1432	0.089	18.762	5.8686	3.197	12.315	6.4469
8.36	119.91	107	1.1189	0.087	18.799	5.8929	3.190	12.346	6.4533
8.48	119.94	107	1.0946	0.085	18.859	5.9172	3.187	12.388	6.4709
8.63	119.95	107	1.0703	0.083	18.893	5.9415	3.180	12.417	6.4757
8.74	119.97	107	1.0459	0.081	18.934	5.9659	3.174	12.45	6.4841
8.87	119.98	107	1.0216	0.079	18.972	5.9902	3.167	12.481	6.4907
8.98	120.04	107	1.0054	0.077	19.042	6.0064	3.170	12.524	6.5179
9.08	120.02	107	0.98107	0.075	19.047	6.0307	3.158	12.539	6.5082
9.23	120.03	107	0.96486	0.074	19.074	6.0469	3.154	12.56	6.5134
9.35	120.04	107	0.94864	0.073	19.105	6.0632	3.151	12.584	6.5207
9.49	120.03	107	0.92432	0.071	19.121	6.0875	3.141	12.604	6.5168
9.61	120.01	107	0.9081	0.070	19.115	6.1037	3.132	12.609	6.5057
9.75	120	107	0.89188	0.069	19.124	6.1199	3.125	12.622	6.502
9.87	120	107	0.86756	0.067	19.143	6.1442	3.116	12.644	6.4994
10.00	119.99	107	0.85134	0.066	19.155	6.1605	3.109	12.657	6.497
10.11	120.03	107	0.83513	0.064	19.204	6.1767	3.109	12.69	6.5137
10.24	120.04	107	0.81891	0.063	19.234	6.1929	3.106	12.713	6.5205
10.37	120.05	107	0.79459	0.061	19.271	6.2172	3.100	12.744	6.5268
10.50	120.08	107	0.77837	0.059	19.318	6.2334	3.099	12.776	6.5421
10.62	120.08	107	0.75405	0.058	19.337	6.2577	3.090	12.797	6.5396
10.74	120.11	107	0.73783	0.056	19.385	6.274	3.090	12.829	6.5553
10.90	120.15	107	0.71351	0.054	19.453	6.2983	3.089	12.876	6.5774
11.01	120.21	107	0.68918	0.052	19.528	6.3226	3.089	12.925	6.6029
11.14	120.2	107	0.67297	0.051	19.538	6.3388	3.082	12.938	6.5996
11.26	120.23	107	0.64864	0.049	19.594	6.3632	3.079	12.979	6.6156
11.37	120.28	107	0.63243	0.048	19.662	6.3794	3.082	13.021	6.6412
11.50	120.33	107	0.61621	0.046	19.726	6.3956	3.084	13.061	6.665
11.63	120.38	107	0.59999	0.045	19.789	6.4118	3.086	13.101	6.6888
11.76	120.44	107	0.58378	0.043	19.872	6.428	3.091	13.15	6.7219
11.87	120.49	107	0.56756	0.042	19.939	6.4442	3.094	13.192	6.7474
11.99	120.52	107	0.55135	0.041	19.985	6.4604	3.093	13.223	6.7622
12.11	120.59	107	0.53513	0.039	20.068	6.4767	3.098	13.272	6.7955
12.25	120.6	107	0.51891	0.038	20.092	6.4929	3.094	13.293	6.7996
12.38	120.66	107	0.49459	0.036	20.181	6.5172	3.097	13.349	6.8319
12.51	120.69	107	0.47837	0.035	20.225	6.5334	3.096	13.379	6.8459
12.64	120.7	107	0.46216	0.034	20.253	6.5496	3.092	13.401	6.8515
12.76	120.73	107	0.44594	0.032	20.297	6.5659	3.091	13.432	6.8658
12.88	120.78	107	0.42973	0.031	20.362	6.5821	3.094	13.472	6.8901
13.00	120.83	107	0.41351	0.030	20.426	6.5983	3.096	13.512	6.9139
13.13	120.87	107	0.38919	0.028	20.495	6.6226	3.095	13.559	6.9362
13.26	120.88	107	0.37297	0.027	20.52	6.6388	3.091	13.58	6.9408
13.41	120.91	107	0.35675	0.026	20.561	6.655	3.089	13.608	6.9528
13.51	120.92	107	0.34054	0.024	20.591	6.6713	3.086	13.631	6.9598
13.63	120.97	107	0.32432	0.023	20.654	6.6875	3.088	13.671	6.9831
13.76	120.99	107	0.30811	0.022	20.697	6.7037	3.087	13.7	6.9965
13.88	120.97	107	0.29189	0.021	20.688	6.7199	3.079	13.704	6.9842
14.02	120.99	107	0.26756	0.019	20.739	6.7442	3.075	13.741	6.9972
14.15	121.02	107	0.25135	0.018	20.78	6.7604	3.074	13.77	7.01
14.28	121.06	107	0.24324	0.017	20.833	6.7686	3.078	13.801	7.0321
14.40	121.06	107	0.22702	0.016	20.842	6.7848	3.072	13.813	7.0285
14.52	121.07	107	0.21081	0.015	20.869	6.801	3.069	13.835	7.034
14.66	121.09	107	0.19459	0.014	20.907	6.8172	3.067	13.862	7.045
14.79	121.06	107	0.17838	0.013	20.897	6.8334	3.058	13.865	7.0317
14.93	121.09	107	0.16216	0.012	20.938	6.8496	3.057	13.894	7.0441
15.02	121.09	107	0.13784	0.010	20.96	6.874	3.049	13.917	7.0429
15.16	121.11	107	0.11351	0.008	21.009	6.8983	3.045	13.953	7.0551
15.28	121.12	107	0.097296	0.007	21.034	6.9145	3.042	13.974	7.0595
15.40	121.11	107	0.072972	0.005	21.051	6.9388	3.034	13.995	7.0559
15.54	121.12	107	0.056756	0.004	21.073	6.955	3.030	14.014	7.0588

15.79	121.12	107	0.024324	0.002	21.105	6.9875	3.020	14.046	7.0587
15.93	121.14	107	0.008108	0.001	21.145	7.0037	3.019	14.074	7.0707
16.05	121.13	107	-0.008108	-0.001	21.153	7.0199	3.013	14.087	7.0666
16.17	121.11	107	-0.024324	-0.002	21.143	7.0361	3.005	14.09	7.0534
16.30	121.08	107	-0.04054	-0.003	21.132	7.0523	2.997	14.092	7.04
16.43	121.07	107	-0.056756	-0.004	21.139	7.0685	2.991	14.104	7.0351
16.57	121.06	107	-0.072972	-0.005	21.144	7.0848	2.984	14.114	7.0296
16.68	121.07	107	-0.089188	-0.006	21.171	7.101	2.981	14.136	7.0351
16.80	121.04	107	-0.1054	-0.008	21.162	7.1172	2.973	14.14	7.0223
16.94	121.08	107	-0.11351	-0.008	21.209	7.1253	2.977	14.167	7.0421
17.05	121.1	107	-0.12973	-0.009	21.237	7.1415	2.974	14.189	7.0478
17.19	121.1	107	-0.15405	-0.011	21.265	7.1658	2.968	14.216	7.0497
17.32	121.11	107	-0.17027	-0.012	21.288	7.1821	2.964	14.235	7.0532
17.44	121.13	107	-0.19459	-0.014	21.338	7.2064	2.961	14.272	7.0657
17.56	121.14	107	-0.21081	-0.015	21.362	7.2226	2.958	14.292	7.0696
17.69	121.18	107	-0.22702	-0.016	21.418	7.2388	2.959	14.328	7.0897
17.83	121.18	107	-0.24324	-0.017	21.439	7.255	2.955	14.347	7.0918
17.96	121.22	107	-0.26756	-0.019	21.503	7.2794	2.954	14.391	7.112
18.08	121.27	107	-0.27567	-0.019	21.553	7.2875	2.958	14.42	7.1327
18.19	121.29	107	-0.29189	-0.020	21.596	7.3037	2.957	14.45	7.1461
18.21	121.32	107	-0.29189	-0.020	21.626	7.3037	2.961	14.465	7.1609

TRIAXIAL TEST

: PLUM CREEK SITE 21	Location: TX	Project No.: 19-274
No.: B-08	Tested By: SKK	Checked By: SKK
No.: 19-274	Test Date: 7/24/19	Depth: 35-37.5'
.: 2	Sample Type: CORE	Elevation: N/A

scription:
:

n Height: 3.03 in	Piston Area: 0.00 in^2	Filter Strip Correction: 0.00 psi
n Area: 1.52 in^2	Piston Friction: 0.00 lb	Membrane Correction: 1.65 lb/in
n Volume: 75.29 cc	Piston Weight: 0.00 lb	Correction Type: Uniform
Limit: ---	Plastic Limit: ---	Measured Specific Gravity: 2.70

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
er ID		---		
tainer + Wet Soil, gm	140.2	140.2	142.61	201.17
tainer + Dry Soil, gm	107.12	107.12	107.12	165.68
tainer, gm	0	---	0	58.56
Soil, gm	107.12	107.12	107.12	107.12
ontent, %	30.88	30.88	33.13	33.13
tio	---	0.90	0.89	---
of Saturation, %	---	92.89	100.00	---
t Weight, pcf	---	88.823	88.969	---

Initialization

Consolidation/A

Saturation

Consolidation/B

Shear

ure

TRIAXIAL TEST

:: PLUM CREEK SITE 21
No.: B-08
No.: 19-274
.: 2

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-274
Checked By: SKK
Depth: 35-37.5'
Elevation: N/A

scription:
:

n Height: 3.03 in
n Area: 1.52 in^2
n Volume: 75.29 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
0	0	1.4688	0	0	100.2	114	114
2.0018	0.12261	1.4706	6.7905	4.6115	101.73	114	118.61
4.0023	0.25466	1.4725	9.0846	6.1569	102.6	114	120.16
6.0026	0.39456	1.4746	10.798	7.303	103.22	114	121.3
8.0018	0.50617	1.4763	12.082	8.1597	103.73	114	122.16
10.001	0.6445	1.4783	13.245	8.9278	104.15	114	122.93
12.004	0.7734	1.4802	14.101	9.4886	104.49	114	123.49
14.002	0.90544	1.4822	14.896	10.006	104.8	114	124.01
16.002	1.0312	1.4841	15.508	10.399	105.05	114	124.4
18.003	1.1617	1.4861	16.12	10.791	105.28	114	124.79
20.003	1.2796	1.4878	16.579	11.081	105.47	114	125.08
22	1.4037	1.4897	17.068	11.39	105.65	114	125.39
24.001	1.5279	1.4916	17.496	11.656	105.8	114	125.66
26.001	1.6505	1.4934	17.772	11.82	105.94	114	125.82
28.004	1.8109	1.4959	17.955	11.916	106.06	114	125.92
30.003	1.9382	1.4978	18.23	12.078	106.18	114	126.08
32.004	2.0608	1.4997	18.414	12.18	106.27	114	126.18
34.002	2.1882	1.5017	18.567	12.259	106.37	114	126.26
36.001	2.306	1.5035	18.72	12.341	106.47	114	126.34
38	2.4491	1.5057	18.873	12.417	106.54	114	126.42
40.001	2.5654	1.5075	18.965	12.458	106.61	114	126.46
42.002	2.7148	1.5098	19.179	12.573	106.67	114	126.57
44	2.8437	1.5118	19.301	12.632	106.72	114	126.63
46.004	2.971	1.5138	19.393	12.67	106.77	114	126.67
48.004	3.0967	1.5157	19.515	12.728	106.81	114	126.73
50.004	3.2335	1.5179	19.607	12.764	106.84	114	126.76
52.002	3.3514	1.5197	19.699	12.803	106.88	114	126.8
54.004	3.474	1.5217	19.821	12.862	106.91	114	126.86
56.002	3.6108	1.5238	19.943	12.917	106.93	114	126.92
58.003	3.7444	1.5259	20.005	12.933	106.96	114	126.93
60.003	3.8859	1.5282	20.066	12.947	106.98	114	126.95
62.003	4.0148	1.5302	20.157	12.984	107	114	126.98
64.002	4.1405	1.5322	20.28	13.041	107.01	114	127.04
66.003	4.2678	1.5343	20.433	13.117	107.02	114	127.12
68.002	4.3952	1.5363	20.586	13.193	107.04	114	127.19
70.002	4.5115	1.5382	20.647	13.212	107.04	114	127.21
72.004	4.6608	1.5406	20.8	13.283	107.05	114	127.28
74.003	4.7834	1.5426	20.922	13.34	107.05	114	127.34
76.004	4.8998	1.5445	21.045	13.397	107.05	114	127.4
78.004	5.0428	1.5468	21.167	13.45	107.06	114	127.45
80.003	5.1497	1.5485	21.35	13.548	107.05	114	127.55
82.002	5.2943	1.5509	21.412	13.56	107.05	114	127.56
84.001	5.4028	1.5527	21.503	13.599	107.05	114	127.6
86.003	5.549	1.5551	21.626	13.65	107.05	114	127.65
88.001	5.6842	1.5573	21.779	13.722	107.04	114	127.72
90.002	5.7895	1.5591	21.932	13.8	107.03	114	127.8
92.003	5.9357	1.5615	22.054	13.85	107.02	114	127.85
94.003	6.0599	1.5635	22.176	13.904	107.01	114	127.9
96.003	6.1935	1.5658	22.329	13.976	107	114	127.98
98.003	6.3271	1.568	22.421	14.009	106.99	114	128.01
100	6.4466	1.57	22.513	14.044	106.98	114	128.04
102	6.5849	1.5723	22.696	14.133	106.97	114	128.13

106	6.8395	1.5766	22.941	14.238	106.94	114	128.24
108	6.9779	1.579	23.094	14.308	106.93	114	128.31
110	7.1083	1.5812	23.216	14.359	106.92	114	128.36
112	7.231	1.5833	23.308	14.393	106.9	114	128.39
114	7.3693	1.5856	23.43	14.442	106.88	114	128.44
116	7.4715	1.5874	23.522	14.479	106.86	114	128.48
118	7.6082	1.5897	23.675	14.548	106.84	114	128.55
120	7.7371	1.592	23.797	14.599	106.84	114	128.6
122	7.8582	1.5941	23.92	14.651	106.81	114	128.65
124	7.9934	1.5964	24.012	14.681	106.79	114	128.68
126	8.1207	1.5986	24.134	14.731	106.77	114	128.73
128	8.2449	1.6008	24.226	14.763	106.75	114	128.76
130	8.3769	1.6031	24.409	14.85	106.73	114	128.85
132	8.5042	1.6053	24.44	14.843	106.71	114	128.84
134	8.6331	1.6076	24.532	14.873	106.68	114	128.87
136	8.7589	1.6098	24.623	14.904	106.67	114	128.9
138	8.9051	1.6124	24.685	14.912	106.64	114	128.91
140	9.0293	1.6146	24.746	14.924	106.63	114	128.92
142	9.1802	1.6173	24.807	14.93	106.6	114	128.93
144	9.2965	1.6193	24.837	14.925	106.59	114	128.92
146	9.4128	1.6214	24.899	14.938	106.57	114	128.94
148	9.5496	1.6239	24.929	14.928	106.55	114	128.93
150	9.6769	1.6262	24.96	14.921	106.52	114	128.92
152	9.8058	1.6285	25.021	14.931	106.5	114	128.93
154	9.9394	1.6309	25.021	14.903	106.48	114	128.9
156	10.073	1.6333	25.082	14.913	106.45	114	128.91
158	10.213	1.6359	25.113	14.902	106.43	114	128.9
160	10.337	1.6381	25.143	14.894	106.4	114	128.89
162	10.464	1.6405	25.143	14.868	106.39	114	128.87
164	10.593	1.6428	25.235	14.897	106.36	114	128.9
166	10.705	1.6449	25.296	14.91	106.33	114	128.91
168	10.839	1.6473	25.357	14.919	106.31	114	128.92
170	10.969	1.6498	25.388	14.91	106.28	114	128.91
172	11.111	1.6524	25.449	14.917	106.27	114	128.92
174	11.236	1.6547	25.541	14.946	106.23	114	128.95
176	11.36	1.657	25.633	14.975	106.22	114	128.98
178	11.489	1.6595	25.663	14.966	106.19	114	128.97
180	11.618	1.6619	25.724	14.976	106.18	114	128.98
182	11.728	1.6639	25.816	15.008	106.15	114	129.01
184	11.874	1.6667	25.877	15.013	106.14	114	129.01
186	11.997	1.669	25.908	15.005	106.11	114	129.01
188	12.121	1.6714	26	15.034	106.1	114	129.03
190	12.263	1.6741	26.061	15.04	106.07	114	129.04
192	12.404	1.6768	26.183	15.083	106.04	114	129.08
194	12.524	1.6791	26.306	15.13	106.03	114	129.13
196	12.64	1.6813	26.367	15.141	106.01	114	129.14
198	12.772	1.6839	26.489	15.185	105.99	114	129.19
200	12.899	1.6863	26.55	15.194	105.96	114	129.19
202	13.025	1.6888	26.703	15.257	105.94	114	129.26
204	13.148	1.6911	26.734	15.248	105.91	114	129.25
206	13.3	1.6941	26.887	15.305	105.9	114	129.31
208	13.407	1.6962	26.979	15.336	105.87	114	129.34
210	13.542	1.6989	27.04	15.343	105.85	114	129.34
212	13.671	1.7014	27.132	15.368	105.83	114	129.37
214	13.792	1.7038	27.223	15.395	105.81	114	129.4
216	13.92	1.7063	27.315	15.421	105.79	114	129.42
218	14.047	1.7088	27.437	15.464	105.77	114	129.46
220	14.166	1.7112	27.56	15.509	105.75	114	129.51
222	14.3	1.7139	27.59	15.497	105.73	114	129.5
224	14.415	1.7162	27.682	15.525	105.7	114	129.53
226	14.544	1.7188	27.743	15.532	105.7	114	129.53
228	14.662	1.7211	27.804	15.541	105.67	114	129.54
230	14.808	1.7241	27.866	15.544	105.64	114	129.54
232	14.929	1.7265	27.927	15.552	105.62	114	129.55
234	15.058	1.7292	27.957	15.541	105.6	114	129.54
236	15.187	1.7318	28.049	15.565	105.58	114	129.57
238	15.312	1.7344	28.049	15.537	105.56	114	129.54
240	15.465	1.7375	28.141	15.555	105.54	114	129.56
242	15.586	1.74	28.172	15.546	105.5	114	129.55
244	15.705	1.7425	28.233	15.554	105.49	114	129.55
246	15.836	1.7452	28.294	15.56	105.46	114	129.56
248	15.982	1.7482	28.355	15.561	105.45	114	129.56

252	16.227	1.7533	28.447	15.558	105.41	114	129.56
254	16.369	1.7563	28.447	15.526	105.4	114	129.53
256	16.507	1.7592	28.477	15.512	105.37	114	129.51
258	16.622	1.7616	28.477	15.486	105.36	114	129.49
260	16.765	1.7646	28.569	15.506	105.33	114	129.51
262	16.872	1.7669	28.6	15.499	105.32	114	129.5
264	16.994	1.7695	28.661	15.506	105.29	114	129.51
266	17.141	1.7726	28.692	15.49	105.28	114	129.49
268	17.282	1.7757	28.753	15.492	105.26	114	129.49
270	17.409	1.7784	28.814	15.497	105.24	114	129.5
272	17.533	1.7811	28.844	15.486	105.22	114	129.49
274	17.672	1.7841	28.936	15.506	105.2	114	129.51
276	17.809	1.787	29.028	15.526	105.17	114	129.53
278	17.939	1.7899	29.12	15.547	105.16	114	129.55
280	18.052	1.7924	29.212	15.573	105.14	114	129.57
282	18.203	1.7957	29.364	15.623	105.13	114	129.62
284	18.324	1.7983	29.426	15.629	105.11	114	129.63
286	18.442	1.8009	29.487	15.636	105.09	114	129.64
288	18.566	1.8037	29.548	15.641	105.09	114	129.64
288.06	18.571	1.8038	29.548	15.64	105.08	114	129.64

TRIAXIAL TEST

:: PLUM CREEK SITE 21
No.: B-08
No.: 19-274
.: 2

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-274
Checked By: SKK
Depth: 35-37.5'
Elevation: N/A

scription:
:

n Height: 3.03 in
n Area: 1.52 in^2
n Volume: 75.29 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
0.00	114	114	0	0.000	13.798	13.798	1.000	13.798	0
0.12	118.61	114	1.5262	0.331	16.884	12.272	1.376	14.578	2.3058
0.25	120.16	114	2.4018	0.390	17.554	11.397	1.540	14.475	3.0784
0.39	121.3	114	3.0203	0.414	18.081	10.778	1.678	14.43	3.6515
0.51	122.16	114	3.5264	0.432	18.432	10.272	1.794	14.352	4.0798
0.64	122.93	114	3.9441	0.442	18.782	9.8543	1.906	14.318	4.4639
0.77	123.49	114	4.2895	0.452	18.997	9.5089	1.998	14.253	4.7443
0.91	124.01	114	4.5948	0.459	19.21	9.2037	2.087	14.207	5.003
1.03	124.4	114	4.8518	0.467	19.346	8.9466	2.162	14.146	5.1997
1.16	124.79	114	5.0768	0.470	19.513	8.7217	2.237	14.117	5.3956
1.28	125.08	114	5.2695	0.476	19.61	8.5289	2.299	14.069	5.5405
1.40	125.39	114	5.4463	0.478	19.742	8.3522	2.364	14.047	5.6948
1.53	125.66	114	5.5989	0.480	19.856	8.1996	2.422	14.028	5.8281
1.65	125.82	114	5.7354	0.485	19.883	8.063	2.466	13.973	5.9101
1.81	125.92	114	5.8559	0.491	19.858	7.9425	2.500	13.9	5.9579
1.94	126.08	114	5.9764	0.495	19.9	7.822	2.544	13.861	6.0391
2.06	126.18	114	6.0728	0.499	19.905	7.7256	2.577	13.815	6.0898
2.19	126.26	114	6.1692	0.503	19.889	7.6292	2.607	13.759	6.1297
2.31	126.34	114	6.2656	0.508	19.874	7.5328	2.638	13.703	6.1704
2.45	126.42	114	6.3379	0.510	19.878	7.4605	2.664	13.669	6.2087
2.57	126.46	114	6.4102	0.515	19.846	7.3882	2.686	13.617	6.2289
2.71	126.57	114	6.4664	0.514	19.906	7.332	2.715	13.619	6.2867
2.84	126.63	114	6.5227	0.516	19.907	7.2758	2.736	13.592	6.3158
2.97	126.67	114	6.5709	0.519	19.897	7.2276	2.753	13.562	6.3348
3.10	126.73	114	6.611	0.519	19.915	7.1874	2.771	13.551	6.364
3.23	126.76	114	6.6432	0.520	19.919	7.1553	2.784	13.537	6.382
3.35	126.8	114	6.6753	0.521	19.926	7.1232	2.797	13.525	6.4016
3.47	126.86	114	6.7074	0.522	19.953	7.091	2.814	13.522	6.4308
3.61	126.92	114	6.7315	0.521	19.984	7.0669	2.828	13.526	6.4586
3.74	126.93	114	6.7556	0.522	19.976	7.0428	2.836	13.509	6.4665
3.89	126.95	114	6.7797	0.524	19.966	7.0187	2.845	13.492	6.4737
4.01	126.98	114	6.7958	0.523	19.987	7.0027	2.854	13.495	6.492
4.14	127.04	114	6.8038	0.522	20.036	6.9946	2.864	13.515	6.5204
4.27	127.12	114	6.8199	0.520	20.096	6.9786	2.880	13.537	6.5586
4.40	127.19	114	6.8359	0.518	20.156	6.9625	2.895	13.559	6.5967
4.51	127.21	114	6.8359	0.517	20.174	6.9625	2.898	13.568	6.6058
4.66	127.28	114	6.844	0.515	20.238	6.9545	2.910	13.596	6.6417
4.78	127.34	114	6.852	0.514	20.286	6.9464	2.920	13.616	6.6699
4.90	127.4	114	6.852	0.511	20.344	6.9464	2.929	13.645	6.6987
5.04	127.45	114	6.86 — Peak	0.510	20.388	6.9384 13.45	2.938	13.663	6.7248
5.15	127.55	114	6.852 After P.	0.506	20.494	6.9464	2.950	13.72	6.774
5.29	127.56	114	6.852	0.505	20.507	6.9464	2.952	13.726	6.7801
5.40	127.6	114	6.844	0.503	20.553	6.9545	2.955	13.754	6.7993
5.55	127.65	114	6.844	0.501	20.604	6.9545	2.963	13.779	6.8248
5.68	127.72	114	6.8359	0.498	20.684	6.9625	2.971	13.823	6.861
5.79	127.8	114	6.8279	0.495	20.77	6.9705	2.980	13.87	6.8999
5.94	127.85	114	6.8199	0.492	20.829	6.9786	2.985	13.904	6.925
6.06	127.9	114	6.8038	0.489	20.899	6.9946	2.988	13.947	6.9522
6.19	127.98	114	6.7958	0.486	20.979	7.0027	2.996	13.991	6.988
6.33	128.01	114	6.7877	0.485	21.019	7.0107	2.998	14.015	7.0043
6.45	128.04	114	6.7797	0.483	21.062	7.0187	3.001	14.041	7.0218

6.72	128.18	114	6.7556	0.476	21.227	7.0428	3.014	14.135	7.0923
6.84	128.24	114	6.7395	0.473	21.297	7.0589	3.017	14.178	7.1192
6.98	128.31	114	6.7315	0.470	21.375	7.0669	3.025	14.221	7.1539
7.11	128.36	114	6.7154	0.468	21.442	7.083	3.027	14.263	7.1796
7.23	128.39	114	6.6994	0.465	21.492	7.0991	3.027	14.295	7.1963
7.37	128.44	114	6.6833	0.463	21.557	7.1151	3.030	14.336	7.221
7.47	128.48	114	6.6592	0.460	21.618	7.1392	3.028	14.379	7.2396
7.61	128.55	114	6.6432	0.457	21.703	7.1553	3.033	14.429	7.2739
7.74 -7.7	128.6	114	6.6351 -6.6	0.455	21.762	- 7.1633 = 14.60	3.038 -	14.463	7.2993
7.86	128.65	114	6.611	0.451	21.838	7.1874	3.038	14.513	7.3253
7.99	128.68	114	6.5869	0.449	21.892	7.2115	3.036	14.552	7.3403
8.12	128.73	114	6.5709	0.446	21.959	7.2276	3.038	14.593	7.3655
8.24	128.76	114	6.5468	0.443	22.015	7.2517	3.036	14.633	7.3814
8.38 -8.4	128.85	114	6.5307 -6.5	0.440	22.118	- 7.2678 = 14.85	3.043 - Max	14.693	7.4251
8.50	128.84	114	6.5066	0.438	22.135	7.2919	3.036 SR	14.713	7.4214
8.63	128.87	114	6.4825	0.436	22.189	7.316	3.033	14.753	7.4366
8.76	128.9	114	6.4664	0.434	22.236	7.332	3.033	14.784	7.4521
8.91	128.91	114	6.4423	0.432	22.268	7.3561	3.027	14.812	7.4559
9.03	128.92	114	6.4263	0.431	22.296	7.3722	3.024	14.834	7.4619
9.18	128.93	114	6.4022	0.429	22.326	7.3963	3.019	14.861	7.4651
9.30	128.92	114	6.3861	0.428	22.337	7.4123	3.013	14.875	7.4624
9.41	128.94	114	6.37	0.426	22.367	7.4284	3.011	14.897	7.4691
9.55	128.93	114	6.3459	0.425	22.381	7.4525	3.003	14.917	7.4642
9.68	128.92	114	6.3218	0.424	22.397	7.4766	2.996	14.937	7.4603
9.81	128.93	114	6.2977	0.422	22.432	7.5007	2.991	14.966	7.4655
9.94	128.9	114	6.2736	0.421	22.428	7.5248	2.981	14.976	7.4515
10.07	128.91	114	6.2495	0.419	22.461	7.5489	2.975	15.005	7.4563
10.21	128.9	114	6.2254	0.418	22.475	7.573	2.968	15.024	7.4509
10.34	128.89	114	6.2013	0.416	22.492	7.5971	2.961	15.044	7.4472
10.46	128.87	114	6.1853	0.416	22.481	7.6132	2.953	15.047	7.4339
10.59	128.9	114	6.1612	0.414	22.534	7.6373	2.951	15.086	7.4483
10.70	128.91	114	6.1291	0.411	22.58	7.6694	2.944	15.125	7.4551
10.84	128.92	114	6.105	0.409	22.613	7.6935	2.939	15.153	7.4596
10.97	128.91	114	6.0809	0.408	22.628	7.7176	2.932	15.173	7.4551
11.11	128.92	114	6.0648	0.407	22.651	7.7337	2.929	15.192	7.4587
11.24	128.95	114	6.0327	0.404	22.712	7.7658	2.925	15.239	7.4731
11.36	128.98	114	6.0166	0.402	22.757	7.7819	2.924	15.27	7.4877
11.49	128.97	114	5.9925	0.400	22.772	7.806	2.917	15.289	7.4832
11.62	128.98	114	5.9764	0.399	22.798	7.822	2.915	15.31	7.4879
11.73	129.01	114	5.9523	0.397	22.854	7.8461	2.913	15.35	7.5038
11.87	129.01	114	5.9363	0.395	22.875	7.8622	2.910	15.369	7.5066
12.00	129.01	114	5.9122	0.394	22.892	7.8863	2.903	15.389	7.5026
12.12	129.03	114	5.8961	0.392	22.936	7.9023	2.902	15.419	7.5168
12.26	129.04	114	5.864	0.390	22.974	7.9345	2.896	15.454	7.52
12.40	129.08	114	5.8399	0.387	23.041	7.9586	2.895	15.5	7.5413
12.52	129.13	114	5.8238	0.385	23.104	7.9746	2.897	15.54	7.5649
12.64	129.14	114	5.8077	0.384	23.132	7.9907	2.895	15.561	7.5705
12.77	129.19	114	5.7836	0.381	23.2	8.0148	2.895	15.607	7.5926
12.90	129.19	114	5.7595	0.379	23.233	8.0389	2.890	15.636	7.5969
13.03	129.26	114	5.7354	0.376	23.32	8.063	2.892	15.692	7.6285
13.15	129.25	114	5.7113	0.375	23.336	8.0871	2.886	15.711	7.6242
13.30	129.31	114	5.6953	0.372	23.409	8.1032	2.889	15.756	7.6527
13.41	129.34	114	5.6712	0.370	23.463	8.1273	2.887	15.795	7.6681
13.54	129.34	114	5.6471	0.368	23.494	8.1514	2.882	15.823	7.6713
13.67	129.37	114	5.631	0.366	23.536	8.1674	2.882	15.851	7.6841
13.79	129.4	114	5.6069	0.364	23.587	8.1915	2.879	15.889	7.6977
13.92	129.42	114	5.5909	0.363	23.629	8.2076	2.879	15.918	7.7105
14.05	129.46	114	5.5668	0.360	23.696	8.2317	2.879	15.964	7.7322
14.17	129.51	114	5.5507	0.358	23.757	8.2478	2.880	16.002	7.7547
14.30	129.5	114	5.5266	0.357	23.769	8.2719	2.874	16.021	7.7487
14.41	129.53	114	5.5025	0.354	23.821	8.296	2.871	16.059	7.7627
14.54	129.53	114	5.4945	0.354	23.836	8.304	2.870	16.07	7.7661
14.66	129.54	114	5.4704	0.352	23.869	8.3281	2.866	16.099	7.7707
14.81	129.54	114	5.4382	0.350	23.904	8.3602	2.859	16.132	7.7721
14.93	129.55	114	5.4222	0.349	23.929	8.3763	2.857	16.152	7.7762
15.06	129.54	114	5.3981	0.347	23.942	8.4004	2.850	16.171	7.7706
15.19	129.57	114	5.382	0.346	23.982	8.4165	2.849	16.199	7.7826
15.31	129.54	114	5.3579	0.345	23.977	8.4405	2.841	16.209	7.7685
15.46	129.56	114	5.3338	0.343	24.02	8.4646	2.838	16.242	7.7777
15.59	129.55	114	5.3017	0.341	24.043	8.4968	2.830	16.27	7.7729
15.71	129.55	114	5.2856	0.340	24.067	8.5128	2.827	16.29	7.777
15.84	129.56	114	5.2615	0.338	24.096	8.5369	2.823	16.317	7.7798

16.10	129.55	114	5.2294	0.336	24.122	8.5691	2.815	16.346	7.7765
16.23	129.56	114	5.2133	0.335	24.143	8.5851	2.812	16.364	7.7792
16.37	129.53	114	5.1972	0.335	24.127	8.6012	2.805	16.364	7.7631
16.51	129.51	114	5.1731	0.333	24.138	8.6253	2.798	16.381	7.7561
16.62	129.49	114	5.1571	0.333	24.128	8.6414	2.792	16.385	7.7431
16.76	129.51	114	5.133	0.331	24.171	8.6655	2.789	16.418	7.7529
16.87	129.5	114	5.1169	0.330	24.18	8.6815	2.785	16.431	7.7495
16.99	129.51	114	5.0928	0.328	24.211	8.7056	2.781	16.458	7.7528
17.14	129.49	114	5.0768	0.328	24.211	8.7217	2.776	16.467	7.7448
17.28	129.49	114	5.0607	0.327	24.23	8.7378	2.773	16.484	7.746
17.41	129.5	114	5.0366	0.325	24.259	8.7619	2.769	16.511	7.7487
17.53	129.49	114	5.0205	0.324	24.264	8.7779	2.764	16.521	7.7431
17.67	129.51	114	4.9964	0.322	24.308	8.802	2.762	16.555	7.753
17.81	129.53	114	4.9723	0.320	24.352	8.8261	2.759	16.589	7.7631
17.94	129.55	114	4.9563	0.319	24.39	8.8422	2.758	16.616	7.7737
18.05	129.57	114	4.9402	0.317	24.431	8.8583	2.758	16.645	7.7863
18.20	129.62	114	4.9241	0.315	24.497	8.8743	2.760	16.686	7.8116
18.32	129.63	114	4.9081	0.314	24.52	8.8904	2.758	16.705	7.8146
18.44	129.64	114	4.892	0.313	24.542	8.9065	2.756	16.724	7.8179
18.57	129.64	114	4.884	0.312	24.556	8.9145	2.755	16.735	7.8205
18.57	129.64	114	4.8759	0.312	24.562	8.9225	2.753	16.742	7.82

TRIAXIAL TEST

:: PLUM CREEK SITE 21
No.: B-08
No.: 19-274
.: 3

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-274
Checked By: SKK
Depth: 35-37.5'
Elevation: N/A

scription:
:

n Height: 3.01 in
n Area: 1.53 in^2
n Volume: 75.76 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
er ID		---		
tainer + Wet Soil, gm	144.2	144.2	146.12	205.17
tainer + Dry Soil, gm	112.67	112.67	112.67	171.72
tainer, gm	0	---	0	59.05
Soil, gm	112.67	112.67	112.67	112.67
ontent, %	27.98	27.98	29.69	29.69
tio	---	0.82	0.80	---
of Saturation, %	---	92.64	100.00	---
t Weight, pcf	---	92.838	93.559	---

Initialization

Consolidation/A

Saturation

Consolidation/B

Shear

ure

TRIAXIAL TEST

:: PLUM CREEK SITE 21
No.: B-08
No.: 19-274
.: 3

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-274
Checked By: SKK
Depth: 35-37.5'
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::

n Height: 3.01 in
n Area: 1.53 in^2
n Volume: 75.76 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
0	0	1.4706	0	0	100.07	128	128
2.0008	0.13407	1.4725	6.3296	4.2918	101.41	128	132.29
4.0013	0.27293	1.4746	11.764	7.9643	103.09	128	135.96
6.0036	0.38306	1.4762	17.26	11.673	105	128	139.67
8.0031	0.51713	1.4782	21.582	14.575	106.43	128	142.57
10.003	0.64322	1.4801	25.164	16.97	107.58	128	144.97
12.001	0.77091	1.482	28.344	19.088	108.54	128	147.09
14.002	0.89061	1.4838	31.154	20.953	109.35	128	148.95
16.003	1.0263	1.4858	33.531	22.518	110.01	128	150.52
18.003	1.1476	1.4876	35.569	23.854	110.55	128	151.85
20.003	1.2896	1.4898	37.391	25.036	111	128	153.04
22.002	1.4189	1.4917	38.904	26.011	111.37	128	154.01
24.002	1.529	1.4934	40.17	26.824	111.67	128	154.82
26.002	1.6871	1.4958	41.312	27.537	111.9	128	155.54
28.004	1.7988	1.4975	42.207	28.098	112.08	128	156.1
30.004	1.9153	1.4993	42.918	28.533	112.24	128	156.53
32.002	2.0542	1.5014	43.597	28.938	112.38	128	156.94
34.003	2.1771	1.5033	44.245	29.327	112.5	128	157.33
36.002	2.2952	1.5051	44.739	29.615	112.59	128	157.61
38.002	2.4436	1.5074	45.202	29.87	112.66	128	157.87
40.002	2.5729	1.5094	45.635	30.11	112.72	128	158.11
42.004	2.7006	1.5114	45.974	30.289	112.77	128	158.29
44.003	2.833	1.5134	46.283	30.446	112.8	128	158.45
46.002	2.9591	1.5154	46.654	30.645	112.85	128	158.64
48.001	3.0964	1.5175	46.931	30.778	112.88	128	158.78
50.001	3.2113	1.5193	47.209	30.919	112.9	128	158.92
52.002	3.331	1.5212	47.364	30.976	112.91	128	158.98
54.001	3.4715	1.5234	47.611	31.087	112.93	128	159.09
56.004	3.6135	1.5257	47.858	31.196	112.94	128	159.2
58.001	3.7348	1.5276	48.105	31.313	112.96	128	159.31
60.002	3.8705	1.5298	48.29	31.384	112.98	128	159.38
62.004	3.9902	1.5317	48.506	31.48	112.98	128	159.48
64.002	4.1099	1.5336	48.753	31.596	112.99	128	159.6
66.003	4.2663	1.5361	48.969	31.678	112.99	128	159.68
68.001	4.3908	1.5381	49.154	31.751	112.98	128	159.75
70.004	4.5121	1.54	49.34	31.825	112.98	128	159.83
72.002	4.6414	1.5421	49.401	31.816	112.97	128	159.82
74.001	4.7723	1.5443	49.587	31.887	112.96	128	159.89
76.004	4.9239	1.5467	49.71	31.909	112.96	128	159.91
78.001	5.0596	1.5489	49.834	31.936	112.96	128	159.94
80.001	5.1809	1.5509	49.957	31.97	112.95	128	159.97
82.001	5.3229	1.5532	50.05	31.975	112.94	128	159.97
84.002	5.4378	1.5551	50.173	32.01	112.93	128	160.01
86	5.5767	1.5574	50.297	32.036	112.93	128	160.04
88.002	5.6996	1.5594	50.42	32.068	112.92	128	160.07
90.003	5.8401	1.5618	50.482	32.053	112.91	128	160.05
92.004	5.9598	1.5638	50.544	32.046	112.89	128	160.05
94	6.0954	1.566	50.667	32.072	112.89	128	160.07
96.004	6.2263	1.5682	50.76	32.081	112.86	128	160.08
98.004	6.3492	1.5703	50.945	32.151	112.85	128	160.15
100	6.4817	1.5725	50.976	32.119	112.83	128	160.12
102	6.6237	1.5749	51.1	32.142	112.82	128	160.14

106	6.8855	1.5793	51.192	32.099	112.78	128	160.1
108	7.01	1.5814	51.347	32.148	112.78	128	160.15
110	7.1393	1.5836	51.47	32.175	112.76	128	160.17
112	7.2749	1.5859	51.563	32.18	112.75	128	160.18
114	7.4042	1.5881	51.625	32.168	112.73	128	160.17
116	7.5351	1.5904	51.748	32.195	112.72	128	160.19
118	7.6676	1.5927	51.933	32.259	112.7	128	160.26
120	7.8048	1.595	52.057	32.282	112.69	128	160.28
122	7.9213	1.5971	52.211	32.332	112.67	128	160.33
124	8.0426	1.5992	52.366	32.381	112.66	128	160.38
126	8.1783	1.6015	52.52	32.423	112.64	128	160.42
128	8.3044	1.6037	52.705	32.489	112.63	128	160.49
130	8.4465	1.6062	52.86	32.528	112.61	128	160.53
132	8.5438	1.6079	53.107	32.643	112.59	128	160.64
134	8.6747	1.6102	53.292	32.705	112.56	128	160.71
136	8.8263	1.6129	53.446	32.74	112.54	128	160.74
138	8.9412	1.615	53.662	32.827	112.52	128	160.83
140	9.0801	1.6174	53.817	32.866	112.5	128	160.87
142	9.219	1.6199	53.94	32.886	112.48	128	160.89
144	9.3482	1.6222	54.156	32.967	112.46	128	160.97
146	9.4807	1.6246	54.249	32.97	112.45	128	160.97
148	9.618	1.627	54.434	33.027	112.42	128	161.03
150	9.7377	1.6292	54.62	33.092	112.4	128	161.09
152	9.8861	1.6319	54.805	33.145	112.38	128	161.14
154	10.022	1.6343	54.959	33.183	112.35	128	161.18
156	10.145	1.6366	55.052	33.189	112.33	128	161.19
158	10.285	1.6391	55.237	33.244	112.3	128	161.24
160	10.403	1.6413	55.422	33.308	112.28	128	161.31
162	10.531	1.6436	55.577	33.349	112.26	128	161.35
164	10.668	1.6462	55.7	33.366	112.24	128	161.37
166	10.797	1.6486	55.731	33.331	112.2	128	161.33
168	10.941	1.6512	55.885	33.365	112.17	128	161.36
170	11.051	1.6533	56.04	33.412	112.14	128	161.41
172	11.181	1.6557	56.225	33.47	112.11	128	161.47
174	11.305	1.658	56.349	33.492	112.07	128	161.49
176	11.447	1.6607	56.503	33.525	112.05	128	161.52
178	11.556	1.6627	56.626	33.553	112.02	128	161.55
180	11.701	1.6654	56.657	33.511	111.98	128	161.51
182	11.808	1.6674	56.843	33.576	111.97	128	161.58
184	11.951	1.6702	56.873	33.534	111.95	128	161.53
186	12.074	1.6725	56.997	33.556	111.93	128	161.56
188	12.221	1.6753	57.151	33.585	111.9	128	161.59
190	12.358	1.6779	57.213	33.564	111.88	128	161.56
192	12.494	1.6805	57.244	33.524	111.85	128	161.52
194	12.622	1.683	57.46	33.598	111.83	128	161.6
196	12.749	1.6854	57.46	33.544	111.8	128	161.54
198	12.863	1.6876	57.522	33.532	111.76	128	161.53
200	12.981	1.6899	57.676	33.573	111.73	128	161.57
202	13.099	1.6922	57.769	33.577	111.71	128	161.58
204	13.257	1.6953	57.8	33.527	111.68	128	161.53
206	13.388	1.6979	57.8	33.471	111.63	128	161.47
208	13.543	1.7009	57.923	33.477	111.6	128	161.48
210	13.667	1.7034	57.954	33.442	111.57	128	161.44
212	13.792	1.7058	58.139	33.497	111.55	128	161.5
214	13.926	1.7085	58.325	33.548	111.51	128	161.55
216	14.065	1.7112	58.386	33.524	111.49	128	161.52
218	14.188	1.7137	58.572	33.579	111.46	128	161.58
220	14.312	1.7162	58.788	33.651	111.43	128	161.65
222	14.449	1.7189	58.942	33.681	111.41	128	161.68
224	14.572	1.7214	59.066	33.699	111.37	128	161.7
226	14.697	1.7239	59.22	33.734	111.36	128	161.73
228	14.828	1.7266	59.374	33.766	111.33	128	161.77
230	14.954	1.7291	59.529	33.8	111.29	128	161.8
232	15.064	1.7314	59.683	33.841	111.27	128	161.84
234	15.199	1.7341	59.838	33.87	111.24	128	161.87
236	15.33	1.7368	59.961	33.884	111.2	128	161.88
238	15.471	1.7397	60.085	33.893	111.17	128	161.89
240	15.576	1.7419	60.239	33.935	111.13	128	161.93
242	15.712	1.7447	60.393	33.963	111.09	128	161.96
244	15.843	1.7474	60.455	33.94	111.05	128	161.94
246	15.969	1.75	60.579	33.955	111.02	128	161.95
248	16.09	1.7525	60.702	33.971	111	128	161.97

252	16.363	1.7583	60.856	33.937	110.94	128	161.94
254	16.488	1.7609	60.98	33.952	110.92	128	161.95
256	16.615	1.7636	61.103	33.965	110.89	128	161.96
258	16.744	1.7663	61.134	33.924	110.86	128	161.92
260	16.872	1.769	61.227	33.919	110.83	128	161.92
262	17	1.7718	61.381	33.949	110.81	128	161.95
264	17.123	1.7744	61.536	33.981	110.78	128	161.98
266	17.25	1.7771	61.597	33.958	110.74	128	161.96
268	17.396	1.7802	61.69	33.945	110.72	128	161.94
270	17.528	1.7831	61.814	33.954	110.69	128	161.95
272	17.672	1.7862	61.906	33.941	110.64	128	161.94
274	17.804	1.7891	61.999	33.933	110.6	128	161.93
276	17.943	1.7921	62.153	33.956	110.56	128	161.96
278	18.048	1.7944	62.246	33.96	110.52	128	161.96
280	18.2	1.7978	62.215	33.873	110.49	128	161.87
282	18.323	1.8005	62.369	33.903	110.46	128	161.9
284	18.446	1.8032	62.4	33.865	110.42	128	161.86
286	18.586	1.8063	62.524	33.869	110.38	128	161.87
288	18.732	1.8095	62.493	33.786	110.37	128	161.79
288.78	18.787	1.8108	62.524	33.777	110.35	128	161.78

TRIAXIAL TEST

:: PLUM CREEK SITE 21
No.: B-08
No.: 19-274
.: 3

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-274
Checked By: SKK
Depth: 35-37.5'
Elevation: N/A

escription:
:

n Height: 3.01 in
n Area: 1.53 in^2
n Volume: 75.76 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

Limit: ---

Plastic Limit: ---

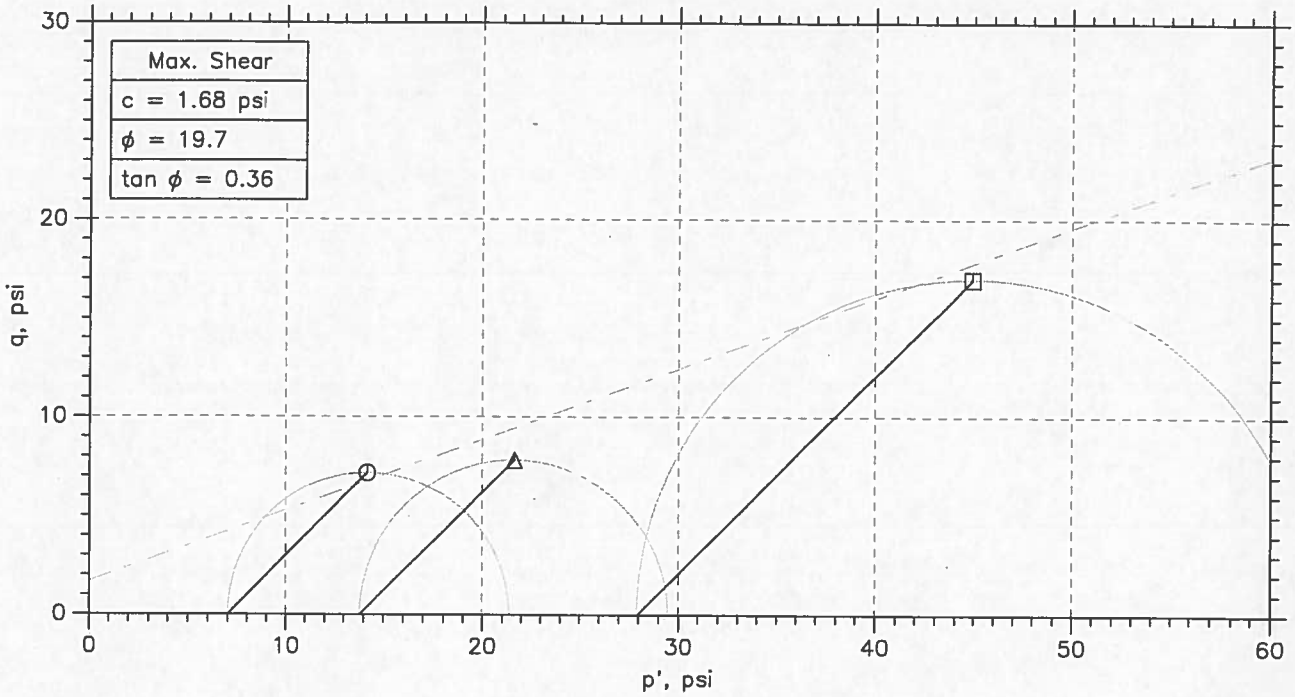
Measured Specific Gravity: 2.70

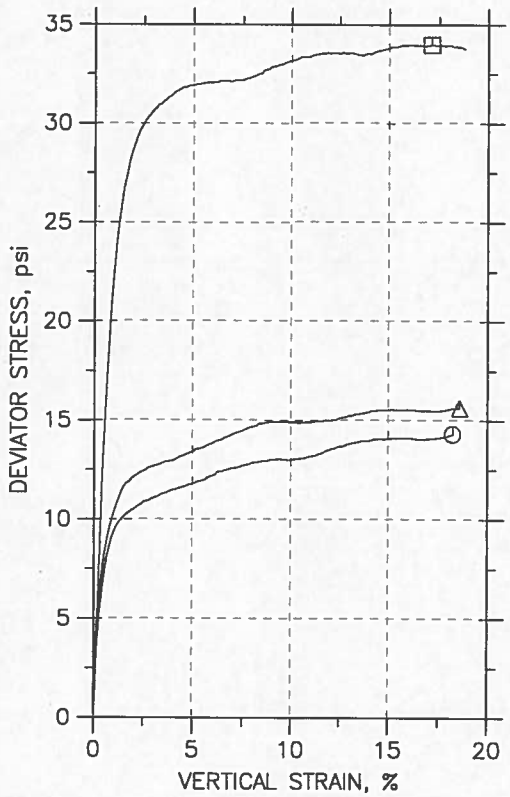
Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
0.00	128	128	0	0.000	27.927	27.927	1.000	27.927	0
0.13	132.29	128	1.3406	0.312	30.878	26.586	1.161	28.732	2.1459
0.27	135.96	128	3.0143	0.378	32.877	24.913	1.320	28.895	3.9821
0.38	139.67	128	4.9236	0.422	34.676	23.003	1.507	28.84	5.8365
0.52	142.57	128	6.3617	0.436	36.14	21.565	1.676	28.853	7.2875
0.64	144.97	128	7.5073	0.442	37.39	20.42	1.831	28.905	8.4851
0.77	147.09	128	8.466	0.444	38.549	19.461	1.981	29.005	9.544
0.89	148.95	128	9.2785	0.443	39.601	18.648	2.124	29.125	10.476
1.03	150.52	128	9.9366	0.441	40.508	17.99	2.252	29.249	11.259
1.15	151.85	128	10.473	0.439	41.308	17.454	2.367	29.381	11.927
1.29	153.04	128	10.928	0.436	42.035	16.999	2.473	29.517	12.518
1.42	154.01	128	11.293	0.434	42.644	16.633	2.564	29.639	13.005
1.53	154.82	128	11.594	0.432	43.157	16.333	2.642	29.745	13.412
1.69	155.54	128	11.83	0.430	43.634	16.097	2.711	29.866	13.769
1.80	156.1	128	12.008	0.427	44.017	15.918	2.765	29.968	14.049
1.92	156.53	128	12.171	0.427	44.289	15.756	2.811	30.022	14.266
2.05	156.94	128	12.309	0.425	44.556	15.618	2.853	30.087	14.469
2.18	157.33	128	12.423	0.424	44.831	15.504	2.892	30.168	14.664
2.30	157.61	128	12.512	0.423	45.029	15.415	2.921	30.222	14.807
2.44	157.87	128	12.585	0.421	45.211	15.342	2.947	30.276	14.935
2.57	158.11	128	12.65	0.420	45.387	15.277	2.971	30.332	15.055
2.70	158.29	128	12.699	0.419	45.517	15.228	2.989	30.373	15.145
2.83	158.45	128	12.732	0.418	45.641	15.195	3.004	30.418	15.223
2.96	158.64	128	12.772	0.417	45.799	15.155	3.022	30.477	15.322
3.10	158.78	128	12.805	0.416	45.9	15.122	3.035	30.511	15.389
3.21	158.92	128	12.829	0.415	46.017	15.098	3.048	30.557	15.459
3.33	158.98	128	12.837	0.414	46.066	15.09	3.053	30.578	15.488
3.47	159.09	128	12.853	0.413	46.16	15.073	3.062	30.617	15.543
3.61	159.2	128	12.87	0.413	46.253	15.057	3.072	30.655	15.598
3.73	159.31	128	12.886	0.412	46.354	15.041	3.082	30.697	15.656
3.87	159.38	128	12.902	0.411	46.408	15.025	3.089	30.716	15.692
3.99	159.48	128	12.902	0.410	46.505	15.025	3.095	30.765	15.74
4.11	159.6	128	12.918 } Peak Pore P	0.409	46.604	15.008	3.105	30.806	15.798
4.27	159.68	128	12.918	0.408	46.686	15.008 = 31.68	3.111	30.847	15.839
4.39	159.75	128	12.91	0.407	46.768	15.017	3.114	30.892	15.876
4.51	159.83	128	12.902	0.405	46.85	15.025	3.118	30.937	15.913
4.64	159.82	128	12.894	0.405	46.849	15.033	3.116	30.941	15.908
4.77	159.89	128	12.886	0.404	46.927	15.041	3.120	30.984	15.943
4.92	159.91	128	12.886	0.404	46.949	15.041	3.121	30.995	15.954
5.06	159.94	128	12.886	0.403	46.977	15.041	3.123	31.009	15.968
5.18	159.97	128	12.878	0.403	47.019	15.049	3.124	31.034	15.985
5.32	159.97	128	12.87	0.402	47.032	15.057	3.124	31.045	15.987
5.44	160.01	128	12.862	0.402	47.075	15.065	3.125	31.07	16.005
5.58	160.04	128	12.853	0.401	47.109	15.073	3.125	31.091	16.018
5.70 -5.7	160.07	128	12.845 -12.85	0.401	47.149	15.082 = 32.07	3.126 — Max SR	31.115	16.034
5.84	160.05	128	12.837	0.401	47.142	15.09	3.124	31.116	16.026
5.96	160.05	128	12.821	0.400	47.152	15.106	3.121	31.129	16.023
6.10	160.07	128	12.813	0.399	47.186	15.114	3.122	31.15	16.036
6.23	160.08	128	12.788	0.399	47.219	15.138	3.119	31.179	16.04
6.35	160.15	128	12.78	0.398	47.297	15.147	3.123	31.222	16.075
6.48	160.12	128	12.756	0.397	47.29	15.171	3.117	31.23	16.059

6.76	160.13	128	12.732	0.396	47.325	15.195	3.114	31.26	16.065
6.89	160.1	128	12.707	0.396	47.318	15.22	3.109	31.269	16.049
7.01	160.15	128	12.707	0.395	47.367	15.22	3.112	31.293	16.074
7.14	160.17	128	12.691	0.394	47.411	15.236	3.112	31.323	16.087
7.27	160.18	128	12.675	0.394	47.432	15.252	3.110	31.342	16.09
7.40	160.17	128	12.658	0.394	47.437	15.268	3.107	31.353	16.084
7.54	160.19	128	12.642	0.393	47.479	15.285	3.106	31.382	16.097
7.67	160.26	128	12.626	0.391	47.56	15.301	3.108	31.43	16.129
7.80	160.28	128	12.618	0.391	47.591	15.309	3.109	31.45	16.141
7.92	160.33	128	12.602	0.390	47.658	15.325	3.110	31.492	16.166
8.04	160.38	128	12.585	0.389	47.722	15.342	3.111	31.532	16.19
8.18	160.42	128	12.569	0.388	47.781	15.358	3.111	31.57	16.212
8.30	160.49	128	12.553	0.386	47.863	15.374	3.113	31.618	16.244
8.45	160.53	128	12.537	0.385	47.918	15.39	3.114	31.654	16.264
8.54	160.64	128	12.512	0.383	48.057	15.415	3.118	31.736	16.321
8.67	160.71	128	12.488	0.382	48.144	15.439	3.118	31.792	16.353
8.83	160.74	128	12.472	0.381	48.195	15.455	3.118	31.825	16.37
8.94	160.83	128	12.447	0.379	48.307	15.48	3.121	31.893	16.414
9.08	160.87	128	12.431	0.378	48.362	15.496	3.121	31.929	16.433
9.22	160.89	128	12.407	0.377	48.406	15.52	3.119	31.963	16.443
9.35	160.97	128	12.39	0.376	48.503	15.537	3.122	32.02	16.483
9.48	160.97	128	12.374	0.375	48.523	15.553	3.120	32.038	16.485
9.62	161.03	128	12.35	0.374	48.605	15.577	3.120	32.091	16.514
9.74	161.09	128	12.325	0.372	48.694	15.602	3.121	32.148	16.546
9.89	161.14	128	12.309	0.371	48.762	15.618	3.122	32.19	16.572
10.02	161.18	128	12.277	0.370	48.833	15.65	3.120	32.242	16.592
10.14	161.19	128	12.252	0.369	48.864	15.675	3.117	32.269	16.595
10.29	161.24	128	12.228	0.368	48.943	15.699	3.118	32.321	16.622
10.40	161.31	128	12.203	0.366	49.031	15.723	3.118	32.377	16.654
10.53	161.35	128	12.187	0.365	49.088	15.74	3.119	32.414	16.674
10.67	161.37	128	12.163	0.365	49.131	15.764	3.117	32.447	16.683
10.80	161.33	128	12.13	0.364	49.128	15.797	3.110	32.462	16.666
10.94	161.36	128	12.098	0.363	49.194	15.829	3.108	32.511	16.682
11.05	161.41	128	12.065	0.361	49.274	15.862	3.106	32.568	16.706
11.18	161.47	128	12.033	0.360	49.364	15.894	3.106	32.629	16.735
11.31	161.49	128	12	0.358	49.418	15.927	3.103	32.672	16.746
11.45	161.52	128	11.976	0.357	49.476	15.951	3.102	32.713	16.762
11.56	161.55	128	11.943	0.356	49.537	15.983	3.099	32.76	16.777
11.70	161.51	128	11.911	0.355	49.526	16.016	3.092	32.771	16.755
11.81	161.58	128	11.895	0.354	49.609	16.032	3.094	32.82	16.788
11.95	161.53	128	11.878	0.354	49.582	16.048	3.090	32.815	16.767
12.07	161.56	128	11.854	0.353	49.628	16.073	3.088	32.851	16.778
12.22	161.59	128	11.83	0.352	49.683	16.097	3.086	32.89	16.793
12.36	161.56	128	11.805	0.352	49.685	16.122	3.082	32.903	16.782
12.49	161.52	128	11.781	0.351	49.67	16.146	3.076	32.908	16.762
12.62	161.6	128	11.757	0.350	49.769	16.17	3.078	32.969	16.799
12.75	161.54	128	11.724	0.350	49.747	16.203	3.070	32.975	16.772
12.86	161.53	128	11.692	0.349	49.767	16.235	3.065	33.001	16.766
12.98	161.57	128	11.659	0.347	49.841	16.268	3.064	33.054	16.786
13.10	161.58	128	11.635	0.347	49.869	16.292	3.061	33.081	16.788
13.26	161.53	128	11.602	0.346	49.852	16.325	3.054	33.088	16.764
13.39	161.47	128	11.562	0.345	49.836	16.365	3.045	33.101	16.736
13.54	161.48	128	11.529	0.344	49.875	16.398	3.042	33.136	16.739
13.67	161.44	128	11.497	0.344	49.872	16.43	3.035	33.151	16.721
13.79	161.5	128	11.472	0.342	49.952	16.455	3.036	33.203	16.749
13.93	161.55	128	11.44	0.341	50.035	16.487	3.035	33.261	16.774
14.06	161.52	128	11.415	0.341	50.035	16.512	3.030	33.273	16.762
14.19	161.58	128	11.391	0.339	50.115	16.536	3.031	33.325	16.789
14.31	161.65	128	11.358	0.338	50.219	16.568	3.031	33.394	16.825
14.45	161.68	128	11.334	0.337	50.274	16.593	3.030	33.433	16.84
14.57	161.7	128	11.302	0.335	50.324	16.625	3.027	33.475	16.85
14.70	161.73	128	11.285	0.335	50.376	16.642	3.027	33.509	16.867
14.83	161.77	128	11.253	0.333	50.44	16.674	3.025	33.557	16.883
14.95	161.8	128	11.22	0.332	50.507	16.707	3.023	33.607	16.9
15.06	161.84	128	11.196	0.331	50.572	16.731	3.023	33.651	16.921
15.20	161.87	128	11.163	0.330	50.634	16.763	3.021	33.699	16.935
15.33	161.88	128	11.131	0.329	50.68	16.796	3.017	33.738	16.942
15.47	161.89	128	11.098	0.327	50.721	16.828	3.014	33.775	16.946
15.58	161.93	128	11.058	0.326	50.804	16.869	3.012	33.836	16.967
15.71	161.96	128	11.017	0.324	50.873	16.91	3.009	33.891	16.982
15.84	161.94	128	10.977	0.323	50.891	16.95	3.002	33.92	16.97
15.97	161.95	128	10.944	0.322	50.938	16.983	2.999	33.96	16.977

16.22	161.96	128	10.895	0.321	50.996	17.032	2.994	34.014	16.982
16.36	161.94	128	10.871	0.320	50.993	17.056	2.990	34.025	16.969
16.49	161.95	128	10.847	0.319	51.032	17.08	2.988	34.056	16.976
16.62	161.96	128	10.814	0.318	51.077	17.113	2.985	34.095	16.982
16.74	161.92	128	10.79	0.318	51.061	17.137	2.980	34.099	16.962
16.87	161.92	128	10.757	0.317	51.089	17.17	2.976	34.129	16.96
17.00	161.95	128	10.733	0.316	51.143	17.194	2.974	34.169	16.975
17.12	161.98	128	10.708	0.315	51.199	17.218	2.974	34.209	16.99
17.25	161.96	128	10.668	0.314	51.217	17.259	2.968	34.238	16.979
17.40	161.94	128	10.652	0.314	51.22	17.275	2.965	34.248	16.972
17.53	161.95	128	10.619	0.313	51.262	17.308	2.962	34.285	16.977
17.67	161.94	128	10.57	0.311	51.297	17.357	2.956	34.327	16.97
17.80	161.93	128	10.53	0.310	51.33	17.397	2.950	34.363	16.966
17.94	161.96	128	10.489	0.309	51.394	17.438	2.947	34.416	16.978
18.05	161.96	128	10.448	0.308	51.438	17.478	2.943	34.458	16.98
18.20	161.87	128	10.416	0.307	51.384	17.511	2.934	34.448	16.937
18.32	161.9	128	10.383	0.306	51.447	17.543	2.933	34.495	16.952
18.45	161.86	128	10.351	0.306	51.44	17.576	2.927	34.508	16.932
18.59	161.87	128	10.31	0.304	51.485	17.617	2.923	34.551	16.934
18.73	161.79	128	10.294	0.305	51.418	17.633	2.916	34.526	16.893
18.79	161.78	128	10.278	0.304	51.426	17.649	2.914	34.538	16.889

CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⊙	△	⊡	
Sample No.		19-274	19-274	19-274	
Test No.		1	2	3	
Depth		35-37.5'	35-37.5'	35-37.5'	
Initial	Diameter, in	1.391	1.389	1.398	
	Height, in	3.029	3.032	3.012	
	Water Content, %	30.5	30.9	28.0	
	Dry Density, pcf	90.01	88.82	92.84	
	Saturation, %	94.3	92.9	92.6	
	Void Ratio	0.873	0.898	0.816	
Before Shear	Water Content, %	33.8	33.1	29.7	
	Dry Density, pcf	88.15	88.97	93.56	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.912	0.895	0.802	
	Back Press., psi	99.99	100.2	100.1	
Ver. Eff. Cons. Stress, psi		7.012	13.8	27.93	
Shear Strength, psi		7.161	7.821	16.99	
Strain at Failure, %		18.2	18.6	17.1	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-274

Boring No.: B-08

Sample Type: CORE

Description:

Remarks:

NRCS Soil Mechanics Center
Lincoln, NE

4/16/2019
3:32 PM

Mohr Circle Program

SITE NAME: Plum Creek Site 21
STATE: TX
SAMPLE NO: 19-278,279,280

Failure Criterion:
- ☐ Maximum Dev. Stress
- ☑ Maximum Stress Ratio
- ☐ Max. Pore Pressure
- ☐ <= 10% Strain
- ☐ Selected Points

Total Strength Parameters:

			Zero Cohesion:
PHI:	10.3 degrees	10.3 degrees	Slope y=
C :	908 psf	6.31 psi	

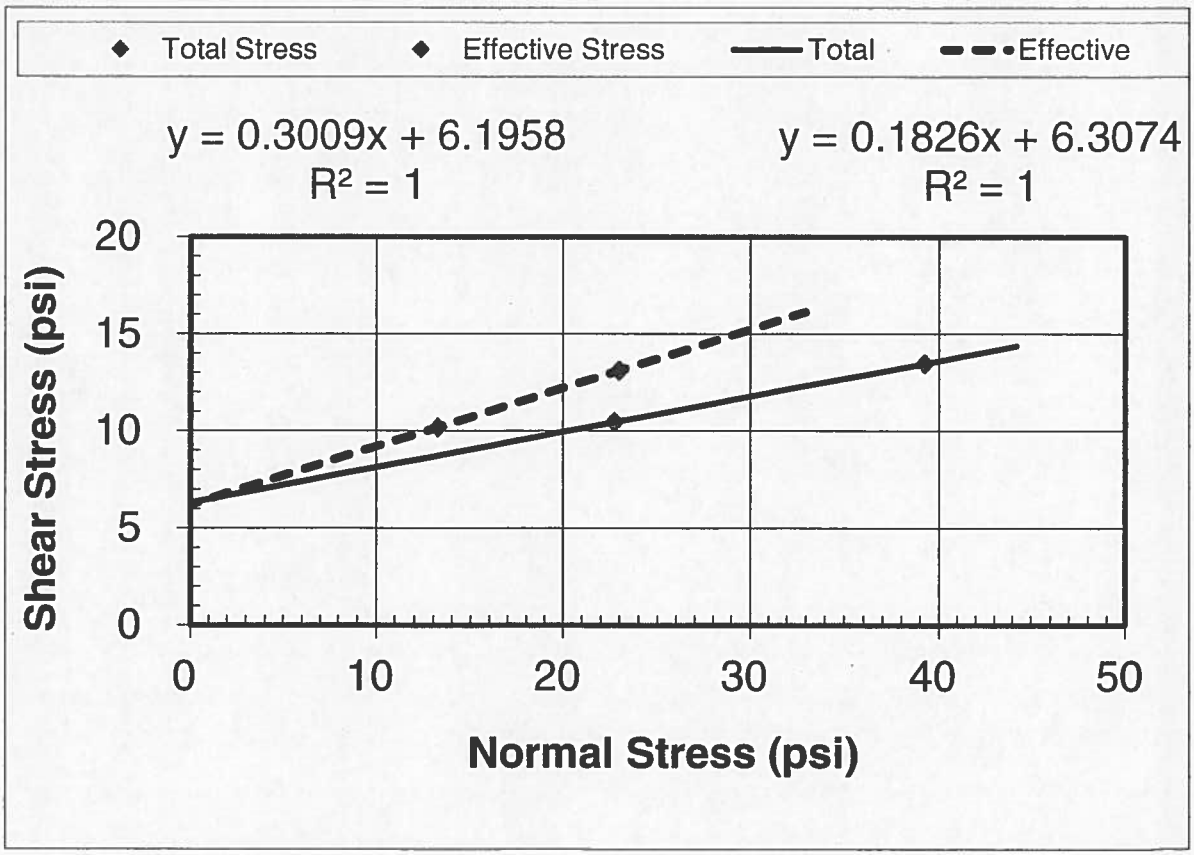
Effective Strength Parameters:

PHI' :	~~16.7~~ degrees	16.7 degrees	Slope y=
C':	~~892~~ psf	6.20 psi	

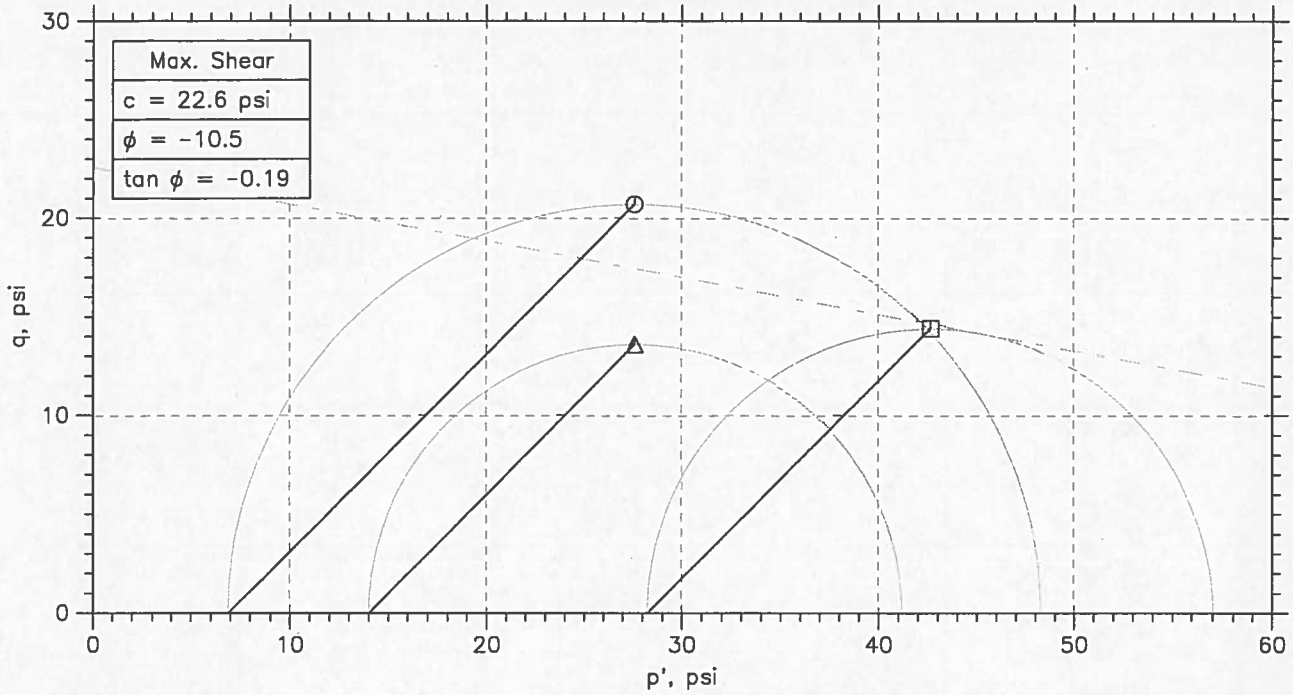
Stress path analysis from p-q plot:
PHI' : 19.5 degrees
C' : 763 psf

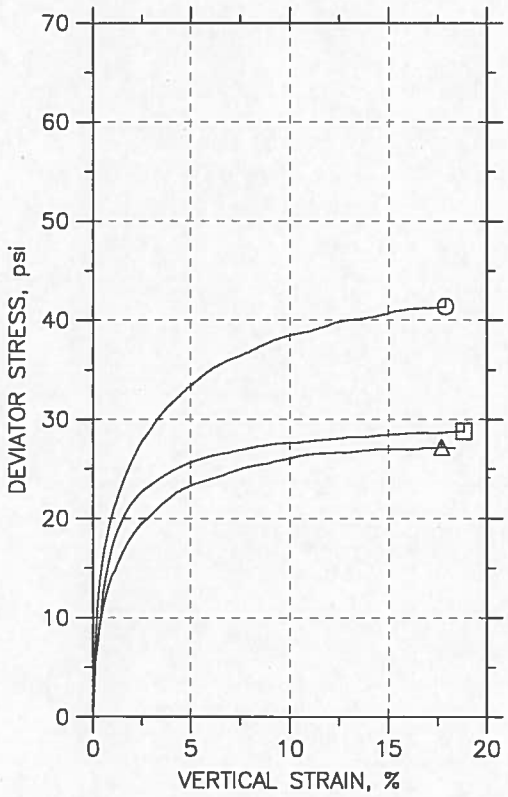
(All inputed values in the chart are in psi)

CELL PRESSURE	DEVIATOR STRESS AT FAILURE	PORE PRESSURE AT FAILURE	PERCENT STRAIN (Optional Entry)
14	21.26	8.34	3.42
28	27.38	14.76	8.74



CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⊙	△	⊡	
Sample No.		19-278	19-279	19-280	
Test No.		1	2	3	
Depth		4-6'	6-8'	8-10'	
Initial	Diameter, in	2.763	2.692	2.649	
	Height, in	6.124	6.194	6.11	
	Water Content, %	14.1	16.7	22.0	
	Dry Density, pcf	115.7	108.2	101.6	
	Saturation, %	80.4	79.1	89.2	
	Void Ratio	0.484	0.575	0.671	
Before Shear	Water Content, %	19.1	19.9	23.7	
	Dry Density, pcf	112.5	110.4	103.3	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.526	0.543	0.644	
	Back Press., psi	100.1	99.98	99.76	
Ver. Eff. Cons. Stress, psi		6.906	14.02	28.24	
Shear Strength, psi		20.69	13.59	14.4	
Strain at Failure, %		17.9	17.7	18.8	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.75	2.73	2.72	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-278

Boring No.: B-301

Sample Type: CORE

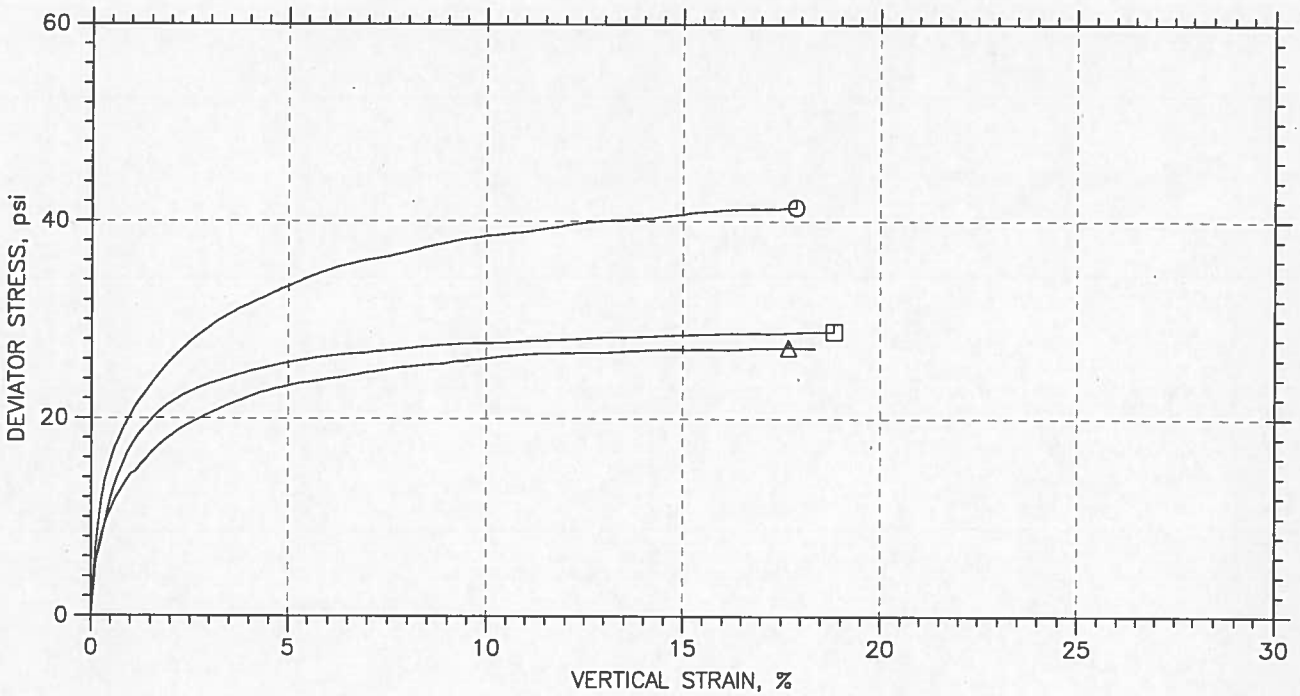
Description:

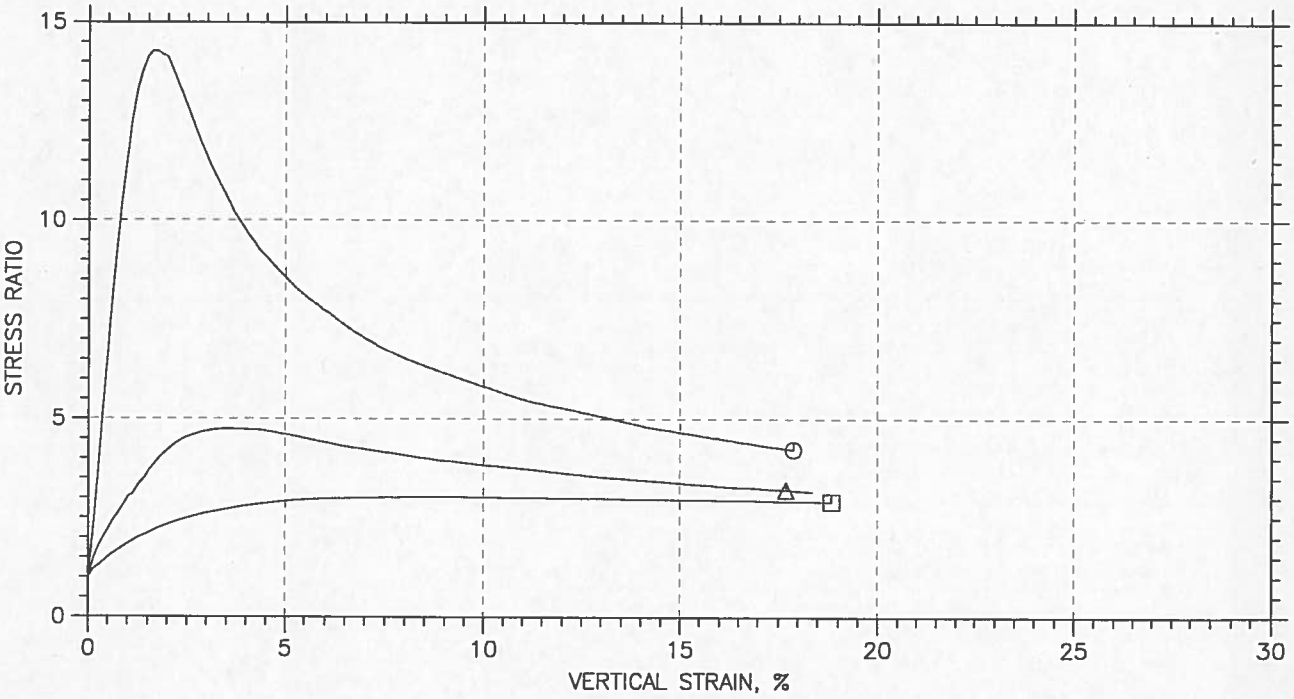
Remarks: @ Maximum Shear

High Density Low WC

Low Density High WC

CONSOLIDATED UNDRAINED TRIAXIAL TEST





	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	19-278	1	4-6'	SKK	3/21/19	SKK		19-278-07eng.dat
△	19-279	2	6-8'	SKK	3/21/19	SKK		19-279-14eng.dat
⊡	19-280	3	8-10'	SKK	3/21/19	SKK		19-280-28eng.dat

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-278
Boring No.: B-301	Sample Type: CORE	
Description:		
Remarks:		

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ng No.: B-301
le No.: 19-278
No.: 1

Location: TX
Tested By: SKK
Test Date: 3/21/19
Sample Type: CORE

Project No.: 19-278
Checked By: SKK
Depth: 4-6'
Elevation: N/A

Description:
rks:

imen Height: 6.12 in
imen Area: 6.00 in^2
imen Volume: 601.71 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.75

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
ainer ID		---		
Container + Wet Soil, gm	1273	1273	1328.5	1504.1
Container + Dry Soil, gm	1115.3	1115.3	1115.3	1290.9
Container, gm	0	---	0	175.6
Dry Soil, gm	1115.3	1115.3	1115.3	1115.3
r Content, %	14.15	14.15	19.12	19.12
Ratio	---	0.48	0.53	---
ee of Saturation, %	---	80.43	100.00	---
Unit Weight, pcf	---	115.71	112.52	---

ial

of Initialization

of Consolidation/A

of Saturation

of Consolidation/B

of Shear

ailure

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ng No.: B-301
le No.: 19-278
No.: 1

Location: TX
Tested By: SKK
Test Date: 3/21/19
Sample Type: CORE

Project No.: 19-278
Checked By: SKK
Depth: 4-6'
Elevation: N/A

Description:
rks:

imen Height: 6.12 in
imen Area: 6.00 in^2
imen Volume: 601.71 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.75

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	6.0373	0	0	100.09	107	107
2	2.0022	0.10963	6.0439	40.721	6.7349	101.09	107	113.73
3	4.0038	0.23954	6.0518	68.433	11.302	102.6	107	118.3
4	6.0027	0.35668	6.0589	83.538	13.779	103.56	107	120.78
5	8.0025	0.48283	6.0666	94.573	15.578	104.16	107	122.58
6	10.003	0.60222	6.0738	103.24	16.982	104.54	107	123.98
7	12.001	0.72236	6.0812	110.45	18.145	104.8	107	125.15
8	14.001	0.84626	6.0888	117.01	19.198	104.97	107	126.2
9	16.001	0.97241	6.0965	122.75	20.111	105.09	107	127.11
10	18.004	1.088	6.1037	128.17	20.974	105.16	107	127.97
11	20.004	1.2247	6.1121	133.48	21.809	105.22	107	128.81
12	22.003	1.3479	6.1198	138.25	22.56	105.23	107	129.56
13	24.001	1.4823	6.1281	142.88	23.28	105.23	107	130.28
14	26.004	1.6114	6.1361	147.38	23.98	105.19	107	130.98
15	28.003	1.7406	6.1442	151.48	24.613	105.14	107	131.61
16	30.002	1.8712	6.1524	155.33	25.204	105.09	107	132.2
17	32.004	1.9831	6.1594	158.84	25.743	105.04	107	132.74
18	34	2.1183	6.1679	162.33	26.269	104.95	107	133.27
19	36.001	2.2354	6.1753	165.66	26.774	104.86	107	133.77
20	38.004	2.3571	6.183	168.62	27.216	104.77	107	134.22
21	40.003	2.4719	6.1903	171.64	27.67	104.67	107	134.67
22	42	2.5951	6.1981	174.35	28.07	104.58	107	135.07
23	44	2.7137	6.2057	176.88	28.44	104.48	107	135.44
24	46	2.8339	6.2133	179.37	28.804	104.37	107	135.8
25	48.003	2.96	6.2214	181.87	29.165	104.27	107	136.16
26	50.002	3.0742	6.2287	184.28	29.514	104.16	107	136.51
27	52.001	3.1996	6.2368	186.65	29.854	104.06	107	136.85
28	54.001	3.3317	6.2453	188.81	30.155	103.95	107	137.16
29	56.003	3.4579	6.2535	190.87	30.443	103.85	107	137.44
30	58.004	3.5795	6.2614	192.81	30.712	103.74	107	137.71
31	60.003	3.6907	6.2686	194.66	30.969	103.63	107	137.97
32	62.002	3.8206	6.2771	196.67	31.244	103.52	107	138.24
33	64.001	3.9467	6.2853	198.39	31.475	103.42	107	138.47
34	66	4.0691	6.2933	200.12	31.706	103.31	107	138.71
35	68.004	4.1968	6.3017	201.88	31.94	103.22	107	138.94
36	70.002	4.3244	6.3101	203.48	32.148	103.11	107	139.15
37	72.002	4.4543	6.3187	205.33	32.394	103.01	107	139.39
38	74.002	4.5797	6.327	207.09	32.627	102.92	107	139.63
39	76.001	4.7141	6.336	208.97	32.875	102.81	107	139.87
40	78.003	4.8335	6.3439	210.82	33.122	102.71	107	140.12
41	80.004	4.9507	6.3517	212.27	33.307	102.62	107	140.31
42	82.003	5.0828	6.3606	214.02	33.534	102.51	107	140.53
43	84.004	5.2022	6.3686	215.72	33.755	102.41	107	140.76
44	86.004	5.3306	6.3772	217.01	33.91	102.32	107	140.91
45	88.001	5.447	6.3851	218.92	34.165	102.22	107	141.16
46	90.003	5.5746	6.3937	220.47	34.357	102.12	107	141.36
47	92.003	5.6895	6.4015	221.88	34.534	102.03	107	141.53
48	94.002	5.8157	6.4101	223.58	34.749	101.93	107	141.75
49	96.003	5.9246	6.4175	224.81	34.899	101.84	107	141.9
50	98.002	6.0567	6.4265	226.29	35.077	101.75	107	142.08
51	100	6.1761	6.4347	227.65	35.241	101.65	107	142.24
52	102	6.2993	6.4431	228.76	35.364	101.55	107	142.36

54	106	6.5508	6.4605	231.07	35.621	101.36	107	142.62
55	108	6.671	6.4688	232.15	35.74	101.26	107	142.74
56	110	6.7911	6.4771	233.23	35.858	101.17	107	142.86
57	112	6.9165	6.4859	234.31	35.973	101.08	107	142.97
58	114	7.0442	6.4948	235.23	36.063	100.99	107	143.06
59	116	7.1718	6.5037	236.03	36.134	100.9	107	143.13
60	118	7.2927	6.5122	236.99	36.231	100.81	107	143.23
61	120	7.4113	6.5205	237.97	36.333	100.72	107	143.33
62	122	7.5488	6.5302	238.87	36.413	100.63	107	143.41
63	124	7.6621	6.5382	240.1	36.555	100.55	107	143.55
64	126	7.8018	6.5481	241.27	36.675	100.46	107	143.68
65	128	7.925	6.5569	242.2	36.765	100.37	107	143.76
66	130	8.0488	6.5657	243.52	36.914	100.29	107	143.91
67	132	8.1773	6.5749	244.66	37.033	100.21	107	144.03
68	134	8.3057	6.5841	245.77	37.147	100.12	107	144.15
69	136	8.4198	6.5923	247.07	37.295	100.04	107	144.3
70	138	8.5437	6.6013	248.15	37.405	99.948	107	144.41
71	140	8.6691	6.6103	249.35	37.533	99.875	107	144.53
72	142	8.7892	6.619	250.43	37.644	99.794	107	144.64
73	144	8.9154	6.6282	251.35	37.729	99.704	107	144.73
74	146	9.031	6.6366	252.4	37.837	99.631	107	144.84
75	148	9.1459	6.645	253.48	37.949	99.55	107	144.95
76	150	9.2773	6.6546	254.53	38.048	99.469	107	145.05
77	152	9.3967	6.6634	255.45	38.135	99.388	107	145.13
78	154	9.5176	6.6723	256.28	38.206	99.307	107	145.21
79	156	9.643	6.6816	257.09	38.27	99.234	107	145.27
80	158	9.7669	6.6907	257.92	38.339	99.153	107	145.34
81	160	9.8818	6.6993	258.84	38.426	99.072	107	145.43
82	162	10.006	6.7085	259.74	38.504	98.991	107	145.5
83	164	10.134	6.7181	260.38	38.543	98.918	107	145.54
84	166	10.265	6.7279	261.06	38.584	98.829	107	145.58
85	168	10.381	6.7366	261.74	38.633	98.748	107	145.63
86	170	10.506	6.746	262.48	38.686	98.658	107	145.69
87	172	10.634	6.7557	263.34	38.756	98.577	107	145.76
88	174	10.76	6.7652	264.05	38.803	98.496	107	145.8
89	176	10.888	6.7749	264.67	38.836	98.407	107	145.84
90	178	11.011	6.7843	265.59	38.916	98.326	107	145.92
91	180	11.128	6.7932	266.33	38.971	98.245	107	145.97
92	182	11.254	6.8029	267.29	39.054	98.164	107	146.05
93	184	11.375	6.8122	268.28	39.143	98.091	107	146.14
94	186	11.507	6.8223	269.23	39.222	98.026	107	146.22
95	188	11.631	6.8319	270.16	39.3	97.945	107	146.3
96	190	11.755	6.8415	270.96	39.359	97.872	107	146.36
97	192	11.872	6.8506	271.85	39.435	97.807	107	146.43
98	194	11.996	6.8602	272.99	39.543	97.742	107	146.54
99	196	12.124	6.8702	273.82	39.604	97.669	107	146.6
00	198	12.246	6.8798	274.9	39.703	97.596	107	146.7
01	200	12.374	6.8898	275.77	39.768	97.523	107	146.77
02	202	12.492	6.8991	276.38	39.801	97.442	107	146.8
03	204	12.617	6.909	277.37	39.885	97.377	107	146.88
04	206	12.745	6.9191	278.08	39.926	97.296	107	146.93
05	208	12.861	6.9283	278.73	39.964	97.231	107	146.96
06	210	12.991	6.9387	279.56	40.022	97.159	107	147.02
07	212	13.111	6.9483	280.11	40.044	97.077	107	147.04
08	214	13.23	6.9578	280.61	40.057	96.996	107	147.06
09	216	13.352	6.9676	281.41	40.114	96.915	107	147.11
10	218	13.479	6.9778	281.81	40.11	96.834	107	147.11
11	220	13.608	6.9882	282.52	40.149	96.761	107	147.15
12	222	13.733	6.9984	283.26	40.194	96.68	107	147.19
13	224	13.856	7.0083	283.81	40.213	96.599	107	147.21
14	226	13.976	7.0182	284.52	40.255	96.518	107	147.26
15	228	14.097	7.028	285.14	40.285	96.437	107	147.28
16	230	14.226	7.0386	285.75	40.309	96.356	107	147.31
17	232	14.349	7.0487	286.93	40.415	96.283	107	147.41
18	234	14.475	7.0591	287.57	40.444	96.21	107	147.44
19	236	14.599	7.0693	288.5	40.514	96.137	107	147.51
20	238	14.72	7.0793	289.33	40.572	96.064	107	147.57
21	240	14.85	7.0902	290.07	40.611	95.983	107	147.61
22	242	14.974	7.1005	290.93	40.672	95.902	107	147.67
23	244	15.088	7.11	291.86	40.745	95.829	107	147.74
24	246	15.21	7.1203	292.84	40.822	95.748	107	147.82
25	248	15.333	7.1306	293.77	40.89	95.675	107	147.89

27	252	15.578	7.1513	295.22	40.97	95.521	107	147.97
28	254	15.705	7.1621	295.86	40.996	95.456	107	148
29	256	15.825	7.1723	296.48	41.021	95.375	107	148.02
30	258	15.951	7.1831	297.38	41.081	95.31	107	148.08
31	260	16.076	7.1937	298.08	41.117	95.237	107	148.12
32	262	16.199	7.2043	298.7	41.139	95.164	107	148.14
33	264	16.321	7.2148	299.38	41.171	95.091	107	148.17
34	266	16.445	7.2255	299.81	41.167	95.018	107	148.17
35	268	16.584	7.2375	300.46	41.186	94.937	107	148.19
36	270	16.709	7.2484	301.17	41.219	94.872	107	148.22
37	272	16.826	7.2586	301.75	41.24	94.807	107	148.24
38	274	16.945	7.269	302.09	41.225	94.726	107	148.23
39	276	17.072	7.2801	302.58	41.227	94.661	107	148.23
40	278	17.2	7.2914	303.14	41.237	94.596	107	148.24
41	280	17.322	7.3022	303.69	41.25	94.523	107	148.25
42	282	17.452	7.3136	304.25	41.259	94.45	107	148.26
43	284	17.574	7.3245	305.14	41.317	94.386	107	148.32
44	286	17.696	7.3353	305.79	41.342	94.304	107	148.34
45	288	17.82	7.3463	306.41	41.361	94.232	107	148.36
46	288.9	17.878	7.3516	306.81	41.385	94.199	107	148.39

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ng No.: B-301
le No.: 19-278
No.: 1

Location: TX
Tested By: SKK
Test Date: 3/21/19
Sample Type: CORE

Project No.: 19-278
Checked By: SKK
Depth: 4-6'
Elevation: N/A

Description:
rks:

imen Height: 6.12 in
imen Area: 6.00 in^2
imen Volume: 601.71 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.75

	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	107	107	0	0.000	6.9064	6.9064	1.000	6.9064	0
2	0.11	113.73	107	0.99729	0.148	12.644	5.9091	2.140	9.2766	3.3674
3	0.24	118.3	107	2.5054	0.222	15.703	4.401	3.568	10.052	5.6511
4	0.36	120.78	107	3.4702	0.252	17.215	3.4362	5.010	10.326	6.8896
5	0.48	122.58	107	4.0702	0.261	18.414	2.8362	6.493	10.625	7.7889
6	0.60	123.98	107	4.4513	0.262	19.438	2.4551	7.917	10.946	8.4912
7	0.72	125.15	107	4.7027	0.259	20.349	2.2037	9.234	11.276	9.0726
8	0.85	126.2	107	4.881	0.254	21.223	2.0254	10.479	11.624	9.599
9	0.97	127.11	107	4.9945	0.248	22.023	1.9118	11.519	11.967	10.056
10	1.09	127.97	107	5.0675	0.242	22.813	1.8389	12.406	12.326	10.487
11	1.22	128.81	107	5.1243	0.235	23.591	1.7821	13.238	12.687	10.905
12	1.35 -PP	129.56	107	5.1405 - Peak PP	0.228	24.326	1.7659 = 22.56	13.775	13.046	11.28
13	1.48	130.28	107	5.1324	0.220	25.054	1.774	14.123	13.414	11.64
14	1.61 -SR	130.98	107	5.0999 -S10	0.213	25.787	1.8064 = 23.9%	14.275 - Max SR	13.797	11.99
15	1.74	131.61	107	5.0513	0.205	26.468	1.8551	14.268	14.162	12.307
16	1.87	132.2	107	4.9945	0.198	27.115	1.9118	14.183	14.514	12.602
17	1.98	132.74	107	4.9459	0.192	27.703	1.9605	14.131	14.832	12.871
18	2.12	133.27	107	4.8567	0.185	28.319	2.0497	13.816	15.184	13.134
19	2.24	133.77	107	4.7675	0.178	28.913	2.1389	13.518	15.526	13.387
20	2.36	134.22	107	4.6783	0.172	29.444	2.2281	13.215	15.836	13.608
21	2.47	134.67	107	4.581	0.166	29.995	2.3254	12.899	16.16	13.835
22	2.60	135.07	107	4.4837	0.160	30.492	2.4226	12.586	16.457	14.035
23	2.71	135.44	107	4.3864	0.154	30.96	2.5199	12.286	16.74	14.22
24	2.83	135.8	107	4.281	0.149	31.429	2.6254	11.971	17.027	14.402
25	2.96	136.16	107	4.1756	0.143	31.896	2.7308	11.680	17.313	14.582
26	3.07	136.51	107	4.0702	0.138	32.35	2.8362	11.406	17.593	14.757
27	3.20	136.85	107	3.9648	0.133	32.795	2.9416	11.149	17.868	14.927
28	3.33	137.16	107	3.8594	0.128	33.202	3.047	10.897	18.125	15.078
29	3.46	137.44	107	3.754	0.123	33.596	3.1524	10.657	18.374	15.222
30	3.58	137.71	107	3.6486	0.119	33.97	3.2578	10.427	18.614	15.356
31	3.69	137.97	107	3.5351	0.114	34.341	3.3713	10.186	18.856	15.485
32	3.82	138.24	107	3.4297	0.110	34.721	3.4767	9.987	19.099	15.622
33	3.95	138.47	107	3.3243	0.106	35.057	3.5821	9.787	19.319	15.737
34	4.07	138.71	107	3.2189	0.102	35.394	3.6875	9.598	19.541	15.853
35	4.20	138.94	107	3.1297	0.098	35.716	3.7767	9.457	19.747	15.97
36	4.32	139.15	107	3.0162	0.094	36.039	3.8902	9.264	19.964	16.074
37	4.45	139.39	107	2.9189	0.090	36.382	3.9875	9.124	20.185	16.197
38	4.58	139.63	107	2.8216	0.086	36.712	4.0848	8.987	20.398	16.313
39	4.71	139.87	107	2.7162	0.083	37.065	4.1902	8.846	20.628	16.437
40	4.83	140.12	107	2.6189	0.079	37.41	4.2875	8.725	20.849	16.561
41	4.95	140.31	107	2.5216	0.076	37.692	4.3848	8.596	21.038	16.653
42	5.08	140.53	107	2.4162	0.072	38.024	4.4902	8.468	21.257	16.767
43	5.20	140.76	107	2.3189	0.069	38.343	4.5875	8.358	21.465	16.878
44	5.33	140.91	107	2.2216	0.066	38.594	4.6848	8.238	21.64	16.955
45	5.45	141.16	107	2.1243	0.062	38.947	4.7821	8.144	21.864	17.082
46	5.57	141.36	107	2.027	0.059	39.236	4.8794	8.041	22.058	17.178
47	5.69	141.53	107	1.9378	0.056	39.502	4.9686	7.950	22.236	17.267
48	5.82	141.75	107	1.8405	0.053	39.815	5.0659	7.860	22.441	17.375
49	5.92	141.9	107	1.7432	0.050	40.062	5.1632	7.759	22.613	17.449
50	6.06	142.08	107	1.654	0.047	40.33	5.2524	7.678	22.791	17.539
51	6.18	142.24	107	1.5567	0.044	40.59	5.3496	7.587	22.97	17.62

53	6.43	142.5	107	1.3621	0.038	41.044	5.5442	7.403	23.294	17.75
54	6.55	142.62	107	1.2649	0.036	41.263	5.6415	7.314	23.452	17.811
55	6.67	142.74	107	1.1676	0.033	41.478	5.7388	7.228	23.609	17.87
56	6.79	142.86	107	1.0784	0.030	41.686	5.828	7.153	23.757	17.929
57	6.92	142.97	107	0.98918	0.027	41.89	5.9172	7.079	23.904	17.986
58	7.04	143.06	107	0.89188	0.025	42.078	6.0145	6.996	24.046	18.032
59	7.17	143.13	107	0.8108	0.022	42.23	6.0956	6.928	24.163	18.067
60	7.29	143.23	107	0.71351	0.020	42.424	6.1929	6.850	24.308	18.116
61	7.41	143.33	107	0.62432	0.017	42.615	6.2821	6.784	24.449	18.167
62	7.55	143.41	107	0.53513	0.015	42.785	6.3713	6.715	24.578	18.207
63	7.66	143.55	107	0.45405	0.012	43.007	6.4523	6.665	24.73	18.277
64	7.80	143.68	107	0.36486	0.010	43.217	6.5415	6.607	24.879	18.338
65	7.92	143.76	107	0.27567	0.007	43.395	6.6307	6.545	25.013	18.382
66	8.05	143.91	107	0.19459	0.005	43.626	6.7118	6.500	25.169	18.457
67	8.18	144.03	107	0.11351	0.003	43.826	6.7929	6.452	25.31	18.517
68	8.31	144.15	107	0.024324	0.001	44.03	6.8821	6.398	25.456	18.574
69	8.42	144.3	107	-0.056756	-0.002	44.258	6.9631	6.356	25.611	18.648
70	8.54	144.41	107	-0.14594	-0.004	44.458	7.0523	6.304	25.755	18.703
71	8.67	144.53	107	-0.21892	-0.006	44.659	7.1253	6.268	25.892	18.767
72	8.79	144.64	107	-0.3	-0.008	44.851	7.2064	6.224	26.029	18.822
73	8.92	144.73	107	-0.38919	-0.010	45.025	7.2956	6.171	26.16	18.865
74	9.03	144.84	107	-0.46216	-0.012	45.205	7.3685	6.135	26.287	18.918
75	9.15	144.95	107	-0.54324	-0.014	45.398	7.4496	6.094	26.424	18.974
76	9.28	145.05	107	-0.62432	-0.016	45.579	7.5307	6.052	26.555	19.024
77	9.40	145.13	107	-0.7054	-0.018	45.746	7.6118	6.010	26.679	19.067
78	9.52	145.21	107	-0.78648	-0.021	45.899	7.6929	5.966	26.796	19.103
79	9.64	145.27	107	-0.85945	-0.022	46.036	7.7658	5.928	26.901	19.135
80	9.77	145.34	107	-0.94053	-0.025	46.186	7.8469	5.886	27.017	19.17
81	9.88	145.43	107	-1.0216	-0.027	46.354	7.928	5.847	27.141	19.213
82	10.01	145.5	107	-1.1027	-0.029	46.513	8.0091	5.808	27.261	19.252
83	10.13	145.54	107	-1.1757	-0.031	46.625	8.0821	5.769	27.353	19.271
84	10.27	145.58	107	-1.2649	-0.033	46.756	8.1712	5.722	27.463	19.292
85	10.38	145.63	107	-1.3459	-0.035	46.885	8.2523	5.681	27.569	19.316
86	10.51	145.69	107	-1.4351	-0.037	47.028	8.3415	5.638	27.685	19.343
87	10.63	145.76	107	-1.5162	-0.039	47.178	8.4226	5.601	27.8	19.378
88	10.76	145.8	107	-1.5973	-0.041	47.307	8.5037	5.563	27.905	19.402
89	10.89	145.84	107	-1.6865	-0.043	47.429	8.5929	5.520	28.011	19.418
90	11.01	145.92	107	-1.7676	-0.045	47.59	8.6739	5.487	28.132	19.458
91	11.13	145.97	107	-1.8486	-0.047	47.726	8.755	5.451	28.241	19.486
92	11.25	146.05	107	-1.9297	-0.049	47.89	8.8361	5.420	28.363	19.527
93	11.38	146.14	107	-2.0027	-0.051	48.052	8.9091	5.394	28.48	19.571
94	11.51	146.22	107	-2.0675	-0.053	48.196	8.9739	5.371	28.585	19.611
95	11.63	146.3	107	-2.1486	-0.055	48.355	9.055	5.340	28.705	19.65
96	11.76	146.36	107	-2.2216	-0.056	48.487	9.128	5.312	28.807	19.679
97	11.87	146.43	107	-2.2865	-0.058	48.628	9.1929	5.290	28.91	19.717
98	12.00	146.54	107	-2.3513	-0.059	48.801	9.2577	5.271	29.029	19.772
99	12.12	146.6	107	-2.4243	-0.061	48.935	9.3307	5.244	29.133	19.802
100	12.25	146.7	107	-2.4973	-0.063	49.107	9.4037	5.222	29.255	19.852
101	12.37	146.77	107	-2.5702	-0.065	49.245	9.4766	5.196	29.361	19.884
102	12.49	146.8	107	-2.6513	-0.067	49.359	9.5577	5.164	29.458	19.901
103	12.62	146.88	107	-2.7162	-0.068	49.507	9.6226	5.145	29.565	19.942
104	12.74	146.93	107	-2.7973	-0.070	49.63	9.7037	5.115	29.667	19.963
105	12.86	146.96	107	-2.8621	-0.072	49.733	9.7685	5.091	29.751	19.982
106	12.99	147.02	107	-2.9351	-0.073	49.863	9.8415	5.067	29.852	20.011
107	13.11	147.04	107	-3.0162	-0.075	49.966	9.9226	5.036	29.944	20.022
108	13.23	147.06	107	-3.0973	-0.077	50.061	10.004	5.004	30.032	20.029
109	13.35	147.11	107	-3.1783	-0.079	50.199	10.085	4.978	30.142	20.057
110	13.48	147.11	107	-3.2594	-0.081	50.276	10.166	4.946	30.221	20.055
111	13.61	147.15	107	-3.3324	-0.083	50.388	10.239	4.921	30.313	20.074
112	13.73	147.19	107	-3.4135	-0.085	50.514	10.32	4.895	30.417	20.097
113	13.86	147.21	107	-3.4946	-0.087	50.614	10.401	4.866	30.508	20.107
114	13.98	147.26	107	-3.5756	-0.089	50.737	10.482	4.840	30.61	20.128
115	14.10	147.28	107	-3.6567	-0.091	50.848	10.563	4.814	30.705	20.142
116	14.23	147.31	107	-3.7378	-0.093	50.953	10.644	4.787	30.798	20.154
117	14.35	147.41	107	-3.8108	-0.094	51.132	10.717	4.771	30.925	20.207
118	14.48	147.44	107	-3.8837	-0.096	51.234	10.79	4.748	31.012	20.222
119	14.60	147.51	107	-3.9567	-0.098	51.377	10.863	4.730	31.12	20.257
120	14.72	147.57	107	-4.0297	-0.099	51.508	10.936	4.710	31.222	20.286
121	14.85	147.61	107	-4.1108	-0.101	51.629	11.017	4.686	31.323	20.306
122	14.97	147.67	107	-4.1919	-0.103	51.77	11.098	4.665	31.434	20.336
123	15.09	147.74	107	-4.2648	-0.105	51.916	11.171	4.647	31.544	20.372
124	15.21	147.82	107	-4.3459	-0.106	52.075	11.252	4.628	31.663	20.411

26	15.45	147.92	107	-4.4918	-0.110	52.315	11.398	4.590	31.857	20.458
27	15.58	147.97	107	-4.5729	-0.112	52.449	11.479	4.569	31.964	20.485
28	15.70	148	107	-4.6378	-0.113	52.54	11.544	4.551	32.042	20.498
29	15.83	148.02	107	-4.7189	-0.115	52.646	11.625	4.529	32.136	20.511
30	15.95	148.08	107	-4.7837	-0.116	52.772	11.69	4.514	32.231	20.541
31	16.08	148.12	107	-4.8567	-0.118	52.88	11.763	4.495	32.321	20.558
32	16.20	148.14	107	-4.9297	-0.120	52.975	11.836	4.476	32.406	20.57
33	16.32	148.17	107	-5.0027	-0.122	53.08	11.909	4.457	32.494	20.585
34	16.45	148.17	107	-5.0756	-0.123	53.149	11.982	4.436	32.566	20.584
35	16.58	148.19	107	-5.1567	-0.125	53.249	12.063	4.414	32.656	20.593
36	16.71	148.22	107	-5.2216	-0.127	53.347	12.128	4.399	32.738	20.61
37	16.83	148.24	107	-5.2864	-0.128	53.432	12.193	4.382	32.813	20.62
38	16.94	148.23	107	-5.3675	-0.130	53.499	12.274	4.359	32.886	20.613
39	17.07	148.23	107	-5.4324	-0.132	53.566	12.339	4.341	32.952	20.614
40	17.20	148.24	107	-5.4972	-0.133	53.641	12.404	4.325	33.022	20.619
41	17.32	148.25	107	-5.5702	-0.135	53.726	12.477	4.306	33.101	20.625
42	17.45	148.26	107	-5.6432	-0.137	53.808	12.55	4.288	33.179	20.629
43	17.57	148.32	107	-5.7081	-0.138	53.932	12.614	4.275	33.273	20.659
44	17.70	148.34	107	-5.7891	-0.140	54.038	12.696	4.256	33.367	20.671
45	17.82	148.36	107	-5.8621	-0.142	54.13	12.768	4.239	33.449	20.681
46	17.88	148.39	107	-5.8945	-0.142	54.186	12.801	4.233	33.494	20.693

TRIAXIAL TEST

ject: PLUM CREEK SITE 21
ing No.: B-301
ple No.: 19-279
t No.: 2

Location: TX
Tested By: SKK
Test Date: 3/21/19
Sample Type: CORE

Project No.: 19-279
Checked By: SKK
Depth: 6-8'
Elevation: N/A

l Description:
arks:

cimen Height: 6.19 in
cimen Area: 5.69 in^2
cimen Volume: 577.71 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

uid Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.73

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
tainer ID		---		
Container + Wet Soil, gm	1168.3	1168.3	1200.8	1376.4
Container + Dry Soil, gm	1001.5	1001.5	1001.5	1177.1
Container, gm	0	---	0	175.6
Dry Soil, gm	1001.5	1001.5	1001.5	1001.5
er Content, %	16.66	16.66	19.90	19.90
l Ratio	---	0.57	0.54	---
ree of Saturation, %	---	79.13	100.00	---
Unit Weight, pcf	---	108.22	110.43	---

tial

of Initialization

of Consolidation/A

of Saturation

of Consolidation/B

of Shear

ailure

TRIAXIAL TEST

ject: PLUM CREEK SITE 21
ing No.: B-301
ple No.: 19-279
: No.: 2

Location: TX
Tested By: SKK
Test Date: 3/21/19
Sample Type: CORE

Project No.: 19-279
Checked By: SKK
Depth: 6-8'
Elevation: N/A

l Description:
arks:

imen Height: 6.19 in
imen Area: 5.69 in^2
imen Volume: 577.71 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

uid Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.73

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	5.5798	0	0	99.985	114	114
2	2.0002	0.12935	5.587	32.27	5.7727	101.98	114	119.77
3	4.001	0.24804	5.5936	45.209	8.076	103.29	114	122.08
4	6.0018	0.38195	5.6012	54.263	9.6783	104.27	114	123.68
5	8.0018	0.50141	5.6079	60.503	10.776	104.97	114	124.78
6	10.004	0.62847	5.6151	66.896	11.898	105.58	114	125.9
7	12.004	0.76086	5.6225	72.188	12.82	106.1	114	126.82
8	14	0.89249	5.63	76.99	13.653	106.54	114	127.65
9	16.004	1.018	5.6372	81.119	14.365	106.91	114	128.36
10	18.003	1.1367	5.6439	82.557	14.599	107.06	114	128.6
11	20.003	1.2714	5.6516	86.931	15.35	107.37	114	129.35
12	22.002	1.4068	5.6594	90.755	16.001	107.64	114	130
13	24.004	1.524	5.6661	93.997	16.552	107.86	114	130.55
14	26.001	1.6503	5.6734	96.903	17.04	108.03	114	131.04
15	28	1.7751	5.6806	99.594	17.489	108.15	114	131.49
16	30.004	1.9082	5.6883	102.1	17.903	108.27	114	131.9
17	32.003	2.0315	5.6955	104.37	18.275	108.35	114	132.27
18	34.002	2.157	5.7028	106.69	18.656	108.43	114	132.66
19	36.004	2.2841	5.7102	108.77	18.993	108.46	114	132.99
20	38.003	2.418	5.718	110.73	19.306	108.49	114	133.31
21	40.001	2.5405	5.7252	112.41	19.572	108.5	114	133.57
22	42.001	2.6661	5.7326	114.09	19.838	108.49	114	133.84
23	44.003	2.7931	5.7401	115.74	20.096	108.48	114	134.1
24	46.002	2.9187	5.7475	117.27	20.333	108.47	114	134.33
25	48.001	3.0412	5.7548	118.83	20.576	108.44	114	134.58
26	50.004	3.1774	5.7629	120.39	20.814	108.4	114	134.81
27	52.004	3.2968	5.77	121.83	21.035	108.36	114	135.04
28	54	3.417	5.7772	123.3	21.26	108.32	114	135.26
29	56.001	3.5509	5.7852	124.58	21.449	108.27	114	135.45
30	58.001	3.6704	5.7924	125.96	21.658	108.21	114	135.66
31	60.002	3.8081	5.8007	127.37	21.866	108.15	114	135.87
32	62.001	3.926	5.8078	128.56	22.042	108.09	114	136.04
33	64	4.0485	5.8152	129.94	22.247	108.03	114	136.25
34	66	4.1764	5.823	131.28	22.446	107.97	114	136.45
35	68	4.3019	5.8306	132.48	22.618	107.91	114	136.62
36	70.004	4.4381	5.8389	133.42	22.745	107.84	114	136.74
37	72.001	4.5705	5.847	134.43	22.883	107.77	114	136.88
38	74.001	4.6892	5.8543	135.41	23.019	107.7	114	137.02
39	76.003	4.8246	5.8626	136.27	23.129	107.63	114	137.13
40	78.001	4.9502	5.8704	137.19	23.252	107.56	114	137.25
41	80.002	5.0742	5.878	138.17	23.385	107.49	114	137.39
42	82.001	5.2081	5.8863	138.87	23.468	107.42	114	137.47
43	84	5.3382	5.8944	139.63	23.563	107.34	114	137.56
44	86.001	5.4714	5.9027	140.28	23.635	107.27	114	137.64
45	88.004	5.5916	5.9102	140.92	23.711	107.19	114	137.71
46	90.004	5.7308	5.919	141.62	23.792	107.11	114	137.79
47	92.001	5.8586	5.927	142.26	23.865	107.04	114	137.86
48	94.001	5.9865	5.9351	143.06	23.963	106.97	114	137.96
49	96.002	6.1074	5.9427	143.64	24.028	106.89	114	138.03
50	98.002	6.2223	5.95	144.22	24.093	106.81	114	138.09
51	100	6.3547	5.9584	144.96	24.179	106.74	114	138.18
52	102	6.4833	5.9666	145.63	24.256	106.67	114	138.26

54	106	6.7397	5.983	147.13	24.434	106.52	114	138.43
55	108	6.8653	5.9911	148.02	24.546	106.44	114	138.55
56	110	6.9893	5.9991	148.78	24.638	106.37	114	138.64
57	112	7.1247	6.0078	149.36	24.696	106.29	114	138.7
58	114	7.2411	6.0153	150.03	24.774	106.23	114	138.77
59	116	7.3689	6.0236	150.77	24.859	106.16	114	138.86
60	118	7.4975	6.032	151.44	24.933	106.08	114	138.93
61	120	7.6216	6.0401	152.39	25.053	106.02	114	139.05
62	122	7.7425	6.048	152.94	25.109	105.95	114	139.11
63	124	7.8734	6.0566	153.55	25.171	105.87	114	139.17
64	126	8.0027	6.0651	154.04	25.214	105.81	114	139.21
65	128	8.1374	6.074	154.68	25.279	105.74	114	139.28
66	130	8.2607	6.0822	155.26	25.338	105.66	114	139.34
67	132	8.3862	6.0905	155.75	25.381	105.6	114	139.38
68	134	8.5194	6.0994	156.34	25.436	105.54	114	139.44
69	136	8.6495	6.1081	156.79	25.472	105.47	114	139.47
70	138	8.7796	6.1168	157.19	25.498	105.4	114	139.5
71	140	8.9013	6.125	157.68	25.541	105.33	114	139.54
72	142	9.033	6.1338	158.48	25.631	105.27	114	139.63
73	144	9.1562	6.1422	159.33	25.733	105.21	114	139.73
74	146	9.2878	6.1511	159.88	25.782	105.15	114	139.78
75	148	9.4134	6.1596	160.28	25.808	105.09	114	139.81
76	150	9.5519	6.169	160.98	25.88	105.03	114	139.88
77	152	9.6698	6.1771	161.47	25.922	104.97	114	139.92
78	154	9.7915	6.1854	161.9	25.954	104.9	114	139.95
79	156	9.9201	6.1942	162.54	26.018	104.84	114	140.02
80	158	10.043	6.2027	163.25	26.093	104.77	114	140.09
81	160	10.178	6.212	163.92	26.159	104.71	114	140.16
82	162	10.299	6.2204	164.5	26.215	104.65	114	140.21
83	164	10.434	6.2298	165.11	26.27	104.6	114	140.27
84	166	10.562	6.2387	165.7	26.323	104.54	114	140.32
85	168	10.686	6.2473	166.15	26.357	104.48	114	140.36
86	170	10.805	6.2557	166.7	26.407	104.42	114	140.41
87	172	10.945	6.2655	167.22	26.446	104.36	114	140.45
88	174	11.068	6.2742	167.68	26.48	104.31	114	140.48
89	176	11.188	6.2826	168.17	26.519	104.25	114	140.52
90	178	11.315	6.2917	168.6	26.547	104.19	114	140.55
91	180	11.448	6.3011	168.97	26.562	104.13	114	140.56
92	182	11.576	6.3102	169.3	26.574	104.07	114	140.57
93	184	11.697	6.3189	169.46	26.559	104.02	114	140.56
94	186	11.827	6.3282	169.86	26.58	103.97	114	140.58
95	188	11.958	6.3376	170.22	26.596	103.91	114	140.6
96	190	12.09	6.3471	170.47	26.591	103.86	114	140.59
97	192	12.214	6.3561	170.93	26.623	103.81	114	140.62
98	194	12.347	6.3657	171.26	26.633	103.75	114	140.63
99	196	12.473	6.3749	171.54	26.635	103.7	114	140.64
100	198	12.592	6.3836	171.75	26.63	103.64	114	140.63
101	200	12.719	6.3928	172	26.627	103.59	114	140.63
102	202	12.859	6.4031	172.36	26.638	103.54	114	140.64
103	204	12.983	6.4123	172.64	26.641	103.48	114	140.64
104	206	13.121	6.4225	173.16	26.676	103.43	114	140.68
105	208	13.232	6.4307	173.59	26.706	103.37	114	140.71
106	210	13.366	6.4406	174.14	26.748	103.33	114	140.75
107	212	13.501	6.4506	174.66	26.784	103.27	114	140.78
108	214	13.624	6.4599	175.24	26.833	103.22	114	140.83
109	216	13.741	6.4686	175.51	26.837	103.17	114	140.84
110	218	13.874	6.4786	175.91	26.854	103.11	114	140.85
111	220	13.995	6.4877	176.37	26.884	103.07	114	140.88
112	222	14.125	6.4976	176.95	26.93	103.02	114	140.93
113	224	14.242	6.5064	177.26	26.938	102.96	114	140.94
114	226	14.379	6.5168	177.72	26.963	102.92	114	140.96
115	228	14.504	6.5264	178.11	26.981	102.87	114	140.98
116	230	14.63	6.536	178.45	26.99	102.82	114	140.99
117	232	14.753	6.5454	178.7	26.986	102.77	114	140.99
118	234	14.885	6.5555	179.03	26.993	102.72	114	140.99
119	236	15.026	6.5665	179.28	26.982	102.68	114	140.98
120	238	15.148	6.5759	179.4	26.96	102.63	114	140.96
121	240	15.264	6.5849	179.83	26.985	102.58	114	140.99
122	242	15.398	6.5953	180.16	26.991	102.53	114	140.99
123	244	15.528	6.6054	180.22	26.956	102.48	114	140.96
124	246	15.653	6.6153	180.71	26.988	102.44	114	140.99
125	248	15.775	6.6248	180.9	26.974	102.39	114	140.97

127	252	16.036	6.6454	181.39	26.958	102.3	114	140.96
128	254	16.166	6.6557	181.63	26.951	102.26	114	140.95
129	256	16.289	6.6655	182.09	26.977	102.21	114	140.98
130	258	16.424	6.6763	182.49	26.991	102.17	114	140.99
131	260	16.544	6.6859	182.95	27.018	102.13	114	141.02
132	262	16.676	6.6965	183.65	27.078	102.09	114	141.08
133	264	16.798	6.7062	184.11	27.104	102.04	114	141.1
134	266	16.922	6.7163	184.6	27.134	101.99	114	141.13
135	268	17.046	6.7263	184.78	27.118	101.94	114	141.12
136	270	17.171	6.7365	184.97	27.102	101.9	114	141.1
137	272	17.289	6.7461	185.42	27.129	101.86	114	141.13
138	274	17.43	6.7576	185.85	27.143	101.82	114	141.14
139	276	17.555	6.7678	186.28	27.163	101.78	114	141.16
140	278	17.683	6.7784	186.74	27.185	101.74	114	141.19
141	280	17.819	6.7896	186.86	27.155	101.7	114	141.16
142	282	17.94	6.7996	187.01	27.135	101.66	114	141.14
143	284	18.07	6.8104	187.29	27.13	101.62	114	141.13
144	286	18.197	6.821	187.53	27.122	101.58	114	141.12
145	288	18.313	6.8307	187.81	27.121	101.54	114	141.12
146	288.56	18.362	6.8348	187.84	27.108	101.53	114	141.11

TRIAXIAL TEST

ject: PLUM CREEK SITE 21
ing No.: B-301
ple No.: 19-279
t No.: 2

Location: TX
Tested By: SKK
Test Date: 3/21/19
Sample Type: CORE

Project No.: 19-279
Checked By: SKK
Depth: 6-8'
Elevation: N/A

l Description:
arks:

cimen Height: 6.19 in
cimen Area: 5.69 in^2
cimen Volume: 577.71 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

uid Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.73

	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	114	114	0	0.000	14.015	14.015	1.000	14.015	0
2	0.13	119.77	114	1.9921	0.345	17.796	12.023	1.480	14.91	2.8864
3	0.25	122.08	114	3.3015	0.409	18.79	10.714	1.754	14.752	4.038
4	0.38	123.68	114	4.2815	0.442	19.412	9.7338	1.994	14.573	4.8392
5	0.50	124.78	114	4.9804	0.462	19.811	9.035	2.193	14.423	5.3882
6	0.63	125.9	114	5.5909	0.470	20.323	8.4245	2.412	14.374	5.949
7	0.76	126.82	114	6.113	0.477	20.722	7.9023	2.622	14.312	6.41
8	0.89	127.65	114	6.5548	0.480	21.113	7.4605	2.830	14.287	6.8264
9	1.02	128.36	114	6.9243	0.482	21.456	7.091	3.026	14.273	7.1825
10	1.14	128.6	114	7.0769	0.485	21.538	6.9384	3.104	14.238	7.2997
11	1.27	129.35	114	7.3902	0.481	21.975	6.6251	3.317	14.3	7.6751
12	1.41	130	114	7.6553	0.478	22.361	6.36	3.516	14.361	8.0007
13	1.52	130.55	114	7.8722	0.476	22.695	6.1432	3.694	14.419	8.2759
14	1.65	131.04	114	8.0409	0.472	23.014	5.9745	3.852	14.494	8.5198
15	1.78	131.49	114	8.1694	0.467	23.335	5.8459	3.992	14.59	8.7444
16	1.91	131.9	114	8.2819	0.463	23.636	5.7335	4.122	14.685	8.9514
17	2.03	132.27	114	8.3622	0.458	23.928	5.6532	4.233	14.79	9.1373
18	2.16	132.66	114	8.4425	0.453	24.229	5.5728	4.348	14.901	9.3279
19	2.28	132.99	114	8.4746	0.446	24.533	5.5407	4.428	15.037	9.4964
20	2.42	133.31	114	8.5068	0.441	24.814	5.5086	4.505	15.161	9.6529
21	2.54 - PP	133.57	114	8.5148 - Peak PP	0.435	25.073	5.5005 = 19.57	4.558	15.287	9.7862
22	2.67	133.84	114	8.5068	0.429	25.346	5.5086	4.601	15.427	9.9188
23	2.79	134.1	114	8.4987	0.423	25.613	5.5166	4.643	15.565	10.048
24	2.92	134.33	114	8.4827	0.417	25.866	5.5327	4.675	15.699	10.167
25	3.04	134.58	114	8.4505	0.411	26.141	5.5648	4.698	15.853	10.288
26	3.18	134.81	114	8.4184	0.404	26.411	5.5969	4.719	16.004	10.407
27	3.30	135.04	114	8.3782	0.398	26.672	5.6371	4.732	16.155	10.518
28	3.42 - SR	135.26	114	8.3381 -	0.392	26.937	5.6773 = 21.26	4.745 - Max SR	16.307	10.63
29	3.55	135.45	114	8.2819	0.386	27.183	5.7335	4.741	16.458	10.725
30	3.67	135.66	114	8.2256	0.380	27.447	5.7897	4.741	16.619	10.829
31	3.81	135.87	114	8.1694	0.374	27.712	5.8459	4.740	16.779	10.933
32	3.93	136.04	114	8.1051	0.368	27.952	5.9102	4.729	16.931	11.021
33	4.05	136.25	114	8.0409	0.361	28.222	5.9745	4.724	17.098	11.124
34	4.18	136.45	114	7.9846	0.356	28.477	6.0307	4.722	17.254	11.223
35	4.30	136.62	114	7.9204	0.350	28.713	6.095	4.711	17.404	11.309
36	4.44	136.74	114	7.8561	0.345	28.904	6.1592	4.693	17.532	11.372
37	4.57	136.88	114	7.7838	0.340	29.114	6.2315	4.672	17.673	11.441
38	4.69	137.02	114	7.7196	0.335	29.315	6.2958	4.656	17.805	11.509
39	4.82	137.13	114	7.6473	0.331	29.497	6.3681	4.632	17.933	11.564
40	4.95	137.25	114	7.575	0.326	29.692	6.4404	4.610	18.066	11.626
41	5.07	137.39	114	7.5027	0.321	29.898	6.5127	4.591	18.205	11.693
42	5.21	137.47	114	7.4304	0.317	30.053	6.585	4.564	18.319	11.734
43	5.34	137.56	114	7.3581	0.312	30.22	6.6573	4.539	18.439	11.781
44	5.47	137.64	114	7.2858	0.308	30.365	6.7296	4.512	18.547	11.818
45	5.59	137.71	114	7.2055	0.304	30.521	6.8099	4.482	18.665	11.856
46	5.73	137.79	114	7.1251	0.299	30.682	6.8902	4.453	18.786	11.896
47	5.86	137.86	114	7.0528	0.296	30.827	6.9625	4.428	18.895	11.932
48	5.99	137.96	114	6.9805	0.291	30.998	7.0348	4.406	19.017	11.982
49	6.11	138.03	114	6.9082	0.288	31.135	7.1071	4.381	19.121	12.014
50	6.22	138.09	114	6.8279	0.283	31.281	7.1874	4.352	19.234	12.047
51	6.35	138.18	114	6.7556	0.279	31.439	7.2597	4.331	19.349	12.09

53	6.60	138.34	114	6.611	0.272	31.749	7.4043	4.288	19.577	12.172
54	6.74	138.43	114	6.5387	0.268	31.91	7.4766	4.268	19.694	12.217
55	6.87	138.55	114	6.4584	0.263	32.103	7.5569	4.248	19.83	12.273
56	6.99	138.64	114	6.3861	0.259	32.267	7.6292	4.229	19.948	12.319
57	7.12	138.7	114	6.3058	0.255	32.405	7.7096	4.203	20.057	12.348
58	7.24	138.77	114	6.2415	0.252	32.548	7.7738	4.187	20.161	12.387
59	7.37	138.86	114	6.1772	0.248	32.697	7.8381	4.172	20.267	12.429
60	7.50	138.93	114	6.0969	0.245	32.851	7.9184	4.149	20.385	12.466
61	7.62	139.05	114	6.0327	0.241	33.036	7.9827	4.138	20.509	12.527
62	7.74	139.11	114	5.9604	0.237	33.164	8.055	4.117	20.609	12.554
63	7.87	139.17	114	5.8881	0.234	33.299	8.1273	4.097	20.713	12.586
64	8.00	139.21	114	5.8238	0.231	33.405	8.1915	4.078	20.798	12.607
65	8.14	139.28	114	5.7515	0.228	33.543	8.2638	4.059	20.904	12.64
66	8.26	139.34	114	5.6792	0.224	33.674	8.3361	4.040	21.005	12.669
67	8.39	139.38	114	5.6149	0.221	33.781	8.4004	4.021	21.091	12.691
68	8.52	139.44	114	5.5507	0.218	33.901	8.4646	4.005	21.183	12.718
69	8.65	139.47	114	5.4864	0.215	34.001	8.5289	3.987	21.265	12.736
70	8.78	139.5	114	5.4141	0.212	34.099	8.6012	3.964	21.35	12.749
71	8.90	139.54	114	5.3499	0.209	34.207	8.6655	3.947	21.436	12.771
72	9.03	139.63	114	5.2856	0.206	34.361	8.7297	3.936	21.545	12.815
73	9.16	139.73	114	5.2213	0.203	34.527	8.794	3.926	21.66	12.866
74	9.29	139.78	114	5.1651	0.200	34.632	8.8502	3.913	21.741	12.891
75	9.41	139.81	114	5.1008	0.198	34.723	8.9145	3.895	21.819	12.904
76	9.55	139.88	114	5.0446	0.195	34.85	8.9707	3.885	21.911	12.94
77	9.67	139.92	114	4.9804	0.192	34.957	9.035	3.869	21.996	12.961
78	9.79	139.95	114	4.9161	0.189	35.053	9.0992	3.852	22.076	12.977
79	9.92	140.02	114	4.8518	0.186	35.181	9.1635	3.839	22.172	13.009
80	10.04	140.09	114	4.7876	0.183	35.321	9.2278	3.828	22.274	13.046
81	10.18	140.16	114	4.7233	0.181	35.451	9.292	3.815	22.372	13.08
82	10.30	140.21	114	4.6671	0.178	35.563	9.3483	3.804	22.456	13.107
83	10.43	140.27	114	4.6108	0.176	35.675	9.4045	3.793	22.54	13.135
84	10.56	140.32	114	4.5546	0.173	35.784	9.4607	3.782	22.622	13.162
85	10.69	140.36	114	4.4904	0.170	35.882	9.525	3.767	22.704	13.179
86	10.80	140.41	114	4.4341	0.168	35.989	9.5812	3.756	22.785	13.204
87	10.94	140.45	114	4.3779	0.166	36.083	9.6374	3.744	22.86	13.223
88	11.07	140.48	114	4.3217	0.163	36.173	9.6937	3.732	22.933	13.24
89	11.19	140.52	114	4.2654	0.161	36.269	9.7499	3.720	23.01	13.26
90	11.31	140.55	114	4.2092	0.159	36.353	9.8061	3.707	23.079	13.273
91	11.45	140.56	114	4.1449	0.156	36.432	9.8704	3.691	23.151	13.281
92	11.58	140.57	114	4.0887	0.154	36.501	9.9266	3.677	23.214	13.287
93	11.70	140.56	114	4.0325	0.152	36.542	9.9829	3.660	23.262	13.28
94	11.83	140.58	114	3.9843	0.150	36.611	10.031	3.650	23.321	13.29
95	11.96	140.6	114	3.9281	0.148	36.683	10.087	3.637	23.385	13.298
96	12.09	140.59	114	3.8799	0.146	36.727	10.135	3.624	23.431	13.296
97	12.21	140.62	114	3.8236	0.144	36.815	10.192	3.612	23.503	13.312
98	12.35	140.63	114	3.7674	0.141	36.881	10.248	3.599	23.565	13.317
99	12.47	140.64	114	3.7112	0.139	36.939	10.304	3.585	23.622	13.318
100	12.59	140.63	114	3.6549	0.137	36.99	10.36	3.570	23.675	13.315
101	12.72	140.63	114	3.6067	0.135	37.035	10.409	3.558	23.722	13.313
102	12.86	140.64	114	3.5505	0.133	37.103	10.465	3.546	23.784	13.319
103	12.98	140.64	114	3.4943	0.131	37.162	10.521	3.532	23.841	13.32
104	13.12	140.68	114	3.4461	0.129	37.246	10.569	3.524	23.907	13.338
105	13.23	140.71	114	3.3899	0.127	37.332	10.625	3.513	23.979	13.353
106	13.37	140.75	114	3.3417	0.125	37.421	10.674	3.506	24.048	13.374
107	13.50	140.78	114	3.2854	0.123	37.514	10.73	3.496	24.122	13.392
108	13.62	140.83	114	3.2372	0.121	37.611	10.778	3.490	24.195	13.417
109	13.74	140.84	114	3.181	0.119	37.671	10.834	3.477	24.253	13.418
110	13.87	140.85	114	3.1248	0.116	37.745	10.891	3.466	24.318	13.427
111	14.00	140.88	114	3.0846	0.115	37.815	10.931	3.460	24.373	13.442
112	14.13	140.93	114	3.0364	0.113	37.909	10.979	3.453	24.444	13.465
113	14.24	140.94	114	2.9802	0.111	37.973	11.035	3.441	24.504	13.469
114	14.38	140.96	114	2.932	0.109	38.046	11.083	3.433	24.565	13.481
115	14.50	140.98	114	2.8838	0.107	38.113	11.132	3.424	24.622	13.491
116	14.63	140.99	114	2.8356	0.105	38.17	11.18	3.414	24.675	13.495
117	14.75	140.99	114	2.7874	0.103	38.214	11.228	3.403	24.721	13.493
118	14.88	140.99	114	2.7392	0.101	38.269	11.276	3.394	24.773	13.497
119	15.03	140.98	114	2.691	0.100	38.307	11.324	3.383	24.816	13.491
120	15.15	140.96	114	2.6428	0.098	38.332	11.373	3.371	24.852	13.48
121	15.26	140.99	114	2.5946	0.096	38.406	11.421	3.363	24.913	13.493
122	15.40	140.99	114	2.5464	0.094	38.46	11.469	3.353	24.965	13.496
123	15.53	140.96	114	2.4982	0.093	38.473	11.517	3.341	24.995	13.478
124	15.65	140.99	114	2.458	0.091	38.545	11.557	3.335	25.051	13.494

126	15.90	140.96	114	2.3617	0.088	38.616	11.654	3.314	25.135	13.481
127	16.04	140.96	114	2.3135	0.086	38.66	11.702	3.304	25.181	13.479
128	16.17	140.95	114	2.2733	0.084	38.693	11.742	3.295	25.217	13.475
129	16.29	140.98	114	2.2251	0.082	38.768	11.79	3.288	25.279	13.489
130	16.42	140.99	114	2.1849	0.081	38.821	11.83	3.281	25.326	13.495
131	16.54	141.02	114	2.1448	0.079	38.888	11.871	3.276	25.379	13.509
132	16.68	141.08	114	2.1046	0.078	38.988	11.911	3.273	25.449	13.539
133	16.80	141.1	114	2.0564	0.076	39.063	11.959	3.266	25.511	13.552
134	16.92	141.13	114	2.0082	0.074	39.141	12.007	3.260	25.574	13.567
135	17.05	141.12	114	1.96	0.072	39.173	12.055	3.249	25.614	13.559
136	17.17	141.1	114	1.9198	0.071	39.197	12.095	3.241	25.646	13.551
137	17.29	141.13	114	1.8797	0.069	39.264	12.136	3.235	25.7	13.564
138	17.43	141.14	114	1.8395	0.068	39.319	12.176	3.229	25.747	13.571
139	17.55	141.16	114	1.7994	0.066	39.378	12.216	3.224	25.797	13.581
140	17.68	141.19	114	1.7592	0.065	39.441	12.256	3.218	25.849	13.593
141	17.82	141.16	114	1.719	0.063	39.452	12.296	3.208	25.874	13.578
142	17.94	141.14	114	1.6789	0.062	39.472	12.336	3.200	25.904	13.568
143	18.07	141.13	114	1.6307	0.060	39.515	12.385	3.191	25.95	13.565
144	18.20	141.12	114	1.5905	0.059	39.546	12.425	3.183	25.986	13.561
145	18.31	141.12	114	1.5503	0.057	39.586	12.465	3.176	26.025	13.56
146	18.36	141.11	114	1.5423	0.057	39.581	12.473	3.173	26.027	13.554

TRIAXIAL TEST

ject: PLUM CREEK SITE 21
ing No.: B-301
ple No.: 19-280
t No.: 3

Location: TX
Tested By: SKK
Test Date: 3/21/19
Sample Type: CORE

Project No.: 19-280
Checked By: SKK
Depth: 8-10'
Elevation: N/A

l Description:
arks:

cimen Height: 6.11 in
cimen Area: 5.51 in^2
cimen Volume: 551.82 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

uid Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
tainer ID		---		
Container + Wet Soil, gm	1095.8	1095.8	1110.7	1286.4
Container + Dry Soil, gm	898.15	898.15	898.15	1073.8
Container, gm	0	---	0	175.61
Dry Soil, gm	898.15	898.15	898.15	898.15
er Content, %	22.01	22.01	23.67	23.67
d Ratio	---	0.67	0.64	---
ree of Saturation, %	---	89.19	100.00	---
Unit Weight, pcf	---	101.61	103.3	---

tial

of Initialization

of Consolidation/A

of Saturation

of Consolidation/B

of Shear

Failure

TRIAXIAL TEST

ject: PLUM CREEK SITE 21
ing No.: B-301
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t No.: 3

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Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

uid Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	5.2675	0	0	99.764	128	128
2	2.0001	0.12935	5.2744	29.456	5.5813	100.69	128	133.58
3	4.0006	0.26423	5.2815	40.911	7.7392	101.8	128	135.74
4	6.0022	0.39595	5.2885	54.249	10.248	102.82	128	138.25
5	8.0011	0.52294	5.2952	65.395	12.336	104.03	128	140.34
6	10.003	0.64835	5.3019	73.793	13.901	105.17	128	141.9
7	12	0.77692	5.3088	80.679	15.177	106.18	128	143.18
8	14.002	0.9039	5.3156	86.854	16.316	107.1	128	144.32
9	16.001	1.0285	5.3223	91.948	17.25	107.91	128	145.25
10	18.004	1.1587	5.3293	96.456	18.069	108.64	128	146.07
11	20.003	1.2864	5.3362	100.44	18.789	109.29	128	146.79
12	22.001	1.4158	5.3432	103.77	19.385	109.86	128	147.39
13	24.002	1.5373	5.3498	107.05	19.97	110.37	128	147.97
14	26.002	1.669	5.3569	109.98	20.488	110.83	128	148.49
15	28.002	1.7983	5.364	112.51	20.929	111.24	128	148.93
16	30.002	1.9309	5.3712	114.95	21.352	111.59	128	149.35
17	32.004	2.061	5.3784	116.96	21.693	111.93	128	149.69
18	34.003	2.188	5.3854	118.81	22.006	112.23	128	150.01
19	36.002	2.3189	5.3926	120.72	22.328	112.5	128	150.33
20	38.004	2.4577	5.4003	122.42	22.607	112.73	128	150.61
21	40	2.5895	5.4076	123.97	22.859	112.95	128	150.86
22	42.004	2.718	5.4147	125.42	23.094	113.15	128	151.09
23	44	2.8513	5.4221	126.65	23.286	113.32	128	151.29
24	46.003	2.9712	5.4288	127.83	23.471	113.48	128	151.47
25	48.003	3.1116	5.4367	128.97	23.643	113.62	128	151.64
26	50.004	3.2402	5.4439	130.02	23.802	113.74	128	151.8
27	52.004	3.3711	5.4513	131.1	23.964	113.85	128	151.96
28	54.002	3.5091	5.4591	132.21	24.13	113.97	128	152.13
29	56.002	3.6298	5.4659	133.32	24.3	114.06	128	152.3
30	58.003	3.7686	5.4738	134.37	24.454	114.15	128	152.45
31	60.003	3.9004	5.4813	135.39	24.603	114.22	128	152.6
32	62.002	4.0337	5.4889	136.53	24.773	114.29	128	152.77
33	64.002	4.1654	5.4965	137.4	24.893	114.35	128	152.89
34	66.001	4.2924	5.5038	138.32	25.026	114.41	128	153.03
35	68.002	4.428	5.5116	139.22	25.149	114.46	128	153.15
36	70	4.5558	5.519	139.99	25.252	114.5	128	153.25
37	72.002	4.6899	5.5267	140.89	25.375	114.55	128	153.38
38	74.001	4.8161	5.5341	141.75	25.495	114.58	128	153.49
39	76	4.9462	5.5416	142.59	25.607	114.61	128	153.61
40	78.002	5.0811	5.5495	143.39	25.712	114.63	128	153.71
41	80.003	5.2128	5.5572	144.13	25.807	114.66	128	153.81
42	82.003	5.3453	5.565	144.78	25.884	114.67	128	153.88
43	84.002	5.4786	5.5728	145.49	25.971	114.7	128	153.97
44	86.002	5.6096	5.5806	146.17	26.054	114.71	128	154.05
45	88.003	5.735	5.588	146.85	26.138	114.71	128	154.14
46	90	5.8628	5.5956	147.59	26.232	114.72	128	154.23
47	92.002	6.0008	5.6038	148.11	26.284	114.73	128	154.28
48	94.002	6.1223	5.6111	148.67	26.346	114.73	128	154.35
49	96.003	6.2563	5.6191	149.19	26.398	114.73	128	154.4
50	98.004	6.3841	5.6268	149.72	26.452	114.73	128	154.45
51	100	6.508	5.6342	150.24	26.507	114.72	128	154.51
52	102	6.6444	5.6424	150.67	26.542	114.72	128	154.54

54	106	6.9165	5.6589	151.6	26.622	114.71	128	154.62
55	108	7.0364	5.6662	152.09	26.672	114.7	128	154.67
56	110	7.1744	5.6747	152.84	26.759	114.69	128	154.76
57	112	7.3172	5.6834	153.27	26.791	114.67	128	154.79
58	114	7.445	5.6912	153.89	26.859	114.67	128	154.86
59	116	7.5846	5.6998	154.47	26.918	114.66	128	154.92
60	118	7.7037	5.7072	154.9	26.957	114.65	128	154.96
61	120	7.8386	5.7155	155.46	27.011	114.63	128	155.01
62	122	7.9671	5.7235	156.14	27.089	114.62	128	155.09
63	124	8.0965	5.7316	156.63	27.134	114.6	128	155.13
64	126	8.2203	5.7393	157.28	27.208	114.59	128	155.21
65	128	8.3544	5.7477	157.78	27.251	114.58	128	155.25
66	130	8.4814	5.7557	158.27	27.296	114.55	128	155.3
67	132	8.6037	5.7634	158.73	27.337	114.54	128	155.34
68	134	8.7441	5.7723	159.23	27.377	114.52	128	155.38
69	136	8.8718	5.7804	159.66	27.41	114.49	128	155.41
70	138	9.0004	5.7885	160.15	27.454	114.47	128	155.45
71	140	9.1282	5.7967	160.62	27.492	114.46	128	155.49
72	142	9.2599	5.8051	161.08	27.529	114.44	128	155.53
73	144	9.3995	5.814	161.51	27.558	114.42	128	155.56
74	146	9.5202	5.8218	161.91	27.587	114.41	128	155.59
75	148	9.6566	5.8306	162.25	27.601	114.38	128	155.6
76	150	9.7891	5.8391	162.59	27.615	114.36	128	155.62
77	152	9.924	5.8479	162.93	27.629	114.34	128	155.63
78	154	10.055	5.8564	163.12	27.617	114.32	128	155.62
79	156	10.188	5.8651	163.49	27.636	114.29	128	155.64
80	158	10.322	5.8738	163.8	27.645	114.28	128	155.64
81	160	10.452	5.8824	164.04	27.643	114.25	128	155.64
82	162	10.572	5.8902	164.6	27.698	114.23	128	155.7
83	164	10.707	5.8992	165.09	27.737	114.22	128	155.74
84	166	10.842	5.9081	165.49	27.76	114.19	128	155.76
85	168	10.975	5.9169	165.99	27.799	114.17	128	155.8
86	170	11.107	5.9257	166.48	27.838	114.15	128	155.84
87	172	11.232	5.934	166.76	27.843	114.13	128	155.84
88	174	11.36	5.9426	167.22	27.877	114.11	128	155.88
89	176	11.487	5.9511	167.59	27.897	114.09	128	155.9
90	178	11.62	5.9601	168	27.919	114.06	128	155.92
91	180	11.753	5.9691	168.43	27.946	114.04	128	155.95
92	182	11.874	5.9773	168.74	27.957	114.02	128	155.96
93	184	12.014	5.9868	169.14	27.976	113.99	128	155.98
94	186	12.153	5.9963	169.57	28.001	113.97	128	156
95	188	12.278	6.0048	169.88	28.01	113.96	128	156.01
96	190	12.408	6.0137	170.4	28.053	113.93	128	156.05
97	192	12.544	6.0231	170.84	28.078	113.91	128	156.08
98	194	12.674	6.0321	171.24	28.099	113.89	128	156.1
99	196	12.801	6.0408	171.73	28.138	113.87	128	156.14
100	198	12.922	6.0492	172.2	28.172	113.84	128	156.17
101	200	13.058	6.0587	172.63	28.197	113.83	128	156.2
102	202	13.185	6.0676	173	28.213	113.8	128	156.21
103	204	13.308	6.0761	173.31	28.222	113.78	128	156.22
104	206	13.439	6.0854	173.58	28.222	113.76	128	156.22
105	208	13.575	6.0949	173.74	28.2	113.75	128	156.2
106	210	13.708	6.1043	174.2	28.229	113.72	128	156.23
107	212	13.835	6.1133	174.63	28.255	113.71	128	156.26
108	214	13.962	6.1224	174.91	28.256	113.68	128	156.26
109	216	14.108	6.1328	175.44	28.291	113.67	128	156.29
110	218	14.239	6.1421	175.9	28.32	113.64	128	156.32
111	220	14.365	6.1511	176.24	28.331	113.63	128	156.33
112	222	14.5	6.1609	176.86	28.383	113.61	128	156.38
113	224	14.631	6.1703	177.2	28.392	113.58	128	156.39
114	226	14.758	6.1795	177.57	28.407	113.56	128	156.41
115	228	14.895	6.1894	178	28.428	113.54	128	156.43
116	230	15.016	6.1983	178.25	28.425	113.52	128	156.42
117	232	15.144	6.2076	178.71	28.454	113.5	128	156.45
118	234	15.276	6.2173	179.23	28.491	113.49	128	156.49
119	236	15.406	6.2268	179.54	28.494	113.47	128	156.49
120	238	15.534	6.2363	179.98	28.517	113.45	128	156.52
121	240	15.667	6.2461	180.38	28.534	113.43	128	156.53
122	242	15.789	6.2552	180.72	28.544	113.41	128	156.54
123	244	15.93	6.2657	181.15	28.562	113.39	128	156.56
124	246	16.055	6.275	181.58	28.586	113.37	128	156.59
125	248	16.177	6.2841	181.98	28.606	113.36	128	156.61

127	252	16.438	6.3037	182.69	28.624	113.32	128	156.62
128	254	16.57	6.3137	183.13	28.644	113.3	128	156.64
129	256	16.703	6.3238	183.43	28.644	113.28	128	156.64
130	258	16.834	6.3338	183.77	28.65	113.26	128	156.65
131	260	16.975	6.3445	184.02	28.637	113.24	128	156.64
132	262	17.097	6.3538	184.08	28.602	113.22	128	156.6
133	264	17.233	6.3643	184.39	28.601	113.2	128	156.6
134	266	17.366	6.3745	184.79	28.615	113.19	128	156.62
135	268	17.499	6.3848	185.13	28.619	113.16	128	156.62
136	270	17.625	6.3946	185.72	28.665	113.15	128	156.66
137	272	17.765	6.4055	186.15	28.68	113.13	128	156.68
138	274	17.887	6.415	186.55	28.698	113.11	128	156.7
139	276	18.021	6.4255	187.08	28.73	113.1	128	156.73
140	278	18.148	6.4354	187.48	28.745	113.08	128	156.75
141	280	18.289	6.4465	187.85	28.75	113.06	128	156.75
142	282	18.42	6.4569	188.4	28.787	113.04	128	156.79
143	284	18.557	6.4677	188.65	28.774	113.02	128	156.77
144	286	18.678	6.4774	189.02	28.786	113	128	156.79
145	288	18.808	6.4878	189.42	28.799	112.98	128	156.8
146	288.39	18.833	6.4897	189.49	28.799	112.98	128	156.8

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Membrane Correction: 1.65 lb/in
Correction Type: Uniform

uid Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

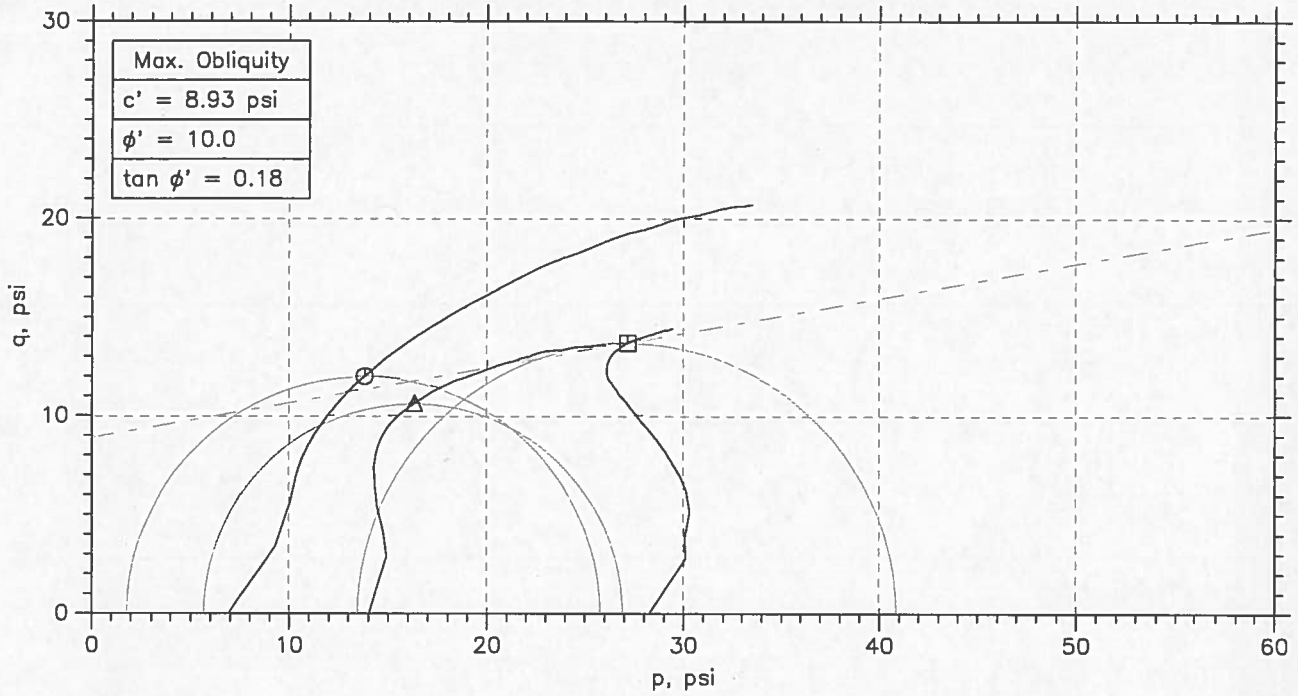
	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	128	128	0	0.000	28.236	28.236	1.000	28.236	0
2	0.13	133.58	128	0.92623	0.166	32.891	27.309	1.204	30.1	2.7907
3	0.26	135.74	128	2.0393	0.264	33.935	26.196	1.295	30.066	3.8696
4	0.40	138.25	128	3.0549	0.298	35.428	25.181	1.407	30.305	5.1238
5	0.52	140.34	128	4.2655	0.346	36.306	23.97	1.515	30.138	6.1681
6	0.65	141.9	128	5.403	0.389	36.734	22.833	1.609	29.783	6.9507
7	0.78	143.18	128	6.4186	0.423	36.994	21.817	1.696	29.406	7.5886
8	0.90	144.32	128	7.3367	0.450	37.215	20.899	1.781	29.057	8.1581
9	1.03	145.25	128	8.1492	0.472	37.336	20.086	1.859	28.711	8.6248
10	1.16	146.07	128	8.8723	0.491	37.433	19.363	1.933	28.398	9.0347
11	1.29	146.79	128	9.5223	0.507	37.503	18.713	2.004	28.108	9.3946
12	1.42	147.39	128	10.091	0.521	37.53	18.145	2.068	27.837	9.6927
13	1.54	147.97	128	10.603	0.531	37.603	17.633	2.133	27.618	9.9851
14	1.67	148.49	128	11.066	0.540	37.657	17.17	2.193	27.413	10.244
15	1.80	148.93	128	11.472	0.548	37.693	16.763	2.249	27.228	10.465
16	1.93	149.35	128	11.83	0.554	37.758	16.406	2.301	27.082	10.676
17	2.06	149.69	128	12.163	0.561	37.766	16.073	2.350	26.919	10.847
18	2.19	150.01	128	12.463	0.566	37.778	15.772	2.395	26.775	11.003
19	2.32	150.33	128	12.732	0.570	37.832	15.504	2.440	26.668	11.164
20	2.46	150.61	128	12.967	0.574	37.876	15.268	2.481	26.572	11.304
21	2.59	150.86	128	13.187	0.577	37.908	15.049	2.519	26.479	11.429
22	2.72	151.09	128	13.382	0.579	37.948	14.854	2.555	26.401	11.547
23	2.85	151.29	128	13.552	0.582	37.97	14.683	2.586	26.327	11.643
24	2.97	151.47	128	13.715	0.584	37.992	14.521	2.616	26.256	11.735
25	3.11	151.64	128	13.853	0.586	38.026	14.383	2.644	26.204	11.822
26	3.24	151.8	128	13.975	0.587	38.062	14.261	2.669	26.162	11.901
27	3.37	151.96	128	14.088	0.588	38.111	14.147	2.694	26.129	11.982
28	3.51	152.13	128	14.202	0.589	38.164	14.033	2.719	26.099	12.065
29	3.63	152.3	128	14.292	0.588	38.244	13.944	2.743	26.094	12.15
30	3.77	152.45	128	14.381	0.588	38.308	13.855	2.765	26.082	12.227
31	3.90	152.6	128	14.454	0.587	38.384	13.782	2.785	26.083	12.301
32	4.03	152.77	128	14.527	0.586	38.482	13.708	2.807	26.095	12.387
33	4.17	152.89	128	14.584	0.586	38.545	13.652	2.823	26.098	12.447
34	4.29	153.03	128	14.641	0.585	38.62	13.595	2.841	26.107	12.513
35	4.43	153.15	128	14.698	0.584	38.687	13.538	2.858	26.112	12.575
36	4.56	153.25	128	14.738	0.584	38.749	13.497	2.871	26.123	12.626
37	4.69	153.38	128	14.787	0.583	38.824	13.448	2.887	26.136	12.688
38	4.82	153.49	128	14.82	0.581	38.911	13.416	2.900	26.163	12.747
39	4.95	153.61	128	14.844	0.580	38.999	13.392	2.912	26.195	12.804
40	5.08	153.71	128	14.868	0.578	39.079	13.367	2.924	26.223	12.856
41	5.21	153.81	128	14.893	0.577	39.149	13.343	2.934	26.246	12.903
42	5.35	153.88	128	14.909	0.576	39.21	13.327	2.942	26.269	12.942
43	5.48	153.97	128	14.933	0.575	39.274	13.302	2.952	26.288	12.986
44	5.61	154.05	128	14.942	0.573	39.348	13.294	2.960	26.321	13.027
45	5.73	154.14	128	14.95	0.572	39.424	13.286	2.967	26.355	13.069
46	5.86	154.23	128	14.958	0.570	39.51	13.278	2.976	26.394	13.116
47	6.00	154.28	128	14.966	0.569	39.553	13.27	2.981	26.412	13.142
48	6.12	154.35	128	14.966	0.568	39.615	13.27	2.985	26.443	13.173
49	6.26	154.4	128	14.966	0.567	39.668	13.27	2.989	26.469	13.199
50	6.38=PP	154.45	128	14.966	0.566	39.722	13.27=26.45	2.993	26.496	13.226
51	6.51	154.51	128	14.958	0.564	39.785	13.278	2.996	26.532	13.254

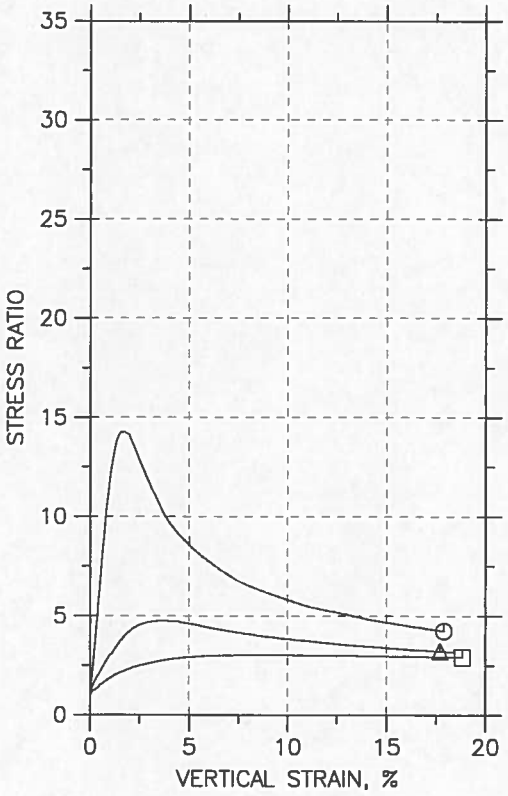
Peak PP

53	6.78	154.59	128	14.95	0.562	39.872	13.286	3.001	26.579	13.293
54	6.92	154.62	128	14.95	0.562	39.908	13.286	3.004	26.597	13.311
55	7.04	154.67	128	14.933	0.560	39.974	13.302	3.005	26.638	13.336
56	7.17	154.76	128	14.925	0.558	40.07	13.31	3.010	26.69	13.38
57	7.32	154.79	128	14.909	0.556	40.118	13.327	3.010	26.722	13.395
58	7.44	154.86	128	14.909	0.555	40.186	13.327	3.015	26.756	13.43
59	7.58	154.92	128	14.893	0.553	40.261	13.343	3.017	26.802	13.459
60	7.70	154.96	128	14.885	0.552	40.308	13.351	3.019	26.829	13.478
61	7.84	155.01	128	14.868	0.550	40.378	13.367	3.021	26.873	13.506
62	7.97	155.09	128	14.852	0.548	40.473	13.383	3.024	26.928	13.545
63	8.10	155.13	128	14.836	0.547	40.534	13.4	3.025	26.967	13.567
64	8.22	155.21	128	14.828	0.545	40.615	13.408	3.029	27.012	13.604
65	8.35	155.25	128	14.812	0.544	40.675	13.424	3.030	27.049	13.625
66	8.48	155.3	128	14.787	0.542	40.744	13.448	3.030	27.096	13.648
67	8.60	155.34	128	14.771	0.540	40.801	13.465	3.030	27.133	13.668
68	8.74 -SR	155.38	128	14.755 -14.76	0.539	40.858	- 13.481 = 27.38	3.031 - Max SR	27.169	13.688
69	8.87	155.41	128	14.73	0.537	40.916	13.505	3.030	27.211	13.705
70	9.00	155.45	128	14.706	0.536	40.984	13.53	3.029	27.257	13.727
71	9.13 -SR	155.49	128	14.698 -14.70	0.535	41.03	- 13.538 = 27.49	3.031 - Max SR	27.284	13.746
72	9.26	155.53	128	14.673	0.533	41.091	13.562	3.030	27.327	13.765
73	9.40	155.56	128	14.657	0.532	41.136	13.578	3.030	27.357	13.779
74	9.52	155.59	128	14.641	0.531	41.182	13.595	3.029	27.388	13.794
75	9.66	155.6	128	14.617	0.530	41.22	13.619	3.027	27.419	13.8
76	9.79	155.62	128	14.592	0.528	41.259	13.643	3.024	27.451	13.808
77	9.92	155.63	128	14.576	0.528	41.288	13.66	3.023	27.474	13.814
78	10.05	155.62	128	14.552	0.527	41.301	13.684	3.018	27.493	13.809
79	10.19	155.64	128	14.527	0.526	41.345	13.708	3.016	27.527	13.818
80	10.32	155.64	128	14.511	0.525	41.369	13.725	3.014	27.547	13.822
81	10.45	155.64	128	14.487	0.524	41.392	13.749	3.011	27.571	13.822
82	10.57	155.7	128	14.47	0.522	41.463	13.765	3.012	27.614	13.849
83	10.71	155.74	128	14.454	0.521	41.518	13.782	3.013	27.65	13.868
84	10.84	155.76	128	14.43	0.520	41.566	13.806	3.011	27.686	13.88
85	10.97	155.8	128	14.405	0.518	41.629	13.83	3.010	27.73	13.899
86	11.11	155.84	128	14.389	0.517	41.684	13.847	3.010	27.765	13.919
87	11.23	155.84	128	14.365	0.516	41.714	13.871	3.007	27.792	13.921
88	11.36	155.88	128	14.348	0.515	41.765	13.887	3.007	27.826	13.939
89	11.49	155.9	128	14.324	0.513	41.808	13.912	3.005	27.86	13.948
90	11.62	155.92	128	14.3	0.512	41.855	13.936	3.003	27.896	13.96
91	11.75	155.95	128	14.275	0.511	41.907	13.96	3.002	27.934	13.973
92	11.87	155.96	128	14.251	0.510	41.942	13.985	2.999	27.963	13.979
93	12.01	155.98	128	14.227	0.509	41.985	14.009	2.997	27.997	13.988
94	12.15	156	128	14.21	0.507	42.026	14.025	2.996	28.026	14.001
95	12.28	156.01	128	14.194	0.507	42.052	14.042	2.995	28.047	14.005
96	12.41	156.05	128	14.17	0.505	42.119	14.066	2.994	28.092	14.026
97	12.54	156.08	128	14.145	0.504	42.168	14.09	2.993	28.129	14.039
98	12.67	156.1	128	14.129	0.503	42.206	14.107	2.992	28.156	14.05
99	12.80	156.14	128	14.105	0.501	42.269	14.131	2.991	28.2	14.069
100	12.92	156.17	128	14.08	0.500	42.328	14.155	2.990	28.242	14.086
101	13.06	156.2	128	14.064	0.499	42.368	14.172	2.990	28.27	14.098
102	13.19	156.21	128	14.04	0.498	42.409	14.196	2.987	28.303	14.107
103	13.31	156.22	128	14.015	0.497	42.442	14.22	2.985	28.331	14.111
104	13.44	156.22	128	13.999	0.496	42.458	14.237	2.982	28.347	14.111
105	13.58	156.2	128	13.983	0.496	42.452	14.253	2.979	28.353	14.1
106	13.71	156.23	128	13.958	0.494	42.507	14.277	2.977	28.392	14.115
107	13.84	156.26	128	13.942	0.493	42.549	14.293	2.977	28.421	14.128
108	13.96	156.26	128	13.918	0.493	42.574	14.318	2.973	28.446	14.128
109	14.11	156.29	128	13.902	0.491	42.625	14.334	2.974	28.479	14.145
110	14.24	156.32	128	13.877	0.490	42.678	14.358	2.972	28.518	14.16
111	14.36	156.33	128	13.861	0.489	42.706	14.375	2.971	28.54	14.165
112	14.50	156.38	128	13.845	0.488	42.774	14.391	2.972	28.583	14.192
113	14.63	156.39	128	13.82	0.487	42.807	14.415	2.970	28.611	14.196
114	14.76	156.41	128	13.796	0.486	42.847	14.44	2.967	28.643	14.203
115	14.89	156.43	128	13.78	0.485	42.884	14.456	2.967	28.67	14.214
116	15.02	156.42	128	13.755	0.484	42.905	14.48	2.963	28.693	14.212
117	15.14	156.45	128	13.739	0.483	42.95	14.497	2.963	28.724	14.227
118	15.28	156.49	128	13.723	0.482	43.004	14.513	2.963	28.758	14.245
119	15.41	156.49	128	13.707	0.481	43.023	14.529	2.961	28.776	14.247
120	15.53	156.52	128	13.682	0.480	43.071	14.553	2.959	28.812	14.259
121	15.67	156.53	128	13.666	0.479	43.104	14.57	2.958	28.837	14.267
122	15.79	156.54	128	13.65	0.478	43.13	14.586	2.957	28.858	14.272
123	15.93	156.56	128	13.625	0.477	43.173	14.61	2.955	28.891	14.281
124	16.05	156.59	128	13.609	0.476	43.213	14.627	2.954	28.92	14.293

126	16.31	156.63	128	13.568	0.474	43.298	14.667	2.952	28.982	14.315
127	16.44	156.62	128	13.552	0.473	43.307	14.683	2.949	28.995	14.312
128	16.57	156.64	128	13.536	0.473	43.344	14.7	2.949	29.022	14.322
129	16.70	156.64	128	13.52	0.472	43.36	14.716	2.946	29.038	14.322
130	16.83	156.65	128	13.495	0.471	43.39	14.74	2.944	29.065	14.325
131	16.97	156.64	128	13.479	0.471	43.394	14.757	2.941	29.075	14.319
132	17.10	156.6	128	13.455	0.470	43.383	14.781	2.935	29.082	14.301
133	17.23	156.6	128	13.438	0.470	43.398	14.797	2.933	29.098	14.3
134	17.37	156.62	128	13.422	0.469	43.429	14.813	2.932	29.121	14.308
135	17.50	156.62	128	13.398	0.468	43.457	14.838	2.929	29.147	14.31
136	17.63	156.66	128	13.382	0.467	43.519	14.854	2.930	29.186	14.332
137	17.76	156.68	128	13.365	0.466	43.551	14.87	2.929	29.211	14.34
138	17.89	156.7	128	13.341	0.465	43.592	14.895	2.927	29.244	14.349
139	18.02	156.73	128	13.333	0.464	43.633	14.903	2.928	29.268	14.365
140	18.15	156.75	128	13.317	0.463	43.664	14.919	2.927	29.292	14.373
141	18.29	156.75	128	13.3	0.463	43.685	14.935	2.925	29.31	14.375
142	18.42	156.79	128	13.276	0.461	43.747	14.96	2.924	29.353	14.394
143	18.56	156.77	128	13.26	0.461	43.75	14.976	2.921	29.363	14.387
144	18.68	156.79	128	13.235	0.460	43.786	15	2.919	29.393	14.393
145	18.81	156.8	128	13.219	0.459	43.815	15.017	2.918	29.416	14.399
146	18.83	156.8	128	13.219	0.459	43.816	15.017	2.918	29.416	14.4

CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⊙	△	⊡	
Sample No.		19-278	19-279	19-280	
Test No.		1	2	3	
Depth		4-6'	6-8'	8-10'	
Initial	Diameter, in	2.763	2.692	2.649	
	Height, in	6.124	6.194	6.11	
	Water Content, %	14.1	16.7	22.0	
	Dry Density, pcf	115.7	108.2	101.6	
	Saturation, %	80.4	79.1	89.2	
	Void Ratio	0.484	0.575	0.671	
Before Shear	Water Content, %	19.1	19.9	23.7	
	Dry Density, pcf	112.5	110.4	103.3	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.526	0.543	0.644	
	Back Press., psi	100.1	99.98	99.76	
Ver. Eff. Cons. Stress, psi		6.906	14.02	28.24	
Shear Strength, psi		20.69	13.59	14.4	
Strain at Failure, %		17.9	17.7	18.8	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.75	2.73	2.72	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-278

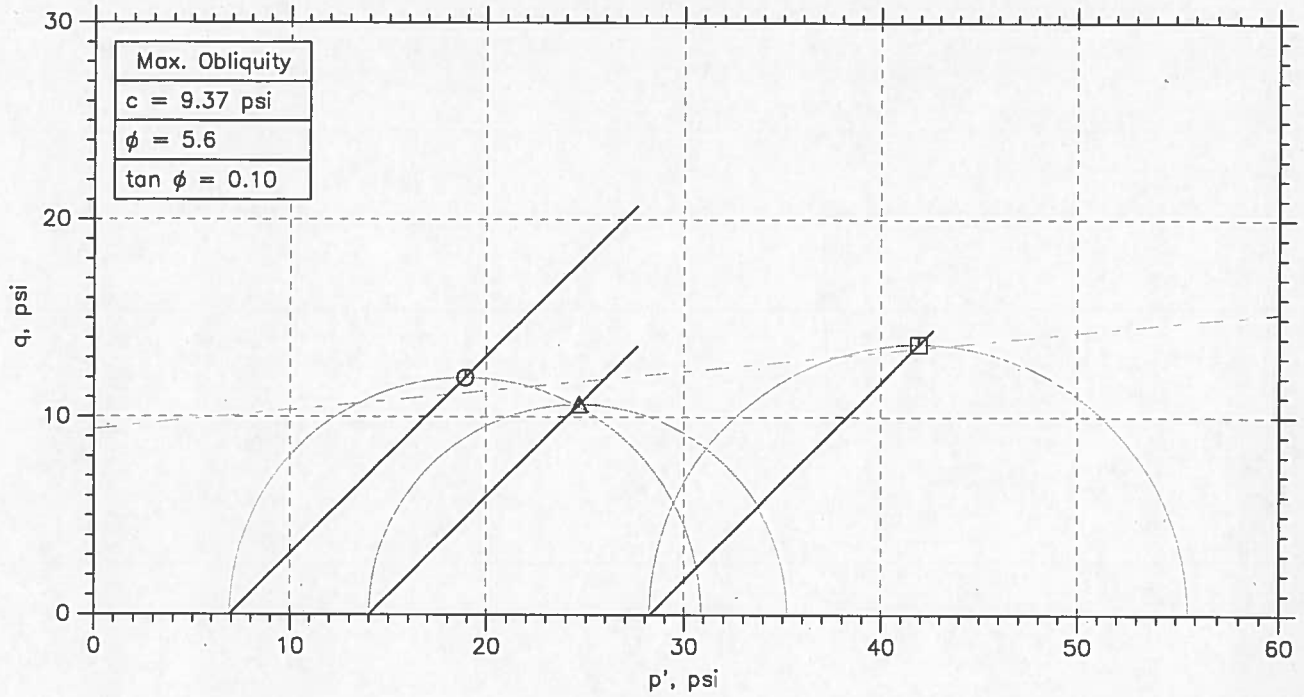
Boring No.: B-301

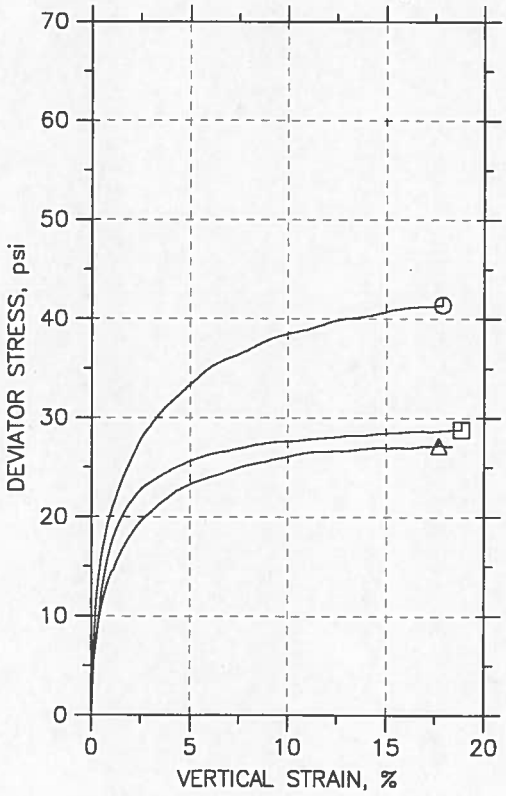
Sample Type: CORE

Description:

Remarks:

CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⊙	△	⊡	
Sample No.		19-278	19-279	19-280	
Test No.		1	2	3	
Depth		4-6'	6-8'	8-10'	
Initial	Diameter, in	2.763	2.692	2.649	
	Height, in	6.124	6.194	6.11	
	Water Content, %	14.1	16.7	22.0	
	Dry Density, pcf	115.7	108.2	101.6	
	Saturation, %	80.4	79.1	89.2	
	Void Ratio	0.484	0.575	0.671	
Before Shear	Water Content, %	19.1	19.9	23.7	
	Dry Density, pcf	112.5	110.4	103.3	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.526	0.543	0.644	
	Back Press., psi	100.1	99.98	99.76	
Ver. Eff. Cons. Stress, psi		6.906	14.02	28.24	
Shear Strength, psi		20.69	13.59	14.4	
Strain at Failure, %		17.9	17.7	18.8	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.75	2.73	2.72	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-278

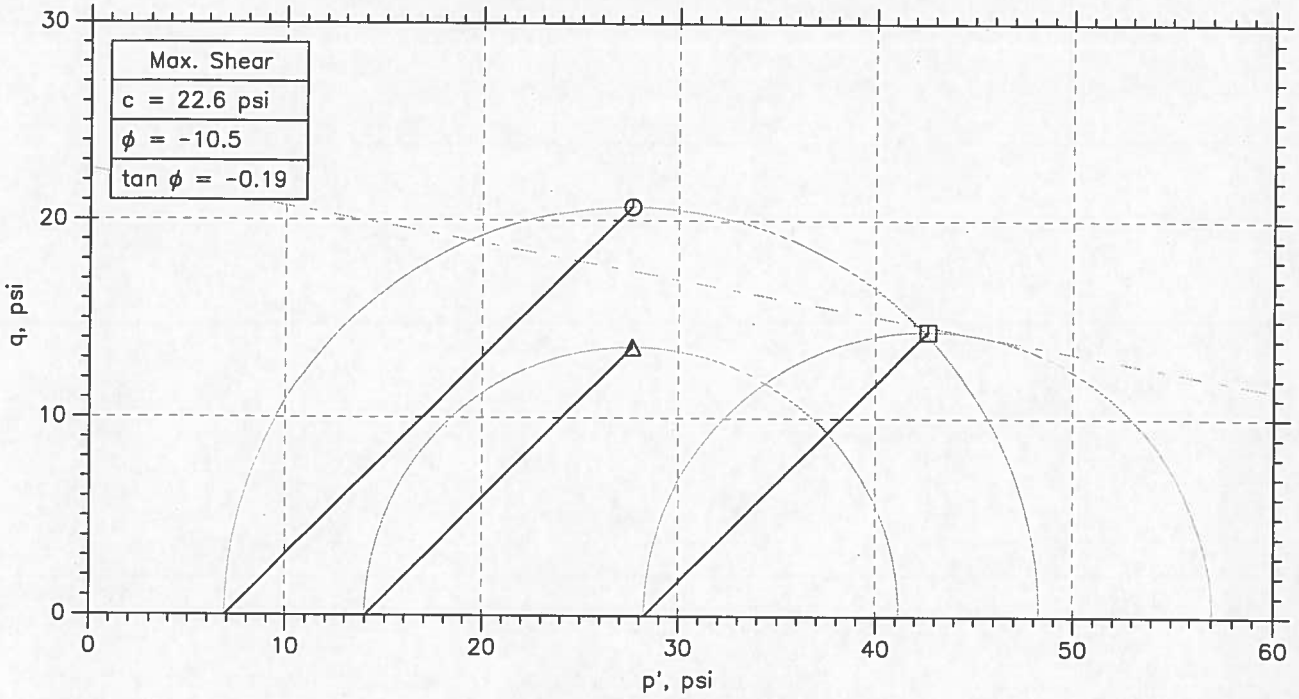
Boring No.: B-301

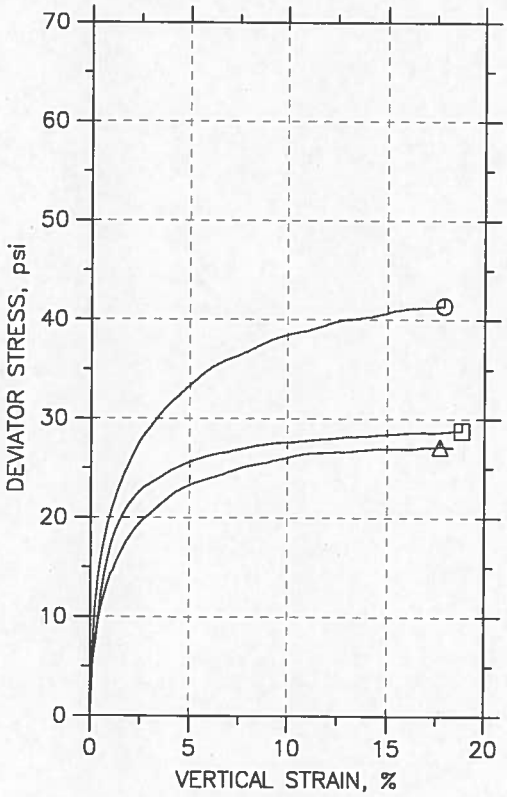
Sample Type: CORE

Description:

Remarks: @ Maximum Obliquity

CONSOLIDATED UNDRAINED TRIAXIAL TEST



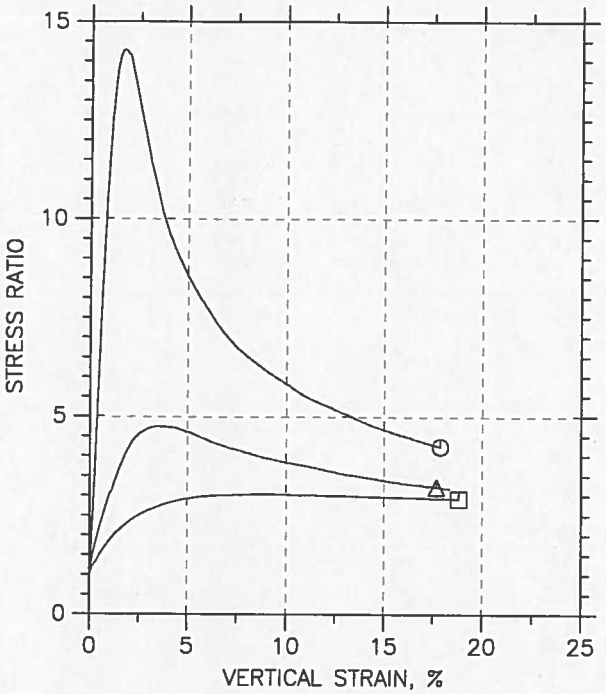


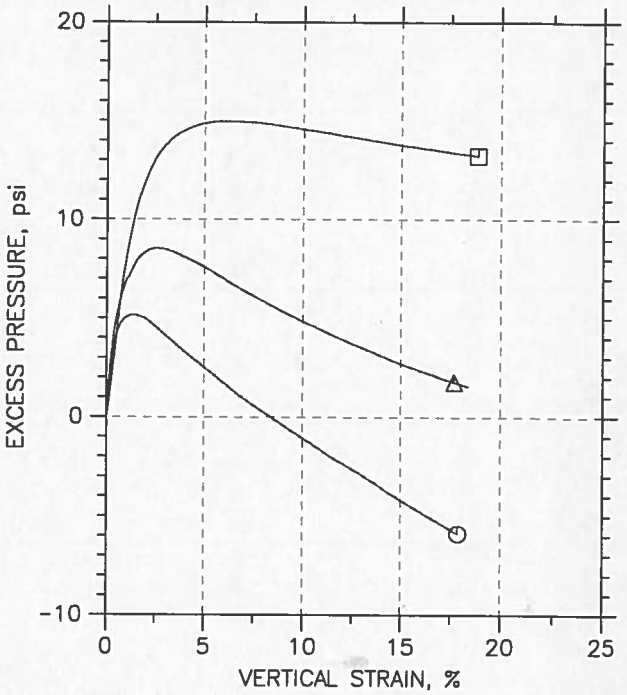
Symbol		⦶	△	⊡	
Sample No.		19-278	19-279	19-280	
Test No.		1	2	3	
Depth		4-6'	6-8'	8-10'	
Initial	Diameter, in	2.763	2.692	2.649	
	Height, in	6.124	6.194	6.11	
	Water Content, %	14.1	16.7	22.0	
	Dry Density, pcf	115.7	108.2	101.6	
	Saturation, %	80.4	79.1	89.2	
	Void Ratio	0.484	0.575	0.671	
Before Shear	Water Content, %	19.1	19.9	23.7	
	Dry Density, pcf	112.5	110.4	103.3	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.526	0.543	0.644	
	Back Press., psi	100.1	99.98	99.76	
Ver. Eff. Cons. Stress, psi		6.906	14.02	28.24	
Shear Strength, psi		20.69	13.59	14.4	
Strain at Failure, %		17.9	17.7	18.8	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.75	2.73	2.72	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

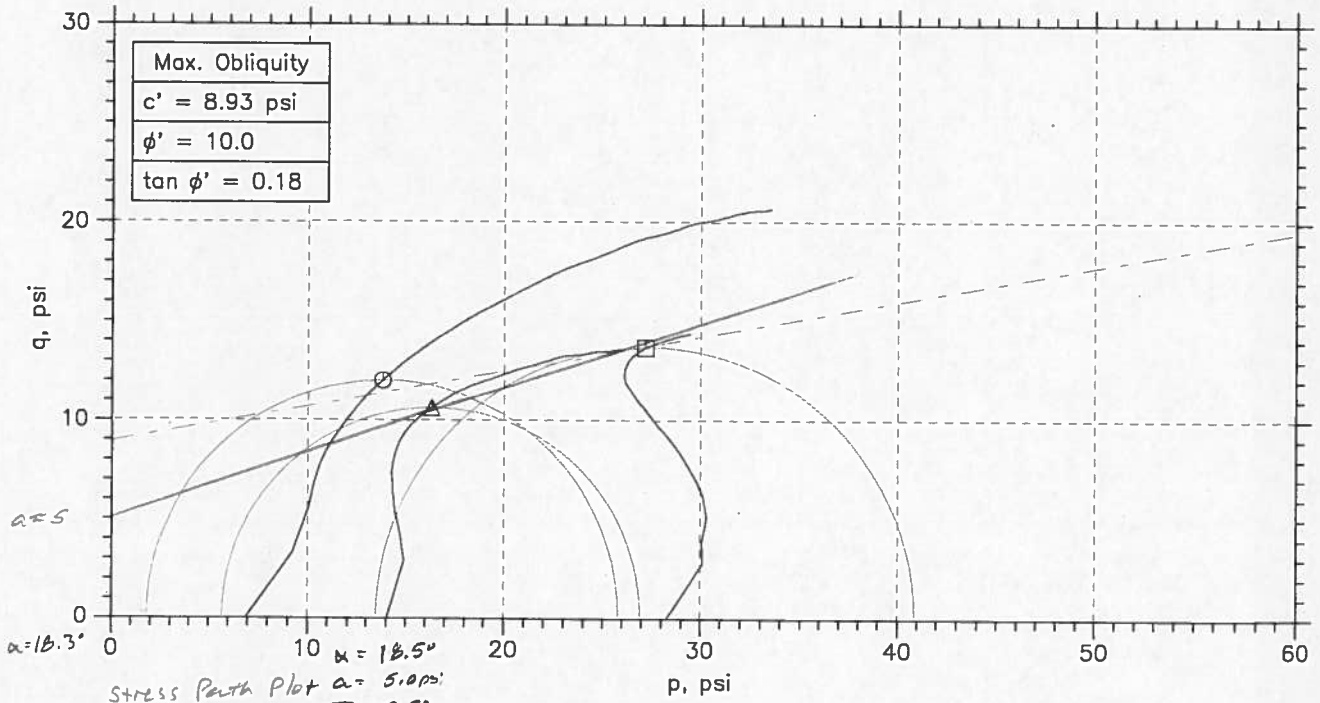
Project: PLUM CREEK SITE 21
Location: TX
Project No.: 19-278
Boring No.: B-301
Sample Type: CORE
Description:
Remarks:

Fri, 29-MAR-2019 08:04:07

CONSOLIDATED UNDRAINED TRIAXIAL TEST







Stress Path Plot a = 5.0psi
$\bar{\phi}$ = 19.5°
$\bar{c}$ = 5.3psi = 763 psF

	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
○	19-278	1	4-6'	SKK	3/21/19	SKK		19-278-07eng.dat
△	19-279	2	6-8'	SKK	3/21/19	SKK		19-279-14eng.dat
□	19-280	3	8-10'	SKK	3/21/19	SKK		19-280-28eng.dat

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-278
Boring No.: B-301	Sample Type: CORE	
Description:		
Remarks:		

NRCS Soil Mechanics Center
Lincoln, NE

4/17/2019
2:07 PM

Mohr Circle Program

SITE NAME: Plum Creek Site 21
STATE: TX
SAMPLE NO: 19-297

Failure Criterion:
- ☑ Maximum Dev. Stress
- ☐ Maximum Stress Ratio
- ☐ Max. Pore Pressure
- ☑ <= 10% Strain
- ☐ Selected Points

Total Strength Parameters:

PHI:	28.4 degrees	28.4 degrees	Zero Cohesion: Slope y=
C :	201 psf	1.39 psi	

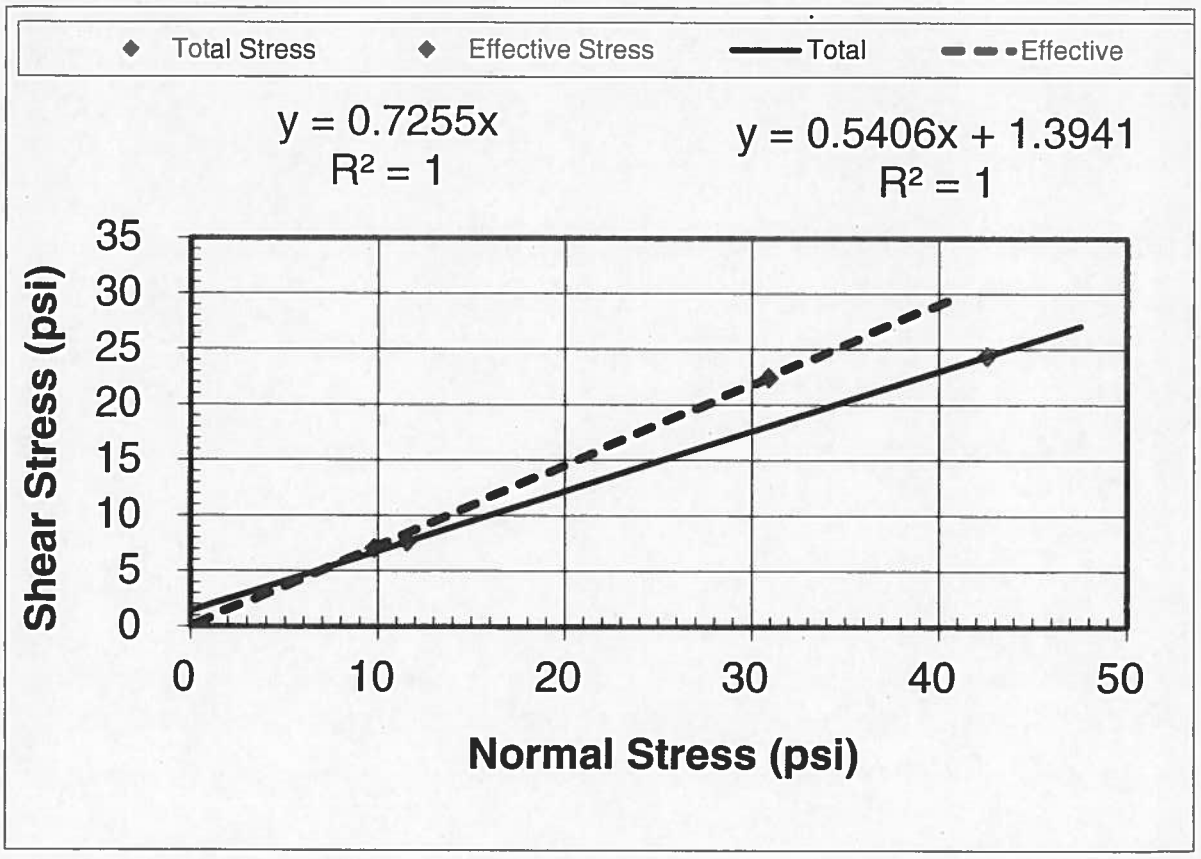
Effective Strength Parameters:

PHI' :	~~36.0~~ degrees	36.0 degrees	Slope y=
C':	~~0~~ psf	0.00 psi	0.7255

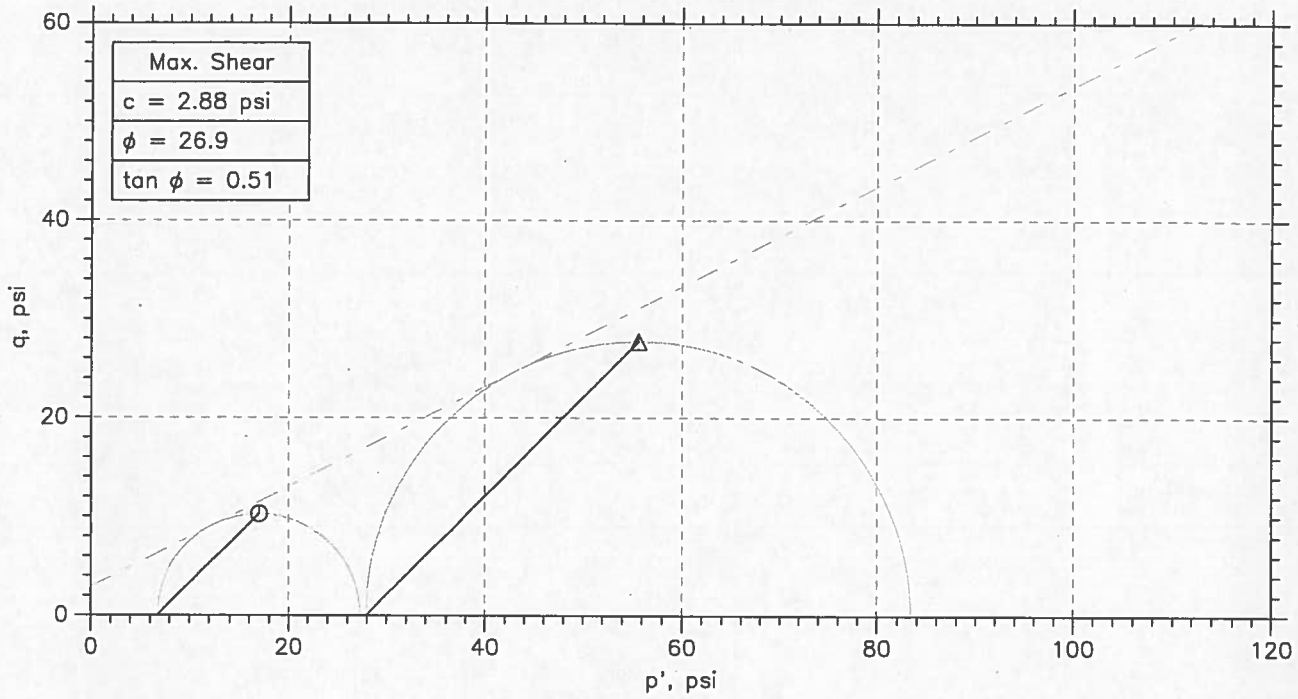
Stress path analysis from p-q plot:
PHI' : 35.3 degrees
C' : 88 psf

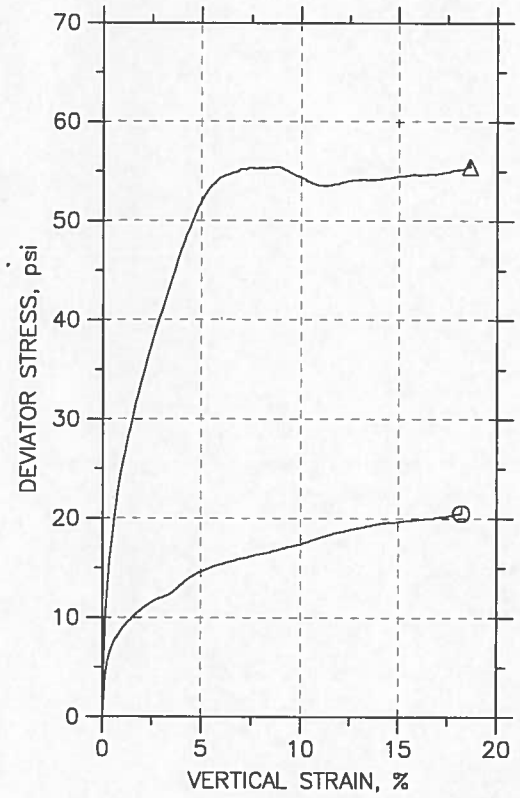
(All inputed values in the chart are in psi)

CELL PRESSURE	DEVIATOR STRESS AT FAILURE	PORE PRESSURE AT FAILURE	PERCENT STRAIN (Optional Entry)
7	17.37	0.81	10.00
28	55.45	8.54	8.77



CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⦶	△		
Sample No.		19-297	19-297		
Test No.		1	2		
Depth		15.5-17.5'	15.5-17.5'		
Initial	Diameter, in	1.391	1.401		
	Height, in	3.028	3.02		
	Water Content, %	27.3	24.7		
	Dry Density, pcf	92.03	97.07		
	Saturation, %	87.8	89.7		
	Void Ratio	0.845	0.749		
Before Shear	Water Content, %	33.3	28.9		
	Dry Density, pcf	89.11	95.05		
	Saturation*, %	100.0	100.0		
	Void Ratio	0.906	0.787		
	Back Press., psi	100.3	100.1		
Ver. Eff. Cons. Stress, psi		6.744	27.91		
Shear Strength, psi		10.25	27.74		
Strain at Failure, %		18.2	18.6		
Strain Rate, %/min		0.06	0.06		
B-Value		0.00	0.00		
Measured Specific Gravity		2.72	2.72		
Liquid Limit		---	---		
Plastic Limit		---	---		

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-297

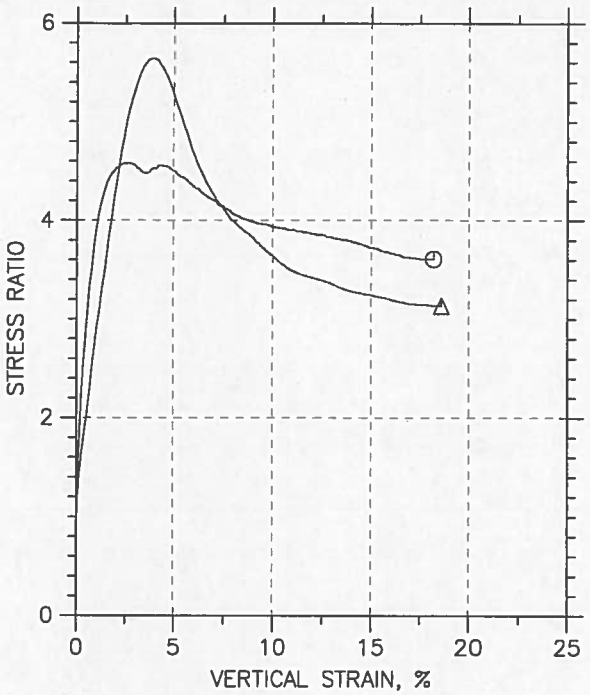
Boring No.: B-603

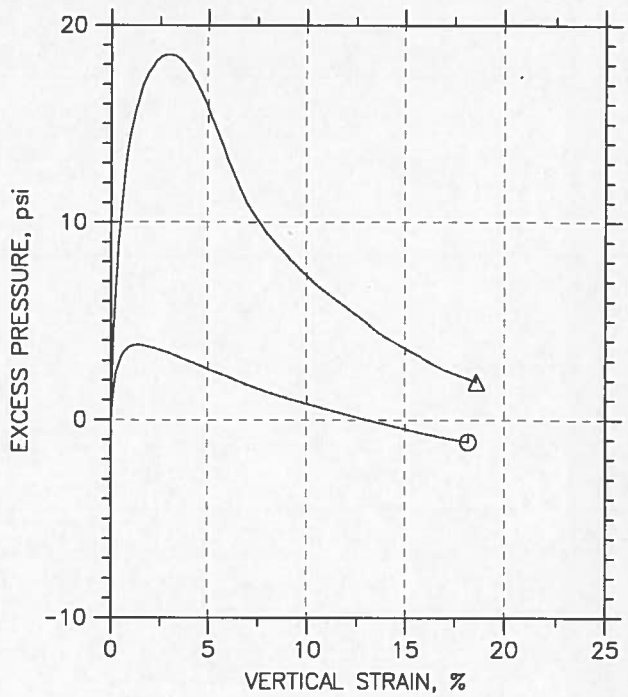
Sample Type: CORE

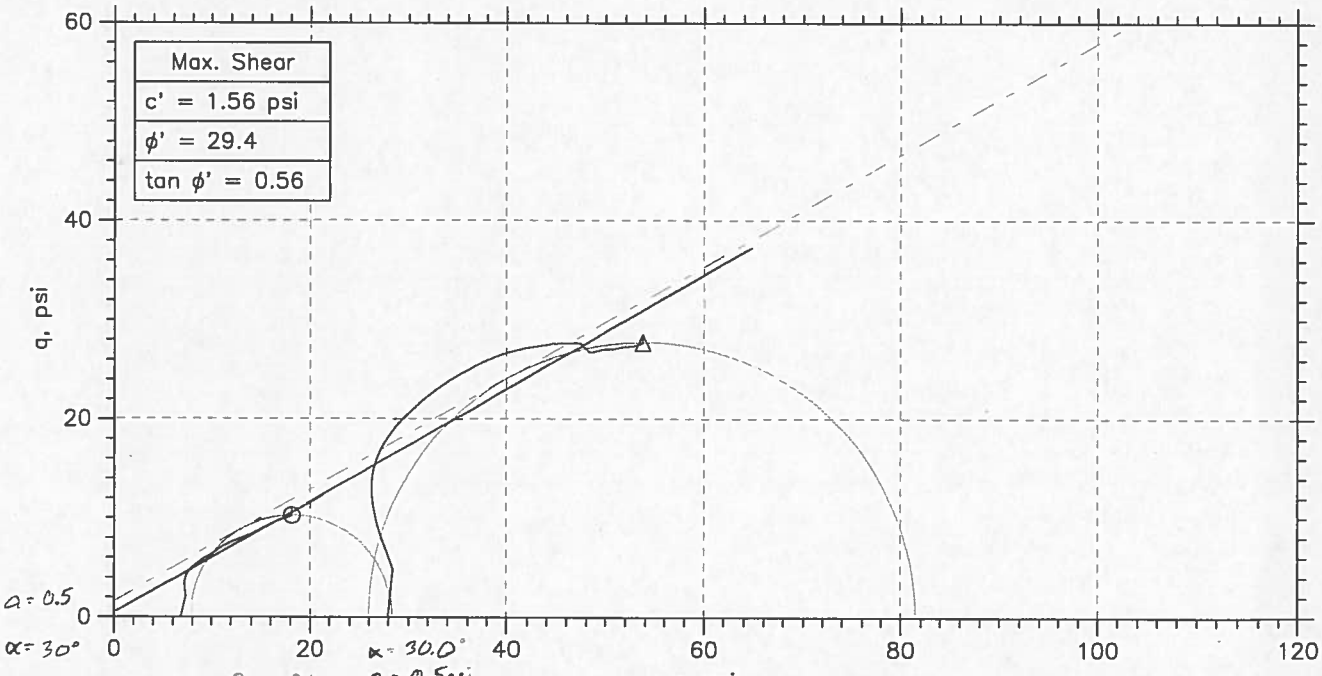
Description:

Remarks:

CONSOLIDATED UNDRAINED TRIAXIAL TEST





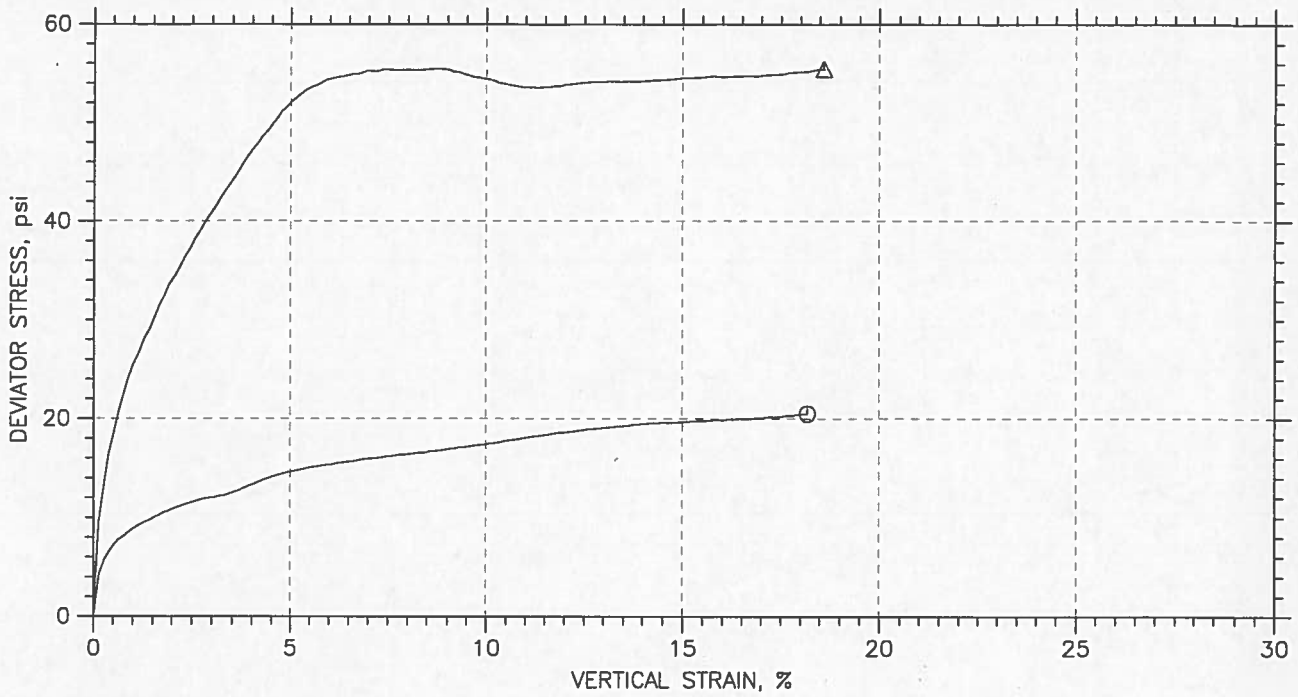


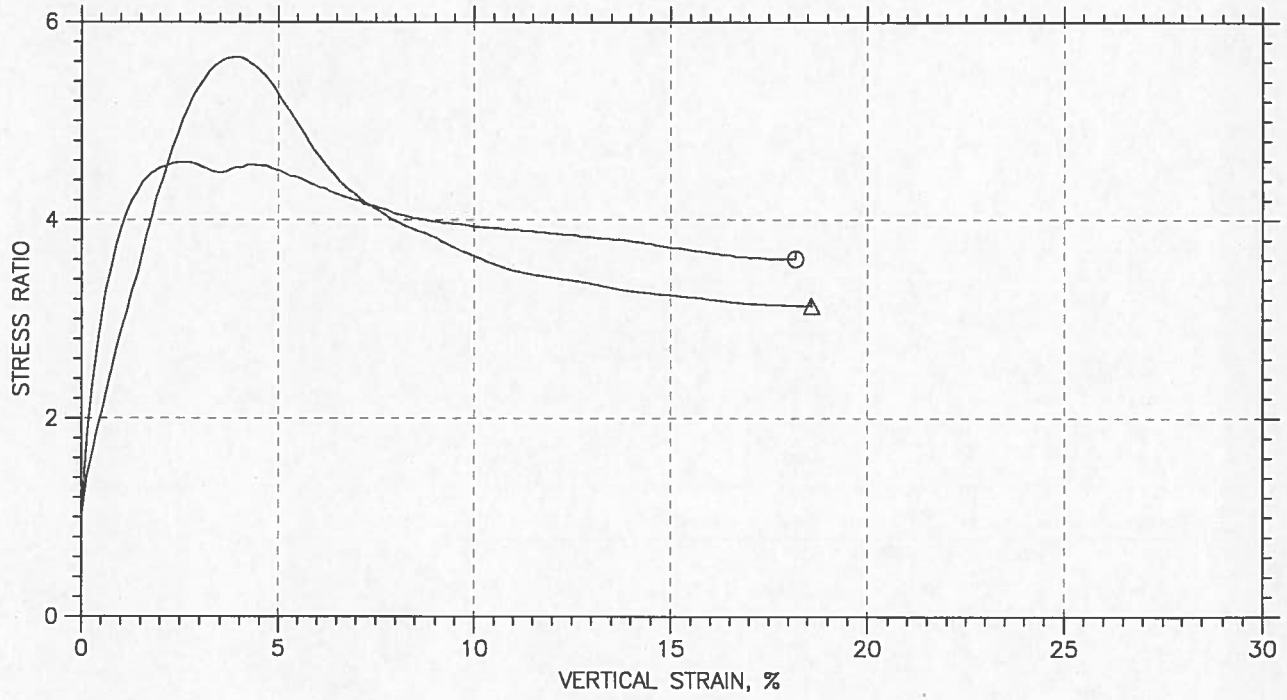
Stress Path Plot → α = 30.0° a = 0.5 psi $\bar{\phi}$ = 35.3° $\bar{c}$ = 0.61 psi = 88 psf

	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	19-297	1	15.5-17.5'	SKK	3/28/19	SKK		19-297-07eng.dat
△	19-297	2	15.5-17.5'	SKK	3/28/19	SKK		19-297-28eng.dat

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-297
Boring No.: B-603	Sample Type: CORE	
Description:		
Remarks:		

CONSOLIDATED UNDRAINED TRIAXIAL TEST





	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	19-297	1	15.5-17.5'	SKK	3/28/19	SKK		19-297-07eng.dat
△	19-297	2	15.5-17.5'	SKK	3/28/19	SKK		19-297-28eng.dat

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-297
Boring No.: B-603	Sample Type: CORE	
Description:		
Remarks:		

TRIAXIAL TEST

:ct: PLUM CREEK SITE 21
g No.: B-603
e No.: 19-297
No.: 1

Location: TX
Tested By: SKK
Test Date: 3/28/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Description:
ks:

men Height: 3.03 in
men Area: 1.52 in^2
men Volume: 75.41 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
iner ID		---		
ontainer + Wet Soil, gm	141.49	141.49	148.17	217.99
ontainer + Dry Soil, gm	111.16	111.16	111.16	180.98
ontainer, gm	0	---	0	69.82
ry Soil, gm	111.16	111.16	111.16	111.16
Content, %	27.28	27.28	33.29	33.29
Ratio	---	0.85	0.91	---
e of Saturation, %	---	87.82	100.00	---
nit Weight, pcf	---	92.029	89.108	---

al

f Initialization

f Consolidation/A

f Saturation

f Consolidation/B

f Shear

ilure

TRIAXIAL TEST

ct: PLUM CREEK SITE 21
g No.: B-603
e No.: 19-297
No.: 1

Location: TX
Tested By: SKK
Test Date: 3/28/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Description:
ks:

men Height: 3.03 in
men Area: 1.52 in^2
men Volume: 75.41 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	1.5047	0	0	100.26	107	107
2	2.0032	0.13282	1.5067	6.4117	4.249	101.84	107	111.25
3	4.0032	0.25482	1.5086	8.5387	5.6479	102.64	107	112.65
4	6.0019	0.38918	1.5106	9.895	6.5317	103.11	107	113.53
5	8.0027	0.51428	1.5125	10.912	7.1901	103.43	107	114.19
6	10.001	0.63165	1.5143	11.775	7.746	103.64	107	114.75
7	12.004	0.77064	1.5164	12.392	8.1352	103.79	107	115.14
8	14.003	0.88338	1.5181	13.008	8.5266	103.9	107	115.53
9	16	1.0116	1.5201	13.563	8.8746	103.96	107	115.87
0	18.003	1.1428	1.5221	14.087	9.2008	104.01	107	116.2
1	20.003	1.2664	1.524	14.55	9.4869	104.03	107	116.49
2	22.002	1.4116	1.5263	14.981	9.7488	104.04	107	116.75
3	24.001	1.5336	1.5282	15.444	10.034	104.03	107	117.03
4	26.001	1.6556	1.5301	15.814	10.257	104.01	107	117.26
5	28.002	1.7668	1.5318	16.153	10.462	103.99	107	117.46
6	30.001	1.9073	1.534	16.492	10.661	103.95	107	117.66
7	32.003	2.02	1.5358	16.831	10.864	103.92	107	117.86
8	34	2.1498	1.5378	17.17	11.064	103.88	107	118.06
9	36.004	2.2841	1.5399	17.478	11.243	103.85	107	118.24
0	38.002	2.4	1.5417	17.786	11.424	103.81	107	118.42
1	40.001	2.5389	1.5439	18.064	11.581	103.77	107	118.58
2	42.002	2.644	1.5456	18.31	11.723	103.73	107	118.72
3	44.001	2.7876	1.5479	18.557	11.859	103.69	107	118.86
4	46	2.925	1.5501	18.773	11.975	103.64	107	118.97
5	48.004	3.0625	1.5523	18.927	12.051	103.59	107	119.05
6	50	3.1737	1.5541	19.143	12.171	103.54	107	119.17
7	52.002	3.3003	1.5561	19.297	12.248	103.49	107	119.25
8	54.002	3.4285	1.5582	19.543	12.384	103.44	107	119.38
9	56.004	3.5351	1.5599	19.821	12.543	103.39	107	119.54
0	58.002	3.6771	1.5622	20.191	12.755	103.34	107	119.76
1	60.003	3.7976	1.5641	20.592	12.99	103.3	107	119.99
2	62.001	3.9227	1.5662	20.992	13.223	103.26	107	120.22
3	64	4.0447	1.5682	21.27	13.377	103.21	107	120.38
4	66.001	4.1837	1.5704	21.701	13.626	103.17	107	120.63
5	68.004	4.3119	1.5725	22.04	13.818	103.12	107	120.82
6	70.004	4.4323	1.5745	22.349	13.991	103.06	107	120.99
7	72.002	4.5528	1.5765	22.626	14.144	103.01	107	121.14
8	74.004	4.6918	1.5788	22.965	14.332	102.96	107	121.33
9	76.001	4.8169	1.5809	23.181	14.444	102.9	107	121.44
0	78.004	4.9343	1.5828	23.427	14.576	102.84	107	121.58
1	80.003	5.0578	1.5849	23.643	14.688	102.79	107	121.69
2	82.002	5.1845	1.587	23.828	14.779	102.74	107	121.78
3	84	5.3204	1.5893	24.013	14.868	102.68	107	121.87
4	86.002	5.4501	1.5915	24.291	15.016	102.63	107	122.02
5	88.004	5.5566	1.5933	24.476	15.11	102.58	107	122.11
6	90.004	5.6925	1.5956	24.599	15.16	102.53	107	122.16
7	92.001	5.8084	1.5975	24.784	15.252	102.48	107	122.25
8	94.002	5.9489	1.5999	24.938	15.319	102.43	107	122.32
9	96.002	6.0725	1.602	25.061	15.37	102.38	107	122.37
0	98.004	6.1976	1.6042	25.308	15.498	102.33	107	122.5
1	100	6.3103	1.6061	25.431	15.551	102.27	107	122.55
2	102	6.4385	1.6083	25.585	15.62	102.23	107	122.62

4	106	6.684	1.6125	25.894	15.759	102.13	107	122.76
5	108	6.7983	1.6145	26.079	15.849	102.08	107	122.85
6	110	6.9389	1.6169	26.263	15.933	102.03	107	122.93
7	112	7.0825	1.6194	26.418	15.997	101.99	107	123
8	114	7.1999	1.6215	26.479	16.01	101.93	107	123.01
9	116	7.3435	1.624	26.633	16.074	101.89	107	123.07
0	118	7.4593	1.626	26.849	16.181	101.85	107	123.18
1	120	7.5798	1.6281	26.942	16.212	101.8	107	123.21
2	122	7.7049	1.6304	27.127	16.298	101.76	107	123.3
3	124	7.7975	1.632	27.281	16.372	101.72	107	123.37
4	126	7.9458	1.6346	27.342	16.377	101.67	107	123.38
5	128	8.0632	1.6367	27.466	16.426	101.63	107	123.43
6	130	8.2037	1.6392	27.62	16.489	101.59	107	123.49
7	132	8.3303	1.6415	27.774	16.554	101.54	107	123.55
8	134	8.4523	1.6437	27.866	16.583	101.5	107	123.58
9	136	8.5713	1.6458	28.082	16.687	101.46	107	123.69
0	138	8.7056	1.6482	28.205	16.732	101.43	107	123.73
1	140	8.8369	1.6506	28.36	16.795	101.39	107	123.8
2	142	8.9496	1.6526	28.514	16.863	101.35	107	123.86
3	144	9.0732	1.6549	28.699	16.946	101.32	107	123.95
4	146	9.2029	1.6573	28.822	16.991	101.28	107	123.99
5	148	9.3357	1.6597	29.069	17.109	101.24	107	124.11
6	150	9.45	1.6618	29.161	17.138	101.21	107	124.14
7	152	9.5936	1.6644	29.377	17.234	101.18	107	124.23
8	154	9.7203	1.6668	29.5	17.279	101.15	107	124.28
9	156	9.8515	1.6692	29.685	17.359	101.11	107	124.36
0	158	9.9689 ~102	1.6714	29.747	17.368	101.07 -0.81	107	124.37
1	160	10.085	1.6735	29.963	17.47	101.04	107	124.47
2	162	10.216	1.676	30.147	17.549	101	107	124.55
3	164	10.346	1.6784	30.332	17.628	100.97	107	124.63
4	166	10.471	1.6807	30.548	17.726	100.93	107	124.73
5	168	10.584	1.6828	30.733	17.809	100.9	107	124.81
6	170	10.707	1.6852	30.887	17.871	100.86	107	124.87
7	172	10.837	1.6876	31.041	17.931	100.82	107	124.93
8	174	10.967	1.6901	31.257	18.027	100.79	107	125.03
9	176	11.098	1.6926	31.504	18.14	100.76	107	125.14
0	178	11.217	1.6948	31.627	18.184	100.71	107	125.18
1	180	11.342	1.6972	31.843	18.28	100.68	107	125.28
2	182	11.485	1.7	31.997	18.335	100.64	107	125.33
3	184	11.59	1.702	32.151	18.399	100.6	107	125.4
4	186	11.719	1.7045	32.367	18.494	100.58	107	125.49
5	188	11.851	1.707	32.521	18.55	100.54	107	125.55
6	190	11.978	1.7095	32.644	18.591	100.51	107	125.59
7	192	12.112	1.7121	32.829	18.665	100.47	107	125.66
8	194	12.235	1.7145	32.953	18.705	100.44	107	125.71
9	196	12.353	1.7168	33.168	18.801	100.41	107	125.8
0	198	12.492	1.7196	33.323	18.855	100.39	107	125.85
1	200	12.608	1.7218	33.507	18.932	100.35	107	125.93
2	202	12.732	1.7243	33.569	18.936	100.31	107	125.94
3	204	12.869	1.727	33.785	19.026	100.28	107	126.03
4	206	12.997	1.7295	33.908	19.064	100.26	107	126.06
5	208	13.135	1.7323	34.032	19.099	100.22	107	126.1
6	210	13.238	1.7343	34.155	19.143	100.2	107	126.14
7	212	13.379	1.7371	34.371	19.23	100.17	107	126.23
8	214	13.507	1.7397	34.463	19.25	100.13	107	126.25
9	216	13.637	1.7423	34.648	19.322	100.1	107	126.32
0	218	13.75	1.7446	34.833	19.398	100.09	107	126.4
1	220	13.872	1.7471	34.925	19.418	100.05	107	126.42
2	222	13.992	1.7495	35.049	19.457	100.02	107	126.46
3	224	14.112	1.752	35.172	19.495	99.988	107	126.49
4	226	14.261	1.755	35.357	19.56	99.956	107	126.56
5	228	14.38	1.7575	35.357	19.528	99.931	107	126.53
6	230	14.499	1.7599	35.573	19.619	99.899	107	126.62
7	232	14.625	1.7625	35.542	19.567	99.875	107	126.57
8	234	14.755	1.7652	35.665	19.602	99.842	107	126.6
9	236	14.888	1.7679	35.758	19.618	99.81	107	126.62
0	238	15.019	1.7707	35.881	19.652	99.777	107	126.65
1	240	15.138	1.7732	36.035	19.707	99.753	107	126.71
2	242	15.286	1.7763	36.189	19.753	99.721	107	126.75
3	244	15.404	1.7787	36.251	19.756	99.696	107	126.76
4	246	15.513	1.781	36.313	19.76	99.664	107	126.76
5	248	15.644	1.7838	36.436	19.794	99.631	107	126.79

7	252	15.898	1.7892	36.683	19.862	99.583	107	126.86
8	254	16.035	1.7921	36.744	19.858	99.55	107	126.86
9	256	16.14	1.7944	36.898	19.915	99.526	107	126.92
0	258	16.27	1.7971	36.929	19.896	99.502	107	126.9
1	260	16.393	1.7998	37.145	19.982	99.469	107	126.98
2	262	16.526	1.8027	37.237	19.996	99.445	107	127
3	264	16.661	1.8056	37.268	19.976	99.404	107	126.98
4	266	16.789	1.8083	37.392	20.008	99.388	107	127.01
5	268	16.9	1.8108	37.576	20.079	99.364	107	127.08
6	270	17.034	1.8137	37.638	20.075	99.34	107	127.08
7	272	17.161	1.8165	37.823	20.141	99.315	107	127.14
8	274	17.275	1.819	37.977	20.194	99.291	107	127.19
9	276	17.425	1.8223	38.07	20.202	99.267	107	127.2
0	278	17.522	1.8244	38.162	20.225	99.242	107	127.22
1	280	17.665	1.8276	38.378	20.303	99.218	107	127.3
2	282	17.797	1.8305	38.501	20.332	99.202	107	127.33
3	284	17.898	1.8328	38.717	20.421	99.177	107	127.42
4	286	18.034	1.8358	38.871	20.466	99.161	107	127.47
5	288	18.148	1.8384	38.994	20.5	99.145	107	127.5
6	288.59	18.18	1.8391	39.025	20.507	99.137	107	127.51

TRIAXIAL TEST

ct: PLUM CREEK SITE 21
g No.: B-603
e No.: 19-297
No.: 1

Location: TX
Tested By: SKK
Test Date: 3/28/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Description:
ks:

men Height: 3.03 in
men Area: 1.52 in^2
men Volume: 75.41 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	107	107	0	0.000	6.7442	6.7442	1.000	6.7442	0
2	0.13	111.25	107	1.5892	0.374	9.4041	5.1551	1.824	7.2796	2.1245
3	0.25	112.65	107	2.3838	0.422	10.008	4.3605	2.295	7.1844	2.824
4	0.39	113.53	107	2.854	0.437	10.422	3.8902	2.679	7.1561	3.2659
5	0.51	114.19	107	3.1702	0.441	10.764	3.574	3.012	7.1691	3.5951
6	0.63	114.75	107	3.3892	0.438	11.101	3.3551	3.309	7.2281	3.873
7	0.77	115.14	107	3.5351	0.435	11.344	3.2091	3.535	7.2767	4.0676
8	0.88	115.53	107	3.6405	0.427	11.63	3.1037	3.747	7.367	4.2633
9	1.01	115.87	107	3.7054	0.418	11.913	3.0389	3.920	7.4761	4.4373
0	1.14	116.2	107	3.754	0.408	12.191	2.9902	4.077	7.5906	4.6004
1	1.27	116.49	107	3.7702	0.397	12.461	2.974	4.190	7.7174	4.7434
2	1.41-pp	116.75	107	3.7864 - Peak pp	0.388	12.707	2.9578 = 9.75	4.296	7.8322	4.8744
3	1.53	117.03	107	3.7783	0.377	12.999	2.9659	4.383	7.9827	5.0168
4	1.66	117.26	107	3.754 3.79	0.366	13.247	2.9902	4.430	8.1188	5.1286
5	1.77	117.46	107	3.7297	0.357	13.476	3.0145	4.470	8.2454	5.2308
6	1.91	117.66	107	3.6973	0.347	13.708	3.047	4.499	8.3776	5.3306
7	2.02	117.86	107	3.6648	0.337	13.944	3.0794	4.528	8.5116	5.4322
8	2.15	118.06	107	3.6243	0.328	14.184	3.1199	4.546	8.6522	5.5322
9	2.28	118.24	107	3.5919	0.319	14.396	3.1524	4.567	8.7739	5.6216
0	2.40	118.42	107	3.5513	0.311	14.617	3.1929	4.578	8.9051	5.7122
1	2.54-SR	118.58	107	3.5108 - 3.51	0.303	14.815	3.2335 = 11.54	4.582 - Max	9.0241	5.7906
2	2.64	118.72	107	3.4702	0.296	14.997	3.274 = 11.72	4.581	9.1357	5.8617
3	2.79	118.86	107	3.4297	0.289	15.173	3.3145	4.578	9.2439	5.9294
4	2.93	118.97	107	3.381	0.282	15.338	3.3632	4.561	9.3506	5.9874
5	3.06	119.05	107	3.3324	0.277	15.463	3.4118	4.532	9.4372	6.0254
6	3.17	119.17	107	3.2838	0.270	15.631	3.4605	4.517	9.5458	6.0853
7	3.30	119.25	107	3.2351	0.264	15.757	3.5091	4.490	9.6331	6.1239
8	3.43	119.38	107	3.1865	0.257	15.942	3.5578	4.481	9.7498	6.192
9	3.54	119.54	107	3.1378	0.250	16.15	3.6064	4.478	9.8781	6.2716
0	3.68	119.76	107	3.0892	0.242	16.41	3.6551	4.490	10.033	6.3775
1	3.80	119.99	107	3.0486	0.235	16.685	3.6956	4.515	10.19	6.4949
2	3.92	120.22	107	3	0.227	16.967	3.7443	4.532	10.356	6.6115
3	4.04	120.38	107	2.9513	0.221	17.17	3.7929	4.527	10.482	6.6887
4	4.18	120.63	107	2.9108	0.214	17.46	3.8334	4.555	10.647	6.8132
5	4.31	120.82	107	2.8621	0.207	17.7	3.8821	4.559	10.791	6.909
6	4.43	120.99	107	2.8054	0.201	17.93	3.9389	4.552	10.934	6.9954
7	4.55	121.14	107	2.7567	0.195	18.131	3.9875	4.547	11.059	7.0719
8	4.69	121.33	107	2.7	0.188	18.376	4.0443	4.544	11.21	7.1658
9	4.82	121.44	107	2.6432	0.183	18.545	4.101	4.522	11.323	7.2218
0	4.93	121.58	107	2.5865	0.177	18.734	4.1578	4.506	11.446	7.2881
1	5.06	121.69	107	2.5378	0.173	18.894	4.2064	4.492	11.55	7.3439
2	5.18	121.78	107	2.4811	0.168	19.042	4.2632	4.467	11.653	7.3895
3	5.32	121.87	107	2.4243	0.163	19.188	4.3199	4.442	11.754	7.434
4	5.45	122.02	107	2.3757	0.158	19.385	4.3686	4.437	11.877	7.508
5	5.56	122.11	107	2.327	0.154	19.528	4.4172	4.421	11.972	7.5552
6	5.69	122.16	107	2.2784	0.150	19.626	4.4659	4.395	12.046	7.5799
7	5.81	122.25	107	2.2216	0.146	19.774	4.5226	4.372	12.148	7.6258
8	5.95	122.32	107	2.173	0.142	19.89	4.5713	4.351	12.231	7.6595
9	6.07	122.37	107	2.1243	0.138	19.99	4.6199	4.327	12.305	7.6851
0	6.20	122.5	107	2.0757	0.134	20.166	4.6686	4.320	12.417	7.7489
1	6.31	122.55	107	2.0189	0.130	20.276	4.7253	4.291	12.501	7.7755

3	6.58	122.69	107	1.9216	0.123	20.508	4.8226	4.253	12.665	7.8428
4	6.68	122.76	107	1.873	0.119	20.63	4.8713	4.235	12.751	7.8795
5	6.80	122.85	107	1.8243	0.115	20.769	4.9199	4.221	12.844	7.9245
6	6.94	122.93	107	1.7757	0.111	20.902	4.9686	4.207	12.935	7.9667
7	7.08	123	107	1.7351	0.108	21.007	5.0091	4.194	13.008	7.9987
8	7.20	123.01	107	1.6784	0.105	21.076	5.0659	4.160	13.071	8.005
9	7.34	123.07	107	1.6378	0.102	21.18	5.1064	4.148	13.143	8.0369
0	7.46	123.18	107	1.5973	0.099	21.328	5.1469	4.144	13.238	8.0907
1	7.58	123.21	107	1.5486	0.096	21.407	5.1956	4.120	13.301	8.1059
2	7.70	123.3	107	1.5081	0.093	21.534	5.2361	4.113	13.385	8.1488
3	7.80	123.37	107	1.4594	0.089	21.656	5.2848	4.098	13.471	8.1858
4	7.95	123.38	107	1.4108	0.086	21.71	5.3334	4.071	13.522	8.1883
5	8.06	123.43	107	1.3703	0.083	21.8	5.374	4.057	13.587	8.2129
6	8.20	123.49	107	1.3297	0.081	21.903	5.4145	4.045	13.659	8.2443
7	8.33	123.55	107	1.2892	0.078	22.009	5.4551	4.035	13.732	8.2771
8	8.45	123.58	107	1.2486	0.075	22.079	5.4956	4.018	13.787	8.2915
9	8.57	123.69	107	1.2081	0.072	22.223	5.5361	4.014	13.88	8.3437
0	8.71	123.73	107	1.1757	0.070	22.3	5.5686	4.005	13.934	8.3659
1	8.84	123.8	107	1.1351	0.068	22.404	5.6091	3.994	14.007	8.3977
2	8.95	123.86	107	1.0946	0.065	22.513	5.6496	3.985	14.081	8.4315
3	9.07	123.95	107	1.0622	0.063	22.629	5.6821	3.982	14.155	8.4732
4	9.20	123.99	107	1.0216	0.060	22.714	5.7226	3.969	14.218	8.4955
5	9.34	124.11	107	0.98918	0.058	22.864	5.755	3.973	14.31	8.5545
6	9.45	124.14	107	0.95675	0.056	22.926	5.7875	3.961	14.357	8.569
7	9.59	124.23	107	0.92432	0.054	23.054	5.8199	3.961	14.437	8.6172
8	9.72	124.28	107	0.89188	0.052	23.131	5.8523	3.952	14.492	8.6393
9	9.85	124.36	107	0.85134	0.049	23.252	5.8929	3.946	14.572	8.6793
0	9.97	124.37	107	0.81891	0.047	23.293	5.9253	3.931	14.609	8.684
1	10.08	124.47	107	0.78648	0.045	23.427	5.9578	3.932	14.693	8.7348
2	10.22	124.55	107	0.74594	0.043	23.547	5.9983	3.926	14.773	8.7744
3	10.35	124.63	107	0.71351	0.040	23.659	6.0307	3.923	14.845	8.814
4	10.47	124.73	107	0.67297	0.038	23.798	6.0713	3.920	14.934	8.8632
5	10.58	124.81	107	0.64053	0.036	23.913	6.1037	3.918	15.008	8.9046
6	10.71	124.87	107	0.59999	0.034	24.015	6.1442	3.909	15.08	8.9354
7	10.84	124.93	107	0.56756	0.032	24.107	6.1767	3.903	15.142	8.9653
8	10.97	125.03	107	0.53513	0.030	24.236	6.2091	3.903	15.222	9.0133
9	11.10	125.14	107	0.5027	0.028	24.382	6.2415	3.906	15.312	9.0701
0	11.22	125.18	107	0.45405	0.025	24.474	6.2902	3.891	15.382	9.0918
1	11.34	125.28	107	0.42162	0.023	24.602	6.3226	3.891	15.462	9.1399
2	11.49	125.33	107	0.38919	0.021	24.69	6.355	3.885	15.522	9.1674
3	11.59	125.4	107	0.34865	0.019	24.795	6.3956	3.877	15.595	9.1995
4	11.72	125.49	107	0.32432	0.018	24.913	6.4199	3.881	15.667	9.2468
5	11.85	125.55	107	0.28378	0.015	25.011	6.4604	3.871	15.736	9.2752
6	11.98	125.59	107	0.25135	0.014	25.083	6.4929	3.863	15.788	9.2953
7	12.11	125.66	107	0.21892	0.012	25.19	6.5253	3.860	15.858	9.3323
8	12.23	125.71	107	0.18648	0.010	25.263	6.5577	3.852	15.91	9.3527
9	12.35	125.8	107	0.15405	0.008	25.391	6.5902	3.853	15.991	9.4004
0	12.49	125.85	107	0.12973	0.007	25.469	6.6145	3.851	16.042	9.4274
1	12.61	125.93	107	0.097296	0.005	25.579	6.6469	3.848	16.113	9.4662
2	12.73	125.94	107	0.056756	0.003	25.624	6.6875	3.832	16.156	9.4681
3	12.87	126.03	107	0.024324	0.001	25.745	6.7199	3.831	16.233	9.5128
4	13.00	126.06	107	0	0.000	25.808	6.7442	3.827	16.276	9.5318
5	13.13	126.1	107	-0.032432	-0.002	25.876	6.7767	3.818	16.326	9.5494
6	13.24	126.14	107	-0.056756	-0.003	25.944	6.801	3.815	16.372	9.5715
7	13.38	126.23	107	-0.089188	-0.005	26.064	6.8334	3.814	16.449	9.6152
8	13.51	126.25	107	-0.12162	-0.006	26.116	6.8658	3.804	16.491	9.6248
9	13.64	126.32	107	-0.15405	-0.008	26.22	6.8983	3.801	16.559	9.6608
0	13.75	126.4	107	-0.17027	-0.009	26.312	6.9145	3.805	16.613	9.6989
1	13.87	126.42	107	-0.2027	-0.010	26.365	6.9469	3.795	16.656	9.7091
2	13.99	126.46	107	-0.23513	-0.012	26.436	6.9794	3.788	16.708	9.7283
3	14.11	126.49	107	-0.26756	-0.014	26.507	7.0118	3.780	16.759	9.7474
4	14.26	126.56	107	-0.3	-0.015	26.605	7.0442	3.777	16.824	9.7802
5	14.38	126.53	107	-0.32432	-0.017	26.597	7.0685	3.763	16.833	9.7642
6	14.50	126.62	107	-0.35675	-0.018	26.72	7.101	3.763	16.91	9.8095
7	14.63	126.57	107	-0.38108	-0.019	26.693	7.1253	3.746	16.909	9.7836
8	14.75	126.6	107	-0.41351	-0.021	26.76	7.1577	3.739	16.959	9.801
9	14.89	126.62	107	-0.44594	-0.023	26.809	7.1902	3.729	16.999	9.8092
0	15.02	126.65	107	-0.47837	-0.024	26.875	7.2226	3.721	17.049	9.8262
1	15.14	126.71	107	-0.5027	-0.026	26.954	7.2469	3.719	17.1	9.8535
2	15.29	126.75	107	-0.53513	-0.027	27.033	7.2794	3.714	17.156	9.8767
3	15.40	126.76	107	-0.55945	-0.028	27.06	7.3037	3.705	17.182	9.8779
4	15.51	126.76	107	-0.59189	-0.030	27.097	7.3361	3.694	17.216	9.8802

6	15.75	126.83	107	-0.64864	-0.033	27.227	7.3929	3.683	17.31	9.9173
7	15.90	126.86	107	-0.67297	-0.034	27.279	7.4172	3.678	17.348	9.9309
8	16.04	126.86	107	-0.7054	-0.036	27.308	7.4496	3.666	17.379	9.9291
9	16.14	126.92	107	-0.72972	-0.037	27.389	7.474	3.665	17.431	9.9575
0	16.27	126.9	107	-0.75405	-0.038	27.394	7.4983	3.653	17.446	9.9481
1	16.39	126.98	107	-0.78648	-0.039	27.512	7.5307	3.653	17.522	9.9909
2	16.53	127	107	-0.8108	-0.041	27.551	7.555	3.647	17.553	9.998
3	16.66	126.98	107	-0.85134	-0.043	27.571	7.5956	3.630	17.583	9.9878
4	16.79	127.01	107	-0.86756	-0.043	27.62	7.6118	3.629	17.616	10.004
5	16.90	127.08	107	-0.89188	-0.044	27.715	7.6361	3.629	17.676	10.039
6	17.03	127.08	107	-0.91621	-0.046	27.735	7.6604	3.621	17.698	10.038
7	17.16	127.14	107	-0.94053	-0.047	27.826	7.6848	3.621	17.755	10.071
8	17.28	127.19	107	-0.96486	-0.048	27.903	7.7091	3.619	17.806	10.097
9	17.43	127.2	107	-0.98918	-0.049	27.935	7.7334	3.612	17.834	10.101
0	17.52	127.22	107	-1.0135	-0.050	27.983	7.7577	3.607	17.87	10.112
1	17.66	127.3	107	-1.0378	-0.051	28.085	7.7821	3.609	17.933	10.151
2	17.80	127.33	107	-1.054	-0.052	28.13	7.7983	3.607	17.964	10.166
3	17.90	127.42	107	-1.0784	-0.053	28.243	7.8226	3.610	18.033	10.21
4	18.03	127.47	107	-1.0946	-0.053	28.304	7.8388	3.611	18.072	10.233
5	18.15	127.5	107	-1.1108	-0.054	28.355	7.855	3.610	18.105	10.25
6	18.18	127.51	107	-1.1189	-0.055	28.37	7.8631	3.608	18.117	10.254

TRIAXIAL TEST

ct: PLUM CREEK SITE 21
g No.: B-603
e No.: 19-297
No.: 2

Location: TX
Tested By: SKK
Test Date: 3/28/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Description:
ks:

men Height: 3.02 in
men Area: 1.54 in^2
men Volume: 76.29 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
iner ID		---		
ontainer + Wet Soil, gm	147.92	147.92	152.92	223.16
ontainer + Dry Soil, gm	118.62	118.62	118.62	188.86
ontainer, gm	0	---	0	70.24
ry Soil, gm	118.62	118.62	118.62	118.62
Content, %	24.70	24.70	28.92	28.92
Ratio	---	0.75	0.79	---
e of Saturation, %	---	89.65	100.00	---
nit Weight, pcf	---	97.065	95.048	---

al

f Initialization

f Consolidation/A

f Saturation

f Consolidation/B

f Shear

ilure

TRIAXIAL TEST

ct: PLUM CREEK SITE 21
g No.: B-603
e No.: 19-297
No.: 2

Location: TX
Tested By: SKK
Test Date: 3/28/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Description:
ks:

men Height: 3.02 in
men Area: 1.54 in^2
men Volume: 76.29 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	1.4913	0	0	100.09	128	128
2	2.001	0.12653	1.4932	14.315	9.581	104.36	128	137.58
3	4.002	0.26255	1.4952	20.127	13.448	107.01	128	141.45
4	6.0041	0.38117	1.497	24.532	16.369	109.01	128	144.37
5	8.0007	0.5251	1.4991	28.11	18.726	110.56	128	146.73
6	10	0.64056	1.5009	31.139	20.716	111.82	128	148.72
7	12.004	0.75918	1.5027	33.861	22.497	112.87	128	150.5
8	14.004	0.87781	1.5045	36.308	24.091	113.76	128	152.09
9	16.003	1.0075	1.5064	38.51	25.515	114.52	128	153.52
0	18	1.1672	1.5089	40.621	26.865	115.19	128	154.87
1	20.004	1.2827	1.5106	42.548	28.104	115.76	128	156.1
2	22.003	1.4187	1.5127	44.169	29.13	116.2	128	157.13
3	24.003	1.5373	1.5145	46.035	30.321	116.64	128	158.32
4	26.001	1.6544	1.5164	47.778	31.43	117.03	128	159.43
5	28.004	1.7952	1.5185	49.461	32.486	117.36	128	160.49
6	30.003	1.9154	1.5204	51.082	33.506	117.65	128	161.51
7	32.003	2.0719	1.5228	52.673	34.49	117.89	128	162.49
8	34.004	2.1921	1.5247	54.141	35.405	118.08	128	163.4
9	36.001	2.3108	1.5265	55.67	36.358	118.25	128	164.36
0	38.004	2.4579	1.5288	57.138	37.257	118.39	128	165.26
1	40.003	2.5654	1.5305	58.637	38.19	118.48	128	166.19
2	42.004	2.7014	1.5327	60.044	39.048	118.55	128	167.05
3	44.001	2.8264	1.5346	61.512	39.949	118.58	128	167.95
4	46.002	2.9592	1.5367	62.858	40.764	118.59	128	168.76
5	48.004	3.0953	1.5389	64.265	41.615	118.57	128	169.61
6	50.004	3.2186	1.5409	65.703	42.489	118.55	128	170.49
7	52	3.361	1.5431	67.141	43.351	118.49	128	171.35
8	54.003	3.4986	1.5453	68.456	44.134	118.4	128	172.13
9	56.002	3.6235	1.5473	69.71	44.882	118.29	128	172.88
0	58.001	3.7406	1.5492	70.995	45.651	118.15	128	173.65
1	60.001	3.8592	1.5511	72.31	46.437	118	128	174.44
2	62.004	3.9968	1.5534	73.656	47.231	117.83	128	175.23
3	64.003	4.1486	1.5558	74.849	47.916	117.63	128	175.92
4	66.004	4.2514	1.5575	75.981	48.586	117.41	128	176.59
5	68.002	4.4049	1.56	77.112	49.227	117.17	128	177.23
6	70.002	4.5282	1.562	78.244	49.882	116.93	128	177.88
7	72.003	4.6547	1.5641	79.345	50.514	116.66	128	178.51
8	74.002	4.7655	1.5659	80.446	51.153	116.39	128	179.15
9	76.003	4.9046	1.5682	81.333	51.638	116.08	128	179.64
0	78.002	5.0201	1.5701	82.221	52.135	115.75	128	180.13
1	80.001	5.1466	1.5722	83.016	52.565	115.42	128	180.57
2	82.001	5.2858	1.5745	83.811	52.987	115.09	128	180.99
3	84.001	5.4171	1.5767	84.545	53.373	114.73	128	181.37
4	86.004	5.5547	1.579	85.096	53.638	114.39	128	181.64
5	88.001	5.6907	1.5813	85.585	53.864	114.03	128	181.86
6	90.001	5.8014	1.5831	86.044	54.085	113.69	128	182.09
7	92.003	5.9153	1.585	86.564	54.343	113.35	128	182.34
8	94.002	6.0703	1.5876	86.931	54.477	113.01	128	182.48
9	96.002	6.1937	1.5897	87.268	54.612	112.7	128	182.61
0	98.003	6.3265	1.592	87.512	54.682	112.39	128	182.68
1	100	6.4673	1.5944	87.849	54.804	112.1	128	182.8
2	102	6.578	1.5963	88.124	54.907	111.82	128	182.91

4	106	6.8327	1.6006	88.644	55.071	111.3	128	183.07
5	108	6.956	1.6028	89.103	55.278	111.08	128	183.28
6	110	7.0889	1.605	89.164	55.232	110.84	128	183.23
7	112	7.2296	1.6075	89.256	55.199	110.62	128	183.2
8	114	7.3435	1.6095	89.623	55.354	110.44	128	183.35
9	116	7.4685	1.6116	89.806	55.387—	110.24 -10.15	128	183.39
0	118	7.6061	1.614	89.867	55.337	110.06	128	183.34
1	120	7.7389	1.6164	90.02	55.346	109.86	128	183.35
2	122	7.8417	1.6182	90.082	55.317	109.67	128	183.32
3	124	7.9604	1.6202	90.265	55.354	109.5	128	183.35
4	126	8.1217	1.6231	90.418	55.344	109.35	128	183.34
5	128	8.2403	1.6252	90.54	55.343	109.19	128	183.34
6	130	8.3811	1.6277	90.724	55.364	109.04	128	183.36
7	132	8.495	1.6297	90.907	55.403	108.9	128	183.4
8	134	8.6357	1.6322	91.091	55.424	108.76	128	183.42
9	136	8.7686	1.6346	91.275	55.45- Max	108.63- 8.54	128	183.45
0	138	8.8777	1.6366	91.366	55.435 Overall	108.49	128	183.43
1	140	9.0248	1.6392	91.427	55.376 (-1.02)	108.35	128	183.38
2	142	9.1403	1.6413	91.213	55.17	108.19	128	183.17
3	144	9.2826	1.6439	91.275	55.114	108.06	128	183.11
4	146	9.4044	1.6461	91.091	54.924	107.92	128	182.92
5	148	9.5452	1.6486	90.999	54.776	107.78	128	182.78
6	150	9.678	1.6511	90.877	54.616	107.66	128	182.62
7	152	9.8077	1.6534	90.907	54.55	107.54	128	182.55
8	154	9.9327	1.6557	90.877	54.451	107.42	128	182.45
9	156	10.058	1.658	90.877	54.37	107.3	128	182.37
0	158	10.189	1.6604	90.785	54.229	107.18	128	182.23
1	160	10.309	1.6627	90.602	54.041	107.06	128	182.04
2	162	10.432	1.665	90.602	53.962	106.94	128	181.96
3	164	10.567	1.6675	90.54	53.838	106.83	128	181.84
4	166	10.698	1.6699	90.51	53.735	106.72	128	181.73
5	168	10.826	1.6723	90.51	53.652	106.62	128	181.65
6	170	10.959	1.6748	90.51	53.567	106.51	128	181.57
7	172	11.097	1.6774	90.724	53.606	106.41	128	181.61
8	174	11.215	1.6796	90.785	53.565	106.31	128	181.57
9	176	11.351	1.6822	90.938	53.568	106.22	128	181.57
0	178	11.472	1.6845	91.152	53.618	106.12	128	181.62
1	180	11.611	1.6872	91.336	53.636	106.02	128	181.64
2	182	11.745	1.6897	91.672	53.748	105.92	128	181.75
3	184	11.886	1.6924	91.825	53.746	105.82	128	181.75
4	186	12.008	1.6948	92.131	53.847	105.74	128	181.85
5	188	12.115	1.6968	92.315	53.885	105.64	128	181.89
6	190	12.253	1.6995	92.529	53.921	105.55	128	181.92
7	192	12.384	1.7021	92.865	54.032	105.46	128	182.03
8	194	12.528	1.7049	93.079	54.063	105.37	128	182.06
9	196	12.65	1.7072	93.324	54.126	105.28	128	182.13
0	198	12.778	1.7097	93.477	54.131	105.17	128	182.13
1	200	12.912	1.7124	93.691	54.166	105.09	128	182.17
2	202	13.039	1.7149	93.813	54.154	104.98	128	182.15
3	204	13.156	1.7172	94.027	54.201	104.88	128	182.2
4	206	13.281	1.7197	94.15	54.188	104.77	128	182.19
5	208	13.412	1.7223	94.211	54.136	104.68	128	182.14
6	210	13.544	1.7249	94.456	54.191	104.57	128	182.19
7	212	13.656	1.7271	94.578	54.186	104.48	128	182.19
8	214	13.795	1.7299	94.67	54.146	104.39	128	182.15
9	216	13.934	1.7327	94.884	54.177	104.3	128	182.18
0	218	14.064	1.7353	95.098	54.213	104.23	128	182.21
1	220	14.173	1.7375	95.312	54.263	104.15	128	182.26
2	222	14.304	1.7402	95.587	54.332	104.08	128	182.33
3	224	14.44	1.743	95.71	54.311	104	128	182.31
4	226	14.572	1.7456	95.955	54.362	103.93	128	182.36
5	228	14.709	1.7484	96.138	54.374	103.85	128	182.37
6	230	14.842	1.7512	96.444	54.458	103.78	128	182.46
7	232	14.965	1.7537	96.689	54.514	103.72	128	182.51
8	234	15.108	1.7567	96.903	54.539	103.64	128	182.54
9	236	15.22	1.759	97.025	54.531	103.57	128	182.53
0	238	15.355	1.7618	97.27	54.578	103.5	128	182.58
1	240	15.475	1.7643	97.423	54.582	103.43	128	182.58
2	242	15.617	1.7673	97.698	54.64	103.37	128	182.64
3	244	15.755	1.7701	98.004	54.718	103.29	128	182.72
4	246	15.867	1.7725	98.065	54.675	103.21	128	182.68
5	248	16.011	1.7755	98.157	54.628	103.13	128	182.63

7	252	16.273	1.7811	98.585	54.687	102.99	128	182.69
8	254	16.386	1.7835	98.738	54.695	102.91	128	182.69
9	256	16.52	1.7864	98.922	54.704	102.84	128	182.7
0	258	16.653	1.7892	99.166	54.748	102.77	128	182.75
1	260	16.792	1.7922	99.289	54.719	102.7	128	182.72
2	262	16.919	1.7949	99.442	54.716	102.64	128	182.72
3	264	17.045	1.7977	99.747	54.798	102.58	128	182.8
4	266	17.177	1.8005	99.962	54.825	102.54	128	182.82
5	268	17.313	1.8035	100.27	54.899	102.48	128	182.9
6	270	17.452	1.8065	100.48	54.919	102.43	128	182.92
7	272	17.578	1.8093	100.7	54.949	102.38	128	182.95
8	274	17.711	1.8122	101.12	55.091	102.34	128	183.09
9	276	17.819	1.8146	101.31	55.116	102.3	128	183.12
0	278	17.942	1.8173	101.52	55.146	102.25	128	183.15
1	280	18.075	1.8203	101.74	55.169	102.2	128	183.17
2	282	18.214	1.8234	101.98	55.204	102.15	128	183.2
3	284	18.342	1.8262	102.38	55.33	102.11	128	183.33
4	286	18.456	1.8288	102.68	55.416	102.06	128	183.42
5	288	18.589	1.8318	102.96	55.47	102.01	128	183.47
6	288.24	18.611	1.8323	102.93	55.438	102.01	128	183.44

TRIAXIAL TEST

ct: PLUM CREEK SITE 21
g No.: B-603
e No.: 19-297
No.: 2

Location: TX
Tested By: SKK
Test Date: 3/28/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Description:
ks:

men Height: 3.02 in
men Area: 1.54 in^2
men Volume: 76.29 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

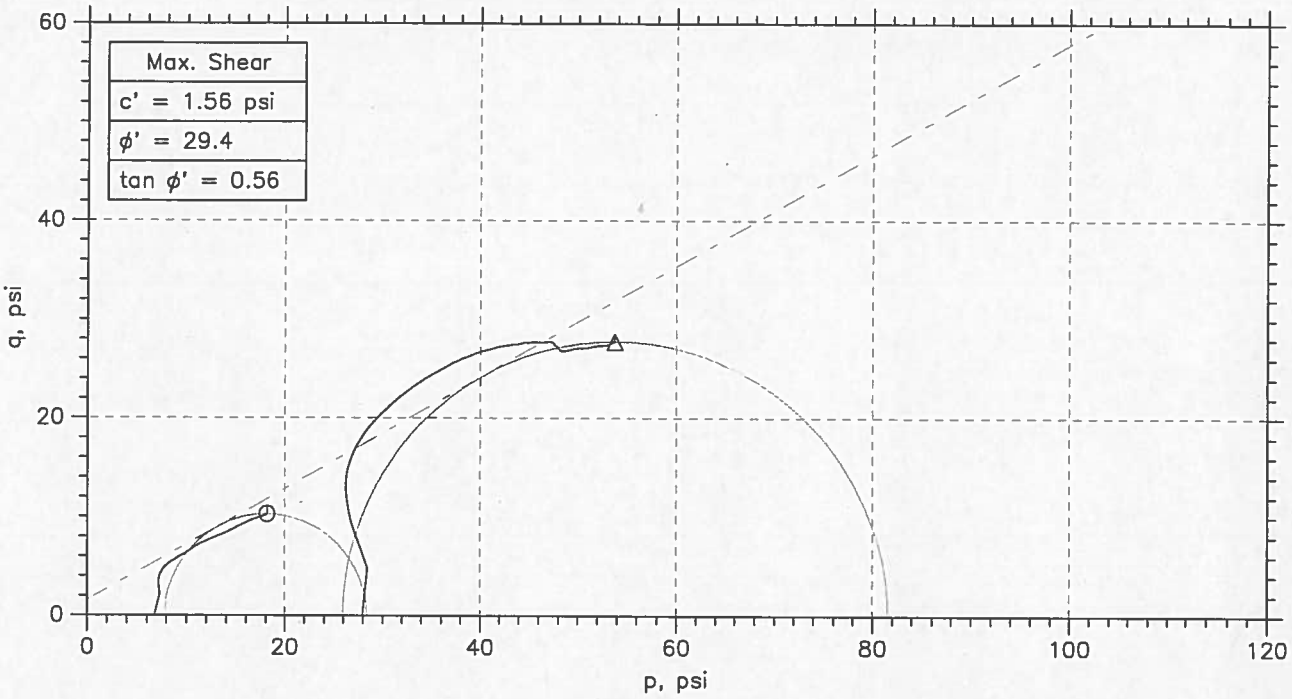
Measured Specific Gravity: 2.72

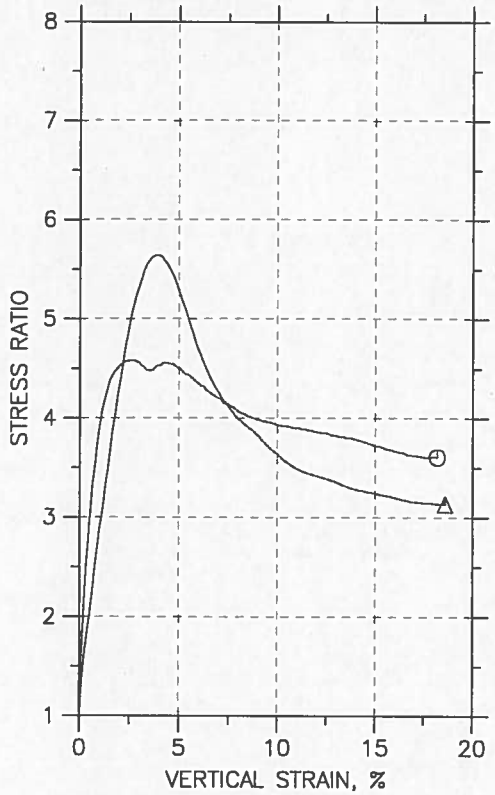
	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	128	128	0	0.000	27.911	27.911	1.000	27.911	0
2	0.13	137.58	128	4.2735	0.446	33.218	23.637	1.405	28.428	4.7905
3	0.26	141.45	128	6.9163	0.514	34.443	20.995	1.641	27.719	6.7242
4	0.38	144.37	128	8.9245	0.545	35.355	18.986	1.862	27.171	8.1845
5	0.53	146.73	128	10.475	0.559	36.162	17.436	2.074	26.799	9.3628
6	0.64	148.72	128	11.728	0.566	36.899	16.183	2.280	26.541	10.358
7	0.76	150.5	128	12.78	0.568	37.628	15.131	2.487	26.379	11.249
8	0.88	152.09	128	13.672	0.568	38.33	14.239	2.692	26.285	12.045
9	1.01	153.52	128	14.435	0.566	38.991	13.476	2.893	26.233	12.758
0	1.17	154.87	128	15.102	0.562	39.674	12.809	3.097	26.242	13.433
1	1.28	156.1	128	15.672	0.558	40.343	12.239	3.296	26.291	14.052
2	1.42	157.13	128	16.114	0.553	40.927	11.797	3.469	26.362	14.565
3	1.54	158.32	128	16.556	0.546	41.677	11.355	3.670	26.516	15.161
4	1.65	159.43	128	16.941	0.539	42.399	10.97	3.865	26.684	15.715
5	1.80	160.49	128	17.271	0.532	43.126	10.64	4.053	26.883	16.243
6	1.92	161.51	128	17.56	0.524	43.858	10.351	4.237	27.104	16.753
7	2.07	162.49	128	17.801	0.516	44.6	10.11	4.411	27.355	17.245
8	2.19	163.4	128	17.994	0.508	45.322	9.9174	4.570	27.62	17.702
9	2.31	164.36	128	18.162	0.500	46.107	9.7487	4.730	27.928	18.179
0	2.46	165.26	128	18.299	0.491	46.869	9.6121	4.876	28.241	18.628
1	2.57	166.19	128	18.395	0.482	47.706	9.5157	5.013	28.611	19.095
2	2.70	167.05	128	18.459	0.473	48.5	9.4515	5.131	28.976	19.524
3	2.83	167.95	128	18.492	0.463	49.368	9.4193	5.241	29.394	19.974
4	2.96-pp	168.76	128	18.5- Peak pp	0.454	50.175	9.4113=40.76	5.331	29.793	20.382
5	3.10	169.61	128	18.484	0.444	51.042	9.4274	5.414	30.235	20.807
6	3.22	170.49	128	18.459	0.434	51.94	9.4515	5.495	30.696	21.244
7	3.36	171.35	128	18.403	0.425	52.859	9.5077	5.560	31.183	21.676
8	3.50	172.13	128	18.307	0.415	53.738	9.6041	5.595	31.671	22.067
9	3.62	172.88	128	18.202	0.406	54.59	9.7085	5.623	32.149	22.441
0	3.74	173.65	128	18.066	0.396	55.496	9.8451	5.637	32.671	22.825
1	3.86-SR	174.44	128	17.913-17.91	0.386	56.435	9.9977=46.44	5.645-Mean SR	33.216	23.219
2	4.00	175.23	128	17.736	0.376	57.405	10.174	5.642	33.79	23.615
3	4.15	175.92	128	17.544	0.366	58.283	10.367	5.622	34.325	23.958
4	4.25	176.59	128	17.319	0.356	59.178	10.592	5.587	34.885	24.293
5	4.40	177.23	128	17.086	0.347	60.052	10.825	5.547	35.438	24.613
6	4.53	177.88	128	16.837	0.338	60.956	11.074	5.504	36.015	24.941
7	4.65	178.51	128	16.572	0.328	61.853	11.339	5.455	36.596	25.257
8	4.77	179.15	128	16.299	0.319	62.766	11.612	5.405	37.189	25.577
9	4.90	179.64	128	15.993	0.310	63.555	11.918	5.333	37.736	25.819
0	5.02	180.13	128	15.664	0.300	64.382	12.247	5.257	38.314	26.067
1	5.15	180.57	128	15.327	0.292	65.149	12.584	5.177	38.867	26.283
2	5.29	180.99	128	14.997	0.283	65.9	12.914	5.103	39.407	26.493
3	5.42	181.37	128	14.644	0.274	66.64	13.267	5.023	39.954	26.686
4	5.55	181.64	128	14.298	0.267	67.25	13.612	4.940	40.431	26.819
5	5.69	181.86	128	13.937	0.259	67.838	13.974	4.855	40.906	26.932
6	5.80	182.09	128	13.6	0.251	68.396	14.311	4.779	41.354	27.043
7	5.92	182.34	128	13.262	0.244	68.991	14.649	4.710	41.82	27.171
8	6.07	182.48	128	12.925	0.237	69.463	14.986	4.635	42.225	27.239
9	6.19	182.61	128	12.612	0.231	69.911	15.299	4.570	42.605	27.306
0	6.33	182.68	128	12.298	0.225	70.295	15.613	4.502	42.954	27.341
1	6.47	182.8	128	12.009	0.219	70.706	15.902	4.446	43.304	[illegible]

3	6.72	182.95	128	11.455	0.208	71.408	16.456	4.339	43.932	27.476
4	6.83	183.07	128	11.214	0.204	71.768	16.697	4.298	44.232	27.535
5	6.96	183.28	128	10.989	0.199	72.2	16.922	4.267	44.561	27.639
6	7.09	183.23	128	10.748	0.195	72.395	17.163	4.218	44.779	27.616
7	7.23	183.2	128	10.531	0.191	72.578	17.38	4.176	44.979	27.599
8	7.34	183.35	128	10.354	0.187	72.91	17.557	4.153	45.233	27.677
9	7.47	183.39	128	10.154	0.183	73.145	17.757	4.119	45.451	27.694
0	7.61	183.34	128	9.9687	0.180	73.279	17.942	4.084	45.611	27.668
1	7.74	183.35	128	9.7679	0.176	73.489	18.143	4.051	45.816	27.673
2	7.84	183.32	128	9.5832	0.173	73.645	18.328	4.018	45.986	27.659
3	7.96	183.35	128	9.4145	0.170	73.85	18.496	3.993	46.173	27.677
4	8.12	183.34	128	9.2619	0.167	73.993	18.649	3.968	46.321	27.672
5	8.24	183.34	128	9.1012	0.164	74.152	18.81	3.942	46.481	27.671
6	8.38	183.36	128	8.9486	0.162	74.326	18.962	3.920	46.644	27.682
7	8.49	183.4	128	8.812	0.159	74.502	19.099	3.901	46.8	27.701
8	8.64	183.42	128	8.6755	0.157	74.659	19.235	3.881	46.947	27.712
9	8.77	183.45	128	8.5389	0.154	74.822	19.372	3.862	47.097	27.725
0	8.88	183.43	128	8.4023	0.152	74.943	19.509	3.842	47.226	27.717
1	9.02	183.38	128	8.2658	0.149	75.021	19.645	3.819	47.333	27.688
2	9.14	183.17	128	8.1051	0.147	74.976	19.806	3.786	47.391	27.585
3	9.28	183.11	128	7.9686	0.145	75.057	19.942	3.764	47.5	27.557
4	9.40	182.92	128	7.832	0.143	75.003	20.079	3.735	47.541	27.462
5	9.55	182.78	128	7.6955	0.140	74.992	20.215	3.710	47.604	27.388
6	9.68	182.62	128	7.5669	0.139	74.96	20.344	3.685	47.652	27.308
7	9.81	182.55	128	7.4545	0.137	75.007	20.456	3.667	47.732	27.275
8	9.93	182.45	128	7.3259	0.135	75.036	20.585	3.645	47.81	27.225
9	10.06	182.37	128	7.2135	0.133	75.067	20.697	3.627	47.882	27.185
0	10.19	182.23	128	7.093	0.131	75.047	20.818	3.605	47.933	27.115
1	10.31	182.04	128	6.9725	0.129	74.98	20.938	3.581	47.959	27.021
2	10.43	181.96	128	6.852	0.127	75.02	21.059	3.562	48.04	26.981
3	10.57	181.84	128	6.7395	0.125	75.009	21.171	3.543	48.09	26.919
4	10.70	181.73	128	6.6351	0.123	75.011	21.276	3.526	48.143	26.867
5	10.83	181.65	128	6.5307	0.122	75.033	21.38	3.509	48.206	26.826
6	10.96	181.57	128	6.4182	0.120	75.059	21.493	3.492	48.276	26.783
7	11.10	181.61	128	6.3218	0.118	75.195	21.589	3.483	48.392	26.803
8	11.22	181.57	128	6.2174	0.116	75.259	21.693	3.469	48.476	26.783
9	11.35	181.57	128	6.1291	0.114	75.35	21.782	3.459	48.566	26.784
0	11.47	181.62	128	6.0327	0.113	75.496	21.878	3.451	48.687	26.809
1	11.61	181.64	128	5.9282	0.111	75.619	21.983	3.440	48.801	26.818
2	11.75	181.75	128	5.8318	0.109	75.827	22.079	3.434	48.953	26.874
3	11.89	181.75	128	5.7354	0.107	75.922	22.175	3.424	49.049	26.873
4	12.01	181.85	128	5.6471	0.105	76.111	22.264	3.419	49.188	26.924
5	12.12	181.89	128	5.5507	0.103	76.245	22.36	3.410	49.303	26.943
6	12.25	181.92	128	5.4623	0.101	76.369	22.449	3.402	49.409	26.96
7	12.38	182.03	128	5.374	0.099	76.569	22.537	3.397	49.553	27.016
8	12.53	182.06	128	5.2776	0.098	76.696	22.633	3.389	49.665	27.032
9	12.65	182.13	128	5.1892	0.096	76.848	22.722	3.382	49.785	27.063
0	12.78	182.13	128	5.0848	0.094	76.957	22.826	3.371	49.891	27.065
1	12.91	182.17	128	4.9964	0.092	77.081	22.914	3.364	49.998	27.083
2	13.04	182.15	128	4.892	0.090	77.173	23.019	3.353	50.096	27.077
3	13.16	182.2	128	4.7876	0.088	77.324	23.123	3.344	50.224	27.1
4	13.28	182.19	128	4.6831	0.086	77.416	23.228	3.333	50.322	27.094
5	13.41	182.14	128	4.5867	0.085	77.461	23.324	3.321	50.392	27.068
6	13.54	182.19	128	4.4823	0.083	77.619	23.429	3.313	50.524	27.095
7	13.66	182.19	128	4.3859	0.081	77.711	23.525	3.303	50.618	27.093
8	13.80	182.15	128	4.2976	0.079	77.76	23.613	3.293	50.686	27.073
9	13.93	182.18	128	4.2092	0.078	77.878	23.702	3.286	50.79	27.088
0	14.06	182.21	128	4.1369	0.076	77.987	23.774	3.280	50.88	27.106
1	14.17	182.26	128	4.0566	0.075	78.117	23.854	3.275	50.986	27.131
2	14.30	182.33	128	3.9923	0.073	78.251	23.919	3.272	51.085	27.166
3	14.44	182.31	128	3.912	0.072	78.31	23.999	3.263	51.154	27.155
4	14.57	182.36	128	3.8397	0.071	78.433	24.071	3.258	51.252	27.181
5	14.71	182.37	128	3.7594	0.069	78.525	24.152	3.251	51.338	27.187
6	14.84	182.46	128	3.6951	0.068	78.674	24.216	3.249	51.445	27.229
7	14.97	182.51	128	3.6308	0.067	78.794	24.28	3.245	51.537	27.257
8	15.11	182.54	128	3.5505	0.065	78.899	24.36	3.239	51.63	27.269
9	15.22	182.53	128	3.4782	0.064	78.964	24.433	3.232	51.698	27.266
0	15.35	182.58	128	3.4059	0.062	79.083	24.505	3.227	51.794	27.289
1	15.47	182.58	128	3.3417	0.061	79.152	24.569	3.222	51.86	27.291
2	15.62	182.64	128	3.2774	0.060	79.274	24.634	3.218	51.954	27.32
3	15.75	182.72	128	3.2051	0.059	79.424	24.706	3.215	52.065	27.359
4	15.87	182.68	128	3.1248	0.057	79.462	24.786	3.206	52.124	27.338

6	16.13	182.65	128	2.9641	0.054	79.595	24.947	3.191	52.271	27.324
7	16.27	182.69	128	2.8999	0.053	79.698	25.011	3.187	52.354	27.343
8	16.39	182.69	128	2.8195	0.052	79.786	25.091	3.180	52.439	27.347
9	16.52	182.7	128	2.7472	0.050	79.868	25.164	3.174	52.516	27.352
0	16.65	182.75	128	2.683	0.049	79.976	25.228	3.170	52.602	27.374
1	16.79	182.72	128	2.6107	0.048	80.02	25.3	3.163	52.66	27.36
2	16.92	182.72	128	2.5464	0.047	80.081	25.365	3.157	52.723	27.358
3	17.05	182.8	128	2.4902	0.045	80.219	25.421	3.156	52.82	27.399
4	17.18	182.82	128	2.45	0.045	80.286	25.461	3.153	52.873	27.412
5	17.31	182.9	128	2.3938	0.044	80.416	25.517	3.151	52.967	27.449
6	17.45	182.92	128	2.3376	0.043	80.493	25.573	3.148	53.033	27.46
7	17.58	182.95	128	2.2894	0.042	80.57	25.622	3.145	53.096	27.474
8	17.71	183.09	128	2.2492	0.041	80.753	25.662	3.147	53.207	27.545
9	17.82	183.12	128	2.209	0.040	80.818	25.702	3.144	53.26	27.558
0	17.94	183.15	128	2.1608	0.039	80.896	25.75	3.142	53.323	27.573
1	18.07	183.17	128	2.1126	0.038	80.967	25.798	3.138	53.383	27.584
2	18.21	183.2	128	2.0644	0.037	81.05	25.846	3.136	53.448	27.602
3	18.34	183.33	128	2.0162	0.036	81.225	25.895	3.137	53.56	27.665
4	18.46	183.42	128	1.968	0.036	81.359	25.943	3.136	53.651	27.708
5	18.59	183.47	128	1.9198	0.035	81.461	25.991	3.134	53.726	27.735
6	18.61	183.44	128	1.9198	0.035	81.429	25.991	3.133	53.71	27.719

CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⊙	△		
Sample No.		19-297	19-297		
Test No.		1	2		
Depth		15.5-17.5	15.5-17.5		
Initial	Diameter, in	1.391	1.401		
	Height, in	3.028	3.02		
	Water Content, %	27.3	24.7		
	Dry Density, pcf	92.03	97.07		
	Saturation, %	87.8	89.7		
	Void Ratio	0.845	0.749		
Before Shear	Water Content, %	33.3	28.9		
	Dry Density, pcf	89.11	95.05		
	Saturation*, %	100.0	100.0		
	Void Ratio	0.906	0.787		
	Back Press., psi	100.3	100.1		
Ver. Eff. Cons. Stress, psi		6.744	27.91		
Shear Strength, psi		10.25	27.74		
Strain at Failure, %		18.2	18.6		
Strain Rate, %/min		0.06	0.06		
B-Value		0.00	0.00		
Measured Specific Gravity		2.72	2.72		
Liquid Limit		---	---		
Plastic Limit		---	---		

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-297

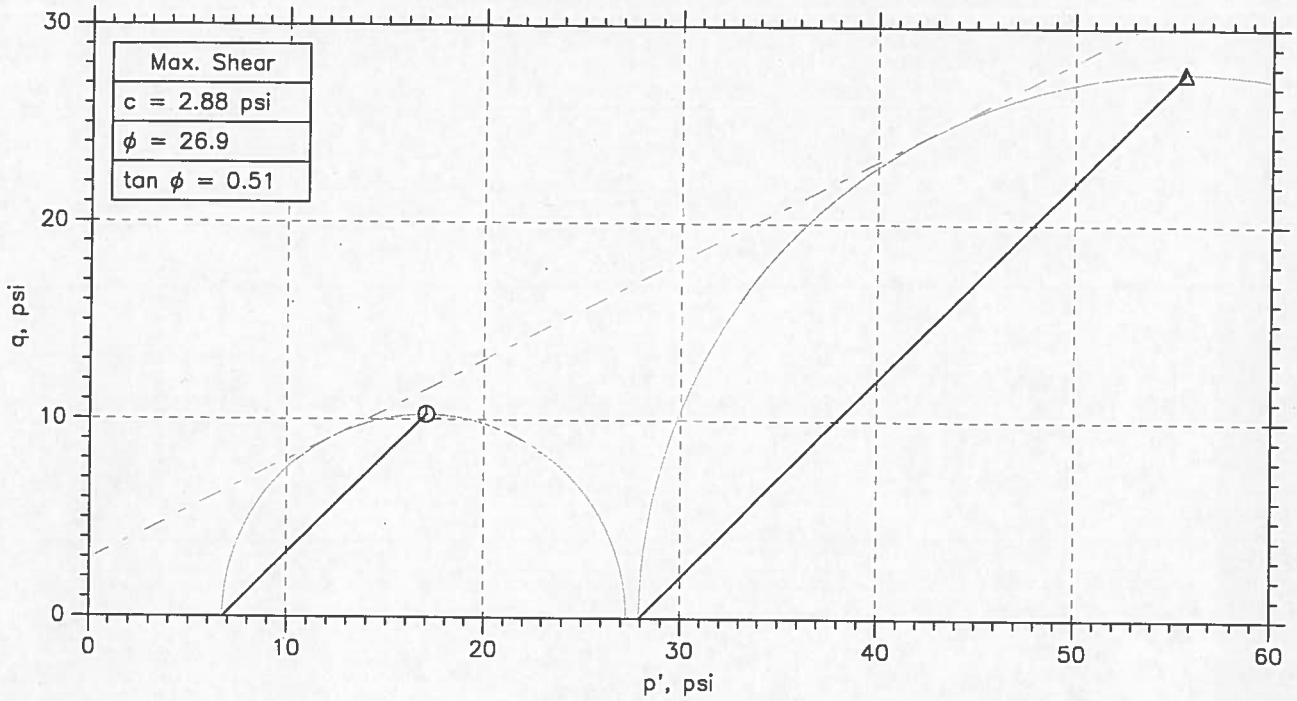
Boring No.: B-603

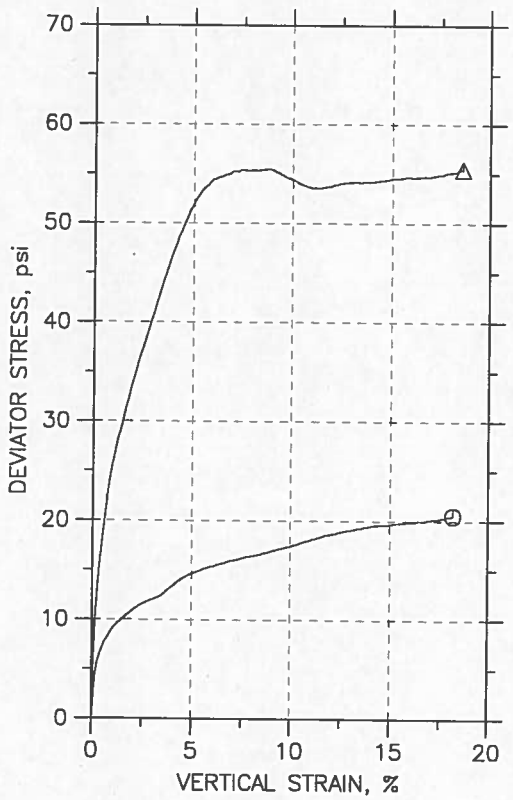
Sample Type: CORE

Description:

Remarks:

CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⦶	△		
Sample No.		19-297	19-297		
Test No.		1	2		
Depth		15.5-17.5'	15.5-17.5'		
Initial	Diameter, in	1.391	1.401		
	Height, in	3.028	3.02		
	Water Content, %	27.3	24.7		
	Dry Density, pcf	92.03	97.07		
	Saturation, %	87.8	89.7		
	Void Ratio	0.845	0.749		
Before Shear	Water Content, %	33.3	28.9		
	Dry Density, pcf	89.11	95.05		
	Saturation*, %	100.0	100.0		
	Void Ratio	0.906	0.787		
	Back Press., psi	100.3	100.1		
Ver. Eff. Cons. Stress, psi		6.744	27.91		
Shear Strength, psi		10.25	27.74		
Strain at Failure, %		18.2	18.6		
Strain Rate, %/min		0.06	0.06		
B-Value		0.00	0.00		
Measured Specific Gravity		2.72	2.72		
Liquid Limit		---	---		
Plastic Limit		---	---		

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-297

Boring No.: B-603

Sample Type: CORE

Description:

Remarks:

NRCS Soil Mechanics Center
Lincoln, NE

9/25/2019
3:57 PM

Mohr Circle Program

SITE NAME: Plum Creek Site 21
STATE: TX
SAMPLE NO: ~~19-270~~ 19-720

Failure Criterion:
- ☐ Maximum Dev. Stress
- ☑ Maximum Stress Ratio
- ☐ Max. Pore Pressure
- ☐ <= 10% Strain
- ☑ Selected Points

Total Strength Parameters:

			Zero Cohesion:
PHI:	22.7 degrees	22.7 degrees	Slope y=
C:	171 psf	1.19 psi	

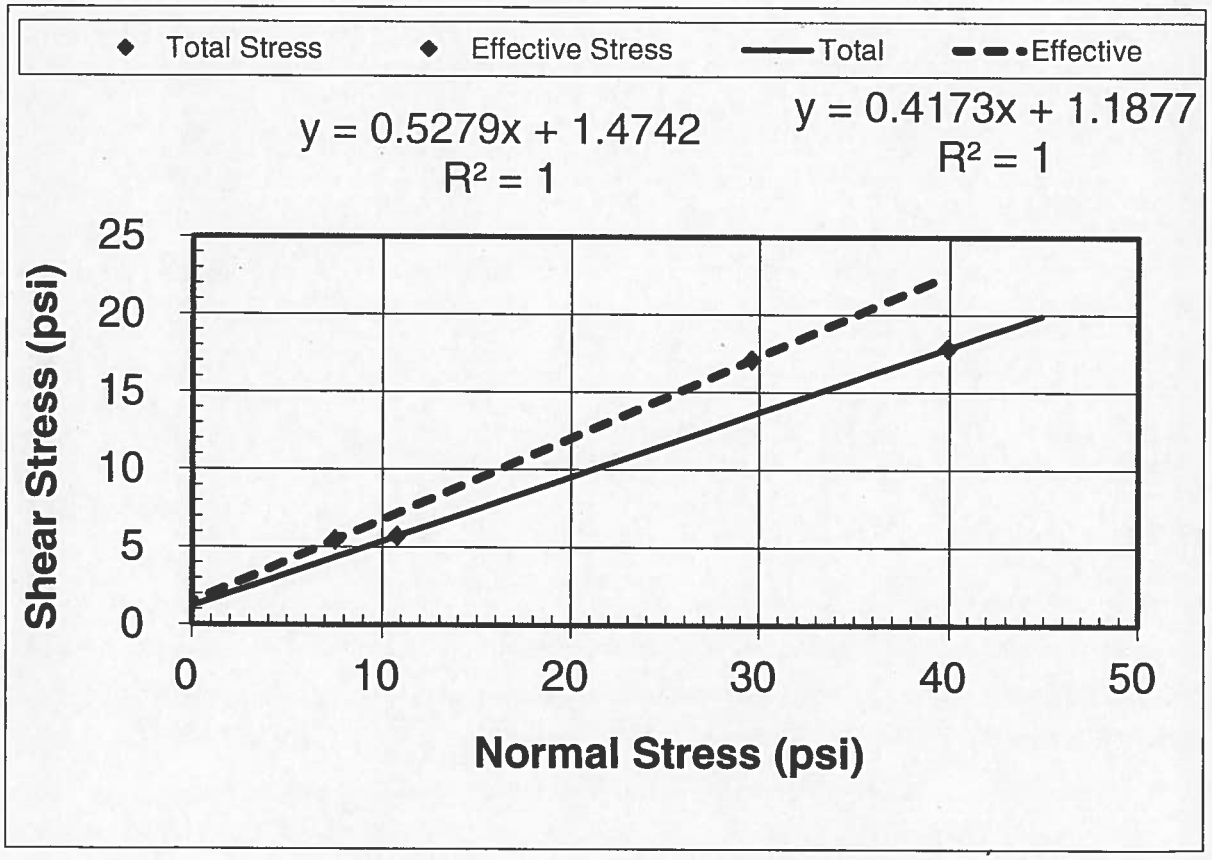
Effective Strength Parameters:

PHI':	~~27.8~~ degrees	27.8 degrees	Slope y=
C':	212 psf	1.47 psi	

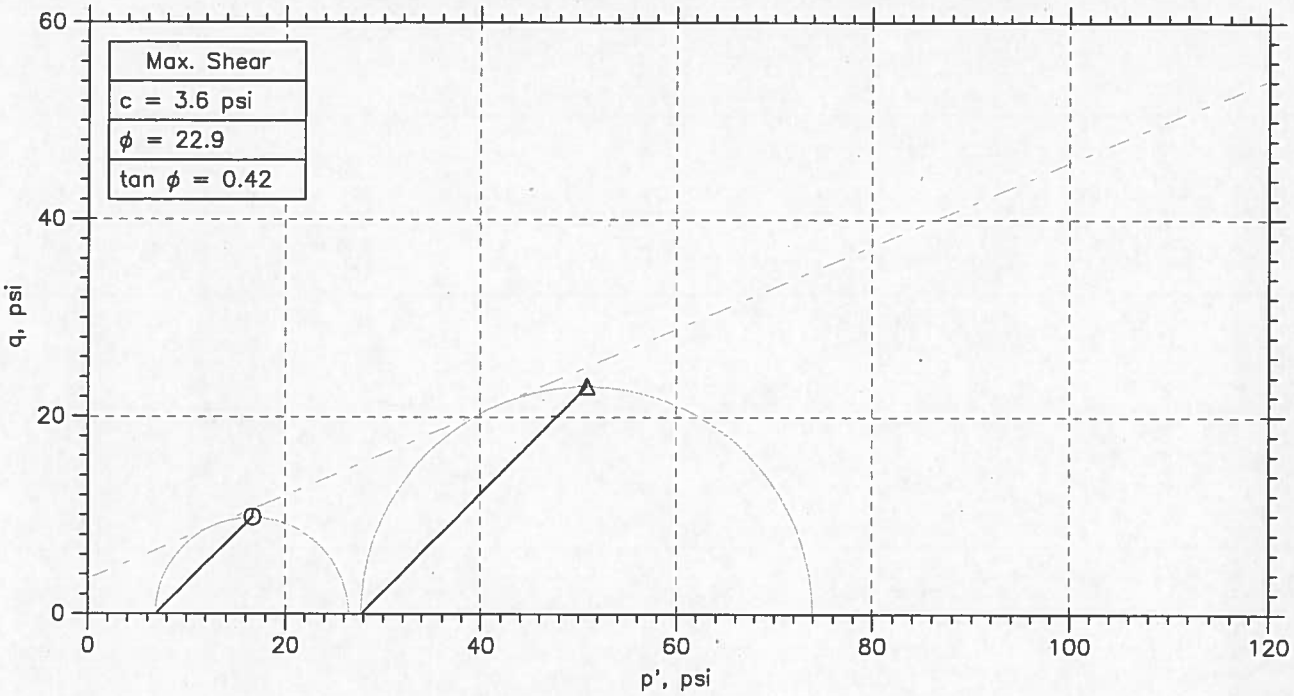
Stress path analysis from p-q plot:
PHI': 29.2 degrees
C': 132 psf

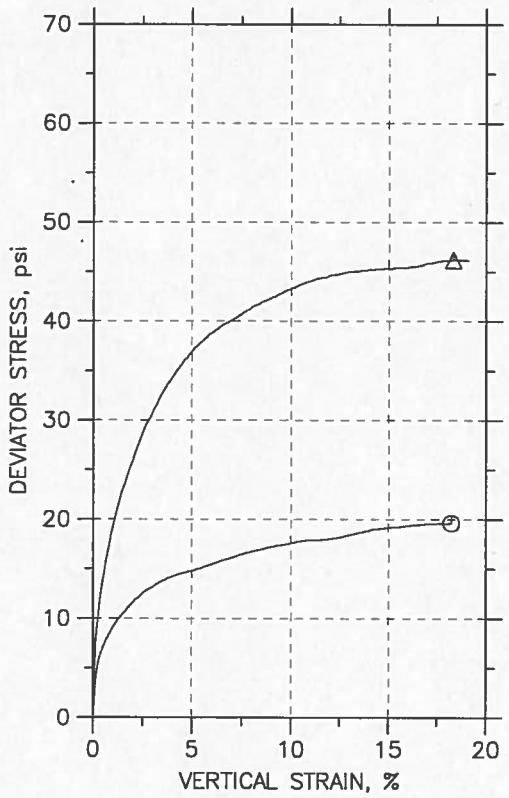
(All inputed values in the chart are in psi)

CELL PRESSURE	DEVIATOR STRESS AT FAILURE	PORE PRESSURE AT FAILURE	PERCENT STRAIN (Optional Entry)
7	12.33	2.75	2.40
28	38.64	8.73	5.90



CONSOLIDATED UNDRAINED TRIAXIAL TEST

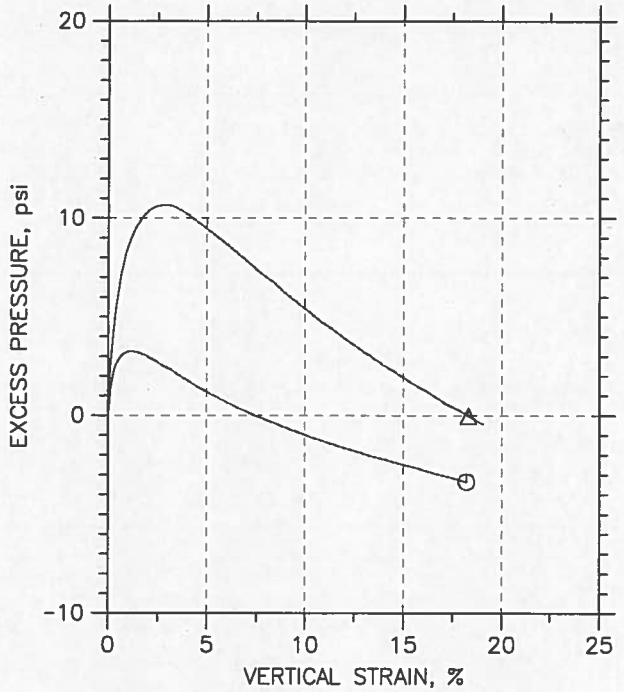


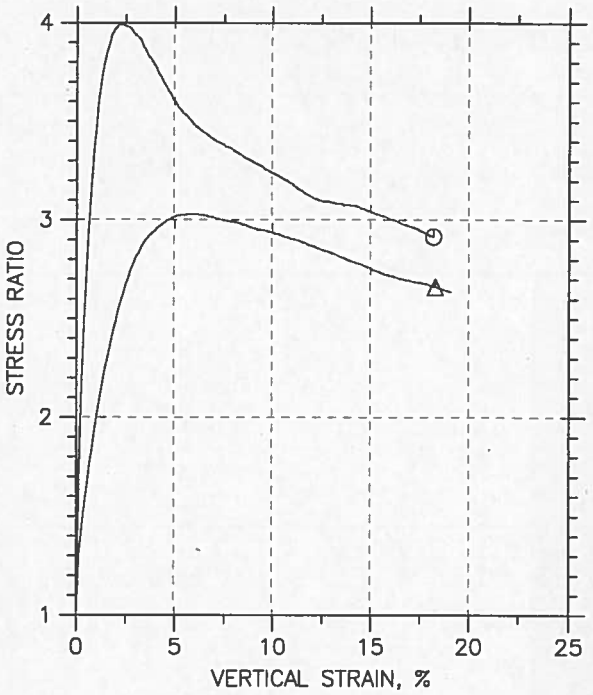


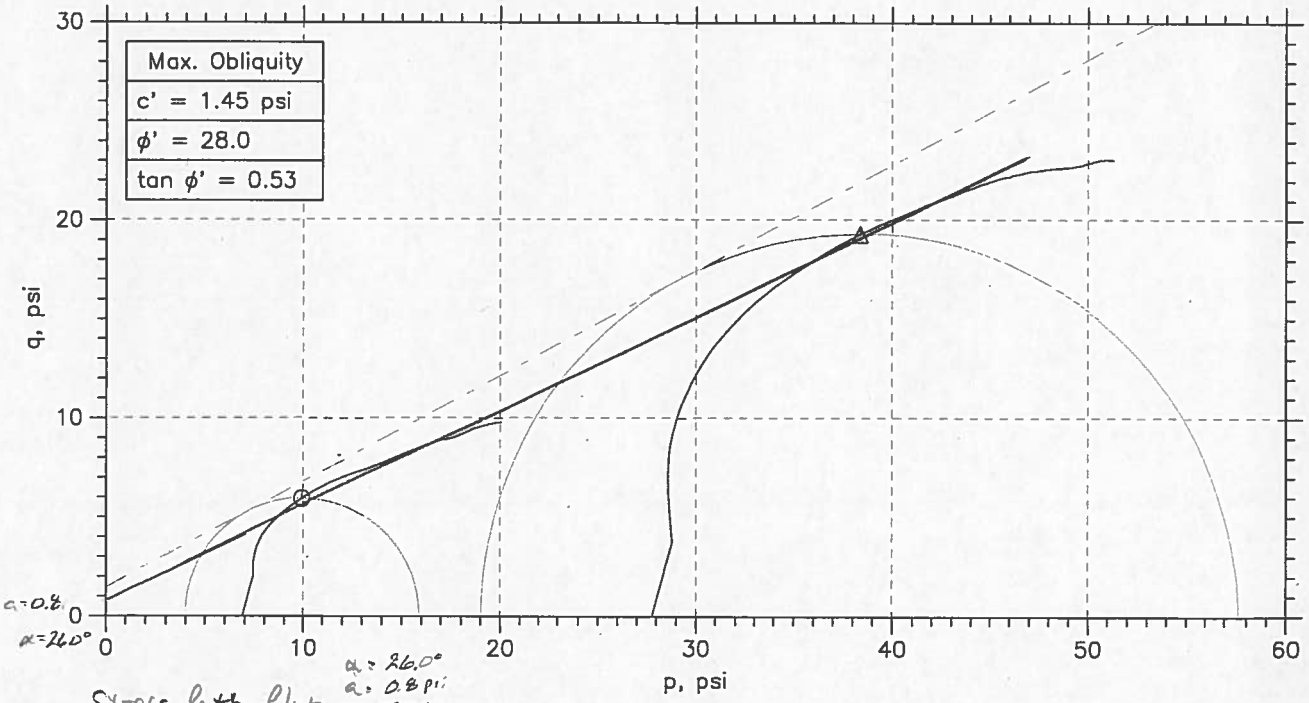
Symbol		⊙	△		
Sample No.		19-720	19-720		
Test No.		1	2		
Depth		17.9-19.5'	17.9-19.5'		
Initial	Diameter, in	1.398	1.403		
	Height, in	3.028	3.055		
	Water Content, %	21.7	18.8		
	Dry Density, pcf	99.54	105.9		
	Saturation, %	84.3	85.8		
	Void Ratio	0.693	0.592		
Before Shear	Water Content, %	31.6	26.3		
	Dry Density, pcf	90.94	98.61		
	Saturation*, %	100.0	100.0		
	Void Ratio	0.853	0.709		
	Back Press., psi	100.1	100.2		
Ver. Eff. Cons. Stress, psi		6.874	27.77		
Shear Strength, psi		9.802	23.1		
Strain at Failure, %		18.2	18.3		
Strain Rate, %/min		0.06	0.06		
B-Value		0.00	0.00		
Measured Specific Gravity		2.7	2.7		
Liquid Limit		---	---		
Plastic Limit		---	---		

Project: PLUM CREEK SITE 21
Location: TX
Project No.: 19-720
Boring No.: B-7
Sample Type: CORE
Description:
Remarks:

CONSOLIDATED UNDRAINED TRIAXIAL TEST







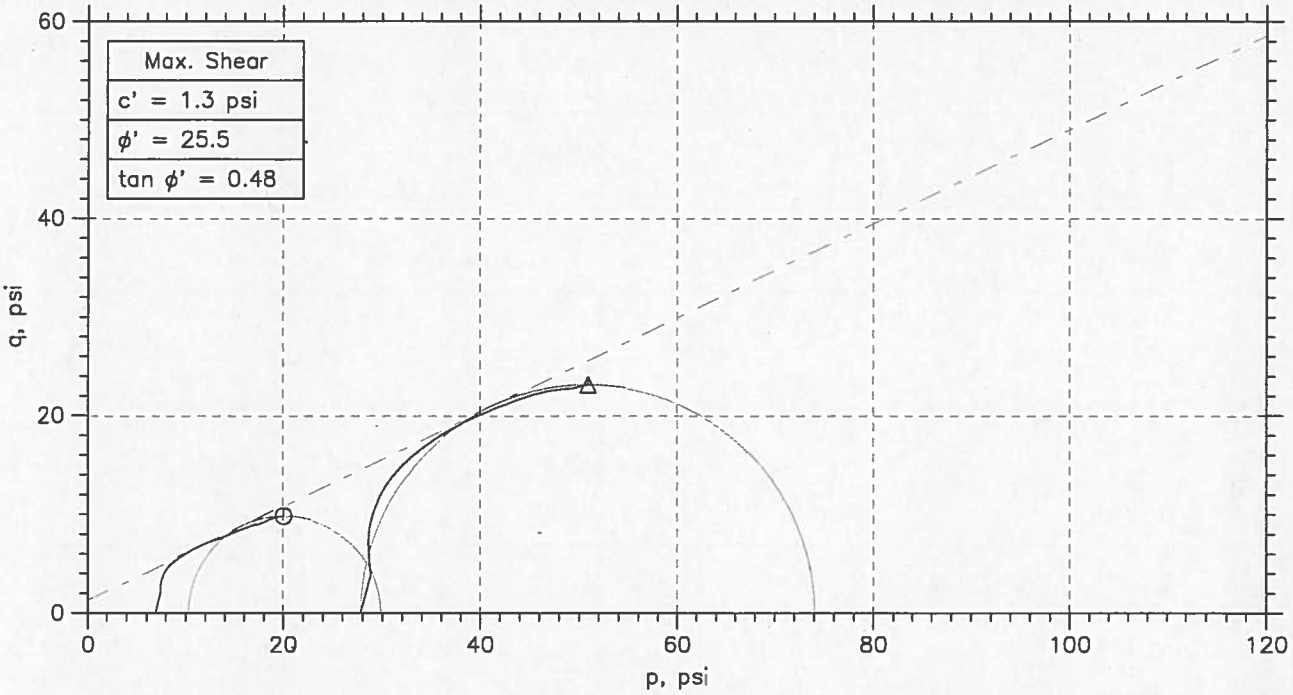
Stress Path Plot

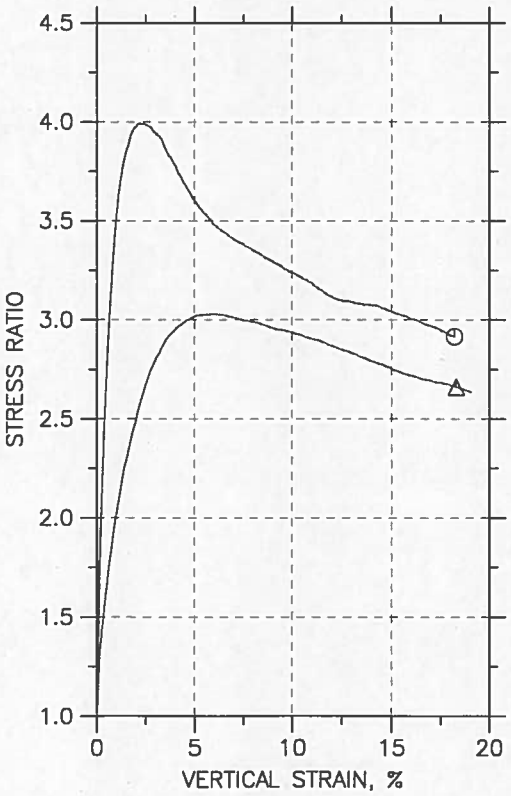
α = 26.0°
a = 0.8 psi
φ = 29.2°
c = 0.92 psi = 132 psf

	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	19-720	1	17.9-19.5'	SKK	7/10/19	SKK		19-720-07eng.dat
△	19-720	2	17.9-19.5'	SKK	7/10/19	SKK		19-720-28eng.dat

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-720
Boring No.: B-7	Sample Type: CORE	
Description:		
Remarks:		

CONSOLIDATED UNDRAINED TRIAXIAL TEST

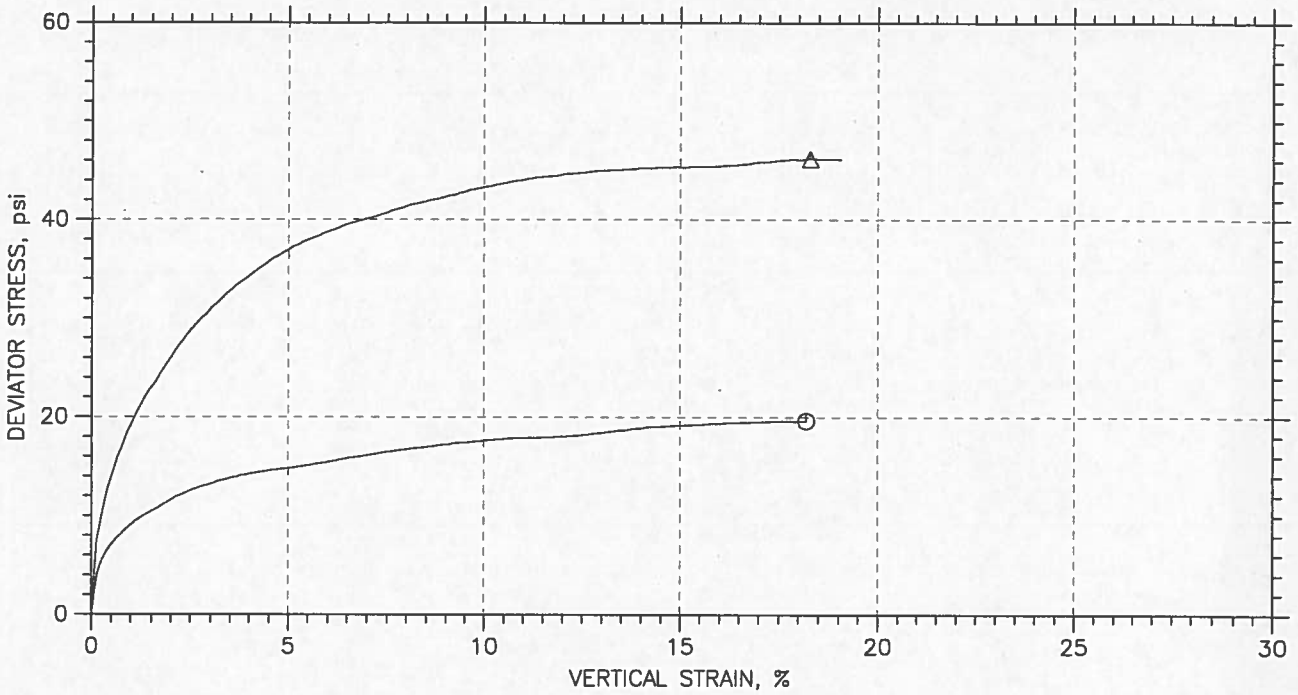


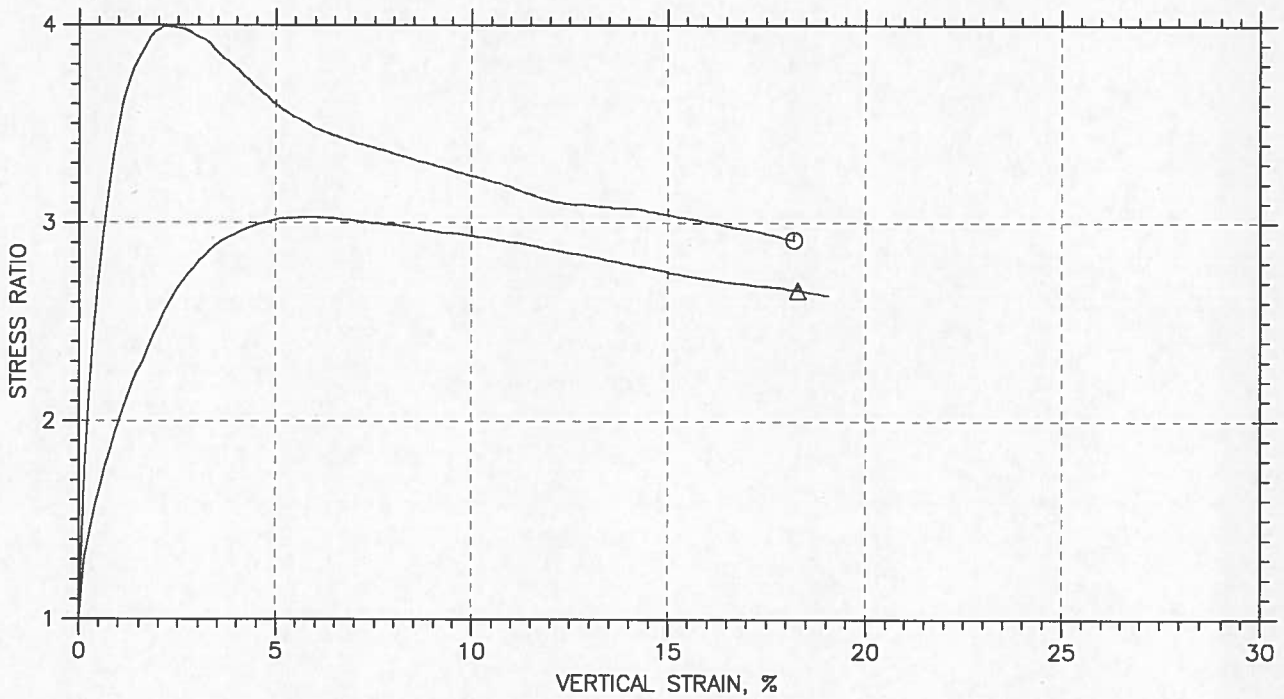


Symbol		⊙	△		
Sample No.		19-720	19-720		
Test No.		1	2		
Depth		17.9-19.5'	17.9-19.5'		
Initial	Diameter, in	1.398	1.403		
	Height, in	3.028	3.055		
	Water Content, %	21.7	18.8		
	Dry Density, pcf	99.54	105.9		
	Saturation, %	84.3	85.8		
	Void Ratio	0.693	0.592		
Before Shear	Water Content, %	31.6	26.3		
	Dry Density, pcf	90.94	98.61		
	Saturation*, %	100.0	100.0		
	Void Ratio	0.853	0.709		
	Back Press., psi	100.1	100.2		
Ver. Eff. Cons. Stress, psi		6.874	27.77		
Shear Strength, psi		9.802	23.1		
Strain at Failure, %		18.2	18.3		
Strain Rate, %/min		0.06	0.06		
B-Value		0.00	0.00		
Measured Specific Gravity		2.7	2.7		
Liquid Limit		---	---		
Plastic Limit		---	---		

Project: PLUM CREEK SITE 21
Location: TX
Project No.: 19-720
Boring No.: B-7
Sample Type: CORE
Description:
Remarks:

CONSOLIDATED UNDRAINED TRIAXIAL TEST





	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	19-720	1	17.9-19.5'	SKK	7/10/19	SKK		19-720-07eng.dat
△	19-720	2	17.9-19.5'	SKK	7/10/19	SKK		19-720-28eng.dat

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-720
Boring No.: B-7	Sample Type: CORE	
Description:		
Remarks:		

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ng No.: B-7
le No.: 19-720
No.: 1

Location: TX
Tested By: SKK
Test Date: 7/10/19
Sample Type: CORE

Project No.: 19-720
Checked By: SKK
Depth: 17.9-19.5'
Elevation: N/A

Description:
rks:

imen Height: 3.03 in
imen Area: 1.53 in^2
imen Volume: 76.17 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
ainer ID		---		
Container + Wet Soil, gm	147.75	147.75	159.84	228.88
Container + Dry Soil, gm	121.45	121.45	121.45	190.49
Container, gm	0	---	0	69.04
Dry Soil, gm	121.45	121.45	121.45	121.45
r Content, %	21.66	21.66	31.61	31.61
l Ratio	---	0.69	0.85	---
ee of Saturation, %	---	84.34	100.00	---
Unit Weight, pcf	---	99.544	90.941	---

ial

of Initialization

of Consolidation/A

of Saturation

of Consolidation/B

of Shear

ailure

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ng No.: B-7
le No.: 19-720
No.: 1

Location: TX
Tested By: SKK
Test Date: 7/10/19
Sample Type: CORE

Project No.: 19-720
Checked By: SKK
Depth: 17.9-19.5'
Elevation: N/A

Description:
rks:

imen Height: 3.03 in
imen Area: 1.53 in^2
imen Volume: 76.17 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	1.5181	0	0	100.13	107	107
2	2.0042	0.13449	1.5201	6.2268	4.0899	101.62	107	111.09
3	4.0003	0.25044	1.5219	8.2613	5.4165	102.27	107	112.42
4	6.0018	0.37257	1.5237	9.6793	6.3346	102.66	107	113.33
5	8.0036	0.49315	1.5256	10.789	7.0486	102.92	107	114.05
6	10.003	0.62919	1.5277	11.806	7.6984	103.1	107	114.7
7	12.002	0.76214	1.5297	12.577	8.1856	103.23	107	115.19
8	14.001	0.88581	1.5316	13.378	8.6928	103.3	107	115.69
9	16	1.011	1.5336	13.995	9.0779	103.35	107	116.08
10	18.002	1.127	1.5354	14.642	9.4835	103.38	107	116.48
11	20	1.2491	1.5373	15.166	9.8069	103.37	107	116.81
12	22.004	1.3944	1.5395	15.752	10.166	103.35	107	117.17
13	24.003	1.5227	1.5415	16.245	10.467	103.32	107	117.47
14	26.004	1.651	1.5435	16.738	10.767	103.27	107	117.77
15	28.002	1.7732	1.5455	17.262	11.087	103.22	107	118.09
16	30.004	1.9061	1.5476	17.725	11.364	103.17	107	118.36
17	32.002	2.0143	1.5493	18.156	11.625	103.09	107	118.63
18	34.003	2.1349	1.5512	18.619	11.903	103.02	107	118.9
19	36.001	2.2756	1.5534	18.989	12.118	102.95	107	119.12
20	38.001	2.4039	1.5554	19.359	12.334	102.87	107	119.33
21	40.003	2.5152	1.5572	19.728	12.552	102.79	107	119.55
22	42.003	2.6528	1.5594	20.067	12.745	102.72	107	119.75
23	44.002	2.7765	1.5614	20.407	12.94	102.64	107	119.94
24	46.004	2.9125	1.5636	20.684	13.093	102.56	107	120.09
25	48.002	3.0424	1.5657	20.961	13.247	102.49	107	120.25
26	50.001	3.1552	1.5675	21.27	13.423	102.41	107	120.42
27	52.002	3.2897	1.5697	21.547	13.575	102.33	107	120.58
28	54.001	3.4026	1.5715	21.732	13.672	102.25	107	120.67
29	56	3.5216	1.5735	21.979	13.806	102.17	107	120.81
30	58	3.6623	1.5758	22.164	13.897	102.09	107	120.9
31	60.002	3.7782	1.5777	22.441	14.051	102.02	107	121.05
32	62.004	3.9204	1.58	22.595	14.121	101.94	107	121.12
33	64.002	4.0457	1.5821	22.842	14.253	101.86	107	121.25
34	66.004	4.1724	1.5842	22.965	14.306	101.78	107	121.31
35	68.003	4.2884	1.5861	23.181	14.419	101.71	107	121.42
36	70.001	4.4182	1.5882	23.304	14.471	101.63	107	121.47
37	72.001	4.5326	1.5901	23.489	14.565	101.56	107	121.57
38	74.002	4.6594	1.5922	23.612	14.618	101.5	107	121.62
39	76.001	4.7893	1.5944	23.797	14.708	101.42	107	121.71
40	78.001	4.9098	1.5964	23.89	14.742	101.35	107	121.74
41	80.003	5.0459	1.5987	24.044	14.811	101.29	107	121.81
42	82.002	5.1541	1.6006	24.198	14.885	101.21	107	121.89
43	84.001	5.2917	1.6029	24.383	14.973	101.15	107	121.97
44	86.001	5.4324	1.6053	24.506	15.021	101.08	107	122.02
45	88.001	5.5622	1.6075	24.722	15.129	101.02	107	122.13
46	90.003	5.6874	1.6096	24.907	15.218	100.94	107	122.22
47	92.001	5.8126	1.6117	25.092	15.307	100.88	107	122.31
48	94.003	5.9348	1.6138	25.215	15.358	100.82	107	122.36
49	96.001	6.0384	1.6156	25.431	15.47	100.75	107	122.47
50	98.002	6.1821	1.6181	25.616	15.554	100.69	107	122.55
51	100	6.3043	1.6202	25.832	15.662	100.62	107	122.66
52	102	6.4357	1.6225	26.017	15.748	100.56	107	122.75

54	106	6.6907	1.6269	26.387	15.921	100.44	107	122.92
55	108	6.8283	1.6293	26.541	15.986	100.39	107	122.99
56	110	6.9504	1.6314	26.726	16.073	100.33	107	123.07
57	112	7.0648	1.6335	26.88	16.142	100.27	107	123.14
58	114	7.2102	1.636	27.096	16.243	100.22	107	123.24
59	116	7.3307	1.6381	27.281	16.329	100.16	107	123.33
60	118	7.4544	1.6403	27.496	16.433	100.1	107	123.43
61	120	7.575	1.6425	27.62	16.482	100.05	107	123.48
62	122	7.7033	1.6448	27.805	16.566	100	107	123.57
63	124	7.8409	1.6472	27.959	16.628	99.956	107	123.63
64	126	7.9692	1.6495	28.113	16.693	99.899	107	123.69
65	128	8.0712	1.6513	28.267	16.763	99.85	107	123.76
66	130	8.2042	1.6537	28.421	16.827	99.802	107	123.83
67	132	8.3186	1.6558	28.545	16.875	99.761	107	123.88
68	134	8.4639	1.6584	28.699	16.935	99.704	107	123.93
69	136	8.5829	1.6606	28.822	16.982	99.656	107	123.98
70	138	8.7128	1.6629	29.007	17.063	99.607	107	124.06
71	140	8.8195	1.6649	29.161	17.131	99.558	107	124.13
72	142	8.954	1.6674	29.284	17.174	99.518	107	124.17
73	144	9.0931	1.6699	29.408	17.216	99.469	107	124.22
74	146	9.1936	1.6718	29.593	17.303	99.421	107	124.3
75	148	9.3126	1.6739	29.716	17.349	99.38	107	124.35
76	150	9.4564	1.6766	29.839	17.389	99.331	107	124.39
77	152	9.5971	1.6792	29.932	17.411	99.283	107	124.41
78	154	9.7176	1.6815	30.086	17.474	99.242	107	124.47
79	156	9.863	1.6842	30.209	17.513	99.194	107	124.51
80	158	9.9758	1.6863	30.363	17.577	99.145	107	124.58
81	160	10.103	1.6887	30.517	17.638	99.104	107	124.64
82	162	10.229	1.691	30.641	17.681	99.056	107	124.68
83	164	10.319	1.6927	30.764	17.732	99.015	107	124.73
84	166	10.463	1.6954	30.856	17.752	98.975	107	124.75
85	168	10.58	1.6977	30.98	17.797	98.926	107	124.8
86	170	10.724	1.7004	31.103	17.834	98.894	107	124.83
87	172	10.846	1.7027	31.196	17.859	98.845	107	124.86
88	174	10.974	1.7052	31.288	17.882	98.813	107	124.88
89	176	11.095	1.7075	31.319	17.871	98.772	107	124.87
90	178	11.225	1.71	31.411	17.893	98.731	107	124.89
91	180	11.355	1.7125	31.442	17.88	98.691	107	124.88
92	182	11.475	1.7148	31.565	17.922	98.65	107	124.92
93	184	11.601	1.7173	31.658	17.946	98.602	107	124.95
94	186	11.73	1.7198	31.72	17.95	98.561	107	124.95
95	188	11.866	1.7225	31.843	17.988	98.521	107	124.99
96	190	11.973	1.7245	31.966	18.033	98.48	107	125.03
97	192	12.118	1.7274	32.028	18.033	98.44	107	125.03
98	194	12.244	1.7299	32.182	18.091	98.407	107	125.09
99	196	12.374	1.7324	32.274	18.112	98.367	107	125.11
00	198	12.491	1.7347	32.429	18.172	98.334	107	125.17
01	200	12.609	1.7371	32.521	18.196	98.302	107	125.2
02	202	12.749	1.7399	32.737	18.285	98.269	107	125.28
03	204	12.874	1.7424	32.922	18.359	98.229	107	125.36
04	206	12.993	1.7448	33.045	18.4	98.188	107	125.4
05	208	13.12	1.7473	33.23	18.474	98.148	107	125.47
06	210	13.242	1.7498	33.353	18.513	98.107	107	125.51
07	212	13.358	1.7521	33.538	18.589	98.075	107	125.59
08	214	13.496	1.7549	33.723	18.659	98.034	107	125.66
09	216	13.623	1.7575	33.785	18.662	98.002	107	125.66
10	218	13.749	1.7601	34.001	18.752	97.969	107	125.75
11	220	13.872	1.7625	34.155	18.808	97.937	107	125.81
12	222	14.015	1.7655	34.278	18.84	97.904	107	125.84
13	224	14.119	1.7676	34.494	18.935	97.872	107	125.94
14	226	14.247	1.7703	34.617	18.972	97.84	107	125.97
15	228	14.383	1.7731	34.741	19.005	97.799	107	126.01
16	230	14.499	1.7755	34.802	19.01	97.758	107	126.01
17	232	14.637	1.7783	34.956	19.06	97.726	107	126.06
18	234	14.757	1.7809	35.049	19.08	97.686	107	126.08
19	236	14.873	1.7833	35.172	19.119	97.653	107	126.12
20	238	15.011	1.7862	35.295	19.151	97.621	107	126.15
21	240	15.127	1.7886	35.388	19.172	97.588	107	126.17
22	242	15.257	1.7914	35.449	19.172	97.556	107	126.17
23	244	15.393	1.7942	35.604	19.222	97.523	107	126.22
24	246	15.521	1.797	35.665	19.222	97.491	107	126.22
25	248	15.654	1.7998	35.819	19.272	97.459	107	126.27

27	252	15.901	1.8051	36.035	19.325	97.377	107	126.32
28	254	16.027	1.8078	36.128	19.342	97.337	107	126.34
29	256	16.163	1.8107	36.282	19.39	97.304	107	126.39
30	258	16.271	1.8131	36.405	19.429	97.272	107	126.43
31	260	16.398	1.8158	36.498	19.446	97.231	107	126.45
32	262	16.52	1.8185	36.559	19.446	97.199	107	126.45
33	264	16.636	1.821	36.652	19.465	97.167	107	126.47
34	266	16.787	1.8243	36.744	19.475	97.134	107	126.47
35	268	16.905	1.8269	36.837	19.493	97.11	107	126.49
36	270	17.028	1.8296	36.929	19.51	97.077	107	126.51
37	272	17.15	1.8323	37.052	19.543	97.045	107	126.54
38	274	17.282	1.8352	37.114	19.541	97.021	107	126.54
39	276	17.413	1.8381	37.207	19.555	96.98	107	126.55
40	278	17.54	1.841	37.268	19.553	96.94	107	126.55
41	280	17.667	1.8438	37.392	19.585	96.907	107	126.59
42	282	17.812	1.8471	37.453	19.578	96.867	107	126.58
43	284	17.919	1.8495	37.484	19.565	96.834	107	126.57
44	286	18.038	1.8521	37.546	19.566	96.802	107	126.57
45	288	18.168	1.8551	37.669	19.596	96.769	107	126.6
46	288.4	18.199	1.8558	37.7	19.604	96.761	107	126.6

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ng No.: B-7
le No.: 19-720
No.: 1

Location: TX
Tested By: SKK
Test Date: 7/10/19
Sample Type: CORE

Project No.: 19-720
Checked By: SKK
Depth: 17.9-19.5'
Elevation: N/A

Description:
rks:

imen Height: 3.03 in
imen Area: 1.53 in^2
imen Volume: 76.17 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	107	107	0	0.000	6.874	6.874	1.000	6.874	0
2	0.13	111.09	107	1.4919	0.365	9.472	5.3821	1.760	7.427	2.0449
3	0.25	112.42	107	2.1486	0.397	10.142	4.7253	2.146	7.4336	2.7082
4	0.37	113.33	107	2.5378	0.401	10.671	4.3361	2.461	7.5034	3.1673
5	0.49	114.05	107	2.7892	0.396	11.133	4.0848	2.726	7.6091	3.5243
6	0.63	114.7	107	2.9756	0.387	11.597	3.8983	2.975	7.7475	3.8492
7	0.76	115.19	107	3.1054	0.379	11.954	3.7686	3.172	7.8614	4.0928
8	0.89	115.69	107	3.1783	0.366	12.388	3.6956	3.352	8.042	4.3464
9	1.01	116.08	107	3.227	0.355	12.725	3.647	3.489	8.1859	4.539
10	1.13	116.48	107	3.2513 – Peak DP	0.343	13.106	3.6226 = 6.888	3.618	8.3644	4.7417
11	1.25	116.81	107	3.2432	0.331	13.438	3.6307	3.701	8.5342	4.9034
12	1.39	117.17	107	3.227	0.317	13.813	3.647	3.788	8.73	5.083
13	1.52	117.47	107	3.1946	0.305	14.146	3.6794	3.845	8.9128	5.2334
14	1.65	117.77	107	3.1459	0.292	14.495	3.728	3.888	9.1113	5.3833
15	1.77	118.09	107	3.0973	0.279	14.863	3.7767	3.936	9.32	5.5433
16	1.91	118.36	107	3.0405	0.268	15.198	3.8334	3.964	9.5155	5.6821
17	2.01	118.63	107	2.9675	0.255	15.532	3.9064	3.976	9.719	5.8125
18	2.13	118.9	107	2.8946	0.243	15.883	3.9794 = 11.90	3.991 – Max SD	9.931	5.9516
19	2.28	119.12	107	2.8216	0.233	16.17	4.0524	3.990	10.111	6.0588
20	2.40	119.33	107	2.7486	0.223	16.459	4.1253 = 12.33	3.990 – Plot Max	10.292	6.1668
21	2.52	119.55	107	2.6675	0.213	16.758	4.2064	3.984	10.482	6.276
22	2.65	119.75	107	2.5946	0.204	17.025	4.2794	3.978 (SP)	10.652	6.3726
23	2.78	119.94	107	2.5135	0.194	17.301	4.3605	3.968	10.831	6.4702
24	2.91	120.09	107	2.4324	0.186	17.535	4.4415	3.948	10.988	6.5467
25	3.04	120.25	107	2.3594	0.178	17.762	4.5145	3.934	11.138	6.6236
26	3.16	120.42	107	2.2865	0.170	18.011	4.5875	3.926	11.299	6.7116
27	3.29	120.58	107	2.2054	0.162	18.244	4.6686	3.908	11.456	6.7875
28	3.40	120.67	107	2.1243	0.155	18.421	4.7497	3.878	11.586	6.8359
29	3.52	120.81	107	2.0432	0.148	18.637	4.8307	3.858	11.734	6.9031
30	3.66	120.9	107	1.9621	0.141	18.809	4.9118	3.829	11.86	6.9484
31	3.78	121.05	107	1.8892	0.134	19.035	4.9848	3.819	12.01	7.0253
32	3.92	121.12	107	1.8162	0.129	19.179	5.0578	3.792	12.118	7.0605
33	4.05	121.25	107	1.7351	0.122	19.392	5.1388	3.774	12.265	7.1263
34	4.17	121.31	107	1.654	0.116	19.526	5.2199	3.741	12.373	7.1529
35	4.29	121.42	107	1.5811	0.110	19.712	5.2929	3.724	12.503	7.2097
36	4.42	121.47	107	1.5081	0.104	19.837	5.3659	3.697	12.602	7.2357
37	4.53	121.57	107	1.4351	0.099	20.004	5.4388	3.678	12.721	7.2826
38	4.66	121.62	107	1.3703	0.094	20.121	5.5037	3.656	12.812	7.3088
39	4.79	121.71	107	1.2973	0.088	20.284	5.5767	3.637	12.931	7.3539
40	4.91	121.74	107	1.2243	0.083	20.391	5.6496	3.609	13.02	7.3708
41	5.05	121.81	107	1.1594	0.078	20.525	5.7145	3.592	13.12	7.4054
42	5.15	121.89	107	1.0865	0.073	20.673	5.7875	3.572	13.23	7.4426
43	5.29	121.97	107	1.0216	0.068	20.825	5.8523	3.558	13.339	7.4864
44	5.43	122.02	107	0.95675	0.064	20.938	5.9172	3.539	13.428	7.5105
45	5.56	122.13	107	0.89188	0.059	21.111	5.9821	3.529	13.546	7.5644
46	5.69	122.22	107	0.81891	0.054	21.273	6.055	3.513	13.664	7.609
47	5.81	122.31	107	0.75405	0.049	21.427	6.1199	3.501	13.773	7.6535
48	5.93	122.36	107	0.68918	0.045	21.543	6.1848	3.483	13.864	7.679
49	6.04	122.47	107	0.62432	0.040	21.72	6.2496	3.475	13.985	7.735
50	6.18	122.55	107	0.55945	0.036	21.869	6.3145	3.463	14.092	7.7771
51	6.30	122.66	107	0.49459	0.032	22.041	6.3794	3.455	14.21	7.8308

53	6.55	122.86	107	0.37297	0.024	22.358	6.501	3.439	14.429	7.9283
54	6.69	122.92	107	0.31621	0.020	22.479	6.5577	3.428	14.518	7.9605
55	6.83	122.99	107	0.25946	0.016	22.6	6.6145	3.417	14.607	7.993
56	6.95	123.07	107	0.2027	0.013	22.744	6.6713	3.409	14.708	8.0365
57	7.06	123.14	107	0.14594	0.009	22.87	6.728	3.399	14.799	8.0712
58	7.21	123.24	107	0.089188	0.005	23.027	6.7848	3.394	14.906	8.1213
59	7.33	123.33	107	0.032432	0.002	23.171	6.8415	3.387	15.006	8.1646
60	7.45	123.43	107	-0.024324	-0.001	23.332	6.8983	3.382	15.115	8.2167
61	7.57	123.48	107	-0.072972	-0.004	23.429	6.9469	3.373	15.188	8.2409
62	7.70	123.57	107	-0.12162	-0.007	23.561	6.9956	3.368	15.278	8.2828
63	7.84	123.63	107	-0.17027	-0.010	23.673	7.0442	3.361	15.358	8.3142
64	7.97	123.69	107	-0.22702	-0.014	23.794	7.101	3.351	15.448	8.3466
65	8.07	123.76	107	-0.27567	-0.016	23.913	7.1496	3.345	15.531	8.3817
66	8.20	123.83	107	-0.32432	-0.019	24.025	7.1983	3.338	15.612	8.4133
67	8.32	123.88	107	-0.36486	-0.022	24.114	7.2388	3.331	15.676	8.4376
68	8.46	123.93	107	-0.42162	-0.025	24.231	7.2956	3.321	15.763	8.4675
69	8.58	123.98	107	-0.47027	-0.028	24.326	7.3442	3.312	15.835	8.491
70	8.71	124.06	107	-0.51891	-0.030	24.456	7.3929	3.308	15.925	8.5317
71	8.82	124.13	107	-0.56756	-0.033	24.573	7.4415	3.302	16.007	8.5657
72	8.95	124.17	107	-0.6081	-0.035	24.656	7.4821	3.295	16.069	8.5871
73	9.09	124.22	107	-0.65675	-0.038	24.747	7.5307	3.286	16.139	8.6079
74	9.19	124.3	107	-0.7054	-0.041	24.882	7.5794	3.283	16.231	8.6515
75	9.31	124.35	107	-0.74594	-0.043	24.969	7.6199	3.277	16.294	8.6744
76	9.46	124.39	107	-0.79459	-0.046	25.057	7.6685	3.268	16.363	8.6944
77	9.60	124.41	107	-0.84323	-0.048	25.128	7.7172	3.256	16.423	8.7053
78	9.72	124.47	107	-0.88378	-0.051	25.232	7.7577	3.252	16.495	8.737
79	9.86	124.51	107	-0.93242	-0.053	25.319	7.8064	3.243	16.563	8.7564
80	9.98	124.58	107	-0.98107	-0.056	25.432	7.855	3.238	16.644	8.7887
81	10.10	124.64	107	-1.0216	-0.058	25.534	7.8956	3.234	16.715	8.8192
82	10.23	124.68	107	-1.0703	-0.061	25.625	7.9442	3.226	16.785	8.8405
83	10.32	124.73	107	-1.1108	-0.063	25.717	7.9848	3.221	16.851	8.8662
84	10.46	124.75	107	-1.1513	-0.065	25.778	8.0253	3.212	16.902	8.8762
85	10.58	124.8	107	-1.2	-0.067	25.871	8.0739	3.204	16.972	8.8984
86	10.72	124.83	107	-1.2324	-0.069	25.941	8.1064	3.200	17.024	8.9172
87	10.85	124.86	107	-1.2811	-0.072	26.014	8.155	3.190	17.085	8.9296
88	10.97	124.88	107	-1.3135	-0.073	26.07	8.1875	3.184	17.129	8.9411
89	11.10	124.87	107	-1.354	-0.076	26.099	8.228	3.172	17.164	8.9355
90	11.22	124.89	107	-1.3946	-0.078	26.162	8.2685	3.164	17.215	8.9467
91	11.35	124.88	107	-1.4351	-0.080	26.189	8.3091	3.152	17.249	8.9399
92	11.48	124.92	107	-1.4757	-0.082	26.272	8.3496	3.146	17.311	8.9611
93	11.60	124.95	107	-1.5243	-0.085	26.344	8.3983	3.137	17.371	8.9728
94	11.73	124.95	107	-1.5648	-0.087	26.388	8.4388	3.127	17.414	8.9748
95	11.87	124.99	107	-1.6054	-0.089	26.467	8.4793	3.121	17.473	8.9939
96	11.97	125.03	107	-1.6459	-0.091	26.553	8.5199	3.117	17.536	9.0165
97	12.12	125.03	107	-1.6865	-0.094	26.593	8.5604	3.107	17.577	9.0164
98	12.24	125.09	107	-1.7189	-0.095	26.684	8.5929	3.105	17.638	9.0455
99	12.37	125.11	107	-1.7594	-0.097	26.746	8.6334	3.098	17.689	9.0561
00	12.49	125.17	107	-1.7919	-0.099	26.838	8.6658	3.097	17.752	9.0859
01	12.61	125.2	107	-1.8243	-0.100	26.894	8.6983	3.092	17.796	9.0979
02	12.75	125.28	107	-1.8567	-0.102	27.015	8.7307	3.094	17.873	9.1423
03	12.87	125.36	107	-1.8973	-0.103	27.131	8.7712	3.093	17.951	9.1796
04	12.99	125.4	107	-1.9378	-0.105	27.212	8.8118	3.088	18.012	9.2
05	13.12	125.47	107	-1.9784	-0.107	27.326	8.8523	3.087	18.089	9.2369
06	13.24	125.51	107	-2.0189	-0.109	27.406	8.8929	3.082	18.149	9.2566
07	13.36	125.59	107	-2.0513	-0.110	27.514	8.9253	3.083	18.22	9.2946
08	13.50	125.66	107	-2.0919	-0.112	27.625	8.9658	3.081	18.296	9.3297
09	13.62	125.66	107	-2.1243	-0.114	27.66	8.9983	3.074	18.329	9.3309
10	13.75	125.75	107	-2.1567	-0.115	27.783	9.0307	3.076	18.407	9.3759
11	13.87	125.81	107	-2.1892	-0.116	27.871	9.0631	3.075	18.467	9.4039
12	14.02	125.84	107	-2.2216	-0.118	27.936	9.0956	3.071	18.516	9.4202
13	14.12	125.94	107	-2.254	-0.119	28.063	9.128	3.074	18.596	9.4677
14	14.25	125.97	107	-2.2865	-0.121	28.132	9.1604	3.071	18.646	9.4858
15	14.38	126.01	107	-2.327	-0.122	28.206	9.201	3.066	18.704	9.5027
16	14.50	126.01	107	-2.3675	-0.125	28.251	9.2415	3.057	18.746	9.5048
17	14.64	126.06	107	-2.4	-0.126	28.334	9.2739	3.055	18.804	9.5301
18	14.76	126.08	107	-2.4405	-0.128	28.395	9.3145	3.048	18.855	9.5401
19	14.87	126.12	107	-2.4729	-0.129	28.466	9.3469	3.045	18.906	9.5594
20	15.01	126.15	107	-2.5054	-0.131	28.531	9.3793	3.042	18.955	9.5756
21	15.13	126.17	107	-2.5378	-0.132	28.584	9.4118	3.037	18.998	9.5861
22	15.26	126.17	107	-2.5702	-0.134	28.616	9.4442	3.030	19.03	9.586
23	15.39	126.22	107	-2.6027	-0.135	28.698	9.4766	3.028	19.087	9.6108
24	15.52	126.22	107	-2.6351	-0.137	28.731	9.5091	3.021	19.12	9.6108

26	15.75	126.31	107	-2.7	-0.140	28.887	9.5739	3.017	19.23	9.6565
27	15.90	126.32	107	-2.7486	-0.142	28.947	9.6226	3.008	19.285	9.6624
28	16.03	126.34	107	-2.7892	-0.144	29.005	9.6631	3.002	19.334	9.671
29	16.16	126.39	107	-2.8216	-0.146	29.086	9.6956	3.000	19.391	9.6952
30	16.27	126.43	107	-2.854	-0.147	29.157	9.728	2.997	19.443	9.7145
31	16.40	126.45	107	-2.8946	-0.149	29.214	9.7685	2.991	19.491	9.7228
32	16.52	126.45	107	-2.927	-0.151	29.247	9.801	2.984	19.524	9.7231
33	16.64	126.47	107	-2.9594	-0.152	29.299	9.8334	2.980	19.566	9.7327
34	16.79	126.47	107	-2.9919	-0.154	29.34	9.8658	2.974	19.603	9.7373
35	16.90	126.49	107	-3.0162	-0.155	29.383	9.8901	2.971	19.637	9.7465
36	17.03	126.51	107	-3.0486	-0.156	29.432	9.9226	2.966	19.677	9.7549
37	17.15	126.54	107	-3.0811	-0.158	29.498	9.955	2.963	19.727	9.7717
38	17.28	126.54	107	-3.1054	-0.159	29.52	9.9793	2.958	19.75	9.7704
39	17.41	126.55	107	-3.1459	-0.161	29.575	10.02	2.952	19.797	9.7775
40	17.54	126.55	107	-3.1865	-0.163	29.614	10.06	2.944	19.837	9.7767
41	17.67	126.59	107	-3.2189	-0.164	29.678	10.093	2.941	19.885	9.7926
42	17.81	126.58	107	-3.2594	-0.166	29.712	10.133	2.932	19.923	9.7892
43	17.92	126.57	107	-3.2919	-0.168	29.731	10.166	2.925	19.949	9.7827
44	18.04	126.57	107	-3.3243	-0.170	29.764	10.198	2.919	19.981	9.7829
45	18.17	126.6	107	-3.3567	-0.171	29.827	10.231	2.915	20.029	9.7981
46	18.20	126.6	107	-3.3648	-0.172	29.843	10.239	2.915	20.041	9.8021

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ng No.: B-7
le No.: 19-720
No.: 2

Location: TX
Tested By: SKK
Test Date: 7/10/19
Sample Type: CORE

Project No.: 19-720
Checked By: SKK
Depth: 17.9-19.5'
Elevation: N/A

Description:
rks:

imen Height: 3.06 in
imen Area: 1.55 in^2
imen Volume: 77.40 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
ainer ID		---		
Container + Wet Soil, gm	155.94	155.94	165.73	235.29
Container + Dry Soil, gm	131.25	131.25	131.25	200.81
Container, gm	0	---	0	69.56
Dry Soil, gm	131.25	131.25	131.25	131.25
r Content, %	18.81	18.81	26.27	26.27
Ratio	---	0.59	0.71	---
ee of Saturation, %	---	85.77	100.00	---
Unit Weight, pcf	---	105.87	98.611	---

ial

of Initialization

of Consolidation/A

of Saturation

of Consolidation/B

of Shear

ailure

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ng No.: B-7
le No.: 19-720
No.: 2

Location: TX
Tested By: SKK
Test Date: 7/10/19
Sample Type: CORE

Project No.: 19-720
Checked By: SKK
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Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	1.4601	0	0	100.23	128	128
2	2.0006	0.12331	1.4619	11.042	7.5473	102.97	128	135.55
3	4.0035	0.27063	1.4641	15.294	10.433	104.56	128	138.43
4	6.0024	0.39394	1.4659	18.475	12.584	105.7	128	140.58
5	8.0006	0.53806	1.468	21.075	14.33	106.59	128	142.33
6	10.002	0.65176	1.4697	23.339	15.848	107.31	128	143.85
7	12.002	0.79908	1.4719	25.357	17.189	107.91	128	145.19
8	14.002	0.91278	1.4735	27.254	18.45	108.42	128	146.45
9	16	1.0537	1.4756	29.059	19.64	108.84	128	147.64
10	18.003	1.1802	1.4775	30.619	20.665	109.21	128	148.66
11	20.004	1.3067	1.4794	32.179	21.686	109.53	128	149.69
12	22.004	1.4348	1.4813	33.647	22.643	109.79	128	150.64
13	24.003	1.595	1.4838	34.993	23.506	110.03	128	151.51
14	26.002	1.7167	1.4856	36.369	24.397	110.23	128	152.4
15	28.003	1.856	1.4877	37.654	25.219	110.4	128	153.22
16	30.004	1.9969	1.4898	38.786	25.936	110.53	128	153.94
17	32.002	2.0994	1.4914	39.887	26.642	110.64	128	154.64
18	34.001	2.2275	1.4934	40.957	27.318	110.72	128	155.32
19	36.004	2.3636	1.4954	42.028	27.989	110.79	128	155.99
20	38.002	2.4837	1.4973	43.098	28.664	110.83	128	156.66
21	40.004	2.623	1.4994	44.138	29.31	110.85	128	157.31
22	42.003	2.7512	1.5014	45.087	29.897	110.88	128	157.9
23	44.003	2.8953	1.5036	46.004	30.456	110.88	128	158.46
24	46.001	3.009	1.5054	46.891	31.004	110.86	128	159
25	48.002	3.1547	1.5077	47.656	31.457	110.84	128	159.46
26	50	3.286	1.5097	48.574	32.016	110.8	128	160.02
27	52.003	3.3981	1.5115	49.308	32.459	110.74	128	160.46
28	54.001	3.547	1.5138	50.134	32.948	110.68	128	160.95
29	56.002	3.6735	1.5158	50.837	33.363	110.6	128	161.36
30	58.002	3.8113	1.5179	51.51	33.752	110.52	128	161.75
31	60.001	3.9458	1.5201	52.122	34.1	110.44	128	162.1
32	62.003	4.0787	1.5222	52.917	34.569	110.35	128	162.57
33	64.001	4.2052	1.5242	53.529	34.919	110.26	128	162.92
34	66.004	4.3381	1.5263	54.202	35.305	110.15	128	163.31
35	68	4.4646	1.5283	54.814	35.653	110.07	128	163.65
36	70.004	4.5943	1.5304	55.456	36.018	109.97	128	164.02
37	72.001	4.7337	1.5326	55.945	36.278	109.87	128	164.28
38	74.002	4.8522	1.5346	56.557	36.626	109.78	128	164.63
39	76.001	4.9851	1.5367	57.077	36.907	109.69	128	164.91
40	78.004	5.11	1.5387	57.689	37.25	109.58	128	165.25
41	80.004	5.2541	1.5411	58.117	37.464	109.49	128	165.46
42	82.002	5.371	1.543	58.576	37.71	109.38	128	165.71
43	84.001	5.4991	1.5451	59.004	37.93	109.27	128	165.93
44	86.001	5.6352	1.5473	59.463	38.166	109.17	128	166.17
45	88.001	5.7809	1.5497	59.891	38.376	109.07	128	166.38
46	90.004	5.901	1.5517	60.381	38.637	108.96	128	166.64
47	92.003	6.0516	1.5541	60.809	38.844	108.84	128	166.84
48	94.002	6.1893	1.5564	61.207	39.036	108.73	128	167.04
49	96.001	6.3014	1.5583	61.604	39.239	108.62	128	167.24
50	98.003	6.4423	1.5606	62.032	39.448	108.52	128	167.45
51	100	6.5672	1.5627	62.369	39.605	108.4	128	167.6
52	102	6.6921	1.5648	62.705	39.761	108.29	128	167.76

54	106	6.9724	1.5695	63.409	40.077	108.08	128	168.08
55	108	7.1005	1.5717	63.684	40.191	107.97	128	168.19
56	110	7.2414	1.5741	64.082	40.376	107.86	128	168.38
57	112	7.3663	1.5762	64.418	40.529	107.74	128	168.53
58	114	7.4976	1.5784	64.785	40.699	107.62	128	168.7
59	116	7.6289	1.5807	65.214	40.906	107.51	128	168.91
60	118	7.7586	1.5829	65.55	41.055	107.4	128	169.05
61	120	7.914	1.5856	65.948	41.229	107.29	128	169.23
62	122	8.0309	1.5876	66.345	41.422	107.18	128	169.42
63	124	8.1814	1.5902	66.682	41.559	107.08	128	169.56
64	126	8.3191	1.5926	66.957	41.663	106.97	128	169.66
65	128	8.4312	1.5945	67.202	41.761	106.87	128	169.76
66	130	8.5593	1.5968	67.569	41.926	106.76	128	169.93
67	132	8.6826	1.5989	67.814	42.017	106.65	128	170.02
68	134	8.8123	1.6012	68.119	42.143	106.53	128	170.14
69	136	8.9469	1.6036	68.425	42.265	106.43	128	170.27
70	138	9.0782	1.6059	68.762	42.408	106.31	128	170.41
71	140	9.2223	1.6084	69.006	42.486	106.22	128	170.49
72	142	9.3568	1.6108	69.435	42.683	106.11	128	170.68
73	144	9.5057	1.6135	69.771	42.815	106.02	128	170.81
74	146	9.6114	1.6154	70.108	42.968	105.92	128	170.97
75	148	9.7299	1.6175	70.383	43.077	105.82	128	171.08
76	150	9.8853	1.6203	70.689	43.184	105.72	128	171.18
77	152	10.013	1.6226	70.995	43.306	105.62	128	171.31
78	154	10.149	1.625	71.209	43.366	105.52	128	171.37
79	156	10.295	1.6277	71.606	43.533	105.41	128	171.53
80	158	10.409	1.6297	71.882	43.642	105.31	128	171.64
81	160	10.558	1.6324	72.126	43.713	105.2	128	171.71
82	162	10.668	1.6345	72.402	43.822	105.09	128	171.82
83	164	10.806	1.637	72.708	43.935	105	128	171.94
84	166	10.933	1.6393	72.891	43.98	104.9	128	171.98
85	168	11.073	1.6419	73.166	44.071	104.81	128	172.07
86	170	11.202	1.6443	73.472	44.188	104.73	128	172.19
87	172	11.331	1.6467	73.717	44.267	104.64	128	172.27
88	174	11.464	1.6492	73.901	44.306	104.54	128	172.31
89	176	11.602	1.6517	74.145	44.379	104.45	128	172.38
90	178	11.724	1.654	74.329	44.423	104.35	128	172.42
91	180	11.844	1.6563	74.482	44.45	104.25	128	172.45
92	182	11.981	1.6588	74.788	44.559	104.15	128	172.56
93	184	12.132	1.6617	75.094	44.66	104.04	128	172.66
94	186	12.273	1.6644	75.216	44.656	103.94	128	172.66
95	188	12.391	1.6666	75.43	44.719	103.86	128	172.72
96	190	12.516	1.669	75.644	44.778	103.77	128	172.78
97	192	12.654	1.6716	75.889	44.848	103.67	128	172.85
98	194	12.768	1.6738	76.103	44.912	103.6	128	172.91
99	196	12.905	1.6764	76.317	44.963	103.51	128	172.96
00	198	13.022	1.6787	76.47	44.989	103.42	128	172.99
01	200	13.178	1.6817	76.653	45.011	103.34	128	173.01
02	202	13.314	1.6843	76.806	45.025	103.25	128	173.03
03	204	13.456	1.6871	76.929	45.018	103.14	128	173.02
04	206	13.596	1.6898	77.204	45.102	103.05	128	173.1
05	208	13.729	1.6924	77.388	45.136	102.96	128	173.14
06	210	13.868	1.6952	77.51	45.129	102.87	128	173.13
07	212	13.95	1.6968	77.724	45.209	102.78	128	173.21
08	214	14.103	1.6998	77.877	45.211	102.7	128	173.21
09	216	14.246	1.7026	77.999	45.202	102.62	128	173.2
10	218	14.38	1.7053	78.244	45.269	102.54	128	173.27
11	220	14.518	1.7081	78.428	45.298	102.47	128	173.3
12	222	14.641	1.7105	78.519	45.281	102.38	128	173.28
13	224	14.763	1.713	78.672	45.3	102.3	128	173.3
14	226	14.898	1.7157	78.886	45.348	102.22	128	173.35
15	228	15.029	1.7183	78.917	45.29	102.12	128	173.29
16	230	15.171	1.7212	79.07	45.297	102.03	128	173.3
17	232	15.282	1.7235	79.315	45.375	101.94	128	173.38
18	234	15.42	1.7263	79.468	45.384	101.86	128	173.38
19	236	15.572	1.7294	79.559	45.35	101.78	128	173.35
20	238	15.708	1.7322	79.773	45.394	101.7	128	173.39
21	240	15.834	1.7348	79.896	45.391	101.63	128	173.39
22	242	15.954	1.7373	80.079	45.427	101.56	128	173.43
23	244	16.091	1.7401	80.324	45.489	101.49	128	173.49
24	246	16.214	1.7426	80.508	45.522	101.41	128	173.52
25	248	16.348	1.7454	80.661	45.531	101.33	128	173.53

27	252	16.603	1.7508	81.089	45.626	101.17	128	173.63
28	254	16.741	1.7537	81.272	45.65	101.08	128	173.65
29	256	16.875	1.7565	81.639	45.78	101	128	173.78
30	258	17.005	1.7593	81.884	45.842	100.91	128	173.84
31	260	17.122	1.7617	82.037	45.859	100.83	128	173.86
32	262	17.253	1.7645	82.221	45.885	100.76	128	173.89
33	264	17.396	1.7676	82.496	45.956	100.69	128	173.96
34	266	17.517	1.7702	82.771	46.039	100.63	128	174.04
35	268	17.652	1.7731	82.924	46.044	100.56	128	174.04
36	270	17.767	1.7756	83.138	46.096	100.49	128	174.1
37	272	17.903	1.7785	83.383	46.152	100.43	128	174.15
38	274	18.027	1.7812	83.383	46.077	100.35	128	174.08
39	276	18.171	1.7843	83.628	46.128	100.27	128	174.13
40	278	18.289	1.7869	83.872	46.193	100.19	128	174.19
41	280	18.429	1.79	83.995	46.177	100.11	128	174.18
42	282	18.573	1.7931	84.086	46.141	100.03	128	174.14
43	284	18.691	1.7957	84.27	46.171	99.961	128	174.17
44	286	18.842	1.7991	84.423	46.164	99.88	128	174.16
45	288	18.962	1.8017	84.515	46.142	99.816	128	174.14
46	289.33	19.061	1.8039	84.637	46.149	99.776	128	174.15

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ng No.: B-7
le No.: 19-720
No.: 2

Location: TX
Tested By: SKK
Test Date: 7/10/19
Sample Type: CORE

Project No.: 19-720
Checked By: SKK
Depth: 17.9-19.5'
Elevation: N/A

Description:
rks:

imen Height: 3.06 in
imen Area: 1.55 in^2
imen Volume: 77.40 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

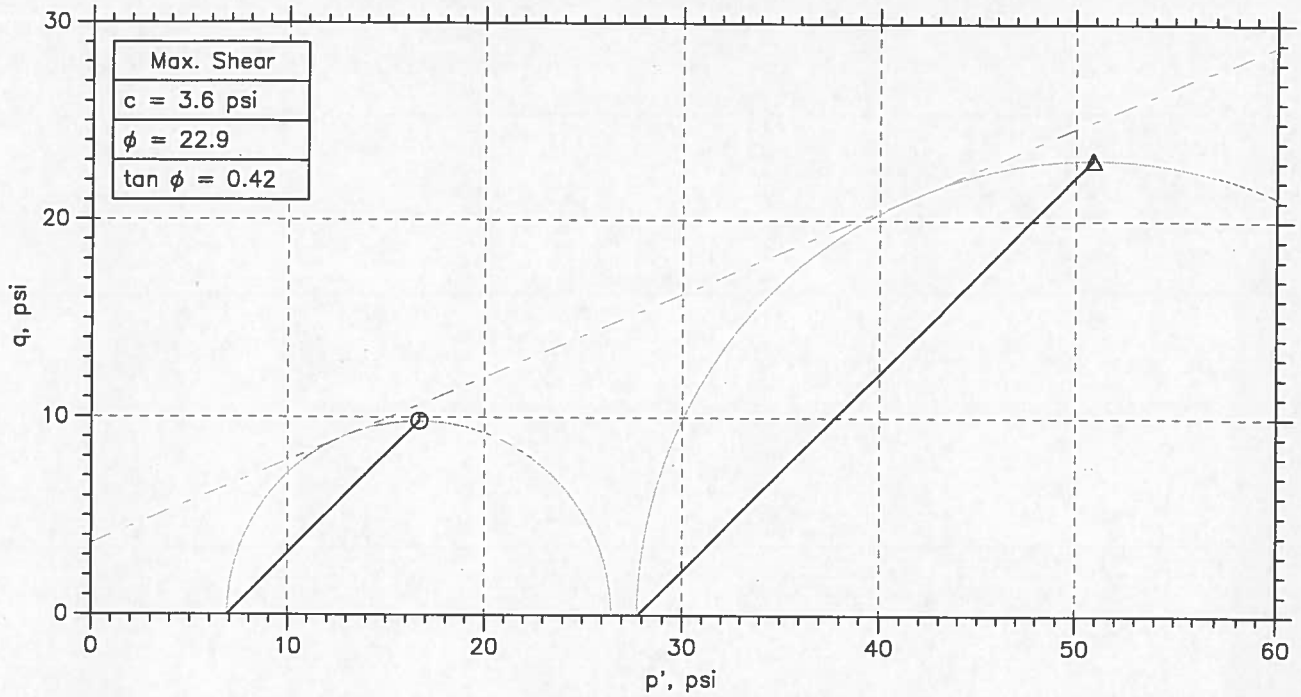
Measured Specific Gravity: 2.70

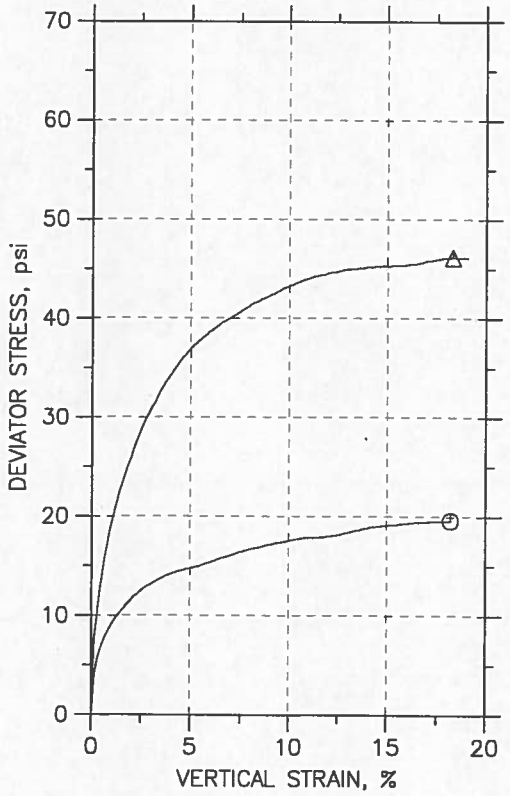
	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	128	128	0	0.000	27.774	27.774	1.000	27.774	0
2	0.12	135.55	128	2.7472	0.364	32.574	25.027	1.302	28.801	3.7736
3	0.27	138.43	128	4.3297	0.415	33.878	23.445	1.445	28.661	5.2164
4	0.39	140.58	128	5.4704	0.435	34.888	22.304	1.564	28.596	6.292
5	0.54	142.33	128	6.362	0.444	35.742	21.412	1.669	28.577	7.1649
6	0.65	143.85	128	7.085	0.447	36.537	20.689	1.766	28.613	7.924
7	0.80	145.19	128	7.6794	0.447	37.284	20.095	1.855	28.689	8.5944
8	0.91	146.45	128	8.1935	0.444	38.031	19.581	1.942	28.806	9.2252
9	1.05	147.64	128	8.6192	0.439	38.795	19.155	2.025	28.975	9.8201
10	1.18	148.66	128	8.9807	0.435	39.458	18.794	2.100	29.126	10.332
11	1.31	149.69	128	9.302	0.429	40.159	18.472	2.174	29.316	10.843
12	1.43	150.64	128	9.5671	0.423	40.85	18.207	2.244	29.529	11.322
13	1.59	151.51	128	9.8001	0.417	41.48	17.974	2.308	29.727	11.753
14	1.72	152.4	128	10.009	0.410	42.163	17.765	2.373	29.964	12.199
15	1.86	153.22	128	10.17	0.403	42.824	17.605	2.433	30.214	12.61
16	2.00	153.94	128	10.306	0.397	43.404	17.468	2.485	30.436	12.968
17	2.10	154.64	128	10.411	0.391	44.006	17.364	2.534	30.685	13.321
18	2.23	155.32	128	10.499	0.384	44.593	17.275	2.581	30.934	13.659
19	2.36	155.99	128	10.563	0.377	45.2	17.211	2.626	31.206	13.995
20	2.48	156.66	128	10.603	0.370	45.835	17.171	2.669	31.503	14.332
21	2.62	157.31	128	10.627	0.363	46.457	17.147	2.709	31.802	14.655
22	2.75	157.9	128	10.652 Peak	0.356	47.019	17.123	2.746	32.071	14.948
23	2.90	158.46	128	10.652 Peak	0.350	47.578	17.123 = 30.46	2.779	32.351	15.228
24	3.01	159	128	10.635 Peak	0.343	48.143	17.139	2.809	32.641	15.502
25	3.15	159.46	128	10.611	0.337	48.62	17.163	2.833	32.892	15.729
26	3.29	160.02	128	10.571	0.330	49.219	17.203	2.861	33.211	16.008
27	3.40	160.46	128	10.515	0.324	49.719	17.259	2.881	33.489	16.23
28	3.55	160.95	128	10.451	0.317	50.271	17.324	2.902	33.797	16.474
29	3.67	161.36	128	10.378	0.311	50.758	17.396	2.918	34.077	16.681
30	3.81	161.75	128	10.29	0.305	51.236	17.484	2.930	34.36	16.876
31	3.95	162.1	128	10.21	0.299	51.665	17.565	2.941	34.615	17.05
32	4.08	162.57	128	10.121	0.293	52.222	17.653	2.958	34.938	17.285
33	4.21	162.92	128	10.033	0.287	52.66	17.741	2.968	35.201	17.46
34	4.34	163.31	128	9.9286	0.281	53.151	17.846	2.978	35.498	17.653
35	4.46	163.65	128	9.8402	0.276	53.587	17.934	2.988	35.76	17.826
36	4.59	164.02	128	9.7438	0.271	54.048	18.031	2.998	36.039	18.009
37	4.73	164.28	128	9.6474	0.266	54.405	18.127	3.001	36.266	18.139
38	4.85	164.63	128	9.5591	0.261	54.841	18.215	3.011	36.528	18.313
39	4.99	164.91	128	9.4627	0.256	55.219	18.312	3.015	36.765	18.453
40	5.11	165.25	128	9.3582	0.251	55.666	18.416	3.023	37.041	18.625
41	5.25	165.46	128	9.2619	0.247	55.977	18.512	3.024	37.245	18.732
42	5.37	165.71	128	9.1494	0.243	56.335	18.625	3.025	37.48	18.855
43	5.50	165.93	128	9.045	0.238	56.66	18.729	3.025	37.694	18.965
44	5.64	166.17	128	8.9486	0.234	56.991	18.826	3.027	37.909	19.083
45	5.78	166.38	128	8.8441	0.230	57.306	18.93	3.027	38.118	19.188
46	5.90	166.64	128	8.7317 -8.73	0.226	57.68	19.043 = 38.64	3.029 - Max SR	38.361	19.319
47	6.05	166.84	128	8.6192	0.222	57.999	19.155	3.028	38.577	19.422
48	6.19	167.04	128	8.5068	0.218	58.303	19.268	3.026	38.786	19.518
49	6.30	167.24	128	8.3943	0.214	58.619	19.38	3.025	39	19.62
50	6.44	167.45	128	8.2899	0.210	58.933	19.484	3.025	39.208	19.724
51	6.57	167.6	128	8.1774	0.206	59.202	19.597	3.021	39.399	19.802

53	6.84	167.93	128	7.9605	0.199	59.74	19.814	3.015	39.777	19.963
54	6.97	168.08	128	7.8561	0.196	59.995	19.918	3.012	39.957	20.038
55	7.10	168.19	128	7.7437	0.193	60.222	20.031	3.006	40.126	20.096
56	7.24	168.38	128	7.6312	0.189	60.519	20.143	3.004	40.331	20.188
57	7.37	168.53	128	7.5187	0.186	60.785	20.256	3.001	40.52	20.265
58	7.50	168.7	128	7.3982	0.182	61.075	20.376	2.997	40.725	20.349
59	7.63	168.91	128	7.2858	0.178	61.394	20.489	2.997	40.941	20.453
60	7.76	169.05	128	7.1733	0.175	61.656	20.601	2.993	41.128	20.527
61	7.91	169.23	128	7.0609	0.171	61.943	20.713	2.990	41.328	20.615
62	8.03	169.42	128	6.9564	0.168	62.24	20.818	2.990	41.529	20.711
63	8.18	169.56	128	6.852	0.165	62.481	20.922	2.986	41.702	20.78
64	8.32	169.66	128	6.7476	0.162	62.69	21.027	2.981	41.858	20.832
65	8.43	169.76	128	6.6432	0.159	62.892	21.131	2.976	42.012	20.88
66	8.56	169.93	128	6.5307	0.156	63.17	21.244	2.974	42.207	20.963
67	8.68	170.02	128	6.4263	0.153	63.365	21.348	2.968	42.357	21.009
68	8.81	170.14	128	6.3058	0.150	63.611	21.469	2.963	42.54	21.071
69	8.95	170.27	128	6.2013	0.147	63.838	21.573	2.959	42.706	21.133
70	9.08	170.41	128	6.0889	0.144	64.093	21.685	2.956	42.889	21.204
71	9.22	170.49	128	5.9925	0.141	64.268	21.782	2.951	43.025	21.243
72	9.36	170.68	128	5.8881	0.138	64.569	21.886	2.950	43.228	21.341
73	9.51	170.81	128	5.7917	0.135	64.797	21.983	2.948	43.39	21.407
74	9.61	170.97	128	5.6953	0.133	65.047	22.079	2.946	43.563	21.484
75	9.73	171.08	128	5.5989	0.130	65.252	22.175	2.943	43.714	21.538
76	9.89	171.18	128	5.4945	0.127	65.464	22.28	2.938	43.872	21.592
77	10.01	171.31	128	5.3981	0.125	65.682	22.376	2.935	44.029	21.653
78	10.15	171.37	128	5.2936	0.122	65.847	22.481	2.929	44.164	21.683
79	10.30	171.53	128	5.1892	0.119	66.119	22.585	2.928	44.352	21.767
80	10.41	171.64	128	5.0848	0.117	66.332	22.69	2.923	44.511	21.821
81	10.56	171.71	128	4.9723	0.114	66.515	22.802	2.917	44.658	21.856
82	10.67	171.82	128	4.8679	0.111	66.729	22.906	2.913	44.818	21.911
83	10.81	171.94	128	4.7715	0.109	66.938	23.003	2.910	44.971	21.968
84	10.93	171.98	128	4.6751	0.106	67.079	23.099	2.904	45.089	21.99
85	11.07	172.07	128	4.5867	0.104	67.259	23.188	2.901	45.223	22.036
86	11.20	172.19	128	4.5064	0.102	67.456	23.268	2.899	45.362	22.094
87	11.33	172.27	128	4.41	0.100	67.631	23.364	2.895	45.498	22.133
88	11.46	172.31	128	4.3136	0.097	67.766	23.461	2.889	45.614	22.153
89	11.60	172.38	128	4.2253	0.095	67.928	23.549	2.885	45.738	22.189
90	11.72	172.42	128	4.1208	0.093	68.077	23.654	2.878	45.865	22.212
91	11.84	172.45	128	4.0244	0.091	68.2	23.75	2.872	45.975	22.225
92	11.98	172.56	128	3.92	0.088	68.413	23.854	2.868	46.134	22.279
93	12.13	172.66	128	3.8156	0.085	68.619	23.959	2.864	46.289	22.33
94	12.27	172.66	128	3.7192	0.083	68.711	24.055	2.856	46.383	22.328
95	12.39	172.72	128	3.6308	0.081	68.862	24.144	2.852	46.503	22.359
96	12.52	172.78	128	3.5425	0.079	69.01	24.232	2.848	46.621	22.389
97	12.65	172.85	128	3.4461	0.077	69.176	24.328	2.843	46.752	22.424
98	12.77	172.91	128	3.3738	0.075	69.313	24.401	2.841	46.857	22.456
99	12.91	172.96	128	3.2854	0.073	69.452	24.489	2.836	46.971	22.482
00	13.02	172.99	128	3.1971	0.071	69.566	24.577	2.831	47.072	22.494
01	13.18	173.01	128	3.1167	0.069	69.669	24.658	2.825	47.163	22.506
02	13.31	173.03	128	3.0284	0.067	69.771	24.746	2.820	47.259	22.513
03	13.46	173.02	128	2.9159	0.065	69.876	24.858	2.811	47.367	22.509
04	13.60	173.1	128	2.8195	0.063	70.057	24.955	2.807	47.506	22.551
05	13.73	173.14	128	2.7312	0.061	70.179	25.043	2.802	47.611	22.568
06	13.87	173.13	128	2.6428	0.059	70.26	25.132	2.796	47.696	22.564
07	13.95	173.21	128	2.5544	0.057	70.429	25.22	2.793	47.824	22.604
08	14.10	173.21	128	2.4741	0.055	70.512	25.3	2.787	47.906	22.606
09	14.25	173.2	128	2.3938	0.053	70.583	25.381	2.781	47.982	22.601
10	14.38	173.27	128	2.3135	0.051	70.73	25.461	2.778	48.095	22.634
11	14.52	173.3	128	2.2412	0.049	70.831	25.533	2.774	48.182	22.649
12	14.64	173.28	128	2.1528	0.048	70.902	25.622	2.767	48.262	22.64
13	14.76	173.3	128	2.0725	0.046	71.002	25.702	2.763	48.352	22.65
14	14.90	173.35	128	1.9921	0.044	71.13	25.782	2.759	48.456	22.674
15	15.03	173.29	128	1.8957	0.042	71.169	25.879	2.750	48.524	22.645
16	15.17	173.3	128	1.7994	0.040	71.272	25.975	2.744	48.624	22.649
17	15.28	173.38	128	1.719	0.038	71.431	26.055	2.742	48.743	22.688
18	15.42	173.38	128	1.6307	0.036	71.528	26.144	2.736	48.836	22.692
19	15.57	173.35	128	1.5503	0.034	71.574	26.224	2.729	48.899	22.675
20	15.71	173.39	128	1.47	0.032	71.699	26.304	2.726	49.001	22.697
21	15.83	173.39	128	1.4057	0.031	71.76	26.369	2.721	49.064	22.696
22	15.95	173.43	128	1.3335	0.029	71.868	26.441	2.718	49.155	22.714
23	16.09	173.49	128	1.2612	0.028	72.002	26.513	2.716	49.257	22.744
24	16.21	173.52	128	1.1808	0.026	72.115	26.594	2.712	49.354	22.761

26	16.47	173.55	128	1.0202	0.022	72.3	26.754	2.702	49.527	22.773
27	16.60	173.63	128	0.93984	0.021	72.461	26.835	2.700	49.648	22.813
28	16.74	173.65	128	0.85148	0.019	72.573	26.923	2.696	49.748	22.825
29	16.88	173.78	128	0.77115	0.017	72.783	27.003	2.695	49.893	22.89
30	17.00	173.84	128	0.68279	0.015	72.933	27.092	2.692	50.012	22.921
31	17.12	173.86	128	0.60246	0.013	73.031	27.172	2.688	50.102	22.93
32	17.25	173.89	128	0.5382	0.012	73.121	27.236	2.685	50.179	22.943
33	17.40	173.96	128	0.4659	0.010	73.264	27.308	2.683	50.286	22.978
34	17.52	174.04	128	0.40164	0.009	73.412	27.373	2.682	50.392	23.019
35	17.65	174.04	128	0.33738	0.007	73.481	27.437	2.678	50.459	23.022
36	17.77	174.1	128	0.26508	0.006	73.605	27.509	2.676	50.557	23.048
37	17.90	174.15	128	0.20082	0.004	73.725	27.574	2.674	50.649	23.076
38	18.03	174.08	128	0.12049	0.003	73.731	27.654	2.666	50.692	23.039
39	18.17	174.13	128	0.040164	0.001	73.862	27.734	2.663	50.798	23.064
40	18.29	174.19	128	-0.032131	-0.001	73.999	27.806	2.661	50.903	23.096
41	18.43	174.18	128	-0.11246	-0.002	74.064	27.887	2.656	50.975	23.088
42	18.57	174.14	128	-0.19279	-0.004	74.108	27.967	2.650	51.037	23.07
43	18.69	174.17	128	-0.26508	-0.006	74.21	28.039	2.647	51.125	23.085
44	18.84	174.16	128	-0.34541	-0.007	74.284	28.12	2.642	51.202	23.082
45	18.96	174.14	128	-0.40967	-0.009	74.326	28.184	2.637	51.255	23.071
46	19.06	174.15	128	-0.44984	-0.010	74.373	28.224	2.635	51.299	23.075

CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⦶	△		
Sample No.		19-720	19-720		
Test No.		1	2		
Depth		17.9-19.5'	17.9-19.5'		
Initial	Diameter, in	1.398	1.403		
	Height, in	3.028	3.055		
	Water Content, %	21.7	18.8		
	Dry Density, pcf	99.54	105.9		
	Saturation, %	84.3	85.8		
	Void Ratio	0.693	0.592		
Before Shear	Water Content, %	31.6	26.3		
	Dry Density, pcf	90.94	98.61		
	Saturation*, %	100.0	100.0		
	Void Ratio	0.853	0.709		
	Back Press., psi	100.1	100.2		
Ver. Eff. Cons. Stress, psi		6.874	27.77		
Shear Strength, psi		9.802	23.1		
Strain at Failure, %		18.2	18.3		
Strain Rate, %/min		0.06	0.06		
B-Value		0.00	0.00		
Measured Specific Gravity		2.7	2.7		
Liquid Limit		---	---		
Plastic Limit		---	---		

Project: PLUM CREEK SITE 21
Location: TX
Project No.: 19-720
Boring No.: B-7
Sample Type: CORE
Description:
Remarks:

NRCS Soil Mechanics Center
Lincoln, NE

4/19/2019
11:40 AM

Mohr Circle Program

SITE NAME: Plum Creek Site 21
STATE: TX
SAMPLE NO: 19-Comp1

Failure Criterion:
- ☐ Maximum Dev. Stress
- ☐ Maximum Stress Ratio
- ☐ Max. Pore Pressure
- ☐ <= 10% Strain
- ☑ Selected Points

Total Strength Parameters:

			Zero Cohesion:
PHI:	14.7 degrees	14.7 degrees	Slope y=
C :	275 psf	1.91 psi	

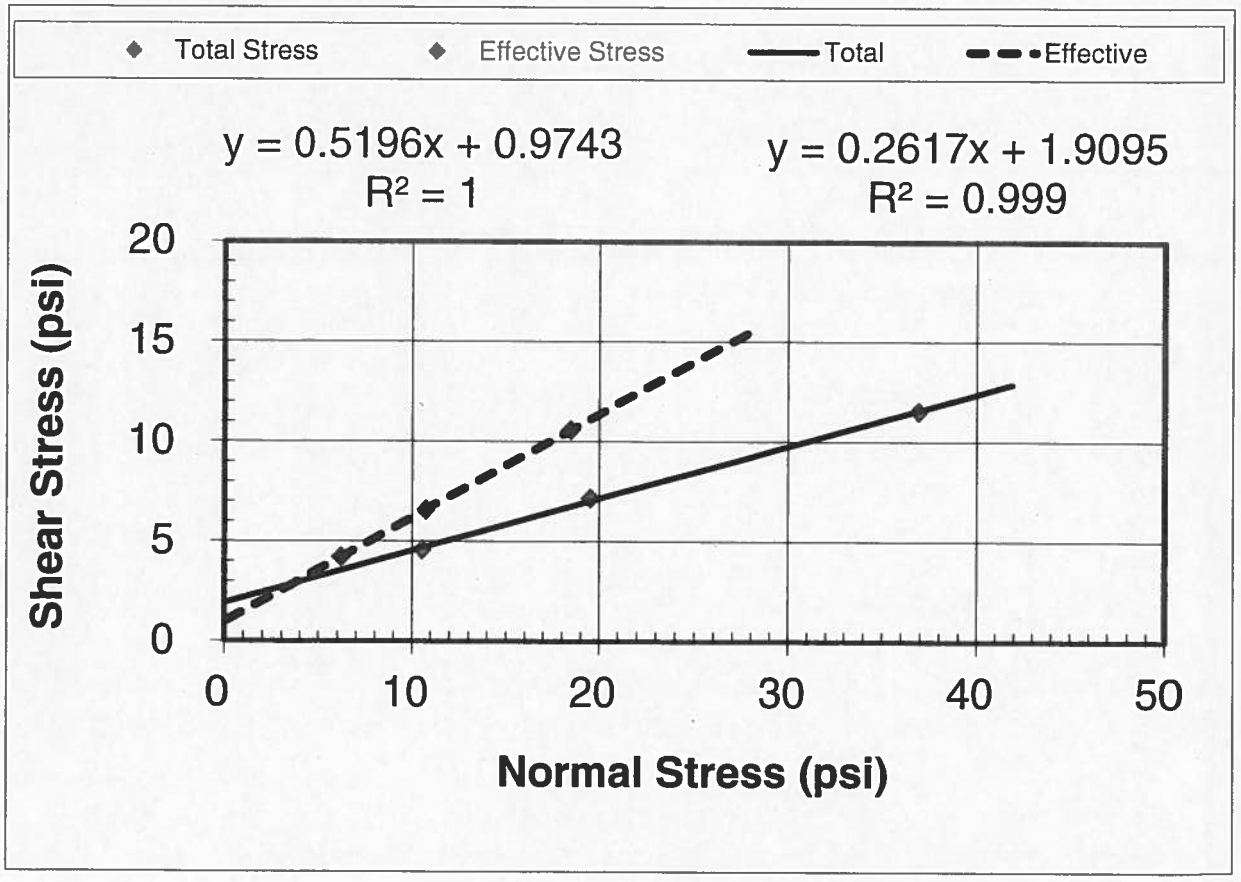
Effective Strength Parameters:

PHI' :	27.5 degrees	27.5 degrees	Slope y=
C':	140 psf	0.97 psi	

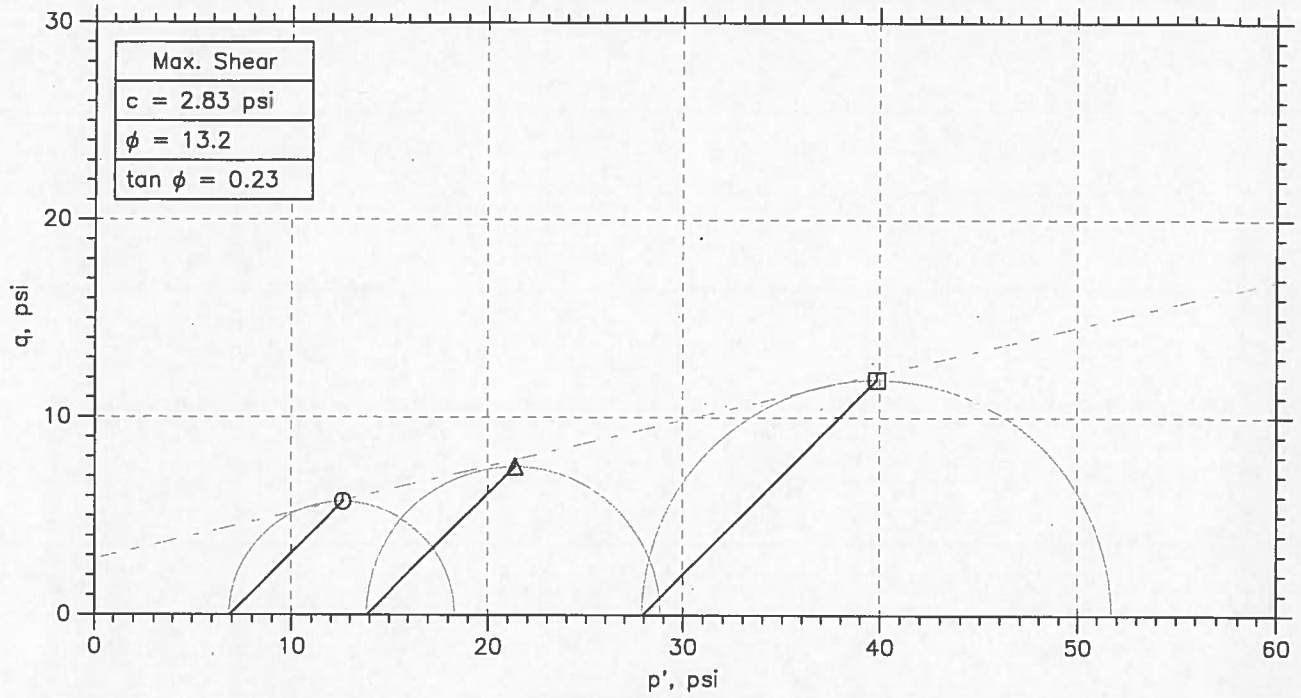
Stress path analysis from p-q plot:
PHI' : degrees
C' : psf

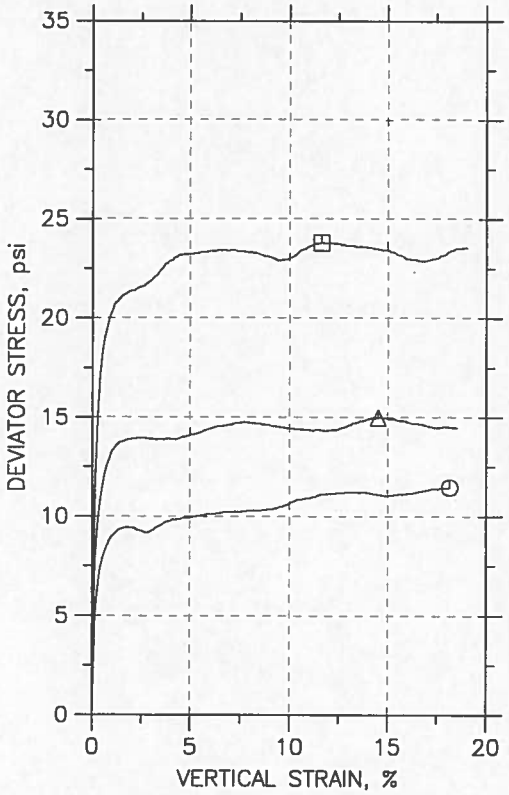
(All inputed values in the chart are in psi)

CELL PRESSURE	DEVIATOR STRESS AT FAILURE	PORE PRESSURE AT FAILURE	PERCENT STRAIN (Optional Entry)
7	9.47	3.36	1.78
14	14.77	7.21	7.71
28	23.82	15.97	11.59



CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⊙	△	⊡	
Sample No.		19-COMP1	19-COMP1	19-COMP1	
Test No.		1	2	3	
Depth		0-4'	0-4'	0-4'	
Initial	Diameter, in	1.4	1.4	1.4	
	Height, in	2.999	3.001	3	
	Water Content, %	21.7	21.7	21.8	
	Dry Density, pcf	101.8	101.8	101.7	
	Saturation, %	89.5	89.3	89.5	
	Void Ratio	0.656	0.656	0.657	
Before Shear	Water Content, %	25.1	24.3	22.5	
	Dry Density, pcf	100.4	101.9	104.8	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.678	0.655	0.609	
	Back Press., psi	100.1	100.1	100.1	
Ver. Eff. Cons. Stress, psi		6.882	13.86	27.93	
Shear Strength, psi		5.733	7.496	11.91	
Strain at Failure, %		18.2	14.5	11.6	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-COMP1

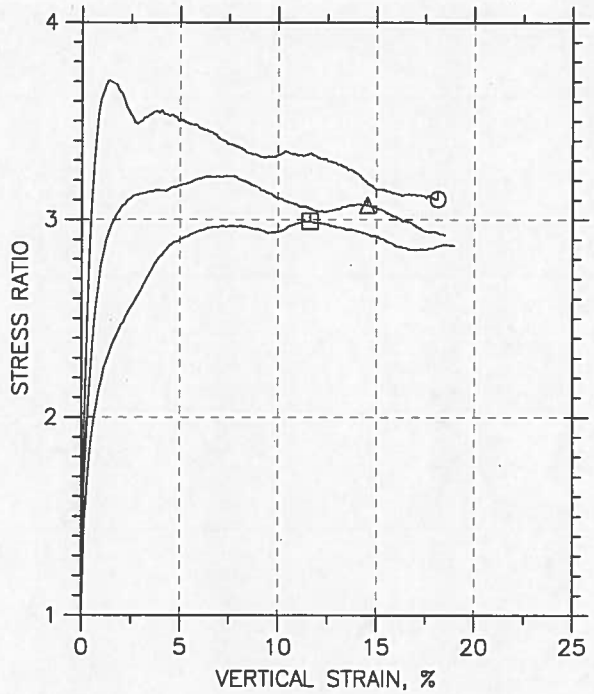
Boring No.:

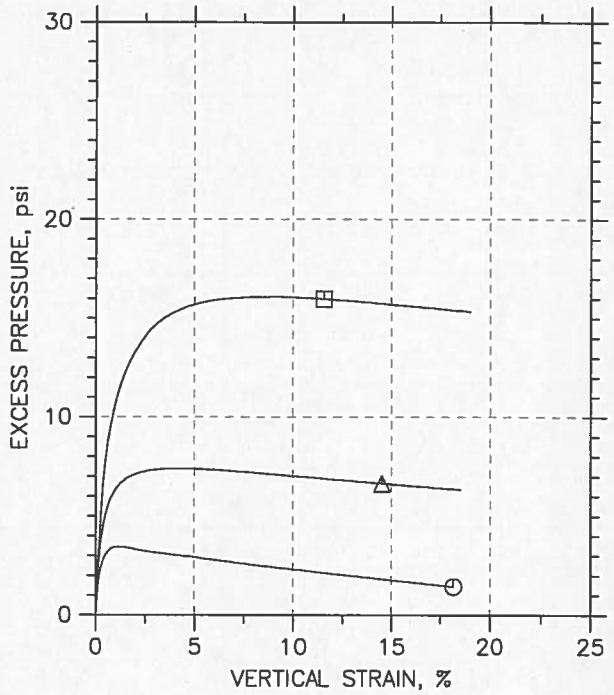
Sample Type: REMOLD

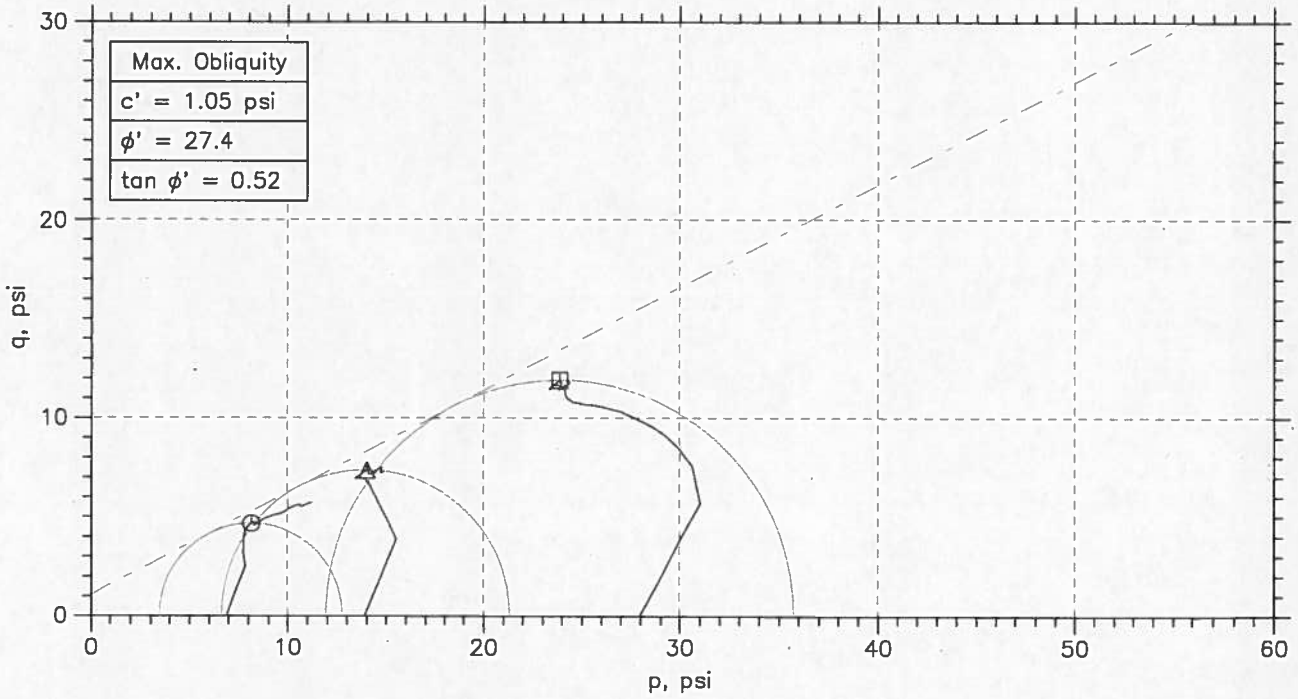
Description: BORROW, B-101, 102, 104, & 105

Remarks:

CONSOLIDATED UNDRAINED TRIAXIAL TEST



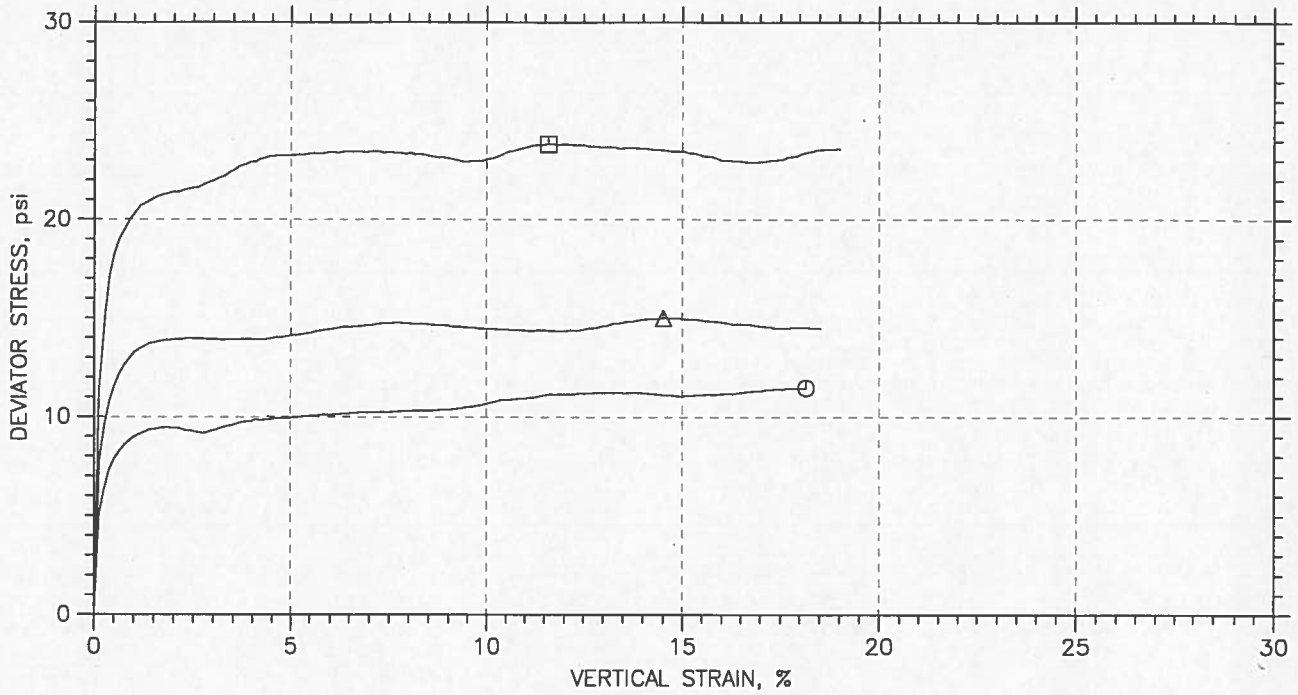


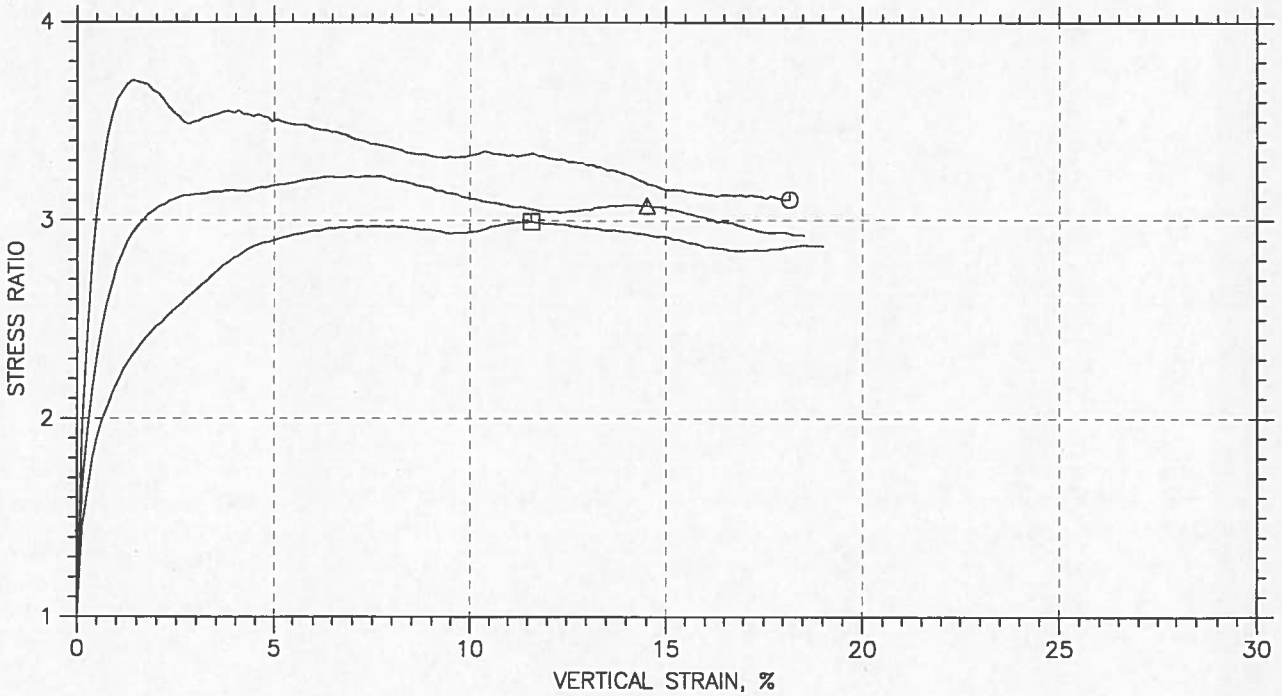


	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	19-COMP1	1	0-4'	SKK	4/4/19	SKK		19-COMP1TX-07eng.dat
△	19-COMP1	2	0-4'	SKK	4/4/19	SKK		19-COMP1TX-14eng.dat
⊡	19-COMP1	3	0-4'	SKK	4/4/19	SKK		19-COMP1TX-28eng.dat

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-COMP1
Boring No.:	Sample Type: REMOLD	
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

CONSOLIDATED UNDRAINED TRIAXIAL TEST





	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	19-COMP1	1	0-4'	SKK	4/4/19	SKK		19-COMP1TX-07eng.dat
△	19-COMP1	2	0-4'	SKK	4/4/19	SKK		19-COMP1TX-14eng.dat
⊡	19-COMP1	3	0-4'	SKK	4/4/19	SKK		19-COMP1TX-28eng.dat

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-COMP1
Boring No.:	Sample Type: REMOLD	
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ng No.:
le No.: 19-COMP1
No.: 1

Location: TX
Tested By: SKK
Test Date: 4/4/19
Sample Type: REMOLD

Project No.: 19-COMP1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
rks:

imen Height: 3.00 in
imen Area: 1.54 in^2
imen Volume: 75.65 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
ainer ID		---		
Container + Wet Soil, gm	150.14	150.14	154.3	207.86
Container + Dry Soil, gm	123.32	123.32	123.32	176.88
Container, gm	0	---	0	53.56
Dry Soil, gm	123.32	123.32	123.32	123.32
r Content, %	21.75	21.75	25.12	25.12
Ratio	---	0.66	0.68	---
ee of Saturation, %	---	89.46	100.00	---
Unit Weight, pcf	---	101.76	100.43	---

ial

of Initialization

of Consolidation/A

of Saturation

of Consolidation/B

of Shear

ailure

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ng No.:
le No.: 19-COMP1
No.: 1

Location: TX
Tested By: SKK
Test Date: 4/4/19
Sample Type: REMOLD

Project No.: 19-COMP1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
rks:

imen Height: 3.00 in
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Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	1.5251	0	0	100.12	107	107
2	2.0011	0.11688	1.5269	7.7064	5.0415	101.68	107	112.04
3	4.0011	0.25246	1.529	9.7717	6.379	102.45	107	113.38
4	6.0011	0.37558	1.5309	11.159	7.2714	102.89	107	114.27
5	8.0019	0.50492	1.5329	12.053	7.839	103.17	107	114.84
6	10.003	0.65297	1.5352	12.731	8.2621	103.34	107	115.26
7	12.002	0.77141	1.537	13.224	8.5675	103.46	107	115.57
8	14.003	0.89764	1.539	13.625	8.8111	103.52	107	115.81
9	16.004	1.0254	1.5409	13.933	8.9937	103.56	107	115.99
10	18.003	1.147	1.5428	14.149	9.1168	103.56	107	116.12
11	20.003	1.2592	1.5446	14.334	9.2209	103.56	107	116.22
12	22.002	1.3994	1.5468	14.55	9.3408	103.55	107	116.34
13	24	1.5272	1.5488	14.642	9.3824	103.52	107	116.38
14	26.003	1.6613	1.5509	14.735	9.423	103.5	107	116.42
15	28.002	1.7766-ps	1.5527	14.827	9.4661-	103.47	107	116.47
16	30.002	1.9013	1.5547	14.827	9.4483	103.44	107	116.45
17	32.004	2.0509	1.5571	14.858	9.4467	103.42	107	116.45
18	34.002	2.1677	1.5589	14.796	9.3904	103.4	107	116.39
19	36.001	2.3002	1.561	14.704	9.3123	103.38	107	116.31
20	38.004	2.442	1.5633	14.673	9.2725	103.35	107	116.27
21	40.001	2.5651	1.5653	14.642	9.2354	103.34	107	116.24
22	42.003	2.6742	1.567	14.581	9.1806	103.32	107	116.18
23	44.002	2.7973	1.569	14.611	9.183	103.3	107	116.18
24	46.002	2.9267	1.5711	14.765	9.2629	103.29	107	116.26
25	48.001	3.0545	1.5732	14.889	9.3232	103.27	107	116.32
26	50.001	3.1776	1.5752	15.074	9.4231	103.26	107	116.42
27	52.003	3.3147-	1.5774	15.228	9.5011	103.23	107	116.5
28	54.002	3.4503	1.5796	15.351	9.5596	103.22	107	116.56
29	56.003	3.5594	1.5814	15.474	9.6218	103.21	107	116.62
30	58.002	3.6841	1.5835	15.629	9.701	103.19	107	116.7
31	60	3.8165	1.5857	15.752	9.7593	103.17	107	116.76
32	62.002	3.9583	1.588	15.783	9.7579	103.16	107	116.76
33	64.004	4.0706	1.5899	15.968	9.8577	103.14	107	116.86
34	66.002	4.1968	1.5919	15.937	9.8196	103.13	107	116.82
35	68.004	4.3339	1.5942	16.029	9.8573	103.11	107	116.86
36	70.004	4.4539	1.5962	16.06	9.8588	103.09	107	116.86
37	72.003	4.5848	1.5984	16.183	9.9165	103.09	107	116.92
38	74.002	4.7033	1.6004	16.214	9.9181	103.07	107	116.92
39	76	4.8342	1.6026	16.276	9.937	103.05	107	116.94
40	78.003	4.9464	1.6045	16.276	9.9202	103.03	107	116.92
41	80.002	5.0711	1.6066	16.399	9.9783	103.02	107	116.98
42	82	5.2035	1.6089	16.43	9.9776	103	107	116.98
43	84.002	5.3297	1.611	16.523	10.016	102.98	107	117.02
44	86.002	5.4497	1.613	16.584	10.036	102.96	107	117.04
45	88.001	5.5806	1.6153	16.646	10.055	102.95	107	117.05
46	90.001	5.71	1.6175	16.708	10.073	102.94	107	117.07
47	92.003	5.8191	1.6194	16.8	10.114	102.92	107	117.11
48	94.003	5.9593	1.6218	16.831	10.111	102.9	107	117.11
49	96.001	6.0871	1.624	16.862	10.111	102.89	107	117.11
50	98.003	6.2071	1.6261	16.923	10.13	102.87	107	117.13
51	100	6.3427	1.6284	17.016	10.167	102.86	107	117.17
52	102	6.4643	1.6305	17.047	10.167	102.84	107	117.17

54	106	6.7198	1.635	17.17	10.203	102.81	107	117.2
55	108	6.832	1.637	17.232	10.224	102.79	107	117.22
56	110	6.9458	1.639	17.232	10.206	102.78	107	117.21
57	112	7.0674	1.6411	17.293	10.225	102.75	107	117.22
58	114	7.2014	1.6435	17.324	10.223	102.74	107	117.22
59	116	7.3261	1.6457	17.386	10.241	102.73	107	117.24
60	118	7.4492	1.6479	17.355	10.203	102.72	107	117.2
61	120	7.5801	1.6502	17.447	10.239	102.7	107	117.24
62	122	7.7141	1.6526	17.509	10.256	102.69	107	117.26
63	124	7.8216	1.6545	17.571	10.277	102.67	107	117.28
64	126	7.9557	1.657	17.632	10.293	102.66	107	117.29
65	128	8.0897	1.6594	17.663	10.291	102.64	107	117.29
66	130	8.2144	1.6616	17.725	10.308	102.62	107	117.31
67	132	8.3344	1.6638	17.725	10.29	102.61	107	117.29
68	134	8.4684	1.6662	17.786	10.306	102.59	107	117.31
69	136	8.5962	1.6686	17.817	10.304	102.58	107	117.3
70	138	8.7115	1.6707	17.879	10.323	102.57	107	117.32
71	140	8.8486	1.6732	17.971	10.357	102.56	107	117.36
72	142	8.9842	1.6757	18.002	10.354	102.54	107	117.35
73	144	9.1089	1.678	18.064	10.371	102.53	107	117.37
74	146	9.2336	1.6803	18.156	10.407	102.51	107	117.41
75	148	9.3473	1.6824	18.218	10.425	102.49	107	117.43
76	150	9.4782	1.6848	18.341	10.478	102.49	107	117.48
77	152	9.6122	1.6873	18.403	10.493	102.47	107	117.49
78	154	9.7213	1.6894	18.526	10.549	102.45	107	117.55
79	156	9.8585	1.6919	18.619	10.582	102.44	107	117.58
80	158	9.9754	1.6941	18.773	10.654	102.42	107	117.65
81	160	10.098	1.6965	18.896	10.707	102.4	107	117.71
82	162	10.234	1.699	19.019	10.757	102.4	107	117.76
83	164	10.367	1.7015	19.204	10.844	102.38	107	117.84
84	166	10.488	1.7038	19.266	10.861	102.36	107	117.86
85	168	10.617	1.7063	19.297	10.858	102.35	107	117.86
86	170	10.751	1.7089	19.389	10.89	102.33	107	117.89
87	172	10.859	1.7109	19.482	10.926	102.32	107	117.93
88	174	10.995	1.7135	19.482	10.904	102.31	107	117.9
89	176	11.115	1.7158	19.636	10.974	102.29	107	117.97
90	178	11.239	1.7183	19.667	10.971	102.27	107	117.97
91	180	11.383	1.721	19.821	11.037	102.26	107	118.04
92	182	11.507	1.7235	19.944	11.088	102.24	107	118.09
93	184	11.626	1.7258	20.067	11.139	102.23	107	118.14
94	186	11.76	1.7284	20.037	11.099	102.23	107	118.1
95	188	11.872	1.7306	20.129	11.134	102.21	107	118.13
96	190	11.998	1.7331	20.16	11.13	102.19	107	118.13
97	192	12.128	1.7356	20.222	11.144	102.18	107	118.14
98	194	12.265	1.7383	20.252	11.138	102.17	107	118.14
99	196	12.399	1.741	20.376	11.187	102.15	107	118.19
100	198	12.526	1.7435	20.376	11.165	102.14	107	118.17
101	200	12.648	1.746	20.437	11.18	102.13	107	118.18
102	202	12.77	1.7484	20.499	11.194	102.11	107	118.19
103	204	12.905	1.7511	20.592	11.224	102.1	107	118.22
104	206	13.017	1.7534	20.592	11.205	102.08	107	118.21
105	208	13.139	1.7558	20.684	11.237	102.07	107	118.24
106	210	13.262	1.7583	20.653	11.199	102.06	107	118.2
107	212	13.379	1.7607	20.746	11.231	102.05	107	118.23
108	214	13.532	1.7638	20.715	11.188	102.03	107	118.19
109	216	13.65	1.7662	20.807	11.22	102.02	107	118.22
110	218	13.769	1.7687	20.838	11.217	102.01	107	118.22
111	220	13.896	1.7713	20.869	11.213	101.99	107	118.21
112	222	14.021	1.7738	20.869	11.191	101.98	107	118.19
113	224	14.155	1.7766	20.869	11.168	101.97	107	118.17
114	226	14.281	1.7792	20.838	11.129	101.95	107	118.13
115	228	14.411	1.7819	20.869	11.125	101.93	107	118.12
116	230	14.546	1.7847	20.838	11.084	101.92	107	118.08
117	232	14.657	1.7871	20.869	11.083	101.91	107	118.08
118	234	14.777	1.7896	20.869	11.062	101.9	107	118.06
119	236	14.911	1.7924	20.869	11.039	101.89	107	118.04
120	238	15.018	1.7947	20.9	11.038	101.87	107	118.04
121	240	15.16	1.7977	20.992	11.066	101.86	107	118.07
122	242	15.291	1.8004	21.054	11.077	101.85	107	118.08
123	244	15.414	1.8031	21.146	11.108	101.84	107	118.11
124	246	15.533	1.8056	21.177	11.104	101.82	107	118.1
125	248	15.667	1.8085	21.27	11.133	101.8	107	118.13

27	252	15.93	1.8141	21.362	11.138	101.78	107	118.14
28	254	16.052	1.8168	21.424	11.151	101.76	107	118.15
29	256	16.158	1.8191	21.516	11.184	101.75	107	118.18
30	258	16.301	1.8222	21.516	11.159	101.74	107	118.16
31	260	16.427	1.8249	21.64	11.205	101.73	107	118.2
32	262	16.549	1.8276	21.732	11.234	101.72	107	118.23
33	264	16.675	1.8303	21.825	11.263	101.71	107	118.26
34	266	16.784	1.8327	21.886	11.277	101.69	107	118.28
35	268	16.935	1.8361	22.01	11.318	101.68	107	118.32
36	270	17.054	1.8387	22.04	11.314	101.67	107	118.31
37	272	17.169	1.8413	22.194	11.377	101.65	107	118.38
38	274	17.3	1.8442	22.256	11.388	101.63	107	118.39
39	276	17.425	1.847	22.349	11.416	101.62	107	118.42
40	278	17.568	1.8502	22.318	11.373	101.61	107	118.37
41	280	17.686	1.8528	22.503	11.452	101.61	107	118.45
42	282	17.808	1.8556	22.503	11.431	101.59	107	118.43
43	284	17.923	1.8582	22.564	11.443	101.58	107	118.44
44	286	18.057	1.8612	22.595	11.436	101.56	107	118.44
45	287.87	18.171	1.8638	22.688	11.465	101.55	107	118.47

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ng No.:
le No.: 19-COMP1
No.: 1

Location: TX
Tested By: SKK
Test Date: 4/4/19
Sample Type: REMOLD

Project No.: 19-COMP1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
rks:

imen Height: 3.00 in
imen Area: 1.54 in^2
imen Volume: 75.65 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	107	107	0	0.000	6.8821	6.8821	1.000	6.8821	0
2	0.12	112.04	107	1.5648	0.310	10.359	5.3172	1.948	7.838	2.5207
3	0.25	113.38	107	2.3351	0.366	10.926	4.547	2.403	7.7364	3.1895
4	0.38	114.27	107	2.7729	0.381	11.38	4.1091	2.770	7.7448	3.6357
5	0.50	114.84	107	3.0486	0.389	11.672	3.8334	3.045	7.7529	3.9195
6	0.65	115.26	107	3.227	0.391	11.917	3.6551	3.260	7.7861	4.131
7	0.77	115.57	107	3.3405	0.390	12.109	3.5416	3.419	7.8253	4.2838
8	0.90	115.81	107	3.4054	0.386	12.288	3.4767	3.534	7.8822	4.4055
9	1.03	115.99	107	3.4378	0.382	12.438	3.4443	3.611	7.9411	4.4969
10	1.15	116.12	107	3.4378	0.377	12.561	3.4443	3.647	8.0027	4.5584
11	1.26 PP	116.22	107	3.4459 Peak PP	0.374	12.657	3.4362 = 9.22	3.684	8.0466	4.6105
12	1.40	116.34	107	3.4297	0.367	12.793	3.4524 = 9.34	3.706 Max SR	8.1228	4.6704
13	1.53	116.38	107	3.4054	0.363	12.859	3.4767 = 9.28	3.699	8.1679	4.6912
14	1.66	116.42	107	3.381	0.359	12.924	3.501 = 9.42	3.691	8.2125	4.7115
15	1.78 DS	116.47	107	3.3567 = 3.36	0.355	12.991	3.5253 = 9.47	3.685 Max Psress	8.2584	4.733
16	1.90	116.45	107	3.3243	0.352	13.006	3.5578	3.656	8.2819	4.7241
17	2.05	116.45	107	3.3	0.349	13.029	3.5821	3.637 < 3.38	8.3054	4.7233
18	2.17	116.39	107	3.2838	0.350	12.989	3.5983	3.610	8.2935	4.6952
19	2.30	116.31	107	3.2594	0.350	12.935	3.6226	3.571	8.2788	4.6561
20	2.44	116.27	107	3.2351	0.349	12.919	3.647	3.543	8.2832	4.6362
21	2.57	116.24	107	3.2189	0.349	12.899	3.6632	3.521	8.2809	4.6177
22	2.67	116.18	107	3.2027	0.349	12.86	3.6794	3.495	8.2697	4.5903
23	2.80	116.18	107	3.1865	0.347	12.879	3.6956	3.485	8.2871	4.5915
24	2.93	116.26	107	3.1702	0.342	12.975	3.7118	3.496	8.3433	4.6314
25	3.05	116.32	107	3.154	0.338	13.051	3.728	3.501	8.3896	4.6616
26	3.18	116.42	107	3.1378	0.333	13.167	3.7443	3.517	8.4558	4.7115
27	3.31	116.5	107	3.1135	0.328	13.27	3.7686	3.521	8.5191	4.7506
28	3.45	116.56	107	3.1054	0.325	13.336	3.7767	3.531	8.5565	4.7798
29	3.56	116.62	107	3.0892	0.321	13.415	3.7929	3.537	8.6038	4.8109
30	3.68	116.7	107	3.0729	0.317	13.51	3.8091	3.547	8.6596	4.8505
31	3.82	116.76	107	3.0567	0.313	13.585	3.8253	3.551	8.705	4.8797
32	3.96	116.76	107	3.0405	0.312	13.599	3.8416	3.540	8.7205	4.8789
33	4.07	116.86	107	3.0243	0.307	13.715	3.8578	3.555	8.7866	4.9288
34	4.20	116.82	107	3.0081	0.306	13.694	3.874	3.535	8.7838	4.9098
35	4.33	116.86	107	2.9919	0.304	13.748	3.8902	3.534	8.8189	4.9287
36	4.45	116.86	107	2.9756	0.302	13.765	3.9064	3.524	8.8358	4.9294
37	4.58	116.92	107	2.9675	0.299	13.831	3.9145	3.533	8.8728	4.9582
38	4.70	116.92	107	2.9513	0.298	13.849	3.9307	3.523	8.8898	4.959
39	4.83	116.94	107	2.9351	0.295	13.884	3.947	3.518	8.9155	4.9685
40	4.95	116.92	107	2.9108	0.293	13.891	3.9713	3.498	8.9314	4.9601
41	5.07	116.98	107	2.9027	0.291	13.958	3.9794	3.507	8.9685	4.9892
42	5.20	116.98	107	2.8865	0.289	13.973	3.9956	3.497	8.9844	4.9888
43	5.33	117.02	107	2.8621	0.286	14.036	4.0199	3.492	9.0279	5.008
44	5.45	117.04	107	2.8459	0.284	14.072	4.0361	3.487	9.0542	5.0181
45	5.58	117.05	107	2.8297	0.281	14.107	4.0524	3.481	9.0796	5.0273
46	5.71	117.07	107	2.8216	0.280	14.134	4.0605	3.481	9.097	5.0365
47	5.82	117.11	107	2.8054	0.277	14.19	4.0767	3.481	9.1335	5.0568
48	5.96	117.11	107	2.7811	0.275	14.212	4.101	3.466	9.1567	5.0556
49	6.09	117.11	107	2.7729	0.274	14.22	4.1091	3.461	9.1645	5.0554
50	6.21	117.13	107	2.7567	0.272	14.256	4.1253	3.456	9.1906	5.0652
51	6.34	117.17	107	2.7405	0.270	14.308	4.1416	3.455	9.2248	5.0833

53	6.59	117.2	107	2.7081	0.265	14.378	4.174	3.445	9.2762	5.1022
54	6.72	117.2	107	2.6919	0.264	14.393	4.1902	3.435	9.2918	5.1016
55	6.83	117.22	107	2.6756	0.262	14.43	4.2064	3.430	9.3182	5.1118
56	6.95	117.21	107	2.6594	0.261	14.429	4.2226	3.417	9.3257	5.103
57	7.07	117.22	107	2.6351	0.258	14.472	4.247	3.408	9.3594	5.1125
58	7.20	117.22	107	2.627	0.257	14.478	4.2551	3.403	9.3666	5.1115
59	7.33	117.24	107	2.6108	0.255	14.513	4.2713	3.398	9.3919	5.1206
60	7.45	117.2	107	2.6027	0.255	14.483	4.2794	3.384	9.3811	5.1017
61	7.58	117.24	107	2.5865	0.253	14.535	4.2956	3.384	9.4153	5.1197
62	7.71	117.26	107	2.5702	0.251	14.568	4.3118	3.379	9.4398	5.128
63	7.82	117.28	107	2.554	0.249	14.605	4.328	3.374	9.4663	5.1383
64	7.96	117.29	107	2.5378	0.247	14.637	4.3443	3.369	9.4907	5.1465
65	8.09	117.29	107	2.5216	0.245	14.651	4.3605	3.360	9.5058	5.1453
66	8.21	117.31	107	2.5054	0.243	14.685	4.3767	3.355	9.5309	5.1542
67	8.33	117.29	107	2.4892	0.242	14.683	4.3929	3.342	9.5377	5.1448
68	8.47	117.31	107	2.4729	0.240	14.715	4.4091	3.337	9.562	5.1529
69	8.60	117.3	107	2.4648	0.239	14.721	4.4172	3.333	9.5694	5.1521
70	8.71	117.32	107	2.4567	0.238	14.748	4.4253	3.333	9.5869	5.1616
71	8.85	117.36	107	2.4405	0.236	14.799	4.4415	3.332	9.62	5.1785
72	8.98	117.35	107	2.4243	0.234	14.812	4.4578	3.323	9.6348	5.177
73	9.11	117.37	107	2.4081	0.232	14.845	4.474	3.318	9.6596	5.1856
74	9.23	117.41	107	2.3919	0.230	14.897	4.4902	3.318	9.6935	5.2033
75	9.35	117.43	107	2.3757	0.228	14.932	4.5064	3.313	9.7191	5.2127
76	9.48	117.48	107	2.3675	0.226	14.992	4.5145	3.321	9.7535	5.2389
77	9.61	117.49	107	2.3513	0.224	15.024	4.5307	3.316	9.7773	5.2466
78	9.72	117.55	107	2.3351	0.221	15.096	4.547	3.320	9.8213	5.2744
79	9.86	117.58	107	2.3189	0.219	15.145	4.5632	3.319	9.8539	5.2908
80	9.98	117.65	107	2.3027	0.216	15.233	4.5794	3.326	9.9063	5.3269
81	10.10	117.71	107	2.2865	0.214	15.302	4.5956	3.330	9.9489	5.3533
82	10.23	117.76	107	2.2784	0.212	15.361	4.6037	3.337	9.9823	5.3786
83	10.37	117.84	107	2.2621	0.209	15.464	4.6199	3.347	10.042	5.4222
84	10.49	117.86	107	2.2459	0.207	15.497	4.6361	3.343	10.067	5.4304
85	10.62	117.86	107	2.2297	0.205	15.51	4.6524	3.334	10.081	5.4288
86	10.75	117.89	107	2.2135	0.203	15.558	4.6686	3.333	10.113	5.4449
87	10.86	117.93	107	2.1973	0.201	15.611	4.6848	3.332	10.148	5.4631
88	10.99	117.9	107	2.1892	0.201	15.597	4.6929	3.323	10.145	5.4519
89	11.11	117.97	107	2.173	0.198	15.683	4.7091	3.330	10.196	5.4869
90	11.24	117.97	107	2.1567	0.197	15.696	4.7253	3.322	10.211	5.4855
91	11.38	118.04	107	2.1405	0.194	15.778	4.7415	3.328	10.26	5.5184
92	11.51	118.09	107	2.1243	0.192	15.845	4.7578	3.330	10.302	5.5438
93	11.63	118.14	107	2.1162	0.190	15.905	4.7659	3.337	10.336	5.5696
94	11.76	118.1	107	2.1081	0.190	15.873	4.774	3.325	10.323	5.5495
95	11.87	118.13	107	2.0919	0.188	15.924	4.7902	3.324	10.357	5.5668
96	12.00	118.13	107	2.0757	0.186	15.936	4.8064	3.316	10.371	5.565
97	12.13	118.14	107	2.0594	0.185	15.966	4.8226	3.311	10.395	5.5719
98	12.26	118.14	107	2.0513	0.184	15.969	4.8307	3.306	10.4	5.5692
99	12.40	118.19	107	2.0351	0.182	16.034	4.847	3.308	10.44	5.5933
00	12.53	118.17	107	2.0189	0.181	16.028	4.8632	3.296	10.446	5.5825
01	12.65	118.18	107	2.0108	0.180	16.051	4.8713	3.295	10.461	5.5899
02	12.77	118.19	107	1.9946	0.178	16.082	4.8875	3.290	10.485	5.5972
03	12.91	118.22	107	1.9784	0.176	16.128	4.9037	3.289	10.516	5.6121
04	13.02	118.21	107	1.9621	0.175	16.125	4.9199	3.278	10.522	5.6026
05	13.14	118.24	107	1.954	0.174	16.165	4.928	3.280	10.547	5.6186
06	13.26	118.2	107	1.9459	0.174	16.135	4.9361	3.269	10.535	5.5993
07	13.38	118.23	107	1.9297	0.172	16.184	4.9524	3.268	10.568	5.6156
08	13.53	118.19	107	1.9135	0.171	16.156	4.9686	3.252	10.562	5.5938
09	13.65	118.22	107	1.9054	0.170	16.196	4.9767	3.254	10.587	5.6099
10	13.77	118.22	107	1.8892	0.168	16.21	4.9929	3.247	10.601	5.6085
11	13.90	118.21	107	1.873	0.167	16.222	5.0091	3.238	10.615	5.6063
12	14.02	118.19	107	1.8648	0.167	16.208	5.0172	3.231	10.613	5.5956
13	14.15	118.17	107	1.8486	0.166	16.202	5.0334	3.219	10.618	5.5841
14	14.28	118.13	107	1.8324	0.165	16.179	5.0497	3.204	10.614	5.5647
15	14.41	118.12	107	1.8162	0.163	16.19	5.0659	3.196	10.628	5.5623
16	14.55	118.08	107	1.8	0.162	16.166	5.0821	3.181	10.624	5.5421
17	14.66	118.08	107	1.7919	0.162	16.173	5.0902	3.177	10.631	5.5413
18	14.78	118.06	107	1.7838	0.161	16.16	5.0983	3.170	10.629	5.5311
19	14.91	118.04	107	1.7676	0.160	16.154	5.1145	3.158	10.634	5.5197
20	15.02	118.04	107	1.7513	0.159	16.169	5.1307	3.151	10.65	5.5191
21	15.16	118.07	107	1.7432	0.158	16.204	5.1388	3.153	10.672	5.5328
22	15.29	118.08	107	1.7351	0.157	16.224	5.1469	3.152	10.686	5.5387
23	15.41	118.11	107	1.7189	0.155	16.271	5.1632	3.151	10.717	5.5538
24	15.53	118.1	107	1.7027	0.153	16.284	5.1794	3.144	10.732	5.5522

26	15.80	118.11	107	1.6784	0.151	16.313	5.2037	3.135	10.759	5.5549
27	15.93	118.14	107	1.6621	0.149	16.358	5.2199	3.134	10.789	5.5691
28	16.05	118.15	107	1.6459	0.148	16.387	5.2361	3.130	10.812	5.5756
29	16.16	118.18	107	1.6297	0.146	16.436	5.2524	3.129	10.844	5.5919
30	16.30	118.16	107	1.6216	0.145	16.419	5.2605	3.121	10.84	5.5794
31	16.43	118.2	107	1.6135	0.144	16.473	5.2686	3.127	10.871	5.6023
32	16.55	118.23	107	1.6054	0.143	16.511	5.2767	3.129	10.894	5.617
33	16.67	118.26	107	1.5892	0.141	16.555	5.2929	3.128	10.924	5.6313
34	16.78	118.28	107	1.573	0.139	16.586	5.3091	3.124	10.948	5.6386
35	16.94	118.32	107	1.5648	0.138	16.635	5.3172	3.129	10.976	5.6589
36	17.05	118.31	107	1.5486	0.137	16.647	5.3334	3.121	10.99	5.6569
37	17.17	118.38	107	1.5324	0.135	16.727	5.3496	3.127	11.038	5.6886
38	17.30	118.39	107	1.5162	0.133	16.753	5.3659	3.122	11.06	5.6938
39	17.42	118.42	107	1.5	0.131	16.798	5.3821	3.121	11.09	5.7078
40	17.57	118.37	107	1.4919	0.131	16.764	5.3902	3.110	11.077	5.6867
41	17.69	118.45	107	1.4919	0.130	16.842	5.3902	3.125	11.116	5.7261
42	17.81	118.43	107	1.4757	0.129	16.837	5.4064	3.114	11.122	5.7153
43	17.92	118.44	107	1.4594	0.128	16.866	5.4226	3.110	11.144	5.7216
44	18.06	118.44	107	1.4432	0.126	16.875	5.4388	3.103	11.157	5.718
45	18.17	118.47	107	1.4351	0.125	16.912	5.4469	3.105	11.18	5.7326

TRIAXIAL TEST

:ct: PLUM CREEK SITE 21
g No.:
e No.: 19-COMP1
No.: 2

Location: TX
Tested By: SKK
Test Date: 4/4/19
Sample Type: REMOLD

Project No.: 19-COMP1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
ks:

men Height: 3.00 in
men Area: 1.54 in^2
men Volume: 75.70 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
iner ID		---		
ontainer + Wet Soil, gm	150.21	150.21	153.34	207.2
ontainer + Dry Soil, gm	123.41	123.41	123.41	177.27
ontainer, gm	0	---	0	53.86
ry Soil, gm	123.41	123.41	123.41	123.41
Content, %	21.72	21.72	24.25	24.25
Ratio	---	0.66	0.65	---
e of Saturation, %	---	89.35	100.00	---
nit Weight, pcf	---	101.77	101.86	---

al

f Initialization

f Consolidation/A

f Saturation

f Consolidation/B

f Shear

ilure

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ig No.:
e No.: 19-COMP1
No.: 2

Location: TX
Tested By: SKK
Test Date: 4/4/19
Sample Type: REMOLD

Project No.: 19-COMP1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
ks:

men Height: 3.00 in
men Area: 1.54 in^2
men Volume: 75.70 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	1.4957	0	0	100.14	114	114
2	2.0032	0.12833	1.4976	11.654	7.7757	102.37	114	121.78
3	4.0043	0.25508	1.4995	14.468	9.6364	103.74	114	123.64
4	6.0037	0.38024	1.5014	16.15	10.739	104.61	114	124.74
5	8.0001	0.50858	1.5033	17.405	11.553	105.23	114	125.55
6	10.001	0.63215	1.5052	18.322	12.142	105.67	114	126.14
7	12.004	0.7589	1.5071	19.026	12.588	106.02	114	126.59
8	14.002	0.89991	1.5092	19.637	12.968	106.29	114	126.97
9	16.001	1.0092	1.5109	20.096	13.252	106.5	114	127.25
.0	18.003	1.1487	1.513	20.402	13.429	106.67	114	127.43
.1	20.001	1.2706	1.5149	20.677	13.588	106.81	114	127.59
.2	22	1.418	1.5172	20.922	13.722	106.93	114	127.72
.3	24.003	1.5273	1.5189	21.014	13.762	107.02	114	127.76
.4	26.002	1.6572	1.5209	21.136	13.818	107.09	114	127.82
.5	28.001	1.7856	1.5229	21.259	13.875	107.16	114	127.87
.6	30.004	1.9345	1.5252	21.32	13.887	107.22	114	127.89
.7	32.002	2.0517	1.527	21.412	13.925	107.27	114	127.92
.8	34.001	2.2054	1.5294	21.442	13.915	107.31	114	127.92
.9	36.004	2.3258	1.5313	21.565	13.972	107.34	114	127.97
!0	38.003	2.4478	1.5332	21.565	13.949	107.37	114	127.95
!1	40.004	2.5825	1.5353	21.626	13.963	107.41	114	127.96
!2	42.004	2.7013	1.5372	21.656	13.961	107.43	114	127.96
!3	44.002	2.8281	1.5392	21.626	13.917	107.46	114	127.92
!4	46.004	2.9738	1.5415	21.687	13.929	107.46	114	127.93
!5	48	3.0958	1.5434	21.687	13.905	107.48	114	127.91
!6	50.004	3.2337	1.5456	21.687	13.879	107.5	114	127.88
!7	52.002	3.3572	1.5476	21.779	13.915	107.5	114	127.91
!8	54.004	3.4903	1.5498	21.809	13.909	107.51	114	127.91
!9	56.002	3.6234	1.5519	21.809	13.884	107.52	114	127.88
!0	58.001	3.747	1.5539	21.901	13.919	107.53	114	127.92
!1	60.003	3.8626	1.5558	21.932	13.917	107.53	114	127.92
!2	62.001	4.0116	1.5582	21.962	13.908	107.53	114	127.91
!3	64.002	4.132	1.5601	21.993	13.905	107.53	114	127.9
!4	66	4.2682	1.5623	22.023	13.898	107.52	114	127.9
!5	68.004	4.3918	1.5644	22.115	13.933	107.53	114	127.93
!6	70.003	4.5011	1.5662	22.207	13.971	107.53	114	127.97
!7	72.001	4.6501	1.5686	22.329	14.02	107.53	114	128.02
!8	74.001	4.7546	1.5703	22.36	14.019	107.52	114	128.02
!9	76.003	4.9051	1.5728	22.482	14.068	107.52	114	128.07
!0	78.003	5.0335	1.5749	22.605	14.121	107.51	114	128.12
!1	80.004	5.1444	1.5768	22.666	14.138	107.51	114	128.14
!2	82.002	5.2838	1.5791	22.757	14.169	107.5	114	128.17
!3	84	5.4074	1.5812	22.88	14.222	107.5	114	128.22
!4	86.002	5.5389	1.5834	22.972	14.254	107.49	114	128.25
!5	88.003	5.6688	1.5855	23.125	14.325	107.48	114	128.33
!6	90.002	5.7829	1.5875	23.216	14.36	107.48	114	128.36
!7	92.004	5.9239	1.5898	23.339	14.409	107.47	114	128.41
!8	94.003	6.0585	1.5921	23.43	14.44	107.46	114	128.44
!9	96.004	6.1805	1.5942	23.553	14.493	107.46	114	128.49
!0	98	6.3152	1.5965	23.675	14.542	107.45	114	128.54
!1	100	6.4515	1.5988	23.736	14.553	107.44	114	128.55
!2	102	6.5719	1.6009	23.797	14.567	107.43	114	128.57

4	106	6.8079	1.6049	23.92	14.596	107.42 -14	114	128.6
5	108	6.9379	1.6072	24.042	14.646	107.41	114	128.65
6	110	7.0741	1.6095	24.073	14.638	107.39	114	128.64
7	112	7.1945	1.6116	24.195	14.689	107.37	114	128.69
8	114	7.3276	1.6139	24.287	14.719	107.37	114	128.72
9	116	7.4528	1.6161	24.348	14.731	107.37	114	128.73
0	118	7.5906	1.6185	24.409	14.741	107.36	114	128.74
1	120	7.7142 - DS	1.6207	24.501	14.772 - Max	107.35 - 7.21	114	128.77
2	122	7.8393	1.6229	24.501	14.747 <13.62	107.34	114	128.75
3	124	7.9629	1.6251	24.501	14.721	107.33	114	128.72
4	126	8.0897	1.6273	24.532	14.714	107.31	114	128.71
5	128	8.2354	1.6299	24.562	14.703	107.3	114	128.7
6	130	8.3749	1.6324	24.593	14.693	107.29	114	128.69
7	132	8.4905	1.6344	24.593	14.67	107.29	114	128.67
8	134	8.6109	1.6366	24.593	14.645	107.27	114	128.65
9	136	8.7472	1.639	24.623	14.636	107.26	114	128.64
0	138	8.8597	1.6411	24.654	14.631	107.25	114	128.63
1	140	8.9959	1.6435	24.654	14.604	107.25	114	128.6
2	142	9.11	1.6456	24.593	14.543	107.23	114	128.54
3	144	9.2605	1.6483	24.685	14.568	107.22	114	128.57
4	146	9.3841	1.6506	24.654	14.524	107.21	114	128.52
5	148	9.5298	1.6532	24.685	14.513	107.2	114	128.51
6	150	9.6582	1.6556	24.715	14.505	107.19	114	128.51
7	152	9.7865	1.6579	24.685	14.461	107.17	114	128.46
8	154	9.9259	1.6605	24.715	14.451	107.16	114	128.45
9	156	10.015	1.6621	24.746	14.451	107.15	114	128.45
0	158	10.157	1.6648	24.776	14.44	107.14	114	128.44
1	160	10.295	1.6673	24.776	14.412	107.13	114	128.41
2	162	10.414	1.6695	24.807	14.406	107.12	114	128.41
3	164	10.563	1.6723	24.837	14.394	107.11	114	128.39
4	166	10.674	1.6744	24.868	14.389	107.1	114	128.39
5	168	10.796	1.6767	24.899	14.383	107.09	114	128.38
6	170	10.924	1.6791	24.929	14.375	107.08	114	128.37
7	172	11.052	1.6815	24.929	14.349	107.06	114	128.35
8	174	11.187	1.6841	24.96	14.339	107.05	114	128.34
9	176	11.311	1.6864	25.082	14.386	107.05	114	128.39
0	178	11.434	1.6888	25.113	14.379	107.03	114	128.38
1	180	11.582	1.6916	25.113	14.349	107.02	114	128.35
2	182	11.713	1.6941	25.143	14.34	107.01	114	128.34
3	184	11.843	1.6966	25.143	14.313	107	114	128.31
4	186	11.962	1.6989	25.204	14.325	106.99	114	128.32
5	188	12.079	1.7011	25.296	14.355	106.97	114	128.35
6	190	12.214	1.7038	25.388	14.381	106.97	114	128.38
7	192	12.339	1.7062	25.388	14.355	106.96	114	128.36
8	194	12.481	1.709	25.51	14.397	106.95	114	128.4
9	196	12.603	1.7114	25.663	14.461	106.93	114	128.46
0	198	12.729	1.7138	25.724	14.471	106.93	114	128.47
1	200	12.868	1.7165	25.847	14.513	106.92	114	128.51
2	202	12.987	1.7189	26.03	14.595	106.9	114	128.6
3	204	13.103	1.7212	26.092	14.607	106.88	114	128.61
4	206	13.226	1.7236	26.306	14.705	106.88	114	128.7
5	208	13.354	1.7262	26.397	14.731	106.87	114	128.73
6	210	13.484	1.7288	26.489	14.756	106.86	114	128.76
7	212	13.6	1.7311	26.642	14.82	106.85	114	128.82
8	214	13.749	1.7341	26.703	14.824	106.84	114	128.82
9	216	13.877	1.7367	26.826	14.867	106.83	114	128.87
0	218	14.002	1.7392	26.979	14.928	106.82	114	128.93
1	220	14.112	1.7414	27.04	14.939	106.8	114	128.94
2	222	14.25	1.7442	27.101	14.945	106.8	114	128.94
3	224	14.381	1.7469	27.162	14.951	106.79	114	128.95
4	226	14.513	1.7496	27.284	14.993	106.77	114	128.99
5	228	14.654	1.7525	27.315	14.98	106.76	114	128.98
6	230	14.772	1.7549	27.376	14.989	106.76	114	128.99
7	232	14.913	1.7578	27.407	14.976	106.75	114	128.98
8	234	15.056	1.7608	27.376	14.927	106.73	114	128.93
9	236	15.148	1.7627	27.437	14.942	106.72	114	128.94
0	238	15.289	1.7656	27.468	14.929	106.72	114	128.93
1	240	15.417	1.7683	27.468	14.901	106.71	114	128.9
2	242	15.55	1.7711	27.437	14.855	106.69	114	128.85
3	244	15.676	1.7737	27.468	14.845	106.68	114	128.84
4	246	15.812	1.7766	27.468	14.815	106.67	114	128.82
5	248	15.958	1.7796	27.499	14.801	106.66	114	128.8

7	252	16.217	1.7852	27.468	14.728	106.64	114	128.73
8	254	16.317	1.7873	27.407	14.672	106.63	114	128.67
9	256	16.439	1.7899	27.499	14.697	106.63	114	128.7
0	258	16.59	1.7931	27.529	14.681	106.62	114	128.68
1	260	16.728	1.7961	27.56	14.668	106.61	114	128.67
2	262	16.85	1.7987	27.529	14.625	106.6	114	128.62
3	264	16.968	1.8013	27.529	14.599	106.59	114	128.6
4	266	17.109	1.8044	27.499	14.552	106.57	114	128.55
5	268	17.242	1.8073	27.529	14.54	106.56	114	128.54
6	270	17.366	1.81	27.468	14.48	106.56	114	128.48
7	272	17.485	1.8126	27.529	14.488	106.54	114	128.49
8	274	17.623	1.8156	27.59	14.492	106.52	114	128.49
9	276	17.757	1.8186	27.652	14.496	106.52	114	128.5
0	278	17.878	1.8213	27.743	14.521	106.52	114	128.52
1	280	18.008	1.8241	27.804	14.526	106.52	114	128.53
2	282	18.138	1.827	27.835	14.515	106.5	114	128.51
3	284	18.264	1.8299	27.835	14.487	106.48	114	128.49
4	286	18.382	1.8325	27.896	14.495	106.48	114	128.5
5	288	18.51	1.8354	27.957	14.501	106.47	114	128.5
6	288.28	18.526	1.8357	27.927	14.48	106.47	114	128.48

TRIAXIAL TEST

ct: PLUM CREEK SITE 21
g No.:
e No.: 19-COMP1
No.: 2

Location: TX
Tested By: SKK
Test Date: 4/4/19
Sample Type: REMOLD

Project No.: 19-COMP1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
ks:

men Height: 3.00 in
men Area: 1.54 in^2
men Volume: 75.70 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	114	114	0	0.000	13.863	13.863	1.000	13.863	0
2	0.13	121.78	114	2.2331	0.287	19.405	11.63	1.669	15.517	3.8878
3	0.26	123.64	114	3.6067	0.374	19.892	10.256	1.940	15.074	4.8182
4	0.38	124.74	114	4.4743	0.417	20.127	9.3884	2.144	14.758	5.3694
5	0.51	125.55	114	5.0928	0.441	20.323	8.7699	2.317	14.546	5.7765
6	0.63	126.14	114	5.5346	0.456	20.47	8.3281	2.458	14.399	6.0712
7	0.76	126.59	114	5.88	0.467	20.57	7.9827	2.577	14.276	6.2938
8	0.90	126.97	114	6.1531	0.474	20.678	7.7096	2.682	14.194	6.4841
9	1.01	127.25	114	6.362	0.480	20.753	7.5007	2.767	14.127	6.6262
0	1.15	127.43	114	6.5307	0.486	20.761	7.332	2.832	14.047	6.7146
1	1.27	127.59	114	6.6753	0.491	20.776	7.1874	2.891	13.982	6.7942
2	1.42	127.72	114	6.7877	0.495	20.797	7.075	2.940	13.936	6.8612
3	1.53	127.76	114	6.8841	0.500	20.741	6.9786	2.972	13.86	6.8812
4	1.66	127.82	114	6.9564	0.503	20.725	6.9063	3.001	13.816	6.9092
5	1.79	127.87	114	7.0207	0.506	20.717	6.842	3.028	13.779	6.9373
6	1.93	127.89	114	7.085	0.510	20.664	6.7778	3.049	13.721	6.9433
7	2.05	127.92	114	7.1332	0.512	20.654	6.7296	3.069	13.692	6.9623
8	2.21	127.92	114	7.1733	0.515	20.605	6.6894	3.080	13.647	6.9577
9	2.33	127.97	114	7.2055	0.516	20.63	6.6573	3.099	13.644	6.9862
0	2.45	127.95	114	7.2376	0.519	20.574	6.6251	3.106	13.6	6.9746
1	2.58	127.96	114	7.2697	0.521	20.556	6.593	3.118	13.575	6.9817
2	2.70	127.96	114	7.2938	0.522	20.53	6.5689	3.125	13.549	6.9804
3	2.83	127.92	114	7.3179	0.526	20.462	6.5448	3.126	13.503	6.9584
4	2.97	127.93	114	7.3259	0.526	20.465	6.5368	3.131	13.501	6.9643
5	3.10	127.91	114	7.342	0.528	20.426	6.5207	3.133	13.473	6.9527
6	3.23	127.88	114	7.3581	0.530	20.384	6.5046	3.134	13.444	6.9396
7	3.36	127.91	114	7.3661	0.529	20.412	6.4966	3.142	13.454	6.9575
8	3.49	127.91	114	7.3741	0.530	20.398	6.4886	3.144	13.443	6.9546
9	3.62	127.88	114	7.3822	0.532	20.364	6.4805	3.142	13.422	6.9419
0	3.75	127.92	114	7.3902 — Peak pp	0.531	20.392 —	6.4725 = 13.92	3.151	13.432	6.9597
1	3.86	127.92	114	7.3902	0.531	20.389	6.4725	3.150	13.431	6.9584
2	4.01	127.91	114	7.3902	0.531	20.381	6.4725	3.149	13.427	6.954
3	4.13	127.9	114	7.3902	0.531	20.377	6.4725	3.148	13.425	6.9523
4	4.27	127.9	114	7.3822	0.531	20.379	6.4805	3.145	13.43	6.949
5	4.39	127.93	114	7.3902	0.530	20.406	6.4725	3.153	13.439	6.9665
6	4.50	127.97	114	7.3902	0.529	20.443	6.4725	3.158	13.458	6.9853
7	4.65	128.02	114	7.3902	0.527	20.492 —	6.4725 = 14.02	3.166	13.482	7.01
8	4.75	128.02	114	7.3822	0.527	20.5	6.4805	3.163	13.49	7.0096
9	4.91	128.07	114	7.3822	0.525	20.548	6.4805	3.171	13.515	7.034
0	5.03	128.12	114	7.3741	0.522	20.609	6.4886	3.176	13.549	7.0604
1	5.14	128.14	114	7.3741	0.522	20.627	6.4886	3.179	13.558	7.069
2	5.28	128.17	114	7.3661	0.520	20.665	6.4966	3.181	13.581	7.0844
3	5.41	128.22	114	7.3581	0.517	20.727	6.5046	3.186	13.616	7.111
4	5.54	128.25	114	7.35	0.516	20.767	6.5127	3.189	13.64	7.1271
5	5.67	128.33	114	7.342	0.513	20.846	6.5207	3.197	13.683	7.1626
6	5.78	128.36	114	7.342	0.511	20.881	6.5207	3.202	13.701	7.1802
7	5.92	128.41	114	7.334	0.509	20.938	6.5287	3.207	13.733	7.2047
8	6.06	128.44	114	7.3259	0.507	20.977	6.5368	3.209	13.757	7.2202
9	6.18	128.49	114	7.3179	0.505	21.038	6.5448	3.214	13.791	7.2464
0	6.32	128.54	114	7.3099	0.503	21.095	6.5528	3.219	13.824	7.2712
1	6.45	128.55	114	7.3018	0.502	21.114	6.5609	3.218	13.838	7.2767

3	6.71	128.58	114	7.2858	0.500	21.155	6.5769	3.217	13.866	7.2892
4	6.81	128.6	114	7.2777	0.499	21.181	6.585	3.217	13.883	7.2981
5	6.94	128.65	114	7.2697	0.496	21.239	6.593	3.221	13.916	7.323
6	7.07	128.64	114	7.2536	0.496	21.247	6.6091	3.215	13.928	7.3188
7	7.19	128.69	114	7.2376	0.493	21.314	6.6251	3.217	13.97	7.3445
8	7.33-SR	128.72	114	7.2376-7.24	0.492	21.344	— 6.6251=14.72	3.222-Max	13.985	7.3594
9	7.45	128.73	114	7.2295	0.491	21.364	6.6332	3.221 SR	13.999	7.3656
0	7.59	128.74	114	7.2215	0.490	21.382	6.6412	3.220	14.012	7.3704
1	7.71-DS	128.77	114	7.2135-7.21	0.488	21.421	— 6.6492=14.77	3.222-psi	14.035	7.3861
2	7.84	128.75	114	7.2055	0.489	21.404	6.6573	3.215 max	14.031	7.3733
3	7.96	128.72	114	7.1894	0.488	21.395	6.6733	3.206 <13.6%	14.034	7.3607
4	8.09	128.71	114	7.1733	0.488	21.404	6.6894	3.200	14.046	7.3571
5	8.24	128.7	114	7.1653	0.487	21.401	6.6974	3.195	14.049	7.3516
6	8.37	128.69	114	7.1573	0.487	21.399	6.7055	3.191	14.052	7.3467
7	8.49	128.67	114	7.1492	0.487	21.383	6.7135	3.185	14.048	7.3348
8	8.61	128.65	114	7.1332	0.487	21.375	6.7296	3.176	14.052	7.3225
9	8.75	128.64	114	7.1251	0.487	21.373	6.7376	3.172	14.055	7.3179
0	8.86	128.63	114	7.1171	0.486	21.377	6.7456	3.169	14.061	7.3157
1	9.00	128.6	114	7.1091	0.487	21.357	6.7537	3.162	14.055	7.3018
2	9.11	128.54	114	7.093	0.488	21.313	6.7697	3.148	14.041	7.2715
3	9.26	128.57	114	7.085	0.486	21.346	6.7778	3.149	14.062	7.284
4	9.38	128.52	114	7.0689	0.487	21.318	6.7938	3.138	14.056	7.2621
5	9.53	128.51	114	7.0609	0.487	21.315	6.8019	3.134	14.058	7.2565
6	9.66	128.51	114	7.0528	0.486	21.315	6.8099	3.130	14.062	7.2526
7	9.79	128.46	114	7.0368	0.487	21.286	6.826	3.118	14.056	7.2303
8	9.93	128.45	114	7.0207	0.486	21.293	6.842	3.112	14.067	7.2253
9	10.01	128.45	114	7.0127	0.485	21.301	6.85	3.110	14.075	7.2254
0	10.16	128.44	114	7.0046	0.485	21.298	6.8581	3.106	14.078	7.22
1	10.30	128.41	114	6.9886	0.485	21.286	6.8741	3.097	14.08	7.206
2	10.41	128.41	114	6.9805	0.485	21.288	6.8822	3.093	14.085	7.203
3	10.56	128.39	114	6.9725	0.484	21.284	6.8902	3.089	14.087	7.1969
4	10.67	128.39	114	6.9645	0.484	21.288	6.8982	3.086	14.093	7.1947
5	10.80	128.38	114	6.9484	0.483	21.297	6.9143	3.080	14.106	7.1914
6	10.92	128.37	114	6.9404	0.483	21.297	6.9223	3.077	14.11	7.1874
7	11.05	128.35	114	6.9243	0.483	21.287	6.9384	3.068	14.113	7.1743
8	11.19	128.34	114	6.9163	0.482	21.286	6.9464	3.064	14.116	7.1696
9	11.31	128.39	114	6.9082	0.480	21.341	6.9545	3.069	14.148	7.1932
0	11.43	128.38	114	6.8922	0.479	21.35	6.9705	3.063	14.16	7.1896
1	11.58	128.35	114	6.8841	0.480	21.328	6.9786	3.056	14.153	7.1745
2	11.71	128.34	114	6.8681	0.479	21.335	6.9946	3.050	14.165	7.17
3	11.84	128.31	114	6.86	0.479	21.316	7.0027	3.044	14.159	7.1567
4	11.96	128.32	114	6.852	0.478	21.336	7.0107	3.043	14.173	7.1625
5	12.08	128.35	114	6.8359	0.476	21.382	7.0268	3.043	14.204	7.1774
6	12.21	128.38	114	6.8279	0.475	21.416	7.0348	3.044	14.225	7.1905
7	12.34	128.36	114	6.8199	0.475	21.398	7.0428	3.038	14.22	7.1776
8	12.48	128.4	114	6.8118	0.473	21.448	7.0509	3.042	14.25	7.1987
9	12.60	128.46	114	6.7958	0.470	21.528	7.0669	3.046	14.298	7.2307
0	12.73	128.47	114	6.7877	0.469	21.546	7.075	3.045	14.311	7.2356
1	12.87	128.51	114	6.7797	0.467	21.596	7.083	3.049	14.34	7.2567
2	12.99	128.6	114	6.7636	0.463	21.694	7.0991	3.056	14.397	7.2977
3	13.10	128.61	114	6.7476	0.462	21.722	7.1151	3.053	14.418	7.3033
4	13.23	128.7	114	6.7395	0.458	21.828	7.1232	3.064	14.476	7.3525
5	13.35	128.73	114	6.7315	0.457	21.862	7.1312	3.066	14.497	7.3655
6	13.48	128.76	114	6.7235	0.456	21.896	7.1392	3.067	14.517	7.3782
7	13.60	128.82	114	6.7154	0.453	21.968	7.1473	3.074	14.557	7.4101
8	13.75	128.82	114	6.7074	0.452	21.979	7.1553	3.072	14.567	7.4119
9	13.88	128.87	114	6.6913	0.450	22.038	7.1714	3.073	14.605	7.4334
0	14.00	128.93	114	6.6833	0.448	22.107	7.1794	3.079	14.643	7.4639
1	14.11	128.94	114	6.6673	0.446	22.135	7.1955	3.076	14.665	7.4697
2	14.25	128.94	114	6.6592	0.446	22.148	7.2035	3.075	14.676	7.4724
3	14.38	128.95	114	6.6512	0.445	22.163	7.2115	3.073	14.687	7.4757
4	14.51	128.99	114	6.6351	0.443	22.221	7.2276	3.074	14.724	7.4965
5	14.65	128.98	114	6.6191	0.442	22.224	7.2437	3.068	14.734	7.4899
6	14.77	128.99	114	6.6191	0.442	22.233	7.2437	3.069	14.738	7.4945
7	14.91	128.98	114	6.611	0.441	22.227	7.2517	3.065	14.74	7.4879
8	15.06	128.93	114	6.595	0.442	22.195	7.2678	3.054	14.731	7.4637
9	15.15	128.94	114	6.5869	0.441	22.218	7.2758	3.054	14.747	7.4711
0	15.29	128.93	114	6.5789	0.441	22.213	7.2838	3.050	14.748	7.4644
1	15.42	128.9	114	6.5709	0.441	22.193	7.2919	3.044	14.742	7.4505
2	15.55	128.85	114	6.5548	0.441	22.163	7.3079	3.033	14.735	7.4274
3	15.68	128.84	114	6.5468	0.441	22.161	7.316	3.029	14.738	7.4225
4	15.81	128.82	114	6.5307	0.441	22.147	7.332	3.021	14.74	7.4077

6	16.08	128.76	114	6.5146	0.441	22.105	7.3481	3.008	14.727	7.3787
7	16.22	128.73	114	6.5066	0.442	22.084	7.3561	3.002	14.72	7.3638
8	16.32	128.67	114	6.4905	0.442	22.044	7.3722	2.990	14.708	7.3358
9	16.44	128.7	114	6.4905	0.442	22.069	7.3722	2.994	14.72	7.3483
0	16.59	128.68	114	6.4825	0.442	22.061	7.3802	2.989	14.721	7.3406
1	16.73	128.67	114	6.4745	0.441	22.057	7.3882	2.985	14.722	7.3342
2	16.85	128.62	114	6.4584	0.442	22.029	7.4043	2.975	14.717	7.3125
3	16.97	128.6	114	6.4504	0.442	22.012	7.4123	2.970	14.712	7.2996
4	17.11	128.55	114	6.4343	0.442	21.98	7.4284	2.959	14.704	7.2759
5	17.24	128.54	114	6.4263	0.442	21.976	7.4364	2.955	14.706	7.27
6	17.37	128.48	114	6.4182	0.443	21.924	7.4445	2.945	14.684	7.2398
7	17.48	128.49	114	6.4022	0.442	21.948	7.4605	2.942	14.704	7.2439
8	17.62	128.49	114	6.3861	0.441	21.968	7.4766	2.938	14.722	7.2459
9	17.76	128.5	114	6.3781	0.440	21.981	7.4846	2.937	14.733	7.2481
0	17.88	128.52	114	6.3781	0.439	22.005	7.4846	2.940	14.745	7.2603
1	18.01	128.53	114	6.3781	0.439	22.011	7.4846	2.941	14.748	7.263
2	18.14	128.51	114	6.362	0.438	22.015	7.5007	2.935	14.758	7.2573
3	18.26	128.49	114	6.3459	0.438	22.004	7.5168	2.927	14.76	7.2436
4	18.38	128.5	114	6.3379	0.437	22.02	7.5248	2.926	14.772	7.2475
5	18.51	128.5	114	6.3299	0.437	22.033	7.5328	2.925	14.783	7.2503
6	18.53	128.48	114	6.3299	0.437	22.013	7.5328	2.922	14.773	7.2402

TRIAXIAL TEST

:ct: PLUM CREEK SITE 21
ıg No.:
e No.: 19-COMP1
No.: 3

Location: TX
Tested By: SKK
Test Date: 4/4/19
Sample Type: REMOLD

Project No.: 19-COMP1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
·ks:

men Height: 3.00 in
men Area: 1.54 in^2
men Volume: 75.68 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
ıiner ID		---		
:ontainer + Wet Soil, gm	150.18	150.18	151.15	205.2
:ontainer + Dry Soil, gm	123.34	123.34	123.34	177.39
:ontainer, gm	0	---	0	54.05
ıry Soil, gm	123.34	123.34	123.34	123.34
· Content, %	21.76	21.76	22.55	22.55
Ratio	---	0.66	0.61	---
:e of Saturation, %	---	89.48	100.00	---
Init Weight, pcf	---	101.75	104.77	---

al

ıf Initialization

ıf Consolidation/A

ıf Saturation

ıf Consolidation/B

ıf Shear

ıilure

TRIAXIAL TEST

ct: PLUM CREEK SITE 21
g No.:
e No.: 19-COMP1
No.: 3

Location: TX
Tested By: SKK
Test Date: 4/4/19
Sample Type: REMOLD

Project No.: 19-COMP1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
ks:

men Height: 3.00 in
men Area: 1.54 in^2
men Volume: 75.68 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.70

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	1.4576	0	0	100.07	128	128
2	2.0026	0.12322	1.4594	16.642	11.397	102.7	128	139.4
3	4.0034	0.27077	1.4616	22.2	15.176	104.98	128	143.18
4	6.0003	0.37778	1.4631	24.979	17.053	106.64	128	145.05
5	8.0021	0.51397	1.4651	26.769	18.245	107.9	128	146.25
6	10.001	0.64206	1.467	27.943	19.015	108.88	128	147.02
7	12.001	0.79609	1.4693	28.838	19.588	109.68	128	147.59
8	14	0.9112	1.471	29.517	20.021	110.36	128	148.02
9	16	1.0474	1.473	30.104	20.385	110.93	128	148.39
0	18.003	1.1755	1.4749	30.629	20.708	111.43	128	148.71
1	20.002	1.3068	1.4769	30.876	20.842	111.85	128	148.84
2	22.001	1.4463	1.479	31.154	20.993	112.24	128	148.99
3	24.003	1.576	1.4809	31.432	21.147	112.57	128	149.15
4	26.001	1.7154	1.483	31.617	21.235	112.87	128	149.23
5	28.002	1.8548	1.4852	31.771	21.302	113.14	128	149.3
6	30.004	1.9845	1.4871	31.957	21.392	113.38	128	149.39
7	32.004	2.124	1.4892	31.987	21.376	113.59	128	149.38
8	34.001	2.2456	1.4911	32.173	21.467	113.8	128	149.47
9	36.004	2.3802	1.4931	32.327	21.535	113.98	128	149.53
0	38.003	2.5001	1.495	32.451	21.585	114.15	128	149.58
1	40.003	2.625	1.4969	32.543	21.613	114.3	128	149.61
2	42.004	2.7433	1.4987	32.79	21.746	114.45	128	149.75
3	44.002	2.8893	1.501	33.037	21.871	114.58	128	149.87
4	46.002	3.0109	1.5029	33.222	21.961	114.71	128	149.96
5	48.003	3.1373	1.5048	33.469	22.09	114.82	128	150.09
6	50	3.2735	1.5069	33.686	22.196	114.92	128	150.2
7	52.001	3.3968	1.5089	33.994	22.366	115.01	128	150.37
8	54.001	3.5297	1.5109	34.241	22.493	115.1	128	150.49
9	56.001	3.6708	1.5132	34.612	22.698	115.19	128	150.7
0	58	3.8086	1.5153	34.797	22.781	115.27	128	150.78
1	60	3.935	1.5173	35.013	22.888	115.34	128	150.89
2	62	4.0777	1.5196	35.137	22.928	115.4	128	150.93
3	64.003	4.1815	1.5212	35.353	23.04	115.45	128	151.04
4	66.002	4.3063	1.5232	35.507	23.106	115.52	128	151.11
5	68.002	4.4555	1.5256	35.723	23.204	115.58	128	151.2
6	70.002	4.5674	1.5274	35.754	23.192	115.63	128	151.19
7	72.002	4.7068	1.5296	35.878	23.232	115.68	128	151.23
8	74.004	4.8527	1.532	35.909	23.21	115.71	128	151.21
9	76.003	4.9873	1.5341	36.001	23.231	115.75	128	151.23
0	78.001	5.1122	1.5361	36.094	23.255	115.79	128	151.26
1	80.004	5.2273	1.538	36.187	23.282	115.83	128	151.28
2	82.003	5.3651	1.5402	36.248	23.281	115.85	128	151.28
3	84.004	5.4964	1.5424	36.372	23.323	115.88	128	151.32
4	86.002	5.644	1.5448	36.464	23.34	115.91	128	151.34
5	88.001	5.7542	1.5466	36.495	23.327	115.93	128	151.33
6	90.004	5.892	1.5489	36.619	23.366	115.97	128	151.37
7	92.002	6.0347	1.5512	36.742	23.404	115.98	128	151.4
8	94.004	6.1725	1.5535	36.742	23.363	116	128	151.36
9	96.002	6.299	1.5556	36.866	23.405	116.02	128	151.41
0	98.001	6.4255	1.5577	36.989	23.447 – max <10.6	116.04 – 15.97	128	151.45
1	100	6.5568	1.5599	36.989	23.408	116.05	128	151.41
2	102	6.7027	1.5623	37.113	23.444	116.06 – 15.99	128	151.44

4	106	6.954	1.5665	37.175	23.408	116.08	128	151.41
5	108	7.1113	1.5692	37.298	23.44	116.1	128	151.44
6	110	7.2345	1.5713	37.36	23.443	116.1	128	151.44
7	112	7.3756	1.5737	37.298	23.361	116.1	128	151.36
8	114	7.4972	1.5757	37.422	23.403	116.12	128	151.4
9	116	7.648	1.5783	37.422	23.358	116.13	128	151.36
0	118	7.776	1.5805	37.483	23.359	116.14	128	151.36
1	120	7.9106	1.5828	37.452	23.299	116.14	128	151.3
2	122	8.0322	1.5849	37.607	23.36	116.15	128	151.36
3	124	8.1668	1.5872	37.545	23.281	116.15	128	151.28
4	126	8.3079	1.5897	37.638	23.297	116.15	128	151.3
5	128	8.444	1.592	37.607	23.237	116.15	128	151.24
6	130	8.5656	1.5942	37.576	23.181	116.15	128	151.18
7	132	8.7018	1.5965	37.576	23.14	116.15	128	151.14
8	134	8.8283	1.5988	37.638	23.141	116.15	128	151.14
9	136	8.9532	1.6009	37.638	23.104	116.16	128	151.1
0	138	9.0975	1.6035	37.607	23.041	116.16	128	151.04
1	140	9.2207	1.6057	37.607	23.005	116.16	128	151
2	142	9.3585	1.6081	37.545	22.925	116.15	128	150.93
3	144	9.4979	1.6106	37.576	22.903	116.14	128	150.9
4	146	9.6212	1.6128	37.73	22.962	116.14	128	150.96
5	148	9.7687	1.6154	37.792	22.956	116.14	128	150.96
6	150	9.9081	1.6179	37.885	22.971	116.14	128	150.97
7	152	9.9957	1.6195	38.039	23.04	116.13	128	151.04
8	154	10.156	1.6224	38.194	23.087	116.12	128	151.09
9	156	10.271	1.6245	38.379	23.167	116.11	128	151.17
0	158	10.412	1.627	38.626	23.276	116.1	128	151.28
1	160	10.545	1.6294	38.904	23.406	116.1	128	151.41
2	162	10.67	1.6317	39.058	23.462	116.1	128	151.46
3	164	10.8	1.6341	39.212	23.517	116.1	128	151.52
4	166	10.928	1.6364	39.398	23.591	116.09	128	151.59
5	168	11.066	1.639	39.583	23.661	116.08	128	151.66
6	170	11.2	1.6415	39.768	23.732	116.07	128	151.73
7	172	11.324	1.6437	39.892	23.769	116.06	128	151.77
8	174	11.447	1.646	39.953	23.768	116.05	128	151.77
9	176	11.589	1.6487	40.108	23.817	116.05	128	151.82
0	178	11.721	1.6511	40.139	23.795	116.03	128	151.79
1	180	11.855	1.6537	40.17	23.771	116.02	128	151.77
2	182	11.996	1.6563	40.293	23.801	116.01	128	151.8
3	184	12.123	1.6587	40.324	23.78	116.01	128	151.78
4	186	12.266	1.6614	40.355	23.754	116	128	151.75
5	188	12.384	1.6636	40.447	23.773	115.99	128	151.77
6	190	12.519	1.6662	40.478	23.749	115.98	128	151.75
7	192	12.65	1.6687	40.447	23.689	115.97	128	151.69
8	194	12.783	1.6712	40.54	23.702	115.96	128	151.7
9	196	12.914	1.6738	40.54	23.661	115.95	128	151.66
0	198	13.024	1.6759	40.602	23.663	115.93	128	151.66
1	200	13.188	1.679	40.694	23.667	115.92	128	151.67
2	202	13.31	1.6814	40.725	23.647	115.92	128	151.65
3	204	13.443	1.684	40.664	23.568	115.9	128	151.57
4	206	13.571	1.6865	40.818	23.619	115.88	128	151.62
5	208	13.699	1.689	40.88	23.615	115.88	128	151.62
6	210	13.843	1.6918	40.941	23.606	115.87	128	151.61
7	212	13.975	1.6944	40.972	23.583	115.85	128	151.58
8	214	14.116	1.6972	41.034	23.574	115.84	128	151.57
9	216	14.253	1.6999	41.034	23.531	115.83	128	151.53
0	218	14.368	1.7022	41.096	23.53	115.82	128	151.53
1	220	14.523	1.7053	41.127	23.5	115.8	128	151.5
2	222	14.654	1.7079	41.127	23.458	115.79	128	151.46
3	224	14.774	1.7103	41.127	23.42	115.78	128	151.42
4	226	14.921	1.7132	41.25	23.445	115.78	128	151.45
5	228	15.051	1.7159	41.281	23.422	115.76	128	151.42
6	230	15.178	1.7184	41.188	23.328	115.75	128	151.33
7	232	15.311	1.7211	41.281	23.339	115.75	128	151.34
8	234	15.44	1.7238	41.219	23.262	115.73	128	151.26
9	236	15.572	1.7264	41.158	23.185	115.71	128	151.18
0	238	15.703	1.7291	41.219	23.179	115.71	128	151.18
1	240	15.854	1.7322	41.158	23.096	115.7	128	151.1
2	242	15.99	1.735	41.034	22.981	115.68	128	150.98
3	244	16.103	1.7374	41.096	22.981	115.67	128	150.98
4	246	16.236	1.7401	41.158	22.975	115.66	128	150.97
5	248	16.373	1.743	41.188	22.949	115.65	128	150.95

7	252	16.627	1.7483	41.25	22.904	115.62	128	150.9
8	254	16.781	1.7515	41.312	22.891	115.61	128	150.89
9	256	16.927	1.7546	41.405	22.897	115.6	128	150.9
0	258	17.057	1.7574	41.528	22.927	115.59	128	150.93
1	260	17.169	1.7597	41.652	22.961	115.58	128	150.96
2	262	17.313	1.7628	41.806	23.003	115.57	128	151
3	264	17.422	1.7651	41.868	23.003	115.56	128	151
4	266	17.574	1.7684	42.022	23.042	115.53	128	151.04
5	268	17.686	1.7708	42.269	23.145	115.53	128	151.15
6	270	17.814	1.7735	42.393	23.174	115.51	128	151.17
7	272	17.948	1.7765	42.547	23.217	115.49	128	151.22
8	274	18.06	1.7789	42.794	23.32	115.49	128	151.32
9	276	18.206	1.7821	43.01	23.394	115.47	128	151.39
0	278	18.344	1.7851	43.165	23.435	115.47	128	151.44
1	280	18.462	1.7877	43.381	23.517	115.46	128	151.52
2	282	18.589	1.7904	43.473	23.527	115.45	128	151.53
3	284	18.727	1.7935	43.566	23.534	115.43	128	151.53
4	286	18.866	1.7965	43.659	23.539	115.42	128	151.54
5	288	18.991	1.7993	43.782	23.567	115.4	128	151.57
6	288.23	19.009	1.7997	43.751	23.544	115.4	128	151.54

TRIAXIAL TEST

:ct: PLUM CREEK SITE 21
g No.:
e No.: 19-COMP1
No.: 3

Location: TX
Tested By: SKK
Test Date: 4/4/19
Sample Type: REMOLD

Project No.: 19-COMP1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
ks:

men Height: 3.00 in
men Area: 1.54 in^2
men Volume: 75.68 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

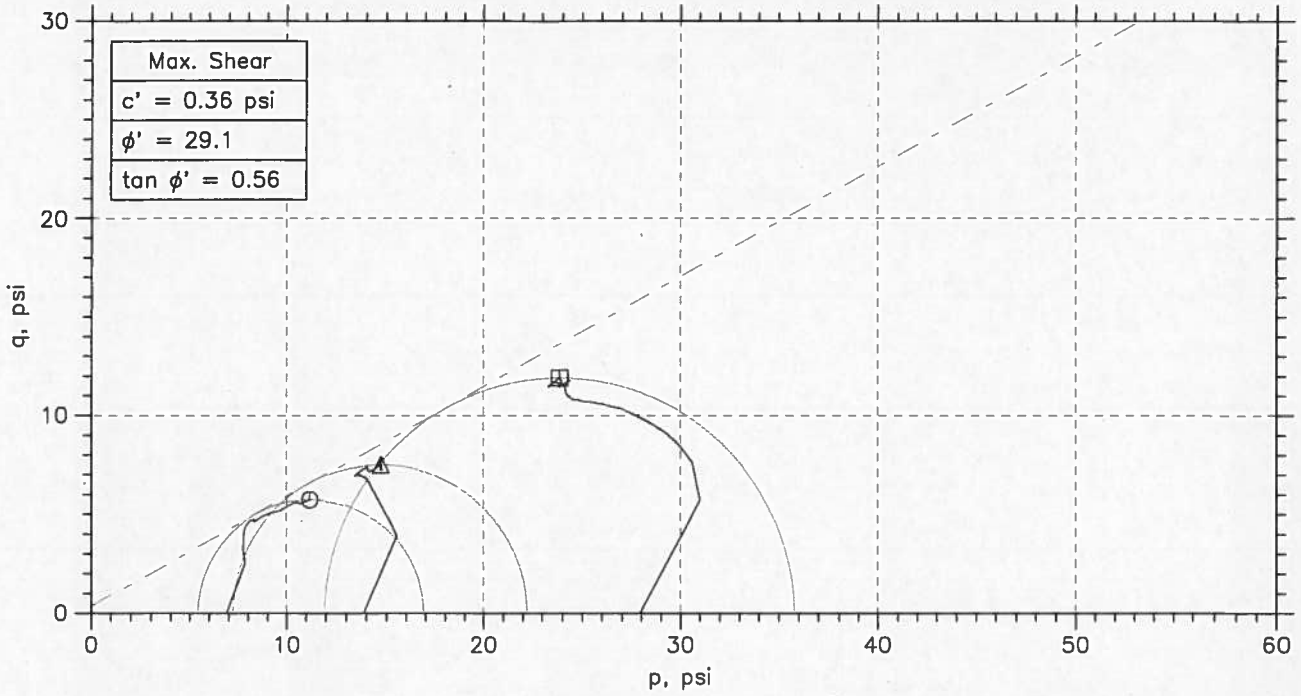
Measured Specific Gravity: 2.70

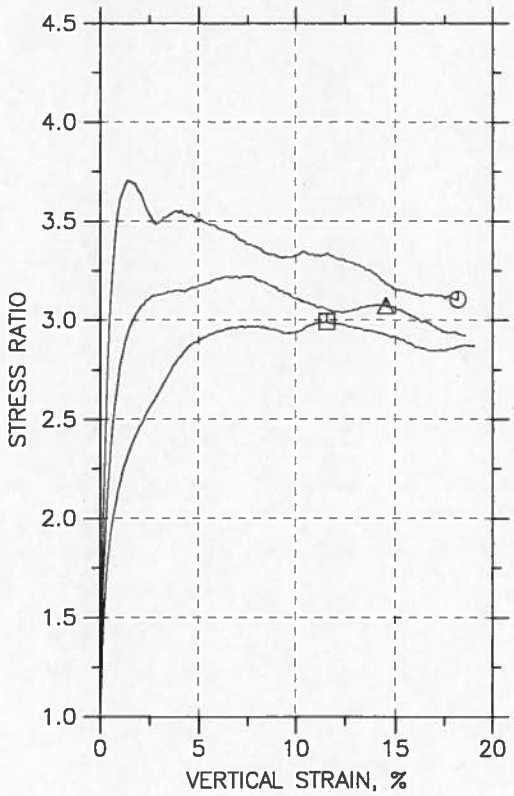
	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	128	128	0	0.000	27.927	27.927	1.000	27.927	0
2	0.12	139.4	128	2.6243	0.230	36.7	25.303	1.450	31.001	5.6986
3	0.27	143.18	128	4.9074	0.323	38.195	23.019	1.659	30.607	7.5878
4	0.38	145.05	128	6.5648	0.385	38.415	21.362	1.798	29.889	8.5266
5	0.51	146.25	128	7.8242	0.429	38.348	20.103	1.908	29.225	9.1227
6	0.64	147.02	128	8.8073	0.463	38.135	19.12	1.995	28.627	9.5077
7	0.80	147.59	128	9.6116	0.491	37.903	18.315	2.069	28.109	9.7939
8	0.91	148.02	128	10.286	0.514	37.662	17.641	2.135	27.651	10.011
9	1.05	148.39	128	10.855	0.532	37.457	17.072	2.194	27.265	10.193
.0	1.18	148.71	128	11.358	0.548	37.277	16.568	2.250	26.923	10.354
.1	1.31	148.84	128	11.781	0.565	36.987	16.146	2.291	26.567	10.421
.2	1.45	148.99	128	12.163	0.579	36.757	15.764	2.332	26.261	10.497
.3	1.58	149.15	128	12.496	0.591	36.578	15.431	2.370	26.004	10.573
.4	1.72	149.23	128	12.797	0.603	36.365	15.13	2.403	25.748	10.617
.5	1.85	149.3	128	13.065	0.613	36.164	14.862	2.433	25.513	10.651
.6	1.98	149.39	128	13.308	0.622	36.011	14.618	2.463	25.314	10.696
.7	2.12	149.38	128	13.52	0.632	35.783	14.407	2.484	25.095	10.688
.8	2.25	149.47	128	13.723	0.639	35.671	14.204	2.511	24.938	10.734
.9	2.38	149.53	128	13.91	0.646	35.552	14.017	2.536	24.785	10.767
0	2.50	149.58	128	14.072	0.652	35.44	13.855	2.558	24.647	10.792
1	2.62	149.61	128	14.227	0.658	35.313	13.7	2.578	24.507	10.807
2	2.74	149.75	128	14.373	0.661	35.3	13.554	2.604	24.427	10.873
3	2.89	149.87	128	14.511	0.663	35.287	13.416	2.630	24.351	10.935
4	3.01	149.96	128	14.633	0.666	35.255	13.294	2.652	24.275	10.98
5	3.14	150.09	128	14.747	0.668	35.271	13.18	2.676	24.225	11.045
6	3.27	150.2	128	14.844	0.669	35.279	13.083	2.697	24.181	11.098
7	3.40	150.37	128	14.942	0.668	35.352	12.985	2.722	24.169	11.183
8	3.53	150.49	128	15.031	0.668	35.389	12.896	2.744	24.142	11.246
9	3.67	150.7	128	15.12	0.666	35.505	12.807	2.772	24.156	11.349
0	3.81	150.78	128	15.193	0.667	35.515	12.734	2.789	24.124	11.391
1	3.94	150.89	128	15.266	0.667	35.548	12.66	2.808	24.104	11.444
2	4.08	150.93	128	15.331	0.669	35.523	12.595	2.820	24.059	11.464
3	4.18	151.04	128	15.38	0.668	35.587	12.547	2.836	24.067	11.52
4	4.31	151.11	128	15.445	0.668	35.587	12.482	2.851	24.035	11.553
5	4.46	151.2	128	15.51	0.668	35.621	12.417	2.869	24.019	11.602
6	4.57	151.19	128	15.559	0.671	35.56	12.368	2.875	23.964	11.596
7	4.71	151.23	128	15.608	0.672	35.551	12.319	2.886	23.935	11.616
8	4.85	151.21	128	15.64	0.674	35.497	12.287	2.889	23.892	11.605
9	4.99	151.23	128	15.681	0.675	35.477	12.246	2.897	23.862	11.616
0	5.11	151.26	128	15.721	0.676	35.46	12.205	2.905	23.833	11.628
1	5.23	151.28	128	15.754	0.677	35.455	12.173	2.913	23.814	11.641
2	5.37	151.28	128	15.778	0.678	35.43	12.149	2.916	23.789	11.641
3	5.50	151.32	128	15.811	0.678	35.439	12.116	2.925	23.777	11.661
4	5.64	151.34	128	15.835	0.678	35.431	12.092	2.930	23.761	11.67
5	5.75	151.33	128	15.86	0.680	35.394	12.067	2.933	23.731	11.664
6	5.89	151.37	128	15.892	0.680	35.401	12.035	2.942	23.718	11.683
7	6.03	151.4	128	15.908	0.680	35.422	12.019	2.947	23.72	11.702
8	6.17	151.36	128	15.925	0.682	35.365	12.002	2.947	23.684	11.682
9	6.30	151.41	128	15.949	0.681	35.383	11.978	2.954	23.68	11.703
0	6.43	151.45	128	15.965	0.681	35.408	11.962	2.960	23.685	11.723
1	6.56	151.41	128	15.973	0.682	35.361	11.954	2.958	23.657	11.704

3	6.82	151.41	128	15.998	0.683	35.338	11.929	2.962	23.634	11.704
4	6.95	151.41	128	16.006	0.684	35.329	11.921	2.964	23.625	11.704
5	7.11	151.44	128	16.022	0.684	35.345	11.905	2.969	23.625	11.72
6	7.23	151.44	128	16.022	0.683	35.347	11.905	2.969	23.626	11.721
7	7.38	151.36	128	16.03	0.686	35.258	11.897	2.964	23.577	11.681
8	7.50	151.4	128	16.046	0.686	35.284	11.88	2.970	23.582	11.702
9	7.65	151.36	128	16.055	0.687	35.23	11.872	2.967	23.551	11.679
0	7.78	151.36	128	16.063	0.688	35.223	11.864	2.969	23.544	11.679
1	7.91	151.3	128	16.071	0.690	35.155	11.856	2.965	23.506	11.65
2	8.03	151.36	128	16.079 -16.08	0.688	35.208	- 11.848 = 23.36	2.972 Max SR = 102	23.528	11.68
3	8.17	151.28	128	16.079	0.691	35.129	11.848	2.965	23.488	11.641
4	8.31	151.3	128	16.079	0.690	35.145	11.848	2.966	23.496	11.649
5	8.44	151.24	128	16.079	0.692	35.085	11.848	2.961	23.466	11.618
6	8.57	151.18	128	16.079	0.694	35.029	11.848	2.957	23.438	11.591
7	8.70	151.14	128	16.079	0.695	34.988	11.848	2.953	23.418	11.57
8	8.83	151.14	128	16.079	0.695	34.989	11.848	2.953	23.419	11.571
9	8.95	151.1	128	16.087 Peak PP	0.696	34.944	- 11.84 = 23.10	2.951	23.392	11.552
0	9.10	151.04	128	16.087	0.698	34.881	11.84	2.946	23.361	11.521
1	9.22	151	128	16.087	0.699	34.844	- 11.84 = 23.00	2.943	23.342	11.502
2	9.36	150.93	128	16.079	0.701	34.773	11.848	2.935	23.31	11.463
3	9.50	150.9	128	16.071	0.702	34.759	11.856	2.932	23.307	11.451
4	9.62	150.96	128	16.071	0.700	34.818	11.856	2.937	23.337	11.481
5	9.77	150.96	128	16.071	0.700	34.812	11.856	2.936	23.334	11.478
6	9.91	150.97	128	16.063	0.699	34.836	11.864	2.936	23.35	11.486
7	10.00	151.04	128	16.055	0.697	34.913	11.872	2.941	23.393	11.52
8	10.16	151.09	128	16.046	0.695	34.968	11.88	2.943	23.424	11.544
9	10.27	151.17	128	16.038	0.692	35.055	11.889	2.949	23.472	11.583
0	10.41	151.28	128	16.03	0.689	35.172	11.897	2.956	23.535	11.638
1	10.55	151.41	128	16.03	0.685	35.302	11.897	2.967	23.6	11.703
2	10.67	151.46	128	16.022	0.683	35.367	11.905	2.971	23.636	11.731
3	10.80	151.52	128	16.022	0.681	35.422	11.905	2.975	23.663	11.758
4	10.93	151.59	128	16.014	0.679	35.504	11.913	2.980	23.708	11.795
5	11.07	151.66	128	16.006	0.676	35.582	11.921	2.985	23.752	11.831
6	11.20	151.73	128	15.998	0.674	35.661	11.929	2.989	23.795	11.866
7	11.32	151.77	128	15.99	0.673	35.706	11.937	2.991	23.822	11.884
8	11.45	151.77	128	15.981	0.672	35.713	11.945	2.990	23.829	11.884
9	11.59	151.82	128	15.973 -15.97	0.671	35.771	- 11.954 = 23.82	2.992 Max + SR	23.862	11.909
0	11.72	151.79	128	15.957	0.671	35.764	11.97	2.988	23.867	11.897
1	11.86	151.77	128	15.949	0.671	35.749	11.978	2.985	23.863	11.886
2	12.00	151.8	128	15.933	0.669	35.796	11.994	2.984 Max Dwell	23.895	11.901
3	12.12	151.78	128	15.933	0.670	35.774	11.994	2.983	23.884	11.89
4	12.27	151.75	128	15.925	0.670	35.756	12.002	2.979	23.879	11.877
5	12.38	151.77	128	15.916	0.670	35.783	12.01	2.979	23.897	11.886
6	12.52	151.75	128	15.908	0.670	35.767	12.019	2.976	23.893	11.874
7	12.65	151.69	128	15.892	0.671	35.724	12.035	2.968	23.879	11.844
8	12.78	151.7	128	15.884	0.670	35.745	12.043	2.968	23.894	11.851
9	12.91	151.66	128	15.876	0.671	35.712	12.051	2.963	23.882	11.831
0	13.02	151.66	128	15.86	0.670	35.73	12.067	2.961	23.899	11.832
1	13.19	151.67	128	15.851	0.670	35.742	12.075	2.960	23.909	11.833
2	13.31	151.65	128	15.843	0.670	35.73	12.084	2.957	23.907	11.823
3	13.44	151.57	128	15.827	0.672	35.668	12.1	2.948	23.884	11.784
4	13.57	151.62	128	15.811	0.669	35.735	12.116	2.949	23.926	11.81
5	13.70	151.62	128	15.811	0.670	35.731	12.116	2.949	23.924	11.808
6	13.84	151.61	128	15.795	0.669	35.738	12.132	2.946	23.935	11.803
7	13.97	151.58	128	15.778	0.669	35.731	12.149	2.941	23.94	11.791
8	14.12	151.57	128	15.77	0.669	35.731	12.157	2.939	23.944	11.787
9	14.25	151.53	128	15.754	0.670	35.703	12.173	2.933	23.938	11.765
.0	14.37	151.53	128	15.746	0.669	35.711	12.181	2.932	23.946	11.765
.1	14.52	151.5	128	15.73	0.669	35.697	12.197	2.927	23.947	11.75
.2	14.65	151.46	128	15.713	0.670	35.671	12.214	2.921	23.942	11.729
.3	14.77	151.42	128	15.705	0.671	35.641	12.222	2.916	23.932	11.71
.4	14.92	151.45	128	15.705	0.670	35.667	12.222	2.918	23.944	11.723
.5	15.05	151.42	128	15.689	0.670	35.66	12.238	2.914	23.949	11.711
.6	15.18	151.33	128	15.673	0.672	35.582	12.254	2.904	23.918	11.664
.7	15.31	151.34	128	15.673	0.672	35.594	12.254	2.905	23.924	11.67
.8	15.44	151.26	128	15.656	0.673	35.533	12.27	2.896	23.902	11.631
.9	15.57	151.18	128	15.64	0.675	35.472	12.287	2.887	23.879	11.592
0	15.70	151.18	128	15.632	0.674	35.474	12.295	2.885	23.884	11.59
1	15.85	151.1	128	15.624	0.676	35.399	12.303	2.877	23.851	11.548
2	15.99	150.98	128	15.608	0.679	35.301	12.319	2.866	23.81	11.491
3	16.10	150.98	128	15.6	0.679	35.308	12.327	2.864	23.818	11.491
4	16.24	150.97	128	15.591	0.679	35.31	12.335	2.863	23.823	11.487

26	16.50	150.94	128	15.567	0.679	35.303	12.36	2.856	23.831	11.472
27	16.63	150.9	128	15.543	0.679	35.288	12.384	2.849	23.836	11.452
28	16.78	150.89	128	15.535	0.679	35.283	12.392	2.847	23.838	11.445
29	16.93	150.9	128	15.526	0.678	35.298	12.4	2.847	23.849	11.449
30	17.06	150.93	128	15.518	0.677	35.335	12.409	2.848	23.872	11.463
31	17.17	150.96	128	15.502	0.675	35.386	12.425	2.848	23.905	11.481
32	17.31	151	128	15.494	0.674	35.436	12.433	2.850	23.934	11.501
33	17.42	151	128	15.486	0.673	35.444	12.441	2.849	23.943	11.502
34	17.57	151.04	128	15.461	0.671	35.507	12.465	2.848	23.986	11.521
35	17.69	151.15	128	15.453	0.668	35.619	12.474	2.856	24.046	11.573
36	17.81	151.17	128	15.437	0.666	35.664	12.49	2.855	24.077	11.587
37	17.95	151.22	128	15.421	0.664	35.723	12.506	2.856	24.115	11.609
38	18.06	151.32	128	15.413	0.661	35.834	12.514	2.863	24.174	11.66
39	18.21	151.39	128	15.396	0.658	35.924	12.53	2.867	24.227	11.697
40	18.34	151.44	128	15.396	0.657	35.966	12.53	2.870	24.248	11.718
41	18.46	151.52	128	15.388	0.654	36.056	12.539	2.876	24.297	11.759
42	18.59	151.53	128	15.372	0.653	36.082	12.555	2.874	24.318	11.764
43	18.73	151.53	128	15.356	0.653	36.105	12.571	2.872	24.338	11.767
44	18.87	151.54	128	15.348	0.652	36.118	12.579	2.871	24.349	11.77
45	18.99	151.57	128	15.331	0.651	36.162	12.595	2.871	24.379	11.783
46	19.01	151.54	128	15.331	0.651	36.139	12.595	2.869	24.367	11.772

CONSOLIDATED UNDRAINED TRIAXIAL TEST

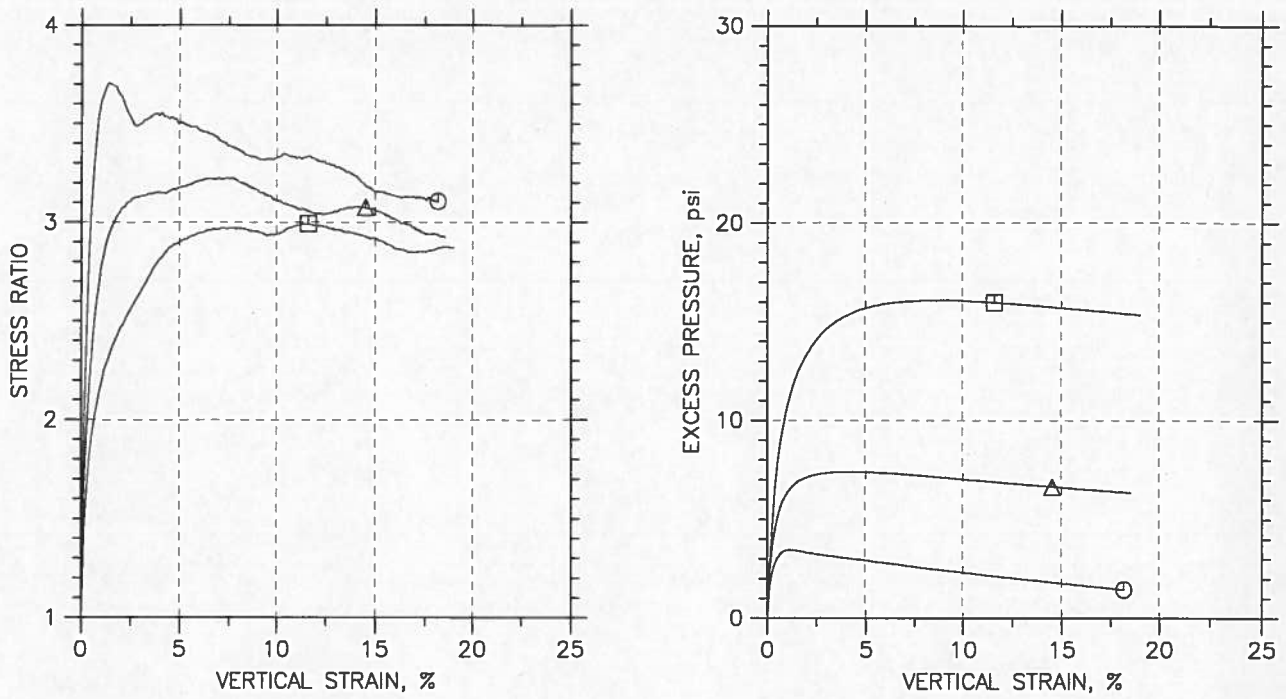


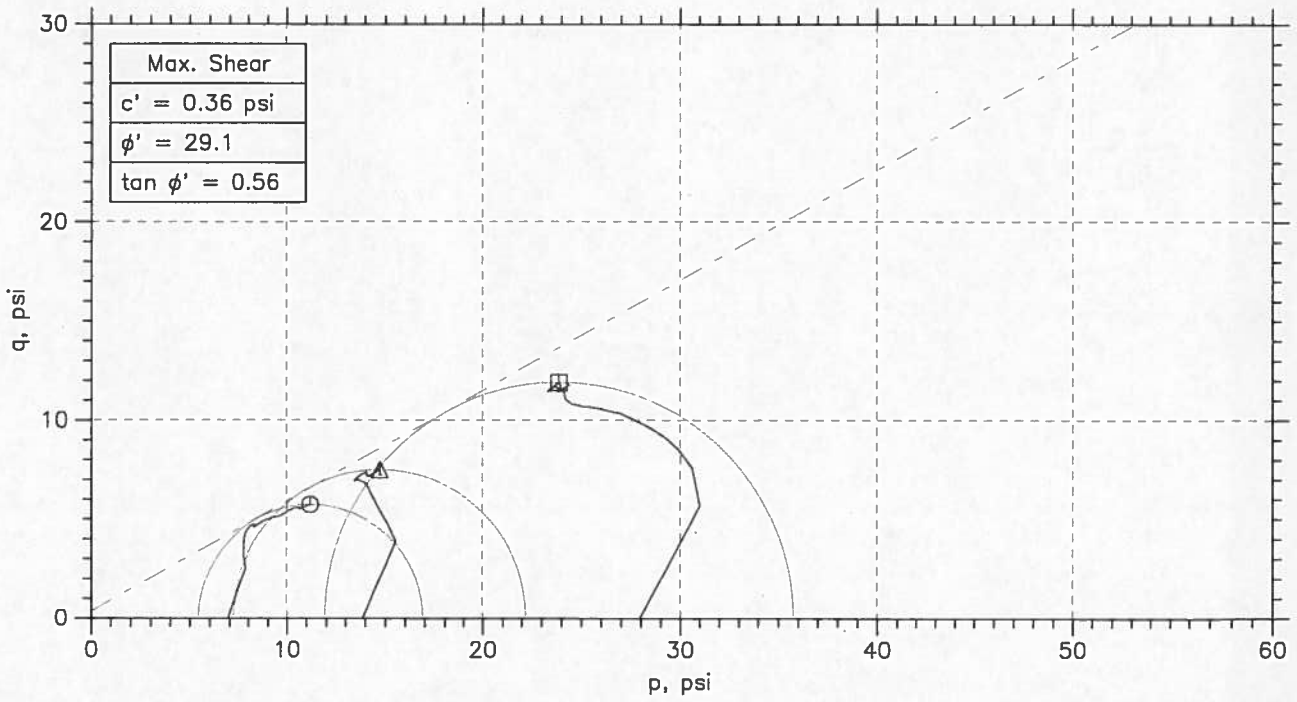


Symbol		⊙	△	⊡	
Sample No.		19-COMP1	19-COMP1	19-COMP1	
Test No.		1	2	3	
Depth		0-4'	0-4'	0-4'	
Initial	Diameter, in	1.4	1.4	1.4	
	Height, in	2.999	3.001	3	
	Water Content, %	21.7	21.7	21.8	
	Dry Density, pcf	101.8	101.8	101.7	
	Saturation, %	89.5	89.3	89.5	
	Void Ratio	0.656	0.656	0.657	
Before Shear	Water Content, %	25.1	24.3	22.5	
	Dry Density, pcf	100.4	101.9	104.8	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.678	0.655	0.609	
	Back Press., psi	100.1	100.1	100.1	
Ver. Eff. Cons. Stress, psi		6.882	13.86	27.93	
Shear Strength, psi		5.733	7.496	11.91	
Strain at Failure, %		18.2	14.5	11.6	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21
Location: TX
Project No.: 19-COMP1
Boring No.:
Sample Type: REMOLD
Description: BORROW, B-101, 102, 104, & 105
Remarks:

CONSOLIDATED UNDRAINED TRIAXIAL TEST

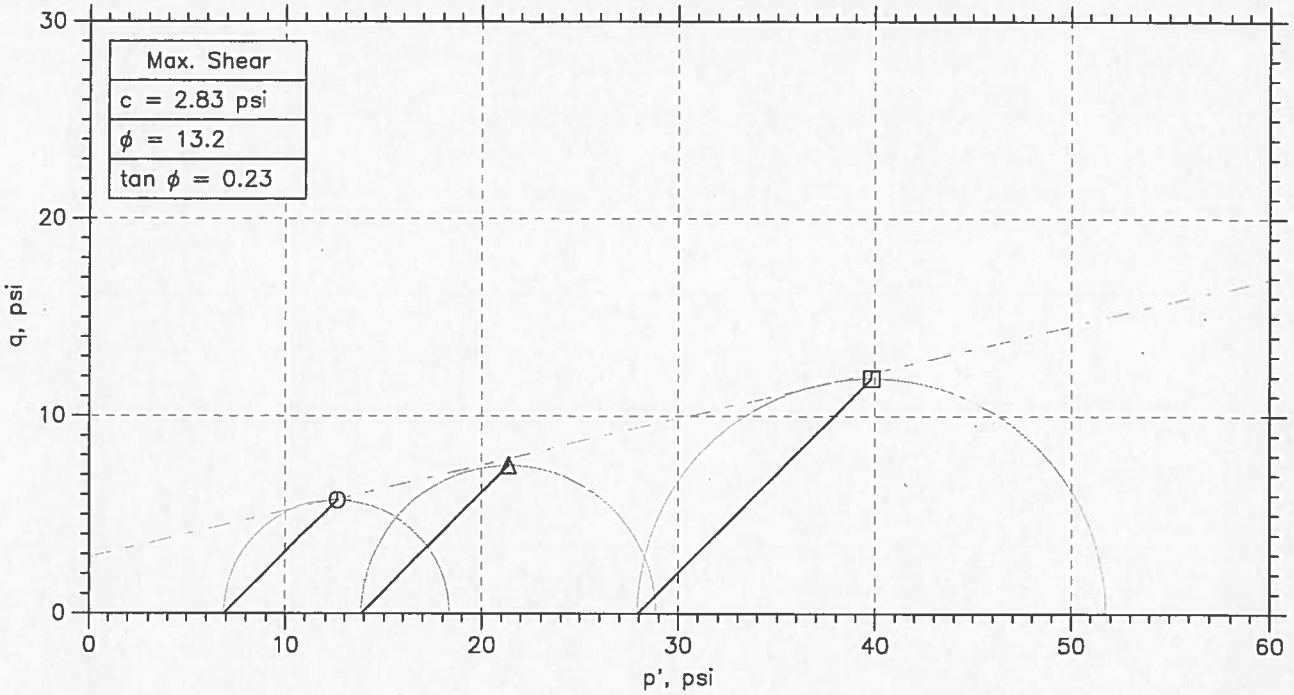


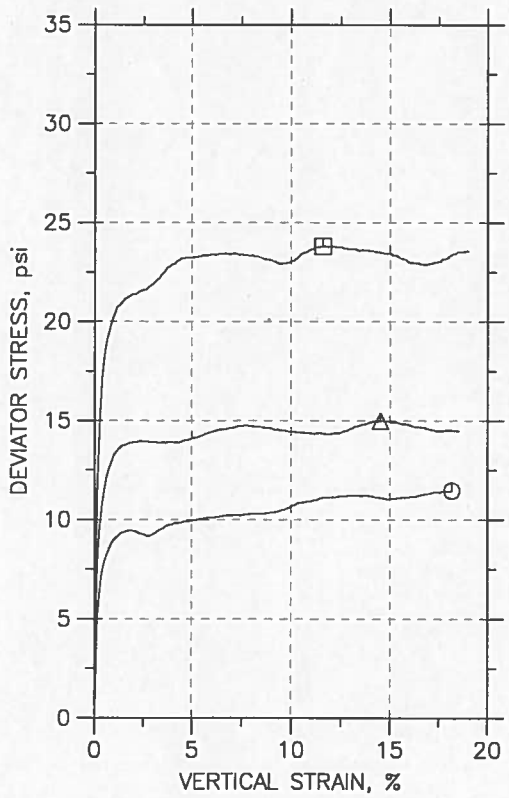


	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⦶	19-COMP1	1	0-4'	SKK	4/4/19	SKK		19-COMP1TX-07eng.dat
△	19-COMP1	2	0-4'	SKK	4/4/19	SKK		19-COMP1TX-14eng.dat
⊡	19-COMP1	3	0-4'	SKK	4/4/19	SKK		19-COMP1TX-28eng.dat

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-COMP1
Boring No.:	Sample Type: REMOLD	
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⦶	△	⊡	
Sample No.		19-COMP1	19-COMP1	19-COMP1	
Test No.		1	2	3	
Depth		0-4'	0-4'	0-4'	
Initial	Diameter, in	1.4	1.4	1.4	
	Height, in	2.999	3.001	3	
	Water Content, %	21.7	21.7	21.8	
	Dry Density, pcf	101.8	101.8	101.7	
	Saturation, %	89.5	89.3	89.5	
	Void Ratio	0.656	0.656	0.657	
Before Shear	Water Content, %	25.1	24.3	22.5	
	Dry Density, pcf	100.4	101.9	104.8	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.678	0.655	0.609	
	Back Press., psi	100.1	100.1	100.1	
Ver. Eff. Cons. Stress, psi		6.882	13.86	27.93	
Shear Strength, psi		5.733	7.496	11.91	
Strain at Failure, %		18.2	14.5	11.6	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-COMP1

Boring No.:

Sample Type: REMOLD

Description: BORROW, B-101, 102, 104, & 105

Remarks:

NRCS Soil Mechanics Center
Lincoln, NE

5/1/2019
9:51 AM

Mohr Circle Program

SITE NAME: Plum Creek Site 21
STATE: TX
SAMPLE NO: 19-Comp2

Failure Criterion:
- ☐ Maximum Dev. Stress
- ☑ Maximum Stress Ratio
- ☐ Max. Pore Pressure
- ☐ <= 10% Strain
- ☐ Selected Points

Total Strength Parameters:

PHI:	13.8 degrees	13.8 degrees	Zero Cohesion: Slope y=
C :	288 psf	2.00 psi	

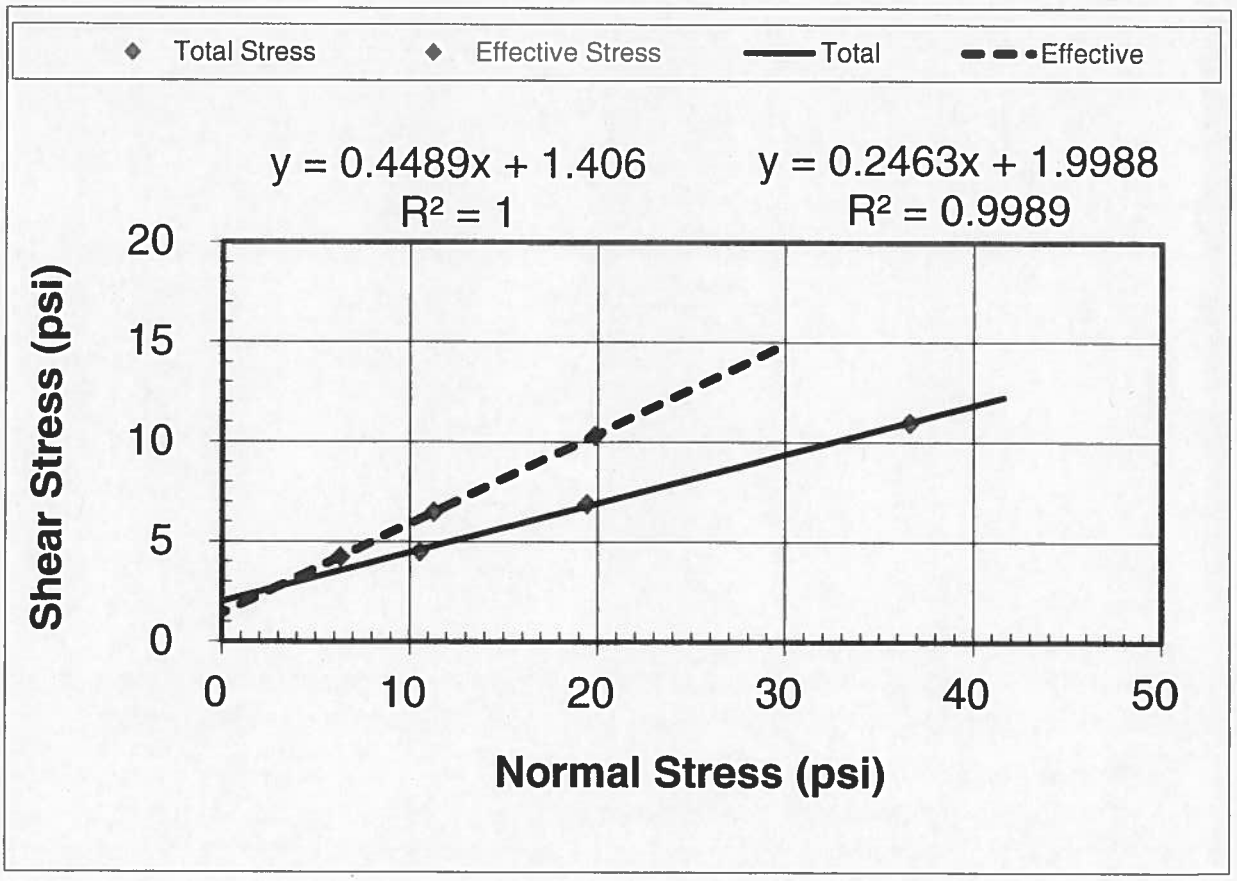
Effective Strength Parameters:

PHI' :	24.2 degrees	24.2 degrees	Slope y=
C':	202 psf	1.41 psi	

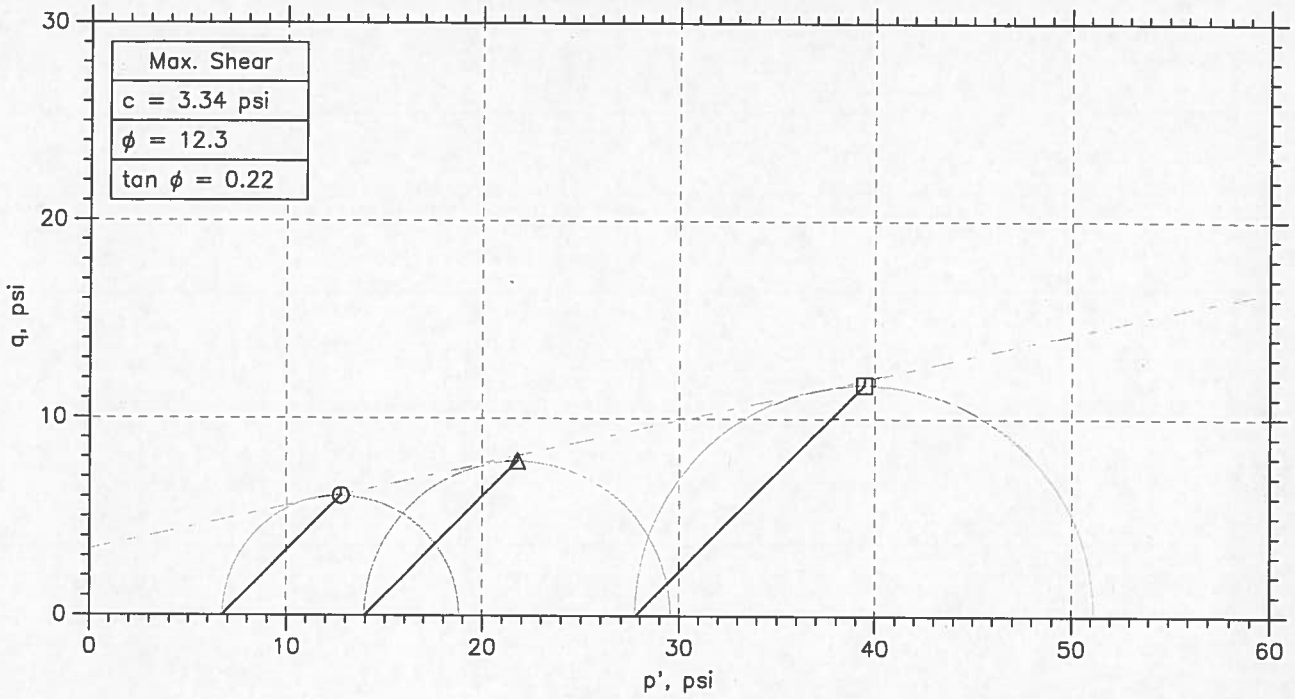
Stress path analysis from p-q plot:
PHI' : degrees
C' : psf

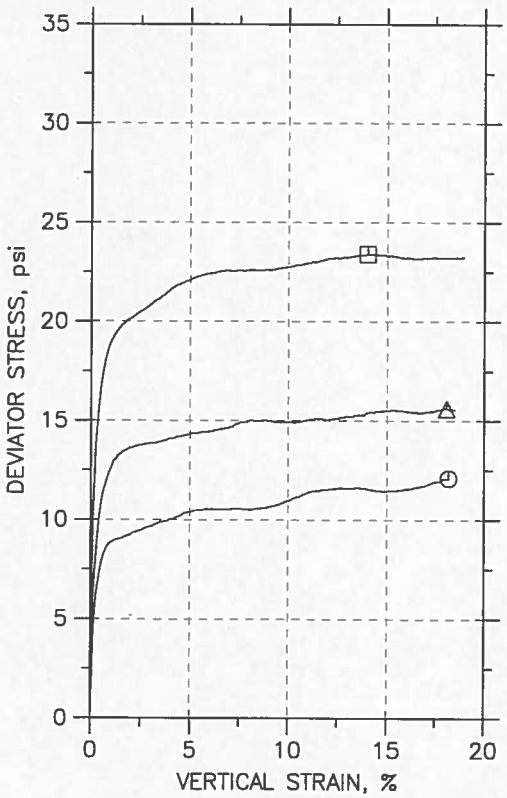
(All inputed values in the chart are in psi)

CELL PRESSURE	DEVIATOR STRESS AT FAILURE	PORE PRESSURE AT FAILURE	PERCENT STRAIN (Optional Entry)
7	9.30	3.43	2.05
14	14.21	6.89	4.37
28	22.60	14.84	8.12



CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⊙	△	⊡	
Sample No.		19-COMP2	19-COMP2	19-COMP2	
Test No.		1	2	3	
Depth		4-10'	4-10'	4-10'	
Initial	Diameter, in	1.4	1.4	1.4	
	Height, in	3.001	3.001	3	
	Water Content, %	20.4	20.2	20.0	
	Dry Density, pcf	105.8	106.	106.2	
	Saturation, %	92.0	91.4	90.9	
	Void Ratio	0.605	0.602	0.598	
Before Shear	Water Content, %	22.9	22.3	20.5	
	Dry Density, pcf	104.6	105.8	109.	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.623	0.605	0.558	
	Back Press., psi	100.3	100	100.3	
Ver. Eff. Cons. Stress, psi		6.712	13.96	27.75	
Shear Strength, psi		6.045	7.809	11.7	
Strain at Failure, %		18.2	18.1	14	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.72	2.72	2.72	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-COMP2

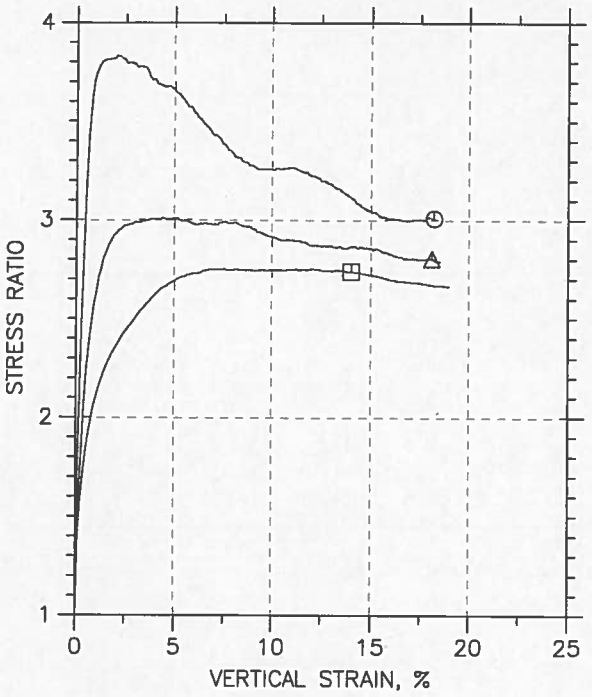
Boring No.:

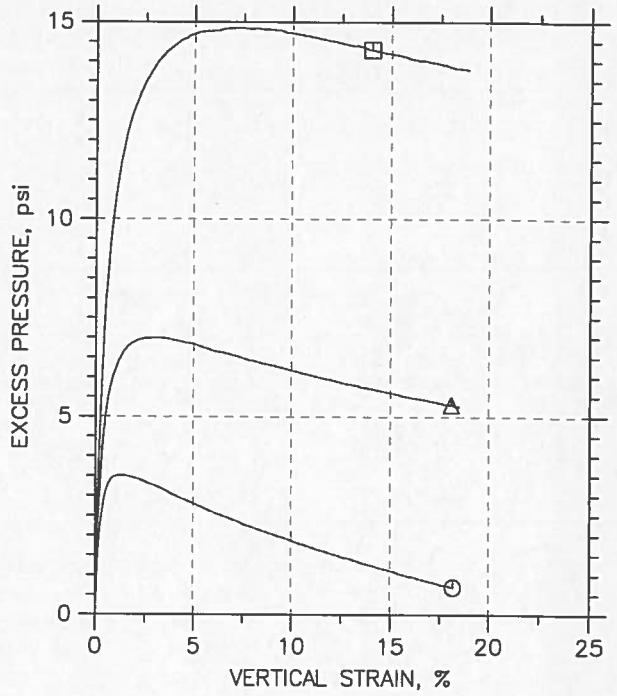
Sample Type: REMOLD

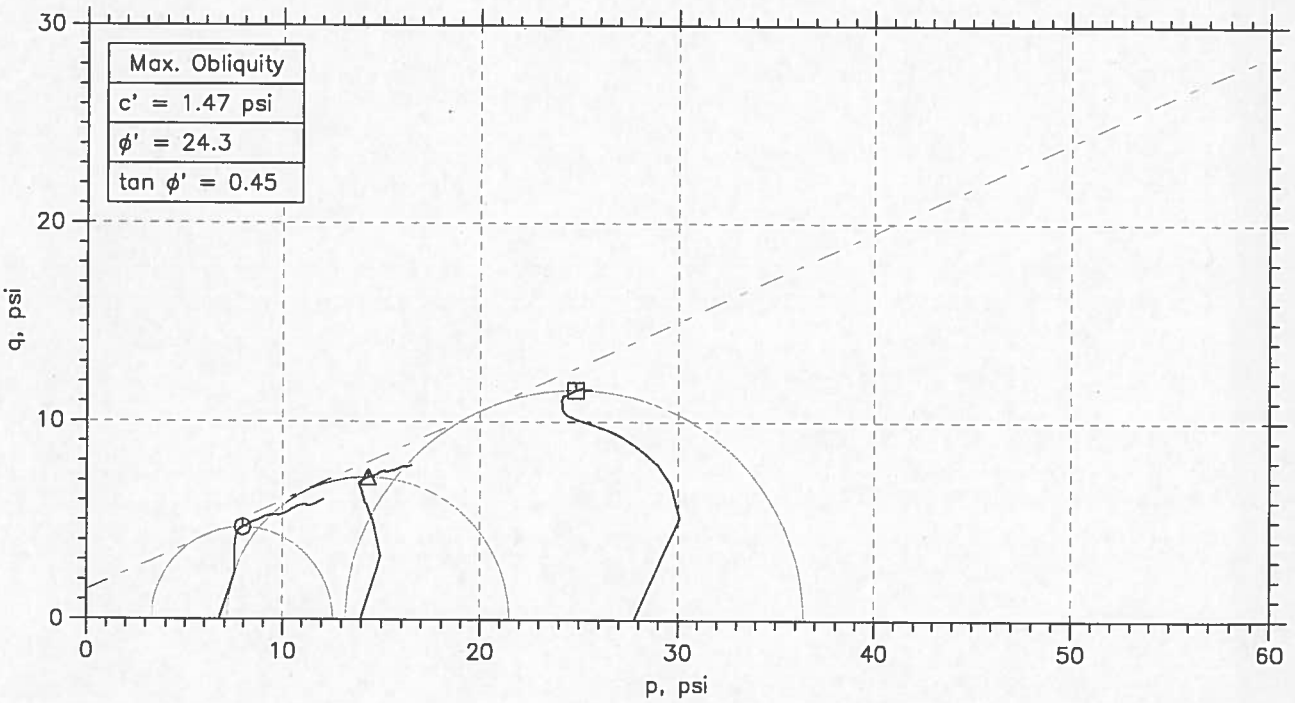
Description: BORROW, B-101, 102, 104, & 105

Remarks:

CONSOLIDATED UNDRAINED TRIAXIAL TEST



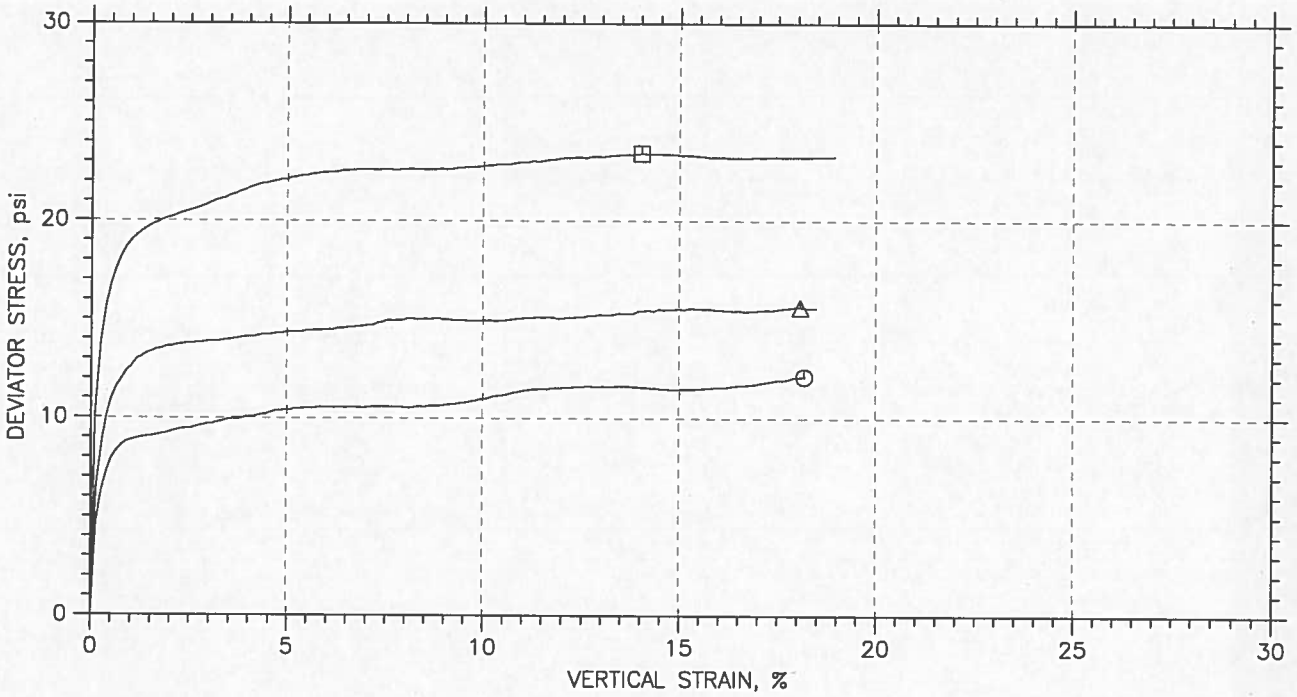


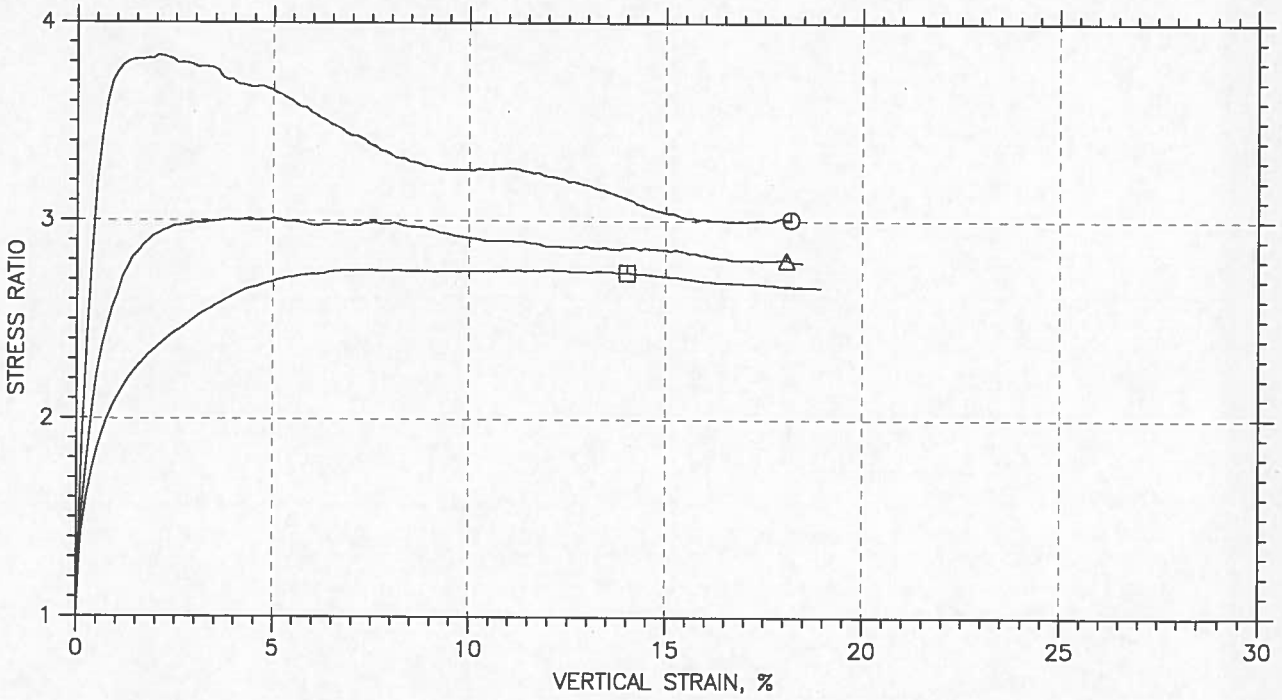


	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	19-COMP2	1	4-10'	SKK	4/24/19	SKK		19-COMP2TXB-07eng.dat
△	19-COMP2	2	4-10'	SKK	4/24/19	SKK		19-COMP2TXB-14eng.dat
⊡	19-COMP2	3	4-10'	SKK	4/24/19	SKK		19-COMP2TXB-28eng.dat

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-COMP2
Boring No.:	Sample Type: REMOLD	
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

CONSOLIDATED UNDRAINED TRIAXIAL TEST





	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	19-COMP2	1	4-10'	SKK	4/24/19	SKK		19-COMP2TXB-07eng.dat
△	19-COMP2	2	4-10'	SKK	4/24/19	SKK		19-COMP2TXB-14eng.dat
⊡	19-COMP2	3	4-10'	SKK	4/24/19	SKK		19-COMP2TXB-28eng.dat

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-COMP2
Boring No.:	Sample Type: REMOLD	
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ng No.:
le No.: 19-COMP2
No.: 1

Location: TX
Tested By: SKK
Test Date: 4/24/19
Sample Type: REMOLD

Project No.: 19-COMP2
Checked By: SKK
Depth: 4-10'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
rks:

imen Height: 3.00 in
imen Area: 1.54 in^2
imen Volume: 75.70 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
ainer ID		---		
Container + Wet Soil, gm	154.57	154.57	157.73	208.46
Container + Dry Soil, gm	128.33	128.33	128.33	179.06
Container, gm	0	---	0	50.73
Dry Soil, gm	128.33	128.33	128.33	128.33
r Content, %	20.45	20.45	22.91	22.91
Ratio	---	0.60	0.62	---
ee of Saturation, %	---	92.00	100.00	---
Unit Weight, pcf	---	105.83	104.61	---

ial

of Initialization

of Consolidation/A

of Saturation

of Consolidation/B

of Shear

ailure

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ng No.:
le No.: 19-COMP2
No.: 1

Location: TX
Tested By: SKK
Test Date: 4/24/19
Sample Type: REMOLD

Project No.: 19-COMP2
Checked By: SKK
Depth: 4-10'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
rks:

imen Height: 3.00 in
imen Area: 1.54 in^2
imen Volume: 75.70 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	1.5235	0	0	100.29	107	107
2	2.0008	0.12471	1.5254	7.0899	4.6419	101.81	107	111.64
3	4.0018	0.25411	1.5274	9.5868	6.2645	102.61	107	113.26
4	6.0042	0.39753	1.5296	11.128	7.2563	103.11	107	114.26
5	8.0002	0.50977	1.5313	12.114	7.8869	103.4	107	114.89
6	10.004	0.6376	1.5333	12.762	8.293	103.58	107	115.29
7	12.004	0.77011	1.5353	13.255	8.5969	103.69	107	115.6
8	14.001	0.89171	1.5372	13.563	8.7811	103.75	107	115.78
9	16.004	1.0273	1.5393	13.717	8.8628	103.77	107	115.86
10	18.004	1.1458	1.5412	13.841	8.9267	103.79	107	115.93
11	20.003	1.2846	1.5433	13.964	8.9875	103.79	107	115.99
12	22.004	1.3937	1.5451	14.026	9.0123	103.79	107	116.01
13	24.003	1.5293	1.5472	14.118	9.0533	103.78	107	116.05
14	26.002	1.6587	1.5492	14.211	9.0951	103.77	107	116.1
15	28.002	1.7772	1.5511	14.334	9.1581	103.75	107	116.16
16	30.002	1.9112	1.5532	14.426	9.1989	103.73	107	116.2
17	32.002	2.05	1.5554	14.611	9.2983	103.72	107	116.3
18	34.002	2.1825	1.5575	14.735	9.3587	103.69	107	116.36
19	36.004	2.2994	1.5594	14.827	9.4014	103.67	107	116.4
20	38.001	2.4335	1.5615	14.92	9.4415	103.64	107	116.44
21	40.002	2.552	1.5634	14.981	9.4639	103.61	107	116.46
22	42.002	2.6736	1.5654	15.135	9.5449	103.59	107	116.54
23	44.002	2.817	1.5677	15.259	9.6029	103.56	107	116.6
24	46.001	2.9246	1.5694	15.351	9.6462	103.54	107	116.65
25	48	3.0602	1.5716	15.413	9.6657	103.52	107	116.67
26	50.002	3.1802	1.5736	15.567	9.7461	103.49	107	116.75
27	52.002	3.3158	1.5758	15.69	9.8045	103.47	107	116.8
28	54.002	3.4281	1.5776	15.844	9.8856	103.43	107	116.89
29	56.003	3.5715	1.5799	15.937	9.9229	103.4	107	116.92
30	58.001	3.6931	1.5819	15.937	9.9048	103.36	107	116.9
31	60.001	3.8209	1.584	16.029	9.9442	103.33	107	116.94
32	62	3.9394	1.586	16.183	10.024	103.3	107	117.02
33	64.001	4.0797	1.5883	16.214	10.022	103.27	107	117.02
34	66.004	4.1998	1.5903	16.338	10.082	103.25	107	117.08
35	68.003	4.3198	1.5923	16.461	10.141	103.22	107	117.14
36	70.004	4.4367	1.5943	16.553	10.181	103.19	107	117.18
37	72.004	4.5677	1.5964	16.708	10.258	103.17	107	117.26
38	74.002	4.7064	1.5988	16.862	10.333	103.14	107	117.33
39	76.003	4.8358	1.6009	16.923	10.352	103.12	107	117.35
40	78.003	4.9449	1.6028	17.016	10.393	103.09	107	117.39
41	80.003	5.079	1.605	17.047	10.391	103.07	107	117.39
42	82.001	5.1897	1.6069	17.17	10.451	103.04	107	117.45
43	84.001	5.3347	1.6094	17.201	10.447	103.01	107	117.45
44	86.004	5.4609	1.6115	17.293	10.485	102.98	107	117.49
45	88.004	5.5872	1.6137	17.324	10.484	102.95	107	117.48
46	90.001	5.6994	1.6156	17.355	10.486	102.92	107	117.49
47	92.003	5.832	1.6179	17.478	10.542	102.9	107	117.54
48	94.003	5.9707	1.6203	17.447	10.501	102.87	107	117.5
49	96.001	6.0752	1.6221	17.54	10.541	102.84	107	117.54
50	98.001	6.1874	1.624	17.509	10.505	102.83	107	117.5
51	100	6.3277	1.6264	17.571	10.521	102.8	107	117.52
52	102	6.4664	1.6288	17.571	10.499	102.78	107	117.5

4	106	6.733	1.6335	17.663	10.514	102.73	107	117.51
5	108	6.8437	1.6354	17.663	10.497	102.7	107	117.5
6	110	6.9684	1.6376	17.694	10.496	102.68	107	117.5
7	112	7.0885	1.6398	17.786	10.533	102.66	107	117.53
8	114	7.1882	1.6415	17.848	10.555	102.64	107	117.56
9	116	7.3254	1.6439	17.879	10.552	102.62	107	117.55
0	118	7.4439	1.646	17.879	10.534	102.58	107	117.53
1	120	7.5873	1.6486	17.941	10.548	102.56	107	117.55
2	122	7.7136	1.6509	17.91	10.51	102.53	107	117.51
3	124	7.8461	1.6532	17.971	10.526	102.52	107	117.53
4	126	7.9677	1.6554	17.971	10.507	102.5	107	117.51
5	128	8.0971	1.6577	17.971	10.486	102.48	107	117.49
6	130	8.214	1.6599	18.064	10.524	102.45	107	117.52
7	132	8.3387	1.6621	18.156	10.56	102.44	107	117.56
8	134	8.465	1.6644	18.156	10.539	102.41	107	117.54
9	136	8.5928	1.6667	18.249	10.575	102.39	107	117.57
0	138	8.7207	1.6691	18.31	10.591	102.37	107	117.59
1	140	8.8485	1.6714	18.341	10.589	102.35	107	117.59
2	142	8.9981	1.6742	18.465	10.639	102.32	107	117.64
3	144	9.1119	1.6763	18.526	10.658	102.3	107	117.66
4	146	9.2445	1.6787	18.588	10.673	102.27	107	117.67
5	148	9.3583	1.6808	18.711	10.728	102.25	107	117.73
6	150	9.4767	1.683	18.773	10.746	102.23	107	117.75
7	152	9.6124	1.6855	18.896	10.797	102.22	107	117.8
8	154	9.7402	1.6879	19.019	10.849	102.19	107	117.85
9	156	9.8634	1.6902	19.143	10.902	102.17	107	117.9
0	158	9.9709	1.6923	19.235	10.939	102.15	107	117.94
1	160	10.097	1.6946	19.328	10.973	102.13	107	117.97
2	162	10.223	1.697	19.543	11.079	102.1	107	118.08
3	164	10.351	1.6994	19.636	11.112	102.08	107	118.11
4	166	10.487	1.702	19.728	11.144	102.06	107	118.14
5	168	10.626	1.7046	19.852	11.193	102.05	107	118.19
6	170	10.746	1.7069	20.006	11.263	102.02	107	118.26
7	172	10.875	1.7094	20.098	11.296	102.01	107	118.3
8	174	10.994	1.7117	20.252	11.366	101.98	107	118.37
9	176	11.109	1.7139	20.345	11.4	101.97	107	118.4
0	178	11.235	1.7164	20.437	11.432	101.94	107	118.43
1	180	11.372	1.719	20.499	11.445	101.92	107	118.44
2	182	11.508	1.7216	20.561	11.457	101.9	107	118.46
3	184	11.63	1.724	20.592	11.454	101.89	107	118.45
4	186	11.748	1.7263	20.715	11.505	101.87	107	118.51
5	188	11.881	1.7289	20.746	11.5	101.84	107	118.5
6	190	11.999	1.7313	20.807	11.516	101.82	107	118.52
7	192	12.13	1.7338	20.9	11.546	101.8	107	118.55
8	194	12.249	1.7362	20.931	11.544	101.79	107	118.54
9	196	12.392	1.739	21.023	11.572	101.76	107	118.57
0	198	12.498	1.7411	21.023	11.554	101.74	107	118.55
1	200	12.623	1.7436	21.146	11.603	101.72	107	118.6
2	202	12.783	1.7468	21.146	11.575	101.72	107	118.57
3	204	12.9	1.7492	21.177	11.572	101.7	107	118.57
4	206	13.019	1.7515	21.239	11.586	101.68	107	118.59
5	208	13.148	1.7542	21.27	11.581	101.66	107	118.58
6	210	13.271	1.7566	21.301	11.577	101.64	107	118.58
7	212	13.404	1.7593	21.393	11.607	101.62	107	118.61
8	214	13.513	1.7616	21.424	11.605	101.59	107	118.61
9	216	13.628	1.7639	21.455	11.602	101.58	107	118.6
0	218	13.772	1.7668	21.455	11.577	101.56	107	118.58
1	220	13.889	1.7692	21.485	11.574	101.54	107	118.57
2	222	14.015	1.7718	21.485	11.552	101.53	107	118.55
3	224	14.143	1.7745	21.485	11.53	101.51	107	118.53
4	226	14.269	1.7771	21.455	11.49	101.49	107	118.49
5	228	14.389	1.7796	21.516	11.504	101.47	107	118.5
6	230	14.515	1.7822	21.485	11.464	101.46	107	118.46
7	232	14.645	1.7849	21.516	11.459	101.44	107	118.46
8	234	14.794	1.788	21.516	11.433	101.42	107	118.43
9	236	14.91	1.7905	21.578	11.447	101.41	107	118.45
0	238	15.036	1.7931	21.609	11.442	101.39	107	118.44
1	240	15.167	1.7959	21.701	11.471	101.37	107	118.47
2	242	15.293	1.7986	21.732	11.466	101.35	107	118.47
3	244	15.404	1.8009	21.763	11.464	101.33	107	118.46
4	246	15.539	1.8038	21.825	11.474	101.3	107	118.47
5	248	15.663	1.8065	21.917	11.503	101.29	107	118.5

7	252	15.926	1.8121	22.071	11.542	101.25	107	118.54
8	254	16.045	1.8147	22.133	11.555	101.24	107	118.55
9	256	16.175	1.8175	22.164	11.549	101.24	107	118.55
0	258	16.302	1.8203	22.287	11.594	101.21	107	118.59
1	260	16.428	1.823	22.379	11.622	101.2	107	118.62
2	262	16.543	1.8255	22.441	11.635	101.18	107	118.64
3	264	16.688	1.8287	22.534	11.66	101.16	107	118.66
4	266	16.805	1.8313	22.626	11.689	101.15	107	118.69
5	268	16.941	1.8343	22.719	11.715	101.13	107	118.72
6	270	17.048	1.8366	22.842	11.763	101.12	107	118.76
7	272	17.192	1.8398	22.965	11.804	101.1	107	118.8
8	274	17.321	1.8427	23.088	11.848	101.08	107	118.85
9	276	17.443	1.8454	23.243	11.909	101.06	107	118.91
0	278	17.569	1.8482	23.304	11.919	101.04	107	118.92
1	280	17.675	1.8506	23.335	11.916	101.03	107	118.92
2	282	17.808	1.8536	23.52	11.992	101.03	107	118.99
3	284	17.931	1.8564	23.705	12.068	101.01	107	119.07
4	286	18.051	1.8591	23.736	12.063	100.99	107	119.06
5	288	18.174	1.8619	23.828	12.089	100.98	107	119.09
6	288.22	18.188	1.8622	23.828	12.087	100.98	107	119.09

TRIAXIAL TEST

ct: PLUM CREEK SITE 21
g No.:
e No.: 19-COMP2
No.: 1

Location: TX
Tested By: SKK
Test Date: 4/24/19
Sample Type: REMOLD

Project No.: 19-COMP2
Checked By: SKK
Depth: 4-10'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
ks:

men Height: 3.00 in
men Area: 1.54 in^2
men Volume: 75.70 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	107	107	0	0.000	6.7118	6.7118	1.000	6.7118	0
2	0.12	111.64	107	1.5243	0.328	9.8294	5.1875	1.895	7.5084	2.3209
3	0.25	113.26	107	2.3189	0.370	10.657	4.3929	2.426	7.5251	3.1322
4	0.40	114.26	107	2.8216	0.389	11.146	3.8902	2.865	7.5183	3.6281
5	0.51	114.89	107	3.1135	0.395	11.485	3.5983	3.192	7.5418	3.9435
6	0.64	115.29	107	3.2919	0.397	11.713	3.4199	3.425	7.5664	4.1465
7	0.77	115.6	107	3.4054	0.396	11.903	3.3064	3.600	7.6049	4.2984
8	0.89	115.78	107	3.4621	0.394	12.031	3.2497	3.702	7.6402	4.3906
9	1.03	115.86	107	3.4865	0.393	12.088	3.2253	3.748	7.6568	4.4314
0	1.15	115.93	107	3.5027	0.392	12.136	3.2091	3.782	7.6725	4.4633
1	1.28	115.99	107	3.5027 Peak PP	0.390	12.197	3.2091	3.801	7.7029	4.4937
2	1.39	116.01	107	3.5027	0.389	12.221	3.2091 = 9.01	3.808	7.7153	4.5062
3	1.53	116.05	107	3.4946	0.386	12.271	3.2172	3.814	7.7439	4.5267
4	1.66	116.1	107	3.4783	0.382	12.329	3.2335	3.813	7.781	4.5475
5	1.78	116.16	107	3.4621	0.378	12.408	3.2497	3.818	7.8287	4.579
6	1.91	116.2	107	3.4459	0.375	12.465	3.2659	3.817	7.8653	4.5994
7	2.05 SR	116.3	107	3.4297 - 3.43	0.369	12.58	3.2821 - 9.30	3.833 - Max SR	7.9312	4.6491
8	2.18	116.36	107	3.4054	0.364	12.665	3.3064 = 9.36	3.830	7.9858	4.6793
9	2.30	116.4	107	3.381	0.360	12.732	3.3307	3.823	8.0314	4.7007
0	2.43	116.44	107	3.3567	0.356	12.797	3.3551	3.814	8.0758	4.7207
1	2.55	116.46	107	3.3243	0.351	12.851	3.3875	3.794	8.1195	4.732
2	2.67	116.54	107	3.3	0.346	12.957	3.4118	3.798	8.1843	4.7725
3	2.82	116.6	107	3.2756	0.341	13.039	3.4362	3.795	8.2376	4.8014
4	2.92	116.65	107	3.2513	0.337	13.107	3.4605	3.788	8.2836	4.8231
5	3.06	116.67	107	3.227	0.334	13.151	3.4848	3.774	8.3177	4.8328
6	3.18	116.75	107	3.2027	0.329	13.255	3.5091	3.777	8.3822	4.8731
7	3.32	116.8	107	3.1783	0.324	13.338	3.5334	3.775	8.4357	4.9022
8	3.43	116.89	107	3.1459	0.318	13.452	3.5659	3.772	8.5087	4.9428
9	3.57	116.92	107	3.1135	0.314	13.521	3.5983	3.758	8.5598	4.9615
0	3.69	116.9	107	3.0729	0.310	13.544	3.6389	3.722	8.5913	4.9524
1	3.82	116.94	107	3.0405	0.306	13.615	3.6713	3.709	8.6434	4.9721
2	3.94	117.02	107	3.0162	0.301	13.719	3.6956	3.712	8.7075	5.0119
3	4.08	117.02	107	2.9838	0.298	13.75	3.728	3.688	8.7391	5.011
4	4.20	117.08	107	2.9594	0.294	13.834	3.7524	3.687	8.7932	5.0408
5	4.32	117.14	107	2.927	0.289	13.926	3.7848	3.679	8.8553	5.0705
6	4.44	117.18	107	2.9027	0.285	13.99	3.8091	3.673	8.8997	5.0906
7	4.57	117.26	107	2.8784	0.281	14.091	3.8334	3.676	8.9624	5.1289
8	4.71	117.33	107	2.854	0.276	14.191	3.8578	3.678	9.0243	5.1665
9	4.84	117.35	107	2.8297	0.273	14.234	3.8821	3.667	9.0579	5.1758
0	4.94	117.39	107	2.8054	0.270	14.299	3.9064	3.660	9.1027	5.1963
1	5.08	117.39	107	2.7811	0.268	14.322	3.9307	3.644	9.1263	5.1955
2	5.19	117.45	107	2.7486	0.263	14.414	3.9632	3.637	9.1885	5.2253
3	5.33	117.45	107	2.7243	0.261	14.435	3.9875	3.620	9.2111	5.2236
4	5.46	117.49	107	2.6919	0.257	14.505	4.0199	3.608	9.2624	5.2425
5	5.59	117.48	107	2.6594	0.254	14.537	4.0524	3.587	9.2946	5.2422
6	5.70	117.49	107	2.6351	0.251	14.563	4.0767	3.572	9.3197	5.243
7	5.83	117.54	107	2.6108	0.248	14.643	4.101	3.570	9.3718	5.2708
8	5.97	117.5	107	2.5865	0.246	14.626	4.1253	3.545	9.3757	5.2504
9	6.08	117.54	107	2.554	0.242	14.699	4.1578	3.535	9.4285	5.2707
0	6.19	117.5	107	2.5378	0.242	14.679	4.174	3.517	9.4264	5.2524
1	6.33	117.52	107	2.5135	0.239	14.719	4.1983	3.506	9.4587	5.2604

3	6.59	117.52	107	2.4648	0.234	14.765	4.247	3.477	9.506	5.259
4	6.73	117.51	107	2.4405	0.232	14.785	4.2713	3.462	9.5282	5.2569
5	6.84	117.5	107	2.4162	0.230	14.792	4.2956	3.444	9.5439	5.2483
6	6.97	117.5	107	2.3919	0.228	14.816	4.3199	3.430	9.5678	5.2479
7	7.09	117.53	107	2.3757	0.226	14.869	4.3361	3.429	9.6028	5.2666
8	7.19	117.56	107	2.3513	0.223	14.916	4.3605	3.421	9.638	5.2776
9	7.33	117.55	107	2.327	0.221	14.937	4.3848	3.407	9.6609	5.2761
0	7.44	117.53	107	2.2946	0.218	14.951	4.4172	3.385	9.684	5.2668
1	7.59	117.55	107	2.2702	0.215	14.99	4.4415	3.375	9.7157	5.2741
2	7.71	117.51	107	2.2459	0.214	14.975	4.4659	3.353	9.7207	5.2548
3	7.85	117.53	107	2.2297	0.212	15.008	4.4821	3.348	9.7451	5.263
4	7.97	117.51	107	2.2135	0.211	15.005	4.4983	3.336	9.7517	5.2534
5	8.10	117.49	107	2.1892	0.209	15.009	4.5226	3.319	9.7658	5.2432
6	8.21	117.52	107	2.1648	0.206	15.071	4.547	3.314	9.8088	5.2618
7	8.34	117.56	107	2.1486	0.203	15.123	4.5632	3.314	9.8429	5.2798
8	8.46	117.54	107	2.1243	0.202	15.127	4.5875	3.297	9.8572	5.2697
9	8.59	117.57	107	2.1	0.199	15.186	4.6118	3.293	9.8991	5.2873
0	8.72	117.59	107	2.0838	0.197	15.219	4.628	3.288	9.9237	5.2956
1	8.85	117.59	107	2.0594	0.194	15.242	4.6524	3.276	9.947	5.2947
2	9.00	117.64	107	2.0351	0.191	15.316	4.6767	3.275	9.9962	5.3195
3	9.11	117.66	107	2.0108	0.189	15.359	4.701	3.267	10.03	5.3288
4	9.24	117.67	107	1.9865	0.186	15.398	4.7253	3.259	10.062	5.3365
5	9.36	117.73	107	1.9621	0.183	15.478	4.7497	3.259	10.114	5.3641
6	9.48	117.75	107	1.9459	0.181	15.512	4.7659	3.255	10.139	5.3728
7	9.61	117.8	107	1.9297	0.179	15.579	4.7821	3.258	10.181	5.3984
8	9.74	117.85	107	1.9054	0.176	15.656	4.8064	3.257	10.231	5.4246
9	9.86	117.9	107	1.8811	0.173	15.733	4.8307	3.257	10.282	5.451
0	9.97	117.94	107	1.8648	0.170	15.786	4.847	3.257	10.316	5.4695
1	10.10	117.97	107	1.8405	0.168	15.844	4.8713	3.253	10.358	5.4864
2	10.22	118.08	107	1.8162	0.164	15.975	4.8956	3.263	10.435	5.5396
3	10.35	118.11	107	1.7919	0.161	16.032	4.9199	3.259	10.476	5.5562
4	10.49	118.14	107	1.7757	0.159	16.08	4.9361	3.258	10.508	5.5721
5	10.63	118.19	107	1.7594	0.157	16.146	4.9524	3.260	10.549	5.5966
6	10.75	118.26	107	1.7351	0.154	16.24	4.9767	3.263	10.608	5.6317
7	10.88	118.3	107	1.7189	0.152	16.289	4.9929	3.262	10.641	5.6479
8	10.99	118.37	107	1.6946	0.149	16.383	5.0172	3.265	10.7	5.6829
9	11.11	118.4	107	1.6784	0.147	16.433	5.0334	3.265	10.733	5.7
0	11.24	118.43	107	1.654	0.145	16.49	5.0578	3.260	10.774	5.7162
1	11.37	118.44	107	1.6297	0.142	16.527	5.0821	3.252	10.804	5.7224
2	11.51	118.46	107	1.6135	0.141	16.556	5.0983	3.247	10.827	5.7287
3	11.63	118.45	107	1.5973	0.139	16.569	5.1145	3.240	10.842	5.7272
4	11.75	118.51	107	1.5811	0.137	16.636	5.1307	3.242	10.883	5.7527
5	11.88	118.5	107	1.5567	0.135	16.656	5.1551	3.231	10.905	5.7502
6	12.00	118.52	107	1.5324	0.133	16.695	5.1794	3.223	10.937	5.7578
7	12.13	118.55	107	1.5162	0.131	16.742	5.1956	3.222	10.969	5.7732
8	12.25	118.54	107	1.5	0.130	16.755	5.2118	3.215	10.984	5.7718
9	12.39	118.57	107	1.4757	0.128	16.808	5.2361	3.210	11.022	5.786
0	12.50	118.55	107	1.4513	0.126	16.814	5.2605	3.196	11.037	5.7768
1	12.62	118.6	107	1.4351	0.124	16.879	5.2767	3.199	11.078	5.8013
2	12.78	118.57	107	1.427	0.123	16.859	5.2848	3.190	11.072	5.7873
3	12.90	118.57	107	1.4108	0.122	16.873	5.301	3.183	11.087	5.7859
4	13.02	118.59	107	1.3946	0.120	16.904	5.3172	3.179	11.11	5.7932
5	13.15	118.58	107	1.3703	0.118	16.923	5.3415	3.168	11.132	5.7907
6	13.27	118.58	107	1.354	0.117	16.935	5.3578	3.161	11.146	5.7887
7	13.40	118.61	107	1.3297	0.115	16.989	5.3821	3.157	11.185	5.8034
8	13.51	118.61	107	1.3054	0.112	17.012	5.4064	3.147	11.209	5.8026
9	13.63	118.6	107	1.2892	0.111	17.025	5.4226	3.140	11.224	5.8012
0	13.77	118.58	107	1.273	0.110	17.016	5.4388	3.129	11.227	5.7886
1	13.89	118.57	107	1.2567	0.109	17.029	5.4551	3.122	11.242	5.7871
2	14.01	118.55	107	1.2405	0.107	17.023	5.4713	3.111	11.247	5.776
3	14.14	118.53	107	1.2243	0.106	17.017	5.4875	3.101	11.252	5.7648
4	14.27	118.49	107	1.2	0.104	17.002	5.5118	3.085	11.257	5.7451
5	14.39	118.5	107	1.1838	0.103	17.032	5.528	3.081	11.28	5.7519
6	14.52	118.46	107	1.1676	0.102	17.009	5.5442	3.068	11.276	5.7322
7	14.64	118.46	107	1.1513	0.100	17.02	5.5605	3.061	11.29	5.7296
8	14.79	118.43	107	1.1351	0.099	17.01	5.5767	3.050	11.293	5.7165
9	14.91	118.45	107	1.1189	0.098	17.04	5.5929	3.047	11.317	5.7236
0	15.04	118.44	107	1.1027	0.096	17.051	5.6091	3.040	11.33	5.7212
1	15.17	118.47	107	1.0865	0.095	17.096	5.6253	3.039	11.361	5.7354
2	15.29	118.47	107	1.0622	0.093	17.116	5.6496	3.029	11.383	5.7329
3	15.40	118.46	107	1.0378	0.091	17.138	5.674	3.020	11.406	5.7318
4	15.54	118.47	107	1.0135	0.088	17.172	5.6983	3.014	11.435	5.7369

6	15.79	118.51	107	0.98107	0.085	17.245	5.7307	3.009	11.488	5.7572
7	15.93	118.54	107	0.96486	0.084	17.289	5.7469	3.008	11.518	5.771
8	16.04	118.55	107	0.95675	0.083	17.31	5.755	3.008	11.533	5.7775
9	16.18	118.55	107	0.94864	0.082	17.312	5.7632	3.004	11.537	5.7743
0	16.30	118.59	107	0.92432	0.080	17.381	5.7875	3.003	11.584	5.797
1	16.43	118.62	107	0.9081	0.078	17.426	5.8037	3.003	11.615	5.8111
2	16.54	118.64	107	0.89188	0.077	17.455	5.8199	2.999	11.638	5.8177
3	16.69	118.66	107	0.87567	0.075	17.496	5.8361	2.998	11.666	5.83
4	16.81	118.69	107	0.85945	0.074	17.542	5.8523	2.997	11.697	5.8447
5	16.94	118.72	107	0.84323	0.072	17.584	5.8686	2.996	11.726	5.8577
6	17.05	118.76	107	0.82702	0.070	17.648	5.8848	2.999	11.766	5.8816
7	17.19	118.8	107	0.8108	0.069	17.705	5.901	3.000	11.803	5.9021
8	17.32	118.85	107	0.79459	0.067	17.765	5.9172	3.002	11.841	5.9238
9	17.44	118.91	107	0.77026	0.065	17.85	5.9415	3.004	11.896	5.9544
0	17.57	118.92	107	0.75405	0.063	17.877	5.9578	3.001	11.917	5.9595
1	17.68	118.92	107	0.74594	0.063	17.882	5.9659	2.997	11.924	5.9581
2	17.81	118.99	107	0.73783	0.062	17.966	5.974	3.007	11.97	5.9958
3	17.93	119.07	107	0.72161	0.060	18.059	5.9902	3.015	12.024	6.0342
4	18.05	119.06	107	0.7054	0.058	18.069	6.0064	3.008	12.038	6.0313
5	18.17	119.09	107	0.68918	0.057	18.112	6.0226	3.007	12.067	6.0447
6	18.19	119.09	107	0.68918	0.057	18.109	6.0226	3.007	12.066	6.0434

TRIAXIAL TEST

:ct: PLUM CREEK SITE 21
g No.:
e No.: 19-COMP2
No.: 2

Location: TX
Tested By: SKK
Test Date: 4/24/19
Sample Type: REMOLD

Project No.: 19-COMP2
Checked By: SKK
Depth: 4-10'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
ks:

men Height: 3.00 in
men Area: 1.54 in^2
men Volume: 75.70 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
iner ID		---		
ontainer + Wet Soil, gm	154.57	154.57	157.19	207.97
ontainer + Dry Soil, gm	128.57	128.57	128.57	179.35
ontainer, gm	0	---	0	50.78
ry Soil, gm	128.57	128.57	128.57	128.57
Content, %	20.22	20.22	22.26	22.26
Ratio	---	0.60	0.61	---
e of Saturation, %	---	91.44	100.00	---
nit Weight, pcf	---	106.02	105.77	---

al

f Initialization

f Consolidation/A

f Saturation

f Consolidation/B

f Shear

ilure

TRIAXIAL TEST

ct: PLUM CREEK SITE 21
g No.:
e No.: 19-COMP2
No.: 2

Location: TX
Tested By: SKK
Test Date: 4/24/19
Sample Type: REMOLD

Project No.: 19-COMP2
Checked By: SKK
Depth: 4-10'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
ks:

men Height: 3.00 in
men Area: 1.54 in^2
men Volume: 75.70 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	1.5005	0	0	100.04	114	114
2	2.0039	0.12478	1.5024	9.6046	6.3868	102.25	114	120.39
3	4.0031	0.26535	1.5045	13	8.6277	103.62	114	122.63
4	6.0039	0.38539	1.5063	15.141	10.033	104.48	114	124.03
5	8.0028	0.50385	1.5081	16.456	10.887	105.09	114	124.89
6	10.001	0.63179	1.5101	17.466	11.536	105.51	114	125.54
7	12	0.75341	1.5119	18.077	11.92	105.83	114	125.92
8	14.004	0.88292	1.5139	18.75	12.343	106.08	114	126.34
9	16.001	1.0251	1.5161	19.179	12.601	106.27	114	126.6
0	18.003	1.1435	1.5179	19.729	12.943	106.44	114	126.94
1	20.002	1.2794	1.52	19.974	13.08	106.56	114	127.08
2	22.001	1.4026	1.5219	20.28	13.259	106.68	114	127.26
3	24.001	1.5416	1.524	20.463	13.354	106.76	114	127.35
4	26	1.6584	1.5258	20.647	13.453	106.82	114	127.45
5	28.001	1.7911	1.5279	20.769	13.508	106.88	114	127.51
6	30.004	1.9175	1.5299	20.953	13.605	106.92	114	127.6
7	32.003	2.047	1.5319	21.014	13.621	106.95	114	127.62
8	34.002	2.1812	1.534	21.136	13.675	106.98	114	127.68
9	36.004	2.3313	1.5364	21.228	13.707	107	114	127.71
0	38.001	2.445	1.5381	21.35	13.765	107.01	114	127.77
1	40.002	2.5745	1.5402	21.381	13.761	107.02	114	127.76
2	42.002	2.7041	1.5422	21.473	13.796	107.02	114	127.8
3	44	2.8178	1.544	21.534	13.814	107.02	114	127.81
4	46	2.9489	1.5461	21.626	13.849	107.03	114	127.85
5	48.003	3.0958	1.5485	21.687	13.86	107.03	114	127.86
6	50.004	3.2142	1.5504	21.717	13.857	107.03	114	127.86
7	52.002	3.3564	1.5527	21.84	13.909	107.02	114	127.91
8	54.001	3.4796	1.5546	21.932	13.945	107.01	114	127.94
9	56.002	3.6091	1.5567	22.023	13.979	107.01	114	127.98
0	58.004	3.7339	1.5587	22.115	14.014	107	114	128.01
1	60.004	3.8586	1.5608	22.237	14.068	106.98	114	128.07
2	62.003	3.9755	1.5627	22.299	14.085	106.97	114	128.08
3	64.004	4.1256	1.5651	22.36	14.095	106.96	114	128.1
4	66.003	4.2472	1.5671	22.482	14.15	106.94	114	128.15
5	68.002	4.3657	1.569	22.605	14.205	106.93	114	128.2
6	70.004	4.5047	1.5713	22.635	14.197	106.91	114	128.2
7	72.004	4.6121	1.5731	22.696	14.215	106.9	114	128.22
8	74.004	4.751	1.5754	22.819	14.266	106.88	114	128.27
9	76	4.8585	1.5772	22.849	14.264	106.88	114	128.26
0	78.003	4.9959	1.5794	23.033	14.353	106.86	114	128.35
1	80.003	5.138	1.5818	23.063	14.345	106.84	114	128.34
2	82.003	5.2438	1.5836	23.094	14.343	106.82	114	128.34
3	84.002	5.3844	1.5859	23.155	14.354	106.8	114	128.35
4	86.002	5.5013	1.5879	23.277	14.408	106.78	114	128.41
5	88.003	5.6498	1.5904	23.339	14.417	106.76	114	128.42
6	90	5.7714	1.5924	23.4	14.431	106.74	114	128.43
7	92	5.8867	1.5944	23.43	14.428	106.72	114	128.43
8	94.003	6.0225	1.5967	23.492	14.439	106.69	114	128.44
9	96.004	6.1647	1.5991	23.583	14.468	106.68	114	128.47
0	98.004	6.2752	1.601	23.706	14.522	106.67	114	128.52
1	100	6.4237	1.6035	23.767	14.531	106.66	114	128.53
2	102	6.5516	1.6057	23.889	14.581	106.64	114	128.58

4	106	6.8039	1.6101	24.042	14.625	106.61	114	128.63
5	108	6.907	1.6119	24.073	14.624	106.6	114	128.62
6	110	7.0397	1.6142	24.195	14.673	106.58	114	128.67
7	112	7.1661	1.6164	24.256	14.685	106.56	114	128.68
8	114	7.3035	1.6188	24.501	14.808	106.55	114	128.81
9	116	7.4283	1.6209	24.593	14.839	106.53	114	128.84
0	118	7.5515	1.6231	24.776	14.927	106.51	114	128.93
1	120	7.6841	1.6254	24.776	14.9	106.49	114	128.9
2	122	7.8121	1.6277	24.868	14.93	106.47	114	128.93
3	124	7.9384	1.6299	24.929	14.941	106.46	114	128.94
4	126	8.0537	1.632	25.082	15.011	106.45	114	129.01
5	128	8.1927	1.6344	25.113	15.001	106.44	114	129
6	130	8.3364	1.637	25.113	14.971	106.41	114	128.97
7	132	8.466	1.6393	25.174	14.981	106.39	114	128.98
8	134	8.5797	1.6414	25.235	14.995	106.38	114	129
9	136	8.706	1.6436	25.296	15.006	106.37	114	129.01
0	138	8.8482	1.6462	25.388	15.032	106.35	114	129.03
1	140	8.9588	1.6482	25.327	14.972	106.34	114	128.97
2	142	9.1041	1.6508	25.388	14.979	106.32	114	128.98
3	144	9.2146	1.6528	25.357	14.937	106.3	114	128.94
4	146	9.3678	1.6556	25.419	14.942	106.28	114	128.94
5	148	9.4847	1.6578	25.449	14.936	106.27	114	128.94
6	150	9.6253	1.6604	25.449	14.907	106.25	114	128.91
7	152	9.7517	1.6627	25.51	14.917	106.23	114	128.92
8	154	9.8812	1.6651	25.541	14.909	106.22	114	128.91
9	156	10.012	1.6675	25.602	14.918	106.2	114	128.92
0	158	10.118	1.6695	25.663	14.932	106.19	114	128.93
1	160	10.251	1.6719	25.663	14.905	106.18	114	128.9
2	162	10.374	1.6742	25.694	14.897	106.15	114	128.9
3	164	10.497	1.6765	25.786	14.926	106.14	114	128.93
4	166	10.635	1.6791	25.877	14.952	106.12	114	128.95
5	168	10.77	1.6817	25.969	14.978	106.11	114	128.98
6	170	10.884	1.6838	26.061	15.008	106.1	114	129.01
7	172	11.017	1.6863	26.153	15.035	106.08	114	129.03
8	174	11.149	1.6888	26.214	15.043	106.07	114	129.04
9	176	11.268	1.6911	26.306	15.072	106.05	114	129.07
0	178	11.402	1.6937	26.397	15.097	106.03	114	129.1
1	180	11.522	1.696	26.397	15.072	106.02	114	129.07
2	182	11.655	1.6985	26.489	15.098	106	114	129.1
3	184	11.795	1.7012	26.489	15.068	105.99	114	129.07
4	186	11.931	1.7038	26.459	15.021	105.98	114	129.02
5	188	12.051	1.7062	26.55	15.049	105.96	114	129.05
6	190	12.164	1.7083	26.642	15.079	105.95	114	129.08
7	192	12.295	1.7109	26.703	15.086	105.93	114	129.09
8	194	12.423	1.7134	26.795	15.112	105.91	114	129.11
9	196	12.55	1.7159	26.856	15.121	105.9	114	129.12
0	198	12.671	1.7183	27.009	15.184	105.88	114	129.18
1	200	12.821	1.7212	27.04	15.169	105.86	114	129.17
2	202	12.937	1.7235	27.193	15.233	105.86	114	129.23
3	204	13.07	1.7262	27.193	15.204	105.85	114	129.2
4	206	13.192	1.7286	27.254	15.213	105.83	114	129.21
5	208	13.309	1.7309	27.315	15.223	105.82	114	129.22
6	210	13.435	1.7334	27.499	15.301	105.8	114	129.3
7	212	13.564	1.736	27.499	15.273	105.78	114	129.27
8	214	13.685	1.7384	27.59	15.3	105.77	114	129.3
9	216	13.827	1.7413	27.621	15.286	105.76	114	129.29
0	218	13.944	1.7437	27.866	15.401	105.74	114	129.4
1	220	14.07	1.7462	27.927	15.408	105.74	114	129.41
2	222	14.182	1.7485	28.049	15.453	105.72	114	129.45
3	224	14.337	1.7517	27.988	15.384	105.7	114	129.38
4	226	14.454	1.7541	28.233	15.498	105.69	114	129.5
5	228	14.588	1.7568	28.202	15.45	105.68	114	129.45
6	230	14.713	1.7594	28.324	15.492	105.66	114	129.49
7	232	14.836	1.7619	28.355	15.482	105.66	114	129.48
8	234	14.991	1.7652	28.477	15.517	105.64	114	129.52
9	236	15.109	1.7676	28.447	15.473	105.62	114	129.47
0	238	15.226	1.7701	28.63	15.551	105.62	114	129.55
1	240	15.354	1.7727	28.661	15.539	105.6	114	129.54
2	242	15.496	1.7757	28.692	15.524	105.58	114	129.52
3	244	15.604	1.778	28.692	15.5	105.56	114	129.5
4	246	15.744	1.7809	28.783	15.52	105.55	114	129.52
5	248	15.883	1.7839	28.753	15.472	105.54	114	129.47

27	252	16.133	1.7892	28.783	15.433	105.51	114	129.43
28	254	16.267	1.7921	28.844	15.437	105.51	114	129.44
29	256	16.385	1.7946	28.844	15.41	105.5	114	129.41
30	258	16.507	1.7972	28.936	15.434	105.49	114	129.43
31	260	16.659	1.8005	28.906	15.383	105.47	114	129.38
32	262	16.785	1.8032	28.997	15.405	105.46	114	129.41
33	264	16.911	1.806	29.059	15.411	105.45	114	129.41
34	266	17.025	1.8084	29.181	15.453	105.44	114	129.45
35	268	17.183	1.8119	29.242	15.451	105.42	114	129.45
36	270	17.294	1.8143	29.334	15.476	105.41	114	129.48
37	272	17.425	1.8172	29.395	15.48	105.39	114	129.48
38	274	17.546	1.8199	29.517	15.52	105.38	114	129.52
39	276	17.666	1.8225	29.64	15.56	105.37	114	129.56
40	278	17.809	1.8257	29.732	15.577	105.35	114	129.58
41	280	17.936	1.8285	29.854	15.615	105.35	114	129.61
42	282	18.069	1.8315	29.915	15.618	105.34	114	129.62
43	284	18.184	1.8341	29.884	15.575	105.33	114	129.57
44	286	18.308	1.8368	29.915	15.563	105.31	114	129.56
45	288	18.431	1.8396	29.976	15.568	105.3	114	129.57
46	288.51	18.469	1.8404	30.007	15.576	105.29	114	129.58

TRIAXIAL TEST

ct: PLUM CREEK SITE 21
g No.:
e No.: 19-COMP2
No.: 2

Location: TX
Tested By: SKK
Test Date: 4/24/19
Sample Type: REMOLD

Project No.: 19-COMP2
Checked By: SKK
Depth: 4-10'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
ks:

men Height: 3.00 in
men Area: 1.54 in^2
men Volume: 75.70 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	114	114	0	0.000	13.959	13.959	1.000	13.959	0
2	0.12	120.39	114	2.209	0.346	18.137	11.75	1.544	14.943	3.1934
3	0.27	122.63	114	3.5746	0.414	19.012	10.384	1.831	14.698	4.3138
4	0.39	124.03	114	4.4422	0.443	19.55	9.5169	2.054	14.533	5.0165
5	0.50	124.89	114	5.0446	0.463	19.802	8.9145	2.221	14.358	5.4437
6	0.63	125.54	114	5.4704	0.474	20.024	8.4887	2.359	14.257	5.7679
7	0.75	125.92	114	5.7917	0.486	20.088	8.1674	2.460	14.128	5.9602
8	0.88	126.34	114	6.0407	0.489	20.262	7.9184	2.559	14.09	6.1716
9	1.03	126.6	114	6.2335	0.495	20.327	7.7256	2.631	14.026	6.3005
0	1.14	126.94	114	6.4022	0.495	20.5	7.5569	2.713	14.028	6.4715
1	1.28	127.08	114	6.5227	0.499	20.516	7.4364	2.759	13.976	6.5399
2	1.40	127.26	114	6.6351	0.500	20.583	7.324	2.810	13.953	6.6293
3	1.54	127.35	114	6.7154	0.503	20.597	7.2437	2.844	13.92	6.6768
4	1.66	127.45	114	6.7797	0.504	20.632	7.1794	2.874	13.906	6.7263
5	1.79	127.51	114	6.8359	0.506	20.631	7.1232	2.896	13.877	6.7541
6	1.92	127.6	114	6.8761	0.505	20.688	7.083	2.921	13.885	6.8024
7	2.05	127.62	114	6.9082	0.507	20.671	7.0509	2.932	13.861	6.8103
8	2.18	127.68	114	6.9404	0.508	20.694	7.0187	2.948	13.856	6.8377
9	2.33	127.71	114	6.9564	0.508	20.71	7.0027	2.957	13.856	6.8535
0	2.45	127.77	114	6.9725	0.507	20.752	6.9866	2.970	13.869	6.8826
1	2.57	127.76	114	6.9805	0.507	20.739	6.9786	2.972	13.859	6.8804
2	2.70	127.8	114	6.9805	0.506	20.774	6.9786	2.977	13.876	6.8979
3	2.82	127.81	114	6.9805	0.505	20.793	6.9786	2.979	13.886	6.907
4	2.95	127.85	114	6.9886 Peak PP.	0.505	20.819	6.9705	2.987	13.895	6.9243
5	3.10	127.86	114	6.9886	0.504	20.831	6.9705	2.988	13.901	6.9301
6	3.21-PP	127.86	114	6.9886	0.504	20.828	6.9705 = 13.86	2.988	13.899	6.9287
7	3.36	127.91	114	6.9805	0.502	20.888	6.9786	2.993	13.933	6.9546
8	3.48	127.94	114	6.9725	0.500	20.931	6.9866	2.996	13.959	6.9724
9	3.61	127.98	114	6.9645	0.498	20.974	6.9946	2.999	13.984	6.9895
0	3.73	128.01	114	6.9564	0.496	21.017	7.0027	3.001	14.01	7.007
1	3.86	128.07	114	6.9404	0.493	21.087	7.0187	3.004	14.053	7.0342
2	3.98	128.08	114	6.9243	0.492	21.12	7.0348	3.002	14.077	7.0425
3	4.13	128.1	114	6.9163	0.491	21.138	7.0428	3.001	14.09	7.0476
4	4.25	128.15	114	6.9002	0.488	21.209	7.0589	3.005	14.134	7.0748
5	4.37-SR	128.2	114	6.8922 -6.89	0.485	21.272	7.0669 = 14.21	3.010 — Max SR	14.169	7.1023
6	4.50	128.2	114	6.8681	0.484	21.288	7.091	3.002	14.19	7.0985
7	4.61	128.22	114	6.86	0.483	21.314	7.0991	3.002	14.207	7.1075
8	4.75	128.27	114	6.844	0.480	21.381	7.1151	3.005	14.248	7.1328
9	4.86	128.26	114	6.8359	0.479	21.387	7.1232	3.002	14.255	7.132
0	5.00-SR	128.35	114	6.8199 -6.82	0.475	21.492	7.1392 = 14.35	3.010 — Max SR	14.316	7.1766
1	5.14	128.34	114	6.8038	0.474	21.5	7.1553	3.005	14.328	7.1723
2	5.24	128.34	114	6.7797	0.473	21.522	7.1794	2.998	14.351	7.1715
3	5.38	128.35	114	6.7636	0.471	21.549	7.1955	2.995	14.372	7.177
4	5.50	128.41	114	6.7395	0.468	21.627	7.2196	2.996	14.423	7.2039
5	5.65	128.42	114	6.7154	0.466	21.661	7.2437	2.990	14.452	7.2085
6	5.77	128.43	114	6.6994	0.464	21.691	7.2597	2.988	14.475	7.2156
7	5.89	128.43	114	6.6753	0.463	21.711	7.2838	2.981	14.498	7.2138
8	6.02	128.44	114	6.6512	0.461	21.747	7.3079	2.976	14.527	7.2194
9	6.16	128.47	114	6.6351	0.459	21.792	7.324	2.975	14.558	7.234
0	6.28	128.52	114	6.6271	0.456	21.854	7.332	2.981	14.593	7.2611
1	6.42	128.53	114	6.6191	0.456	21.871	7.3401	2.980	14.605	7.2654

53	6.67	128.58	114	6.5869	0.452	21.948	7.3722	2.977	14.66	7.2877
54	6.81	128.63	114	6.5709	0.449	22.013	7.3882	2.980	14.701	7.3125
55	6.91	128.62	114	6.5548	0.448	22.028	7.4043	2.975	14.716	7.3118
56	7.04	128.67	114	6.5387	0.446	22.093	7.4204	2.977	14.757	7.3363
57	7.17	128.68	114	6.5227	0.444	22.121	7.4364	2.975	14.779	7.3424
58	7.30	128.81	114	6.5066	0.439	22.261	7.4525	2.987	14.857	7.4041
59	7.43	128.84	114	6.4905	0.437	22.308	7.4686	2.987	14.888	7.4196
60	7.55	128.93	114	6.4664	0.433	22.42	7.4927	2.992	14.956	7.4635
61	7.68	128.9	114	6.4504	0.433	22.408	7.5087	2.984	14.959	7.4499
62	7.81	128.93	114	6.4263	0.430	22.463	7.5328	2.982	14.998	7.4649
63	7.94	128.94	114	6.4182	0.430	22.482	7.5409	2.981	15.011	7.4706
64	8.05	129.01	114	6.4102	0.427	22.56	7.5489	2.989	15.054	7.5055
65	8.19	129	114	6.3941	0.426	22.566	7.565	2.983	15.065	7.5005
66	8.34	128.97	114	6.37	0.425	22.56	7.5891	2.973	15.075	7.4855
67	8.47	128.98	114	6.354	0.424	22.587	7.6051	2.970	15.096	7.4907
68	8.58	129	114	6.3379	0.423	22.616	7.6212	2.968	15.119	7.4976
69	8.71	129.01	114	6.3299	0.422	22.635	7.6292	2.967	15.132	7.503
70	8.85	129.03	114	6.3138	0.420	22.677	7.6453	2.966	15.161	7.5161
71	8.96	128.97	114	6.2977	0.421	22.633	7.6614	2.954	15.147	7.486
72	9.10	128.98	114	6.2817	0.419	22.656	7.6774	2.951	15.167	7.4893
73	9.21	128.94	114	6.2576	0.419	22.639	7.7015	2.939	15.17	7.4686
74	9.37	128.94	114	6.2415	0.418	22.66	7.7176	2.936	15.189	7.4711
75	9.48	128.94	114	6.2254	0.417	22.67	7.7337	2.931	15.202	7.4681
76	9.63	128.91	114	6.2094	0.417	22.657	7.7497	2.924	15.203	7.4534
77	9.75	128.92	114	6.1933	0.415	22.683	7.7658	2.921	15.224	7.4586
78	9.88	128.91	114	6.1772	0.414	22.69	7.7819	2.916	15.236	7.4543
79	10.01	128.92	114	6.1612	0.413	22.716	7.7979	2.913	15.257	7.459
80	10.12	128.93	114	6.1451	0.412	22.746	7.814	2.911	15.28	7.4662
81	10.25	128.9	114	6.1371	0.412	22.727	7.822	2.905	15.274	7.4523
82	10.37	128.9	114	6.113	0.410	22.743	7.8461	2.899	15.295	7.4485
83	10.50	128.93	114	6.0969	0.408	22.788	7.8622	2.898	15.325	7.463
84	10.63	128.95	114	6.0809	0.407	22.83	7.8783	2.898	15.354	7.4759
85	10.77	128.98	114	6.0728	0.405	22.864	7.8863	2.899	15.375	7.4889
86	10.88	129.01	114	6.0568	0.404	22.911	7.9023	2.899	15.406	7.5041
87	11.02	129.03	114	6.0407	0.402	22.953	7.9184	2.899	15.436	7.5173
88	11.15	129.04	114	6.0246	0.401	22.977	7.9345	2.896	15.456	7.5214
89	11.27	129.07	114	6.0086	0.399	23.022	7.9505	2.896	15.486	7.5359
90	11.40	129.1	114	5.9925	0.397	23.064	7.9666	2.895	15.515	7.5487
91	11.52	129.07	114	5.9764	0.397	23.055	7.9827	2.888	15.519	7.536
92	11.65	129.1	114	5.9604	0.395	23.096	7.9987	2.888	15.548	7.5488
93	11.80	129.07	114	5.9523	0.395	23.074	8.0068	2.882	15.541	7.5338
94	11.93	129.02	114	5.9363	0.395	23.044	8.0228	2.872	15.533	7.5104
95	12.05	129.05	114	5.9202	0.393	23.088	8.0389	2.872	15.563	7.5245
96	12.16	129.08	114	5.9041	0.392	23.134	8.055	2.872	15.594	7.5393
97	12.29	129.09	114	5.8881	0.390	23.157	8.071	2.869	15.614	7.5432
98	12.42	129.11	114	5.872	0.389	23.2	8.0871	2.869	15.643	7.5562
99	12.55	129.12	114	5.8559	0.387	23.224	8.1032	2.866	15.663	7.5603
100	12.67	129.18	114	5.8399	0.385	23.303	8.1192	2.870	15.711	7.5919
101	12.82	129.17	114	5.8238	0.384	23.304	8.1353	2.865	15.72	7.5846
102	12.94	129.23	114	5.8238	0.382	23.368	8.1353	2.872	15.752	7.6163
103	13.07	129.2	114	5.8077	0.382	23.355	8.1514	2.865	15.753	7.6019
104	13.19	129.21	114	5.7917	0.381	23.38	8.1674	2.863	15.774	7.6064
105	13.31	129.22	114	5.7836	0.380	23.398	8.1755	2.862	15.787	7.6114
106	13.43	129.3	114	5.7595	0.376	23.501	8.1996	2.866	15.85	7.6506
107	13.56	129.27	114	5.7435	0.376	23.489	8.2156	2.859	15.852	7.6365
108	13.68	129.3	114	5.7274	0.374	23.531	8.2317	2.859	15.881	7.6498
109	13.83	129.29	114	5.7194	0.374	23.526	8.2397	2.855	15.883	7.643
110	13.94	129.4	114	5.7033	0.370	23.656	8.2558	2.865	15.956	7.7003
111	14.07	129.41	114	5.6953	0.370	23.672	8.2638	2.864	15.968	7.7039
112	14.18	129.45	114	5.6792	0.368	23.733	8.2799	2.866	16.006	7.7265
113	14.34	129.38	114	5.6631	0.368	23.68	8.296	2.854	15.988	7.6919
114	14.45	129.5	114	5.6471	0.364	23.81	8.312	2.864	16.061	7.7488
115	14.59	129.45	114	5.639	0.365	23.77	8.3201	2.857	16.045	7.7251
116	14.71	129.49	114	5.623	0.363	23.828	8.3361	2.858	16.082	7.746
117	14.84	129.48	114	5.6149	0.363	23.826	8.3442	2.855	16.085	7.741
118	14.99	129.52	114	5.5989	0.361	23.877	8.3602	2.856	16.119	7.7584
119	15.11	129.47	114	5.5828	0.361	23.849	8.3763	2.847	16.113	7.7365
120	15.23	129.55	114	5.5748	0.358	23.935	8.3843	2.855	16.16	7.7753
121	15.35	129.54	114	5.5587	0.358	23.94	8.4004	2.850	16.17	7.7696
122	15.50	129.52	114	5.5346	0.357	23.949	8.4245	2.843	16.187	7.7622
123	15.60	129.5	114	5.5186	0.356	23.941	8.4405	2.836	16.191	7.7502
124	15.74	129.52	114	5.5105	0.355	23.969	8.4486	2.837	16.209	7.7602

26	16.01	129.48	114	5.4864	0.354	23.949	8.4727	2.827	16.211	7.7384
27	16.13	129.43	114	5.4704	0.354	23.922	8.4887	2.818	16.205	7.7165
28	16.27	129.44	114	5.4704	0.354	23.926	8.4887	2.819	16.207	7.7185
29	16.39	129.41	114	5.4543	0.354	23.915	8.5048	2.812	16.21	7.7052
30	16.51	129.43	114	5.4463	0.353	23.947	8.5128	2.813	16.23	7.7171
31	16.66	129.38	114	5.4302	0.353	23.912	8.5289	2.804	16.22	7.6915
32	16.79	129.41	114	5.4222	0.352	23.942	8.5369	2.805	16.24	7.7027
33	16.91	129.41	114	5.4061	0.351	23.964	8.553	2.802	16.258	7.7054
34	17.03	129.45	114	5.3981	0.349	24.014	8.561	2.805	16.287	7.7264
35	17.18	129.45	114	5.382	0.348	24.028	8.5771	2.801	16.303	7.7254
36	17.29	129.48	114	5.374	0.347	24.062	8.5851	2.803	16.323	7.7382
37	17.42	129.48	114	5.3499	0.346	24.09	8.6092	2.798	16.349	7.7402
38	17.55	129.52	114	5.3418	0.344	24.137	8.6173	2.801	16.377	7.7599
39	17.67	129.56	114	5.3258	0.342	24.193	8.6333	2.802	16.413	7.7798
40	17.81	129.58	114	5.3097	0.341	24.227	8.6494	2.801	16.438	7.7887
41	17.94	129.61	114	5.3097	0.340	24.264	8.6494	2.805	16.457	7.8075
42	18.07	129.62	114	5.3017	0.339	24.275	8.6574	2.804	16.466	7.8089
43	18.18	129.57	114	5.2856	0.339	24.248	8.6735	2.796	16.461	7.7873
44	18.31	129.56	114	5.2695	0.339	24.253	8.6896	2.791	16.471	7.7815
45	18.43	129.57	114	5.2615	0.338	24.266	8.6976	2.790	16.482	7.784
46	18.47	129.58	114	5.2535	0.337	24.281	8.7056	2.789	16.494	7.7879

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ıg No.:
le No.: 19-COMP2
No.: 3

Location: TX
Tested By: SKK
Test Date: 4/24/19
Sample Type: REMOLD

Project No.: 19-COMP2
Checked By: SKK
Depth: 4-10'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
ks:

imen Height: 3.00 in
imen Area: 1.54 in^2
imen Volume: 75.68 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

	Before Test Trimmings	Before Test Specimen+Ring	After Test Specimen+Ring	After Test Trimmings
ıiner ID		---		
Container + Wet Soil, gm	154.53	154.53	155.21	205.74
Container + Dry Soil, gm	128.79	128.79	128.79	179.32
Container, gm	0	---	0	50.53
Dry Soil, gm	128.79	128.79	128.79	128.79
Content, %	19.99	19.99	20.51	20.51
Ratio	---	0.60	0.56	---
ee of Saturation, %	---	90.86	100.00	---
Unit Weight, pcf	---	106.24	108.99	---

ial

of Initialization

of Consolidation/A

of Saturation

of Consolidation/B

of Shear

ıilure

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ıg No.:
le No.: 19-COMP2
No.: 3

Location: TX
Tested By: SKK
Test Date: 4/24/19
Sample Type: REMOLD

Project No.: 19-COMP2
Checked By: SKK
Depth: 4-10'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
·ks:

men Height: 3.00 in
men Area: 1.54 in^2
men Volume: 75.68 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

d Limit: ---

Plastic Limit: ---

Measured Specific Gravity: 2.72

	Time min	Vertical Strain %	Corrected Area in^2	Deviator Load lb	Deviator Stress psi	Pore Pressure psi	Horizontal Stress psi	Vertical Stress psi
1	0	0	1.4637	0	0	100.25	128	128
2	2.004	0.10333	1.4652	15.067	10.278	103.08	128	138.28
3	4.003	0.24541	1.4673	20.255	13.792	105.28	128	141.79
4	6.0033	0.38265	1.4693	23.033	15.657	106.85	128	143.66
5	8.003	0.50212	1.4711	24.701	16.766	108.05	128	144.77
6	10.002	0.63451	1.4731	25.936	17.576	108.99	128	145.58
7	12.003	0.75561	1.4749	26.862	18.176	109.74	128	146.18
8	14.003	0.88638	1.4768	27.603	18.648	110.37	128	146.65
9	16.003	1.0172	1.4788	28.128	18.972	110.9	128	146.97
.0	18.001	1.1544	1.4808	28.56	19.23	111.34	128	147.23
.1	20.003	1.2739	1.4826	28.9	19.43	111.73	128	147.43
.2	22.001	1.4176	1.4848	29.239	19.624	112.07	128	147.62
.3	24.004	1.5403	1.4866	29.517	19.78	112.37	128	147.78
.4	26.002	1.6743	1.4886	29.734	19.892	112.63	128	147.89
.5	28	1.8067	1.4906	29.981	20.025	112.86	128	148.02
.6	30.004	1.952	1.4929	30.166	20.112	113.07	128	148.11
.7	32.001	2.0941	1.495	30.351	20.2	113.26	128	148.2
.8	34.004	2.22	1.4969	30.567	20.312	113.43	128	148.31
.9	36.002	2.3556	1.499	30.752	20.401	113.58	128	148.4
0	38.002	2.4735	1.5008	30.907	20.473	113.71	128	148.47
1	40.003	2.6188	1.5031	31.092	20.559	113.84	128	148.56
2	42.001	2.7496	1.5051	31.277	20.648	113.96	128	148.65
3	44.004	2.8626	1.5068	31.463	20.742	114.06	128	148.74
4	46.002	2.9885	1.5088	31.679	20.852	114.17	128	148.85
5	48.003	3.1161	1.5108	31.895	20.962	114.27	128	148.96
6	50.004	3.2533	1.5129	32.111	21.068	114.34	128	149.07
7	52.002	3.3889	1.5151	32.265	21.134	114.41	128	149.13
8	54.001	3.5003	1.5168	32.481	21.247	114.48	128	149.25
9	56.001	3.6376	1.519	32.667	21.332	114.54	128	149.33
0	58	3.7796	1.5212	32.914	21.456	114.6	128	149.46
1	60.004	3.9104	1.5233	33.099	21.543	114.65	128	149.54
2	62.002	4.0267	1.5251	33.315	21.653	114.7	128	149.65
3	64	4.1623	1.5273	33.5	21.737	114.75	128	149.74
4	66.003	4.2785	1.5291	33.686	21.826	114.79	128	149.83
5	68.003	4.4222	1.5314	33.809	21.867	114.82	128	149.87
6	70.004	4.5708	1.5338	33.964	21.927	114.84	128	149.93
7	72	4.6854	1.5357	34.087	21.976	114.89	128	149.98
8	74.003	4.8129	1.5377	34.241	22.04	114.92	128	150.04
9	76.002	4.9599	1.5401	34.334	22.06	114.94	128	150.06
0	78.001	5.0923	1.5422	34.55	22.163	114.97	128	150.16
1	80.003	5.2263	1.5444	34.643	22.185	114.99	128	150.19
2	82.003	5.3409	1.5463	34.797	22.253	115	128	150.25
3	84.002	5.4862	1.5487	34.89	22.272	115.01	128	150.27
4	86.003	5.6121	1.5507	35.044	22.336	115.01	128	150.34
5	88.004	5.7462	1.5529	35.137	22.357	115.02	128	150.36
6	90	5.8656	1.5549	35.26	22.403	115.02	128	150.4
7	92.001	6.0029	1.5572	35.353	22.423	115.03	128	150.42
8	94.002	6.1498	1.5596	35.446	22.441	115.03	128	150.44
9	96.004	6.279	1.5618	35.507	22.443	115.04	128	150.44
0	98.001	6.4033	1.5638	35.662	22.507	115.06	128	150.51
1	100	6.5324	1.566	35.723	22.509	115.08	128	150.51
2	102	6.6584	1.5681	35.816	22.532	115.09	128	150.53

54	106	6.9151	1.5724	35.97	22.556	115.1	128	150.56
55	108	7.0539	1.5748	36.032	22.555	115.1	128	150.56
56	110	7.2009	1.5773	36.094	22.552	115.1	128	150.55
57	112	7.3284	1.5795	36.156	22.554	115.1	128	150.55
58	114	7.4705	1.5819	36.248	22.572	115.1	128	150.57
59	116	7.5916	1.584	36.31	22.576	115.09	128	150.58
60	118	7.7304	1.5863	36.31	22.536	115.08	128	150.54
61	120	7.8547	1.5885	36.403	22.558	115.08	128	150.56
62	122	7.992	1.5909	36.495	22.576	115.07	128	150.58
63	124	8.1163	1.593	36.588	22.598	115.09	128	150.6
64	126	8.2503	1.5953	36.619	22.578	115.08	128	150.58
65	128	8.3795	1.5976	36.65	22.56	115.07	128	150.56
66	130	8.5151	1.5999	36.742	22.578	115.06	128	150.58
67	132	8.6491	1.6023	36.804	22.578	115.06	128	150.58
68	134	8.7702	1.6044	36.866	22.581	115.06	128	150.58
69	136	8.88	1.6064	36.958	22.606	115.06	128	150.61
70	138	9.0398	1.6092	36.989	22.579	115.05	128	150.58
71	140	9.1787	1.6116	37.082	22.596	115.04	128	150.6
72	142	9.2998	1.6138	37.205	22.637	115.04	128	150.64
73	144	9.4225	1.616	37.298	22.658	115.02	128	150.66
74	146	9.5645	1.6185	37.422	22.692	115	128	150.69
75	148	9.6953	1.6209	37.483	22.692	114.98	128	150.69
76	150	9.8293	1.6233	37.576	22.709	114.98	128	150.71
77	152	9.9698	1.6258	37.7	22.743	114.97	128	150.74
78	154	10.081	1.6278	37.792	22.767	114.96	128	150.77
79	156	10.23	1.6305	37.916	22.799	114.94	128	150.8
80	158	10.338	1.6325	38.008	22.823	114.93	128	150.82
81	160	10.488	1.6352	38.101	22.835	114.93	128	150.83
82	162	10.612	1.6375	38.163	22.835	114.91	128	150.84
83	164	10.742	1.6399	38.286	22.872	114.9	128	150.87
84	166	10.872	1.6423	38.441	22.927	114.89	128	150.93
85	168	10.979	1.6442	38.502	22.932	114.88	128	150.93
86	170	11.145	1.6473	38.626	22.957	114.86	128	150.96
87	172	11.261	1.6495	38.78	23.015	114.85	128	151.02
88	174	11.397	1.652	38.78	22.974	114.84	128	150.97
89	176	11.502	1.6539	38.904	23.017	114.83	128	151.02
90	178	11.642	1.6566	39.058	23.068	114.81	128	151.07
91	180	11.786	1.6593	39.151	23.08	114.79	128	151.08
92	182	11.927	1.6619	39.305	23.13	114.78	128	151.13
93	184	12.065	1.6645	39.459	23.18	114.77	128	151.18
94	186	12.172	1.6666	39.49	23.166	114.75	128	151.17
95	188	12.317	1.6693	39.614	23.195	114.74	128	151.19
96	190	12.451	1.6719	39.706	23.209	114.72	128	151.21
97	192	12.59	1.6745	39.706	23.166	114.7	128	151.17
98	194	12.702	1.6767	39.861	23.224	114.69	128	151.22
99	196	12.847	1.6795	39.984	23.253	114.67	128	151.25
100	198	12.974	1.6819	40.015	23.231	114.66	128	151.23
101	200	13.099	1.6843	40.108	23.248	114.65	128	151.25
102	202	13.259	1.6874	40.262	23.29	114.66	128	151.29
103	204	13.352	1.6893	40.324	23.297	114.64	128	151.3
104	206	13.498	1.6921	40.447	23.325	114.62	128	151.32
105	208	13.615	1.6944	40.54	23.343	114.61	128	151.34
106	210	13.745	1.6969	40.602	23.339	114.58	128	151.34
107	212	13.871	1.6994	40.694	23.354	114.55	128	151.35
108	214	14.011	1.7022	40.849	23.4	114.54	128	151.4
109	216	14.139	1.7047	40.88	23.378	114.53	128	151.38
110	218	14.287	1.7077	40.972	23.386	114.51	128	151.39
111	220	14.41	1.7101	41.034	23.383	114.5	128	151.38
112	222	14.534	1.7126	41.065	23.362	114.49	128	151.36
113	224	14.663	1.7152	41.127	23.357	114.47	128	151.36
114	226	14.807	1.7181	41.188	23.348	114.45	128	151.35
115	228	14.918	1.7204	41.219	23.33	114.45	128	151.33
116	230	15.069	1.7234	41.25	23.301	114.44	128	151.3
117	232	15.188	1.7258	41.343	23.317	114.43	128	151.32
118	234	15.325	1.7286	41.374	23.291	114.41	128	151.29
119	236	15.464	1.7315	41.405	23.265	114.4	128	151.26
120	238	15.587	1.734	41.435	23.244	114.38	128	151.24
121	240	15.735	1.737	41.466	23.214	114.36	128	151.21
122	242	15.863	1.7397	41.528	23.209	114.33	128	151.21
123	244	15.982	1.7421	41.59	23.207	114.32	128	151.21
124	246	16.121	1.745	41.682	23.216	114.31	128	151.22
125	248	16.26	1.7479	41.682	23.172	114.29	128	151.17

27	252	16.526	1.7535	41.837	23.175	114.28	128	151.18
28	254	16.667	1.7565	41.899	23.165	114.27	128	151.17
29	256	16.798	1.7592	41.991	23.176	114.26	128	151.18
30	258	16.917	1.7617	42.115	23.208	114.23	128	151.21
31	260	17.067	1.7649	42.146	23.178	114.23	128	151.18
32	262	17.208	1.7679	42.269	23.202	114.22	128	151.2
33	264	17.339	1.7707	42.362	23.213	114.2	128	151.21
34	266	17.461	1.7734	42.454	23.225	114.19	128	151.23
35	268	17.602	1.7764	42.485	23.198	114.17	128	151.2
36	270	17.737	1.7793	42.609	23.223	114.16	128	151.22
37	272	17.865	1.7821	42.64	23.199	114.14	128	151.2
38	274	17.986	1.7847	42.732	23.212	114.11	128	151.21
39	276	18.112	1.7875	42.825	23.223	114.1	128	151.22
40	278	18.239	1.7902	42.856	23.199	114.08	128	151.2
41	280	18.364	1.793	42.948	23.211	114.08	128	151.21
42	282	18.499	1.796	43.072	23.235	114.07	128	151.24
43	284	18.619	1.7986	43.134	23.231	114.06	128	151.23
44	286	18.755	1.8016	43.226	23.238	114.05	128	151.24
45	288	18.897	1.8047	43.288	23.226	114.03	128	151.23
46	288.39	18.929	1.8055	43.35	23.249	114.03	128	151.25

TRIAXIAL TEST

ect: PLUM CREEK SITE 21
ıg No.:
le No.: 19-COMP2
No.: 3

Location: TX
Tested By: SKK
Test Date: 4/24/19
Sample Type: REMOLD

Project No.: 19-COMP2
Checked By: SKK
Depth: 4-10'
Elevation: N/A

Description: BORROW, B-101, 102, 104, & 105
ks:

imen Height: 3.00 in
imen Area: 1.54 in^2
imen Volume: 75.68 cc

Piston Area: 0.00 in^2
Piston Friction: 0.00 lb
Piston Weight: 0.00 lb

Filter Strip Correction: 0.00 psi
Membrane Correction: 1.65 lb/in
Correction Type: Uniform

id Limit: ---

Plastic Limit: ---

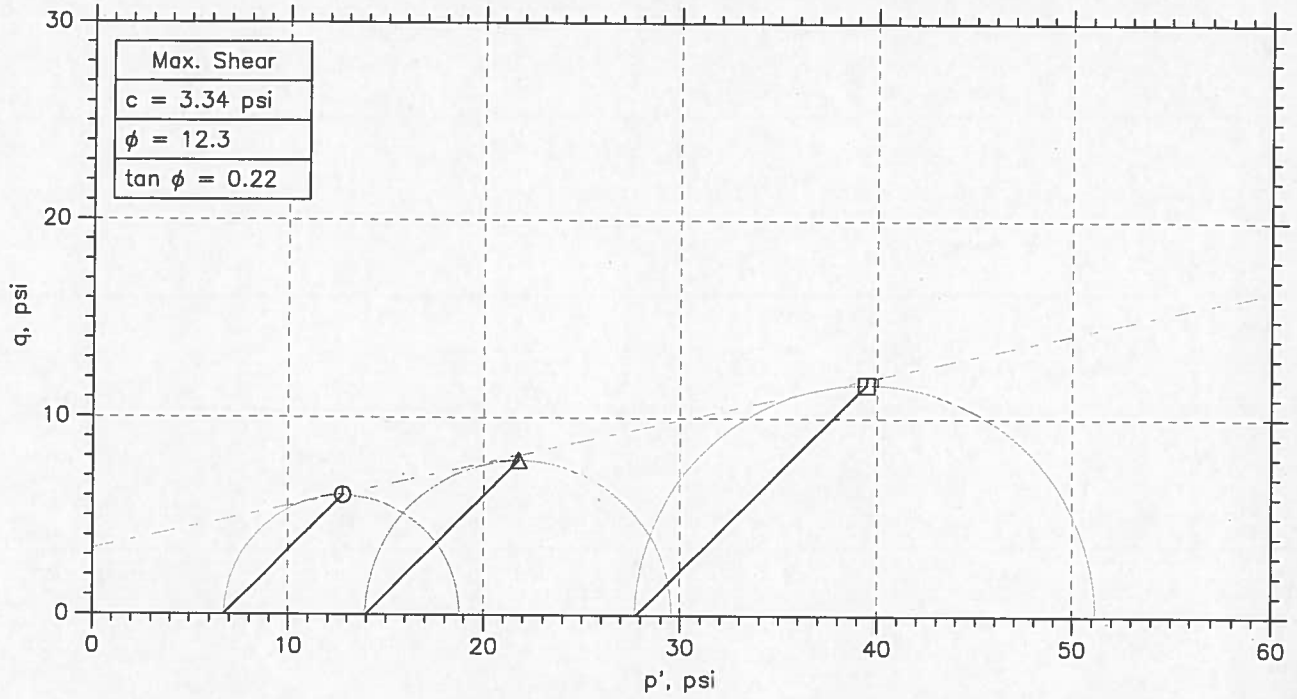
Measured Specific Gravity: 2.72

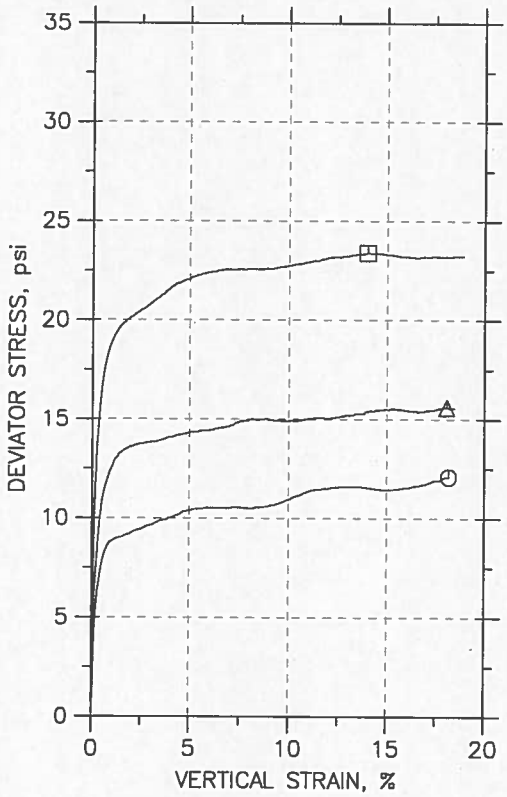
	Vertical Strain %	Total Vertical Stress psi	Total Horizontal Stress psi	Excess Pore Pressure psi	A Parameter	Effective Vertical Stress psi	Effective Horizontal Stress psi	Stress Ratio	Effective p psi	q psi
1	0.00	128	128	0	0.000	27.748	27.748	1.000	27.748	0
2	0.10	138.28	128	2.8274	0.275	35.199	24.921	1.412	30.06	5.1391
3	0.25	141.79	128	5.0292	0.365	36.511	22.719	1.607	29.615	6.8959
4	0.38	143.66	128	6.5973	0.421	36.808	21.151	1.740	28.979	7.8286
5	0.50	144.77	128	7.7998	0.465	36.714	19.948	1.840	28.331	8.383
6	0.63	145.58	128	8.7423	0.497	36.581	19.006	1.925	27.794	8.7878
7	0.76	146.18	128	9.4898	0.522	36.435	18.258	1.995	27.346	9.0881
8	0.89	146.65	128	10.115	0.542	36.28	17.633	2.058	26.957	9.3238
9	1.02	146.97	128	10.643	0.561	36.076	17.105	2.109	26.59	9.4858
10	1.15	147.23	128	11.09	0.577	35.888	16.658	2.154	26.273	9.6152
11	1.27	147.43	128	11.48	0.591	35.698	16.268	2.194	25.983	9.7152
12	1.42	147.62	128	11.822	0.602	35.55	15.927	2.232	25.738	9.8119
13	1.54	147.78	128	12.122	0.613	35.406	15.626	2.266	25.516	9.8902
14	1.67	147.89	128	12.374	0.622	35.266	15.374	2.294	25.32	9.946
15	1.81	148.02	128	12.61	0.630	35.163	15.138	2.323	25.151	10.012
16	1.95	148.11	128	12.821	0.637	35.039	14.927	2.347	24.983	10.056
17	2.09	148.2	128	13.008	0.644	34.94	14.74	2.370	24.84	10.1
18	2.22	148.31	128	13.178	0.649	34.882	14.57	2.394	24.726	10.156
19	2.36	148.4	128	13.325	0.653	34.824	14.423	2.414	24.624	10.2
20	2.47	148.47	128	13.463	0.658	34.759	14.285	2.433	24.522	10.237
21	2.62	148.56	128	13.585	0.661	34.723	14.163	2.452	24.443	10.28
22	2.75	148.65	128	13.707	0.664	34.69	14.042	2.471	24.366	10.324
23	2.86	148.74	128	13.804	0.666	34.686	13.944	2.488	24.315	10.371
24	2.99	148.85	128	13.918	0.667	34.683	13.83	2.508	24.256	10.426
25	3.12	148.96	128	14.015	0.669	34.695	13.733	2.526	24.214	10.481
26	3.25	149.07	128	14.088	0.669	34.728	13.66	2.542	24.194	10.534
27	3.39	149.13	128	14.162	0.670	34.721	13.587	2.556	24.154	10.567
28	3.50	149.25	128	14.227	0.670	34.769	13.522	2.571	24.145	10.623
29	3.64	149.33	128	14.292	0.670	34.789	13.457	2.585	24.123	10.666
30	3.78	149.46	128	14.348	0.669	34.856	13.4	2.601	24.128	10.728
31	3.91	149.54	128	14.397	0.668	34.893	13.351	2.614	24.122	10.771
32	4.03	149.65	128	14.446	0.667	34.955	13.302	2.628	24.129	10.826
33	4.16	149.74	128	14.495	0.667	34.99	13.253	2.640	24.122	10.868
34	4.28	149.83	128	14.535	0.666	35.039	13.213	2.652	24.126	10.913
35	4.42	149.87	128	14.568	0.666	35.048	13.18	2.659	24.114	10.934
36	4.57	149.93	128	14.592	0.665	35.083	13.156	2.667	24.119	10.963
37	4.69	149.98	128	14.641	0.666	35.083	13.107	2.677	24.095	10.988
38	4.81	150.04	128	14.665	0.665	35.123	13.083	2.685	24.103	11.02
39	4.96	150.06	128	14.69	0.666	35.118	13.058	2.689	24.088	11.03
40	5.09	150.16	128	14.714	0.664	35.197	13.034	2.700	24.116	11.081
41	5.23	150.19	128	14.738	0.664	35.195	13.01	2.705	24.102	11.093
42	5.34	150.25	128	14.747	0.663	35.255	13.002	2.712	24.128	11.126
43	5.49	150.27	128	14.755	0.662	35.265	12.993	2.714	24.129	11.136
44	5.61	150.34	128	14.763	0.661	35.321	12.985	2.720	24.153	11.168
45	5.75	150.36	128	14.771	0.661	35.335	12.977	2.723	24.156	11.179
46	5.87	150.4	128	14.771	0.659	35.38	12.977	2.726	24.179	11.201
47	6.00	150.42	128	14.779	0.659	35.392	12.969	2.729	24.181	11.212
48	6.15	150.44	128	14.779	0.659	35.41	12.969	2.730	24.19	11.22
49	6.28	150.44	128	14.787	0.659	35.404	12.961	2.732	24.183	11.222
50	6.40	150.51	128	14.812	0.658	35.443	12.937	2.740	24.19	11.253
51	6.53	150.51	128	14.828	0.659	35.429	12.92	2.742	24.175	11.255

53	6.80	150.57	128	14.844	0.658	35.474		12.904	2.749	24.189	11.285
54	6.92	150.56	128	14.844	0.658	35.46		12.904	2.748	24.182	11.278
55	7.05	150.56	128	14.844	0.658	35.46		12.904	2.748	24.182	11.278
56	7.20	150.55	128	14.852	0.659	35.448		12.896 = 22.55	2.749	24.172	11.276
57	7.33	150.55	128	14.844 Peak AP	0.658	35.459		12.904	2.748	24.181	11.277
58	7.47	150.57	128	14.852	0.658	35.468		12.896 = 22.51	2.750 Max	24.182	11.286
59	7.59	150.58	128	14.836	0.657	35.488		12.912	2.748 SA	24.2	11.288
60	7.73	150.54	128	14.828	0.658	35.456		12.92	2.744	24.188	11.268
61	7.85	150.56	128	14.828	0.657	35.478		12.92	2.746	24.199	11.279
62	7.99	150.58	128	14.82	0.656	35.505		12.929	2.746	24.217	11.288
63	8.12	150.6	128	14.836 -14.84	0.657	35.51		12.912 = 22.60	2.750 Max	24.211	11.299
64	8.25	150.58	128	14.828	0.657	35.499		12.92	2.748 FR	24.21	11.289
65	8.38	150.56	128	14.82	0.657	35.489		12.929	2.745	24.209	11.28
66	8.52	150.58	128	14.812	0.656	35.515		12.937	2.745	24.226	11.289
67	8.65	150.58	128	14.812	0.656	35.515		12.937	2.745	24.226	11.289
68	8.77	150.58	128	14.812	0.656	35.518		12.937	2.746	24.227	11.29
69	8.88	150.61	128	14.803	0.655	35.551		12.945	2.746	24.248	11.303
70	9.04	150.58	128	14.795	0.655	35.532		12.953	2.743	24.242	11.289
71	9.18	150.6	128	14.787	0.654	35.557		12.961	2.743	24.259	11.298
72	9.30	150.64	128	14.787	0.653	35.598		12.961	2.747	24.279	11.318
73	9.42	150.66	128	14.771	0.652	35.635		12.977	2.746	24.306	11.329
74	9.56	150.69	128	14.747	0.650	35.694		13.002	2.745	24.348	11.346
75	9.70	150.69	128	14.73	0.649	35.709		13.018	2.743	24.364	11.346
76	9.83	150.71	128	14.73	0.649	35.727		13.018	2.744	24.372	11.354
77	9.97	150.74	128	14.722	0.647	35.769		13.026	2.746	24.398	11.372 -102
78	10.08	150.77	128	14.706	0.646	35.809		13.042	2.746	24.426	11.384
79	10.23	150.8	128	14.69	0.644	35.857		13.058	2.746	24.458	11.399
80	10.34	150.82	128	14.682	0.643	35.89		13.067	2.747	24.478	11.412
81	10.49	150.83	128	14.673	0.643	35.91		13.075	2.746	24.492	11.417
82	10.61	150.84	128	14.657	0.642	35.926		13.091	2.744	24.509	11.418
83	10.74	150.87	128	14.649	0.640	35.971		13.099	2.746	24.535	11.436
84	10.87	150.93	128	14.641	0.639	36.034		13.107	2.749	24.571	11.463
85	10.98	150.93	128	14.625	0.638	36.056		13.123	2.747	24.59	11.466
86	11.15	150.96	128	14.608	0.636	36.097		13.14	2.747	24.618	11.478
87	11.26	151.02	128	14.6	0.634	36.163		13.148	2.750	24.656	11.508
88	11.40	150.97	128	14.584	0.635	36.138		13.164	2.745	24.651	11.487
89	11.50	151.02	128	14.576	0.633	36.189		13.172	2.747	24.681	11.509
90	11.64	151.07	128	14.56	0.631	36.256		13.188	2.749	24.722	11.534
91	11.79	151.08	128	14.535	0.630	36.292		13.213	2.747	24.753	11.54
92	11.93	151.13	128	14.527	0.628	36.351		13.221	2.749	24.786	11.565
93	12.07	151.18	128	14.519	0.626	36.409		13.229	2.752	24.819	11.59
94	12.17	151.17	128	14.503	0.626	36.411		13.245	2.749	24.828	11.583
95	12.32	151.19	128	14.487	0.625	36.457		13.262	2.749	24.859	11.597
96	12.45	151.21	128	14.47	0.623	36.487		13.278	2.748	24.882	11.605
97	12.59	151.17	128	14.446	0.624	36.468		13.302	2.742	24.885	11.583
98	12.70	151.22	128	14.438	0.622	36.534		13.31	2.745	24.922	11.612
99	12.85	151.25	128	14.422	0.620	36.579		13.327	2.745	24.953	11.626
100	12.97	151.23	128	14.405	0.620	36.574		13.343	2.741	24.959	11.616
101	13.10	151.25	128	14.397	0.619	36.599		13.351	2.741	24.975	11.624
102	13.26	151.29	128	14.405	0.619	36.633		13.343	2.745	24.988	11.645
103	13.35	151.3	128	14.389	0.618	36.656		13.359	2.744	25.008	11.649
104	13.50	151.32	128	14.373	0.616	36.7		13.375	2.744	25.038	11.662
105	13.62	151.34	128	14.357	0.615	36.734		13.392	2.743	25.063	11.671
106	13.74	151.34	128	14.324	0.614	36.763		13.424	2.739	25.093	11.669
107	13.87	151.35	128	14.3	0.612	36.802		13.448	2.737	25.125	11.677
108	14.01	151.4	128	14.292	0.611	36.857		13.457	2.739	25.157	11.7
109	14.14	151.38	128	14.275	0.611	36.851		13.473	2.735	25.162	11.689
110	14.29	151.39	128	14.259	0.610	36.875		13.489	2.734	25.182	11.693
111	14.41	151.38	128	14.251	0.609	36.88		13.497	2.732	25.189	11.692
112	14.53	151.36	128	14.235	0.609	36.875		13.513	2.729	25.194	11.681
113	14.66	151.36	128	14.218	0.609	36.887		13.53	2.726	25.208	11.679
114	14.81	151.35	128	14.202	0.608	36.894		13.546	2.724	25.22	11.674
115	14.92	151.33	128	14.202	0.609	36.876		13.546	2.722	25.211	11.665
116	15.07	151.3	128	14.186	0.609	36.863		13.562	2.718	25.213	11.65
117	15.19	151.32	128	14.178	0.608	36.887		13.57	2.718	25.229	11.658
118	15.33	151.29	128	14.162	0.608	36.878		13.587	2.714	25.232	11.646
119	15.46	151.26	128	14.145	0.608	36.868		13.603	2.710	25.235	11.632
120	15.59	151.24	128	14.129	0.608	36.863		13.619	2.707	25.241	11.622
121	15.74	151.21	128	14.113	0.608	36.85		13.635	2.703	25.243	11.607
122	15.86	151.21	128	14.08	0.607	36.877		13.668	2.698	25.273	11.605
123	15.98	151.21	128	14.064	0.606	36.891		13.684	2.696	25.288	11.604
124	16.12	151.22	128	14.056	0.605	36.908		13.692	2.696	25.3	11.608

26	16.40	151.18	128	14.023	0.605	36.906	13.725	2.689	25.315	11.591
27	16.53	151.18	128	14.023	0.605	36.9	13.725	2.689	25.312	11.588
28	16.67	151.17	128	14.015	0.605	36.898	13.733	2.687	25.316	11.583
29	16.80	151.18	128	14.007	0.604	36.917	13.741	2.687	25.329	11.588
30	16.92	151.21	128	13.983	0.602	36.974	13.765	2.686	25.369	11.604
31	17.07	151.18	128	13.975	0.603	36.951	13.773	2.683	25.362	11.589
32	17.21	151.2	128	13.967	0.602	36.984	13.782	2.684	25.383	11.601
33	17.34	151.21	128	13.95	0.601	37.011	13.798	2.682	25.404	11.606
34	17.46	151.23	128	13.934	0.600	37.04	13.814	2.681	25.427	11.613
35	17.60	151.2	128	13.918	0.600	37.028	13.83	2.677	25.429	11.599
36	17.74	151.22	128	13.91	0.599	37.062	13.838	2.678	25.45	11.612
37	17.86	151.2	128	13.885	0.599	37.062	13.863	2.673	25.463	11.6
38	17.99	151.21	128	13.861	0.597	37.099	13.887	2.671	25.493	11.606
39	18.11	151.22	128	13.845	0.596	37.127	13.903	2.670	25.515	11.612
40	18.24	151.2	128	13.828	0.596	37.119	13.92	2.667	25.519	11.6
41	18.36	151.21	128	13.828	0.596	37.13	13.92	2.667	25.525	11.605
42	18.50	151.24	128	13.82	0.595	37.163	13.928	2.668	25.545	11.618
43	18.62	151.23	128	13.812	0.595	37.167	13.936	2.667	25.551	11.615
44	18.75	151.24	128	13.796	0.594	37.19	13.952	2.666	25.571	11.619
45	18.90	151.23	128	13.78	0.593	37.194	13.968	2.663	25.581	11.613
46	18.93	151.25	128	13.78	0.593	37.218	13.968	2.664	25.593	11.625

CONSOLIDATED UNDRAINED TRIAXIAL TEST

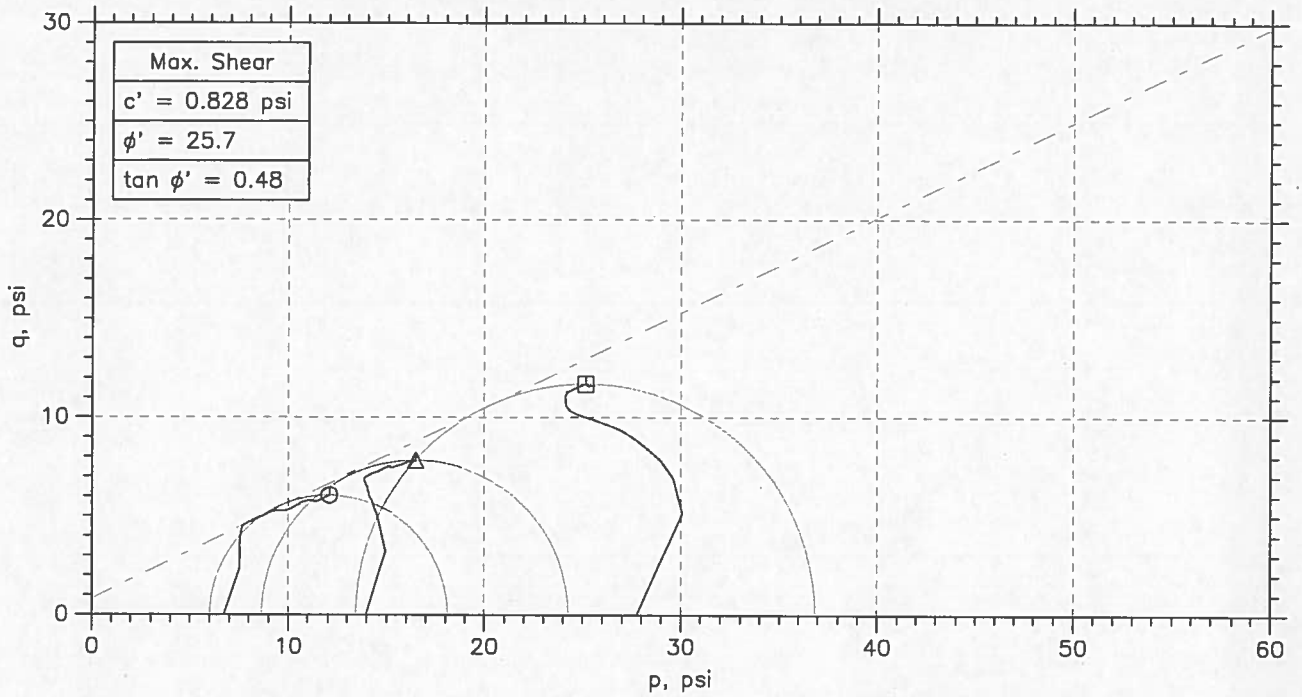


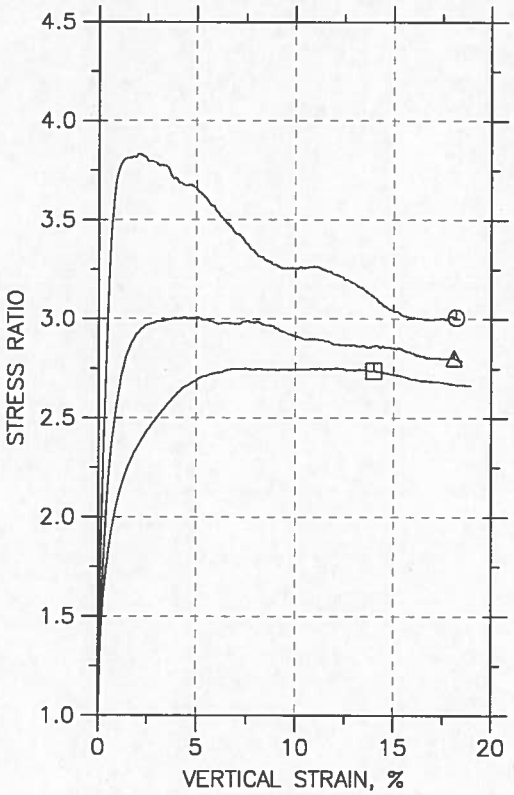


Symbol		⊙	△	⊡	
Sample No.		19-COMP2	19-COMP2	19-COMP2	
Test No.		1	2	3	
Depth		4-10'	4-10'	4-10'	
Initial	Diameter, in	1.4	1.4	1.4	
	Height, in	3.001	3.001	3	
	Water Content, %	20.4	20.2	20.0	
	Dry Density, pcf	105.8	106.	106.2	
	Saturation, %	92.0	91.4	90.9	
	Void Ratio	0.605	0.602	0.598	
Before Shear	Water Content, %	22.9	22.3	20.5	
	Dry Density, pcf	104.6	105.8	109.	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.623	0.605	0.558	
	Back Press., psi	100.3	100	100.3	
Ver. Eff. Cons. Stress, psi		6.712	13.96	27.75	
Shear Strength, psi		6.045	7.809	11.7	
Strain at Failure, %		18.2	18.1	14	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.72	2.72	2.72	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21
Location: TX
Project No.: 19-COMP2
Boring No.:
Sample Type: REMOLD
Description: BORROW, B-101, 102, 104, & 105
Remarks:

CONSOLIDATED UNDRAINED TRIAXIAL TEST





Symbol		⊙	△	⊡	
Sample No.		19-COMP2	19-COMP2	19-COMP2	
Test No.		1	2	3	
Depth		4-10'	4-10'	4-10'	
Initial	Diameter, in	1.4	1.4	1.4	
	Height, in	3.001	3.001	3	
	Water Content, %	20.4	20.2	20.0	
	Dry Density, pcf	105.8	106.	106.2	
	Saturation, %	92.0	91.4	90.9	
	Void Ratio	0.605	0.602	0.598	
Before Shear	Water Content, %	22.9	22.3	20.5	
	Dry Density, pcf	104.6	105.8	109.	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.623	0.605	0.558	
	Back Press., psi	100.3	100	100.3	
Ver. Eff. Cons. Stress, psi		6.712	13.96	27.75	
Shear Strength, psi		6.045	7.809	11.7	
Strain at Failure, %		18.2	18.1	14	
Strain Rate, %/min		0.06	0.06	0.06	
B-Value		0.00	0.00	0.00	
Measured Specific Gravity		2.72	2.72	2.72	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

Project: PLUM CREEK SITE 21

Location: TX

Project No.: 19-COMP2

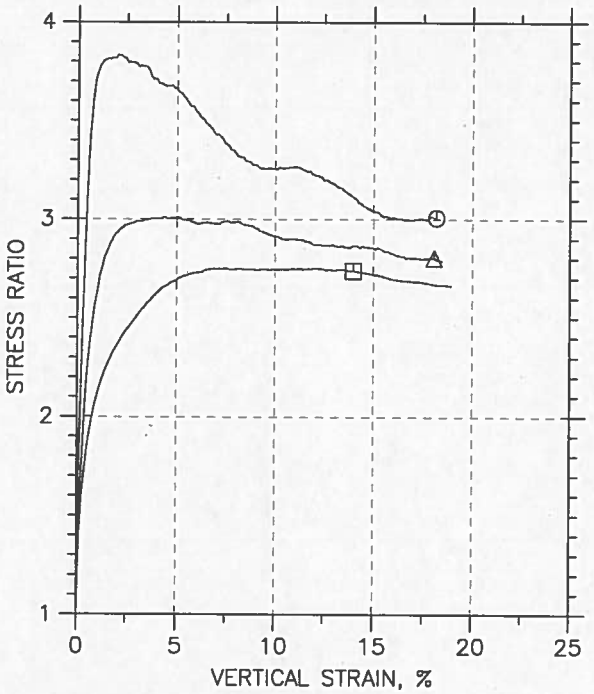
Boring No.:

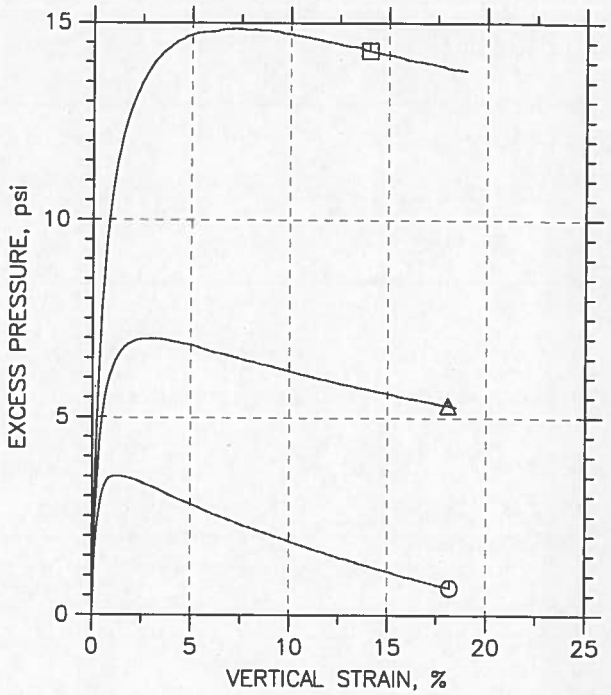
Sample Type: REMOLD

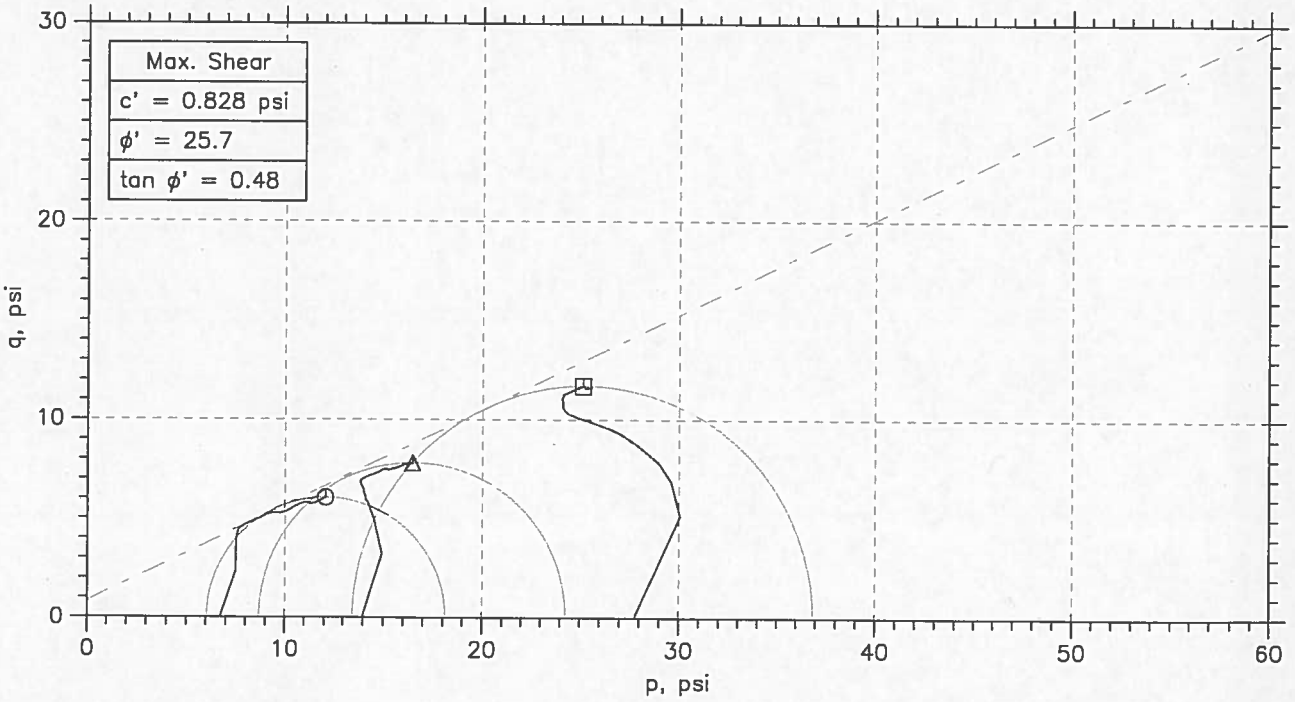
Description: BORROW, B-101, 102, 104, & 105

Remarks:

CONSOLIDATED UNDRAINED TRIAXIAL TEST







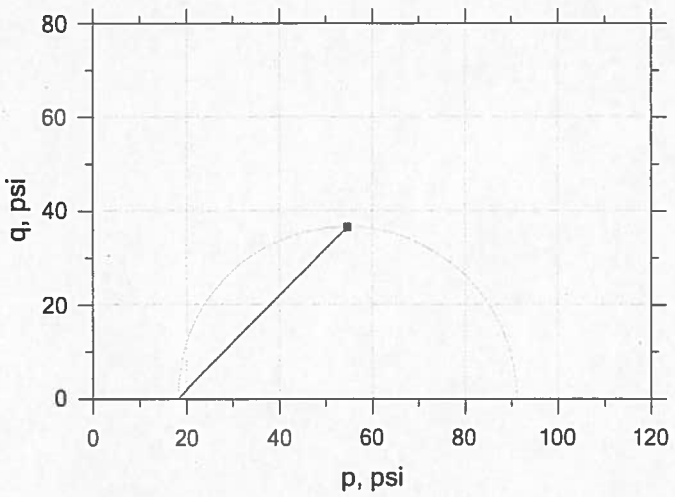
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	19-COMP2	1	4-10'	SKK	4/24/19	SKK		19-COMP2TXB-07eng.dat
△	19-COMP2	2	4-10'	SKK	4/24/19	SKK		19-COMP2TXB-14eng.dat
⊡	19-COMP2	3	4-10'	SKK	4/24/19	SKK		19-COMP2TXB-28eng.dat

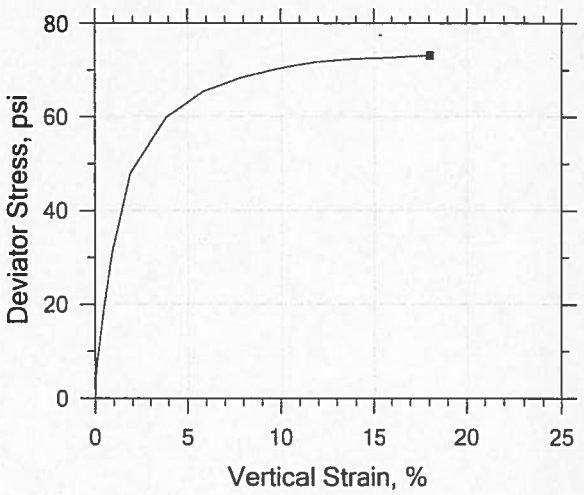
Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-COMP2
Boring No.:	Sample Type: REMOLD	
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

ATTACHMENT 3

UU SHEAR TEST DATA

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-249
Depth, ft		20-22.5'
Test Number		1
Initial	Height, in	3.007
	Diameter, in	1.401
	Moisture Content (from Cuttings), %	18.0
	Dry Density, pcf	111.
	Saturation (Wet Method), %	91.3
	Void Ratio	0.539
Final	Moisture Content, %	19.3
	Dry Density, pcf	112.
	Cross-Sectional Area (Method A), in²	1.533
	Saturation, %	100.0
	Void Ratio	0.527
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		17.97
Horizontal Effective Consolidation Stress, psi		17.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		36.56
Strain at Failure, %		18.1
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		73.12
Effective Minor Principal Stress at Failure, psi		18.08
Effective Major Principal Stress at Failure, psi		91.21
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-04P	Tested By: SKK	Checked By: SKK
Sample No.: 19-249	Test Date: 3/20/19	Depth: 20-22.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

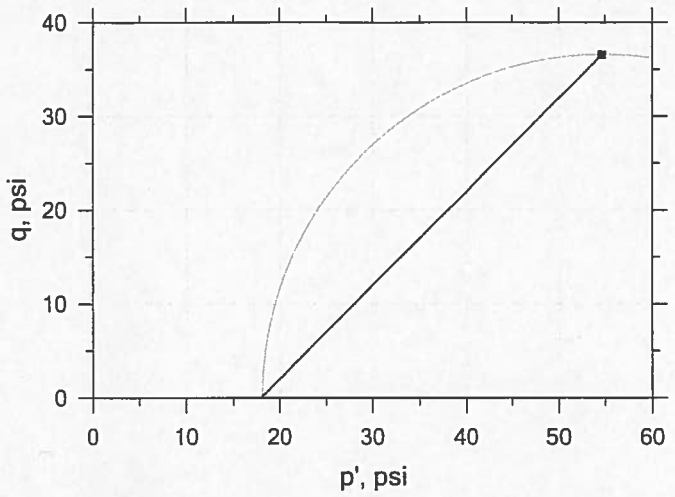
Shear Phase

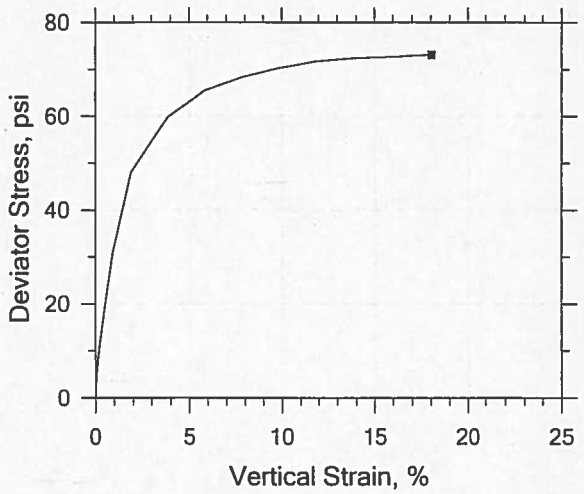
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5333	-0.041236	-0.026894	17.967	17.994	0.00000
0.017667	0.0068211	0.00000	1.5334	2.5118	1.6378	19.616	17.978	0.00000
0.035383	0.013642	0.00000	1.5335	4.5345	2.9563	20.926	17.970	0.00000
0.087717	0.042632	0.00000	1.5339	8.1375	5.3030	23.289	17.986	0.00000
0.17080	0.11596	0.00000	1.5351	12.805	8.3361	26.306	17.970	0.00000
0.50127	0.44508	0.00000	1.5401	28.290	18.348	36.309	17.962	0.00000
1.0036	0.91744	0.00000	1.5475	48.280	31.156	49.126	17.970	0.00000
2.0002	1.8877	0.00000	1.5628	75.199	48.031	66.026	17.994	-0.0081505
4.0041	3.8693	0.00000	1.5950	95.842	59.914	77.916	18.002	-0.016301
6.0018	5.8474	0.00000	1.6285	106.97	65.428	83.430	18.002	-0.024451
8.0015	7.8375	0.00000	1.6637	114.28	68.353	86.331	17.978	-0.032602
10.002	9.8207	0.00000	1.7002	120.12	70.232	88.234	18.002	-0.040752
12.002	11.809	0.00000	1.7386	125.50	71.693	89.711	18.018	-0.048903
14.000	13.814	0.00000	1.7790	129.77	72.379	90.365	17.986	-0.057054
16.003	15.827	0.00000	1.8216	133.55	72.688	90.699	18.010	-0.065204
18.002	17.817	0.00000	1.8657	137.60	73.059	91.069	18.010	-0.065204
18.250	18.054	0.00000	1.8711	138.12	73.122	91.132	18.010	-0.073354

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-04P	Tested By: SKK	Checked By: SKK
Sample No.: 19-249	Test Date: 3/20/19	Depth: 20-22.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





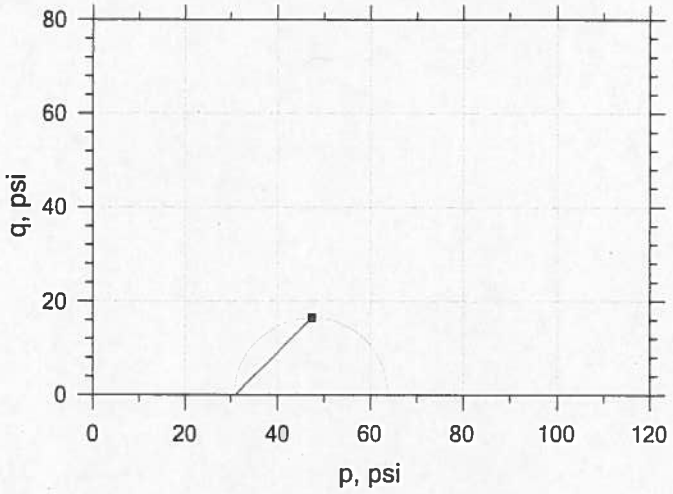
	Symbol	■
	Sample ID	19-249
	Depth, ft	20-22.5'
	Test Number	1
Initial	Height, in	3.007
	Diameter, in	1.401
	Moisture Content (from Cuttings), %	18.0
	Dry Density, pcf	111.
	Saturation (Wet Method), %	91.3
	Void Ratio	0.539
Final	Moisture Content, %	19.3
	Dry Density, pcf	112.
	Cross-Sectional Area (Method A), in²	1.533
	Saturation, %	100.0
	Void Ratio	0.527
	Back Pressure, %	0.0000
	Vertical Effective Consolidation Stress, psi	17.97
	Horizontal Effective Consolidation Stress, psi	17.99
	Vertical Strain after Consolidation, %	0.0000
	Volumetric Strain after Consolidation, %	0.0000
	Time to 50% Consolidation, min	0.0000
	Shear Strength, psi	36.56
	Strain at Failure, %	18.1
	Strain Rate, %/min	1.000
	Deviator Stress at Failure, psi	73.12
	Effective Minor Principal Stress at Failure, psi	18.08
	Effective Major Principal Stress at Failure, psi	91.21
	B-Value	---

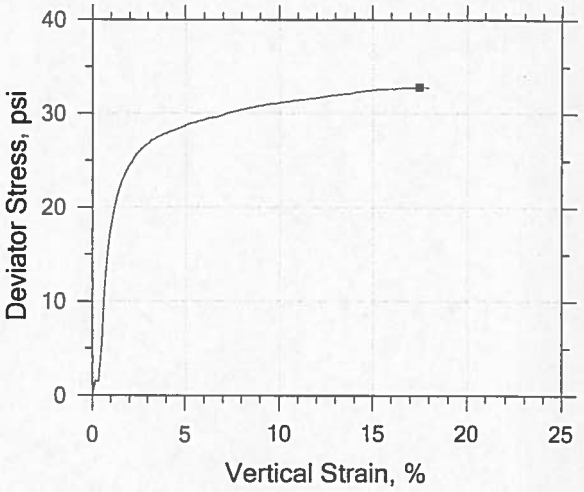
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-04P	Tested By: SKK	Checked By: SKK
Sample No.: 19-249	Test Date: 3/20/19	Depth: 20-22.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





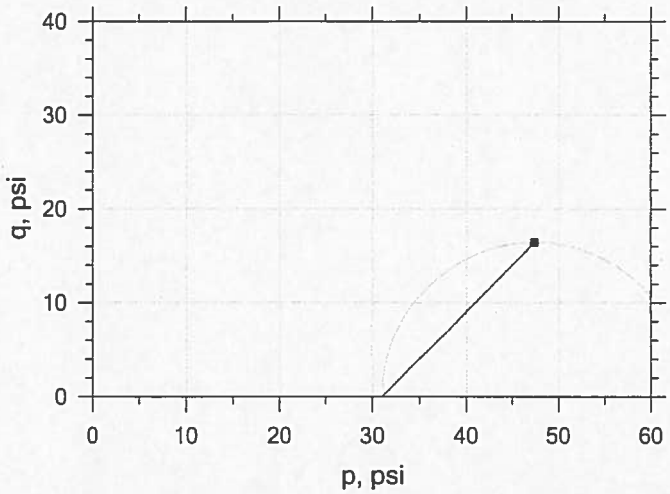
Symbol		■
Sample ID		19-250
Depth, ft		35-37.5'
Test Number		1
Initial	Height, in	3.022
	Diameter, in	1.387
	Moisture Content (from Cuttings), %	19.9
	Dry Density, pcf	109.
	Saturation (Wet Method), %	95.9
	Void Ratio	0.565
Final	Moisture Content, %	20.8
	Dry Density, pcf	108.
	Cross-Sectional Area (Method A), in²	1.512
	Saturation, %	100.0
	Void Ratio	0.567
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		30.98
Horizontal Effective Consolidation Stress, psi		30.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		16.43
Strain at Failure, %		17.5
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		32.85
Effective Minor Principal Stress at Failure, psi		31.37
Effective Major Principal Stress at Failure, psi		64.23
B-Value		---

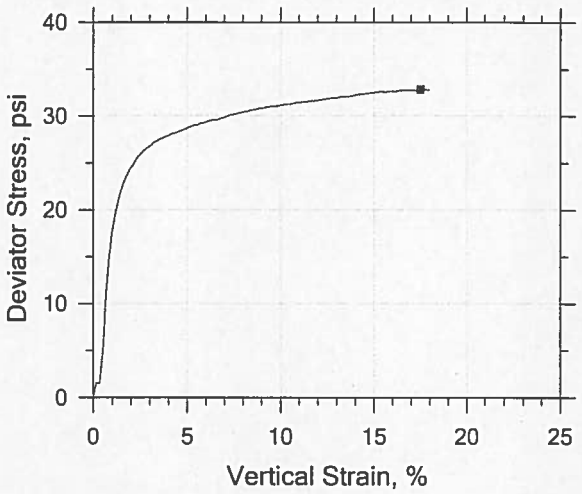
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-04P	Tested By: SKK	Checked By: SKK
Sample No.: 19-250	Test Date: 3/21/19	Depth: 35-37.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-250
Depth, ft		35-37.5'
Test Number		1
Initial	Height, in	3.022
	Diameter, in	1.387
	Moisture Content (from Cuttings), %	19.9
	Dry Density, pcf	109.
	Saturation (Wet Method), %	95.9
	Void Ratio	0.565
Final	Moisture Content, %	20.8
	Dry Density, pcf	108.
	Cross-Sectional Area (Method A), in²	1.512
	Saturation, %	100.0
	Void Ratio	0.567
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		30.98
Horizontal Effective Consolidation Stress, psi		30.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		16.43
Strain at Failure, %		17.5
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		32.85
Effective Minor Principal Stress at Failure, psi		31.37
Effective Major Principal Stress at Failure, psi		64.23
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-04P	Tested By: SKK	Checked By: SKK
Sample No.: 19-250	Test Date: 3/21/19	Depth: 35-37.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5124	-0.0087357	-0.0057762	30.984	30.989	0.00000
0.17062	0.15054	0.00000	1.5146	2.4128	1.5858	32.591	31.006	-0.0081505
0.33388	0.33153	0.00000	1.5174	2.3195	1.5129	32.519	31.006	-0.0081505
0.50075	0.50405	0.00000	1.5200	8.5173	5.5796	36.537	30.957	-0.016301
0.66775	0.64614	0.00000	1.5222	16.907	11.076	42.057	30.981	-0.016301
0.83572	0.81021	0.00000	1.5247	22.496	14.716	45.730	31.014	-0.024451
1.0028	0.95398	0.00000	1.5269	26.607	17.380	48.362	30.981	-0.024451
1.1704	1.1316	0.00000	1.5297	29.718	19.374	50.348	30.973	-0.032602
1.3344	1.2821	0.00000	1.5320	31.949	20.794	51.800	31.006	-0.032602
1.5029	1.4513	0.00000	1.5346	33.944	22.051	53.032	30.981	-0.040752
1.6698	1.6187	0.00000	1.5372	35.400	22.953	53.958	31.006	-0.040752
1.8336	1.7760	0.00000	1.5397	36.585	23.678	54.668	30.989	-0.048903
2.0015	1.9350	0.00000	1.5422	37.642	24.318	55.307	30.989	-0.048903
2.1691	2.1059	0.00000	1.5449	38.449	24.790	55.787	30.997	-0.057054
2.3368	2.2496	0.00000	1.5472	39.257	25.269	56.267	30.997	-0.057054
2.5046	2.4069	0.00000	1.5497	40.035	25.723	56.720	30.997	-0.065204
2.6680	2.5693	0.00000	1.5522	40.625	26.053	57.051	30.997	-0.065204
2.8360	2.7114	0.00000	1.5545	41.152	26.347	57.353	31.006	-0.073354
3.0042	2.9008	0.00000	1.5575	41.714	26.648	57.645	30.997	-0.073354
3.1675	3.0480	0.00000	1.5599	42.118	26.860	57.857	30.997	-0.081505
3.3352	3.2002	0.00000	1.5624	42.709	27.189	58.186	30.997	-0.081505
3.5015	3.3728	0.00000	1.5651	43.051	27.351	58.348	30.997	-0.089655
3.6685	3.5351	0.00000	1.5678	43.422	27.534	58.540	31.006	-0.089655
3.8365	3.7060	0.00000	1.5706	43.764	27.695	58.701	31.006	-0.097806
4.0036	3.8667	0.00000	1.5732	44.075	27.839	58.845	31.006	-0.097806
4.1709	4.0257	0.00000	1.5758	44.362	27.968	58.941	30.973	-0.10596
4.3336	4.1847	0.00000	1.5784	44.704	28.131	59.105	30.973	-0.10596
4.5018	4.3555	0.00000	1.5812	44.914	28.207	59.212	31.006	-0.10596
4.6680	4.5314	0.00000	1.5841	45.194	28.323	59.329	31.006	-0.11411
4.8357	4.7039	0.00000	1.5870	45.505	28.460	59.466	31.006	-0.12226
5.0031	4.8765	0.00000	1.5899	45.847	28.616	59.622	31.006	-0.12226
5.1704	5.0253	0.00000	1.5924	46.127	28.740	59.746	31.006	-0.12226
5.3334	5.1691	0.00000	1.5948	46.407	28.866	59.871	31.006	-0.13041
5.5012	5.3602	0.00000	1.5980	46.780	29.032	60.038	31.006	-0.13041
5.6685	5.5260	0.00000	1.6008	46.900	29.050	60.071	31.022	-0.13856
5.8362	5.6985	0.00000	1.6037	47.277	29.224	60.229	31.006	-0.13856
6.0035	5.8558	0.00000	1.6064	47.398	29.243	60.265	31.022	-0.14671
6.1706	6.0182	0.00000	1.6092	47.681	29.361	60.367	31.006	-0.14671
6.3375	6.1772	0.00000	1.6119	47.992	29.498	60.503	31.006	-0.15486
6.5003	6.3599	0.00000	1.6151	48.212	29.568	60.565	30.997	-0.15486
6.6680	6.5409	0.00000	1.6182	48.365	29.598	60.603	31.006	-0.16301
6.8357	6.7066	0.00000	1.6211	48.583	29.672	60.678	31.006	-0.16301
7.0030	6.8775	0.00000	1.6240	48.925	29.821	60.826	31.006	-0.17116
7.1701	7.0314	0.00000	1.6267	49.111	29.879	60.885	31.006	-0.17116
7.3339	7.1904	0.00000	1.6295	49.453	30.031	61.037	31.006	-0.17116
7.5017	7.3612	0.00000	1.6325	49.764	30.159	61.164	31.006	-0.17931
7.6680	7.5456	0.00000	1.6358	49.920	30.186	61.191	31.006	-0.17931
7.8357	7.6927	0.00000	1.6384	50.169	30.283	61.288	31.006	-0.18746
8.0028	7.8585	0.00000	1.6413	50.383	30.352	61.373	31.022	-0.18746
8.1698	8.0378	0.00000	1.6445	50.664	30.456	61.470	31.014	-0.19561

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-04P	Tested By: SKK	Checked By: SKK
Sample No.: 19-250	Test Date: 3/21/19	Depth: 35-37.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3334	8.1934	0.00000	1.6473	50.821	30.493	61.499	31.006	-0.19561
8.5008	8.3575	0.00000	1.6503	51.101	30.601	61.607	31.006	-0.19561
8.6685	8.5351	0.00000	1.6535	51.323	30.668	61.657	30.989	-0.20376
8.8362	8.6856	0.00000	1.6562	51.476	30.704	61.701	30.997	-0.20376
9.0043	8.8632	0.00000	1.6594	51.784	30.821	61.835	31.014	-0.21191
9.1672	8.9969	0.00000	1.6619	51.879	30.828	61.833	31.006	-0.21191
9.3355	9.1728	0.00000	1.6651	52.127	30.910	61.915	31.006	-0.21191
9.5021	9.3351	0.00000	1.6681	52.376	30.997	62.002	31.006	-0.22006
9.6701	9.4975	0.00000	1.6711	52.559	31.044	62.065	31.022	-0.22006
9.8334	9.6548	0.00000	1.6740	52.744	31.093	62.123	31.030	-0.22821
10.001	9.8172	0.00000	1.6770	52.841	31.088	62.102	31.014	-0.22821
10.169	10.005	0.00000	1.6805	53.060	31.146	62.152	31.006	-0.23636
10.336	10.154	0.00000	1.6833	53.248	31.200	62.197	30.997	-0.23636
10.504	10.331	0.00000	1.6866	53.528	31.297	62.294	30.997	-0.23636
10.667	10.507	0.00000	1.6899	53.618	31.281	62.294	31.014	-0.23636
10.835	10.648	0.00000	1.6926	53.830	31.351	62.389	31.038	-0.24451
11.002	10.837	0.00000	1.6962	54.086	31.428	62.433	31.006	-0.24451
11.170	10.988	0.00000	1.6990	54.209	31.440	62.454	31.014	-0.25267
11.338	11.148	0.00000	1.7021	54.430	31.507	62.504	30.997	-0.25267
11.501	11.319	0.00000	1.7054	54.552	31.511	62.516	31.006	-0.26082
11.669	11.490	0.00000	1.7087	54.739	31.552	62.558	31.006	-0.26082
11.837	11.649	0.00000	1.7118	54.957	31.616	62.621	31.006	-0.26082
12.001	11.820	0.00000	1.7151	55.112	31.638	62.644	31.006	-0.26897
12.168	11.991	0.00000	1.7184	55.330	31.696	62.702	31.006	-0.26897
12.336	12.150	0.00000	1.7215	55.487	31.724	62.721	30.997	-0.26897
12.504	12.321	0.00000	1.7249	55.763	31.815	62.829	31.014	-0.27712
12.667	12.486	0.00000	1.7281	55.920	31.839	62.845	31.006	-0.27712
12.835	12.652	0.00000	1.7314	56.138	31.898	62.903	31.006	-0.28527
13.003	12.814	0.00000	1.7346	56.356	31.957	62.963	31.006	-0.28527
13.170	12.977	0.00000	1.7379	56.449	31.944	62.950	31.006	-0.28527
13.334	13.153	0.00000	1.7414	56.758	32.050	63.064	31.014	-0.29342
13.502	13.320	0.00000	1.7448	56.946	32.089	63.095	31.006	-0.29342
13.669	13.486	0.00000	1.7481	57.074	32.094	63.084	30.989	-0.29342
13.837	13.669	0.00000	1.7518	57.256	32.123	63.136	31.014	-0.30157
14.000	13.828	0.00000	1.7550	57.437	32.160	63.198	31.038	-0.30157
14.167	14.002	0.00000	1.7586	57.724	32.251	63.257	31.006	-0.30157
14.335	14.169	0.00000	1.7620	57.943	32.306	63.303	30.997	-0.30972
14.502	14.325	0.00000	1.7652	58.159	32.363	63.369	31.006	-0.30972
14.669	14.499	0.00000	1.7688	58.344	32.395	63.409	31.014	-0.31787
14.837	14.665	0.00000	1.7723	58.510	32.419	63.384	30.965	-0.31787
15.003	14.839	0.00000	1.7759	58.750	32.481	63.487	31.006	-0.31787
15.171	14.986	0.00000	1.7790	58.841	32.470	63.484	31.014	-0.31787
15.334	15.130	0.00000	1.7820	59.092	32.550	63.556	31.006	-0.32602
15.502	15.309	0.00000	1.7857	59.339	32.612	63.626	31.014	-0.32602
15.669	15.500	0.00000	1.7898	59.432	32.583	63.597	31.014	-0.33417
15.838	15.678	0.00000	1.7936	59.587	32.594	63.608	31.014	-0.33417
16.001	15.829	0.00000	1.7968	59.812	32.655	63.637	30.981	-0.33417
16.168	15.993	0.00000	1.8003	59.962	32.668	63.674	31.006	-0.34232
16.335	16.150	0.00000	1.8036	60.017	32.631	63.669	31.038	-0.34232
16.503	16.312	0.00000	1.8071	60.304	32.721	63.726	31.006	-0.34232

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-04P	Tested By: SKK	Checked By: SKK
Sample No.: 19-250	Test Date: 3/21/19	Depth: 35-37.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

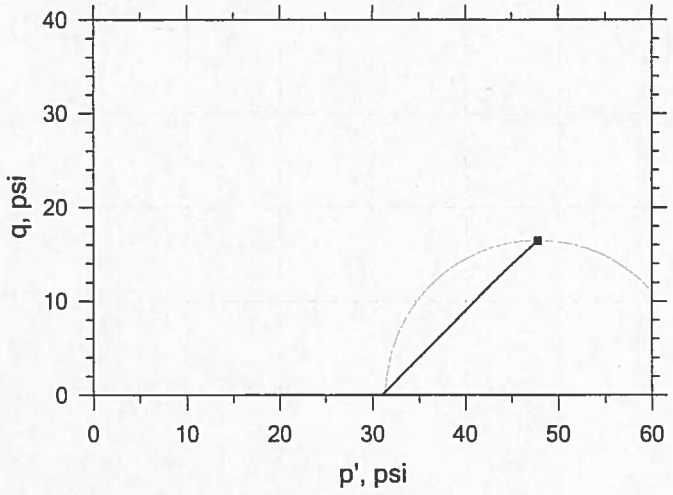
Shear Phase

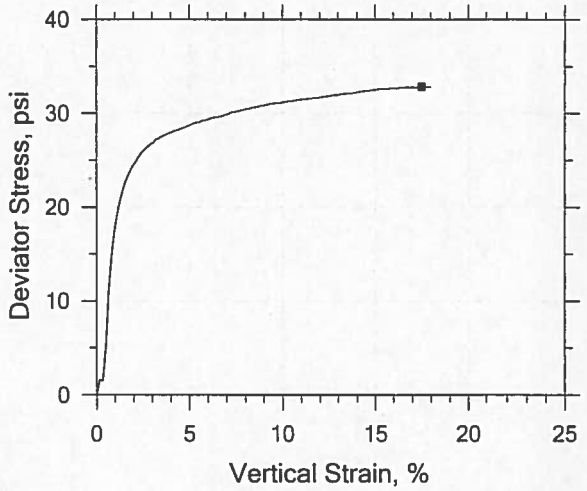
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.671	16.468	0.00000	1.8105	60.427	32.721	63.735	31.014	-0.35047
16.834	16.642	0.00000	1.8143	60.608	32.746	63.784	31.038	-0.35047
17.002	16.828	0.00000	1.8184	60.769	32.754	63.768	31.014	-0.35047
17.169	16.986	0.00000	1.8218	60.893	32.754	63.768	31.014	-0.35862
17.336	17.158	0.00000	1.8256	61.019	32.748	63.754	31.006	-0.35862
17.503	17.299	0.00000	1.8287	61.144	32.755	63.761	31.006	-0.35862
17.671	17.500	0.00000	1.8332	61.486	32.854	63.860	31.006	-0.36677
17.834	17.642	0.00000	1.8363	61.515	32.808	63.822	31.014	-0.36677
18.001	17.809	0.00000	1.8401	61.703	32.837	63.843	31.006	-0.36677
18.169	17.989	0.00000	1.8441	61.766	32.792	63.798	31.006	-0.37492
18.174	17.990	0.00000	1.8441	61.767	32.792	63.790	30.997	-0.37492

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-04P	Tested By: SKK	Checked By: SKK
Sample No.: 19-250	Test Date: 3/21/19	Depth: 35-37.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





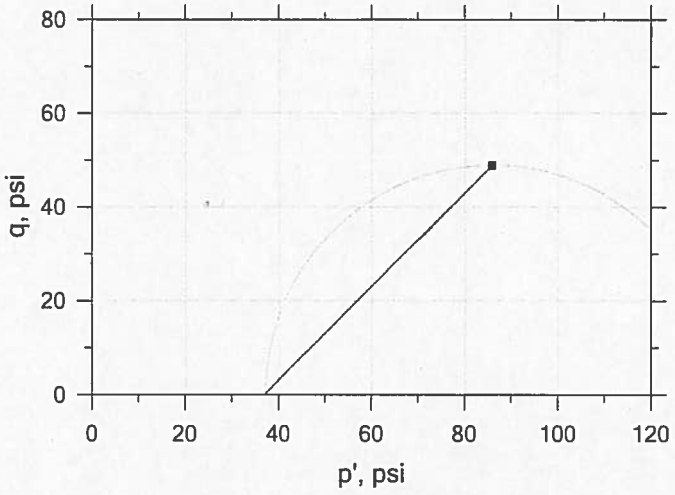
Symbol		■
Sample ID		19-250
Depth, ft		35-37.5'
Test Number		1
Initial	Height, in	3.022
	Diameter, in	1.387
	Moisture Content (from Cuttings), %	19.9
	Dry Density, pcf	109.
	Saturation (Wet Method), %	95.9
	Void Ratio	0.565
Final	Moisture Content, %	20.8
	Dry Density, pcf	108.
	Cross-Sectional Area (Method A), in²	1.512
	Saturation, %	100.0
	Void Ratio	0.567
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		30.98
Horizontal Effective Consolidation Stress, psi		30.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		16.43
Strain at Failure, %		17.5
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		32.85
Effective Minor Principal Stress at Failure, psi		31.37
Effective Major Principal Stress at Failure, psi		64.23
B-Value		---

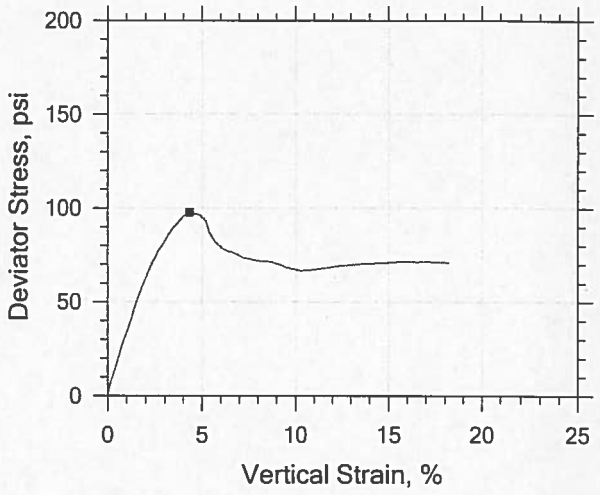
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-04P	Tested By: SKK	Checked By: SKK
Sample No.: 19-250	Test Date: 3/21/19	Depth: 35-37.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-251
Depth, ft		43-45.5'
Test Number		1
Initial	Height, in	3.046
	Diameter, in	1.396
	Moisture Content (from Cuttings), %	24.4
	Dry Density, pcf	98.0
	Saturation (Wet Method), %	90.6
	Void Ratio	0.733
Final	Moisture Content, %	24.4
	Dry Density, pcf	102.
	Cross-Sectional Area (Method A), in²	1.489
	Saturation, %	100.0
	Void Ratio	0.663
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		36.97
Horizontal Effective Consolidation Stress, psi		36.98
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		48.87
Strain at Failure, %		4.36
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		97.74
Effective Minor Principal Stress at Failure, psi		37.06
Effective Major Principal Stress at Failure, psi		134.8
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-04P	Tested By: SKK	Checked By: SKK
Sample No.: 19-251	Test Date: 3/21/19	Depth: 43-45.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.4890	-0.021887	-0.014699	36.970	36.985	0.00000
0.17080	0.12763	0.00000	1.4909	10.225	6.8522	43.756	36.904	0.00000
0.33747	0.29951	0.00000	1.4934	18.258	12.211	49.204	36.993	-0.0081505
0.50462	0.46288	0.00000	1.4959	25.857	17.263	54.199	36.936	-0.0081505
0.66717	0.61433	0.00000	1.4982	33.247	22.163	59.139	36.977	-0.016301
0.83460	0.75728	0.00000	1.5003	40.722	27.106	64.026	36.920	-0.016301
1.0016	0.91895	0.00000	1.5028	48.105	31.967	68.960	36.993	-0.024451
1.1692	1.0993	0.00000	1.5055	55.444	36.775	73.760	36.985	-0.024451
1.3367	1.2474	0.00000	1.5078	62.610	41.465	78.385	36.920	-0.032602
1.5048	1.3954	0.00000	1.5100	69.935	46.247	83.224	36.977	-0.032602
1.6679	1.5418	0.00000	1.5123	76.832	50.732	87.733	37.001	-0.040752
1.8354	1.7171	0.00000	1.5150	83.779	55.219	92.155	36.936	-0.040752
2.0035	1.8753	0.00000	1.5174	90.482	59.540	96.533	36.993	-0.048903
2.1708	2.0455	0.00000	1.5201	96.951	63.685	100.67	36.985	-0.048903
2.3346	2.1936	0.00000	1.5224	102.95	67.522	104.51	36.993	-0.048903
2.5046	2.3637	0.00000	1.5250	108.61	71.107	108.10	36.993	-0.057054
2.6677	2.5356	0.00000	1.5277	113.83	74.393	111.39	36.993	-0.057054
2.8354	2.6786	0.00000	1.5300	118.90	77.588	114.59	37.001	-0.065204
3.0032	2.8760	0.00000	1.5331	123.69	80.546	117.54	36.993	-0.065204
3.1711	3.0478	0.00000	1.5358	128.29	83.390	120.39	37.001	-0.073354
3.3349	3.1806	0.00000	1.5379	132.08	85.735	122.74	37.009	-0.073354
3.5022	3.3490	0.00000	1.5406	136.00	88.121	125.13	37.009	-0.081505
3.6695	3.5107	0.00000	1.5431	139.53	90.259	127.30	37.041	-0.081505
3.8372	3.7115	0.00000	1.5464	142.96	92.279	129.28	37.001	-0.081505
4.0049	3.8732	0.00000	1.5490	146.10	94.143	131.15	37.009	-0.089655
4.1679	4.0297	0.00000	1.5515	148.87	95.769	132.75	36.985	-0.089655
4.3354	4.2118	0.00000	1.5544	151.29	97.136	134.14	37.009	-0.097806
4.5035	4.3599	0.00000	1.5569	152.48	97.745	134.70	36.960	-0.097806
4.6669	4.5284	0.00000	1.5596	152.36	97.481	134.47	36.985	-0.10596
4.8349	4.6985	0.00000	1.5624	151.69	96.876	133.90	37.025	-0.10596
5.0030	4.8704	0.00000	1.5652	151.19	96.374	133.42	37.041	-0.10596
5.1695	5.0219	0.00000	1.5677	149.33	95.027	132.04	37.017	-0.11411
5.3377	5.2006	0.00000	1.5707	146.88	93.277	130.29	37.009	-0.11411
5.5012	5.3639	0.00000	1.5734	137.93	87.424	124.39	36.969	-0.12226
5.6685	5.5358	0.00000	1.5762	133.35	84.352	121.36	37.009	-0.12226
5.8370	5.7026	0.00000	1.5790	130.02	82.082	119.14	37.058	-0.12226
6.0048	5.9068	0.00000	1.5824	127.32	80.191	117.21	37.017	-0.13041
6.1679	6.0684	0.00000	1.5852	125.35	78.806	115.86	37.050	-0.13041
6.3359	6.2369	0.00000	1.5880	123.84	77.703	114.71	37.009	-0.13856
6.5038	6.4054	0.00000	1.5909	123.25	77.186	114.19	37.001	-0.13856
6.6708	6.5824	0.00000	1.5939	122.78	76.738	113.75	37.009	-0.13856
6.8344	6.7440	0.00000	1.5967	121.75	75.950	113.00	37.050	-0.14671
7.0025	6.9261	0.00000	1.5998	121.05	75.358	112.33	36.969	-0.14671
7.1700	7.0963	0.00000	1.6027	119.39	74.178	111.19	37.017	-0.15486
7.3377	7.2512	0.00000	1.6054	118.52	73.507	110.51	37.001	-0.15486
7.5015	7.4179	0.00000	1.6083	118.33	73.249	110.27	37.017	-0.15486
7.6690	7.6034	0.00000	1.6115	118.09	72.946	109.92	36.977	-0.16301
7.8367	7.7702	0.00000	1.6144	117.64	72.528	109.43	36.904	-0.16301
8.0038	7.9370	0.00000	1.6173	117.25	72.144	109.15	37.009	-0.17116
8.1711	8.0969	0.00000	1.6202	117.15	71.954	108.96	37.009	-0.17116

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-04P	Tested By: SKK	Checked By: SKK
Sample No.: 19-251	Test Date: 3/21/19	Depth: 43-45.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3338	8.2824	0.00000	1.6234	117.00	71.704	108.72	37.017	-0.17116
8.5017	8.4441	0.00000	1.6263	117.25	71.724	108.73	37.009	-0.17931
8.6692	8.6262	0.00000	1.6295	117.28	71.593	108.60	37.009	-0.17931
8.8372	8.7844	0.00000	1.6324	116.87	71.214	108.22	37.009	-0.17931
9.0049	8.9478	0.00000	1.6353	116.32	70.737	107.75	37.009	-0.18746
9.1677	9.1095	0.00000	1.6382	115.55	70.136	107.10	36.969	-0.18746
9.3354	9.2762	0.00000	1.6412	114.57	69.407	106.42	37.009	-0.19561
9.5038	9.4447	0.00000	1.6443	113.73	68.760	105.77	37.009	-0.19561
9.6711	9.6268	0.00000	1.6476	113.08	68.218	105.23	37.009	-0.19561
9.8338	9.7902	0.00000	1.6506	112.70	67.857	104.90	37.041	-0.20376
10.001	9.9501	0.00000	1.6535	112.40	67.546	104.56	37.009	-0.20376
10.169	10.139	0.00000	1.6570	111.81	67.040	104.05	37.009	-0.21191
10.336	10.292	0.00000	1.6598	111.37	66.658	103.66	37.001	-0.21191
10.504	10.462	0.00000	1.6630	111.71	66.729	103.74	37.009	-0.21191
10.667	10.622	0.00000	1.6659	112.12	66.846	103.85	37.001	-0.22006
10.835	10.777	0.00000	1.6688	112.59	67.003	104.00	37.001	-0.22006
11.003	10.978	0.00000	1.6726	113.33	67.289	104.30	37.009	-0.22006
11.171	11.141	0.00000	1.6757	113.89	67.493	104.50	37.009	-0.22821
11.335	11.298	0.00000	1.6786	114.54	67.757	104.76	37.001	-0.22821
11.503	11.468	0.00000	1.6818	115.14	67.971	104.97	37.001	-0.23636
11.670	11.637	0.00000	1.6851	115.79	68.221	105.23	37.009	-0.23636
11.837	11.812	0.00000	1.6884	116.35	68.411	105.41	37.001	-0.23636
12.005	11.957	0.00000	1.6912	117.01	68.682	105.66	36.977	-0.23636
12.168	12.140	0.00000	1.6947	117.81	69.003	106.01	37.009	-0.24451
12.335	12.304	0.00000	1.6979	118.31	69.162	106.16	37.001	-0.24451
12.503	12.476	0.00000	1.7012	118.87	69.349	106.34	36.993	-0.24451
12.671	12.659	0.00000	1.7048	119.40	69.507	106.49	36.985	-0.25267
12.834	12.823	0.00000	1.7080	119.81	69.609	106.58	36.969	-0.25267
13.002	12.979	0.00000	1.7111	120.52	69.897	106.86	36.960	-0.26082
13.168	13.173	0.00000	1.7149	120.92	69.963	106.96	37.001	-0.26082
13.336	13.332	0.00000	1.7180	121.45	70.136	107.14	37.009	-0.26082
13.505	13.490	0.00000	1.7212	121.73	70.164	107.17	37.009	-0.26897
13.668	13.663	0.00000	1.7246	122.28	70.340	107.35	37.009	-0.26897
13.835	13.844	0.00000	1.7282	122.72	70.438	107.45	37.009	-0.26897
14.003	14.029	0.00000	1.7320	123.22	70.566	107.57	37.009	-0.27712
14.170	14.174	0.00000	1.7349	123.50	70.602	107.61	37.009	-0.27712
14.337	14.324	0.00000	1.7379	124.00	70.761	107.75	36.993	-0.27712
14.501	14.502	0.00000	1.7415	124.43	70.854	107.86	37.009	-0.28527
14.668	14.696	0.00000	1.7455	124.71	70.847	107.85	37.001	-0.28527
14.836	14.873	0.00000	1.7491	125.21	70.976	107.98	37.009	-0.28527
15.005	15.035	0.00000	1.7525	125.55	71.031	108.03	37.001	-0.28527
15.167	15.197	0.00000	1.7558	126.02	71.157	108.14	36.985	-0.29342
15.335	15.374	0.00000	1.7595	126.39	71.210	108.22	37.009	-0.29342
15.502	15.518	0.00000	1.7625	126.98	71.419	108.42	37.001	-0.29342
15.670	15.685	0.00000	1.7660	127.23	71.411	108.42	37.009	-0.30157
15.838	15.879	0.00000	1.7700	127.67	71.486	108.48	36.993	-0.30157
16.001	16.036	0.00000	1.7733	127.88	71.469	108.47	37.001	-0.30157
16.168	16.194	0.00000	1.7767	128.01	71.400	108.38	36.985	-0.30972
16.336	16.371	0.00000	1.7804	128.22	71.362	108.36	37.001	-0.30972
16.504	16.519	0.00000	1.7836	128.41	71.333	108.34	37.009	-0.30972

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-04P	Tested By: SKK	Checked By: SKK
Sample No.: 19-251	Test Date: 3/21/19	Depth: 43-45.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

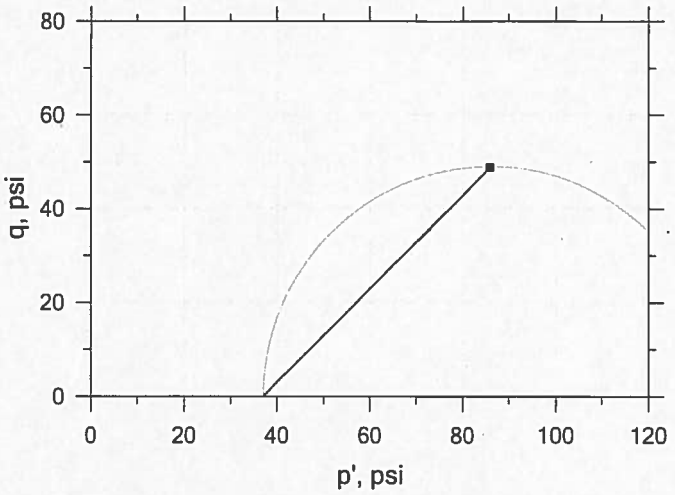
Shear Phase

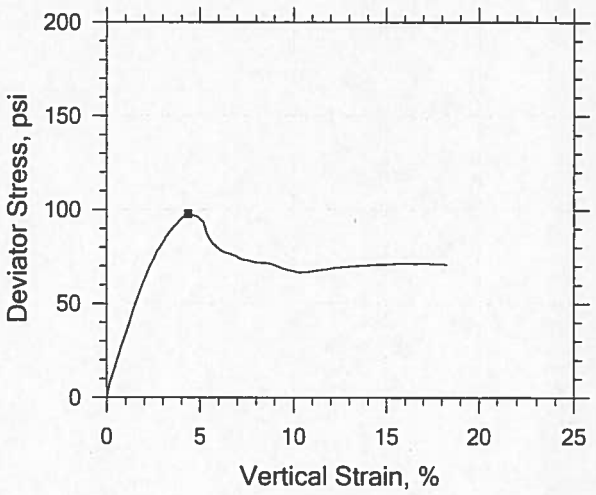
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.667	16.713	0.00000	1.7878	128.84	71.402	108.42	37.017	-0.31787
16.835	16.863	0.00000	1.7910	129.06	71.391	108.40	37.009	-0.31787
17.002	17.026	0.00000	1.7945	129.31	71.382	108.39	37.009	-0.31787
17.169	17.208	0.00000	1.7985	129.56	71.357	108.37	37.009	-0.32602
17.337	17.385	0.00000	1.8023	129.66	71.250	108.25	37.001	-0.32602
17.501	17.531	0.00000	1.8055	129.97	71.293	108.27	36.977	-0.32602
17.669	17.691	0.00000	1.8090	129.84	71.076	108.08	37.009	-0.32602
17.836	17.846	0.00000	1.8124	130.03	71.039	108.05	37.009	-0.33417
18.004	18.035	0.00000	1.8166	130.28	71.006	108.01	37.001	-0.33417
18.171	18.195	0.00000	1.8202	130.40	70.929	107.94	37.009	-0.33417
18.224	18.248	0.00000	1.8213	130.12	70.726	107.74	37.017	-0.33417

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-04P	Tested By: SKK	Checked By: SKK
Sample No.: 19-251	Test Date: 3/21/19	Depth: 43-45.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





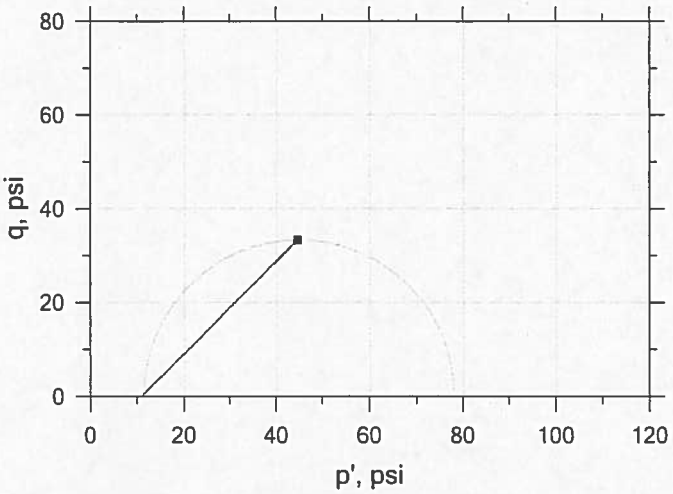
	Symbol	■
	Sample ID	19-251
	Depth, ft	43-45.5'
	Test Number	1
Initial	Height, in	3.046
	Diameter, in	1.396
	Moisture Content (from Cuttings), %	24.4
	Dry Density, pcf	98.0
	Saturation (Wet Method), %	90.6
	Void Ratio	0.733
Final	Moisture Content, %	24.4
	Dry Density, pcf	102.
	Cross-Sectional Area (Method A), in²	1.489
	Saturation, %	100.0
	Void Ratio	0.663
	Back Pressure, %	0.0000
	Vertical Effective Consolidation Stress, psi	36.97
	Horizontal Effective Consolidation Stress, psi	36.98
	Vertical Strain after Consolidation, %	0.0000
	Volumetric Strain after Consolidation, %	0.0000
	Time to 50% Consolidation, min	0.0000
	Shear Strength, psi	48.87
	Strain at Failure, %	4.36
	Strain Rate, %/min	1.000
	Deviator Stress at Failure, psi	97.74
	Effective Minor Principal Stress at Failure, psi	37.06
	Effective Major Principal Stress at Failure, psi	134.8
	B-Value	---

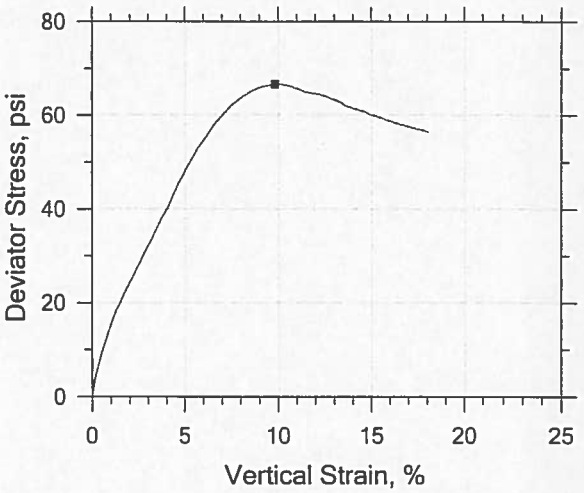
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-04P	Tested By: SKK	Checked By: SKK
Sample No.: 19-251	Test Date: 3/21/19	Depth: 43-45.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-254
Depth, ft		12-14'
Test Number		1
Initial	Height, in	3.029
	Diameter, in	1.390
	Moisture Content (from Cuttings), %	19.7
	Dry Density, pcf	103.
	Saturation (Wet Method), %	82.0
	Void Ratio	0.655
Final	Moisture Content, %	23.5
	Dry Density, pcf	104.
	Cross-Sectional Area (Method A), in²	1.508
	Saturation, %	100.0
	Void Ratio	0.639
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		10.97
Horizontal Effective Consolidation Stress, psi		10.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		33.31
Strain at Failure, %		9.83
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		66.63
Effective Minor Principal Stress at Failure, psi		11.32
Effective Major Principal Stress at Failure, psi		77.95
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-05	Tested By: SKK	Checked By: SKK
Sample No.: 19-254	Test Date: 3/21/19	Depth: 12-14'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5081	-0.022922	-0.015200	10.971	10.986	0.00000
0.17100	0.15920	0.00000	1.5105	6.0452	3.9946	14.956	10.962	0.00000
0.33402	0.31839	0.00000	1.5129	10.180	6.7140	17.676	10.962	-0.0081505
0.50160	0.47081	0.00000	1.5152	13.816	9.0961	20.066	10.970	-0.016301
0.66840	0.65203	0.00000	1.5180	17.114	11.243	22.205	10.962	-0.016301
0.83637	0.82139	0.00000	1.5206	20.252	13.280	24.250	10.970	-0.024451
1.0039	0.98058	0.00000	1.5230	23.238	15.212	26.174	10.962	-0.032602
1.1676	1.1245	0.00000	1.5252	25.907	16.933	27.919	10.986	-0.032602
1.3358	1.2922	0.00000	1.5278	28.329	18.481	29.483	11.002	-0.040752
1.5035	1.4785	0.00000	1.5307	30.543	19.884	30.854	10.970	-0.048903
1.6668	1.6157	0.00000	1.5328	32.652	21.226	32.220	10.994	-0.048903
1.8351	1.7647	0.00000	1.5352	34.676	22.506	33.484	10.978	-0.057054
2.0024	1.9239	0.00000	1.5376	36.663	23.754	34.748	10.994	-0.065204
2.1700	2.0865	0.00000	1.5402	38.654	25.000	35.986	10.986	-0.065204
2.3361	2.2406	0.00000	1.5426	40.520	26.162	37.148	10.986	-0.073354
2.5040	2.4015	0.00000	1.5452	42.541	27.420	38.406	10.986	-0.081505
2.6671	2.5522	0.00000	1.5476	44.342	28.535	39.529	10.994	-0.081505
2.8351	2.7063	0.00000	1.5500	46.427	29.827	40.813	10.986	-0.089655
3.0025	2.8723	0.00000	1.5527	48.415	31.049	42.043	10.994	-0.097806
3.1700	3.0264	0.00000	1.5551	50.469	32.313	43.299	10.986	-0.097806
3.3335	3.2009	0.00000	1.5579	52.519	33.563	44.557	10.994	-0.10596
3.5013	3.3533	0.00000	1.5604	54.664	34.878	45.872	10.994	-0.10596
3.6692	3.5108	0.00000	1.5629	56.808	36.186	47.188	11.002	-0.11411
3.8364	3.6734	0.00000	1.5656	59.112	37.589	48.575	10.986	-0.12226
4.0044	3.8529	0.00000	1.5685	61.254	38.876	49.878	11.002	-0.12226
4.1671	4.0460	0.00000	1.5717	63.430	40.174	51.176	11.002	-0.13041
4.3338	4.1950	0.00000	1.5741	65.638	41.507	52.510	11.002	-0.13856
4.5010	4.3610	0.00000	1.5768	67.909	42.868	53.862	10.994	-0.13856
4.6689	4.5185	0.00000	1.5794	70.115	44.187	55.189	11.002	-0.14671
4.8361	4.6692	0.00000	1.5819	72.322	45.506	56.508	11.002	-0.14671
5.0038	4.8555	0.00000	1.5850	74.530	46.801	57.803	11.002	-0.15486
5.1702	5.0164	0.00000	1.5877	76.551	47.988	58.990	11.002	-0.16301
5.3338	5.1857	0.00000	1.5905	78.696	49.243	60.245	11.002	-0.16301
5.5015	5.3415	0.00000	1.5932	80.560	50.325	61.335	11.010	-0.17116
5.6687	5.5058	0.00000	1.5959	82.644	51.537	62.539	11.002	-0.17116
5.8364	5.6633	0.00000	1.5986	84.601	52.668	63.678	11.010	-0.17931
6.0034	5.8479	0.00000	1.6017	86.469	53.722	64.725	11.002	-0.18746
6.1668	6.0224	0.00000	1.6047	88.118	54.643	65.637	10.994	-0.18746
6.3338	6.1866	0.00000	1.6075	89.890	55.643	66.637	10.994	-0.19561
6.5019	6.3560	0.00000	1.6104	91.690	56.652	67.662	11.010	-0.19561
6.6694	6.5067	0.00000	1.6130	93.274	57.536	68.555	11.018	-0.20376
6.8366	6.6710	0.00000	1.6159	94.984	58.486	69.504	11.018	-0.20376
7.0048	6.8454	0.00000	1.6189	96.482	59.294	70.288	10.994	-0.21191
7.1671	7.0148	0.00000	1.6218	97.815	60.001	71.011	11.010	-0.22006
7.3353	7.1791	0.00000	1.6247	99.188	60.733	71.719	10.986	-0.22006
7.5032	7.3400	0.00000	1.6275	100.42	61.379	72.406	11.027	-0.22821
7.6697	7.5161	0.00000	1.6306	101.86	62.135	73.137	11.002	-0.22821
7.8372	7.6736	0.00000	1.6334	102.85	62.630	73.641	11.010	-0.23636
8.0048	7.8430	0.00000	1.6364	103.95	63.176	74.162	10.986	-0.24451
8.1668	8.0055	0.00000	1.6393	104.97	63.681	74.684	11.002	-0.24451

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-05	Tested By: SKK	Checked By: SKK
Sample No.: 19-254	Test Date: 3/21/19	Depth: 12-14'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3345	8.1732	0.00000	1.6423	105.96	64.163	75.173	11.010	-0.25267
8.5022	8.3561	0.00000	1.6456	106.86	64.573	75.599	11.027	-0.25267
8.6700	8.4984	0.00000	1.6481	107.67	64.957	75.983	11.027	-0.26082
8.8335	8.6694	0.00000	1.6512	108.51	65.336	76.363	11.027	-0.26897
9.0017	8.8354	0.00000	1.6542	109.22	65.643	76.669	11.027	-0.26897
9.1694	8.9861	0.00000	1.6570	109.91	65.940	76.967	11.027	-0.27712
9.3374	9.1792	0.00000	1.6605	110.47	66.131	77.142	11.010	-0.27712
9.5005	9.3350	0.00000	1.6633	110.97	66.310	77.321	11.010	-0.28527
9.6687	9.5078	0.00000	1.6665	111.40	66.438	77.448	11.010	-0.28527
9.8366	9.6602	0.00000	1.6693	111.77	66.541	77.567	11.027	-0.29342
10.004	9.8346	0.00000	1.6726	112.14	66.628	77.654	11.027	-0.29342
10.168	10.016	0.00000	1.6759	112.30	66.581	77.591	11.010	-0.30157
10.336	10.153	0.00000	1.6785	112.52	66.602	77.621	11.018	-0.30157
10.504	10.339	0.00000	1.6820	112.55	66.472	77.507	11.035	-0.30972
10.668	10.483	0.00000	1.6847	112.52	66.342	77.369	11.027	-0.30972
10.835	10.649	0.00000	1.6878	112.55	66.232	77.250	11.018	-0.31787
11.003	10.825	0.00000	1.6911	112.33	65.964	76.990	11.027	-0.31787
11.171	10.998	0.00000	1.6944	112.14	65.719	76.745	11.027	-0.32602
11.334	11.154	0.00000	1.6974	111.86	65.432	76.459	11.027	-0.32602
11.502	11.325	0.00000	1.7007	111.56	65.118	76.128	11.010	-0.33417
11.670	11.486	0.00000	1.7038	111.43	64.921	75.924	11.002	-0.34232
11.837	11.652	0.00000	1.7070	111.53	64.846	75.856	11.010	-0.34232
12.003	11.818	0.00000	1.7102	111.52	64.716	75.735	11.018	-0.35047
12.171	11.996	0.00000	1.7136	111.59	64.616	75.626	11.010	-0.35047
12.335	12.151	0.00000	1.7167	111.53	64.459	75.469	11.010	-0.35047
12.502	12.316	0.00000	1.7199	111.53	64.331	75.341	11.010	-0.35862
12.670	12.477	0.00000	1.7230	111.40	64.134	75.145	11.010	-0.36677
12.834	12.654	0.00000	1.7265	111.15	63.852	74.863	11.010	-0.36677
13.005	12.819	0.00000	1.7298	110.90	63.581	74.599	11.018	-0.36677
13.168	12.985	0.00000	1.7331	110.78	63.384	74.378	10.994	-0.37492
13.336	13.162	0.00000	1.7366	110.47	63.067	74.069	11.002	-0.37492
13.504	13.325	0.00000	1.7399	110.19	62.781	73.791	11.010	-0.38307
13.667	13.496	0.00000	1.7433	109.72	62.382	73.392	11.010	-0.38307
13.835	13.665	0.00000	1.7468	109.19	61.950	72.961	11.010	-0.39122
14.003	13.826	0.00000	1.7500	109.04	61.740	72.750	11.010	-0.39122
14.171	13.997	0.00000	1.7535	108.85	61.504	72.514	11.010	-0.39937
14.334	14.158	0.00000	1.7568	108.82	61.364	72.375	11.010	-0.39937
14.504	14.345	0.00000	1.7606	108.51	61.047	72.057	11.010	-0.40753
14.667	14.487	0.00000	1.7635	108.48	60.922	71.932	11.010	-0.40753
14.835	14.634	0.00000	1.7666	108.35	60.741	71.751	11.010	-0.40753
15.002	14.826	0.00000	1.7706	107.99	60.388	71.382	10.994	-0.41568
15.170	15.012	0.00000	1.7744	107.70	60.089	71.099	11.010	-0.42383
15.334	15.180	0.00000	1.7779	107.54	59.875	70.893	11.018	-0.42383
15.501	15.340	0.00000	1.7813	107.39	59.669	70.679	11.010	-0.42383
15.669	15.501	0.00000	1.7847	107.27	59.479	70.489	11.010	-0.43198
15.836	15.691	0.00000	1.7887	107.08	59.233	70.251	11.018	-0.43198
16.004	15.826	0.00000	1.7916	106.83	58.993	70.012	11.018	-0.44013
16.170	15.991	0.00000	1.7951	106.64	58.769	69.779	11.010	-0.44013
16.334	16.184	0.00000	1.7992	106.49	58.537	69.564	11.027	-0.44828
16.501	16.341	0.00000	1.8026	106.24	58.283	69.310	11.027	-0.44828

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-05	Tested By: SKK	Checked By: SKK
Sample No.: 19-254	Test Date: 3/21/19	Depth: 12-14'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

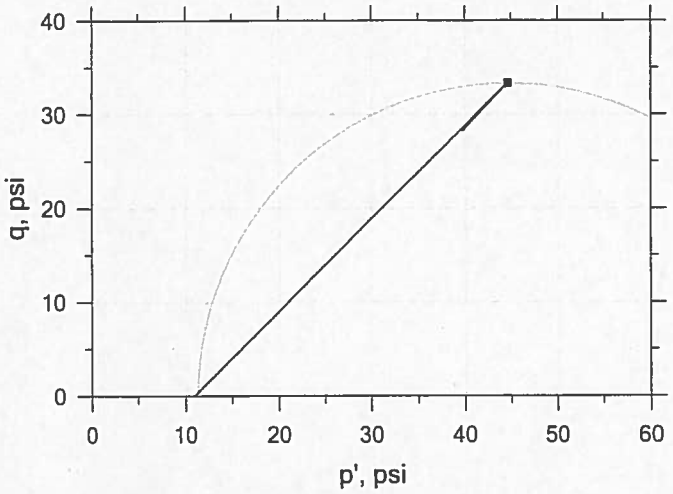
Shear Phase

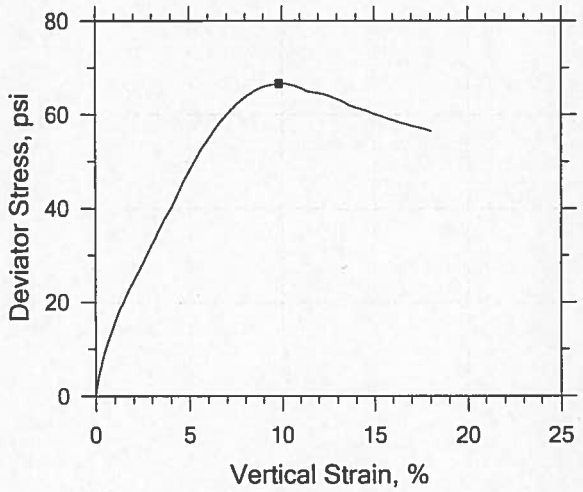
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.668	16.492	0.00000	1.8059	106.24	58.172	69.199	11.027	-0.45643
16.836	16.672	0.00000	1.8098	106.05	57.937	68.963	11.027	-0.45643
17.004	16.829	0.00000	1.8132	106.09	57.841	68.844	11.002	-0.45643
17.168	17.015	0.00000	1.8173	105.87	57.585	68.587	11.002	-0.46458
17.336	17.161	0.00000	1.8205	105.77	57.424	68.450	11.027	-0.46458
17.503	17.339	0.00000	1.8244	105.71	57.260	68.279	11.018	-0.47273
17.671	17.505	0.00000	1.8281	105.59	57.071	68.089	11.018	-0.47273
17.834	17.678	0.00000	1.8319	105.62	56.960	67.987	11.027	-0.48088
18.002	17.828	0.00000	1.8353	105.40	56.732	67.758	11.027	-0.48088
18.169	17.987	0.00000	1.8388	105.24	56.531	67.558	11.027	-0.48088
18.223	18.057	0.00000	1.8404	105.19	56.450	67.445	10.994	-0.48903

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-05	Tested By: SKK	Checked By: SKK
Sample No.: 19-254	Test Date: 3/21/19	Depth: 12-14'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





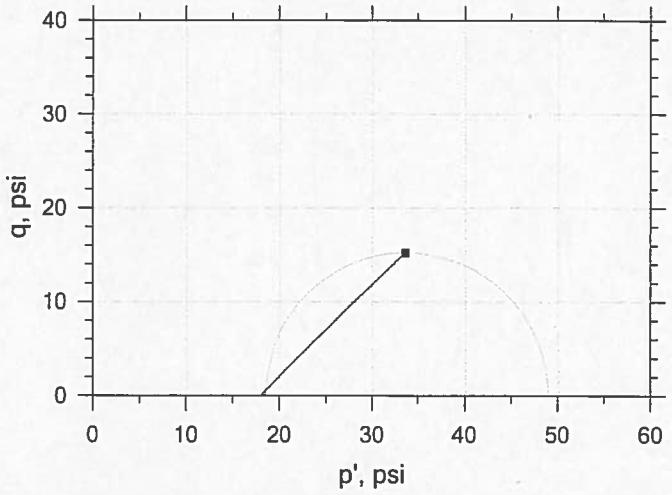
Symbol		■
Sample ID		19-254
Depth, ft		12-14'
Test Number		1
Initial	Height, in	3.029
	Diameter, in	1.390
	Moisture Content (from Cuttings), %	19.7
	Dry Density, pcf	103.
	Saturation (Wet Method), %	82.0
	Void Ratio	0.655
Final	Moisture Content, %	23.5
	Dry Density, pcf	104.
	Cross-Sectional Area (Method A), in²	1.508
	Saturation, %	100.0
	Void Ratio	0.639
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		10.97
Horizontal Effective Consolidation Stress, psi		10.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		33.31
Strain at Failure, %		9.83
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		66.63
Effective Minor Principal Stress at Failure, psi		11.32
Effective Major Principal Stress at Failure, psi		77.95
B-Value		---

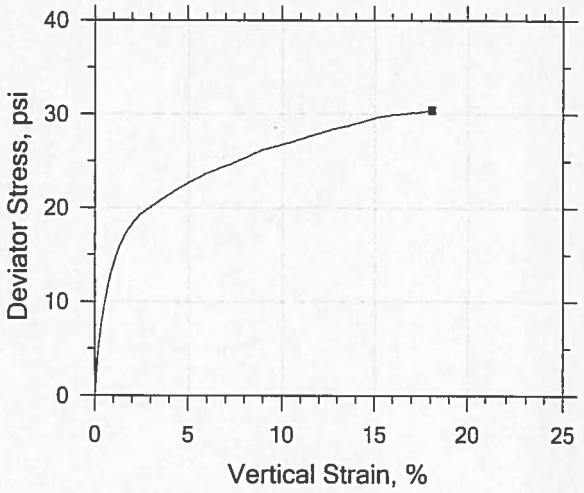
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-05	Tested By: SKK	Checked By: SKK
Sample No.: 19-254	Test Date: 3/21/19	Depth: 12-14'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-261
Depth, ft		20-22.5'
Test Number		1
Initial	Height, in	3.030
	Diameter, in	1.388
	Moisture Content (from Cuttings), %	26.3
	Dry Density, pcf	95.3
	Saturation (Wet Method), %	91.3
	Void Ratio	0.788
Final	Moisture Content, %	27.9
	Dry Density, pcf	96.8
	Cross-Sectional Area (Method A), in²	1.498
	Saturation, %	100.0
	Void Ratio	0.761
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		17.98
Horizontal Effective Consolidation Stress, psi		17.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		15.22
Strain at Failure, %		18.1
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		30.43
Effective Minor Principal Stress at Failure, psi		18.49
Effective Major Principal Stress at Failure, psi		48.92
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-06p	Tested By: SKK	Checked By: SKK
Sample No.: 19-261	Test Date: 3/22/19	Depth: 20-22.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.4979	-0.0083621	-0.0055827	17.980	17.986	0.00000
0.17052	0.17302	0.00000	1.5005	7.2741	4.8397	22.793	17.954	-0.0081505
0.33693	0.34095	0.00000	1.5030	11.502	7.6368	25.590	17.954	-0.016301
0.50458	0.50889	0.00000	1.5055	14.674	9.7224	27.676	17.954	-0.016301
0.67105	0.66664	0.00000	1.5079	17.313	11.450	29.420	17.970	-0.024451
0.83407	0.82609	0.00000	1.5103	19.361	12.780	30.766	17.986	-0.032602
1.0020	0.98894	0.00000	1.5128	21.137	13.925	31.895	17.970	-0.032602
1.1690	1.1518	0.00000	1.5153	22.690	14.919	32.897	17.978	-0.040752
1.3359	1.3028	0.00000	1.5176	24.089	15.811	33.789	17.978	-0.048903
1.5041	1.4860	0.00000	1.5205	25.208	16.509	34.487	17.978	-0.048903
1.6671	1.6352	0.00000	1.5228	26.201	17.130	35.116	17.986	-0.057054
1.8346	1.7760	0.00000	1.5249	27.041	17.649	35.635	17.986	-0.065204
2.0019	1.9881	0.00000	1.5282	27.880	18.150	36.136	17.986	-0.065204
2.1690	2.1204	0.00000	1.5303	28.561	18.564	36.566	18.002	-0.073354
2.3372	2.2900	0.00000	1.5330	29.190	18.934	36.904	17.970	-0.081505
2.5047	2.4342	0.00000	1.5352	29.746	19.262	37.248	17.986	-0.081505
2.6679	2.5970	0.00000	1.5378	30.150	19.485	37.471	17.986	-0.089655
2.8356	2.7667	0.00000	1.5405	30.620	19.748	37.718	17.970	-0.089655
3.0022	2.9074	0.00000	1.5427	30.989	19.953	37.939	17.986	-0.097806
3.1698	3.0754	0.00000	1.5454	31.425	20.192	38.178	17.986	-0.10596
3.3372	3.2416	0.00000	1.5480	31.825	20.409	38.411	18.002	-0.11411
3.5012	3.4028	0.00000	1.5506	32.231	20.629	38.623	17.994	-0.11411
3.6687	3.5809	0.00000	1.5535	32.760	20.923	38.917	17.994	-0.12226
3.8364	3.7386	0.00000	1.5560	33.071	21.081	39.075	17.994	-0.12226
4.0049	3.9116	0.00000	1.5588	33.537	21.335	39.329	17.994	-0.13041
4.1679	4.0830	0.00000	1.5616	33.879	21.508	39.502	17.994	-0.13856
4.3359	4.2306	0.00000	1.5640	34.285	21.727	39.713	17.986	-0.13856
4.5038	4.3985	0.00000	1.5668	34.689	21.940	39.926	17.986	-0.14671
4.6669	4.5698	0.00000	1.5696	35.092	22.149	40.143	17.994	-0.14671
4.8349	4.7293	0.00000	1.5722	35.434	22.322	40.316	17.994	-0.15486
5.0020	4.9057	0.00000	1.5751	35.838	22.529	40.523	17.994	-0.16301
5.1692	5.0702	0.00000	1.5779	36.242	22.739	40.733	17.994	-0.16301
5.3369	5.2348	0.00000	1.5806	36.522	22.869	40.863	17.994	-0.17116
5.5046	5.4044	0.00000	1.5834	36.926	23.076	41.070	17.994	-0.17931
5.6677	5.5706	0.00000	1.5862	37.237	23.224	41.218	17.994	-0.17931
5.8338	5.7233	0.00000	1.5888	37.579	23.395	41.389	17.994	-0.18746
6.0017	5.8912	0.00000	1.5916	37.952	23.580	41.574	17.994	-0.18746
6.1684	6.0558	0.00000	1.5944	38.292	23.745	41.747	18.002	-0.19561
6.3356	6.2491	0.00000	1.5977	38.574	23.863	41.857	17.994	-0.19561
6.5030	6.4137	0.00000	1.6005	38.854	23.989	41.983	17.994	-0.20376
6.6698	6.5969	0.00000	1.6036	39.196	24.147	42.141	17.994	-0.21191
6.8375	6.7716	0.00000	1.6067	39.538	24.307	42.301	17.994	-0.21191
7.0050	6.9429	0.00000	1.6096	39.817	24.429	42.423	17.994	-0.22006
7.1684	7.1075	0.00000	1.6125	40.097	24.552	42.546	17.994	-0.22006
7.3359	7.2771	0.00000	1.6154	40.375	24.671	42.674	18.002	-0.22821
7.5038	7.4399	0.00000	1.6183	40.688	24.814	42.808	17.994	-0.22821
7.6669	7.6028	0.00000	1.6211	41.030	24.974	42.968	17.994	-0.23636
7.8349	7.7571	0.00000	1.6238	41.310	25.098	43.092	17.994	-0.24451
8.0028	7.9336	0.00000	1.6269	41.621	25.233	43.227	17.994	-0.24451
8.1698	8.1032	0.00000	1.6299	41.932	25.370	43.364	17.994	-0.25267

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-06p	Tested By: SKK	Checked By: SKK
Sample No.: 19-261	Test Date: 3/22/19	Depth: 20-22.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3364	8.2711	0.00000	1.6329	42.305	25.545	43.539	17.994	-0.25267
8.5041	8.4289	0.00000	1.6357	42.645	25.702	43.704	18.002	-0.26082
8.6674	8.5798	0.00000	1.6384	42.959	25.845	43.831	17.986	-0.26082
8.8351	8.7630	0.00000	1.6417	43.329	26.010	44.012	18.002	-0.26897
9.0017	8.9174	0.00000	1.6445	43.609	26.130	44.132	18.002	-0.26897
9.1690	9.1006	0.00000	1.6478	43.921	26.259	44.253	17.994	-0.27712
9.3369	9.2584	0.00000	1.6507	44.108	26.320	44.314	17.994	-0.27712
9.5046	9.4076	0.00000	1.6534	44.386	26.438	44.440	18.002	-0.28527
9.6677	9.5722	0.00000	1.6564	44.573	26.495	44.498	18.002	-0.29342
9.8346	9.7367	0.00000	1.6594	44.792	26.572	44.566	17.994	-0.29342
10.001	9.8996	0.00000	1.6624	45.072	26.686	44.680	17.994	-0.30157
10.168	10.067	0.00000	1.6655	45.319	26.777	44.779	18.002	-0.30157
10.336	10.239	0.00000	1.6687	45.599	26.886	44.889	18.002	-0.30972
10.504	10.414	0.00000	1.6720	45.787	26.939	44.933	17.994	-0.30972
10.667	10.571	0.00000	1.6749	46.096	27.070	45.072	18.002	-0.30972
10.835	10.743	0.00000	1.6781	46.378	27.178	45.172	17.994	-0.31787
11.002	10.900	0.00000	1.6811	46.694	27.312	45.281	17.970	-0.32602
11.169	11.075	0.00000	1.6844	46.904	27.376	45.378	18.002	-0.32602
11.337	11.243	0.00000	1.6876	47.186	27.484	45.478	17.994	-0.33417
11.505	11.416	0.00000	1.6909	47.528	27.625	45.619	17.994	-0.33417
11.668	11.584	0.00000	1.6941	47.777	27.712	45.706	17.994	-0.33417
11.835	11.749	0.00000	1.6973	47.994	27.782	45.776	17.994	-0.34232
12.002	11.905	0.00000	1.7003	48.307	27.910	45.896	17.986	-0.34232
12.169	12.057	0.00000	1.7032	48.490	27.963	45.965	18.002	-0.35047
12.337	12.230	0.00000	1.7066	48.832	28.101	46.103	18.002	-0.35862
12.504	12.405	0.00000	1.7100	49.081	28.183	46.185	18.002	-0.35862
12.667	12.576	0.00000	1.7133	49.364	28.286	46.272	17.986	-0.35862
12.835	12.729	0.00000	1.7163	49.640	28.392	46.394	18.002	-0.36677
13.002	12.902	0.00000	1.7197	49.893	28.475	46.461	17.986	-0.36677
13.169	13.072	0.00000	1.7231	50.141	28.557	46.543	17.986	-0.37492
13.336	13.251	0.00000	1.7267	50.357	28.615	46.609	17.994	-0.37492
13.505	13.424	0.00000	1.7301	50.639	28.714	46.700	17.986	-0.38307
13.668	13.596	0.00000	1.7335	50.824	28.756	46.750	17.994	-0.38307
13.835	13.774	0.00000	1.7371	51.164	28.886	46.888	18.002	-0.39122
14.002	13.911	0.00000	1.7399	51.350	28.941	46.943	18.002	-0.39122
14.170	14.086	0.00000	1.7434	51.661	29.053	47.056	18.002	-0.39937
14.337	14.269	0.00000	1.7472	51.912	29.127	47.121	17.994	-0.39937
14.501	14.429	0.00000	1.7504	52.159	29.208	47.210	18.002	-0.40753
14.668	14.605	0.00000	1.7540	52.563	29.371	47.373	18.002	-0.40753
14.836	14.770	0.00000	1.7574	52.781	29.431	47.434	18.002	-0.41568
15.005	14.932	0.00000	1.7608	53.092	29.545	47.547	18.002	-0.41568
15.168	15.105	0.00000	1.7644	53.344	29.621	47.607	17.986	-0.42383
15.336	15.285	0.00000	1.7681	53.651	29.725	47.727	18.002	-0.42383
15.504	15.436	0.00000	1.7713	53.871	29.790	47.784	17.994	-0.42383
15.671	15.601	0.00000	1.7747	54.024	29.812	47.814	18.002	-0.43198
15.834	15.764	0.00000	1.7782	54.209	29.851	47.862	18.010	-0.43198
16.001	15.923	0.00000	1.7815	54.397	29.894	47.896	18.002	-0.44013
16.169	16.088	0.00000	1.7850	54.708	30.003	48.005	18.002	-0.44013
16.336	16.266	0.00000	1.7888	54.800	29.984	47.994	18.010	-0.44828
16.505	16.415	0.00000	1.7920	54.957	30.012	48.014	18.002	-0.44828

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-06p	Tested By: SKK	Checked By: SKK
Sample No.: 19-261	Test Date: 3/22/19	Depth: 20-22.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

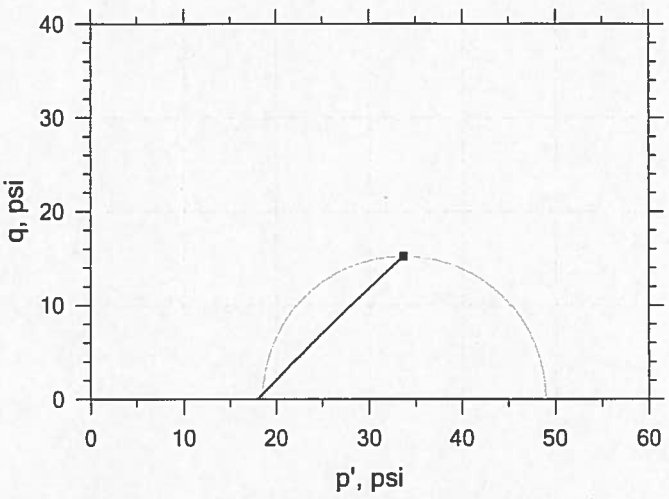
Shear Phase

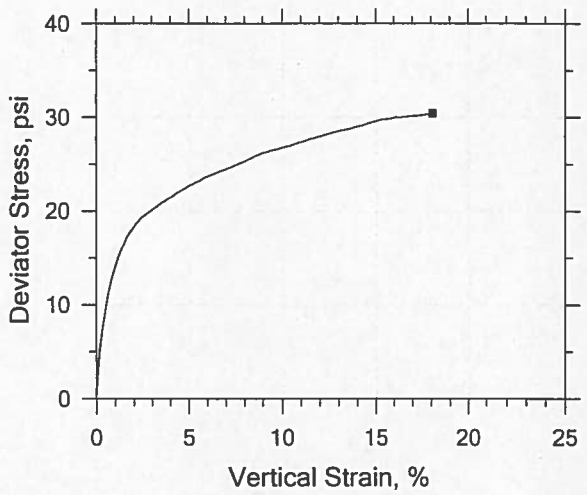
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.667	16.583	0.00000	1.7956	55.144	30.049	48.051	18.002	-0.44828
16.834	16.766	0.00000	1.7996	55.361	30.096	48.099	18.002	-0.45643
17.001	16.921	0.00000	1.8029	55.548	30.138	48.140	18.002	-0.45643
17.168	17.066	0.00000	1.8061	55.700	30.163	48.182	18.018	-0.46458
17.336	17.238	0.00000	1.8098	55.828	30.165	48.167	18.002	-0.46458
17.504	17.433	0.00000	1.8141	56.045	30.206	48.208	18.002	-0.46458
17.671	17.579	0.00000	1.8173	56.263	30.267	48.269	18.002	-0.47273
17.834	17.760	0.00000	1.8213	56.512	30.330	48.332	18.002	-0.47273
18.002	17.916	0.00000	1.8248	56.698	30.368	48.370	18.002	-0.48088
18.168	18.088	0.00000	1.8286	56.945	30.433	48.443	18.010	-0.48088
18.173	18.091	0.00000	1.8287	56.947	30.433	48.435	18.002	-0.48088

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-06p	Tested By: SKK	Checked By: SKK
Sample No.: 19-261	Test Date: 3/22/19	Depth: 20-22.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





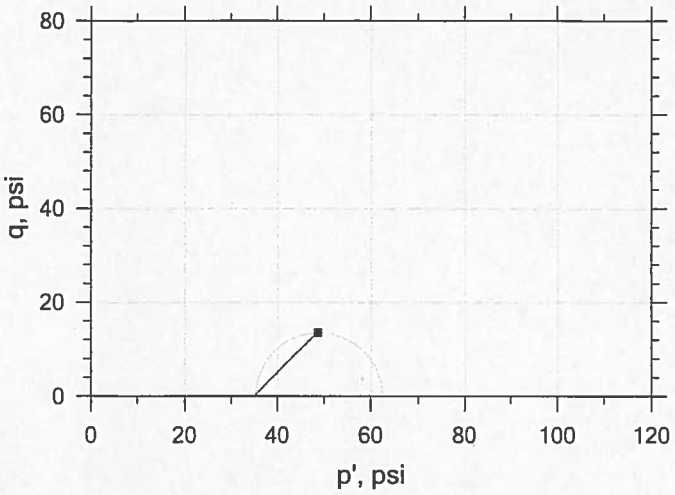
Symbol		■
Sample ID		19-261
Depth, ft		20-22.5'
Test Number		1
Initial	Height, in	3.030
	Diameter, in	1.388
	Moisture Content (from Cuttings), %	26.3
	Dry Density, pcf	95.3
	Saturation (Wet Method), %	91.3
	Void Ratio	0.788
Final	Moisture Content, %	27.9
	Dry Density, pcf	96.8
	Cross-Sectional Area (Method A), in²	1.498
	Saturation, %	100.0
	Void Ratio	0.761
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		17.98
Horizontal Effective Consolidation Stress, psi		17.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		15.22
Strain at Failure, %		18.1
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		30.43
Effective Minor Principal Stress at Failure, psi		18.49
Effective Major Principal Stress at Failure, psi		48.92
B-Value		---

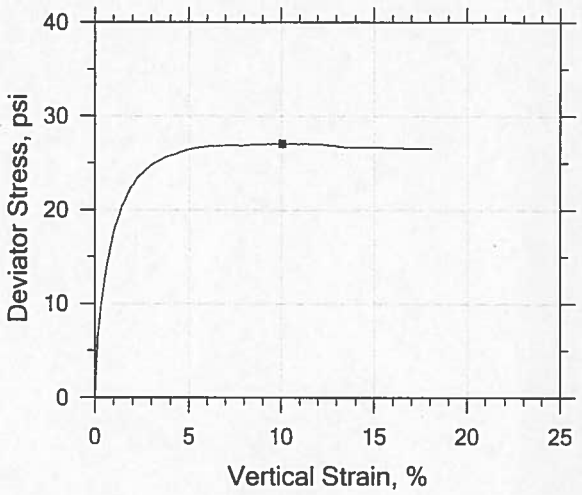
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-06p	Tested By: SKK	Checked By: SKK
Sample No.: 19-261	Test Date: 3/22/19	Depth: 20-22.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





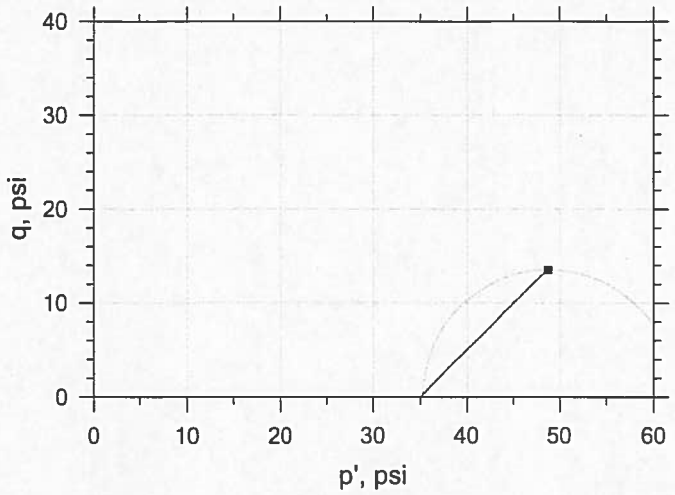
Symbol		■
Sample ID		19-262
Depth, ft		40-42.5'
Test Number		1
Initial	Height, in	3.009
	Diameter, in	1.399
	Moisture Content (from Cuttings), %	20.6
	Dry Density, pcf	105.
	Saturation (Wet Method), %	91.0
	Void Ratio	0.616
Final	Moisture Content, %	21.7
	Dry Density, pcf	107.
	Cross-Sectional Area (Method A), in²	1.520
	Saturation, %	100.0
	Void Ratio	0.589
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		34.95
Horizontal Effective Consolidation Stress, psi		35.00
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		13.53
Strain at Failure, %		10.1
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		27.05
Effective Minor Principal Stress at Failure, psi		35.24
Effective Major Principal Stress at Failure, psi		62.30
B-Value		---

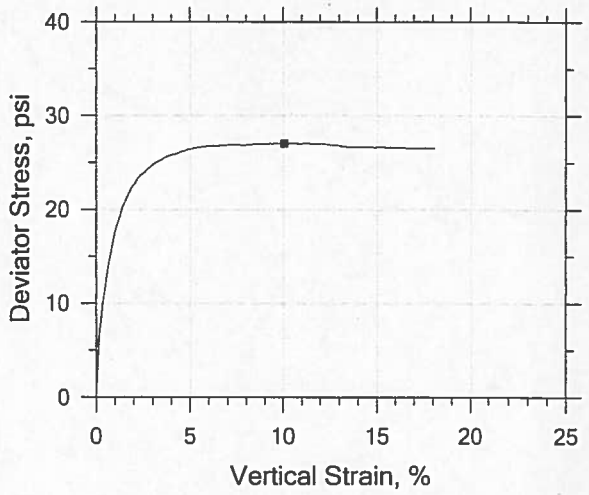
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-06P	Tested By: SKK	Checked By: SKK
Sample No.: 19-262	Test Date: 3/25/19	Depth: 40-42.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-262
Depth, ft		40-42.5'
Test Number		1
Initial	Height, in	3.009
	Diameter, in	1.399
	Moisture Content (from Cuttings), %	20.6
	Dry Density, pcf	105.
	Saturation (Wet Method), %	91.0
	Void Ratio	0.616
Final	Moisture Content, %	21.7
	Dry Density, pcf	107.
	Cross-Sectional Area (Method A), in²	1.520
	Saturation, %	100.0
	Void Ratio	0.589
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		34.95
Horizontal Effective Consolidation Stress, psi		35.00
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		13.53
Strain at Failure, %		10.1
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		27.05
Effective Minor Principal Stress at Failure, psi		35.24
Effective Major Principal Stress at Failure, psi		62.30
B-Value		—

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-06P	Tested By: SKK	Checked By: SKK
Sample No.: 19-262	Test Date: 3/25/19	Depth: 40-42.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5202	-0.082656	-0.054373	34.945	35.000	0.00000
0.17047	0.15894	0.00000	1.5226	10.034	6.5829	41.526	34.943	0.00000
0.33348	0.31616	0.00000	1.5250	14.731	9.6448	44.580	34.935	-0.0081505
0.50073	0.47510	0.00000	1.5274	18.418	12.036	47.028	34.992	-0.0081505
0.66812	0.62720	0.00000	1.5298	21.469	14.005	48.980	34.975	-0.016301
0.83608	0.81006	0.00000	1.5326	24.143	15.715	50.690	34.975	-0.024451
1.0040	0.94507	0.00000	1.5347	26.352	17.127	52.094	34.967	-0.024451
1.1710	1.1006	0.00000	1.5371	28.221	18.308	53.260	34.951	-0.032602
1.3338	1.2715	0.00000	1.5397	29.798	19.293	54.285	34.992	-0.032602
1.5021	1.4048	0.00000	1.5418	31.323	20.250	55.233	34.984	-0.040752
1.6673	1.5894	0.00000	1.5447	32.627	21.047	56.039	34.992	-0.048903
1.8358	1.7483	0.00000	1.5472	33.686	21.690	56.674	34.984	-0.048903
2.0032	1.9021	0.00000	1.5496	34.710	22.310	57.302	34.992	-0.057054
2.1697	2.0713	0.00000	1.5523	35.518	22.785	57.776	34.992	-0.057054
2.3374	2.2319	0.00000	1.5549	36.392	23.302	58.278	34.975	-0.065204
2.5015	2.3909	0.00000	1.5574	37.009	23.653	58.652	35.000	-0.065204
2.6694	2.5549	0.00000	1.5600	37.537	23.944	58.944	35.000	-0.073354
2.8371	2.7190	0.00000	1.5626	38.161	24.295	59.287	34.992	-0.081505
3.0005	2.8916	0.00000	1.5654	38.627	24.542	59.534	34.992	-0.081505
3.1684	3.0659	0.00000	1.5682	39.187	24.847	59.839	34.992	-0.089655
3.3366	3.2283	0.00000	1.5709	39.558	25.034	60.034	35.000	-0.089655
3.5006	3.4094	0.00000	1.5738	39.931	25.216	60.216	35.000	-0.097806
3.6681	3.5581	0.00000	1.5762	40.272	25.386	60.394	35.008	-0.097806
3.8366	3.7136	0.00000	1.5788	40.647	25.576	60.576	35.000	-0.10596
4.0047	3.8913	0.00000	1.5817	40.957	25.717	60.717	35.000	-0.10596
4.1668	4.0605	0.00000	1.5845	41.237	25.841	60.840	35.000	-0.11411
4.3348	4.2400	0.00000	1.5875	41.422	25.901	60.908	35.008	-0.11411
4.5018	4.4057	0.00000	1.5902	41.735	26.045	61.045	35.000	-0.12226
4.6694	4.5510	0.00000	1.5926	42.013	26.173	61.181	35.008	-0.13041
4.8369	4.7356	0.00000	1.5957	42.230	26.251	61.259	35.008	-0.13041
5.0029	4.8894	0.00000	1.5983	42.541	26.396	61.404	35.008	-0.13856
5.1700	5.0722	0.00000	1.6014	42.697	26.434	61.442	35.008	-0.13856
5.3377	5.2466	0.00000	1.6043	42.946	26.533	61.541	35.008	-0.14671
5.5013	5.4140	0.00000	1.6072	43.101	26.575	61.583	35.008	-0.14671
5.6689	5.5832	0.00000	1.6101	43.319	26.655	61.663	35.008	-0.15486
5.8371	5.7558	0.00000	1.6130	43.441	26.675	61.691	35.016	-0.15486
6.0008	5.9216	0.00000	1.6158	43.661	26.756	61.764	35.008	-0.16301
6.1681	6.1011	0.00000	1.6189	43.787	26.775	61.775	35.000	-0.16301
6.3348	6.2668	0.00000	1.6218	43.909	26.796	61.804	35.008	-0.17116
6.5032	6.4411	0.00000	1.6248	43.973	26.778	61.777	35.000	-0.17116
6.6705	6.6001	0.00000	1.6276	44.129	26.821	61.820	35.000	-0.17931
6.8337	6.7710	0.00000	1.6306	44.282	26.858	61.866	35.008	-0.17931
7.0015	6.9316	0.00000	1.6334	44.376	26.862	61.870	35.008	-0.18746
7.1692	7.1059	0.00000	1.6364	44.531	26.899	61.907	35.008	-0.18746
7.3369	7.2717	0.00000	1.6394	44.626	26.902	61.901	35.000	-0.19561
7.5009	7.4426	0.00000	1.6424	44.690	26.884	61.875	34.992	-0.19561
7.6684	7.6032	0.00000	1.6453	44.816	26.907	61.890	34.984	-0.20376
7.8361	7.7536	0.00000	1.6479	44.830	26.864	61.929	35.065	-0.20376
8.0035	7.9331	0.00000	1.6511	44.904	26.849	61.857	35.008	-0.21191
8.1694	8.0903	0.00000	1.6540	45.029	26.872	61.880	35.008	-0.21191

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-06P	Tested By: SKK	Checked By: SKK
Sample No.: 19-262	Test Date: 3/25/19	Depth: 40-42.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3377	8.2578	0.00000	1.6570	45.184	26.909	61.917	35.008	-0.22006
8.5014	8.4167	0.00000	1.6599	45.340	26.949	61.957	35.008	-0.22006
8.6692	8.5739	0.00000	1.6627	45.464	26.971	61.979	35.008	-0.22821
8.8371	8.7619	0.00000	1.6661	45.555	26.963	61.979	35.016	-0.22821
9.0006	8.9123	0.00000	1.6689	45.683	26.988	61.988	35.000	-0.23636
9.1673	9.0713	0.00000	1.6718	45.744	26.970	61.978	35.008	-0.23636
9.3351	9.2558	0.00000	1.6752	45.930	27.019	62.027	35.008	-0.24451
9.5031	9.4199	0.00000	1.6782	45.992	27.000	62.008	35.008	-0.24451
9.6668	9.5771	0.00000	1.6812	46.155	27.043	62.019	34.975	-0.25267
9.8351	9.7566	0.00000	1.6845	46.201	27.009	62.058	35.048	-0.25267
10.003	9.9172	0.00000	1.6875	46.303	27.015	62.023	35.008	-0.26082
10.170	10.088	0.00000	1.6907	46.464	27.052	62.035	34.984	-0.26082
10.334	10.250	0.00000	1.6938	46.486	27.009	62.033	35.024	-0.26897
10.501	10.408	0.00000	1.6968	46.645	27.049	62.056	35.008	-0.26897
10.668	10.596	0.00000	1.7003	46.711	27.023	62.014	34.992	-0.27712
10.836	10.758	0.00000	1.7034	46.799	27.018	62.034	35.016	-0.27712
11.003	10.926	0.00000	1.7066	46.852	26.992	62.048	35.056	-0.28527
11.170	11.086	0.00000	1.7097	46.994	27.019	61.995	34.975	-0.28527
11.337	11.237	0.00000	1.7126	47.081	27.018	62.026	35.008	-0.28527
11.505	11.418	0.00000	1.7161	47.205	27.027	62.035	35.008	-0.29342
11.668	11.580	0.00000	1.7192	47.258	27.002	62.050	35.048	-0.29342
11.836	11.765	0.00000	1.7228	47.333	26.981	61.973	34.992	-0.30157
12.003	11.906	0.00000	1.7256	47.450	27.000	62.024	35.024	-0.30157
12.170	12.088	0.00000	1.7292	47.611	27.030	62.030	35.000	-0.30972
12.333	12.267	0.00000	1.7327	47.640	26.984	61.992	35.008	-0.30972
12.502	12.445	0.00000	1.7362	47.647	26.926	61.902	34.975	-0.30972
12.669	12.611	0.00000	1.7395	47.701	26.899	61.915	35.016	-0.31787
12.837	12.792	0.00000	1.7431	47.765	26.872	61.880	35.008	-0.31787
13.001	12.957	0.00000	1.7465	47.825	26.849	61.865	35.016	-0.32602
13.168	13.110	0.00000	1.7495	47.763	26.760	61.776	35.016	-0.32602
13.336	13.289	0.00000	1.7531	47.825	26.733	61.749	35.016	-0.33417
13.504	13.460	0.00000	1.7566	47.825	26.673	61.689	35.016	-0.33417
13.667	13.643	0.00000	1.7603	47.951	26.681	61.689	35.008	-0.33417
13.835	13.800	0.00000	1.7635	48.074	26.696	61.712	35.016	-0.34232
14.002	13.964	0.00000	1.7669	48.112	26.660	61.643	34.984	-0.34232
14.170	14.132	0.00000	1.7703	48.231	26.668	61.676	35.008	-0.35047
14.334	14.313	0.00000	1.7741	48.322	26.656	61.672	35.016	-0.35047
14.501	14.508	0.00000	1.7781	48.447	26.658	61.674	35.016	-0.35047
14.668	14.648	0.00000	1.7810	48.604	26.697	61.704	35.008	-0.35862
14.836	14.829	0.00000	1.7848	48.571	26.614	61.630	35.016	-0.35862
15.003	14.979	0.00000	1.7880	48.699	26.633	61.632	35.000	-0.36677
15.171	15.133	0.00000	1.7912	48.820	26.646	61.662	35.016	-0.36677
15.338	15.307	0.00000	1.7949	48.986	26.677	61.644	34.967	-0.36677
15.502	15.488	0.00000	1.7988	49.005	26.623	61.647	35.024	-0.37492
15.669	15.627	0.00000	1.8017	49.102	26.627	61.635	35.008	-0.37492
15.837	15.818	0.00000	1.8058	49.224	26.627	61.643	35.016	-0.38307
16.001	15.998	0.00000	1.8097	49.317	26.615	61.631	35.016	-0.38307
16.169	16.145	0.00000	1.8128	49.414	26.616	61.615	35.000	-0.38307
16.337	16.292	0.00000	1.8160	49.537	26.631	61.639	35.008	-0.39122
16.505	16.463	0.00000	1.8197	49.535	26.569	61.585	35.016	-0.39122

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-06P	Tested By: SKK	Checked By: SKK
Sample No.: 19-262	Test Date: 3/25/19	Depth: 40-42.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

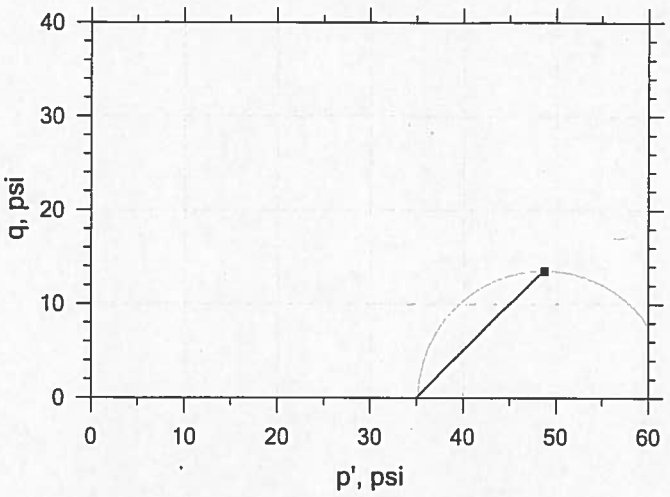
Shear Phase

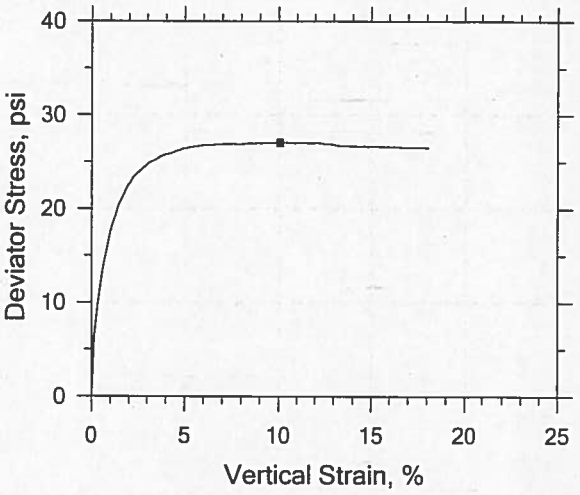
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.668	16.651	0.00000	1.8238	49.630	26.553	61.561	35.008	-0.39937
16.836	16.798	0.00000	1.8271	49.630	26.501	61.509	35.008	-0.39937
17.003	16.982	0.00000	1.8311	49.848	26.554	61.562	35.008	-0.39937
17.171	17.141	0.00000	1.8346	49.948	26.551	61.527	34.975	-0.40753
17.334	17.309	0.00000	1.8384	50.065	26.555	61.563	35.008	-0.40753
17.502	17.483	0.00000	1.8422	50.190	26.560	61.567	35.008	-0.40753
17.670	17.643	0.00000	1.8458	50.250	26.534	61.550	35.016	-0.41568
17.834	17.802	0.00000	1.8494	50.367	26.540	61.589	35.048	-0.41568
18.002	17.953	0.00000	1.8528	50.437	26.523	61.539	35.016	-0.42383
18.148	18.103	0.00000	1.8562	50.532	26.520	61.528	35.008	-0.42383

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-06P	Tested By: SKK	Checked By: SKK
Sample No.: 19-262	Test Date: 3/25/19	Depth: 40-42.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





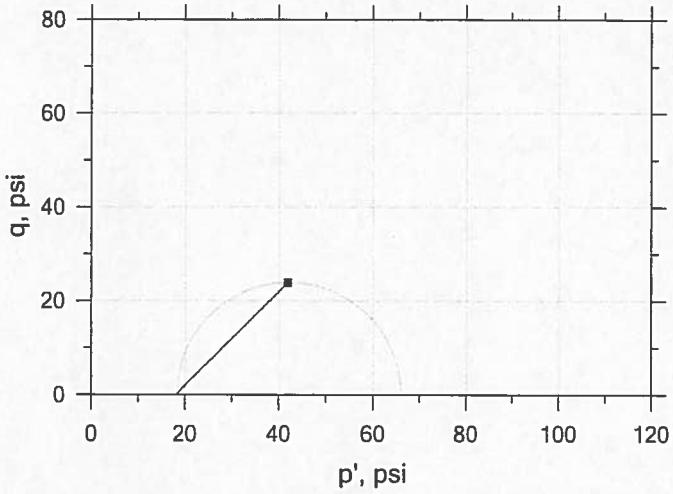
Symbol		■
Sample ID		19-262
Depth, ft		40-42.5'
Test Number		1
Initial	Height, in	3.009
	Diameter, in	1.399
	Moisture Content (from Cuttings), %	20.6
	Dry Density, pcf	105.
	Saturation (Wet Method), %	91.0
	Void Ratio	0.616
Final	Moisture Content, %	21.7
	Dry Density, pcf	107.
	Cross-Sectional Area (Method A), in²	1.520
	Saturation, %	100.0
	Void Ratio	0.589
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		34.95
Horizontal Effective Consolidation Stress, psi		35.00
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		13.53
Strain at Failure, %		10.1
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		27.05
Effective Minor Principal Stress at Failure, psi		35.24
Effective Major Principal Stress at Failure, psi		62.30
B-Value		---

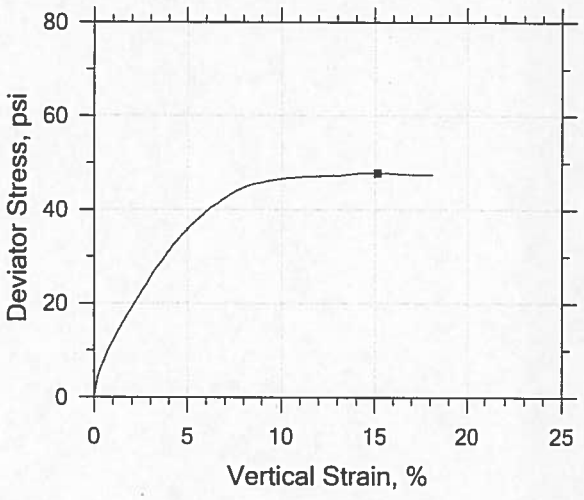
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-06P	Tested By: SKK	Checked By: SKK
Sample No.: 19-262	Test Date: 3/25/19	Depth: 40-42.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





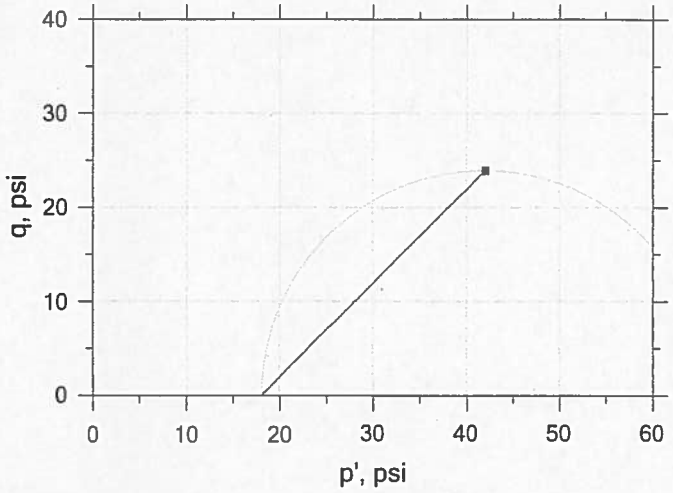
Symbol		■
Sample ID		19-267
Depth, ft		20-22.5'
Test Number		1
Initial	Height, in	3.022
	Diameter, in	1.392
	Moisture Content (from Cuttings), %	20.7
	Dry Density, pcf	104.
	Saturation (Wet Method), %	89.9
	Void Ratio	0.623
Final	Moisture Content, %	21.9
	Dry Density, pcf	106.
	Cross-Sectional Area (Method A), in²	1.501
	Saturation, %	100.0
	Void Ratio	0.590
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		17.99
Horizontal Effective Consolidation Stress, psi		17.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		23.92
Strain at Failure, %		15.2
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		47.84
Effective Minor Principal Stress at Failure, psi		18.13
Effective Major Principal Stress at Failure, psi		65.98
B-Value		---

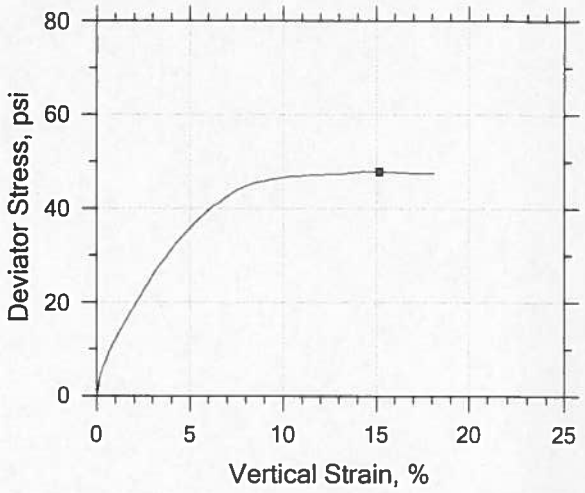
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-07	Tested By: SKK	Checked By: SKK
Sample No.: 19-267	Test Date: 3/25/19	Depth: 20-22.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-267
Depth, ft		20-22.5'
Test Number		1
Initial	Height, in	3.022
	Diameter, in	1.392
	Moisture Content (from Cuttings), %	20.7
	Dry Density, pcf	104.
	Saturation (Wet Method), %	89.9
	Void Ratio	0.623
Final	Moisture Content, %	21.9
	Dry Density, pcf	106.
	Cross-Sectional Area (Method A), in²	1.501
	Saturation, %	100.0
	Void Ratio	0.590
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		17.99
Horizontal Effective Consolidation Stress, psi		17.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		23.92
Strain at Failure, %		15.2
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		47.84
Effective Minor Principal Stress at Failure, psi		18.13
Effective Major Principal Stress at Failure, psi		65.98
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-07	Tested By: SKK	Checked By: SKK
Sample No.: 19-267	Test Date: 3/25/19	Depth: 20-22.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5009	-0.010145	-0.0067588	17.987	17.994	0.00000
0.17083	0.17380	0.00000	1.5036	6.4257	4.2654	22.259	17.994	0.00000
0.33387	0.32544	0.00000	1.5058	9.3243	6.1766	24.138	17.962	-0.0081505
0.50115	0.50605	0.00000	1.5086	11.936	7.8880	25.850	17.962	-0.0081505
0.66850	0.65429	0.00000	1.5108	14.204	9.3703	27.340	17.970	-0.0081505
0.83542	0.81445	0.00000	1.5133	16.354	10.769	28.714	17.945	-0.0081505
1.0033	0.98484	0.00000	1.5159	18.377	12.077	30.014	17.937	-0.0081505
1.1709	1.1552	0.00000	1.5185	20.294	13.310	31.296	17.986	-0.0081505
1.3344	1.2984	0.00000	1.5207	21.984	14.395	32.333	17.937	-0.016301
1.5026	1.4483	0.00000	1.5230	23.780	15.546	33.515	17.970	-0.016301
1.6695	1.6272	0.00000	1.5258	25.519	16.649	34.627	17.978	-0.016301
1.8373	1.7686	0.00000	1.5280	27.074	17.636	35.614	17.978	-0.016301
2.0009	1.9441	0.00000	1.5307	28.751	18.692	36.678	17.986	-0.016301
2.1680	2.1026	0.00000	1.5332	30.433	19.752	37.721	17.970	-0.016301
2.3362	2.2610	0.00000	1.5357	32.173	20.845	38.823	17.978	-0.016301
2.5044	2.4348	0.00000	1.5384	33.915	21.933	39.902	17.970	-0.024451
2.6672	2.5831	0.00000	1.5407	35.622	23.000	40.986	17.986	-0.024451
2.8344	2.7705	0.00000	1.5437	37.304	24.037	42.007	17.970	-0.024451
3.0024	2.9324	0.00000	1.5463	39.077	25.135	43.105	17.970	-0.024451
3.1706	3.0823	0.00000	1.5487	40.814	26.212	44.198	17.986	-0.024451
3.3334	3.2374	0.00000	1.5512	42.402	27.186	45.164	17.978	-0.024451
3.5015	3.4163	0.00000	1.5540	43.921	28.105	46.100	17.994	-0.032602
3.6688	3.6173	0.00000	1.5573	45.478	29.037	47.023	17.986	-0.032602
3.8362	3.7724	0.00000	1.5598	46.970	29.940	47.926	17.986	-0.032602
4.0032	3.9325	0.00000	1.5624	48.556	30.898	48.884	17.986	-0.032602
4.1706	4.0995	0.00000	1.5651	49.984	31.749	49.743	17.994	-0.032602
4.3339	4.2427	0.00000	1.5674	51.288	32.527	50.529	18.002	-0.040752
4.5019	4.4267	0.00000	1.5705	52.658	33.328	51.322	17.994	-0.040752
4.6695	4.5988	0.00000	1.5733	53.902	34.051	52.045	17.994	-0.040752
4.8370	4.7726	0.00000	1.5762	55.270	34.849	52.843	17.994	-0.040752
5.0009	4.9174	0.00000	1.5786	56.422	35.519	53.505	17.986	-0.040752
5.1688	5.0912	0.00000	1.5815	57.667	36.234	54.212	17.978	-0.040752
5.3367	5.2531	0.00000	1.5842	58.814	36.889	54.883	17.994	-0.048903
5.5044	5.4303	0.00000	1.5871	59.933	37.517	55.511	17.994	-0.048903
5.6667	5.6075	0.00000	1.5901	61.113	38.181	56.183	18.002	-0.048903
5.8341	5.7813	0.00000	1.5930	62.110	38.728	56.722	17.994	-0.048903
6.0019	5.9619	0.00000	1.5961	63.322	39.406	57.400	17.994	-0.048903
6.1698	6.1118	0.00000	1.5986	64.288	39.940	57.926	17.986	-0.048903
6.3373	6.2771	0.00000	1.6015	65.405	40.560	58.554	17.994	-0.057054
6.5009	6.4458	0.00000	1.6044	66.183	40.964	58.958	17.994	-0.057054
6.6688	6.6383	0.00000	1.6077	67.020	41.392	59.394	18.002	-0.057054
6.8357	6.7951	0.00000	1.6104	68.017	41.935	59.929	17.994	-0.057054
7.0030	6.9672	0.00000	1.6133	68.824	42.350	60.352	18.002	-0.057054
7.1709	7.1341	0.00000	1.6162	69.727	42.825	60.819	17.994	-0.057054
7.3347	7.2892	0.00000	1.6189	70.565	43.264	61.266	18.002	-0.065204
7.5030	7.4647	0.00000	1.6220	71.435	43.711	61.713	18.002	-0.065204
7.6709	7.6419	0.00000	1.6251	72.212	44.098	62.100	18.002	-0.065204
7.8336	7.8072	0.00000	1.6280	72.836	44.395	62.389	17.994	-0.065204
8.0006	7.9844	0.00000	1.6312	73.487	44.701	62.703	18.002	-0.065204
8.1685	8.1275	0.00000	1.6337	74.018	44.950	62.944	17.994	-0.065204

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-07	Tested By: SKK	Checked By: SKK
Sample No.: 19-267	Test Date: 3/25/19	Depth: 20-22.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3360	8.2825	0.00000	1.6365	74.513	45.170	63.172	18.002	-0.065204
8.5039	8.4615	0.00000	1.6397	74.950	45.341	63.335	17.994	-0.073354
8.6675	8.6165	0.00000	1.6425	75.420	45.543	63.521	17.978	-0.073354
8.8341	8.8039	0.00000	1.6458	75.850	45.703	63.705	18.002	-0.073354
9.0017	8.9692	0.00000	1.6488	76.161	45.801	63.803	18.002	-0.073354
9.1690	9.1396	0.00000	1.6519	76.596	45.972	63.974	18.002	-0.073354
9.3370	9.3083	0.00000	1.6550	77.000	46.123	64.125	18.002	-0.081505
9.5009	9.4599	0.00000	1.6578	77.342	46.246	64.248	18.002	-0.081505
9.6685	9.6388	0.00000	1.6610	77.688	46.355	64.341	17.986	-0.081505
9.8360	9.8007	0.00000	1.6640	77.964	46.431	64.433	18.002	-0.081505
10.004	9.9864	0.00000	1.6675	78.368	46.570	64.572	18.002	-0.081505
10.167	10.128	0.00000	1.6701	78.617	46.639	64.642	18.002	-0.081505
10.335	10.288	0.00000	1.6731	79.021	46.791	64.793	18.002	-0.081505
10.503	10.460	0.00000	1.6763	79.239	46.824	64.826	18.002	-0.089655
10.671	10.653	0.00000	1.6799	79.488	46.863	64.865	18.002	-0.089655
10.834	10.809	0.00000	1.6828	79.705	46.903	64.905	18.002	-0.089655
11.003	10.968	0.00000	1.6858	79.925	46.943	64.937	17.994	-0.089655
11.170	11.154	0.00000	1.6894	80.239	47.024	65.002	17.978	-0.089655
11.334	11.300	0.00000	1.6922	80.450	47.064	65.075	18.010	-0.089655
11.502	11.481	0.00000	1.6956	80.700	47.109	65.111	18.002	-0.097806
11.671	11.639	0.00000	1.6986	80.825	47.091	65.093	18.002	-0.097806
11.834	11.782	0.00000	1.7014	81.009	47.117	65.127	18.010	-0.097806
12.001	11.970	0.00000	1.7050	81.320	47.191	65.202	18.010	-0.097806
12.169	12.130	0.00000	1.7081	81.476	47.190	65.200	18.010	-0.097806
12.337	12.309	0.00000	1.7116	81.788	47.269	65.271	18.002	-0.097806
12.501	12.471	0.00000	1.7148	81.944	47.266	65.268	18.002	-0.097806
12.668	12.636	0.00000	1.7180	82.101	47.261	65.255	17.994	-0.10596
12.835	12.805	0.00000	1.7214	82.317	47.288	65.290	18.002	-0.10596
13.004	12.978	0.00000	1.7248	82.445	47.261	65.247	17.986	-0.10596
13.170	13.157	0.00000	1.7283	82.785	47.353	65.347	17.994	-0.10596
13.334	13.335	0.00000	1.7319	83.091	47.426	65.444	18.018	-0.10596
13.502	13.503	0.00000	1.7353	83.467	47.543	65.546	18.002	-0.10596
13.670	13.672	0.00000	1.7386	83.753	47.608	65.586	17.978	-0.10596
13.838	13.844	0.00000	1.7421	84.027	47.663	65.665	18.002	-0.11411
14.001	13.992	0.00000	1.7451	84.336	47.752	65.763	18.010	-0.11411
14.168	14.171	0.00000	1.7488	84.618	47.807	65.809	18.002	-0.11411
14.336	14.352	0.00000	1.7524	84.867	47.841	65.843	18.002	-0.11411
14.505	14.505	0.00000	1.7556	85.020	47.836	65.847	18.010	-0.11411
14.668	14.689	0.00000	1.7594	85.174	47.813	65.832	18.018	-0.11411
14.835	14.834	0.00000	1.7624	85.333	47.816	65.819	18.002	-0.11411
15.003	15.020	0.00000	1.7662	85.551	47.828	65.830	18.002	-0.12226
15.167	15.166	0.00000	1.7693	85.735	47.844	65.854	18.010	-0.12226
15.335	15.343	0.00000	1.7730	85.861	47.808	65.810	18.002	-0.12226
15.503	15.514	0.00000	1.7765	86.050	47.811	65.805	17.994	-0.12226
15.670	15.671	0.00000	1.7799	86.147	47.770	65.748	17.978	-0.12226
15.834	15.855	0.00000	1.7837	86.295	47.742	65.752	18.010	-0.12226
16.001	16.015	0.00000	1.7871	86.419	47.714	65.724	18.010	-0.12226
16.168	16.171	0.00000	1.7905	86.452	47.637	65.639	18.002	-0.13041
16.336	16.350	0.00000	1.7943	86.637	47.631	65.641	18.010	-0.13041
16.504	16.514	0.00000	1.7978	86.732	47.584	65.587	18.002	-0.13041

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-07	Tested By: SKK	Checked By: SKK
Sample No.: 19-267	Test Date: 3/25/19	Depth: 20-22.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

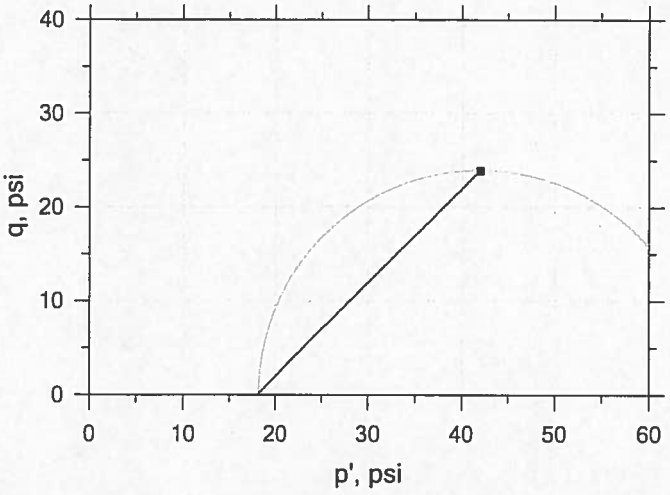
Shear Phase

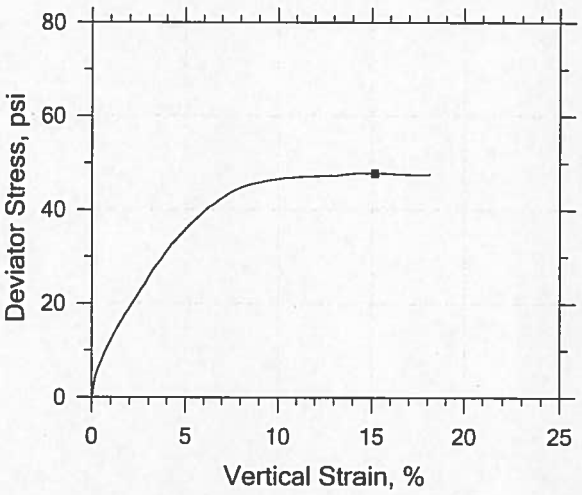
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.667	16.679	0.00000	1.8014	86.979	47.621	65.631	18.010	-0.13041
16.834	16.846	0.00000	1.8050	87.045	47.555	65.549	17.994	-0.13041
17.002	17.013	0.00000	1.8086	87.197	47.537	65.547	18.010	-0.13041
17.170	17.175	0.00000	1.8122	87.297	47.493	65.471	17.978	-0.13041
17.333	17.347	0.00000	1.8160	87.445	47.469	65.480	18.010	-0.13041
17.501	17.509	0.00000	1.8195	87.634	47.474	65.476	18.002	-0.13856
17.670	17.679	0.00000	1.8233	87.879	47.503	65.522	18.018	-0.13856
17.837	17.834	0.00000	1.8267	88.133	47.547	65.541	17.994	-0.13856
18.001	18.022	0.00000	1.8309	88.318	47.532	65.534	18.002	-0.13856
18.116	18.124	0.00000	1.8332	88.535	47.587	65.590	18.002	-0.13856

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-07	Tested By: SKK	Checked By: SKK
Sample No.: 19-267	Test Date: 3/25/19	Depth: 20-22.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





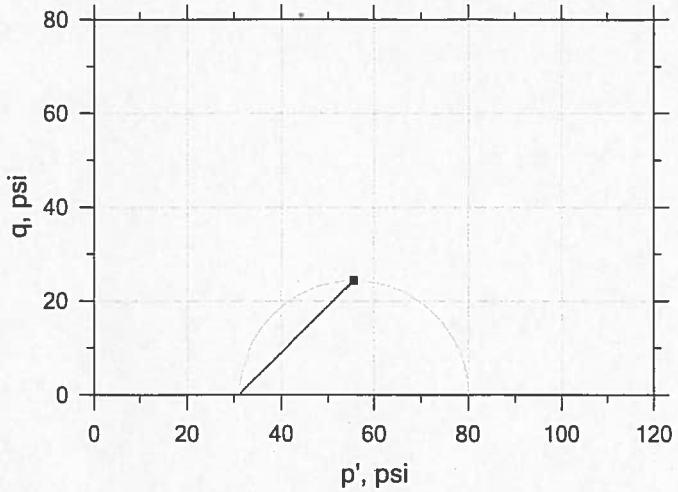
Symbol		■
Sample ID		19-267
Depth, ft		20-22.5'
Test Number		1
Initial	Height, in	3.022
	Diameter, in	1.392
	Moisture Content (from Cuttings), %	20.7
	Dry Density, pcf	104.
	Saturation (Wet Method), %	89.9
	Void Ratio	0.623
Final	Moisture Content, %	21.9
	Dry Density, pcf	106.
	Cross-Sectional Area (Method A), in²	1.501
	Saturation, %	100.0
	Void Ratio	0.590
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		17.99
Horizontal Effective Consolidation Stress, psi		17.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		23.92
Strain at Failure, %		15.2
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		47.84
Effective Minor Principal Stress at Failure, psi		18.13
Effective Major Principal Stress at Failure, psi		65.98
B-Value		---

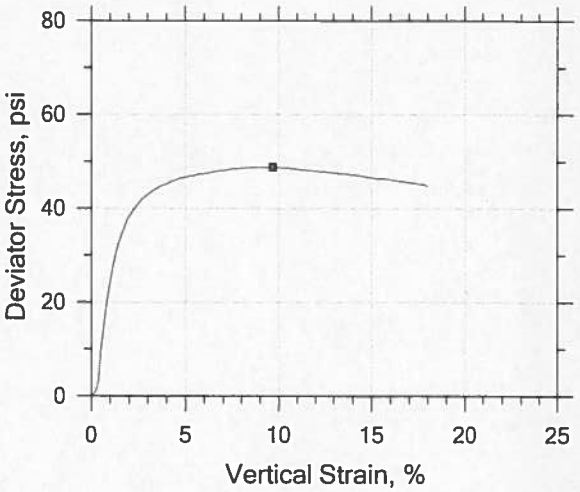
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-07	Tested By: SKK	Checked By: SKK
Sample No.: 19-267	Test Date: 3/25/19	Depth: 20-22.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-269
Depth, ft		35-37.5'
Test Number		1
Initial	Height, in	3.027
	Diameter, in	1.394
	Moisture Content (from Cuttings), %	25.7
	Dry Density, pcf	96.4
	Saturation (Wet Method), %	91.4
	Void Ratio	0.768
Final	Moisture Content, %	28.1
	Dry Density, pcf	96.4
	Cross-Sectional Area (Method A), in²	1.527
	Saturation, %	100.0
	Void Ratio	0.768
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		30.97
Horizontal Effective Consolidation Stress, psi		30.97
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		24.38
Strain at Failure, %		9.69
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		48.76
Effective Minor Principal Stress at Failure, psi		31.27
Effective Major Principal Stress at Failure, psi		80.03
B-Value		—

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-07	Tested By: SKK	Checked By: SKK
Sample No.: 19-269	Test Date: 3/26/19	Depth: 35-37.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5267	-0.0051709	-0.0033870	30.970	30.973	0.00000
0.16733	0.17061	0.00000	1.5293	0.97548	0.62980	31.668	31.038	-0.0081505
0.33505	0.34967	0.00000	1.5320	4.1592	2.6984	33.680	30.981	-0.0081505
0.50135	0.50845	0.00000	1.5345	15.290	9.9402	40.922	30.981	-0.016301
0.66917	0.67568	0.00000	1.5371	23.686	15.378	46.351	30.973	-0.016301
0.83662	0.81758	0.00000	1.5393	30.552	19.810	50.808	30.997	-0.024451
1.0005	0.97129	0.00000	1.5417	36.529	23.649	54.614	30.965	-0.024451
1.1684	1.1250	0.00000	1.5440	41.874	27.067	58.040	30.973	-0.032602
1.3358	1.2855	0.00000	1.5466	46.538	30.031	61.004	30.973	-0.040752
1.5040	1.4443	0.00000	1.5491	50.329	32.423	63.404	30.981	-0.040752
1.6668	1.6031	0.00000	1.5516	53.470	34.387	65.369	30.981	-0.048903
1.8340	1.7686	0.00000	1.5542	56.197	36.077	67.098	31.022	-0.048903
2.0024	1.9088	0.00000	1.5564	58.505	37.501	68.491	30.989	-0.057054
2.1697	2.0862	0.00000	1.5592	60.491	38.699	69.705	31.006	-0.057054
2.3338	2.2635	0.00000	1.5620	62.203	39.717	70.714	30.997	-0.065204
2.5011	2.4156	0.00000	1.5645	63.541	40.504	71.493	30.989	-0.073354
2.6684	2.5693	0.00000	1.5669	64.940	41.326	72.315	30.989	-0.073354
2.8369	2.7247	0.00000	1.5694	66.215	42.065	73.054	30.989	-0.081505
3.0005	2.8885	0.00000	1.5721	67.053	42.519	73.517	30.997	-0.081505
3.1679	3.0524	0.00000	1.5747	68.079	43.092	74.089	30.997	-0.089655
3.3358	3.2027	0.00000	1.5772	68.951	43.571	74.560	30.989	-0.089655
3.5034	3.3801	0.00000	1.5801	69.789	44.013	75.011	30.997	-0.097806
3.6702	3.5541	0.00000	1.5829	70.473	44.358	75.355	30.997	-0.097806
3.8340	3.6960	0.00000	1.5853	71.219	44.757	75.754	30.997	-0.10596
4.0023	3.8733	0.00000	1.5882	71.780	45.020	76.009	30.989	-0.10596
4.1697	4.0541	0.00000	1.5912	72.338	45.278	76.275	30.997	-0.11411
4.3335	4.2163	0.00000	1.5939	73.053	45.642	76.640	30.997	-0.11411
4.5014	4.3852	0.00000	1.5967	73.547	45.864	76.877	31.014	-0.12226
4.6689	4.5507	0.00000	1.5995	74.110	46.129	77.126	30.997	-0.12226
4.8374	4.7011	0.00000	1.6020	74.577	46.341	77.338	30.997	-0.13041
5.0010	4.8565	0.00000	1.6046	74.981	46.510	77.507	30.997	-0.13041
5.1689	5.0389	0.00000	1.6077	75.385	46.664	77.661	30.997	-0.13856
5.3369	5.2095	0.00000	1.6106	75.820	46.843	77.840	30.997	-0.13856
5.5045	5.3801	0.00000	1.6135	76.102	46.925	77.915	30.989	-0.14671
5.6679	5.5457	0.00000	1.6163	76.473	47.065	78.063	30.997	-0.14671
5.8353	5.6977	0.00000	1.6189	76.909	47.252	78.249	30.997	-0.15486
6.0036	5.8767	0.00000	1.6220	77.126	47.288	78.286	30.997	-0.15486
6.1668	6.0203	0.00000	1.6245	77.468	47.420	78.418	30.997	-0.16301
6.3348	6.1994	0.00000	1.6276	77.841	47.551	78.549	30.997	-0.16301
6.5027	6.3649	0.00000	1.6305	78.182	47.669	78.674	31.006	-0.17116
6.6705	6.5372	0.00000	1.6335	78.525	47.784	78.781	30.997	-0.17116
6.8335	6.6943	0.00000	1.6362	78.930	47.944	78.941	30.997	-0.17931
7.0016	6.8717	0.00000	1.6393	79.145	47.976	78.982	31.006	-0.17931
7.1681	7.0423	0.00000	1.6423	79.518	48.108	79.114	31.006	-0.18746
7.3364	7.2197	0.00000	1.6455	79.829	48.197	79.203	31.006	-0.18746
7.5035	7.3835	0.00000	1.6484	80.171	48.313	79.318	31.006	-0.19561
7.6668	7.5457	0.00000	1.6513	80.453	48.391	79.389	30.997	-0.19561
7.8353	7.7078	0.00000	1.6542	80.702	48.450	79.447	30.997	-0.20376
8.0035	7.8818	0.00000	1.6573	80.949	48.500	79.505	31.006	-0.20376
8.1710	8.0389	0.00000	1.6601	81.166	48.541	79.547	31.006	-0.21191

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-07	Tested By: SKK	Checked By: SKK
Sample No.: 19-269	Test Date: 3/26/19	Depth: 35-37.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3351	8.2129	0.00000	1.6633	81.508	48.648	79.653	31.006	-0.21191
8.5027	8.3717	0.00000	1.6662	81.666	48.651	79.648	30.997	-0.21191
8.6702	8.5474	0.00000	1.6694	81.912	48.698	79.704	31.006	-0.22006
8.8343	8.7062	0.00000	1.6723	82.039	48.682	79.680	30.997	-0.22821
9.0023	8.8531	0.00000	1.6750	82.286	48.745	79.750	31.006	-0.22821
9.1689	9.0389	0.00000	1.6784	82.441	48.730	79.736	31.006	-0.22821
9.3374	9.1994	0.00000	1.6814	82.628	48.748	79.754	31.006	-0.23636
9.5042	9.3666	0.00000	1.6845	82.752	48.725	79.731	31.006	-0.23636
9.6671	9.5170	0.00000	1.6873	82.814	48.675	79.680	31.006	-0.24451
9.8353	9.6876	0.00000	1.6904	83.120	48.756	79.786	31.030	-0.24451
10.003	9.8734	0.00000	1.6939	83.249	48.725	79.730	31.006	-0.25267
10.170	10.029	0.00000	1.6969	83.343	48.689	79.695	31.006	-0.25267
10.334	10.189	0.00000	1.6999	83.405	48.632	79.637	31.006	-0.25267
10.501	10.367	0.00000	1.7032	83.496	48.582	79.596	31.014	-0.26082
10.669	10.525	0.00000	1.7063	83.595	48.547	79.536	30.989	-0.26897
10.836	10.694	0.00000	1.7095	83.685	48.501	79.506	31.006	-0.26897
11.004	10.872	0.00000	1.7129	83.714	48.414	79.428	31.014	-0.26897
11.171	11.029	0.00000	1.7159	83.685	48.305	79.311	31.006	-0.27712
11.338	11.194	0.00000	1.7191	83.678	48.204	79.242	31.038	-0.27712
11.501	11.357	0.00000	1.7223	83.809	48.185	79.191	31.006	-0.28527
11.668	11.512	0.00000	1.7253	83.776	48.075	79.089	31.014	-0.28527
11.836	11.703	0.00000	1.7290	83.869	48.018	79.031	31.014	-0.28527
12.003	11.867	0.00000	1.7322	83.996	47.995	79.000	31.006	-0.29342
12.171	12.029	0.00000	1.7354	84.058	47.935	78.941	31.006	-0.29342
12.335	12.193	0.00000	1.7387	84.153	47.894	78.891	30.997	-0.30157
12.502	12.363	0.00000	1.7421	84.182	47.811	78.816	31.006	-0.30157
12.670	12.527	0.00000	1.7453	84.339	47.805	78.802	30.997	-0.30972
12.837	12.672	0.00000	1.7482	84.338	47.718	78.724	31.006	-0.30972
13.001	12.848	0.00000	1.7517	84.431	47.668	78.674	31.006	-0.31787
13.169	13.015	0.00000	1.7551	84.491	47.604	78.618	31.014	-0.31787
13.337	13.181	0.00000	1.7585	84.491	47.507	78.520	31.014	-0.31787
13.504	13.363	0.00000	1.7622	84.460	47.382	78.396	31.014	-0.32602
13.668	13.532	0.00000	1.7656	84.617	47.372	78.377	31.006	-0.32602
13.836	13.686	0.00000	1.7687	84.740	47.350	78.364	31.014	-0.32602
14.003	13.877	0.00000	1.7727	84.680	47.204	78.209	31.006	-0.33417
14.170	14.031	0.00000	1.7758	84.773	47.166	78.171	31.006	-0.33417
14.337	14.189	0.00000	1.7791	84.752	47.061	78.018	30.957	-0.34232
14.501	14.358	0.00000	1.7826	84.773	46.973	77.978	31.006	-0.34232
14.667	14.539	0.00000	1.7864	84.806	46.885	77.882	30.997	-0.34232
14.835	14.723	0.00000	1.7903	84.711	46.723	77.729	31.006	-0.35047
15.004	14.868	0.00000	1.7933	84.680	46.620	77.626	31.006	-0.35047
15.171	15.015	0.00000	1.7964	84.555	46.465	77.470	31.006	-0.35862
15.334	15.189	0.00000	1.8001	84.711	46.449	77.455	31.006	-0.35862
15.502	15.380	0.00000	1.8042	84.742	46.354	77.360	31.006	-0.35862
15.669	15.558	0.00000	1.8080	84.864	46.318	77.331	31.014	-0.36677
15.837	15.718	0.00000	1.8114	84.928	46.258	77.264	31.006	-0.36677
16.001	15.877	0.00000	1.8148	85.022	46.216	77.222	31.006	-0.36677
16.168	16.054	0.00000	1.8186	85.023	46.113	77.110	30.997	-0.37492
16.336	16.198	0.00000	1.8218	84.990	46.010	77.016	31.006	-0.37492
16.504	16.360	0.00000	1.8253	84.959	45.898	76.903	31.006	-0.38307

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-07	Tested By: SKK	Checked By: SKK
Sample No.: 19-269	Test Date: 3/26/19	Depth: 35-37.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

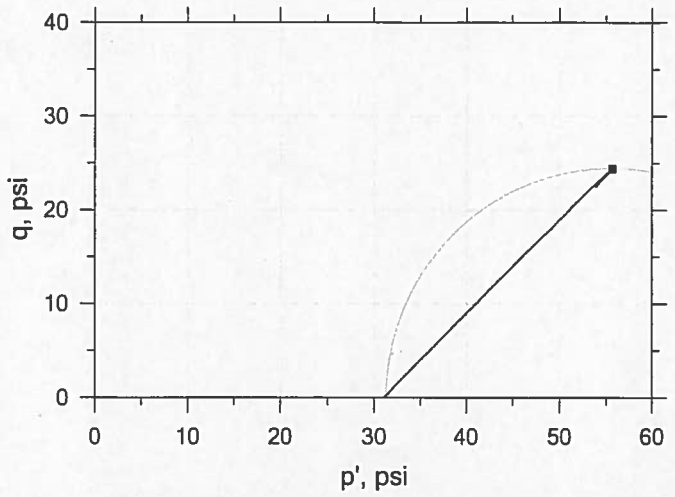
Shear Phase

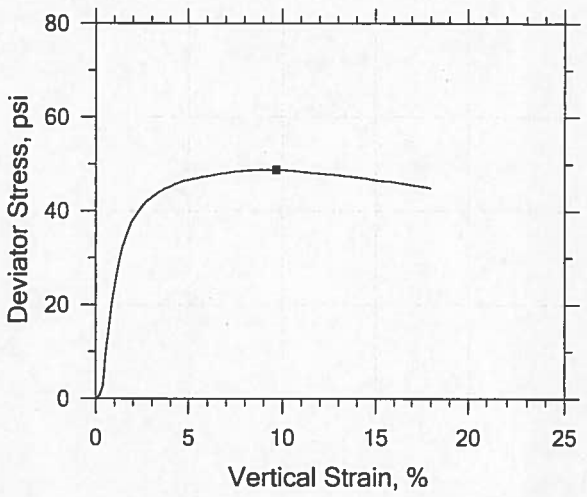
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.667	16.529	0.00000	1.8290	84.965	45.801	76.783	30.981	-0.38307
16.836	16.711	0.00000	1.8330	84.928	45.674	76.680	31.006	-0.38307
17.003	16.870	0.00000	1.8365	84.959	45.598	76.603	31.006	-0.39122
17.171	17.044	0.00000	1.8403	84.864	45.444	76.458	31.014	-0.39122
17.335	17.178	0.00000	1.8433	84.897	45.383	76.389	31.006	-0.39122
17.503	17.373	0.00000	1.8477	84.959	45.302	76.308	31.006	-0.39937
17.670	17.520	0.00000	1.8510	84.950	45.211	76.257	31.046	-0.39937
17.834	17.688	0.00000	1.8547	84.959	45.117	76.123	31.006	-0.40753
18.002	17.867	0.00000	1.8588	84.857	44.957	76.004	31.046	-0.40753
18.152	18.000	0.00000	1.8618	84.833	44.866	75.880	31.014	-0.40753

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-07	Tested By: SKK	Checked By: SKK
Sample No.: 19-269	Test Date: 3/26/19	Depth: 35-37.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





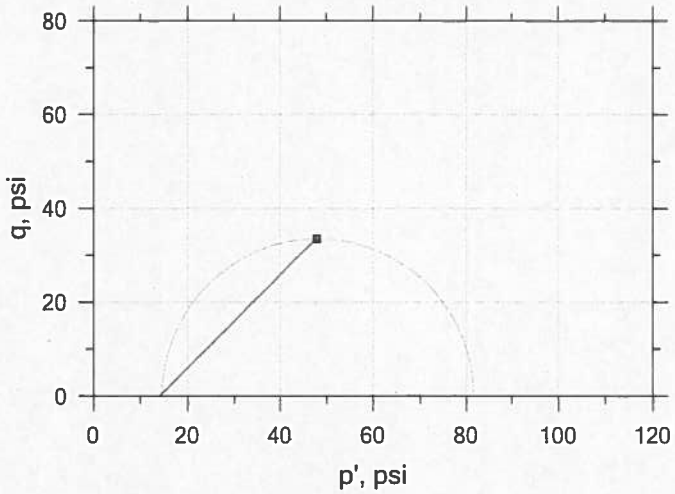
Symbol		■
Sample ID		19-269
Depth, ft		35-37.5'
Test Number		1
Initial	Height, in	3.027
	Diameter, in	1.394
	Moisture Content (from Cuttings), %	25.7
	Dry Density, pcf	96.4
	Saturation (Wet Method), %	91.4
	Void Ratio	0.768
Final	Moisture Content, %	28.1
	Dry Density, pcf	96.4
	Cross-Sectional Area (Method A), in²	1.527
	Saturation, %	100.0
	Void Ratio	0.768
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		30.97
Horizontal Effective Consolidation Stress, psi		30.97
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		24.38
Strain at Failure, %		9.69
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		48.76
Effective Minor Principal Stress at Failure, psi		31.27
Effective Major Principal Stress at Failure, psi		80.03
B-Value		---

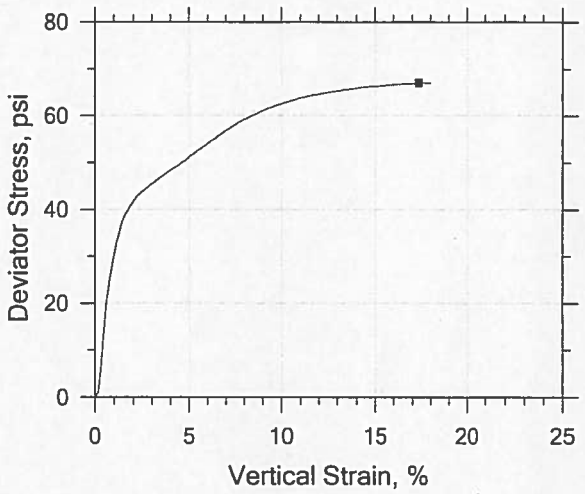
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-07	Tested By: SKK	Checked By: SKK
Sample No.: 19-269	Test Date: 3/26/19	Depth: 35-37.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-271
Depth, ft		15-17.5'
Test Number		1
Initial	Height, in	3.019
	Diameter, in	1.393
	Moisture Content (from Cuttings), %	19.4
	Dry Density, pcf	108.
	Saturation (Wet Method), %	94.7
	Void Ratio	0.549
Final	Moisture Content, %	20.5
	Dry Density, pcf	108.
	Cross-Sectional Area (Method A), in²	1.524
	Saturation, %	100.0
	Void Ratio	0.550
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		13.99
Horizontal Effective Consolidation Stress, psi		13.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		33.51
Strain at Failure, %		17.3
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		67.03
Effective Minor Principal Stress at Failure, psi		14.49
Effective Major Principal Stress at Failure, psi		81.52
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-08	Tested By: SKK	Checked By: SKK
Sample No.: 19-271	Test Date: 3/26/19	Depth: 15-17.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5243	-0.00018889	-0.00012392	13.992	13.992	0.00000
0.17042	0.16938	0.00000	1.5269	1.6734	1.0879	15.104	14.016	0.00000
0.33760	0.32521	0.00000	1.5293	10.918	7.1241	21.092	13.968	-0.0081505
0.50468	0.48104	0.00000	1.5317	22.696	14.795	28.787	13.992	-0.016301
0.66677	0.62332	0.00000	1.5338	31.431	20.462	34.462	14.000	-0.016301
0.83475	0.77915	0.00000	1.5363	39.023	25.365	39.340	13.976	-0.024451
1.0017	0.95530	0.00000	1.5390	45.115	29.270	43.253	13.984	-0.032602
1.1691	1.1162	0.00000	1.5415	50.397	32.641	46.641	14.000	-0.032602
1.3374	1.2822	0.00000	1.5441	54.530	35.255	49.263	14.008	-0.040752
1.5036	1.4262	0.00000	1.5463	57.922	37.391	51.383	13.992	-0.040752
1.6707	1.5905	0.00000	1.5489	60.503	38.987	52.979	13.992	-0.048903
1.8345	1.7666	0.00000	1.5517	62.524	40.212	54.203	13.992	-0.057054
2.0030	1.9258	0.00000	1.5542	64.327	41.299	55.291	13.992	-0.065204
2.1707	2.0749	0.00000	1.5566	65.724	42.127	56.127	14.000	-0.065204
2.3340	2.2290	0.00000	1.5590	67.123	42.951	56.951	14.000	-0.073354
2.5017	2.3984	0.00000	1.5617	68.150	43.526	57.526	14.000	-0.081505
2.6683	2.5509	0.00000	1.5642	69.080	44.046	58.054	14.008	-0.081505
2.8363	2.7202	0.00000	1.5669	70.015	44.558	58.558	14.000	-0.089655
3.0005	2.8710	0.00000	1.5693	70.917	45.057	59.057	14.000	-0.089655
3.1678	3.0302	0.00000	1.5719	71.816	45.548	59.556	14.008	-0.097806
3.3350	3.2064	0.00000	1.5748	72.718	46.030	60.038	14.008	-0.10596
3.5027	3.3537	0.00000	1.5772	73.651	46.544	60.552	14.008	-0.10596
3.6696	3.5434	0.00000	1.5803	74.556	47.017	61.009	13.992	-0.11411
3.8374	3.7128	0.00000	1.5831	75.518	47.535	61.534	14.000	-0.12226
4.0005	3.8500	0.00000	1.5853	76.295	47.951	61.951	14.000	-0.12226
4.1676	4.0177	0.00000	1.5881	77.137	48.389	62.381	13.992	-0.13041
4.3355	4.1837	0.00000	1.5908	78.038	48.865	62.857	13.992	-0.13041
4.5035	4.3852	0.00000	1.5942	78.967	49.336	63.344	14.008	-0.13856
4.6707	4.5461	0.00000	1.5969	79.900	49.830	63.838	14.008	-0.14671
4.8340	4.6969	0.00000	1.5994	80.674	50.228	64.252	14.024	-0.14671
5.0019	4.8714	0.00000	1.6023	81.579	50.693	64.701	14.008	-0.15486
5.1694	5.0187	0.00000	1.6048	82.574	51.228	65.236	14.008	-0.16301
5.3376	5.1932	0.00000	1.6078	83.512	51.709	65.693	13.984	-0.16301
5.5010	5.3626	0.00000	1.6107	84.408	52.166	66.174	14.008	-0.17116
5.6686	5.5302	0.00000	1.6135	85.372	52.663	66.671	14.008	-0.17931
5.8368	5.6776	0.00000	1.6160	86.180	53.075	67.083	14.008	-0.17931
6.0005	5.8538	0.00000	1.6191	87.144	53.563	67.571	14.008	-0.18746
6.1676	6.0062	0.00000	1.6217	88.017	54.007	68.007	14.000	-0.18746
6.3355	6.1756	0.00000	1.6246	89.141	54.595	68.570	13.976	-0.19561
6.5031	6.3534	0.00000	1.6277	89.847	54.917	68.933	14.016	-0.20376
6.6707	6.5262	0.00000	1.6307	90.937	55.477	69.485	14.008	-0.20376
6.8340	6.7007	0.00000	1.6338	91.934	55.975	69.975	14.000	-0.21191
7.0022	6.8480	0.00000	1.6363	92.799	56.409	70.434	14.024	-0.21191
7.1699	7.0123	0.00000	1.6392	93.832	56.933	70.925	13.992	-0.22006
7.3376	7.1817	0.00000	1.6422	94.606	57.293	71.301	14.008	-0.22006
7.5010	7.3629	0.00000	1.6454	95.539	57.740	71.748	14.008	-0.22821
7.6676	7.5086	0.00000	1.6480	96.314	58.113	72.129	14.016	-0.23636
7.8348	7.6746	0.00000	1.6510	97.249	58.568	72.576	14.008	-0.23636
8.0025	7.8541	0.00000	1.6542	97.995	58.897	72.905	14.008	-0.24451
8.1699	8.0066	0.00000	1.6569	98.741	59.243	73.251	14.008	-0.24451

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-08	Tested By: SKK	Checked By: SKK
Sample No.: 19-271	Test Date: 3/26/19	Depth: 15-17.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3374	8.1861	0.00000	1.6602	99.425	59.532	73.540	14.008	-0.25267
8.5036	8.3623	0.00000	1.6634	100.21	59.881	73.864	13.984	-0.25267
8.6668	8.5147	0.00000	1.6662	100.98	60.237	74.253	14.016	-0.26082
8.8340	8.7044	0.00000	1.6696	101.69	60.532	74.548	14.016	-0.26897
9.0019	8.8450	0.00000	1.6722	102.41	60.860	74.876	14.016	-0.26897
9.1694	9.0059	0.00000	1.6751	103.03	61.118	75.126	14.008	-0.27712
9.3371	9.1787	0.00000	1.6783	103.71	61.401	75.417	14.016	-0.27712
9.5010	9.3193	0.00000	1.6809	104.40	61.708	75.716	14.008	-0.28527
9.6686	9.5242	0.00000	1.6847	104.99	61.911	75.911	14.000	-0.28527
9.8358	9.6733	0.00000	1.6875	105.58	62.152	76.160	14.008	-0.29342
10.003	9.8494	0.00000	1.6908	106.11	62.335	76.351	14.016	-0.30157
10.171	10.012	0.00000	1.6939	106.67	62.547	76.555	14.008	-0.30157
10.333	10.170	0.00000	1.6968	107.35	62.833	76.849	14.016	-0.30972
10.503	10.354	0.00000	1.7003	107.79	62.952	76.968	14.016	-0.30972
10.667	10.505	0.00000	1.7032	108.38	63.189	77.181	13.992	-0.30972
10.835	10.686	0.00000	1.7067	108.94	63.378	77.402	14.024	-0.31787
11.003	10.830	0.00000	1.7094	109.54	63.620	77.604	13.984	-0.32602
11.170	10.993	0.00000	1.7125	110.09	63.820	77.836	14.016	-0.32602
11.337	11.164	0.00000	1.7158	110.49	63.927	77.935	14.008	-0.33417
11.504	11.348	0.00000	1.7194	110.99	64.075	78.083	14.008	-0.33417
11.667	11.504	0.00000	1.7224	111.42	64.208	78.224	14.016	-0.34232
11.834	11.667	0.00000	1.7256	111.99	64.408	78.416	14.008	-0.34232
12.002	11.843	0.00000	1.7291	112.33	64.469	78.485	14.016	-0.35047
12.170	11.999	0.00000	1.7321	112.73	64.581	78.605	14.024	-0.35047
12.336	12.173	0.00000	1.7356	113.26	64.750	78.775	14.024	-0.35862
12.504	12.341	0.00000	1.7389	113.66	64.854	78.862	14.008	-0.35862
12.670	12.483	0.00000	1.7417	114.10	64.992	79.008	14.016	-0.36677
12.837	12.661	0.00000	1.7453	114.51	65.086	79.086	14.000	-0.36677
13.001	12.817	0.00000	1.7484	114.88	65.177	79.177	14.000	-0.37492
13.168	13.005	0.00000	1.7521	115.37	65.311	79.327	14.016	-0.37492
13.334	13.162	0.00000	1.7553	115.78	65.417	79.425	14.008	-0.38307
13.503	13.318	0.00000	1.7585	116.28	65.578	79.570	13.992	-0.38307
13.669	13.496	0.00000	1.7621	116.56	65.593	79.601	14.008	-0.39122
13.836	13.659	0.00000	1.7654	116.99	65.710	79.718	14.008	-0.39122
14.004	13.832	0.00000	1.7690	117.39	65.799	79.815	14.016	-0.39937
14.171	13.996	0.00000	1.7723	117.74	65.861	79.869	14.008	-0.39937
14.334	14.158	0.00000	1.7757	118.33	66.060	80.084	14.024	-0.40753
14.502	14.330	0.00000	1.7792	118.67	66.116	80.124	14.008	-0.40753
14.669	14.495	0.00000	1.7827	119.01	66.173	80.181	14.008	-0.40753
14.836	14.672	0.00000	1.7864	119.39	66.238	80.246	14.008	-0.41568
15.003	14.816	0.00000	1.7894	119.79	66.346	80.362	14.016	-0.41568
15.167	14.966	0.00000	1.7926	120.07	66.378	80.394	14.016	-0.42383
15.337	15.158	0.00000	1.7966	120.29	66.342	80.358	14.016	-0.42383
15.504	15.342	0.00000	1.8005	120.63	66.380	80.396	14.016	-0.43198
15.670	15.507	0.00000	1.8040	120.94	66.417	80.433	14.016	-0.43198
15.834	15.668	0.00000	1.8075	121.44	66.562	80.561	14.000	-0.44013
16.001	15.829	0.00000	1.8109	121.75	66.599	80.607	14.008	-0.44013
16.168	16.017	0.00000	1.8150	122.03	66.596	80.612	14.016	-0.44828
16.335	16.152	0.00000	1.8179	122.53	66.758	80.766	14.008	-0.44828
16.503	16.313	0.00000	1.8214	122.77	66.759	80.775	14.016	-0.44828

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-08	Tested By: SKK	Checked By: SKK
Sample No.: 19-271	Test Date: 3/26/19	Depth: 15-17.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

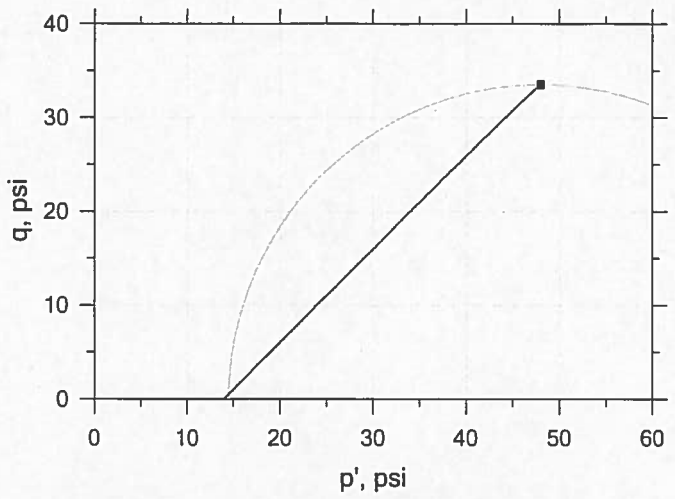
Shear Phase

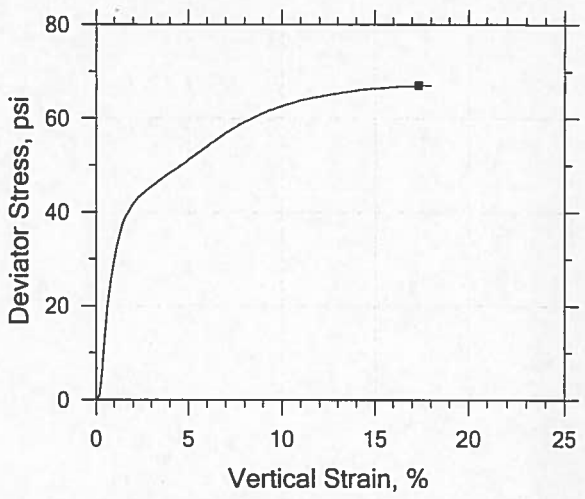
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.670	16.515	0.00000	1.8258	123.21	66.828	80.844	14.016	-0.45643
16.837	16.665	0.00000	1.8291	123.39	66.804	80.820	14.016	-0.45643
17.004	16.823	0.00000	1.8326	123.71	66.841	80.857	14.016	-0.46458
17.167	17.001	0.00000	1.8365	123.99	66.843	80.859	14.016	-0.46458
17.335	17.143	0.00000	1.8397	124.33	66.909	80.925	14.016	-0.47273
17.502	17.341	0.00000	1.8441	124.86	67.028	81.044	14.016	-0.47273
17.669	17.483	0.00000	1.8472	124.92	66.941	80.957	14.016	-0.47273
17.837	17.654	0.00000	1.8511	125.32	67.013	81.037	14.024	-0.48088
18.000	17.825	0.00000	1.8549	125.55	66.989	80.972	13.984	-0.48088
18.167	17.991	0.00000	1.8587	125.83	66.997	80.988	13.992	-0.48903
18.176	18.000	0.00000	1.8589	125.88	67.021	81.029	14.008	-0.48903

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-08	Tested By: SKK	Checked By: SKK
Sample No.: 19-271	Test Date: 3/26/19	Depth: 15-17.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





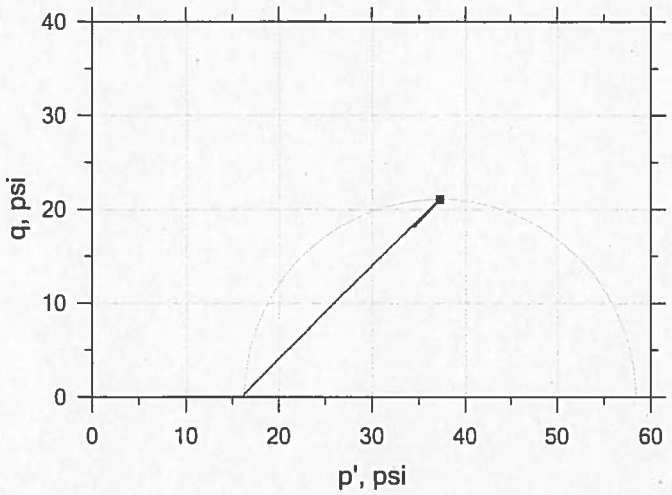
Symbol		■
Sample ID		19-271
Depth, ft		15-17.5'
Test Number		1
Initial	Height, in	3.019
	Diameter, in	1.393
	Moisture Content (from Cuttings), %	19.4
	Dry Density, pcf	108.
	Saturation (Wet Method), %	94.7
	Void Ratio	0.549
Final	Moisture Content, %	20.5
	Dry Density, pcf	108.
	Cross-Sectional Area (Method A), in²	1.524
	Saturation, %	100.0
	Void Ratio	0.550
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		13.99
Horizontal Effective Consolidation Stress, psi		13.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		33.51
Strain at Failure, %		17.3
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		67.03
Effective Minor Principal Stress at Failure, psi		14.49
Effective Major Principal Stress at Failure, psi		81.52
B-Value		—

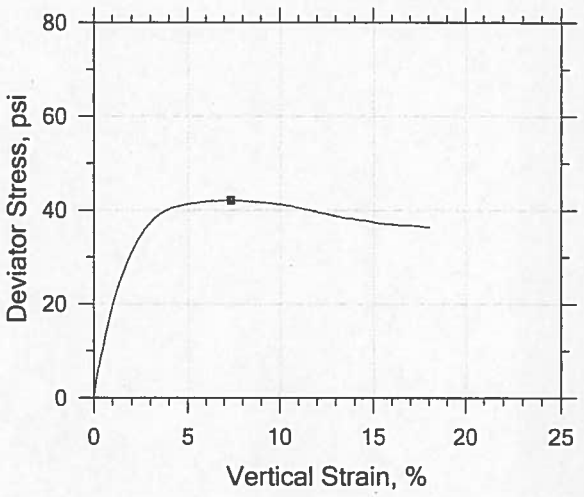
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-08	Tested By: SKK	Checked By: SKK
Sample No.: 19-271	Test Date: 3/26/19	Depth: 15-17.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-276
Depth, ft		18-20'
Test Number		1
Initial	Height, in	3.050
	Diameter, in	1.397
	Moisture Content (from Cuttings), %	27.8
	Dry Density, pcf	92.6
	Saturation (Wet Method), %	90.7
	Void Ratio	0.834
Final	Moisture Content, %	30.0
	Dry Density, pcf	93.6
	Cross-Sectional Area (Method A), in²	1.522
	Saturation, %	100.0
	Void Ratio	0.815
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		15.98
Horizontal Effective Consolidation Stress, psi		15.98
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		21.05
Strain at Failure, %		7.38
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		42.10
Effective Minor Principal Stress at Failure, psi		16.21
Effective Major Principal Stress at Failure, psi		58.32
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-09	Tested By: SKK	Checked By: SKK
Sample No.: 19-276	Test Date: 3/28/19	Depth: 18-20'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5221	-0.0016019	-0.0010524	15.976	15.977	0.00000
0.16995	0.15480	0.00000	1.5245	7.2808	4.7686	20.713	15.944	0.00000
0.33765	0.33146	0.00000	1.5272	12.255	8.0092	23.954	15.944	-0.0081505
0.50110	0.50813	0.00000	1.5299	16.907	11.027	27.028	16.001	-0.0081505
0.66865	0.65788	0.00000	1.5322	21.360	13.910	29.878	15.969	-0.016301
0.83635	0.81941	0.00000	1.5347	25.529	16.596	32.549	15.952	-0.016301
1.0041	0.96747	0.00000	1.5370	29.506	19.152	35.120	15.969	-0.024451
1.1668	1.1374	0.00000	1.5396	32.958	21.353	37.314	15.961	-0.024451
1.3348	1.2855	0.00000	1.5419	36.282	23.470	39.447	15.977	-0.032602
1.5029	1.4554	0.00000	1.5446	39.427	25.458	41.410	15.952	-0.032602
1.6707	1.6220	0.00000	1.5472	42.218	27.211	43.196	15.985	-0.040752
1.8340	1.7768	0.00000	1.5496	44.892	28.886	44.871	15.985	-0.040752
2.0015	1.9383	0.00000	1.5522	47.410	30.454	46.439	15.985	-0.048903
2.1692	2.1082	0.00000	1.5549	49.459	31.711	47.712	16.001	-0.048903
2.3377	2.2529	0.00000	1.5572	51.483	32.957	48.942	15.985	-0.057054
2.5008	2.4027	0.00000	1.5596	53.254	34.035	50.028	15.993	-0.057054
2.6684	2.5710	0.00000	1.5623	54.933	35.043	51.036	15.993	-0.065204
2.8361	2.7089	0.00000	1.5645	56.456	35.961	51.954	15.993	-0.073354
3.0040	2.9041	0.00000	1.5676	57.916	36.811	52.812	16.001	-0.073354
3.1710	3.0555	0.00000	1.5701	59.097	37.499	53.500	16.001	-0.073354
3.3348	3.2053	0.00000	1.5725	60.341	38.225	54.226	16.001	-0.081505
3.5021	3.3819	0.00000	1.5754	61.242	38.719	54.720	16.001	-0.081505
3.6700	3.5401	0.00000	1.5780	62.111	39.199	55.209	16.009	-0.089655
3.8374	3.7151	0.00000	1.5808	62.890	39.613	55.614	16.001	-0.089655
4.0011	3.8665	0.00000	1.5833	63.602	39.993	56.011	16.017	-0.097806
4.1710	4.0264	0.00000	1.5860	64.194	40.293	56.302	16.009	-0.097806
4.3348	4.1862	0.00000	1.5886	64.721	40.550	56.568	16.017	-0.10596
4.5018	4.3595	0.00000	1.5915	65.129	40.725	56.726	16.001	-0.10596
4.6689	4.5446	0.00000	1.5946	65.538	40.895	56.872	15.977	-0.11411
4.8366	4.7145	0.00000	1.5974	65.933	41.062	57.079	16.017	-0.11411
5.0007	4.8744	0.00000	1.6001	66.243	41.179	57.204	16.025	-0.12226
5.1681	5.0342	0.00000	1.6028	66.526	41.279	57.289	16.009	-0.12226
5.3358	5.1924	0.00000	1.6055	66.960	41.474	57.491	16.017	-0.13041
5.5032	5.3758	0.00000	1.6086	67.146	41.501	57.518	16.017	-0.13041
5.6710	5.5424	0.00000	1.6114	67.362	41.555	57.580	16.025	-0.13856
5.8340	5.7072	0.00000	1.6142	67.678	41.671	57.672	16.001	-0.13856
6.0024	5.8587	0.00000	1.6168	67.925	41.750	57.759	16.009	-0.13856
6.1702	6.0303	0.00000	1.6198	68.172	41.818	57.836	16.017	-0.14671
6.3338	6.1834	0.00000	1.6224	68.450	41.915	57.940	16.025	-0.14671
6.5019	6.3601	0.00000	1.6255	68.640	41.945	57.954	16.009	-0.15486
6.6694	6.5401	0.00000	1.6286	68.702	41.894	57.904	16.009	-0.15486
6.8371	6.7168	0.00000	1.6317	68.980	41.978	57.995	16.017	-0.16301
7.0048	6.8951	0.00000	1.6348	69.229	42.042	58.059	16.017	-0.16301
7.1679	7.0398	0.00000	1.6374	69.423	42.088	58.073	15.985	-0.17116
7.3358	7.2115	0.00000	1.6404	69.571	42.094	58.111	16.017	-0.17116
7.5021	7.3763	0.00000	1.6433	69.723	42.104	58.137	16.033	-0.17931
7.6697	7.5665	0.00000	1.6467	69.789	42.049	58.066	16.017	-0.17931
7.8335	7.7162	0.00000	1.6494	69.878	42.029	58.062	16.033	-0.18746
8.0013	7.9064	0.00000	1.6528	70.069	42.049	58.066	16.017	-0.18746
8.1687	8.0561	0.00000	1.6555	70.005	41.935	57.961	16.025	-0.19561

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-09	Tested By: SKK	Checked By: SKK
Sample No.: 19-276	Test Date: 3/28/19	Depth: 18-20'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3366	8.2109	0.00000	1.6583	70.101	41.916	57.926	16.009	-0.19561
8.5047	8.3842	0.00000	1.6614	70.070	41.811	57.820	16.009	-0.20376
8.6681	8.5525	0.00000	1.6645	70.195	41.802	57.811	16.009	-0.20376
8.8351	8.7308	0.00000	1.6677	70.136	41.677	57.670	15.993	-0.21191
9.0021	8.8940	0.00000	1.6707	70.286	41.686	57.703	16.017	-0.21191
9.1697	9.0454	0.00000	1.6735	70.290	41.612	57.613	16.001	-0.21191
9.3374	9.2103	0.00000	1.6765	70.418	41.606	57.591	15.985	-0.22006
9.5011	9.3937	0.00000	1.6799	70.531	41.581	57.615	16.033	-0.22006
9.6679	9.5654	0.00000	1.6831	70.473	41.461	57.478	16.017	-0.22821
9.8358	9.7269	0.00000	1.6861	70.475	41.381	57.390	16.009	-0.22821
10.004	9.8766	0.00000	1.6889	70.480	41.309	57.294	15.985	-0.23636
10.167	10.055	0.00000	1.6923	70.535	41.252	57.269	16.017	-0.23636
10.335	10.208	0.00000	1.6952	70.376	41.081	57.115	16.033	-0.24451
10.503	10.386	0.00000	1.6985	70.380	40.994	57.012	16.017	-0.24451
10.667	10.553	0.00000	1.7017	70.409	40.928	56.954	16.025	-0.25267
10.835	10.735	0.00000	1.7052	70.317	40.784	56.801	16.017	-0.25267
11.002	10.893	0.00000	1.7082	70.158	40.612	56.645	16.033	-0.26082
11.170	11.061	0.00000	1.7114	70.010	40.441	56.442	16.001	-0.26082
11.334	11.219	0.00000	1.7145	69.946	40.325	56.335	16.009	-0.26897
11.502	11.396	0.00000	1.7179	69.825	40.167	56.160	15.993	-0.26897
11.670	11.566	0.00000	1.7212	69.853	40.099	56.108	16.009	-0.26897
11.834	11.734	0.00000	1.7245	69.630	39.887	55.920	16.033	-0.27712
12.002	11.897	0.00000	1.7277	69.536	39.752	55.785	16.033	-0.27712
12.169	12.064	0.00000	1.7309	69.354	39.564	55.581	16.017	-0.28527
12.337	12.227	0.00000	1.7342	69.257	39.428	55.462	16.033	-0.28527
12.501	12.374	0.00000	1.7370	69.262	39.359	55.369	16.009	-0.29342
12.668	12.542	0.00000	1.7404	69.136	39.204	55.222	16.017	-0.29342
12.836	12.722	0.00000	1.7440	68.986	39.030	55.023	15.993	-0.29342
13.004	12.895	0.00000	1.7474	68.852	38.869	54.903	16.033	-0.30157
13.171	13.042	0.00000	1.7504	68.765	38.748	54.757	16.009	-0.30157
13.335	13.215	0.00000	1.7539	68.607	38.574	54.591	16.017	-0.30972
13.503	13.381	0.00000	1.7573	68.483	38.422	54.439	16.017	-0.30972
13.670	13.551	0.00000	1.7607	68.359	38.269	54.286	16.017	-0.31787
13.834	13.718	0.00000	1.7641	68.448	38.239	54.273	16.033	-0.31787
14.002	13.898	0.00000	1.7678	68.454	38.155	54.164	16.009	-0.31787
14.169	14.075	0.00000	1.7714	68.364	38.019	54.012	15.993	-0.32602
14.334	14.213	0.00000	1.7743	68.296	37.914	53.932	16.017	-0.32602
14.502	14.386	0.00000	1.7779	68.359	37.866	53.883	16.017	-0.33417
14.669	14.563	0.00000	1.7816	68.423	37.816	53.825	16.009	-0.33417
14.837	14.733	0.00000	1.7851	68.359	37.698	53.716	16.017	-0.34232
15.005	14.909	0.00000	1.7888	68.234	37.544	53.561	16.017	-0.34232
15.168	15.069	0.00000	1.7922	68.112	37.398	53.407	16.009	-0.34232
15.336	15.229	0.00000	1.7956	67.925	37.218	53.227	16.009	-0.35047
15.504	15.417	0.00000	1.7996	67.923	37.126	53.144	16.017	-0.35047
15.668	15.601	0.00000	1.8035	67.987	37.074	53.083	16.009	-0.35862
15.834	15.742	0.00000	1.8065	67.991	37.008	53.001	15.993	-0.35862
16.003	15.910	0.00000	1.8101	68.121	36.999	52.968	15.969	-0.36677
16.170	16.084	0.00000	1.8138	68.148	36.931	52.916	15.985	-0.36677
16.334	16.228	0.00000	1.8170	68.174	36.876	52.885	16.009	-0.36677
16.502	16.402	0.00000	1.8207	68.174	36.793	52.802	16.009	-0.37492

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-09	Tested By: SKK	Checked By: SKK
Sample No.: 19-276	Test Date: 3/28/19	Depth: 18-20'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

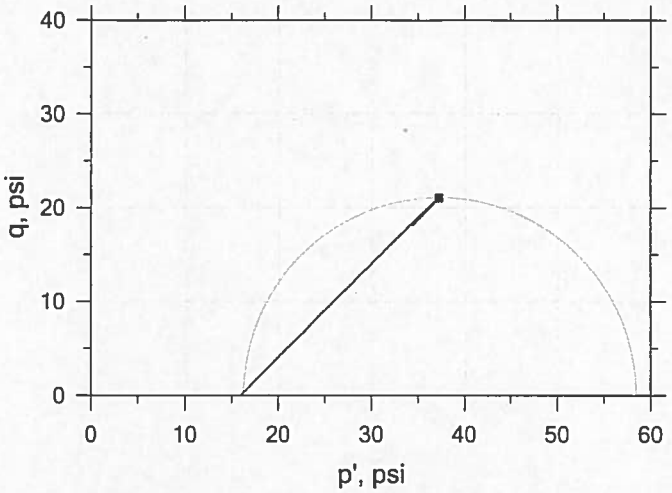
Shear Phase

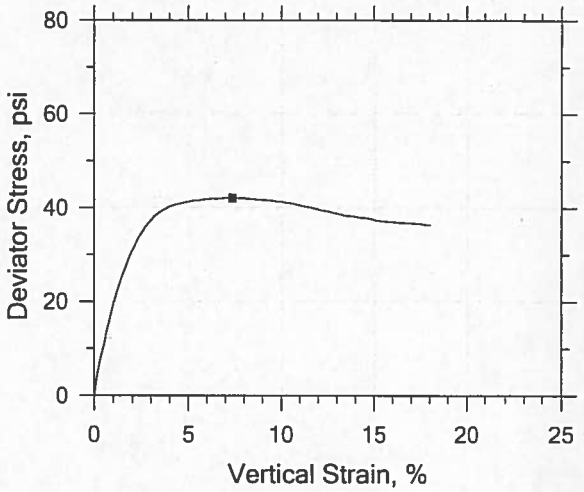
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.669	16.577	0.00000	1.8246	68.331	36.795	52.796	16.001	-0.37492
16.837	16.743	0.00000	1.8282	68.391	36.748	52.757	16.009	-0.38307
17.001	16.918	0.00000	1.8321	68.545	36.748	52.765	16.017	-0.38307
17.168	17.095	0.00000	1.8360	68.576	36.680	52.697	16.017	-0.38307
17.336	17.229	0.00000	1.8390	68.673	36.667	52.668	16.001	-0.39122
17.505	17.415	0.00000	1.8431	68.702	36.594	52.603	16.009	-0.39122
17.668	17.558	0.00000	1.8463	68.670	36.507	52.525	16.017	-0.39122
17.836	17.741	0.00000	1.8504	68.701	36.436	52.453	16.017	-0.39937
18.003	17.919	0.00000	1.8544	68.640	36.317	52.326	16.009	-0.39937
18.166	18.067	0.00000	1.8578	68.759	36.310	52.344	16.033	-0.40753

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-09	Tested By: SKK	Checked By: SKK
Sample No.: 19-276	Test Date: 3/28/19	Depth: 18-20'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





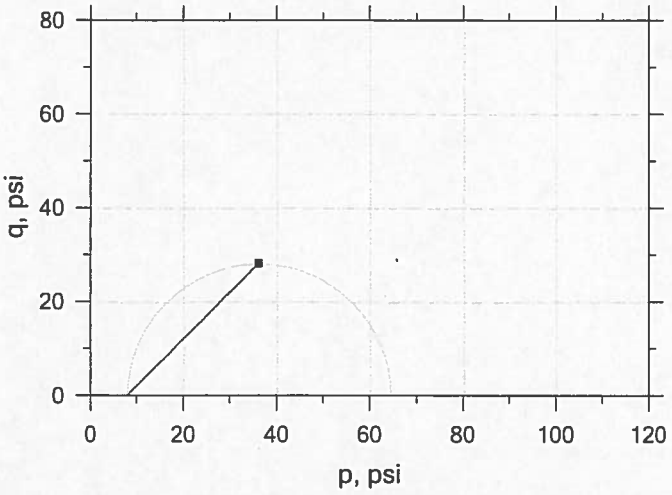
Symbol		■
Sample ID		19-276
Depth, ft		18-20'
Test Number		1
Initial	Height, in	3.050
	Diameter, in	1.397
	Moisture Content (from Cuttings), %	27.8
	Dry Density, pcf	92.6
	Saturation (Wet Method), %	90.7
	Void Ratio	0.834
Final	Moisture Content, %	30.0
	Dry Density, pcf	93.6
	Cross-Sectional Area (Method A), in²	1.522
	Saturation, %	100.0
	Void Ratio	0.815
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		15.98
Horizontal Effective Consolidation Stress, psi		15.98
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		21.05
Strain at Failure, %		7.38
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		42.10
Effective Minor Principal Stress at Failure, psi		16.21
Effective Major Principal Stress at Failure, psi		58.32
B-Value		—

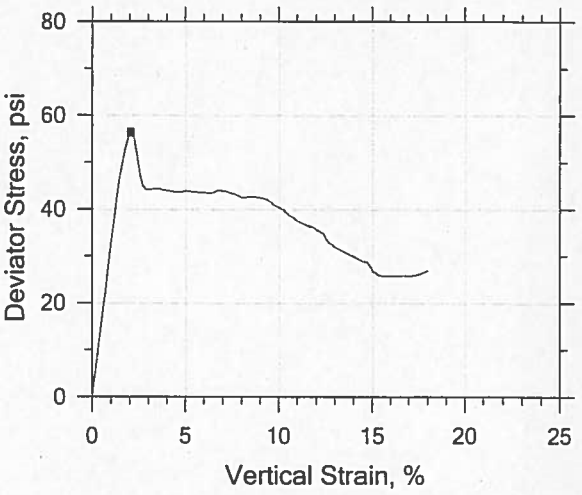
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-09	Tested By: SKK	Checked By: SKK
Sample No.: 19-276	Test Date: 3/28/19	Depth: 18-20'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-285
Depth, ft		13-15'
Test Number		2
Initial	Height, in	3.041
	Diameter, in	1.398
	Moisture Content (from Cuttings), %	26.4
	Dry Density, pcf	96.7
	Saturation (Wet Method), %	94.7
	Void Ratio	0.757
Final	Moisture Content, %	27.5
	Dry Density, pcf	97.2
	Cross-Sectional Area (Method A), in²	1.529
	Saturation, %	100.0
	Void Ratio	0.747
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		7.957
Horizontal Effective Consolidation Stress, psi		7.988
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		28.18
Strain at Failure, %		2.06
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		56.36
Effective Minor Principal Stress at Failure, psi		8.062
Effective Major Principal Stress at Failure, psi		64.43
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-302	Tested By: SKK	Checked By: SKK
Sample No.: 19-285	Test Date: 4/11/19	Depth: 13-15'
Test No.: 2	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5291	-0.047437	-0.031023	7.9574	7.9884	0.00000
0.16707	0.15501	0.00000	1.5315	7.6978	5.0191	12.991	7.9722	-0.0081505
0.33450	0.32856	0.00000	1.5341	16.155	10.515	18.487	7.9722	-0.0081505
0.50117	0.49705	0.00000	1.5367	24.798	16.113	24.086	7.9722	-0.016301
0.66810	0.66217	0.00000	1.5393	33.008	21.412	29.376	7.9641	-0.016301
0.83555	0.82898	0.00000	1.5419	41.646	26.971	34.959	7.9884	-0.016301
1.0037	0.97725	0.00000	1.5442	49.978	32.320	40.308	7.9884	-0.024451
1.1707	1.1407	0.00000	1.5467	57.970	37.426	45.406	7.9803	-0.024451
1.3335	1.2856	0.00000	1.5490	65.149	41.998	49.995	7.9965	-0.032602
1.5013	1.4473	0.00000	1.5515	71.833	46.230	54.227	7.9965	-0.040752
1.6681	1.6057	0.00000	1.5540	77.645	49.889	57.893	8.0046	-0.040752
1.8358	1.7675	0.00000	1.5566	82.494	52.914	60.927	8.0127	-0.048903
2.0042	1.9292	0.00000	1.5592	86.287	55.252	63.265	8.0127	-0.048903
2.1671	2.0640	0.00000	1.5613	88.152	56.365	64.377	8.0127	-0.048903
2.3353	2.2409	0.00000	1.5641	86.655	55.297	63.334	8.0370	-0.057054
2.5035	2.4195	0.00000	1.5670	80.126	51.021	59.058	8.0370	-0.065204
2.6668	2.5813	0.00000	1.5696	73.816	46.909	54.938	8.0289	-0.065204
2.8353	2.7329	0.00000	1.5721	70.828	44.928	52.974	8.0451	-0.065204
3.0037	2.8981	0.00000	1.5747	69.778	44.178	52.191	8.0127	-0.073354
3.1671	3.0547	0.00000	1.5773	69.840	44.139	52.151	8.0127	-0.081505
3.3340	3.2199	0.00000	1.5800	70.083	44.210	52.247	8.0370	-0.081505
3.5026	3.3799	0.00000	1.5826	70.308	44.272	52.276	8.0046	-0.081505
3.6702	3.5552	0.00000	1.5855	70.581	44.355	52.392	8.0370	-0.089655
3.8337	3.7136	0.00000	1.5881	70.332	44.119	52.156	8.0370	-0.089655
4.0015	3.8770	0.00000	1.5908	70.363	44.056	52.093	8.0370	-0.097806
4.1691	4.0354	0.00000	1.5934	70.244	43.901	51.914	8.0127	-0.097806
4.3374	4.2123	0.00000	1.5963	70.306	43.851	51.864	8.0127	-0.10596
4.5013	4.3841	0.00000	1.5992	70.089	43.629	51.642	8.0127	-0.10596
4.6686	4.5459	0.00000	1.6019	70.149	43.586	51.606	8.0208	-0.10596
4.8366	4.7312	0.00000	1.6050	70.306	43.591	51.603	8.0127	-0.11411
5.0005	4.8829	0.00000	1.6076	70.524	43.650	51.662	8.0127	-0.12226
5.1686	5.0312	0.00000	1.6101	70.895	43.806	51.826	8.0208	-0.12226
5.3358	5.2013	0.00000	1.6130	71.085	43.837	51.842	8.0046	-0.12226
5.5046	5.3816	0.00000	1.6161	70.988	43.686	51.707	8.0208	-0.13041
5.6668	5.5518	0.00000	1.6190	71.087	43.661	51.657	7.9965	-0.13041
5.8345	5.7135	0.00000	1.6217	71.052	43.557	51.570	8.0127	-0.13856
6.0022	5.8669	0.00000	1.6244	71.177	43.556	51.569	8.0127	-0.13856
6.1705	6.0488	0.00000	1.6275	71.146	43.445	51.458	8.0127	-0.13856
6.3345	6.1921	0.00000	1.6300	71.206	43.409	51.430	8.0208	-0.14671
6.5029	6.3791	0.00000	1.6333	71.204	43.313	51.342	8.0289	-0.14671
6.6705	6.5526	0.00000	1.6363	71.676	43.514	51.518	8.0046	-0.15486
6.8335	6.7194	0.00000	1.6392	72.486	43.923	51.919	7.9965	-0.15486
7.0021	6.8846	0.00000	1.6421	72.704	43.970	51.967	7.9965	-0.16301
7.1702	7.0429	0.00000	1.6449	72.451	43.735	51.748	8.0127	-0.16301
7.3335	7.2030	0.00000	1.6478	72.579	43.731	51.727	7.9965	-0.16301
7.5012	7.3850	0.00000	1.6510	72.263	43.445	51.466	8.0208	-0.17116
7.6692	7.5535	0.00000	1.6540	72.071	43.243	51.288	8.0451	-0.17116
7.8371	7.7236	0.00000	1.6571	71.830	43.010	51.023	8.0127	-0.17931
8.0008	7.8820	0.00000	1.6599	71.608	42.796	50.825	8.0289	-0.17931
8.1684	8.0556	0.00000	1.6631	71.111	42.409	50.438	8.0289	-0.18746

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-302	Tested By: SKK	Checked By: SKK
Sample No.: 19-285	Test Date: 4/11/19	Depth: 13-15'
Test No.: 2	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3366	8.2156	0.00000	1.6660	71.297	42.440	50.469	8.0289	-0.18746
8.5039	8.3808	0.00000	1.6690	71.643	42.564	50.576	8.0127	-0.18746
8.6668	8.5358	0.00000	1.6718	71.859	42.614	50.635	8.0208	-0.19561
8.8343	8.7076	0.00000	1.6749	72.018	42.621	50.626	8.0046	-0.19561
9.0004	8.8862	0.00000	1.6782	71.854	42.432	50.477	8.0451	-0.20376
9.1679	9.0227	0.00000	1.6807	71.799	42.330	50.343	8.0127	-0.20376
9.3350	9.2013	0.00000	1.6840	71.824	42.255	50.292	8.0370	-0.21191
9.5026	9.3631	0.00000	1.6870	71.553	42.012	50.008	7.9965	-0.21191
9.6699	9.5214	0.00000	1.6900	71.025	41.619	49.615	7.9965	-0.21191
9.8369	9.6950	0.00000	1.6932	70.213	41.052	49.065	8.0127	-0.22006
10.004	9.8635	0.00000	1.6964	69.679	40.654	48.691	8.0370	-0.22006
10.167	10.040	0.00000	1.6998	69.341	40.367	48.388	8.0208	-0.22821
10.336	10.190	0.00000	1.7026	68.781	39.965	47.986	8.0208	-0.22821
10.504	10.366	0.00000	1.7059	67.971	39.405	47.434	8.0289	-0.22821
10.670	10.554	0.00000	1.7095	67.040	38.769	46.790	8.0208	-0.23636
10.837	10.691	0.00000	1.7121	66.575	38.433	46.446	8.0127	-0.23636
11.001	10.876	0.00000	1.7157	65.855	37.925	45.962	8.0370	-0.23636
11.168	11.026	0.00000	1.7186	65.271	37.516	45.520	8.0046	-0.24451
11.336	11.193	0.00000	1.7218	64.741	37.130	45.143	8.0127	-0.24451
11.504	11.365	0.00000	1.7251	64.456	36.886	44.923	8.0370	-0.25267
11.667	11.547	0.00000	1.7287	64.020	36.551	44.588	8.0370	-0.25267
11.837	11.702	0.00000	1.7317	63.646	36.264	44.309	8.0451	-0.25267
12.001	11.860	0.00000	1.7348	63.368	36.032	44.069	8.0370	-0.26082
12.169	12.037	0.00000	1.7383	62.716	35.578	43.607	8.0289	-0.26082
12.337	12.199	0.00000	1.7415	62.222	35.222	43.235	8.0127	-0.26082
12.504	12.379	0.00000	1.7451	61.628	34.802	42.830	8.0289	-0.26897
12.667	12.541	0.00000	1.7483	59.457	33.489	41.493	8.0046	-0.26897
12.835	12.687	0.00000	1.7513	58.523	32.893	40.906	8.0127	-0.26897
13.003	12.871	0.00000	1.7550	57.709	32.353	40.390	8.0370	-0.27712
13.170	13.023	0.00000	1.7580	56.999	31.886	39.899	8.0127	-0.27712
13.338	13.210	0.00000	1.7618	56.471	31.510	39.523	8.0127	-0.28527
13.502	13.373	0.00000	1.7651	55.939	31.143	39.172	8.0289	-0.28527
13.669	13.537	0.00000	1.7685	55.415	30.781	38.786	8.0046	-0.28527
13.837	13.707	0.00000	1.7720	55.191	30.587	38.624	8.0370	-0.29342
14.004	13.877	0.00000	1.7755	54.666	30.224	38.245	8.0208	-0.29342
14.167	14.052	0.00000	1.7791	54.135	29.857	37.886	8.0289	-0.29342
14.336	14.232	0.00000	1.7828	53.607	29.491	37.520	8.0289	-0.30157
14.502	14.399	0.00000	1.7863	52.952	29.060	37.097	8.0370	-0.30157
14.670	14.571	0.00000	1.7899	52.678	28.842	36.854	8.0127	-0.30157
14.833	14.735	0.00000	1.7933	52.486	28.673	36.710	8.0370	-0.30972
15.002	14.888	0.00000	1.7966	51.152	27.873	35.894	8.0208	-0.30972
15.167	15.058	0.00000	1.8002	49.283	26.772	34.809	8.0370	-0.30972
15.333	15.233	0.00000	1.8039	48.442	26.244	34.289	8.0451	-0.30972
15.501	15.383	0.00000	1.8071	47.919	25.902	33.922	8.0208	-0.31787
15.669	15.569	0.00000	1.8110	47.798	25.771	33.775	8.0046	-0.31787
15.836	15.710	0.00000	1.8141	47.763	25.703	33.724	8.0208	-0.32602
16.004	15.897	0.00000	1.8181	47.924	25.727	33.723	7.9965	-0.32602
16.168	16.044	0.00000	1.8213	48.073	25.758	33.786	8.0289	-0.32602
16.336	16.219	0.00000	1.8251	48.136	25.732	33.753	8.0208	-0.33417
16.504	16.384	0.00000	1.8287	48.263	25.744	33.756	8.0127	-0.33417

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-302	Tested By: SKK	Checked By: SKK
Sample No.: 19-285	Test Date: 4/11/19	Depth: 13-15'
Test No.: 2	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

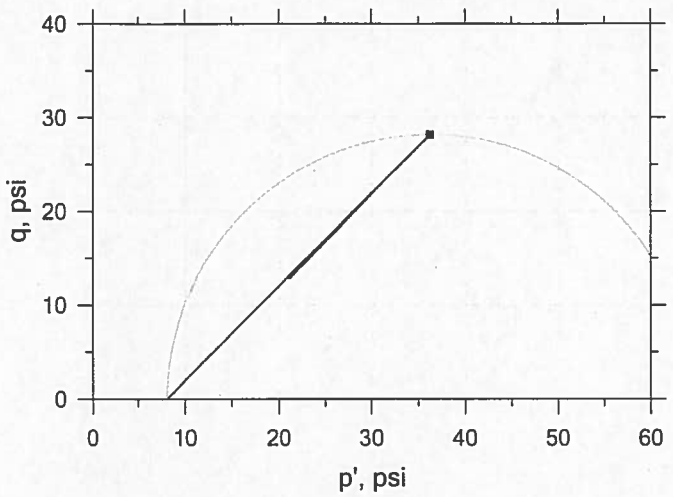
Shear Phase

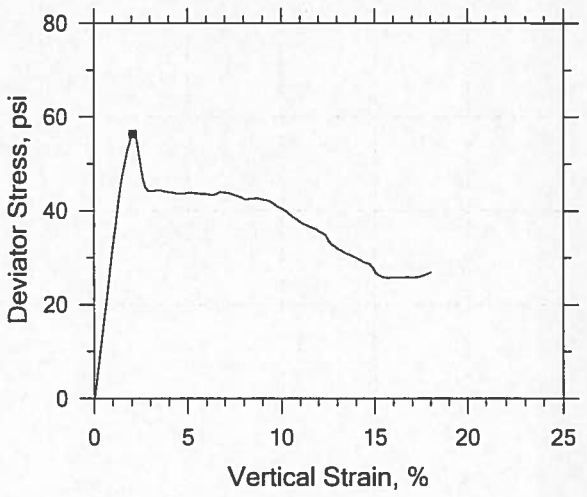
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.667	16.542	0.00000	1.8322	48.391	25.758	33.755	7.9965	-0.33417
16.835	16.718	0.00000	1.8360	48.693	25.862	33.899	8.0370	-0.34232
17.003	16.876	0.00000	1.8395	48.667	25.793	33.805	8.0127	-0.34232
17.171	17.034	0.00000	1.8430	48.764	25.790	33.786	7.9965	-0.34232
17.335	17.206	0.00000	1.8469	48.912	25.810	33.839	8.0289	-0.35047
17.502	17.368	0.00000	1.8505	49.131	25.872	33.893	8.0208	-0.35047
17.669	17.545	0.00000	1.8545	49.631	26.079	34.091	8.0127	-0.35047
17.836	17.703	0.00000	1.8580	50.161	26.308	34.312	8.0046	-0.35047
18.005	17.870	0.00000	1.8618	50.843	26.614	34.627	8.0127	-0.35862
18.168	18.030	0.00000	1.8654	51.529	26.924	34.929	8.0046	-0.35862
18.177	18.037	0.00000	1.8656	51.591	26.955	34.959	8.0046	-0.35862

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-302	Tested By: SKK	Checked By: SKK
Sample No.: 19-285	Test Date: 4/11/19	Depth: 13-15'
Test No.: 2	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





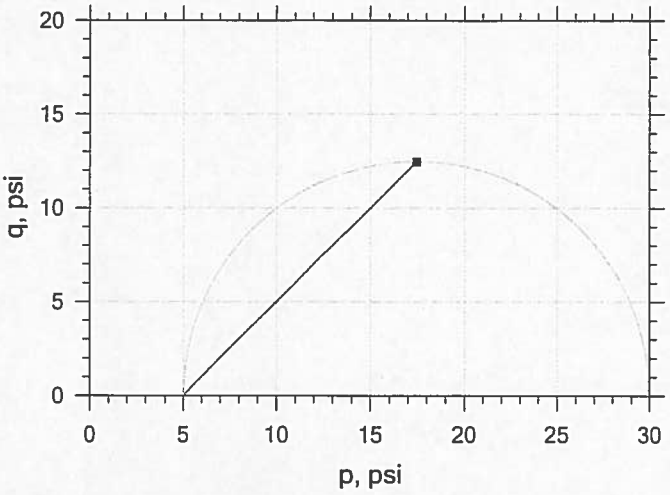
Symbol		■
Sample ID		19-285
Depth, ft		13-15'
Test Number		2
Initial	Height, in	3.041
	Diameter, in	1.398
	Moisture Content (from Cuttings), %	26.4
	Dry Density, pcf	96.7
	Saturation (Wet Method), %	94.7
	Void Ratio	0.757
Final	Moisture Content, %	27.5
	Dry Density, pcf	97.2
	Cross-Sectional Area (Method A), in²	1.529
	Saturation, %	100.0
	Void Ratio	0.747
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		7.957
Horizontal Effective Consolidation Stress, psi		7.988
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		28.18
Strain at Failure, %		2.06
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		56.36
Effective Minor Principal Stress at Failure, psi		8.062
Effective Major Principal Stress at Failure, psi		64.43
B-Value		---

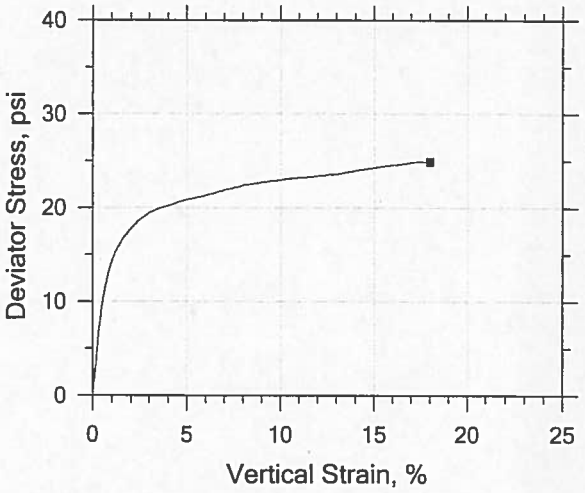
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-302	Tested By: SKK	Checked By: SKK
Sample No.: 19-285	Test Date: 4/11/19	Depth: 13-15'
Test No.: 2	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-288
Depth, ft		5-6.5'
Test Number		1
Initial	Height, in	3.021
	Diameter, in	1.391
	Moisture Content (from Cuttings), %	19.7
	Dry Density, pcf	106.
	Saturation (Wet Method), %	92.9
	Void Ratio	0.565
Final	Moisture Content, %	21.1
	Dry Density, pcf	107.
	Cross-Sectional Area (Method A), in²	1.518
	Saturation, %	100.0
	Void Ratio	0.563
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		4.991
Horizontal Effective Consolidation Stress, psi		4.999
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		12.47
Strain at Failure, %		18.0
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		24.93
Effective Minor Principal Stress at Failure, psi		5.463
Effective Major Principal Stress at Failure, psi		30.40
B-Value		—

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-601	Tested By: SKK	Checked By: SKK
Sample No.: 19-288	Test Date: 3/28/19	Depth: 5-6.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5179	-0.011553	-0.0076114	4.9912	4.9988	0.00000
0.16735	0.16769	0.00000	1.5205	5.3432	3.5063	8.4727	4.9664	0.00000
0.33453	0.31674	0.00000	1.5227	10.565	6.9231	11.898	4.9745	-0.0081505
0.50128	0.48104	0.00000	1.5252	14.354	9.3884	14.379	4.9907	-0.016301
0.66867	0.62840	0.00000	1.5275	17.370	11.342	16.333	4.9907	-0.016301
0.83637	0.80624	0.00000	1.5302	19.795	12.898	17.889	4.9907	-0.024451
1.0032	0.96038	0.00000	1.5326	21.538	14.008	18.991	4.9826	-0.032602
1.1708	1.1247	0.00000	1.5352	23.060	14.968	19.959	4.9907	-0.032602
1.3343	1.2822	0.00000	1.5376	24.177	15.664	20.663	4.9988	-0.040752
1.5018	1.4482	0.00000	1.5402	25.143	16.257	21.247	4.9907	-0.040752
1.6697	1.6074	0.00000	1.5427	26.076	16.827	21.818	4.9907	-0.048903
1.8366	1.7802	0.00000	1.5454	26.696	17.191	22.190	4.9988	-0.057054
2.0040	1.9225	0.00000	1.5477	27.349	17.581	22.580	4.9988	-0.057054
2.1668	2.0749	0.00000	1.5501	27.908	17.908	22.907	4.9988	-0.065204
2.3346	2.2443	0.00000	1.5527	28.468	18.230	23.228	4.9988	-0.065204
2.5023	2.3916	0.00000	1.5551	28.995	18.534	23.541	5.0069	-0.073354
2.6705	2.5796	0.00000	1.5581	29.554	18.849	23.856	5.0069	-0.081505
2.8343	2.7287	0.00000	1.5605	29.898	19.033	24.032	4.9988	-0.081505
3.0023	2.8761	0.00000	1.5629	30.300	19.255	24.262	5.0069	-0.089655
3.1697	3.0488	0.00000	1.5656	30.736	19.491	24.498	5.0069	-0.089655
3.3377	3.2097	0.00000	1.5682	31.015	19.630	24.637	5.0069	-0.097806
3.5008	3.3673	0.00000	1.5708	31.295	19.769	24.776	5.0069	-0.10596
3.6681	3.5316	0.00000	1.5735	31.608	19.926	24.925	4.9988	-0.10596
3.8361	3.6908	0.00000	1.5761	31.824	20.023	25.030	5.0069	-0.11411
4.0044	3.8602	0.00000	1.5788	32.073	20.138	25.145	5.0069	-0.11411
4.1674	4.0346	0.00000	1.5817	32.290	20.231	25.238	5.0069	-0.12226
4.3348	4.2006	0.00000	1.5845	32.506	20.325	25.340	5.0150	-0.13041
4.5018	4.3768	0.00000	1.5874	32.788	20.457	25.463	5.0069	-0.13041
4.6694	4.5394	0.00000	1.5901	33.099	20.610	25.617	5.0069	-0.13856
4.8335	4.6783	0.00000	1.5924	33.314	20.709	25.724	5.0150	-0.13856
5.0016	4.8476	0.00000	1.5952	33.503	20.783	25.790	5.0069	-0.14671
5.1694	5.0272	0.00000	1.5982	33.812	20.929	25.944	5.0150	-0.14671
5.3335	5.1999	0.00000	1.6012	33.909	20.944	25.942	4.9988	-0.15486
5.5011	5.3659	0.00000	1.6040	34.062	20.995	26.002	5.0069	-0.15486
5.6684	5.5353	0.00000	1.6068	34.311	21.105	26.112	5.0069	-0.16301
5.8364	5.6996	0.00000	1.6096	34.467	21.157	26.164	5.0069	-0.17116
6.0045	5.8605	0.00000	1.6124	34.622	21.210	26.217	5.0069	-0.17116
6.1679	6.0468	0.00000	1.6156	34.964	21.372	26.379	5.0069	-0.17931
6.3351	6.2247	0.00000	1.6187	35.182	21.458	26.465	5.0069	-0.17931
6.5024	6.3941	0.00000	1.6216	35.337	21.508	26.514	5.0069	-0.18746
6.6700	6.5685	0.00000	1.6246	35.617	21.632	26.639	5.0069	-0.18746
6.8340	6.7159	0.00000	1.6272	35.835	21.725	26.732	5.0069	-0.19561
7.0023	6.8785	0.00000	1.6300	35.990	21.775	26.782	5.0069	-0.19561
7.1689	7.0513	0.00000	1.6331	36.334	21.938	26.937	4.9988	-0.20376
7.3372	7.2376	0.00000	1.6363	36.550	22.018	27.025	5.0069	-0.20376
7.5008	7.3815	0.00000	1.6389	36.672	22.052	27.067	5.0150	-0.21191
7.6679	7.5509	0.00000	1.6419	36.956	22.177	27.176	4.9988	-0.21191
7.8359	7.7254	0.00000	1.6450	37.109	22.221	27.228	5.0069	-0.22006
8.0039	7.8829	0.00000	1.6478	37.296	22.289	27.296	5.0069	-0.22006
8.1671	8.0489	0.00000	1.6508	37.636	22.448	27.463	5.0150	-0.22821

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-601	Tested By: SKK	Checked By: SKK
Sample No.: 19-288	Test Date: 3/28/19	Depth: 5-6.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3353	8.2217	0.00000	1.6539	37.729	22.454	27.469	5.0150	-0.23636
8.5024	8.3792	0.00000	1.6567	37.885	22.503	27.518	5.0150	-0.23636
8.6705	8.5604	0.00000	1.6600	38.106	22.584	27.583	4.9988	-0.24451
8.8335	8.6908	0.00000	1.6624	38.261	22.639	27.638	4.9988	-0.24451
9.0018	8.8653	0.00000	1.6656	38.355	22.645	27.643	4.9988	-0.25267
9.1700	9.0194	0.00000	1.6684	38.633	22.766	27.773	5.0069	-0.25267
9.3374	9.1871	0.00000	1.6715	38.699	22.756	27.747	4.9907	-0.26082
9.5006	9.3362	0.00000	1.6742	38.788	22.766	27.773	5.0069	-0.26082
9.6687	9.5039	0.00000	1.6773	39.099	22.902	27.909	5.0069	-0.26897
9.8372	9.6953	0.00000	1.6809	39.192	22.901	27.908	5.0069	-0.26897
10.005	9.8409	0.00000	1.6836	39.289	22.915	27.906	4.9907	-0.26897
10.168	10.002	0.00000	1.6866	39.474	22.977	27.976	4.9988	-0.27712
10.336	10.180	0.00000	1.6899	39.659	23.034	28.041	5.0069	-0.28527
10.504	10.339	0.00000	1.6929	39.818	23.080	28.071	4.9907	-0.28527
10.667	10.510	0.00000	1.6962	39.939	23.100	28.107	5.0069	-0.28527
10.836	10.683	0.00000	1.6994	40.125	23.158	28.165	5.0069	-0.29342
11.004	10.840	0.00000	1.7025	40.186	23.146	28.161	5.0150	-0.29342
11.167	11.010	0.00000	1.7057	40.436	23.241	28.248	5.0069	-0.30157
11.336	11.174	0.00000	1.7088	40.498	23.228	28.235	5.0069	-0.30157
11.504	11.330	0.00000	1.7119	40.564	23.219	28.210	4.9907	-0.30972
11.667	11.516	0.00000	1.7155	40.809	23.305	28.312	5.0069	-0.30972
11.835	11.680	0.00000	1.7186	40.934	23.328	28.334	5.0069	-0.31787
12.003	11.838	0.00000	1.7217	41.056	23.351	28.366	5.0150	-0.31787
12.171	12.011	0.00000	1.7251	41.244	23.407	28.414	5.0069	-0.32602
12.335	12.178	0.00000	1.7284	41.336	23.408	28.423	5.0150	-0.32602
12.502	12.351	0.00000	1.7318	41.460	23.427	28.442	5.0150	-0.33417
12.670	12.500	0.00000	1.7347	41.711	23.525	28.532	5.0069	-0.33417
12.834	12.668	0.00000	1.7381	41.835	23.545	28.551	5.0069	-0.34232
13.002	12.841	0.00000	1.7415	41.864	23.508	28.523	5.0150	-0.34232
13.169	13.017	0.00000	1.7451	42.115	23.596	28.603	5.0069	-0.34232
13.337	13.190	0.00000	1.7485	42.270	23.631	28.638	5.0069	-0.35047
13.505	13.371	0.00000	1.7522	42.488	23.699	28.706	5.0069	-0.35047
13.667	13.530	0.00000	1.7554	42.740	23.792	28.783	4.9907	-0.35862
13.835	13.703	0.00000	1.7589	42.923	23.842	28.849	5.0069	-0.35862
14.003	13.870	0.00000	1.7623	43.079	23.877	28.884	5.0069	-0.36677
14.170	14.026	0.00000	1.7655	43.359	23.986	28.993	5.0069	-0.36677
14.334	14.197	0.00000	1.7691	43.574	24.053	29.068	5.0150	-0.36677
14.501	14.363	0.00000	1.7725	43.670	24.053	29.060	5.0069	-0.37492
14.669	14.546	0.00000	1.7763	43.916	24.134	29.149	5.0150	-0.37492
14.838	14.690	0.00000	1.7793	44.075	24.177	29.175	4.9988	-0.38307
15.001	14.838	0.00000	1.7824	44.198	24.198	29.204	5.0069	-0.38307
15.169	15.007	0.00000	1.7859	44.447	24.282	29.289	5.0069	-0.39122
15.337	15.205	0.00000	1.7901	44.663	24.338	29.353	5.0150	-0.39122
15.505	15.378	0.00000	1.7937	44.820	24.369	29.376	5.0069	-0.39122
15.668	15.525	0.00000	1.7969	45.039	24.443	29.442	4.9988	-0.39937
15.836	15.695	0.00000	1.8005	45.224	24.490	29.497	5.0069	-0.39937
16.004	15.854	0.00000	1.8039	45.348	24.506	29.513	5.0069	-0.40753
16.171	16.001	0.00000	1.8071	45.597	24.595	29.602	5.0069	-0.40753
16.335	16.171	0.00000	1.8107	45.690	24.590	29.597	5.0069	-0.40753
16.503	16.347	0.00000	1.8145	45.877	24.634	29.641	5.0069	-0.41568

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-601	Tested By: SKK	Checked By: SKK
Sample No.: 19-288	Test Date: 3/28/19	Depth: 5-6.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

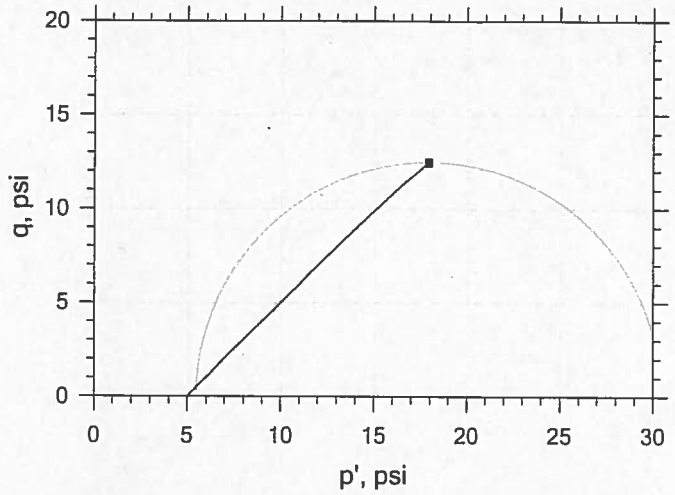
Shear Phase

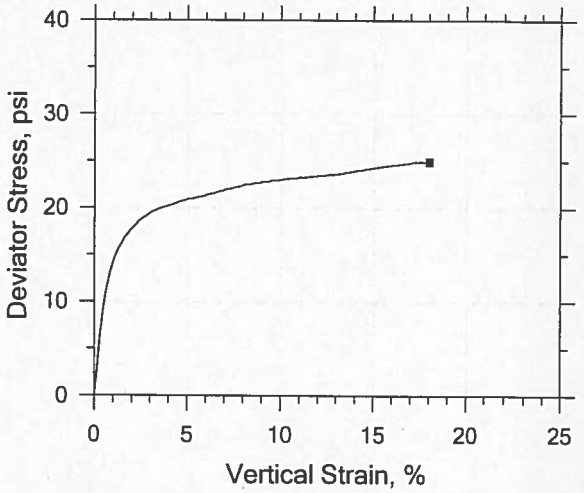
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.671	16.514	0.00000	1.8182	46.095	24.698	29.705	5.0069	-0.41568
16.835	16.689	0.00000	1.8220	46.281	24.742	29.749	5.0069	-0.42383
17.002	16.862	0.00000	1.8258	46.435	24.768	29.783	5.0150	-0.42383
17.170	16.997	0.00000	1.8287	46.651	24.840	29.863	5.0231	-0.43198
17.334	17.182	0.00000	1.8328	46.870	24.897	29.912	5.0150	-0.43198
17.502	17.329	0.00000	1.8361	46.965	24.899	29.906	5.0069	-0.43198
17.670	17.510	0.00000	1.8401	47.121	24.922	29.929	5.0069	-0.44013
17.834	17.688	0.00000	1.8441	47.214	24.912	29.919	5.0069	-0.44013
18.002	17.836	0.00000	1.8474	47.307	24.912	29.919	5.0069	-0.44828
18.170	18.003	0.00000	1.8512	47.430	24.921	29.936	5.0150	-0.44828
18.183	18.012	0.00000	1.8514	47.461	24.934	29.950	5.0150	-0.44828

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-601	Tested By: SKK	Checked By: SKK
Sample No.: 19-288	Test Date: 3/28/19	Depth: 5-6.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





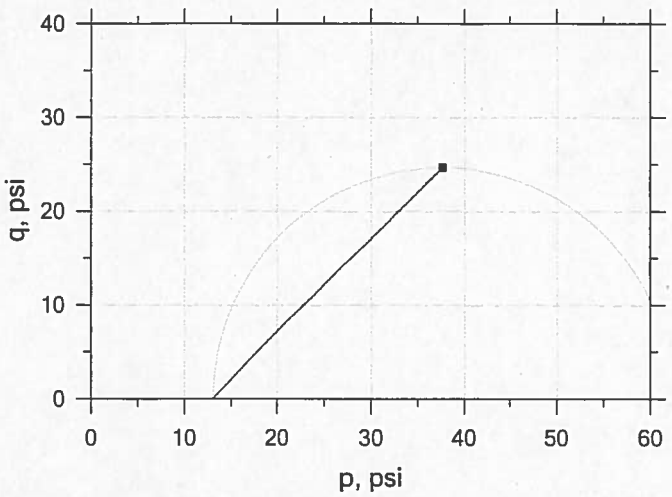
Symbol		■
Sample ID		19-288
Depth, ft		5-6.5'
Test Number		1
Initial	Height, in	3.021
	Diameter, in	1.391
	Moisture Content (from Cuttings), %	19.7
	Dry Density, pcf	106.
	Saturation (Wet Method), %	92.9
	Void Ratio	0.565
Final	Moisture Content, %	21.1
	Dry Density, pcf	107.
	Cross-Sectional Area (Method A), in²	1.518
	Saturation, %	100.0
	Void Ratio	0.563
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		4.991
Horizontal Effective Consolidation Stress, psi		4.999
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		12.47
Strain at Failure, %		18.0
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		24.93
Effective Minor Principal Stress at Failure, psi		5.463
Effective Major Principal Stress at Failure, psi		30.40
B-Value		---

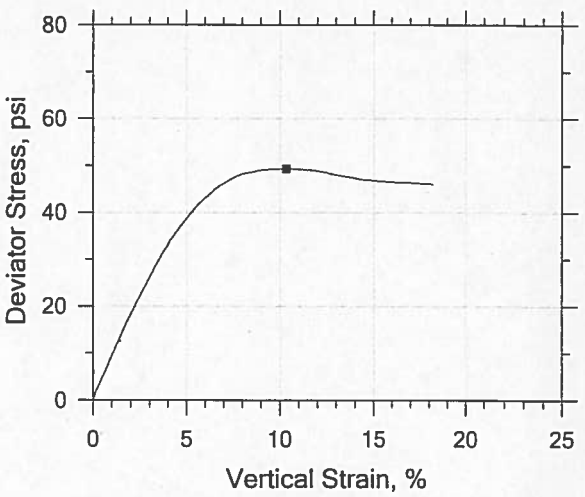
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-43WB
Boring No.: B-601	Tested By: SKK	Checked By: SKK
Sample No.: 19-288	Test Date: 3/28/19	Depth: 5-6.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





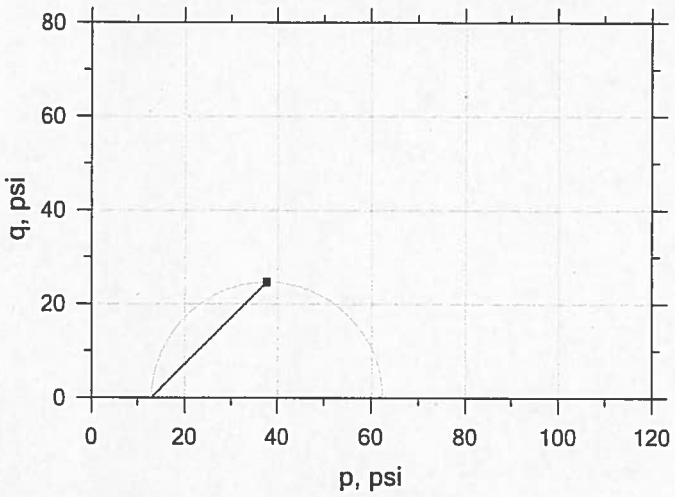
Symbol		■
Sample ID		19-290
Depth, ft		19-20.5'
Test Number		1
Initial	Height, in	5.479
	Diameter, in	2.753
	Moisture Content (from Cuttings), %	24.3
	Dry Density, pcf	92.6
	Saturation (Wet Method), %	79.1
	Void Ratio	0.841
Final	Moisture Content, %	28.2
	Dry Density, pcf	96.3
	Cross-Sectional Area (Method A), in²	5.798
	Saturation, %	100.0
	Void Ratio	0.770
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		12.96
Horizontal Effective Consolidation Stress, psi		12.97
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		24.66
Strain at Failure, %		10.3
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		49.33
Effective Minor Principal Stress at Failure, psi		13.32
Effective Major Principal Stress at Failure, psi		62.65
B-Value		---

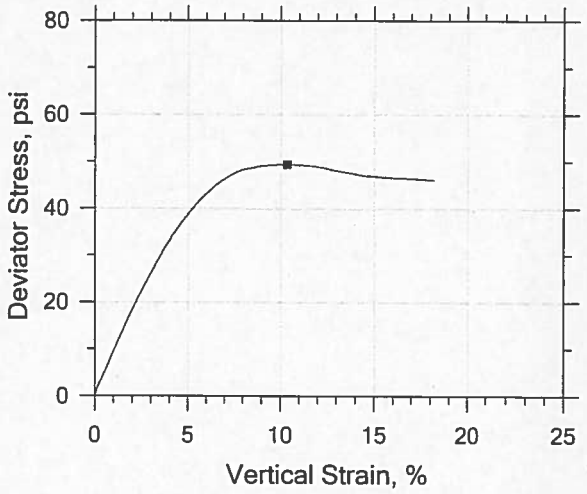
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-601	Tested By: SKK	Checked By: SKK
Sample No.: 19-290	Test Date: 4/11/19	Depth: 19-20.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-290
Depth, ft		19-20.5'
Test Number		1
Initial	Height, in	5.479
	Diameter, in	2.753
	Moisture Content (from Cuttings), %	24.3
	Dry Density, pcf	92.6
	Saturation (Wet Method), %	79.1
	Void Ratio	0.841
Final	Moisture Content, %	28.2
	Dry Density, pcf	96.3
	Cross-Sectional Area (Method A), in²	5.798
	Saturation, %	100.0
	Void Ratio	0.770
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		12.96
Horizontal Effective Consolidation Stress, psi		12.97
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		24.66
Strain at Failure, %		10.3
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		49.33
Effective Minor Principal Stress at Failure, psi		13.32
Effective Major Principal Stress at Failure, psi		62.65
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-601	Tested By: SKK	Checked By: SKK
Sample No.: 19-290	Test Date: 4/11/19	Depth: 19-20.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	5.7984	-0.086517	-0.014921	12.956	12.971	0.00000
0.17025	0.15033	0.00000	5.8072	11.704	2.0118	14.950	12.939	-0.0081505
0.33745	0.32713	0.00000	5.8175	19.850	3.4042	16.343	12.939	-0.0081505
0.50083	0.48502	0.00000	5.8267	28.129	4.8159	17.714	12.898	-0.016301
0.66818	0.64291	0.00000	5.8360	36.657	6.2657	19.123	12.858	-0.024451
0.83640	0.80553	0.00000	5.8455	45.278	7.7263	20.543	12.817	-0.032602
1.0039	0.96626	0.00000	5.8550	53.952	9.1915	22.009	12.817	-0.032602
1.1708	1.1336	0.00000	5.8649	62.541	10.636	23.421	12.785	-0.040752
1.3343	1.2839	0.00000	5.8739	71.239	12.097	24.914	12.817	-0.048903
1.5027	1.4503	0.00000	5.8838	80.038	13.568	26.385	12.817	-0.048903
1.6703	1.6167	0.00000	5.8937	88.837	15.034	27.851	12.817	-0.057054
1.8341	1.7869	0.00000	5.9039	97.412	16.457	29.298	12.841	-0.065204
2.0016	1.9609	0.00000	5.9144	105.82	17.846	30.752	12.906	-0.065204
2.1692	2.1226	0.00000	5.9242	114.29	19.241	32.115	12.874	-0.073354
2.3367	2.2880	0.00000	5.9342	122.68	20.619	33.509	12.890	-0.081505
2.5006	2.4525	0.00000	5.9442	130.66	21.923	34.838	12.914	-0.081505
2.6679	2.6274	0.00000	5.9549	139.00	23.280	36.186	12.906	-0.089655
2.8354	2.8024	0.00000	5.9656	147.03	24.579	37.453	12.874	-0.097806
3.0040	2.9593	0.00000	5.9753	154.98	25.867	38.781	12.914	-0.097806
3.1705	3.1333	0.00000	5.9860	162.85	27.131	40.029	12.898	-0.10596
3.3338	3.2864	0.00000	5.9955	170.46	28.355	41.253	12.898	-0.11411
3.5019	3.4576	0.00000	6.0061	178.01	29.558	42.480	12.922	-0.11411
3.6697	3.6240	0.00000	6.0165	185.29	30.712	43.634	12.922	-0.12226
3.8377	3.7960	0.00000	6.0272	192.47	31.844	44.775	12.930	-0.13041
4.0013	3.9719	0.00000	6.0383	199.31	32.915	45.853	12.939	-0.13041
4.1677	4.1251	0.00000	6.0479	206.14	33.989	46.944	12.955	-0.13856
4.3343	4.3037	0.00000	6.0592	212.64	34.994	47.941	12.947	-0.13856
4.5013	4.4711	0.00000	6.0698	218.83	35.949	48.887	12.939	-0.14671
4.6682	4.6460	0.00000	6.0810	225.11	36.910	49.881	12.971	-0.15486
4.8354	4.8181	0.00000	6.0920	230.88	37.788	50.791	13.003	-0.15486
5.0034	4.9883	0.00000	6.1029	236.42	38.624	51.595	12.971	-0.16301
5.1669	5.1556	0.00000	6.1136	241.93	39.453	52.408	12.955	-0.16301
5.3346	5.3144	0.00000	6.1239	247.05	40.220	53.215	12.995	-0.17116
5.5029	5.4922	0.00000	6.1354	252.18	40.977	53.956	12.979	-0.17931
5.6705	5.6501	0.00000	6.1457	256.85	41.663	54.651	12.987	-0.17931
5.8338	5.8146	0.00000	6.1564	261.13	42.283	55.287	13.003	-0.18746
6.0018	5.9819	0.00000	6.1674	265.93	42.982	55.961	12.979	-0.18746
6.1692	6.1578	0.00000	6.1789	270.05	43.565	56.577	13.011	-0.19561
6.3364	6.3289	0.00000	6.1902	274.16	44.145	57.156	13.011	-0.20376
6.5041	6.4925	0.00000	6.2011	278.47	44.760	57.804	13.044	-0.20376
6.6674	6.6561	0.00000	6.2119	282.05	45.254	58.290	13.036	-0.21191
6.8359	6.8338	0.00000	6.2238	285.57	45.729	58.748	13.020	-0.21191
7.0041	7.0040	0.00000	6.2352	288.92	46.180	59.207	13.028	-0.22006
7.1710	7.1676	0.00000	6.2461	291.90	46.572	59.616	13.044	-0.22821
7.3338	7.3377	0.00000	6.2576	294.86	46.955	59.991	13.036	-0.22821
7.5018	7.4966	0.00000	6.2684	297.81	47.342	60.370	13.028	-0.22821
7.6692	7.6573	0.00000	6.2793	300.24	47.643	60.670	13.028	-0.23636
7.8369	7.8313	0.00000	6.2911	302.76	47.949	60.985	13.036	-0.24451
8.0008	7.9977	0.00000	6.3025	304.93	48.204	61.240	13.036	-0.24451
8.1684	8.1773	0.00000	6.3148	306.55	48.362	61.390	13.028	-0.25267

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-601	Tested By: SKK	Checked By: SKK
Sample No.: 19-290	Test Date: 4/11/19	Depth: 19-20.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3364	8.3465	0.00000	6.3265	308.16	48.523	61.600	13.076	-0.25267
8.5039	8.5215	0.00000	6.3386	309.25	48.599	61.651	13.052	-0.26082
8.6677	8.6850	0.00000	6.3499	311.02	48.787	61.855	13.068	-0.26082
8.8362	8.8543	0.00000	6.3617	312.70	48.957	62.017	13.060	-0.26897
9.0045	9.0254	0.00000	6.3737	313.82	49.037	62.105	13.068	-0.27712
9.1710	9.1994	0.00000	6.3859	314.84	49.100	62.168	13.068	-0.27712
9.3349	9.3714	0.00000	6.3980	316.00	49.183	62.243	13.060	-0.27712
9.5029	9.5341	0.00000	6.4095	316.89	49.232	62.308	13.076	-0.28527
9.6705	9.6910	0.00000	6.4207	317.74	49.274	62.342	13.068	-0.29342
9.8343	9.8583	0.00000	6.4326	318.64	49.319	62.371	13.052	-0.29342
10.003	10.031	0.00000	6.4450	319.23	49.313	62.349	13.036	-0.30157
10.169	10.198	0.00000	6.4569	319.64	49.282	62.301	13.020	-0.30157
10.336	10.347	0.00000	6.4677	320.48	49.326	62.338	13.011	-0.30972
10.504	10.534	0.00000	6.4812	320.88	49.281	62.317	13.036	-0.30972
10.667	10.688	0.00000	6.4923	321.62	49.307	62.367	13.060	-0.31787
10.835	10.864	0.00000	6.5052	321.87	49.244	62.312	13.068	-0.31787
11.003	11.037	0.00000	6.5178	321.96	49.159	62.227	13.068	-0.32602
11.170	11.204	0.00000	6.5301	322.59	49.159	62.203	13.044	-0.32602
11.337	11.379	0.00000	6.5429	323.09	49.135	62.163	13.028	-0.33417
11.501	11.536	0.00000	6.5546	323.25	49.069	62.088	13.020	-0.33417
11.668	11.715	0.00000	6.5679	323.53	49.008	62.028	13.020	-0.34232
11.836	11.888	0.00000	6.5808	323.32	48.876	61.863	12.987	-0.34232
12.004	12.053	0.00000	6.5931	323.37	48.789	61.825	13.036	-0.35047
12.168	12.231	0.00000	6.6065	323.36	48.686	61.746	13.060	-0.35047
12.335	12.408	0.00000	6.6199	323.12	48.546	61.606	13.060	-0.35862
12.503	12.580	0.00000	6.6329	322.75	48.391	61.435	13.044	-0.35862
12.670	12.740	0.00000	6.6450	322.03	48.192	61.220	13.028	-0.36677
12.834	12.907	0.00000	6.6578	321.95	48.083	61.087	13.003	-0.36677
13.002	13.070	0.00000	6.6703	322.06	48.007	61.067	13.060	-0.37492
13.169	13.245	0.00000	6.6837	321.59	47.837	60.889	13.052	-0.37492
13.337	13.419	0.00000	6.6971	321.47	47.719	60.755	13.036	-0.38307
13.501	13.579	0.00000	6.7095	321.48	47.629	60.640	13.011	-0.38307
13.668	13.746	0.00000	6.7225	321.38	47.518	60.570	13.052	-0.39122
13.836	13.912	0.00000	6.7355	321.16	47.391	60.443	13.052	-0.39122
14.003	14.090	0.00000	6.7495	320.72	47.224	60.276	13.052	-0.39937
14.171	14.244	0.00000	6.7616	320.51	47.105	60.148	13.044	-0.39937
14.335	14.402	0.00000	6.7741	320.24	46.975	59.978	13.003	-0.39937
14.503	14.586	0.00000	6.7886	320.54	46.914	59.974	13.060	-0.40753
14.671	14.754	0.00000	6.8020	321.10	46.901	59.937	13.036	-0.40753
14.834	14.919	0.00000	6.8152	321.13	46.812	59.839	13.028	-0.41568
15.001	15.092	0.00000	6.8291	321.63	46.786	59.805	13.020	-0.41568
15.169	15.256	0.00000	6.8423	321.70	46.703	59.682	12.979	-0.42383
15.337	15.427	0.00000	6.8562	321.91	46.635	59.679	13.044	-0.42383
15.500	15.605	0.00000	6.8706	322.74	46.655	59.715	13.060	-0.42383
15.668	15.771	0.00000	6.8842	322.78	46.565	59.592	13.028	-0.43198
15.837	15.953	0.00000	6.8990	323.22	46.524	59.544	13.020	-0.44013
16.004	16.112	0.00000	6.9121	323.53	46.478	59.482	13.003	-0.44013
16.167	16.274	0.00000	6.9255	323.63	46.399	59.394	12.995	-0.44013
16.335	16.455	0.00000	6.9405	324.42	46.410	59.462	13.052	-0.44828
16.503	16.617	0.00000	6.9540	324.98	46.397	59.441	13.044	-0.44828

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-601	Tested By: SKK	Checked By: SKK
Sample No.: 19-290	Test Date: 4/11/19	Depth: 19-20.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

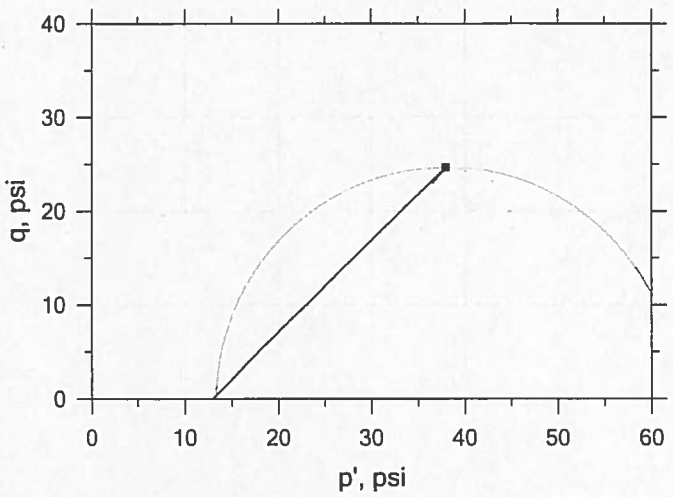
Shear Phase

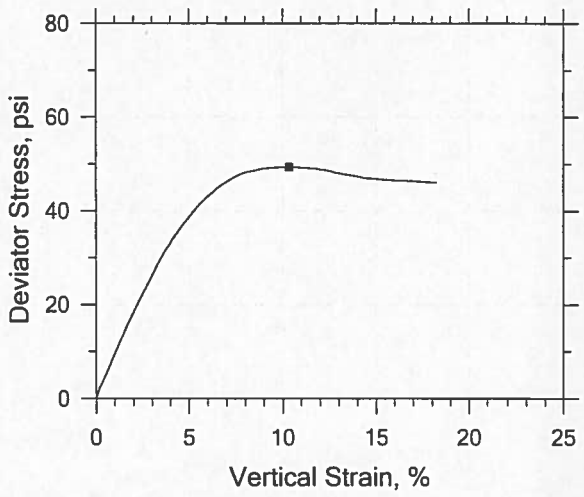
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.670	16.791	0.00000	6.9686	325.40	46.355	59.367	13.011	-0.45643
16.834	16.948	0.00000	6.9817	326.04	46.357	59.417	13.060	-0.45643
17.002	17.120	0.00000	6.9962	326.50	46.324	59.384	13.060	-0.45643
17.169	17.292	0.00000	7.0107	326.79	46.266	59.286	13.020	-0.46458
17.336	17.455	0.00000	7.0246	327.23	46.233	59.261	13.028	-0.46458
17.504	17.621	0.00000	7.0387	327.38	46.159	59.203	13.044	-0.47273
17.667	17.778	0.00000	7.0522	327.82	46.129	59.149	13.020	-0.47273
17.835	17.955	0.00000	7.0674	328.40	46.110	59.153	13.044	-0.47273
18.003	18.112	0.00000	7.0810	328.72	46.063	59.067	13.003	-0.48088
18.122	18.234	0.00000	7.0915	329.12	46.048	59.100	13.052	-0.48088

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-601	Tested By: SKK	Checked By: SKK
Sample No.: 19-290	Test Date: 4/11/19	Depth: 19-20.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





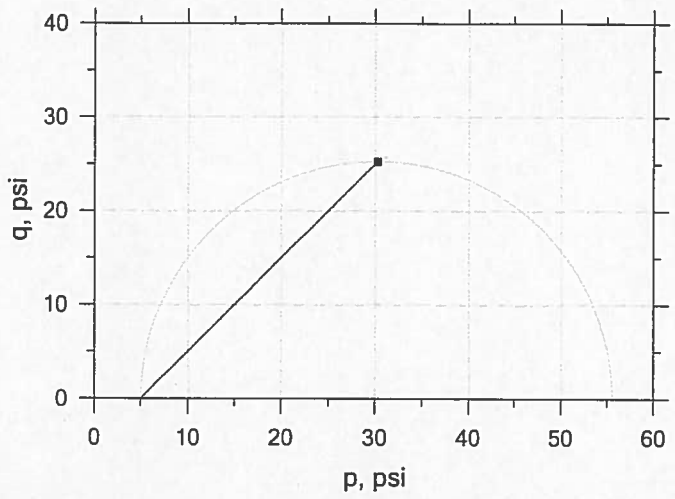
Symbol		■
Sample ID		19-290
Depth, ft		19-20.5'
Test Number		1
Initial	Height, in	5.479
	Diameter, in	2.753
	Moisture Content (from Cuttings), %	24.3
	Dry Density, pcf	92.6
	Saturation (Wet Method), %	79.1
	Void Ratio	0.841
Final	Moisture Content, %	28.2
	Dry Density, pcf	96.3
	Cross-Sectional Area (Method A), in²	5.798
	Saturation, %	100.0
	Void Ratio	0.770
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		12.96
Horizontal Effective Consolidation Stress, psi		12.97
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		24.66
Strain at Failure, %		10.3
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		49.33
Effective Minor Principal Stress at Failure, psi		13.32
Effective Major Principal Stress at Failure, psi		62.65
B-Value		---

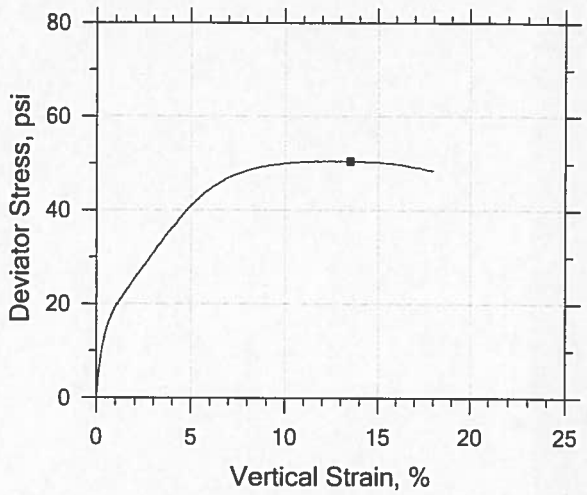
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-601	Tested By: SKK	Checked By: SKK
Sample No.: 19-290	Test Date: 4/11/19	Depth: 19-20.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-291
Depth, ft		5-7'
Test Number		1
Initial	Height, in	3.023
	Diameter, in	1.393
	Moisture Content (from Cuttings), %	16.3
	Dry Density, pcf	113.
	Saturation (Wet Method), %	91.4
	Void Ratio	0.479
Final	Moisture Content, %	17.8
	Dry Density, pcf	113.
	Cross-Sectional Area (Method A), in²	1.523
	Saturation, %	100.0
	Void Ratio	0.477
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		4.991
Horizontal Effective Consolidation Stress, psi		4.999
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		25.27
Strain at Failure, %		13.5
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		50.53
Effective Minor Principal Stress at Failure, psi		5.349
Effective Major Principal Stress at Failure, psi		55.88
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-291	Test Date: 4/3/19	Depth: 5-7'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5226	-0.011553	-0.0075877	4.9912	4.9988	0.00000
0.17085	0.15909	0.00000	1.5251	10.323	6.7615	11.704	4.9421	-0.0081505
0.33362	0.30634	0.00000	1.5273	16.810	10.992	15.983	4.9907	-0.0081505
0.50147	0.47051	0.00000	1.5298	21.319	13.913	18.904	4.9907	-0.016301
0.66825	0.61267	0.00000	1.5320	24.461	15.937	20.920	4.9826	-0.016301
0.83570	0.79038	0.00000	1.5348	27.070	17.601	22.592	4.9907	-0.024451
1.0037	0.94609	0.00000	1.5372	29.278	19.002	23.993	4.9907	-0.032602
1.1706	1.1187	0.00000	1.5399	31.173	20.191	25.190	4.9988	-0.032602
1.3341	1.2846	0.00000	1.5424	32.852	21.238	26.237	4.9988	-0.040752
1.5021	1.4471	0.00000	1.5450	34.531	22.282	27.281	4.9988	-0.040752
1.6696	1.6129	0.00000	1.5476	36.085	23.242	28.240	4.9988	-0.048903
1.8375	1.7872	0.00000	1.5503	37.607	24.174	29.181	5.0069	-0.048903
2.0010	1.9243	0.00000	1.5525	39.006	25.035	30.042	5.0069	-0.057054
2.1680	2.0750	0.00000	1.5549	40.438	25.910	30.909	4.9988	-0.057054
2.3357	2.2493	0.00000	1.5577	41.866	26.773	31.780	5.0069	-0.065204
2.5018	2.3932	0.00000	1.5600	43.265	27.624	32.631	5.0069	-0.073354
2.6693	2.5692	0.00000	1.5628	44.696	28.481	33.488	5.0069	-0.073354
2.8370	2.7215	0.00000	1.5652	46.129	29.346	34.336	4.9907	-0.081505
3.0005	2.8755	0.00000	1.5677	47.680	30.282	35.288	5.0069	-0.081505
3.1670	3.0448	0.00000	1.5704	49.204	31.191	36.198	5.0069	-0.089655
3.3347	3.2022	0.00000	1.5730	50.758	32.121	37.128	5.0069	-0.089655
3.5031	3.3849	0.00000	1.5760	52.221	32.981	37.980	4.9988	-0.097806
3.6703	3.5406	0.00000	1.5785	53.774	33.904	38.911	5.0069	-0.097806
3.8375	3.6896	0.00000	1.5810	55.204	34.750	39.757	5.0069	-0.10596
4.0004	3.8504	0.00000	1.5836	56.666	35.607	40.614	5.0069	-0.10596
4.1680	4.0298	0.00000	1.5866	58.065	36.414	41.421	5.0069	-0.11411
4.3360	4.2227	0.00000	1.5898	59.495	37.232	42.239	5.0069	-0.11411
4.5041	4.3801	0.00000	1.5924	60.925	38.062	43.069	5.0069	-0.12226
4.6670	4.5392	0.00000	1.5950	62.322	38.867	43.882	5.0150	-0.12226
4.8352	4.7000	0.00000	1.5977	63.692	39.652	44.659	5.0069	-0.13041
5.0033	4.8540	0.00000	1.6003	64.934	40.357	45.372	5.0150	-0.13856
5.1706	5.0300	0.00000	1.6033	66.209	41.069	46.084	5.0150	-0.13856
5.3334	5.1925	0.00000	1.6060	67.299	41.671	46.677	5.0069	-0.14671
5.5015	5.3668	0.00000	1.6090	68.482	42.321	47.320	4.9988	-0.14671
5.6688	5.5191	0.00000	1.6116	69.535	42.900	47.915	5.0150	-0.15486
5.8370	5.6850	0.00000	1.6144	70.625	43.493	48.500	5.0069	-0.15486
6.0010	5.8390	0.00000	1.6171	71.587	44.010	49.025	5.0150	-0.16301
6.1690	6.0252	0.00000	1.6203	72.555	44.511	49.510	4.9988	-0.16301
6.3365	6.2029	0.00000	1.6233	73.608	45.068	50.083	5.0150	-0.17116
6.5041	6.3738	0.00000	1.6263	74.415	45.475	50.498	5.0231	-0.17116
6.6672	6.5346	0.00000	1.6291	75.192	45.867	50.890	5.0231	-0.17931
6.8352	6.6869	0.00000	1.6317	75.944	46.246	51.244	4.9988	-0.17931
7.0032	6.8528	0.00000	1.6347	76.814	46.689	51.687	4.9988	-0.17931
7.1703	7.0254	0.00000	1.6377	77.462	46.990	52.013	5.0231	-0.18746
7.3334	7.2065	0.00000	1.6409	78.118	47.291	52.297	5.0069	-0.18746
7.5046	7.3606	0.00000	1.6436	78.801	47.620	52.635	5.0150	-0.19561
7.6675	7.5213	0.00000	1.6465	79.265	47.813	52.836	5.0231	-0.20376
7.8347	7.7024	0.00000	1.6497	79.795	48.033	53.048	5.0150	-0.20376
8.0027	7.8598	0.00000	1.6525	80.359	48.285	53.284	4.9988	-0.21191
8.1703	8.0375	0.00000	1.6557	80.975	48.556	53.579	5.0231	-0.21191

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-291	Test Date: 4/3/19	Depth: 5-7'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3375	8.2186	0.00000	1.6590	81.474	48.754	53.769	5.0150	-0.21191
8.5011	8.3726	0.00000	1.6618	81.939	48.945	53.968	5.0231	-0.22006
8.6683	8.5537	0.00000	1.6651	82.404	49.119	54.150	5.0312	-0.22006
8.8352	8.6841	0.00000	1.6674	82.810	49.287	54.310	5.0231	-0.22821
9.0033	8.8516	0.00000	1.6705	83.152	49.394	54.417	5.0231	-0.22821
9.1703	9.0243	0.00000	1.6737	83.523	49.515	54.546	5.0312	-0.23636
9.3341	9.1647	0.00000	1.6763	83.901	49.658	54.665	5.0069	-0.23636
9.5018	9.3695	0.00000	1.6800	84.241	49.740	54.755	5.0150	-0.24451
9.6688	9.5201	0.00000	1.6828	84.488	49.798	54.821	5.0231	-0.24451
9.8365	9.6928	0.00000	1.6861	84.774	49.864	54.863	4.9988	-0.25267
10.005	9.8569	0.00000	1.6891	85.085	49.951	54.949	4.9988	-0.25267
10.167	10.011	0.00000	1.6920	85.423	50.059	55.074	5.0150	-0.26082
10.335	10.199	0.00000	1.6956	85.736	50.131	55.138	5.0069	-0.26082
10.501	10.348	0.00000	1.6984	86.012	50.204	55.227	5.0231	-0.26897
10.668	10.527	0.00000	1.7018	86.261	50.242	55.265	5.0231	-0.26897
10.835	10.673	0.00000	1.7046	86.478	50.282	55.305	5.0231	-0.26897
11.003	10.837	0.00000	1.7077	86.727	50.328	55.351	5.0231	-0.27712
11.170	11.006	0.00000	1.7109	86.912	50.333	55.365	5.0312	-0.27712
11.336	11.184	0.00000	1.7144	87.104	50.337	55.344	5.0069	-0.28527
11.504	11.346	0.00000	1.7175	87.316	50.362	55.393	5.0312	-0.28527
11.670	11.502	0.00000	1.7205	87.511	50.381	55.371	4.9907	-0.29342
11.836	11.678	0.00000	1.7240	87.877	50.485	55.508	5.0231	-0.29342
12.004	11.835	0.00000	1.7270	87.972	50.444	55.459	5.0150	-0.29342
12.167	12.008	0.00000	1.7304	88.219	50.481	55.504	5.0231	-0.30157
12.338	12.179	0.00000	1.7338	88.373	50.464	55.495	5.0312	-0.30157
12.501	12.325	0.00000	1.7367	88.528	50.464	55.495	5.0312	-0.30972
12.669	12.496	0.00000	1.7401	88.810	50.520	55.543	5.0231	-0.30972
12.836	12.663	0.00000	1.7434	88.964	50.505	55.536	5.0312	-0.31787
13.004	12.851	0.00000	1.7472	89.185	50.515	55.530	5.0150	-0.31787
13.167	13.003	0.00000	1.7502	89.308	50.490	55.513	5.0231	-0.32602
13.335	13.167	0.00000	1.7535	89.463	50.477	55.500	5.0231	-0.32602
13.503	13.342	0.00000	1.7571	89.714	50.511	55.526	5.0150	-0.32602
13.670	13.504	0.00000	1.7604	89.931	50.533	55.548	5.0150	-0.33417
13.833	13.670	0.00000	1.7637	90.085	50.517	55.540	5.0231	-0.33417
14.001	13.843	0.00000	1.7673	90.207	50.478	55.509	5.0312	-0.34232
14.169	14.020	0.00000	1.7709	90.304	50.421	55.436	5.0150	-0.34232
14.336	14.200	0.00000	1.7746	90.458	50.395	55.419	5.0231	-0.35047
14.504	14.366	0.00000	1.7781	90.551	50.344	55.367	5.0231	-0.35047
14.667	14.515	0.00000	1.7812	90.771	50.373	55.388	5.0150	-0.35047
14.835	14.684	0.00000	1.7847	90.895	50.336	55.351	5.0150	-0.35862
15.002	14.860	0.00000	1.7884	91.109	50.345	55.376	5.0312	-0.35862
15.170	15.022	0.00000	1.7918	91.204	50.296	55.319	5.0231	-0.35862
15.336	15.214	0.00000	1.7958	91.237	50.193	55.208	5.0150	-0.36677
15.504	15.356	0.00000	1.7989	91.296	50.136	55.167	5.0312	-0.36677
15.667	15.525	0.00000	1.8025	91.358	50.063	55.094	5.0312	-0.37492
15.835	15.688	0.00000	1.8059	91.546	50.065	55.088	5.0231	-0.37492
16.002	15.865	0.00000	1.8098	91.606	49.985	55.017	5.0312	-0.38307
16.170	16.021	0.00000	1.8131	91.606	49.887	54.918	5.0312	-0.38307
16.334	16.185	0.00000	1.8167	91.641	49.802	54.817	5.0150	-0.38307
16.501	16.370	0.00000	1.8207	91.670	49.701	54.724	5.0231	-0.39122

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-291	Test Date: 4/3/19	Depth: 5-7'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

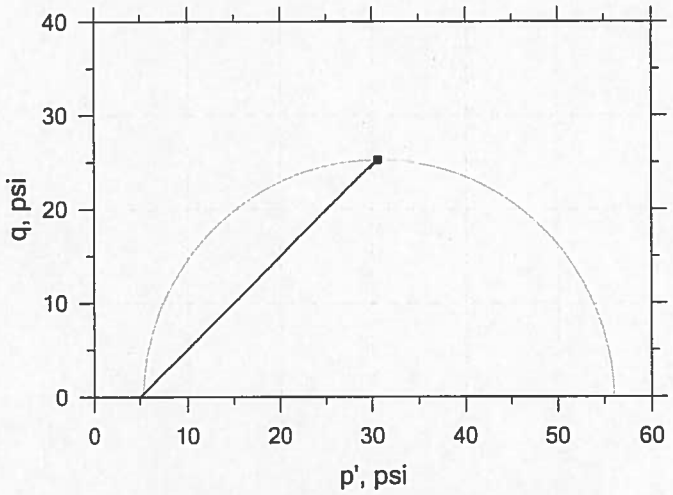
Shear Phase

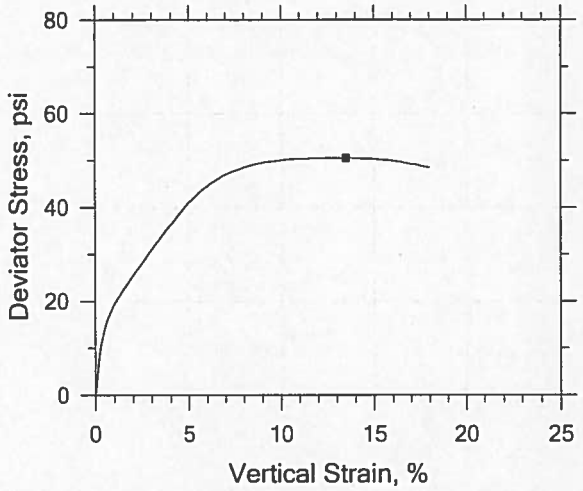
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.667	16.529	0.00000	1.8241	91.670	49.600	54.623	5.0231	-0.39122
16.835	16.684	0.00000	1.8275	91.638	49.483	54.515	5.0312	-0.39937
17.003	16.854	0.00000	1.8313	91.581	49.345	54.352	5.0069	-0.39937
17.170	17.023	0.00000	1.8350	91.517	49.203	54.218	5.0150	-0.39937
17.334	17.192	0.00000	1.8388	91.606	49.145	54.176	5.0312	-0.40753
17.502	17.355	0.00000	1.8424	91.577	49.026	54.050	5.0231	-0.40753
17.670	17.524	0.00000	1.8461	91.422	48.835	53.858	5.0231	-0.40753
17.834	17.680	0.00000	1.8496	91.391	48.720	53.743	5.0231	-0.41568
18.002	17.857	0.00000	1.8536	91.327	48.573	53.605	5.0312	-0.41568
18.171	18.011	0.00000	1.8571	91.328	48.477	53.500	5.0231	-0.42383

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-291	Test Date: 4/3/19	Depth: 5-7'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





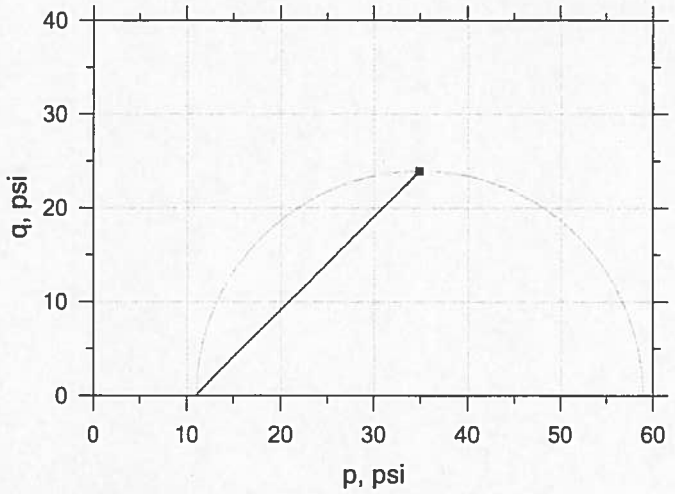
Symbol		■
Sample ID		19-291
Depth, ft		5-7'
Test Number		1
Initial	Height, in	3.023
	Diameter, in	1.393
	Moisture Content (from Cuttings), %	16.3
	Dry Density, pcf	113.
	Saturation (Wet Method), %	91.4
	Void Ratio	0.479
Final	Moisture Content, %	17.8
	Dry Density, pcf	113.
	Cross-Sectional Area (Method A), in²	1.523
	Saturation, %	100.0
	Void Ratio	0.477
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		4.991
Horizontal Effective Consolidation Stress, psi		4.999
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		25.27
Strain at Failure, %		13.5
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		50.53
Effective Minor Principal Stress at Failure, psi		5.349
Effective Major Principal Stress at Failure, psi		55.88
B-Value		---

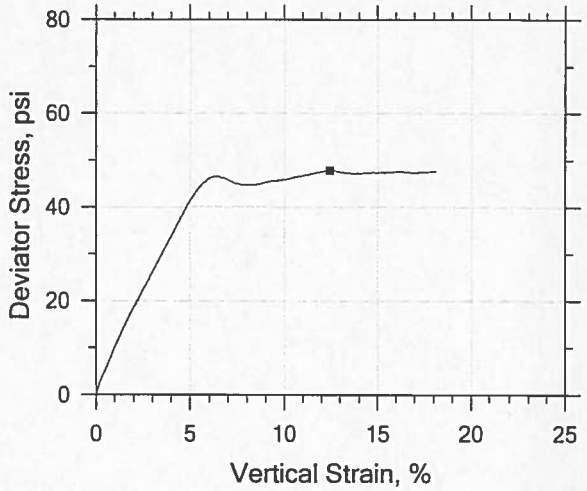
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-291	Test Date: 4/3/19	Depth: 5-7'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-292
Depth, ft		15-17'
Test Number		1
Initial	Height, in	5.574
	Diameter, in	2.740
	Moisture Content (from Cuttings), %	25.1
	Dry Density, pcf	95.7
	Saturation (Wet Method), %	87.9
	Void Ratio	0.775
Final	Moisture Content, %	26.9
	Dry Density, pcf	98.1
	Cross-Sectional Area (Method A), in²	5.799
	Saturation, %	100.0
	Void Ratio	0.731
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		10.98
Horizontal Effective Consolidation Stress, psi		10.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		23.92
Strain at Failure, %		12.5
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		47.84
Effective Minor Principal Stress at Failure, psi		11.21
Effective Major Principal Stress at Failure, psi		59.04
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-292	Test Date: 4/15/19	Depth: 15-17'
Test No.: 1	Sample Type: ORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	5.7989	-0.022922	-0.0039528	10.982	10.986	0.00000
0.17100	0.15264	0.00000	5.8078	13.633	2.3437	13.297	10.954	0.00000
0.33402	0.31360	0.00000	5.8172	22.133	3.7973	14.694	10.897	0.00000
0.50153	0.47363	0.00000	5.8265	30.343	5.1963	16.085	10.889	-0.0081505
0.66840	0.63737	0.00000	5.8361	39.019	6.6705	17.551	10.881	-0.0081505
0.83610	0.80203	0.00000	5.8458	48.292	8.2416	19.090	10.848	-0.0081505
1.0035	0.95929	0.00000	5.8551	57.522	9.8012	20.666	10.865	-0.0081505
1.1708	1.1332	0.00000	5.8654	66.539	11.317	22.182	10.865	-0.016301
1.3340	1.3025	0.00000	5.8755	75.370	12.797	23.653	10.856	-0.016301
1.5010	1.4625	0.00000	5.8850	83.977	14.235	25.115	10.881	-0.016301
1.6676	1.6263	0.00000	5.8948	92.154	15.594	26.475	10.881	-0.024451
1.8351	1.7909	0.00000	5.9047	100.26	16.938	27.843	10.905	-0.024451
2.0026	1.9556	0.00000	5.9146	108.22	18.251	29.148	10.897	-0.024451
2.1687	2.1184	0.00000	5.9244	115.81	19.498	30.395	10.897	-0.032602
2.3364	2.2895	0.00000	5.9348	123.77	20.800	31.713	10.913	-0.032602
2.5045	2.4514	0.00000	5.9447	131.60	22.079	33.008	10.929	-0.032602
2.6710	2.6253	0.00000	5.9553	139.22	23.315	34.236	10.921	-0.032602
2.8340	2.7983	0.00000	5.9659	146.85	24.549	35.527	10.978	-0.040752
3.0016	2.9574	0.00000	5.9757	154.73	25.823	36.761	10.937	-0.040752
3.1684	3.1249	0.00000	5.9860	162.46	27.066	38.052	10.986	-0.040752
3.3351	3.2988	0.00000	5.9967	170.45	28.347	39.317	10.970	-0.048903
3.5021	3.4579	0.00000	6.0066	178.57	29.647	40.625	10.978	-0.048903
3.6697	3.6272	0.00000	6.0172	186.37	30.889	41.842	10.954	-0.048903
3.8374	3.7946	0.00000	6.0277	194.73	32.218	43.204	10.986	-0.057054
4.0011	3.9657	0.00000	6.0384	202.89	33.507	44.445	10.937	-0.057054
4.1710	4.1332	0.00000	6.0489	211.40	34.853	45.806	10.954	-0.057054
4.3346	4.2914	0.00000	6.0589	219.54	36.134	47.144	11.010	-0.065204
4.5022	4.4532	0.00000	6.0692	227.57	37.393	48.346	10.954	-0.065204
4.6692	4.6281	0.00000	6.0803	235.68	38.654	49.640	10.986	-0.065204
4.8369	4.7918	0.00000	6.0908	243.42	39.854	50.840	10.986	-0.073354
5.0005	4.9500	0.00000	6.1009	250.75	40.986	51.997	11.010	-0.073354
5.1668	5.1221	0.00000	6.1120	257.93	42.083	53.109	11.027	-0.073354
5.3346	5.2923	0.00000	6.1230	264.61	43.094	54.137	11.043	-0.073354
5.5021	5.4588	0.00000	6.1338	270.93	44.045	55.063	11.018	-0.081505
5.6697	5.6327	0.00000	6.1451	276.37	44.845	55.864	11.018	-0.081505
5.8374	5.8122	0.00000	6.1568	280.93	45.497	56.540	11.043	-0.081505
6.0008	5.9648	0.00000	6.1668	284.94	46.070	57.121	11.051	-0.089655
6.1684	6.1369	0.00000	6.1781	287.49	46.394	57.445	11.051	-0.089655
6.3353	6.3098	0.00000	6.1895	288.89	46.531	57.590	11.059	-0.089655
6.5035	6.4782	0.00000	6.2006	289.60	46.558	57.633	11.075	-0.097806
6.6708	6.6493	0.00000	6.2120	288.64	46.314	57.389	11.075	-0.097806
6.8346	6.8094	0.00000	6.2227	288.18	46.157	57.208	11.051	-0.097806
7.0019	6.9759	0.00000	6.2338	287.34	45.936	56.971	11.035	-0.097806
7.1689	7.1452	0.00000	6.2452	285.31	45.524	56.607	11.083	-0.10596
7.3364	7.3126	0.00000	6.2564	283.85	45.205	56.280	11.075	-0.10596
7.5034	7.4810	0.00000	6.2678	282.98	44.980	56.039	11.059	-0.10596
7.6708	7.6364	0.00000	6.2784	282.46	44.819	55.829	11.010	-0.11411
7.8340	7.8057	0.00000	6.2899	282.31	44.708	55.726	11.018	-0.11411
8.0021	7.9620	0.00000	6.3006	283.10	44.755	55.830	11.075	-0.11411
8.1692	8.1276	0.00000	6.3119	283.64	44.756	55.775	11.018	-0.12226

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-292	Test Date: 4/15/19	Depth: 15-17'
Test No.: 1	Sample Type: ORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3369	8.2904	0.00000	6.3231	284.23	44.765	55.824	11.059	-0.12226
8.5047	8.4736	0.00000	6.3358	285.04	44.800	55.851	11.051	-0.12226
8.6681	8.6225	0.00000	6.3461	286.22	44.910	55.968	11.059	-0.13041
8.8364	8.7835	0.00000	6.3573	287.77	45.072	56.123	11.051	-0.13041
9.0029	8.9629	0.00000	6.3699	289.55	45.258	56.277	11.018	-0.13041
9.1700	9.1304	0.00000	6.3816	291.08	45.411	56.405	10.994	-0.13041
9.3366	9.2950	0.00000	6.3932	292.23	45.504	56.523	11.018	-0.13856
9.5007	9.4671	0.00000	6.4053	293.35	45.589	56.592	11.002	-0.13856
9.6676	9.6391	0.00000	6.4175	294.52	45.681	56.732	11.051	-0.13856
9.8359	9.8112	0.00000	6.4298	295.55	45.752	56.762	11.010	-0.14671
10.004	9.9722	0.00000	6.4413	296.76	45.854	56.896	11.043	-0.14671
10.167	10.134	0.00000	6.4529	297.88	45.942	56.960	11.018	-0.14671
10.335	10.301	0.00000	6.4648	299.49	46.102	57.153	11.051	-0.15486
10.503	10.481	0.00000	6.4779	301.14	46.260	57.311	11.051	-0.15486
10.670	10.647	0.00000	6.4899	302.92	46.445	57.471	11.027	-0.15486
10.834	10.796	0.00000	6.5008	304.25	46.569	57.611	11.043	-0.15486
11.002	10.968	0.00000	6.5133	305.50	46.666	57.709	11.043	-0.16301
11.170	11.137	0.00000	6.5257	307.02	46.808	57.835	11.027	-0.16301
11.338	11.298	0.00000	6.5375	308.39	46.928	57.971	11.043	-0.17116
11.502	11.462	0.00000	6.5496	310.07	47.095	58.114	11.018	-0.17116
11.669	11.626	0.00000	6.5618	311.62	47.241	58.268	11.027	-0.17116
11.836	11.783	0.00000	6.5735	313.06	47.372	58.382	11.010	-0.17116
12.003	11.962	0.00000	6.5868	314.55	47.499	58.509	11.010	-0.17931
12.170	12.137	0.00000	6.6000	316.20	47.650	58.661	11.010	-0.17931
12.334	12.296	0.00000	6.6119	317.63	47.777	58.787	11.010	-0.17931
12.502	12.461	0.00000	6.6244	318.65	47.838	58.857	11.018	-0.18746
12.670	12.641	0.00000	6.6380	319.18	47.815	58.834	11.018	-0.18746
12.837	12.805	0.00000	6.6505	319.31	47.742	58.744	11.002	-0.18746
13.001	12.968	0.00000	6.6630	318.56	47.536	58.547	11.010	-0.18746
13.168	13.140	0.00000	6.6762	318.44	47.420	58.430	11.010	-0.19561
13.334	13.309	0.00000	6.6892	318.56	47.343	58.369	11.027	-0.19561
13.501	13.483	0.00000	6.7026	318.81	47.282	58.292	11.010	-0.19561
13.669	13.647	0.00000	6.7154	318.81	47.188	58.198	11.010	-0.19561
13.836	13.814	0.00000	6.7284	319.62	47.214	58.224	11.010	-0.20376
14.004	13.984	0.00000	6.7417	320.33	47.223	58.233	11.010	-0.20376
14.167	14.140	0.00000	6.7540	321.11	47.249	58.259	11.010	-0.20376
14.334	14.304	0.00000	6.7669	322.29	47.330	58.341	11.010	-0.21191
14.502	14.470	0.00000	6.7800	323.04	47.345	58.356	11.010	-0.21191
14.670	14.643	0.00000	6.7937	324.22	47.420	58.438	11.018	-0.21191
14.838	14.812	0.00000	6.8072	324.59	47.377	58.387	11.010	-0.22006
15.002	14.974	0.00000	6.8202	324.90	47.329	58.340	11.010	-0.22006
15.169	15.135	0.00000	6.8331	325.74	47.359	58.385	11.027	-0.22006
15.336	15.314	0.00000	6.8476	326.61	47.382	58.401	11.018	-0.22006
15.503	15.481	0.00000	6.8611	327.23	47.376	58.395	11.018	-0.22821
15.670	15.646	0.00000	6.8746	328.48	47.461	58.480	11.018	-0.22821
15.834	15.813	0.00000	6.8882	329.57	47.522	58.533	11.010	-0.22821
16.002	15.984	0.00000	6.9022	330.28	47.526	58.536	11.010	-0.23636
16.170	16.149	0.00000	6.9157	331.46	47.600	58.610	11.010	-0.23636
16.337	16.323	0.00000	6.9301	331.87	47.556	58.559	11.002	-0.23636
16.501	16.486	0.00000	6.9436	332.51	47.553	58.612	11.059	-0.23636

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-292	Test Date: 4/15/19	Depth: 15-17'
Test No.: 1	Sample Type: ORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

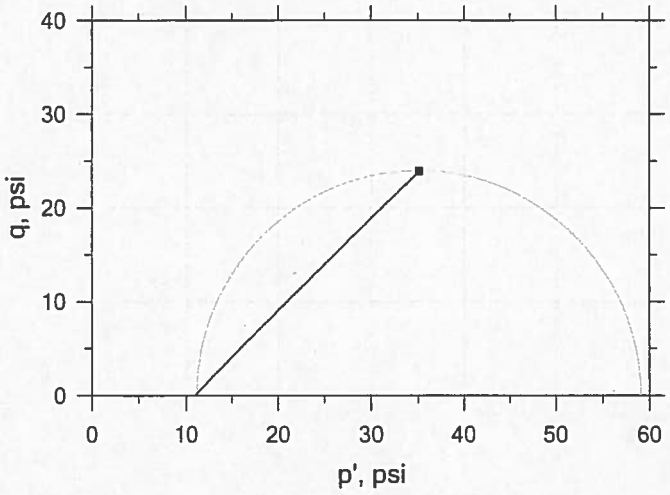
Shear Phase

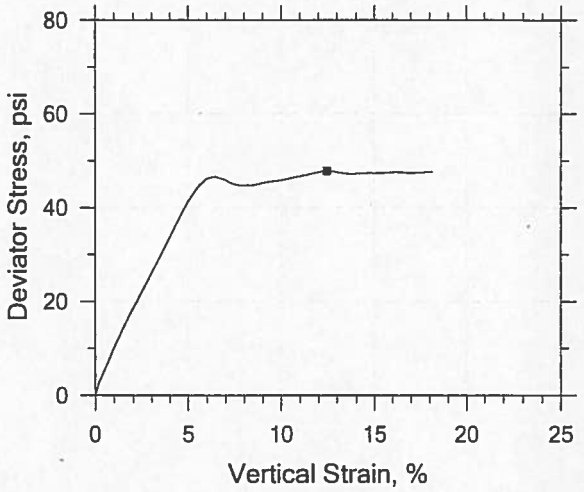
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.669	16.656	0.00000	6.9578	332.42	47.440	58.474	11.035	-0.24451
16.836	16.830	0.00000	6.9723	333.02	47.423	58.433	11.010	-0.24451
17.004	16.995	0.00000	6.9863	333.42	47.383	58.385	11.002	-0.24451
17.167	17.159	0.00000	7.0001	334.20	47.398	58.392	10.994	-0.25267
17.335	17.321	0.00000	7.0138	335.12	47.433	58.492	11.059	-0.25267
17.502	17.486	0.00000	7.0278	336.08	47.471	58.538	11.067	-0.25267
17.670	17.672	0.00000	7.0437	337.30	47.534	58.568	11.035	-0.26082
17.837	17.836	0.00000	7.0578	338.45	47.598	58.657	11.059	-0.26082
18.005	17.992	0.00000	7.0711	339.32	47.628	58.687	11.059	-0.26082
18.167	18.146	0.00000	7.0845	340.31	47.676	58.735	11.059	-0.26897
18.172	18.152	0.00000	7.0850	340.44	47.690	58.733	11.043	-0.26897

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-292	Test Date: 4/15/19	Depth: 15-17'
Test No.: 1	Sample Type: ORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





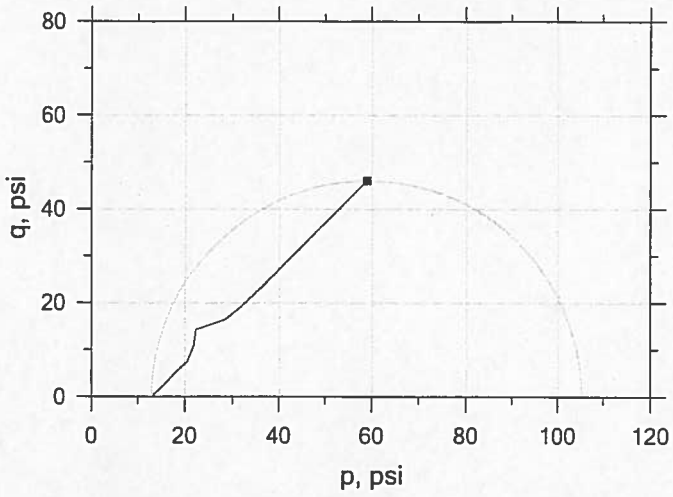
Symbol		■
Sample ID		19-292
Depth, ft		15-17'
Test Number		1
Initial	Height, in	5.574
	Diameter, in	2.740
	Moisture Content (from Cuttings), %	25.1
	Dry Density, pcf	95.7
	Saturation (Wet Method), %	87.9
	Void Ratio	0.775
Final	Moisture Content, %	26.9
	Dry Density, pcf	98.1
	Cross-Sectional Area (Method A), in²	5.799
	Saturation, %	100.0
	Void Ratio	0.731
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		10.98
Horizontal Effective Consolidation Stress, psi		10.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		23.92
Strain at Failure, %		12.5
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		47.84
Effective Minor Principal Stress at Failure, psi		11.21
Effective Major Principal Stress at Failure, psi		59.04
B-Value		---

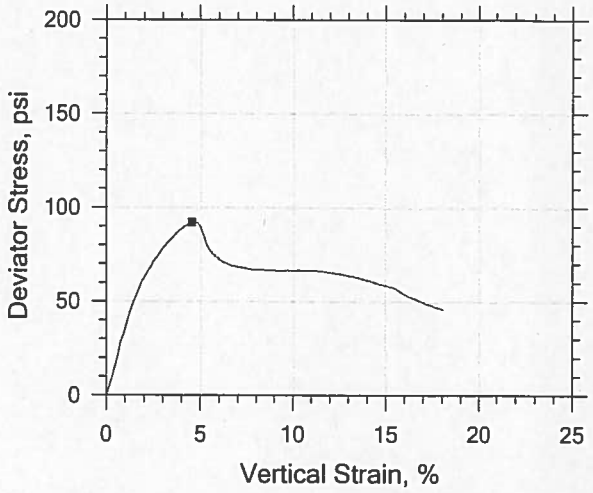
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-292	Test Date: 4/15/19	Depth: 15-17'
Test No.: 1	Sample Type: ORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-298
Depth, ft		20-21'
Test Number		1
Initial	Height, in	3.050
	Diameter, in	1.406
	Moisture Content (from Cuttings), %	24.7
	Dry Density, pcf	98.0
	Saturation (Wet Method), %	91.8
	Void Ratio	0.734
Final	Moisture Content, %	26.2
	Dry Density, pcf	99.1
	Cross-Sectional Area (Method A), in²	1.540
	Saturation, %	100.0
	Void Ratio	0.713
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		12.96
Horizontal Effective Consolidation Stress, psi		13.00
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		46.03
Strain at Failure, %		4.54
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		92.06
Effective Minor Principal Stress at Failure, psi		13.15
Effective Major Principal Stress at Failure, psi		105.2
B-Value		—

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-603	Tested By: SKK	Checked By: SKK
Sample No.: 19-298	Test Date: 4/3/19	Depth: 20-21'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5402	-0.060773	-0.039459	12.956	12.995	0.00000
0.16717	0.15993	0.00000	1.5426	6.8414	4.4274	17.423	12.995	-0.0081505
0.33462	0.33164	0.00000	1.5453	15.086	9.7469	22.718	12.971	-0.0081505
0.50213	0.46800	0.00000	1.5474	23.442	15.127	28.131	13.003	-0.016301
0.66952	0.63297	0.00000	1.5500	33.954	21.877	32.887	11.010	-0.024451
0.83723	0.77102	0.00000	1.5521	44.470	28.615	36.627	8.0127	-0.024451
1.0046	0.94273	0.00000	1.5548	51.077	32.806	44.846	12.039	-0.032602
1.1672	1.0757	0.00000	1.5569	59.684	38.285	51.053	12.768	-0.032602
1.3354	1.2390	0.00000	1.5595	68.002	43.548	56.381	12.833	-0.040752
1.5038	1.3888	0.00000	1.5619	75.505	48.278	61.209	12.930	-0.048903
1.6669	1.5538	0.00000	1.5645	82.308	52.539	65.494	12.955	-0.048903
1.8351	1.7188	0.00000	1.5671	88.461	56.369	69.340	12.971	-0.057054
2.0028	1.8450	0.00000	1.5691	94.207	59.953	72.948	12.995	-0.057054
2.1706	2.0471	0.00000	1.5723	99.432	63.143	76.131	12.987	-0.065204
2.3341	2.2036	0.00000	1.5749	104.28	66.114	79.109	12.995	-0.073354
2.5024	2.3804	0.00000	1.5777	108.76	68.824	81.819	12.995	-0.081505
2.6706	2.5184	0.00000	1.5800	113.08	71.455	84.458	13.003	-0.081505
2.8346	2.7036	0.00000	1.5830	117.12	73.864	86.867	13.003	-0.089655
3.0030	2.8669	0.00000	1.5856	120.88	76.105	89.108	13.003	-0.089655
3.1698	3.0167	0.00000	1.5881	124.52	78.269	91.289	13.020	-0.097806
3.3378	3.1935	0.00000	1.5910	127.85	80.211	93.215	13.003	-0.10596
3.5015	3.3534	0.00000	1.5936	131.14	82.137	95.157	13.020	-0.10596
3.6690	3.5251	0.00000	1.5964	134.40	84.029	97.048	13.020	-0.11411
3.8367	3.6850	0.00000	1.5991	137.45	85.790	98.793	13.003	-0.11411
4.0038	3.8433	0.00000	1.6017	140.19	87.349	100.36	13.011	-0.12226
4.1708	4.0100	0.00000	1.6045	142.83	88.836	101.86	13.020	-0.13041
4.3341	4.1800	0.00000	1.6073	145.16	90.122	103.13	13.011	-0.13041
4.5011	4.3854	0.00000	1.6108	147.18	91.175	104.19	13.011	-0.13856
4.6682	4.5402	0.00000	1.6134	148.86	92.061	105.07	13.011	-0.13856
4.8365	4.6968	0.00000	1.6161	149.04	92.013	105.06	13.052	-0.14671
5.0046	4.8685	0.00000	1.6190	148.42	91.457	104.49	13.036	-0.15486
5.1680	5.0234	0.00000	1.6216	145.28	89.367	102.39	13.020	-0.15486
5.3359	5.1985	0.00000	1.6246	138.10	84.774	97.793	13.020	-0.16301
5.5038	5.3702	0.00000	1.6276	130.12	79.705	92.709	13.003	-0.16301
5.6674	5.5385	0.00000	1.6305	125.66	76.823	89.875	13.052	-0.17116
5.8357	5.6917	0.00000	1.6331	122.84	74.963	87.983	13.020	-0.17116
6.0033	5.8668	0.00000	1.6362	120.69	73.506	86.518	13.011	-0.17931
6.1711	6.0284	0.00000	1.6390	119.02	72.351	85.346	12.995	-0.17931
6.3346	6.1782	0.00000	1.6416	116.77	70.858	83.902	13.044	-0.18746
6.5025	6.3617	0.00000	1.6448	115.87	70.166	83.193	13.028	-0.19561
6.6703	6.5418	0.00000	1.6480	114.66	69.289	82.301	13.011	-0.19561
6.8339	6.7152	0.00000	1.6510	114.16	68.849	81.884	13.036	-0.20376
7.0019	6.8617	0.00000	1.6536	113.95	68.607	81.610	13.003	-0.20376
7.1698	7.0351	0.00000	1.6567	113.48	68.187	81.214	13.028	-0.21191
7.3375	7.2135	0.00000	1.6599	113.32	67.954	80.982	13.028	-0.21191
7.5015	7.3886	0.00000	1.6630	112.92	67.574	80.610	13.036	-0.22006
7.6685	7.5469	0.00000	1.6659	112.64	67.287	80.299	13.011	-0.22821
7.8362	7.7304	0.00000	1.6692	112.36	66.978	79.990	13.011	-0.22821
8.0043	7.8768	0.00000	1.6719	112.30	66.828	79.840	13.011	-0.23636
8.1672	8.0250	0.00000	1.6745	112.46	66.808	79.812	13.003	-0.23636

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-603	Tested By: SKK	Checked By: SKK
Sample No.: 19-298	Test Date: 4/3/19	Depth: 20-21'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3357	8.2017	0.00000	1.6778	112.58	66.745	79.757	13.011	-0.24451
8.5036	8.3684	0.00000	1.6808	112.83	66.765	79.776	13.011	-0.24451
8.6669	8.5502	0.00000	1.6842	112.73	66.566	79.602	13.036	-0.25267
8.8352	8.7168	0.00000	1.6872	112.99	66.590	79.585	12.995	-0.25267
9.0032	8.8684	0.00000	1.6900	113.17	66.579	79.607	13.028	-0.26082
9.1708	9.0401	0.00000	1.6932	113.27	66.506	79.501	12.995	-0.26082
9.3341	9.2168	0.00000	1.6965	113.20	66.329	79.349	13.020	-0.26897
9.5018	9.3919	0.00000	1.6998	113.30	66.252	79.247	12.995	-0.27712
9.6695	9.5434	0.00000	1.7027	113.73	66.387	79.407	13.020	-0.27712
9.8375	9.7134	0.00000	1.7059	114.04	66.438	79.450	13.011	-0.28527
10.001	9.8801	0.00000	1.7090	114.38	66.507	79.534	13.028	-0.28527
10.168	10.037	0.00000	1.7120	114.32	66.351	79.355	13.003	-0.29342
10.336	10.207	0.00000	1.7152	114.70	66.438	79.425	12.987	-0.29342
10.503	10.375	0.00000	1.7185	114.91	66.430	79.442	13.011	-0.30157
10.671	10.555	0.00000	1.7219	115.19	66.452	79.463	13.011	-0.30157
10.834	10.713	0.00000	1.7250	115.20	66.330	79.318	12.987	-0.30972
11.002	10.883	0.00000	1.7283	115.28	66.248	79.259	13.011	-0.30972
11.169	11.037	0.00000	1.7312	115.59	66.307	79.319	13.011	-0.31787
11.337	11.210	0.00000	1.7346	115.78	66.278	79.290	13.011	-0.31787
11.504	11.382	0.00000	1.7380	115.87	66.197	79.208	13.011	-0.32602
11.668	11.552	0.00000	1.7413	115.69	65.955	78.967	13.011	-0.32602
11.836	11.722	0.00000	1.7447	115.68	65.819	78.847	13.028	-0.33417
12.004	11.885	0.00000	1.7479	115.35	65.497	78.509	13.011	-0.33417
12.167	12.040	0.00000	1.7510	115.31	65.356	78.384	13.028	-0.34232
12.335	12.195	0.00000	1.7541	114.94	65.022	78.049	13.028	-0.34232
12.504	12.377	0.00000	1.7577	114.72	64.758	77.769	13.011	-0.35047
12.667	12.537	0.00000	1.7609	114.57	64.545	77.556	13.011	-0.35047
12.835	12.718	0.00000	1.7646	114.29	64.243	77.263	13.020	-0.35862
13.004	12.856	0.00000	1.7674	113.95	63.945	76.948	13.003	-0.35862
13.167	13.033	0.00000	1.7710	113.60	63.611	76.646	13.036	-0.36677
13.335	13.213	0.00000	1.7747	113.35	63.332	76.360	13.028	-0.36677
13.502	13.380	0.00000	1.7781	112.70	62.839	75.850	13.011	-0.37492
13.670	13.550	0.00000	1.7816	112.23	62.445	75.472	13.028	-0.37492
13.834	13.717	0.00000	1.7850	111.71	62.023	75.035	13.011	-0.38307
14.005	13.898	0.00000	1.7888	111.09	61.541	74.528	12.987	-0.38307
14.168	14.035	0.00000	1.7916	110.58	61.153	74.197	13.044	-0.38307
14.337	14.208	0.00000	1.7952	110.12	60.766	73.786	13.020	-0.39122
14.501	14.392	0.00000	1.7991	109.25	60.146	73.157	13.011	-0.39122
14.669	14.590	0.00000	1.8033	108.35	59.496	72.524	13.028	-0.39937
14.837	14.732	0.00000	1.8063	107.88	59.132	72.176	13.044	-0.39937
15.005	14.892	0.00000	1.8096	107.41	58.759	71.786	13.028	-0.40753
15.168	15.058	0.00000	1.8132	106.82	58.308	71.360	13.052	-0.40753
15.337	15.259	0.00000	1.8175	106.11	57.775	70.779	13.003	-0.40753
15.501	15.435	0.00000	1.8213	105.43	57.272	70.275	13.003	-0.41568
15.668	15.587	0.00000	1.8246	104.00	56.382	69.369	12.987	-0.41568
15.836	15.754	0.00000	1.8282	102.38	55.378	68.374	12.995	-0.42383
16.004	15.930	0.00000	1.8320	100.49	54.220	67.215	12.995	-0.42383
16.168	16.073	0.00000	1.8351	99.151	53.393	66.389	12.995	-0.43198
16.336	16.235	0.00000	1.8387	97.960	52.637	65.673	13.036	-0.43198
16.503	16.422	0.00000	1.8428	96.746	51.853	64.897	13.044	-0.43198

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-603	Tested By: SKK	Checked By: SKK
Sample No.: 19-298	Test Date: 4/3/19	Depth: 20-21'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

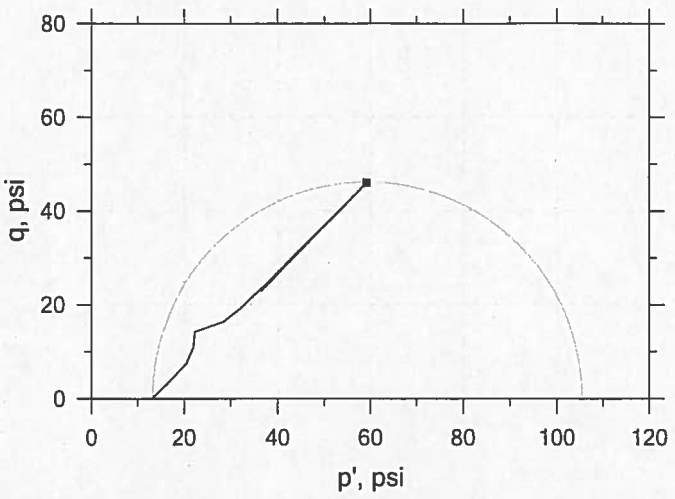
Shear Phase

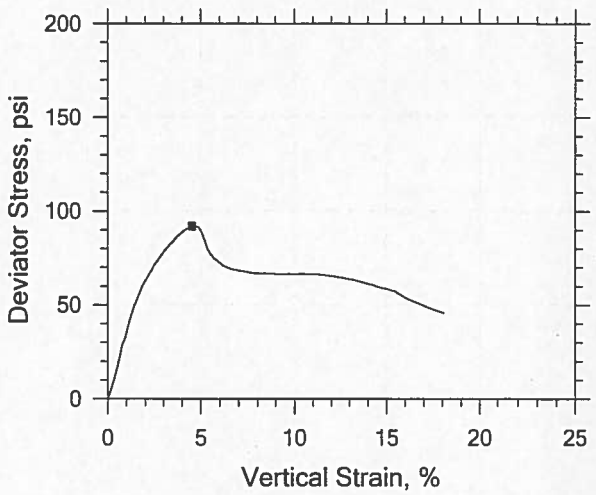
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.668	16.589	0.00000	1.8465	95.566	51.104	64.140	13.036	-0.44013
16.836	16.749	0.00000	1.8500	94.483	50.415	63.426	13.011	-0.44013
17.003	16.925	0.00000	1.8539	93.423	49.729	62.756	13.028	-0.44828
17.171	17.075	0.00000	1.8573	92.338	49.049	62.061	13.011	-0.44828
17.335	17.264	0.00000	1.8615	91.468	48.462	61.474	13.011	-0.45643
17.503	17.408	0.00000	1.8648	90.535	47.872	60.883	13.011	-0.45643
17.670	17.584	0.00000	1.8688	89.575	47.250	60.245	12.995	-0.45643
17.834	17.750	0.00000	1.8725	88.757	46.711	59.747	13.036	-0.46458
18.003	17.927	0.00000	1.8766	88.015	46.208	59.228	13.020	-0.46458
18.166	18.075	0.00000	1.8800	87.331	45.755	58.775	13.020	-0.47273

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-603	Tested By: SKK	Checked By: SKK
Sample No.: 19-298	Test Date: 4/3/19	Depth: 20-21'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





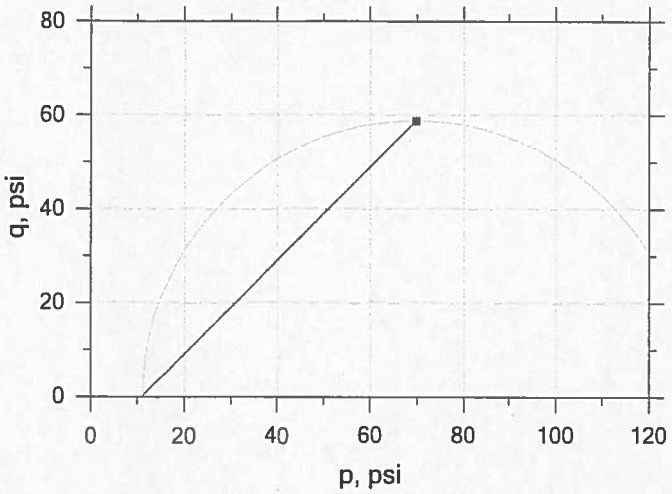
Symbol		■
Sample ID		19-298
Depth, ft		20-21'
Test Number		1
Initial	Height, in	3.050
	Diameter, in	1.406
	Moisture Content (from Cuttings), %	24.7
	Dry Density, pcf	98.0
	Saturation (Wet Method), %	91.8
	Void Ratio	0.734
Final	Moisture Content, %	26.2
	Dry Density, pcf	99.1
	Cross-Sectional Area (Method A), in²	1.540
	Saturation, %	100.0
	Void Ratio	0.713
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		12.96
Horizontal Effective Consolidation Stress, psi		13.00
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		46.03
Strain at Failure, %		4.54
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		92.06
Effective Minor Principal Stress at Failure, psi		13.15
Effective Major Principal Stress at Failure, psi		105.2
B-Value		---

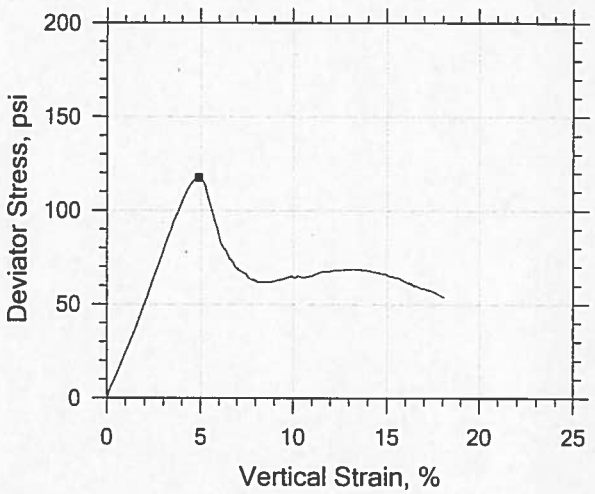
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-603	Tested By: SKK	Checked By: SKK
Sample No.: 19-298	Test Date: 4/3/19	Depth: 20-21'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-304
Depth, ft		15-16'
Test Number		1
Initial	Height, in	3.053
	Diameter, in	1.395
	Moisture Content (from Cuttings), %	21.8
	Dry Density, pcf	98.5
	Saturation (Wet Method), %	83.6
	Void Ratio	0.699
Final	Moisture Content, %	25.2
	Dry Density, pcf	99.8
	Cross-Sectional Area (Method A), in²	1.515
	Saturation, %	100.0
	Void Ratio	0.676
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		10.97
Horizontal Effective Consolidation Stress, psi		10.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		58.78
Strain at Failure, %		4.90
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		117.6
Effective Minor Principal Stress at Failure, psi		11.18
Effective Major Principal Stress at Failure, psi		128.7
B-Value		—

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-604	Tested By: SKK	Checked By: SKK
Sample No.: 19-304	Test Date: 4/11/19	Depth: 15-16'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5148	-0.022922	-0.015132	10.971	10.986	0.00000
0.17032	0.15816	0.00000	1.5172	7.5740	4.9847	15.922	10.937	-0.0081505
0.33335	0.34156	0.00000	1.5200	13.392	8.7943	19.715	10.921	-0.0081505
0.50458	0.51822	0.00000	1.5227	19.286	12.642	23.620	10.978	-0.016301
0.66747	0.66965	0.00000	1.5250	25.170	16.473	27.419	10.946	-0.024451
0.83568	0.83454	0.00000	1.5275	31.351	20.485	31.455	10.970	-0.024451
1.0038	0.99102	0.00000	1.5299	37.323	24.348	35.310	10.962	-0.032602
1.1706	1.1660	0.00000	1.5326	43.363	28.238	39.160	10.921	-0.032602
1.3341	1.3141	0.00000	1.5349	49.452	32.156	43.101	10.946	-0.040752
1.5014	1.4874	0.00000	1.5376	55.888	36.277	47.222	10.946	-0.048903
1.6693	1.6371	0.00000	1.5400	62.468	40.488	51.482	10.994	-0.048903
1.8373	1.7953	0.00000	1.5425	69.196	44.777	55.714	10.937	-0.057054
2.0007	1.9551	0.00000	1.5450	75.898	49.034	60.036	11.002	-0.065204
2.1680	2.1318	0.00000	1.5478	83.019	53.539	64.533	10.994	-0.065204
2.3360	2.2697	0.00000	1.5500	90.121	58.039	68.976	10.937	-0.073354
2.5047	2.4245	0.00000	1.5524	97.539	62.718	73.712	10.994	-0.073354
2.6682	2.5978	0.00000	1.5552	104.79	67.259	78.237	10.978	-0.081505
2.8362	2.7526	0.00000	1.5577	112.22	71.920	82.866	10.946	-0.089655
3.0046	2.9259	0.00000	1.5604	119.68	76.561	87.539	10.978	-0.089655
3.1680	3.0774	0.00000	1.5629	126.86	81.029	92.015	10.986	-0.097806
3.3362	3.2473	0.00000	1.5656	134.32	85.642	96.652	11.010	-0.097806
3.5038	3.4189	0.00000	1.5684	141.19	89.865	100.86	10.994	-0.10596
3.6672	3.5569	0.00000	1.5706	148.25	94.224	105.22	10.994	-0.11411
3.8354	3.7538	0.00000	1.5739	155.15	98.409	109.40	10.986	-0.11411
4.0041	3.9254	0.00000	1.5767	162.09	102.63	113.60	10.970	-0.12226
4.1669	4.0617	0.00000	1.5789	168.17	106.33	117.35	11.027	-0.12226
4.3354	4.2316	0.00000	1.5817	174.11	109.89	120.90	11.010	-0.13041
4.5025	4.4049	0.00000	1.5846	179.28	112.94	123.94	11.002	-0.13041
4.6701	4.5816	0.00000	1.5875	183.25	115.23	126.24	11.010	-0.13856
4.8375	4.7414	0.00000	1.5902	186.65	117.16	128.15	10.994	-0.14671
5.0004	4.9012	0.00000	1.5928	187.60	117.56	128.59	11.035	-0.14671
5.1682	5.0830	0.00000	1.5959	186.02	116.33	127.34	11.010	-0.15486
5.3362	5.2495	0.00000	1.5987	181.41	113.24	124.29	11.051	-0.16301
5.5046	5.4111	0.00000	1.6014	171.06	106.57	117.61	11.035	-0.16301
5.6675	5.5743	0.00000	1.6042	162.44	101.01	112.06	11.051	-0.17116
5.8354	5.7593	0.00000	1.6073	151.85	94.217	105.21	10.994	-0.17116
6.0027	5.9125	0.00000	1.6100	145.00	89.801	100.85	11.051	-0.17931
6.1706	6.0773	0.00000	1.6128	134.57	83.167	94.161	10.994	-0.17931
6.3336	6.2372	0.00000	1.6155	130.14	80.280	91.315	11.035	-0.18746
6.5014	6.4054	0.00000	1.6184	127.38	78.421	89.439	11.018	-0.19561
6.6696	6.5922	0.00000	1.6217	121.18	74.435	85.494	11.059	-0.19561
6.8370	6.7638	0.00000	1.6247	118.46	72.615	83.617	11.002	-0.20376
7.0009	6.9371	0.00000	1.6277	113.67	69.527	80.554	11.027	-0.20376
7.1685	7.1172	0.00000	1.6308	111.64	68.141	79.200	11.059	-0.21191
7.3362	7.2820	0.00000	1.6337	110.56	67.353	78.364	11.010	-0.22006
7.5036	7.4453	0.00000	1.6366	109.35	66.487	77.497	11.010	-0.22006
7.6669	7.6118	0.00000	1.6396	105.87	64.235	75.253	11.018	-0.22821
7.8349	7.7868	0.00000	1.6427	104.78	63.445	74.447	11.002	-0.22821
8.0030	7.9534	0.00000	1.6457	103.91	62.794	73.797	11.002	-0.23636
8.1698	8.1132	0.00000	1.6485	102.53	61.843	72.886	11.043	-0.24451

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-604	Tested By: SKK	Checked By: SKK
Sample No.: 19-304	Test Date: 4/11/19	Depth: 15-16'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3336	8.2798	0.00000	1.6515	102.81	61.893	72.936	11.043	-0.24451
8.5018	8.4531	0.00000	1.6546	102.84	61.784	72.851	11.067	-0.25267
8.6696	8.6281	0.00000	1.6578	102.97	61.739	72.765	11.027	-0.25267
8.8334	8.7846	0.00000	1.6607	103.34	61.847	72.906	11.059	-0.26082
9.0017	8.9410	0.00000	1.6635	104.16	62.227	73.230	11.002	-0.26082
9.1693	9.1278	0.00000	1.6669	105.06	62.634	73.628	10.994	-0.26897
9.3373	9.2893	0.00000	1.6699	106.02	63.090	74.101	11.010	-0.26897
9.5011	9.4508	0.00000	1.6729	106.64	63.340	74.374	11.035	-0.27712
9.6690	9.6090	0.00000	1.6758	107.66	63.832	74.883	11.051	-0.28527
9.8367	9.7672	0.00000	1.6787	108.94	64.475	75.510	11.035	-0.28527
10.001	9.9489	0.00000	1.6821	110.28	65.136	76.146	11.010	-0.28527
10.168	10.104	0.00000	1.6850	108.33	63.857	74.851	10.994	-0.29342
10.335	10.265	0.00000	1.6881	110.69	65.137	76.115	10.978	-0.30157
10.502	10.444	0.00000	1.6914	109.47	64.279	75.289	11.010	-0.30157
10.669	10.607	0.00000	1.6945	109.57	64.209	75.227	11.018	-0.30972
10.833	10.768	0.00000	1.6976	110.72	64.765	75.775	11.010	-0.30972
11.001	10.950	0.00000	1.7010	111.34	64.992	75.994	11.002	-0.31787
11.169	11.103	0.00000	1.7040	112.62	65.621	76.624	11.002	-0.31787
11.337	11.268	0.00000	1.7071	113.92	66.258	77.260	11.002	-0.32602
11.501	11.433	0.00000	1.7103	115.29	66.928	77.930	11.002	-0.32602
11.667	11.578	0.00000	1.7131	116.13	67.304	78.290	10.986	-0.33417
11.835	11.779	0.00000	1.7170	116.60	67.412	78.414	11.002	-0.33417
12.002	11.934	0.00000	1.7201	117.07	67.562	78.532	10.970	-0.34232
12.169	12.091	0.00000	1.7231	117.69	67.793	78.787	10.994	-0.34232
12.337	12.257	0.00000	1.7264	118.56	68.162	79.156	10.994	-0.35047
12.501	12.427	0.00000	1.7297	118.94	68.244	79.198	10.954	-0.35047
12.669	12.599	0.00000	1.7331	119.28	68.297	79.275	10.978	-0.35862
12.836	12.744	0.00000	1.7360	119.49	68.305	79.274	10.970	-0.35862
13.004	12.924	0.00000	1.7396	120.00	68.449	79.362	10.913	-0.36677
13.171	13.085	0.00000	1.7428	120.34	68.506	79.468	10.962	-0.36677
13.335	13.253	0.00000	1.7462	121.00	68.748	79.645	10.897	-0.37492
13.502	13.432	0.00000	1.7498	121.21	68.717	79.671	10.954	-0.37492
13.670	13.603	0.00000	1.7533	120.84	68.364	79.293	10.929	-0.38307
13.834	13.751	0.00000	1.7563	120.91	68.278	79.191	10.913	-0.38307
14.001	13.948	0.00000	1.7603	120.75	68.024	78.953	10.929	-0.39122
14.168	14.103	0.00000	1.7635	120.59	67.808	78.729	10.921	-0.39122
14.335	14.266	0.00000	1.7668	120.03	67.354	78.291	10.937	-0.39937
14.504	14.441	0.00000	1.7705	119.80	67.077	78.088	11.010	-0.39937
14.670	14.616	0.00000	1.7741	119.33	66.672	77.666	10.994	-0.40753
14.837	14.795	0.00000	1.7778	118.93	66.297	77.299	11.002	-0.40753
15.000	14.939	0.00000	1.7808	118.52	65.951	76.961	11.010	-0.40753
15.167	15.097	0.00000	1.7841	117.18	65.068	76.111	11.043	-0.41568
15.335	15.272	0.00000	1.7878	116.75	64.688	75.698	11.010	-0.41568
15.502	15.466	0.00000	1.7919	116.34	64.306	75.324	11.018	-0.42383
15.670	15.631	0.00000	1.7954	115.97	63.967	74.977	11.010	-0.42383
15.834	15.799	0.00000	1.7990	114.79	63.174	74.200	11.027	-0.43198
16.001	15.961	0.00000	1.8025	113.32	62.231	73.298	11.067	-0.43198
16.169	16.139	0.00000	1.8063	112.30	61.530	72.541	11.010	-0.44013
16.337	16.295	0.00000	1.8097	111.40	60.912	71.914	11.002	-0.44013
16.504	16.464	0.00000	1.8133	109.84	59.920	70.971	11.051	-0.44828

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-604	Tested By: SKK	Checked By: SKK
Sample No.: 19-304	Test Date: 4/11/19	Depth: 15-16'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

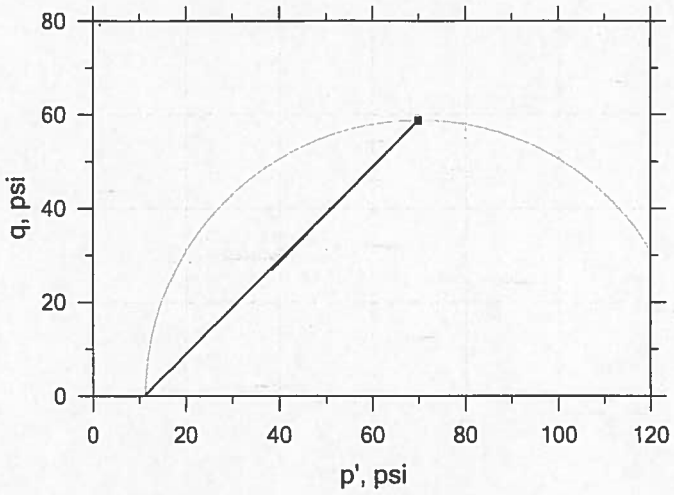
Shear Phase

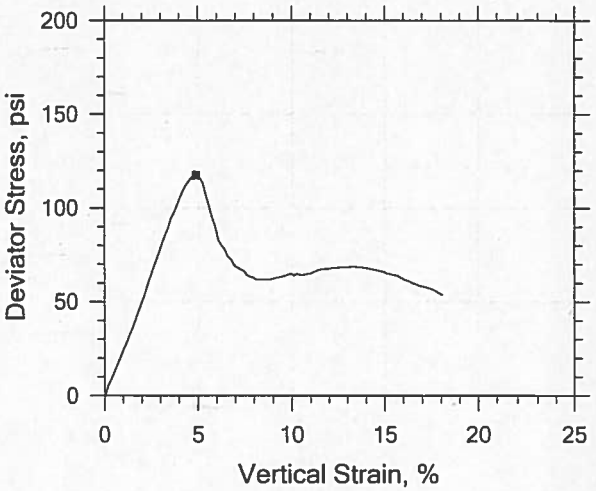
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.667	16.645	0.00000	1.8173	109.15	59.405	70.464	11.059	-0.44828
16.835	16.804	0.00000	1.8207	108.29	58.813	69.831	11.018	-0.44828
17.001	16.960	0.00000	1.8242	107.54	58.284	69.327	11.043	-0.45643
17.169	17.138	0.00000	1.8281	107.01	57.860	68.927	11.067	-0.46458
17.338	17.303	0.00000	1.8317	106.17	57.281	68.340	11.059	-0.46458
17.501	17.475	0.00000	1.8355	105.46	56.768	67.803	11.035	-0.46458
17.668	17.636	0.00000	1.8391	104.47	56.111	67.137	11.027	-0.47273
17.836	17.808	0.00000	1.8430	102.75	55.058	66.100	11.043	-0.47273
18.004	17.966	0.00000	1.8465	101.05	54.024	65.026	11.002	-0.48088
18.105	18.086	0.00000	1.8492	100.30	53.533	64.575	11.043	-0.48088

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-604	Tested By: SKK	Checked By: SKK
Sample No.: 19-304	Test Date: 4/11/19	Depth: 15-16'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





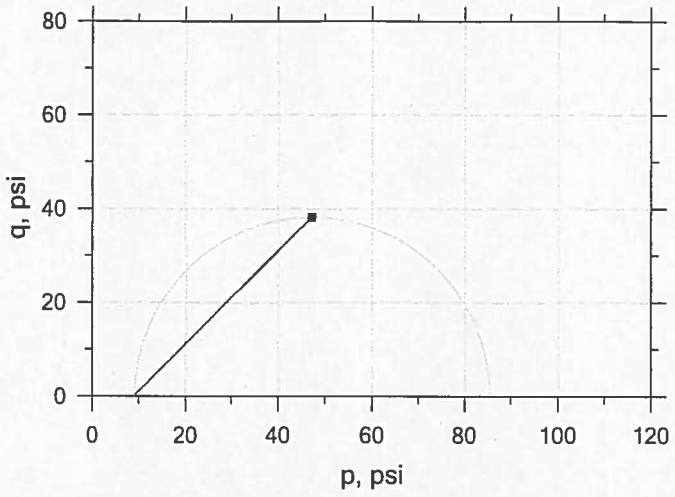
	Symbol	■
	Sample ID	19-304
	Depth, ft	15-16'
	Test Number	1
Initial	Height, in	3.053
	Diameter, in	1.395
	Moisture Content (from Cuttings), %	21.8
	Dry Density, pcf	98.5
	Saturation (Wet Method), %	83.6
	Void Ratio	0.699
Final	Moisture Content, %	25.2
	Dry Density, pcf	99.8
	Cross-Sectional Area (Method A), in²	1.515
	Saturation, %	100.0
	Void Ratio	0.676
	Back Pressure, %	0.0000
	Vertical Effective Consolidation Stress, psi	10.97
	Horizontal Effective Consolidation Stress, psi	10.99
	Vertical Strain after Consolidation, %	0.0000
	Volumetric Strain after Consolidation, %	0.0000
	Time to 50% Consolidation, min	0.0000
	Shear Strength, psi	58.78
	Strain at Failure, %	4.90
	Strain Rate, %/min	1.000
	Deviator Stress at Failure, psi	117.6
	Effective Minor Principal Stress at Failure, psi	11.18
	Effective Major Principal Stress at Failure, psi	128.7
	B-Value	---

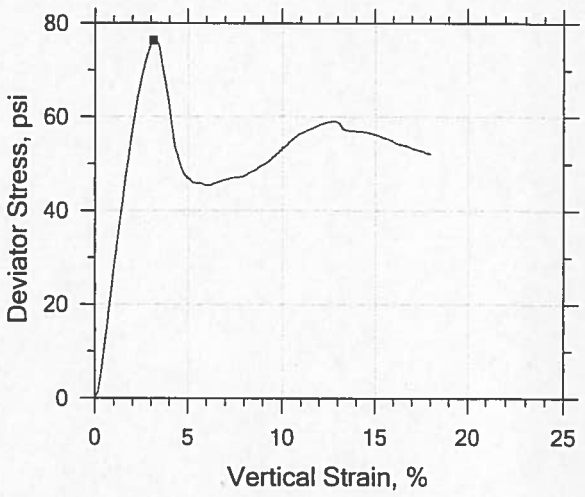
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-604	Tested By: SKK	Checked By: SKK
Sample No.: 19-304	Test Date: 4/11/19	Depth: 15-16'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-311
Depth, ft		10-11.5'
Test Number		1
Initial	Height, in	5.920
	Diameter, in	2.660
	Moisture Content (from Cuttings), %	24.2
	Dry Density, pcf	98.1
	Saturation (Wet Method), %	90.3
	Void Ratio	0.725
Final	Moisture Content, %	26.4
	Dry Density, pcf	98.6
	Cross-Sectional Area (Method A), in²	5.537
	Saturation, %	100.0
	Void Ratio	0.716
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		8.958
Horizontal Effective Consolidation Stress, psi		8.961
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		38.19
Strain at Failure, %		3.11
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		76.38
Effective Minor Principal Stress at Failure, psi		9.180
Effective Major Principal Stress at Failure, psi		85.56
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-605	Tested By: SKK	Checked By: SKK
Sample No.: 19-311	Test Date: 4/12/19	Depth: 10-11.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	5.5371	-0.012597	-0.0022750	8.9583	8.9606	0.00000
0.17017	0.16616	0.00000	5.5463	8.2026	1.4748	10.403	8.9282	-0.0081505
0.33708	0.32886	0.00000	5.5553	30.051	5.4012	14.370	8.9687	-0.0081505
0.50383	0.47252	0.00000	5.5633	56.933	10.222	19.101	8.8796	-0.016301
0.67068	0.64214	0.00000	5.5728	87.199	15.631	24.446	8.8148	-0.016301
0.83345	0.80051	0.00000	5.5817	117.11	20.961	29.783	8.8229	-0.024451
1.0012	0.96494	0.00000	5.5910	148.66	26.565	35.404	8.8391	-0.032602
1.1678	1.1276	0.00000	5.6002	179.01	31.936	40.775	8.8391	-0.032602
1.3358	1.2990	0.00000	5.6099	208.88	37.201	46.073	8.8715	-0.040752
1.5031	1.4651	0.00000	5.6194	237.29	42.191	51.087	8.8958	-0.048903
1.6694	1.6365	0.00000	5.6292	264.96	47.028	55.940	8.9120	-0.048903
1.8371	1.7992	0.00000	5.6385	291.38	51.632	60.569	8.9363	-0.057054
2.0045	1.9550	0.00000	5.6475	317.24	56.127	65.071	8.9444	-0.065204
2.1676	2.1194	0.00000	5.6570	340.53	60.146	69.082	8.9363	-0.073354
2.3353	2.3003	0.00000	5.6674	362.96	63.988	73.005	9.0173	-0.073354
2.5032	2.4604	0.00000	5.6767	383.29	67.461	76.486	9.0254	-0.081505
2.6699	2.6248	0.00000	5.6863	401.07	70.469	79.519	9.0497	-0.081505
2.8376	2.7892	0.00000	5.6959	416.16	72.994	82.028	9.0335	-0.089655
3.0012	2.9441	0.00000	5.7050	428.41	75.022	84.047	9.0254	-0.097806
3.1691	3.1077	0.00000	5.7147	436.91	76.380	85.462	9.0821	-0.097806
3.3366	3.2721	0.00000	5.7244	437.48	76.346	85.380	9.0335	-0.10596
3.5047	3.4461	0.00000	5.7347	430.52	74.990	84.162	9.1712	-0.11411
3.6710	3.6235	0.00000	5.7452	406.37	70.645	79.646	9.0011	-0.11411
3.8345	3.8000	0.00000	5.7558	384.46	66.705	75.795	9.0902	-0.12226
4.0020	3.9575	0.00000	5.7652	365.65	63.329	72.435	9.1064	-0.12226
4.1694	4.1202	0.00000	5.7750	337.78	58.391	67.562	9.1712	-0.13041
4.3376	4.2881	0.00000	5.7851	311.09	53.672	62.876	9.2036	-0.13856
4.5005	4.4638	0.00000	5.7958	299.13	51.505	60.685	9.1793	-0.13856
4.6686	4.6248	0.00000	5.8056	286.70	49.274	58.421	9.1469	-0.14671
4.8358	4.7875	0.00000	5.8155	279.40	47.931	57.038	9.1064	-0.15486
5.0032	4.9528	0.00000	5.8256	274.86	47.065	56.171	9.1064	-0.15486
5.1704	5.1033	0.00000	5.8348	273.55	46.762	55.885	9.1226	-0.16301
5.3342	5.2851	0.00000	5.8460	269.80	46.026	55.124	9.0983	-0.16301
5.5020	5.4460	0.00000	5.8560	269.36	45.870	54.960	9.0902	-0.17116
5.6691	5.6148	0.00000	5.8665	270.43	45.966	55.015	9.0497	-0.17116
5.8366	5.7732	0.00000	5.8763	270.52	45.900	54.958	9.0578	-0.17931
6.0047	5.9471	0.00000	5.8872	268.44	45.459	54.484	9.0254	-0.18746
6.1681	6.1046	0.00000	5.8971	268.59	45.405	54.454	9.0497	-0.18746
6.3353	6.2777	0.00000	5.9079	270.03	45.561	54.562	9.0011	-0.19561
6.5027	6.4344	0.00000	5.9178	272.27	45.859	54.876	9.0173	-0.19561
6.6699	6.6083	0.00000	5.9289	274.23	46.099	55.133	9.0335	-0.20376
6.8371	6.7762	0.00000	5.9395	276.04	46.317	55.318	9.0011	-0.21191
7.0008	6.9389	0.00000	5.9499	277.98	46.560	55.610	9.0497	-0.21191
7.1681	7.1042	0.00000	5.9605	279.41	46.713	55.763	9.0497	-0.22006
7.3361	7.2634	0.00000	5.9707	281.15	46.921	55.979	9.0578	-0.22006
7.5042	7.4304	0.00000	5.9815	282.30	47.025	56.083	9.0578	-0.22821
7.6670	7.6044	0.00000	5.9928	283.39	47.114	56.188	9.0740	-0.22821
7.8353	7.7584	0.00000	6.0028	284.38	47.197	56.271	9.0740	-0.23636
8.0026	7.9384	0.00000	6.0145	285.72	47.323	56.397	9.0740	-0.23636
8.1691	8.0985	0.00000	6.0250	288.36	47.676	56.742	9.0659	-0.24451

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-605	Tested By: SKK	Checked By: SKK
Sample No.: 19-311	Test Date: 4/12/19	Depth: 10-11.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3358	8.2638	0.00000	6.0359	291.51	48.107	57.165	9.0578	-0.24451
8.5037	8.4412	0.00000	6.0475	294.12	48.442	57.500	9.0578	-0.25267
8.6670	8.6091	0.00000	6.0587	296.76	48.785	57.851	9.0659	-0.26082
8.8342	8.7675	0.00000	6.0692	299.90	49.215	58.281	9.0659	-0.26082
9.0023	8.9285	0.00000	6.0799	303.13	49.656	58.722	9.0659	-0.26897
9.1678	9.0938	0.00000	6.0910	305.91	50.017	59.059	9.0416	-0.26897
9.3350	9.2617	0.00000	6.1022	308.86	50.405	59.455	9.0497	-0.27712
9.5017	9.4347	0.00000	6.1139	313.15	51.007	60.049	9.0416	-0.27712
9.6683	9.5922	0.00000	6.1245	317.57	51.636	60.654	9.0173	-0.28527
9.8366	9.7645	0.00000	6.1362	321.73	52.213	61.246	9.0335	-0.28527
10.001	9.9246	0.00000	6.1471	326.52	52.895	61.929	9.0335	-0.29342
10.168	10.099	0.00000	6.1591	330.88	53.496	62.513	9.0173	-0.29342
10.336	10.267	0.00000	6.1706	335.14	54.083	63.100	9.0173	-0.30157
10.504	10.422	0.00000	6.1813	339.73	54.729	63.787	9.0578	-0.30157
10.667	10.594	0.00000	6.1932	344.00	55.309	64.318	9.0092	-0.30972
10.836	10.761	0.00000	6.2048	348.31	55.897	64.955	9.0578	-0.30972
11.004	10.922	0.00000	6.2159	352.01	56.389	65.423	9.0335	-0.31787
11.168	11.084	0.00000	6.2273	354.34	56.657	65.698	9.0416	-0.31787
11.335	11.263	0.00000	6.2399	357.07	56.976	66.050	9.0740	-0.32602
11.504	11.434	0.00000	6.2519	359.97	57.326	66.384	9.0578	-0.32602
11.671	11.605	0.00000	6.2640	362.12	57.554	66.604	9.0497	-0.33417
11.834	11.764	0.00000	6.2753	364.91	57.893	66.959	9.0659	-0.33417
12.002	11.934	0.00000	6.2874	367.59	58.203	67.260	9.0578	-0.34232
12.170	12.100	0.00000	6.2993	370.10	58.488	67.570	9.0821	-0.34232
12.333	12.263	0.00000	6.3110	371.84	58.652	67.727	9.0740	-0.35047
12.501	12.425	0.00000	6.3226	373.86	58.860	67.934	9.0740	-0.35047
12.669	12.600	0.00000	6.3353	375.64	59.019	68.069	9.0497	-0.35862
12.837	12.766	0.00000	6.3473	376.66	59.065	68.131	9.0659	-0.35862
13.001	12.919	0.00000	6.3585	377.22	59.046	68.104	9.0578	-0.36677
13.168	13.092	0.00000	6.3712	374.58	58.510	67.584	9.0740	-0.36677
13.336	13.271	0.00000	6.3843	369.36	57.568	66.618	9.0497	-0.37492
13.503	13.430	0.00000	6.3961	367.72	57.203	66.204	9.0011	-0.37492
13.670	13.602	0.00000	6.4088	367.62	57.070	66.112	9.0416	-0.38307
13.834	13.762	0.00000	6.4207	367.90	57.005	66.038	9.0335	-0.38307
14.002	13.929	0.00000	6.4331	368.84	57.036	66.054	9.0173	-0.39122
14.169	14.086	0.00000	6.4449	368.96	56.947	65.989	9.0416	-0.39122
14.336	14.250	0.00000	6.4572	369.39	56.903	65.944	9.0416	-0.39122
14.504	14.418	0.00000	6.4699	369.71	56.836	65.862	9.0254	-0.39937
14.671	14.579	0.00000	6.4821	369.64	56.715	65.765	9.0497	-0.39937
14.834	14.750	0.00000	6.4951	369.54	56.583	65.641	9.0578	-0.40753
15.002	14.917	0.00000	6.5078	368.89	56.368	65.442	9.0740	-0.40753
15.170	15.088	0.00000	6.5210	368.39	56.174	65.257	9.0821	-0.41568
15.334	15.259	0.00000	6.5341	367.83	55.973	65.047	9.0740	-0.41568
15.501	15.429	0.00000	6.5473	366.65	55.676	64.766	9.0902	-0.42383
15.668	15.594	0.00000	6.5600	365.68	55.417	64.507	9.0902	-0.42383
15.836	15.765	0.00000	6.5734	365.25	55.235	64.309	9.0740	-0.42383
16.004	15.932	0.00000	6.5864	364.66	55.032	64.114	9.0821	-0.43198
16.171	16.083	0.00000	6.5982	362.12	54.546	63.556	9.0092	-0.43198
16.334	16.251	0.00000	6.6115	361.59	54.352	63.410	9.0578	-0.44013
16.502	16.422	0.00000	6.6250	360.51	54.075	63.092	9.0173	-0.44013

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-605	Tested By: SKK	Checked By: SKK
Sample No.: 19-311	Test Date: 4/12/19	Depth: 10-11.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

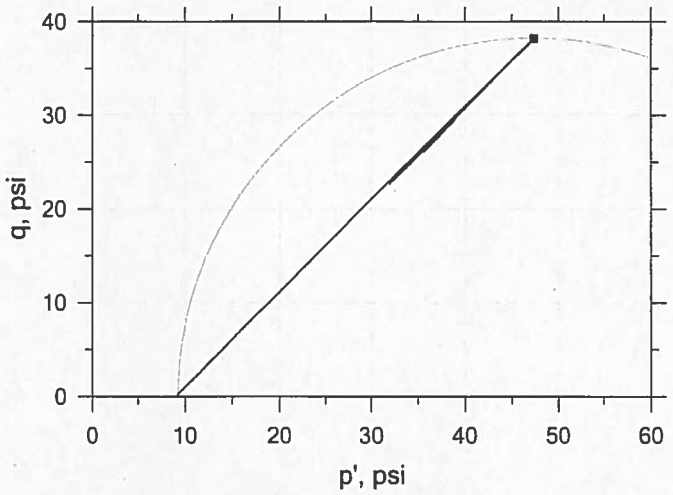
Shear Phase

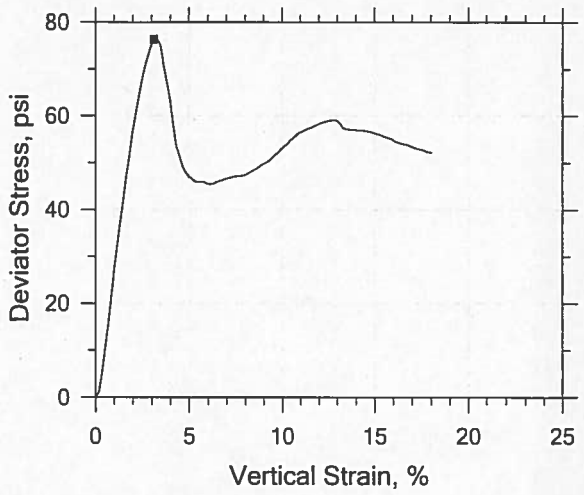
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.669	16.577	0.00000	6.6373	359.94	53.885	62.951	9.0659	-0.44013
16.837	16.747	0.00000	6.6509	359.96	53.775	62.874	9.0983	-0.44828
17.000	16.914	0.00000	6.6642	358.94	53.512	62.577	9.0659	-0.44828
17.168	17.063	0.00000	6.6763	357.94	53.262	62.360	9.0983	-0.45643
17.336	17.241	0.00000	6.6906	357.01	53.005	62.095	9.0902	-0.45643
17.503	17.404	0.00000	6.7038	356.36	52.800	61.890	9.0902	-0.46458
17.670	17.578	0.00000	6.7180	356.18	52.658	61.716	9.0578	-0.46458
17.834	17.743	0.00000	6.7314	354.65	52.323	61.389	9.0659	-0.46458
18.002	17.904	0.00000	6.7446	354.43	52.185	61.251	9.0659	-0.47273
18.125	18.033	0.00000	6.7553	354.47	52.106	61.124	9.0173	-0.47273

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-605	Tested By: SKK	Checked By: SKK
Sample No.: 19-311	Test Date: 4/12/19	Depth: 10-11.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





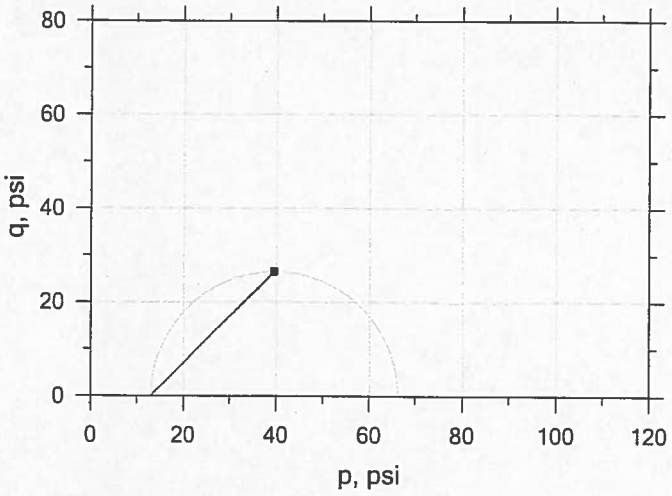
Symbol		■
Sample ID		19-311
Depth, ft		10-11.5'
Test Number		1
Initial	Height, in	5.920
	Diameter, in	2.660
	Moisture Content (from Cuttings), %	24.2
	Dry Density, pcf	98.1
	Saturation (Wet Method), %	90.3
	Void Ratio	0.725
Final	Moisture Content, %	26.4
	Dry Density, pcf	98.6
	Cross-Sectional Area (Method A), in²	5.537
	Saturation, %	100.0
	Void Ratio	0.716
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		8.958
Horizontal Effective Consolidation Stress, psi		8.961
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		38.19
Strain at Failure, %		3.11
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		76.38
Effective Minor Principal Stress at Failure, psi		9.180
Effective Major Principal Stress at Failure, psi		85.56
B-Value		---

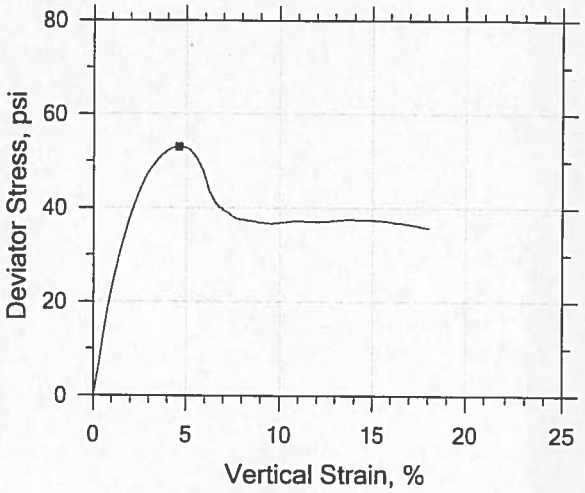
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-605	Tested By: SKK	Checked By: SKK
Sample No.: 19-311	Test Date: 4/12/19	Depth: 10-11.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-312
Depth, ft		20-22'
Test Number		1
Initial	Height, in	6.502
	Diameter, in	2.726
	Moisture Content (from Cuttings), %	30.1
	Dry Density, pcf	91.4
	Saturation (Wet Method), %	95.7
	Void Ratio	0.852
Final	Moisture Content, %	30.8
	Dry Density, pcf	92.2
	Cross-Sectional Area (Method A), in²	5.802
	Saturation, %	100.0
	Void Ratio	0.835
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		13.00
Horizontal Effective Consolidation Stress, psi		13.00
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		26.54
Strain at Failure, %		4.61
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		53.07
Effective Minor Principal Stress at Failure, psi		13.12
Effective Major Principal Stress at Failure, psi		66.19
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-605	Tested By: SKK	Checked By: SKK
Sample No.: 19-312	Test Date: 4/12/19	Depth: 20-22'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	5.8018	-0.00037358	-6.4390e-05	13.003	13.003	0.00000
0.17050	0.16014	0.00000	5.8111	21.869	3.7594	16.706	12.947	-0.0081505
0.33352	0.32501	0.00000	5.8207	43.137	7.4031	20.342	12.939	-0.0081505
0.50482	0.48041	0.00000	5.8298	67.264	11.526	24.465	12.939	-0.0081505
0.66763	0.62951	0.00000	5.8386	88.585	15.157	28.128	12.971	-0.016301
0.83457	0.79122	0.00000	5.8481	109.82	18.760	31.731	12.971	-0.016301
1.0027	0.95372	0.00000	5.8577	129.17	22.028	34.958	12.930	-0.024451
1.1702	1.1115	0.00000	5.8670	147.21	25.064	37.954	12.890	-0.024451
1.3341	1.2772	0.00000	5.8769	163.81	27.843	40.733	12.890	-0.024451
1.5025	1.4444	0.00000	5.8869	179.94	30.533	43.439	12.906	-0.032602
1.6702	1.6077	0.00000	5.8966	194.92	33.018	45.957	12.939	-0.032602
1.8341	1.7647	0.00000	5.9060	208.38	35.240	48.203	12.963	-0.040752
2.0027	1.9256	0.00000	5.9157	221.44	37.386	50.349	12.963	-0.040752
2.1705	2.0873	0.00000	5.9255	233.94	39.430	52.385	12.955	-0.048903
2.3346	2.2577	0.00000	5.9358	245.28	41.268	54.263	12.995	-0.048903
2.5027	2.4155	0.00000	5.9454	255.76	42.961	55.940	12.979	-0.048903
2.6700	2.5811	0.00000	5.9555	265.36	44.497	57.484	12.987	-0.057054
2.8374	2.7421	0.00000	5.9654	273.79	45.831	58.827	12.995	-0.057054
3.0010	2.9053	0.00000	5.9754	281.46	47.035	60.047	13.011	-0.057054
3.1687	3.0765	0.00000	5.9860	288.43	48.112	61.108	12.995	-0.065204
3.3367	3.2406	0.00000	5.9961	294.67	49.067	62.127	13.060	-0.065204
3.5048	3.4086	0.00000	6.0066	300.33	49.920	62.972	13.052	-0.073354
3.6679	3.5688	0.00000	6.0165	305.50	50.692	63.712	13.020	-0.073354
3.8359	3.7447	0.00000	6.0275	310.16	51.369	64.397	13.028	-0.073354
4.0043	3.9206	0.00000	6.0386	314.38	51.971	65.015	13.044	-0.081505
4.1676	4.0926	0.00000	6.0494	317.99	52.470	65.514	13.044	-0.081505
4.3356	4.2661	0.00000	6.0604	320.82	52.838	65.874	13.036	-0.081505
4.5034	4.4357	0.00000	6.0711	322.37	52.996	66.064	13.068	-0.089655
4.6702	4.6077	0.00000	6.0821	323.43	53.072	66.099	13.028	-0.089655
4.8338	4.7678	0.00000	6.0923	323.87	53.051	66.062	13.011	-0.089655
5.0024	4.9327	0.00000	6.1029	323.54	52.901	65.994	13.093	-0.097806
5.1702	5.0913	0.00000	6.1131	322.26	52.599	65.732	13.133	-0.097806
5.3338	5.2577	0.00000	6.1238	320.31	52.184	65.293	13.109	-0.097806
5.5013	5.4131	0.00000	6.1339	316.69	51.506	64.655	13.149	-0.10596
5.6687	5.5835	0.00000	6.1449	311.44	50.554	63.711	13.157	-0.10596
5.8367	5.7515	0.00000	6.1559	304.06	49.262	62.444	13.182	-0.11411
6.0006	5.9117	0.00000	6.1664	295.50	47.787	61.001	13.214	-0.11411
6.1682	6.0687	0.00000	6.1767	284.43	45.910	59.165	13.255	-0.11411
6.3348	6.2335	0.00000	6.1875	270.86	43.633	56.814	13.182	-0.12226
6.5024	6.3984	0.00000	6.1984	264.09	42.460	55.601	13.141	-0.12226
6.6700	6.5617	0.00000	6.2093	256.67	41.189	54.249	13.060	-0.12226
6.8372	6.7313	0.00000	6.2205	252.40	40.422	53.571	13.149	-0.12226
7.0008	6.8985	0.00000	6.2317	249.73	39.917	53.050	13.133	-0.13041
7.1689	7.0658	0.00000	6.2429	247.33	39.458	52.607	13.149	-0.13041
7.3372	7.2393	0.00000	6.2546	245.23	39.044	52.129	13.084	-0.13856
7.5045	7.4136	0.00000	6.2664	242.16	38.478	51.498	13.020	-0.13856
7.6671	7.5667	0.00000	6.2768	239.28	37.952	51.077	13.125	-0.14671
7.8354	7.7276	0.00000	6.2877	238.31	37.728	50.862	13.133	-0.14671
8.0032	7.9138	0.00000	6.3004	238.02	37.602	50.654	13.052	-0.14671
8.1710	8.0794	0.00000	6.3118	237.68	37.476	50.520	13.044	-0.14671

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-605	Tested By: SKK	Checked By: SKK
Sample No.: 19-312	Test Date: 4/12/19	Depth: 20-22'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3348	8.2380	0.00000	6.3227	237.53	37.385	50.388	13.003	-0.15486
8.5022	8.3942	0.00000	6.3335	237.37	37.293	50.320	13.028	-0.15486
8.6700	8.5677	0.00000	6.3455	237.36	37.216	50.293	13.076	-0.16301
8.8377	8.7231	0.00000	6.3563	237.28	37.136	50.180	13.044	-0.16301
9.0019	8.8959	0.00000	6.3683	236.63	36.960	49.980	13.020	-0.16301
9.1697	9.0624	0.00000	6.3800	236.68	36.897	49.973	13.076	-0.16301
9.3377	9.2414	0.00000	6.3926	236.71	36.825	49.902	13.076	-0.17116
9.5008	9.4047	0.00000	6.4041	236.75	36.761	49.805	13.044	-0.17116
9.6684	9.5649	0.00000	6.4155	236.81	36.702	49.770	13.068	-0.17931
9.8367	9.7384	0.00000	6.4278	237.93	36.802	49.846	13.044	-0.17931
10.001	9.9159	0.00000	6.4405	238.72	36.848	49.852	13.003	-0.17931
10.168	10.082	0.00000	6.4523	239.60	36.914	49.983	13.068	-0.17931
10.336	10.251	0.00000	6.4645	240.60	36.995	50.055	13.060	-0.18746
10.503	10.425	0.00000	6.4770	241.25	37.021	50.081	13.060	-0.18746
10.671	10.582	0.00000	6.4884	242.52	37.148	50.225	13.076	-0.18746
10.834	10.749	0.00000	6.5006	243.46	37.219	50.279	13.060	-0.19561
11.002	10.919	0.00000	6.5130	244.16	37.251	50.263	13.011	-0.19561
11.171	11.082	0.00000	6.5249	244.52	37.235	50.303	13.068	-0.19561
11.334	11.245	0.00000	6.5369	244.93	37.226	50.270	13.044	-0.20376
11.502	11.410	0.00000	6.5491	245.08	37.177	50.213	13.036	-0.20376
11.669	11.571	0.00000	6.5610	245.20	37.124	50.184	13.060	-0.20376
11.837	11.746	0.00000	6.5740	245.58	37.104	50.156	13.052	-0.21191
12.000	11.909	0.00000	6.5861	245.80	37.065	50.109	13.044	-0.21191
12.168	12.081	0.00000	6.5990	246.26	37.059	50.135	13.076	-0.21191
12.336	12.252	0.00000	6.6119	247.04	37.102	50.146	13.044	-0.22006
12.504	12.426	0.00000	6.6251	247.88	37.151	50.187	13.036	-0.22006
12.671	12.597	0.00000	6.6380	248.50	37.169	50.197	13.028	-0.22006
12.834	12.763	0.00000	6.6506	249.69	37.273	50.301	13.028	-0.22006
13.003	12.926	0.00000	6.6631	250.58	37.334	50.394	13.060	-0.22821
13.170	13.086	0.00000	6.6754	251.36	37.379	50.423	13.044	-0.22821
13.334	13.254	0.00000	6.6883	252.18	37.425	50.436	13.011	-0.22821
13.502	13.422	0.00000	6.7012	253.16	37.496	50.564	13.068	-0.23636
13.669	13.582	0.00000	6.7137	253.94	37.539	50.591	13.052	-0.23636
13.837	13.747	0.00000	6.7265	254.75	37.585	50.629	13.044	-0.23636
14.001	13.911	0.00000	6.7393	254.97	37.543	50.570	13.028	-0.24451
14.169	14.078	0.00000	6.7524	255.29	37.513	50.517	13.003	-0.24451
14.338	14.249	0.00000	6.7659	255.76	37.505	50.484	12.979	-0.24451
14.501	14.405	0.00000	6.7782	256.05	37.476	50.544	13.068	-0.24451
14.669	14.575	0.00000	6.7917	256.46	37.459	50.495	13.036	-0.25267
14.836	14.743	0.00000	6.8051	256.65	37.409	50.437	13.028	-0.25267
15.003	14.909	0.00000	6.8183	257.14	37.405	50.457	13.052	-0.25267
15.171	15.077	0.00000	6.8319	257.76	37.418	50.478	13.060	-0.26082
15.335	15.236	0.00000	6.8447	257.95	37.373	50.433	13.060	-0.26082
15.503	15.400	0.00000	6.8579	258.39	37.361	50.405	13.044	-0.26082
15.670	15.579	0.00000	6.8725	258.57	37.305	50.365	13.060	-0.26897
15.834	15.741	0.00000	6.8857	258.72	37.252	50.328	13.076	-0.26897
16.002	15.911	0.00000	6.8996	258.79	37.183	50.243	13.060	-0.26897
16.170	16.074	0.00000	6.9131	258.04	36.999	50.059	13.060	-0.26897
16.334	16.240	0.00000	6.9267	257.98	36.914	49.958	13.044	-0.27712
16.502	16.414	0.00000	6.9412	258.10	36.851	49.927	13.076	-0.27712

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-605	Tested By: SKK	Checked By: SKK
Sample No.: 19-312	Test Date: 4/12/19	Depth: 20-22'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

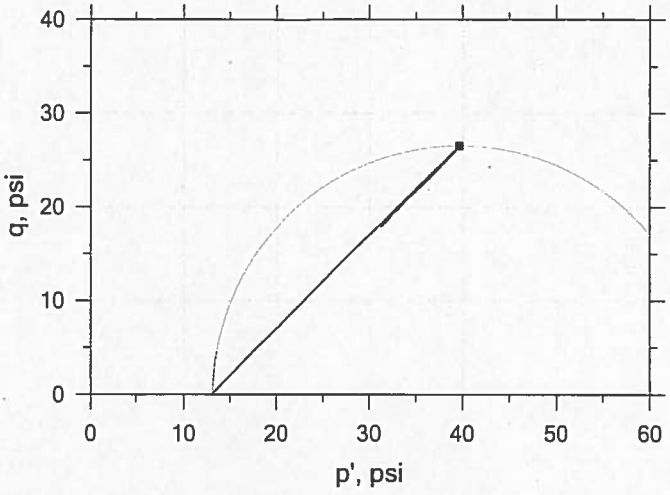
Shear Phase

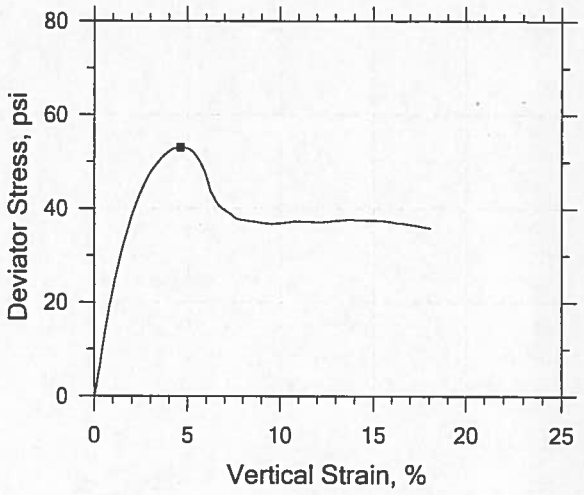
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.669	16.584	0.00000	6.9553	258.38	36.813	49.881	13.068	-0.27712
16.837	16.744	0.00000	6.9687	258.13	36.703	49.780	13.076	-0.28527
17.004	16.914	0.00000	6.9829	258.14	36.626	49.686	13.060	-0.28527
17.167	17.070	0.00000	6.9960	257.76	36.501	49.553	13.052	-0.28527
17.335	17.238	0.00000	7.0103	257.52	36.388	49.432	13.044	-0.28527
17.504	17.405	0.00000	7.0244	257.03	36.241	49.261	13.020	-0.29342
17.667	17.569	0.00000	7.0384	256.67	36.116	49.192	13.076	-0.29342
17.835	17.739	0.00000	7.0529	256.24	35.977	49.029	13.052	-0.29342
18.003	17.917	0.00000	7.0683	256.00	35.861	48.888	13.028	-0.30157
18.144	18.059	0.00000	7.0805	255.75	35.761	48.781	13.020	-0.30157

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-605	Tested By: SKK	Checked By: SKK
Sample No.: 19-312	Test Date: 4/12/19	Depth: 20-22'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





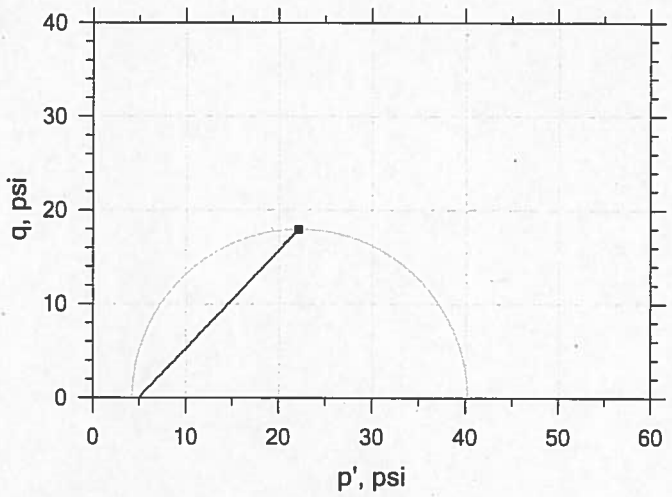
Symbol		■
Sample ID		19-312
Depth, ft		20-22'
Test Number		1
Initial	Height, in	6.502
	Diameter, in	2.726
	Moisture Content (from Cuttings), %	30.1
	Dry Density, pcf	91.4
	Saturation (Wet Method), %	95.7
	Void Ratio	0.852
Final	Moisture Content, %	30.8
	Dry Density, pcf	92.2
	Cross-Sectional Area (Method A), in²	5.802
	Saturation, %	100.0
	Void Ratio	0.835
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		13.00
Horizontal Effective Consolidation Stress, psi		13.00
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		26.54
Strain at Failure, %		4.61
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		53.07
Effective Minor Principal Stress at Failure, psi		13.12
Effective Major Principal Stress at Failure, psi		66.19
B-Value		---

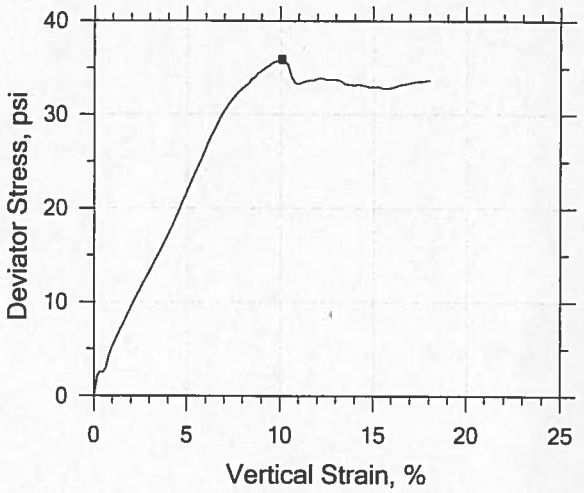
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.: B-605	Tested By: SKK	Checked By: SKK
Sample No.: 19-312	Test Date: 4/12/19	Depth: 20-22'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-698
Depth, ft		15-17'
Test Number		1
Initial	Height, in	6.221
	Diameter, in	2.689
	Moisture Content (from Cuttings), %	22.4
	Dry Density, pcf	99.9
	Saturation (Wet Method), %	86.8
	Void Ratio	0.706
Final	Moisture Content, %	25.5
	Dry Density, pcf	101.
	Cross-Sectional Area (Method A), in²	5.655
	Saturation, %	100.0
	Void Ratio	0.695
	Back Pressure, %	0.008150
Vertical Effective Consolidation Stress, psi		4.957
Horizontal Effective Consolidation Stress, psi		4.958
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		17.96
Strain at Failure, %		10.1
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		35.92
Effective Minor Principal Stress at Failure, psi		4.223
Effective Major Principal Stress at Failure, psi		40.15
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-1	Tested By: SKK	Checked By: SKK
Sample No.: 19-698	Test Date: 7/10/19	Depth: 15-17'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	5.6553	-0.0044237	-0.00078223	4.9656	4.9664	0.0081505
0.17088	0.15816	0.00000	5.6643	11.668	2.0561	6.8199	4.7639	-0.0081505
0.33443	0.30068	0.00000	5.6724	14.611	2.5685	7.3809	4.8125	-0.016301
0.50198	0.46625	0.00000	5.6818	14.348	2.5139	7.3911	4.8773	-0.024451
0.66907	0.64007	0.00000	5.6918	17.371	3.0363	7.8812	4.8449	-0.040752
0.83703	0.78505	0.00000	5.7001	24.607	4.2979	9.0374	4.7396	-0.048903
1.0010	0.94569	0.00000	5.7093	29.317	5.1119	9.9244	4.8125	-0.057054
1.1686	1.1162	0.00000	5.7192	33.669	5.8599	10.535	4.6747	-0.065204
1.3368	1.2719	0.00000	5.7282	37.706	6.5516	11.251	4.6990	-0.073354
1.5007	1.4432	0.00000	5.7381	41.722	7.2360	11.911	4.6747	-0.081505
1.6673	1.6022	0.00000	5.7474	45.596	7.8945	12.626	4.7315	-0.089655
1.8350	1.7686	0.00000	5.7571	49.752	8.5991	13.233	4.6342	-0.097806
2.0022	1.9408	0.00000	5.7673	53.787	9.2794	13.946	4.6666	-0.097806
2.1693	2.0981	0.00000	5.7765	57.741	9.9452	14.588	4.6423	-0.10596
2.3360	2.2637	0.00000	5.7863	61.665	10.603	15.213	4.6099	-0.11411
2.5044	2.4268	0.00000	5.7960	65.422	11.229	15.863	4.6342	-0.12226
2.6678	2.5932	0.00000	5.8059	69.048	11.831	16.376	4.5451	-0.12226
2.8344	2.7547	0.00000	5.8155	72.711	12.437	17.007	4.5694	-0.13041
3.0025	2.9252	0.00000	5.8257	76.378	13.041	17.618	4.5775	-0.13041
3.1704	3.0883	0.00000	5.8355	80.222	13.674	18.162	4.4884	-0.13856
3.3376	3.2415	0.00000	5.8448	83.946	14.285	18.806	4.5208	-0.14671
3.5015	3.4112	0.00000	5.8551	87.784	14.912	19.368	4.4560	-0.15486
3.6693	3.5875	0.00000	5.8658	91.812	15.567	20.088	4.5208	-0.15486
3.8370	3.7547	0.00000	5.8759	96.022	16.253	20.717	4.4641	-0.16301
4.0005	3.9055	0.00000	5.8852	100.00	16.900	21.356	4.4560	-0.16301
4.1683	4.0793	0.00000	5.8958	104.46	17.621	22.044	4.4236	-0.17116
4.3365	4.2465	0.00000	5.9061	108.93	18.343	22.799	4.4560	-0.17931
4.5044	4.4113	0.00000	5.9163	113.56	19.090	23.562	4.4722	-0.17931
4.6673	4.5736	0.00000	5.9264	118.15	19.830	24.172	4.3426	-0.18746
4.8347	4.7416	0.00000	5.9368	123.03	20.612	24.971	4.3588	-0.19561
5.0031	4.9220	0.00000	5.9481	127.83	21.376	25.694	4.3183	-0.19561
5.1704	5.0868	0.00000	5.9584	132.71	22.153	26.488	4.3345	-0.20376
5.3376	5.2515	0.00000	5.9688	137.73	22.952	27.214	4.2615	-0.20376
5.5010	5.4262	0.00000	5.9798	142.80	23.754	28.015	4.2615	-0.21191
5.6688	5.6049	0.00000	5.9911	148.00	24.572	28.801	4.2291	-0.21191
5.8365	5.7754	0.00000	6.0020	153.10	25.375	29.571	4.1967	-0.22006
6.0047	5.9509	0.00000	6.0132	158.05	26.146	30.334	4.1886	-0.22006
6.1683	6.0992	0.00000	6.0227	162.72	26.877	31.033	4.1562	-0.22821
6.3360	6.2705	0.00000	6.0337	167.63	27.638	31.786	4.1481	-0.23636
6.5041	6.4468	0.00000	6.0450	172.23	28.344	32.484	4.1400	-0.23636
6.6670	6.6050	0.00000	6.0553	176.31	28.965	33.105	4.1400	-0.24451
6.8352	6.7590	0.00000	6.0653	180.57	29.617	33.724	4.1076	-0.24451
7.0034	6.9328	0.00000	6.0766	184.56	30.213	34.305	4.0914	-0.25267
7.1709	7.1009	0.00000	6.0876	188.02	30.723	34.774	4.0509	-0.25267
7.3344	7.2590	0.00000	6.0980	191.31	31.208	35.259	4.0509	-0.26082
7.5028	7.4304	0.00000	6.1093	194.49	31.666	35.693	4.0266	-0.26082
7.6704	7.6075	0.00000	6.1210	197.32	32.063	36.098	4.0347	-0.26897
7.8339	7.7632	0.00000	6.1313	199.93	32.432	36.466	4.0347	-0.27712
8.0020	7.9337	0.00000	6.1427	202.07	32.717	36.630	3.9132	-0.27712
8.1693	8.1166	0.00000	6.1549	204.76	33.085	37.047	3.9618	-0.28527

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-1	Tested By: SKK	Checked By: SKK
Sample No.: 19-698	Test Date: 7/10/19	Depth: 15-17'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3365	8.2838	0.00000	6.1661	206.65	33.326	37.215	3.8889	-0.28527
8.5044	8.4502	0.00000	6.1773	209.71	33.757	37.727	3.9699	-0.29342
8.6673	8.6232	0.00000	6.1890	211.59	33.994	37.883	3.8889	-0.29342
8.8352	8.7863	0.00000	6.2001	214.35	34.375	38.304	3.9294	-0.30157
9.0036	8.9478	0.00000	6.2111	216.15	34.601	38.514	3.9132	-0.30157
9.1673	9.1166	0.00000	6.2226	218.06	34.840	38.704	3.8646	-0.30972
9.3352	9.2888	0.00000	6.2344	220.29	35.127	39.040	3.9132	-0.31787
9.5033	9.4445	0.00000	6.2451	221.77	35.300	39.132	3.8322	-0.31787
9.6709	9.6175	0.00000	6.2571	223.92	35.572	39.396	3.8240	-0.32602
9.8344	9.7781	0.00000	6.2682	225.09	35.693	39.541	3.8484	-0.32602
10.002	9.9421	0.00000	6.2796	225.72	35.725	39.525	3.7997	-0.33417
10.170	10.102	0.00000	6.2908	227.39	35.922	39.803	3.8808	-0.34232
10.334	10.279	0.00000	6.3032	226.16	35.654	39.437	3.7835	-0.34232
10.501	10.444	0.00000	6.3148	223.97	35.237	39.117	3.8808	-0.34232
10.668	10.601	0.00000	6.3259	216.93	34.059	37.972	3.9132	-0.35047
10.835	10.775	0.00000	6.3383	213.47	33.443	37.397	3.9537	-0.35047
11.004	10.950	0.00000	6.3507	212.76	33.262	37.200	3.9375	-0.35862
11.168	11.113	0.00000	6.3624	213.84	33.367	37.329	3.9618	-0.35862
11.336	11.274	0.00000	6.3739	215.12	33.504	37.458	3.9537	-0.36677
11.505	11.453	0.00000	6.3868	216.24	33.609	37.538	3.9294	-0.36677
11.668	11.624	0.00000	6.3992	217.05	33.666	37.603	3.9375	-0.37492
11.837	11.780	0.00000	6.4105	217.40	33.657	37.571	3.9132	-0.37492
12.004	11.961	0.00000	6.4237	218.96	33.827	37.724	3.8970	-0.38307
12.171	12.134	0.00000	6.4363	219.86	33.897	37.786	3.8889	-0.38307
12.334	12.283	0.00000	6.4473	220.05	33.866	37.731	3.8646	-0.39122
12.502	12.460	0.00000	6.4603	219.58	33.721	37.602	3.8808	-0.39122
12.670	12.624	0.00000	6.4724	220.05	33.727	37.592	3.8646	-0.39122
12.837	12.797	0.00000	6.4853	220.67	33.753	37.609	3.8565	-0.39937
13.001	12.962	0.00000	6.4975	221.01	33.737	37.610	3.8727	-0.39937
13.169	13.134	0.00000	6.5104	221.08	33.677	37.541	3.8646	-0.40753
13.336	13.299	0.00000	6.5228	220.55	33.528	37.409	3.8808	-0.40753
13.504	13.467	0.00000	6.5354	219.36	33.278	37.191	3.9132	-0.40753
13.671	13.637	0.00000	6.5484	219.28	33.196	37.052	3.8565	-0.41568
13.834	13.800	0.00000	6.5607	219.65	33.186	37.059	3.8727	-0.41568
14.002	13.970	0.00000	6.5737	219.72	33.128	36.960	3.8322	-0.41568
14.170	14.145	0.00000	6.5871	220.67	33.202	37.067	3.8646	-0.42383
14.337	14.309	0.00000	6.5997	220.92	33.173	37.038	3.8646	-0.42383
14.501	14.466	0.00000	6.6118	221.20	33.151	37.024	3.8727	-0.42383
14.668	14.644	0.00000	6.6256	220.98	33.046	36.910	3.8646	-0.43198
14.836	14.803	0.00000	6.6379	220.65	32.931	36.747	3.8159	-0.43198
15.004	14.974	0.00000	6.6513	221.29	32.957	36.838	3.8808	-0.43198
15.167	15.141	0.00000	6.6644	221.72	32.954	36.843	3.8889	-0.44013
15.334	15.308	0.00000	6.6775	222.21	32.959	36.743	3.7835	-0.44013
15.503	15.480	0.00000	6.6911	221.79	32.825	36.568	3.7430	-0.44013
15.669	15.652	0.00000	6.7048	221.99	32.785	36.455	3.6701	-0.44828
15.836	15.832	0.00000	6.7191	222.73	32.821	36.531	3.7106	-0.45643
16.004	15.995	0.00000	6.7321	223.37	32.849	36.616	3.7673	-0.46458
16.167	16.157	0.00000	6.7451	224.72	32.983	36.685	3.7025	-0.46458
16.335	16.318	0.00000	6.7581	226.10	33.120	36.774	3.6539	-0.46458
16.503	16.497	0.00000	6.7726	227.13	33.198	36.957	3.7592	-0.47273

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-1	Tested By: SKK	Checked By: SKK
Sample No.: 19-698	Test Date: 7/10/19	Depth: 15-17'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

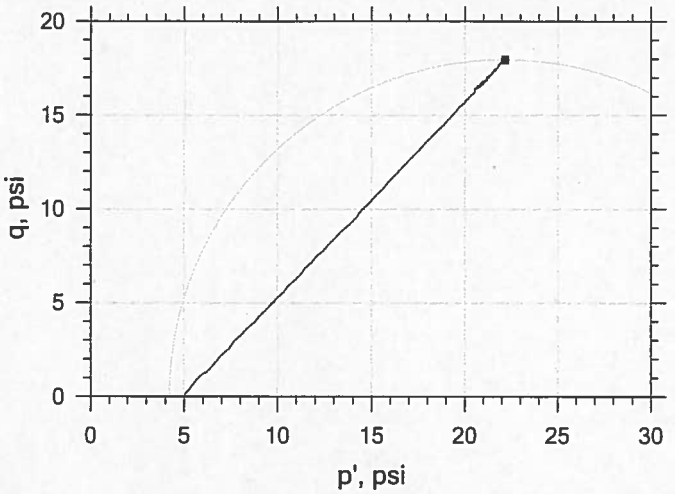
Shear Phase

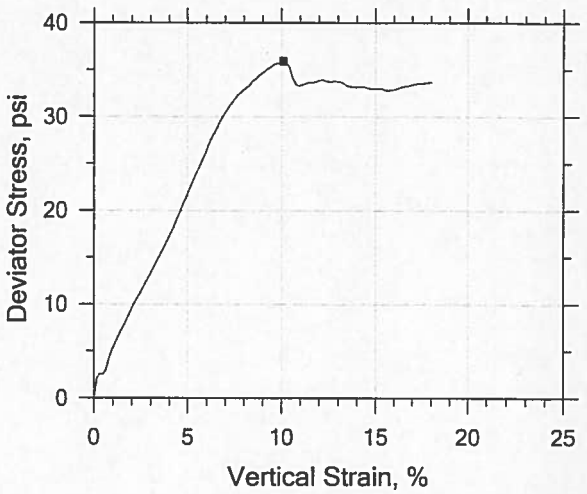
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.671	16.662	0.00000	6.7860	227.86	33.237	36.939	3.7025	-0.47273
16.834	16.829	0.00000	6.7996	228.72	33.294	37.021	3.7268	-0.47273
17.002	16.994	0.00000	6.8132	229.73	33.372	37.034	3.6620	-0.48088
17.170	17.165	0.00000	6.8272	230.97	33.480	37.199	3.7187	-0.48088
17.338	17.326	0.00000	6.8405	231.66	33.514	37.176	3.6620	-0.48903
17.501	17.491	0.00000	6.8542	232.35	33.544	37.190	3.6458	-0.48903
17.669	17.658	0.00000	6.8681	232.83	33.542	37.277	3.7349	-0.48903
17.836	17.820	0.00000	6.8816	233.81	33.616	37.270	3.6539	-0.49718
18.004	17.986	0.00000	6.8956	234.52	33.647	37.341	3.6944	-0.49718
18.049	18.045	0.00000	6.9006	234.80	33.662	37.333	3.6701	-0.49718

USD

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-1	Tested By: SKK	Checked By: SKK
Sample No.: 19-698	Test Date: 7/10/19	Depth: 15-17'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





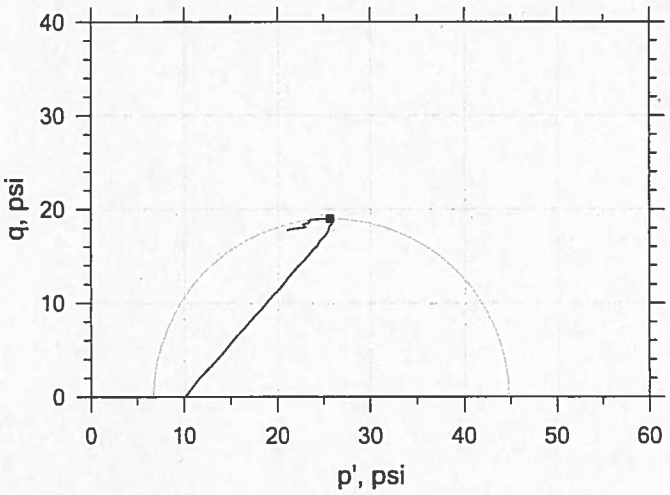
Symbol		■
Sample ID		19-698
Depth, ft		15-17'
Test Number		1
Initial	Height, in	6.221
	Diameter, in	2.689
	Moisture Content (from Cuttings), %	22.4
	Dry Density, pcf	99.9
	Saturation (Wet Method), %	86.8
	Void Ratio	0.706
Final	Moisture Content, %	25.5
	Dry Density, pcf	101.
	Cross-Sectional Area (Method A), in²	5.655
	Saturation, %	100.0
	Void Ratio	0.695
	Back Pressure, %	0.008150
Vertical Effective Consolidation Stress, psi		4.957
Horizontal Effective Consolidation Stress, psi		4.958
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		17.96
Strain at Failure, %		10.1
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		35.92
Effective Minor Principal Stress at Failure, psi		4.223
Effective Major Principal Stress at Failure, psi		40.15
B-Value		—

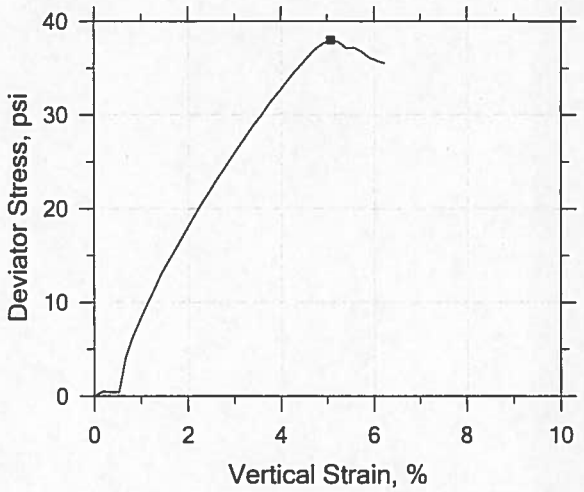
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-1	Tested By: SKK	Checked By: SKK
Sample No.: 19-698	Test Date: 7/10/19	Depth: 15-17'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-701
Depth, ft		23-25'
Test Number		1
Initial	Height, in	5.734
	Diameter, in	2.669
	Moisture Content (from Cuttings), %	20.2
	Dry Density, pcf	92.7
	Saturation (Wet Method), %	66.7
	Void Ratio	0.818
Final	Moisture Content, %	30.3
	Dry Density, pcf	92.8
	Cross-Sectional Area (Method A), in²	5.592
	Saturation, %	100.0
	Void Ratio	0.817
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		9.978
Horizontal Effective Consolidation Stress, psi		9.981
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		19.00
Strain at Failure, %		5.07
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		38.00
Effective Minor Principal Stress at Failure, psi		6.670
Effective Major Principal Stress at Failure, psi		44.67
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USI

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-1	Tested By: SKK	Checked By: SKK
Sample No.: 19-701	Test Date: 7/10/19	Depth: 23-25'
Test No.: 1	Sample Type: CORE	Elevation: N/A

Description:

Remarks: Cell malfunction, started leaking at top of cell while running test so computer program ended test.

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	5.5915	-0.019542	-0.0034949	9.9779	9.9814	0.00000
0.17030	0.17397	0.00000	5.6013	2.9377	0.52017	10.485	9.9652	-0.016301
0.33750	0.35596	0.00000	5.6115	2.5939	0.45347	10.427	9.9733	-0.032602
0.50140	0.51387	0.00000	5.6204	2.5939	0.44887	10.422	9.9733	-0.048903
0.66927	0.66821	0.00000	5.6292	23.422	4.1445	13.705	9.5601	-0.057054
0.83723	0.81630	0.00000	5.6376	35.961	6.3588	15.878	9.5196	-0.073354
1.0011	0.97867	0.00000	5.6468	46.052	8.1315	17.570	9.4386	-0.089655
1.1688	1.1312	0.00000	5.6555	55.436	9.7744	19.100	9.3252	-0.10596
1.3362	1.2945	0.00000	5.6649	65.270	11.490	20.629	9.1388	-0.11411
1.5044	1.4444	0.00000	5.6735	74.421	13.082	22.035	8.9525	-0.13041
1.6669	1.6076	0.00000	5.6829	82.945	14.556	23.485	8.9282	-0.14671
1.8346	1.7682	0.00000	5.6922	91.496	16.031	24.813	8.7824	-0.16301
2.0030	1.9350	0.00000	5.7019	99.896	17.473	26.231	8.7580	-0.17116
2.1708	2.0930	0.00000	5.7111	108.14	18.885	27.603	8.7175	-0.18746
2.3344	2.2589	0.00000	5.7208	116.27	20.270	28.793	8.5231	-0.19561
2.5027	2.4355	0.00000	5.7311	124.24	21.620	30.086	8.4664	-0.21191
2.6708	2.5881	0.00000	5.7401	132.05	22.942	31.400	8.4583	-0.22821
2.8349	2.7603	0.00000	5.7503	139.41	24.177	32.546	8.3692	-0.23636
3.0032	2.9253	0.00000	5.7600	146.78	25.412	33.627	8.2152	-0.25267
3.1706	3.0966	0.00000	5.7702	154.16	26.642	34.800	8.1585	-0.26897
3.3372	3.2509	0.00000	5.7794	161.05	27.789	35.834	8.0451	-0.27712
3.5012	3.4187	0.00000	5.7895	167.99	28.935	36.964	8.0289	-0.27712
3.6682	3.5935	0.00000	5.8000	174.65	30.027	38.023	7.9965	-0.28527
3.8367	3.7488	0.00000	5.8093	181.67	31.183	39.082	7.8993	-0.29342
4.0049	3.9245	0.00000	5.8199	188.41	32.280	40.188	7.9074	-0.30157
4.1677	4.0842	0.00000	5.8296	194.59	33.282	40.970	7.6886	-0.30157
4.3354	4.2448	0.00000	5.8394	200.99	34.320	41.992	7.6724	-0.30972
4.5031	4.4196	0.00000	5.8501	207.15	35.306	42.816	7.5104	-0.31787
4.6706	4.5883	0.00000	5.8604	213.05	36.245	43.407	7.1620	-0.32602
4.8344	4.7426	0.00000	5.8699	217.92	37.013	44.070	7.0567	-0.32602
5.0020	4.9121	0.00000	5.8804	221.74	37.593	44.236	6.6435	-0.33417
5.1698	5.0745	0.00000	5.8904	224.55	38.001	44.329	6.3275	-0.34232
5.3372	5.2484	0.00000	5.9013	223.71	37.785	42.136	4.3507	-0.35047
5.5034	5.4046	0.00000	5.9110	220.12	37.112	41.528	4.4155	-0.35047
5.6703	5.5723	0.00000	5.9215	220.96	37.185	41.706	4.5208	-0.35862
5.8372	5.7445	0.00000	5.9323	218.72	36.735	40.729	3.9942	-0.36677
6.0010	5.9068	0.00000	5.9426	215.54	36.133	40.727	4.5937	-0.36677
6.1685	6.0853	0.00000	5.9538	213.74	35.759	39.040	3.2812	-0.37492
6.3360	6.2316	0.00000	5.9631	212.52	35.494	38.411	2.9166	-0.38307
6.5035	6.2316	0.00000	5.9631	212.52	35.494	38.411	2.9166	-0.38307
6.6702	6.2316	0.00000	5.9631	212.52	35.494	38.411	2.9166	-0.38307
6.8338	6.2316	0.00000	5.9631	212.52	35.494	38.411	2.9166	-0.38307
6.8385	6.2316	0.00000	5.9631	212.52	35.494	38.411	2.9166	-0.38307

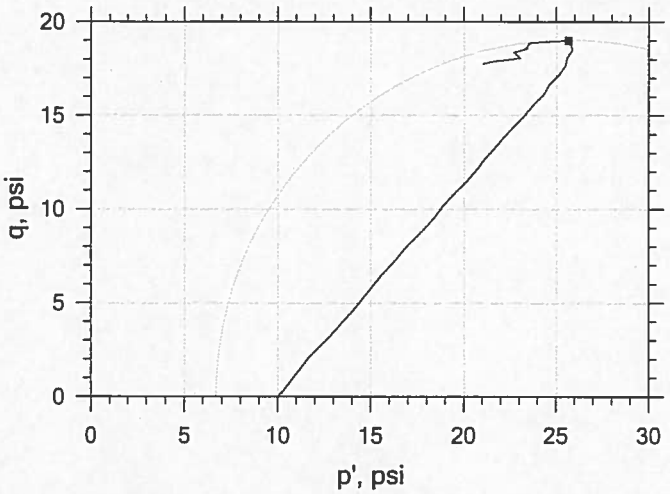
USI

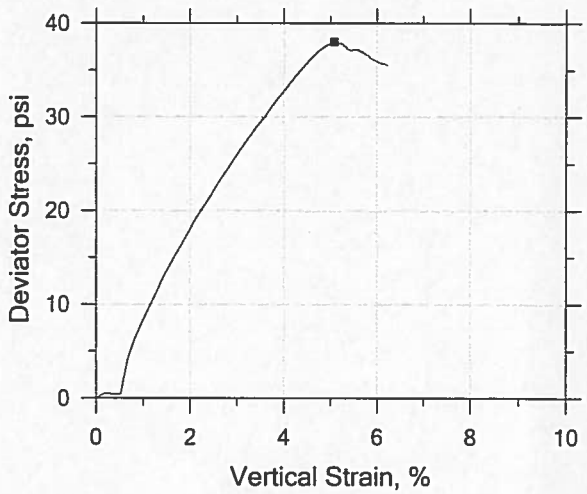
Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-1	Tested By: SKK	Checked By: SKK
Sample No.: 19-701	Test Date: 7/10/19	Depth: 23-25'
Test No.: 1	Sample Type: CORE	Elevation: N/A

Description:

Remarks: Cell malfunction, started leaking at top of cell while running test so computer program ended test.

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





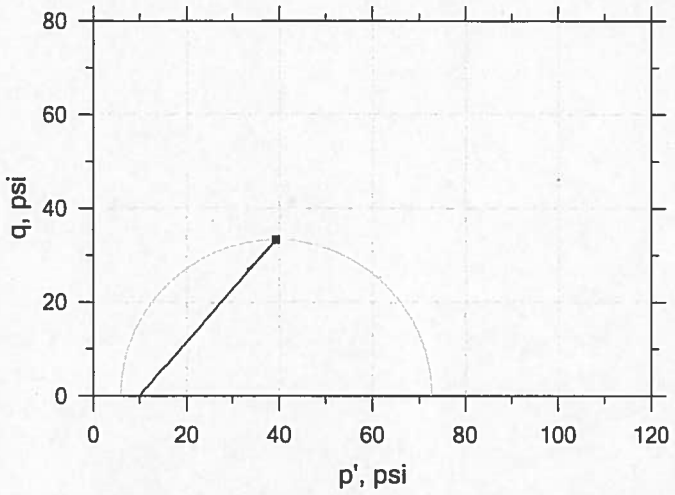
Symbol		■
Sample ID		19-701
Depth, ft		23-25'
Test Number		1
Initial	Height, in	5.734
	Diameter, in	2.669
	Moisture Content (from Cuttings), %	20.2
	Dry Density, pcf	92.7
	Saturation (Wet Method), %	66.7
	Void Ratio	0.818
Final	Moisture Content, %	30.3
	Dry Density, pcf	92.8
	Cross-Sectional Area (Method A), in²	5.592
	Saturation, %	100.0
	Void Ratio	0.817
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		9.978
Horizontal Effective Consolidation Stress, psi		9.981
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		19.00
Strain at Failure, %		5.07
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		38.00
Effective Minor Principal Stress at Failure, psi		6.670
Effective Major Principal Stress at Failure, psi		44.67
B-Value		---

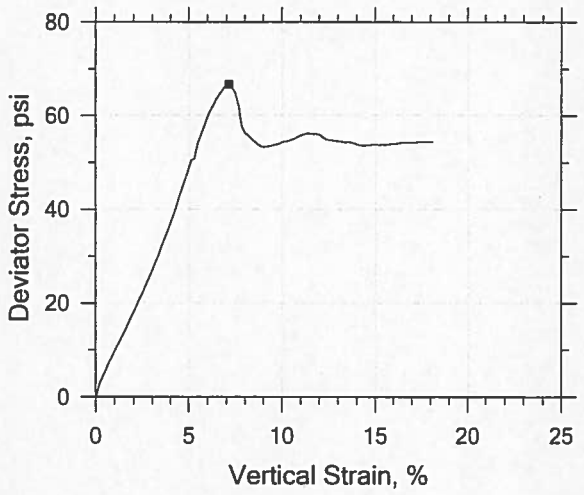
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-1	Tested By: SKK	Checked By: SKK
Sample No.: 19-701	Test Date: 7/10/19	Depth: 23-25'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks: Cell malfunction, started leaking at top of cell while running test so computer program ended test.		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-707
Depth, ft		23-25'
Test Number		1
Initial	Height, in	6.570
	Diameter, in	2.721
	Moisture Content (from Cuttings), %	20.0
	Dry Density, pcf	93.2
	Saturation (Wet Method), %	67.5
	Void Ratio	0.795
Final	Moisture Content, %	28.2
	Dry Density, pcf	95.3
	Cross-Sectional Area (Method A), in²	5.727
	Saturation, %	100.0
	Void Ratio	0.755
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		9.970
Horizontal Effective Consolidation Stress, psi		9.973
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		33.35
Strain at Failure, %		7.14
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		66.71
Effective Minor Principal Stress at Failure, psi		5.964
Effective Major Principal Stress at Failure, psi		72.67
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USI

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-2	Tested By: SKK	Checked By: SKK
Sample No.: 19-707	Test Date: 7/10/19	Depth: 23-25'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	5.7275	-0.017759	-0.0031007	9.9702	9.9733	0.00000
0.16682	0.17096	0.00000	5.7373	16.394	2.8533	12.422	9.5682	-0.0081505
0.33375	0.33722	0.00000	5.7469	24.935	4.3307	13.939	9.6087	-0.0081505
0.50155	0.51054	0.00000	5.7569	33.406	5.7904	15.334	9.5439	-0.016301
0.66943	0.66111	0.00000	5.7656	41.783	7.2309	16.572	9.3414	-0.024451
0.83635	0.83208	0.00000	5.7756	49.049	8.4723	17.716	9.2442	-0.032602
1.0047	0.99128	0.00000	5.7848	56.927	9.8168	19.004	9.1874	-0.040752
1.1676	1.1473	0.00000	5.7940	64.205	11.054	20.087	9.0335	-0.040752
1.3351	1.3152	0.00000	5.8038	71.856	12.349	21.374	9.0254	-0.048903
1.5022	1.4814	0.00000	5.8136	79.199	13.587	22.726	9.1388	-0.057054
1.6697	1.6398	0.00000	5.8230	87.744	15.029	23.909	8.8796	-0.065204
1.8377	1.7990	0.00000	5.8324	95.942	16.407	25.189	8.7824	-0.065204
2.0011	1.9669	0.00000	5.8424	104.14	17.777	26.479	8.7013	-0.073354
2.1687	2.1245	0.00000	5.8518	112.26	19.132	27.810	8.6770	-0.073354
2.3358	2.2868	0.00000	5.8615	121.32	20.643	29.102	8.4583	-0.081505
2.5031	2.4609	0.00000	5.8720	130.53	22.170	30.612	8.4421	-0.089655
2.6710	2.6296	0.00000	5.8822	139.77	23.699	31.963	8.2638	-0.089655
2.8345	2.7872	0.00000	5.8917	149.07	25.235	33.483	8.2476	-0.097806
3.0027	2.9684	0.00000	5.9027	158.72	26.819	35.002	8.1828	-0.097806
3.1700	3.1362	0.00000	5.9129	168.86	28.483	36.528	8.0451	-0.10596
3.3335	3.3024	0.00000	5.9231	178.79	30.107	38.087	7.9803	-0.10596
3.5011	3.4687	0.00000	5.9333	189.49	31.855	39.673	7.8182	-0.11411
3.6689	3.6436	0.00000	5.9441	200.26	33.604	41.382	7.7777	-0.11411
3.8366	3.8216	0.00000	5.9551	211.26	35.385	43.042	7.6562	-0.12226
4.0041	4.0004	0.00000	5.9662	222.78	37.247	44.798	7.5509	-0.12226
4.1671	4.1643	0.00000	5.9764	234.13	39.078	46.362	7.2835	-0.12226
4.3348	4.3227	0.00000	5.9863	245.85	40.967	48.267	7.2997	-0.12226
4.5011	4.4851	0.00000	5.9964	257.57	42.849	50.003	7.1539	-0.13041
4.6689	4.6537	0.00000	6.0070	269.63	44.778	51.794	7.0162	-0.13041
4.8369	4.8270	0.00000	6.0180	281.57	46.676	53.562	6.8865	-0.13041
5.0010	4.9799	0.00000	6.0277	293.30	48.542	55.405	6.8622	-0.13041
5.1684	5.1368	0.00000	6.0376	305.42	50.467	57.184	6.7164	-0.13856
5.3369	5.3085	0.00000	6.0486	308.49	50.879	57.498	6.6192	-0.13856
5.5042	5.4818	0.00000	6.0597	328.62	54.103	60.674	6.5706	-0.13856
5.6674	5.6410	0.00000	6.0699	340.13	55.905	62.305	6.4004	-0.14671
5.8353	5.8089	0.00000	6.0807	351.69	57.703	63.966	6.2627	-0.14671
6.0036	5.9657	0.00000	6.0909	363.06	59.470	65.659	6.1898	-0.14671
6.1707	6.1273	0.00000	6.1013	372.97	60.988	67.065	6.0763	-0.15486
6.3340	6.2935	0.00000	6.1122	381.68	62.302	68.346	6.0439	-0.15486
6.5019	6.4582	0.00000	6.1229	390.20	63.580	69.478	5.8981	-0.15486
6.6697	6.6315	0.00000	6.1343	397.57	64.659	70.573	5.9143	-0.15486
6.8377	6.7994	0.00000	6.1453	404.49	65.665	71.498	5.8333	-0.16301
7.0016	6.9609	0.00000	6.1560	409.90	66.427	72.236	5.8090	-0.16301
7.1689	7.1397	0.00000	6.1679	412.45	66.709	72.510	5.8009	-0.16301
7.3374	7.3036	0.00000	6.1788	408.45	65.939	71.570	5.6308	-0.17116
7.5006	7.4730	0.00000	6.1901	402.71	64.889	70.714	5.8252	-0.17116
7.6687	7.6511	0.00000	6.2020	386.96	62.220	68.296	6.0763	-0.17116
7.8366	7.8204	0.00000	6.2134	359.02	57.605	63.916	6.3113	-0.17116
8.0042	7.9867	0.00000	6.2246	352.04	56.376	62.752	6.3761	-0.17931
8.1674	8.1490	0.00000	6.2356	348.80	55.753	62.170	6.4166	-0.17931

USI

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-2	Tested By: SKK	Checked By: SKK
Sample No.: 19-707	Test Date: 7/10/19	Depth: 23-25'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3356	8.3082	0.00000	6.2465	345.65	55.149	61.606	6.4571	-0.17931
8.5035	8.4863	0.00000	6.2586	342.88	54.596	61.053	6.4571	-0.18746
8.6668	8.6533	0.00000	6.2701	339.85	54.010	60.515	6.5057	-0.18746
8.8348	8.8188	0.00000	6.2814	337.41	53.519	59.968	6.4490	-0.18746
9.0035	8.9960	0.00000	6.2937	336.75	53.306	59.780	6.4733	-0.18746
9.1671	9.1591	0.00000	6.3050	338.18	53.433	59.931	6.4976	-0.19561
9.3356	9.3309	0.00000	6.3169	339.25	53.497	59.946	6.4490	-0.19561
9.5032	9.5089	0.00000	6.3293	341.36	53.723	60.164	6.4409	-0.19561
9.6702	9.6862	0.00000	6.3418	342.95	53.865	60.281	6.4166	-0.20376
9.8377	9.8610	0.00000	6.3541	345.04	54.085	60.485	6.4004	-0.20376
10.001	10.013	0.00000	6.3648	347.68	54.405	60.821	6.4166	-0.20376
10.169	10.184	0.00000	6.3769	348.73	54.463	60.750	6.2870	-0.21191
10.337	10.373	0.00000	6.3904	350.96	54.693	61.036	6.3437	-0.21191
10.501	10.532	0.00000	6.4017	353.02	54.914	61.363	6.4490	-0.21191
10.668	10.688	0.00000	6.4129	355.24	55.161	61.407	6.2465	-0.21191
10.835	10.859	0.00000	6.4252	358.72	55.594	61.841	6.2465	-0.22006
11.003	11.016	0.00000	6.4366	360.80	55.815	62.086	6.2708	-0.22006
11.171	11.187	0.00000	6.4490	362.93	56.034	62.240	6.2060	-0.22821
11.335	11.355	0.00000	6.4612	364.88	56.227	62.449	6.2222	-0.22821
11.503	11.534	0.00000	6.4742	365.39	56.189	62.346	6.1574	-0.22821
11.670	11.690	0.00000	6.4857	365.43	56.092	62.225	6.1331	-0.22821
11.837	11.866	0.00000	6.4986	366.51	56.142	62.324	6.1817	-0.23636
12.001	12.038	0.00000	6.5113	365.89	55.934	62.107	6.1736	-0.23636
12.168	12.211	0.00000	6.5242	362.74	55.338	61.528	6.1898	-0.23636
12.336	12.381	0.00000	6.5368	361.07	54.971	61.161	6.1898	-0.24451
12.504	12.553	0.00000	6.5497	360.71	54.804	61.059	6.2546	-0.24451
12.667	12.716	0.00000	6.5619	360.88	54.725	60.899	6.1736	-0.24451
12.835	12.887	0.00000	6.5748	360.68	54.584	60.830	6.2465	-0.25267
13.004	13.059	0.00000	6.5878	361.25	54.558	60.764	6.2060	-0.25267
13.168	13.219	0.00000	6.6000	361.50	54.493	60.667	6.1736	-0.25267
13.336	13.384	0.00000	6.6125	361.32	54.359	60.524	6.1655	-0.26082
13.504	13.552	0.00000	6.6254	362.36	54.406	60.515	6.1088	-0.26082
13.667	13.717	0.00000	6.6380	362.42	54.309	60.547	6.2384	-0.26082
13.835	13.883	0.00000	6.6509	361.84	54.112	60.327	6.2141	-0.26082
14.002	14.047	0.00000	6.6635	360.62	53.824	60.046	6.2222	-0.26897
14.170	14.217	0.00000	6.6767	360.79	53.739	59.920	6.1817	-0.26897
14.334	14.385	0.00000	6.6898	361.06	53.671	59.869	6.1979	-0.26897
14.502	14.555	0.00000	6.7031	362.00	53.700	59.906	6.2060	-0.27712
14.669	14.728	0.00000	6.7167	363.27	53.778	59.968	6.1898	-0.27712
14.837	14.890	0.00000	6.7296	364.24	53.816	59.974	6.1574	-0.28527
15.001	15.052	0.00000	6.7423	365.30	53.867	60.049	6.1817	-0.28527
15.168	15.230	0.00000	6.7565	365.67	53.806	59.987	6.1817	-0.28527
15.337	15.399	0.00000	6.7700	366.73	53.851	60.009	6.1574	-0.28527
15.505	15.569	0.00000	6.7836	367.21	53.811	59.903	6.0926	-0.29342
15.668	15.730	0.00000	6.7966	368.18	53.847	59.931	6.0845	-0.29342
15.836	15.899	0.00000	6.8103	369.82	53.976	60.109	6.1331	-0.29342
16.004	16.068	0.00000	6.8240	371.12	54.055	60.180	6.1250	-0.30157
16.167	16.235	0.00000	6.8376	371.88	54.055	60.147	6.0926	-0.30157
16.335	16.405	0.00000	6.8515	374.02	54.255	60.355	6.1007	-0.30157
16.503	16.568	0.00000	6.8649	374.93	54.278	60.330	6.0520	-0.30157

USI

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-2	Tested By: SKK	Checked By: SKK
Sample No.: 19-707	Test Date: 7/10/19	Depth: 23-25'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

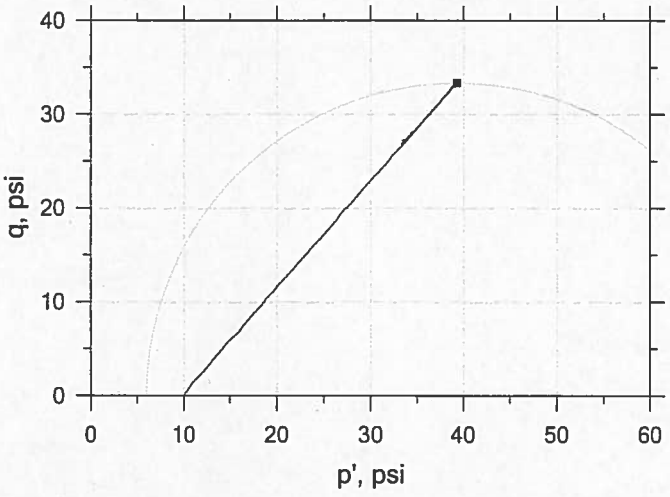
Shear Phase

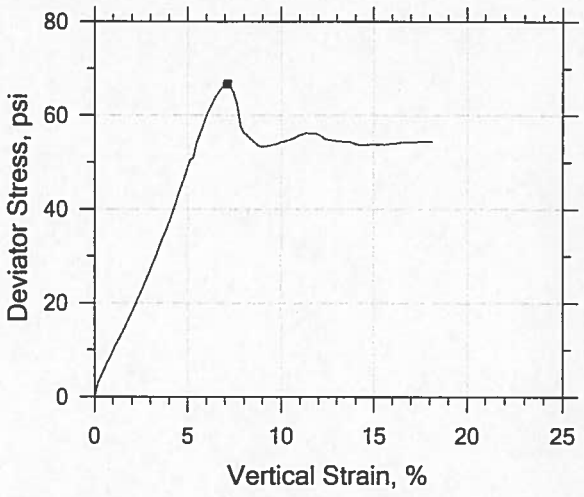
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.670	16.746	0.00000	6.8795	376.09	54.327	60.362	6.0358	-0.30972
16.834	16.908	0.00000	6.8930	376.83	54.326	60.361	6.0358	-0.30972
17.002	17.085	0.00000	6.9076	377.43	54.294	60.281	5.9872	-0.30972
17.170	17.249	0.00000	6.9214	378.39	54.321	60.340	6.0196	-0.31787
17.334	17.407	0.00000	6.9346	379.94	54.437	60.489	6.0520	-0.31787
17.502	17.585	0.00000	6.9496	380.66	54.420	60.456	6.0358	-0.31787
17.670	17.752	0.00000	6.9637	381.82	54.474	60.429	5.9548	-0.31787
17.834	17.917	0.00000	6.9777	382.71	54.488	60.516	6.0277	-0.32602
18.001	18.092	0.00000	6.9926	383.31	54.455	60.434	5.9791	-0.32602
18.062	18.143	0.00000	6.9969	383.21	54.405	60.425	6.0196	-0.32602

USI

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-2	Tested By: SKK	Checked By: SKK
Sample No.: 19-707	Test Date: 7/10/19	Depth: 23-25'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





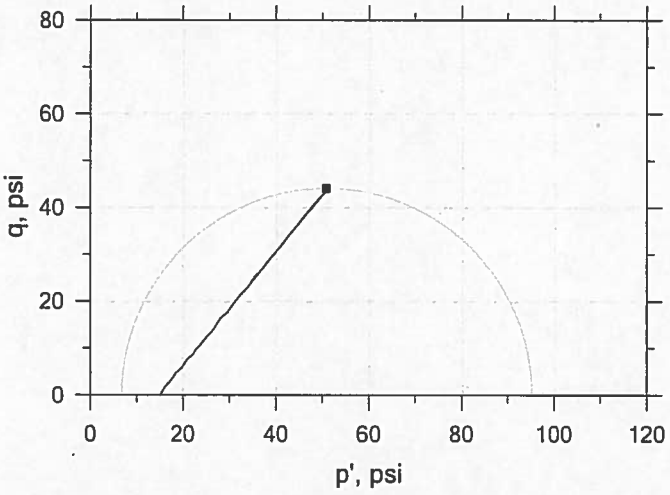
Symbol		■
Sample ID		19-707
Depth, ft		23-25'
Test Number		1
Initial	Height, in	6.570
	Diameter, in	2.721
	Moisture Content (from Cuttings), %	20.0
	Dry Density, pcf	93.2
	Saturation (Wet Method), %	67.5
	Void Ratio	0.795
Final	Moisture Content, %	28.2
	Dry Density, pcf	95.3
	Cross-Sectional Area (Method A), in²	5.727
	Saturation, %	100.0
	Void Ratio	0.755
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		9.970
Horizontal Effective Consolidation Stress, psi		9.973
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		33.35
Strain at Failure, %		7.14
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		66.71
Effective Minor Principal Stress at Failure, psi		5.964
Effective Major Principal Stress at Failure, psi		72.67
B-Value		---

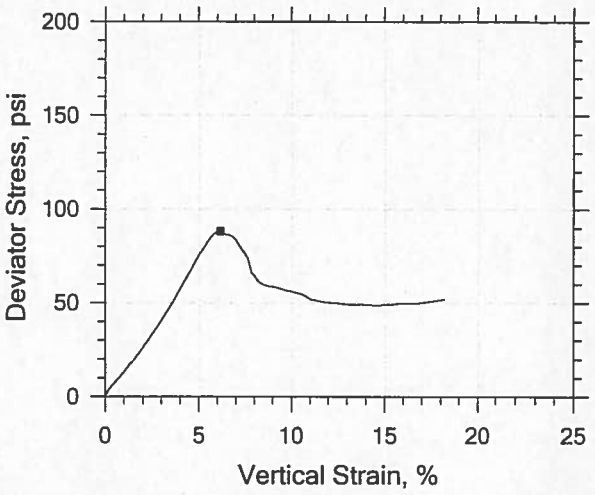
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-2	Tested By: SKK	Checked By: SKK
Sample No.: 19-707	Test Date: 7/10/19	Depth: 23-25'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-708
Depth, ft		28-30'
Test Number		1
Initial	Height, in	6.000
	Diameter, in	2.708
	Moisture Content (from Cuttings), %	19.4
	Dry Density, pcf	95.1
	Saturation (Wet Method), %	68.6
	Void Ratio	0.753
Final	Moisture Content, %	25.9
	Dry Density, pcf	98.5
	Cross-Sectional Area (Method A), in²	5.623
	Saturation, %	100.0
	Void Ratio	0.692
	Back Pressure, %	-0.008150
Vertical Effective Consolidation Stress, psi		14.98
Horizontal Effective Consolidation Stress, psi		14.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		44.09
Strain at Failure, %		6.16
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		88.18
Effective Minor Principal Stress at Failure, psi		6.792
Effective Major Principal Stress at Failure, psi		94.97
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USI

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-2	Tested By: SKK	Checked By: SKK
Sample No.: 19-708	Test Date: 7/11/19	Depth: 28-30'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	5.6232	-0.062186	-0.011059	14.969	14.980	-0.0081505
0.17068	0.16731	0.00000	5.6327	19.231	3.4100	17.750	14.340	-0.016301
0.33345	0.34410	0.00000	5.6427	31.297	5.5380	19.724	14.186	-0.032602
0.50072	0.50624	0.00000	5.6518	43.189	7.6291	21.605	13.976	-0.048903
0.66808	0.67614	0.00000	5.6615	54.100	9.5392	23.239	13.700	-0.057054
0.83578	0.84776	0.00000	5.6713	64.964	11.434	25.215	13.781	-0.073354
1.0029	1.0082	0.00000	5.6805	76.141	13.379	26.950	13.571	-0.089655
1.1710	1.1686	0.00000	5.6897	87.557	15.360	28.623	13.263	-0.089655
1.3342	1.3229	0.00000	5.6986	98.904	17.324	30.732	13.408	-0.12226
1.5029	1.5170	0.00000	5.7099	111.11	19.422	32.336	12.914	-0.12226
1.6707	1.6619	0.00000	5.7183	122.91	21.455	34.401	12.947	-0.13856
1.8337	1.8257	0.00000	5.7278	135.51	23.614	36.269	12.655	-0.14671
2.0046	1.9948	0.00000	5.7377	148.35	25.808	38.301	12.493	-0.16301
2.1676	2.1491	0.00000	5.7467	160.95	27.955	40.294	12.339	-0.17116
2.3353	2.3251	0.00000	5.7571	175.13	30.365	42.242	11.877	-0.17931
2.5027	2.4889	0.00000	5.7668	189.54	32.808	44.345	11.537	-0.18746
2.6699	2.6640	0.00000	5.7771	204.01	35.249	47.029	11.780	-0.22006
2.8371	2.8296	0.00000	5.7870	218.50	37.690	49.024	11.334	-0.22006
3.0046	2.9960	0.00000	5.7969	233.81	40.261	51.280	11.018	-0.22821
3.1670	3.1797	0.00000	5.8079	249.50	42.883	53.634	10.751	-0.24451
3.3348	3.3445	0.00000	5.8178	266.10	45.659	56.289	10.630	-0.26082
3.5034	3.5135	0.00000	5.8280	282.99	48.474	58.779	10.305	-0.26897
3.6704	3.6937	0.00000	5.8389	300.24	51.332	61.411	10.079	-0.27712
3.8340	3.8498	0.00000	5.8484	317.64	54.221	64.049	9.8275	-0.29342
4.0015	4.0120	0.00000	5.8583	335.52	57.178	66.560	9.3819	-0.30157
4.1686	4.1707	0.00000	5.8680	354.03	60.233	69.453	9.2198	-0.31787
4.3363	4.3406	0.00000	5.8784	372.28	63.228	72.156	8.9282	-0.33417
4.5042	4.5217	0.00000	5.8895	390.90	66.265	74.918	8.6527	-0.34232
4.6676	4.6769	0.00000	5.8991	409.03	69.228	77.565	8.3368	-0.35862
4.8355	4.8399	0.00000	5.9092	427.21	72.182	80.284	8.1018	-0.36677
5.0026	4.9977	0.00000	5.9191	444.38	74.959	82.753	7.7939	-0.37492
5.1699	5.1676	0.00000	5.9297	460.60	77.556	85.107	7.5509	-0.39122
5.3376	5.3375	0.00000	5.9403	476.29	80.055	87.379	7.3240	-0.39937
5.5012	5.4962	0.00000	5.9503	491.75	82.516	89.645	7.1296	-0.41568
5.6686	5.6661	0.00000	5.9610	506.19	84.786	91.705	6.9189	-0.42383
5.8366	5.8317	0.00000	5.9715	518.34	86.667	93.505	6.8379	-0.44013
6.0006	5.9973	0.00000	5.9820	527.21	87.993	94.645	6.6516	-0.44828
6.1683	6.1646	0.00000	5.9927	529.27	88.176	94.520	6.3437	-0.44828
6.3358	6.3250	0.00000	6.0029	526.58	87.575	94.105	6.5301	-0.45643
6.5028	6.4871	0.00000	6.0133	519.15	86.184	92.997	6.8136	-0.46458
6.6702	6.6630	0.00000	6.0247	520.09	86.174	93.093	6.9189	-0.46458
6.8340	6.8338	0.00000	6.0357	515.70	85.285	92.228	6.9432	-0.47273
7.0010	6.9934	0.00000	6.0461	506.42	83.600	90.770	7.1701	-0.48088
7.1689	7.1736	0.00000	6.0578	490.62	80.825	88.173	7.3483	-0.48088
7.3371	7.3349	0.00000	6.0683	477.45	78.511	86.070	7.5590	-0.48903
7.5045	7.5074	0.00000	6.0797	465.06	76.323	83.963	7.6400	-0.49718
7.6668	7.6781	0.00000	6.0909	447.43	73.284	81.192	7.9074	-0.49718
7.8348	7.8618	0.00000	6.1030	403.88	65.998	74.456	8.4583	-0.50533
8.0029	8.0153	0.00000	6.1132	395.11	64.451	73.176	8.7256	-0.50533
8.1694	8.1792	0.00000	6.1241	379.62	61.803	70.691	8.8877	-0.51348

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-2	Tested By: SKK	Checked By: SKK
Sample No.: 19-708	Test Date: 7/11/19	Depth: 28-30'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3335	8.3577	0.00000	6.1361	372.44	60.507	69.565	9.0578	-0.52163
8.5012	8.5241	0.00000	6.1472	367.37	59.570	68.749	9.1793	-0.52163
8.6691	8.7061	0.00000	6.1595	365.09	59.077	68.159	9.0821	-0.52978
8.8358	8.8700	0.00000	6.1706	363.47	58.705	67.796	9.0902	-0.52978
9.0031	9.0278	0.00000	6.1813	362.99	58.522	67.693	9.1712	-0.53793
9.1668	9.2011	0.00000	6.1931	362.12	58.266	67.429	9.1631	-0.54608
9.3348	9.3710	0.00000	6.2047	359.82	57.782	67.091	9.3090	-0.54608
9.5028	9.5375	0.00000	6.2161	357.32	57.270	66.490	9.2198	-0.55423
9.6699	9.7108	0.00000	6.2280	354.79	56.750	66.188	9.4386	-0.56238
9.8334	9.8704	0.00000	6.2391	353.27	56.404	65.648	9.2442	-0.56238
10.002	10.044	0.00000	6.2511	352.03	56.092	65.490	9.3981	-0.57054
10.170	10.218	0.00000	6.2632	348.57	55.428	64.834	9.4062	-0.57054
10.333	10.381	0.00000	6.2746	347.44	55.144	64.599	9.4548	-0.57869
10.502	10.557	0.00000	6.2869	345.24	54.682	64.104	9.4224	-0.58684
10.670	10.725	0.00000	6.2988	340.52	53.826	63.362	9.5358	-0.58684
10.838	10.911	0.00000	6.3120	333.68	52.625	62.185	9.5601	-0.59499
11.001	11.058	0.00000	6.3224	328.61	51.734	61.424	9.6898	-0.59499
11.168	11.239	0.00000	6.3353	327.46	51.443	61.271	9.8275	-0.60314
11.335	11.413	0.00000	6.3477	325.63	51.049	60.747	9.6979	-0.61129
11.503	11.576	0.00000	6.3594	324.42	50.762	60.565	9.8032	-0.61129
11.670	11.744	0.00000	6.3715	323.81	50.566	60.329	9.7627	-0.61944
11.834	11.904	0.00000	6.3831	322.82	50.316	60.054	9.7384	-0.62759
12.004	12.091	0.00000	6.3967	322.14	50.098	59.974	9.8761	-0.62759
12.167	12.239	0.00000	6.4074	321.84	49.965	59.776	9.8113	-0.63574
12.334	12.421	0.00000	6.4208	322.51	49.961	59.837	9.8761	-0.64389
12.502	12.586	0.00000	6.4329	321.04	49.635	59.544	9.9085	-0.64389
12.669	12.753	0.00000	6.4452	319.99	49.374	59.242	9.8680	-0.65204
12.837	12.925	0.00000	6.4579	320.56	49.360	59.212	9.8518	-0.66019
13.004	13.085	0.00000	6.4698	319.89	49.162	59.087	9.9247	-0.66019
13.168	13.261	0.00000	6.4829	320.19	49.107	58.910	9.8032	-0.66834
13.336	13.431	0.00000	6.4957	320.63	49.073	58.885	9.8113	-0.66834
13.503	13.585	0.00000	6.5072	321.96	49.187	59.031	9.8437	-0.67649
13.671	13.764	0.00000	6.5208	322.93	49.231	59.026	9.7951	-0.68464
13.834	13.927	0.00000	6.5331	322.05	49.000	58.835	9.8356	-0.68464
14.002	14.101	0.00000	6.5463	322.13	48.909	58.696	9.7870	-0.69279
14.170	14.272	0.00000	6.5594	322.68	48.892	58.703	9.8113	-0.70094
14.334	14.447	0.00000	6.5728	322.03	48.690	58.477	9.7870	-0.70094
14.502	14.611	0.00000	6.5854	323.68	48.843	58.630	9.7870	-0.70909
14.669	14.789	0.00000	6.5992	324.06	48.795	58.566	9.7708	-0.71724
14.833	14.946	0.00000	6.6113	326.41	49.057	58.755	9.6979	-0.71724
15.001	15.117	0.00000	6.6247	328.03	49.199	58.873	9.6735	-0.72539
15.168	15.282	0.00000	6.6376	328.00	49.096	58.883	9.7870	-0.72539
15.336	15.462	0.00000	6.6517	330.40	49.349	59.104	9.7546	-0.73355
15.504	15.623	0.00000	6.6644	332.19	49.521	59.194	9.6735	-0.73355
15.667	15.784	0.00000	6.6772	334.34	49.744	59.433	9.6898	-0.74170
15.835	15.949	0.00000	6.6902	335.11	49.759	59.303	9.5439	-0.74985
16.003	16.115	0.00000	6.7035	335.99	49.788	59.315	9.5277	-0.74985
16.170	16.293	0.00000	6.7177	337.07	49.839	59.400	9.5601	-0.75800
16.337	16.451	0.00000	6.7305	338.05	49.888	59.505	9.6168	-0.76615
16.501	16.629	0.00000	6.7448	338.78	49.886	59.454	9.5682	-0.76615

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-2	Tested By: SKK	Checked By: SKK
Sample No.: 19-708	Test Date: 7/11/19	Depth: 28-30'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

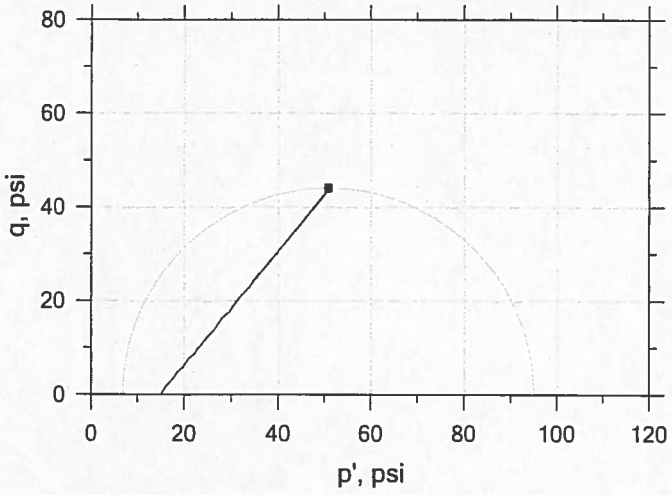
Shear Phase

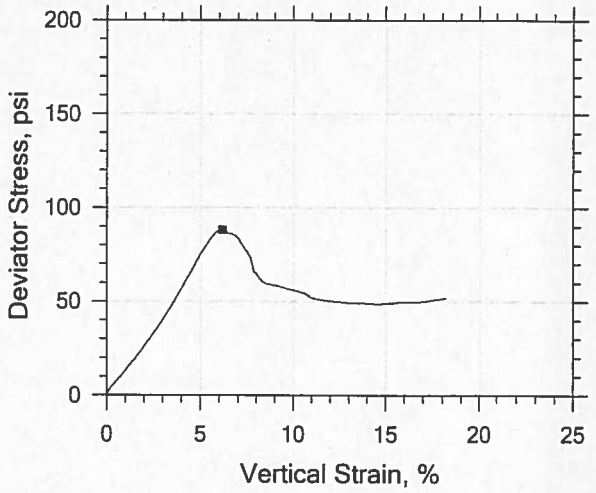
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.668	16.796	0.00000	6.7584	339.46	49.884	59.436	9.5520	-0.77430
16.835	16.959	0.00000	6.7716	342.00	50.157	59.644	9.4872	-0.77430
17.003	17.140	0.00000	6.7864	344.30	50.383	59.740	9.3576	-0.78245
17.170	17.311	0.00000	6.8005	346.48	50.596	60.067	9.4710	-0.78245
17.333	17.472	0.00000	6.8137	348.59	50.805	60.130	9.3252	-0.79060
17.501	17.657	0.00000	6.8291	350.68	50.992	60.317	9.3252	-0.79060
17.669	17.818	0.00000	6.8424	353.28	51.270	60.635	9.3657	-0.79875
17.836	17.986	0.00000	6.8564	355.74	51.521	60.846	9.3252	-0.79875
18.004	18.151	0.00000	6.8703	358.47	51.811	61.031	9.2198	-0.80690
18.057	18.217	0.00000	6.8758	358.80	51.816	61.092	9.2766	-0.80690

USI

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-2	Tested By: SKK	Checked By: SKK
Sample No.: 19-708	Test Date: 7/11/19	Depth: 28-30'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





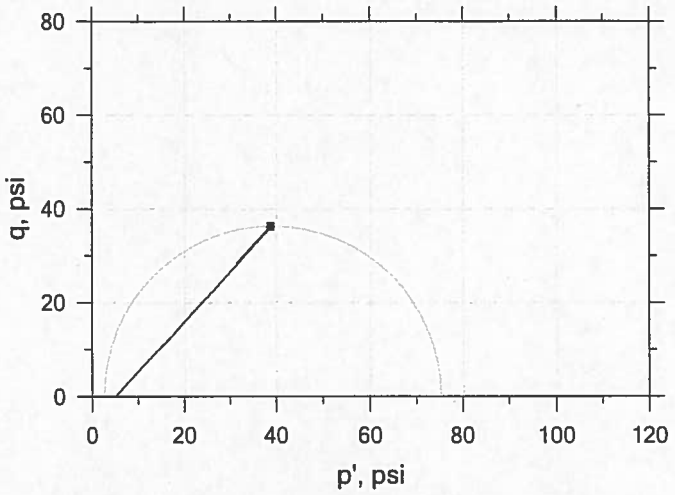
Symbol		■
Sample ID		19-708
Depth, ft		28-30'
Test Number		1
Initial	Height, in	6.000
	Diameter, in	2.708
	Moisture Content (from Cuttings), %	19.4
	Dry Density, pcf	95.1
	Saturation (Wet Method), %	68.6
	Void Ratio	0.753
Final	Moisture Content, %	25.9
	Dry Density, pcf	98.5
	Cross-Sectional Area (Method A), in²	5.623
	Saturation, %	100.0
	Void Ratio	0.692
	Back Pressure, %	-0.008150
Vertical Effective Consolidation Stress, psi		14.98
Horizontal Effective Consolidation Stress, psi		14.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		44.09
Strain at Failure, %		6.16
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		88.18
Effective Minor Principal Stress at Failure, psi		6.792
Effective Major Principal Stress at Failure, psi		94.97
B-Value		---

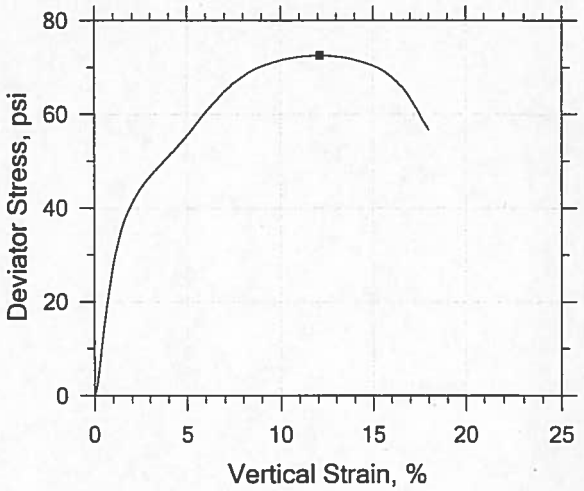
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-2	Tested By: SKK	Checked By: SKK
Sample No.: 19-708	Test Date: 7/11/19	Depth: 28-30'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-713
Depth, ft		15-17'
Test Number		1
Initial	Height, in	5.991
	Diameter, in	2.672
	Moisture Content (from Cuttings), %	18.0
	Dry Density, pcf	107.
	Saturation (Wet Method), %	89.1
	Void Ratio	0.529
Final	Moisture Content, %	20.2
	Dry Density, pcf	107.
	Cross-Sectional Area (Method A), in²	5.607
	Saturation, %	100.0
	Void Ratio	0.529
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		4.997
Horizontal Effective Consolidation Stress, psi		4.999
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		36.27
Strain at Failure, %		12.1
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		72.54
Effective Minor Principal Stress at Failure, psi		2.528
Effective Major Principal Stress at Failure, psi		75.07
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-713	Test Date: 7/11/19	Depth: 15-17'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	5.6073	-0.011553	-0.0020604	4.9968	4.9988	0.00000
0.17053	0.14255	0.00000	5.6153	13.415	2.3856	7.2628	4.8773	0.00000
0.33772	0.29962	0.00000	5.6242	43.373	7.7045	12.363	4.6585	0.00000
0.50458	0.44986	0.00000	5.6327	71.168	12.624	17.145	4.5208	0.00000
0.66742	0.59583	0.00000	5.6409	98.648	17.473	21.872	4.3993	0.00000
0.83512	0.76997	0.00000	5.6508	125.90	22.262	26.572	4.3102	0.00000
1.0025	0.93130	0.00000	5.6600	149.73	26.431	30.700	4.2696	0.00000
1.1695	1.1003	0.00000	5.6697	170.63	30.068	34.167	4.0995	0.00000
1.3362	1.2634	0.00000	5.6791	187.83	33.044	37.087	4.0428	0.00000
1.5025	1.4170	0.00000	5.6879	202.36	35.543	39.392	3.8484	0.00000
1.6703	1.5980	0.00000	5.6984	214.40	37.585	41.434	3.8484	0.00000
1.8336	1.7593	0.00000	5.7077	223.92	39.188	42.996	3.8078	0.00000
2.0021	1.9292	0.00000	5.7176	232.46	40.609	44.336	3.7268	0.00000
2.1690	2.0939	0.00000	5.7272	239.86	41.830	45.540	3.7106	0.00000
2.3367	2.2740	0.00000	5.7378	246.52	42.909	46.603	3.6944	0.00000
2.5046	2.4414	0.00000	5.7476	252.90	43.943	47.572	3.6296	0.00000
2.6677	2.6121	0.00000	5.7577	258.44	44.823	48.452	3.6296	0.00000
2.8357	2.7640	0.00000	5.7667	263.88	45.694	49.299	3.6053	-0.0081505
3.0025	2.9347	0.00000	5.7769	268.97	46.490	49.998	3.5081	0.00000
3.1703	3.1114	0.00000	5.7874	273.78	47.231	50.812	3.5810	-0.0081505
3.3336	3.2642	0.00000	5.7965	278.15	47.907	51.407	3.5000	-0.0081505
3.5011	3.4384	0.00000	5.8070	282.82	48.621	52.089	3.4676	-0.0081505
3.6690	3.5937	0.00000	5.8163	287.46	49.337	52.780	3.4433	-0.0081505
3.8375	3.7593	0.00000	5.8264	292.19	50.060	53.479	3.4190	-0.0081505
4.0014	3.9224	0.00000	5.8362	296.74	50.751	54.129	3.3785	-0.0081505
4.1687	4.0871	0.00000	5.8463	301.59	51.490	54.860	3.3703	-0.0081505
4.3370	4.2647	0.00000	5.8571	306.46	52.222	55.625	3.4028	-0.016301
4.5048	4.4311	0.00000	5.8673	311.49	52.984	56.305	3.3217	-0.016301
4.6682	4.5916	0.00000	5.8772	316.25	53.702	56.967	3.2650	-0.016301
4.8364	4.7683	0.00000	5.8881	321.36	54.466	57.699	3.2326	-0.016301
5.0042	4.9433	0.00000	5.8989	326.83	55.288	58.545	3.2569	-0.016301
5.1674	5.1072	0.00000	5.9091	332.00	56.065	59.273	3.2083	-0.024451
5.3359	5.2873	0.00000	5.9203	337.61	56.901	60.061	3.1597	-0.024451
5.5030	5.4504	0.00000	5.9306	343.17	57.737	60.921	3.1840	-0.024451
5.6711	5.6109	0.00000	5.9406	348.46	58.526	61.678	3.1516	-0.024451
5.8349	5.7713	0.00000	5.9508	354.04	59.360	62.447	3.0868	-0.024451
6.0016	5.9403	0.00000	5.9615	359.36	60.143	63.205	3.0625	-0.024451
6.1695	6.0991	0.00000	5.9715	364.77	60.944	63.990	3.0463	-0.032602
6.3370	6.2784	0.00000	5.9830	370.23	61.736	64.693	2.9572	-0.032602
6.5006	6.4312	0.00000	5.9927	375.33	62.483	65.448	2.9653	-0.032602
6.6685	6.6011	0.00000	6.0036	380.44	63.215	66.156	2.9410	-0.032602
6.8364	6.7641	0.00000	6.0141	385.63	63.965	66.906	2.9410	-0.032602
7.0043	6.9246	0.00000	6.0245	390.53	64.665	67.508	2.8437	-0.032602
7.1674	7.0944	0.00000	6.0355	394.96	65.276	68.071	2.7951	-0.032602
7.3359	7.2669	0.00000	6.0467	399.42	65.889	68.749	2.8599	-0.040752
7.5038	7.4214	0.00000	6.0568	403.53	66.455	69.266	2.8113	-0.040752
7.6700	7.5878	0.00000	6.0677	407.43	66.974	69.744	2.7708	-0.040752
7.8338	7.7569	0.00000	6.0788	411.23	67.472	70.219	2.7465	-0.040752
8.0022	7.9259	0.00000	6.0900	414.80	67.932	70.670	2.7384	-0.048903
8.1692	8.0829	0.00000	6.1004	418.17	68.364	71.062	2.6979	-0.048903

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-713	Test Date: 7/11/19	Depth: 15-17'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3375	8.2494	0.00000	6.1115	421.53	68.787	71.469	2.6817	-0.048903
8.5009	8.4252	0.00000	6.1232	424.79	69.183	71.905	2.7222	-0.048903
8.6682	8.5806	0.00000	6.1336	427.49	69.502	72.119	2.6169	-0.048903
8.8354	8.7513	0.00000	6.1451	430.27	69.820	72.518	2.6979	-0.057054
9.0029	8.9195	0.00000	6.1564	432.89	70.114	72.771	2.6574	-0.057054
9.1700	9.0894	0.00000	6.1679	435.35	70.378	73.003	2.6250	-0.057054
9.3336	9.2558	0.00000	6.1793	437.58	70.607	73.257	2.6493	-0.057054
9.5018	9.4325	0.00000	6.1913	439.92	70.843	73.484	2.6412	-0.057054
9.6692	9.5938	0.00000	6.2024	442.14	71.071	73.655	2.5845	-0.057054
9.8375	9.7654	0.00000	6.2142	444.08	71.245	73.764	2.5197	-0.057054
10.001	9.9293	0.00000	6.2255	446.20	71.452	74.077	2.6250	-0.057054
10.168	10.094	0.00000	6.2369	448.02	71.610	74.154	2.5440	-0.057054
10.335	10.257	0.00000	6.2482	449.73	71.749	74.318	2.5683	-0.065204
10.503	10.429	0.00000	6.2602	451.62	71.911	74.488	2.5764	-0.065204
10.671	10.593	0.00000	6.2717	452.99	71.994	74.562	2.5683	-0.065204
10.835	10.755	0.00000	6.2830	454.73	72.136	74.591	2.4548	-0.065204
11.003	10.929	0.00000	6.2953	456.21	72.228	74.699	2.4710	-0.065204
11.170	11.097	0.00000	6.3072	457.56	72.301	74.748	2.4467	-0.065204
11.334	11.259	0.00000	6.3188	458.87	72.374	74.910	2.5359	-0.073354
11.501	11.419	0.00000	6.3302	459.97	72.413	74.932	2.5197	-0.073354
11.668	11.590	0.00000	6.3424	461.27	72.476	74.979	2.5035	-0.073354
11.836	11.761	0.00000	6.3547	462.30	72.493	74.989	2.4954	-0.073354
12.005	11.933	0.00000	6.3671	463.37	72.517	74.955	2.4386	-0.073354
12.168	12.100	0.00000	6.3792	464.43	72.541	74.987	2.4467	-0.081505
12.335	12.261	0.00000	6.3909	465.04	72.500	74.995	2.4954	-0.081505
12.502	12.433	0.00000	6.4035	465.97	72.500	74.987	2.4873	-0.081505
12.670	12.601	0.00000	6.4158	466.67	72.466	74.888	2.4224	-0.081505
12.837	12.773	0.00000	6.4284	467.21	72.403	74.793	2.3900	-0.081505
13.001	12.950	0.00000	6.4415	467.78	72.341	74.804	2.4629	-0.081505
13.168	13.114	0.00000	6.4537	468.20	72.266	74.680	2.4143	-0.081505
13.336	13.277	0.00000	6.4658	468.58	72.186	74.568	2.3819	-0.081505
13.503	13.460	0.00000	6.4794	468.71	72.050	74.530	2.4792	-0.089655
13.667	13.617	0.00000	6.4912	468.90	71.945	74.424	2.4792	-0.089655
13.835	13.772	0.00000	6.5029	469.09	71.843	74.273	2.4305	-0.089655
14.002	13.948	0.00000	6.5162	468.71	71.634	74.113	2.4792	-0.089655
14.170	14.125	0.00000	6.5296	468.48	71.447	73.845	2.3981	-0.089655
14.337	14.284	0.00000	6.5417	468.22	71.273	73.703	2.4305	-0.089655
14.505	14.449	0.00000	6.5544	467.92	71.085	73.475	2.3900	-0.089655
14.667	14.617	0.00000	6.5673	467.60	70.893	73.324	2.4305	-0.097806
14.835	14.781	0.00000	6.5799	467.08	70.674	73.088	2.4143	-0.097806
15.002	14.947	0.00000	6.5927	466.55	70.453	72.860	2.4062	-0.097806
15.169	15.121	0.00000	6.6063	465.53	70.151	72.541	2.3900	-0.097806
15.337	15.291	0.00000	6.6195	464.65	69.873	72.320	2.4467	-0.097806
15.505	15.455	0.00000	6.6323	463.14	69.508	71.881	2.3738	-0.097806
15.667	15.620	0.00000	6.6454	461.10	69.061	71.524	2.4629	-0.097806
15.835	15.778	0.00000	6.6578	458.99	68.612	71.035	2.4224	-0.10596
16.002	15.962	0.00000	6.6724	456.15	68.033	70.504	2.4710	-0.097806
16.170	16.133	0.00000	6.6859	453.24	67.456	69.886	2.4305	-0.10596
16.334	16.290	0.00000	6.6985	450.12	66.860	69.355	2.4954	-0.10596
16.502	16.466	0.00000	6.7126	446.29	66.145	68.648	2.5035	-0.10596

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-713	Test Date: 7/11/19	Depth: 15-17'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

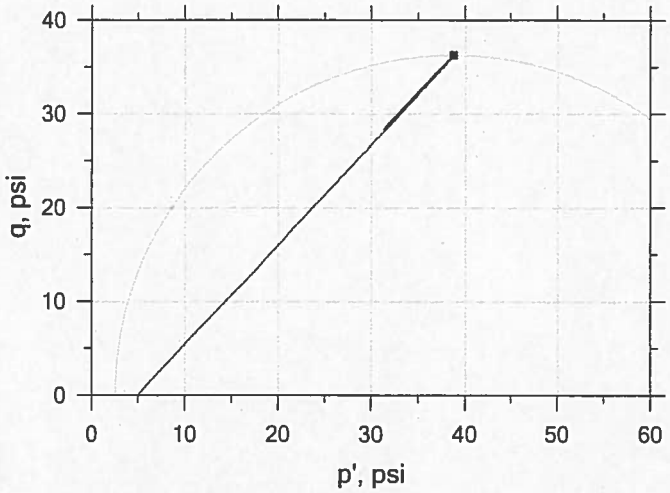
Shear Phase

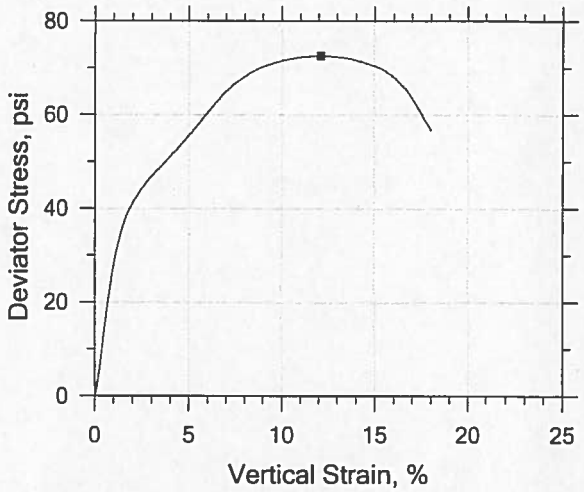
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.670	16.631	0.00000	6.7259	442.30	65.419	67.946	2.5278	-0.10596
16.838	16.797	0.00000	6.7393	437.36	64.551	67.095	2.5440	-0.10596
17.002	16.959	0.00000	6.7525	431.57	63.565	66.141	2.5764	-0.11411
17.170	17.132	0.00000	6.7666	425.44	62.523	65.108	2.5845	-0.11411
17.338	17.301	0.00000	6.7804	418.49	61.367	64.032	2.6655	-0.11411
17.505	17.459	0.00000	6.7934	411.86	60.271	62.961	2.6898	-0.11411
17.667	17.617	0.00000	6.8064	404.99	59.143	61.840	2.6979	-0.11411
17.835	17.782	0.00000	6.8200	398.54	58.075	60.838	2.7627	-0.11411
18.003	17.954	0.00000	6.8344	392.00	56.993	59.804	2.8113	-0.12226
18.052	18.000	0.00000	6.8382	389.70	56.623	59.443	2.8194	-0.12226

USI

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-713	Test Date: 7/11/19	Depth: 15-17'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





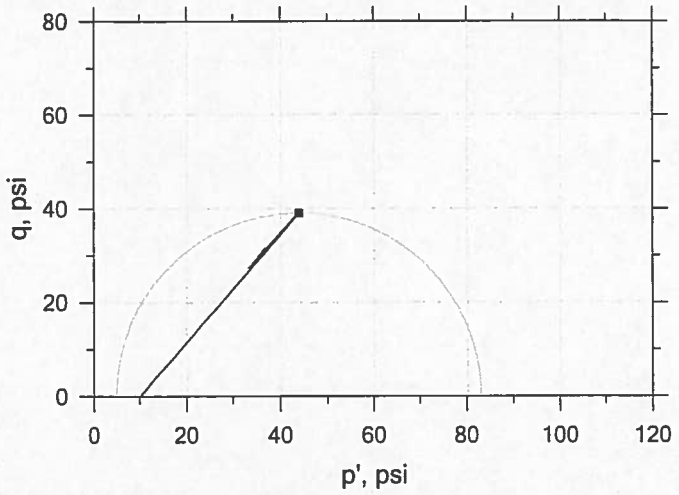
Symbol		■
Sample ID		19-713
Depth, ft		15-17'
Test Number		1
Initial	Height, in	5.991
	Diameter, in	2.672
	Moisture Content (from Cuttings), %	18.0
	Dry Density, pcf	107.
	Saturation (Wet Method), %	89.1
	Void Ratio	0.529
Final	Moisture Content, %	20.2
	Dry Density, pcf	107.
	Cross-Sectional Area (Method A), in²	5.607
	Saturation, %	100.0
	Void Ratio	0.529
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		4.997
Horizontal Effective Consolidation Stress, psi		4.999
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		36.27
Strain at Failure, %		12.1
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		72.54
Effective Minor Principal Stress at Failure, psi		2.528
Effective Major Principal Stress at Failure, psi		75.07
B-Value		---

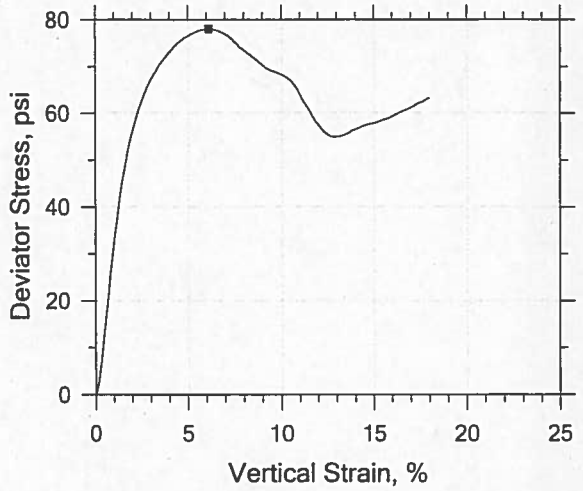
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-713	Test Date: 7/11/19	Depth: 15-17'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-714
Depth, ft		20-22'
Test Number		1
Initial	Height, in	5.999
	Diameter, in	2.642
	Moisture Content (from Cuttings), %	17.0
	Dry Density, pcf	112.
	Saturation (Wet Method), %	92.5
	Void Ratio	0.493
Final	Moisture Content, %	18.2
	Dry Density, pcf	112.
	Cross-Sectional Area (Method A), in²	5.471
	Saturation, %	100.0
	Void Ratio	0.489
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		9.986
Horizontal Effective Consolidation Stress, psi		9.990
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		39.03
Strain at Failure, %		6.14
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		78.05
Effective Minor Principal Stress at Failure, psi		4.893
Effective Major Principal Stress at Failure, psi		82.94
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USI

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-714	Test Date: 7/23/19	Depth: 20-22'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	5.4712	-0.021324	-0.0038976	9.9856	9.9895	0.00000
0.16685	0.14933	0.00000	5.4794	16.125	2.9391	12.742	9.8032	0.00000
0.33378	0.29952	0.00000	5.4876	40.657	7.4014	16.775	9.3738	0.00000
0.50092	0.45141	0.00000	5.4960	70.905	12.890	21.996	9.1064	0.00000
0.66738	0.61952	0.00000	5.5053	104.27	18.925	27.716	8.7905	0.00000
0.83483	0.77483	0.00000	5.5139	139.52	25.285	33.686	8.4016	0.00000
1.0027	0.93781	0.00000	5.5230	172.22	31.159	39.196	8.0370	0.00000
1.1700	1.1119	0.00000	5.5327	201.28	36.352	44.154	7.8020	0.00000
1.3377	1.2723	0.00000	5.5417	228.24	41.154	48.656	7.5023	0.0081505
1.5008	1.4208	0.00000	5.5500	251.50	45.279	52.482	7.2025	0.0081505
1.6671	1.5915	0.00000	5.5596	271.88	48.864	55.823	6.9594	0.00000
1.8354	1.7562	0.00000	5.5690	291.08	52.225	58.982	6.7569	0.0081505
2.0024	1.9260	0.00000	5.5786	308.17	55.194	61.716	6.5219	0.0081505
2.1700	2.1060	0.00000	5.5889	323.19	57.775	64.152	6.3761	0.0081505
2.3372	2.2699	0.00000	5.5982	336.43	60.041	66.271	6.2303	0.0081505
2.5043	2.4439	0.00000	5.6082	348.49	62.079	68.196	6.1169	0.0081505
2.6671	2.6069	0.00000	5.6176	359.01	63.845	69.751	5.9062	0.0081505
2.8346	2.7844	0.00000	5.6279	368.94	65.488	71.354	5.8657	0.0081505
3.0021	2.9483	0.00000	5.6374	377.73	66.933	72.702	5.7685	0.0081505
3.1690	3.1189	0.00000	5.6473	385.34	68.158	73.837	5.6794	0.0081505
3.3359	3.2862	0.00000	5.6571	392.22	69.254	74.860	5.6064	0.0081505
3.5032	3.4526	0.00000	5.6668	398.89	70.307	75.857	5.5497	0.0081505
3.6710	3.6258	0.00000	5.6770	404.63	71.188	76.648	5.4606	0.0081505
3.8346	3.7973	0.00000	5.6871	410.11	72.020	77.456	5.4363	0.0081505
4.0018	3.9501	0.00000	5.6962	415.66	72.877	78.224	5.3472	0.0081505
4.1697	4.1105	0.00000	5.7057	420.67	73.629	78.823	5.1933	0.0081505
4.3372	4.2803	0.00000	5.7158	425.51	74.342	79.576	5.2338	0.0081505
4.5048	4.4390	0.00000	5.7253	429.98	74.996	80.100	5.1041	0.0081505
4.6669	4.6140	0.00000	5.7358	434.08	75.569	80.698	5.1284	0.0081505
4.8351	4.7898	0.00000	5.7464	437.84	76.079	81.102	5.0231	0.0081505
5.0033	4.9519	0.00000	5.7562	440.79	76.459	81.474	5.0150	0.0081505
5.1708	5.1251	0.00000	5.7667	443.80	76.837	81.901	5.0636	0.0081505
5.3341	5.2890	0.00000	5.7767	446.44	77.158	82.206	5.0474	0.0081505
5.5015	5.4596	0.00000	5.7871	448.99	77.455	82.397	4.9421	0.0081505
5.6684	5.6371	0.00000	5.7980	451.37	77.715	82.584	4.8692	0.0081505
5.8364	5.8010	0.00000	5.8081	452.97	77.852	82.794	4.9421	0.0081505
6.0043	5.9639	0.00000	5.8182	454.82	78.032	82.901	4.8692	0.0081505
6.1708	6.1397	0.00000	5.8291	455.80	78.051	82.953	4.9016	0.0081505
6.3343	6.2959	0.00000	5.8388	456.25	77.995	82.831	4.8368	0.0081505
6.5013	6.4751	0.00000	5.8500	456.17	77.827	82.607	4.7801	0.0081505
6.6689	6.6509	0.00000	5.8610	455.33	77.533	82.322	4.7882	0.0081505
6.8359	6.8105	0.00000	5.8710	454.57	77.268	82.121	4.8530	0.0081505
7.0043	6.9709	0.00000	5.8811	453.70	76.983	81.828	4.8449	0.0081505
7.1671	7.1228	0.00000	5.8908	452.55	76.659	81.504	4.8449	0.0081505
7.3354	7.2986	0.00000	5.9019	450.08	76.092	80.985	4.8935	0.016301
7.5029	7.4667	0.00000	5.9126	447.04	75.434	80.328	4.8935	0.016301
7.6700	7.6365	0.00000	5.9235	443.98	74.776	79.718	4.9421	0.016301
7.8372	7.8003	0.00000	5.9340	440.33	74.025	79.007	4.9826	0.016301
8.0048	7.9718	0.00000	5.9451	437.82	73.460	78.427	4.9664	0.016301
8.1708	8.1340	0.00000	5.9556	435.50	72.937	77.993	5.0555	0.016301

USI

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-714	Test Date: 7/23/19	Depth: 20-22'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3377	8.3029	0.00000	5.9666	433.29	72.429	77.493	5.0636	0.016301
8.5048	8.4719	0.00000	5.9776	431.16	71.936	77.049	5.1122	0.016301
8.6676	8.6221	0.00000	5.9874	429.17	71.482	76.603	5.1203	0.024451
8.8354	8.7910	0.00000	5.9985	426.87	70.962	76.106	5.1446	0.024451
9.0021	8.9702	0.00000	6.0103	423.91	70.326	75.503	5.1771	0.024451
9.1695	9.1384	0.00000	6.0214	421.51	69.794	74.995	5.2014	0.024451
9.3369	9.3099	0.00000	6.0328	420.23	69.446	74.664	5.2176	0.024451
9.5043	9.4797	0.00000	6.0441	418.95	69.101	74.334	5.2338	0.024451
9.6669	9.6316	0.00000	6.0543	418.38	68.887	74.162	5.2743	0.024451
9.8348	9.8074	0.00000	6.0661	417.34	68.578	73.925	5.3472	0.024451
10.003	9.9857	0.00000	6.0781	416.30	68.268	73.518	5.2500	0.032602
10.168	10.144	0.00000	6.0888	415.41	67.998	73.337	5.3391	0.032602
10.336	10.325	0.00000	6.1011	413.52	67.546	72.877	5.3310	0.032602
10.503	10.484	0.00000	6.1119	410.83	66.983	72.387	5.4039	0.032602
10.670	10.653	0.00000	6.1235	406.79	66.193	71.581	5.3877	0.032602
10.837	10.824	0.00000	6.1352	402.30	65.332	70.760	5.4282	0.032602
11.001	10.991	0.00000	6.1468	395.82	64.151	69.644	5.4930	0.040752
11.168	11.156	0.00000	6.1581	388.69	62.870	68.444	5.5740	0.032602
11.336	11.329	0.00000	6.1702	383.17	61.849	67.472	5.6226	0.040752
11.503	11.500	0.00000	6.1821	377.65	60.834	66.537	5.7037	0.040752
11.670	11.661	0.00000	6.1934	371.48	59.723	65.491	5.7685	0.040752
11.838	11.822	0.00000	6.2047	364.81	58.536	64.361	5.8252	0.040752
12.002	11.989	0.00000	6.2165	360.08	57.659	63.541	5.8819	0.040752
12.169	12.157	0.00000	6.2283	355.80	56.859	62.830	5.9710	0.040752
12.337	12.320	0.00000	6.2400	351.56	56.070	62.089	6.0196	0.040752
12.501	12.489	0.00000	6.2519	348.57	55.481	61.516	6.0358	0.040752
12.668	12.669	0.00000	6.2648	346.94	55.102	61.203	6.1007	0.040752
12.836	12.838	0.00000	6.2770	346.64	54.944	60.972	6.0277	0.048903
13.003	13.007	0.00000	6.2892	347.80	55.019	61.152	6.1331	0.048903
13.170	13.183	0.00000	6.3020	349.08	55.106	61.215	6.1088	0.048903
13.334	13.352	0.00000	6.3143	350.88	55.281	61.398	6.1169	0.048903
13.502	13.519	0.00000	6.3264	353.43	55.574	61.561	5.9872	0.048903
13.669	13.683	0.00000	6.3385	356.00	55.870	61.890	6.0196	0.048903
13.837	13.850	0.00000	6.3507	359.50	56.309	62.280	5.9710	0.048903
14.001	14.019	0.00000	6.3633	361.84	56.562	62.501	5.9386	0.048903
14.168	14.186	0.00000	6.3756	364.18	56.816	62.714	5.8981	0.048903
14.336	14.355	0.00000	6.3882	367.04	57.148	63.046	5.8981	0.048903
14.504	14.523	0.00000	6.4007	369.51	57.419	63.252	5.8333	0.048903
14.671	14.688	0.00000	6.4132	371.69	57.644	63.461	5.8171	0.048903
14.835	14.840	0.00000	6.4246	373.21	57.774	63.608	5.8333	0.048903
15.002	15.022	0.00000	6.4383	374.77	57.890	63.699	5.8090	0.048903
15.170	15.182	0.00000	6.4505	376.50	58.046	63.750	5.7037	0.040752
15.334	15.344	0.00000	6.4628	378.74	58.278	63.982	5.7037	0.040752
15.502	15.508	0.00000	6.4754	381.29	58.554	64.274	5.7199	0.040752
15.669	15.686	0.00000	6.4890	383.43	58.759	64.462	5.7037	0.040752
15.836	15.849	0.00000	6.5016	385.78	59.002	64.657	5.6551	0.040752
16.004	16.015	0.00000	6.5145	388.71	59.332	64.946	5.6145	0.040752
16.167	16.180	0.00000	6.5273	391.59	59.653	65.179	5.5254	0.040752
16.335	16.346	0.00000	6.5402	394.69	60.007	65.549	5.5416	0.040752
16.503	16.515	0.00000	6.5534	397.75	60.349	65.826	5.4768	0.032602

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-714	Test Date: 7/23/19	Depth: 20-22'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

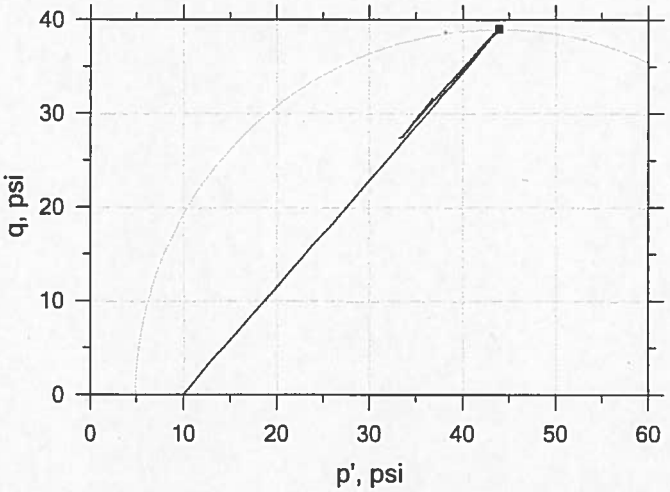
Shear Phase

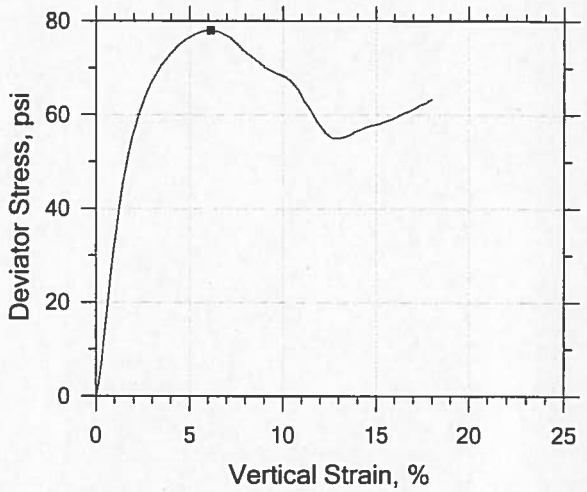
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.670	16.701	0.00000	6.5681	400.43	60.617	66.110	5.4930	0.032602
16.838	16.854	0.00000	6.5802	403.25	60.931	66.457	5.5254	0.032602
17.001	17.031	0.00000	6.5942	406.35	61.269	66.681	5.4120	0.032602
17.169	17.192	0.00000	6.6071	409.59	61.636	67.032	5.3958	0.032602
17.337	17.361	0.00000	6.6206	413.11	62.039	67.402	5.3634	0.032602
17.505	17.531	0.00000	6.6342	415.89	62.327	67.634	5.3067	0.032602
17.667	17.693	0.00000	6.6473	418.44	62.585	67.868	5.2824	0.024451
17.835	17.855	0.00000	6.6604	422.00	62.993	68.211	5.2176	0.024451
18.004	18.020	0.00000	6.6738	425.18	63.340	68.517	5.1771	0.024451

USI

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-714	Test Date: 7/23/19	Depth: 20-22'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





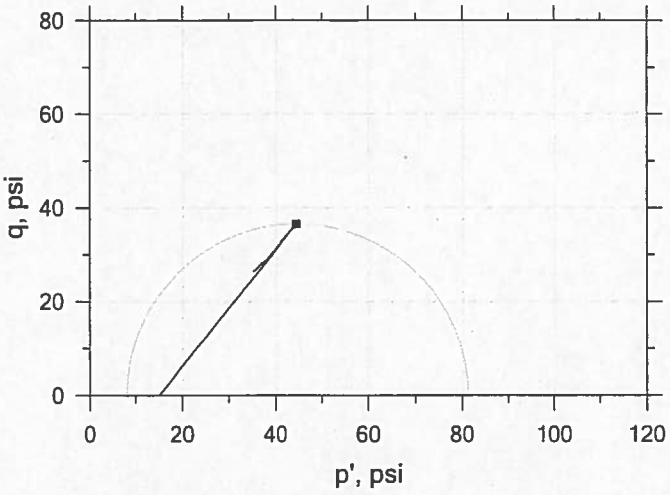
Symbol		■
Sample ID		19-714
Depth, ft		20-22'
Test Number		1
Initial	Height, in	5.999
	Diameter, in	2.642
	Moisture Content (from Cuttings), %	17.0
	Dry Density, pcf	112.
	Saturation (Wet Method), %	92.5
	Void Ratio	0.493
Final	Moisture Content, %	18.2
	Dry Density, pcf	112.
	Cross-Sectional Area (Method A), in²	5.471
	Saturation, %	100.0
	Void Ratio	0.489
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		9.986
Horizontal Effective Consolidation Stress, psi		9.990
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		39.03
Strain at Failure, %		6.14
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		78.05
Effective Minor Principal Stress at Failure, psi		4.893
Effective Major Principal Stress at Failure, psi		82.94
B-Value		---

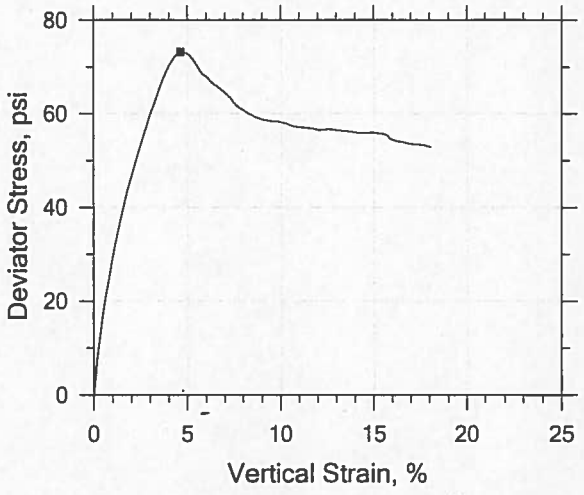
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-714	Test Date: 7/23/19	Depth: 20-22'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-717
Depth, ft		33-35'
Test Number		1
Initial	Height, in	6.066
	Diameter, in	2.665
	Moisture Content (from Cuttings), %	22.3
	Dry Density, pcf	101.
	Saturation (Wet Method), %	89.2
	Void Ratio	0.674
Final	Moisture Content, %	24.2
	Dry Density, pcf	102.
	Cross-Sectional Area (Method A), in²	5.532
	Saturation, %	100.0
	Void Ratio	0.654
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		14.99
Horizontal Effective Consolidation Stress, psi		14.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		36.59
Strain at Failure, %		4.63
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		73.18
Effective Minor Principal Stress at Failure, psi		7.972
Effective Major Principal Stress at Failure, psi		81.16
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-717	Test Date: 7/24/19	Depth: 33-35'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	5.5325	0.029304	0.0052968	14.994	14.988	0.00000
0.17078	0.15406	0.00000	5.5410	38.697	6.9800	21.304	14.324	0.0081505
0.33407	0.30897	0.00000	5.5496	66.513	11.978	25.783	13.805	0.0081505
0.50215	0.46050	0.00000	5.5581	93.260	16.768	30.112	13.344	0.0081505
0.66897	0.62049	0.00000	5.5670	117.94	21.170	34.132	12.963	0.0081505
0.83615	0.79741	0.00000	5.5769	139.90	25.065	37.696	12.631	0.0081505
1.0041	0.96586	0.00000	5.5864	160.62	28.728	41.002	12.274	0.0081505
1.1674	1.1199	0.00000	5.5951	179.04	31.971	43.921	11.950	0.0081505
1.3346	1.2816	0.00000	5.6043	196.69	35.065	46.748	11.683	0.0081505
1.5028	1.4391	0.00000	5.6132	213.24	37.954	49.305	11.351	0.0081505
1.6698	1.6126	0.00000	5.6231	229.08	40.699	51.863	11.164	0.0081505
1.8369	1.7709	0.00000	5.6322	243.93	43.266	54.204	10.937	0.0081505
2.0045	1.9427	0.00000	5.6421	258.26	45.727	56.365	10.638	0.0081505
2.1674	2.1078	0.00000	5.6516	272.31	48.132	58.664	10.532	0.0081505
2.3346	2.2813	0.00000	5.6616	286.00	50.461	60.653	10.192	0.0081505
2.5028	2.4515	0.00000	5.6715	299.63	52.771	62.777	10.006	0.016301
2.6695	2.6123	0.00000	5.6809	312.61	54.965	64.760	9.7951	0.016301
2.8372	2.7926	0.00000	5.6914	325.87	57.189	66.766	9.5763	0.016301
3.0007	2.9552	0.00000	5.7009	338.60	59.323	68.689	9.3657	0.016301
3.1685	3.1329	0.00000	5.7114	351.21	61.417	70.588	9.1712	0.016301
3.3356	3.3048	0.00000	5.7215	363.31	63.419	72.404	8.9849	0.016301
3.5029	3.4715	0.00000	5.7314	374.74	65.300	74.058	8.7580	0.016301
3.6703	3.6357	0.00000	5.7412	385.66	67.087	75.675	8.5879	0.016301
3.8336	3.8034	0.00000	5.7512	395.11	68.610	77.052	8.4421	0.016301
4.0007	3.9718	0.00000	5.7613	404.03	70.034	78.339	8.3043	0.016301
4.1674	4.1445	0.00000	5.7717	411.46	71.191	79.374	8.1828	0.016301
4.3356	4.3011	0.00000	5.7811	417.61	72.134	80.220	8.0856	0.016301
4.5041	4.4679	0.00000	5.7912	422.78	72.899	80.911	8.0127	0.016301
4.6669	4.6312	0.00000	5.8011	425.18	73.184	81.172	7.9884	0.016301
4.8346	4.7972	0.00000	5.8112	425.69	73.139	81.111	7.9722	0.016301
5.0028	4.9766	0.00000	5.8222	425.03	72.883	80.880	7.9965	0.016301
5.1705	5.1408	0.00000	5.8323	422.66	72.347	80.368	8.0208	0.016301
5.3341	5.3025	0.00000	5.8422	418.69	71.541	79.651	8.1099	0.016301
5.5017	5.4786	0.00000	5.8531	413.48	70.513	78.720	8.2071	0.016301
5.6690	5.6555	0.00000	5.8641	407.42	69.344	77.680	8.3368	0.016301
5.8359	5.8206	0.00000	5.8744	403.21	68.502	76.895	8.3935	0.016301
6.0038	6.0026	0.00000	5.8858	400.72	67.942	76.344	8.4016	0.016301
6.1669	6.1643	0.00000	5.8959	397.25	67.234	75.708	8.4745	0.016301
6.3336	6.3259	0.00000	5.9061	394.11	66.582	75.057	8.4745	0.0081505
6.5013	6.4893	0.00000	5.9164	391.69	66.054	74.496	8.4421	0.016301
6.6695	6.6612	0.00000	5.9273	389.49	65.557	73.982	8.4259	0.016301
6.8372	6.8322	0.00000	5.9382	387.33	65.069	73.697	8.6284	0.0081505
7.0040	7.0015	0.00000	5.9490	384.58	64.484	73.178	8.6932	0.0081505
7.1674	7.1640	0.00000	5.9594	382.21	63.970	72.704	8.7337	0.016301
7.3354	7.3240	0.00000	5.9697	379.06	63.329	72.087	8.7580	0.0081505
7.5040	7.4907	0.00000	5.9804	374.33	62.420	71.203	8.7824	0.0081505
7.6677	7.6592	0.00000	5.9914	370.91	61.732	70.644	8.9120	0.0081505
7.8349	7.8209	0.00000	6.0019	368.45	61.210	70.162	8.9525	0.0081505
8.0033	8.0105	0.00000	6.0142	366.71	60.790	69.743	8.9525	0.0081505
8.1711	8.1688	0.00000	6.0246	364.96	60.393	69.353	8.9606	0.0081505

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-717	Test Date: 7/24/19	Depth: 33-35'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3338	8.3271	0.00000	6.0350	362.85	59.935	68.879	8.9444	0.0081505
8.5025	8.5023	0.00000	6.0466	361.58	59.605	68.566	8.9606	0.0081505
8.6705	8.6606	0.00000	6.0570	359.87	59.217	68.145	8.9282	0.0081505
8.8343	8.8265	0.00000	6.0681	359.53	59.050	68.108	9.0578	0.0081505
9.0024	9.0026	0.00000	6.0798	358.47	58.757	67.855	9.0983	0.0081505
9.1698	9.1778	0.00000	6.0915	358.74	58.685	67.799	9.1145	0.0081505
9.3336	9.3319	0.00000	6.1019	358.47	58.536	67.643	9.1064	0.0081505
9.5019	9.5113	0.00000	6.1140	358.38	58.402	67.492	9.0902	0.0081505
9.6690	9.6790	0.00000	6.1253	358.69	58.340	67.439	9.0983	0.0081505
9.8369	9.8398	0.00000	6.1363	359.40	58.349	67.463	9.1145	0.0081505
10.005	10.018	0.00000	6.1484	359.19	58.195	67.277	9.0821	0.0081505
10.168	10.188	0.00000	6.1600	359.09	58.066	67.156	9.0902	0.0081505
10.336	10.348	0.00000	6.1710	358.63	57.885	66.950	9.0659	0.0081505
10.504	10.530	0.00000	6.1836	357.22	57.536	66.634	9.0983	0.00000
10.671	10.685	0.00000	6.1943	356.88	57.377	66.491	9.1145	0.00000
10.838	10.856	0.00000	6.2062	356.70	57.234	66.332	9.0983	0.0081505
11.001	11.022	0.00000	6.2178	356.91	57.158	66.248	9.0902	0.00000
11.169	11.194	0.00000	6.2298	356.95	57.049	66.139	9.0902	0.00000
11.337	11.357	0.00000	6.2413	357.15	56.974	66.105	9.1307	0.0081505
11.501	11.526	0.00000	6.2532	357.63	56.938	66.036	9.0983	0.00000
11.668	11.693	0.00000	6.2650	357.75	56.846	65.960	9.1145	0.00000
11.836	11.857	0.00000	6.2767	357.74	56.735	65.752	9.0173	0.00000
12.004	12.022	0.00000	6.2885	357.30	56.556	65.573	9.0173	0.00000
12.167	12.187	0.00000	6.3003	357.73	56.514	65.564	9.0497	0.00000
12.335	12.353	0.00000	6.3122	358.82	56.576	65.618	9.0416	0.00000
12.503	12.516	0.00000	6.3240	359.85	56.630	65.656	9.0254	0.00000
12.671	12.691	0.00000	6.3366	360.82	56.666	65.675	9.0092	0.00000
12.834	12.854	0.00000	6.3485	361.10	56.601	65.610	9.0092	0.00000
13.001	13.029	0.00000	6.3612	360.91	56.454	65.479	9.0254	0.00000
13.167	13.189	0.00000	6.3730	361.10	56.376	65.385	9.0092	0.00000
13.335	13.370	0.00000	6.3863	361.44	56.309	65.310	9.0011	0.00000
13.504	13.539	0.00000	6.3988	361.94	56.272	65.289	9.0173	0.00000
13.669	13.707	0.00000	6.4113	362.07	56.179	65.172	8.9930	0.00000
13.837	13.867	0.00000	6.4231	362.32	56.112	65.080	8.9687	0.00000
14.005	14.034	0.00000	6.4357	362.17	55.976	64.920	8.9444	0.00000
14.167	14.201	0.00000	6.4482	362.60	55.931	64.883	8.9525	0.00000
14.335	14.363	0.00000	6.4603	362.94	55.874	64.851	8.9768	-0.0081505
14.502	14.529	0.00000	6.4729	363.72	55.882	64.843	8.9606	0.00000
14.670	14.695	0.00000	6.4855	364.72	55.924	64.885	8.9606	0.00000
14.834	14.861	0.00000	6.4982	365.56	55.942	64.862	8.9201	-0.0081505
15.001	15.020	0.00000	6.5103	366.66	56.002	64.905	8.9039	-0.0081505
15.169	15.200	0.00000	6.5241	366.38	55.837	64.725	8.8877	-0.0081505
15.336	15.360	0.00000	6.5365	366.50	55.747	64.643	8.8958	-0.0081505
15.504	15.529	0.00000	6.5496	366.73	55.667	64.522	8.8553	-0.0081505
15.671	15.692	0.00000	6.5622	365.89	55.428	64.291	8.8634	-0.0081505
15.834	15.860	0.00000	6.5753	361.70	54.677	63.630	8.9525	-0.0081505
16.002	16.026	0.00000	6.5883	360.48	54.381	63.358	8.9768	-0.0081505
16.168	16.195	0.00000	6.6016	359.89	54.178	63.171	8.9930	-0.0081505
16.336	16.364	0.00000	6.6149	359.92	54.071	63.047	8.9768	-0.0081505
16.505	16.537	0.00000	6.6287	360.20	53.997	62.974	8.9768	-0.0081505

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-717	Test Date: 7/24/19	Depth: 33-35'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

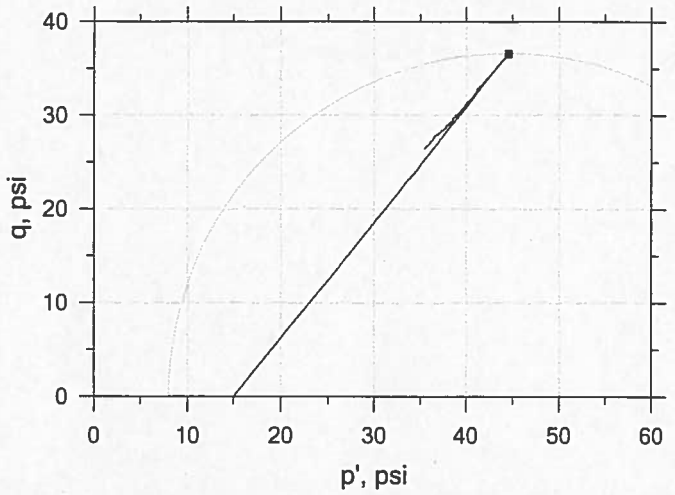
Shear Phase

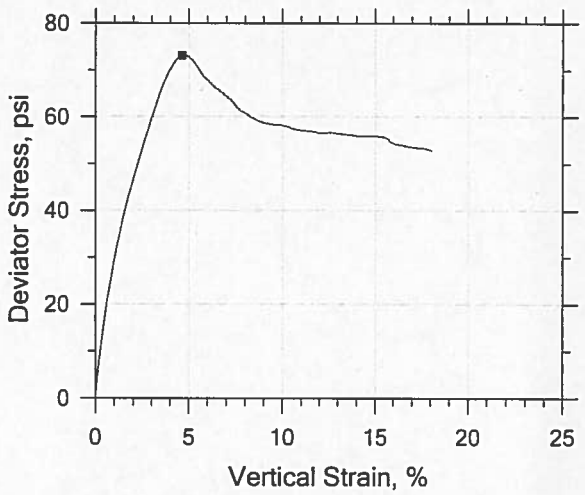
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.668	16.709	0.00000	6.6423	359.67	53.802	62.795	8.9930	-0.0081505
16.836	16.875	0.00000	6.6556	359.26	53.630	62.640	9.0092	-0.0081505
17.004	17.042	0.00000	6.6690	359.70	53.585	62.594	9.0092	-0.0081505
17.167	17.208	0.00000	6.6823	359.33	53.418	62.427	9.0092	-0.016301
17.336	17.376	0.00000	6.6960	360.14	53.428	62.397	8.9687	-0.016301
17.504	17.542	0.00000	6.7094	360.55	53.378	62.339	8.9606	-0.016301
17.668	17.705	0.00000	6.7227	361.02	53.339	62.299	8.9606	-0.016301
17.836	17.869	0.00000	6.7361	360.18	53.104	62.065	8.9606	-0.016301
18.003	18.031	0.00000	6.7495	359.87	52.951	61.879	8.9282	-0.016301
18.043	18.074	0.00000	6.7530	359.76	52.906	61.931	9.0254	-0.016301

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-717	Test Date: 7/24/19	Depth: 33-35'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





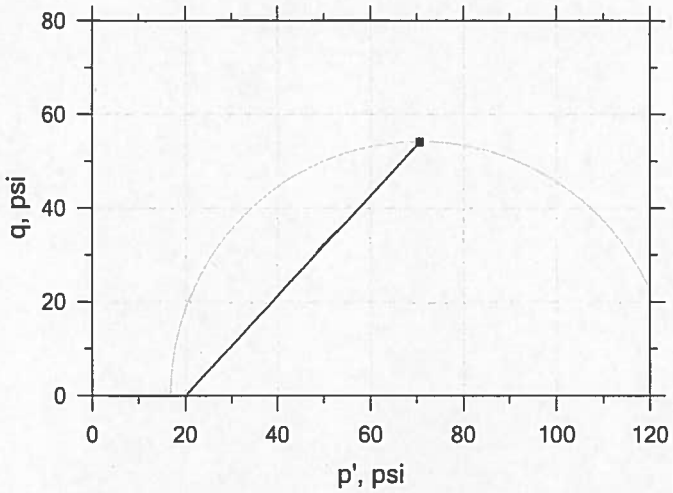
Symbol		■
Sample ID		19-717
Depth, ft		33-35'
Test Number		1
Initial	Height, in	6.066
	Diameter, in	2.665
	Moisture Content (from Cuttings), %	22.3
	Dry Density, pcf	101.
	Saturation (Wet Method), %	89.2
	Void Ratio	0.674
Final	Moisture Content, %	24.2
	Dry Density, pcf	102.
	Cross-Sectional Area (Method A), in²	5.532
	Saturation, %	100.0
	Void Ratio	0.654
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		14.99
Horizontal Effective Consolidation Stress, psi		14.99
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		36.59
Strain at Failure, %		4.63
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		73.18
Effective Minor Principal Stress at Failure, psi		7.972
Effective Major Principal Stress at Failure, psi		81.16
B-Value		---

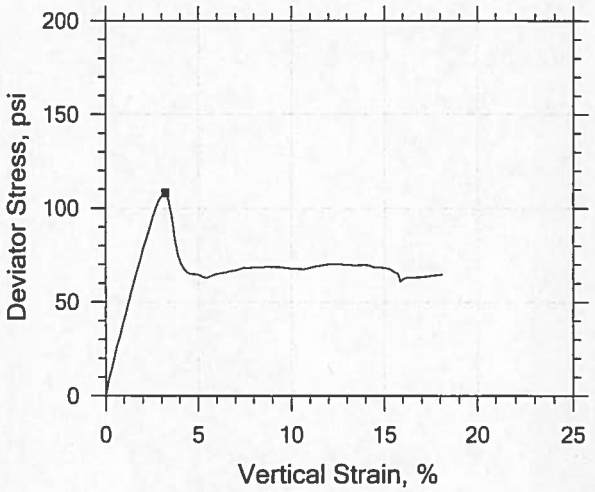
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-717	Test Date: 7/24/19	Depth: 33-35'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-719
Depth, ft		43-45'
Test Number		1
Initial	Height, in	3.032
	Diameter, in	1.396
	Moisture Content (from Cuttings), %	22.9
	Dry Density, pcf	99.6
	Saturation (Wet Method), %	88.7
	Void Ratio	0.699
Final	Moisture Content, %	24.7
	Dry Density, pcf	101.
	Cross-Sectional Area (Method A), in²	1.513
	Saturation, %	100.0
	Void Ratio	0.670
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		19.99
Horizontal Effective Consolidation Stress, psi		20.00
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		54.13
Strain at Failure, %		3.21
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		108.3
Effective Minor Principal Stress at Failure, psi		16.62
Effective Major Principal Stress at Failure, psi		124.9
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-719	Test Date: 7/25/19	Depth: 43-45'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5131	-0.015122	-0.0099943	19.985	19.995	0.00000
0.16802	0.13571	0.00000	1.5152	12.135	8.0023	27.746	19.744	0.00000
0.33755	0.31043	0.00000	1.5178	21.505	14.153	33.703	19.550	0.00000
0.50440	0.46818	0.00000	1.5202	30.844	20.267	39.622	19.355	-0.0081505
0.66877	0.59541	0.00000	1.5222	39.963	26.226	45.395	19.169	-0.0081505
0.83413	0.76334	0.00000	1.5247	48.874	32.018	50.960	18.942	-0.0081505
1.0040	0.92280	0.00000	1.5272	58.352	38.166	56.986	18.820	-0.0081505
1.1690	1.0873	0.00000	1.5297	67.315	43.953	62.595	18.642	-0.0081505
1.3338	1.2349	0.00000	1.5320	76.151	49.648	68.120	18.472	-0.0081505
1.5034	1.3927	0.00000	1.5345	85.708	55.790	74.067	18.278	-0.0081505
1.6678	1.5436	0.00000	1.5368	94.608	61.488	79.588	18.099	-0.016301
1.8337	1.7099	0.00000	1.5394	103.88	67.402	85.315	17.913	-0.016301
2.0025	1.8795	0.00000	1.5421	112.61	72.938	90.746	17.808	-0.016301
2.1676	2.0186	0.00000	1.5443	121.49	78.580	96.145	17.565	-0.016301
2.3349	2.2052	0.00000	1.5472	130.51	84.250	101.67	17.419	-0.016301
2.5013	2.3596	0.00000	1.5497	139.25	89.752	107.00	17.249	-0.016301
2.6708	2.5156	0.00000	1.5521	147.75	95.076	112.14	17.062	-0.016301
2.8368	2.6751	0.00000	1.5547	155.37	99.810	116.75	16.941	-0.016301
3.0033	2.8498	0.00000	1.5575	162.34	104.10	120.86	16.755	-0.024451
3.1685	3.0551	0.00000	1.5608	167.48	107.16	123.74	16.576	-0.024451
3.3372	3.2128	0.00000	1.5633	169.46	108.25	124.84	16.592	-0.024451
3.5031	3.3774	0.00000	1.5660	163.91	104.51	121.20	16.682	-0.024451
3.6684	3.5623	0.00000	1.5690	149.82	95.323	112.33	17.006	-0.024451
3.8339	3.7251	0.00000	1.5716	132.09	83.878	101.31	17.435	-0.024451
4.0039	3.8998	0.00000	1.5745	118.26	74.933	92.635	17.702	-0.024451
4.1692	4.0729	0.00000	1.5773	111.01	70.189	87.948	17.759	-0.024451
4.3363	4.2611	0.00000	1.5804	106.44	67.156	85.021	17.864	-0.024451
4.5028	4.4155	0.00000	1.5830	104.54	65.836	83.749	17.913	-0.024451
4.6677	4.5784	0.00000	1.5857	103.59	65.119	83.097	17.978	-0.032602
4.8338	4.7412	0.00000	1.5884	103.58	64.995	83.013	18.018	-0.032602
5.0014	4.9125	0.00000	1.5913	103.49	64.816	82.802	17.986	-0.032602
5.1680	5.0957	0.00000	1.5943	102.75	64.220	82.173	17.954	-0.032602
5.3355	5.2722	0.00000	1.5973	101.39	63.237	81.182	17.945	-0.032602
5.5029	5.4537	0.00000	1.6004	101.34	63.080	81.083	18.002	-0.032602
5.6698	5.6352	0.00000	1.6035	102.54	63.696	81.641	17.945	-0.032602
5.8372	5.7980	0.00000	1.6062	103.72	64.315	82.253	17.937	-0.032602
6.0009	5.9592	0.00000	1.6090	104.75	64.837	82.766	17.929	-0.032602
6.1685	6.1254	0.00000	1.6118	105.58	65.229	83.207	17.978	-0.032602
6.3365	6.2967	0.00000	1.6148	106.47	65.655	83.535	17.881	-0.040752
6.5046	6.4681	0.00000	1.6177	106.87	65.777	83.657	17.881	-0.040752
6.6677	6.6190	0.00000	1.6203	107.75	66.203	84.068	17.864	-0.040752
6.8354	6.7904	0.00000	1.6233	108.58	66.585	84.498	17.913	-0.040752
7.0025	6.9770	0.00000	1.6266	109.23	66.844	84.620	17.775	-0.040752
7.1693	7.1364	0.00000	1.6294	110.21	67.322	85.179	17.856	-0.040752
7.3357	7.3043	0.00000	1.6323	111.37	67.908	85.691	17.783	-0.040752
7.5036	7.4621	0.00000	1.6351	112.31	68.357	86.132	17.775	-0.040752
7.6706	7.6521	0.00000	1.6385	112.28	68.193	85.936	17.743	-0.040752
7.8346	7.8031	0.00000	1.6412	112.84	68.415	86.166	17.751	-0.040752
8.0012	7.9880	0.00000	1.6445	113.19	68.484	86.187	17.702	-0.040752
8.1685	8.1491	0.00000	1.6473	113.50	68.543	86.270	17.727	-0.048903

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-719	Test Date: 7/25/19	Depth: 43-45'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3365	8.3069	0.00000	1.6502	113.63	68.500	86.178	17.678	-0.048903
8.5036	8.4714	0.00000	1.6531	113.99	68.587	86.330	17.743	-0.048903
8.6693	8.6376	0.00000	1.6561	114.66	68.855	86.557	17.702	-0.048903
8.8352	8.8056	0.00000	1.6592	114.96	68.905	86.632	17.727	-0.048903
9.0018	8.9786	0.00000	1.6624	114.97	68.772	86.459	17.686	-0.048903
9.1693	9.1448	0.00000	1.6654	115.02	68.673	86.391	17.719	-0.048903
9.3370	9.3145	0.00000	1.6685	115.19	68.637	86.307	17.670	-0.048903
9.5039	9.4858	0.00000	1.6717	115.21	68.513	86.223	17.711	-0.048903
9.6669	9.6520	0.00000	1.6747	115.00	68.253	85.939	17.686	-0.048903
9.8349	9.8166	0.00000	1.6778	114.87	68.044	85.755	17.711	-0.048903
10.003	9.9862	0.00000	1.6810	114.81	67.873	85.576	17.702	-0.048903
10.171	10.146	0.00000	1.6839	114.84	67.762	85.488	17.727	-0.048903
10.334	10.329	0.00000	1.6874	115.04	67.738	85.375	17.638	-0.057054
10.502	10.493	0.00000	1.6905	115.06	67.620	85.298	17.678	-0.057054
10.670	10.661	0.00000	1.6937	115.18	67.555	85.265	17.711	-0.057054
10.837	10.819	0.00000	1.6967	115.84	67.817	85.503	17.686	-0.057054
11.001	10.970	0.00000	1.6995	116.69	68.194	85.848	17.654	-0.057054
11.168	11.152	0.00000	1.7030	117.74	68.668	86.322	17.654	-0.057054
11.336	11.318	0.00000	1.7062	118.46	68.953	86.591	17.638	-0.057054
11.503	11.491	0.00000	1.7095	119.27	69.287	86.908	17.621	-0.057054
11.667	11.637	0.00000	1.7124	119.99	69.586	87.191	17.605	-0.057054
11.835	11.813	0.00000	1.7158	120.75	69.879	87.451	17.573	-0.057054
12.003	11.976	0.00000	1.7190	121.37	70.105	87.677	17.573	-0.057054
12.171	12.158	0.00000	1.7225	121.81	70.206	87.771	17.565	-0.057054
12.334	12.322	0.00000	1.7257	122.09	70.231	87.788	17.557	-0.057054
12.502	12.502	0.00000	1.7293	122.27	70.186	87.751	17.565	-0.057054
12.670	12.678	0.00000	1.7328	122.29	70.046	87.546	17.500	-0.065204
12.837	12.829	0.00000	1.7358	122.27	69.910	87.475	17.565	-0.057054
13.001	12.999	0.00000	1.7392	122.06	69.646	87.178	17.532	-0.065204
13.168	13.177	0.00000	1.7427	122.43	69.706	87.271	17.565	-0.065204
13.335	13.342	0.00000	1.7460	122.47	69.594	87.086	17.492	-0.065204
13.503	13.516	0.00000	1.7496	122.72	69.586	87.102	17.516	-0.065204
13.670	13.694	0.00000	1.7532	123.07	69.637	87.242	17.605	-0.065204
13.834	13.854	0.00000	1.7564	123.52	69.755	87.312	17.557	-0.065204
14.002	14.042	0.00000	1.7603	123.71	69.704	87.237	17.532	-0.065204
14.169	14.237	0.00000	1.7643	123.48	69.410	86.983	17.573	-0.065204
14.337	14.375	0.00000	1.7671	122.49	68.732	86.289	17.557	-0.065204
14.504	14.546	0.00000	1.7707	122.22	68.431	85.972	17.540	-0.065204
14.667	14.707	0.00000	1.7740	122.43	68.418	85.966	17.548	-0.065204
14.835	14.861	0.00000	1.7772	122.40	68.269	85.826	17.557	-0.065204
15.003	15.028	0.00000	1.7807	122.27	68.057	85.630	17.573	-0.065204
15.170	15.218	0.00000	1.7847	122.21	67.864	85.421	17.557	-0.065204
15.337	15.357	0.00000	1.7876	121.28	67.224	84.797	17.573	-0.065204
15.505	15.552	0.00000	1.7917	118.84	65.701	83.330	17.630	-0.065204
15.668	15.730	0.00000	1.7955	118.34	65.278	82.907	17.630	-0.065204
15.836	15.879	0.00000	1.7987	110.94	61.041	78.824	17.783	-0.065204
16.003	16.032	0.00000	1.8020	113.37	62.274	80.025	17.751	-0.073354
16.170	16.196	0.00000	1.8055	114.83	62.955	80.698	17.743	-0.073354
16.337	16.390	0.00000	1.8097	115.13	62.968	80.622	17.654	-0.073354
16.505	16.546	0.00000	1.8131	115.49	63.041	80.768	17.727	-0.073354

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-719	Test Date: 7/25/19	Depth: 43-45'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

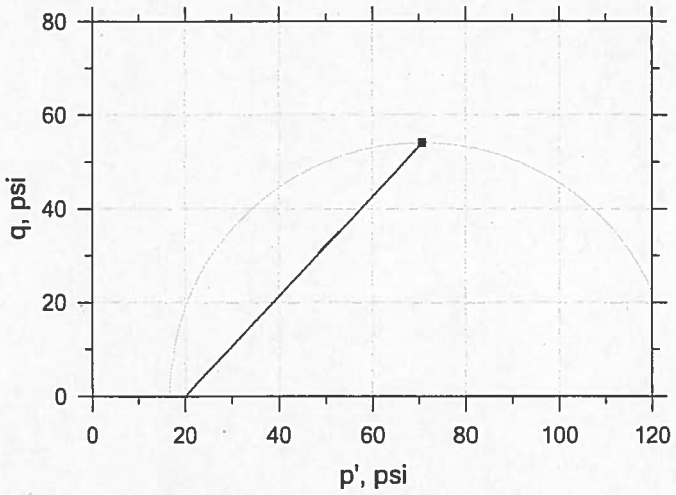
Shear Phase

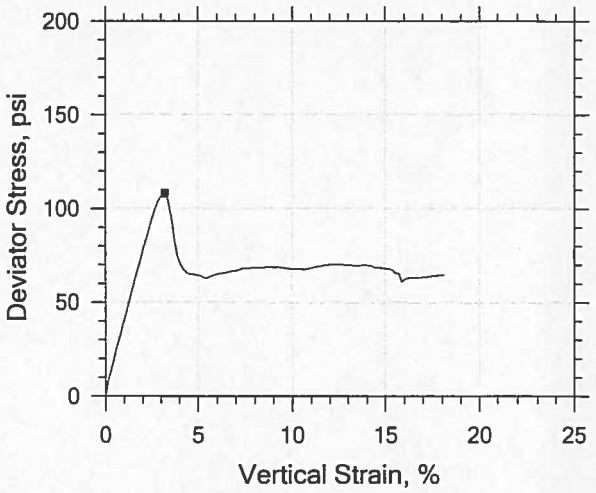
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.668	16.719	0.00000	1.8169	115.92	63.140	80.891	17.751	-0.073354
16.836	16.887	0.00000	1.8205	116.37	63.253	80.939	17.686	-0.073354
17.005	17.048	0.00000	1.8241	117.00	63.470	81.116	17.646	-0.073354
17.168	17.233	0.00000	1.8281	117.50	63.592	81.246	17.654	-0.073354
17.336	17.384	0.00000	1.8315	118.15	63.828	81.474	17.646	-0.073354
17.504	17.559	0.00000	1.8354	118.69	63.979	81.584	17.605	-0.073354
17.667	17.723	0.00000	1.8390	119.46	64.267	81.873	17.605	-0.073354
17.835	17.894	0.00000	1.8429	119.93	64.381	81.978	17.597	-0.073354
18.003	18.054	0.00000	1.8465	120.40	64.502	82.099	17.597	-0.073354
18.056	18.103	0.00000	1.8476	120.79	64.675	82.320	17.646	-0.073354

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-719	Test Date: 7/25/19	Depth: 43-45'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





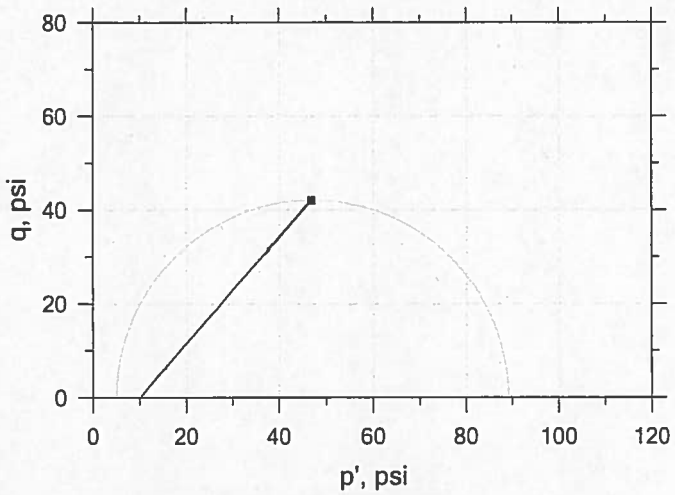
Symbol		■
Sample ID		19-719
Depth, ft		43-45'
Test Number		1
Initial	Height, in	3.032
	Diameter, in	1.396
	Moisture Content (from Cuttings), %	22.9
	Dry Density, pcf	99.6
	Saturation (Wet Method), %	88.7
	Void Ratio	0.699
Final	Moisture Content, %	24.7
	Dry Density, pcf	101.
	Cross-Sectional Area (Method A), in²	1.513
	Saturation, %	100.0
	Void Ratio	0.670
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		19.99
Horizontal Effective Consolidation Stress, psi		20.00
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		54.13
Strain at Failure, %		3.21
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		108.3
Effective Minor Principal Stress at Failure, psi		16.62
Effective Major Principal Stress at Failure, psi		124.9
B-Value		---

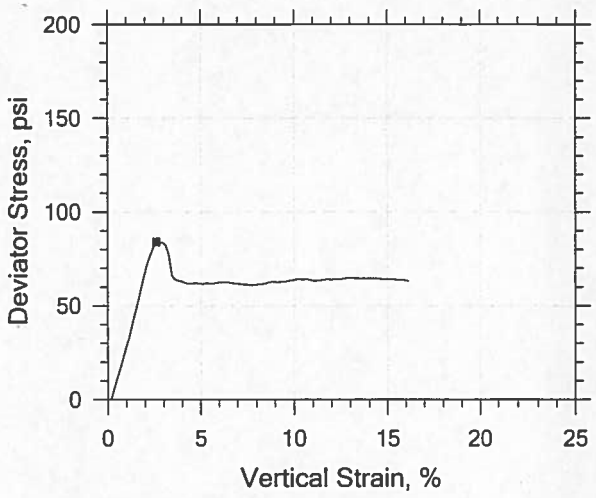
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-3	Tested By: SKK	Checked By: SKK
Sample No.: 19-719	Test Date: 7/25/19	Depth: 43-45'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-723
Depth, ft		17.5-19'
Test Number		1
Initial	Height, in	6.305
	Diameter, in	2.764
	Moisture Content (from Cuttings), %	19.3
	Dry Density, pcf	101.
	Saturation (Wet Method), %	75.3
	Void Ratio	0.711
Final	Moisture Content, %	25.3
	Dry Density, pcf	102.
	Cross-Sectional Area (Method A), in²	5.974
	Saturation, %	100.0
	Void Ratio	0.700
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		9.965
Horizontal Effective Consolidation Stress, psi		9.973
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		42.01
Strain at Failure, %		2.62
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		84.03
Effective Minor Principal Stress at Failure, psi		5.008
Effective Major Principal Stress at Failure, psi		89.04
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USI

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-723	Test Date: 7/25/19	Depth: 17.5-19'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	5.9736	-0.048850	-0.0081778	9.9651	9.9733	0.00000
0.16670	0.16421	0.00000	5.9834	1.0926	0.17868	10.193	10.014	-0.0081505
0.33413	0.32679	0.00000	5.9932	37.622	6.2697	15.870	9.6006	-0.016301
0.50218	0.47473	0.00000	6.0021	67.966	11.313	20.492	9.1793	-0.024451
0.66957	0.64544	0.00000	6.0124	100.08	16.630	25.420	8.7905	-0.032602
0.83337	0.80152	0.00000	6.0218	132.23	21.939	30.430	8.4907	-0.040752
1.0010	0.95922	0.00000	6.0314	167.06	27.675	35.850	8.1747	-0.057054
1.1678	1.1413	0.00000	6.0425	203.36	33.627	41.438	7.8101	-0.065204
1.3363	1.3080	0.00000	6.0527	242.83	40.089	47.518	7.4294	-0.073354
1.5040	1.4811	0.00000	6.0634	284.19	46.836	53.803	6.9675	-0.081505
1.6678	1.6429	0.00000	6.0733	325.32	53.526	60.121	6.5949	-0.089655
1.8360	1.8006	0.00000	6.0831	367.74	60.410	66.657	6.2465	-0.097806
2.0043	1.9680	0.00000	6.0935	408.94	67.065	72.850	5.7847	-0.11411
2.1678	2.1233	0.00000	6.1032	445.64	72.968	78.429	5.4606	-0.12226
2.3355	2.2956	0.00000	6.1139	475.79	77.768	82.961	5.1933	-0.13041
2.5033	2.4444	0.00000	6.1232	499.58	81.531	86.416	4.8854	-0.13856
2.6704	2.6184	0.00000	6.1342	515.82	84.028	88.889	4.8611	-0.14671
2.8344	2.7818	0.00000	6.1445	513.05	83.434	88.278	4.8449	-0.15486
3.0030	2.9411	0.00000	6.1546	514.76	83.569	88.317	4.7477	-0.17116
3.1696	3.1085	0.00000	6.1652	505.47	81.916	86.882	4.9664	-0.17931
3.3368	3.2638	0.00000	6.1751	476.32	77.059	82.415	5.3553	-0.18746
3.5041	3.4475	0.00000	6.1869	407.68	65.814	71.842	6.0277	-0.19561
3.6699	3.5930	0.00000	6.1962	398.47	64.225	70.147	5.9224	-0.20376
3.8373	3.7621	0.00000	6.2071	393.48	63.306	69.399	6.0926	-0.21191
4.0005	3.9255	0.00000	6.2176	392.00	62.956	69.162	6.2060	-0.22006
4.1675	4.1043	0.00000	6.2292	388.63	62.293	68.564	6.2708	-0.22821
4.3352	4.2742	0.00000	6.2403	386.46	61.831	68.070	6.2384	-0.23636
4.5029	4.4295	0.00000	6.2504	385.66	61.600	67.782	6.1817	-0.24451
4.6693	4.6075	0.00000	6.2621	388.65	61.958	67.994	6.0358	-0.25267
4.8365	4.7660	0.00000	6.2725	389.73	62.024	68.092	6.0682	-0.26082
5.0034	4.9481	0.00000	6.2845	389.71	61.899	68.032	6.1331	-0.27712
5.1704	5.1213	0.00000	6.2960	388.31	61.560	67.701	6.1412	-0.28527
5.3342	5.2831	0.00000	6.3068	391.92	62.022	68.180	6.1574	-0.28527
5.5017	5.4408	0.00000	6.3173	390.91	61.756	67.832	6.0763	-0.30157
5.6686	5.6123	0.00000	6.3288	391.30	61.703	67.674	5.9710	-0.30972
5.8360	5.7830	0.00000	6.3402	394.00	62.013	68.008	5.9953	-0.30972
6.0034	5.9399	0.00000	6.3508	396.49	62.298	68.301	6.0034	-0.32602
6.1706	6.1106	0.00000	6.3623	397.76	62.380	68.416	6.0358	-0.32602
6.3371	6.2797	0.00000	6.3738	399.18	62.487	68.555	6.0682	-0.33417
6.5044	6.4520	0.00000	6.3856	399.88	62.477	68.489	6.0115	-0.34232
6.6670	6.6219	0.00000	6.3972	398.98	62.219	68.085	5.8657	-0.34232
6.8344	6.7869	0.00000	6.4085	397.85	61.930	67.836	5.9062	-0.35047
7.0009	6.9584	0.00000	6.4203	397.30	61.727	67.698	5.9710	-0.35047
7.1688	7.1422	0.00000	6.4330	398.02	61.713	67.660	5.9467	-0.35862
7.3363	7.3023	0.00000	6.4441	396.36	61.345	67.365	6.0196	-0.35862
7.5041	7.4689	0.00000	6.4557	396.95	61.323	67.342	6.0196	-0.36677
7.6706	7.6486	0.00000	6.4683	394.90	60.883	66.879	5.9953	-0.36677
7.8376	7.8055	0.00000	6.4793	396.23	60.981	67.017	6.0358	-0.37492
8.0011	7.9811	0.00000	6.4917	398.41	61.197	67.209	6.0115	-0.37492
8.1680	8.1518	0.00000	6.5037	400.57	61.411	67.398	5.9872	-0.38307

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-723	Test Date: 7/25/19	Depth: 17.5-19'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3360	8.3095	0.00000	6.5149	402.22	61.556	67.503	5.9467	-0.39122
8.5037	8.4794	0.00000	6.5270	404.58	61.799	67.648	5.8495	-0.39122
8.6701	8.6330	0.00000	6.5380	408.32	62.265	68.049	5.7847	-0.39937
8.8334	8.8029	0.00000	6.5502	411.62	62.649	68.425	5.7766	-0.39937
9.0009	8.9622	0.00000	6.5616	412.23	62.629	68.446	5.8171	-0.40753
9.1683	9.1346	0.00000	6.5741	412.50	62.548	68.398	5.8495	-0.40753
9.3363	9.3094	0.00000	6.5868	413.65	62.599	68.448	5.8495	-0.41568
9.5043	9.4955	0.00000	6.6003	415.43	62.736	68.553	5.8171	-0.41568
9.6673	9.6492	0.00000	6.6115	418.15	63.036	68.813	5.7766	-0.42383
9.8342	9.8231	0.00000	6.6243	421.27	63.383	69.102	5.7199	-0.42383
10.002	10.003	0.00000	6.6375	424.15	63.687	69.294	5.6064	-0.43198
10.169	10.165	0.00000	6.6495	427.23	64.031	69.661	5.6308	-0.43198
10.336	10.323	0.00000	6.6612	428.38	64.088	69.710	5.6226	-0.44013
10.503	10.486	0.00000	6.6734	427.29	63.805	69.411	5.6064	-0.44013
10.670	10.658	0.00000	6.6862	429.68	64.036	69.683	5.6470	-0.44013
10.837	10.825	0.00000	6.6987	428.96	63.805	69.484	5.6794	-0.44828
11.001	10.995	0.00000	6.7115	425.41	63.151	68.846	5.6956	-0.44828
11.169	11.159	0.00000	6.7239	426.99	63.267	68.963	5.6956	-0.45643
11.335	11.315	0.00000	6.7357	428.62	63.394	69.049	5.6551	-0.45643
11.503	11.491	0.00000	6.7491	430.83	63.591	69.238	5.6470	-0.46458
11.670	11.651	0.00000	6.7613	433.41	63.856	69.487	5.6308	-0.46458
11.838	11.824	0.00000	6.7746	435.45	64.027	69.601	5.5740	-0.46458
12.001	11.995	0.00000	6.7878	435.79	63.950	69.508	5.5578	-0.47273
12.167	12.156	0.00000	6.8002	437.17	64.033	69.526	5.4930	-0.47273
12.334	12.323	0.00000	6.8131	437.62	63.973	69.426	5.4525	-0.47273
12.502	12.491	0.00000	6.8262	439.04	64.055	69.548	5.4930	-0.48088
12.669	12.655	0.00000	6.8391	442.13	64.383	69.812	5.4282	-0.48088
12.837	12.819	0.00000	6.8520	445.89	64.808	70.244	5.4363	-0.48088
13.005	12.999	0.00000	6.8661	447.58	64.916	70.320	5.4039	-0.48903
13.167	13.165	0.00000	6.8792	447.36	64.757	70.169	5.4120	-0.48903
13.334	13.324	0.00000	6.8919	447.45	64.648	70.076	5.4282	-0.48903
13.501	13.496	0.00000	6.9055	447.73	64.557	69.993	5.4363	-0.48903
13.669	13.659	0.00000	6.9186	448.29	64.512	69.949	5.4363	-0.49718
13.836	13.834	0.00000	6.9326	449.44	64.544	69.980	5.4363	-0.49718
14.003	14.003	0.00000	6.9463	450.05	64.502	69.833	5.3310	-0.49718
14.169	14.166	0.00000	6.9595	450.79	64.483	69.838	5.3553	-0.49718
14.336	14.331	0.00000	6.9728	452.00	64.529	69.901	5.3715	-0.50533
14.503	14.503	0.00000	6.9869	452.75	64.503	69.874	5.3715	-0.50533
14.670	14.671	0.00000	7.0007	451.78	64.234	69.638	5.4039	-0.50533
14.838	14.842	0.00000	7.0147	453.02	64.280	69.659	5.3796	-0.50533
15.001	15.009	0.00000	7.0284	453.65	64.240	69.587	5.3472	-0.51348
15.167	15.168	0.00000	7.0416	453.22	64.054	69.410	5.3553	-0.51348
15.335	15.335	0.00000	7.0556	453.59	63.977	69.341	5.3634	-0.51348
15.502	15.508	0.00000	7.0700	453.95	63.894	69.185	5.2905	-0.51348
15.668	15.670	0.00000	7.0836	455.06	63.925	69.240	5.3148	-0.52163
15.835	15.842	0.00000	7.0980	454.28	63.681	69.028	5.3472	-0.52163
16.002	16.008	0.00000	7.1120	453.75	63.478	68.825	5.3472	-0.52163
16.169	16.169	0.00000	7.1258	451.78	63.077	68.448	5.3715	-0.52978
16.337	16.169	0.00000	7.1258	451.78	63.077	68.448	5.3715	-0.52978
16.501	16.169	0.00000	7.1258	451.78	63.077	68.448	5.3715	-0.52978

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-723	Test Date: 7/25/19	Depth: 17.5-19'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

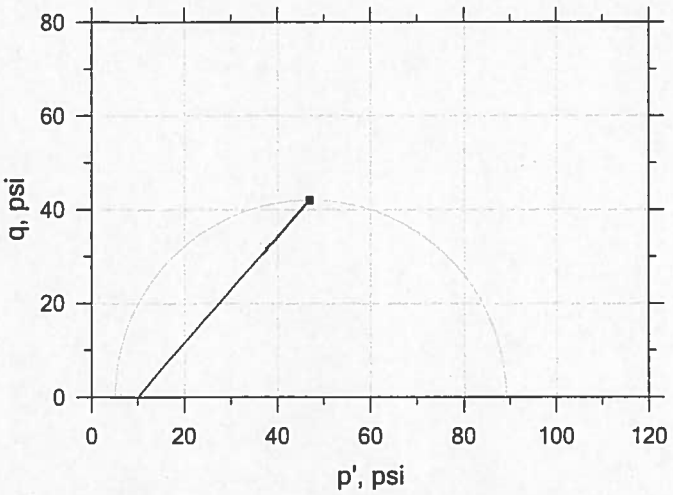
UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

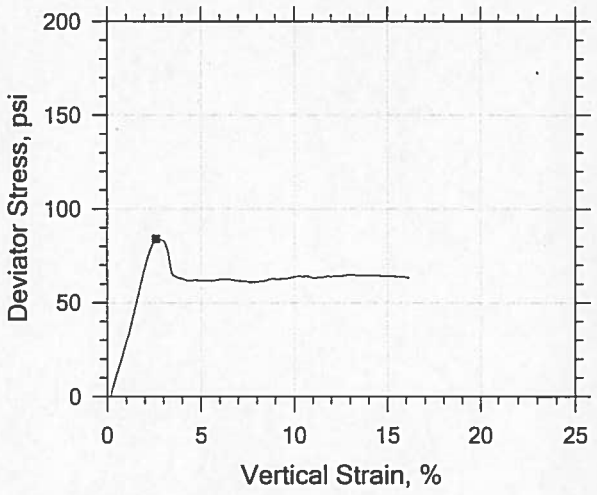
Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.668	16.169	0.00000	7.1258	451.78	63.077	68.448	5.3715	-0.52978
16.773	16.169	0.00000	7.1258	451.78	63.077	68.448	5.3715	-0.52978

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-723	Test Date: 7/25/19	Depth: 17.5-19'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





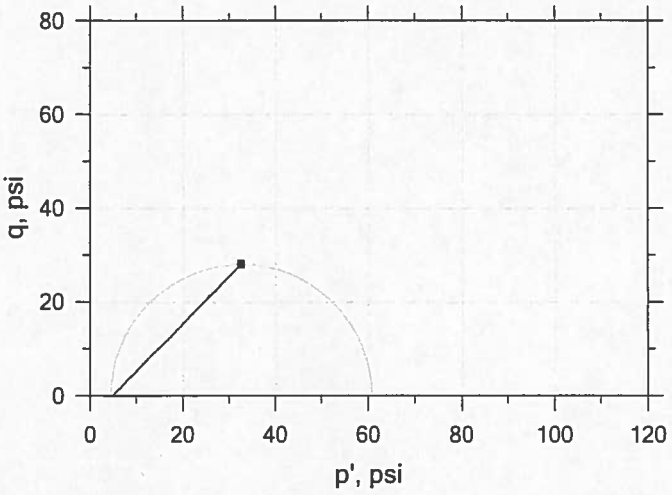
Symbol		■
Sample ID		19-723
Depth, ft		17.5-19'
Test Number		1
Initial	Height, in	6.305
	Diameter, in	2.764
	Moisture Content (from Cuttings), %	19.3
	Dry Density, pcf	101.
	Saturation (Wet Method), %	75.3
	Void Ratio	0.711
Final	Moisture Content, %	25.3
	Dry Density, pcf	102.
	Cross-Sectional Area (Method A), in²	5.974
	Saturation, %	100.0
	Void Ratio	0.700
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		9.965
Horizontal Effective Consolidation Stress, psi		9.973
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		42.01
Strain at Failure, %		2.62
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		84.03
Effective Minor Principal Stress at Failure, psi		5.008
Effective Major Principal Stress at Failure, psi		89.04
B-Value		—

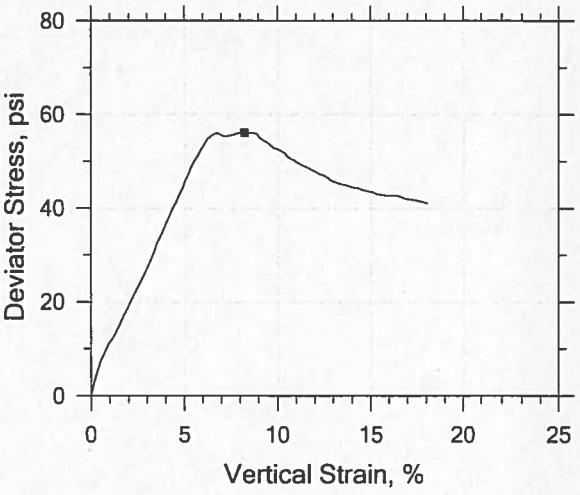
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-723	Test Date: 7/25/19	Depth: 17.5-19'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol		■
Sample ID		19-724
Depth, ft		13.5-15.5'
Test Number		1
Initial	Height, in	3.037
	Diameter, in	1.393
	Moisture Content (from Cuttings), %	23.4
	Dry Density, pcf	93.5
	Saturation (Wet Method), %	80.1
	Void Ratio	0.775
Final	Moisture Content, %	28.7
	Dry Density, pcf	94.1
	Cross-Sectional Area (Method A), in²	1.517
	Saturation, %	100.0
	Void Ratio	0.764
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		4.984
Horizontal Effective Consolidation Stress, psi		4.991
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		28.05
Strain at Failure, %		8.24
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		56.10
Effective Minor Principal Stress at Failure, psi		4.545
Effective Major Principal Stress at Failure, psi		60.64
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USI

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-603	Tested By: SKK	Checked By: SKK
Sample No.: 19-724	Test Date: 7/25/19	Depth: 13.5-15.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5174	-0.0097709	-0.0064391	4.9843	4.9907	0.00000
0.16667	0.15694	0.00000	1.5198	4.2622	2.7969	7.7309	4.9340	0.00000
0.33385	0.31557	0.00000	1.5222	7.6654	5.0206	9.8898	4.8692	0.00000
0.50170	0.47757	0.00000	1.5247	10.685	6.9851	11.838	4.8530	0.00000
0.66823	0.64126	0.00000	1.5272	13.099	8.5468	13.448	4.9016	0.00000
0.83595	0.81170	0.00000	1.5299	15.142	9.8596	14.802	4.9421	0.00000
1.0036	0.94165	0.00000	1.5319	17.031	11.073	15.910	4.8368	0.00000
1.1708	1.1357	0.00000	1.5349	18.774	12.178	17.007	4.8287	0.00000
1.3341	1.2994	0.00000	1.5374	20.637	13.363	18.199	4.8368	0.00000
1.5019	1.4563	0.00000	1.5399	22.649	14.641	19.518	4.8773	0.00000
1.6688	1.6065	0.00000	1.5422	24.643	15.904	20.765	4.8611	0.00000
1.8370	1.7517	0.00000	1.5445	26.605	17.144	21.989	4.8449	0.00000
2.0035	1.9170	0.00000	1.5471	28.626	18.414	23.259	4.8449	0.00000
2.1706	2.0824	0.00000	1.5497	30.735	19.736	24.605	4.8692	0.00000
2.3341	2.2225	0.00000	1.5519	32.796	21.029	25.858	4.8287	0.00000
2.5017	2.4014	0.00000	1.5548	35.036	22.423	27.244	4.8206	0.00000
2.6690	2.5634	0.00000	1.5574	36.836	23.534	28.371	4.8368	0.00000
2.8370	2.7186	0.00000	1.5598	38.985	24.867	29.688	4.8206	0.00000
3.0045	2.8975	0.00000	1.5627	41.258	26.268	31.072	4.8044	0.00000
3.1675	3.0781	0.00000	1.5656	43.536	27.666	32.430	4.7639	0.00000
3.3352	3.2384	0.00000	1.5682	46.075	29.232	34.044	4.8125	0.00000
3.5027	3.4105	0.00000	1.5710	48.756	30.878	35.658	4.7801	0.00000
3.6695	3.5573	0.00000	1.5734	51.465	32.546	37.310	4.7639	0.00000
3.8333	3.7126	0.00000	1.5759	53.460	33.753	38.492	4.7396	0.00000
4.0006	3.8948	0.00000	1.5789	56.134	35.374	40.113	4.7396	0.00000
4.1680	4.0433	0.00000	1.5814	58.782	36.987	41.702	4.7152	0.00000
4.3357	4.2256	0.00000	1.5844	61.286	38.489	43.269	4.7801	0.0081505
4.5025	4.3994	0.00000	1.5873	63.848	40.025	44.749	4.7233	0.0081505
4.6701	4.5563	0.00000	1.5899	66.004	41.308	45.983	4.6747	0.0081505
4.8375	4.7285	0.00000	1.5928	68.568	42.836	47.584	4.7477	0.0081505
5.0014	4.8905	0.00000	1.5955	70.750	44.124	48.847	4.7233	0.0081505
5.1682	5.0457	0.00000	1.5981	73.522	45.779	50.478	4.6990	0.0081505
5.3362	5.2179	0.00000	1.6010	75.965	47.215	51.833	4.6180	0.0081505
5.5038	5.3782	0.00000	1.6037	78.641	48.796	53.406	4.6099	0.0081505
5.6672	5.5554	0.00000	1.6067	80.927	50.120	54.794	4.6747	0.0081505
5.8349	5.7207	0.00000	1.6095	82.600	51.064	55.625	4.5613	0.0081505
6.0023	5.8963	0.00000	1.6125	84.951	52.418	57.037	4.6180	0.0081505
6.1698	6.0768	0.00000	1.6156	86.994	53.574	58.233	4.6585	0.0081505
6.3333	6.2371	0.00000	1.6184	88.775	54.576	59.194	4.6180	0.0081505
6.5007	6.4059	0.00000	1.6213	90.041	55.251	59.910	4.6585	0.0081505
6.6677	6.5713	0.00000	1.6242	90.931	55.695	60.264	4.5694	0.0081505
6.8362	6.7451	0.00000	1.6272	91.635	56.016	60.634	4.6180	0.0081505
7.0046	6.9138	0.00000	1.6301	91.443	55.790	60.432	4.6423	0.0081505
7.1672	7.0590	0.00000	1.6327	91.022	55.438	60.016	4.5775	0.0081505
7.3352	7.2395	0.00000	1.6359	90.965	55.288	59.841	4.5532	0.0081505
7.5030	7.4117	0.00000	1.6389	91.428	55.460	60.030	4.5694	0.0081505
7.6698	7.5770	0.00000	1.6418	91.765	55.559	60.153	4.5937	0.0081505
7.8373	7.7475	0.00000	1.6449	92.252	55.745	60.387	4.6423	0.0081505
8.0010	7.8994	0.00000	1.6476	92.784	55.969	60.596	4.6261	0.0081505
8.1682	8.0884	0.00000	1.6510	92.981	55.966	60.543	4.5775	0.0081505

USI

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-603	Tested By: SKK	Checked By: SKK
Sample No.: 19-724	Test Date: 7/25/19	Depth: 13.5-15.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3357	8.2386	0.00000	1.6537	93.359	56.097	60.650	4.5532	0.0081505
8.5027	8.4208	0.00000	1.6570	93.373	55.985	60.620	4.6342	0.0081505
8.6701	8.5794	0.00000	1.6598	93.558	55.993	60.635	4.6423	0.0081505
8.8333	8.7397	0.00000	1.6628	93.822	56.047	60.616	4.5694	0.0081505
9.0009	8.9119	0.00000	1.6659	93.574	55.784	60.354	4.5694	0.0081505
9.1682	9.0705	0.00000	1.6688	92.376	54.963	59.605	4.6423	0.0081505
9.3357	9.2393	0.00000	1.6719	91.690	54.443	59.094	4.6504	0.0081505
9.5036	9.4198	0.00000	1.6752	91.253	54.066	58.725	4.6585	0.016301
9.6708	9.5869	0.00000	1.6783	90.599	53.569	58.236	4.6666	0.0081505
9.8346	9.7421	0.00000	1.6812	89.673	52.920	57.554	4.6342	0.0081505
10.002	9.9345	0.00000	1.6848	89.388	52.630	57.288	4.6585	0.016301
10.170	10.085	0.00000	1.6876	89.150	52.395	57.005	4.6099	0.0081505
10.333	10.253	0.00000	1.6908	88.786	52.074	56.643	4.5694	0.016301
10.501	10.412	0.00000	1.6938	88.265	51.668	56.342	4.6747	0.016301
10.669	10.571	0.00000	1.6968	87.151	50.913	55.563	4.6504	0.016301
10.837	10.768	0.00000	1.7006	86.507	50.413	55.023	4.6099	0.016301
11.000	10.927	0.00000	1.7036	86.141	50.102	54.680	4.5775	0.016301
11.167	11.087	0.00000	1.7067	85.521	49.642	54.211	4.5694	0.0081505
11.335	11.252	0.00000	1.7098	85.061	49.274	53.956	4.6828	0.0081505
11.502	11.418	0.00000	1.7130	84.655	48.938	53.629	4.6909	0.016301
11.670	11.598	0.00000	1.7165	84.254	48.597	53.272	4.6747	0.016301
11.833	11.742	0.00000	1.7193	83.930	48.324	52.917	4.5937	0.016301
12.001	11.926	0.00000	1.7229	83.433	47.927	52.520	4.5937	0.016301
12.168	12.083	0.00000	1.7260	83.120	47.653	52.255	4.6018	0.016301
12.335	12.253	0.00000	1.7293	82.652	47.283	51.893	4.6099	0.0081505
12.502	12.435	0.00000	1.7329	82.416	47.042	51.733	4.6909	0.0081505
12.670	12.611	0.00000	1.7364	82.065	46.737	51.331	4.5937	0.016301
12.836	12.765	0.00000	1.7395	81.339	46.232	50.874	4.6423	0.016301
13.002	12.960	0.00000	1.7434	80.553	45.669	50.352	4.6828	0.0081505
13.169	13.117	0.00000	1.7465	80.451	45.522	50.100	4.5775	0.0081505
13.334	13.272	0.00000	1.7497	80.117	45.244	49.926	4.6828	0.0081505
13.503	13.453	0.00000	1.7533	79.956	45.050	49.757	4.7071	0.0081505
13.671	13.630	0.00000	1.7569	79.877	44.906	49.548	4.6423	0.0081505
13.835	13.812	0.00000	1.7606	79.750	44.731	49.389	4.6585	0.0081505
14.003	13.956	0.00000	1.7636	79.466	44.490	49.165	4.6747	0.0081505
14.171	14.108	0.00000	1.7667	79.321	44.323	48.949	4.6261	0.0081505
14.334	14.288	0.00000	1.7704	79.446	44.293	48.919	4.6261	0.0081505
14.502	14.479	0.00000	1.7744	79.043	43.960	48.578	4.6180	0.0081505
14.670	14.653	0.00000	1.7780	78.857	43.759	48.377	4.6180	0.0081505
14.833	14.812	0.00000	1.7813	78.772	43.623	48.201	4.5775	0.0081505
15.001	14.974	0.00000	1.7847	78.613	43.445	48.039	4.5937	0.0081505
15.169	15.154	0.00000	1.7885	78.563	43.317	48.000	4.6828	0.0081505
15.338	15.298	0.00000	1.7915	78.261	43.069	47.712	4.6423	0.0081505
15.505	15.471	0.00000	1.7952	78.087	42.877	47.463	4.5856	0.0081505
15.668	15.659	0.00000	1.7992	78.195	42.835	47.493	4.6585	0.0081505
15.836	15.817	0.00000	1.8026	78.071	42.679	47.337	4.6585	0.0081505
16.001	15.974	0.00000	1.8059	78.326	42.735	47.361	4.6261	0.00000
16.171	16.155	0.00000	1.8098	78.295	42.618	47.245	4.6261	0.0081505
16.335	16.302	0.00000	1.8130	78.568	42.688	47.347	4.6585	0.00000
16.503	16.494	0.00000	1.8172	78.613	42.608	47.201	4.5937	0.0081505

USL

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-603	Tested By: SKK	Checked By: SKK
Sample No.: 19-724	Test Date: 7/25/19	Depth: 13.5-15.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

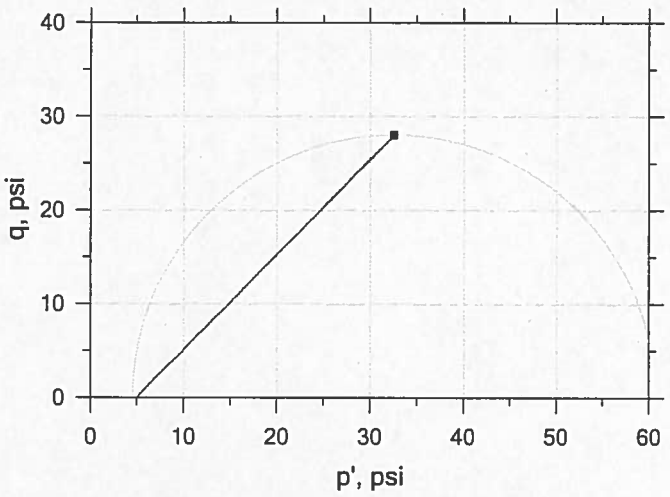
Shear Phase

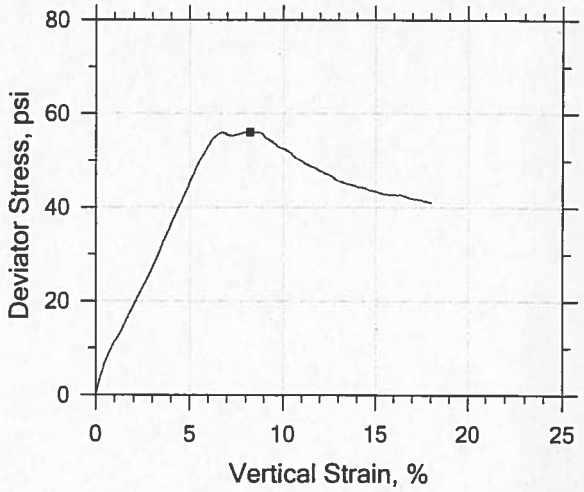
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.668	16.642	0.00000	1.8204	78.167	42.281	46.923	4.6423	0.00000
16.837	16.821	0.00000	1.8243	77.855	42.012	46.662	4.6504	0.00000
17.002	16.988	0.00000	1.8280	77.864	41.926	46.536	4.6099	0.00000
17.167	17.159	0.00000	1.8317	77.827	41.813	46.447	4.6342	0.00000
17.337	17.312	0.00000	1.8352	77.741	41.683	46.284	4.6018	0.00000
17.502	17.471	0.00000	1.8387	77.741	41.596	46.198	4.6018	0.00000
17.667	17.625	0.00000	1.8421	77.558	41.414	45.999	4.5856	0.00000
17.836	17.829	0.00000	1.8467	77.537	41.291	45.974	4.6828	0.00000
18.002	17.981	0.00000	1.8501	77.324	41.094	45.753	4.6585	0.00000
18.067	18.040	0.00000	1.8514	77.262	41.029	45.687	4.6585	0.00000

USI

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-603	Tested By: SKK	Checked By: SKK
Sample No.: 19-724	Test Date: 7/25/19	Depth: 13.5-15.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





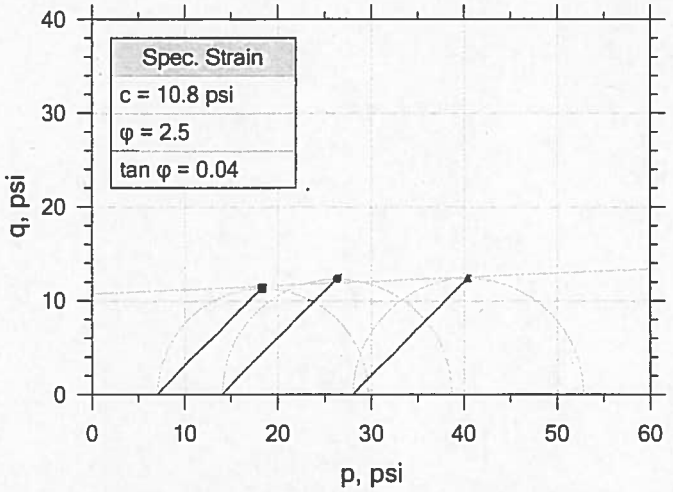
Symbol		■
Sample ID		19-724
Depth, ft		13.5-15.5'
Test Number		1
Initial	Height, in	3.037
	Diameter, in	1.393
	Moisture Content (from Cuttings), %	23.4
	Dry Density, pcf	93.5
	Saturation (Wet Method), %	80.1
	Void Ratio	0.775
Final	Moisture Content, %	28.7
	Dry Density, pcf	94.1
	Cross-Sectional Area (Method A), in²	1.517
	Saturation, %	100.0
	Void Ratio	0.764
	Back Pressure, %	0.0000
Vertical Effective Consolidation Stress, psi		4.984
Horizontal Effective Consolidation Stress, psi		4.991
Vertical Strain after Consolidation, %		0.0000
Volumetric Strain after Consolidation, %		0.0000
Time to 50% Consolidation, min		0.0000
Shear Strength, psi		28.05
Strain at Failure, %		8.24
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		56.10
Effective Minor Principal Stress at Failure, psi		4.545
Effective Major Principal Stress at Failure, psi		60.64
B-Value		---

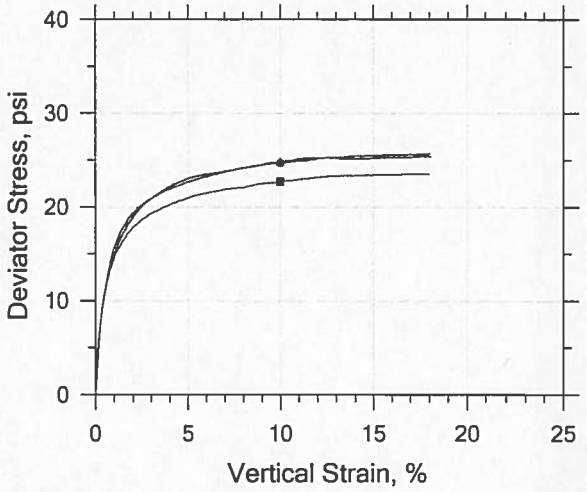
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-086WB
Boring No.: B-603	Tested By: SKK	Checked By: SKK
Sample No.: 19-724	Test Date: 7/25/19	Depth: 13.5-15.5'
Test No.: 1	Sample Type: CORE	Elevation: N/A
Description:		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





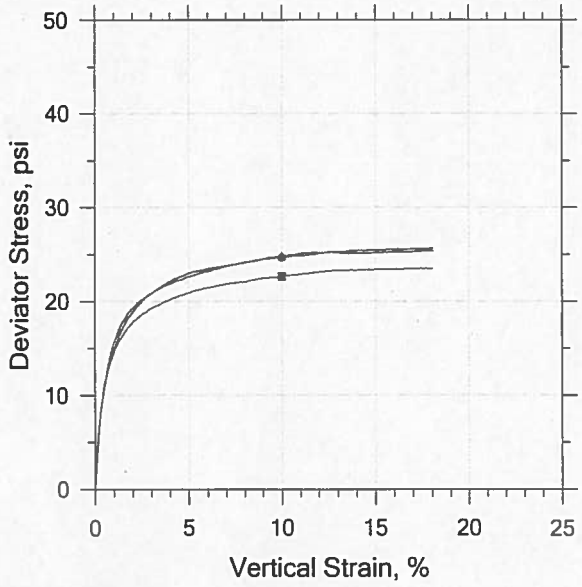
		■	●	▲
Symbol		■	●	▲
Sample ID		19-COMP1	19-COMP1	19-COMP1
Depth, ft		0-4'	0-4'	0-4'
Test Number		1	2	3
Initial	Height, in	3.001	3.001	3.001
	Diameter, in	1.400	1.400	1.400
	Moisture Content (from Cuttings), %	20.4	20.4	20.8
	Dry Density, pcf	102.	102.	102.
	Saturation (Wet Method), %	84.5	84.7	85.5
	Void Ratio	0.650	0.651	0.656
Final	Moisture Content, %	23.8	23.6	23.1
	Dry Density, pcf	103.	103.	104.
	Cross-Sectional Area (Method A), in²	1.535	1.530	1.520
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.643	0.636	0.624
	Back Pressure, %	0.0000	0.0000	0.0000
Vertical Effective Consolidation Stress, psi		7.002	13.97	28.00
Horizontal Effective Consolidation Stress, psi		6.992	13.99	28.00
Vertical Strain after Consolidation, %		0.0000	0.0000	0.0000
Volumetric Strain after Consolidation, %		0.0000	0.0000	0.0000
Time to 50% Consolidation, s		0.0000	0.0000	0.0000
Shear Strength, psi		11.34	12.34	12.42
Strain at Failure, %		10.0	10.0	10.0
Strain Rate, %/s		0.01667	0.01667	0.01667
Deviator Stress at Failure, psi		22.68	24.69	24.83
Effective Minor Principal Stress at Failure, psi		7.057	14.04	28.02
Effective Major Principal Stress at Failure, psi		29.73	38.72	52.85
B-Value		---	---	---

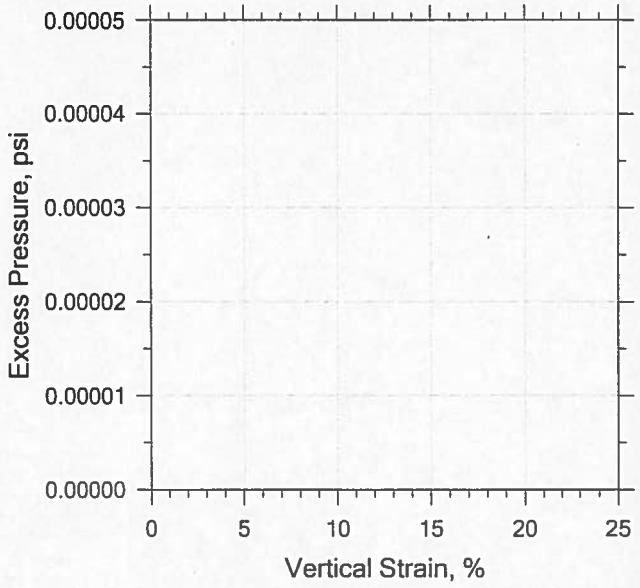
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

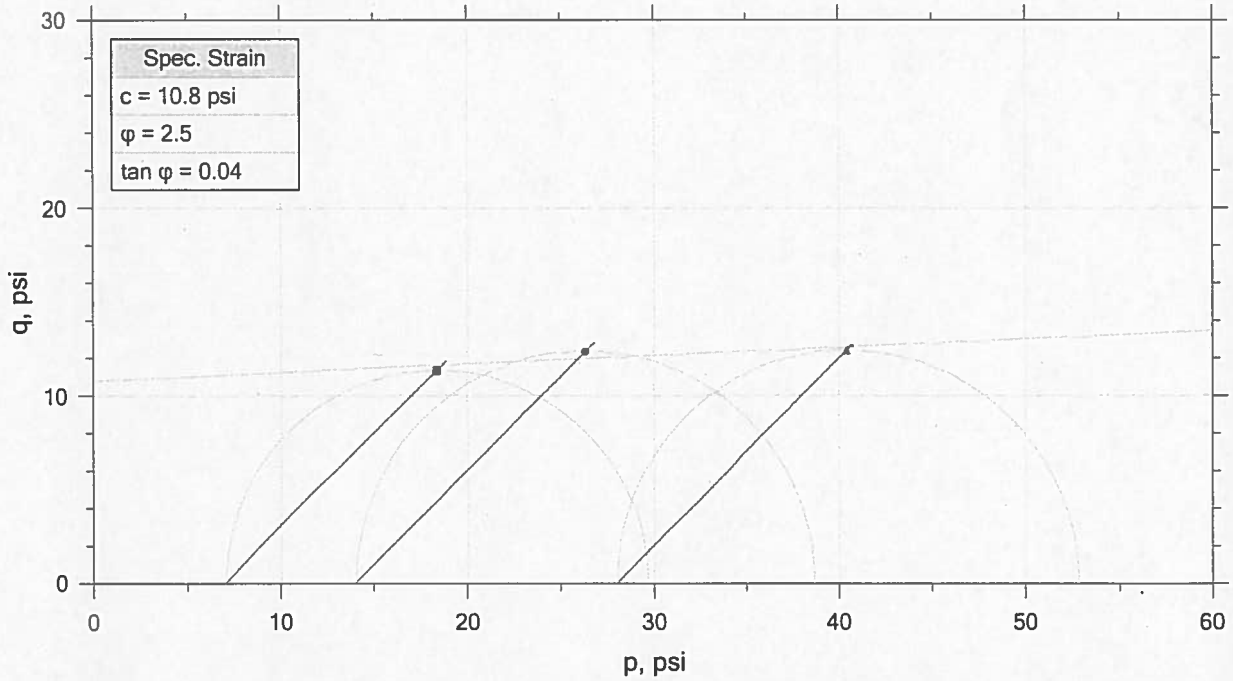
USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP1	Test Date: 4/8/19	Depth: 0-4'
Test No.: 1	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-1-1, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	19-COMP1	1	0-4'	SKK	4/8/19	SKK	4/15/19	UU-19-COMP1TX-07-eng.dat
●	19-COMP1	2	0-4'	SKK	4/8/19	SKK	4/15/19	UU-19-COMP1TX-14-eng.dat
▲	19-COMP1	3	0-4'	SKK	4/8/19	SKK	4/15/19	UU-19-COMP1TX-28-eng.dat

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP1	Test Date: 4/8/19	Depth: 0-4'
Test No.: 1	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-1-1, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time s	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5352	0.016342	0.010645	7.0025	6.9919	0.00000
10.225	0.16552	0.00000	1.5377	7.5271	4.8872	11.798	6.9108	0.00000
20.038	0.29692	0.00000	1.5397	12.384	8.0292	14.908	6.8784	-0.0081505
30.042	0.46415	0.00000	1.5423	15.979	10.338	17.273	6.9351	-0.0081505
40.054	0.61431	0.00000	1.5447	18.643	12.041	19.016	6.9756	-0.0081505
50.132	0.78666	0.00000	1.5473	20.723	13.356	20.348	6.9919	-0.0081505
60.187	0.95389	0.00000	1.5500	22.250	14.311	21.286	6.9756	-0.0081505
70.241	1.0870	0.00000	1.5520	23.523	15.105	22.089	6.9838	-0.0081505
80.038	1.2764	0.00000	1.5550	24.549	15.727	22.711	6.9838	-0.0081505
90.125	1.4385	0.00000	1.5576	25.449	16.272	23.264	6.9919	-0.0081505
100.15	1.6092	0.00000	1.5603	26.288	16.774	23.765	6.9919	-0.0081505
110.21	1.7525	0.00000	1.5626	27.003	17.200	24.192	6.9919	-0.016301
120.25	1.9044	0.00000	1.5650	27.625	17.564	24.556	6.9919	-0.016301
130.01	2.0631	0.00000	1.5675	28.216	17.905	24.897	6.9919	-0.016301
140.10	2.2303	0.00000	1.5702	28.712	18.182	25.182	7.0000	-0.016301
150.12	2.3788	0.00000	1.5726	29.180	18.446	25.437	6.9919	-0.016301
160.15	2.5511	0.00000	1.5754	29.644	18.700	25.700	7.0000	-0.016301
170.21	2.7235	0.00000	1.5782	29.985	18.875	25.883	7.0081	-0.016301
180.03	2.8719	0.00000	1.5806	30.423	19.117	26.109	6.9919	-0.016301
190.09	3.0443	0.00000	1.5834	30.826	19.329	26.329	7.0000	-0.016301
200.19	3.2337	0.00000	1.5865	31.168	19.498	26.498	7.0000	-0.016301
210.03	3.3924	0.00000	1.5891	31.480	19.656	26.648	6.9919	-0.024451
220.10	3.5613	0.00000	1.5919	31.822	19.828	26.820	6.9919	-0.024451
230.19	3.7132	0.00000	1.5944	32.163	20.004	27.004	7.0000	-0.024451
240.27	3.8753	0.00000	1.5971	32.380	20.099	27.099	7.0000	-0.024451
250.04	4.0493	0.00000	1.6000	32.722	20.268	27.268	7.0000	-0.024451
260.07	4.2098	0.00000	1.6026	32.971	20.383	27.382	7.0000	-0.024451
270.15	4.3855	0.00000	1.6056	33.220	20.492	27.492	7.0000	-0.024451
280.21	4.5527	0.00000	1.6084	33.562	20.661	27.661	7.0000	-0.024451
290.02	4.7114	0.00000	1.6111	33.717	20.716	27.716	7.0000	-0.024451
300.08	4.8872	0.00000	1.6141	34.028	20.863	27.863	7.0000	-0.024451
310.13	5.0613	0.00000	1.6170	34.246	20.951	27.951	7.0000	-0.032602
320.24	5.2165	0.00000	1.6197	34.588	21.121	28.121	7.0000	-0.032602
330.06	5.3923	0.00000	1.6227	34.774	21.189	28.189	7.0000	-0.032602
340.10	5.5544	0.00000	1.6255	34.961	21.261	28.261	7.0000	-0.032602
350.19	5.7421	0.00000	1.6287	35.178	21.344	28.344	7.0000	-0.032602
360.26	5.9076	0.00000	1.6316	35.365	21.413	28.413	7.0000	-0.032602
370.07	6.0885	0.00000	1.6347	35.583	21.497	28.497	7.0000	-0.032602
380.16	6.2592	0.00000	1.6377	35.799	21.582	28.590	7.0081	-0.032602
390.22	6.4349	0.00000	1.6408	35.956	21.630	28.630	7.0000	-0.032602
400.02	6.5987	0.00000	1.6436	36.173	21.717	28.717	7.0000	-0.032602
410.10	6.7626	0.00000	1.6465	36.298	21.747	28.747	7.0000	-0.032602
420.18	6.9264	0.00000	1.6494	36.515	21.834	28.834	7.0000	-0.032602
430.26	7.1004	0.00000	1.6525	36.700	21.897	28.905	7.0081	-0.040752
440.04	7.2455	0.00000	1.6551	36.826	21.933	28.933	7.0000	-0.032602
450.08	7.4212	0.00000	1.6582	36.980	21.976	28.984	7.0081	-0.040752
460.15	7.5936	0.00000	1.6613	37.075	21.985	28.985	7.0000	-0.040752
470.19	7.7574	0.00000	1.6643	37.293	22.070	29.070	7.0000	-0.040752
480.24	7.9161	0.00000	1.6672	37.355	22.062	29.062	7.0000	-0.040752
490.26	8.0646	0.00000	1.6698	37.479	22.095	29.095	7.0000	-0.040752

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP1	Test Date: 4/8/19	Depth: 0-4'
Test No.: 1	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-1-1, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time s	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
500.07	8.2318	0.00000	1.6729	37.788	22.232	29.240	7.0081	-0.040752
510.16	8.3939	0.00000	1.6758	37.913	22.260	29.268	7.0081	-0.040752
520.23	8.5697	0.00000	1.6791	38.101	22.322	29.322	7.0000	-0.040752
530.02	8.7318	0.00000	1.6821	38.317	22.404	29.412	7.0081	-0.048903
540.09	8.8905	0.00000	1.6850	38.476	22.452	29.444	6.9919	-0.040752
550.16	9.0475	0.00000	1.6879	38.628	22.497	29.505	7.0081	-0.040752
560.24	9.2249	0.00000	1.6912	38.723	22.502	29.501	7.0000	-0.048903
570.05	9.3734	0.00000	1.6940	38.877	22.549	29.557	7.0081	-0.048903
580.09	9.5474	0.00000	1.6972	39.003	22.573	29.573	7.0000	-0.048903
590.10	9.7181	0.00000	1.7004	39.096	22.578	29.578	7.0000	-0.048903
600.14	9.8921	0.00000	1.7037	39.343	22.672	29.680	7.0081	-0.048903
610.16	10.054	0.00000	1.7068	39.436	22.679	29.687	7.0081	-0.048903
620.23	10.213	0.00000	1.7098	39.654	22.759	29.767	7.0081	-0.048903
630.28	10.382	0.00000	1.7130	39.778	22.782	29.790	7.0081	-0.048903
640.24	10.554	0.00000	1.7163	39.873	22.786	29.786	7.0000	-0.048903
650.04	10.725	0.00000	1.7196	40.058	22.843	29.851	7.0081	-0.048903
660.12	10.899	0.00000	1.7230	40.181	22.862	29.878	7.0162	-0.057054
670.13	11.049	0.00000	1.7259	40.369	22.926	29.935	7.0081	-0.057054
680.16	11.232	0.00000	1.7294	40.524	22.962	29.970	7.0081	-0.057054
690.27	11.382	0.00000	1.7324	40.649	22.988	29.996	7.0081	-0.057054
700.02	11.535	0.00000	1.7354	40.837	23.051	30.051	7.0000	-0.057054
710.02	11.708	0.00000	1.7387	40.991	23.087	30.095	7.0081	-0.057054
720.09	11.875	0.00000	1.7420	41.146	23.125	30.133	7.0081	-0.057054
730.12	12.052	0.00000	1.7456	41.333	23.178	30.186	7.0081	-0.057054
740.15	12.230	0.00000	1.7491	41.457	23.195	30.203	7.0081	-0.057054
750.22	12.387	0.00000	1.7522	41.613	23.236	30.244	7.0081	-0.057054
760.24	12.549	0.00000	1.7555	41.706	23.240	30.248	7.0081	-0.057054
770.05	12.718	0.00000	1.7589	41.892	23.294	30.302	7.0081	-0.057054
780.09	12.889	0.00000	1.7623	41.955	23.276	30.285	7.0081	-0.057054
790.15	13.088	0.00000	1.7664	42.048	23.268	30.276	7.0081	-0.065204
800.23	13.250	0.00000	1.7697	42.234	23.323	30.331	7.0081	-0.065204
810.05	13.404	0.00000	1.7728	42.297	23.311	30.319	7.0081	-0.065204
820.01	13.580	0.00000	1.7764	42.421	23.326	30.334	7.0081	-0.065204
830.05	13.747	0.00000	1.7799	42.576	23.362	30.370	7.0081	-0.065204
840.14	13.909	0.00000	1.7832	42.547	23.295	30.295	7.0000	-0.065204
850.12	14.078	0.00000	1.7867	42.763	23.363	30.371	7.0081	-0.065204
860.23	14.254	0.00000	1.7904	42.856	23.360	30.368	7.0081	-0.065204
870.08	14.419	0.00000	1.7938	42.981	23.378	30.386	7.0081	-0.065204
880.16	14.568	0.00000	1.7970	43.105	23.400	30.408	7.0081	-0.065204
890.21	14.754	0.00000	1.8009	43.165	23.375	30.392	7.0162	-0.065204
900.21	14.892	0.00000	1.8038	43.290	23.401	30.417	7.0162	-0.065204
910.02	15.071	0.00000	1.8076	43.416	23.414	30.422	7.0081	-0.073354
920.07	15.225	0.00000	1.8109	43.569	23.451	30.467	7.0162	-0.073354
930.16	15.402	0.00000	1.8147	43.637	23.432	30.423	6.9919	-0.073354
940.24	15.561	0.00000	1.8181	43.756	23.447	30.463	7.0162	-0.073354
950.07	15.721	0.00000	1.8215	43.820	23.431	30.439	7.0081	-0.073354
960.17	15.909	0.00000	1.8256	43.913	23.422	30.430	7.0081	-0.073354
970.13	16.068	0.00000	1.8291	44.069	23.457	30.465	7.0081	-0.073354
980.19	16.223	0.00000	1.8325	44.162	23.458	30.466	7.0081	-0.073354
990.04	16.394	0.00000	1.8362	44.162	23.404	30.412	7.0081	-0.073354

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP1	Test Date: 4/8/19	Depth: 0-4'
Test No.: 1	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-1-1, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time s	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
1000.1	16.549	0.00000	1.8396	44.380	23.472	30.481	7.0081	-0.073354
1010.2	16.733	0.00000	1.8437	44.502	23.480	30.496	7.0162	-0.073354
1020.3	16.895	0.00000	1.8473	44.658	23.512	30.528	7.0162	-0.073354
1030.3	17.056	0.00000	1.8509	44.722	23.495	30.503	7.0081	-0.073354
1040.0	17.220	0.00000	1.8545	44.784	23.476	30.484	7.0081	-0.081505
1050.1	17.399	0.00000	1.8585	44.970	23.518	30.526	7.0081	-0.081505
1060.2	17.549	0.00000	1.8619	45.036	23.505	30.497	6.9919	-0.081505
1070.3	17.706	0.00000	1.8655	45.188	23.535	30.544	7.0081	-0.081505
1080.1	17.858	0.00000	1.8689	45.219	23.503	30.511	7.0081	-0.081505
1089.8	18.030	0.00000	1.8729	45.281	23.480	30.488	7.0081	-0.081505

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP1	Test Date: 4/8/19	Depth: 0-4'
Test No.: 1	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-1-1, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time s	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5302	-0.031280	-0.020442	13.971	13.992	0.00000
10.015	0.17263	0.00000	1.5328	8.5241	5.5529	19.520	13.968	0.00000
20.046	0.32133	0.00000	1.5351	13.191	8.5780	22.529	13.951	0.00000
30.115	0.48712	0.00000	1.5377	16.860	10.942	24.893	13.951	0.00000
40.140	0.64437	0.00000	1.5401	19.653	12.731	26.706	13.976	0.00000
50.234	0.80503	0.00000	1.5426	22.043	14.252	28.244	13.992	0.00000
60.067	0.95715	0.00000	1.5450	23.911	15.432	29.415	13.984	0.00000
70.156	1.1417	0.00000	1.5478	25.368	16.336	30.336	14.000	0.00000
80.249	1.2802	0.00000	1.5500	26.617	17.113	31.088	13.976	0.00000
90.066	1.4306	0.00000	1.5524	27.578	17.698	31.690	13.992	0.00000
100.11	1.5998	0.00000	1.5550	28.357	18.161	32.144	13.984	0.00000
110.19	1.7348	0.00000	1.5572	29.227	18.689	32.672	13.984	0.00000
120.04	1.9211	0.00000	1.5601	29.972	19.122	33.113	13.992	0.00000
130.09	2.0784	0.00000	1.5626	30.529	19.441	33.441	14.000	0.00000
140.19	2.2305	0.00000	1.5651	31.087	19.760	33.768	14.008	0.00000
150.28	2.3929	0.00000	1.5677	31.588	20.039	34.031	13.992	-0.0081505
160.08	2.5518	0.00000	1.5702	32.055	20.296	34.288	13.992	-0.0081505
170.16	2.7125	0.00000	1.5728	32.453	20.509	34.525	14.016	-0.0081505
180.24	2.8663	0.00000	1.5753	32.863	20.729	34.721	13.992	-0.0081505
190.05	3.0338	0.00000	1.5780	33.236	20.922	34.914	13.992	-0.0081505
200.16	3.2167	0.00000	1.5810	33.607	21.109	35.109	14.000	-0.0081505
210.25	3.3876	0.00000	1.5838	33.982	21.301	35.293	13.992	-0.0081505
220.27	3.5551	0.00000	1.5866	34.290	21.450	35.458	14.008	-0.0081505
230.06	3.7260	0.00000	1.5894	34.697	21.661	35.653	13.992	-0.0081505
240.15	3.8713	0.00000	1.5918	34.977	21.797	35.789	13.992	-0.0081505
250.22	4.0286	0.00000	1.5944	35.248	21.925	35.957	14.032	-0.0081505
260.23	4.2166	0.00000	1.5975	35.599	22.093	36.085	13.992	-0.0081505
270.06	4.3773	0.00000	1.6002	35.844	22.202	36.210	14.008	-0.0081505
280.09	4.5482	0.00000	1.6031	36.032	22.272	36.272	14.000	-0.0081505
290.16	4.7225	0.00000	1.6060	36.314	22.399	36.390	13.992	-0.0081505
300.24	4.8763	0.00000	1.6086	36.685	22.586	36.586	14.000	-0.016301
310.03	5.0524	0.00000	1.6116	36.872	22.652	36.652	14.000	-0.016301
320.12	5.2096	0.00000	1.6143	37.154	22.782	36.774	13.992	-0.016301
330.21	5.3857	0.00000	1.6173	37.401	22.885	36.885	14.000	-0.016301
340.26	5.5532	0.00000	1.6201	37.651	22.991	36.983	13.992	-0.016301
350.06	5.7258	0.00000	1.6231	37.867	23.075	37.075	14.000	-0.016301
360.18	5.8916	0.00000	1.6260	38.147	23.199	37.199	14.000	-0.016301
370.25	6.0711	0.00000	1.6291	38.271	23.223	37.223	14.000	-0.016301
380.06	6.2386	0.00000	1.6320	38.582	23.365	37.364	14.000	-0.016301
390.15	6.4180	0.00000	1.6351	38.800	23.445	37.445	14.000	-0.016301
400.22	6.5855	0.00000	1.6380	38.955	23.491	37.490	14.000	-0.016301
410.03	6.7445	0.00000	1.6408	39.174	23.577	37.569	13.992	-0.016301
420.13	6.9103	0.00000	1.6438	39.421	23.678	37.678	14.000	-0.016301
430.19	7.0863	0.00000	1.6469	39.639	23.758	37.758	14.000	-0.016301
440.25	7.2419	0.00000	1.6496	39.857	23.843	37.843	14.000	-0.016301
450.10	7.4042	0.00000	1.6525	40.043	23.907	37.907	14.000	-0.016301
460.17	7.5752	0.00000	1.6556	40.230	23.968	37.968	14.000	-0.024451
470.22	7.7392	0.00000	1.6585	40.416	24.031	38.031	14.000	-0.024451
480.06	7.8965	0.00000	1.6614	40.572	24.077	38.077	14.000	-0.024451
490.06	8.0452	0.00000	1.6640	40.727	24.125	38.125	14.000	-0.024451

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP1	Test Date: 4/8/19	Depth: 0-4'
Test No.: 2	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-1-1, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time s	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
500.17	8.2212	0.00000	1.6672	40.943	24.201	38.209	14.008	-0.024451
510.17	8.3836	0.00000	1.6702	41.100	24.245	38.245	14.000	-0.024451
520.23	8.5545	0.00000	1.6733	41.225	24.267	38.267	14.000	-0.024451
530.05	8.7237	0.00000	1.6764	41.442	24.344	38.344	14.000	-0.024451
540.15	8.8707	0.00000	1.6791	41.629	24.410	38.410	14.000	-0.024451
550.19	9.0365	0.00000	1.6822	41.845	24.487	38.495	14.008	-0.024451
560.26	9.2091	0.00000	1.6854	42.000	24.525	38.533	14.008	-0.024451
570.04	9.3698	0.00000	1.6884	42.125	24.548	38.556	14.008	-0.024451
580.11	9.5356	0.00000	1.6915	42.280	24.588	38.596	14.008	-0.024451
590.19	9.7048	0.00000	1.6946	42.435	24.627	38.635	14.008	-0.024451
600.04	9.8774	0.00000	1.6979	42.531	24.628	38.628	14.000	-0.024451
610.09	10.040	0.00000	1.7009	42.746	24.704	38.712	14.008	-0.032602
620.17	10.207	0.00000	1.7041	42.841	24.707	38.706	14.000	-0.032602
630.29	10.371	0.00000	1.7072	42.997	24.746	38.745	14.000	-0.032602
640.05	10.537	0.00000	1.7104	43.152	24.784	38.784	14.000	-0.032602
650.12	10.713	0.00000	1.7138	43.368	24.853	38.861	14.008	-0.032602
660.23	10.889	0.00000	1.7172	43.461	24.851	38.859	14.008	-0.032602
670.03	11.045	0.00000	1.7202	43.619	24.893	38.893	14.000	-0.032602
680.09	11.214	0.00000	1.7234	43.712	24.892	38.892	14.000	-0.032602
690.13	11.364	0.00000	1.7264	43.867	24.934	38.934	14.000	-0.032602
700.11	11.518	0.00000	1.7294	44.052	24.991	38.999	14.008	-0.032602
710.17	11.698	0.00000	1.7329	44.241	25.042	39.042	14.000	-0.032602
720.28	11.869	0.00000	1.7362	44.334	25.040	39.040	14.000	-0.032602
730.06	12.038	0.00000	1.7396	44.643	25.162	39.170	14.008	-0.032602
740.17	12.214	0.00000	1.7431	44.767	25.176	39.184	14.008	-0.032602
750.25	12.369	0.00000	1.7462	44.892	25.196	39.204	14.008	-0.040752
760.05	12.530	0.00000	1.7494	45.173	25.304	39.304	14.000	-0.040752
770.12	12.701	0.00000	1.7528	45.234	25.282	39.290	14.008	-0.040752
780.21	12.875	0.00000	1.7563	45.327	25.278	39.286	14.008	-0.040752
790.23	13.062	0.00000	1.7601	45.451	25.287	39.295	14.008	-0.040752
800.01	13.226	0.00000	1.7634	45.609	25.321	39.321	14.000	-0.040752
810.10	13.385	0.00000	1.7666	45.700	25.320	39.328	14.008	-0.040752
820.16	13.559	0.00000	1.7702	45.855	25.350	39.358	14.008	-0.040752
830.23	13.728	0.00000	1.7737	46.046	25.401	39.392	13.992	-0.040752
840.07	13.896	0.00000	1.7771	46.075	25.361	39.361	14.000	-0.040752
850.12	14.051	0.00000	1.7803	46.322	25.448	39.456	14.008	-0.040752
860.22	14.224	0.00000	1.7839	46.420	25.445	39.428	13.984	-0.040752
870.04	14.397	0.00000	1.7875	46.477	25.418	39.426	14.008	-0.040752
880.08	14.544	0.00000	1.7906	46.633	25.456	39.464	14.008	-0.040752
890.14	14.735	0.00000	1.7946	46.788	25.477	39.486	14.008	-0.040752
900.22	14.879	0.00000	1.7976	46.881	25.481	39.489	14.008	-0.048903
910.01	15.056	0.00000	1.8014	46.975	25.472	39.480	14.008	-0.048903
920.11	15.208	0.00000	1.8046	47.068	25.472	39.480	14.008	-0.048903
930.20	15.386	0.00000	1.8084	47.192	25.480	39.488	14.008	-0.048903
940.25	15.540	0.00000	1.8117	47.379	25.531	39.539	14.008	-0.048903
950.05	15.702	0.00000	1.8152	47.503	25.544	39.552	14.008	-0.048903
960.13	15.896	0.00000	1.8194	47.628	25.546	39.554	14.008	-0.048903
970.20	16.051	0.00000	1.8227	47.721	25.544	39.552	14.008	-0.048903
980.01	16.200	0.00000	1.8260	47.876	25.578	39.586	14.008	-0.048903
990.09	16.376	0.00000	1.8298	47.876	25.517	39.525	14.008	-0.048903

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP1	Test Date: 4/8/19	Depth: 0-4'
Test No.: 2	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-1-1, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time s	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
1000.1	16.536	0.00000	1.8333	48.123	25.596	39.612	14.016	-0.048903
1010.1	16.721	0.00000	1.8374	48.156	25.550	39.558	14.008	-0.048903
1020.1	16.873	0.00000	1.8408	48.310	25.581	39.597	14.016	-0.048903
1030.2	17.042	0.00000	1.8445	48.467	25.608	39.616	14.008	-0.048903
1040.2	17.210	0.00000	1.8483	48.529	25.583	39.591	14.008	-0.048903
1050.1	17.386	0.00000	1.8522	48.714	25.622	39.638	14.016	-0.048903
1060.1	17.535	0.00000	1.8555	48.807	25.620	39.636	14.016	-0.057054
1070.2	17.687	0.00000	1.8590	48.932	25.634	39.650	14.016	-0.048903
1080.3	17.846	0.00000	1.8626	49.056	25.645	39.661	14.016	-0.057054
1090.0	18.023	0.00000	1.8666	49.213	25.667	39.675	14.008	-0.057054
1091.1	18.056	0.00000	1.8673	49.275	25.688	39.697	14.008	-0.057054

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP1	Test Date: 4/8/19	Depth: 0-4'
Test No.: 2	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-1-1, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time s	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5196	-0.0039426	-0.0025944	27.997	28.000	0.00000
10.014	0.15607	0.00000	1.5220	8.5914	5.6374	33.572	27.935	0.00000
20.029	0.32757	0.00000	1.5246	13.298	8.7064	36.731	28.024	0.00000
30.114	0.47335	0.00000	1.5269	16.507	10.789	38.781	27.992	0.00000
40.170	0.63113	0.00000	1.5293	19.148	12.491	40.491	28.000	0.00000
50.202	0.83350	0.00000	1.5324	21.028	13.683	41.618	27.935	0.00000
60.037	0.97585	0.00000	1.5346	22.725	14.763	42.754	27.992	0.00000
70.092	1.1353	0.00000	1.5371	24.102	15.627	43.578	27.951	0.00000
80.170	1.2811	0.00000	1.5394	25.249	16.342	44.310	27.967	0.00000
90.273	1.4441	0.00000	1.5419	26.363	17.030	45.022	27.992	0.00000
100.03	1.6036	0.00000	1.5444	27.294	17.598	45.598	28.000	0.00000
110.12	1.7528	0.00000	1.5467	28.256	18.186	46.194	28.008	0.00000
120.22	1.9225	0.00000	1.5494	28.999	18.626	46.650	28.024	0.00000
130.20	2.0700	0.00000	1.5518	29.785	19.098	47.082	27.984	0.00000
140.26	2.2467	0.00000	1.5546	30.469	19.495	47.479	27.984	0.00000
150.08	2.4233	0.00000	1.5574	31.063	19.834	47.801	27.967	0.00000
160.14	2.5605	0.00000	1.5596	31.683	20.197	48.172	27.976	0.00000
170.20	2.7303	0.00000	1.5623	32.177	20.470	48.462	27.992	-0.0081505
180.26	2.9018	0.00000	1.5650	32.581	20.684	48.676	27.992	-0.0081505
190.05	3.0802	0.00000	1.5679	33.110	20.975	48.967	27.992	-0.0081505
200.09	3.2448	0.00000	1.5706	33.514	21.189	49.181	27.992	-0.0081505
210.17	3.4060	0.00000	1.5732	33.980	21.443	49.435	27.992	-0.0081505
220.25	3.5896	0.00000	1.5762	34.416	21.670	49.662	27.992	-0.0081505
230.03	3.7336	0.00000	1.5786	34.726	21.828	49.820	27.992	-0.0081505
240.09	3.9000	0.00000	1.5813	35.127	22.036	50.044	28.008	-0.0081505
250.09	4.0732	0.00000	1.5842	35.442	22.187	50.179	27.992	-0.0081505
260.16	4.2378	0.00000	1.5869	35.877	22.416	50.408	27.992	-0.0081505
270.22	4.3973	0.00000	1.5895	36.093	22.507	50.507	28.000	-0.0081505
280.03	4.5706	0.00000	1.5924	36.404	22.654	50.654	28.000	-0.0081505
290.11	4.7301	0.00000	1.5951	36.652	22.765	50.764	28.000	-0.0081505
300.16	4.8930	0.00000	1.5978	36.994	22.932	50.932	28.000	-0.0081505
310.22	5.0782	0.00000	1.6009	37.336	23.093	51.093	28.000	-0.0081505
320.03	5.2583	0.00000	1.6040	37.556	23.178	51.170	27.992	-0.0081505
330.11	5.4384	0.00000	1.6070	37.772	23.260	51.260	28.000	-0.0081505
340.17	5.5910	0.00000	1.6096	37.927	23.312	51.312	28.000	-0.0081505
350.22	5.7659	0.00000	1.6126	38.083	23.358	51.357	28.000	-0.016301
360.29	5.9391	0.00000	1.6156	38.393	23.499	51.499	28.000	-0.016301
370.06	6.1192	0.00000	1.6187	38.487	23.504	51.504	28.000	-0.016301
380.16	6.2736	0.00000	1.6213	38.704	23.593	51.593	28.000	-0.016301
390.21	6.4622	0.00000	1.6246	38.829	23.613	51.613	28.000	-0.016301
400.26	6.6080	0.00000	1.6272	38.953	23.647	51.646	28.000	-0.016301
410.08	6.7658	0.00000	1.6299	39.169	23.732	51.740	28.008	-0.016301
420.09	6.9407	0.00000	1.6330	39.355	23.794	51.802	28.008	-0.016301
430.14	7.1191	0.00000	1.6361	39.544	23.856	51.856	28.000	-0.016301
440.17	7.2854	0.00000	1.6390	39.697	23.899	51.907	28.008	-0.016301
450.24	7.4587	0.00000	1.6421	39.855	23.943	51.943	28.000	-0.016301
460.03	7.5924	0.00000	1.6445	40.072	24.035	52.035	28.000	-0.016301
470.09	7.7519	0.00000	1.6473	40.226	24.080	52.088	28.008	-0.016301
480.14	7.9217	0.00000	1.6504	40.444	24.160	52.168	28.008	-0.016301
490.17	8.0658	0.00000	1.6530	40.599	24.210	52.218	28.008	-0.016301

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP1	Test Date: 4/8/19	Depth: 0-4'
Test No.: 3	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-1-1, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time s	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
500.20	8.2682	0.00000	1.6566	40.787	24.261	52.261	28.000	-0.016301
510.28	8.4277	0.00000	1.6595	41.000	24.340	52.364	28.024	-0.016301
520.26	8.5957	0.00000	1.6625	41.190	24.402	52.410	28.008	-0.016301
530.04	8.7449	0.00000	1.6653	41.283	24.412	52.420	28.008	-0.016301
540.11	8.9147	0.00000	1.6684	41.494	24.486	52.526	28.040	-0.016301
550.20	9.0999	0.00000	1.6718	41.718	24.562	52.570	28.008	-0.016301
560.01	9.2389	0.00000	1.6743	41.936	24.649	52.657	28.008	-0.024451
570.11	9.4241	0.00000	1.6777	42.091	24.683	52.691	28.008	-0.024451
580.17	9.5784	0.00000	1.6806	42.218	24.709	52.709	28.000	-0.024451
590.26	9.7414	0.00000	1.6836	42.371	24.749	52.757	28.008	-0.024451
600.09	9.9129	0.00000	1.6868	42.558	24.806	52.813	28.008	-0.024451
610.15	10.093	0.00000	1.6902	42.752	24.863	52.838	27.976	-0.024451
620.25	10.251	0.00000	1.6932	42.900	24.900	52.908	28.008	-0.024451
630.10	10.422	0.00000	1.6964	43.086	24.955	52.963	28.008	-0.024451
640.14	10.587	0.00000	1.6996	43.213	24.977	52.976	28.000	-0.024451
650.19	10.748	0.00000	1.7026	43.335	24.997	53.005	28.008	-0.024451
660.24	10.918	0.00000	1.7059	43.584	25.088	53.096	28.008	-0.024451
670.22	11.091	0.00000	1.7092	43.745	25.126	53.109	27.984	-0.024451
680.04	11.254	0.00000	1.7123	43.926	25.179	53.187	28.008	-0.024451
690.14	11.405	0.00000	1.7153	44.019	25.184	53.192	28.008	-0.024451
700.22	11.587	0.00000	1.7188	44.154	25.203	53.162	27.959	-0.024451
710.15	11.753	0.00000	1.7220	44.299	25.233	53.241	28.008	-0.024451
720.20	11.925	0.00000	1.7254	44.361	25.213	53.221	28.008	-0.024451
730.25	12.110	0.00000	1.7290	44.484	25.223	53.239	28.016	-0.024451
740.23	12.283	0.00000	1.7324	44.579	25.221	53.229	28.008	-0.032602
750.27	12.449	0.00000	1.7357	44.734	25.256	53.263	28.008	-0.032602
760.08	12.629	0.00000	1.7393	44.798	25.233	53.233	28.000	-0.032602
770.15	12.789	0.00000	1.7425	44.859	25.215	53.223	28.008	-0.032602
780.22	12.948	0.00000	1.7457	45.014	25.251	53.259	28.008	-0.032602
790.01	13.120	0.00000	1.7491	44.983	25.177	53.185	28.008	-0.032602
800.01	13.293	0.00000	1.7526	44.983	25.119	53.127	28.008	-0.032602
810.04	13.480	0.00000	1.7564	45.107	25.128	53.136	28.008	-0.032602
820.11	13.617	0.00000	1.7592	45.169	25.118	53.126	28.008	-0.032602
830.20	13.777	0.00000	1.7624	45.294	25.136	53.144	28.008	-0.032602
840.23	13.945	0.00000	1.7659	45.420	25.151	53.151	28.000	-0.032602
850.23	14.140	0.00000	1.7699	45.511	25.138	53.146	28.008	-0.032602
860.05	14.322	0.00000	1.7737	45.667	25.165	53.173	28.008	-0.032602
870.11	14.461	0.00000	1.7765	45.729	25.154	53.162	28.008	-0.032602
880.09	14.643	0.00000	1.7803	45.885	25.180	53.188	28.008	-0.032602
890.12	14.794	0.00000	1.7835	45.949	25.165	53.165	28.000	-0.032602
900.21	14.943	0.00000	1.7866	46.102	25.201	53.209	28.008	-0.040752
910.01	15.111	0.00000	1.7901	46.254	25.230	53.254	28.024	-0.040752
920.08	15.298	0.00000	1.7941	46.318	25.202	53.218	28.016	-0.040752
930.15	15.442	0.00000	1.7972	46.506	25.258	53.266	28.008	-0.040752
940.20	15.629	0.00000	1.8011	46.570	25.230	53.230	28.000	-0.040752
950.26	15.814	0.00000	1.8051	46.737	25.260	53.211	27.951	-0.040752
960.04	15.951	0.00000	1.8080	46.852	25.277	53.269	27.992	-0.040752
970.06	16.099	0.00000	1.8112	46.973	25.293	53.301	28.008	-0.040752
980.12	16.272	0.00000	1.8150	47.064	25.285	53.301	28.016	-0.040752
990.17	16.466	0.00000	1.8192	47.158	25.270	53.286	28.016	-0.040752

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP1	Test Date: 4/8/19	Depth: 0-4'
Test No.: 3	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-1-1, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

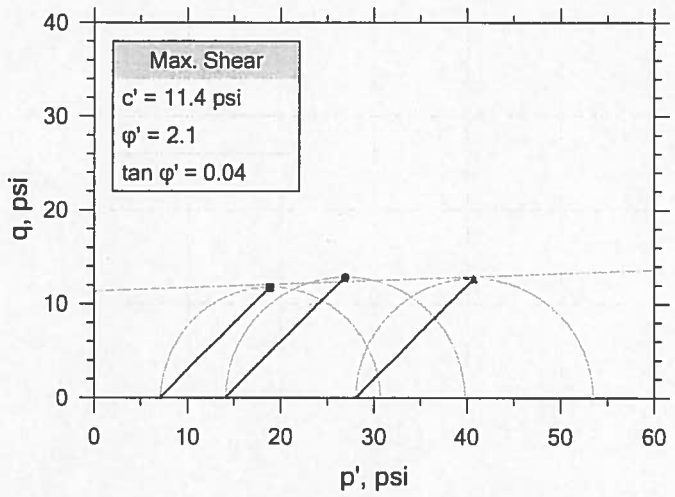
Shear Phase

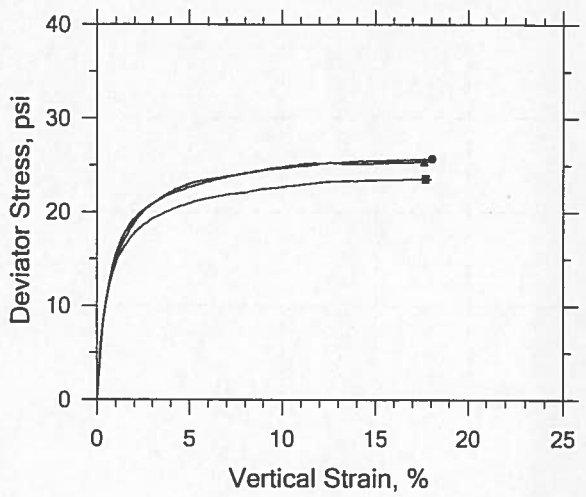
Time s	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
1000.2	16.613	0.00000	1.8224	47.254	25.272	53.272	28.000	-0.040752
1010.2	16.799	0.00000	1.8265	47.397	25.287	53.344	28.057	-0.040752
1020.2	16.953	0.00000	1.8298	47.531	25.307	53.323	28.016	-0.040752
1030.0	17.123	0.00000	1.8336	47.717	25.350	53.367	28.016	-0.040752
1040.1	17.296	0.00000	1.8374	47.809	25.340	53.365	28.024	-0.040752
1050.1	17.462	0.00000	1.8411	47.968	25.369	53.377	28.008	-0.040752
1060.2	17.627	0.00000	1.8448	48.132	25.401	53.369	27.967	-0.040752
1070.2	17.778	0.00000	1.8482	48.215	25.394	53.410	28.016	-0.040752
1080.1	17.955	0.00000	1.8522	48.337	25.398	53.423	28.024	-0.040752
1089.3	18.118	0.00000	1.8559	48.370	25.359	53.375	28.016	-0.048903

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP1	Test Date: 4/8/19	Depth: 0-4'
Test No.: 3	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-1-1, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





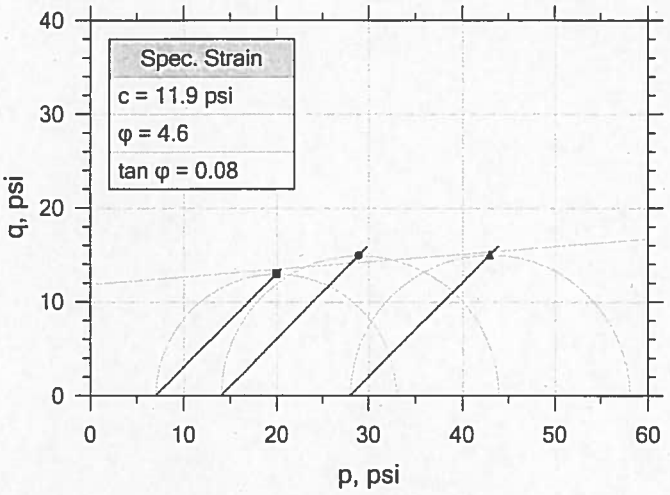
		■	●	▲
Symbol		■	●	▲
Sample ID		19-COMP1	19-COMP1	19-COMP1
Depth, ft		0-4'	0-4'	0-4'
Test Number		1	2	3
Initial	Height, in	3.001	3.001	3.001
	Diameter, in	1.400	1.400	1.400
	Moisture Content (from Cuttings), %	20.4	20.4	20.8
	Dry Density, pcf	102.	102.	102.
	Saturation (Wet Method), %	84.5	84.7	85.5
	Void Ratio	0.650	0.651	0.656
Final	Moisture Content, %	23.8	23.6	23.1
	Dry Density, pcf	103.	103.	104.
	Cross-Sectional Area (Method A), in²	1.535	1.530	1.520
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.643	0.636	0.624
	Back Pressure, %	0.0000	0.0000	0.0000
Vertical Effective Consolidation Stress, psi		7.002	13.97	28.00
Horizontal Effective Consolidation Stress, psi		6.992	13.99	28.00
Vertical Strain after Consolidation, %		0.0000	0.0000	0.0000
Volumetric Strain after Consolidation, %		0.0000	0.0000	0.0000
Time to 50% Consolidation, s		0.0000	0.0000	0.0000
Shear Strength, psi		11.77	12.84	12.70
Strain at Failure, %		17.7	18.1	17.6
Strain Rate, %/s		0.01667	0.01667	0.01667
Deviator Stress at Failure, psi		23.54	25.69	25.40
Effective Minor Principal Stress at Failure, psi		7.090	14.07	28.01
Effective Major Principal Stress at Failure, psi		30.63	39.75	53.41
B-Value		---	---	---

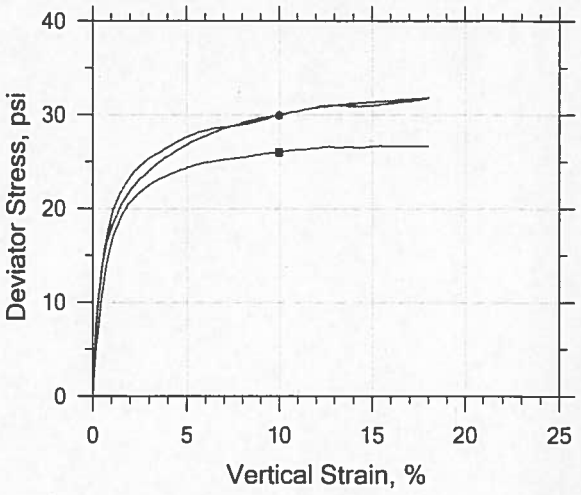
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP1	Test Date: 4/8/19	Depth: 0-4'
Test No.: 1	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-1-1, 102, 104, & 105		
Remarks: @ Maximum Shear		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





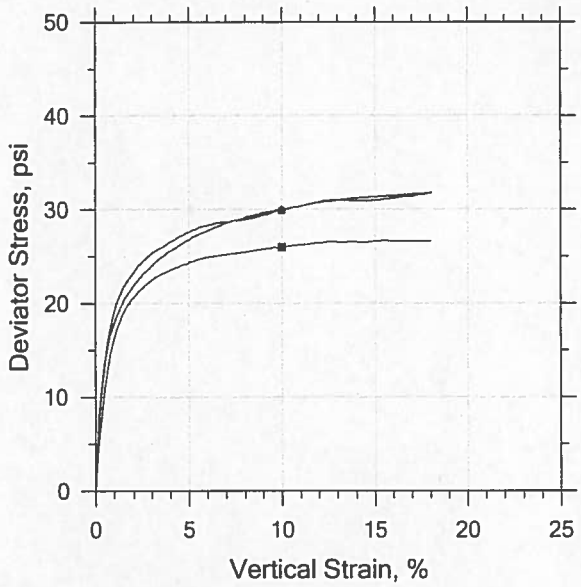
Symbol		■	●	▲
Sample ID		19-COMP2	19-COMP2	19-COMP2
Depth, ft		4-10'	4-10'	4-10'
Test Number		1	2	3
Initial	Height, in	3.001	3.001	3.000
	Diameter, in	1.400	1.400	1.400
	Moisture Content (from Cuttings), %	18.4	18.0	18.0
	Dry Density, pcf	106.	106.	106.
	Saturation (Wet Method), %	82.6	81.7	81.7
	Void Ratio	0.605	0.600	0.600
Final	Moisture Content, %	21.9	21.7	21.4
	Dry Density, pcf	107.	107.	107.
	Cross-Sectional Area (Method A), in²	1.533	1.533	1.528
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.594	0.590	0.582
	Back Pressure, %	0.0000	0.0000	0.0000
Vertical Effective Consolidation Stress, psi		6.982	13.99	27.99
Horizontal Effective Consolidation Stress, psi		6.992	13.99	27.99
Vertical Strain after Consolidation, %		0.0000	0.0000	0.0000
Volumetric Strain after Consolidation, %		0.0000	0.0000	0.0000
Time to 50% Consolidation, min		0.0000	0.0000	0.0000
Shear Strength, psi		12.99	14.95	15.01
Strain at Failure, %		10.0	10.0	10.0
Strain Rate, %/min		1.000	1.000	1.000
Deviator Stress at Failure, psi		25.98	29.90	30.01
Effective Minor Principal Stress at Failure, psi		7.090	14.10	28.09
Effective Major Principal Stress at Failure, psi		33.07	44.00	58.10
B-Value		---	---	---

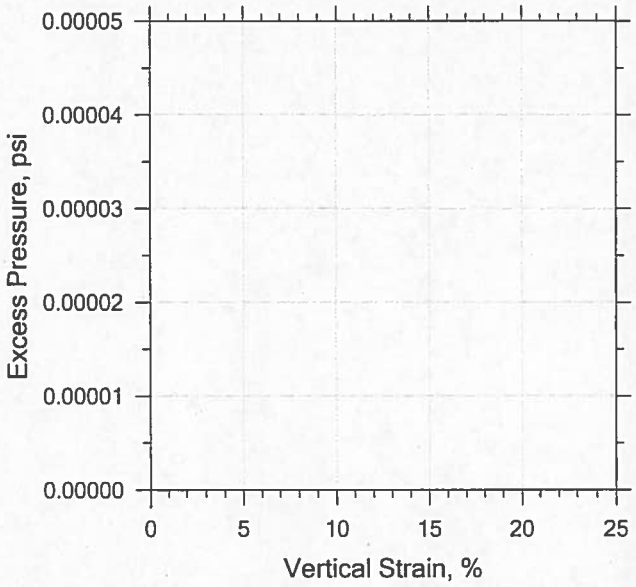
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

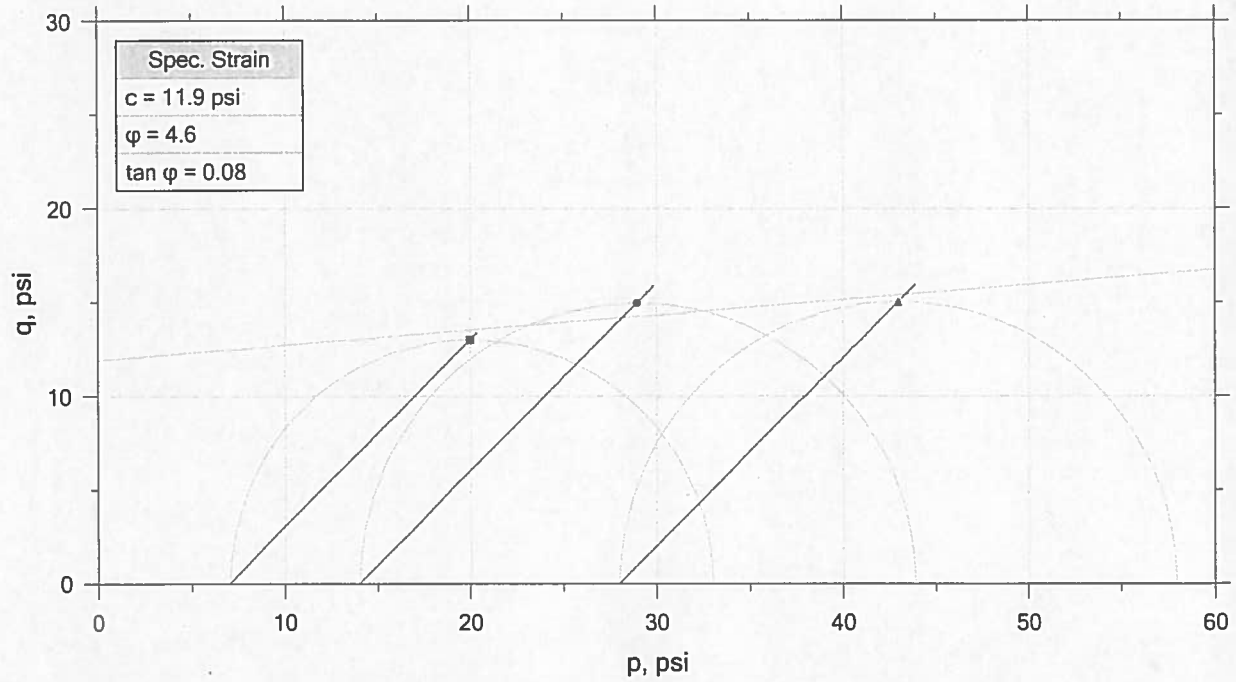
USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP2	Test Date: 4/22/19	Depth: 4-10'
Test No.: 1	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
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●	19-COMP2	2	4-10'	SKK	4/22/19	SKK	4/23/19	UU-19-COMP2TXB-14-eng.dat
▲	19-COMP2	3	4-10'	SKK	4/22/19	SKK	4/23/19	UU-19-COMP2TXB-28-eng.dat

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP2	Test Date: 4/22/19	Depth: 4-10'
Test No.: 1	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5327	-0.014749	-0.0096227	6.9822	6.9919	0.00000
0.17077	0.15029	0.00000	1.5350	7.0207	4.5666	11.518	6.9513	0.00000
0.33405	0.31936	0.00000	1.5376	11.747	7.6244	14.576	6.9513	0.00000
0.50185	0.47818	0.00000	1.5401	16.410	10.633	17.584	6.9513	0.00000
0.66895	0.64384	0.00000	1.5426	19.980	12.922	19.898	6.9756	0.00000
0.83613	0.80779	0.00000	1.5452	22.682	14.641	21.633	6.9919	0.00000
1.0042	0.97174	0.00000	1.5477	24.988	16.099	23.067	6.9675	0.00000
1.1674	1.1254	0.00000	1.5501	26.724	17.187	24.179	6.9919	0.00000
1.3354	1.3150	0.00000	1.5531	28.178	18.081	25.105	7.0243	0.00000
1.5037	1.4550	0.00000	1.5553	29.364	18.812	25.812	7.0000	0.00000
1.6705	1.6070	0.00000	1.5577	30.423	19.456	26.448	6.9919	0.00000
1.8346	1.7744	0.00000	1.5604	31.292	19.972	26.972	7.0000	0.00000
2.0030	1.9144	0.00000	1.5626	32.102	20.455	27.447	6.9919	-0.0081505
2.1705	2.1108	0.00000	1.5658	32.786	20.842	27.834	6.9919	-0.0081505
2.3343	2.2560	0.00000	1.5681	33.377	21.181	28.173	6.9919	-0.0081505
2.5021	2.4114	0.00000	1.5706	33.937	21.497	28.488	6.9919	-0.0081505
2.6692	2.5702	0.00000	1.5731	34.434	21.771	28.762	6.9919	-0.0081505
2.8372	2.7359	0.00000	1.5758	34.963	22.061	29.053	6.9919	-0.0081505
3.0013	2.8913	0.00000	1.5783	35.365	22.274	29.274	7.0000	-0.0081505
3.1692	3.0535	0.00000	1.5810	35.833	22.525	29.517	6.9919	-0.0081505
3.3377	3.2209	0.00000	1.5837	36.268	22.754	29.745	6.9919	-0.0081505
3.5005	3.3968	0.00000	1.5866	36.642	22.939	29.931	6.9919	-0.0081505
3.6674	3.5659	0.00000	1.5894	37.044	23.145	30.145	7.0000	-0.016301
3.8351	3.7367	0.00000	1.5922	37.355	23.291	30.291	7.0000	-0.016301
4.0032	3.9177	0.00000	1.5952	37.666	23.434	30.434	7.0000	-0.016301
4.1708	4.0628	0.00000	1.5976	37.977	23.587	30.587	7.0000	-0.016301
4.3346	4.2148	0.00000	1.6001	38.288	23.737	30.737	7.0000	-0.016301
4.5022	4.3993	0.00000	1.6032	38.536	23.838	30.838	7.0000	-0.016301
4.6692	4.5632	0.00000	1.6060	38.878	24.003	31.003	7.0000	-0.024451
4.8369	4.7374	0.00000	1.6089	39.158	24.125	31.125	7.0000	-0.024451
5.0041	4.9133	0.00000	1.6119	39.345	24.188	31.188	7.0000	-0.024451
5.1671	5.0602	0.00000	1.6144	39.718	24.375	31.375	7.0000	-0.024451
5.3356	5.2395	0.00000	1.6174	39.904	24.437	31.437	7.0000	-0.024451
5.5034	5.3932	0.00000	1.6201	40.246	24.601	31.601	7.0000	-0.032602
5.6710	5.5657	0.00000	1.6230	40.464	24.683	31.683	7.0000	-0.032602
5.8348	5.7331	0.00000	1.6259	40.682	24.765	31.765	7.0000	-0.032602
6.0030	5.9175	0.00000	1.6291	40.930	24.861	31.861	7.0000	-0.032602
6.1703	6.0815	0.00000	1.6319	41.117	24.925	31.925	7.0000	-0.040752
6.3377	6.2574	0.00000	1.6350	41.241	24.947	31.947	7.0000	-0.040752
6.5008	6.4264	0.00000	1.6380	41.490	25.046	32.046	7.0000	-0.040752
6.6682	6.6040	0.00000	1.6411	41.614	25.066	32.066	7.0000	-0.040752
6.8361	6.7748	0.00000	1.6441	41.801	25.127	32.127	7.0000	-0.040752
7.0043	6.9490	0.00000	1.6472	41.956	25.166	32.166	7.0000	-0.048903
7.1708	7.1027	0.00000	1.6499	42.143	25.231	32.231	7.0000	-0.048903
7.3346	7.2735	0.00000	1.6529	42.329	25.290	32.290	7.0000	-0.048903
7.5028	7.4289	0.00000	1.6557	42.454	25.316	32.316	7.0000	-0.048903
7.6692	7.6082	0.00000	1.6589	42.609	25.353	32.353	7.0000	-0.048903
7.8377	7.7756	0.00000	1.6619	42.763	25.392	32.400	7.0081	-0.057054
8.0009	7.9447	0.00000	1.6650	42.920	25.433	32.433	7.0000	-0.057054
8.1684	8.1086	0.00000	1.6680	43.045	25.455	32.455	7.0000	-0.057054

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP2	Test Date: 4/22/19	Depth: 4-10'
Test No.: 1	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3361	8.2555	0.00000	1.6706	43.231	25.519	32.519	7.0000	-0.057054
8.5040	8.4382	0.00000	1.6740	43.416	25.571	32.579	7.0081	-0.065204
8.6671	8.5851	0.00000	1.6766	43.573	25.617	32.617	7.0000	-0.065204
8.8351	8.7610	0.00000	1.6799	43.851	25.726	32.734	7.0081	-0.065204
9.0032	8.9232	0.00000	1.6829	43.944	25.729	32.737	7.0081	-0.065204
9.1710	9.0803	0.00000	1.6858	44.133	25.789	32.789	7.0000	-0.073354
9.3338	9.2409	0.00000	1.6888	44.321	25.848	32.840	6.9919	-0.073354
9.5013	9.4048	0.00000	1.6918	44.444	25.867	32.867	7.0000	-0.073354
9.6684	9.5671	0.00000	1.6949	44.691	25.960	32.968	7.0081	-0.073354
9.8361	9.7413	0.00000	1.6981	44.755	25.940	32.940	7.0000	-0.081505
10.004	9.9120	0.00000	1.7013	44.877	25.956	32.964	7.0081	-0.081505
10.171	10.085	0.00000	1.7046	45.064	26.008	33.016	7.0081	-0.081505
10.334	10.240	0.00000	1.7076	45.252	26.067	33.067	7.0000	-0.089655
10.502	10.412	0.00000	1.7108	45.407	26.100	33.100	7.0000	-0.089655
10.669	10.568	0.00000	1.7138	45.592	26.156	33.164	7.0081	-0.089655
10.837	10.740	0.00000	1.7171	45.718	26.172	33.172	7.0000	-0.089655
11.004	10.916	0.00000	1.7205	45.903	26.220	33.228	7.0081	-0.097806
11.171	11.089	0.00000	1.7239	46.059	26.253	33.261	7.0081	-0.097806
11.337	11.246	0.00000	1.7269	46.185	26.273	33.273	7.0000	-0.097806
11.504	11.417	0.00000	1.7302	46.276	26.268	33.276	7.0081	-0.097806
11.667	11.574	0.00000	1.7333	46.463	26.322	33.330	7.0081	-0.10596
11.835	11.726	0.00000	1.7363	46.680	26.396	33.404	7.0081	-0.10596
12.003	11.893	0.00000	1.7396	46.834	26.427	33.443	7.0162	-0.10596
12.171	12.076	0.00000	1.7432	46.993	26.456	33.456	7.0000	-0.10596
12.334	12.241	0.00000	1.7465	47.149	26.488	33.488	7.0000	-0.11411
12.502	12.411	0.00000	1.7499	47.335	26.537	33.537	7.0000	-0.11411
12.668	12.573	0.00000	1.7531	47.427	26.533	33.541	7.0081	-0.11411
12.837	12.737	0.00000	1.7564	47.644	26.601	33.609	7.0081	-0.12226
13.005	12.908	0.00000	1.7599	47.675	26.559	33.567	7.0081	-0.12226
13.168	13.078	0.00000	1.7633	47.706	26.518	33.526	7.0081	-0.12226
13.335	13.273	0.00000	1.7673	47.800	26.503	33.511	7.0081	-0.12226
13.503	13.434	0.00000	1.7705	47.867	26.486	33.470	6.9838	-0.12226
13.669	13.591	0.00000	1.7738	48.111	26.569	33.577	7.0081	-0.13041
13.836	13.765	0.00000	1.7774	48.173	26.543	33.551	7.0081	-0.13041
14.005	13.941	0.00000	1.7810	48.266	26.534	33.542	7.0081	-0.13041
14.167	14.103	0.00000	1.7843	48.328	26.512	33.520	7.0081	-0.13856
14.335	14.269	0.00000	1.7878	48.394	26.491	33.483	6.9919	-0.13856
14.502	14.462	0.00000	1.7918	48.577	26.526	33.534	7.0081	-0.13856
14.669	14.612	0.00000	1.7950	48.670	26.525	33.533	7.0081	-0.13856
14.837	14.790	0.00000	1.7987	48.857	26.566	33.575	7.0081	-0.14671
15.004	14.947	0.00000	1.8020	49.043	26.615	33.623	7.0081	-0.14671
15.167	15.117	0.00000	1.8057	49.169	26.624	33.624	7.0000	-0.14671
15.335	15.298	0.00000	1.8095	49.323	26.645	33.653	7.0081	-0.14671
15.503	15.457	0.00000	1.8129	49.479	26.675	33.683	7.0081	-0.15486
15.671	15.630	0.00000	1.8166	49.574	26.666	33.666	7.0000	-0.15486
15.834	15.782	0.00000	1.8199	49.665	26.662	33.670	7.0081	-0.15486
16.002	15.944	0.00000	1.8234	49.729	26.639	33.639	7.0000	-0.16301
16.169	16.122	0.00000	1.8273	49.852	26.643	33.651	7.0081	-0.16301
16.337	16.277	0.00000	1.8307	49.945	26.638	33.646	7.0081	-0.16301
16.505	16.456	0.00000	1.8346	50.038	26.625	33.633	7.0081	-0.16301

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP2	Test Date: 4/22/19	Depth: 4-10'
Test No.: 1	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.668	16.608	0.00000	1.8380	50.099	26.603	33.620	7.0162	-0.17116
16.836	16.784	0.00000	1.8418	50.225	26.609	33.617	7.0081	-0.17116
17.003	16.957	0.00000	1.8457	50.411	26.648	33.656	7.0081	-0.17116
17.171	17.126	0.00000	1.8494	50.473	26.621	33.629	7.0081	-0.17116
17.335	17.279	0.00000	1.8529	50.598	26.633	33.641	7.0081	-0.17931
17.503	17.445	0.00000	1.8566	50.722	26.640	33.648	7.0081	-0.17931
17.670	17.604	0.00000	1.8602	50.784	26.616	33.624	7.0081	-0.17931
17.834	17.766	0.00000	1.8638	50.938	26.639	33.656	7.0162	-0.17931
18.002	17.928	0.00000	1.8675	51.066	26.649	33.649	7.0000	-0.18746
18.134	18.039	0.00000	1.8700	51.126	26.641	33.649	7.0081	-0.18746

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP2	Test Date: 4/22/19	Depth: 4-10'
Test No.: 1	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5325	-0.00018889	-0.00012325	13.992	13.992	0.00000
0.17098	0.16737	0.00000	1.5351	9.9125	6.4493	20.465	14.016	0.00000
0.33452	0.32791	0.00000	1.5376	16.021	10.404	24.355	13.951	0.00000
0.50130	0.49358	0.00000	1.5401	20.739	13.443	27.426	13.984	0.00000
0.66890	0.64046	0.00000	1.5424	24.463	15.830	29.846	14.016	-0.0081505
0.83635	0.81978	0.00000	1.5452	27.173	17.547	31.539	13.992	-0.0081505
1.0047	0.97862	0.00000	1.5477	29.284	18.875	32.883	14.008	-0.0081505
1.1671	1.1101	0.00000	1.5497	31.029	19.970	33.962	13.992	-0.0081505
1.3343	1.3065	0.00000	1.5528	32.395	20.801	34.801	14.000	-0.0081505
1.5024	1.4534	0.00000	1.5551	33.575	21.522	35.530	14.008	-0.016301
1.6702	1.6259	0.00000	1.5579	34.577	22.119	36.095	13.976	-0.016301
1.8335	1.7694	0.00000	1.5601	35.350	22.576	36.568	13.992	-0.016301
2.0019	1.9299	0.00000	1.5627	36.217	23.087	37.095	14.008	-0.016301
2.1692	2.0700	0.00000	1.5649	36.907	23.488	37.471	13.984	-0.024451
2.3364	2.2356	0.00000	1.5676	37.682	23.935	37.927	13.992	-0.024451
2.5040	2.4081	0.00000	1.5704	38.273	24.261	38.253	13.992	-0.024451
2.6710	2.5482	0.00000	1.5726	38.800	24.555	38.555	14.000	-0.024451
2.8351	2.7360	0.00000	1.5757	39.365	24.857	38.833	13.976	-0.032602
3.0029	2.9051	0.00000	1.5784	39.890	25.139	39.131	13.992	-0.032602
3.1705	3.0520	0.00000	1.5808	40.387	25.409	39.401	13.992	-0.032602
3.3377	3.2211	0.00000	1.5836	40.762	25.594	39.577	13.984	-0.032602
3.5011	3.3799	0.00000	1.5862	41.164	25.798	39.790	13.992	-0.032602
3.6686	3.5797	0.00000	1.5894	41.537	25.970	39.962	13.992	-0.040752
3.8369	3.7403	0.00000	1.5921	41.910	26.154	40.146	13.992	-0.040752
4.0005	3.8906	0.00000	1.5946	42.377	26.399	40.391	13.992	-0.040752
4.1684	4.0579	0.00000	1.5974	42.777	26.596	40.604	14.008	-0.040752
4.3364	4.2133	0.00000	1.6000	43.127	26.764	40.740	13.976	-0.040752
4.5038	4.3858	0.00000	1.6028	43.589	26.997	40.989	13.992	-0.048903
4.6668	4.5549	0.00000	1.6057	43.931	27.155	41.146	13.992	-0.048903
4.8343	4.7206	0.00000	1.6085	44.273	27.313	41.304	13.992	-0.048903
5.0025	4.8726	0.00000	1.6110	44.648	27.495	41.479	13.984	-0.048903
5.1697	5.0468	0.00000	1.6140	44.926	27.609	41.601	13.992	-0.048903
5.3335	5.1988	0.00000	1.6166	45.299	27.789	41.781	13.992	-0.057054
5.5011	5.3832	0.00000	1.6197	45.579	27.899	41.891	13.992	-0.057054
5.6681	5.5677	0.00000	1.6229	46.004	28.098	42.139	14.040	-0.057054
5.8361	5.7436	0.00000	1.6259	46.232	28.178	42.170	13.992	-0.057054
6.0047	5.9178	0.00000	1.6289	46.477	28.269	42.277	14.008	-0.065204
6.1673	6.0681	0.00000	1.6315	46.667	28.334	42.326	13.992	-0.065204
6.3353	6.2338	0.00000	1.6344	46.883	28.409	42.408	14.000	-0.065204
6.5035	6.4011	0.00000	1.6374	47.165	28.522	42.514	13.992	-0.065204
6.6707	6.5907	0.00000	1.6407	47.379	28.587	42.595	14.008	-0.065204
6.8345	6.7359	0.00000	1.6432	47.472	28.593	42.601	14.008	-0.065204
7.0026	6.9067	0.00000	1.6462	47.693	28.667	42.659	13.992	-0.073354
7.1700	7.0877	0.00000	1.6495	47.754	28.640	42.640	14.000	-0.073354
7.3335	7.2363	0.00000	1.6521	47.973	28.721	42.712	13.992	-0.073354
7.5009	7.4173	0.00000	1.6553	48.220	28.806	42.806	14.000	-0.073354
7.6676	7.5932	0.00000	1.6585	48.284	28.782	42.774	13.992	-0.081505
7.8353	7.7504	0.00000	1.6613	48.502	28.857	42.849	13.992	-0.081505
8.0030	7.9348	0.00000	1.6646	48.624	28.865	42.865	14.000	-0.081505
8.1694	8.0629	0.00000	1.6669	48.842	28.950	42.950	14.000	-0.081505

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP2	Test Date: 4/22/19	Depth: 4-10'
Test No.: 2	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3369	8.2303	0.00000	1.6700	49.029	29.002	43.002	14.000	-0.081505
8.5047	8.3959	0.00000	1.6730	49.184	29.035	43.035	14.000	-0.089655
8.6681	8.5462	0.00000	1.6758	49.464	29.148	43.148	14.000	-0.089655
8.8361	8.7119	0.00000	1.6788	49.714	29.237	43.229	13.992	-0.089655
9.0045	8.8742	0.00000	1.6818	49.992	29.344	43.344	14.000	-0.089655
9.1710	9.0654	0.00000	1.6853	50.272	29.440	43.440	14.000	-0.089655
9.3340	9.2072	0.00000	1.6880	50.428	29.480	43.480	14.000	-0.097806
9.5013	9.3797	0.00000	1.6912	50.707	29.582	43.582	14.000	-0.097806
9.6684	9.5385	0.00000	1.6941	50.987	29.689	43.688	14.000	-0.097806
9.8364	9.7110	0.00000	1.6974	51.329	29.826	43.826	14.000	-0.097806
10.004	9.8801	0.00000	1.7006	51.547	29.891	43.891	14.000	-0.097806
10.167	10.053	0.00000	1.7038	51.671	29.899	43.899	14.000	-0.10596
10.335	10.215	0.00000	1.7069	51.920	29.984	43.984	14.000	-0.10596
10.502	10.375	0.00000	1.7100	52.105	30.032	44.040	14.008	-0.10596
10.669	10.541	0.00000	1.7131	52.449	30.170	44.170	14.000	-0.10596
10.837	10.688	0.00000	1.7159	52.701	30.261	44.245	13.984	-0.11411
11.001	10.888	0.00000	1.7198	52.822	30.256	44.255	14.000	-0.11411
11.168	11.048	0.00000	1.7229	53.131	30.374	44.382	14.008	-0.11411
11.335	11.209	0.00000	1.7260	53.352	30.440	44.432	13.992	-0.11411
11.504	11.374	0.00000	1.7292	53.692	30.573	44.573	14.000	-0.11411
11.667	11.526	0.00000	1.7322	53.815	30.585	44.593	14.008	-0.11411
11.834	11.709	0.00000	1.7358	54.096	30.677	44.677	14.000	-0.12226
12.002	11.863	0.00000	1.7388	54.314	30.742	44.742	14.000	-0.12226
12.169	12.051	0.00000	1.7425	54.532	30.794	44.794	14.000	-0.12226
12.337	12.201	0.00000	1.7455	54.872	30.930	44.938	14.008	-0.12226
12.504	12.380	0.00000	1.7491	55.060	30.967	44.967	14.000	-0.12226
12.668	12.565	0.00000	1.7528	55.183	30.964	44.972	14.008	-0.13041
12.835	12.741	0.00000	1.7563	55.402	31.019	45.019	14.000	-0.13041
13.003	12.898	0.00000	1.7595	55.525	31.027	45.035	14.008	-0.13041
13.170	13.093	0.00000	1.7634	55.620	31.003	45.003	14.000	-0.13041
13.333	13.238	0.00000	1.7664	55.682	30.981	44.981	14.000	-0.13041
13.501	13.398	0.00000	1.7696	55.713	30.934	44.934	14.000	-0.13041
13.668	13.579	0.00000	1.7734	55.903	30.970	44.953	13.984	-0.13856
13.837	13.747	0.00000	1.7768	55.929	30.917	44.925	14.008	-0.13856
14.001	13.945	0.00000	1.7809	56.053	30.908	44.916	14.008	-0.13856
14.169	14.076	0.00000	1.7836	56.148	30.909	44.909	14.000	-0.13856
14.336	14.244	0.00000	1.7871	56.271	30.910	44.918	14.008	-0.13856
14.503	14.409	0.00000	1.7906	56.395	30.913	44.921	14.008	-0.14671
14.671	14.587	0.00000	1.7943	56.520	30.911	44.919	14.008	-0.14671
14.834	14.780	0.00000	1.7983	56.706	30.937	44.945	14.008	-0.14671
15.001	14.917	0.00000	1.8012	56.896	30.988	44.980	13.992	-0.14671
15.169	15.086	0.00000	1.8048	57.017	30.986	44.994	14.008	-0.14671
15.337	15.253	0.00000	1.8084	57.167	31.002	45.034	14.032	-0.15486
15.501	15.402	0.00000	1.8116	57.359	31.047	45.055	14.008	-0.15486
15.668	15.569	0.00000	1.8151	57.639	31.133	45.141	14.008	-0.15486
15.835	15.750	0.00000	1.8190	57.736	31.113	45.104	13.992	-0.15486
16.004	15.894	0.00000	1.8221	58.012	31.206	45.214	14.008	-0.15486
16.171	16.075	0.00000	1.8261	58.135	31.198	45.214	14.016	-0.15486
16.333	16.254	0.00000	1.8300	58.416	31.278	45.286	14.008	-0.16301
16.501	16.409	0.00000	1.8334	58.601	31.315	45.331	14.016	-0.16301

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP2	Test Date: 4/22/19	Depth: 4-10'
Test No.: 2	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.667	16.553	0.00000	1.8365	58.822	31.376	45.376	14.000	-0.16301
16.835	16.724	0.00000	1.8403	58.976	31.389	45.397	14.008	-0.16301
17.003	16.920	0.00000	1.8447	59.162	31.408	45.416	14.008	-0.16301
17.170	17.067	0.00000	1.8479	59.287	31.414	45.422	14.008	-0.16301
17.338	17.244	0.00000	1.8519	59.629	31.525	45.533	14.008	-0.17116
17.501	17.398	0.00000	1.8553	59.824	31.565	45.533	13.968	-0.17116
17.668	17.566	0.00000	1.8591	59.971	31.574	45.582	14.008	-0.17116
17.836	17.738	0.00000	1.8630	60.220	31.634	45.642	14.008	-0.17116
18.004	17.912	0.00000	1.8670	60.479	31.700	45.659	13.959	-0.17116
18.150	18.044	0.00000	1.8700	60.655	31.738	45.746	14.008	-0.17116

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP2	Test Date: 4/22/19	Depth: 4-10'
Test No.: 2	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
0.00000	0.00000	0.00000	1.5276	-0.0021602	-0.0014141	27.990	27.992	0.00000
0.17058	0.15743	0.00000	1.5300	11.346	7.4083	35.400	27.992	0.00000
0.33412	0.30802	0.00000	1.5323	16.600	10.819	38.811	27.992	0.00000
0.50068	0.46545	0.00000	1.5347	20.529	13.354	41.297	27.943	0.00000
0.66798	0.62630	0.00000	1.5372	23.356	15.164	43.116	27.951	0.00000
0.83620	0.76662	0.00000	1.5394	25.465	16.506	44.482	27.976	0.00000
1.0039	0.95314	0.00000	1.5423	27.202	17.593	45.585	27.992	-0.0081505
1.1667	1.1071	0.00000	1.5447	28.631	18.483	46.483	28.000	-0.0081505
1.3349	1.2766	0.00000	1.5473	29.821	19.213	47.172	27.959	-0.0081505
1.5036	1.4237	0.00000	1.5496	30.997	19.936	47.920	27.984	-0.0081505
1.6701	1.5829	0.00000	1.5521	32.023	20.558	48.542	27.984	-0.0081505
1.8341	1.7352	0.00000	1.5546	32.795	21.016	49.024	28.008	-0.0081505
2.0018	1.9029	0.00000	1.5572	33.675	21.537	49.504	27.967	-0.016301
2.1690	2.0432	0.00000	1.5594	34.355	21.936	49.919	27.984	-0.016301
2.3373	2.2194	0.00000	1.5623	35.131	22.384	50.376	27.992	-0.016301
2.5013	2.3871	0.00000	1.5649	35.809	22.772	50.788	28.016	-0.016301
2.6693	2.5446	0.00000	1.5675	36.509	23.175	51.118	27.943	-0.016301
2.8334	2.7191	0.00000	1.5703	36.998	23.436	51.420	27.984	-0.024451
3.0008	2.9039	0.00000	1.5733	37.609	23.772	51.804	28.032	-0.024451
3.1682	3.0648	0.00000	1.5759	38.207	24.104	52.104	28.000	-0.024451
3.3344	3.2393	0.00000	1.5787	38.770	24.410	52.393	27.984	-0.024451
3.5026	3.3933	0.00000	1.5812	39.295	24.696	52.696	28.000	-0.024451
3.6696	3.5456	0.00000	1.5837	39.736	24.928	52.904	27.976	-0.024451
3.8334	3.7236	0.00000	1.5867	40.180	25.154	53.089	27.935	-0.024451
4.0010	3.8742	0.00000	1.5891	40.696	25.432	53.424	27.992	-0.032602
4.1680	4.0590	0.00000	1.5922	41.100	25.629	53.621	27.992	-0.032602
4.3362	4.2318	0.00000	1.5951	41.503	25.827	53.827	28.000	-0.032602
4.5039	4.3892	0.00000	1.5977	41.936	26.049	54.057	28.008	-0.032602
4.6667	4.5569	0.00000	1.6005	42.375	26.270	54.262	27.992	-0.032602
4.8341	4.7212	0.00000	1.6033	42.712	26.427	54.443	28.016	-0.040752
5.0017	4.8803	0.00000	1.6060	43.152	26.650	54.642	27.992	-0.040752
5.1693	5.0429	0.00000	1.6087	43.459	26.789	54.797	28.008	-0.040752
5.3367	5.2089	0.00000	1.6115	43.959	27.044	55.044	28.000	-0.040752
5.5048	5.4005	0.00000	1.6148	44.299	27.192	55.199	28.008	-0.040752
5.6685	5.5682	0.00000	1.6177	44.674	27.368	55.367	28.000	-0.048903
5.8367	5.7462	0.00000	1.6207	44.985	27.500	55.500	28.000	-0.048903
6.0004	5.9225	0.00000	1.6237	45.329	27.652	55.644	27.992	-0.048903
6.1672	6.0833	0.00000	1.6265	45.608	27.770	55.762	27.992	-0.048903
6.3341	6.2476	0.00000	1.6294	45.917	27.904	55.904	28.000	-0.048903
6.5020	6.4136	0.00000	1.6323	46.322	28.095	56.095	28.000	-0.048903
6.6693	6.5864	0.00000	1.6353	46.601	28.206	56.206	28.000	-0.057054
6.8373	6.7524	0.00000	1.6382	46.912	28.339	56.338	28.000	-0.057054
7.0047	6.9047	0.00000	1.6409	47.223	28.475	56.475	28.000	-0.057054
7.1672	7.0587	0.00000	1.6436	47.472	28.573	56.572	28.000	-0.057054
7.3349	7.2350	0.00000	1.6467	47.690	28.643	56.643	28.000	-0.065204
7.5016	7.3924	0.00000	1.6495	48.032	28.795	56.794	28.000	-0.065204
7.6690	7.5772	0.00000	1.6528	48.251	28.862	56.854	27.992	-0.065204
7.8373	7.7466	0.00000	1.6559	48.498	28.951	56.950	28.000	-0.065204
8.0038	7.8903	0.00000	1.6584	48.716	29.031	57.030	28.000	-0.065204
8.1706	8.0495	0.00000	1.6613	49.089	29.198	57.198	28.000	-0.073354

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP2	Test Date: 4/22/19	Depth: 4-10'
Test No.: 3	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

Shear Phase

Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
8.3344	8.2257	0.00000	1.6645	49.306	29.265	57.265	28.000	-0.073354
8.5015	8.4054	0.00000	1.6678	49.524	29.331	57.330	28.000	-0.073354
8.6693	8.5646	0.00000	1.6707	49.742	29.403	57.403	28.000	-0.073354
8.8362	8.7186	0.00000	1.6735	49.959	29.477	57.477	28.000	-0.081505
9.0040	8.8948	0.00000	1.6767	50.270	29.598	57.598	28.000	-0.081505
9.1669	9.0540	0.00000	1.6797	50.488	29.669	57.669	28.000	-0.081505
9.3341	9.2165	0.00000	1.6827	50.643	29.701	57.701	28.000	-0.081505
9.5020	9.3962	0.00000	1.6860	50.861	29.764	57.764	28.000	-0.081505
9.6693	9.5605	0.00000	1.6891	51.079	29.832	57.831	28.000	-0.089655
9.8375	9.7402	0.00000	1.6924	51.296	29.893	57.893	28.000	-0.089655
10.001	9.8736	0.00000	1.6949	51.545	29.990	57.990	28.000	-0.089655
10.168	10.036	0.00000	1.6980	51.700	30.021	58.020	28.000	-0.089655
10.337	10.209	0.00000	1.7013	51.918	30.084	58.083	28.000	-0.097806
10.500	10.397	0.00000	1.7048	52.167	30.158	58.158	28.000	-0.097806
10.667	10.551	0.00000	1.7078	52.353	30.209	58.209	28.000	-0.097806
10.836	10.712	0.00000	1.7108	52.600	30.293	58.300	28.008	-0.097806
11.002	10.892	0.00000	1.7143	52.695	30.279	58.279	28.000	-0.097806
11.170	11.042	0.00000	1.7172	52.944	30.367	58.367	28.000	-0.10596
11.337	11.225	0.00000	1.7207	53.193	30.441	58.441	28.000	-0.10596
11.504	11.385	0.00000	1.7238	53.473	30.542	58.542	28.000	-0.10596
11.667	11.530	0.00000	1.7267	53.628	30.576	58.576	28.000	-0.10596
11.835	11.715	0.00000	1.7303	53.844	30.629	58.637	28.008	-0.10596
12.003	11.871	0.00000	1.7333	54.125	30.731	58.731	28.000	-0.11411
12.169	12.059	0.00000	1.7370	54.188	30.693	58.693	28.000	-0.11411
12.336	12.221	0.00000	1.7403	54.469	30.792	58.783	27.992	-0.11411
12.504	12.387	0.00000	1.7436	54.685	30.850	58.850	28.000	-0.11411
12.668	12.562	0.00000	1.7470	54.751	30.819	58.803	27.984	-0.11411
12.836	12.726	0.00000	1.7503	54.965	30.877	58.877	28.000	-0.11411
13.004	12.901	0.00000	1.7538	55.214	30.950	58.950	28.000	-0.12226
13.171	13.068	0.00000	1.7572	55.400	30.990	58.989	28.000	-0.12226
13.334	13.243	0.00000	1.7608	55.649	31.061	59.061	28.000	-0.12226
13.502	13.418	0.00000	1.7643	55.834	31.097	59.104	28.008	-0.12226
13.669	13.573	0.00000	1.7675	55.960	31.106	59.105	28.000	-0.13041
13.836	13.743	0.00000	1.7710	56.209	31.178	59.178	28.000	-0.13041
14.005	13.900	0.00000	1.7742	56.342	31.190	59.149	27.959	-0.13041
14.167	14.044	0.00000	1.7772	56.432	31.183	59.158	27.976	-0.13041
14.335	14.232	0.00000	1.7811	56.675	31.243	59.243	28.000	-0.13041
14.504	14.420	0.00000	1.7850	56.891	31.288	59.296	28.008	-0.13856
14.667	14.586	0.00000	1.7884	56.925	31.240	59.232	27.992	-0.13856
14.835	14.744	0.00000	1.7917	57.235	31.349	59.348	28.000	-0.13856
15.003	14.911	0.00000	1.7953	57.390	31.367	59.367	28.000	-0.13856
15.171	15.081	0.00000	1.7989	57.456	31.334	59.318	27.984	-0.14671
15.334	15.230	0.00000	1.8020	57.701	31.409	59.409	28.000	-0.14671
15.502	15.392	0.00000	1.8055	57.825	31.411	59.411	28.000	-0.14671
15.670	15.565	0.00000	1.8092	57.979	31.425	59.433	28.008	-0.14671
15.834	15.745	0.00000	1.8130	58.198	31.472	59.472	28.000	-0.14671
16.002	15.909	0.00000	1.8166	58.292	31.456	59.455	28.000	-0.15486
16.169	16.080	0.00000	1.8203	58.447	31.470	59.470	28.000	-0.15486
16.338	16.220	0.00000	1.8233	58.663	31.530	59.538	28.008	-0.15486
16.502	16.402	0.00000	1.8273	58.914	31.592	59.592	28.000	-0.15486

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP2	Test Date: 4/22/19	Depth: 4-10'
Test No.: 3	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

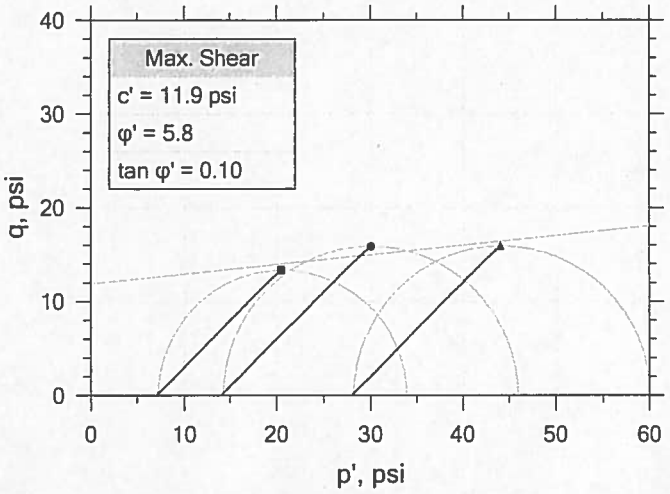
Shear Phase

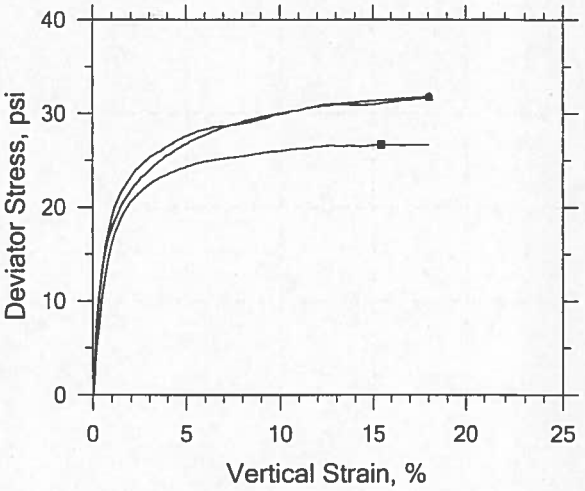
Time min	Vertical Strain %	Volumetric Strain %	Corrected Area in²	Deviator Load lb	Deviator Stress psi	Total Vertical Stress psi	Total Horizontal Stress psi	Pore Pressure psi
16.669	16.552	0.00000	1.8306	59.007	31.580	59.580	28.000	-0.16301
16.838	16.734	0.00000	1.8346	59.193	31.606	59.606	28.000	-0.16301
17.001	16.905	0.00000	1.8384	59.380	31.636	59.636	28.000	-0.16301
17.169	17.057	0.00000	1.8417	59.534	31.655	59.663	28.008	-0.16301
17.336	17.227	0.00000	1.8455	59.751	31.702	59.710	28.008	-0.17116
17.505	17.388	0.00000	1.8491	59.938	31.735	59.743	28.008	-0.17116
17.668	17.572	0.00000	1.8532	59.969	31.674	59.681	28.008	-0.17116
17.836	17.723	0.00000	1.8566	60.249	31.760	59.768	28.008	-0.17116
18.004	17.899	0.00000	1.8606	60.373	31.752	59.760	28.008	-0.17116
18.167	18.062	0.00000	1.8643	60.653	31.833	59.841	28.008	-0.17116
18.177	18.074	0.00000	1.8646	60.622	31.812	59.819	28.008	-0.17931

USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP2	Test Date: 4/22/19	Depth: 4-10'
Test No.: 3	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





		■	●	▲
Symbol		■	●	▲
Sample ID		19-COMP2	19-COMP2	19-COMP2
Depth, ft		4-10'	4-10'	4-10'
Test Number		1	2	3
Initial	Height, in	3.001	3.001	3.000
	Diameter, in	1.400	1.400	1.400
	Moisture Content (from Cuttings), %	18.4	18.0	18.0
	Dry Density, pcf	106.	106.	106.
	Saturation (Wet Method), %	82.6	81.7	81.7
	Void Ratio	0.605	0.600	0.600
Final	Moisture Content, %	21.9	21.7	21.4
	Dry Density, pcf	107.	107.	107.
	Cross-Sectional Area (Method A), in²	1.533	1.533	1.528
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.594	0.590	0.582
	Back Pressure, %	0.0000	0.0000	0.0000
Vertical Effective Consolidation Stress, psi		6.982	13.99	27.99
Horizontal Effective Consolidation Stress, psi		6.992	13.99	27.99
Vertical Strain after Consolidation, %		0.0000	0.0000	0.0000
Volumetric Strain after Consolidation, %		0.0000	0.0000	0.0000
Time to 50% Consolidation, min		0.0000	0.0000	0.0000
Shear Strength, psi		13.34	15.87	15.92
Strain at Failure, %		15.5	18.0	18.1
Strain Rate, %/min		1.000	1.000	1.000
Deviator Stress at Failure, psi		26.67	31.74	31.83
Effective Minor Principal Stress at Failure, psi		7.163	14.18	28.18
Effective Major Principal Stress at Failure, psi		33.84	45.92	60.01
B-Value		---	---	---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Specific Gravity determined by ASTM D854.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

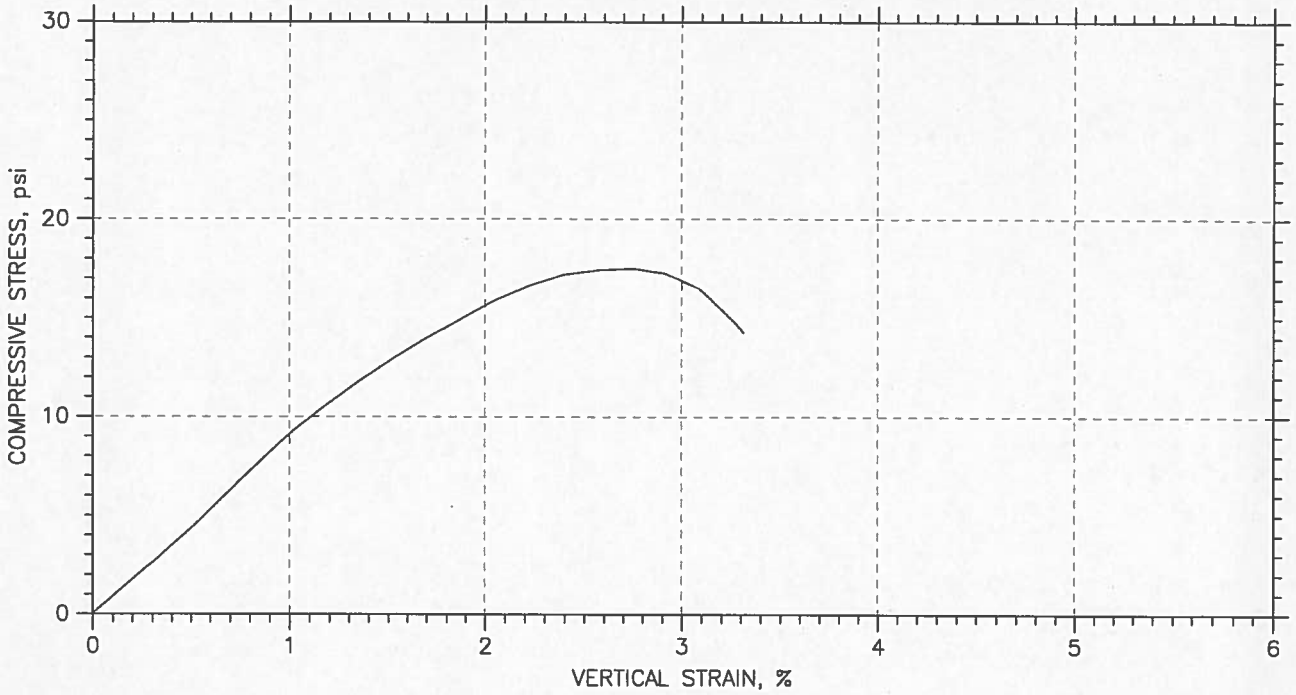
USDA

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-043WB
Boring No.:	Tested By: SKK	Checked By: SKK
Sample No.: 19-COMP2	Test Date: 4/22/19	Depth: 4-10'
Test No.: 1	Sample Type: REMOLD	Elevation: N/A
Description: BORROW, B-101, 102, 104, & 105		
Remarks:		

ATTACHMENT 4

Qu SHEAR TEST DATA

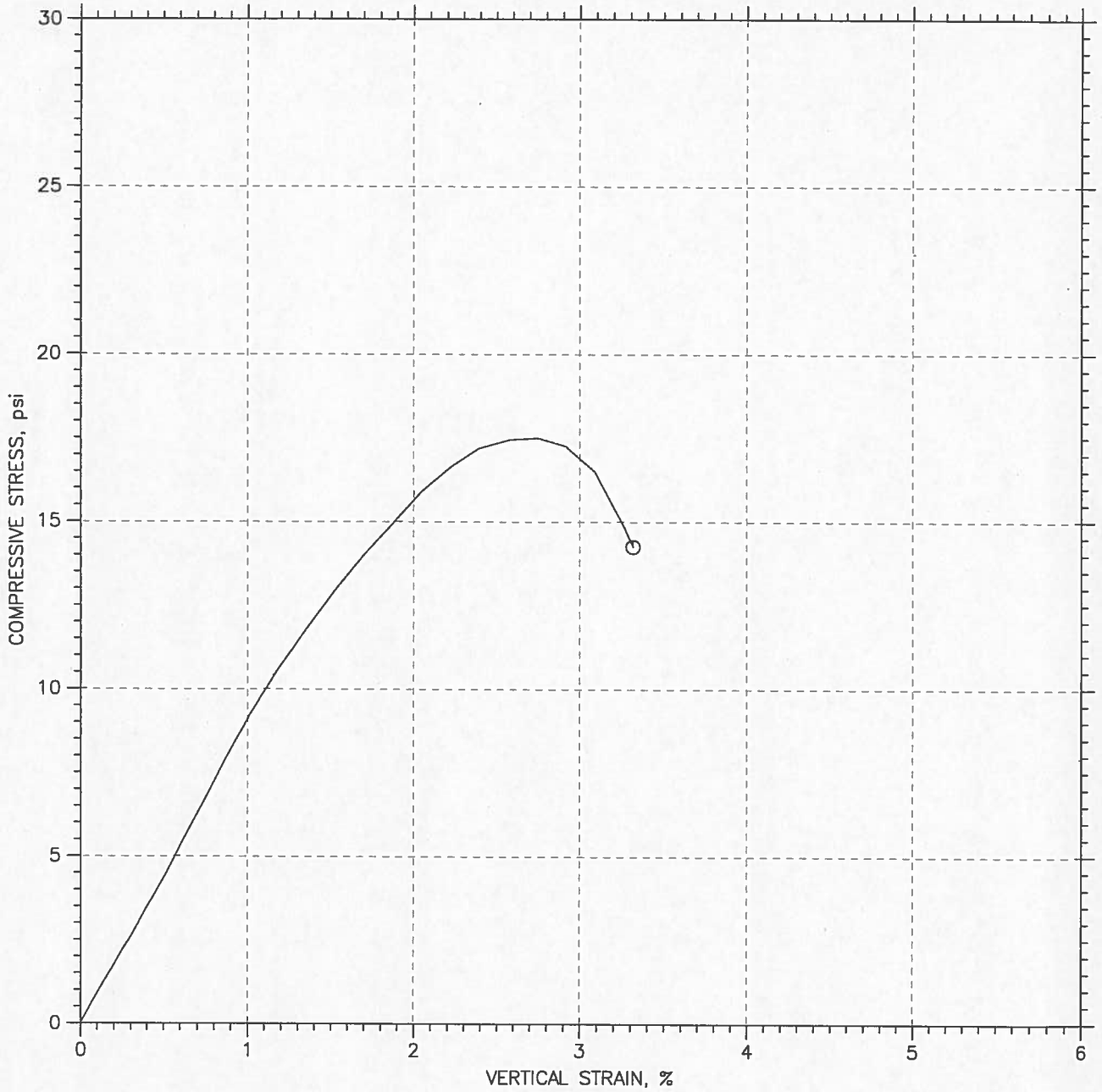
UNCONFINED COMPRESSION TEST REPORT



Symbol					
Test No.		1			
Initial	Diameter, in	2.73			
	Height, in	5.734			
	Water Content, %	20.84			
	Dry Density, pcf	98.31			
	Saturation, %	78.73			
	Void Ratio	0.715			
Unconfined Compressive Strength, psi		17.49			
Undrained Shear Strength, psi		8.745			
Time to Failure, min		2.6694			
Strain Rate, %/min		1			
Measured Specific Gravity		2.70			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-248
	Boring No.: B-04P
	Sample Type: CORE
	Description:
	Remarks:

UNCONFINED COMPRESSION TEST REPORT



	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-248
	Boring No.: B-04P	Tested By: SKK	Checked By: SKK
	Sample No.: 19-248	Test Date: 3/11/19	Depth: 10-12.5'
	Test No.: 1	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks:		

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-04P
Sample No.: 19-248
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 3/11/19
Sample Type: CORE

Project No.: 19-248
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 5.73 in
Specimen Area: 5.85 in^2
Specimen Volume: 550.01 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.70

Cap Mass: 0 gm

Water Content Information

Container ID	
Wt. Container, gm	0
Wt. Container + Wet Soil, gm	1046.6
Wt. Container + Dry Soil, gm	866.13
Wt. Dry Soil, gm	866.13
Water Content, %	20.84
Void Ratio	0.71
Degree of Saturation, %	78.73
Wet Unit Weight, pcf	118.79
Dry Unit Weight, pcf	98.308

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-04P
Sample No.: 19-248
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 3/11/19
Sample Type: CORE

Project No.: 19-248
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description:
Remarks:

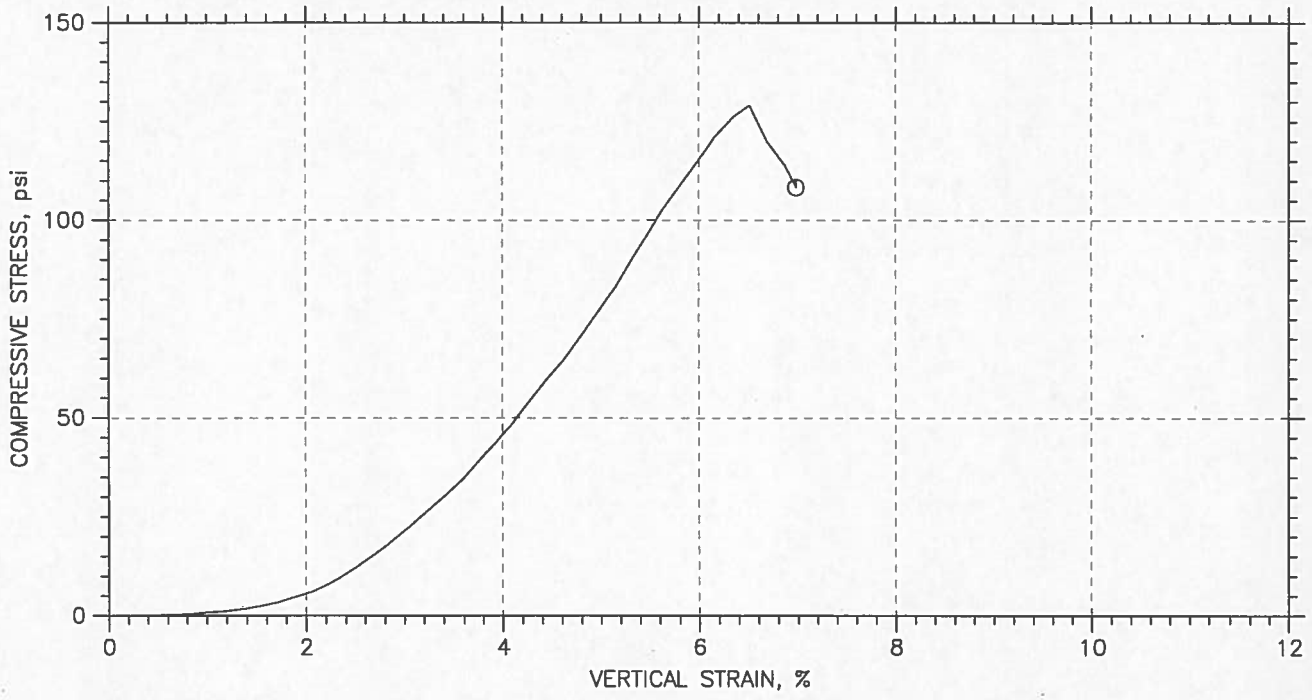
Specimen Height: 5.73 in
Specimen Area: 5.85 in^2
Specimen Volume: 550.01 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.70

Cap Mass: 0 gm

	Time min	Axial Displacement in	Axial Strain %	Load lb	Corrected Area in^2	Corrected Vertical Stress psi	Corrected Shear Stress psi
1	0	0	0	0.1233	5.8535	0.021065	0.010532
2	0.17042	0.0094915	0.16553	8.6004	5.8632	1.4668	0.73342
3	0.33733	0.019631	0.34237	17.416	5.8736	2.9652	1.4826
4	0.50407	0.029678	0.51759	26.448	5.8839	4.495	2.2475
5	0.66755	0.038985	0.67989	35.789	5.8936	6.0725	3.0362
6	0.83552	0.048708	0.84946	45.591	5.9036	7.7225	3.8613
7	1.0019	0.058199	1.015	54.654	5.9135	9.2422	4.6211
8	1.1699	0.067876	1.1837	62.73	5.9236	10.59	5.2949
9	1.3337	0.077414	1.3501	69.913	5.9336	11.782	5.8912
10	1.5019	0.087461	1.5253	76.91	5.9442	12.939	6.4694
11	1.6702	0.097138	1.6941	83.137	5.9544	13.962	6.9812
12	1.8342	0.10705	1.8669	88.932	5.9648	14.909	7.4547
13	2.002	0.11737	2.0469	94.943	5.9758	15.888	7.9439
14	2.1696	0.12737	2.2213	99.536	5.9865	16.627	8.3134
15	2.3334	0.13723	2.3933	103.05	5.997	17.184	8.5918
16	2.5018	0.14784	2.5782	104.75	6.0084	17.433	8.7166
17	2.6694	0.15761	2.7486	105.27	6.0189	17.49	8.7449
18	2.8334	0.16714	2.915	103.97	6.0292	17.245	8.6226
19	3.0012	0.17705	3.0878	99.536	6.04	16.479	8.2397
20	3.1691	0.18719	3.2646	89.703	6.051	14.824	7.4122
21	3.2181	0.19002	3.3138	86.25	6.0541	14.247	7.1233

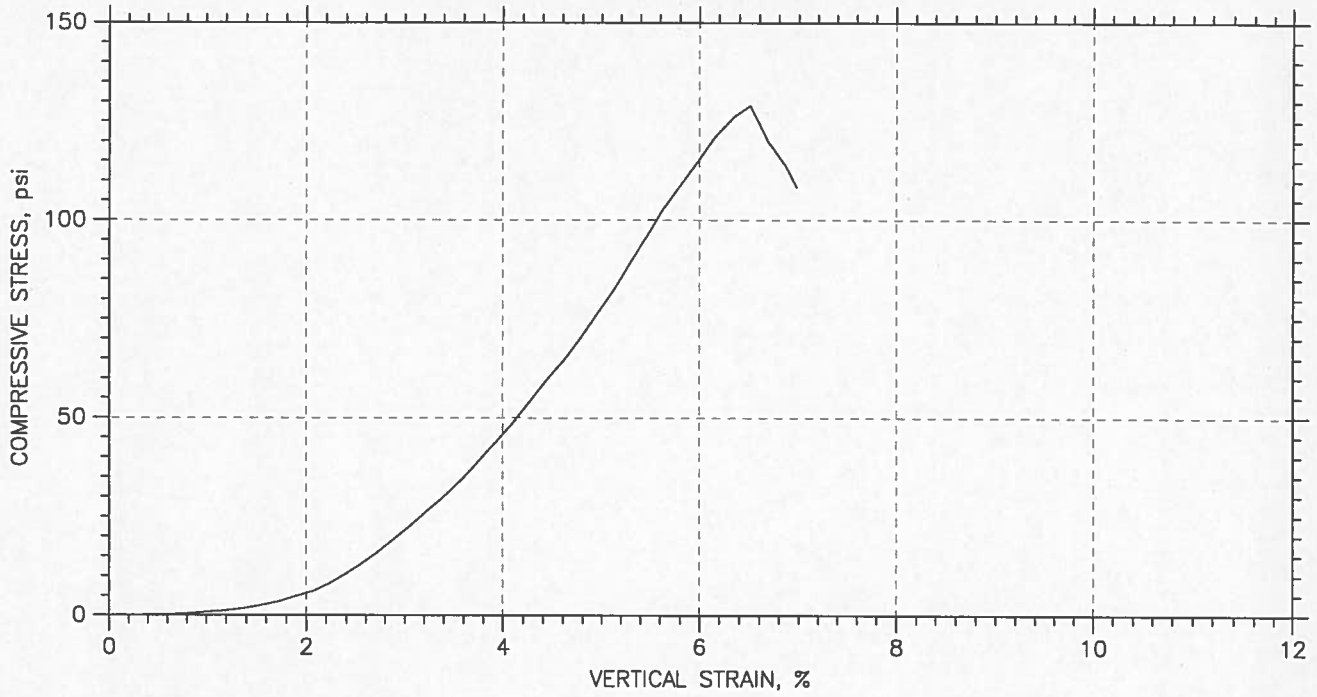
UNCONFINED COMPRESSION TEST REPORT



Symbol		⊙			
Test No.		1			
Initial	Diameter, in	1.399			
	Height, in	3.045			
	Water Content, %	21.46			
	Dry Density, pcf	101.1			
	Saturation, %	85.32			
	Void Ratio	0.687			
Unconfined Compressive Strength, psi		128.9			
Undrained Shear Strength, psi		64.47			
Time to Failure, min		6.3362			
Strain Rate, %/min		1			
Measured Specific Gravity		2.73			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-252
	Boring No.: B-04P
	Sample Type: CORE
	Description:
	Remarks:

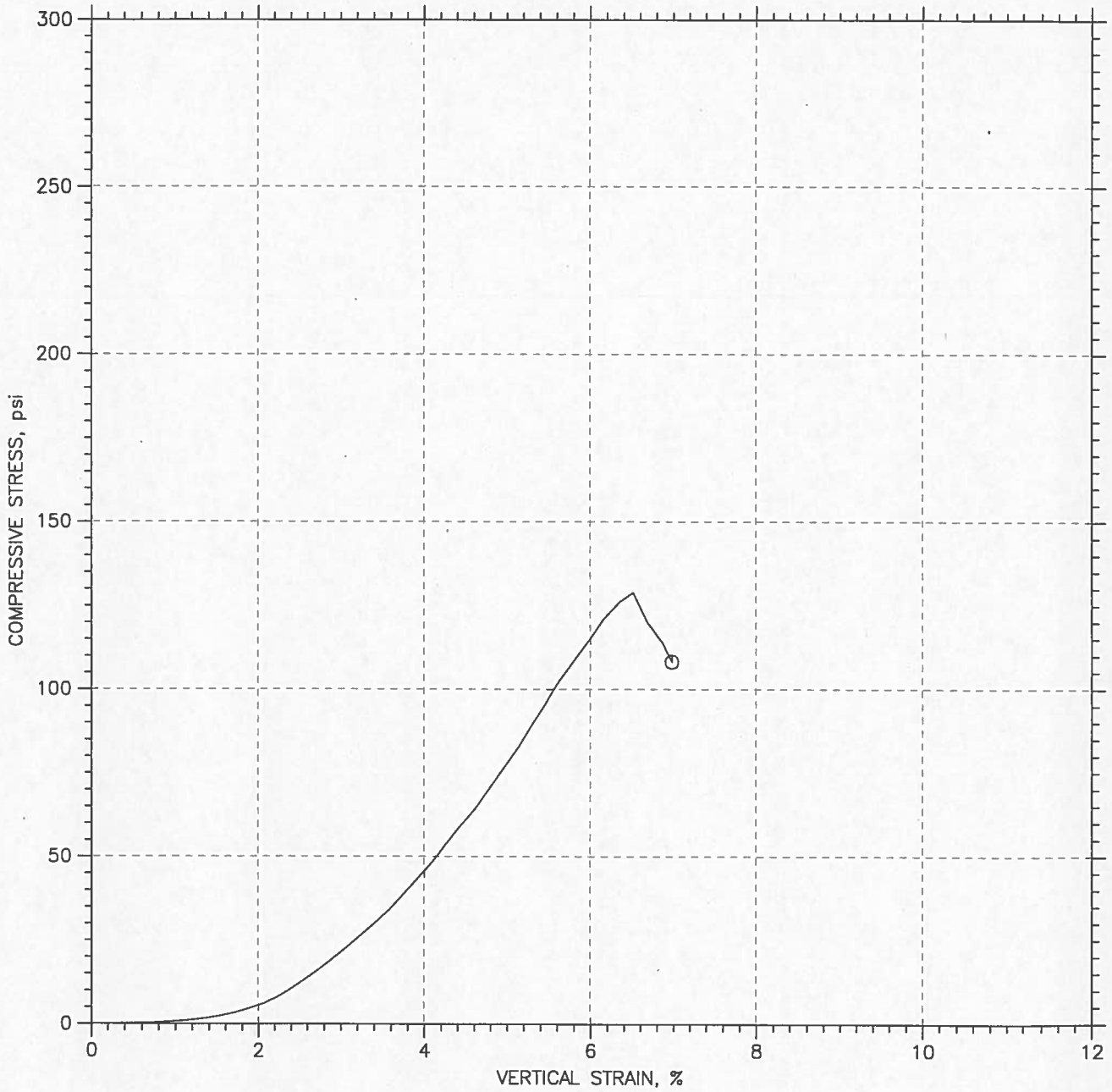
UNCONFINED COMPRESSION TEST REPORT



Symbol					
Test No.		1			
Initial	Diameter, in	1.399			
	Height, in	3.045			
	Water Content, %	21.46			
	Dry Density, pcf	101.1			
	Saturation, %	85.32			
	Void Ratio	0.687			
Unconfined Compressive Strength, psi		128.9			
Undrained Shear Strength, psi		64.47			
Time to Failure, min		6.3362			
Strain Rate, %/min		1			
Measured Specific Gravity		2.73			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-252
	Boring No.: B-04P
	Sample Type: CORE
	Description:
	Remarks:

UNCONFINED COMPRESSION TEST REPORT



	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-252
	Boring No.: B-04P	Tested By: SKK	Checked By: SKK
	Sample No.: 19-252	Test Date: 2/13/19	Depth: 53-55'
	Test No.: 1	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks:		

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-04P
Sample No.: 19-252
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 2/13/19
Sample Type: CORE

Project No.: 19-252
Checked By: SKK
Depth: 53-55'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 3.04 in
Specimen Area: 1.54 in^2
Specimen Volume: 76.70 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.73

Cap Mass: 0 gm

Water Content Information

Container ID	
Wt. Container, gm	0
Wt. Container + Wet Soil, gm	150.8
Wt. Container + Dry Soil, gm	124.16
Wt. Dry Soil, gm	124.16
Water Content, %	21.46
Void Ratio	0.69
Degree of Saturation, %	85.32
Wet Unit Weight, pcf	122.73
Dry Unit Weight, pcf	101.05

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-04P
Sample No.: 19-252
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 2/13/19
Sample Type: CORE

Project No.: 19-252
Checked By: SKK
Depth: 53-55'
Elevation: N/A

Soil Description:
Remarks:

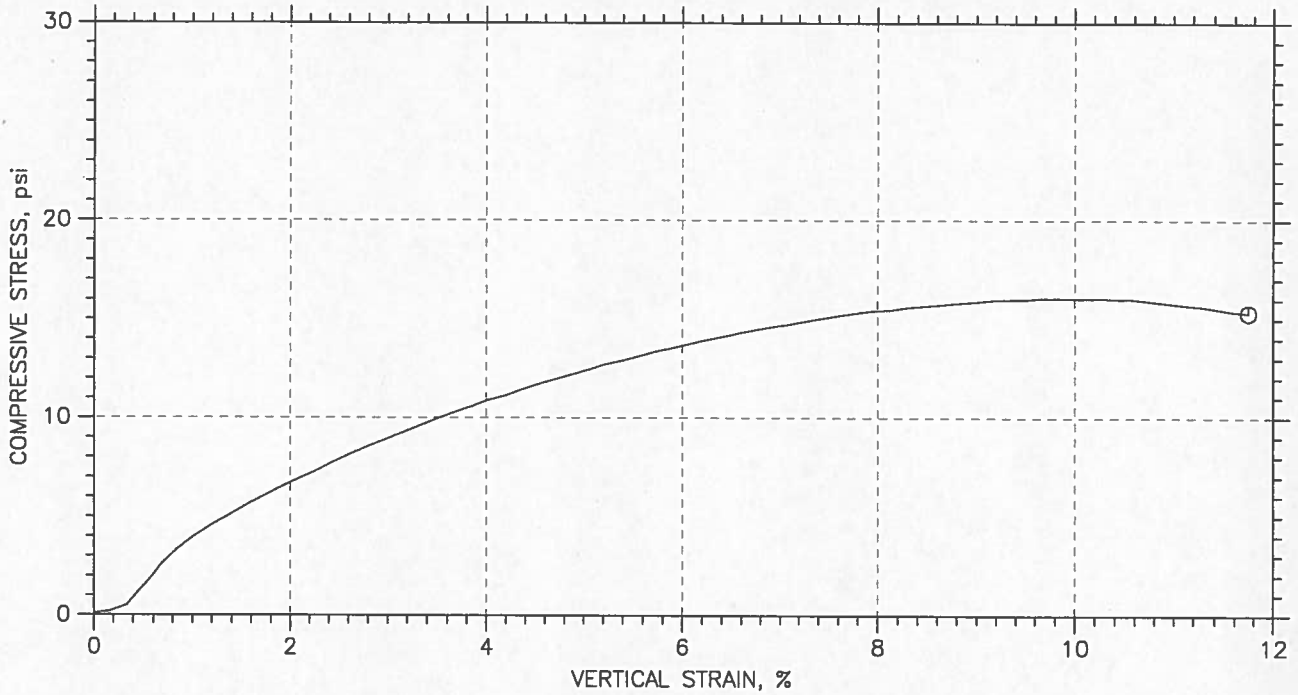
Specimen Height: 3.04 in
Specimen Area: 1.54 in^2
Specimen Volume: 76.70 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.73

Cap Mass: 0 gm

	Time min	Axial Displacement in	Axial Strain %	Load lb	Corrected Area in^2	Corrected Vertical Stress psi	Corrected Shear Stress psi
1	0	0	0	0.15413	1.5372	0.10027	0.050133
2	0.17067	0.0048615	0.15966	0.15413	1.5396	0.10011	0.050053
3	0.33422	0.01051	0.34516	0.21578	1.5425	0.13989	0.069944
4	0.5011	0.015788	0.5185	0.33908	1.5452	0.21944	0.10972
5	0.6673	0.020557	0.67512	0.46238	1.5476	0.29877	0.14938
6	0.83423	0.026437	0.86822	0.83229	1.5506	0.53674	0.26837
7	1.0014	0.030975	1.0172	1.2639	1.553	0.81382	0.40691
8	1.1684	0.036299	1.1921	1.7879	1.5557	1.1492	0.57461
9	1.3356	0.041485	1.3624	2.5894	1.5584	1.6615	0.83077
10	1.5025	0.046578	1.5297	3.7607	1.5611	2.4091	1.2045
11	1.6692	0.052273	1.7167	5.2712	1.564	3.3703	1.6851
12	1.8367	0.057088	1.8748	7.1207	1.5666	4.5455	2.2727
13	2.0039	0.062876	2.0649	9.5251	1.5696	6.0685	3.0343
14	2.1698	0.067598	2.22	12.361	1.5721	7.8629	3.9314
15	2.3373	0.072136	2.369	15.844	1.5745	10.063	5.0316
16	2.5042	0.07709	2.5317	19.975	1.5771	12.666	6.3328
17	2.6672	0.082229	2.7005	24.661	1.5798	15.609	7.8047
18	2.8339	0.087507	2.8738	29.963	1.5827	18.932	9.4658
19	3.0011	0.092647	3.0426	35.419	1.5854	22.34	11.17
20	3.1683	0.097971	3.2174	41.399	1.5883	26.065	13.033
21	3.335	0.10339	3.3953	47.687	1.5912	29.969	14.985
22	3.5043	0.10894	3.5778	54.5	1.5942	34.186	17.093
23	3.6707	0.11404	3.7451	61.929	1.597	38.778	19.389
24	3.8369	0.11932	3.9184	69.543	1.5999	43.468	21.734
25	4.0038	0.12445	4.0872	77.403	1.6027	48.296	24.148
26	4.1702	0.12955	4.2545	86.189	1.6055	53.684	26.842
27	4.3367	0.1351	4.4369	95.56	1.6086	59.407	29.704
28	4.5044	0.14024	4.6057	103.61	1.6114	64.295	32.148
29	4.6708	0.14524	4.7699	112.82	1.6142	69.894	34.947
30	4.8336	0.15061	4.9463	122.99	1.6172	76.055	38.028
31	5.0042	0.1564	5.1364	134.09	1.6204	82.752	41.376
32	5.1672	0.16122	5.2945	144.73	1.6231	89.166	44.583
33	5.3352	0.16645	5.4663	155.98	1.6261	95.923	47.962
34	5.5011	0.17122	5.6229	166.86	1.6288	102.45	51.223
35	5.6668	0.17687	5.8084	177.68	1.632	108.87	54.437
36	5.8335	0.18228	5.9863	187.88	1.6351	114.91	57.454
37	6.0036	0.18742	6.1551	198.21	1.638	121.01	60.503
38	6.1703	0.19335	6.3497	207.12	1.6414	126.18	63.091
39	6.3362	0.19816	6.5079	211.99	1.6442	128.93	64.466
40	6.5034	0.20354	6.6843	197.47	1.6473	119.88	59.938
41	6.6704	0.20905	6.8652	187.85	1.6505	113.82	56.908
42	6.7805	0.21247	6.9777	178.82	1.6525	108.21	54.106

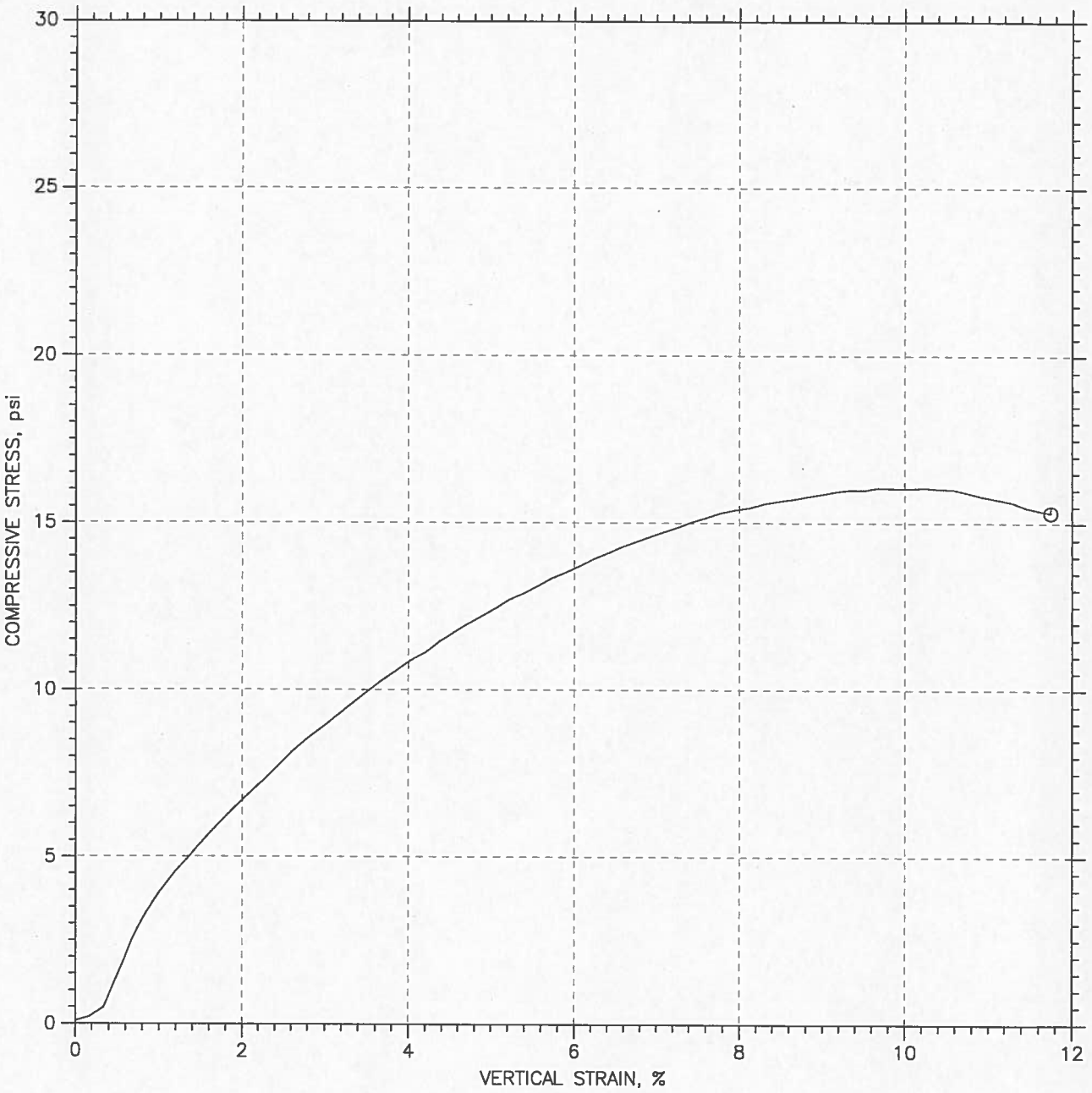
UNCONFINED COMPRESSION TEST REPORT



Symbol		⊙			
Test No.		1			
Initial	Diameter, in	1.387			
	Height, in	3.018			
	Water Content, %	18.39			
	Dry Density, pcf	108.			
	Saturation, %	91.71			
	Void Ratio	0.531			
Unconfined Compressive Strength, psi		16.07			
Undrained Shear Strength, psi		8.035			
Time to Failure, min		9.3337			
Strain Rate, %/min		1			
Measured Specific Gravity		2.65			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-277
	Boring No.: B-301
	Sample Type: CORE
	Description:
	Remarks:

UNCONFINED COMPRESSION TEST REPORT



	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-277
	Boring No.: B-301	Tested By: SKK	Checked By: SKK
	Sample No.: 19-277	Test Date: 3/11/19	Depth: 2-4'
	Test No.: 1	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks:		

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-277
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 3/11/19
Sample Type: CORE

Project No.: 19-277
Checked By: SKK
Depth: 2-4'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 3.02 in
Specimen Area: 1.51 in^2
Specimen Volume: 74.72 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.65

Cap Mass: 0 gm

Water Content Information

Container ID	
Wt. Container, gm	0
Wt. Container + Wet Soil, gm	153.09
Wt. Container + Dry Soil, gm	129.31
Wt. Dry Soil, gm	129.31
Water Content, %	18.39
Void Ratio	0.53
Degree of Saturation, %	91.71
Wet Unit Weight, pcf	127.9
Dry Unit Weight, pcf	108.03

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-277
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 3/11/19
Sample Type: CORE

Project No.: 19-277
Checked By: SKK
Depth: 2-4'
Elevation: N/A

Soil Description:
Remarks:

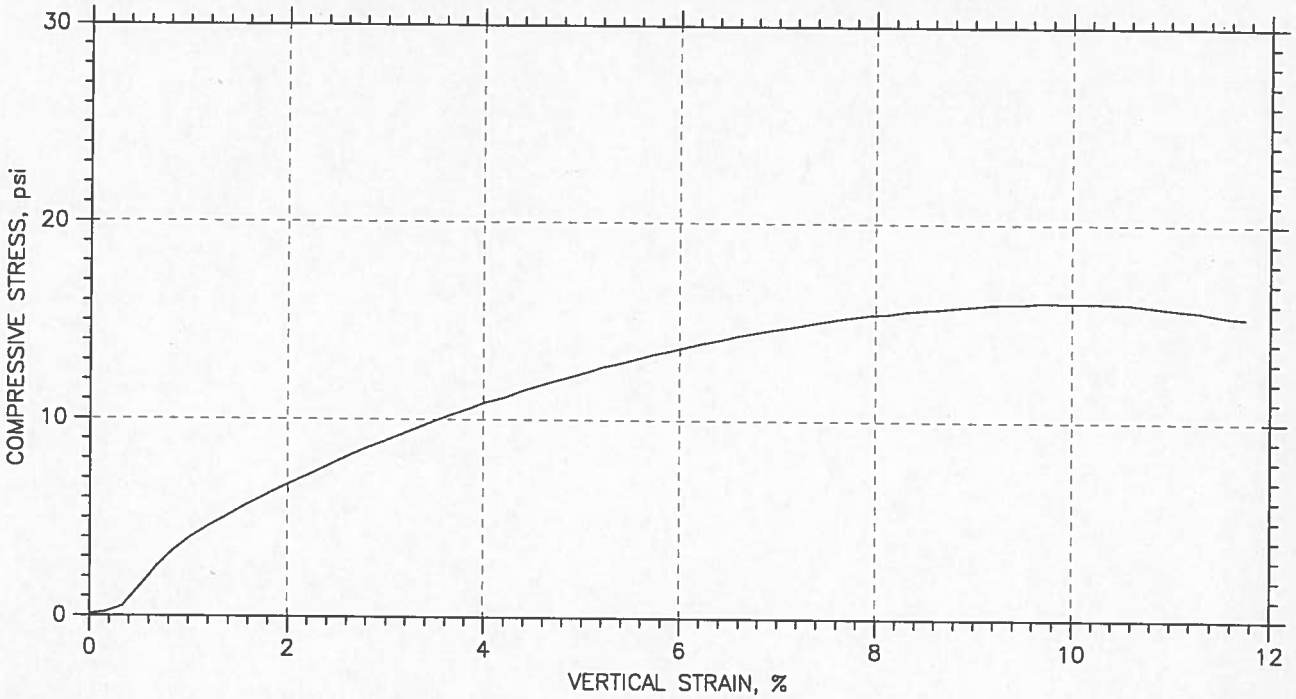
Specimen Height: 3.02 in
Specimen Area: 1.51 in^2
Specimen Volume: 74.72 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.65

Cap Mass: 0 gm

	Time min	Axial Displacement in	Axial Strain %	Load lb	Corrected Area in^2	Corrected Vertical Stress psi	Corrected Shear Stress psi
1	0	0	0	0.1233	1.5109	0.081607	0.040804
2	0.16675	0.005093	0.16875	0.30826	1.5135	0.20367	0.10184
3	0.33393	0.010093	0.33444	0.73982	1.516	0.48801	0.244
4	0.50147	0.015279	0.50626	2.2503	1.5186	1.4818	0.7409
5	0.66883	0.020326	0.67349	3.8224	1.5212	2.5128	1.2564
6	0.83628	0.025373	0.84071	5.0554	1.5237	3.3178	1.6589
7	1.0041	0.030604	1.0141	6.0727	1.5264	3.9784	1.9892
8	1.1709	0.035975	1.192	6.9666	1.5292	4.5559	2.2779
9	1.3345	0.041439	1.3731	7.7372	1.532	5.0506	2.5253
10	1.5023	0.046763	1.5495	8.5387	1.5347	5.5637	2.7819
11	1.6696	0.052273	1.732	9.2785	1.5376	6.0346	3.0173
12	1.8373	0.057597	1.9085	9.9875	1.5403	6.484	3.242
13	2.0012	0.062644	2.0757	10.604	1.543	6.8726	3.4363
14	2.1683	0.068339	2.2644	11.282	1.5459	7.298	3.649
15	2.336	0.073571	2.4377	11.96	1.5487	7.7229	3.8615
16	2.5038	0.078525	2.6019	12.608	1.5513	8.1272	4.0636
17	2.6709	0.083942	2.7814	13.224	1.5542	8.509	4.2545
18	2.8347	0.089637	2.9701	13.81	1.5572	8.8686	4.4343
19	3.003	0.095008	3.148	14.396	1.56	9.2277	4.6139
20	3.1701	0.10033	3.3245	14.981	1.5629	9.5857	4.7928
21	3.334	0.10543	3.4932	15.536	1.5656	9.9233	4.9617
22	3.5019	0.11061	3.6651	16.091	1.5684	10.259	5.1297
23	3.6691	0.11626	3.8522	16.615	1.5715	10.573	5.2865
24	3.8376	0.12108	4.0118	17.108	1.5741	10.869	5.4344
25	4.0012	0.12682	4.202	17.54	1.5772	11.121	5.5604
26	4.1707	0.132	4.3738	18.095	1.58	11.452	5.726
27	4.3345	0.13691	4.5364	18.526	1.5827	11.705	5.8526
28	4.5017	0.142	4.7052	18.958	1.5855	11.957	5.9784
29	4.6691	0.14705	4.8724	19.359	1.5883	12.188	6.094
30	4.8371	0.15284	5.0642	19.821	1.5915	12.454	6.227
31	5.0004	0.15724	5.2099	20.252	1.594	12.706	6.3528
32	5.1686	0.16279	5.394	20.592	1.5971	12.893	6.4467
33	5.336	0.16793	5.5643	20.992	1.6	13.121	6.5603
34	5.5038	0.17284	5.7269	21.393	1.6027	13.348	6.674
35	5.6699	0.17816	5.9034	21.732	1.6057	13.534	6.7671
36	5.8337	0.18316	6.069	22.071	1.6085	13.721	6.8606
37	6.0019	0.18812	6.2332	22.441	1.6114	13.927	6.9634
38	6.1699	0.19377	6.4204	22.78	1.6146	14.109	7.0545
39	6.3334	0.19872	6.5845	23.119	1.6174	14.294	7.1469
40	6.5046	0.20414	6.764	23.427	1.6205	14.457	7.2283
41	6.6709	0.20923	6.9328	23.705	1.6235	14.601	7.3007
42	6.8345	0.21432	7.1015	23.982	1.6264	14.745	7.3727
43	7.0023	0.21937	7.2687	24.26	1.6294	14.889	7.4446
44	7.1691	0.22423	7.4298	24.537	1.6322	15.033	7.5166
45	7.3373	0.22965	7.6093	24.815	1.6354	15.174	7.5869
46	7.5007	0.23428	7.7627	25.061	1.6381	15.299	7.6496
47	7.6678	0.23965	7.9407	25.277	1.6413	15.401	7.7005
48	7.836	0.24511	8.1217	25.431	1.6445	15.465	7.7323
49	8.0036	0.25039	8.2966	25.678	1.6476	15.585	7.7924
50	8.1699	0.25604	8.4838	25.863	1.651	15.665	7.8325
51	8.3337	0.26127	8.6571	26.017	1.6541	15.728	7.8642
52	8.5007	0.26655	8.832	26.202	1.6573	15.81	7.905
53	8.6681	0.27146	8.9946	26.356	1.6603	15.875	7.9373
54	8.8352	0.2765	9.1619	26.541	1.6633	15.957	7.9783
55	9.0027	0.28183	9.3383	26.664	1.6666	16	7.9998
56	9.1701	0.28743	9.5239	26.726	1.67	16.004	8.0019
57	9.3337	0.29202	9.6758	26.88	1.6728	16.069	8.0345
58	9.5017	0.29776	9.866	26.911	1.6763	16.054	8.0268
59	9.6688	0.30331	10.05	26.942	1.6797	16.039	8.0196
60	9.836	0.30845	10.22	27.034	1.6829	16.064	8.0319
61	10.004	0.31392	10.401	27.034	1.6863	16.031	8.0157
62	10.171	0.31933	10.581	27.065	1.6897	16.017	8.0087
63	10.334	0.32466	10.757	26.942	1.6931	15.913	7.9565
64	10.502	0.3297	10.925	26.818	1.6962	15.811	7.9053
65	10.669	0.33517	11.106	26.726	1.6997	15.724	7.862
66	10.838	0.34058	11.285	26.633	1.7031	15.638	7.819
67	11.001	0.34549	11.448	26.418	1.7063	15.483	7.7414
68	11.169	0.35068	11.62	26.294	1.7096	15.381	7.6903
69	11.306	0.35443	11.744	26.233	1.712	15.323	7.6615

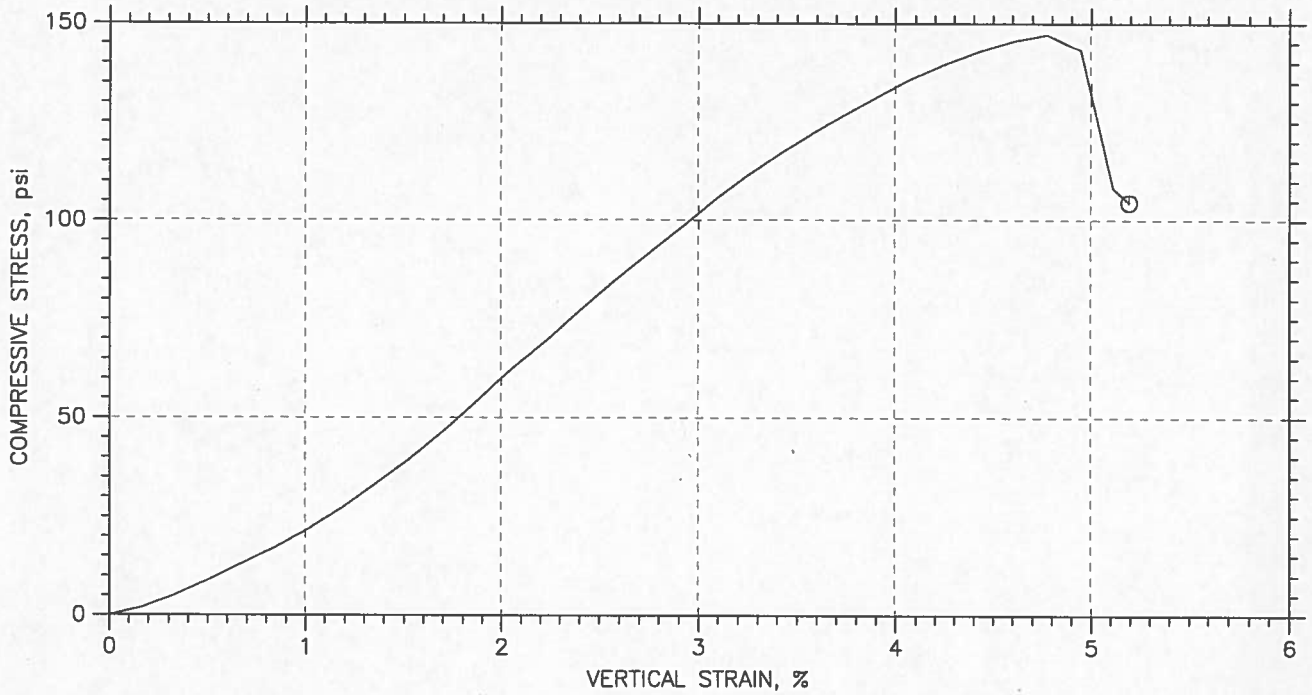
UNCONFINED COMPRESSION TEST REPORT



Symbol					
Test No.		1			
Initial	Diameter, in	1.387			
	Height, in	3.018			
	Water Content, %	18.39			
	Dry Density, pcf	108.			
	Saturation, %	91.71			
	Void Ratio	0.531			
Unconfined Compressive Strength, psi		16.07			
Undrained Shear Strength, psi		8.035			
Time to Failure, min		9.3337			
Strain Rate, %/min		1			
Measured Specific Gravity		2.65			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-277
	Boring No.: B-301
	Sample Type: CORE
	Description:
	Remarks:

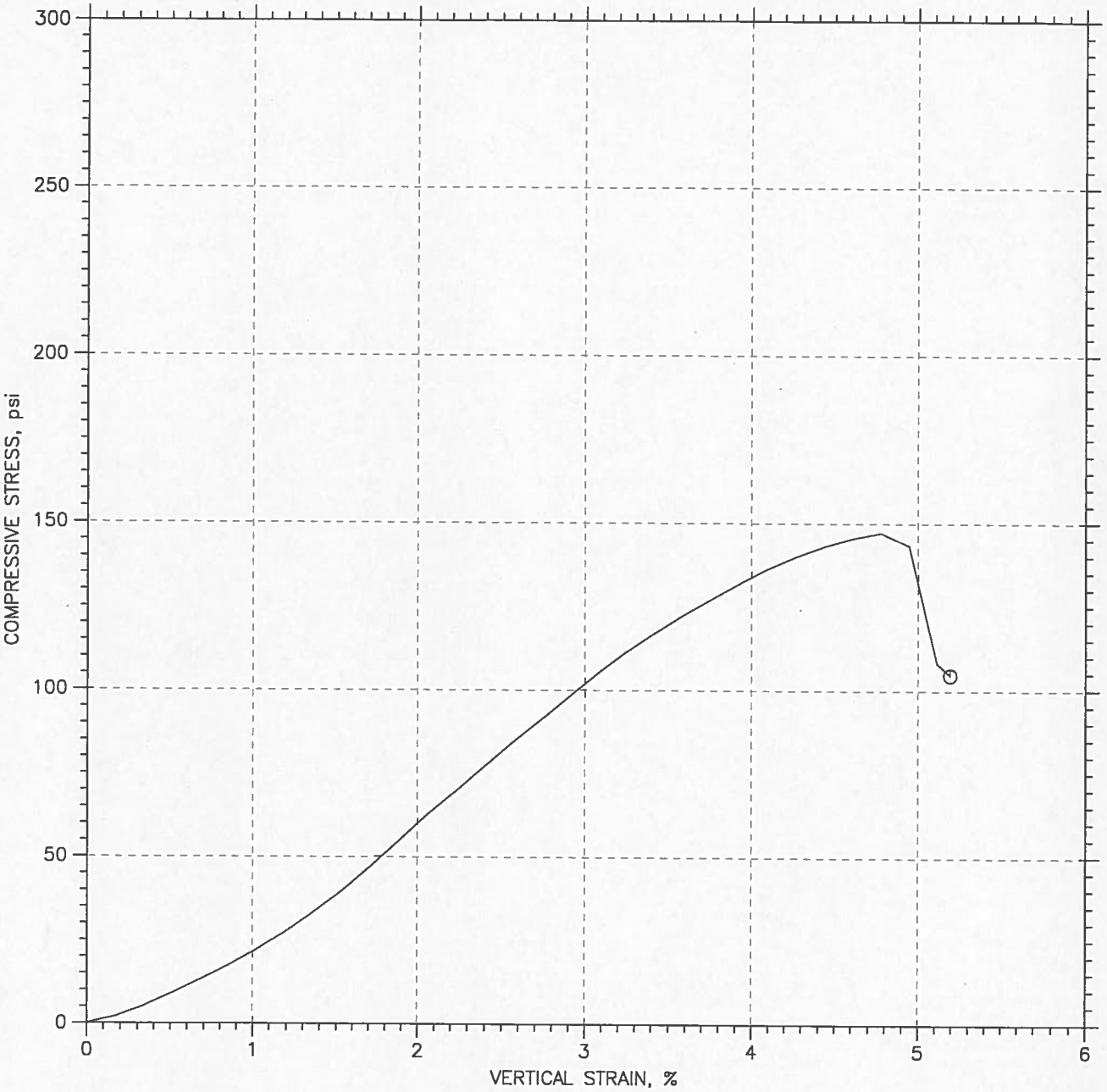
UNCONFINED COMPRESSION TEST REPORT



Symbol		⊙			
Test No.		1			
Initial	Diameter, in	2.619			
	Height, in	5.524			
	Water Content, %	21.21			
	Dry Density, pcf	101.4			
	Saturation, %	84.20			
	Void Ratio	0.693			
Unconfined Compressive Strength, psi		147.2			
Undrained Shear Strength, psi		73.58			
Time to Failure, min		4.6705			
Strain Rate, %/min		1			
Measured Specific Gravity		2.75			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-299
	Boring No.: B-603
	Sample Type: CORE
	Description:
	Remarks:

UNCONFINED COMPRESSION TEST REPORT



	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-299
	Boring No.: B-603	Tested By: SKK	Checked By: SKK
	Sample No.: 19-299	Test Date: 2/13/19	Depth: 23-24'
	Test No.: 1	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks:		

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-299
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 2/13/19
Sample Type: CORE

Project No.: 19-299
Checked By: SKK
Depth: 23-24'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 5.52 in
Specimen Area: 5.39 in^2
Specimen Volume: 487.66 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.75

Cap Mass: 0 gm

Water Content Information

Container ID	
Wt. Container, gm	0
Wt. Container + Wet Soil, gm	960.3
Wt. Container + Dry Soil, gm	792.28
Wt. Dry Soil, gm	792.28
Water Content, %	21.21
Void Ratio	0.69
Degree of Saturation, %	84.20
Wet Unit Weight, pcf	122.93
Dry Unit Weight, pcf	101.42

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-299
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 2/13/19
Sample Type: CORE

Project No.: 19-299
Checked By: SKK
Depth: 23-24'
Elevation: N/A

Soil Description:
Remarks:

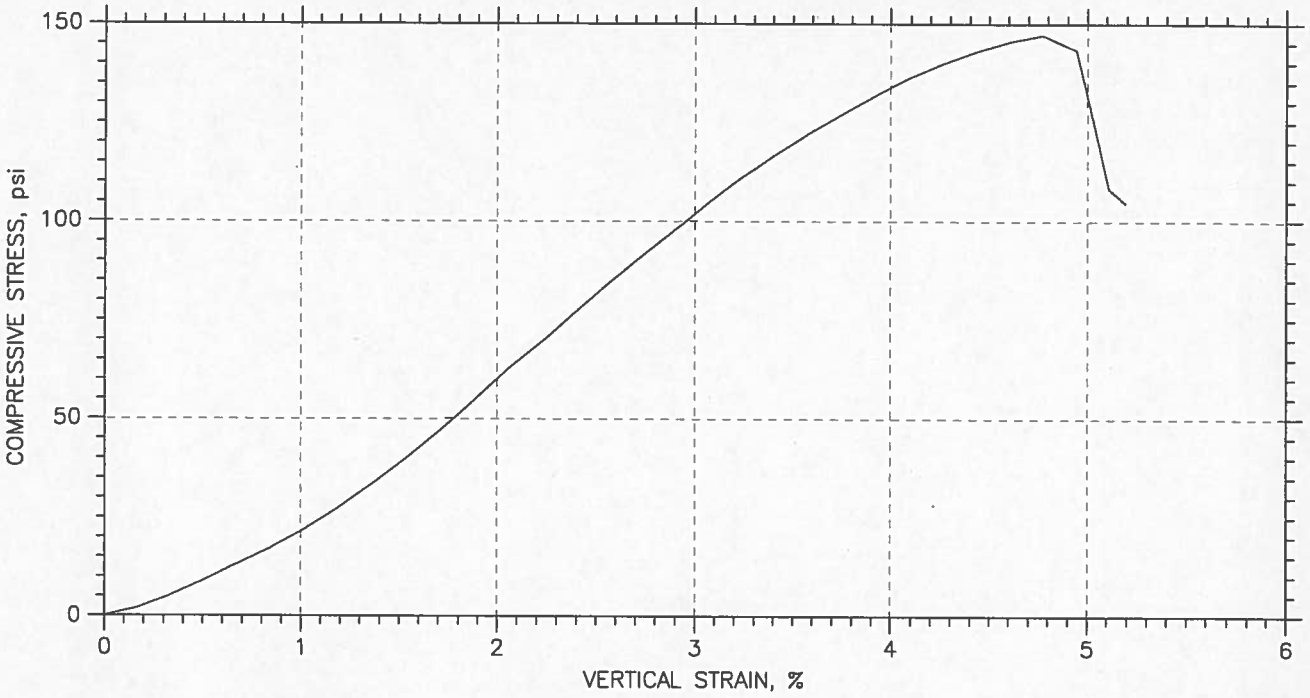
Specimen Height: 5.52 in
Specimen Area: 5.39 in^2
Specimen Volume: 487.66 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.75

Cap Mass: 0 gm

	Time min	Axial Displacement in	Axial Strain %	Load lb	Corrected Area in^2	Corrected Vertical Stress psi	Corrected Shear Stress psi
1	0	0	0	0.18495	5.3872	0.034332	0.017166
2	0.17052	0.0091211	0.16512	10.265	5.3961	1.9023	0.95115
3	0.33773	0.01815	0.32856	27.188	5.4049	5.0303	2.5151
4	0.50392	0.027734	0.50206	47.687	5.4144	8.8076	4.4038
5	0.6667	0.036901	0.66802	69.728	5.4234	12.857	6.4284
6	0.83365	0.046347	0.839	92.2	5.4328	16.971	8.4855
7	1.0016	0.055884	1.0117	118.12	5.4422	21.705	10.853
8	1.1681	0.06533	1.1827	147.13	5.4516	26.988	13.494
9	1.3358	0.074636	1.3511	179.74	5.461	32.914	16.457
10	1.5032	0.084637	1.5322	216.61	5.471	39.593	19.796
11	1.67	0.094499	1.7107	257.33	5.4809	46.95	23.475
12	1.8335	0.10376	1.8783	299.19	5.4903	54.495	27.247
13	2.0041	0.11353	2.0552	343.4	5.5002	62.434	31.217
14	2.17	0.12408	2.2463	386.77	5.511	70.182	35.091
15	2.3377	0.13311	2.4097	428.17	5.5202	77.564	38.782
16	2.501	0.14237	2.5774	468.77	5.5297	84.772	42.386
17	2.668	0.15214	2.7542	508.72	5.5397	91.83	45.915
18	2.8347	0.16145	2.9227	547.46	5.5494	98.653	49.327
19	3.0027	0.1702	3.0811	584.61	5.5584	105.18	52.588
20	3.1701	0.17914	3.2429	618.95	5.5677	111.17	55.584
21	3.3371	0.18886	3.4189	652.73	5.5779	117.02	58.511
22	3.5045	0.1983	3.5899	684.3	5.5878	122.46	61.232
23	3.667	0.20789	3.7634	713.06	5.5978	127.38	63.691
24	3.8348	0.21715	3.931	740.65	5.6076	132.08	66.04
25	4.0025	0.22608	4.0928	765.4	5.6171	136.26	68.132
26	4.1684	0.23571	4.2671	787.66	5.6273	139.97	69.985
27	4.3361	0.24502	4.4356	806.34	5.6372	143.04	71.519
28	4.5033	0.25465	4.6099	822.03	5.6475	145.56	72.778
29	4.6705	0.26373	4.7742	832.48	5.6573	147.15	73.576
30	4.8361	0.27317	4.9452	812.16	5.6674	143.3	71.652
31	5.0036	0.28234	5.1111	614.51	5.6773	108.24	54.119
32	5.095	0.28688	5.1933	594.16	5.6823	104.56	52.282

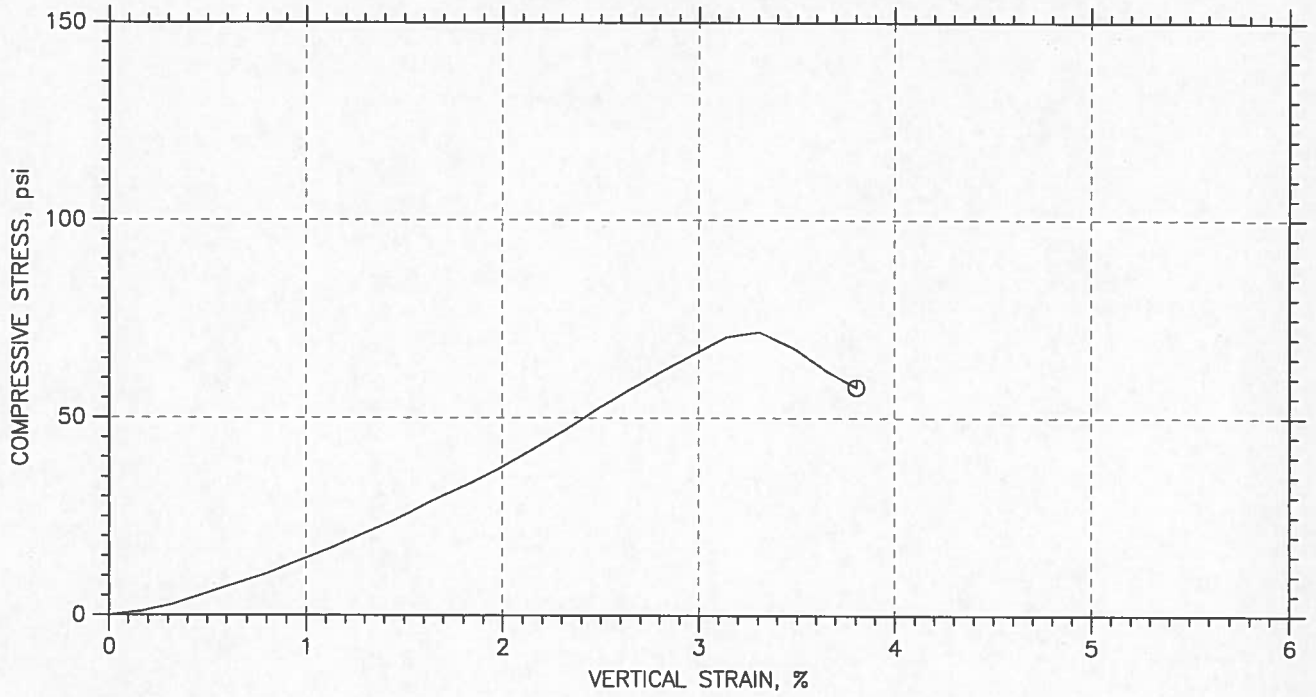
UNCONFINED COMPRESSION TEST REPORT



Symbol					
Test No.		1			
Initial	Diameter, in	2.619			
	Height, in	5.524			
	Water Content, %	21.21			
	Dry Density, pcf	101.4			
	Saturation, %	84.20			
	Void Ratio	0.693			
Unconfined Compressive Strength, psi		147.2			
Undrained Shear Strength, psi		73.58			
Time to Failure, min		4.6705			
Strain Rate, %/min		1			
Measured Specific Gravity		2.75			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-299
	Boring No.: B-603
	Sample Type: CORE
	Description:
	Remarks:

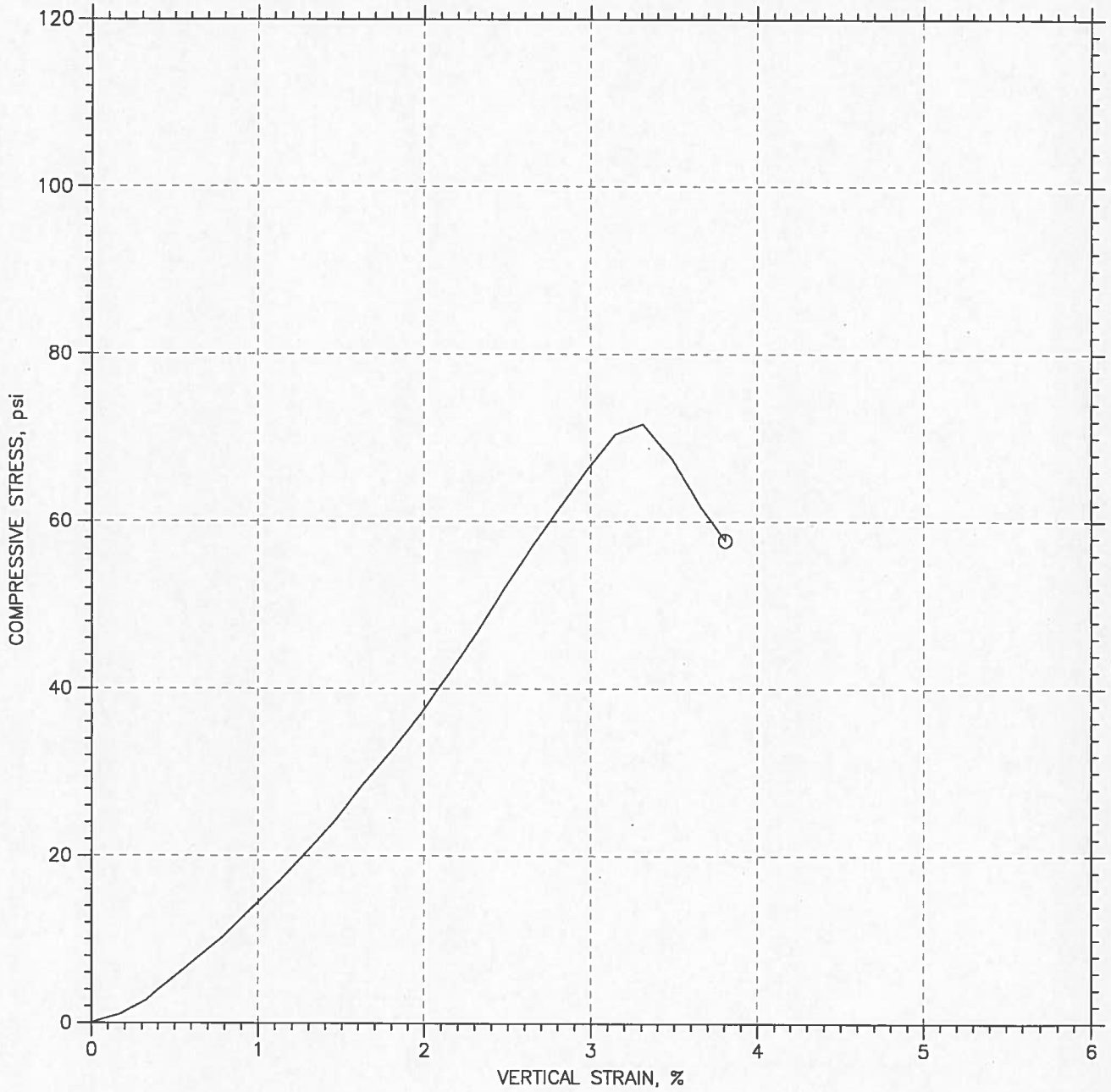
UNCONFINED COMPRESSION TEST REPORT



Symbol		⊙			
Test No.		1			
Initial	Diameter, in	2.747			
	Height, in	5.88			
	Water Content, %	21.85			
	Dry Density, pcf	99.53			
	Saturation, %	82.91			
	Void Ratio	0.725			
Unconfined Compressive Strength, psi		71.65			
Undrained Shear Strength, psi		35.83			
Time to Failure, min		3.3341			
Strain Rate, %/min		1			
Measured Specific Gravity		2.75			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-301
	Boring No.: B-603
	Sample Type: CORE
	Description:
	Remarks:

UNCONFINED COMPRESSION TEST REPORT



	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-301
	Boring No.: B-603	Tested By: SKK	Checked By: SKK
	Sample No.: 19-301	Test Date: 3/11/19	Depth: 38-39'
	Test No.: 1	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks:		

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-301
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 3/11/19
Sample Type: CORE

Project No.: 19-301
Checked By: SKK
Depth: 38-39'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 5.88 in
Specimen Area: 5.93 in^2
Specimen Volume: 571.07 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.75

Cap Mass: 0 gm

Water Content Information

Container ID	
Wt. Container, gm	0
Wt. Container + Wet Soil, gm	1109.4
Wt. Container + Dry Soil, gm	910.44
Wt. Dry Soil, gm	910.44
Water Content, %	21.85
Void Ratio	0.72
Degree of Saturation, %	82.91
Wet Unit Weight, pcf	121.28
Dry Unit Weight, pcf	99.528

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-301
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 3/11/19
Sample Type: CORE

Project No.: 19-301
Checked By: SKK
Depth: 38-39'
Elevation: N/A

Soil Description:
Remarks:

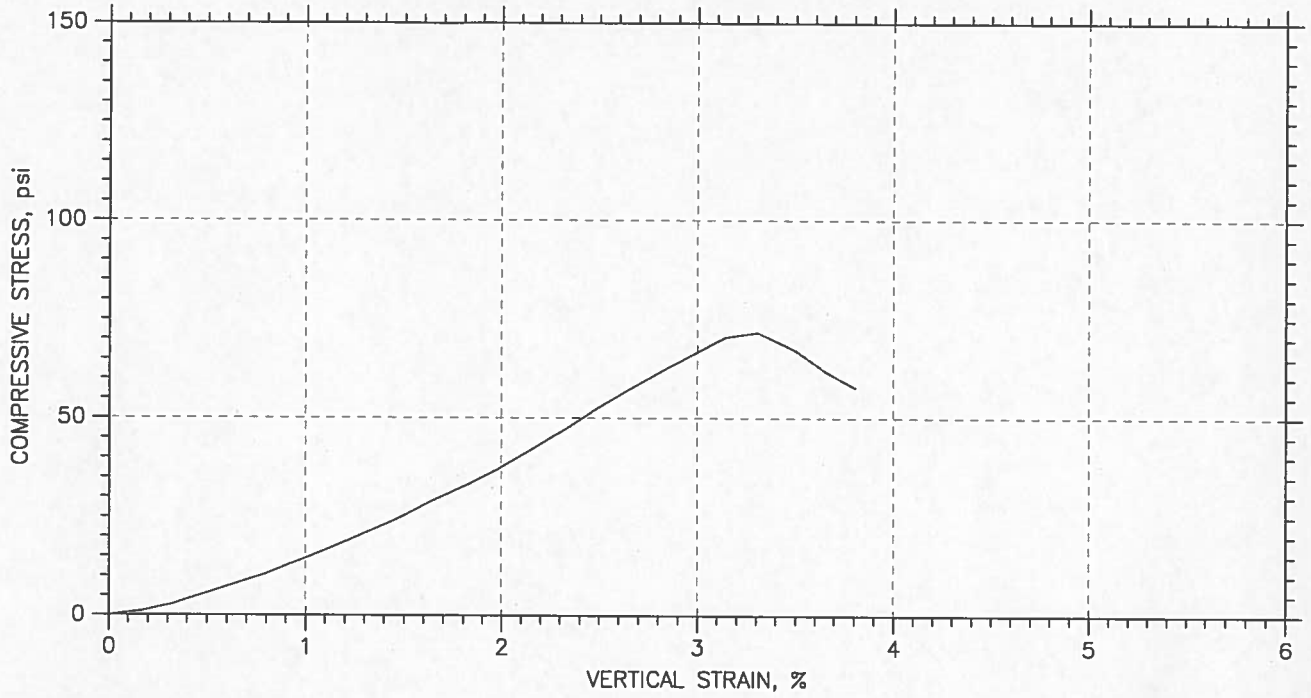
Specimen Height: 5.88 in
Specimen Area: 5.93 in^2
Specimen Volume: 571.07 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.75

Cap Mass: 0 gm

	Time min	Axial Displacement in	Axial Strain %	Load lb	Corrected Area in^2	Corrected Vertical Stress psi	Corrected Shear Stress psi
1	0	0	0	0.21578	5.9266	0.036409	0.018204
2	0.1703	0.0098619	0.16772	6.1651	5.9366	1.0385	0.51925
3	0.33383	0.019029	0.32363	16.183	5.9459	2.7218	1.3609
4	0.50137	0.027826	0.47324	30.733	5.9548	5.1611	2.5805
5	0.66848	0.036901	0.62757	45.684	5.9641	7.6598	3.8299
6	0.83645	0.046485	0.79057	61.59	5.9738	10.31	5.1549
7	1.0042	0.055838	0.94963	80.671	5.9834	13.482	6.7412
8	1.1708	0.065978	1.1221	101.45	5.9939	16.925	8.4626
9	1.3341	0.076164	1.2953	123.98	6.0044	20.648	10.324
10	1.5016	0.085887	1.4607	145.68	6.0145	24.222	12.111
11	1.6693	0.095656	1.6268	171.82	6.0246	28.52	14.26
12	1.8375	0.10617	1.8056	197.25	6.0356	32.682	16.341
13	2.0016	0.11645	1.9804	224.04	6.0464	37.054	18.527
14	2.169	0.12621	2.1465	253.36	6.0566	41.831	20.916
15	2.3365	0.13649	2.3213	284.98	6.0675	46.969	23.485
16	2.5044	0.14571	2.478	316.39	6.0772	52.062	26.031
17	2.668	0.15543	2.6434	347.04	6.0875	57.007	28.504
18	2.8359	0.16515	2.8087	375.86	6.0979	61.637	30.819
19	3.004	0.17529	2.9812	404.99	6.1087	66.296	33.148
20	3.1708	0.18488	3.1442	430.82	6.119	70.407	35.203
21	3.3341	0.19441	3.3064	439.17	6.1293	71.652	35.826
22	3.5016	0.20497	3.4859	414.48	6.1407	67.498	33.749
23	3.6693	0.21511	3.6583	379.56	6.1517	61.7	30.85
24	3.8013	0.22372	3.8048	355.6	6.161	57.718	28.859

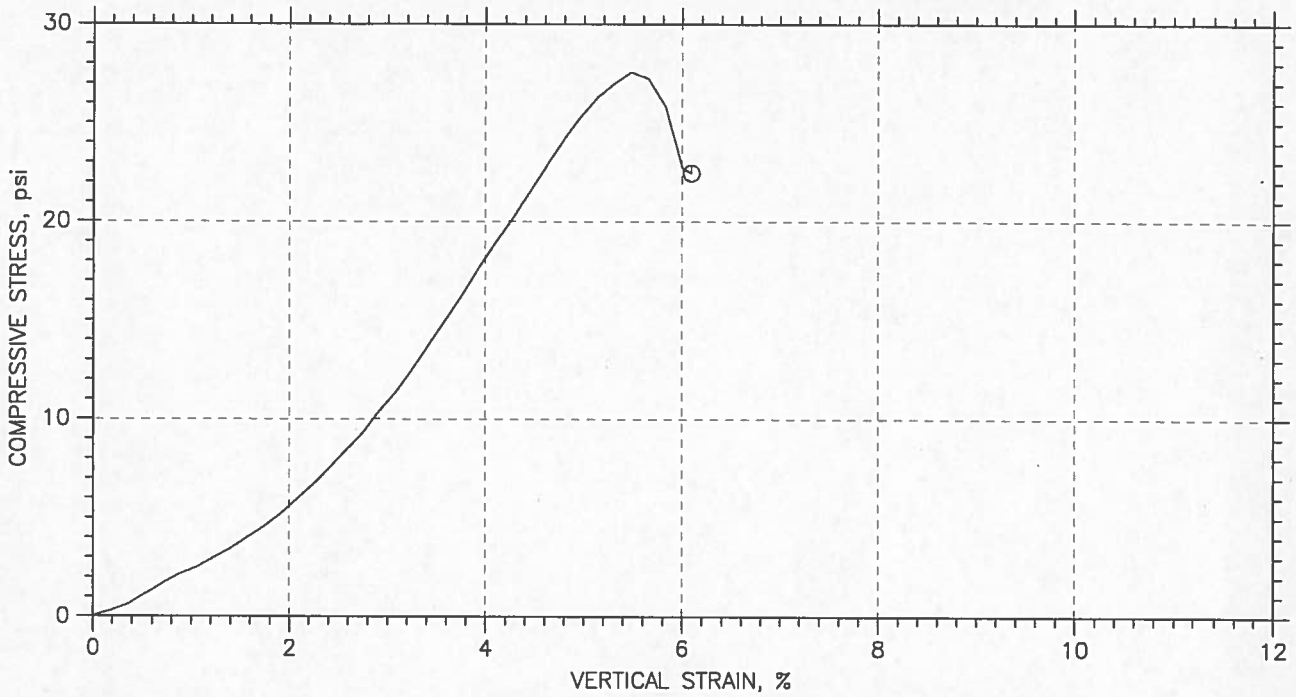
UNCONFINED COMPRESSION TEST REPORT



Symbol					
Test No.		1			
Initial	Diameter, in	2.747			
	Height, in	5.88			
	Water Content, %	21.85			
	Dry Density, pcf	99.53			
	Saturation, %	82.91			
	Void Ratio	0.725			
Unconfined Compressive Strength, psi		71.65			
Undrained Shear Strength, psi		35.83			
Time to Failure, min		3.3341			
Strain Rate, %/min		1			
Measured Specific Gravity		2.75			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-301
	Boring No.: B-603
	Sample Type: CORE
	Description:
	Remarks:

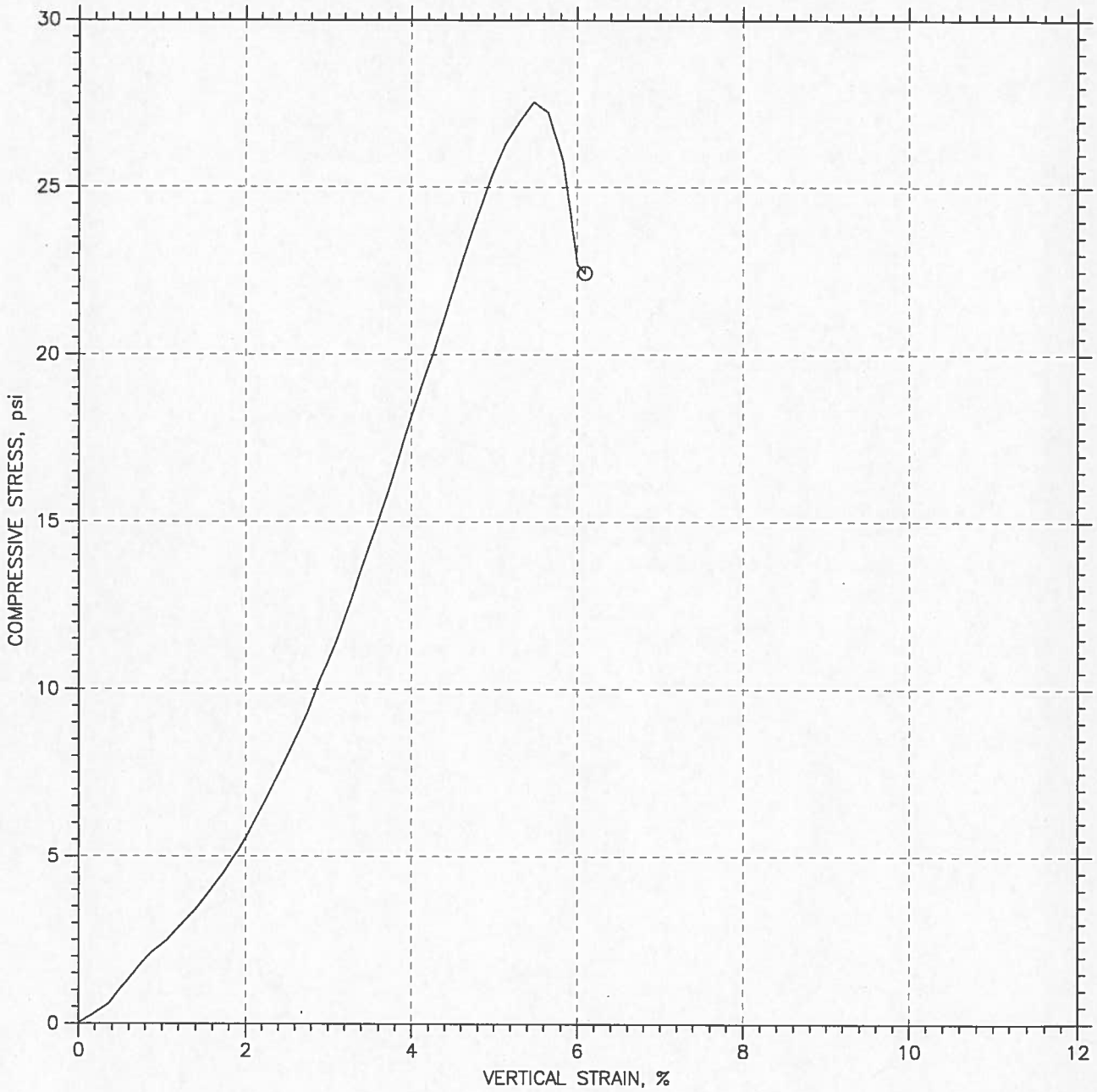
UNCONFINED COMPRESSION TEST REPORT



Symbol		⊙			
Test No.		1			
Initial	Diameter, in	2.93			
	Height, in	4.893			
	Water Content, %	22.06			
	Dry Density, pcf	77.22			
	Saturation, %	49.45			
	Void Ratio	1.23			
Unconfined Compressive Strength, psi		27.55			
Undrained Shear Strength, psi		13.78			
Time to Failure, min		5.335			
Strain Rate, %/min		1			
Measured Specific Gravity		2.76			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-306
	Boring No.: B-604
	Sample Type: CORE
	Description:
	Remarks: SAMPLE SHORT

UNCONFINED COMPRESSION TEST REPORT



	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-306
	Boring No.: B-604	Tested By: SKK	Checked By: SKK
	Sample No.: 19-306	Test Date: 2/13/19	Depth: 23-24.5'
	Test No.: 1	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SAMPLE SHORT		

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-306
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 2/13/19
Sample Type: CORE

Project No.: 19-306
Checked By: SKK
Depth: 23-24.5'
Elevation: N/A

Soil Description:
Remarks: SAMPLE SHORT

Specimen Height: 4.89 in
Specimen Area: 6.74 in^2
Specimen Volume: 540.63 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.76

Cap Mass: 0 gm

Water Content Information

Container ID	
Wt. Container, gm	0
Wt. Container + Wet Soil, gm	816.26
Wt. Container + Dry Soil, gm	668.75
Wt. Dry Soil, gm	668.75
Water Content, %	22.06
Void Ratio	1.23
Degree of Saturation, %	49.45
Wet Unit Weight, pcf	94.255
Dry Unit Weight, pcf	77.222

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-306
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 2/13/19
Sample Type: CORE

Project No.: 19-306
Checked By: SKK
Depth: 23-24.5'
Elevation: N/A

Soil Description:
Remarks: SAMPLE SHORT

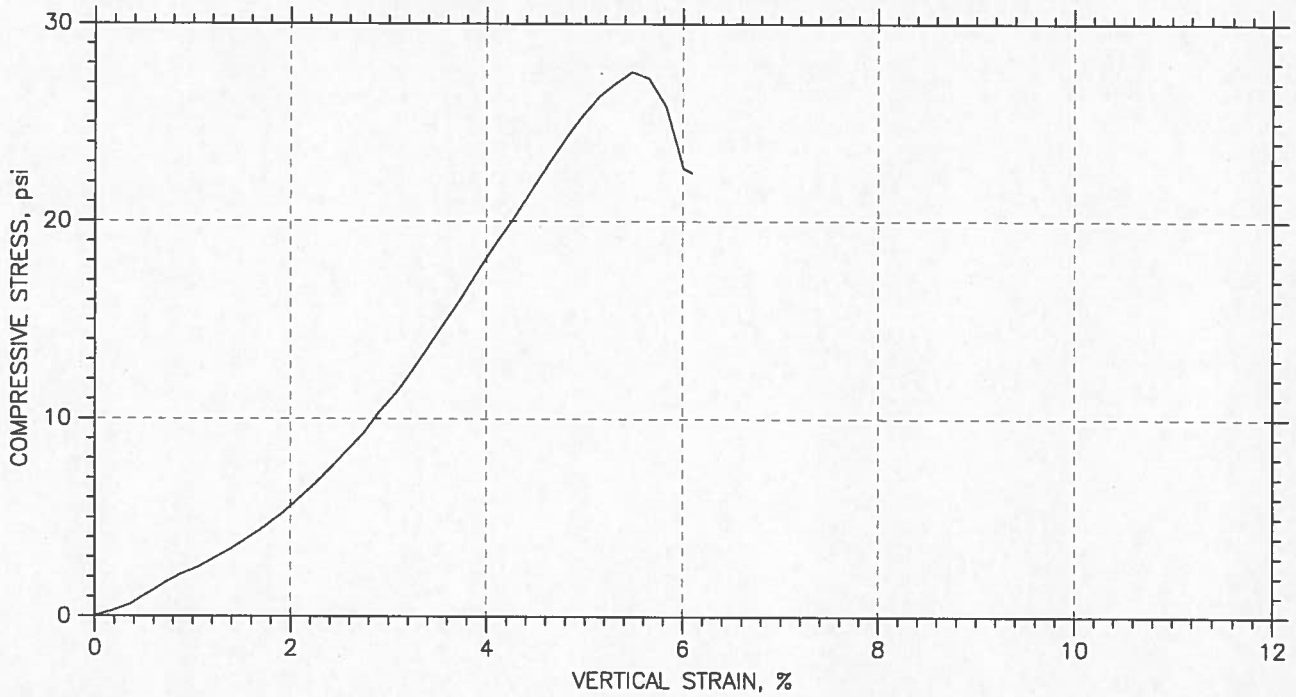
Specimen Height: 4.89 in
Specimen Area: 6.74 in^2
Specimen Volume: 540.63 cc

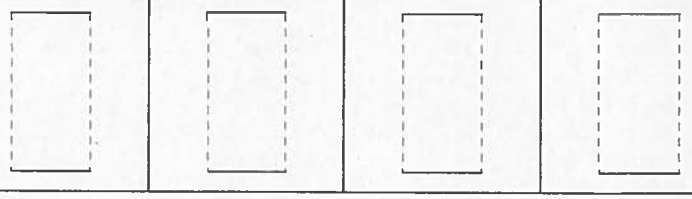
Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.76

Cap Mass: 0 gm

	Time min	Axial Displacement in	Axial Strain %	Load lb	Corrected Area in^2	Corrected Vertical Stress psi	Corrected Shear Stress psi
1	0	0	0	0.1233	6.7426	0.018287	0.0091436
2	0.16668	0.0085192	0.17411	1.8187	6.7543	0.26927	0.13463
3	0.33412	0.01764	0.36052	4.1306	6.767	0.61041	0.30521
4	0.50178	0.026113	0.53369	7.7989	6.7787	1.1505	0.57525
5	0.66823	0.035003	0.71537	11.467	6.7911	1.6885	0.84427
6	0.83647	0.042874	0.87623	14.488	6.8022	2.1299	1.065
7	1.0044	0.051393	1.0503	16.892	6.8141	2.479	1.2395
8	1.1677	0.059264	1.2112	19.913	6.8252	2.9176	1.4588
9	1.3349	0.068154	1.3929	23.304	6.8378	3.4081	1.7041
10	1.5013	0.076488	1.5632	27.157	6.8496	3.9648	1.9824
11	1.6685	0.084729	1.7316	31.011	6.8614	4.5196	2.2598
12	1.8365	0.093202	1.9048	35.511	6.8735	5.1664	2.5832
13	2.0003	0.1013	2.0704	40.505	6.8851	5.883	2.9415
14	2.1675	0.10959	2.2398	45.93	6.897	6.6594	3.3297
15	2.3342	0.1177	2.4054	51.695	6.9087	7.4825	3.7412
16	2.5016	0.1258	2.571	57.736	6.9205	8.3428	4.1714
17	2.6683	0.13446	2.7479	64.302	6.9331	9.2747	4.6374
18	2.8357	0.14214	2.905	71.516	6.9443	10.298	5.1492
19	3.0037	0.1508	3.082	78.883	6.957	11.339	5.6693
20	3.1667	0.15918	3.2532	87.052	6.9693	12.491	6.2454
21	3.3334	0.167	3.4131	95.621	6.9808	13.698	6.8488
22	3.5006	0.17576	3.592	104.81	6.9938	14.986	7.4929
23	3.6678	0.18437	3.768	114.21	7.0066	16.3	8.1501
24	3.8358	0.19215	3.927	123.55	7.0182	17.604	8.8021
25	4.0037	0.20127	4.1134	133.72	7.0318	19.017	9.5083
26	4.167	0.20923	4.2761	142.04	7.0438	20.166	10.083
27	4.3347	0.21821	4.4597	152.28	7.0573	21.577	10.789
28	4.5027	0.2265	4.6291	161.8	7.0698	22.887	11.443
29	4.6696	0.23483	4.7994	171.17	7.0825	24.169	12.084
30	4.8371	0.24326	4.9716	179.68	7.0953	25.324	12.662
31	5.0004	0.25136	5.1372	186.9	7.1077	26.295	13.147
32	5.1675	0.2603	5.3198	192.41	7.1214	27.019	13.51
33	5.335	0.26794	5.476	196.54	7.1332	27.554	13.777
34	5.5019	0.2766	5.6529	194.6	7.1466	27.23	13.615
35	5.6694	0.28535	5.8318	184.55	7.1601	25.775	12.888
36	5.8368	0.29377	6.004	162.73	7.1732	22.685	11.343
37	5.9298	0.29822	6.0948	161.09	7.1802	22.436	11.218

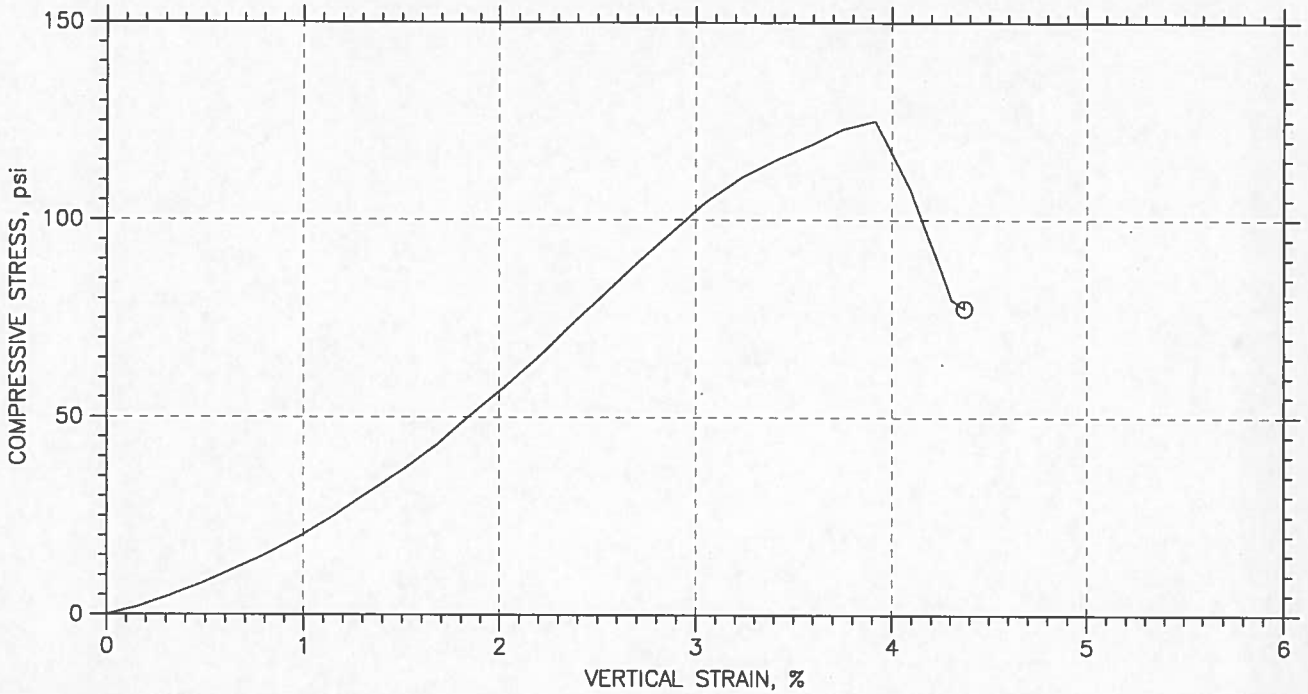
UNCONFINED COMPRESSION TEST REPORT



Symbol					
Test No.		1			
Initial	Diameter, in	2.93			
	Height, in	4.893			
	Water Content, %	22.06			
	Dry Density, pcf	77.22			
	Saturation, %	49.45			
	Void Ratio	1.23			
Unconfined Compressive Strength, psi		27.55			
Undrained Shear Strength, psi		13.78			
Time to Failure, min		5.335			
Strain Rate, %/min		1			
Measured Specific Gravity		2.76			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

Project: PLUM CREEK SITE 21
Location: TX
Project No.: 19-306
Boring No.: B-604
Sample Type: CORE
Description:
Remarks: SAMPLE SHORT

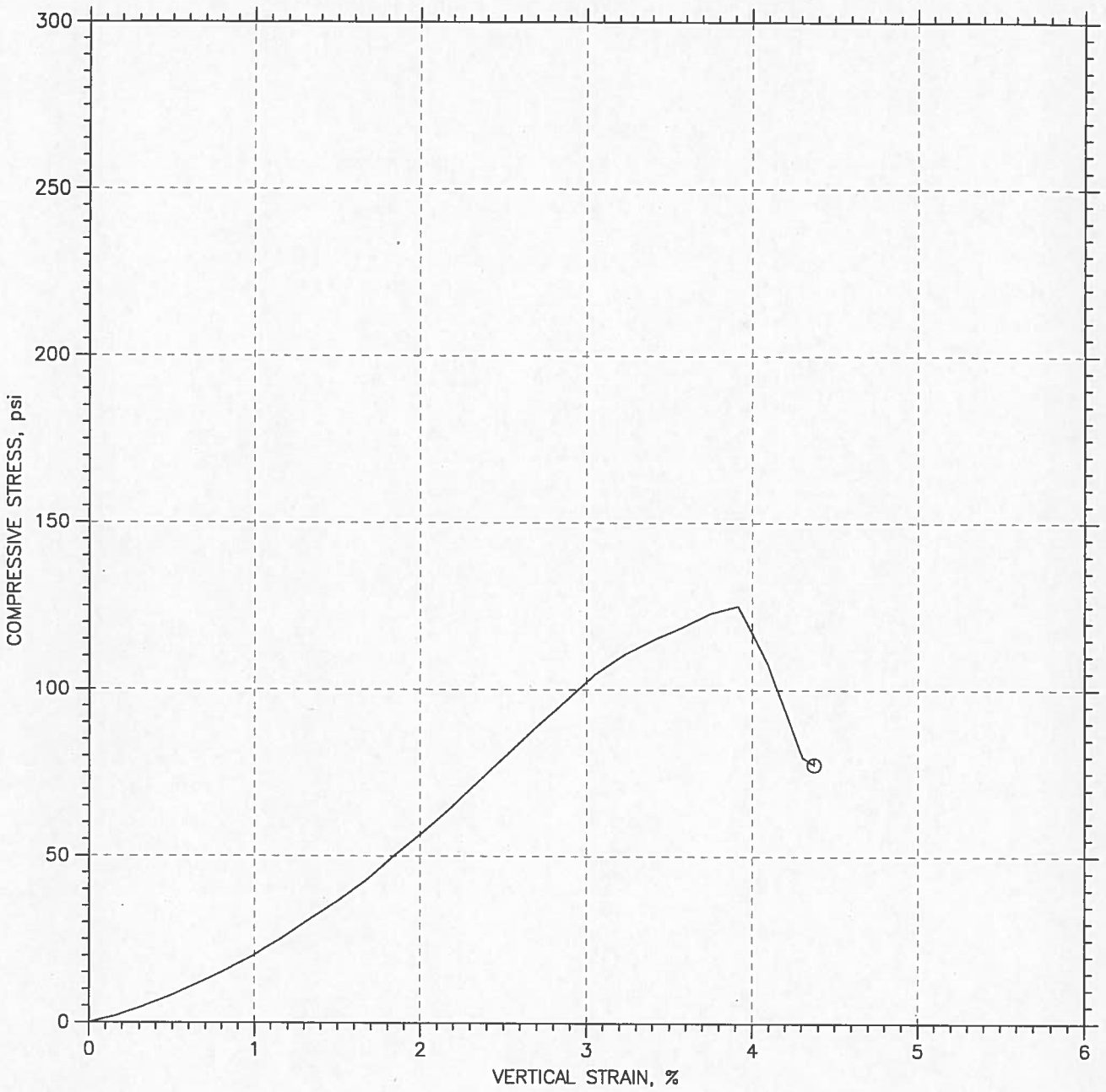
UNCONFINED COMPRESSION TEST REPORT



Symbol		⊙			
Test No.		1			
Initial	Diameter, in	2.745			
	Height, in	4.4			
	Water Content, %	22.08			
	Dry Density, pcf	102.2			
	Saturation, %	88.44			
	Void Ratio	0.692			
Unconfined Compressive Strength, psi		125			
Undrained Shear Strength, psi		62.52			
Time to Failure, min		3.8339			
Strain Rate, %/min		1			
Measured Specific Gravity		2.77			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-308
	Boring No.: B-604
	Sample Type: CORE
	Description:
	Remarks:

UNCONFINED COMPRESSION TEST REPORT



	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-308
	Boring No.: B-604	Tested By: SKK	Checked By: SKK
	Sample No.: 19-308	Test Date: 2/14/19	Depth: 39-40'
	Test No.: 1	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks:		

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-308
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 2/14/19
Sample Type: CORE

Project No.: 19-308
Checked By: SKK
Depth: 39-40'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 4.40 in
Specimen Area: 5.92 in^2
Specimen Volume: 426.71 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.77

Cap Mass: 0 gm

Water Content Information

Container ID	
Wt. Container, gm	0
Wt. Container + Wet Soil, gm	853.03
Wt. Container + Dry Soil, gm	698.74
Wt. Dry Soil, gm	698.74
Water Content, %	22.08
Void Ratio	0.69
Degree of Saturation, %	88.44
Wet Unit Weight, pcf	124.8
Dry Unit Weight, pcf	102.23

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-308
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 2/14/19
Sample Type: CORE

Project No.: 19-308
Checked By: SKK
Depth: 39-40'
Elevation: N/A

Soil Description:
Remarks:

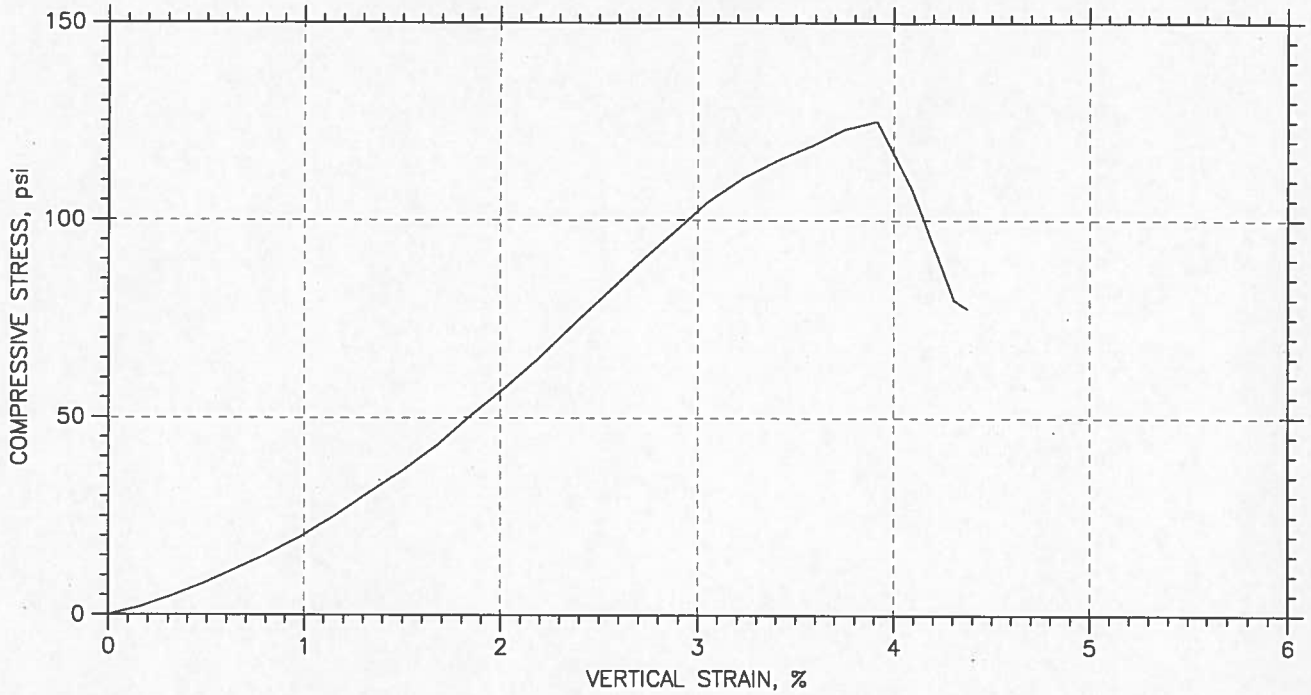
Specimen Height: 4.40 in
Specimen Area: 5.92 in^2
Specimen Volume: 426.71 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.77

Cap Mass: 0 gm

	Time min	Axial Displacement in	Axial Strain %	Load lb	Corrected Area in^2	Corrected Vertical Stress psi	Corrected Shear Stress psi
1	0	0	0	0.21578	5.918	0.036462	0.018231
2	0.16688	0.0068061	0.15468	11.251	5.9272	1.8983	0.94914
3	0.33512	0.013381	0.30411	26.911	5.936	4.5335	2.2667
4	0.50103	0.021113	0.47984	46.547	5.9465	7.8275	3.9138
5	0.66873	0.028104	0.63873	68.156	5.956	11.443	5.7215
6	0.83593	0.035466	0.80604	91.151	5.9661	15.278	7.6391
7	1.0039	0.043291	0.98388	118.46	5.9768	19.82	9.9102
8	1.1709	0.050791	1.1543	149.94	5.9871	25.043	12.522
9	1.3373	0.058292	1.3248	184.4	5.9975	30.746	15.373
10	1.5006	0.065885	1.4974	218.58	6.008	36.383	18.191
11	1.6675	0.073756	1.6763	258.57	6.0189	42.959	21.48
12	1.8337	0.080794	1.8362	301.38	6.0287	49.991	24.996
13	2.0014	0.088758	2.0172	345.56	6.0398	57.213	28.606
14	2.1686	0.096258	2.1877	391.36	6.0504	64.684	32.342
15	2.3363	0.10343	2.3508	439.94	6.0605	72.592	36.296
16	2.5035	0.11126	2.5286	490.9	6.0715	80.853	40.426
17	2.6705	0.11885	2.7012	541.67	6.0823	89.057	44.528
18	2.8377	0.12677	2.8811	590.59	6.0936	96.92	48.46
19	3.0041	0.13413	3.0484	637.94	6.1041	104.51	52.255
20	3.1701	0.14233	3.2347	677.3	6.1158	110.75	55.373
21	3.337	0.14997	3.4083	704.95	6.1268	115.06	57.53
22	3.5045	0.15751	3.5798	728.96	6.1377	118.77	59.384
23	3.667	0.16483	3.7461	755.63	6.1483	122.9	61.45
24	3.8339	0.17224	3.9145	770.18	6.1591	125.05	62.524
25	4.0011	0.18015	4.0944	664.26	6.1706	107.65	53.824
26	4.1683	0.18946	4.3059	493.67	6.1843	79.827	39.913
27	4.2345	0.19242	4.3733	480.08	6.1886	77.574	38.787

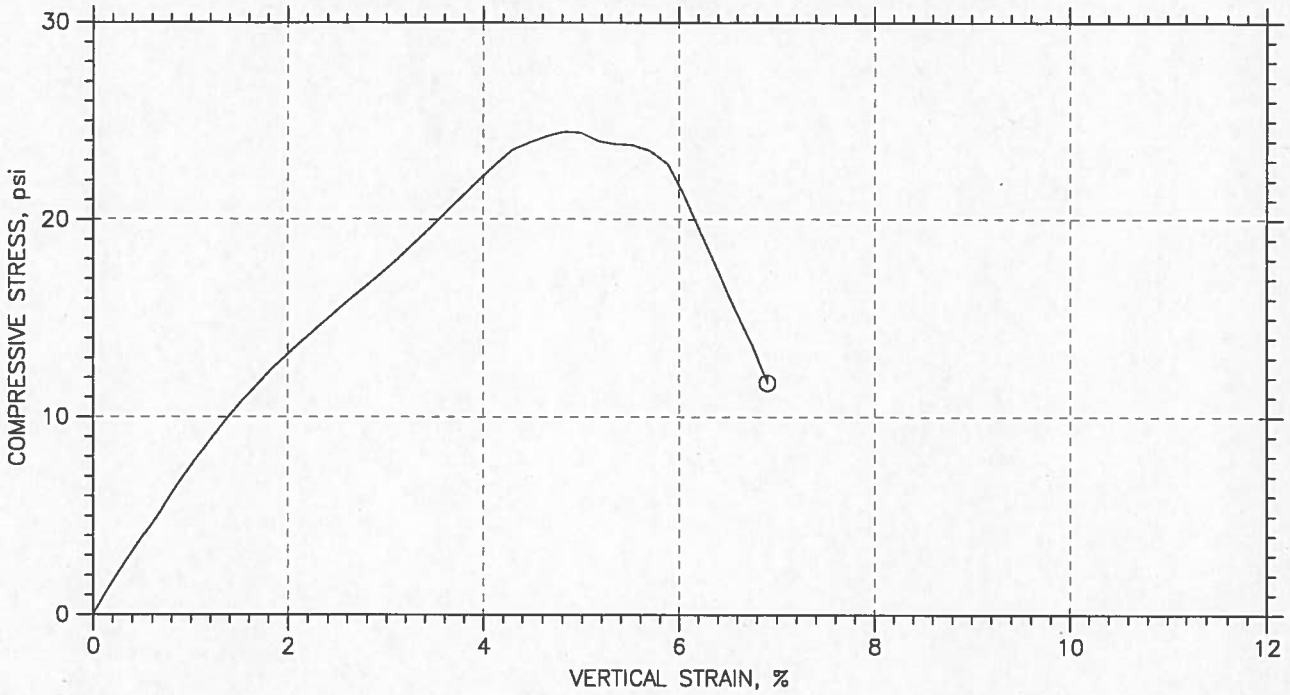
UNCONFINED COMPRESSION TEST REPORT



Symbol					
Test No.		1			
Initial	Diameter, in	2.745			
	Height, in	4.4			
	Water Content, %	22.08			
	Dry Density, pcf	102.2			
	Saturation, %	88.44			
	Void Ratio	0.692			
Unconfined Compressive Strength, psi		125			
Undrained Shear Strength, psi		62.52			
Time to Failure, min		3.8339			
Strain Rate, %/min		1			
Measured Specific Gravity		2.77			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-308
	Boring No.: B-604
	Sample Type: CORE
	Description:
	Remarks:

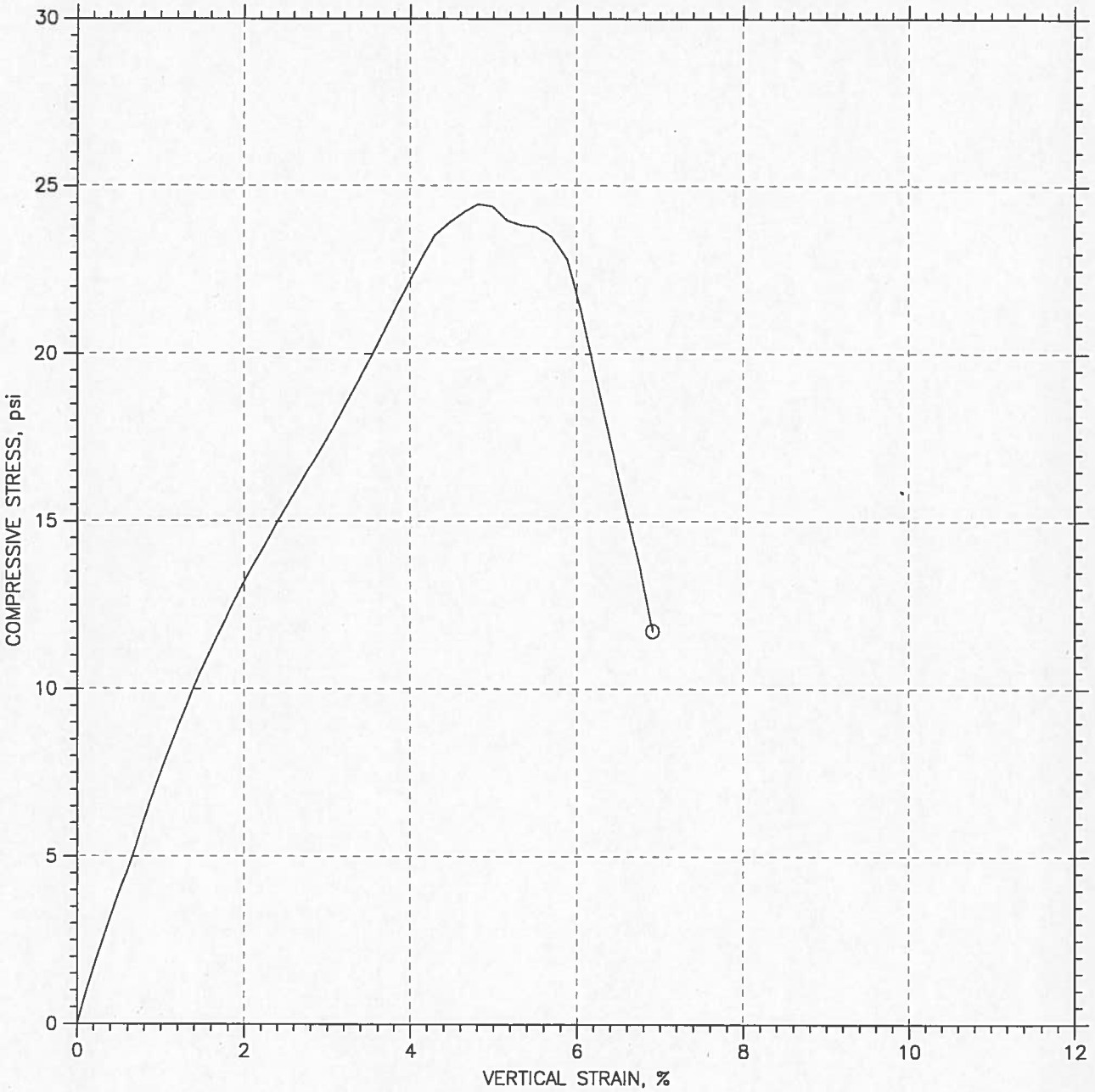
UNCONFINED COMPRESSION TEST REPORT



Symbol		⊙			
Test No.		1			
Initial	Diameter, in	2.677			
	Height, in	5.975			
	Water Content, %	26.07			
	Dry Density, pcf	95.88			
	Saturation, %	93.33			
	Void Ratio	0.751			
Unconfined Compressive Strength, psi q_u		24.46			
Undrained Shear Strength, psi $q_u/2 = c_u =$		12.23	1,761 psf		
Time to Failure, min		4.6683	@4.8% Strain		
Strain Rate, %/min		1			
Measured Specific Gravity		2.69			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-696
	Boring No.: B-1
	Sample Type: CORE
	Description:
	Remarks:

UNCONFINED COMPRESSION TEST REPORT



	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-696
	Boring No.: B-1	Tested By: SKK	Checked By: SKK
	Sample No.: 19-696	Test Date: 7/8/19	Depth: 2-4'
	Test No.: 1	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks:		

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-1
Sample No.: 19-696
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/8/19
Sample Type: CORE

Project No.: 19-696
Checked By: SKK
Depth: 2-4'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 5.97 in
Specimen Area: 5.63 in^2
Specimen Volume: 551.09 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.69

Cap Mass: 0 gm

Water Content Information

Container ID	
Wt. Container, gm	0
Wt. Container + Wet Soil, gm	1067.1
Wt. Container + Dry Soil, gm	846.4
Wt. Dry Soil, gm	846.4
Water Content, %	26.07
Void Ratio	0.75
Degree of Saturation, %	93.33
Wet Unit Weight, pcf	120.88
Dry Unit Weight, pcf	95.88

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-1
Sample No.: 19-696
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/8/19
Sample Type: CORE

Project No.: 19-696
Checked By: SKK
Depth: 2-4'
Elevation: N/A

Soil Description:
Remarks:

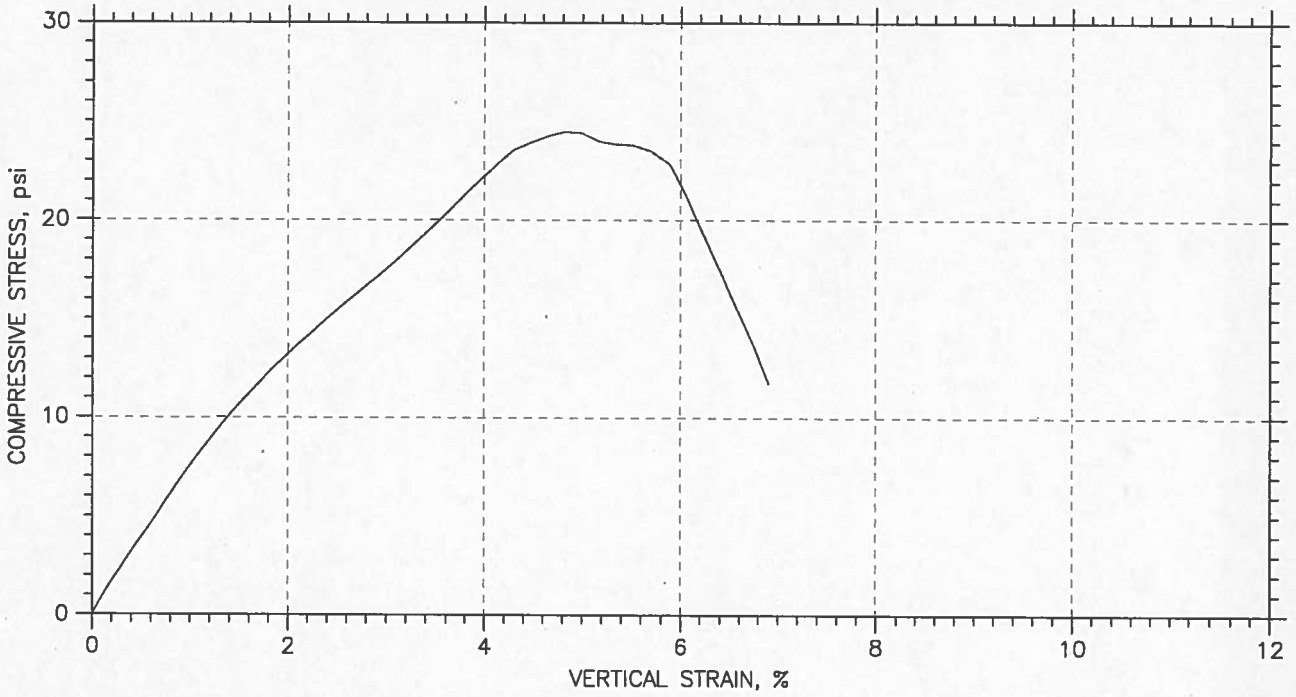
Specimen Height: 5.97 in
Specimen Area: 5.63 in^2
Specimen Volume: 551.09 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.69

Cap Mass: 0 gm

	Time min	Axial Displacement in	Axial Strain %	Load lb	Corrected Area in^2	Corrected Vertical Stress psi	Corrected Shear Stress psi
1	0	0	0	0.1233	5.6284	0.021907	0.010954
2	0.17063	0.0090285	0.15111	7.3057	5.6369	1.296	0.64802
3	0.3347	0.019816	0.33166	15.166	5.6472	2.6856	1.3428
4	0.50325	0.029864	0.49981	22.194	5.6567	3.9236	1.9618
5	0.6709	0.041022	0.68656	29.716	5.6673	5.2434	2.6217
6	0.83392	0.050977	0.85316	36.96	5.6769	6.5106	3.2553
7	1.0016	0.06144	1.0283	44.05	5.6869	7.7458	3.8729
8	1.1693	0.071951	1.2042	50.677	5.697	8.8954	4.4477
9	1.337	0.081766	1.3685	56.442	5.7065	9.8908	4.9454
10	1.5008	0.091489	1.5312	61.898	5.7159	10.829	5.4145
11	1.6678	0.10144	1.6978	67.077	5.7256	11.715	5.8576
12	1.8357	0.11158	1.8675	72.101	5.7355	12.571	6.2855
13	2.0038	0.122	2.0419	77.033	5.7457	13.407	6.7035
14	2.167	0.1327	2.2209	81.688	5.7563	14.191	7.0956
15	2.335	0.14325	2.3975	86.373	5.7667	14.978	7.489
16	2.5029	0.15418	2.5804	90.966	5.7775	15.745	7.8725
17	2.6706	0.16515	2.7641	95.59	5.7884	16.514	8.257
18	2.8342	0.17608	2.9469	100.09	5.7993	17.259	8.6295
19	3.0016	0.18659	3.1228	104.78	5.8099	18.034	9.0171
20	3.1693	0.19636	3.2863	109.34	5.8197	18.788	9.3939
21	3.3365	0.20631	3.453	114.18	5.8297	19.586	9.7928
22	3.5006	0.21604	3.6157	118.96	5.8396	20.371	10.185
23	3.6675	0.22627	3.7869	124.1	5.85	21.215	10.607
24	3.8355	0.23636	3.9559	129.04	5.8602	22.019	11.009
25	4.0035	0.24673	4.1294	133.97	5.8709	22.819	11.41
26	4.1704	0.25669	4.296	138.41	5.8811	23.534	11.767
27	4.3337	0.26752	4.4774	141.03	5.8922	23.934	11.967
28	4.502	0.27766	4.6471	143.06	5.9027	24.237	12.118
29	4.6683	0.28762	4.8137	144.63	5.9131	24.46	12.23
30	4.8365	0.2979	4.9857	144.54	5.9238	24.4	12.2
31	5.0046	0.30841	5.1616	142.29	5.9347	23.976	11.988
32	5.1709	0.31905	5.3398	141.74	5.9459	23.838	11.919
33	5.3339	0.32915	5.5088	141.67	5.9566	23.785	11.892
34	5.5012	0.34012	5.6924	140.23	5.9682	23.496	11.748
35	5.6683	0.35146	5.8823	136.47	5.9802	22.82	11.41
36	5.836	0.3616	6.052	127.31	5.991	21.25	10.625
37	6.004	0.37258	6.2356	115.41	6.0027	19.226	9.6132
38	6.1667	0.38286	6.4076	104.34	6.0138	17.351	8.6755
39	6.335	0.39272	6.5727	93.309	6.0244	15.489	7.7443
40	6.503	0.4036	6.7548	82.212	6.0362	13.62	6.81
41	6.6566	0.41258	6.9051	70.93	6.0459	11.732	5.8659

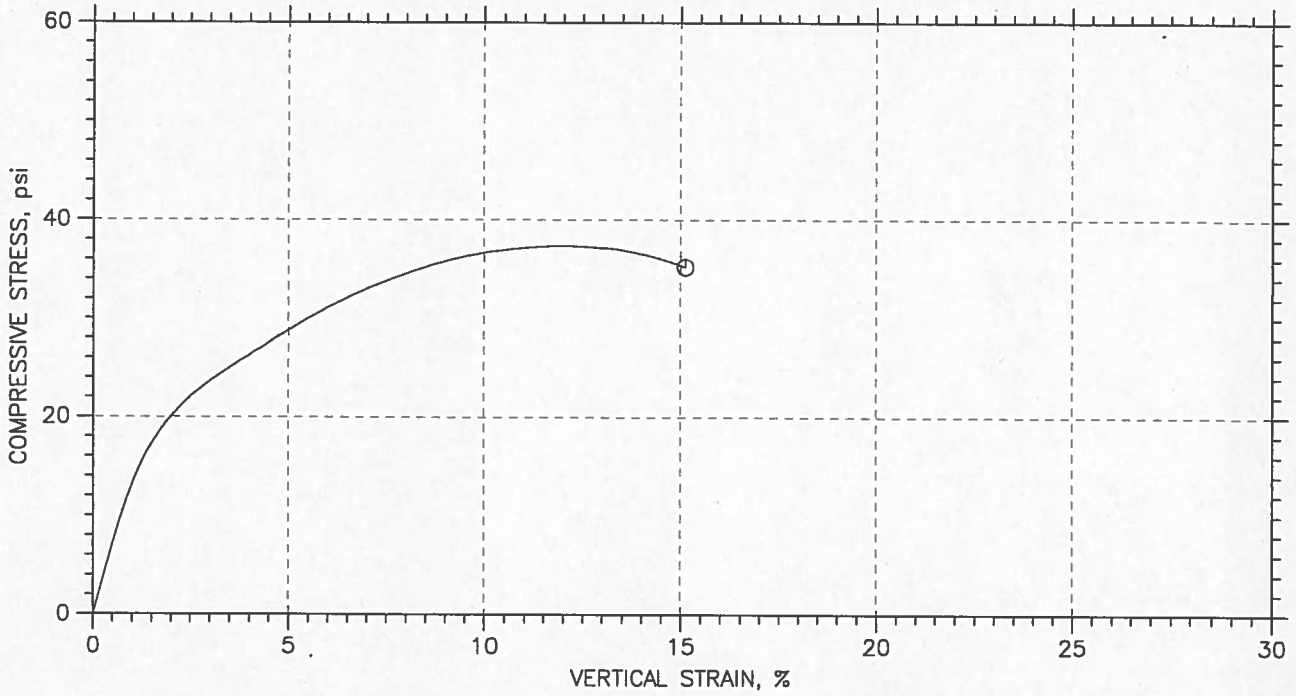
UNCONFINED COMPRESSION TEST REPORT



Symbol					
Test No.		1			
Initial	Diameter, in	2.677			
	Height, in	5.975			
	Water Content, %	26.07			
	Dry Density, pcf	95.88			
	Saturation, %	93.33			
	Void Ratio	0.751			
Unconfined Compressive Strength, psi		24.46			
Undrained Shear Strength, psi		12.23			
Time to Failure, min		4.6683			
Strain Rate, %/min		1			
Measured Specific Gravity		2.69			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-696
	Boring No.: B-1
	Sample Type: CORE
	Description:
	Remarks:

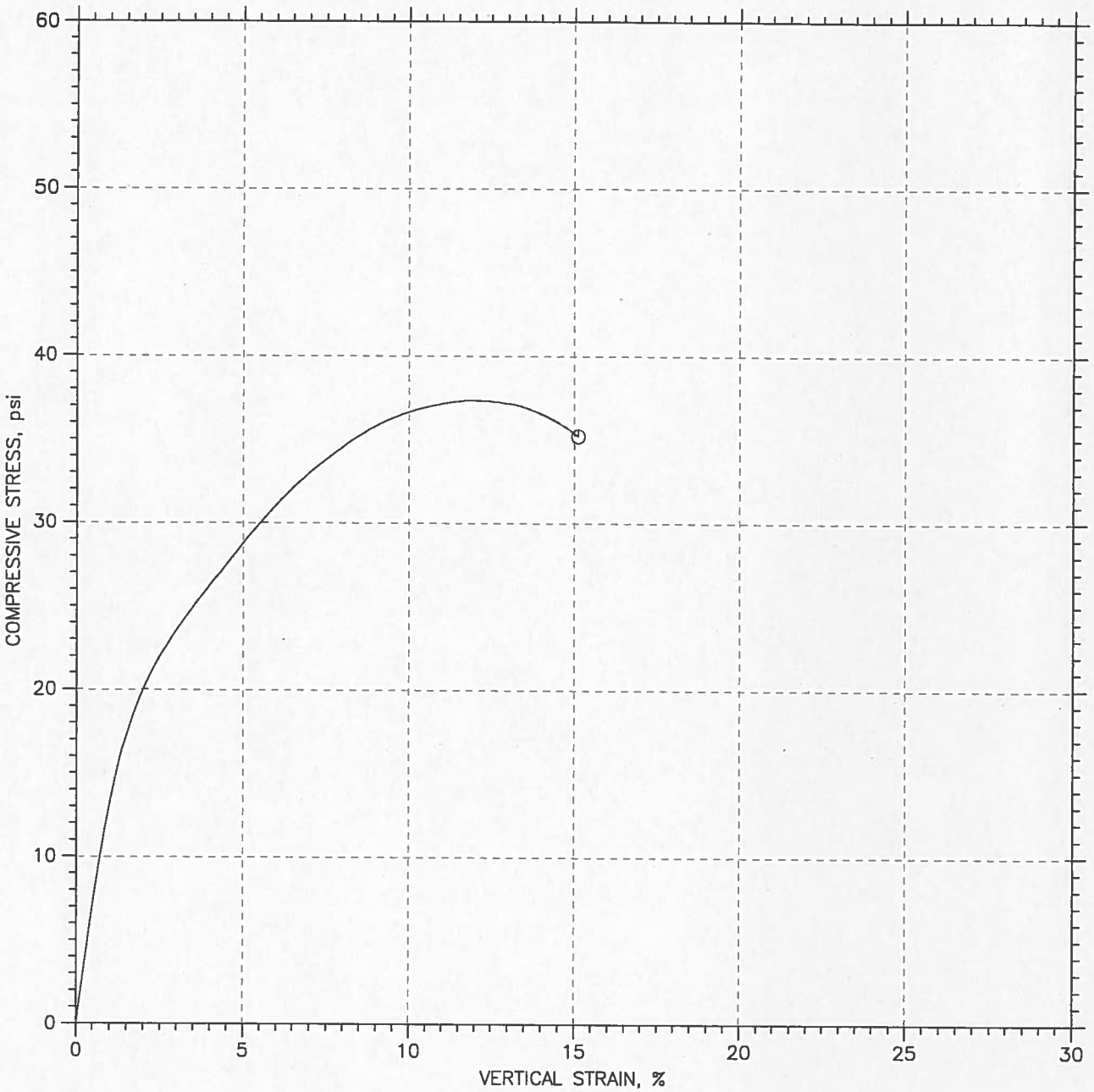
UNCONFINED COMPRESSION TEST REPORT



Symbol		⊙			
Test No.		1			
Initial	Diameter, in	2.663			
	Height, in	6.046			
	Water Content, %	18.48			
	Dry Density, pcf	107.9			
	Saturation, %	88.79			
	Void Ratio	0.562			
Unconfined Compressive Strength, psi q_u		37.33			
Undrained Shear Strength, psi $q_u/2 = c_u =$		18.66	2,687 psf		
Time to Failure, min		11.668	@ 12.1% Strain		
Strain Rate, %/min		1			
Measured Specific Gravity		2.70			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-703
	Boring No.: B-2
	Sample Type: CORE
	Description:
	Remarks:

UNCONFINED COMPRESSION TEST REPORT



	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-703
	Boring No.: B-2	Tested By: SKK	Checked By: SKK
	Sample No.: 19-703	Test Date: 7/9/19	Depth: 8-10'
	Test No.: 1	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks:		

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-2
Sample No.: 19-703
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/9/19
Sample Type: CORE

Project No.: 19-703
Checked By: SKK
Depth: 8-10'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 6.05 in
Specimen Area: 5.57 in^2
Specimen Volume: 551.83 cc

Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.70

Cap Mass: 0 gm

Water Content Information

Container ID	
Wt. Container, gm	0
Wt. Container + Wet Soil, gm	1130.1
Wt. Container + Dry Soil, gm	953.83
Wt. Dry Soil, gm	953.83
Water Content, %	18.48
Void Ratio	0.56
Degree of Saturation, %	88.79
Wet Unit Weight, pcf	127.85
Dry Unit Weight, pcf	107.91

UNCONFINED COMPRESSION TEST

Project: PLUM CREEK SITE 21
Boring No.: B-2
Sample No.: 19-703
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/9/19
Sample Type: CORE

Project No.: 19-703
Checked By: SKK
Depth: 8-10'
Elevation: N/A

Soil Description:
Remarks:

Specimen Height: 6.05 in
Specimen Area: 5.57 in^2
Specimen Volume: 551.83 cc

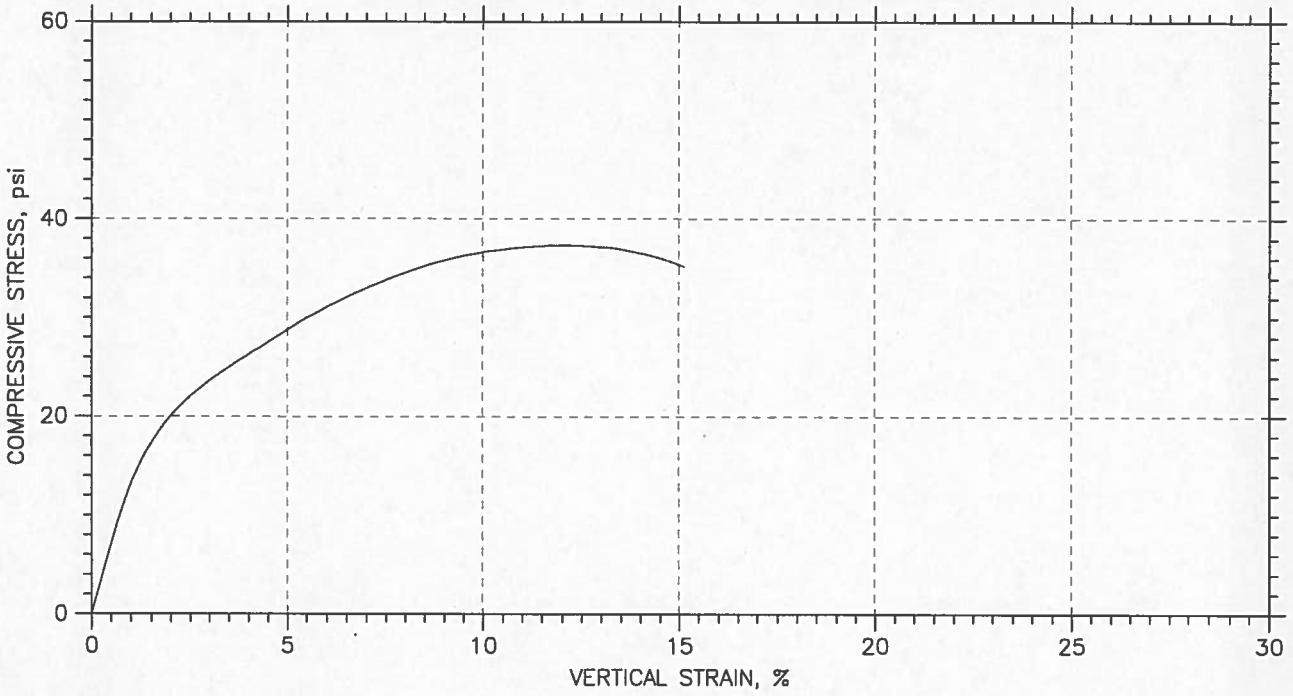
Liquid Limit: ---
Plastic Limit: ---
Measured Specific Gravity: 2.70

Cap Mass: 0 gm

	Time min	Axial Displacement in	Axial Strain %	Load lb	Corrected Area in^2	Corrected Vertical Stress psi	Corrected Shear Stress psi
1	0	0	0	0.092477	5.5697	0.016604	0.0083018
2	0.17088	0.009723	0.16082	12.762	5.5787	2.2876	1.1438
3	0.3339	0.019724	0.32623	25.462	5.5879	4.5566	2.2783
4	0.50108	0.029725	0.49164	39.025	5.5972	6.9723	3.4861
5	0.66853	0.040929	0.67697	52.681	5.6077	9.3945	4.6972
6	0.83598	0.050838	0.84085	64.826	5.6169	11.541	5.7706
7	1.0032	0.061764	1.0216	75.646	5.6272	13.443	6.7215
8	1.1709	0.072552	1.2	84.863	5.6374	15.054	7.5268
9	1.3336	0.082275	1.3608	92.569	5.6465	16.394	8.197
10	1.5013	0.092832	1.5354	99.32	5.6566	17.558	8.7792
11	1.6691	0.10316	1.7062	105.18	5.6664	18.562	9.2808
12	1.8362	0.11344	1.8762	110.33	5.6762	19.436	9.7182
13	2.0034	0.12376	2.047	115.07	5.6861	20.237	10.119
14	2.1706	0.13436	2.2223	119.45	5.6963	20.97	10.485
15	2.3342	0.14395	2.3809	123.3	5.7055	21.611	10.806
16	2.5013	0.15386	2.5448	126.85	5.7151	22.195	11.097
17	2.6688	0.16446	2.7201	130.18	5.7254	22.737	11.368
18	2.836	0.17437	2.884	133.32	5.7351	23.246	11.623
19	3.0035	0.18488	3.0578	136.5	5.7454	23.757	11.879
20	3.1704	0.1952	3.2286	139.49	5.7555	24.235	12.118
21	3.3342	0.20617	3.4101	142.54	5.7663	24.719	12.359
22	3.5022	0.21682	3.5862	145.5	5.7769	25.186	12.593
23	3.6691	0.22724	3.7585	148.46	5.7872	25.652	12.826
24	3.8376	0.23821	3.94	151.32	5.7982	26.098	13.049
25	4.0046	0.24886	4.1162	154.31	5.8088	26.565	13.283
26	4.167	0.25984	4.2977	156.96	5.8198	26.971	13.485
27	4.3347	0.27007	4.4669	159.71	5.8301	27.393	13.697
28	4.5024	0.28021	4.6346	162.57	5.8404	27.836	13.918
29	4.6704	0.29039	4.8031	165.35	5.8507	28.261	14.131
30	4.8339	0.30063	4.9723	168.15	5.8611	28.69	14.345
31	5.0013	0.31137	5.15	171.08	5.8721	29.135	14.567
32	5.167	0.32151	5.3177	173.73	5.8825	29.534	14.767
33	5.3352	0.3322	5.4946	176.54	5.8935	29.955	14.977
34	5.5014	0.34258	5.6661	179.04	5.9042	30.323	15.162
35	5.6688	0.35299	5.8385	181.59	5.9151	30.7	15.35
36	5.837	0.36313	6.0062	184.06	5.9256	31.062	15.531
37	6.0043	0.37387	6.1838	186.59	5.9368	31.429	15.714
38	6.1672	0.3842	6.3546	188.93	5.9477	31.766	15.883
39	6.3336	0.39452	6.5254	191.3	5.9585	32.106	16.053
40	6.5017	0.40517	6.7015	193.68	5.9698	32.443	16.222
41	6.6698	0.41582	6.8776	195.8	5.9811	32.737	16.369
42	6.8336	0.42605	7.0469	198.12	5.992	33.064	16.532
43	7.0008	0.43735	7.2337	200.24	6.004	33.352	16.676
44	7.167	0.44758	7.403	202.28	6.015	33.629	16.814
45	7.3344	0.45842	7.5822	204.34	6.0267	33.907	16.953
46	7.5014	0.46911	7.7591	206.38	6.0382	34.179	17.089
47	7.6685	0.47949	7.9306	208.13	6.0495	34.405	17.203
48	7.8357	0.48953	8.0968	210.14	6.0604	34.674	17.337
49	8.0022	0.49958	8.263	211.9	6.0714	34.901	17.45
50	8.1688	0.51051	8.4437	213.71	6.0834	35.131	17.565
51	8.3368	0.52088	8.6152	215.38	6.0948	35.338	17.669
52	8.5043	0.53111	8.7845	217.07	6.1061	35.55	17.775
53	8.6675	0.54093	8.9468	218.49	6.117	35.719	17.859
54	8.8349	0.55079	9.1099	220.03	6.128	35.906	17.953
55	9.0029	0.56148	9.2868	221.51	6.1399	36.078	18.039
56	9.1693	0.57209	9.4622	222.87	6.1518	36.228	18.114
57	9.337	0.58255	9.6353	224.1	6.1636	36.359	18.18
58	9.5005	0.59329	9.813	225.43	6.1757	36.502	18.251
59	9.668	0.60366	9.9845	226.48	6.1875	36.602	18.301
60	9.8357	0.61454	10.164	227.74	6.1999	36.733	18.366
61	10.003	0.62524	10.341	228.79	6.2121	36.829	18.415
62	10.169	0.63626	10.524	229.81	6.2248	36.918	18.459
63	10.337	0.64681	10.698	230.76	6.2369	36.999	18.5
64	10.504	0.65746	10.874	231.59	6.2493	37.059	18.53
65	10.667	0.66756	11.041	232.49	6.261	37.133	18.566
66	10.835	0.67811	11.216	233.29	6.2733	37.187	18.594
67	11.003	0.68835	11.385	234.06	6.2853	37.239	18.62
68	11.17	0.6989	11.56	234.74	6.2977	37.273	18.637
69	11.337	0.709	11.727	235.48	6.3096	37.32	18.66
70	11.501	0.71941	11.899	235.88	6.322	37.311	18.655
71	11.668	0.72974	12.07	236.43	6.3342	37.326	18.663
72	11.836	0.73983	12.237	236.68	6.3463	37.294	18.647
73	12.004	0.75011	12.407	237.2	6.3586	37.304	18.652
74	12.171	0.76122	12.591	237.3	6.372	37.241	18.62

77	12.669	0.79197	13.099	237.94	6.4093	37.125	18.562
78	12.836	0.80312	13.284	237.88	6.4229	37.037	18.518
79	13.004	0.81303	13.447	237.79	6.4351	36.952	18.476
80	13.171	0.82363	13.623	237.48	6.4481	36.829	18.415
81	13.334	0.83405	13.795	237.08	6.461	36.694	18.347
82	13.502	0.8453	13.981	236.56	6.475	36.534	18.267
83	13.669	0.85595	14.157	236.06	6.4883	36.383	18.192
84	13.837	0.86674	14.336	235.32	6.5018	36.194	18.097
85	14.004	0.87716	14.508	234.52	6.5149	35.998	17.999
86	14.167	0.88688	14.669	233.69	6.5272	35.803	17.901
87	14.334	0.89753	14.845	232.64	6.5407	35.568	17.784
88	14.501	0.9079	15.017	231.47	6.5539	35.318	17.659
89	14.59	0.91383	15.115	230.85	6.5614	35.183	17.592

UNCONFINED COMPRESSION TEST REPORT



Symbol					
Test No.		1			
Initial	Diameter, in	2.663			
	Height, in	6.046			
	Water Content, %	18.48			
	Dry Density, pcf	107.9			
	Saturation, %	88.79			
	Void Ratio	0.562			
Unconfined Compressive Strength, psi		37.33			
Undrained Shear Strength, psi		18.66			
Time to Failure, min		11.668			
Strain Rate, %/min		1			
Measured Specific Gravity		2.70			
Liquid Limit		---			
Plastic Limit		---			
Plasticity Index		---			
Failure Sketch					

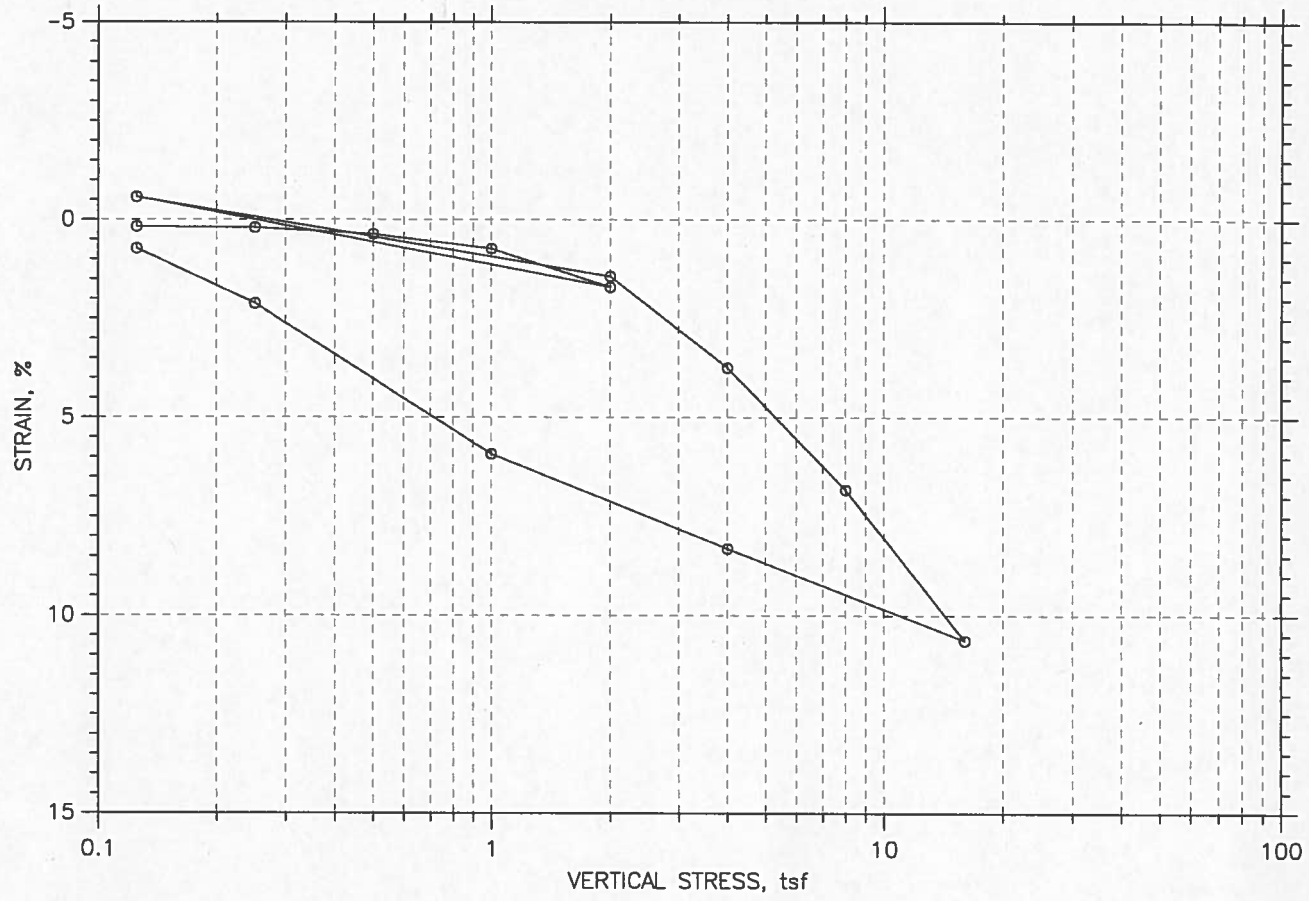
	Project: PLUM CREEK SITE 21
	Location: TX
	Project No.: 19-703
	Boring No.: B-2
	Sample Type: CORE
	Description:
	Remarks:

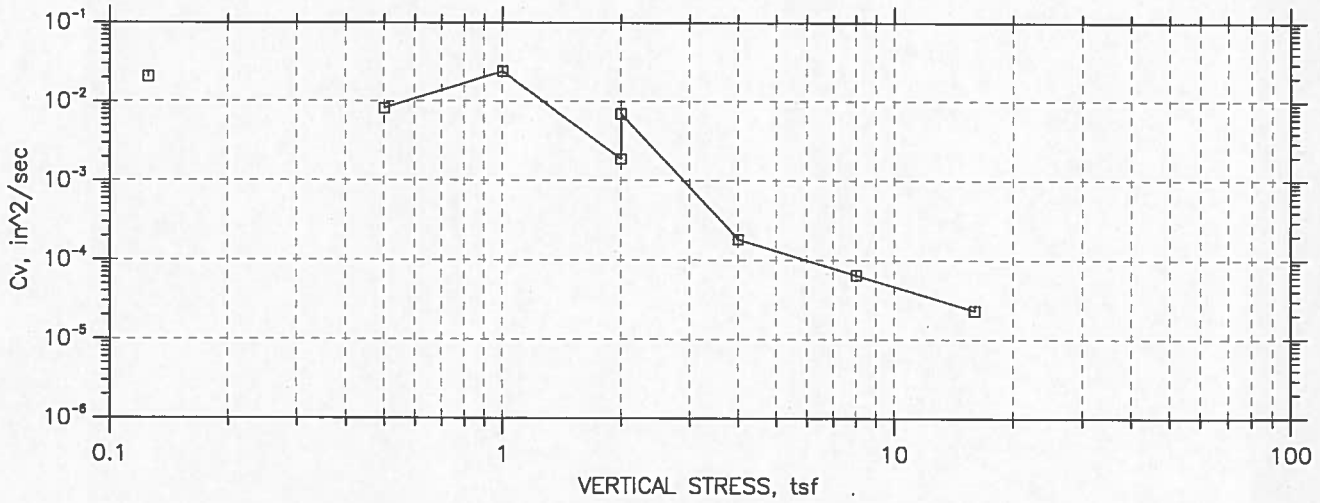
ATTACHMENT 5

CONSOLIDATION TEST DATA

CONSOLIDATION TEST DATA

SUMMARY REPORT



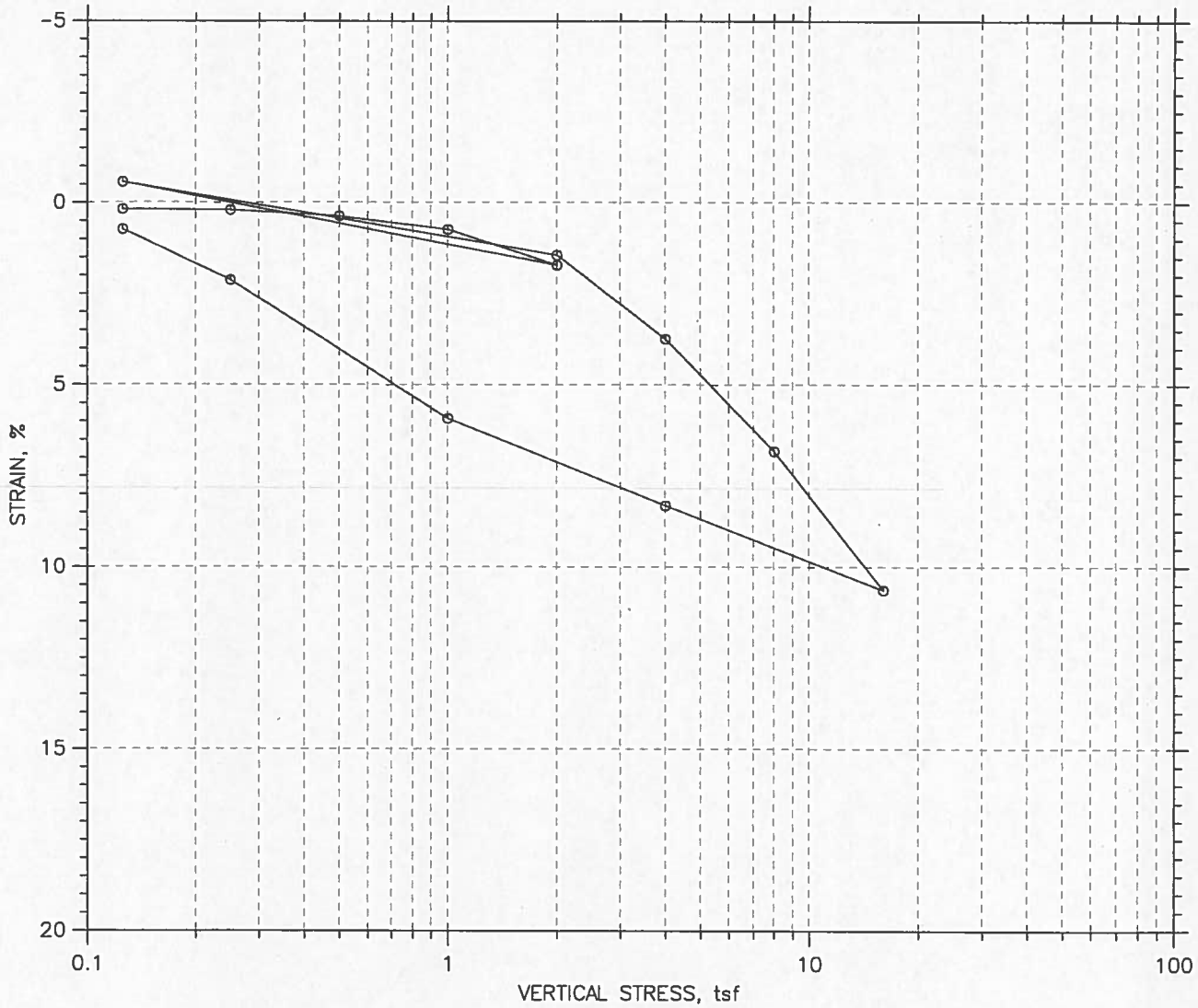


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-255
	Boring No.: B-05	Tested By: SKK	Checked By: SKK
	Sample No.: 19-255	Test Date: 5/20/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF		

Wed, 29-MAY-2019 13:04:21

CONSOLIDATION TEST DATA

SUMMARY REPORT



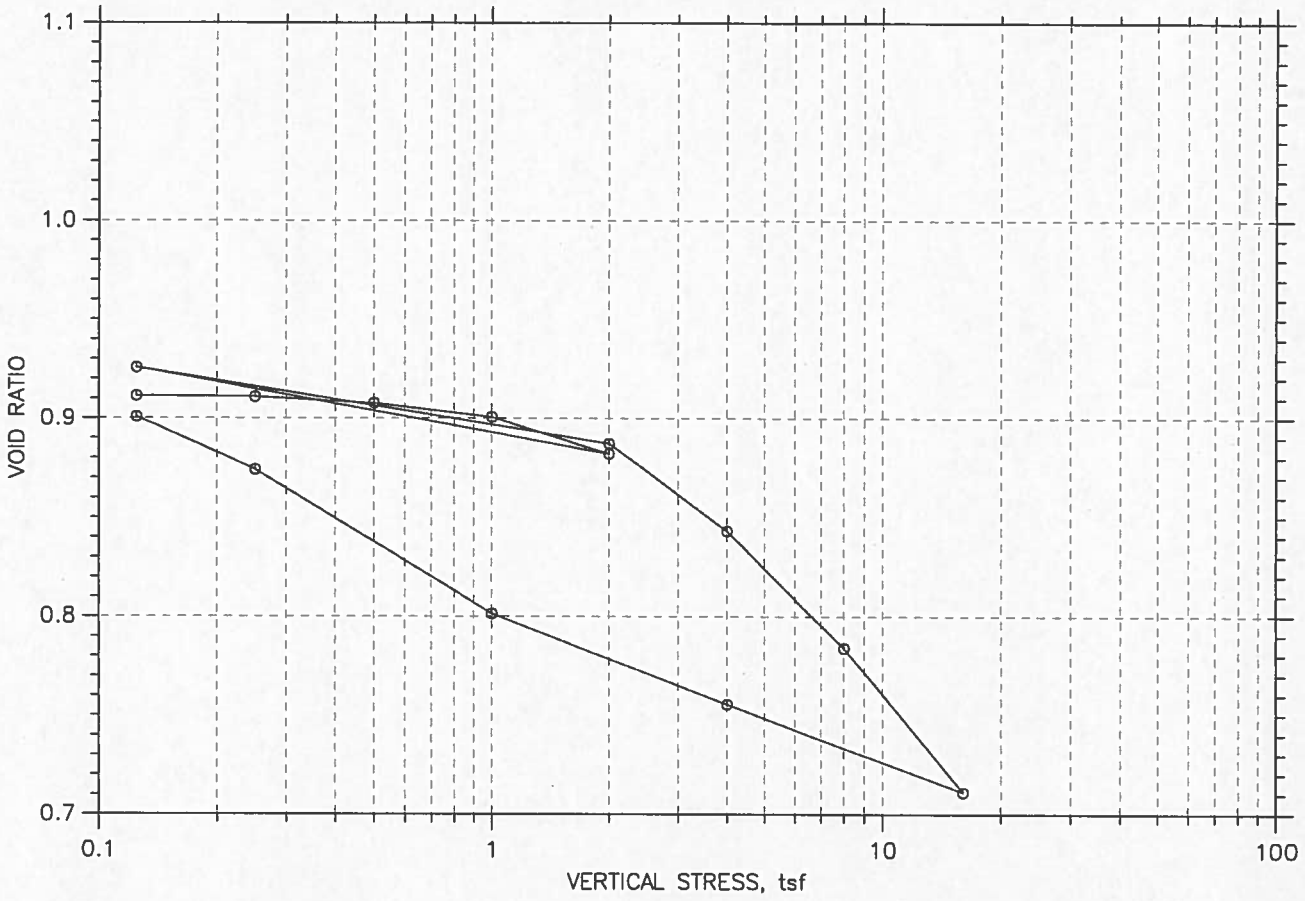
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	31.33	33.51
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	88.69	89.15
Compression Index: 3.81959e-313				Saturation, %	93.18	100.76
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.91	0.90
LL: ---	PL: ---	PI: ---	GS: 2.72			

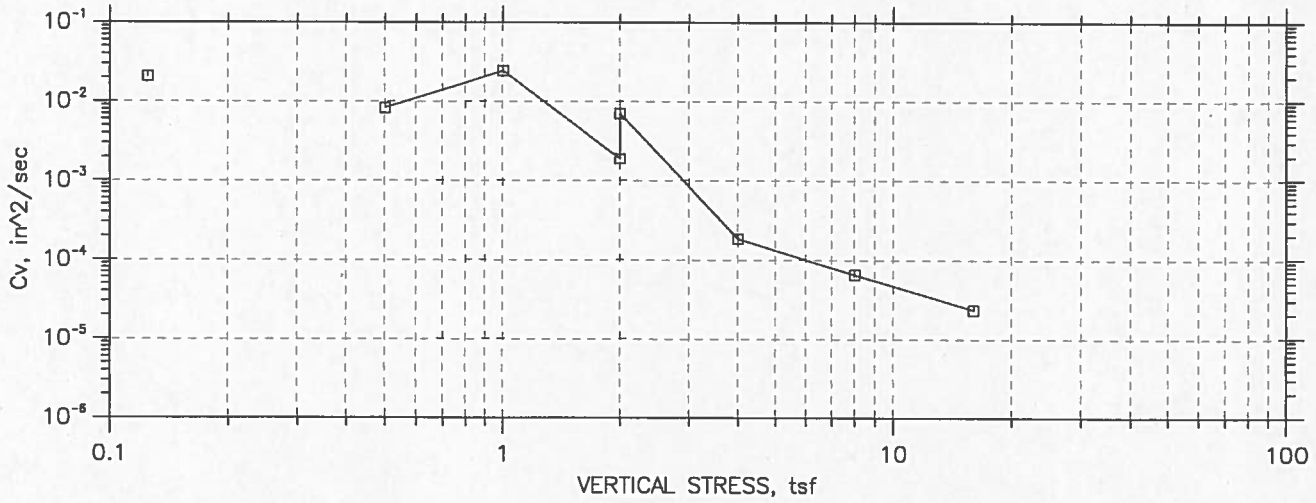
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-255
	Boring No.: B-05	Tested By: SKK	Checked By: SKK
	Sample No.: 19-255	Test Date: 5/20/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF		

Wed, 29-MAY-2019 13:04:21

CONSOLIDATION TEST DATA

SUMMARY REPORT



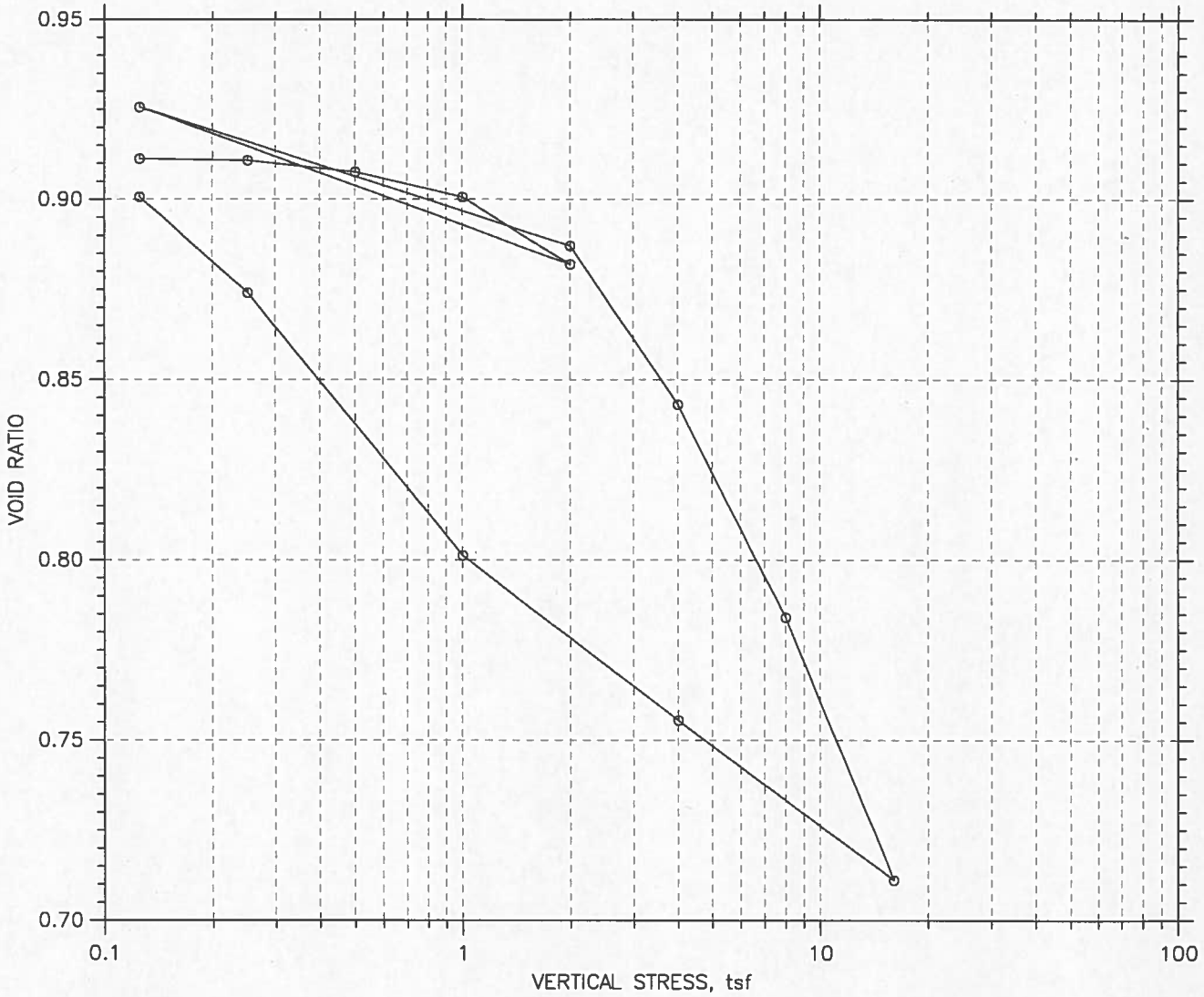


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-255
	Boring No.: B-05	Tested By: SKK	Checked By: SKK
	Sample No.: 19-255	Test Date: 5/20/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF		

Wed, 29-MAY-2019 13:04:38

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	31.33	33.51
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	88.69	89.15
Compression Index: 3.81959e-313				Saturation, %	93.18	100.76
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.91	0.90
LL: ---	PL: ---	PI: ---	GS: 2.72			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-255
	Boring No.: B-05	Tested By: SKK	Checked By: SKK
	Sample No.: 19-255	Test Date: 5/20/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF		

Wed, 29-MAY-2019 13:04:38

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

Measured Specific Gravity: 2.72
Initial Void Ratio: 0.91
Final Void Ratio: 0.90

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	144.95	260.83	263.33	224.75
Wt. Container + Dry Soil, gm	127.4	224.88	224.88	186.33
Wt. Container, gm	71.13	110.15	110.15	71.69
Wt. Dry Soil, gm	56.27	114.73	114.73	114.64
Water Content, %	31.19	31.33	33.51	33.51
Void Ratio	---	0.91	0.90	---
Degree of Saturation, %	---	93.18	100.76	---
Dry Unit Weight, pcf	---	88.685	89.151	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001793	0.911	0.18	0.1	3.95e-002	1.43e-002	1.06e-002
2	0.25	0.002069	0.911	0.21	0.0	0.00e+000	2.20e-003	0.00e+000
3	0.5	0.003724	0.908	0.37	0.2	1.76e-002	6.59e-003	2.17e-003
4	1	0.007403	0.901	0.74	0.1	3.73e-002	7.33e-003	5.11e-003
5	2	0.01715	0.882	1.71	2.9	1.19e-003	9.71e-003	2.16e-004
6	0.125	-0.005701	0.926	-0.57	44.2	7.96e-005	1.21e-002	1.81e-005
7	2	0.01444	0.887	1.44	0.8	4.44e-003	1.07e-002	8.90e-004
8	4	0.03756	0.843	3.74	19.6	1.72e-004	1.15e-002	3.72e-005
9	8	0.06851	0.784	6.82	48.2	6.63e-005	7.71e-003	9.57e-006
10	16	0.1068	0.711	10.63	129.0	2.30e-005	4.76e-003	2.05e-006
11	4	0.0835	0.755	8.32	30.8	9.48e-005	1.93e-003	3.43e-006
12	1	0.0595	0.801	5.93	129.6	2.37e-005	7.97e-003	3.54e-006
13	0.25	0.02133	0.874	2.12	714.2	4.59e-006	5.07e-002	4.36e-006
14	0.125	0.007357	0.901	0.73	1376.8	2.51e-006	1.11e-001	5.24e-006

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001793	0.911	0.18	0.0	0.00e+000	1.43e-002	0.00e+000
2	0.25	0.002069	0.911	0.21	0.0	0.00e+000	2.20e-003	0.00e+000
3	0.5	0.003724	0.908	0.37	0.0	0.00e+000	6.59e-003	0.00e+000
4	1	0.007403	0.901	0.74	0.0	0.00e+000	7.33e-003	0.00e+000
5	2	0.01715	0.882	1.71	0.0	2.21e-002	9.71e-003	4.01e-003
6	0.125	-0.005701	0.926	-0.57	0.0	0.00e+000	1.21e-002	0.00e+000
7	2	0.01444	0.887	1.44	0.0	2.00e-002	1.07e-002	4.01e-003
8	4	0.03756	0.843	3.74	0.0	0.00e+000	1.15e-002	0.00e+000
9	8	0.06851	0.784	6.82	0.0	0.00e+000	7.71e-003	0.00e+000
10	16	0.1068	0.711	10.63	0.0	0.00e+000	4.76e-003	0.00e+000
11	4	0.0835	0.755	8.32	0.0	0.00e+000	1.93e-003	0.00e+000
12	1	0.0595	0.801	5.93	0.0	0.00e+000	7.97e-003	0.00e+000
13	0.25	0.02133	0.874	2.12	0.0	0.00e+000	5.07e-002	0.00e+000
14	0.125	0.007357	0.901	0.73	0.0	0.00e+000	1.11e-001	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 1 of 14
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.0056	-0.001335	-0.13	0.917
2	0.01	0.09	0.0101	-0.001335	-0.13	0.917
3	0.02	0.13	0.028	-0.001105	-0.11	0.917
4	0.03	0.16	0.0448	-0.0007376	-0.07	0.916
5	0.04	0.19	0.0583	-0.0004617	-0.05	0.916
6	0.05	0.23	0.0739	-0.0001858	-0.02	0.915
7	0.07	0.27	0.0874	-1.889e-006	-0.00	0.915
8	0.08	0.29	0.0964	0.000228	0.02	0.914
9	0.12	0.35	0.111	0.0005039	0.05	0.914
10	0.17	0.41	0.121	0.0005499	0.05	0.914
11	0.25	0.50	0.129	0.0005039	0.05	0.914
12	0.33	0.57	0.132	0.0004579	0.05	0.914

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 2 of 14
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.132	-0.001795	-0.18	0.918
2	0.01	0.09	0.133	-0.001795	-0.18	0.918
3	0.02	0.13	0.165	-0.001749	-0.17	0.918
4	0.03	0.16	0.187	-0.001611	-0.16	0.918
5	0.03	0.19	0.203	-0.001565	-0.16	0.918
6	0.05	0.23	0.22	-0.001519	-0.15	0.918
7	0.07	0.26	0.231	-0.001473	-0.15	0.917
8	0.09	0.30	0.236	-0.001473	-0.15	0.917
9	0.12	0.34	0.244	-0.001427	-0.14	0.917
10	0.17	0.41	0.248	-0.001427	-0.14	0.917
11	0.25	0.50	0.253	-0.001427	-0.14	0.917
12	0.33	0.58	0.257	-0.001473	-0.15	0.917
13	0.41	0.64	0.257	-0.001519	-0.15	0.918

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 3 of 14
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.255	-0.003771	-0.38	0.922
2	0.01	0.09	0.258	-0.003771	-0.38	0.922
3	0.02	0.13	0.323	-0.003725	-0.37	0.922
4	0.03	0.16	0.376	-0.003587	-0.36	0.922
5	0.04	0.19	0.41	-0.003312	-0.33	0.921
6	0.05	0.23	0.45	-0.002898	-0.29	0.920
7	0.07	0.27	0.472	-0.002714	-0.27	0.920
8	0.08	0.29	0.482	-0.002576	-0.26	0.920
9	0.12	0.34	0.491	-0.0023	-0.23	0.919
10	0.17	0.41	0.495	-0.002208	-0.22	0.919
11	0.25	0.50	0.497	-0.002116	-0.21	0.919
12	0.34	0.58	0.499	-0.002116	-0.21	0.919
13	0.50	0.71	0.501	-0.002116	-0.21	0.919
14	0.75	0.87	0.503	-0.002116	-0.21	0.919

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 4 of 14
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.503	-0.003447	-0.34	0.921
2	0.01	0.09	0.545	-0.003447	-0.34	0.921
3	0.02	0.13	0.781	-0.003034	-0.30	0.920
4	0.03	0.16	0.867	-0.002206	-0.22	0.919
5	0.04	0.19	0.912	-0.001746	-0.17	0.918
6	0.05	0.23	0.955	-0.00124	-0.12	0.917
7	0.07	0.26	0.973	-0.0009185	-0.09	0.916
8	0.09	0.30	0.981	-0.0006427	-0.06	0.916
9	0.12	0.34	0.988	-0.0004588	-0.05	0.916
10	0.17	0.41	0.993	-0.0003208	-0.03	0.915
11	0.25	0.50	0.997	-0.0001829	-0.02	0.915
12	0.34	0.58	0.997	-9.092e-005	-0.01	0.915
13	0.50	0.71	0.998	4.701e-005	0.00	0.915
14	0.75	0.87	0.998	0.000139	0.01	0.914
15	1.00	1.00	0.999	0.000185	0.02	0.914
16	1.50	1.23	0.999	0.0003229	0.03	0.914
17	2.00	1.42	0.999	0.0003229	0.03	0.914
18	3.00	1.73	0.999	0.0003229	0.03	0.914
19	3.89	1.97	0.999	0.0002309	0.02	0.914

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 5 of 14
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	-0.001931	-0.19	0.918
2	0.01	0.09	1.18	-0.001931	-0.19	0.918
3	0.02	0.13	1.64	-0.0005518	-0.05	0.916
4	0.03	0.16	1.78	0.0008275	0.08	0.913
5	0.04	0.19	1.85	0.001747	0.17	0.911
6	0.05	0.23	1.91	0.002713	0.27	0.910
7	0.07	0.27	1.94	0.003126	0.31	0.909
8	0.08	0.29	1.95	0.003356	0.33	0.908
9	0.12	0.34	1.97	0.004046	0.40	0.907
10	0.17	0.41	1.98	0.004598	0.46	0.906
11	0.25	0.50	1.99	0.00469	0.47	0.906
12	0.34	0.58	1.99	0.00469	0.47	0.906
13	0.50	0.71	1.99	0.004828	0.48	0.905
14	0.75	0.87	2	0.004966	0.49	0.905
15	1.00	1.00	2	0.005242	0.52	0.905
16	1.50	1.23	2	0.005655	0.56	0.904
17	2.00	1.42	2	0.006069	0.60	0.903
18	3.00	1.73	2	0.006391	0.64	0.902
19	4.00	2.00	2	0.006667	0.66	0.902
20	5.00	2.24	2	0.006851	0.68	0.902
21	6.00	2.45	2	0.006897	0.69	0.902
22	7.00	2.65	2	0.006897	0.69	0.902
23	8.00	2.83	2	0.006943	0.69	0.901
24	9.00	3.00	2	0.006943	0.69	0.901
25	10.00	3.16	2	0.006989	0.70	0.901
26	12.00	3.46	2	0.007127	0.71	0.901
27	14.00	3.74	2	0.007219	0.72	0.901
28	16.00	4.00	2	0.007311	0.73	0.901
29	18.00	4.24	2	0.007403	0.74	0.901
30	20.00	4.47	2	0.007403	0.74	0.901
31	22.00	4.69	2	0.007449	0.74	0.900
32	24.00	4.90	2	0.007494	0.75	0.900
33	26.00	5.10	2	0.00754	0.75	0.900
34	28.00	5.29	2	0.00754	0.75	0.900
35	30.00	5.48	2	0.007586	0.76	0.900
36	35.00	5.92	2	0.007632	0.76	0.900
37	40.00	6.32	2	0.007632	0.76	0.900
38	45.00	6.71	2	0.007678	0.76	0.900
39	50.00	7.07	2	0.007678	0.76	0.900
40	60.00	7.75	2	0.007724	0.77	0.900
41	70.00	8.37	2	0.00777	0.77	0.900
42	80.00	8.94	2	0.00777	0.77	0.900
43	90.00	9.49	2	0.00777	0.77	0.900
44	100.00	10.00	2	0.007816	0.78	0.900
45	110.00	10.49	2	0.007816	0.78	0.900
46	120.00	10.95	2	0.007816	0.78	0.900
47	120.06	10.96	2	0.007816	0.78	0.900

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 6 of 14
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	0.01504	1.50	0.886
2	0.01	0.09	1.81	0.01504	1.50	0.886
3	0.02	0.13	0.578	0.01278	1.27	0.890
4	0.03	0.16	0.4	0.01182	1.18	0.892
5	0.04	0.19	0.322	0.01103	1.10	0.894
6	0.05	0.23	0.241	0.01016	1.01	0.895
7	0.07	0.27	0.205	0.009702	0.97	0.896
8	0.08	0.29	0.186	0.009242	0.92	0.897
9	0.12	0.35	0.161	0.008644	0.86	0.898
10	0.17	0.41	0.145	0.008	0.80	0.899
11	0.25	0.50	0.138	0.007357	0.73	0.901
12	0.34	0.58	0.133	0.007127	0.71	0.901
13	0.50	0.71	0.131	0.006621	0.66	0.902
14	0.75	0.87	0.128	0.006161	0.61	0.903
15	1.00	1.00	0.128	0.005839	0.58	0.904
16	1.50	1.23	0.127	0.00538	0.54	0.904
17	2.00	1.42	0.127	0.004828	0.48	0.905
18	3.00	1.73	0.125	0.004276	0.43	0.907
19	4.00	2.00	0.124	0.003724	0.37	0.908
20	5.00	2.24	0.125	0.003402	0.34	0.908
21	6.00	2.45	0.125	0.003035	0.30	0.909
22	7.00	2.65	0.124	0.002575	0.26	0.910
23	8.00	2.83	0.124	0.002207	0.22	0.910
24	9.00	3.00	0.125	0.002023	0.20	0.911
25	10.00	3.16	0.125	0.001839	0.18	0.911
26	12.00	3.46	0.124	0.001609	0.16	0.912
27	14.00	3.74	0.125	0.001103	0.11	0.913
28	16.00	4.00	0.124	0.0007357	0.07	0.913
29	18.00	4.24	0.124	0.0003678	0.04	0.914
30	20.00	4.47	0.125	9.196e-005	0.01	0.915
31	22.00	4.69	0.125	-4.598e-005	-0.00	0.915
32	24.00	4.90	0.125	-0.0001379	-0.01	0.915
33	26.00	5.10	0.124	-0.0003678	-0.04	0.915
34	28.00	5.29	0.125	-0.0008276	-0.08	0.916
35	30.00	5.48	0.124	-0.0009656	-0.10	0.917
36	35.00	5.92	0.124	-0.001517	-0.15	0.918
37	40.00	6.32	0.124	-0.002115	-0.21	0.919
38	45.00	6.71	0.124	-0.002667	-0.27	0.920
39	50.00	7.07	0.125	-0.002943	-0.29	0.920
40	60.00	7.75	0.124	-0.00354	-0.35	0.921
41	70.00	8.37	0.124	-0.00446	-0.44	0.923
42	80.00	8.94	0.125	-0.005426	-0.54	0.925
43	90.00	9.49	0.124	-0.006023	-0.60	0.926
44	100.00	10.00	0.125	-0.006483	-0.65	0.927
45	110.00	10.49	0.124	-0.006713	-0.67	0.927
46	120.00	10.95	0.124	-0.007081	-0.71	0.928
47	130.00	11.40	0.124	-0.007495	-0.75	0.929
48	140.00	11.83	0.124	-0.007678	-0.76	0.929
49	150.00	12.25	0.124	-0.007816	-0.78	0.930
50	150.04	12.25	0.124	-0.007816	-0.78	0.930

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 7 of 14
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.124	-0.01504	-1.50	0.943
2	0.01	0.09	0.242	-0.01504	-1.50	0.943
3	0.02	0.13	1.05	-0.01356	-1.35	0.941
4	0.03	0.16	1.47	-0.009886	-0.98	0.934
5	0.04	0.19	1.67	-0.007817	-0.78	0.930
6	0.05	0.23	1.85	-0.006161	-0.61	0.926
7	0.07	0.27	1.91	-0.005288	-0.53	0.925
8	0.08	0.29	1.93	-0.004966	-0.49	0.924
9	0.12	0.35	1.96	-0.004046	-0.40	0.922
10	0.17	0.41	1.98	-0.003449	-0.34	0.921
11	0.25	0.50	1.98	-0.002667	-0.27	0.920
12	0.34	0.58	1.99	-0.002253	-0.22	0.919
13	0.50	0.71	1.99	-0.001701	-0.17	0.918
14	0.75	0.87	2	-0.00115	-0.11	0.917
15	1.00	1.00	2	-0.0008277	-0.08	0.916
16	1.50	1.23	2	-0.000276	-0.03	0.915
17	2.00	1.42	2	0.0001838	0.02	0.914
18	3.00	1.73	2	0.0006896	0.07	0.913
19	4.00	2.00	2	0.001195	0.12	0.912
20	5.00	2.24	2	0.001655	0.16	0.912
21	6.00	2.45	2	0.001839	0.18	0.911
22	7.00	2.65	2	0.002023	0.20	0.911
23	8.00	2.83	2	0.002207	0.22	0.910
24	9.00	3.00	2	0.002437	0.24	0.910
25	10.00	3.16	2	0.002621	0.26	0.910
26	12.00	3.46	2	0.002759	0.27	0.909
27	14.00	3.74	2	0.002851	0.28	0.909
28	16.00	4.00	2	0.003081	0.31	0.909
29	18.00	4.24	2	0.003218	0.32	0.909
30	20.00	4.47	2	0.00331	0.33	0.908
31	22.00	4.69	2	0.003448	0.34	0.908
32	24.00	4.90	2	0.003586	0.36	0.908
33	26.00	5.10	2	0.00377	0.38	0.907
34	28.00	5.29	2	0.003862	0.38	0.907
35	30.00	5.48	2	0.004	0.40	0.907
36	35.00	5.92	2	0.004552	0.45	0.906
37	40.00	6.32	2	0.004598	0.46	0.906
38	45.00	6.71	2	0.00469	0.47	0.906
39	50.00	7.07	2	0.00469	0.47	0.906
40	60.00	7.75	2	0.00469	0.47	0.906
41	70.00	8.37	2	0.004782	0.48	0.906
42	80.00	8.94	2	0.004782	0.48	0.906
43	90.00	9.49	2	0.004874	0.49	0.905
44	100.00	10.00	2	0.004874	0.49	0.905
45	110.00	10.49	2	0.004966	0.49	0.905
46	120.00	10.95	2	0.005104	0.51	0.905
47	120.08	10.96	2	0.005104	0.51	0.905

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 8 of 14
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	0.002527	0.25	0.910
2	0.01	0.09	2.48	0.002527	0.25	0.910
3	0.02	0.13	3.52	0.005654	0.56	0.904
4	0.03	0.16	3.74	0.007539	0.75	0.900
5	0.04	0.19	3.84	0.008597	0.86	0.898
6	0.05	0.23	3.91	0.009562	0.95	0.896
7	0.07	0.27	3.94	0.01034	1.03	0.895
8	0.08	0.29	3.96	0.01053	1.05	0.895
9	0.12	0.35	3.97	0.01094	1.09	0.894
10	0.17	0.41	3.98	0.01126	1.12	0.893
11	0.25	0.50	3.99	0.01237	1.23	0.891
12	0.33	0.58	3.99	0.01283	1.28	0.890
13	0.50	0.71	4	0.01319	1.31	0.890
14	0.75	0.87	4	0.01338	1.33	0.889
15	1.00	1.00	4	0.01338	1.33	0.889
16	1.50	1.22	4	0.01398	1.39	0.888
17	2.00	1.42	4	0.01439	1.43	0.887
18	3.00	1.73	4	0.01508	1.50	0.886
19	4.00	2.00	4	0.01572	1.57	0.885
20	5.00	2.24	4	0.01623	1.62	0.884
21	6.00	2.45	4	0.0166	1.65	0.883
22	7.00	2.65	4	0.01687	1.68	0.883
23	8.00	2.83	4	0.01715	1.71	0.882
24	9.00	3.00	4	0.01733	1.73	0.882
25	10.00	3.16	4	0.01738	1.73	0.882
26	12.00	3.46	4	0.0177	1.76	0.881
27	14.00	3.74	4	0.01802	1.80	0.880
28	16.00	4.00	4	0.01857	1.85	0.879
29	18.00	4.24	4	0.01899	1.89	0.878
30	20.00	4.47	4	0.01945	1.94	0.878
31	22.00	4.69	4	0.01959	1.95	0.877
32	24.00	4.90	4	0.01968	1.96	0.877
33	26.00	5.10	4	0.01991	1.98	0.877
34	28.00	5.29	4	0.02014	2.01	0.876
35	30.00	5.48	4	0.02051	2.04	0.876
36	35.00	5.92	4	0.02092	2.08	0.875
37	40.00	6.32	4	0.0211	2.10	0.874
38	45.00	6.71	4	0.02129	2.12	0.874
39	50.00	7.07	4	0.02147	2.14	0.874
40	60.00	7.75	4	0.02198	2.19	0.873
41	70.00	8.37	4	0.02239	2.23	0.872
42	80.00	8.94	4	0.02285	2.28	0.871
43	90.00	9.49	4	0.02331	2.32	0.870
44	100.00	10.00	4	0.02377	2.37	0.869
45	110.00	10.49	4	0.02414	2.40	0.869
46	120.00	10.95	4	0.02455	2.45	0.868
47	130.00	11.40	4	0.02483	2.47	0.867
48	140.00	11.83	4	0.02501	2.49	0.867
49	150.00	12.25	4	0.0252	2.51	0.867
50	160.00	12.65	4	0.02538	2.53	0.866
51	170.00	13.04	4	0.02556	2.55	0.866
52	174.64	13.21	4	0.02565	2.56	0.866

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 9 of 14
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.02235	2.23	0.872
2	0.01	0.09	4.76	0.02235	2.23	0.872
3	0.02	0.13	7.53	0.02644	2.63	0.864
4	0.03	0.16	7.79	0.02915	2.90	0.859
5	0.04	0.19	7.88	0.02984	2.97	0.858
6	0.05	0.23	7.93	0.03067	3.05	0.856
7	0.07	0.27	7.96	0.03131	3.12	0.855
8	0.08	0.29	7.96	0.03163	3.15	0.854
9	0.12	0.35	7.98	0.03205	3.19	0.854
10	0.17	0.41	7.98	0.03264	3.25	0.852
11	0.25	0.50	7.99	0.03306	3.29	0.852
12	0.34	0.58	7.99	0.03329	3.32	0.851
13	0.50	0.71	7.99	0.03343	3.33	0.851
14	0.75	0.87	8	0.03389	3.38	0.850
15	1.00	1.00	8	0.03453	3.44	0.849
16	1.50	1.23	8	0.03536	3.52	0.847
17	2.00	1.41	8	0.03586	3.57	0.846
18	3.00	1.73	8	0.03632	3.62	0.845
19	4.00	2.00	8	0.03678	3.66	0.845
20	5.00	2.24	8	0.03775	3.76	0.843
21	6.00	2.45	8	0.03816	3.80	0.842
22	7.00	2.65	8	0.03858	3.84	0.841
23	8.00	2.83	8	0.03876	3.86	0.841
24	9.00	3.00	8	0.03913	3.90	0.840
25	10.00	3.16	8	0.03963	3.95	0.839
26	12.00	3.46	8	0.04037	4.02	0.838
27	14.00	3.74	8	0.04069	4.05	0.837
28	16.00	4.00	8	0.04088	4.07	0.837
29	18.00	4.24	8	0.04124	4.11	0.836
30	20.00	4.47	8	0.0417	4.15	0.835
31	22.00	4.69	8	0.04207	4.19	0.834
32	24.00	4.90	8	0.04235	4.22	0.834
33	26.00	5.10	8	0.04253	4.24	0.834
34	28.00	5.29	8	0.04281	4.26	0.833
35	30.00	5.48	8	0.0434	4.32	0.832
36	35.00	5.92	8	0.04451	4.43	0.830
37	40.00	6.32	8	0.04538	4.52	0.828
38	45.00	6.71	8	0.04612	4.59	0.827
39	50.00	7.07	8	0.04653	4.63	0.826
40	60.00	7.75	8	0.04736	4.72	0.824
41	70.00	8.37	8	0.04786	4.77	0.823
42	80.00	8.94	8	0.04874	4.85	0.822
43	90.00	9.49	8	0.04961	4.94	0.820
44	100.00	10.00	8	0.05002	4.98	0.819
45	110.00	10.49	8	0.05053	5.03	0.818
46	120.00	10.95	8	0.05108	5.09	0.817
47	130.00	11.40	8	0.05196	5.17	0.816
48	140.00	11.83	8	0.05214	5.19	0.815
49	150.00	12.25	8	0.05232	5.21	0.815
50	160.00	12.65	8	0.05265	5.24	0.814
51	170.00	13.04	8	0.05301	5.28	0.814
52	175.02	13.23	8	0.05329	5.31	0.813

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 10 of 14
Applied Stress: 16 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.04786	4.77	0.823
2	0.01	0.09	10.2	0.04786	4.77	0.823
3	0.02	0.13	15.9	0.05177	5.16	0.816
4	0.03	0.16	15.9	0.05568	5.55	0.808
5	0.04	0.19	15.9	0.05646	5.62	0.807
6	0.05	0.23	16	0.05711	5.69	0.806
7	0.07	0.26	16	0.05738	5.72	0.805
8	0.09	0.30	16	0.05766	5.74	0.805
9	0.12	0.34	16	0.0578	5.76	0.804
10	0.17	0.41	16	0.05798	5.77	0.804
11	0.25	0.50	16	0.05835	5.81	0.803
12	0.34	0.58	16	0.05867	5.84	0.803
13	0.50	0.71	16	0.05918	5.89	0.802
14	0.75	0.87	16	0.0595	5.93	0.801
15	1.00	1.00	16	0.05991	5.97	0.800
16	1.50	1.23	16	0.06074	6.05	0.799
17	2.00	1.42	16	0.06134	6.11	0.798
18	3.00	1.73	16	0.06212	6.19	0.796
19	4.00	2.00	16	0.06272	6.25	0.795
20	5.00	2.24	16	0.06318	6.29	0.794
21	6.00	2.45	16	0.06377	6.35	0.793
22	7.00	2.65	16	0.06428	6.40	0.792
23	8.00	2.83	16	0.06465	6.44	0.791
24	9.00	3.00	16	0.06511	6.48	0.791
25	10.00	3.16	16	0.06561	6.54	0.790
26	12.00	3.46	16	0.06653	6.63	0.788
27	14.00	3.74	16	0.06699	6.67	0.787
28	16.00	4.00	16	0.0675	6.72	0.786
29	18.00	4.24	16	0.06796	6.77	0.785
30	20.00	4.47	16	0.06837	6.81	0.784
31	22.00	4.69	16	0.06897	6.87	0.783
32	24.00	4.90	16	0.06989	6.96	0.781
33	26.00	5.10	16	0.07053	7.03	0.780
34	28.00	5.29	16	0.07085	7.06	0.780
35	30.00	5.48	16	0.07145	7.12	0.778
36	35.00	5.92	16	0.07251	7.22	0.776
37	40.00	6.32	16	0.07292	7.26	0.776
38	45.00	6.71	16	0.07393	7.36	0.774
39	50.00	7.07	16	0.07504	7.47	0.772
40	60.00	7.75	16	0.07651	7.62	0.769
41	70.00	8.37	16	0.07798	7.77	0.766
42	80.00	8.94	16	0.07881	7.85	0.764
43	90.00	9.49	16	0.07987	7.95	0.762
44	100.00	10.00	16	0.08092	8.06	0.760
45	110.00	10.49	16	0.08221	8.19	0.758
46	120.00	10.95	16	0.08267	8.23	0.757
47	130.00	11.40	16	0.08318	8.28	0.756
48	140.00	11.83	16	0.08368	8.33	0.755
49	150.00	12.25	16	0.08442	8.41	0.754
50	160.00	12.65	16	0.08506	8.47	0.752
51	170.00	13.04	16	0.08548	8.51	0.752
52	180.00	13.42	16	0.08575	8.54	0.751
53	190.00	13.78	16	0.08607	8.57	0.751
54	192.17	13.86	16	0.08612	8.58	0.750

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 11 of 14
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	16	0.1046	10.42	0.715
2	0.01	0.09	12.7	0.1046	10.42	0.715
3	0.02	0.13	4.72	0.1005	10.01	0.723
4	0.03	0.16	4.16	0.09596	9.56	0.732
5	0.04	0.19	4.08	0.0955	9.51	0.733
6	0.05	0.23	4.04	0.09485	9.45	0.734
7	0.07	0.27	4.03	0.09462	9.42	0.734
8	0.09	0.30	4.02	0.09449	9.41	0.734
9	0.12	0.34	4.02	0.09421	9.38	0.735
10	0.17	0.41	4.01	0.09403	9.37	0.735
11	0.25	0.50	4.01	0.09361	9.32	0.736
12	0.34	0.58	4.01	0.09334	9.30	0.737
13	0.50	0.71	4	0.09274	9.24	0.738
14	0.75	0.87	4	0.09237	9.20	0.739
15	1.00	1.00	4	0.09214	9.18	0.739
16	1.50	1.23	4	0.0915	9.11	0.740
17	2.00	1.41	4	0.09127	9.09	0.741
18	3.00	1.73	4	0.09113	9.08	0.741
19	4.00	2.00	4	0.09099	9.06	0.741
20	5.00	2.24	4	0.09081	9.04	0.742
21	6.00	2.45	4	0.09058	9.02	0.742
22	7.00	2.65	4	0.09007	8.97	0.743
23	8.00	2.83	4	0.08966	8.93	0.744
24	9.00	3.00	4	0.08938	8.90	0.744
25	10.00	3.16	4	0.08934	8.90	0.744
26	12.00	3.46	4	0.08902	8.87	0.745
27	14.00	3.74	4	0.08856	8.82	0.746
28	16.00	4.00	4	0.08823	8.79	0.746
29	18.00	4.24	4	0.08768	8.73	0.747
30	20.00	4.47	4	0.08736	8.70	0.748
31	22.00	4.69	4	0.08704	8.67	0.749
32	24.00	4.90	4	0.08681	8.65	0.749
33	26.00	5.10	4	0.08667	8.63	0.749
34	28.00	5.29	4	0.08653	8.62	0.750
35	30.00	5.48	4	0.08644	8.61	0.750
36	35.00	5.92	4	0.08607	8.57	0.751
37	40.00	6.32	4	0.08584	8.55	0.751
38	45.00	6.71	4	0.08552	8.52	0.752
39	50.00	7.07	4	0.08529	8.50	0.752
40	60.00	7.75	4	0.08474	8.44	0.753
41	70.00	8.37	4	0.08396	8.36	0.755
42	80.00	8.94	4	0.08341	8.31	0.756
43	90.00	9.49	4	0.08304	8.27	0.756
44	100.00	10.00	4	0.08267	8.23	0.757
45	110.00	10.49	4	0.08221	8.19	0.758
46	120.00	10.95	4	0.0818	8.15	0.759
47	130.00	11.40	4	0.08157	8.12	0.759
48	140.00	11.83	4	0.08138	8.11	0.759
49	141.11	11.88	4	0.08138	8.11	0.759

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 12 of 14
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.08138	8.11	0.759
2	0.01	0.09	3.51	0.08138	8.11	0.759
3	0.02	0.13	1.04	0.07876	7.84	0.764
4	0.03	0.16	1.05	0.07793	7.76	0.766
5	0.04	0.19	1.04	0.0778	7.75	0.766
6	0.05	0.23	1.02	0.07761	7.73	0.767
7	0.07	0.26	1.02	0.07747	7.72	0.767
8	0.09	0.30	1.01	0.07729	7.70	0.767
9	0.12	0.34	1.01	0.07701	7.67	0.768
10	0.17	0.41	1.01	0.07678	7.65	0.768
11	0.25	0.50	1	0.07665	7.63	0.769
12	0.34	0.58	1	0.07651	7.62	0.769
13	0.50	0.71	1	0.07637	7.61	0.769
14	0.75	0.87	1	0.0761	7.58	0.770
15	1.00	1.00	1	0.07587	7.56	0.770
16	1.50	1.23	1	0.07541	7.51	0.771
17	2.00	1.42	1	0.07495	7.46	0.772
18	3.00	1.73	1	0.07416	7.39	0.773
19	4.00	2.00	1	0.07375	7.35	0.774
20	5.00	2.24	0.999	0.07347	7.32	0.775
21	6.00	2.45	1	0.07324	7.30	0.775
22	7.00	2.65	1	0.07301	7.27	0.775
23	8.00	2.83	1	0.07283	7.25	0.776
24	9.00	3.00	1	0.07265	7.24	0.776
25	10.00	3.16	1	0.07246	7.22	0.776
26	12.00	3.46	0.999	0.072	7.17	0.777
27	14.00	3.74	1	0.07127	7.10	0.779
28	16.00	4.00	0.999	0.0709	7.06	0.779
29	18.00	4.24	0.999	0.07072	7.04	0.780
30	20.00	4.47	1	0.07058	7.03	0.780
31	22.00	4.69	1	0.07035	7.01	0.781
32	24.00	4.90	0.999	0.06989	6.96	0.781
33	26.00	5.10	1	0.06966	6.94	0.782
34	28.00	5.29	1	0.06924	6.90	0.783
35	30.00	5.48	0.999	0.06865	6.84	0.784
36	35.00	5.92	1	0.06809	6.78	0.785
37	40.00	6.32	0.999	0.06773	6.75	0.786
38	45.00	6.71	1	0.06745	6.72	0.786
39	50.00	7.07	1	0.06681	6.65	0.787
40	60.00	7.75	1	0.06561	6.54	0.790
41	70.00	8.37	1	0.06497	6.47	0.791
42	80.00	8.94	0.999	0.06396	6.37	0.793
43	90.00	9.49	0.999	0.06313	6.29	0.794
44	100.00	10.00	0.999	0.06253	6.23	0.795
45	110.00	10.49	1	0.06166	6.14	0.797
46	120.00	10.95	0.999	0.06097	6.07	0.798
47	130.00	11.40	0.998	0.06042	6.02	0.799
48	140.00	11.83	0.999	0.05986	5.96	0.801
49	150.00	12.25	0.999	0.05954	5.93	0.801
50	160.00	12.65	0.999	0.05913	5.89	0.802
51	170.00	13.04	0.999	0.05853	5.83	0.803
52	180.00	13.42	0.999	0.05798	5.77	0.804
53	189.99	13.78	0.999	0.05738	5.72	0.805

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 13 of 14
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.05738	5.72	0.805
2	0.01	0.09	0.757	0.05734	5.71	0.805
3	0.02	0.13	0.326	0.05591	5.57	0.808
4	0.03	0.16	0.285	0.05545	5.52	0.809
5	0.04	0.19	0.276	0.0554	5.52	0.809
6	0.05	0.23	0.264	0.05531	5.51	0.809
7	0.07	0.27	0.261	0.05527	5.50	0.809
8	0.08	0.29	0.259	0.05522	5.50	0.809
9	0.12	0.35	0.257	0.05517	5.50	0.809
10	0.17	0.41	0.255	0.05508	5.49	0.810
11	0.25	0.50	0.254	0.05494	5.47	0.810
12	0.34	0.58	0.254	0.05485	5.46	0.810
13	0.50	0.71	0.253	0.05467	5.45	0.810
14	0.75	0.87	0.252	0.05449	5.43	0.811
15	1.00	1.00	0.252	0.0543	5.41	0.811
16	1.50	1.23	0.25	0.05416	5.39	0.811
17	2.00	1.42	0.252	0.05403	5.38	0.812
18	3.00	1.73	0.251	0.05384	5.36	0.812
19	4.00	2.00	0.25	0.05366	5.34	0.812
20	5.00	2.24	0.251	0.05343	5.32	0.813
21	6.00	2.45	0.25	0.05329	5.31	0.813
22	7.00	2.65	0.25	0.05311	5.29	0.813
23	8.00	2.83	0.251	0.05283	5.26	0.814
24	9.00	3.00	0.251	0.05251	5.23	0.815
25	10.00	3.16	0.25	0.05205	5.18	0.815
26	12.00	3.46	0.25	0.05168	5.15	0.816
27	14.00	3.74	0.251	0.05136	5.12	0.817
28	16.00	4.00	0.25	0.05104	5.08	0.817
29	18.00	4.24	0.25	0.05076	5.06	0.818
30	20.00	4.47	0.251	0.05044	5.02	0.818
31	22.00	4.69	0.25	0.04993	4.97	0.819
32	24.00	4.90	0.251	0.04961	4.94	0.820
33	26.00	5.10	0.25	0.04943	4.92	0.820
34	28.00	5.29	0.251	0.0492	4.90	0.821
35	30.00	5.48	0.251	0.04906	4.89	0.821
36	35.00	5.92	0.25	0.04855	4.84	0.822
37	40.00	6.32	0.25	0.04782	4.76	0.823
38	45.00	6.71	0.251	0.04704	4.68	0.825
39	50.00	7.07	0.25	0.04658	4.64	0.826
40	60.00	7.75	0.25	0.04625	4.61	0.826
41	70.00	8.37	0.25	0.04511	4.49	0.829
42	80.00	8.94	0.252	0.04423	4.41	0.830
43	90.00	9.49	0.25	0.04304	4.29	0.833
44	100.00	10.00	0.251	0.04253	4.24	0.834
45	110.00	10.49	0.249	0.04193	4.18	0.835
46	120.00	10.95	0.25	0.04147	4.13	0.836
47	130.00	11.40	0.25	0.04092	4.08	0.837
48	140.00	11.83	0.249	0.04014	4.00	0.838
49	150.00	12.25	0.25	0.03945	3.93	0.839
50	160.00	12.65	0.25	0.03848	3.83	0.841
51	170.00	13.04	0.249	0.03743	3.73	0.843
52	180.00	13.42	0.251	0.03697	3.68	0.844
53	190.00	13.78	0.25	0.0366	3.65	0.845
54	200.00	14.14	0.25	0.03632	3.62	0.845
55	210.00	14.49	0.251	0.03614	3.60	0.846
56	220.00	14.83	0.25	0.03605	3.59	0.846
57	230.00	15.17	0.25	0.03563	3.55	0.847
58	240.00	15.49	0.251	0.03513	3.50	0.848
59	250.00	15.81	0.25	0.03467	3.45	0.849
60	260.00	16.12	0.251	0.03425	3.41	0.849
61	270.00	16.43	0.25	0.03361	3.35	0.851
62	280.00	16.73	0.251	0.0331	3.30	0.852
63	290.00	17.03	0.25	0.03265	3.25	0.852
64	300.00	17.32	0.25	0.03223	3.21	0.853
65	310.00	17.61	0.25	0.03186	3.17	0.854
66	320.00	17.89	0.25	0.03163	3.15	0.854
67	330.00	18.17	0.249	0.03127	3.11	0.855
68	340.00	18.44	0.25	0.03099	3.09	0.856
69	350.00	18.71	0.25	0.0309	3.08	0.856
70	360.00	18.97	0.25	0.03076	3.06	0.856
71	370.00	19.24	0.25	0.03062	3.05	0.856
72	380.00	19.49	0.25	0.03021	3.01	0.857
73	390.00	19.75	0.25	0.02989	2.98	0.858
74	400.00	20.00	0.25	0.02956	2.94	0.858
75	410.00	20.25	0.25	0.02943	2.93	0.859
76	420.00	20.49	0.25	0.02924	2.91	0.859
77	430.00	20.74	0.25	0.02887	2.88	0.860
78	440.00	20.98	0.25	0.02846	2.83	0.860
79	450.00	21.21	0.25	0.02814	2.80	0.861
80	460.00	21.45	0.25	0.02763	2.75	0.862
81	470.00	21.68	0.251	0.0275	2.74	0.862

82	480.00	21.91	0.25	0.02727	2.72	0.863
83	490.00	22.14	0.249	0.02717	2.71	0.863
84	500.00	22.36	0.25	0.02713	2.70	0.863
85	510.00	22.58	0.25	0.02699	2.69	0.863
86	520.00	22.80	0.25	0.02676	2.67	0.864
87	530.00	23.02	0.25	0.02653	2.64	0.864
88	540.00	23.24	0.25	0.02635	2.62	0.864
89	550.00	23.45	0.249	0.02602	2.59	0.865
90	560.00	23.66	0.25	0.02584	2.57	0.865
91	570.00	23.87	0.25	0.02566	2.56	0.866
92	580.00	24.08	0.25	0.02543	2.53	0.866
93	590.00	24.29	0.25	0.02515	2.51	0.867
94	600.00	24.49	0.25	0.02487	2.48	0.867
95	610.00	24.70	0.25	0.02451	2.44	0.868
96	620.00	24.90	0.251	0.02437	2.43	0.868
97	630.00	25.10	0.25	0.02418	2.41	0.869
98	640.00	25.30	0.25	0.02409	2.40	0.869
99	650.00	25.50	0.25	0.024	2.39	0.869
100	660.00	25.69	0.25	0.02391	2.38	0.869
101	670.00	25.88	0.25	0.02368	2.36	0.870
102	680.00	26.08	0.251	0.02354	2.34	0.870
103	690.00	26.27	0.251	0.02331	2.32	0.870
104	700.00	26.46	0.25	0.02322	2.31	0.870
105	710.00	26.65	0.25	0.02322	2.31	0.870
106	720.00	26.83	0.25	0.02317	2.31	0.870
107	730.00	27.02	0.25	0.02313	2.30	0.871
108	740.00	27.20	0.251	0.02308	2.30	0.871
109	750.00	27.39	0.251	0.02308	2.30	0.871
110	760.00	27.57	0.25	0.02304	2.29	0.871
111	770.00	27.75	0.25	0.02294	2.29	0.871
112	780.00	27.93	0.25	0.0229	2.28	0.871
113	790.00	28.11	0.25	0.02281	2.27	0.871
114	800.00	28.28	0.25	0.02276	2.27	0.871
115	810.00	28.46	0.25	0.02267	2.26	0.871
116	820.00	28.64	0.249	0.02258	2.25	0.872
117	830.00	28.81	0.25	0.02248	2.24	0.872
118	840.00	28.98	0.25	0.02244	2.23	0.872
119	850.00	29.15	0.25	0.0223	2.22	0.872
120	860.00	29.33	0.25	0.02202	2.19	0.873
121	870.00	29.50	0.25	0.02175	2.17	0.873
122	880.00	29.66	0.251	0.02156	2.15	0.874
123	890.00	29.83	0.25	0.02124	2.12	0.874
124	900.00	30.00	0.25	0.02115	2.11	0.874
125	910.00	30.17	0.249	0.0211	2.10	0.874
126	920.00	30.33	0.25	0.02101	2.09	0.875
127	930.00	30.50	0.249	0.02097	2.09	0.875
128	940.00	30.66	0.25	0.02092	2.08	0.875
129	950.00	30.82	0.25	0.02078	2.07	0.875
130	960.00	30.98	0.25	0.02074	2.07	0.875
131	970.00	31.14	0.25	0.02064	2.06	0.875
132	980.00	31.30	0.25	0.02055	2.05	0.875
133	990.00	31.46	0.25	0.02051	2.04	0.876
134	1000.00	31.62	0.25	0.02046	2.04	0.876
135	1010.00	31.78	0.25	0.02046	2.04	0.876
136	1020.00	31.94	0.251	0.02037	2.03	0.876
137	1030.00	32.09	0.25	0.02037	2.03	0.876
138	1040.00	32.25	0.25	0.02028	2.02	0.876
139	1050.00	32.40	0.249	0.02028	2.02	0.876
140	1060.00	32.56	0.251	0.02018	2.01	0.876
141	1070.00	32.71	0.25	0.02014	2.01	0.876
142	1080.00	32.86	0.25	0.02009	2.00	0.876
143	1090.00	33.02	0.251	0.02009	2.00	0.876
144	1100.00	33.17	0.249	0.02	1.99	0.877
145	1110.00	33.32	0.25	0.01991	1.98	0.877
146	1120.00	33.47	0.249	0.01977	1.97	0.877
147	1130.00	33.62	0.25	0.01977	1.97	0.877
148	1140.00	33.76	0.25	0.01959	1.95	0.877
149	1150.00	33.91	0.25	0.0194	1.93	0.878
150	1160.00	34.06	0.25	0.01936	1.93	0.878
151	1170.00	34.21	0.25	0.01927	1.92	0.878
152	1180.00	34.35	0.251	0.01922	1.91	0.878
153	1182.02	34.38	0.25	0.01922	1.91	0.878

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, REBOUND

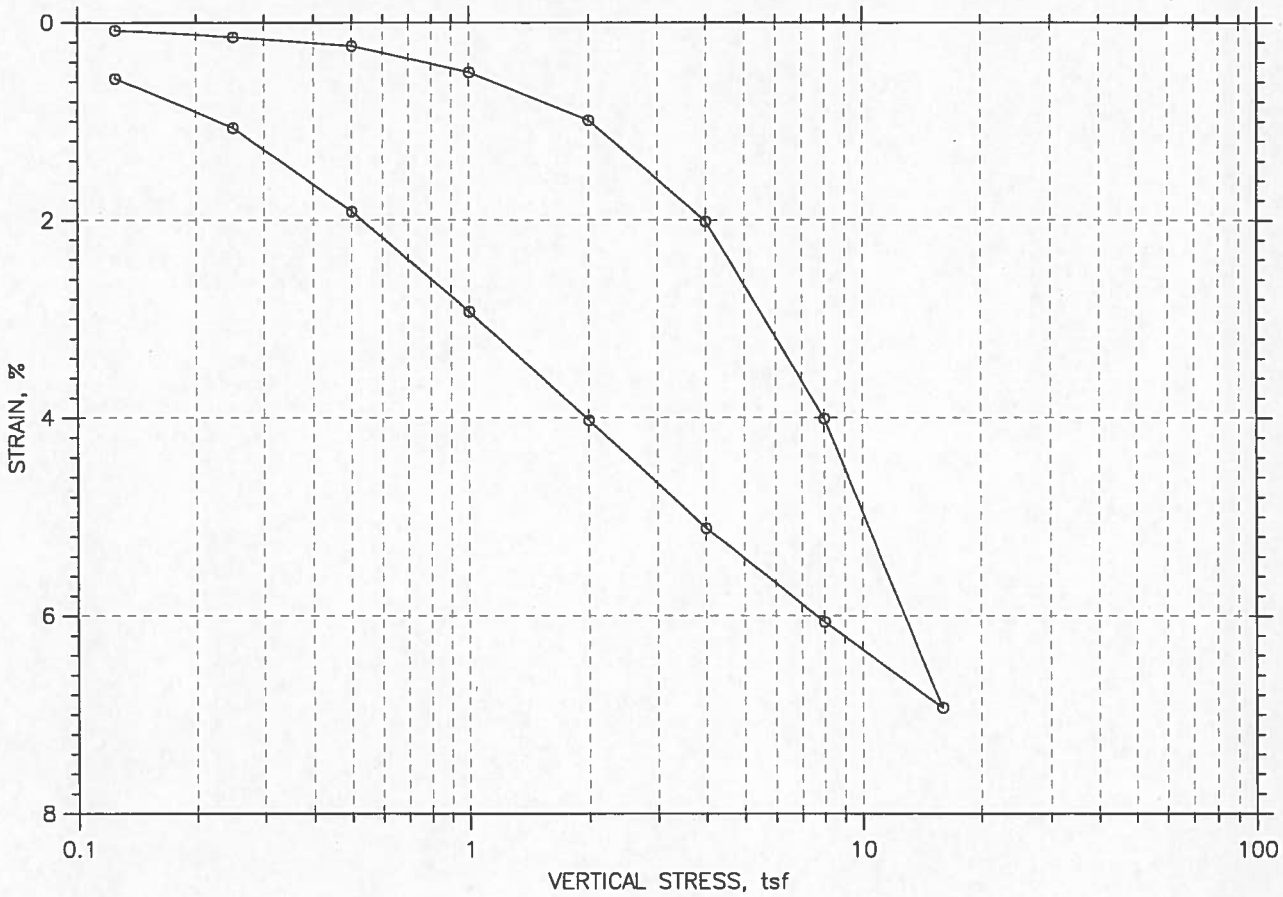
Constant Load Step: 14 of 14
Applied Stress: 0.125 tsf

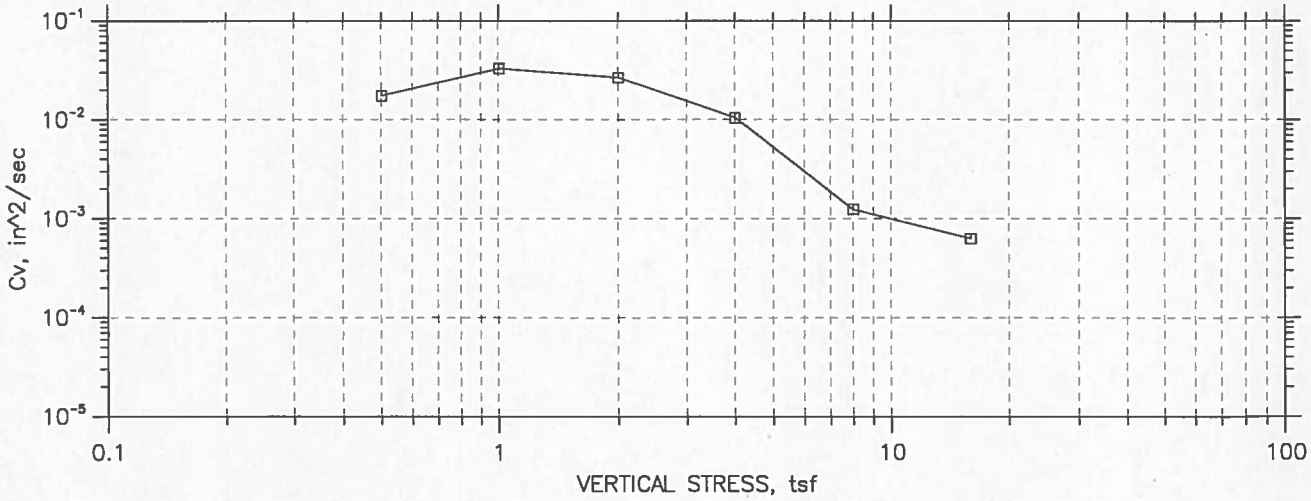
	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	0.01922	1.91	0.878
2	0.01	0.09	0.229	0.01922	1.91	0.878
3	0.02	0.13	0.169	0.01913	1.91	0.878
4	0.03	0.16	0.149	0.01904	1.90	0.878
5	0.04	0.19	0.14	0.01899	1.89	0.878
6	0.05	0.23	0.131	0.01894	1.89	0.879
7	0.07	0.27	0.128	0.01894	1.89	0.879
8	0.08	0.29	0.128	0.0189	1.88	0.879
9	0.12	0.35	0.128	0.0189	1.88	0.879
10	0.17	0.41	0.127	0.0189	1.88	0.879
11	0.25	0.50	0.125	0.01885	1.88	0.879
12	0.34	0.58	0.125	0.01885	1.88	0.879
13	0.50	0.71	0.127	0.01881	1.87	0.879
14	0.75	0.87	0.125	0.01881	1.87	0.879
15	1.00	1.00	0.125	0.01876	1.87	0.879
16	1.50	1.23	0.124	0.01871	1.86	0.879
17	2.00	1.41	0.124	0.01867	1.86	0.879
18	3.00	1.73	0.125	0.01858	1.85	0.879
19	4.00	2.00	0.124	0.01848	1.84	0.879
20	5.00	2.24	0.124	0.01839	1.83	0.880
21	6.00	2.45	0.125	0.01825	1.82	0.880
22	7.00	2.65	0.123	0.01821	1.81	0.880
23	8.00	2.83	0.124	0.01816	1.81	0.880
24	9.00	3.00	0.124	0.01812	1.80	0.880
25	10.00	3.16	0.124	0.01812	1.80	0.880
26	12.00	3.46	0.124	0.01802	1.80	0.880
27	14.00	3.74	0.125	0.01793	1.79	0.880
28	16.00	4.00	0.125	0.01789	1.78	0.881
29	18.00	4.24	0.125	0.01779	1.77	0.881
30	20.00	4.47	0.124	0.0177	1.76	0.881
31	22.00	4.69	0.124	0.01766	1.76	0.881
32	24.00	4.90	0.124	0.01756	1.75	0.881
33	26.00	5.10	0.124	0.01747	1.74	0.881
34	28.00	5.29	0.124	0.01738	1.73	0.882
35	30.00	5.48	0.125	0.01729	1.72	0.882
36	35.00	5.92	0.124	0.01706	1.70	0.882
37	40.00	6.32	0.124	0.01683	1.68	0.883
38	45.00	6.71	0.124	0.01664	1.66	0.883
39	50.00	7.07	0.124	0.0166	1.65	0.883
40	60.00	7.75	0.124	0.01646	1.64	0.883
41	70.00	8.37	0.124	0.01632	1.63	0.884
42	80.00	8.94	0.125	0.01595	1.59	0.884
43	90.00	9.49	0.123	0.01568	1.56	0.885
44	100.00	10.00	0.125	0.01536	1.53	0.885
45	110.00	10.49	0.123	0.01504	1.50	0.886
46	120.00	10.95	0.124	0.01467	1.46	0.887
47	130.00	11.40	0.125	0.01448	1.44	0.887
48	140.00	11.83	0.125	0.0143	1.42	0.887
49	150.00	12.25	0.123	0.01416	1.41	0.888
50	160.00	12.65	0.125	0.01407	1.40	0.888
51	170.00	13.04	0.124	0.01393	1.39	0.888
52	180.00	13.42	0.122	0.01366	1.36	0.889
53	190.00	13.78	0.124	0.01352	1.35	0.889
54	200.00	14.14	0.125	0.01329	1.32	0.889
55	210.00	14.49	0.124	0.01306	1.30	0.890
56	220.00	14.83	0.124	0.01278	1.27	0.890
57	230.00	15.17	0.125	0.01251	1.25	0.891
58	240.00	15.49	0.123	0.01241	1.24	0.891
59	250.00	15.81	0.123	0.01228	1.22	0.891
60	260.00	16.12	0.127	0.01209	1.20	0.892
61	270.00	16.43	0.124	0.01205	1.20	0.892
62	280.00	16.73	0.125	0.01205	1.20	0.892
63	290.00	17.03	0.123	0.01191	1.19	0.892
64	300.00	17.32	0.124	0.01191	1.19	0.892
65	310.00	17.61	0.125	0.01191	1.19	0.892
66	320.00	17.89	0.123	0.01191	1.19	0.892
67	330.00	18.17	0.124	0.01191	1.19	0.892
68	340.00	18.44	0.124	0.01186	1.18	0.892
69	350.00	18.71	0.123	0.01182	1.18	0.892
70	360.00	18.97	0.123	0.01182	1.18	0.892
71	370.00	19.24	0.125	0.01177	1.17	0.892
72	380.00	19.49	0.124	0.01154	1.15	0.893
73	390.00	19.75	0.124	0.0114	1.14	0.893
74	400.00	20.00	0.125	0.01122	1.12	0.893
75	410.00	20.25	0.124	0.01108	1.10	0.894
76	420.00	20.49	0.124	0.01085	1.08	0.894
77	430.00	20.74	0.124	0.01076	1.07	0.894
78	440.00	20.98	0.124	0.01067	1.06	0.894
79	450.00	21.21	0.124	0.01062	1.06	0.894
80	460.00	21.45	0.124	0.01048	1.04	0.895
81	470.00	21.68	0.124	0.01044	1.04	0.895

82	480.00	21.91	0.124	0.01035	1.03	0.895
83	490.00	22.14	0.124	0.0103	1.03	0.895
84	500.00	22.36	0.124	0.01016	1.01	0.895
85	510.00	22.58	0.124	0.01007	1.00	0.895
86	520.00	22.80	0.125	0.01002	1.00	0.896
87	530.00	23.02	0.124	0.009977	0.99	0.896
88	540.00	23.24	0.124	0.009931	0.99	0.896
89	550.00	23.45	0.123	0.009839	0.98	0.896
90	560.00	23.66	0.125	0.009748	0.97	0.896
91	570.00	23.87	0.124	0.00961	0.96	0.896
92	580.00	24.08	0.124	0.009472	0.94	0.897
93	590.00	24.29	0.123	0.00938	0.93	0.897
94	600.00	24.49	0.124	0.009288	0.93	0.897
95	610.00	24.70	0.124	0.009196	0.92	0.897
96	620.00	24.90	0.123	0.009104	0.91	0.897
97	630.00	25.10	0.124	0.009012	0.90	0.897
98	640.00	25.30	0.125	0.008966	0.89	0.898
99	650.00	25.50	0.124	0.008874	0.88	0.898
100	660.00	25.69	0.124	0.008782	0.87	0.898
101	670.00	25.88	0.124	0.00869	0.87	0.898
102	680.00	26.08	0.124	0.008598	0.86	0.898
103	690.00	26.27	0.124	0.00846	0.84	0.899
104	700.00	26.46	0.124	0.008368	0.83	0.899
105	710.00	26.65	0.124	0.008276	0.82	0.899
106	720.00	26.83	0.124	0.00823	0.82	0.899
107	730.00	27.02	0.124	0.008184	0.82	0.899
108	740.00	27.20	0.124	0.008092	0.81	0.899
109	750.00	27.39	0.124	0.008046	0.80	0.899
110	760.00	27.57	0.124	0.008	0.80	0.899
111	770.00	27.75	0.124	0.007908	0.79	0.900
112	780.00	27.93	0.124	0.007862	0.78	0.900
113	790.00	28.11	0.124	0.007724	0.77	0.900
114	800.00	28.28	0.124	0.007541	0.75	0.900
115	810.00	28.46	0.124	0.007449	0.74	0.900
116	820.00	28.64	0.124	0.007403	0.74	0.901
117	830.00	28.81	0.125	0.007403	0.74	0.901
118	840.00	28.98	0.125	0.007357	0.73	0.901
119	850.00	29.15	0.125	0.007311	0.73	0.901
120	860.00	29.33	0.123	0.007311	0.73	0.901
121	870.00	29.50	0.124	0.007219	0.72	0.901
122	880.00	29.66	0.124	0.007219	0.72	0.901
123	890.00	29.83	0.124	0.007219	0.72	0.901
124	900.00	30.00	0.124	0.007127	0.71	0.901
125	910.00	30.17	0.124	0.007081	0.71	0.901
126	920.00	30.33	0.124	0.006989	0.70	0.901
127	930.00	30.50	0.124	0.006989	0.70	0.901
128	940.00	30.66	0.124	0.006943	0.69	0.901
129	950.00	30.82	0.123	0.006897	0.69	0.902
130	960.00	30.98	0.124	0.006851	0.68	0.902
131	970.00	31.14	0.124	0.006805	0.68	0.902
132	980.00	31.31	0.125	0.006759	0.67	0.902
133	990.00	31.46	0.124	0.006713	0.67	0.902
134	1000.00	31.62	0.125	0.006713	0.67	0.902
135	1010.00	31.78	0.124	0.006575	0.65	0.902
136	1020.00	31.94	0.125	0.006575	0.65	0.902
137	1030.00	32.09	0.123	0.006529	0.65	0.902
138	1040.00	32.25	0.123	0.006437	0.64	0.902
139	1050.00	32.40	0.125	0.006437	0.64	0.902
140	1060.00	32.56	0.125	0.006437	0.64	0.902
141	1070.00	32.71	0.124	0.006391	0.64	0.902
142	1080.00	32.86	0.124	0.006345	0.63	0.903
143	1090.00	33.02	0.124	0.006253	0.62	0.903
144	1100.00	33.17	0.124	0.006207	0.62	0.903
145	1110.00	33.32	0.123	0.006207	0.62	0.903
146	1120.00	33.47	0.124	0.006207	0.62	0.903
147	1130.00	33.62	0.124	0.006161	0.61	0.903
148	1140.00	33.76	0.124	0.006115	0.61	0.903
149	1150.00	33.91	0.124	0.006115	0.61	0.903
150	1160.00	34.06	0.124	0.006069	0.60	0.903
151	1170.00	34.21	0.125	0.005977	0.60	0.903
152	1180.00	34.35	0.124	0.005977	0.60	0.903
153	1190.00	34.50	0.125	0.005931	0.59	0.903
154	1200.00	34.64	0.124	0.005931	0.59	0.903
155	1210.00	34.79	0.124	0.005885	0.59	0.903
156	1220.00	34.93	0.125	0.005839	0.58	0.904
157	1230.00	35.07	0.124	0.005839	0.58	0.904
158	1240.00	35.21	0.125	0.005793	0.58	0.904
159	1250.00	35.36	0.123	0.005793	0.58	0.904
160	1260.00	35.50	0.124	0.005747	0.57	0.904
161	1270.00	35.64	0.124	0.005747	0.57	0.904
162	1280.00	35.78	0.125	0.005747	0.57	0.904
163	1290.00	35.92	0.124	0.005747	0.57	0.904
164	1300.00	36.06	0.124	0.005701	0.57	0.904
165	1310.00	36.19	0.123	0.005655	0.56	0.904
166	1320.00	36.33	0.125	0.005655	0.56	0.904
167	1330.00	36.47	0.123	0.005609	0.56	0.904
168	1340.00	36.61	0.124	0.005609	0.56	0.904
169	1350.00	36.74	0.124	0.005563	0.55	0.904
170	1360.00	36.88	0.124	0.005517	0.55	0.904
171	1370.00	37.01	0.124	0.005471	0.54	0.904
172	1380.00	37.15	0.124	0.005426	0.54	0.904
173	1390.00	37.28	0.124	0.00538	0.54	0.904
174	1400.00	37.42	0.124	0.00538	0.54	0.904
175	1410.00	37.55	0.127	0.005334	0.53	0.905
176	1420.00	37.68	0.123	0.005288	0.53	0.905
177	1430.00	37.82	0.123	0.005288	0.53	0.905
178	1440.00	37.95	0.124	0.005242	0.52	0.905
179	1440.01	37.95	0.123	0.005242	0.52	0.905

CONSOLIDATION TEST DATA

SUMMARY REPORT



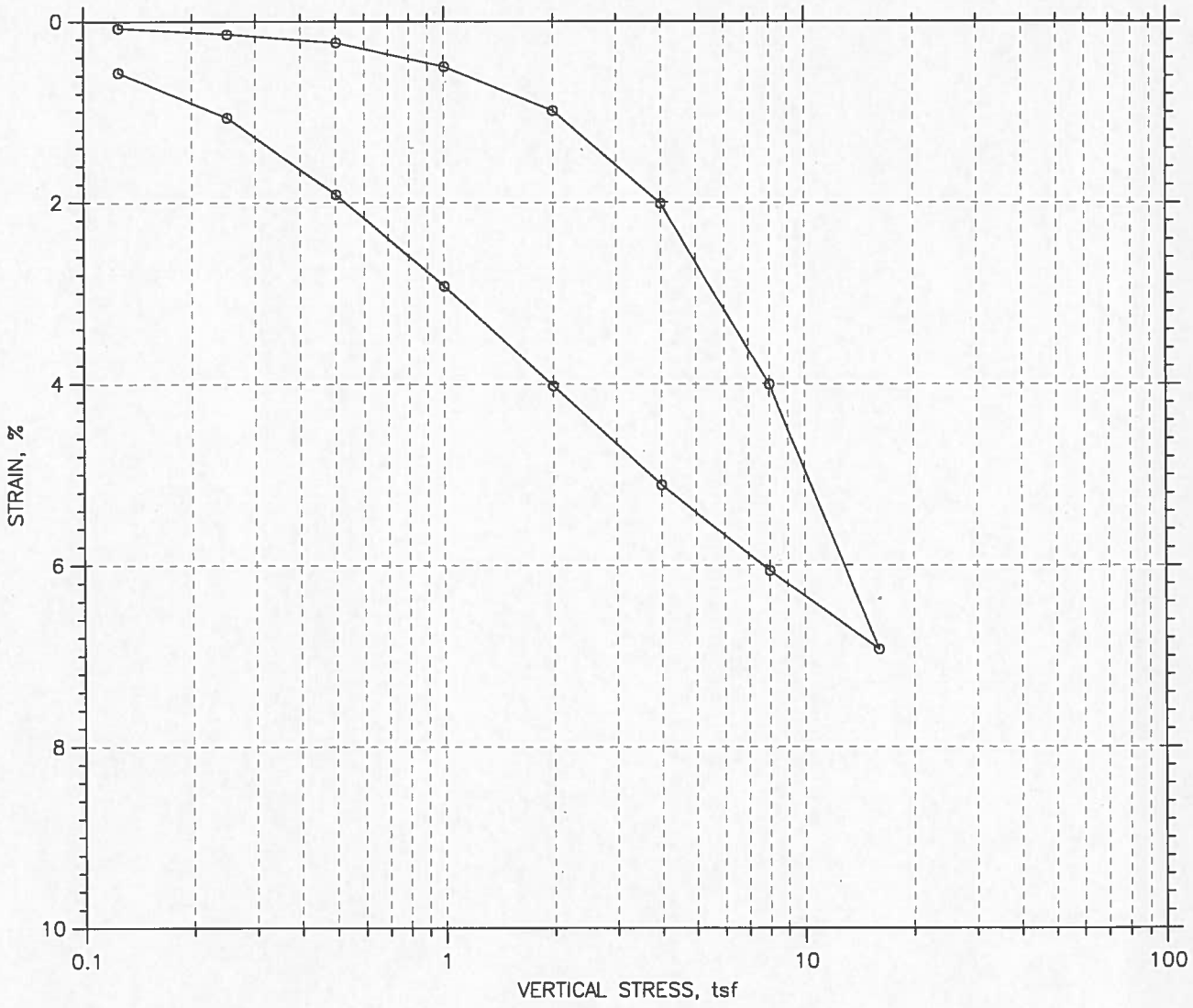


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-259
	Boring No.: B-06P	Tested By: SKK	Checked By: SKK
	Sample No.: 19-259	Test Date: 3/25/19	Test No.: 2
	Depth: 7.5-10'	Sample Type:	Elevation: N/A
	Description:		
	Remarks:		

Fri, 29-MAR-2019 14:00:44

CONSOLIDATION TEST DATA

SUMMARY REPORT



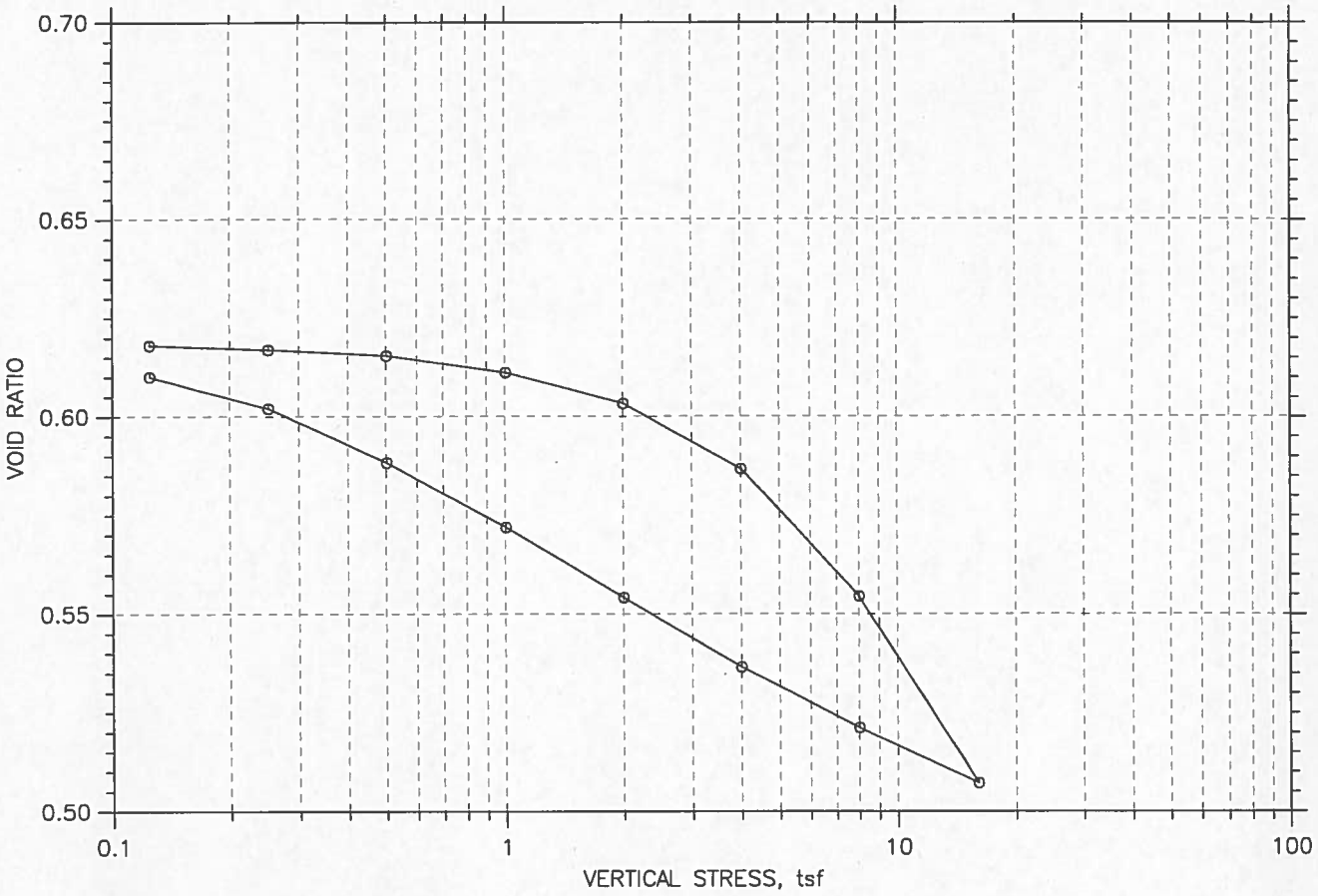
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	19.81	22.13
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	104.9	105.2
Compression Index: 3.81959e-313				Saturation, %	87.01	98.12
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.62	0.61
LL: ---	PL: ---	PI: ---	GS: 2.72			

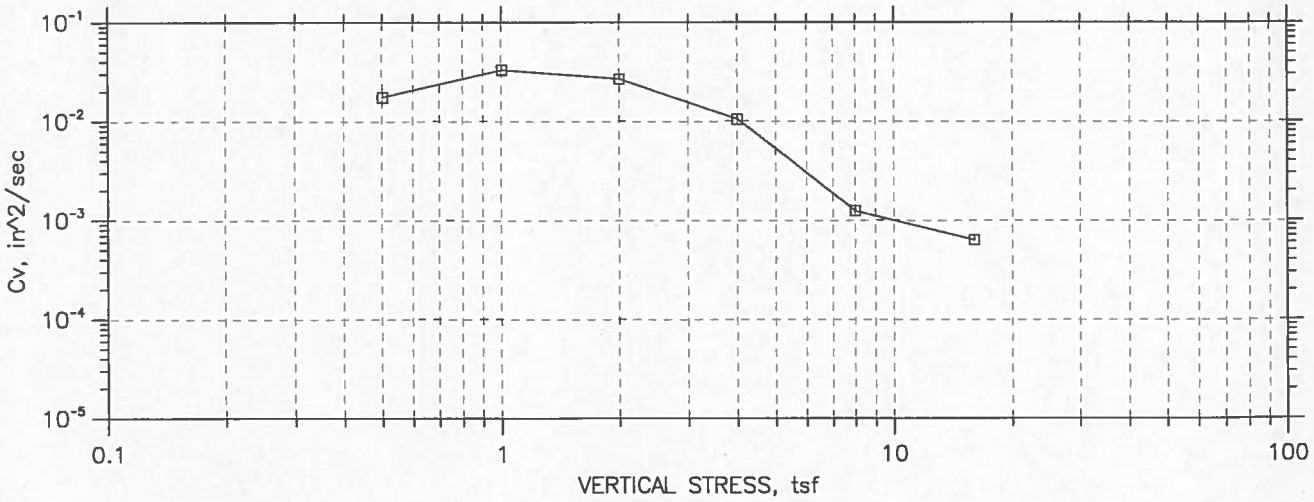
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-259
	Boring No.: B-06P	Tested By: SKK	Checked By: SKK
	Sample No.: 19-259	Test Date: 3/25/19	Test No.: 2
	Depth: 7.5-10'	Sample Type:	Elevation: N/A
	Description:		
	Remarks:		

Fri, 29-MAR-2019 14:00:44

CONSOLIDATION TEST DATA

SUMMARY REPORT



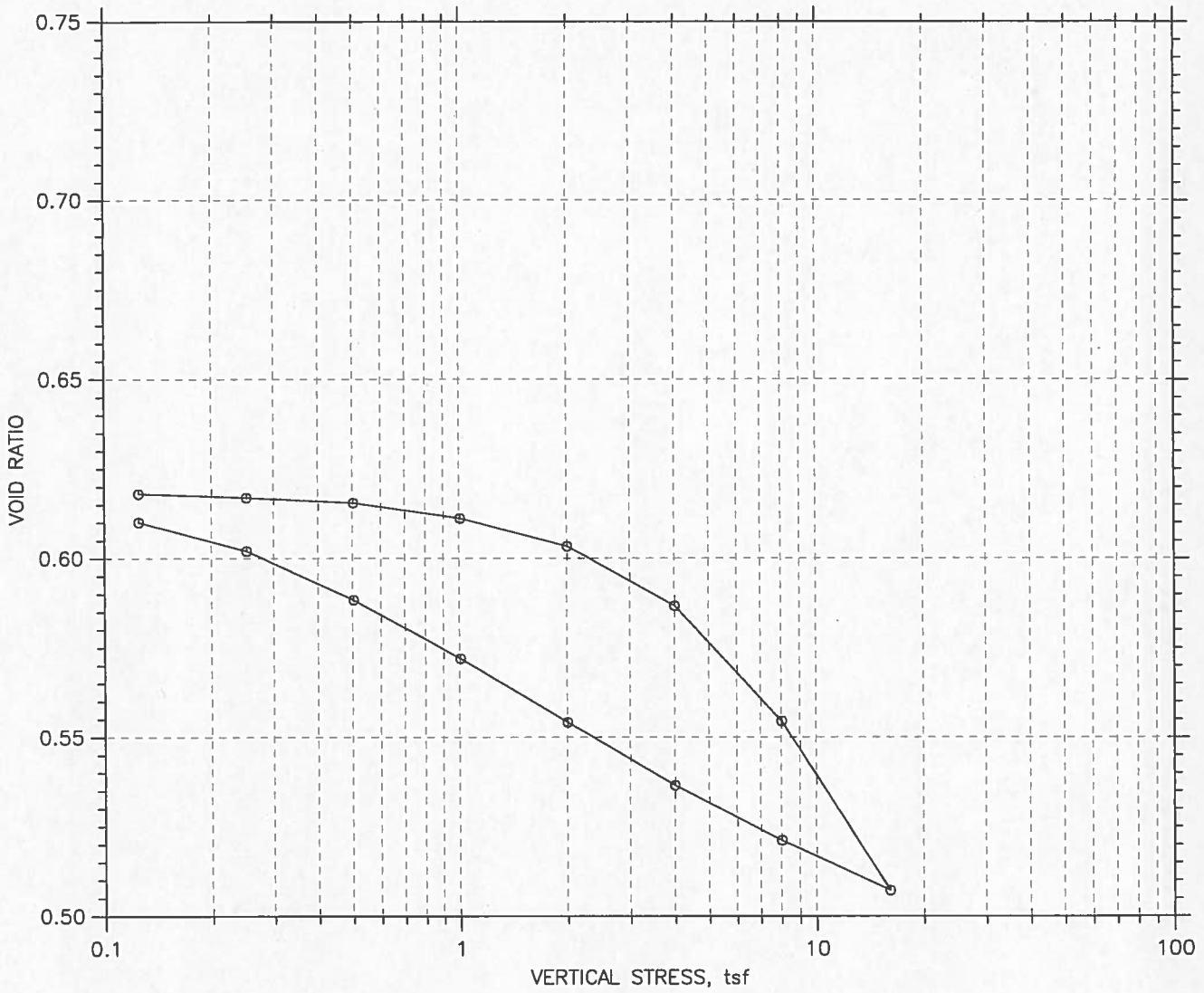


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-259
	Boring No.: B-06P	Tested By: SKK	Checked By: SKK
	Sample No.: 19-259	Test Date: 3/25/19	Test No.: 2
	Depth: 7.5-10'	Sample Type:	Elevation: N/A
	Description:		
	Remarks:		

Fri, 29-MAR-2019 14:01:05

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	19.81	22.13
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	104.9	105.2
Compression Index: 3.81959e-313				Saturation, %	87.01	98.12
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.62	0.61
LL: ---	PL: ---	PI: ---	GS: 2.72			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-259
	Boring No.: B-06P	Tested By: SKK	Checked By: SKK
	Sample No.: 19-259	Test Date: 3/25/19	Test No.: 2
	Depth: 7.5-10'	Sample Type:	Elevation: N/A
	Description:		
	Remarks:		

Fri, 29-MAR-2019 14:01:05

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

Measured Specific Gravity: 2.72
Initial Void Ratio: 0.62
Final Void Ratio: 0.61

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	170.34	162.53	165.68	234.63
Wt. Container + Dry Soil, gm	151.77	135.66	135.66	204.62
Wt. Container, gm	58.72	0	0	69.03
Wt. Dry Soil, gm	93.05	135.66	135.66	135.59
Water Content, %	19.96	19.81	22.13	22.13
Void Ratio	---	0.62	0.61	---
Degree of Saturation, %	---	87.01	98.12	---
Dry Unit Weight, pcf	---	104.86	105.24	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.0007816	0.618	0.08	0.0	0.00e+000	6.23e-003	0.00e+000
2	0.25	0.001471	0.617	0.15	0.0	0.00e+000	5.50e-003	0.00e+000
3	0.5	0.002391	0.615	0.24	0.2	2.19e-002	3.66e-003	1.50e-003
4	1	0.005058	0.611	0.50	0.1	6.55e-002	5.31e-003	6.52e-003
5	2	0.009931	0.603	0.99	0.1	4.22e-002	4.85e-003	3.84e-003
6	4	0.02023	0.587	2.02	1.0	3.55e-003	5.13e-003	3.41e-004
7	8	0.04023	0.554	4.01	3.9	8.59e-004	4.98e-003	8.01e-005
8	16	0.06957	0.507	6.93	6.7	4.77e-004	3.65e-003	3.27e-005
9	8	0.06088	0.521	6.06	0.0	8.32e-002	1.08e-003	1.69e-003
10	4	0.05136	0.536	5.12	3.6	8.83e-004	2.37e-003	3.92e-005
11	2	0.04042	0.554	4.03	41.7	7.79e-005	5.45e-003	7.95e-006
12	1	0.02938	0.572	2.93	138.3	2.40e-005	1.10e-002	4.94e-006
13	0.5	0.01922	0.588	1.91	167.7	2.02e-005	2.02e-002	7.67e-006
14	0.25	0.01071	0.602	1.07	234.7	1.47e-005	3.39e-002	9.35e-006
15	0.125	0.005701	0.610	0.57	219.5	1.60e-005	3.99e-002	1.19e-005

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.0007816	0.618	0.08	0.0	0.00e+000	6.23e-003	0.00e+000
2	0.25	0.001471	0.617	0.15	0.0	0.00e+000	5.50e-003	0.00e+000
3	0.5	0.002391	0.615	0.24	0.0	0.00e+000	3.66e-003	0.00e+000
4	1	0.005058	0.611	0.50	0.0	0.00e+000	5.31e-003	0.00e+000
5	2	0.009931	0.603	0.99	0.0	0.00e+000	4.85e-003	0.00e+000
6	4	0.02023	0.587	2.02	0.0	2.19e-002	5.13e-003	2.11e-003
7	8	0.04023	0.554	4.01	0.0	0.00e+000	4.98e-003	0.00e+000
8	16	0.06957	0.507	6.93	0.0	0.00e+000	3.65e-003	0.00e+000
9	8	0.06088	0.521	6.06	0.0	0.00e+000	1.08e-003	0.00e+000
10	4	0.05136	0.536	5.12	0.0	0.00e+000	2.37e-003	0.00e+000
11	2	0.04042	0.554	4.03	7.2	1.05e-004	5.45e-003	1.07e-005
12	1	0.02938	0.572	2.93	30.7	2.51e-005	1.10e-002	5.17e-006
13	0.5	0.01922	0.588	1.91	0.0	0.00e+000	2.02e-002	0.00e+000
14	0.25	0.01071	0.602	1.07	0.0	0.00e+000	3.39e-002	0.00e+000
15	0.125	0.005701	0.610	0.57	0.0	0.00e+000	3.99e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

Constant Load Step: 1 of 15
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.0056	-0.001335	-0.13	0.621
2	0.01	0.09	0.0157	-0.001381	-0.14	0.622
3	0.02	0.13	0.0515	-0.001243	-0.12	0.621
4	0.03	0.16	0.0717	-0.001013	-0.10	0.621
5	0.04	0.19	0.0852	-0.0007835	-0.08	0.621
6	0.05	0.23	0.0997	-0.0005996	-0.06	0.620
7	0.07	0.27	0.111	-0.0004617	-0.05	0.620
8	0.08	0.29	0.117	-0.0003237	-0.03	0.620
9	0.12	0.35	0.122	-0.0001858	-0.02	0.620
10	0.17	0.41	0.128	-0.0001858	-0.02	0.620
11	0.25	0.50	0.132	-0.0002778	-0.03	0.620
12	0.33	0.57	0.13	-0.0005536	-0.06	0.620

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

Constant Load Step: 2 of 15
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.129	-0.002853	-0.28	0.624
2	0.01	0.09	0.13	-0.002853	-0.28	0.624
3	0.02	0.13	0.18	-0.002669	-0.27	0.624
4	0.03	0.16	0.208	-0.002347	-0.23	0.623
5	0.04	0.19	0.223	-0.002163	-0.22	0.623
6	0.05	0.23	0.236	-0.002025	-0.20	0.623
7	0.07	0.26	0.243	-0.001979	-0.20	0.623
8	0.09	0.30	0.246	-0.001979	-0.20	0.623
9	0.12	0.34	0.25	-0.001979	-0.20	0.623
10	0.17	0.41	0.252	-0.001979	-0.20	0.623
11	0.25	0.50	0.259	-0.001979	-0.20	0.623
12	0.33	0.58	0.252	-0.002071	-0.21	0.623
13	0.37	0.61	0.252	-0.002117	-0.21	0.623

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

Constant Load Step: 3 of 15
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.252	-0.004369	-0.44	0.626
2	0.01	0.09	0.254	-0.004369	-0.44	0.626
3	0.02	0.13	0.334	-0.004277	-0.43	0.626
4	0.03	0.16	0.393	-0.004047	-0.40	0.626
5	0.04	0.19	0.427	-0.003955	-0.39	0.626
6	0.05	0.23	0.465	-0.003679	-0.37	0.625
7	0.07	0.27	0.481	-0.003633	-0.36	0.625
8	0.08	0.29	0.487	-0.003587	-0.36	0.625
9	0.12	0.35	0.494	-0.003541	-0.35	0.625
10	0.17	0.41	0.497	-0.00345	-0.34	0.625
11	0.25	0.50	0.499	-0.003404	-0.34	0.625
12	0.34	0.58	0.5	-0.003404	-0.34	0.625
13	0.50	0.71	0.505	-0.00345	-0.34	0.625
14	0.53	0.73	0.505	-0.00345	-0.34	0.625

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

Constant Load Step: 4 of 15
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.506	-0.004781	-0.48	0.627
2	0.01	0.09	0.513	-0.004781	-0.48	0.627
3	0.02	0.13	0.815	-0.004229	-0.42	0.626
4	0.03	0.16	0.908	-0.003493	-0.35	0.625
5	0.04	0.19	0.947	-0.00308	-0.31	0.624
6	0.05	0.23	0.976	-0.002712	-0.27	0.624
7	0.07	0.27	0.986	-0.002574	-0.26	0.623
8	0.08	0.29	0.989	-0.002528	-0.25	0.623
9	0.12	0.35	0.993	-0.00239	-0.24	0.623
10	0.17	0.41	0.997	-0.002298	-0.23	0.623
11	0.25	0.50	0.998	-0.002206	-0.22	0.623
12	0.34	0.58	0.998	-0.002114	-0.21	0.623
13	0.50	0.71	0.999	-0.002068	-0.21	0.623
14	0.75	0.87	0.999	-0.002068	-0.21	0.623
15	1.00	1.00	0.999	-0.002068	-0.21	0.623
16	1.50	1.23	1	-0.002114	-0.21	0.623
17	1.52	1.23	1	-0.002114	-0.21	0.623

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

Constant Load Step: 5 of 15
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	-0.004276	-0.43	0.626
2	0.01	0.09	1.15	-0.004276	-0.43	0.626
3	0.02	0.13	1.76	-0.003035	-0.30	0.624
4	0.03	0.16	1.89	-0.002023	-0.20	0.623
5	0.04	0.19	1.93	-0.001609	-0.16	0.622
6	0.05	0.23	1.97	-0.00115	-0.11	0.621
7	0.07	0.27	1.98	-0.0008737	-0.09	0.621
8	0.09	0.30	1.99	-0.0006438	-0.06	0.620
9	0.12	0.34	1.99	-0.0005058	-0.05	0.620
10	0.17	0.41	1.99	-0.0003679	-0.04	0.620
11	0.25	0.50	2	-0.00023	-0.02	0.620
12	0.34	0.58	2	-0.000138	-0.01	0.620
13	0.50	0.71	2	-7.766e-008	-0.00	0.619
14	0.75	0.87	2	0.0001838	0.02	0.619
15	1.00	1.00	2	0.0002758	0.03	0.619
16	1.50	1.23	2	0.0004137	0.04	0.619
17	2.00	1.41	2	0.0004597	0.05	0.619
18	3.00	1.73	2	0.0005517	0.05	0.618
19	4.00	2.00	2	0.0005976	0.06	0.618
20	5.00	2.24	2	0.0005976	0.06	0.618
21	6.00	2.45	2	0.0005976	0.06	0.618
22	7.00	2.65	2	0.0005976	0.06	0.618
23	8.00	2.83	2	0.0005976	0.06	0.618
24	9.00	3.00	2	0.0005976	0.06	0.618
25	10.00	3.16	2	0.0005976	0.06	0.618
26	12.00	3.46	2	0.0005976	0.06	0.618
27	14.00	3.74	2	0.0005976	0.06	0.618
28	16.00	4.00	2	0.0006436	0.06	0.618
29	18.00	4.24	2	0.0006436	0.06	0.618
30	20.00	4.47	2	0.0006436	0.06	0.618
31	22.00	4.69	2	0.0006436	0.06	0.618
32	24.00	4.90	2	0.0006436	0.06	0.618
33	26.00	5.10	2	0.0005976	0.06	0.618
34	27.90	5.28	2	0.0005976	0.06	0.618

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

Constant Load Step: 6 of 15
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	-0.001979	-0.20	0.623
2	0.01	0.09	2.48	-0.001979	-0.20	0.623
3	0.02	0.13	3.63	-4.742e-005	-0.00	0.619
4	0.03	0.16	3.82	0.00147	0.15	0.617
5	0.04	0.19	3.89	0.002206	0.22	0.616
6	0.05	0.23	3.94	0.002711	0.27	0.615
7	0.07	0.27	3.96	0.003309	0.33	0.614
8	0.08	0.29	3.97	0.003493	0.35	0.614
9	0.12	0.35	3.98	0.003953	0.39	0.613
10	0.17	0.41	3.99	0.004275	0.43	0.612
11	0.25	0.50	3.99	0.004505	0.45	0.612
12	0.34	0.58	3.99	0.004596	0.46	0.612
13	0.50	0.71	4	0.00478	0.48	0.612
14	0.75	0.87	4	0.00524	0.52	0.611
15	1.00	1.00	4	0.005516	0.55	0.610
16	1.50	1.22	4	0.005838	0.58	0.610
17	2.00	1.42	4	0.005976	0.60	0.610
18	3.00	1.73	4	0.00616	0.61	0.609
19	4.00	2.00	4	0.00639	0.64	0.609
20	5.00	2.24	4	0.006574	0.65	0.609
21	6.00	2.45	4	0.006711	0.67	0.609
22	7.00	2.65	4	0.006757	0.67	0.608
23	8.00	2.83	4	0.006849	0.68	0.608
24	9.00	3.00	4	0.006895	0.69	0.608
25	10.00	3.16	4	0.006941	0.69	0.608
26	12.00	3.46	4	0.006941	0.69	0.608
27	14.00	3.74	4	0.007033	0.70	0.608
28	16.00	4.00	4	0.007079	0.71	0.608
29	18.00	4.24	4	0.007125	0.71	0.608
30	20.00	4.47	4	0.007171	0.71	0.608
31	22.00	4.69	4	0.007217	0.72	0.608
32	24.00	4.90	4	0.007217	0.72	0.608
33	26.00	5.10	4	0.007263	0.72	0.608
34	28.00	5.29	4	0.007263	0.72	0.608
35	30.00	5.48	4	0.007309	0.73	0.608
36	35.00	5.92	4	0.007309	0.73	0.608
37	40.00	6.32	4	0.007401	0.74	0.607
38	45.00	6.71	4	0.007447	0.74	0.607
39	50.00	7.07	4	0.007585	0.76	0.607
40	60.00	7.75	4	0.007631	0.76	0.607
41	70.00	8.37	4	0.007723	0.77	0.607
42	80.00	8.94	4	0.007861	0.78	0.607
43	90.00	9.49	4	0.007861	0.78	0.607
44	100.00	10.00	4	0.007907	0.79	0.607
45	110.00	10.49	4	0.007953	0.79	0.607
46	120.00	10.95	4	0.007953	0.79	0.607
47	130.00	11.40	4	0.008045	0.80	0.606
48	140.00	11.83	4	0.008045	0.80	0.606
49	150.00	12.25	4	0.008045	0.80	0.606
50	160.00	12.65	4	0.008091	0.81	0.606
51	170.00	13.04	4	0.008091	0.81	0.606
52	180.00	13.42	4	0.008137	0.81	0.606
53	190.00	13.78	4	0.008137	0.81	0.606
54	200.00	14.14	4	0.008137	0.81	0.606
55	210.00	14.49	4	0.008091	0.81	0.606
56	220.00	14.83	4	0.008137	0.81	0.606
57	230.00	15.17	4	0.008137	0.81	0.606
58	240.00	15.49	4	0.008183	0.82	0.606
59	250.00	15.81	4	0.008183	0.82	0.606
60	260.00	16.12	4	0.008183	0.82	0.606
61	270.00	16.43	4	0.008183	0.82	0.606
62	280.00	16.73	4	0.008229	0.82	0.606
63	290.00	17.03	4	0.008275	0.82	0.606
64	300.00	17.32	4	0.008275	0.82	0.606
65	310.00	17.61	4	0.008321	0.83	0.606
66	315.72	17.77	4	0.008321	0.83	0.606

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

Constant Load Step: 7 of 15
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.005012	0.50	0.611
2	0.01	0.09	4.67	0.005012	0.50	0.611
3	0.02	0.13	7.52	0.008782	0.87	0.605
4	0.03	0.16	7.77	0.01205	1.20	0.600
5	0.04	0.19	7.86	0.0131	1.31	0.598
6	0.05	0.23	7.93	0.01421	1.42	0.596
7	0.07	0.27	7.95	0.01458	1.45	0.596
8	0.08	0.29	7.96	0.01499	1.49	0.595
9	0.12	0.35	7.97	0.01554	1.55	0.594
10	0.17	0.41	7.98	0.01568	1.56	0.594
11	0.25	0.50	7.99	0.016	1.59	0.594
12	0.34	0.58	7.99	0.01641	1.63	0.593
13	0.50	0.71	7.99	0.01678	1.67	0.592
14	0.75	0.87	8	0.01729	1.72	0.591
15	1.00	1.00	8	0.01761	1.75	0.591
16	1.50	1.23	8	0.01821	1.81	0.590
17	2.00	1.41	8	0.01867	1.86	0.589
18	3.00	1.73	8	0.01936	1.93	0.588
19	4.00	2.00	8	0.01982	1.97	0.587
20	5.00	2.24	8	0.02005	2.00	0.587
21	6.00	2.45	8	0.02037	2.03	0.586
22	7.00	2.65	8	0.0206	2.05	0.586
23	8.00	2.83	8	0.02083	2.07	0.586
24	9.00	3.00	8	0.02092	2.08	0.586
25	10.00	3.16	8	0.02097	2.09	0.586
26	12.00	3.46	8	0.02097	2.09	0.586
27	14.00	3.74	8	0.02101	2.09	0.585
28	16.00	4.00	8	0.02115	2.11	0.585
29	18.00	4.24	8	0.0212	2.11	0.585
30	20.00	4.47	8	0.0212	2.11	0.585
31	22.00	4.69	8	0.02138	2.13	0.585
32	24.00	4.90	8	0.02143	2.13	0.585
33	26.00	5.10	8	0.02152	2.14	0.585
34	28.00	5.29	8	0.02161	2.15	0.584
35	30.00	5.48	8	0.02166	2.16	0.584
36	35.00	5.92	8	0.02179	2.17	0.584
37	40.00	6.32	8	0.02189	2.18	0.584
38	45.00	6.71	8	0.02198	2.19	0.584
39	50.00	7.07	8	0.02212	2.20	0.584
40	60.00	7.75	8	0.02248	2.24	0.583
41	70.00	8.37	8	0.0229	2.28	0.582
42	80.00	8.94	8	0.02327	2.32	0.582
43	90.00	9.49	8	0.02336	2.33	0.582
44	100.00	10.00	8	0.0234	2.33	0.582
45	110.00	10.49	8	0.02345	2.34	0.582
46	120.00	10.95	8	0.02372	2.36	0.581
47	130.00	11.40	8	0.02386	2.38	0.581
48	140.00	11.83	8	0.024	2.39	0.581
49	150.00	12.25	8	0.02414	2.40	0.580
50	160.00	12.65	8	0.02423	2.41	0.580
51	170.00	13.04	8	0.02432	2.42	0.580
52	180.00	13.42	8	0.02446	2.44	0.580
53	190.00	13.78	8	0.02451	2.44	0.580
54	200.00	14.14	8	0.02455	2.45	0.580
55	210.00	14.49	8	0.02455	2.45	0.580
56	220.00	14.83	8	0.0246	2.45	0.580
57	230.00	15.17	8	0.0246	2.45	0.580
58	240.00	15.49	8	0.0246	2.45	0.580
59	250.00	15.81	8	0.02464	2.45	0.580
60	260.00	16.12	8	0.02469	2.46	0.580
61	270.00	16.43	8	0.02469	2.46	0.580
62	280.00	16.73	8	0.02474	2.46	0.579
63	290.00	17.03	8	0.02474	2.46	0.579
64	300.00	17.32	8	0.02478	2.47	0.579
65	310.00	17.61	8	0.02483	2.47	0.579
66	320.00	17.89	8	0.02487	2.48	0.579
67	330.00	18.17	8	0.02487	2.48	0.579
68	340.00	18.44	8	0.02483	2.47	0.579
69	350.00	18.71	8	0.02483	2.47	0.579
70	360.00	18.97	8	0.02487	2.48	0.579
71	370.00	19.24	8	0.02492	2.48	0.579
72	380.00	19.49	8	0.02492	2.48	0.579
73	390.00	19.75	8	0.02492	2.48	0.579
74	400.00	20.00	8	0.02492	2.48	0.579
75	410.00	20.25	8	0.02497	2.49	0.579
76	420.00	20.49	8	0.02497	2.49	0.579
77	430.00	20.74	8	0.02497	2.49	0.579
78	440.00	20.98	8	0.02501	2.49	0.579
79	450.00	21.21	8	0.02501	2.49	0.579
80	460.00	21.45	8	0.02501	2.49	0.579
81	470.00	21.68	8	0.02497	2.49	0.579

82	480.00	21.91	8	0.02497	2.49	0.579
83	485.38	22.03	8	0.02501	2.49	0.579

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

Constant Load Step: 8 of 15
Applied Stress: 16 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.01959	1.95	0.588
2	0.01	0.09	10.6	0.01959	1.95	0.588
3	0.02	0.13	15.6	0.02423	2.41	0.580
4	0.03	0.16	15.8	0.02952	2.94	0.572
5	0.04	0.19	15.8	0.03067	3.05	0.570
6	0.05	0.23	15.9	0.03186	3.17	0.568
7	0.07	0.27	15.9	0.0326	3.25	0.567
8	0.08	0.29	15.9	0.03297	3.28	0.566
9	0.12	0.35	16	0.03324	3.31	0.566
10	0.17	0.41	16	0.03357	3.34	0.565
11	0.25	0.50	16	0.03421	3.41	0.564
12	0.34	0.58	16	0.03458	3.44	0.564
13	0.50	0.71	16	0.0349	3.48	0.563
14	0.75	0.87	16	0.03609	3.60	0.561
15	1.00	1.00	16	0.03674	3.66	0.560
16	1.50	1.23	16	0.0378	3.76	0.558
17	2.00	1.41	16	0.03848	3.83	0.557
18	3.00	1.73	16	0.03922	3.91	0.556
19	4.00	2.00	16	0.03963	3.95	0.555
20	5.00	2.24	16	0.04009	3.99	0.555
21	6.00	2.45	16	0.04055	4.04	0.554
22	7.00	2.65	16	0.04097	4.08	0.553
23	8.00	2.83	16	0.04138	4.12	0.553
24	9.00	3.00	16	0.04184	4.17	0.552
25	10.00	3.16	16	0.04198	4.18	0.552
26	12.00	3.46	16	0.04226	4.21	0.551
27	14.00	3.74	16	0.04253	4.24	0.551
28	16.00	4.00	16	0.04294	4.28	0.550
29	18.00	4.24	16	0.04322	4.30	0.550
30	20.00	4.47	16	0.04368	4.35	0.549
31	22.00	4.69	16	0.044	4.38	0.548
32	24.00	4.90	16	0.04437	4.42	0.548
33	26.00	5.10	16	0.04446	4.43	0.548
34	28.00	5.29	16	0.04455	4.44	0.547
35	30.00	5.48	16	0.04469	4.45	0.547
36	35.00	5.92	16	0.04501	4.48	0.547
37	40.00	6.32	16	0.04534	4.52	0.546
38	45.00	6.71	16	0.0457	4.55	0.546
39	50.00	7.07	16	0.04584	4.57	0.545
40	60.00	7.75	16	0.04639	4.62	0.545
41	70.00	8.37	16	0.04658	4.64	0.544
42	80.00	8.94	16	0.04681	4.66	0.544
43	90.00	9.49	16	0.04699	4.68	0.544
44	100.00	10.00	16	0.04717	4.70	0.543
45	110.00	10.49	16	0.04727	4.71	0.543
46	120.00	10.95	16	0.04731	4.71	0.543
47	130.00	11.40	16	0.0474	4.72	0.543
48	140.00	11.83	16	0.04745	4.73	0.543
49	150.00	12.25	16	0.04759	4.74	0.543
50	160.00	12.65	16	0.04759	4.74	0.543
51	170.00	13.04	16	0.04768	4.75	0.542
52	180.00	13.42	16	0.04777	4.76	0.542
53	190.00	13.78	16	0.04782	4.76	0.542
54	200.00	14.14	16	0.04786	4.77	0.542
55	210.00	14.49	16	0.04796	4.78	0.542
56	220.00	14.83	16	0.048	4.78	0.542
57	230.00	15.17	16	0.04805	4.79	0.542
58	240.00	15.49	16	0.04805	4.79	0.542
59	250.00	15.81	16	0.04809	4.79	0.542
60	260.00	16.12	16	0.04814	4.79	0.542
61	270.00	16.43	16	0.04819	4.80	0.542
62	280.00	16.73	16	0.04819	4.80	0.542
63	290.00	17.03	16	0.04823	4.80	0.542
64	300.00	17.32	16	0.04832	4.81	0.541
65	310.00	17.61	16	0.04846	4.83	0.541
66	320.00	17.89	16	0.04851	4.83	0.541
67	330.00	18.17	16	0.04855	4.84	0.541
68	340.00	18.44	16	0.0486	4.84	0.541
69	350.00	18.71	16	0.04869	4.85	0.541
70	360.00	18.97	16	0.04883	4.86	0.541
71	370.00	19.24	16	0.04883	4.86	0.541
72	380.00	19.49	16	0.04883	4.86	0.541
73	390.00	19.75	16	0.04888	4.87	0.541
74	400.00	20.00	16	0.04888	4.87	0.541
75	410.00	20.25	16	0.04883	4.86	0.541
76	420.00	20.49	16	0.04888	4.87	0.541
77	429.03	20.71	16	0.04892	4.87	0.540

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

Constant Load Step: 9 of 15
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	16	0.06745	6.72	0.511
2	0.01	0.09	12.7	0.06745	6.72	0.511
3	0.02	0.13	7.97	0.06304	6.28	0.518
4	0.03	0.16	8.04	0.06138	6.11	0.520
5	0.04	0.19	8.03	0.06124	6.10	0.521
6	0.05	0.23	8.02	0.06097	6.07	0.521
7	0.07	0.26	8.01	0.06088	6.06	0.521
8	0.09	0.30	8.01	0.06083	6.06	0.521
9	0.12	0.34	8	0.06078	6.05	0.521
10	0.17	0.41	8.01	0.06074	6.05	0.521
11	0.25	0.50	8	0.06065	6.04	0.522
12	0.34	0.58	8	0.0606	6.04	0.522
13	0.50	0.71	8	0.06051	6.03	0.522
14	0.75	0.87	8	0.06037	6.01	0.522
15	1.00	1.00	8	0.06028	6.00	0.522
16	1.50	1.23	8	0.06005	5.98	0.522
17	2.00	1.42	8	0.05986	5.96	0.523
18	3.00	1.73	7.99	0.05963	5.94	0.523
19	4.00	2.00	8	0.05963	5.94	0.523
20	5.00	2.24	8	0.05959	5.94	0.523
21	6.00	2.45	8	0.05954	5.93	0.523
22	7.00	2.65	7.99	0.0595	5.93	0.523
23	8.00	2.83	8	0.05945	5.92	0.523
24	9.00	3.00	8	0.0594	5.92	0.524
25	10.00	3.16	8	0.05936	5.91	0.524
26	12.00	3.46	8	0.05927	5.90	0.524
27	14.00	3.74	8	0.05913	5.89	0.524
28	16.00	4.00	8	0.05917	5.89	0.524
29	18.00	4.24	8	0.05908	5.88	0.524
30	20.00	4.47	8	0.05917	5.89	0.524
31	22.00	4.69	8.01	0.05904	5.88	0.524
32	24.00	4.90	8	0.05908	5.88	0.524
33	26.00	5.10	8	0.05904	5.88	0.524
34	28.00	5.29	8	0.05904	5.88	0.524
35	30.00	5.48	8	0.0589	5.87	0.524
36	35.00	5.92	8	0.05895	5.87	0.524
37	40.00	6.32	8	0.05881	5.86	0.524
38	45.00	6.71	8	0.0589	5.87	0.524
39	50.00	7.07	7.99	0.05881	5.86	0.524
40	60.00	7.75	8	0.05885	5.86	0.524
41	70.00	8.37	8.01	0.05881	5.86	0.524
42	80.00	8.94	8	0.05885	5.86	0.524
43	90.00	9.49	8	0.05885	5.86	0.524
44	100.00	10.00	8	0.05872	5.85	0.525
45	110.00	10.49	8	0.0589	5.87	0.524
46	120.00	10.95	8	0.05885	5.86	0.524
47	130.00	11.40	8	0.05885	5.86	0.524
48	140.00	11.83	8	0.05885	5.86	0.524
49	150.00	12.25	8	0.05885	5.86	0.524
50	160.00	12.65	8	0.05881	5.86	0.524
51	170.00	13.04	8	0.05881	5.86	0.524
52	180.00	13.42	8	0.05876	5.85	0.525
53	190.00	13.78	8	0.05876	5.85	0.525
54	200.00	14.14	8	0.05876	5.85	0.525
55	210.00	14.49	8	0.05876	5.85	0.525
56	220.00	14.83	8	0.05876	5.85	0.525
57	230.00	15.17	8	0.05876	5.85	0.525
58	240.00	15.49	8	0.05876	5.85	0.525
59	250.00	15.81	8	0.05876	5.85	0.525
60	258.55	16.08	8	0.05876	5.85	0.525

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

Constant Load Step: 10 of 15
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.05876	5.85	0.525
2	0.01	0.09	5.94	0.05876	5.85	0.525
3	0.02	0.13	4.06	0.05586	5.56	0.529
4	0.03	0.16	4.04	0.05494	5.47	0.531
5	0.04	0.19	4.04	0.05458	5.44	0.531
6	0.05	0.23	4.02	0.0543	5.41	0.532
7	0.07	0.27	4.01	0.05403	5.38	0.532
8	0.08	0.29	4.01	0.05384	5.36	0.532
9	0.12	0.35	4.01	0.05347	5.33	0.533
10	0.17	0.41	4	0.05334	5.31	0.533
11	0.25	0.50	4.01	0.05324	5.30	0.533
12	0.34	0.58	4	0.05315	5.29	0.534
13	0.50	0.71	4	0.05306	5.28	0.534
14	0.75	0.87	4	0.05297	5.28	0.534
15	1.00	1.00	4	0.05278	5.26	0.534
16	1.50	1.23	4	0.0526	5.24	0.534
17	2.00	1.41	4	0.05242	5.22	0.535
18	3.00	1.73	4	0.05219	5.20	0.535
19	4.00	2.00	4	0.05205	5.18	0.535
20	5.00	2.24	4	0.05196	5.17	0.536
21	6.00	2.45	4	0.05186	5.17	0.536
22	7.00	2.65	4	0.05182	5.16	0.536
23	8.00	2.83	4	0.05177	5.16	0.536
24	9.00	3.00	4	0.05173	5.15	0.536
25	10.00	3.16	4	0.05173	5.15	0.536
26	12.00	3.46	4	0.05168	5.15	0.536
27	14.00	3.74	4	0.05154	5.13	0.536
28	16.00	4.00	4	0.0515	5.13	0.536
29	18.00	4.24	4	0.0514	5.12	0.536
30	20.00	4.47	4	0.0514	5.12	0.536
31	22.00	4.69	4	0.05136	5.12	0.536
32	24.00	4.90	4	0.05122	5.10	0.537
33	26.00	5.10	4	0.05117	5.10	0.537
34	28.00	5.29	4	0.05113	5.09	0.537
35	30.00	5.48	4	0.05108	5.09	0.537
36	35.00	5.92	4	0.05104	5.08	0.537
37	40.00	6.32	4	0.05085	5.07	0.537
38	45.00	6.71	4	0.05071	5.05	0.538
39	50.00	7.07	4	0.05058	5.04	0.538
40	60.00	7.75	4	0.05035	5.01	0.538
41	70.00	8.37	4	0.05007	4.99	0.539
42	80.00	8.94	4	0.0498	4.96	0.539
43	90.00	9.49	4	0.04966	4.95	0.539
44	100.00	10.00	4	0.04966	4.95	0.539
45	110.00	10.49	4	0.04952	4.93	0.539
46	120.00	10.95	4	0.04957	4.94	0.539
47	130.00	11.40	4	0.04952	4.93	0.539
48	140.00	11.83	4	0.04943	4.92	0.540
49	150.00	12.25	4	0.04943	4.92	0.540
50	160.00	12.65	4	0.04934	4.91	0.540
51	170.00	13.04	4	0.04934	4.91	0.540
52	180.00	13.42	4	0.04934	4.91	0.540
53	190.00	13.78	4	0.04934	4.91	0.540
54	200.00	14.14	4	0.04929	4.91	0.540
55	210.00	14.49	4	0.04934	4.91	0.540
56	220.00	14.83	4	0.04934	4.91	0.540
57	230.00	15.17	4	0.04929	4.91	0.540
58	240.00	15.49	4	0.04934	4.91	0.540
59	250.00	15.81	4	0.04929	4.91	0.540
60	260.00	16.12	4	0.04929	4.91	0.540
61	270.00	16.43	4	0.04929	4.91	0.540
62	280.00	16.73	4	0.04934	4.91	0.540
63	290.00	17.03	4	0.04929	4.91	0.540
64	300.00	17.32	4	0.04929	4.91	0.540
65	310.00	17.61	4	0.04929	4.91	0.540
66	320.00	17.89	4	0.04929	4.91	0.540
67	330.00	18.17	4	0.04929	4.91	0.540
68	340.00	18.44	4	0.04924	4.90	0.540
69	350.00	18.71	4	0.04924	4.90	0.540
70	356.43	18.88	4	0.04924	4.90	0.540

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

Constant Load Step: 11 of 15
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.04924	4.90	0.540
2	0.01	0.09	3.38	0.04924	4.90	0.540
3	0.02	0.13	2.05	0.04708	4.69	0.543
4	0.03	0.16	2.03	0.04681	4.66	0.544
5	0.04	0.19	2.03	0.04662	4.64	0.544
6	0.05	0.23	2.02	0.04648	4.63	0.544
7	0.07	0.27	2.01	0.04635	4.62	0.545
8	0.08	0.29	2.01	0.04625	4.61	0.545
9	0.12	0.35	2.01	0.04607	4.59	0.545
10	0.17	0.41	2	0.04584	4.57	0.545
11	0.25	0.50	2	0.04557	4.54	0.546
12	0.34	0.58	2	0.04543	4.52	0.546
13	0.50	0.71	2	0.04497	4.48	0.547
14	0.75	0.87	2	0.04478	4.46	0.547
15	1.00	1.00	2	0.04469	4.45	0.547
16	1.50	1.23	2	0.04442	4.42	0.548
17	2.00	1.42	2	0.04432	4.41	0.548
18	3.00	1.73	2	0.04423	4.41	0.548
19	4.00	2.00	2	0.04423	4.41	0.548
20	5.00	2.24	2	0.04409	4.39	0.548
21	6.00	2.45	2	0.044	4.38	0.548
22	7.00	2.65	2	0.04386	4.37	0.549
23	8.00	2.83	2	0.04363	4.35	0.549
24	9.00	3.00	2	0.0435	4.33	0.549
25	10.00	3.16	2	0.04336	4.32	0.549
26	12.00	3.46	2	0.04313	4.30	0.550
27	14.00	3.74	2	0.04294	4.28	0.550
28	16.00	4.00	2	0.04281	4.26	0.550
29	18.00	4.24	2	0.04276	4.26	0.550
30	20.00	4.47	2	0.04267	4.25	0.551
31	22.00	4.69	2	0.04248	4.23	0.551
32	24.00	4.90	2	0.04225	4.21	0.551
33	26.00	5.10	2	0.04212	4.19	0.551
34	28.00	5.29	2	0.04193	4.18	0.552
35	30.00	5.48	2	0.04166	4.15	0.552
36	35.00	5.92	2	0.04129	4.11	0.553
37	40.00	6.32	2	0.04106	4.09	0.553
38	45.00	6.71	2	0.04088	4.07	0.553
39	50.00	7.07	2	0.04088	4.07	0.553
40	60.00	7.75	2	0.04069	4.05	0.554
41	70.00	8.37	2	0.04037	4.02	0.554
42	80.00	8.94	2	0.04014	4.00	0.555
43	90.00	9.49	2	0.03996	3.98	0.555
44	100.00	10.00	2	0.03986	3.97	0.555
45	110.00	10.49	2	0.03977	3.96	0.555
46	120.00	10.95	2	0.03968	3.95	0.555
47	130.00	11.40	2	0.03963	3.95	0.555
48	140.00	11.83	2	0.03945	3.93	0.556
49	150.00	12.25	2	0.0394	3.92	0.556
50	160.00	12.65	2	0.03931	3.92	0.556
51	170.00	13.04	2	0.03931	3.92	0.556
52	180.00	13.42	2	0.03927	3.91	0.556
53	190.00	13.78	2	0.03922	3.91	0.556
54	200.00	14.14	2	0.03922	3.91	0.556
55	210.00	14.49	2	0.03913	3.90	0.556
56	220.00	14.83	2	0.03908	3.89	0.556
57	230.00	15.17	2	0.03908	3.89	0.556
58	240.00	15.49	2	0.03894	3.88	0.557
59	250.00	15.81	2	0.03885	3.87	0.557
60	260.00	16.12	2	0.03881	3.87	0.557
61	270.00	16.43	2	0.03876	3.86	0.557
62	280.00	16.73	2	0.03871	3.86	0.557
63	290.00	17.03	2	0.03862	3.85	0.557
64	300.00	17.32	2	0.03858	3.84	0.557
65	310.00	17.61	2	0.03858	3.84	0.557
66	320.00	17.89	2	0.03853	3.84	0.557
67	330.00	18.17	2	0.03844	3.83	0.557
68	340.00	18.44	2	0.03839	3.82	0.557
69	350.00	18.71	2	0.03835	3.82	0.557
70	360.00	18.97	2	0.0383	3.81	0.558
71	370.00	19.24	2	0.0383	3.81	0.558
72	374.20	19.34	2	0.0383	3.81	0.558

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

Constant Load Step: 12 of 15
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	0.0383	3.81	0.558
2	0.01	0.09	1.65	0.0383	3.81	0.558
3	0.02	0.13	1.06	0.03678	3.66	0.560
4	0.03	0.16	1.03	0.03637	3.62	0.561
5	0.04	0.19	1.03	0.03609	3.59	0.561
6	0.05	0.23	1.02	0.03596	3.58	0.561
7	0.07	0.27	1.01	0.03573	3.56	0.562
8	0.08	0.29	1.01	0.03559	3.54	0.562
9	0.12	0.35	1.01	0.03545	3.53	0.562
10	0.17	0.41	1.01	0.03531	3.52	0.562
11	0.25	0.50	1.01	0.03513	3.50	0.563
12	0.34	0.58	0.999	0.03504	3.49	0.563
13	0.50	0.71	0.998	0.03494	3.48	0.563
14	0.75	0.87	1	0.03481	3.47	0.563
15	1.00	1.00	0.999	0.03467	3.45	0.563
16	1.50	1.23	1	0.03458	3.44	0.564
17	2.00	1.42	1	0.03453	3.44	0.564
18	3.00	1.73	1	0.03448	3.43	0.564
19	4.00	2.00	0.999	0.03444	3.43	0.564
20	5.00	2.24	1	0.03444	3.43	0.564
21	6.00	2.45	0.999	0.03435	3.42	0.564
22	7.00	2.65	0.999	0.03425	3.41	0.564
23	8.00	2.83	0.999	0.03421	3.41	0.564
24	9.00	3.00	1	0.03416	3.40	0.564
25	10.00	3.16	0.999	0.03412	3.40	0.564
26	12.00	3.46	0.999	0.03393	3.38	0.565
27	14.00	3.74	0.999	0.0337	3.36	0.565
28	16.00	4.00	1	0.03356	3.34	0.565
29	18.00	4.24	0.999	0.03333	3.32	0.566
30	20.00	4.47	0.999	0.03324	3.31	0.566
31	22.00	4.69	1	0.03306	3.29	0.566
32	24.00	4.90	1	0.03292	3.28	0.566
33	26.00	5.10	0.999	0.03278	3.27	0.566
34	28.00	5.29	1	0.03269	3.26	0.567
35	30.00	5.48	0.999	0.03265	3.25	0.567
36	35.00	5.92	0.998	0.03246	3.23	0.567
37	40.00	6.32	1	0.032	3.19	0.568
38	45.00	6.71	1	0.03168	3.16	0.568
39	50.00	7.07	0.999	0.03127	3.11	0.569
40	60.00	7.75	1	0.03076	3.06	0.570
41	70.00	8.37	0.999	0.03035	3.02	0.570
42	80.00	8.94	1	0.02993	2.98	0.571
43	90.00	9.49	0.999	0.02975	2.96	0.571
44	100.00	10.00	0.998	0.02952	2.94	0.572
45	110.00	10.49	1	0.02933	2.92	0.572
46	120.00	10.95	0.999	0.02924	2.91	0.572
47	130.00	11.40	0.999	0.0291	2.90	0.572
48	140.00	11.83	1	0.02897	2.89	0.573
49	150.00	12.25	0.998	0.02892	2.88	0.573
50	160.00	12.65	0.999	0.02887	2.88	0.573
51	170.00	13.04	0.999	0.02878	2.87	0.573
52	180.00	13.42	0.999	0.02878	2.87	0.573
53	190.00	13.78	0.998	0.02869	2.86	0.573
54	200.00	14.14	1	0.02864	2.85	0.573
55	210.00	14.49	0.999	0.02864	2.85	0.573
56	220.00	14.83	0.999	0.0286	2.85	0.573
57	230.00	15.17	0.999	0.02855	2.84	0.573
58	240.00	15.49	0.999	0.02855	2.84	0.573
59	250.00	15.81	0.999	0.02846	2.83	0.573
60	260.00	16.12	1	0.02846	2.83	0.573
61	270.00	16.43	0.999	0.02842	2.83	0.574
62	280.00	16.73	0.998	0.02832	2.82	0.574
63	290.00	17.03	0.999	0.02828	2.82	0.574
64	300.00	17.32	0.999	0.02823	2.81	0.574
65	310.00	17.61	1	0.02819	2.81	0.574
66	320.00	17.89	0.999	0.02814	2.80	0.574
67	330.00	18.17	0.998	0.02805	2.79	0.574
68	340.00	18.44	0.998	0.028	2.79	0.574
69	350.00	18.71	0.999	0.02791	2.78	0.574
70	360.00	18.97	0.999	0.02786	2.78	0.574
71	370.00	19.24	0.999	0.02777	2.77	0.575
72	380.00	19.49	0.999	0.02777	2.77	0.575
73	390.00	19.75	0.999	0.02773	2.76	0.575
74	400.00	20.00	0.999	0.02763	2.75	0.575
75	410.00	20.25	1	0.02763	2.75	0.575
76	420.00	20.49	1	0.0275	2.74	0.575
77	430.00	20.74	1	0.02745	2.73	0.575
78	440.00	20.98	1	0.02745	2.73	0.575
79	450.00	21.21	0.998	0.0274	2.73	0.575
80	460.00	21.45	0.999	0.02736	2.72	0.575
81	470.00	21.68	1	0.0274	2.73	0.575

82	480.00	21.91	0.999	0.02736	2.72	0.575
83	490.00	22.14	0.999	0.02736	2.72	0.575
84	500.00	22.36	0.998	0.02736	2.72	0.575
85	510.00	22.58	0.999	0.02731	2.72	0.575
86	520.00	22.80	1	0.02731	2.72	0.575
87	530.00	23.02	0.999	0.02731	2.72	0.575
88	540.00	23.24	0.999	0.02731	2.72	0.575
89	546.56	23.38	0.999	0.02727	2.72	0.575

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

Constant Load Step: 13 of 15
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.02727	2.72	0.575
2	0.01	0.09	0.895	0.02727	2.72	0.575
3	0.02	0.13	0.565	0.02658	2.65	0.576
4	0.03	0.16	0.527	0.02625	2.61	0.577
5	0.04	0.19	0.519	0.02607	2.60	0.577
6	0.05	0.23	0.511	0.02593	2.58	0.578
7	0.07	0.27	0.508	0.02584	2.57	0.578
8	0.08	0.29	0.506	0.02579	2.57	0.578
9	0.12	0.35	0.504	0.02566	2.56	0.578
10	0.17	0.41	0.503	0.02556	2.55	0.578
11	0.25	0.50	0.503	0.02547	2.54	0.578
12	0.34	0.58	0.502	0.02538	2.53	0.578
13	0.50	0.71	0.502	0.02533	2.52	0.578
14	0.75	0.87	0.501	0.02529	2.52	0.579
15	1.00	1.00	0.501	0.0252	2.51	0.579
16	1.50	1.23	0.501	0.0251	2.50	0.579
17	2.00	1.41	0.501	0.02506	2.50	0.579
18	3.00	1.73	0.501	0.02487	2.48	0.579
19	4.00	2.00	0.5	0.02478	2.47	0.579
20	5.00	2.24	0.5	0.02464	2.45	0.580
21	6.00	2.45	0.5	0.02451	2.44	0.580
22	7.00	2.65	0.5	0.02441	2.43	0.580
23	8.00	2.83	0.501	0.02432	2.42	0.580
24	9.00	3.00	0.5	0.02414	2.40	0.580
25	10.00	3.16	0.502	0.02409	2.40	0.580
26	12.00	3.46	0.5	0.024	2.39	0.581
27	14.00	3.74	0.5	0.02391	2.38	0.581
28	16.00	4.00	0.5	0.02373	2.36	0.581
29	18.00	4.24	0.501	0.02354	2.34	0.581
30	20.00	4.47	0.5	0.0235	2.34	0.581
31	22.00	4.69	0.5	0.02331	2.32	0.582
32	24.00	4.90	0.5	0.02317	2.31	0.582
33	26.00	5.10	0.5	0.02308	2.30	0.582
34	28.00	5.29	0.5	0.02294	2.29	0.582
35	30.00	5.48	0.5	0.02276	2.27	0.583
36	35.00	5.92	0.499	0.02248	2.24	0.583
37	40.00	6.32	0.501	0.0223	2.22	0.583
38	45.00	6.71	0.5	0.02207	2.20	0.584
39	50.00	7.07	0.5	0.02175	2.17	0.584
40	60.00	7.75	0.5	0.0211	2.10	0.585
41	70.00	8.37	0.5	0.02097	2.09	0.586
42	80.00	8.94	0.5	0.02097	2.09	0.586
43	90.00	9.49	0.501	0.02083	2.07	0.586
44	100.00	10.00	0.5	0.02069	2.06	0.586
45	110.00	10.49	0.5	0.0206	2.05	0.586
46	120.00	10.95	0.5	0.02046	2.04	0.586
47	130.00	11.40	0.5	0.02032	2.02	0.587
48	140.00	11.83	0.5	0.02009	2.00	0.587
49	150.00	12.25	0.5	0.01963	1.96	0.588
50	160.00	12.65	0.5	0.01927	1.92	0.588
51	170.00	13.04	0.5	0.0189	1.88	0.589
52	180.00	13.42	0.5	0.01885	1.88	0.589
53	190.00	13.78	0.5	0.01871	1.86	0.589
54	200.00	14.14	0.501	0.01867	1.86	0.589
55	210.00	14.49	0.5	0.01862	1.85	0.589
56	220.00	14.83	0.5	0.01848	1.84	0.590
57	230.00	15.17	0.5	0.01844	1.84	0.590
58	240.00	15.49	0.501	0.01835	1.83	0.590
59	250.00	15.81	0.499	0.0183	1.82	0.590
60	260.00	16.12	0.5	0.01825	1.82	0.590
61	270.00	16.43	0.499	0.01821	1.81	0.590
62	280.00	16.73	0.5	0.01816	1.81	0.590
63	290.00	17.03	0.5	0.01816	1.81	0.590
64	300.00	17.32	0.5	0.01812	1.80	0.590
65	310.00	17.61	0.501	0.01802	1.80	0.590
66	320.00	17.89	0.499	0.01802	1.80	0.590
67	330.00	18.17	0.499	0.01798	1.79	0.590
68	340.00	18.44	0.499	0.01789	1.78	0.590
69	350.00	18.71	0.501	0.01784	1.78	0.591
70	360.00	18.97	0.501	0.01779	1.77	0.591
71	370.00	19.24	0.5	0.0177	1.76	0.591
72	380.00	19.49	0.501	0.01766	1.76	0.591
73	390.00	19.75	0.5	0.01761	1.75	0.591
74	400.00	20.00	0.499	0.01756	1.75	0.591
75	410.00	20.25	0.499	0.01752	1.74	0.591
76	420.00	20.49	0.501	0.01743	1.74	0.591
77	430.00	20.74	0.5	0.01743	1.74	0.591
78	440.00	20.98	0.5	0.01738	1.73	0.591
79	450.00	21.21	0.501	0.01738	1.73	0.591
80	460.00	21.45	0.5	0.01738	1.73	0.591
81	470.00	21.68	0.499	0.01729	1.72	0.591

82	480.00	21.91	0.5	0.01729	1.72	0.591
83	490.00	22.14	0.501	0.01724	1.72	0.592
84	500.00	22.36	0.501	0.0172	1.71	0.592
85	510.00	22.58	0.501	0.01715	1.71	0.592
86	520.00	22.80	0.5	0.01715	1.71	0.592
87	530.00	23.02	0.5	0.01715	1.71	0.592
88	535.45	23.14	0.5	0.0171	1.70	0.592

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description:
Remarks:

Constant Load Step: 14 of 15
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.5	0.0171	1.70	0.592
2	0.01	0.09	0.458	0.0171	1.70	0.592
3	0.02	0.13	0.32	0.01683	1.68	0.592
4	0.03	0.16	0.287	0.01664	1.66	0.592
5	0.04	0.19	0.273	0.0166	1.65	0.593
6	0.05	0.23	0.26	0.01646	1.64	0.593
7	0.07	0.27	0.258	0.01646	1.64	0.593
8	0.08	0.29	0.254	0.01646	1.64	0.593
9	0.12	0.34	0.253	0.01641	1.63	0.593
10	0.17	0.41	0.252	0.01641	1.63	0.593
11	0.25	0.50	0.252	0.01637	1.63	0.593
12	0.34	0.58	0.251	0.01632	1.63	0.593
13	0.50	0.71	0.251	0.01628	1.62	0.593
14	0.75	0.87	0.251	0.01618	1.61	0.593
15	1.00	1.00	0.251	0.01614	1.61	0.593
16	1.50	1.23	0.25	0.01605	1.60	0.593
17	2.00	1.42	0.251	0.01595	1.59	0.594
18	3.00	1.73	0.251	0.01582	1.58	0.594
19	4.00	2.00	0.25	0.01572	1.57	0.594
20	5.00	2.24	0.25	0.01559	1.55	0.594
21	6.00	2.45	0.25	0.01554	1.55	0.594
22	7.00	2.65	0.25	0.01545	1.54	0.594
23	8.00	2.83	0.25	0.01531	1.52	0.595
24	9.00	3.00	0.252	0.01522	1.52	0.595
25	10.00	3.16	0.25	0.01513	1.51	0.595
26	12.00	3.46	0.25	0.01476	1.47	0.596
27	14.00	3.74	0.251	0.01481	1.47	0.595
28	16.00	4.00	0.249	0.01462	1.46	0.596
29	18.00	4.24	0.25	0.01453	1.45	0.596
30	20.00	4.47	0.25	0.01444	1.44	0.596
31	22.00	4.69	0.25	0.01439	1.43	0.596
32	24.00	4.90	0.249	0.0143	1.42	0.596
33	26.00	5.10	0.25	0.01425	1.42	0.596
34	28.00	5.29	0.25	0.01421	1.42	0.596
35	30.00	5.48	0.25	0.01416	1.41	0.596
36	35.00	5.92	0.25	0.01402	1.40	0.597
37	40.00	6.32	0.25	0.01389	1.38	0.597
38	45.00	6.71	0.25	0.01361	1.36	0.597
39	50.00	7.07	0.25	0.01343	1.34	0.598
40	60.00	7.75	0.25	0.0132	1.31	0.598
41	70.00	8.37	0.251	0.01287	1.28	0.599
42	80.00	8.94	0.25	0.01251	1.25	0.599
43	90.00	9.49	0.25	0.01223	1.22	0.600
44	100.00	10.00	0.251	0.012	1.20	0.600
45	110.00	10.49	0.249	0.01186	1.18	0.600
46	120.00	10.95	0.251	0.01163	1.16	0.601
47	130.00	11.40	0.249	0.0114	1.14	0.601
48	140.00	11.83	0.25	0.01122	1.12	0.601
49	150.00	12.25	0.249	0.01103	1.10	0.602
50	160.00	12.65	0.25	0.01081	1.08	0.602
51	170.00	13.04	0.25	0.01048	1.04	0.602
52	180.00	13.42	0.251	0.01025	1.02	0.603
53	190.00	13.78	0.249	0.01021	1.02	0.603
54	200.00	14.14	0.25	0.01012	1.01	0.603
55	210.00	14.49	0.25	0.01012	1.01	0.603
56	220.00	14.83	0.25	0.01002	1.00	0.603
57	230.00	15.17	0.25	0.009977	0.99	0.603
58	240.00	15.49	0.25	0.009931	0.99	0.603
59	250.00	15.81	0.25	0.009977	0.99	0.603
60	260.00	16.12	0.25	0.009931	0.99	0.603
61	270.00	16.43	0.25	0.009885	0.98	0.603
62	280.00	16.73	0.25	0.009885	0.98	0.603
63	290.00	17.03	0.25	0.009885	0.98	0.603
64	300.00	17.32	0.251	0.009885	0.98	0.603
65	310.00	17.61	0.25	0.009839	0.98	0.603
66	320.00	17.89	0.25	0.009839	0.98	0.603
67	330.00	18.17	0.249	0.009839	0.98	0.603
68	340.00	18.44	0.25	0.009839	0.98	0.603
69	350.00	18.71	0.25	0.009794	0.98	0.604
70	360.00	18.97	0.25	0.009794	0.98	0.604
71	370.00	19.24	0.25	0.009748	0.97	0.604
72	380.00	19.49	0.25	0.009748	0.97	0.604
73	390.00	19.75	0.25	0.009702	0.97	0.604
74	400.00	20.00	0.25	0.009656	0.96	0.604
75	410.00	20.25	0.25	0.00961	0.96	0.604
76	420.00	20.49	0.25	0.009564	0.95	0.604
77	430.00	20.74	0.25	0.009426	0.94	0.604
78	440.00	20.98	0.25	0.00938	0.93	0.604
79	450.00	21.21	0.25	0.009334	0.93	0.604
80	460.00	21.45	0.25	0.009242	0.92	0.604
81	470.00	21.68	0.25	0.009196	0.92	0.605

82	480.00	21.91	0.25	0.00915	0.91	0.605
83	490.00	22.14	0.25	0.009104	0.91	0.605
84	500.00	22.36	0.25	0.009012	0.90	0.605
85	510.00	22.58	0.25	0.008966	0.89	0.605
86	520.00	22.80	0.25	0.008828	0.88	0.605
87	530.00	23.02	0.25	0.008736	0.87	0.605
88	540.00	23.24	0.25	0.008736	0.87	0.605
89	550.00	23.45	0.25	0.00869	0.87	0.605
90	560.00	23.66	0.25	0.00869	0.87	0.605
91	570.00	23.87	0.25	0.008644	0.86	0.605
92	580.00	24.08	0.249	0.008644	0.86	0.605
93	588.76	24.26	0.25	0.008598	0.86	0.605

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-259
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 3/25/19
Sample Type:

Project No.: 19-259
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

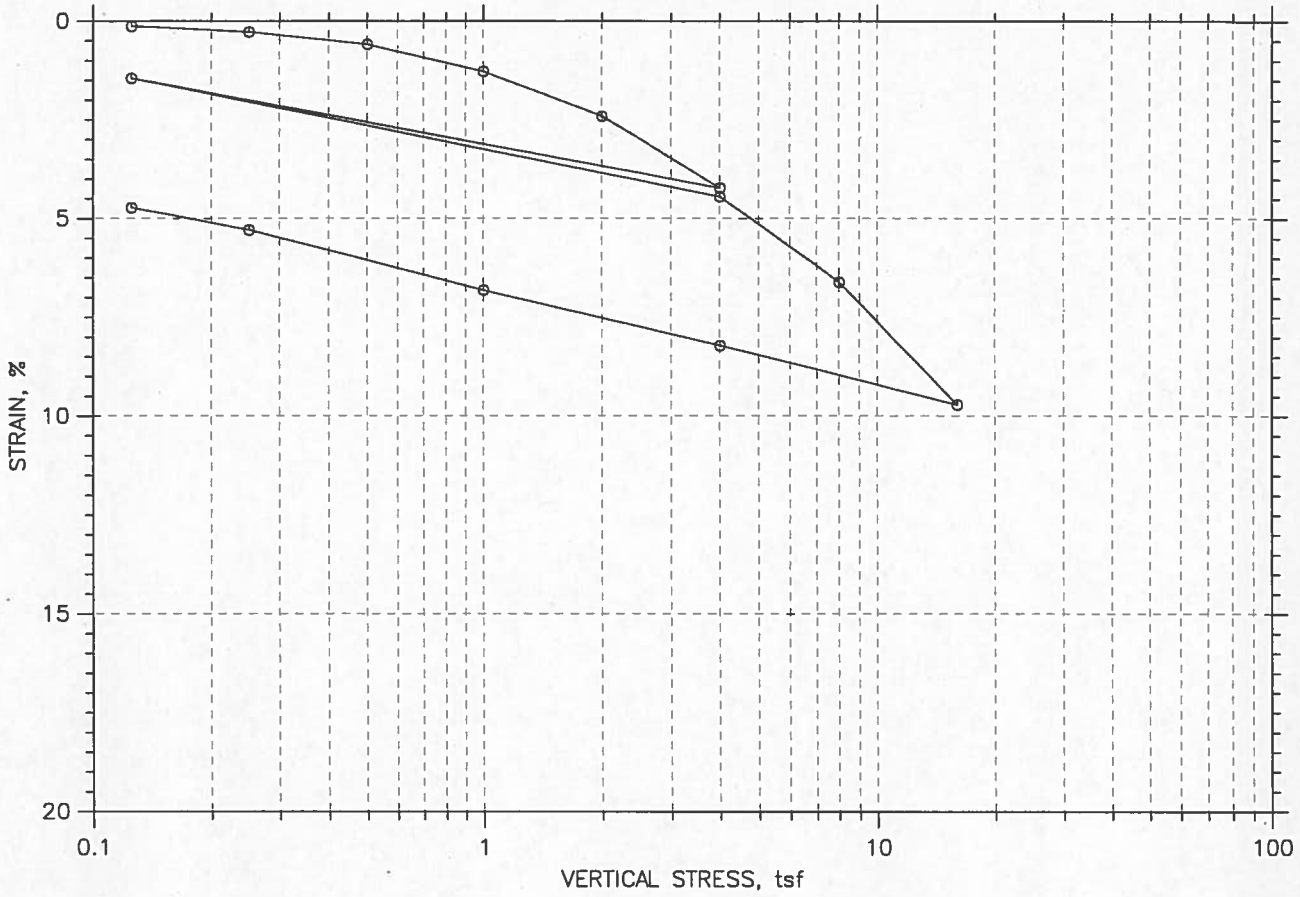
Soil Description:
Remarks:

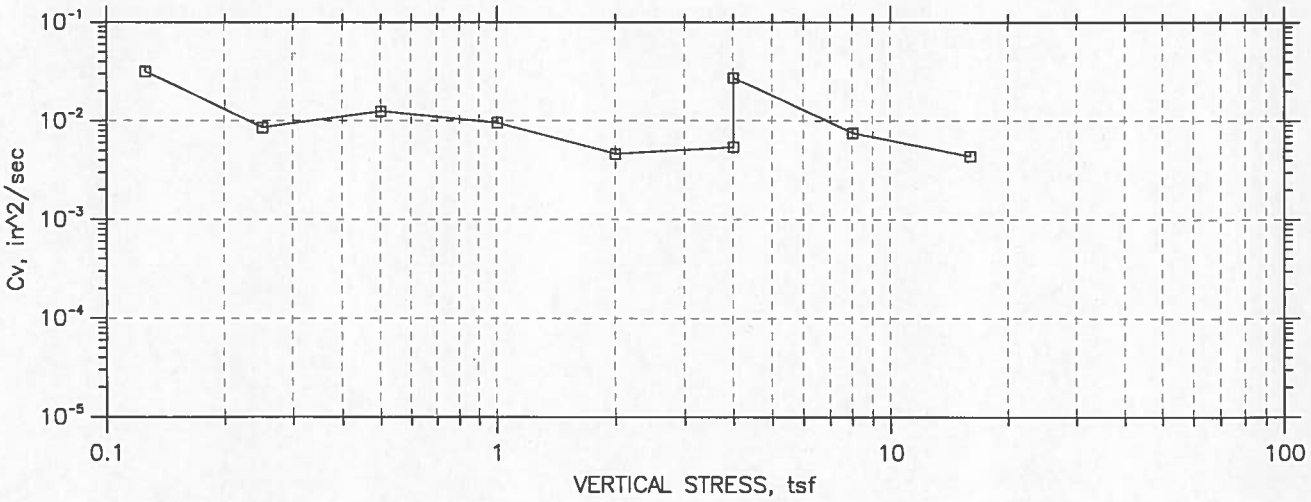
Constant Load Step: 15 of 15
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	0.008598	0.86	0.605
2	0.01	0.09	0.23	0.008598	0.86	0.605
3	0.02	0.13	0.171	0.00846	0.84	0.606
4	0.03	0.16	0.146	0.008368	0.83	0.606
5	0.04	0.19	0.136	0.008276	0.82	0.606
6	0.05	0.23	0.129	0.008184	0.82	0.606
7	0.07	0.27	0.128	0.008138	0.81	0.606
8	0.08	0.29	0.127	0.008092	0.81	0.606
9	0.12	0.34	0.125	0.008046	0.80	0.606
10	0.17	0.41	0.127	0.008	0.80	0.606
11	0.25	0.50	0.125	0.008	0.80	0.606
12	0.34	0.58	0.124	0.007954	0.79	0.607
13	0.50	0.71	0.125	0.007954	0.79	0.607
14	0.75	0.87	0.124	0.007908	0.79	0.607
15	1.00	1.00	0.125	0.007908	0.79	0.607
16	1.50	1.23	0.125	0.007862	0.78	0.607
17	2.00	1.41	0.124	0.007862	0.78	0.607
18	3.00	1.73	0.125	0.00777	0.77	0.607
19	4.00	2.00	0.124	0.007724	0.77	0.607
20	5.00	2.24	0.124	0.007678	0.76	0.607
21	6.00	2.45	0.124	0.007633	0.76	0.607
22	7.00	2.65	0.124	0.007587	0.76	0.607
23	8.00	2.83	0.124	0.007587	0.76	0.607
24	9.00	3.00	0.124	0.007541	0.75	0.607
25	10.00	3.16	0.124	0.007495	0.75	0.607
26	12.00	3.46	0.123	0.007449	0.74	0.607
27	14.00	3.74	0.124	0.007403	0.74	0.607
28	16.00	4.00	0.125	0.007265	0.72	0.608
29	18.00	4.24	0.124	0.007173	0.71	0.608
30	20.00	4.47	0.124	0.007127	0.71	0.608
31	22.00	4.69	0.124	0.007081	0.71	0.608
32	24.00	4.90	0.124	0.007035	0.70	0.608
33	26.00	5.10	0.124	0.006943	0.69	0.608
34	28.00	5.29	0.124	0.006943	0.69	0.608
35	30.00	5.48	0.123	0.006851	0.68	0.608
36	35.00	5.92	0.124	0.006575	0.65	0.609
37	40.00	6.32	0.124	0.006391	0.64	0.609
38	45.00	6.71	0.124	0.006299	0.63	0.609
39	50.00	7.07	0.124	0.006161	0.61	0.609
40	60.00	7.75	0.124	0.005931	0.59	0.610
41	70.00	8.37	0.124	0.005701	0.57	0.610
42	80.00	8.94	0.124	0.005471	0.54	0.611
43	90.00	9.49	0.124	0.005334	0.53	0.611
44	100.00	10.00	0.124	0.005196	0.52	0.611
45	110.00	10.49	0.125	0.00515	0.51	0.611
46	120.00	10.95	0.124	0.005058	0.50	0.611
47	130.00	11.40	0.124	0.004966	0.49	0.611
48	140.00	11.83	0.124	0.004782	0.48	0.612
49	150.00	12.25	0.124	0.00469	0.47	0.612
50	160.00	12.65	0.124	0.004552	0.45	0.612
51	170.00	13.04	0.124	0.004414	0.44	0.612
52	180.00	13.42	0.124	0.004276	0.43	0.612
53	190.00	13.78	0.125	0.004138	0.41	0.613
54	200.00	14.14	0.124	0.004046	0.40	0.613
55	210.00	14.49	0.124	0.003954	0.39	0.613
56	220.00	14.83	0.124	0.003862	0.38	0.613
57	230.00	15.17	0.124	0.00377	0.38	0.613
58	240.00	15.49	0.124	0.003724	0.37	0.613
59	250.00	15.81	0.124	0.003632	0.36	0.613
60	260.00	16.12	0.124	0.003586	0.36	0.614
61	262.26	16.19	0.124	0.003586	0.36	0.614

CONSOLIDATION TEST DATA

SUMMARY REPORT



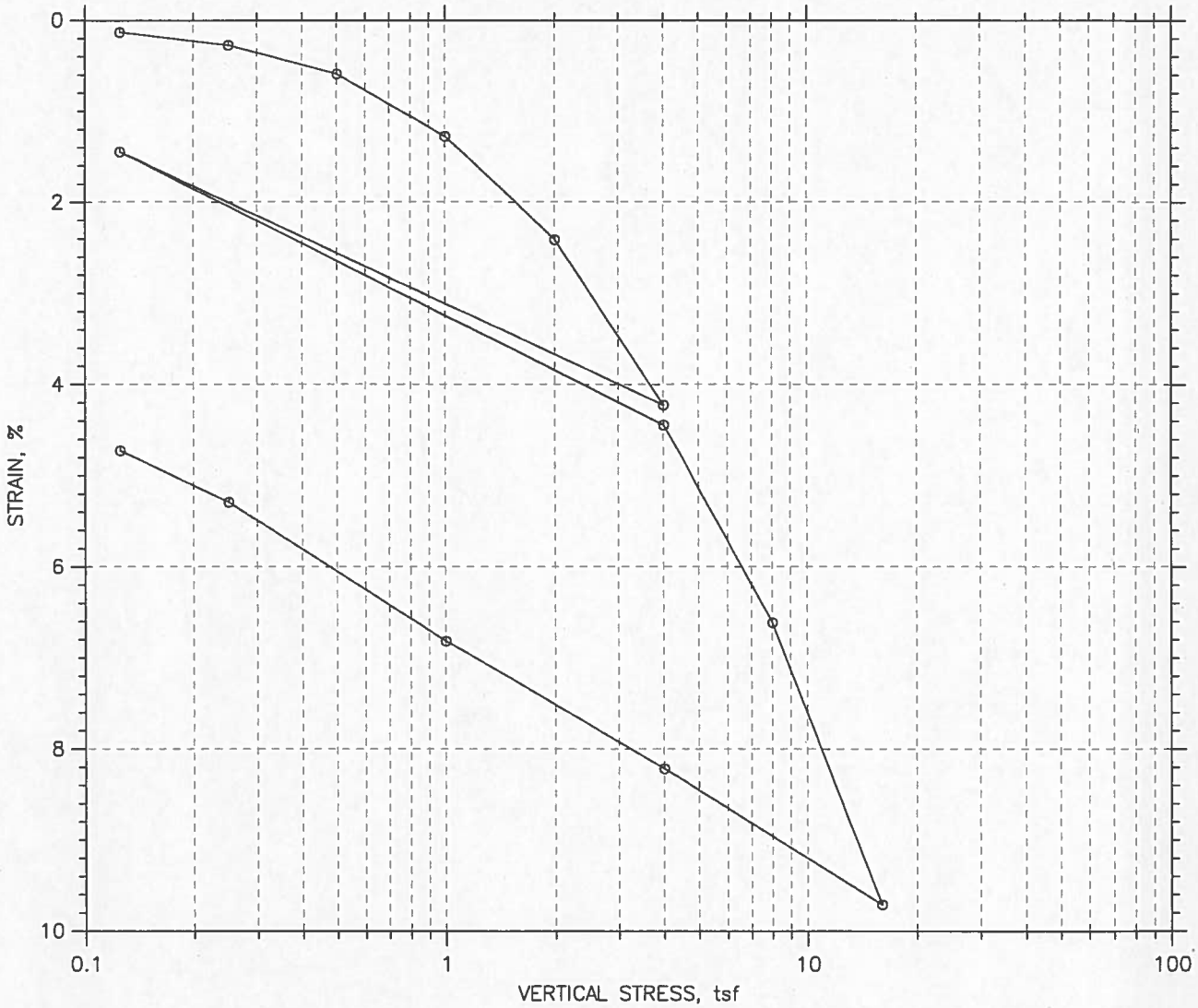


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-260
	Boring No.: B-06P	Tested By: SKK	Checked By: SKK
	Sample No.: 19-260	Test Date: 6/4/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF,		

Thu, 06-JUN-2019 07:33:56

CONSOLIDATION TEST DATA

SUMMARY REPORT



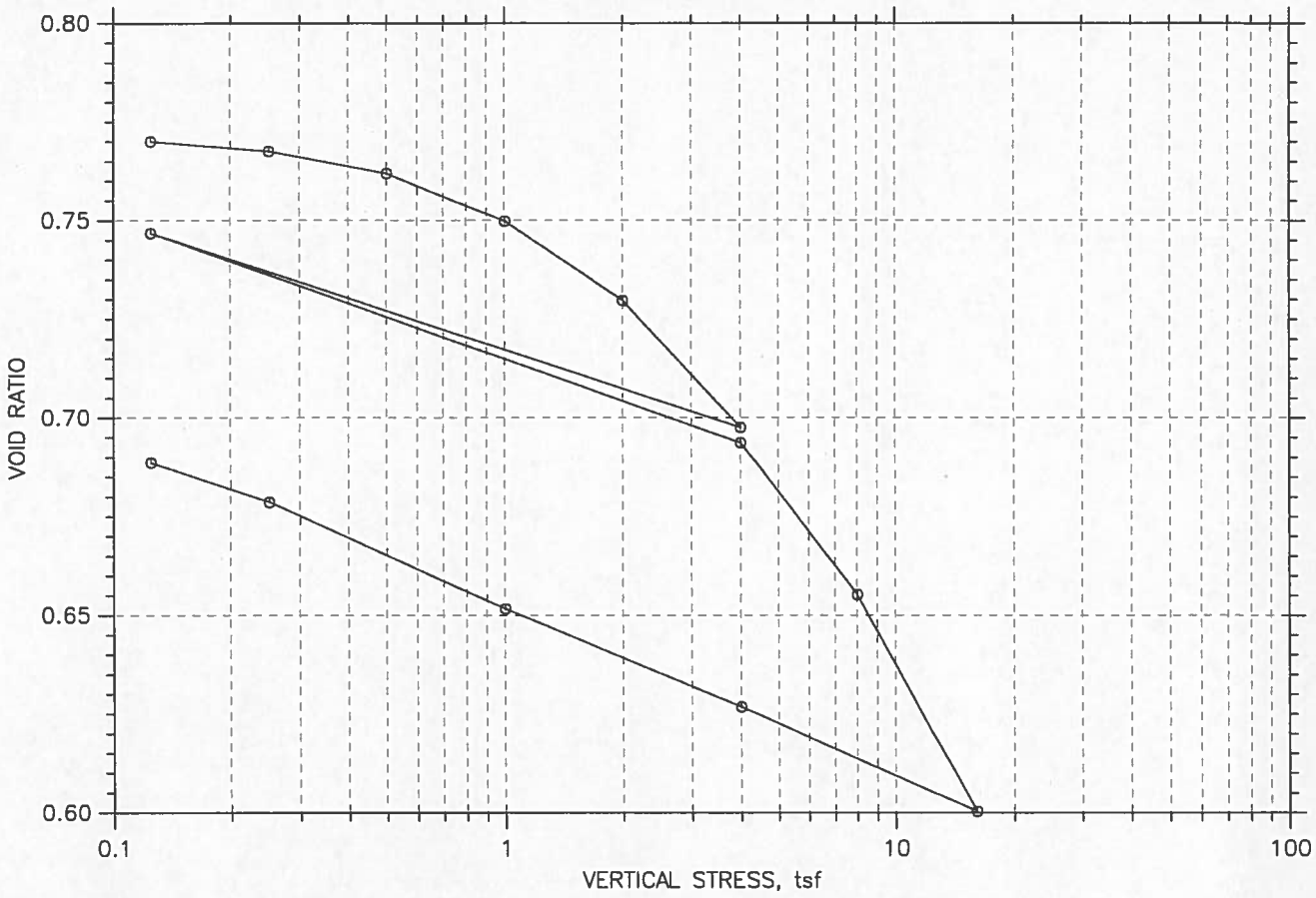
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	23.02	23.84
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	96.86	101.4
Compression Index: 3.81959e-313				Saturation, %	81.95	94.70
Diameter: 2.5 in		Height: 1.001 in		Void Ratio	0.77	0.69
LL: ---	PL: ---	PI: ---	GS: 2.75			

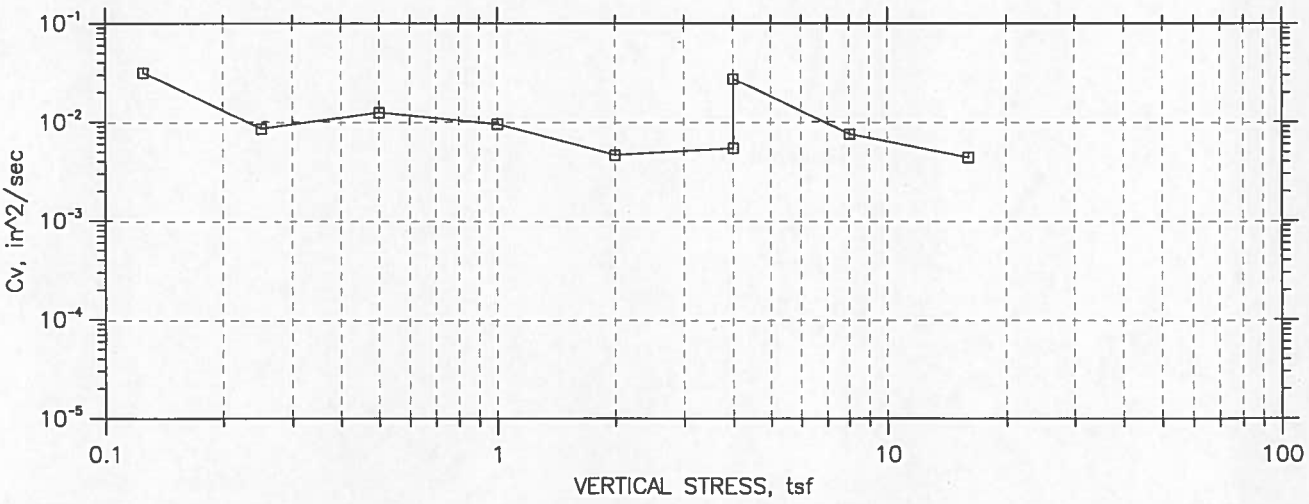
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-260
	Boring No.: B-06P	Tested By: SKK	Checked By: SKK
	Sample No.: 19-260	Test Date: 6/4/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF.		

Thu, 06-JUN-2019 07:33:56

CONSOLIDATION TEST DATA

SUMMARY REPORT



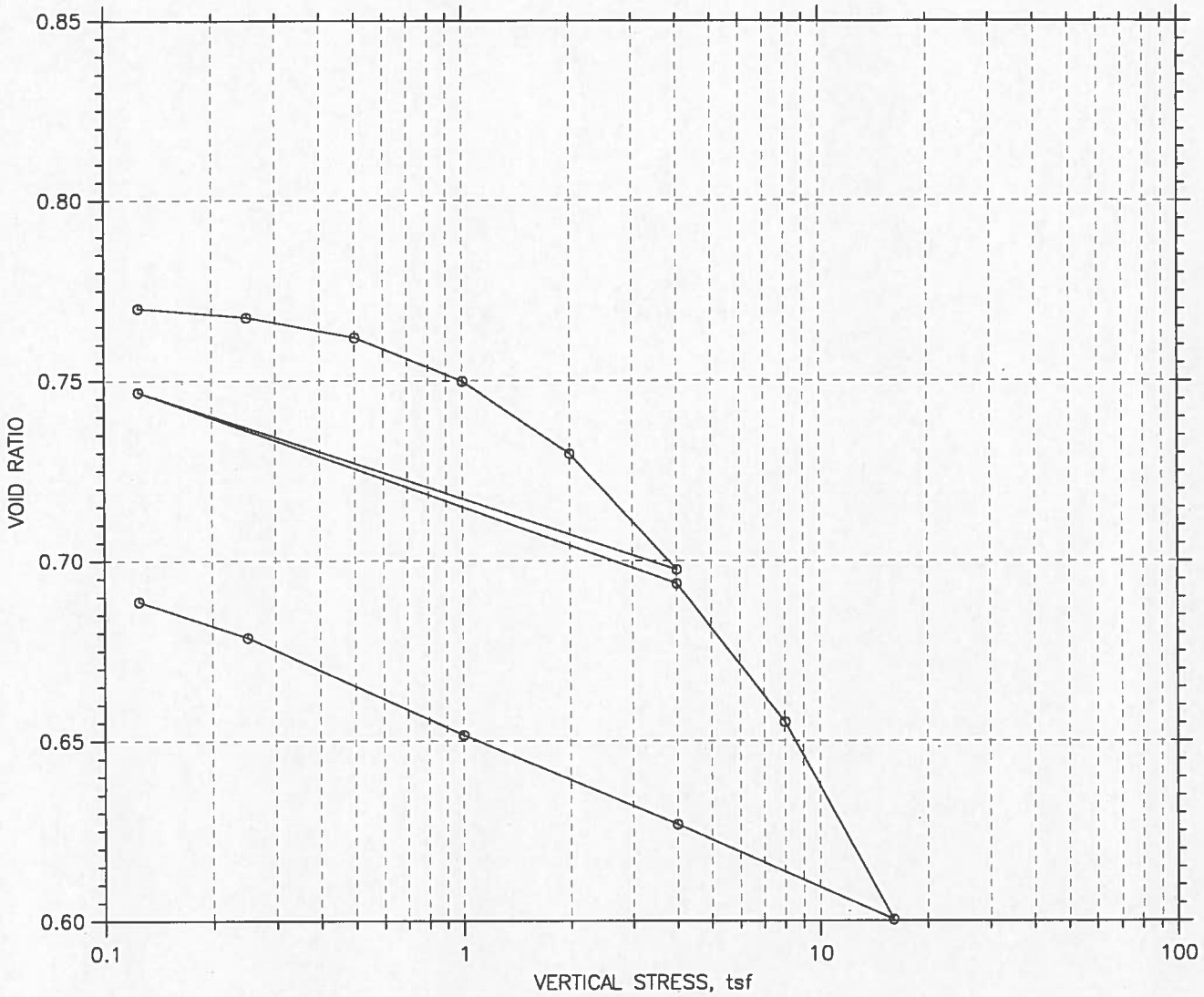


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-260
	Boring No.: B-06P	Tested By: SKK	Checked By: SKK
	Sample No.: 19-260	Test Date: 6/4/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF		

Thu, 06-JUN-2019 07:34:22

CONSOLIDATION TEST DATA

SUMMARY REPORT



				Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	23.02	23.84
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	96.86	101.4
Compression Index: 3.81959e-313				Saturation, %	81.95	94.70
Diameter: 2.5 in		Height: 1.001 in		Void Ratio	0.77	0.69
LL: ---	PL: ---	PI: ---	GS: 2.75			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-260
	Boring No.: B-06P	Tested By: SKK	Checked By: SKK
	Sample No.: 19-260	Test Date: 6/4/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF,		

Thu, 06-JUN-2019 07:34:22

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Measured Specific Gravity: 2.75
Initial Void Ratio: 0.77
Final Void Ratio: 0.69

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	110.31	263.84	264.87	206.6
Wt. Container + Dry Soil, gm	99.51	235.08	235.08	176.81
Wt. Container, gm	50.73	110.15	110.15	51.87
Wt. Dry Soil, gm	48.78	124.93	124.93	124.94
Water Content, %	22.14	23.02	23.84	23.84
Void Ratio	---	0.77	0.69	---
Degree of Saturation, %	---	81.95	94.70	---
Dry Unit Weight, pcf	---	96.861	101.44	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001333	0.770	0.13	0.1	4.95e-002	1.07e-002	9.87e-003
2	0.25	0.002759	0.768	0.28	0.2	1.48e-002	1.14e-002	3.16e-003
3	0.5	0.005931	0.762	0.59	0.2	1.46e-002	1.27e-002	3.46e-003
4	1	0.01278	0.750	1.28	0.4	8.04e-003	1.37e-002	2.06e-003
5	2	0.02414	0.730	2.41	0.9	3.68e-003	1.13e-002	7.82e-004
6	4	0.0423	0.698	4.23	0.6	5.34e-003	9.07e-003	9.07e-004
7	0.125	0.01448	0.747	1.45	1.8	1.86e-003	7.17e-003	2.50e-004
8	4	0.04451	0.694	4.45	0.1	6.41e-002	7.74e-003	9.30e-003
9	8	0.06621	0.655	6.61	0.7	4.40e-003	5.42e-003	4.46e-004
10	16	0.0972	0.600	9.71	1.4	2.08e-003	3.87e-003	1.51e-004
11	4	0.08226	0.627	8.22	0.0	8.75e-002	1.24e-003	2.04e-003
12	1	0.06823	0.652	6.82	1.2	2.56e-003	4.67e-003	2.24e-004
13	0.25	0.05297	0.679	5.29	16.8	1.87e-004	2.03e-002	7.10e-005
14	0.125	0.04731	0.689	4.73	57.6	5.55e-005	4.52e-002	4.70e-005

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001333	0.770	0.13	0.0	0.00e+000	1.07e-002	0.00e+000
2	0.25	0.002759	0.768	0.28	0.0	0.00e+000	1.14e-002	0.00e+000
3	0.5	0.005931	0.762	0.59	0.0	0.00e+000	1.27e-002	0.00e+000
4	1	0.01278	0.750	1.28	0.1	1.49e-002	1.37e-002	3.83e-003
5	2	0.02414	0.730	2.41	0.0	0.00e+000	1.13e-002	0.00e+000
6	4	0.0423	0.698	4.23	0.0	0.00e+000	9.07e-003	0.00e+000
7	0.125	0.01448	0.747	1.45	0.0	0.00e+000	7.17e-003	0.00e+000
8	4	0.04451	0.694	4.45	0.0	2.58e-002	7.74e-003	3.74e-003
9	8	0.06621	0.655	6.61	0.0	2.93e-002	5.42e-003	2.97e-003
10	16	0.0972	0.600	9.71	0.0	2.68e-002	3.87e-003	1.94e-003
11	4	0.08226	0.627	8.22	0.0	0.00e+000	1.24e-003	0.00e+000
12	1	0.06823	0.652	6.82	0.0	2.42e-002	4.67e-003	2.12e-003
13	0.25	0.05297	0.679	5.29	2.1	3.48e-004	2.03e-002	1.33e-004
14	0.125	0.04731	0.689	4.73	0.0	0.00e+000	4.52e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 1 of 14
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00448	-0.001335	-0.13	0.775
2	0.01	0.09	0.0101	-0.001335	-0.13	0.775
3	0.02	0.13	0.0303	-0.001197	-0.12	0.775
4	0.03	0.16	0.0437	-0.0006916	-0.07	0.774
5	0.04	0.19	0.0583	-0.0005077	-0.05	0.773
6	0.05	0.23	0.0762	-0.0003237	-0.03	0.773
7	0.07	0.27	0.0885	-0.0002318	-0.02	0.773
8	0.08	0.29	0.0964	-0.0001858	-0.02	0.773
9	0.12	0.34	0.109	-9.385e-005	-0.01	0.773
10	0.17	0.41	0.118	4.409e-005	0.00	0.772
11	0.25	0.50	0.123	9.007e-005	0.01	0.772
12	0.33	0.58	0.125	9.007e-005	0.01	0.772
13	0.49	0.70	0.128	-1.889e-006	-0.00	0.772

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 2 of 14
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.128	-0.002255	-0.23	0.776
2	0.01	0.09	0.129	-0.002255	-0.23	0.776
3	0.02	0.13	0.159	-0.002117	-0.21	0.776
4	0.03	0.16	0.179	-0.001887	-0.19	0.776
5	0.04	0.19	0.194	-0.001749	-0.17	0.776
6	0.05	0.23	0.213	-0.001611	-0.16	0.775
7	0.07	0.27	0.223	-0.001381	-0.14	0.775
8	0.08	0.29	0.229	-0.001243	-0.12	0.775
9	0.12	0.34	0.238	-0.001013	-0.10	0.774
10	0.17	0.41	0.243	-0.0009215	-0.09	0.774
11	0.25	0.50	0.246	-0.0008755	-0.09	0.774
12	0.34	0.58	0.249	-0.0008295	-0.08	0.774
13	0.50	0.71	0.25	-0.0007835	-0.08	0.774
14	0.75	0.87	0.251	-0.0007835	-0.08	0.774
15	0.94	0.97	0.252	-0.0008295	-0.08	0.774

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 3 of 14
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.253	-0.003082	-0.31	0.778
2	0.01	0.09	0.255	-0.003082	-0.31	0.778
3	0.02	0.13	0.331	-0.002898	-0.29	0.778
4	0.03	0.16	0.371	-0.002622	-0.26	0.777
5	0.04	0.19	0.398	-0.0023	-0.23	0.776
6	0.05	0.23	0.436	-0.001656	-0.17	0.775
7	0.07	0.27	0.458	-0.001335	-0.13	0.775
8	0.08	0.29	0.468	-0.001197	-0.12	0.775
9	0.12	0.35	0.485	-0.0008747	-0.09	0.774
10	0.17	0.41	0.492	-0.0006448	-0.06	0.774
11	0.25	0.50	0.495	-0.0004609	-0.05	0.773
12	0.34	0.58	0.497	-0.000323	-0.03	0.773
13	0.50	0.71	0.495	-0.000231	-0.02	0.773
14	0.75	0.87	0.499	-0.0001391	-0.01	0.773
15	1.00	1.00	0.5	-9.307e-005	-0.01	0.773
16	1.50	1.23	0.5	-4.71e-005	-0.00	0.772
17	2.00	1.41	0.501	-1.116e-006	-0.00	0.772
18	3.00	1.73	0.5	4.486e-005	0.00	0.772
19	4.00	2.00	0.5	4.486e-005	0.00	0.772
20	5.00	2.24	0.5	4.486e-005	0.00	0.772
21	6.00	2.45	0.499	9.084e-005	0.01	0.772
22	7.00	2.65	0.499	0.0001368	0.01	0.772
23	8.00	2.83	0.5	0.0001368	0.01	0.772
24	9.00	3.00	0.501	0.0001368	0.01	0.772
25	10.00	3.16	0.5	0.0001368	0.01	0.772
26	12.00	3.46	0.501	9.084e-005	0.01	0.772
27	13.34	3.65	0.501	9.084e-005	0.01	0.772

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 4 of 14
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.5	-0.00124	-0.12	0.775
2	0.01	0.09	0.593	-0.001194	-0.12	0.775
3	0.02	0.13	0.76	-0.0004588	-0.05	0.773
4	0.03	0.16	0.835	0.0003229	0.03	0.772
5	0.04	0.19	0.88	0.0009206	0.09	0.771
6	0.05	0.23	0.932	0.00161	0.16	0.770
7	0.07	0.27	0.957	0.002116	0.21	0.769
8	0.08	0.29	0.967	0.002392	0.24	0.768
9	0.12	0.34	0.981	0.002806	0.28	0.767
10	0.17	0.41	0.989	0.003036	0.30	0.767
11	0.25	0.50	0.994	0.003312	0.33	0.767
12	0.34	0.58	0.995	0.003541	0.35	0.766
13	0.50	0.71	0.997	0.003771	0.38	0.766
14	0.75	0.87	0.999	0.003863	0.39	0.766
15	1.00	1.00	0.999	0.003955	0.40	0.765
16	1.50	1.23	0.999	0.004139	0.41	0.765
17	2.00	1.42	0.998	0.004185	0.42	0.765
18	3.00	1.73	0.999	0.004277	0.43	0.765
19	4.00	2.00	0.999	0.004369	0.44	0.765
20	5.00	2.24	0.998	0.004415	0.44	0.765
21	6.00	2.45	0.999	0.004461	0.45	0.765
22	7.00	2.65	0.999	0.004507	0.45	0.764
23	8.00	2.83	0.998	0.004553	0.45	0.764
24	9.00	3.00	0.999	0.004553	0.45	0.764
25	10.00	3.16	0.999	0.004599	0.46	0.764
26	12.00	3.46	0.999	0.004599	0.46	0.764
27	14.00	3.74	1	0.004645	0.46	0.764
28	16.00	4.00	1	0.004691	0.47	0.764
29	18.00	4.24	0.999	0.004737	0.47	0.764
30	20.00	4.47	0.999	0.004783	0.48	0.764
31	22.00	4.69	0.999	0.004829	0.48	0.764
32	24.00	4.90	1	0.004829	0.48	0.764
33	26.00	5.10	0.999	0.004875	0.49	0.764
34	28.00	5.29	0.999	0.004875	0.49	0.764
35	30.00	5.48	0.998	0.004921	0.49	0.764
36	35.00	5.92	0.999	0.005013	0.50	0.764
37	40.00	6.32	0.999	0.005059	0.51	0.763
38	45.00	6.71	0.999	0.005105	0.51	0.763
39	50.00	7.07	0.999	0.005105	0.51	0.763
40	60.00	7.75	0.999	0.005197	0.52	0.763
41	70.00	8.37	0.999	0.005381	0.54	0.763
42	80.00	8.94	0.999	0.005381	0.54	0.763
43	90.00	9.49	1	0.005473	0.55	0.763
44	100.00	10.00	0.999	0.00561	0.56	0.762
45	110.00	10.49	0.999	0.00561	0.56	0.762
46	120.00	10.95	0.998	0.00561	0.56	0.762
47	130.00	11.40	0.999	0.005656	0.57	0.762
48	140.00	11.83	0.999	0.00561	0.56	0.762
49	150.00	12.25	0.999	0.005656	0.57	0.762
50	159.61	12.63	1	0.00561	0.56	0.762

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 5 of 14
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.003448	0.34	0.766
2	0.01	0.09	1.18	0.003448	0.34	0.766
3	0.02	0.13	1.58	0.004184	0.42	0.765
4	0.03	0.16	1.73	0.005885	0.59	0.762
5	0.04	0.19	1.81	0.006897	0.69	0.760
6	0.05	0.23	1.9	0.008138	0.81	0.758
7	0.07	0.27	1.94	0.008552	0.85	0.757
8	0.08	0.29	1.96	0.009012	0.90	0.756
9	0.12	0.35	1.97	0.009518	0.95	0.756
10	0.17	0.41	1.98	0.009931	0.99	0.755
11	0.25	0.50	1.99	0.01039	1.04	0.754
12	0.34	0.58	1.99	0.01053	1.05	0.754
13	0.51	0.71	2	0.0108	1.08	0.753
14	0.75	0.87	2	0.01131	1.13	0.752
15	1.00	1.00	2	0.01168	1.17	0.752
16	1.50	1.23	2	0.01191	1.19	0.751
17	2.00	1.42	2	0.012	1.20	0.751
18	3.00	1.73	2	0.01223	1.22	0.751
19	4.00	2.00	2	0.01251	1.25	0.750
20	5.00	2.24	2	0.01269	1.27	0.750
21	6.00	2.45	2	0.01278	1.28	0.750
22	7.00	2.65	2	0.01287	1.29	0.750
23	8.00	2.83	2	0.01297	1.30	0.749
24	9.00	3.00	2	0.01315	1.31	0.749
25	10.00	3.16	2	0.01338	1.34	0.749
26	12.00	3.46	2	0.01379	1.38	0.748
27	14.00	3.74	2	0.01402	1.40	0.748
28	16.00	4.00	2	0.01412	1.41	0.747
29	18.00	4.24	2	0.01416	1.41	0.747
30	20.00	4.47	2	0.01425	1.42	0.747
31	22.00	4.69	2	0.01439	1.44	0.747
32	24.00	4.90	2	0.01444	1.44	0.747
33	26.00	5.10	2	0.01444	1.44	0.747
34	28.00	5.29	2	0.01448	1.45	0.747
35	30.00	5.48	2	0.01453	1.45	0.747
36	35.00	5.92	2	0.01458	1.46	0.747
37	40.00	6.32	2	0.01462	1.46	0.747
38	45.00	6.71	2	0.01467	1.47	0.746
39	50.00	7.07	2	0.01471	1.47	0.746
40	60.00	7.75	2	0.01476	1.47	0.746
41	70.00	8.37	2	0.01481	1.48	0.746
42	80.00	8.94	2	0.01481	1.48	0.746
43	90.00	9.49	2	0.01481	1.48	0.746
44	100.00	10.00	2	0.01481	1.48	0.746
45	110.00	10.49	2	0.01481	1.48	0.746
46	120.00	10.95	2	0.01481	1.48	0.746
47	120.06	10.96	2	0.01481	1.48	0.746

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 6 of 14
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	0.01223	1.22	0.751
2	0.01	0.09	2.25	0.01223	1.22	0.751
3	0.02	0.13	3.3	0.0149	1.49	0.746
4	0.03	0.16	3.61	0.01802	1.80	0.740
5	0.04	0.19	3.76	0.01963	1.96	0.738
6	0.05	0.23	3.88	0.02069	2.07	0.736
7	0.07	0.27	3.93	0.02133	2.13	0.735
8	0.08	0.29	3.95	0.02179	2.18	0.734
9	0.12	0.35	3.97	0.02253	2.25	0.733
10	0.17	0.41	3.98	0.02326	2.32	0.731
11	0.25	0.50	3.99	0.02386	2.38	0.730
12	0.34	0.58	3.99	0.02418	2.42	0.730
13	0.50	0.71	3.99	0.02478	2.48	0.729
14	0.75	0.87	4	0.02515	2.51	0.728
15	1.00	1.00	4	0.0252	2.52	0.728
16	1.50	1.23	4	0.02538	2.54	0.727
17	2.00	1.42	4	0.02547	2.54	0.727
18	3.00	1.73	4	0.02593	2.59	0.726
19	4.00	2.00	4	0.02611	2.61	0.726
20	5.00	2.24	4	0.0263	2.63	0.726
21	6.00	2.45	4	0.02653	2.65	0.725
22	7.00	2.65	4	0.0269	2.69	0.725
23	8.00	2.83	4	0.02731	2.73	0.724
24	9.00	3.00	4	0.02754	2.75	0.724
25	10.00	3.16	4	0.02768	2.77	0.723
26	12.00	3.46	4	0.02782	2.78	0.723
27	14.00	3.74	4	0.02837	2.83	0.722
28	16.00	4.00	4	0.0286	2.86	0.722
29	18.00	4.24	4	0.02883	2.88	0.721
30	20.00	4.47	4	0.02887	2.88	0.721
31	22.00	4.69	4	0.02897	2.89	0.721
32	24.00	4.90	4	0.0291	2.91	0.721
33	26.00	5.10	4	0.0292	2.92	0.721
34	28.00	5.29	4	0.02924	2.92	0.721
35	30.00	5.48	4	0.02933	2.93	0.720
36	35.00	5.92	4	0.02947	2.94	0.720
37	40.00	6.32	4	0.02952	2.95	0.720
38	45.00	6.71	4	0.02961	2.96	0.720
39	50.00	7.07	4	0.02979	2.98	0.720
40	60.00	7.75	4	0.02993	2.99	0.719
41	70.00	8.37	4	0.03011	3.01	0.719
42	80.00	8.94	4	0.03025	3.02	0.719
43	90.00	9.49	4	0.03025	3.02	0.719
44	100.00	10.00	4	0.0303	3.03	0.719
45	110.00	10.49	4	0.03039	3.04	0.719
46	120.00	10.95	4	0.03044	3.04	0.719
47	120.07	10.96	4	0.03039	3.04	0.719

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 7 of 14
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.04019	4.01	0.701
2	0.01	0.09	3.6	0.04019	4.01	0.701
3	0.02	0.13	0.909	0.03568	3.56	0.709
4	0.03	0.16	0.592	0.03214	3.21	0.716
5	0.04	0.19	0.456	0.03039	3.04	0.719
6	0.05	0.23	0.315	0.02892	2.89	0.721
7	0.07	0.27	0.253	0.02796	2.79	0.723
8	0.08	0.29	0.224	0.02694	2.69	0.725
9	0.12	0.34	0.186	0.02602	2.60	0.726
10	0.17	0.41	0.162	0.02515	2.51	0.728
11	0.25	0.50	0.145	0.02405	2.40	0.730
12	0.34	0.58	0.14	0.02322	2.32	0.731
13	0.50	0.71	0.134	0.02258	2.26	0.732
14	0.75	0.87	0.131	0.02207	2.20	0.733
15	1.00	1.00	0.13	0.02198	2.20	0.733
16	1.50	1.23	0.128	0.02143	2.14	0.734
17	2.00	1.42	0.129	0.02028	2.03	0.737
18	3.00	1.73	0.125	0.0194	1.94	0.738
19	4.00	2.00	0.127	0.01899	1.90	0.739
20	5.00	2.24	0.127	0.01821	1.82	0.740
21	6.00	2.45	0.127	0.01784	1.78	0.741
22	7.00	2.65	0.127	0.01752	1.75	0.741
23	8.00	2.83	0.127	0.01706	1.70	0.742
24	9.00	3.00	0.124	0.01678	1.68	0.743
25	10.00	3.16	0.125	0.01651	1.65	0.743
26	12.00	3.46	0.125	0.01577	1.58	0.744
27	14.00	3.74	0.124	0.01549	1.55	0.745
28	16.00	4.00	0.124	0.01527	1.52	0.745
29	18.00	4.24	0.124	0.01499	1.50	0.746
30	20.00	4.47	0.125	0.01467	1.47	0.746
31	22.00	4.69	0.125	0.01444	1.44	0.747
32	24.00	4.90	0.124	0.01421	1.42	0.747
33	26.00	5.10	0.124	0.01398	1.40	0.748
34	28.00	5.29	0.123	0.01375	1.37	0.748
35	30.00	5.48	0.124	0.01361	1.36	0.748
36	35.00	5.92	0.124	0.01343	1.34	0.749
37	40.00	6.32	0.124	0.01324	1.32	0.749
38	45.00	6.71	0.124	0.01306	1.30	0.749
39	50.00	7.07	0.125	0.01301	1.30	0.749
40	60.00	7.75	0.124	0.01297	1.30	0.749
41	70.00	8.37	0.124	0.01278	1.28	0.750
42	80.00	8.94	0.125	0.0126	1.26	0.750
43	90.00	9.49	0.124	0.01255	1.25	0.750
44	100.00	10.00	0.124	0.01246	1.24	0.750
45	110.00	10.49	0.123	0.01232	1.23	0.751
46	120.00	10.95	0.125	0.01237	1.24	0.751
47	120.11	10.96	0.125	0.01237	1.24	0.751

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 8 of 14
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.124	0.002527	0.25	0.768
2	0.01	0.09	0.171	0.002527	0.25	0.768
3	0.02	0.13	1.5	0.006574	0.66	0.761
4	0.03	0.16	2.76	0.01572	1.57	0.745
5	0.04	0.19	3.45	0.02051	2.05	0.736
6	0.05	0.23	3.83	0.02414	2.41	0.730
7	0.07	0.27	3.91	0.02524	2.52	0.728
8	0.08	0.29	3.93	0.02538	2.54	0.727
9	0.12	0.34	3.96	0.02584	2.58	0.727
10	0.17	0.41	3.98	0.02621	2.62	0.726
11	0.25	0.50	3.99	0.02685	2.68	0.725
12	0.34	0.58	3.99	0.02772	2.77	0.723
13	0.50	0.71	3.99	0.02883	2.88	0.721
14	0.75	0.87	3.99	0.02938	2.93	0.720
15	1.01	1.00	4	0.02979	2.98	0.720
16	1.50	1.23	4	0.0303	3.03	0.719
17	2.00	1.42	4	0.03057	3.05	0.718
18	3.00	1.73	4	0.03094	3.09	0.718
19	4.00	2.00	4	0.03113	3.11	0.717
20	5.00	2.24	4	0.03122	3.12	0.717
21	6.00	2.45	4	0.03131	3.13	0.717
22	7.00	2.65	4	0.0314	3.14	0.717
23	8.00	2.83	4	0.03154	3.15	0.717
24	9.00	3.00	4	0.03163	3.16	0.716
25	10.00	3.16	4	0.03168	3.16	0.716
26	12.00	3.46	4	0.03177	3.17	0.716
27	14.00	3.74	4	0.03191	3.19	0.716
28	16.00	4.00	4	0.032	3.20	0.716
29	18.00	4.24	4	0.03205	3.20	0.716
30	20.00	4.47	4	0.03205	3.20	0.716
31	22.00	4.69	4	0.03205	3.20	0.716
32	24.00	4.90	4	0.03205	3.20	0.716
33	26.00	5.10	4	0.03209	3.21	0.716
34	28.00	5.29	4	0.03214	3.21	0.716
35	30.00	5.48	4	0.03218	3.22	0.715
36	35.00	5.92	4	0.03223	3.22	0.715
37	40.00	6.32	4	0.03228	3.22	0.715
38	45.00	6.71	4	0.03228	3.22	0.715
39	50.00	7.07	4	0.03232	3.23	0.715
40	60.00	7.75	4	0.03241	3.24	0.715
41	70.00	8.37	4	0.03241	3.24	0.715
42	80.00	8.94	4	0.03251	3.25	0.715
43	90.00	9.49	4	0.03246	3.24	0.715
44	100.00	10.00	4	0.03251	3.25	0.715
45	110.00	10.49	4	0.03255	3.25	0.715
46	120.00	10.95	4	0.0326	3.26	0.715
47	120.08	10.96	4	0.0326	3.26	0.715

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 9 of 14
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.02929	2.93	0.721
2	0.01	0.09	4.63	0.02929	2.93	0.721
3	0.02	0.13	7.31	0.03448	3.44	0.711
4	0.03	0.16	7.69	0.03821	3.82	0.705
5	0.04	0.19	7.83	0.03954	3.95	0.702
6	0.05	0.23	7.91	0.04023	4.02	0.701
7	0.07	0.27	7.94	0.04088	4.08	0.700
8	0.09	0.30	7.96	0.0412	4.12	0.699
9	0.12	0.34	7.97	0.04143	4.14	0.699
10	0.17	0.41	7.98	0.04207	4.20	0.698
11	0.25	0.50	7.98	0.04308	4.30	0.696
12	0.34	0.58	7.99	0.04354	4.35	0.695
13	0.50	0.71	8	0.04432	4.43	0.694
14	0.75	0.87	7.99	0.04501	4.50	0.693
15	1.00	1.00	8	0.04529	4.52	0.692
16	1.50	1.23	8	0.04566	4.56	0.692
17	2.00	1.41	8	0.04612	4.61	0.691
18	3.00	1.73	8	0.04658	4.65	0.690
19	4.00	2.00	8	0.04685	4.68	0.689
20	5.00	2.24	8	0.04731	4.73	0.689
21	6.00	2.45	8	0.04763	4.76	0.688
22	7.00	2.65	8	0.04786	4.78	0.688
23	8.00	2.83	8	0.04819	4.81	0.687
24	9.00	3.00	8	0.04842	4.84	0.687
25	10.00	3.16	8	0.04855	4.85	0.686
26	12.00	3.46	8	0.04869	4.86	0.686
27	14.00	3.74	8	0.04888	4.88	0.686
28	16.00	4.00	8	0.04897	4.89	0.686
29	18.00	4.24	8	0.04888	4.88	0.686
30	20.00	4.47	8	0.04915	4.91	0.685
31	22.00	4.69	8	0.04934	4.93	0.685
32	24.00	4.90	8	0.04947	4.94	0.685
33	26.00	5.10	8	0.04952	4.95	0.685
34	28.00	5.29	8	0.04961	4.96	0.685
35	30.00	5.48	8	0.04961	4.96	0.685
36	35.00	5.92	8	0.04975	4.97	0.684
37	40.00	6.32	8	0.04989	4.98	0.684
38	45.00	6.71	8	0.05007	5.00	0.684
39	50.00	7.07	8	0.0503	5.03	0.683
40	60.00	7.75	8	0.05048	5.04	0.683
41	70.00	8.37	8	0.05062	5.06	0.683
42	80.00	8.94	8	0.05081	5.08	0.682
43	90.00	9.49	8	0.0509	5.08	0.682
44	100.00	10.00	8	0.0509	5.08	0.682
45	110.00	10.49	8	0.05094	5.09	0.682
46	120.00	10.95	8	0.05099	5.09	0.682
47	120.06	10.96	8	0.05099	5.09	0.682

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 10 of 14
Applied Stress: 16 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.04557	4.55	0.692
2	0.01	0.09	8.83	0.04557	4.55	0.692
3	0.02	0.13	14.5	0.05081	5.08	0.682
4	0.03	0.16	15.5	0.05816	5.81	0.669
5	0.04	0.19	15.7	0.06046	6.04	0.665
6	0.05	0.23	15.9	0.06184	6.18	0.663
7	0.07	0.27	15.9	0.06285	6.28	0.661
8	0.08	0.29	15.9	0.06322	6.32	0.660
9	0.12	0.34	16	0.06391	6.38	0.659
10	0.17	0.41	16	0.06497	6.49	0.657
11	0.25	0.50	16	0.06566	6.56	0.656
12	0.34	0.58	16	0.06598	6.59	0.656
13	0.50	0.71	16	0.06667	6.66	0.654
14	0.75	0.87	16	0.06745	6.74	0.653
15	1.00	1.00	16	0.06842	6.83	0.651
16	1.50	1.23	16	0.06952	6.95	0.649
17	2.00	1.42	16	0.07021	7.01	0.648
18	3.00	1.73	16	0.07118	7.11	0.646
19	4.00	2.00	16	0.07141	7.13	0.646
20	5.00	2.24	16	0.07168	7.16	0.645
21	6.00	2.45	16	0.072	7.19	0.645
22	7.00	2.65	16	0.07251	7.24	0.644
23	8.00	2.83	16	0.07274	7.27	0.644
24	9.00	3.00	16	0.07297	7.29	0.643
25	10.00	3.16	16	0.07329	7.32	0.643
26	12.00	3.46	16	0.0737	7.36	0.642
27	14.00	3.74	16	0.07403	7.40	0.641
28	16.00	4.00	16	0.0743	7.42	0.641
29	18.00	4.24	16	0.07444	7.44	0.641
30	20.00	4.47	16	0.07462	7.45	0.640
31	22.00	4.69	16	0.07472	7.46	0.640
32	24.00	4.90	16	0.07485	7.48	0.640
33	26.00	5.10	16	0.07495	7.49	0.640
34	28.00	5.29	16	0.07495	7.49	0.640
35	30.00	5.48	16	0.0749	7.48	0.640
36	35.00	5.92	16	0.07513	7.51	0.639
37	40.00	6.32	16	0.07527	7.52	0.639
38	45.00	6.71	16	0.07559	7.55	0.639
39	50.00	7.07	16	0.07587	7.58	0.638
40	60.00	7.75	16	0.076	7.59	0.638
41	70.00	8.37	16	0.07614	7.61	0.638
42	80.00	8.94	16	0.07628	7.62	0.637
43	90.00	9.49	16	0.07633	7.62	0.637
44	100.00	10.00	16	0.07642	7.63	0.637
45	110.00	10.49	16	0.07646	7.64	0.637
46	120.00	10.95	16	0.07656	7.65	0.637
47	120.08	10.96	16	0.07656	7.65	0.637

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 11 of 14
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	16	0.09508	9.50	0.604
2	0.01	0.09	13	0.09508	9.50	0.604
3	0.02	0.13	5.17	0.08998	8.99	0.613
4	0.03	0.16	4.13	0.08396	8.39	0.624
5	0.04	0.19	4.06	0.0835	8.34	0.625
6	0.05	0.23	4.03	0.08281	8.27	0.626
7	0.07	0.27	4.02	0.08249	8.24	0.626
8	0.08	0.29	4.02	0.08239	8.23	0.627
9	0.12	0.35	4.01	0.08221	8.21	0.627
10	0.17	0.41	4.01	0.08212	8.20	0.627
11	0.25	0.50	4	0.08193	8.19	0.627
12	0.33	0.58	4	0.08184	8.18	0.627
13	0.50	0.71	4	0.08161	8.15	0.628
14	0.75	0.87	4	0.08147	8.14	0.628
15	1.00	1.00	4	0.08143	8.13	0.628
16	1.50	1.23	4	0.08124	8.12	0.629
17	2.00	1.41	4	0.08115	8.11	0.629
18	3.00	1.73	4	0.08097	8.09	0.629
19	4.00	2.00	4	0.08083	8.08	0.629
20	5.00	2.24	4	0.08069	8.06	0.630
21	6.00	2.45	4	0.08065	8.06	0.630
22	7.00	2.65	4	0.08056	8.05	0.630
23	8.00	2.83	4	0.08051	8.04	0.630
24	9.00	3.00	4	0.08046	8.04	0.630
25	10.00	3.16	4	0.08046	8.04	0.630
26	12.00	3.46	4	0.08042	8.03	0.630
27	14.00	3.74	4	0.08042	8.03	0.630
28	16.00	4.00	4	0.08042	8.03	0.630
29	18.00	4.24	4	0.08037	8.03	0.630
30	20.00	4.47	4	0.08037	8.03	0.630
31	22.00	4.69	4	0.08037	8.03	0.630
32	24.00	4.90	4	0.08033	8.02	0.630
33	26.00	5.10	4	0.08033	8.02	0.630
34	28.00	5.29	4	0.08033	8.02	0.630
35	30.00	5.48	4	0.08028	8.02	0.630
36	35.00	5.92	4	0.08023	8.02	0.630
37	40.00	6.32	4	0.08019	8.01	0.630
38	45.00	6.71	4	0.08019	8.01	0.630
39	50.00	7.07	4	0.08019	8.01	0.630
40	60.00	7.75	4	0.08014	8.01	0.631
41	70.00	8.37	4	0.08014	8.01	0.631
42	80.00	8.94	4	0.08019	8.01	0.630
43	90.00	9.49	4	0.08014	8.01	0.631
44	100.00	10.00	4	0.08014	8.01	0.631
45	110.00	10.49	4	0.08019	8.01	0.630
46	120.00	10.95	4	0.08019	8.01	0.630
47	120.04	10.96	4	0.08014	8.01	0.631

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 12 of 14
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.08019	8.01	0.630
2	0.01	0.09	3.47	0.08014	8.01	0.631
3	0.02	0.13	1.39	0.07711	7.70	0.636
4	0.03	0.16	1.19	0.07508	7.50	0.639
5	0.04	0.19	1.12	0.07407	7.40	0.641
6	0.05	0.23	1.06	0.07283	7.28	0.643
7	0.07	0.27	1.04	0.07255	7.25	0.644
8	0.08	0.29	1.03	0.07237	7.23	0.644
9	0.12	0.35	1.02	0.07205	7.20	0.645
10	0.17	0.41	1.01	0.07191	7.18	0.645
11	0.25	0.50	1.01	0.07164	7.16	0.646
12	0.34	0.58	1	0.0715	7.14	0.646
13	0.50	0.71	1.01	0.07108	7.10	0.647
14	0.75	0.87	1	0.07044	7.04	0.648
15	1.00	1.00	1	0.06989	6.98	0.649
16	1.50	1.23	1	0.06966	6.96	0.649
17	2.00	1.41	0.999	0.06947	6.94	0.649
18	3.00	1.73	0.999	0.06906	6.90	0.650
19	4.00	2.00	0.999	0.06869	6.86	0.651
20	5.00	2.24	0.999	0.06846	6.84	0.651
21	6.00	2.45	0.999	0.06805	6.80	0.652
22	7.00	2.65	0.999	0.06773	6.77	0.652
23	8.00	2.83	1	0.06754	6.75	0.653
24	9.00	3.00	0.999	0.06736	6.73	0.653
25	10.00	3.16	0.999	0.06727	6.72	0.653
26	12.00	3.46	0.998	0.06713	6.71	0.654
27	14.00	3.74	0.999	0.06699	6.69	0.654
28	16.00	4.00	0.999	0.0669	6.68	0.654
29	18.00	4.24	0.999	0.06685	6.68	0.654
30	20.00	4.47	0.998	0.06681	6.67	0.654
31	22.00	4.69	0.999	0.06681	6.67	0.654
32	24.00	4.90	1	0.06676	6.67	0.654
33	26.00	5.10	0.999	0.06672	6.66	0.654
34	28.00	5.29	0.998	0.06667	6.66	0.654
35	30.00	5.48	1	0.06662	6.66	0.654
36	35.00	5.92	0.998	0.06653	6.65	0.655
37	40.00	6.32	1	0.06649	6.64	0.655
38	45.00	6.71	0.999	0.06649	6.64	0.655
39	50.00	7.07	0.998	0.06639	6.63	0.655
40	60.00	7.75	0.999	0.06635	6.63	0.655
41	70.00	8.37	0.999	0.06626	6.62	0.655
42	80.00	8.94	0.999	0.06621	6.61	0.655
43	90.00	9.49	0.999	0.06612	6.61	0.655
44	100.00	10.00	0.998	0.06616	6.61	0.655
45	110.00	10.49	0.998	0.06612	6.61	0.655
46	120.00	10.95	1	0.06612	6.61	0.655
47	120.05	10.96	0.999	0.06612	6.61	0.655

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 13 of 14
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.998	0.06612	6.61	0.655
2	0.01	0.09	0.868	0.06612	6.61	0.655
3	0.02	0.13	0.493	0.0646	6.45	0.658
4	0.03	0.16	0.4	0.06391	6.38	0.659
5	0.04	0.19	0.356	0.06318	6.31	0.661
6	0.05	0.23	0.314	0.06239	6.23	0.662
7	0.07	0.27	0.292	0.06203	6.20	0.663
8	0.08	0.29	0.285	0.06184	6.18	0.663
9	0.12	0.35	0.271	0.06161	6.16	0.663
10	0.17	0.41	0.264	0.06111	6.10	0.664
11	0.25	0.50	0.26	0.0606	6.05	0.665
12	0.34	0.58	0.258	0.06028	6.02	0.666
13	0.50	0.71	0.255	0.05986	5.98	0.666
14	0.75	0.87	0.254	0.05954	5.95	0.667
15	1.00	1.00	0.253	0.05922	5.92	0.668
16	1.50	1.23	0.251	0.05876	5.87	0.668
17	2.00	1.41	0.253	0.05858	5.85	0.669
18	3.00	1.73	0.251	0.05812	5.81	0.670
19	4.00	2.00	0.252	0.05757	5.75	0.670
20	5.00	2.24	0.25	0.05706	5.70	0.671
21	6.00	2.45	0.25	0.0566	5.65	0.672
22	7.00	2.65	0.251	0.05619	5.61	0.673
23	8.00	2.83	0.251	0.05577	5.57	0.674
24	9.00	3.00	0.251	0.0555	5.54	0.674
25	10.00	3.16	0.25	0.05499	5.49	0.675
26	12.00	3.46	0.251	0.05444	5.44	0.676
27	14.00	3.74	0.251	0.0543	5.42	0.676
28	16.00	4.00	0.25	0.05403	5.40	0.677
29	18.00	4.24	0.25	0.0538	5.37	0.677
30	20.00	4.47	0.251	0.05357	5.35	0.678
31	22.00	4.69	0.25	0.05334	5.33	0.678
32	24.00	4.90	0.25	0.05324	5.32	0.678
33	26.00	5.10	0.25	0.05311	5.31	0.678
34	28.00	5.29	0.25	0.05297	5.29	0.679
35	30.00	5.48	0.25	0.05288	5.28	0.679
36	35.00	5.92	0.25	0.05283	5.28	0.679
37	40.00	6.32	0.25	0.0526	5.25	0.679
38	45.00	6.71	0.25	0.05246	5.24	0.680
39	50.00	7.07	0.25	0.05232	5.23	0.680
40	60.00	7.75	0.25	0.05209	5.20	0.680
41	70.00	8.37	0.25	0.05196	5.19	0.680
42	80.00	8.94	0.25	0.05168	5.16	0.681
43	90.00	9.49	0.25	0.05154	5.15	0.681
44	100.00	10.00	0.25	0.05127	5.12	0.682
45	110.00	10.49	0.25	0.05108	5.10	0.682
46	120.00	10.95	0.25	0.05085	5.08	0.682
47	120.05	10.96	0.251	0.05085	5.08	0.682

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/4/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

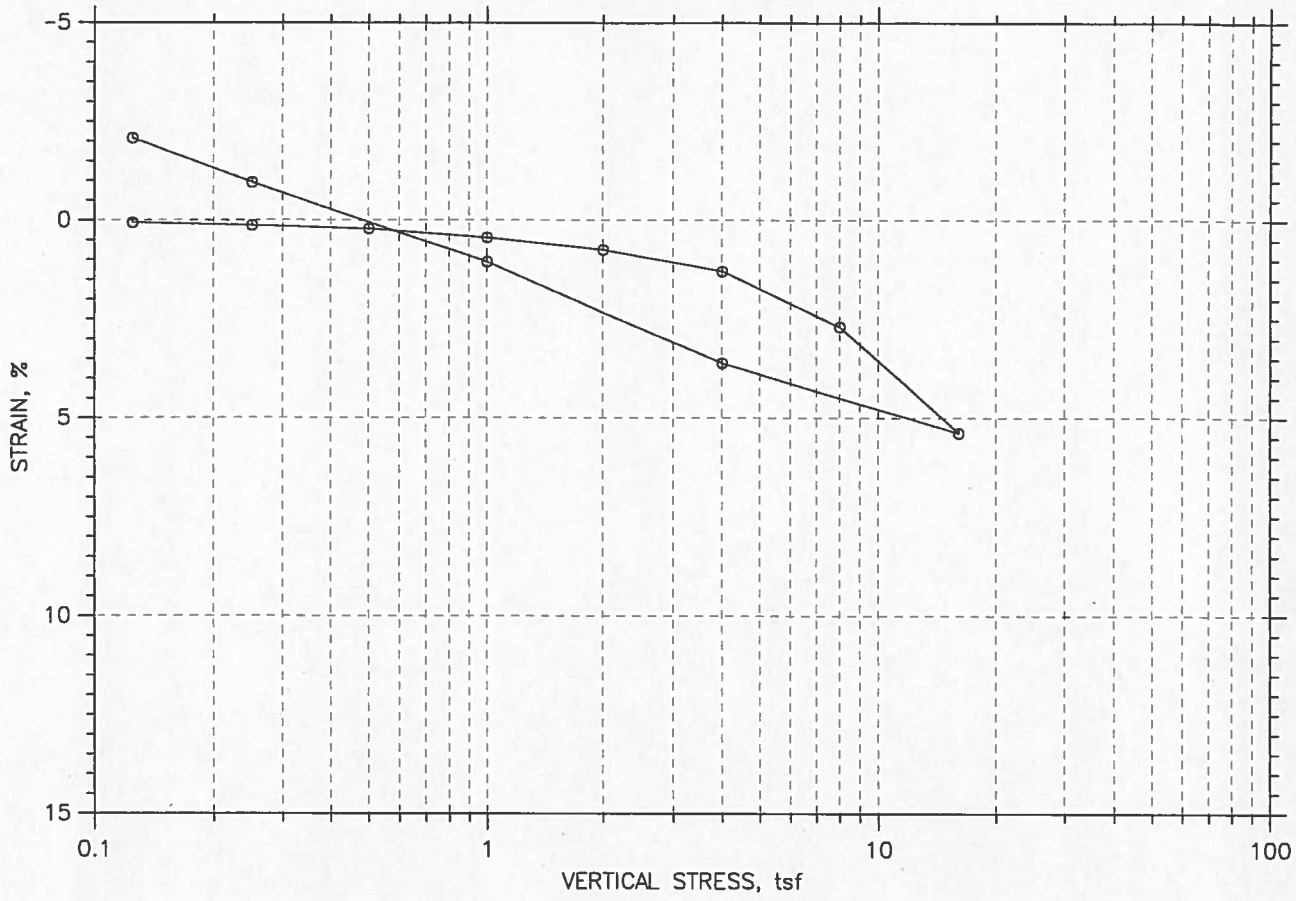
Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

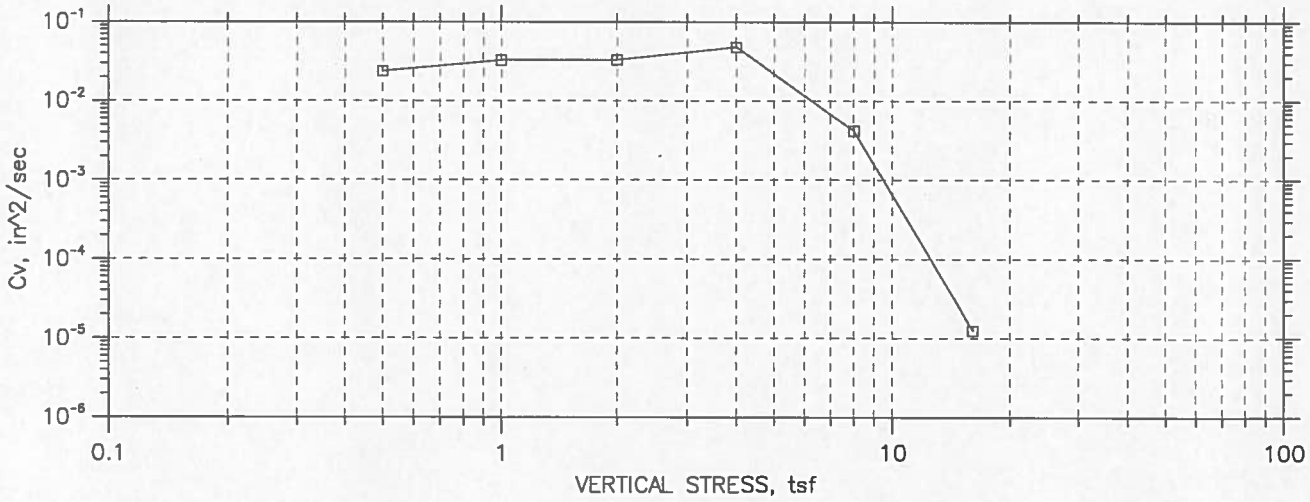
Constant Load Step: 14 of 14
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	0.05085	5.08	0.682
2	0.01	0.09	0.229	0.05085	5.08	0.682
3	0.02	0.13	0.177	0.05067	5.06	0.683
4	0.03	0.16	0.158	0.05048	5.04	0.683
5	0.04	0.19	0.15	0.05044	5.04	0.683
6	0.05	0.23	0.138	0.05035	5.03	0.683
7	0.07	0.27	0.134	0.05026	5.02	0.683
8	0.08	0.29	0.133	0.05021	5.02	0.684
9	0.12	0.35	0.13	0.05012	5.01	0.684
10	0.17	0.41	0.127	0.04998	4.99	0.684
11	0.25	0.50	0.128	0.04989	4.98	0.684
12	0.34	0.58	0.127	0.04984	4.98	0.684
13	0.50	0.71	0.125	0.0497	4.97	0.684
14	0.75	0.87	0.127	0.04957	4.95	0.685
15	1.00	1.00	0.125	0.04947	4.94	0.685
16	1.50	1.23	0.124	0.0492	4.91	0.685
17	2.00	1.42	0.125	0.04892	4.89	0.686
18	3.00	1.73	0.124	0.04865	4.86	0.686
19	4.00	2.00	0.124	0.04851	4.85	0.687
20	5.00	2.24	0.124	0.04842	4.84	0.687
21	6.00	2.45	0.125	0.04832	4.83	0.687
22	7.00	2.65	0.125	0.04819	4.81	0.687
23	8.00	2.83	0.125	0.04809	4.80	0.687
24	9.00	3.00	0.124	0.04805	4.80	0.687
25	10.00	3.16	0.125	0.048	4.80	0.687
26	12.00	3.46	0.123	0.04786	4.78	0.688
27	14.00	3.74	0.124	0.04773	4.77	0.688
28	16.00	4.00	0.124	0.04763	4.76	0.688
29	18.00	4.24	0.124	0.0474	4.74	0.688
30	20.00	4.47	0.124	0.04727	4.72	0.689
31	22.00	4.69	0.124	0.04717	4.71	0.689
32	24.00	4.90	0.124	0.04694	4.69	0.689
33	26.00	5.10	0.125	0.04676	4.67	0.690
34	28.00	5.29	0.125	0.04662	4.66	0.690
35	30.00	5.48	0.124	0.04658	4.65	0.690
36	35.00	5.92	0.123	0.04616	4.61	0.691
37	40.00	6.32	0.123	0.04593	4.59	0.691
38	45.00	6.71	0.124	0.04589	4.58	0.691
39	50.00	7.07	0.124	0.04575	4.57	0.691
40	60.00	7.75	0.124	0.04552	4.55	0.692
41	70.00	8.37	0.124	0.04543	4.54	0.692
42	80.00	8.94	0.124	0.04534	4.53	0.692
43	90.00	9.49	0.125	0.04534	4.53	0.692
44	100.00	10.00	0.125	0.04529	4.52	0.692
45	110.00	10.49	0.124	0.04524	4.52	0.692
46	120.00	10.95	0.124	0.0452	4.52	0.692
47	120.01	10.96	0.123	0.0452	4.52	0.692

CONSOLIDATION TEST DATA

SUMMARY REPORT



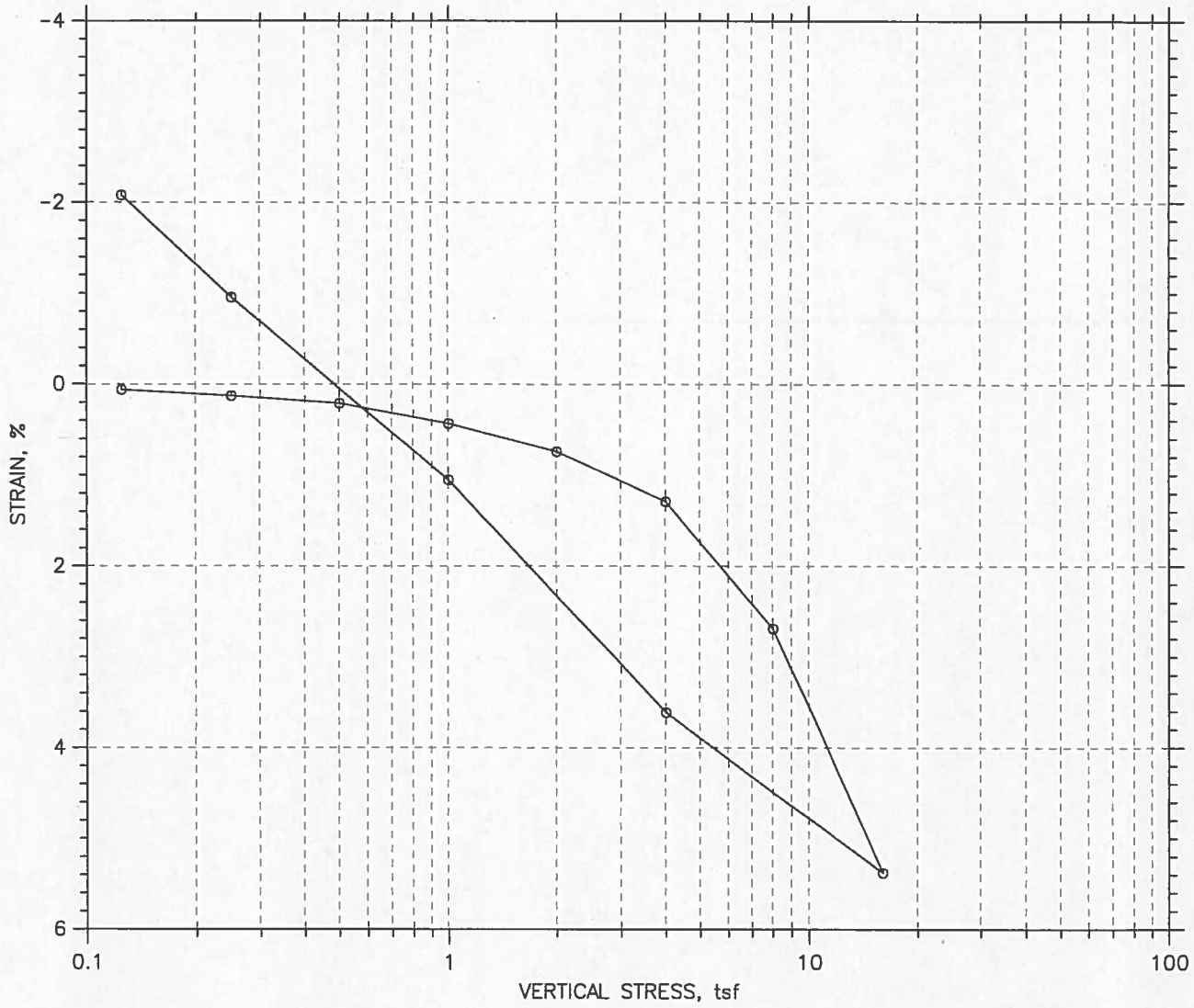


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-266
	Boring No.: B-07	Tested By: SKK	Checked By: SKK
	Sample No.: 19-266	Test Date: 4/15/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Wed, 22-MAY-2019 14:05:17

CONSOLIDATION TEST DATA

SUMMARY REPORT



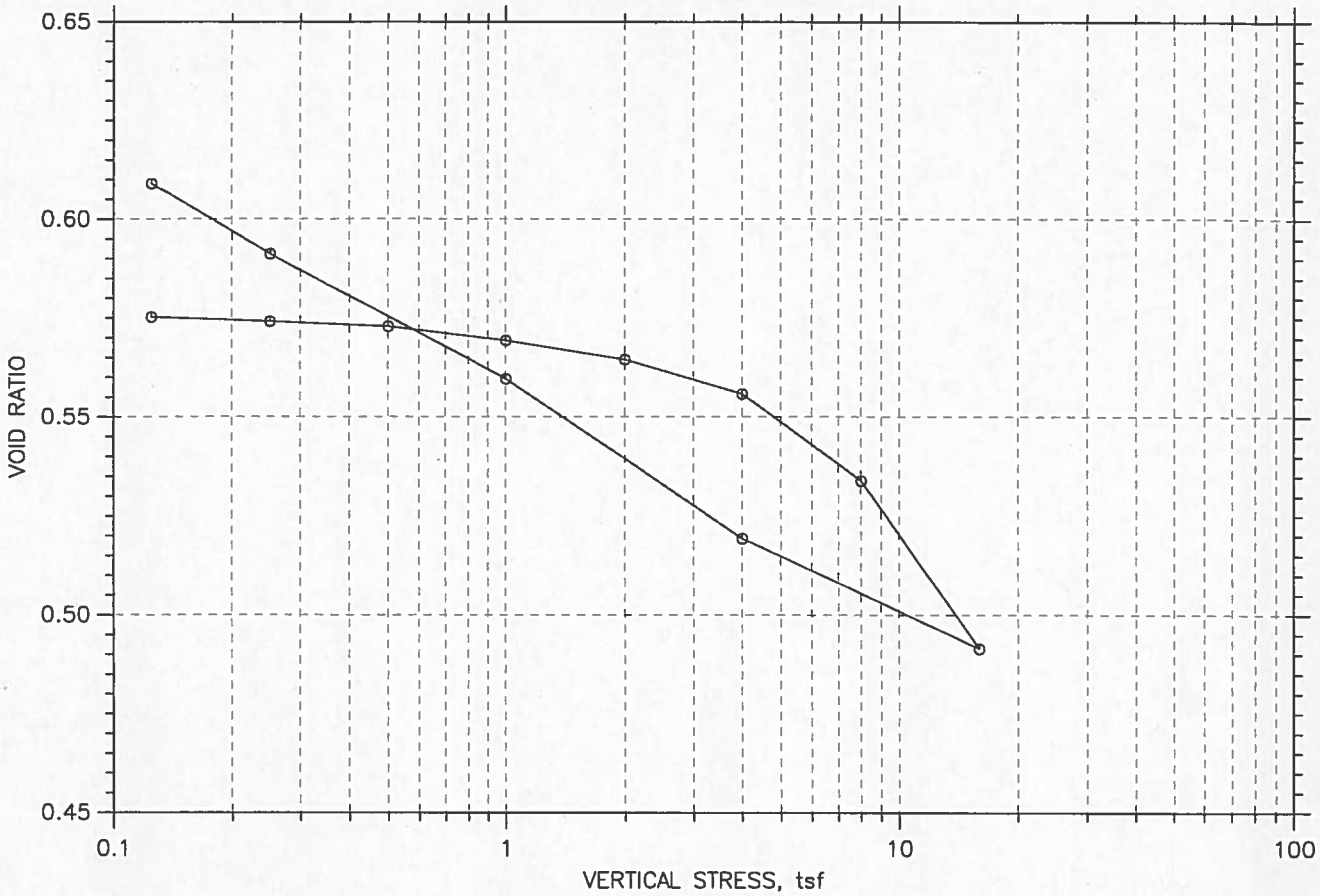
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	19.18	21.99
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	109.3	106.9
Compression Index: 3.81959e-313				Saturation, %	91.86	99.12
Diameter: 2.5 in		Height: 1.005 in		Void Ratio	0.58	0.61
LL: ---	PL: ---	PI: ---	GS: 2.76			

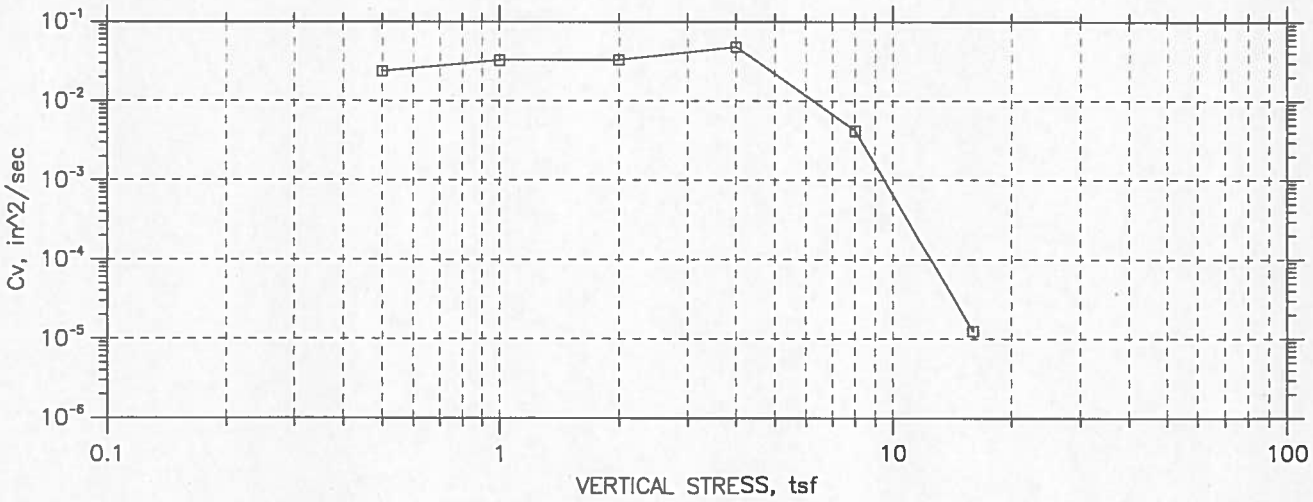
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-266
	Boring No.: B-07	Tested By: SKK	Checked By: SKK
	Sample No.: 19-266	Test Date: 4/15/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Wed, 22-MAY-2019 14:05:17

CONSOLIDATION TEST DATA

SUMMARY REPORT



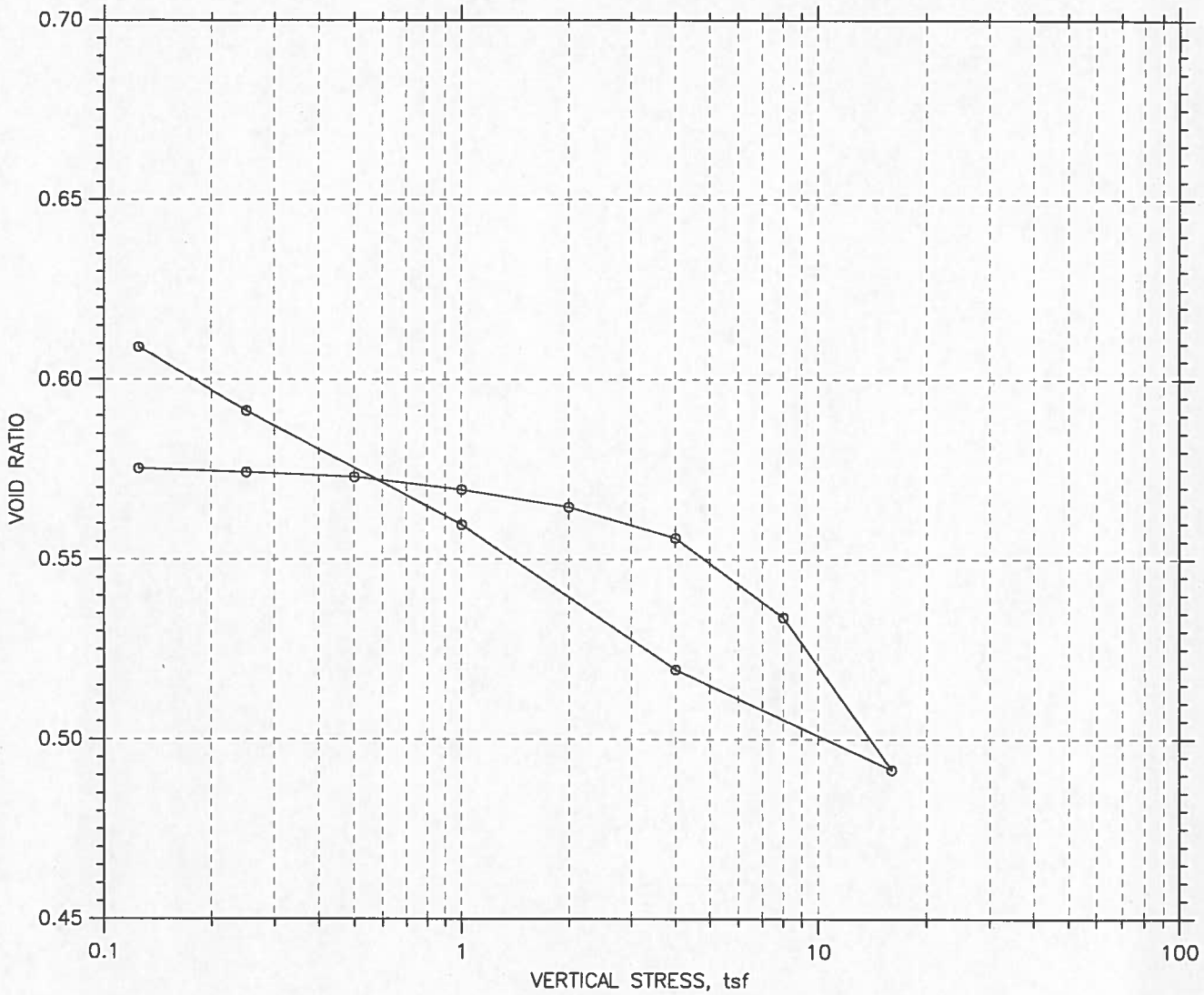


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-266
	Boring No.: B-07	Tested By: SKK	Checked By: SKK
	Sample No.: 19-266	Test Date: 4/15/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Wed, 22-MAY-2019 14:05:34

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	19.18	21.99
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	109.3	106.9
Compression Index: 3.81959e-313				Saturation, %	91.86	99.12
Diameter: 2.5 in		Height: 1.005 in		Void Ratio	0.58	0.61
LL: ---	PL: ---	PI: ---	GS: 2.76			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-266
	Boring No.: B-07	Tested By: SKK	Checked By: SKK
	Sample No.: 19-266	Test Date: 4/15/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Wed, 22-MAY-2019 14:05:34

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/15/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Measured Specific Gravity: 2.76
Initial Void Ratio: 0.58
Final Void Ratio: 0.61

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	177.23	278.85	282.83	226.12
Wt. Container + Dry Soil, gm	159.46	251.7	251.7	195.01
Wt. Container, gm	70.48	110.15	110.15	53.54
Wt. Dry Soil, gm	88.98	141.55	141.55	141.47
Water Content, %	19.97	19.18	21.99	21.99
Void Ratio	---	0.58	0.61	---
Degree of Saturation, %	---	91.86	99.12	---
Dry Unit Weight, pcf	---	109.31	106.86	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/15/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.0006437	0.575	0.06	0.0	0.00e+000	5.12e-003	0.00e+000
2	0.25	0.001333	0.574	0.13	0.0	0.00e+000	5.49e-003	0.00e+000
3	0.5	0.002161	0.573	0.22	0.1	5.63e-002	3.29e-003	3.47e-003
4	1	0.004414	0.569	0.44	0.1	4.75e-002	4.48e-003	3.99e-003
5	2	0.007495	0.565	0.75	0.1	5.47e-002	3.07e-003	3.14e-003
6	4	0.01301	0.556	1.29	0.0	8.61e-002	2.75e-003	4.43e-003
7	8	0.02704	0.534	2.69	0.7	4.61e-003	3.49e-003	3.01e-004
8	16	0.05407	0.491	5.38	207.5	1.58e-005	3.36e-003	9.98e-007
9	4	0.03632	0.519	3.61	179.8	1.81e-005	1.47e-003	4.99e-007
10	1	0.01062	0.560	1.06	498.8	6.82e-006	8.52e-003	1.09e-006
11	0.25	-0.009564	0.591	-0.95	0.0	0.00e+000	2.68e-002	0.00e+000
12	0.125	-0.02087	0.609	-2.08	0.0	0.00e+000	9.00e-002	0.00e+000

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.0006437	0.575	0.06	0.0	0.00e+000	5.12e-003	0.00e+000
2	0.25	0.001333	0.574	0.13	0.0	0.00e+000	5.49e-003	0.00e+000
3	0.5	0.002161	0.573	0.22	0.0	0.00e+000	3.29e-003	0.00e+000
4	1	0.004414	0.569	0.44	0.0	0.00e+000	4.48e-003	0.00e+000
5	2	0.007495	0.565	0.75	0.0	0.00e+000	3.07e-003	0.00e+000
6	4	0.01301	0.556	1.29	0.0	0.00e+000	2.75e-003	0.00e+000
7	8	0.02704	0.534	2.69	0.0	0.00e+000	3.49e-003	0.00e+000
8	16	0.05407	0.491	5.38	0.0	0.00e+000	3.36e-003	0.00e+000
9	4	0.03632	0.519	3.61	0.0	0.00e+000	1.47e-003	0.00e+000
10	1	0.01062	0.560	1.06	0.0	0.00e+000	8.52e-003	0.00e+000
11	0.25	-0.009564	0.591	-0.95	0.0	0.00e+000	2.68e-002	0.00e+000
12	0.125	-0.02087	0.609	-2.08	0.0	0.00e+000	9.00e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/15/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 1 of 12
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00448	-0.001335	-0.13	0.578
2	0.01	0.09	0.0101	-0.001335	-0.13	0.578
3	0.02	0.13	0.0471	-0.001197	-0.12	0.578
4	0.03	0.16	0.0706	-0.0009215	-0.09	0.578
5	0.04	0.19	0.0863	-0.0008295	-0.08	0.578
6	0.05	0.23	0.101	-0.0006916	-0.07	0.577
7	0.07	0.26	0.108	-0.0006456	-0.06	0.577
8	0.09	0.30	0.115	-0.0005996	-0.06	0.577
9	0.12	0.34	0.121	-0.0005536	-0.06	0.577
10	0.17	0.41	0.124	-0.0005077	-0.05	0.577
11	0.25	0.50	0.131	-0.0005077	-0.05	0.577
12	0.33	0.58	0.128	-0.0006456	-0.06	0.577
13	0.37	0.60	0.128	-0.0006916	-0.07	0.577

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/15/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 2 of 12
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.128	-0.002945	-0.29	0.581
2	0.01	0.09	0.128	-0.002945	-0.29	0.581
3	0.02	0.13	0.178	-0.002853	-0.28	0.581
4	0.03	0.16	0.207	-0.002531	-0.25	0.580
5	0.04	0.19	0.217	-0.002393	-0.24	0.580
6	0.05	0.23	0.232	-0.002163	-0.22	0.580
7	0.07	0.27	0.24	-0.002071	-0.21	0.580
8	0.08	0.29	0.243	-0.002025	-0.20	0.579
9	0.12	0.35	0.248	-0.002025	-0.20	0.579
10	0.17	0.41	0.249	-0.001979	-0.20	0.579
11	0.25	0.50	0.254	-0.002025	-0.20	0.579
12	0.34	0.58	0.258	-0.002071	-0.21	0.580
13	0.40	0.63	0.251	-0.002255	-0.22	0.580

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/15/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 3 of 12
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.252	-0.004507	-0.45	0.583
2	0.01	0.09	0.255	-0.004507	-0.45	0.583
3	0.02	0.13	0.334	-0.004323	-0.43	0.583
4	0.03	0.16	0.394	-0.004139	-0.41	0.583
5	0.04	0.19	0.431	-0.004001	-0.40	0.583
6	0.05	0.23	0.468	-0.003771	-0.38	0.582
7	0.07	0.27	0.483	-0.003679	-0.37	0.582
8	0.08	0.29	0.487	-0.003633	-0.36	0.582
9	0.12	0.34	0.494	-0.003633	-0.36	0.582
10	0.17	0.41	0.497	-0.003633	-0.36	0.582
11	0.25	0.50	0.499	-0.003587	-0.36	0.582
12	0.33	0.58	0.5	-0.003587	-0.36	0.582
13	0.50	0.71	0.504	-0.003633	-0.36	0.582
14	0.58	0.76	0.504	-0.003679	-0.37	0.582

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/15/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 4 of 12
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.504	-0.005011	-0.50	0.584
2	0.01	0.09	0.518	-0.005011	-0.50	0.584
3	0.02	0.13	0.831	-0.004505	-0.45	0.583
4	0.03	0.16	0.918	-0.003815	-0.38	0.582
5	0.04	0.19	0.953	-0.003539	-0.35	0.582
6	0.05	0.23	0.979	-0.003217	-0.32	0.581
7	0.07	0.27	0.986	-0.00308	-0.31	0.581
8	0.08	0.29	0.989	-0.002988	-0.30	0.581
9	0.12	0.35	0.995	-0.00285	-0.28	0.581
10	0.17	0.41	0.998	-0.002758	-0.27	0.581
11	0.25	0.50	0.997	-0.002758	-0.27	0.581
12	0.33	0.58	0.998	-0.002712	-0.27	0.581
13	0.50	0.71	0.998	-0.002666	-0.27	0.580
14	0.75	0.87	0.999	-0.002666	-0.27	0.580
15	1.00	1.00	0.999	-0.002666	-0.27	0.580
16	1.18	1.09	1	-0.002758	-0.27	0.581

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/15/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 5 of 12
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	1	-0.00492	-0.49	0.584
2	0.01	0.09	1.15	-0.00492	-0.49	0.584
3	0.02	0.13	1.81	-0.003678	-0.37	0.582
4	0.03	0.16	1.91	-0.002989	-0.30	0.581
5	0.04	0.19	1.95	-0.002667	-0.27	0.580
6	0.05	0.23	1.98	-0.002391	-0.24	0.580
7	0.07	0.27	1.98	-0.002207	-0.22	0.580
8	0.08	0.29	1.99	-0.002115	-0.21	0.580
9	0.12	0.34	1.99	-0.002069	-0.21	0.580
10	0.17	0.41	2	-0.002023	-0.20	0.579
11	0.25	0.50	2	-0.001931	-0.19	0.579
12	0.34	0.58	2	-0.001931	-0.19	0.579
13	0.50	0.71	2	-0.001839	-0.18	0.579
14	0.75	0.87	2	-0.001747	-0.17	0.579
15	1.00	1.00	2	-0.001747	-0.17	0.579
16	1.50	1.23	2	-0.001701	-0.17	0.579
17	2.00	1.42	2	-0.001655	-0.16	0.579
18	3.00	1.73	2	-0.001655	-0.16	0.579
19	4.00	2.00	2	-0.001747	-0.17	0.579
20	4.82	2.20	2	-0.001839	-0.18	0.579

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/15/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 6 of 12
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	-0.004415	-0.44	0.583
2	0.01	0.09	2.53	-0.004415	-0.44	0.583
3	0.02	0.13	3.76	-0.001933	-0.19	0.579
4	0.03	0.16	3.9	-0.001059	-0.11	0.578
5	0.04	0.19	3.94	-0.0005072	-0.05	0.577
6	0.05	0.23	3.97	-9.34e-005	-0.01	0.576
7	0.07	0.26	3.98	-4.742e-005	-0.00	0.576
8	0.09	0.30	3.98	-4.742e-005	-0.00	0.576
9	0.12	0.34	3.99	-1.437e-006	-0.00	0.576
10	0.17	0.41	3.99	-1.437e-006	-0.00	0.576
11	0.25	0.50	3.99	-1.437e-006	-0.00	0.576
12	0.34	0.58	4	4.454e-005	0.00	0.576
13	0.50	0.71	4	9.052e-005	0.01	0.576
14	0.75	0.87	4	0.0001365	0.01	0.576
15	1.00	1.00	4	0.0001825	0.02	0.576
16	1.50	1.23	4	0.0003204	0.03	0.576
17	2.00	1.41	4	0.0003664	0.04	0.576
18	3.00	1.73	4	0.0005043	0.05	0.575
19	4.00	2.00	4	0.0005503	0.05	0.575
20	5.00	2.24	4	0.0006882	0.07	0.575
21	6.00	2.45	4	0.0007802	0.08	0.575
22	7.00	2.65	4	0.0008262	0.08	0.575
23	8.00	2.83	4	0.0008722	0.09	0.575
24	9.00	3.00	4	0.0008722	0.09	0.575
25	10.00	3.16	4	0.0009181	0.09	0.575
26	12.00	3.46	4	0.0009641	0.10	0.575
27	14.00	3.74	4	0.0009641	0.10	0.575
28	16.00	4.00	4	0.00101	0.10	0.575
29	18.00	4.24	4	0.001102	0.11	0.575
30	20.00	4.47	4	0.001148	0.11	0.574
31	22.00	4.69	4	0.001148	0.11	0.574
32	24.00	4.90	4	0.001194	0.12	0.574
33	26.00	5.10	4	0.00124	0.12	0.574
34	28.00	5.29	4	0.00124	0.12	0.574
35	30.00	5.48	4	0.00124	0.12	0.574
36	35.00	5.92	4	0.001332	0.13	0.574
37	40.00	6.32	4	0.001332	0.13	0.574
38	45.00	6.71	4	0.001286	0.13	0.574
39	50.00	7.07	4	0.001286	0.13	0.574
40	60.00	7.75	4	0.001286	0.13	0.574
41	70.00	8.37	4	0.001286	0.13	0.574
42	80.00	8.94	4	0.001102	0.11	0.575
43	80.20	8.96	4	0.001102	0.11	0.575

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/15/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 7 of 12
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	-0.002207	-0.22	0.580
2	0.01	0.09	4.79	-0.002207	-0.22	0.580
3	0.02	0.13	7.71	0.002115	0.21	0.573
4	0.03	0.16	7.87	0.00377	0.38	0.570
5	0.04	0.19	7.91	0.004414	0.44	0.569
6	0.05	0.23	7.95	0.005012	0.50	0.568
7	0.07	0.27	7.97	0.005149	0.51	0.568
8	0.08	0.29	7.97	0.005241	0.52	0.568
9	0.12	0.35	7.98	0.005609	0.56	0.567
10	0.17	0.41	7.99	0.005793	0.58	0.567
11	0.25	0.50	7.99	0.006069	0.60	0.567
12	0.34	0.58	7.99	0.006805	0.68	0.566
13	0.50	0.71	7.99	0.007356	0.73	0.565
14	0.75	0.87	8	0.007632	0.76	0.564
15	1.00	1.00	8	0.00777	0.77	0.564
16	1.50	1.23	8	0.007908	0.79	0.564
17	2.00	1.42	8	0.007954	0.79	0.564
18	3.00	1.73	8	0.008	0.80	0.564
19	4.00	2.00	8	0.008184	0.81	0.563
20	5.00	2.24	8	0.008414	0.84	0.563
21	6.00	2.45	8	0.008598	0.86	0.563
22	7.00	2.65	8	0.008828	0.88	0.562
23	8.00	2.83	8	0.008828	0.88	0.562
24	9.00	3.00	8	0.00892	0.89	0.562
25	10.00	3.16	8	0.009012	0.90	0.562
26	12.00	3.46	8	0.00915	0.91	0.562
27	14.00	3.74	8	0.009334	0.93	0.562
28	16.00	4.00	8	0.009517	0.95	0.561
29	18.00	4.24	8	0.009701	0.97	0.561
30	20.00	4.47	8	0.009839	0.98	0.561
31	22.00	4.69	8	0.009977	0.99	0.561
32	24.00	4.90	8	0.01007	1.00	0.560
33	26.00	5.10	8	0.01021	1.02	0.560
34	28.00	5.29	8	0.0103	1.02	0.560
35	30.00	5.48	8	0.01035	1.03	0.560
36	35.00	5.92	8	0.01053	1.05	0.560
37	40.00	6.32	8	0.01067	1.06	0.560
38	45.00	6.71	8	0.0108	1.08	0.559
39	50.00	7.07	8	0.01094	1.09	0.559
40	60.00	7.75	8	0.01113	1.11	0.559
41	70.00	8.37	8	0.01126	1.12	0.559
42	80.00	8.94	8	0.01136	1.13	0.558
43	90.00	9.49	8	0.01154	1.15	0.558
44	100.00	10.00	8	0.01163	1.16	0.558
45	110.00	10.49	8	0.01172	1.17	0.558
46	120.00	10.95	8	0.01182	1.18	0.558
47	120.04	10.96	8	0.01182	1.18	0.558

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/15/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 8 of 12
Applied Stress: 16 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.006391	0.64	0.566
2	0.01	0.09	10.5	0.006391	0.64	0.566
3	0.02	0.13	15.8	0.01058	1.05	0.560
4	0.03	0.16	15.9	0.0154	1.53	0.552
5	0.04	0.19	15.9	0.01563	1.56	0.552
6	0.05	0.23	16	0.01582	1.57	0.551
7	0.07	0.27	16	0.016	1.59	0.551
8	0.08	0.29	16	0.01614	1.61	0.551
9	0.12	0.35	16	0.01623	1.62	0.551
10	0.17	0.41	16	0.01637	1.63	0.551
11	0.25	0.50	16	0.0166	1.65	0.550
12	0.34	0.58	16	0.01697	1.69	0.550
13	0.50	0.71	16	0.01766	1.76	0.549
14	0.75	0.87	16	0.01802	1.79	0.548
15	1.00	1.00	16	0.01876	1.87	0.547
16	1.50	1.23	16	0.01922	1.91	0.546
17	2.00	1.42	16	0.01959	1.95	0.546
18	3.00	1.73	16	0.02019	2.01	0.545
19	4.00	2.00	16	0.02051	2.04	0.544
20	5.00	2.24	16	0.02074	2.06	0.544
21	6.00	2.45	16	0.02097	2.09	0.543
22	7.00	2.65	16	0.0211	2.10	0.543
23	8.00	2.83	16	0.02129	2.12	0.543
24	9.00	3.00	16	0.02138	2.13	0.543
25	10.00	3.16	16	0.02147	2.14	0.543
26	12.00	3.46	16	0.02184	2.17	0.542
27	14.00	3.74	16	0.02221	2.21	0.541
28	16.00	4.00	16	0.0223	2.22	0.541
29	18.00	4.24	16	0.02244	2.23	0.541
30	20.00	4.47	16	0.02267	2.26	0.541
31	22.00	4.69	16	0.02308	2.30	0.540
32	24.00	4.90	16	0.02345	2.33	0.539
33	26.00	5.10	16	0.02373	2.36	0.539
34	28.00	5.29	16	0.02405	2.39	0.539
35	30.00	5.48	16	0.02419	2.41	0.538
36	35.00	5.92	16	0.02465	2.45	0.538
37	40.00	6.32	16	0.02515	2.50	0.537
38	45.00	6.71	16	0.02543	2.53	0.536
39	50.00	7.07	16	0.02566	2.55	0.536
40	60.00	7.75	16	0.02584	2.57	0.536
41	70.00	8.37	16	0.02671	2.66	0.534
42	80.00	8.94	16	0.02754	2.74	0.533
43	90.00	9.49	16	0.02809	2.80	0.532
44	100.00	10.00	16	0.02842	2.83	0.532
45	110.00	10.49	16	0.02874	2.86	0.531
46	120.00	10.95	16	0.02906	2.89	0.531
47	130.00	11.40	16	0.02989	2.97	0.529
48	140.00	11.83	16	0.03021	3.01	0.529
49	150.00	12.25	16	0.03071	3.06	0.528
50	160.00	12.65	16	0.03099	3.08	0.528
51	170.00	13.04	16	0.03122	3.11	0.527
52	180.00	13.42	16	0.03159	3.14	0.527
53	190.00	13.78	16	0.03214	3.20	0.526
54	200.00	14.14	16	0.03246	3.23	0.525
55	210.00	14.49	16	0.03278	3.26	0.525
56	220.00	14.83	16	0.03292	3.28	0.525
57	230.00	15.17	16	0.03311	3.29	0.524
58	240.00	15.49	16	0.0332	3.30	0.524
59	250.00	15.81	16	0.03329	3.31	0.524
60	260.00	16.12	16	0.03343	3.33	0.524
61	260.84	16.15	16	0.03343	3.33	0.524

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/15/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 9 of 12
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	16	0.05196	5.17	0.495
2	0.01	0.09	13.4	0.05196	5.17	0.495
3	0.02	0.13	4.46	0.04828	4.80	0.501
4	0.03	0.16	4.1	0.04382	4.36	0.508
5	0.04	0.19	4.04	0.0434	4.32	0.508
6	0.05	0.23	4.02	0.04313	4.29	0.509
7	0.07	0.27	4.02	0.04294	4.27	0.509
8	0.08	0.29	4.02	0.0429	4.27	0.509
9	0.12	0.34	4.01	0.04276	4.25	0.509
10	0.17	0.41	4.01	0.04262	4.24	0.509
11	0.25	0.50	4	0.04239	4.22	0.510
12	0.34	0.58	4.01	0.04212	4.19	0.510
13	0.50	0.71	4	0.0417	4.15	0.511
14	0.75	0.87	4	0.04129	4.11	0.512
15	1.00	1.00	4	0.04111	4.09	0.512
16	1.50	1.23	4	0.04083	4.06	0.512
17	2.00	1.41	4	0.04074	4.05	0.512
18	3.00	1.73	4	0.04046	4.03	0.513
19	4.00	2.00	4	0.04019	4.00	0.513
20	5.00	2.24	4	0.04	3.98	0.514
21	6.00	2.45	4	0.03986	3.97	0.514
22	7.00	2.65	4	0.03982	3.96	0.514
23	8.00	2.83	4	0.03977	3.96	0.514
24	9.00	3.00	4	0.03973	3.95	0.514
25	10.00	3.16	4	0.03963	3.94	0.514
26	12.00	3.46	4	0.0394	3.92	0.514
27	14.00	3.74	4	0.03931	3.91	0.515
28	16.00	4.00	4	0.03917	3.90	0.515
29	18.00	4.24	4	0.03904	3.88	0.515
30	20.00	4.47	4	0.03894	3.88	0.515
31	22.00	4.69	4	0.03881	3.86	0.515
32	24.00	4.90	4	0.03867	3.85	0.516
33	26.00	5.10	4	0.03853	3.83	0.516
34	28.00	5.29	4	0.03839	3.82	0.516
35	30.00	5.48	4	0.03825	3.81	0.516
36	35.00	5.92	4	0.03802	3.78	0.517
37	40.00	6.32	4	0.03779	3.76	0.517
38	45.00	6.71	4	0.0377	3.75	0.517
39	50.00	7.07	4	0.03743	3.72	0.518
40	60.00	7.75	4	0.03683	3.66	0.519
41	70.00	8.37	4	0.03642	3.62	0.519
42	80.00	8.94	4	0.03614	3.60	0.520
43	90.00	9.49	4	0.03573	3.55	0.520
44	100.00	10.00	4	0.03536	3.52	0.521
45	110.00	10.49	4	0.03504	3.49	0.521
46	120.00	10.95	4	0.03494	3.48	0.521
47	130.00	11.40	4	0.03485	3.47	0.522
48	140.00	11.83	4	0.03476	3.46	0.522
49	150.00	12.25	4	0.03471	3.45	0.522
50	160.00	12.65	4	0.03458	3.44	0.522
51	170.00	13.04	4	0.03453	3.44	0.522
52	180.00	13.42	4	0.03425	3.41	0.523
53	190.00	13.78	4	0.03421	3.40	0.523
54	200.00	14.14	4	0.03421	3.40	0.523
55	204.85	14.31	4	0.03421	3.40	0.523

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/15/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 10 of 12
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.03421	3.40	0.523
2	0.01	0.09	3.31	0.03421	3.40	0.523
3	0.02	0.13	0.971	0.03219	3.20	0.526
4	0.03	0.16	1.05	0.03173	3.16	0.527
5	0.03	0.19	1.02	0.03159	3.14	0.527
6	0.05	0.23	1.01	0.0314	3.12	0.527
7	0.07	0.26	1.01	0.03131	3.12	0.527
8	0.09	0.30	1.01	0.03122	3.11	0.527
9	0.12	0.34	1.01	0.03108	3.09	0.528
10	0.17	0.41	1.01	0.03099	3.08	0.528
11	0.25	0.50	1	0.03085	3.07	0.528
12	0.34	0.58	0.999	0.03071	3.06	0.528
13	0.50	0.71	1	0.03058	3.04	0.528
14	0.75	0.87	1	0.03039	3.02	0.529
15	1.00	1.00	1	0.03021	3.01	0.529
16	1.50	1.23	0.999	0.02998	2.98	0.529
17	2.00	1.42	0.999	0.02984	2.97	0.529
18	3.00	1.73	0.999	0.02961	2.95	0.530
19	4.00	2.00	0.998	0.02947	2.93	0.530
20	5.00	2.24	1	0.02924	2.91	0.530
21	6.00	2.45	1	0.02915	2.90	0.531
22	7.00	2.65	0.999	0.02901	2.89	0.531
23	8.00	2.83	1	0.02892	2.88	0.531
24	9.00	3.00	0.999	0.02883	2.87	0.531
25	10.00	3.16	0.999	0.02874	2.86	0.531
26	12.00	3.46	0.999	0.02869	2.85	0.531
27	14.00	3.74	1	0.0286	2.85	0.531
28	16.00	4.00	0.999	0.02851	2.84	0.532
29	18.00	4.24	0.998	0.02842	2.83	0.532
30	20.00	4.47	0.999	0.02823	2.81	0.532
31	22.00	4.69	1	0.02791	2.78	0.532
32	24.00	4.90	0.998	0.02768	2.75	0.533
33	26.00	5.10	0.999	0.02745	2.73	0.533
34	28.00	5.29	0.998	0.02736	2.72	0.533
35	30.00	5.48	0.999	0.02731	2.72	0.533
36	35.00	5.92	0.999	0.02708	2.69	0.534
37	40.00	6.32	0.999	0.02662	2.65	0.535
38	45.00	6.71	1	0.02616	2.60	0.535
39	50.00	7.07	0.999	0.02575	2.56	0.536
40	60.00	7.75	0.999	0.02515	2.50	0.537
41	70.00	8.37	1	0.02497	2.48	0.537
42	80.00	8.94	0.999	0.0246	2.45	0.538
43	90.00	9.49	0.998	0.02409	2.40	0.538
44	100.00	10.00	1	0.02368	2.36	0.539
45	110.00	10.49	0.999	0.02322	2.31	0.540
46	120.00	10.95	0.998	0.02271	2.26	0.541
47	130.00	11.40	0.999	0.0223	2.22	0.541
48	140.00	11.83	1	0.02198	2.19	0.542
49	150.00	12.25	0.999	0.02166	2.15	0.542
50	160.00	12.65	0.999	0.0212	2.11	0.543
51	170.00	13.04	0.999	0.02106	2.10	0.543
52	180.00	13.42	1	0.02101	2.09	0.543
53	190.00	13.78	0.998	0.02097	2.09	0.543
54	200.00	14.14	1	0.02074	2.06	0.544
55	210.00	14.49	0.998	0.02064	2.05	0.544
56	220.00	14.83	0.999	0.02046	2.04	0.544
57	230.00	15.17	0.999	0.02023	2.01	0.545
58	240.00	15.49	1	0.01954	1.94	0.546
59	250.00	15.81	1	0.01904	1.89	0.546
60	260.00	16.12	0.997	0.0189	1.88	0.547
61	270.00	16.43	0.998	0.01871	1.86	0.547
62	280.00	16.73	0.999	0.01844	1.83	0.547
63	290.00	17.03	0.999	0.0183	1.82	0.548
64	300.00	17.32	0.999	0.01821	1.81	0.548
65	310.00	17.61	1	0.01807	1.80	0.548
66	320.00	17.89	1	0.01789	1.78	0.548
67	330.00	18.17	1	0.01756	1.75	0.549
68	340.00	18.44	0.999	0.0172	1.71	0.549
69	350.00	18.71	0.999	0.01701	1.69	0.550
70	360.00	18.97	0.999	0.01687	1.68	0.550
71	370.00	19.24	1	0.01669	1.66	0.550
72	380.00	19.49	0.999	0.0166	1.65	0.550
73	390.00	19.75	0.999	0.01646	1.64	0.550
74	400.00	20.00	0.999	0.01614	1.61	0.551
75	410.00	20.25	0.999	0.01595	1.59	0.551
76	420.00	20.49	0.999	0.01582	1.57	0.551
77	430.00	20.74	1	0.01568	1.56	0.552
78	440.00	20.98	0.998	0.01559	1.55	0.552
79	450.00	21.21	0.999	0.01531	1.52	0.552
80	460.00	21.45	1	0.01508	1.50	0.553
81	470.00	21.68	0.999	0.0149	1.48	0.553

82	480.00	21.91	1	0.01471	1.46	0.553
83	490.00	22.14	0.999	0.01458	1.45	0.553
84	500.00	22.36	0.999	0.01444	1.44	0.554
85	510.00	22.58	0.998	0.01444	1.44	0.554
86	520.00	22.80	1	0.01435	1.43	0.554
87	530.00	23.02	0.999	0.01425	1.42	0.554
88	540.00	23.24	1	0.01416	1.41	0.554
89	550.00	23.45	0.998	0.01412	1.40	0.554
90	560.00	23.66	0.999	0.01393	1.39	0.554
91	570.00	23.87	0.998	0.01375	1.37	0.555
92	580.00	24.08	0.999	0.01361	1.35	0.555
93	590.00	24.29	0.999	0.01347	1.34	0.555
94	600.00	24.49	1	0.01333	1.33	0.555
95	610.00	24.70	0.999	0.0132	1.31	0.556
96	620.00	24.90	0.998	0.01306	1.30	0.556
97	630.00	25.10	0.999	0.01287	1.28	0.556
98	640.00	25.30	0.998	0.01269	1.26	0.556
99	650.00	25.50	1	0.01251	1.24	0.557
100	660.00	25.69	1	0.01237	1.23	0.557
101	670.00	25.88	0.999	0.01237	1.23	0.557
102	680.00	26.08	0.999	0.01232	1.23	0.557
103	690.00	26.27	0.999	0.01223	1.22	0.557
104	700.00	26.46	0.999	0.01214	1.21	0.557
105	710.00	26.65	0.999	0.01214	1.21	0.557
106	720.00	26.83	1	0.012	1.19	0.557
107	730.00	27.02	0.999	0.01195	1.19	0.558
108	740.00	27.20	0.999	0.01195	1.19	0.558
109	750.00	27.39	0.999	0.01191	1.18	0.558
110	760.00	27.57	1	0.01186	1.18	0.558
111	770.00	27.75	0.999	0.01172	1.17	0.558
112	780.00	27.93	0.999	0.01163	1.16	0.558
113	790.00	28.11	0.998	0.01154	1.15	0.558
114	800.00	28.28	0.999	0.0114	1.13	0.558
115	810.00	28.46	0.997	0.01136	1.13	0.558
116	820.00	28.64	0.999	0.01126	1.12	0.559
117	830.00	28.81	0.998	0.01117	1.11	0.559
118	840.00	28.98	0.999	0.01113	1.11	0.559
119	850.00	29.15	0.999	0.01103	1.10	0.559
120	860.00	29.33	0.999	0.0109	1.08	0.559
121	870.00	29.50	0.999	0.01067	1.06	0.560
122	880.00	29.66	0.999	0.01058	1.05	0.560
123	890.00	29.83	0.999	0.01048	1.04	0.560
124	900.00	30.00	0.999	0.01039	1.03	0.560
125	910.00	30.17	1	0.0103	1.02	0.560
126	920.00	30.33	0.999	0.0103	1.02	0.560
127	930.00	30.50	0.999	0.01025	1.02	0.560
128	940.00	30.66	0.999	0.01021	1.02	0.560
129	950.00	30.82	0.999	0.01012	1.01	0.560
130	960.00	30.98	1	0.009977	0.99	0.561
131	970.00	31.14	0.999	0.009931	0.99	0.561
132	980.00	31.31	0.998	0.009977	0.99	0.561
133	990.00	31.46	0.999	0.009931	0.99	0.561
134	1000.00	31.62	0.998	0.009885	0.98	0.561
135	1010.00	31.78	0.999	0.009885	0.98	0.561
136	1020.00	31.94	0.999	0.009885	0.98	0.561
137	1030.00	32.09	0.999	0.009839	0.98	0.561
138	1040.00	32.25	1	0.009794	0.97	0.561
139	1050.00	32.40	1	0.009794	0.97	0.561
140	1060.00	32.56	0.999	0.009794	0.97	0.561
141	1070.00	32.71	0.999	0.009748	0.97	0.561
142	1080.00	32.86	0.999	0.009748	0.97	0.561
143	1090.00	33.02	0.999	0.009748	0.97	0.561
144	1100.00	33.17	0.999	0.009702	0.97	0.561
145	1110.00	33.32	0.999	0.009748	0.97	0.561
146	1120.00	33.47	1	0.009702	0.97	0.561
147	1130.00	33.62	0.999	0.009702	0.97	0.561
148	1140.00	33.76	0.998	0.009702	0.97	0.561
149	1150.00	33.91	0.999	0.009656	0.96	0.561
150	1160.00	34.06	0.999	0.009656	0.96	0.561
151	1170.00	34.21	0.999	0.009656	0.96	0.561
152	1180.00	34.35	0.999	0.009656	0.96	0.561
153	1190.00	34.50	0.999	0.009656	0.96	0.561
154	1200.00	34.64	0.999	0.00961	0.96	0.561
155	1210.00	34.79	0.999	0.009656	0.96	0.561
156	1220.00	34.93	0.999	0.00961	0.96	0.561
157	1230.00	35.07	0.999	0.00961	0.96	0.561
158	1240.00	35.21	0.999	0.00961	0.96	0.561
159	1250.00	35.36	0.999	0.009564	0.95	0.561
160	1260.00	35.50	0.999	0.009472	0.94	0.561
161	1270.00	35.64	0.999	0.00938	0.93	0.562
162	1280.00	35.78	0.999	0.009334	0.93	0.562
163	1290.00	35.92	0.999	0.009242	0.92	0.562
164	1300.00	36.06	1	0.009196	0.92	0.562
165	1310.00	36.19	0.999	0.009104	0.91	0.562
166	1320.00	36.33	0.998	0.009058	0.90	0.562
167	1330.00	36.47	0.999	0.009012	0.90	0.562
168	1340.00	36.61	1	0.00892	0.89	0.562
169	1350.00	36.74	1	0.00892	0.89	0.562
170	1360.00	36.88	1	0.008828	0.88	0.562
171	1370.00	37.01	0.999	0.008736	0.87	0.563
172	1380.00	37.15	1	0.008736	0.87	0.563
173	1390.00	37.28	1	0.008598	0.86	0.563
174	1400.00	37.42	0.998	0.008598	0.86	0.563
175	1410.00	37.55	0.999	0.008552	0.85	0.563
176	1420.00	37.68	0.999	0.008598	0.86	0.563
177	1430.00	37.82	0.999	0.008506	0.85	0.563
178	1440.00	37.95	0.999	0.008506	0.85	0.563
179	1440.02	37.95	0.998	0.008506	0.85	0.563

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/15/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 11 of 12
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.008506	0.85	0.563
2	0.01	0.09	0.798	0.008506	0.85	0.563
3	0.02	0.13	0.375	0.008	0.80	0.564
4	0.03	0.16	0.308	0.007816	0.78	0.564
5	0.04	0.19	0.28	0.00777	0.77	0.564
6	0.05	0.23	0.262	0.007724	0.77	0.564
7	0.07	0.26	0.255	0.007678	0.76	0.564
8	0.09	0.30	0.253	0.007633	0.76	0.564
9	0.12	0.34	0.254	0.007587	0.75	0.564
10	0.17	0.41	0.251	0.007541	0.75	0.564
11	0.25	0.50	0.252	0.007495	0.75	0.565
12	0.34	0.58	0.251	0.007449	0.74	0.565
13	0.50	0.71	0.252	0.007311	0.73	0.565
14	0.75	0.87	0.251	0.007219	0.72	0.565
15	1.00	1.00	0.251	0.007173	0.71	0.565
16	1.50	1.23	0.25	0.006989	0.70	0.565
17	2.00	1.41	0.25	0.006897	0.69	0.565
18	3.00	1.73	0.25	0.006759	0.67	0.566
19	4.00	2.00	0.25	0.006667	0.66	0.566
20	5.00	2.24	0.251	0.006575	0.65	0.566
21	6.00	2.45	0.252	0.006483	0.65	0.566
22	7.00	2.65	0.249	0.006299	0.63	0.566
23	8.00	2.83	0.251	0.006253	0.62	0.566
24	9.00	3.00	0.249	0.006161	0.61	0.567
25	10.00	3.16	0.25	0.006069	0.60	0.567
26	12.00	3.46	0.251	0.005885	0.59	0.567
27	14.00	3.74	0.25	0.005793	0.58	0.567
28	16.00	4.00	0.25	0.005609	0.56	0.567
29	18.00	4.24	0.251	0.005288	0.53	0.568
30	20.00	4.47	0.25	0.005334	0.53	0.568
31	22.00	4.69	0.25	0.005242	0.52	0.568
32	24.00	4.90	0.251	0.005196	0.52	0.568
33	26.00	5.10	0.25	0.00515	0.51	0.568
34	28.00	5.29	0.25	0.005058	0.50	0.568
35	30.00	5.48	0.251	0.004966	0.49	0.568
36	35.00	5.92	0.25	0.004782	0.48	0.569
37	40.00	6.32	0.25	0.004552	0.45	0.569
38	45.00	6.71	0.249	0.004414	0.44	0.569
39	50.00	7.07	0.25	0.00423	0.42	0.570
40	60.00	7.75	0.25	0.003908	0.39	0.570
41	70.00	8.37	0.25	0.003586	0.36	0.571
42	80.00	8.94	0.251	0.003356	0.33	0.571
43	90.00	9.49	0.251	0.002943	0.29	0.572
44	100.00	10.00	0.251	0.002713	0.27	0.572
45	110.00	10.49	0.25	0.002437	0.24	0.572
46	120.00	10.95	0.25	0.002161	0.22	0.573
47	130.00	11.40	0.25	0.001839	0.18	0.573
48	140.00	11.83	0.249	0.001563	0.16	0.574
49	150.00	12.25	0.25	0.001333	0.13	0.574
50	160.00	12.65	0.25	0.001195	0.12	0.574
51	170.00	13.04	0.249	0.001058	0.11	0.575
52	180.00	13.42	0.25	0.0007357	0.07	0.575
53	190.00	13.78	0.25	0.0004598	0.05	0.576
54	200.00	14.14	0.251	0.0001379	0.01	0.576
55	210.00	14.49	0.25	0	0.00	0.576
56	220.00	14.83	0.25	-0.0002299	-0.02	0.577
57	230.00	15.17	0.25	-0.0003678	-0.04	0.577
58	240.00	15.49	0.25	-0.0004598	-0.05	0.577
59	250.00	15.81	0.25	-0.0005977	-0.06	0.577
60	260.00	16.12	0.249	-0.0007816	-0.08	0.577
61	270.00	16.43	0.25	-0.001012	-0.10	0.578
62	280.00	16.73	0.25	-0.001241	-0.12	0.578
63	290.00	17.03	0.25	-0.001425	-0.14	0.579
64	300.00	17.32	0.25	-0.001655	-0.16	0.579
65	310.00	17.61	0.251	-0.001839	-0.18	0.579
66	320.00	17.89	0.25	-0.001931	-0.19	0.579
67	330.00	18.17	0.25	-0.002069	-0.21	0.580
68	340.00	18.44	0.25	-0.002161	-0.22	0.580
69	350.00	18.71	0.251	-0.002207	-0.22	0.580
70	360.00	18.97	0.25	-0.002299	-0.23	0.580
71	370.00	19.24	0.25	-0.002437	-0.24	0.580
72	380.00	19.49	0.25	-0.002529	-0.25	0.580
73	390.00	19.75	0.249	-0.002621	-0.26	0.580
74	400.00	20.00	0.25	-0.002897	-0.29	0.581
75	410.00	20.25	0.251	-0.003035	-0.30	0.581
76	420.00	20.49	0.25	-0.003127	-0.31	0.581
77	430.00	20.74	0.25	-0.003265	-0.32	0.581
78	440.00	20.98	0.25	-0.003356	-0.33	0.582
79	450.00	21.21	0.251	-0.00354	-0.35	0.582
80	460.00	21.45	0.249	-0.003678	-0.37	0.582
81	470.00	21.68	0.25	-0.003862	-0.38	0.582

82	480.00	21.91	0.25	-0.003954	-0.39	0.582
83	490.00	22.14	0.251	-0.004138	-0.41	0.583
84	500.00	22.36	0.25	-0.004322	-0.43	0.583
85	510.00	22.58	0.251	-0.004414	-0.44	0.583
86	520.00	22.80	0.25	-0.004598	-0.46	0.583
87	530.00	23.02	0.249	-0.004736	-0.47	0.584
88	540.00	23.24	0.25	-0.004782	-0.48	0.584
89	550.00	23.45	0.251	-0.004874	-0.48	0.584
90	560.00	23.66	0.25	-0.00492	-0.49	0.584
91	570.00	23.87	0.25	-0.005012	-0.50	0.584
92	580.00	24.08	0.25	-0.005104	-0.51	0.584
93	590.00	24.29	0.251	-0.00515	-0.51	0.584
94	600.00	24.49	0.25	-0.005288	-0.53	0.585
95	610.00	24.70	0.25	-0.005426	-0.54	0.585
96	620.00	24.90	0.25	-0.005563	-0.55	0.585
97	630.00	25.10	0.25	-0.005609	-0.56	0.585
98	640.00	25.30	0.25	-0.005655	-0.56	0.585
99	650.00	25.50	0.251	-0.005747	-0.57	0.585
100	660.00	25.69	0.25	-0.005885	-0.59	0.585
101	670.00	25.88	0.25	-0.006023	-0.60	0.586
102	680.00	26.08	0.25	-0.006161	-0.61	0.586
103	690.00	26.27	0.25	-0.006299	-0.63	0.586
104	700.00	26.46	0.25	-0.006483	-0.65	0.586
105	710.00	26.65	0.25	-0.006621	-0.66	0.587
106	720.00	26.83	0.25	-0.006805	-0.68	0.587
107	730.00	27.02	0.25	-0.006897	-0.69	0.587
108	740.00	27.20	0.25	-0.007035	-0.70	0.587
109	750.00	27.39	0.25	-0.007081	-0.70	0.587
110	760.00	27.57	0.251	-0.007265	-0.72	0.588
111	770.00	27.75	0.25	-0.007495	-0.75	0.588
112	780.00	27.93	0.25	-0.007678	-0.76	0.588
113	790.00	28.11	0.25	-0.007678	-0.76	0.588
114	800.00	28.28	0.25	-0.007724	-0.77	0.588
115	810.00	28.46	0.25	-0.007862	-0.78	0.589
116	820.00	28.64	0.25	-0.007954	-0.79	0.589
117	830.00	28.81	0.25	-0.008138	-0.81	0.589
118	840.00	28.98	0.25	-0.008276	-0.82	0.589
119	850.00	29.15	0.25	-0.008368	-0.83	0.589
120	860.00	29.33	0.25	-0.008506	-0.85	0.590
121	870.00	29.50	0.25	-0.008552	-0.85	0.590
122	880.00	29.66	0.25	-0.008598	-0.86	0.590
123	890.00	29.83	0.25	-0.008644	-0.86	0.590
124	900.00	30.00	0.25	-0.00869	-0.86	0.590
125	910.00	30.17	0.25	-0.00869	-0.86	0.590
126	920.00	30.33	0.25	-0.008782	-0.87	0.590
127	930.00	30.50	0.25	-0.008782	-0.87	0.590
128	940.00	30.66	0.25	-0.008828	-0.88	0.590
129	950.00	30.82	0.249	-0.008874	-0.88	0.590
130	960.00	30.98	0.25	-0.008874	-0.88	0.590
131	970.00	31.14	0.25	-0.008966	-0.89	0.590
132	980.00	31.30	0.25	-0.00892	-0.89	0.590
133	990.00	31.46	0.25	-0.009012	-0.90	0.590
134	1000.00	31.62	0.25	-0.009104	-0.91	0.591
135	1010.00	31.78	0.25	-0.00915	-0.91	0.591
136	1020.00	31.94	0.249	-0.009288	-0.92	0.591
137	1030.00	32.09	0.25	-0.00938	-0.93	0.591
138	1040.00	32.25	0.25	-0.009518	-0.95	0.591
139	1050.00	32.40	0.251	-0.009564	-0.95	0.591
140	1060.00	32.56	0.25	-0.009656	-0.96	0.591
141	1070.00	32.71	0.25	-0.009702	-0.97	0.591
142	1080.00	32.86	0.25	-0.009748	-0.97	0.592
143	1090.00	33.02	0.25	-0.009748	-0.97	0.592
144	1100.00	33.17	0.249	-0.009839	-0.98	0.592
145	1110.00	33.32	0.25	-0.009839	-0.98	0.592
146	1120.00	33.47	0.25	-0.009931	-0.99	0.592
147	1130.00	33.62	0.251	-0.009885	-0.98	0.592
148	1140.00	33.76	0.25	-0.009931	-0.99	0.592
149	1150.00	33.91	0.25	-0.009977	-0.99	0.592
150	1160.00	34.06	0.25	-0.009977	-0.99	0.592
151	1170.00	34.21	0.25	-0.01002	-1.00	0.592
152	1180.00	34.35	0.25	-0.01002	-1.00	0.592
153	1190.00	34.50	0.25	-0.01007	-1.00	0.592
154	1200.00	34.64	0.25	-0.01012	-1.01	0.592
155	1210.00	34.79	0.251	-0.01016	-1.01	0.592
156	1220.00	34.93	0.25	-0.01016	-1.01	0.592
157	1230.00	35.07	0.25	-0.01025	-1.02	0.592
158	1240.00	35.21	0.25	-0.0103	-1.02	0.592
159	1250.00	35.36	0.25	-0.01035	-1.03	0.592
160	1260.00	35.50	0.25	-0.01039	-1.03	0.593
161	1270.00	35.64	0.25	-0.01048	-1.04	0.593
162	1280.00	35.78	0.25	-0.01053	-1.05	0.593
163	1290.00	35.92	0.251	-0.01053	-1.05	0.593
164	1300.00	36.06	0.25	-0.01067	-1.06	0.593
165	1310.00	36.19	0.25	-0.01071	-1.07	0.593
166	1320.00	36.33	0.25	-0.01076	-1.07	0.593
167	1330.00	36.47	0.25	-0.01085	-1.08	0.593
168	1340.00	36.61	0.25	-0.01085	-1.08	0.593
169	1350.00	36.74	0.25	-0.01099	-1.09	0.594
170	1360.00	36.88	0.251	-0.01103	-1.10	0.594
171	1370.00	37.01	0.25	-0.01108	-1.10	0.594
172	1380.00	37.15	0.25	-0.01113	-1.11	0.594
173	1390.00	37.28	0.25	-0.01117	-1.11	0.594
174	1400.00	37.42	0.249	-0.01126	-1.12	0.594
175	1410.00	37.55	0.25	-0.01131	-1.13	0.594
176	1420.00	37.68	0.25	-0.01145	-1.14	0.594
177	1430.00	37.82	0.25	-0.01159	-1.15	0.594
178	1440.00	37.95	0.25	-0.01168	-1.16	0.595
179	1440.03	37.95	0.25	-0.01168	-1.16	0.595

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/15/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

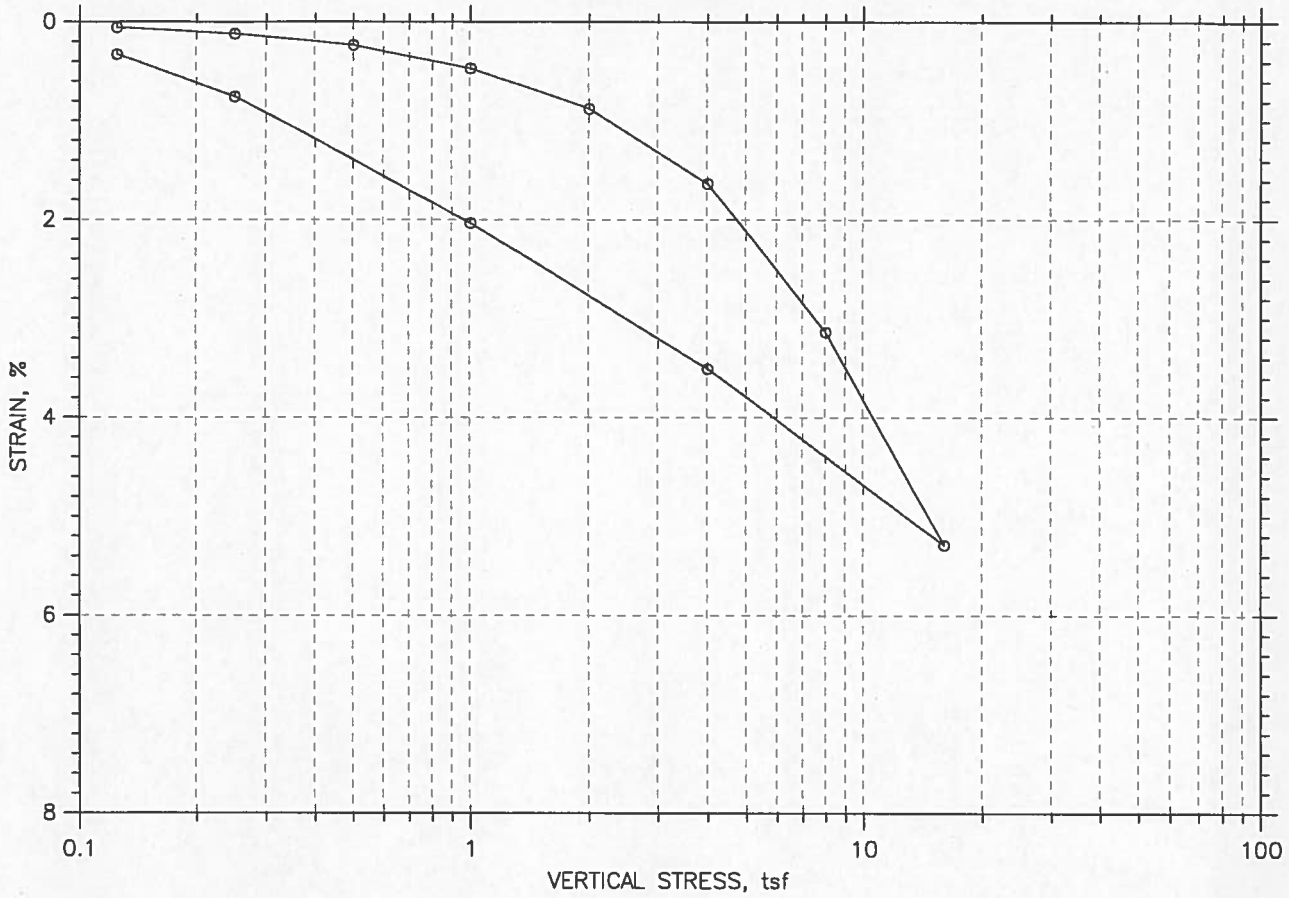
Constant Load Step: 12 of 12
Applied Stress: 0.125 tsf

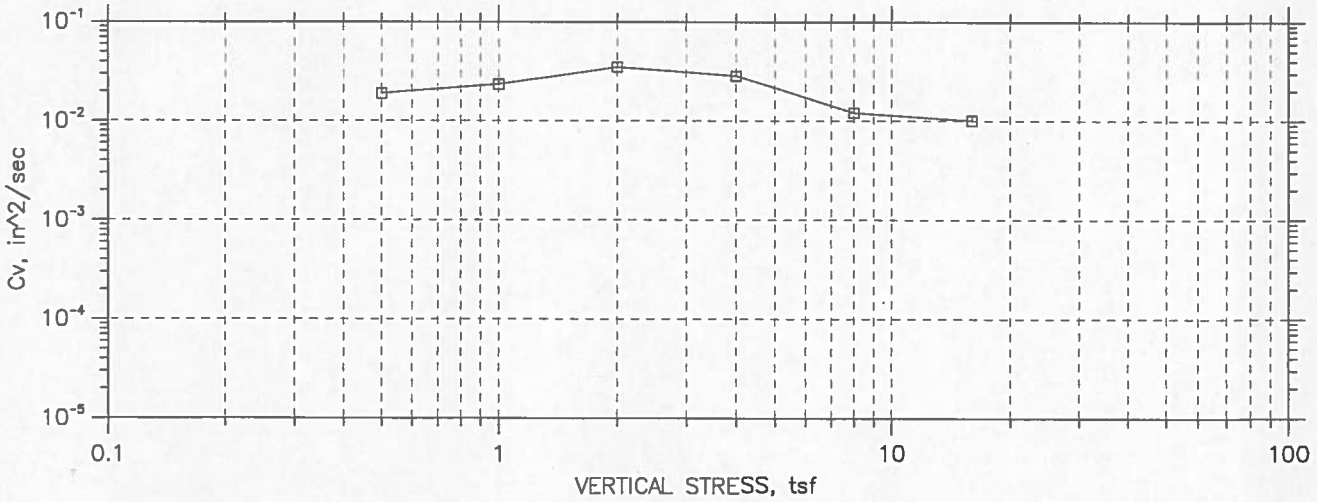
	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	-0.01168	-1.16	0.595
2	0.01	0.09	0.217	-0.01168	-1.16	0.595
3	0.02	0.13	0.138	-0.01195	-1.19	0.595
4	0.03	0.16	0.129	-0.012	-1.19	0.595
5	0.04	0.19	0.127	-0.012	-1.19	0.595
6	0.05	0.23	0.125	-0.012	-1.19	0.595
7	0.07	0.27	0.125	-0.012	-1.19	0.595
8	0.08	0.29	0.125	-0.012	-1.19	0.595
9	0.12	0.34	0.125	-0.012	-1.19	0.595
10	0.17	0.41	0.124	-0.012	-1.19	0.595
11	0.25	0.50	0.124	-0.012	-1.19	0.595
12	0.34	0.58	0.124	-0.01205	-1.20	0.595
13	0.50	0.71	0.125	-0.01205	-1.20	0.595
14	0.75	0.87	0.124	-0.01205	-1.20	0.595
15	1.00	1.00	0.125	-0.01209	-1.20	0.595
16	1.50	1.23	0.124	-0.01209	-1.20	0.595
17	2.00	1.42	0.125	-0.01214	-1.21	0.595
18	3.00	1.73	0.124	-0.01218	-1.21	0.595
19	4.00	2.00	0.124	-0.01218	-1.21	0.595
20	5.00	2.24	0.124	-0.01223	-1.22	0.595
21	6.00	2.45	0.124	-0.01228	-1.22	0.596
22	7.00	2.65	0.124	-0.01232	-1.23	0.596
23	8.00	2.83	0.124	-0.01237	-1.23	0.596
24	9.00	3.00	0.124	-0.01237	-1.23	0.596
25	10.00	3.16	0.124	-0.01246	-1.24	0.596
26	12.00	3.46	0.125	-0.01251	-1.24	0.596
27	14.00	3.74	0.124	-0.0126	-1.25	0.596
28	16.00	4.00	0.123	-0.01264	-1.26	0.596
29	18.00	4.24	0.124	-0.01269	-1.26	0.596
30	20.00	4.47	0.125	-0.01269	-1.26	0.596
31	22.00	4.69	0.124	-0.01274	-1.27	0.596
32	24.00	4.90	0.124	-0.01274	-1.27	0.596
33	26.00	5.10	0.124	-0.01278	-1.27	0.596
34	28.00	5.29	0.125	-0.01283	-1.28	0.596
35	30.00	5.48	0.124	-0.01283	-1.28	0.596
36	35.00	5.92	0.124	-0.01292	-1.29	0.597
37	40.00	6.32	0.124	-0.01301	-1.29	0.597
38	45.00	6.71	0.124	-0.01315	-1.31	0.597
39	50.00	7.07	0.125	-0.01324	-1.32	0.597
40	60.00	7.75	0.124	-0.01343	-1.34	0.597
41	70.00	8.37	0.124	-0.01356	-1.35	0.598
42	80.00	8.94	0.124	-0.0137	-1.36	0.598
43	90.00	9.49	0.125	-0.01384	-1.38	0.598
44	100.00	10.00	0.124	-0.01398	-1.39	0.598
45	110.00	10.49	0.124	-0.01407	-1.40	0.598
46	120.00	10.95	0.124	-0.01412	-1.40	0.598
47	130.00	11.40	0.124	-0.01425	-1.42	0.599
48	140.00	11.83	0.124	-0.01439	-1.43	0.599
49	150.00	12.25	0.124	-0.01448	-1.44	0.599
50	160.00	12.65	0.124	-0.01462	-1.45	0.599
51	170.00	13.04	0.124	-0.01471	-1.46	0.599
52	180.00	13.42	0.124	-0.01481	-1.47	0.599
53	190.00	13.78	0.125	-0.0149	-1.48	0.600
54	200.00	14.14	0.124	-0.01504	-1.50	0.600
55	210.00	14.49	0.125	-0.01513	-1.51	0.600
56	220.00	14.83	0.124	-0.01531	-1.52	0.600
57	230.00	15.17	0.123	-0.01549	-1.54	0.601
58	240.00	15.49	0.124	-0.01563	-1.56	0.601
59	250.00	15.81	0.124	-0.01577	-1.57	0.601
60	260.00	16.12	0.124	-0.01591	-1.58	0.601
61	270.00	16.43	0.124	-0.01605	-1.60	0.601
62	280.00	16.73	0.124	-0.01609	-1.60	0.602
63	290.00	17.03	0.124	-0.01618	-1.61	0.602
64	300.00	17.32	0.124	-0.01623	-1.61	0.602
65	310.00	17.61	0.123	-0.01632	-1.62	0.602
66	320.00	17.89	0.124	-0.01641	-1.63	0.602
67	330.00	18.17	0.125	-0.01651	-1.64	0.602
68	340.00	18.44	0.124	-0.01655	-1.65	0.602
69	350.00	18.71	0.124	-0.01655	-1.65	0.602
70	360.00	18.97	0.125	-0.01655	-1.65	0.602
71	370.00	19.24	0.124	-0.0166	-1.65	0.602
72	380.00	19.49	0.124	-0.01664	-1.66	0.602
73	390.00	19.75	0.123	-0.01664	-1.66	0.602
74	400.00	20.00	0.124	-0.01669	-1.66	0.602
75	410.00	20.25	0.125	-0.01674	-1.67	0.603
76	420.00	20.49	0.124	-0.01674	-1.67	0.603
77	430.00	20.74	0.124	-0.01678	-1.67	0.603
78	440.00	20.98	0.124	-0.01683	-1.67	0.603
79	450.00	21.21	0.125	-0.01687	-1.68	0.603
80	460.00	21.45	0.125	-0.01692	-1.68	0.603
81	470.00	21.68	0.124	-0.01706	-1.70	0.603

82	480.00	21.91	0.124	-0.0172	-1.71	0.603
83	490.00	22.14	0.124	-0.01733	-1.72	0.603
84	500.00	22.36	0.124	-0.01743	-1.73	0.604
85	510.00	22.58	0.124	-0.01752	-1.74	0.604
86	520.00	22.80	0.124	-0.01756	-1.75	0.604
87	530.00	23.02	0.124	-0.01766	-1.76	0.604
88	540.00	23.24	0.124	-0.01784	-1.78	0.604
89	550.00	23.45	0.124	-0.01798	-1.79	0.604
90	560.00	23.66	0.124	-0.01816	-1.81	0.605
91	570.00	23.87	0.123	-0.01825	-1.82	0.605
92	580.00	24.08	0.124	-0.01835	-1.83	0.605
93	590.00	24.29	0.125	-0.01844	-1.83	0.605
94	600.00	24.49	0.124	-0.01853	-1.84	0.605
95	610.00	24.70	0.123	-0.01867	-1.86	0.606
96	620.00	24.90	0.124	-0.01881	-1.87	0.606
97	630.00	25.10	0.124	-0.01881	-1.87	0.606
98	640.00	25.30	0.124	-0.01894	-1.88	0.606
99	650.00	25.50	0.124	-0.01899	-1.89	0.606
100	660.00	25.69	0.124	-0.01908	-1.90	0.606
101	670.00	25.88	0.124	-0.01908	-1.90	0.606
102	680.00	26.08	0.125	-0.01913	-1.90	0.606
103	690.00	26.27	0.123	-0.01913	-1.90	0.606
104	700.00	26.46	0.124	-0.01917	-1.91	0.606
105	710.00	26.65	0.123	-0.01922	-1.91	0.606
106	720.00	26.83	0.124	-0.01927	-1.92	0.606
107	730.00	27.02	0.124	-0.01936	-1.93	0.607
108	740.00	27.20	0.124	-0.01936	-1.93	0.607
109	750.00	27.39	0.124	-0.0194	-1.93	0.607
110	760.00	27.57	0.124	-0.0194	-1.93	0.607
111	770.00	27.75	0.124	-0.0195	-1.94	0.607
112	780.00	27.93	0.123	-0.01959	-1.95	0.607
113	790.00	28.11	0.124	-0.01968	-1.96	0.607
114	800.00	28.28	0.124	-0.01977	-1.97	0.607
115	810.00	28.46	0.124	-0.01982	-1.97	0.607
116	820.00	28.64	0.124	-0.01982	-1.97	0.607
117	830.00	28.81	0.124	-0.01986	-1.98	0.607
118	840.00	28.98	0.124	-0.01986	-1.98	0.607
119	850.00	29.15	0.124	-0.01991	-1.98	0.607
120	860.00	29.33	0.124	-0.01991	-1.98	0.607
121	870.00	29.50	0.124	-0.02	-1.99	0.608
122	880.00	29.66	0.124	-0.02	-1.99	0.608
123	890.00	29.83	0.124	-0.02005	-1.99	0.608
124	900.00	30.00	0.124	-0.02009	-2.00	0.608
125	910.00	30.17	0.124	-0.02018	-2.01	0.608
126	920.00	30.33	0.124	-0.02023	-2.01	0.608
127	930.00	30.50	0.124	-0.02032	-2.02	0.608
128	940.00	30.66	0.124	-0.02046	-2.04	0.608
129	950.00	30.82	0.124	-0.02055	-2.05	0.609
130	960.00	30.98	0.124	-0.02064	-2.05	0.609
131	970.00	31.14	0.124	-0.02074	-2.06	0.609
132	980.00	31.30	0.125	-0.02078	-2.07	0.609
133	990.00	31.46	0.124	-0.02087	-2.08	0.609
134	1000.00	31.62	0.124	-0.02101	-2.09	0.609
135	1010.00	31.78	0.124	-0.02106	-2.10	0.609
136	1020.00	31.94	0.124	-0.0211	-2.10	0.609
137	1030.00	32.09	0.124	-0.02124	-2.11	0.610
138	1040.00	32.25	0.124	-0.02129	-2.12	0.610
139	1050.00	32.40	0.124	-0.02133	-2.12	0.610
140	1060.00	32.56	0.125	-0.02143	-2.13	0.610
141	1070.00	32.71	0.123	-0.02152	-2.14	0.610
142	1080.00	32.86	0.124	-0.02156	-2.15	0.610
143	1090.00	33.02	0.124	-0.02161	-2.15	0.610
144	1100.00	33.17	0.124	-0.02161	-2.15	0.610
145	1110.00	33.32	0.124	-0.02166	-2.15	0.610
146	1120.00	33.47	0.124	-0.0217	-2.16	0.610
147	1130.00	33.62	0.124	-0.02175	-2.16	0.610
148	1140.00	33.76	0.124	-0.02175	-2.16	0.610
149	1150.00	33.91	0.124	-0.02175	-2.16	0.610
150	1160.00	34.06	0.125	-0.02179	-2.17	0.610
151	1170.00	34.21	0.124	-0.02184	-2.17	0.611
152	1180.00	34.35	0.124	-0.02189	-2.18	0.611
153	1190.00	34.50	0.124	-0.02184	-2.17	0.611
154	1200.00	34.64	0.124	-0.02189	-2.18	0.611
155	1210.00	34.79	0.124	-0.02189	-2.18	0.611
156	1220.00	34.93	0.123	-0.02193	-2.18	0.611
157	1230.00	35.07	0.124	-0.02198	-2.19	0.611
158	1240.00	35.21	0.124	-0.02202	-2.19	0.611
159	1250.00	35.36	0.124	-0.02207	-2.20	0.611
160	1260.00	35.50	0.124	-0.02207	-2.20	0.611
161	1270.00	35.64	0.124	-0.02212	-2.20	0.611
162	1280.00	35.78	0.123	-0.02216	-2.21	0.611
163	1290.00	35.92	0.124	-0.0223	-2.22	0.611
164	1300.00	36.06	0.124	-0.02235	-2.22	0.611
165	1310.00	36.19	0.124	-0.02239	-2.23	0.611
166	1320.00	36.33	0.124	-0.02244	-2.23	0.611
167	1330.00	36.47	0.124	-0.02248	-2.24	0.612
168	1340.00	36.61	0.125	-0.02253	-2.24	0.612
169	1350.00	36.74	0.124	-0.02262	-2.25	0.612
170	1360.00	36.88	0.124	-0.02267	-2.26	0.612
171	1370.00	37.01	0.124	-0.02271	-2.26	0.612
172	1380.00	37.15	0.124	-0.02276	-2.26	0.612
173	1390.00	37.28	0.124	-0.02281	-2.27	0.612
174	1400.00	37.42	0.125	-0.02285	-2.27	0.612
175	1410.00	37.55	0.124	-0.0229	-2.28	0.612
176	1420.00	37.68	0.124	-0.0229	-2.28	0.612
177	1430.00	37.82	0.123	-0.0229	-2.28	0.612
178	1440.00	37.95	0.124	-0.02299	-2.29	0.612
179	1440.02	37.95	0.124	-0.02299	-2.29	0.612

CONSOLIDATION TEST DATA

SUMMARY REPORT



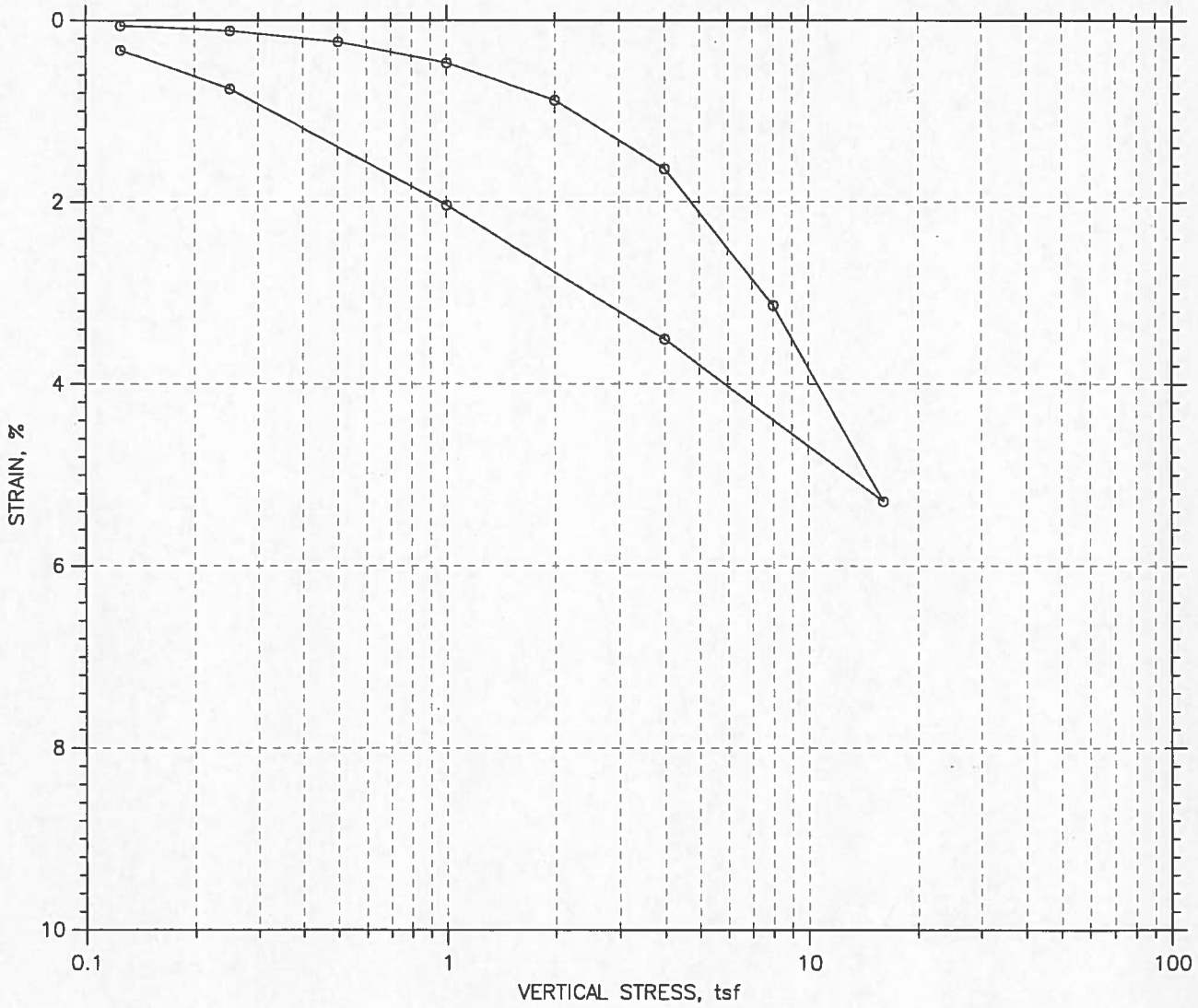


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-282
	Boring No.: B-301	Tested By: SKK	Checked By: SKK
	Sample No.: 19-282	Test Date: 5/13/19	Test No.: 1
	Depth: 18-20'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Thu, 23-MAY-2019 07:18:11

CONSOLIDATION TEST DATA

SUMMARY REPORT



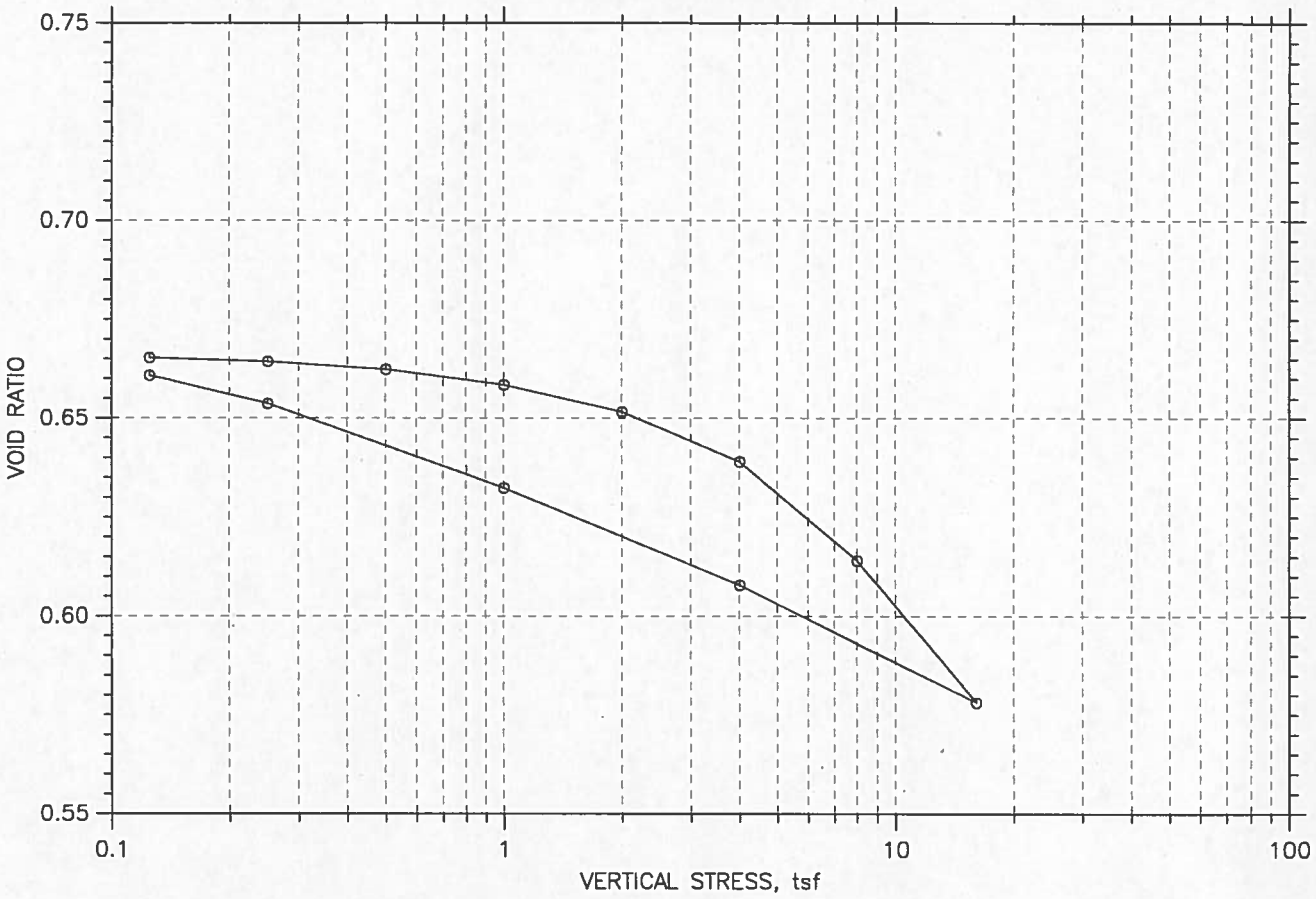
				Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	20.84	23.44
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	102.3	102.4
Compression Index: 3.81959e-313				Saturation, %	85.40	96.33
Diameter: 2.5 in		Height: 1.002 in		Void Ratio	0.67	0.66
LL: ---	PL: ---	PI: ---	GS: 2.73			

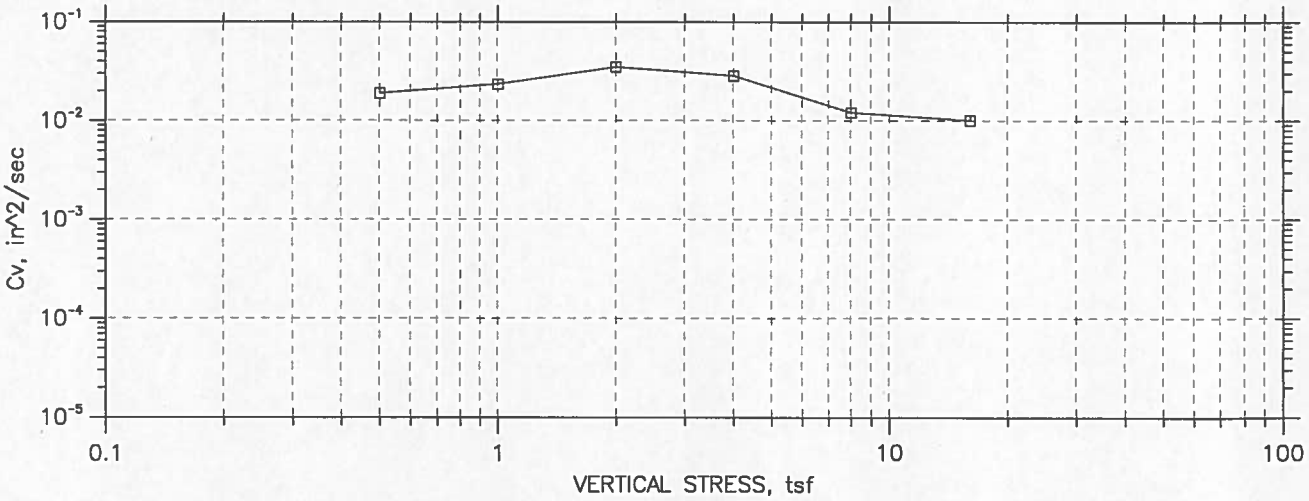
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-282
	Boring No.: B-301	Tested By: SKK	Checked By: SKK
	Sample No.: 19-282	Test Date: 5/13/19	Test No.: 1
	Depth: 18-20'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Thu, 23-MAY-2019 07:18:12

CONSOLIDATION TEST DATA

SUMMARY REPORT



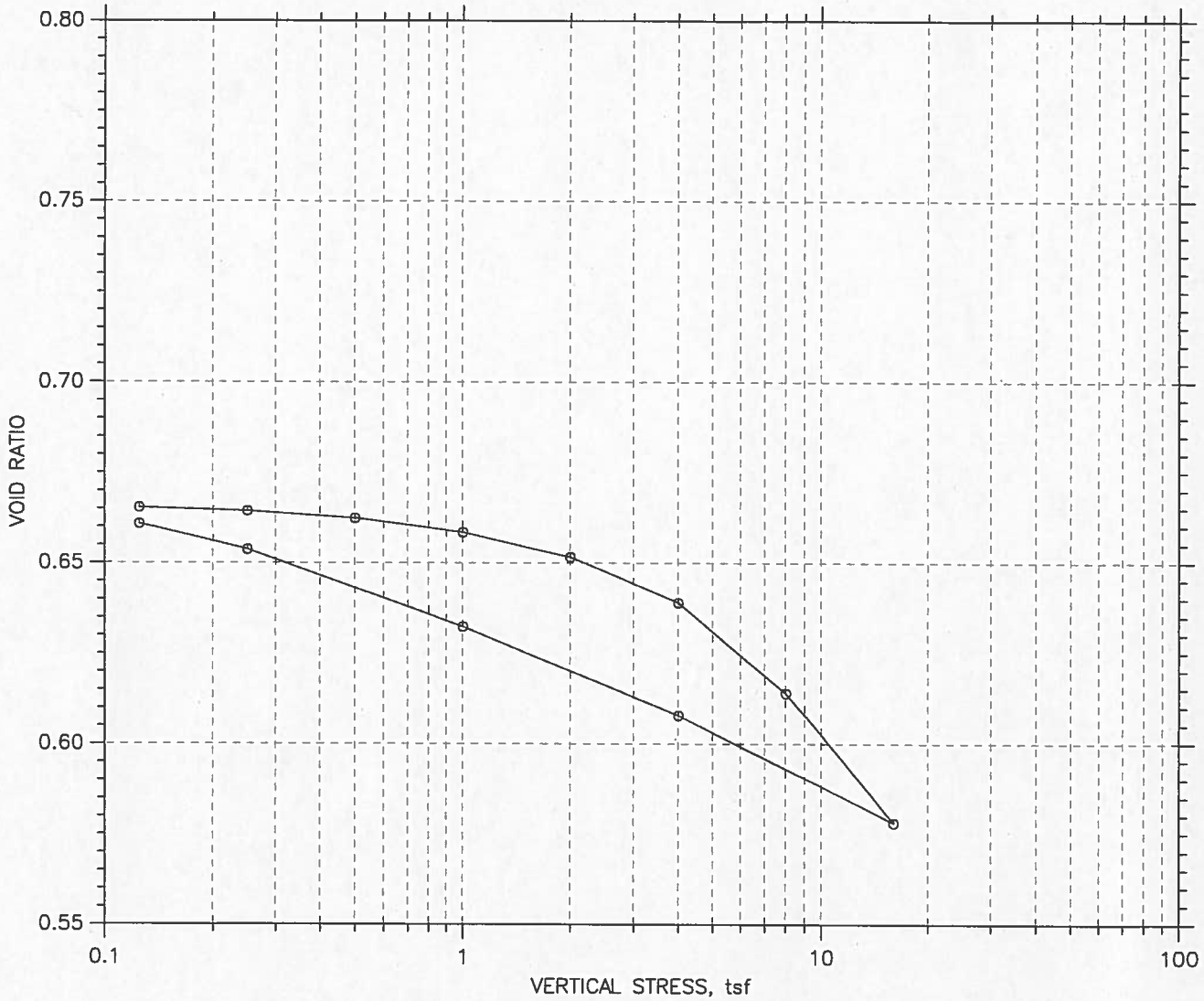


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-282
	Boring No.: B-301	Tested By: SKK	Checked By: SKK
	Sample No.: 19-282	Test Date: 5/13/19	Test No.: 1
	Depth: 18-20'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Thu, 23-MAY-2019 07:18:36

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	20.84	23.44
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	102.3	102.4
Compression Index: 3.81959e-313				Saturation, %	85.40	96.33
Diameter: 2.5 in		Height: 1.002 in		Void Ratio	0.67	0.66
LL: ---	PL: ---	PI: ---	GS: 2.73			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-282
	Boring No.: B-301	Tested By: SKK	Checked By: SKK
	Sample No.: 19-282	Test Date: 5/13/19	Test No.: 1
	Depth: 18-20'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Thu, 23-MAY-2019 07:18:36

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/13/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Measured Specific Gravity: 2.73
Initial Void Ratio: 0.67
Final Void Ratio: 0.66

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	153.11	269.74	273.17	231.82
Wt. Container + Dry Soil, gm	136.78	242.22	242.22	200.88
Wt. Container, gm	59.11	110.16	110.16	68.88
Wt. Dry Soil, gm	77.67	132.06	132.06	132
Water Content, %	21.02	20.84	23.44	23.44
Void Ratio	---	0.67	0.66	---
Degree of Saturation, %	---	85.40	96.33	---
Dry Unit Weight, pcf	---	102.28	102.4	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/13/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.0005977	0.665	0.06	0.0	0.00e+000	4.77e-003	0.00e+000
2	0.25	0.001195	0.664	0.12	0.0	0.00e+000	4.77e-003	0.00e+000
3	0.5	0.002391	0.662	0.24	0.1	3.75e-002	4.77e-003	3.35e-003
4	1	0.004736	0.658	0.47	0.1	3.38e-002	4.68e-003	2.96e-003
5	2	0.008828	0.652	0.88	0.1	4.69e-002	4.08e-003	3.59e-003
6	4	0.01641	0.639	1.64	0.2	2.27e-002	3.79e-003	1.61e-003
7	8	0.03145	0.614	3.14	0.5	7.39e-003	3.75e-003	5.19e-004
8	16	0.05301	0.578	5.29	0.3	9.56e-003	2.69e-003	4.82e-004
9	4	0.03517	0.608	3.51	0.1	3.32e-002	1.48e-003	9.22e-004
10	1	0.02041	0.632	2.04	3.8	8.87e-004	4.91e-003	8.16e-005
11	0.25	0.007587	0.654	0.76	15.9	2.16e-004	1.71e-002	6.91e-005
12	0.125	0.00331	0.661	0.33	85.4	4.11e-005	3.41e-002	2.63e-005

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.0005977	0.665	0.06	0.0	0.00e+000	4.77e-003	0.00e+000
2	0.25	0.001195	0.664	0.12	0.0	0.00e+000	4.77e-003	0.00e+000
3	0.5	0.002391	0.662	0.24	0.0	0.00e+000	4.77e-003	0.00e+000
4	1	0.004736	0.658	0.47	0.0	0.00e+000	4.68e-003	0.00e+000
5	2	0.008828	0.652	0.88	0.0	3.92e-002	4.08e-003	3.00e-003
6	4	0.01641	0.639	1.64	0.0	3.13e-002	3.79e-003	2.22e-003
7	8	0.03145	0.614	3.14	0.0	3.05e-002	3.75e-003	2.15e-003
8	16	0.05301	0.578	5.29	0.0	3.13e-002	2.69e-003	1.57e-003
9	4	0.03517	0.608	3.51	0.0	3.11e-002	1.48e-003	8.65e-004
10	1	0.02041	0.632	2.04	0.0	0.00e+000	4.91e-003	0.00e+000
11	0.25	0.007587	0.654	0.76	0.0	0.00e+000	1.71e-002	0.00e+000
12	0.125	0.00331	0.661	0.33	0.0	0.00e+000	3.41e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/13/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 1 of 12
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00448	-0.001335	-0.13	0.668
2	0.01	0.09	0.0112	-0.001335	-0.13	0.668
3	0.02	0.13	0.0437	-0.001289	-0.13	0.668
4	0.03	0.16	0.0739	-0.001013	-0.10	0.668
5	0.04	0.19	0.0885	-0.0007835	-0.08	0.668
6	0.05	0.23	0.105	-0.0005077	-0.05	0.667
7	0.07	0.27	0.117	-0.0004157	-0.04	0.667
8	0.08	0.29	0.121	-0.0003697	-0.04	0.667
9	0.12	0.35	0.125	-0.0003697	-0.04	0.667
10	0.17	0.41	0.136	-0.0004157	-0.04	0.667
11	0.24	0.49	0.13	-0.0007376	-0.07	0.667

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/13/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 2 of 12
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.13	-0.002991	-0.30	0.671
2	0.01	0.09	0.131	-0.002991	-0.30	0.671
3	0.02	0.13	0.177	-0.002807	-0.28	0.671
4	0.03	0.16	0.207	-0.002577	-0.26	0.671
5	0.03	0.19	0.223	-0.002485	-0.25	0.670
6	0.05	0.23	0.24	-0.002347	-0.23	0.670
7	0.07	0.27	0.245	-0.002301	-0.23	0.670
8	0.09	0.30	0.249	-0.002301	-0.23	0.670
9	0.12	0.34	0.25	-0.002255	-0.23	0.670
10	0.17	0.41	0.255	-0.002301	-0.23	0.670
11	0.24	0.49	0.258	-0.002393	-0.24	0.670

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/13/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 3 of 12
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.258	-0.004691	-0.47	0.674
2	0.01	0.09	0.26	-0.004691	-0.47	0.674
3	0.02	0.13	0.342	-0.004553	-0.45	0.674
4	0.03	0.16	0.399	-0.004277	-0.43	0.673
5	0.04	0.19	0.432	-0.004001	-0.40	0.673
6	0.05	0.23	0.467	-0.003679	-0.37	0.672
7	0.07	0.27	0.483	-0.003587	-0.36	0.672
8	0.08	0.29	0.489	-0.003541	-0.35	0.672
9	0.12	0.35	0.495	-0.003404	-0.34	0.672
10	0.17	0.41	0.497	-0.003358	-0.34	0.672
11	0.25	0.50	0.501	-0.003358	-0.34	0.672
12	0.34	0.58	0.504	-0.003404	-0.34	0.672
13	0.40	0.63	0.505	-0.00345	-0.34	0.672

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/13/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 4 of 12
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.505	-0.004781	-0.48	0.674
2	0.01	0.09	0.523	-0.004781	-0.48	0.674
3	0.02	0.13	0.797	-0.004321	-0.43	0.673
4	0.03	0.16	0.9	-0.003677	-0.37	0.672
5	0.04	0.19	0.942	-0.003447	-0.34	0.672
6	0.05	0.23	0.973	-0.003126	-0.31	0.671
7	0.07	0.27	0.984	-0.002942	-0.29	0.671
8	0.08	0.29	0.988	-0.00285	-0.28	0.671
9	0.12	0.34	0.994	-0.002712	-0.27	0.671
10	0.17	0.41	0.997	-0.002574	-0.26	0.671
11	0.25	0.50	0.998	-0.002482	-0.25	0.670
12	0.34	0.58	0.998	-0.002436	-0.24	0.670
13	0.50	0.71	0.998	-0.00239	-0.24	0.670
14	0.75	0.87	0.999	-0.00239	-0.24	0.670
15	1.00	1.00	1	-0.00239	-0.24	0.670
16	1.32	1.15	1	-0.002436	-0.24	0.670

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/13/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 5 of 12
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	1	-0.004598	-0.46	0.674
2	0.01	0.09	1.14	-0.004598	-0.46	0.674
3	0.02	0.13	1.76	-0.003449	-0.34	0.672
4	0.03	0.16	1.89	-0.002299	-0.23	0.670
5	0.04	0.19	1.94	-0.001885	-0.19	0.669
6	0.05	0.23	1.97	-0.001609	-0.16	0.669
7	0.07	0.26	1.98	-0.001471	-0.15	0.669
8	0.09	0.30	1.99	-0.001425	-0.14	0.669
9	0.12	0.34	1.99	-0.001242	-0.12	0.668
10	0.17	0.41	2	-0.00115	-0.11	0.668
11	0.25	0.50	2	-0.001012	-0.10	0.668
12	0.33	0.58	2	-0.0009197	-0.09	0.668
13	0.50	0.71	2	-0.0008277	-0.08	0.668
14	0.75	0.87	2	-0.0007357	-0.07	0.667
15	1.00	1.00	2	-0.0006898	-0.07	0.667
16	1.50	1.23	2	-0.0005978	-0.06	0.667
17	2.00	1.42	2	-0.0005518	-0.06	0.667
18	3.00	1.73	2	-0.0005058	-0.05	0.667
19	4.00	2.00	2	-0.0004599	-0.05	0.667
20	5.00	2.24	2	-0.0005058	-0.05	0.667
21	5.17	2.27	2	-0.0005058	-0.05	0.667

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/13/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 6 of 12
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	-0.003082	-0.31	0.671
2	0.01	0.09	2.49	-0.003036	-0.30	0.671
3	0.02	0.13	3.69	-0.001427	-0.14	0.669
4	0.03	0.16	3.86	9.052e-005	0.01	0.666
5	0.04	0.19	3.92	0.0006423	0.06	0.665
6	0.05	0.23	3.96	0.001194	0.12	0.664
7	0.07	0.27	3.97	0.001516	0.15	0.664
8	0.08	0.29	3.98	0.001746	0.17	0.663
9	0.12	0.35	3.98	0.002114	0.21	0.663
10	0.17	0.41	3.99	0.002298	0.23	0.662
11	0.25	0.50	3.99	0.002435	0.24	0.662
12	0.34	0.58	3.99	0.002573	0.26	0.662
13	0.50	0.71	4	0.002711	0.27	0.662
14	0.75	0.87	4	0.002987	0.30	0.661
15	1.00	1.00	4	0.003263	0.33	0.661
16	1.50	1.23	4	0.003539	0.35	0.660
17	2.00	1.42	4	0.003677	0.37	0.660
18	3.00	1.73	4	0.003769	0.38	0.660
19	4.00	2.00	4	0.003861	0.39	0.660
20	5.00	2.24	4	0.003907	0.39	0.660
21	6.00	2.45	4	0.003999	0.40	0.660
22	7.00	2.65	4	0.004091	0.41	0.659
23	8.00	2.83	4	0.004137	0.41	0.659
24	9.00	3.00	4	0.004183	0.42	0.659
25	10.00	3.16	4	0.004183	0.42	0.659
26	12.00	3.46	4	0.004183	0.42	0.659
27	14.00	3.74	4	0.004229	0.42	0.659
28	16.00	4.00	4	0.004275	0.43	0.659
29	18.00	4.24	4	0.004275	0.43	0.659
30	20.00	4.47	4	0.004275	0.43	0.659
31	22.00	4.69	4	0.004275	0.43	0.659
32	24.00	4.90	4	0.004321	0.43	0.659
33	26.00	5.10	4	0.004321	0.43	0.659
34	28.00	5.29	4	0.004367	0.44	0.659
35	30.00	5.48	4	0.004367	0.44	0.659
36	35.00	5.92	4	0.004367	0.44	0.659
37	40.00	6.32	4	0.004367	0.44	0.659
38	45.00	6.71	4	0.004367	0.44	0.659
39	50.00	7.07	4	0.004413	0.44	0.659
40	60.00	7.75	4	0.004413	0.44	0.659
41	70.00	8.37	4	0.004459	0.44	0.659
42	80.00	8.94	4	0.004505	0.45	0.659
43	90.00	9.49	4	0.004459	0.44	0.659
44	100.00	10.00	4	0.004459	0.44	0.659
45	110.00	10.49	4	0.004459	0.44	0.659
46	120.00	10.95	4	0.004505	0.45	0.659
47	120.04	10.96	4	0.004505	0.45	0.659

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/13/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 7 of 12
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.001195	0.12	0.664
2	0.01	0.09	4.77	0.001195	0.12	0.664
3	0.02	0.13	7.71	0.005287	0.53	0.657
4	0.03	0.16	7.85	0.007219	0.72	0.654
5	0.04	0.19	7.9	0.008138	0.81	0.653
6	0.05	0.23	7.94	0.008966	0.89	0.651
7	0.07	0.27	7.96	0.009426	0.94	0.651
8	0.08	0.29	7.96	0.009609	0.96	0.650
9	0.12	0.35	7.98	0.009839	0.98	0.650
10	0.17	0.41	7.98	0.01021	1.02	0.649
11	0.25	0.50	7.99	0.0109	1.09	0.648
12	0.34	0.58	7.99	0.0114	1.14	0.647
13	0.50	0.71	8	0.01191	1.19	0.646
14	0.75	0.87	8	0.01246	1.24	0.646
15	1.00	1.00	8	0.01287	1.28	0.645
16	1.50	1.22	8	0.01324	1.32	0.644
17	2.00	1.42	8	0.01343	1.34	0.644
18	3.00	1.73	8	0.01356	1.35	0.644
19	4.00	2.00	8	0.01366	1.36	0.644
20	5.00	2.24	8	0.01379	1.38	0.643
21	6.00	2.45	8	0.01398	1.39	0.643
22	7.00	2.65	8	0.01407	1.40	0.643
23	8.00	2.83	8	0.01416	1.41	0.643
24	9.00	3.00	8	0.01425	1.42	0.643
25	10.00	3.16	8	0.01435	1.43	0.642
26	12.00	3.46	8	0.01444	1.44	0.642
27	14.00	3.74	8	0.01458	1.45	0.642
28	16.00	4.00	8	0.01462	1.46	0.642
29	18.00	4.24	8	0.01471	1.47	0.642
30	20.00	4.47	8	0.01476	1.47	0.642
31	22.00	4.69	8	0.01485	1.48	0.642
32	24.00	4.90	8	0.01494	1.49	0.641
33	26.00	5.10	8	0.01499	1.50	0.641
34	28.00	5.29	8	0.01503	1.50	0.641
35	30.00	5.48	8	0.01508	1.51	0.641
36	35.00	5.92	8	0.01522	1.52	0.641
37	40.00	6.32	8	0.01536	1.53	0.641
38	45.00	6.71	8	0.01517	1.51	0.641
39	50.00	7.07	8	0.01526	1.52	0.641
40	60.00	7.75	8	0.01559	1.56	0.640
41	70.00	8.37	8	0.01572	1.57	0.640
42	80.00	8.94	8	0.01586	1.58	0.640
43	90.00	9.49	8	0.01595	1.59	0.640
44	100.00	10.00	8	0.016	1.60	0.640
45	110.00	10.49	8	0.01618	1.62	0.639
46	120.00	10.95	8	0.01623	1.62	0.639
47	120.05	10.96	8	0.01623	1.62	0.639

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/13/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 8 of 12
Applied Stress: 16 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.01081	1.08	0.648
2	0.01	0.09	8.83	0.01081	1.08	0.648
3	0.02	0.13	15.9	0.0154	1.54	0.641
4	0.03	0.16	15.8	0.02019	2.01	0.633
5	0.04	0.19	15.9	0.02143	2.14	0.631
6	0.05	0.23	15.9	0.02244	2.24	0.629
7	0.07	0.27	15.9	0.02317	2.31	0.628
8	0.08	0.29	16	0.0234	2.34	0.627
9	0.12	0.35	16	0.02359	2.35	0.627
10	0.17	0.41	16	0.02409	2.40	0.626
11	0.25	0.50	16	0.02515	2.51	0.624
12	0.34	0.58	16	0.02579	2.57	0.623
13	0.50	0.71	16	0.02621	2.62	0.623
14	0.75	0.87	16	0.02671	2.67	0.622
15	1.00	1.00	16	0.0274	2.73	0.621
16	1.50	1.23	16	0.02819	2.81	0.619
17	2.00	1.42	16	0.0286	2.85	0.619
18	3.00	1.73	16	0.02915	2.91	0.618
19	4.00	2.00	16	0.02979	2.97	0.617
20	5.00	2.24	16	0.03016	3.01	0.616
21	6.00	2.45	16	0.03039	3.03	0.616
22	7.00	2.65	16	0.03058	3.05	0.615
23	8.00	2.83	16	0.03067	3.06	0.615
24	9.00	3.00	16	0.03076	3.07	0.615
25	10.00	3.16	16	0.0309	3.08	0.615
26	12.00	3.46	16	0.03094	3.09	0.615
27	14.00	3.74	16	0.03099	3.09	0.615
28	16.00	4.00	16	0.03104	3.10	0.615
29	18.00	4.24	16	0.03113	3.11	0.614
30	20.00	4.47	16	0.03122	3.12	0.614
31	22.00	4.69	16	0.03127	3.12	0.614
32	24.00	4.90	16	0.03131	3.12	0.614
33	26.00	5.10	16	0.03136	3.13	0.614
34	28.00	5.29	16	0.0314	3.13	0.614
35	30.00	5.48	16	0.03145	3.14	0.614
36	35.00	5.92	16	0.03159	3.15	0.614
37	40.00	6.32	16	0.03168	3.16	0.614
38	45.00	6.71	16	0.03173	3.17	0.613
39	50.00	7.07	16	0.03186	3.18	0.613
40	60.00	7.75	16	0.03196	3.19	0.613
41	70.00	8.37	16	0.03205	3.20	0.613
42	80.00	8.94	16	0.03209	3.20	0.613
43	90.00	9.49	16	0.03219	3.21	0.613
44	100.00	10.00	16	0.03223	3.22	0.613
45	110.00	10.49	16	0.03228	3.22	0.613
46	120.00	10.95	16	0.03237	3.23	0.612
47	120.07	10.96	16	0.03237	3.23	0.612

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/13/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 9 of 12
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	16	0.0509	5.08	0.582
2	0.01	0.09	13.6	0.05085	5.08	0.582
3	0.02	0.13	5.21	0.04708	4.70	0.588
4	0.03	0.16	4.21	0.04101	4.09	0.598
5	0.04	0.19	4.11	0.04	3.99	0.600
6	0.05	0.23	4.06	0.03871	3.86	0.602
7	0.07	0.27	4.04	0.03853	3.85	0.602
8	0.08	0.29	4.03	0.03839	3.83	0.602
9	0.12	0.34	4.02	0.03793	3.79	0.603
10	0.17	0.41	4.01	0.03766	3.76	0.604
11	0.25	0.50	4.01	0.03752	3.74	0.604
12	0.33	0.58	4.01	0.03729	3.72	0.604
13	0.50	0.71	4	0.03706	3.70	0.605
14	0.75	0.87	4	0.03683	3.68	0.605
15	1.00	1.00	4	0.0366	3.65	0.605
16	1.50	1.23	4	0.03609	3.60	0.606
17	2.00	1.41	4	0.03582	3.57	0.607
18	3.00	1.73	4	0.03554	3.55	0.607
19	4.00	2.00	4	0.03517	3.51	0.608
20	5.00	2.24	4	0.03499	3.49	0.608
21	6.00	2.45	4	0.03481	3.47	0.608
22	7.00	2.65	4	0.03467	3.46	0.609
23	8.00	2.83	4	0.03453	3.45	0.609
24	9.00	3.00	4	0.03439	3.43	0.609
25	10.00	3.16	4	0.0343	3.42	0.609
26	12.00	3.46	4	0.03425	3.42	0.609
27	14.00	3.74	4	0.03421	3.41	0.609
28	16.00	4.00	4	0.03412	3.40	0.610
29	18.00	4.24	4	0.03393	3.39	0.610
30	20.00	4.47	4	0.03384	3.38	0.610
31	22.00	4.69	4	0.03375	3.37	0.610
32	24.00	4.90	4	0.03375	3.37	0.610
33	26.00	5.10	4	0.03366	3.36	0.610
34	28.00	5.29	4	0.03366	3.36	0.610
35	30.00	5.48	4	0.03356	3.35	0.610
36	35.00	5.92	4	0.03347	3.34	0.611
37	40.00	6.32	4	0.03333	3.33	0.611
38	45.00	6.71	4	0.03329	3.32	0.611
39	50.00	7.07	4	0.03324	3.32	0.611
40	60.00	7.75	4	0.0332	3.31	0.611
41	70.00	8.37	4	0.03315	3.31	0.611
42	80.00	8.94	4	0.03315	3.31	0.611
43	90.00	9.49	4	0.0331	3.30	0.611
44	100.00	10.00	4	0.0331	3.30	0.611
45	110.00	10.49	4	0.0331	3.30	0.611
46	120.00	10.95	4	0.03306	3.30	0.611
47	120.05	10.96	4	0.03306	3.30	0.611

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/13/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 10 of 12
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.03306	3.30	0.611
2	0.01	0.09	3.33	0.03306	3.30	0.611
3	0.02	0.13	1.3	0.03099	3.09	0.615
4	0.03	0.16	1.17	0.02938	2.93	0.617
5	0.04	0.19	1.11	0.02851	2.85	0.619
6	0.05	0.23	1.07	0.02773	2.77	0.620
7	0.07	0.27	1.04	0.02731	2.73	0.621
8	0.08	0.29	1.04	0.02713	2.71	0.621
9	0.12	0.35	1.03	0.02685	2.68	0.622
10	0.17	0.41	1.02	0.02662	2.66	0.622
11	0.25	0.50	1.01	0.02644	2.64	0.622
12	0.34	0.58	1.01	0.02625	2.62	0.623
13	0.50	0.71	1.01	0.02584	2.58	0.623
14	0.75	0.87	1	0.0252	2.51	0.624
15	1.00	1.00	1	0.02469	2.46	0.625
16	1.50	1.23	1	0.02396	2.39	0.626
17	2.00	1.41	1	0.02354	2.35	0.627
18	3.00	1.73	1	0.02294	2.29	0.628
19	4.00	2.00	1	0.02258	2.25	0.629
20	5.00	2.24	1	0.02225	2.22	0.629
21	6.00	2.45	0.999	0.02198	2.19	0.630
22	7.00	2.65	1	0.02179	2.18	0.630
23	8.00	2.83	1	0.02166	2.16	0.630
24	9.00	3.00	1	0.02138	2.13	0.631
25	10.00	3.16	0.999	0.02124	2.12	0.631
26	12.00	3.46	1	0.02087	2.08	0.632
27	14.00	3.74	1	0.0206	2.06	0.632
28	16.00	4.00	1	0.02032	2.03	0.632
29	18.00	4.24	0.999	0.02009	2.01	0.633
30	20.00	4.47	1	0.01995	1.99	0.633
31	22.00	4.69	1	0.01982	1.98	0.633
32	24.00	4.90	0.999	0.01963	1.96	0.634
33	26.00	5.10	1	0.01936	1.93	0.634
34	28.00	5.29	0.999	0.01917	1.91	0.634
35	30.00	5.48	0.999	0.01908	1.90	0.635
36	35.00	5.92	1	0.0189	1.89	0.635
37	40.00	6.32	0.999	0.01871	1.87	0.635
38	45.00	6.71	0.998	0.01871	1.87	0.635
39	50.00	7.07	0.999	0.01867	1.86	0.635
40	60.00	7.75	0.999	0.01858	1.85	0.635
41	70.00	8.37	0.999	0.01848	1.84	0.636
42	80.00	8.94	0.998	0.01844	1.84	0.636
43	90.00	9.49	0.999	0.01839	1.84	0.636
44	100.00	10.00	0.999	0.01835	1.83	0.636
45	110.00	10.49	1	0.0183	1.83	0.636
46	120.00	10.95	1	0.0183	1.83	0.636
47	120.05	10.96	0.999	0.0183	1.83	0.636

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/13/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 11 of 12
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.0183	1.83	0.636
2	0.01	0.09	0.824	0.0183	1.83	0.636
3	0.02	0.13	0.441	0.01683	1.68	0.638
4	0.03	0.16	0.366	0.01628	1.62	0.639
5	0.04	0.19	0.329	0.01605	1.60	0.640
6	0.05	0.23	0.298	0.01577	1.57	0.640
7	0.07	0.27	0.286	0.0154	1.54	0.641
8	0.08	0.29	0.279	0.01522	1.52	0.641
9	0.12	0.35	0.269	0.0149	1.49	0.641
10	0.17	0.41	0.263	0.01462	1.46	0.642
11	0.25	0.50	0.259	0.0143	1.43	0.642
12	0.34	0.58	0.257	0.01412	1.41	0.643
13	0.50	0.71	0.254	0.01375	1.37	0.643
14	0.75	0.87	0.254	0.01329	1.33	0.644
15	1.00	1.00	0.252	0.01292	1.29	0.645
16	1.50	1.23	0.251	0.01237	1.23	0.646
17	2.00	1.42	0.252	0.01209	1.21	0.646
18	3.00	1.73	0.251	0.01177	1.17	0.647
19	4.00	2.00	0.251	0.01122	1.12	0.648
20	5.00	2.24	0.251	0.01094	1.09	0.648
21	6.00	2.45	0.25	0.01053	1.05	0.649
22	7.00	2.65	0.251	0.01025	1.02	0.649
23	8.00	2.83	0.251	0.009931	0.99	0.650
24	9.00	3.00	0.25	0.009794	0.98	0.650
25	10.00	3.16	0.25	0.009656	0.96	0.650
26	12.00	3.46	0.251	0.009196	0.92	0.651
27	14.00	3.74	0.25	0.008782	0.88	0.652
28	16.00	4.00	0.25	0.00823	0.82	0.653
29	18.00	4.24	0.251	0.008046	0.80	0.653
30	20.00	4.47	0.25	0.007908	0.79	0.653
31	22.00	4.69	0.25	0.007816	0.78	0.653
32	24.00	4.90	0.25	0.00777	0.78	0.653
33	26.00	5.10	0.25	0.007541	0.75	0.654
34	28.00	5.29	0.251	0.007724	0.77	0.653
35	30.00	5.48	0.251	0.007678	0.77	0.653
36	35.00	5.92	0.25	0.007633	0.76	0.654
37	40.00	6.32	0.25	0.007449	0.74	0.654
38	45.00	6.71	0.25	0.007173	0.72	0.654
39	50.00	7.07	0.25	0.006851	0.68	0.655
40	60.00	7.75	0.25	0.006391	0.64	0.656
41	70.00	8.37	0.25	0.006115	0.61	0.656
42	80.00	8.94	0.25	0.005839	0.58	0.657
43	90.00	9.49	0.25	0.005701	0.57	0.657
44	100.00	10.00	0.25	0.005609	0.56	0.657
45	110.00	10.49	0.25	0.005563	0.56	0.657
46	120.00	10.95	0.25	0.005471	0.55	0.657
47	120.04	10.96	0.25	0.005471	0.55	0.657

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/13/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

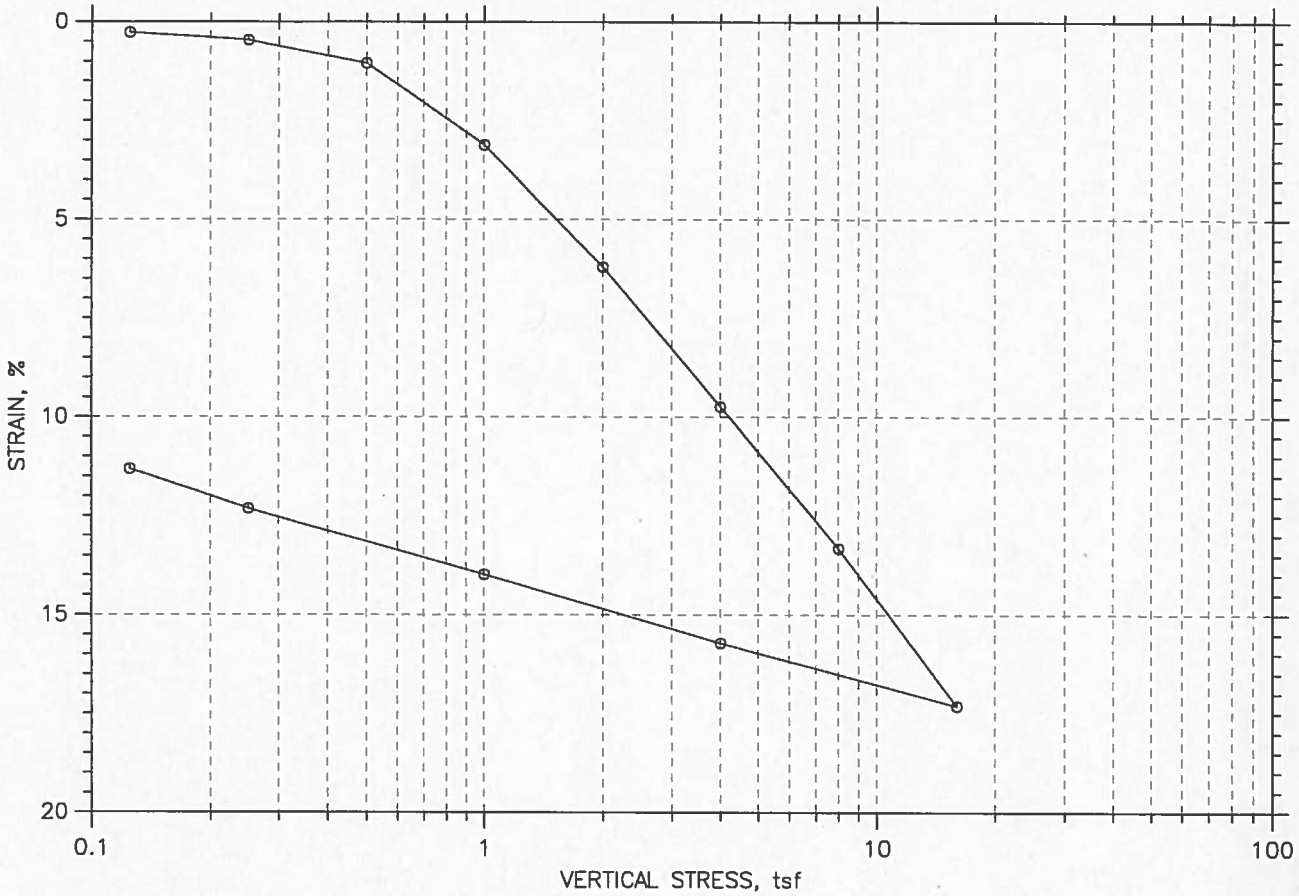
Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

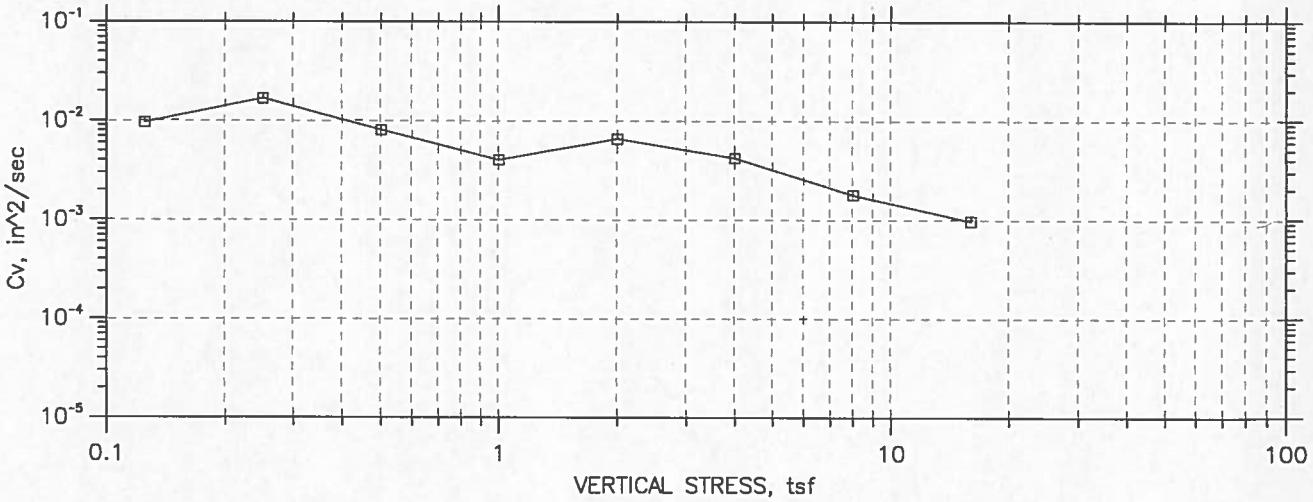
Constant Load Step: 12 of 12
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	0.005471	0.55	0.657
2	0.01	0.09	0.231	0.005471	0.55	0.657
3	0.02	0.13	0.182	0.005334	0.53	0.657
4	0.03	0.16	0.161	0.005288	0.53	0.657
5	0.04	0.19	0.148	0.005242	0.52	0.658
6	0.05	0.23	0.137	0.005104	0.51	0.658
7	0.07	0.27	0.132	0.005058	0.50	0.658
8	0.08	0.29	0.13	0.005012	0.50	0.658
9	0.12	0.34	0.128	0.00492	0.49	0.658
10	0.17	0.41	0.128	0.00492	0.49	0.658
11	0.25	0.50	0.125	0.004828	0.48	0.658
12	0.33	0.58	0.125	0.004828	0.48	0.658
13	0.50	0.71	0.125	0.004736	0.47	0.658
14	0.75	0.87	0.125	0.004552	0.45	0.659
15	1.00	1.00	0.125	0.004414	0.44	0.659
16	1.50	1.23	0.125	0.004322	0.43	0.659
17	2.00	1.41	0.124	0.00423	0.42	0.659
18	3.00	1.73	0.125	0.004046	0.40	0.660
19	4.00	2.00	0.125	0.003954	0.39	0.660
20	5.00	2.24	0.124	0.003862	0.39	0.660
21	6.00	2.45	0.125	0.00377	0.38	0.660
22	7.00	2.65	0.124	0.003632	0.36	0.660
23	8.00	2.83	0.125	0.00354	0.35	0.660
24	9.00	3.00	0.125	0.003402	0.34	0.661
25	10.00	3.16	0.124	0.00331	0.33	0.661
26	12.00	3.46	0.125	0.003173	0.32	0.661
27	14.00	3.74	0.125	0.003127	0.31	0.661
28	16.00	4.00	0.124	0.003035	0.30	0.661
29	18.00	4.24	0.124	0.003035	0.30	0.661
30	20.00	4.47	0.124	0.002989	0.30	0.661
31	22.00	4.69	0.124	0.002897	0.29	0.661
32	24.00	4.90	0.124	0.002851	0.28	0.662
33	26.00	5.10	0.124	0.002805	0.28	0.662
34	28.00	5.29	0.124	0.002713	0.27	0.662
35	30.00	5.48	0.124	0.002621	0.26	0.662
36	35.00	5.92	0.124	0.002391	0.24	0.662
37	40.00	6.32	0.125	0.002253	0.22	0.663
38	45.00	6.71	0.124	0.002115	0.21	0.663
39	50.00	7.07	0.124	0.001977	0.20	0.663
40	60.00	7.75	0.124	0.001747	0.17	0.663
41	70.00	8.37	0.124	0.001655	0.17	0.664
42	80.00	8.94	0.124	0.001517	0.15	0.664
43	90.00	9.49	0.124	0.001425	0.14	0.664
44	100.00	10.00	0.124	0.001379	0.14	0.664
45	110.00	10.49	0.124	0.001287	0.13	0.664
46	120.00	10.95	0.124	0.001195	0.12	0.664
47	120.01	10.96	0.124	0.001195	0.12	0.664

CONSOLIDATION TEST DATA

SUMMARY REPORT



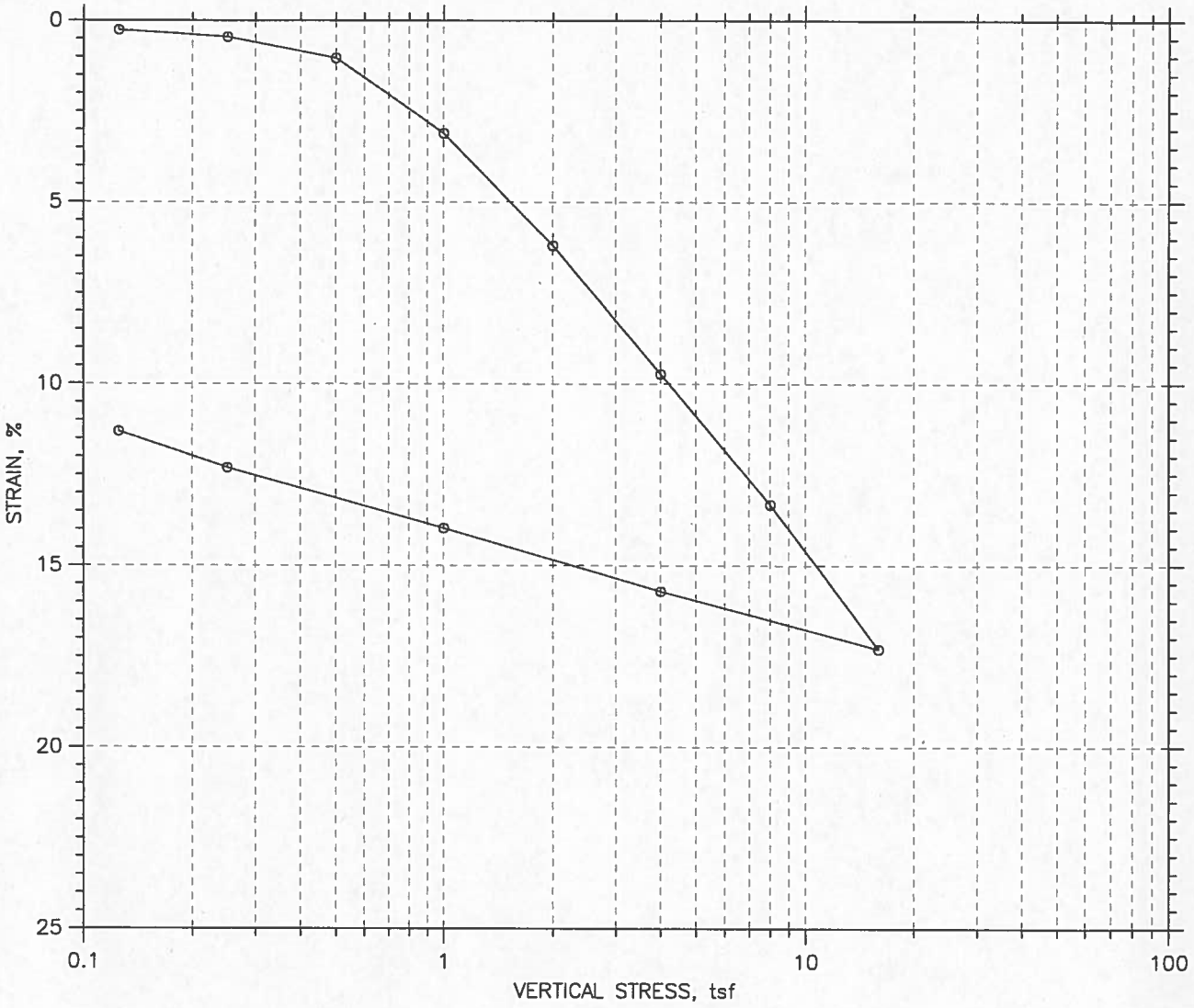


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-289
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-289	Test Date: 5/14/19	Test No.: 1
	Depth: 10-12.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Wed, 22-MAY-2019 13:51:03

CONSOLIDATION TEST DATA

SUMMARY REPORT



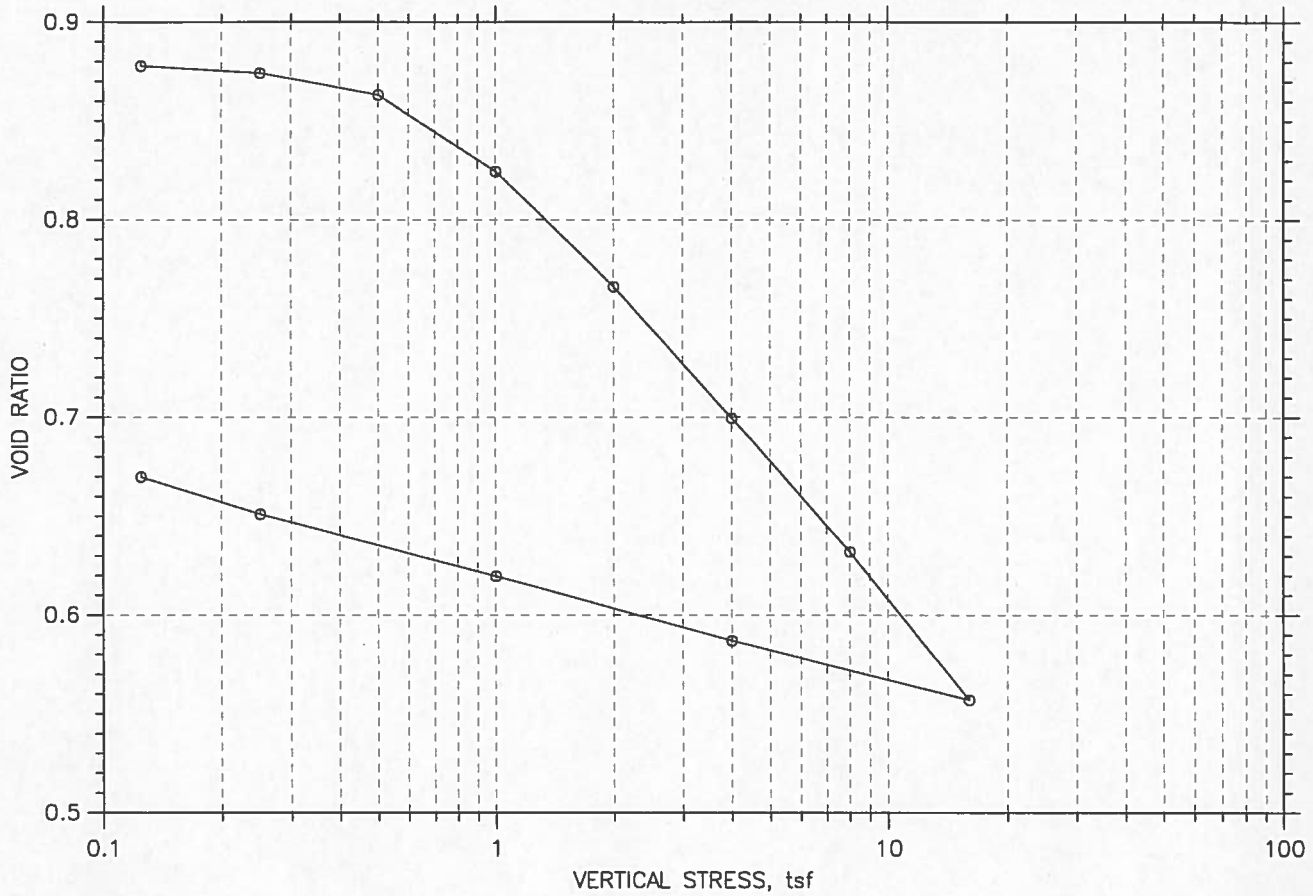
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	23.23	24.22
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	90.52	101.8
Compression Index: 3.81959e-313				Saturation, %	71.85	98.17
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.88	0.67
LL: ---	PL: ---	PI: ---	GS: 2.73			

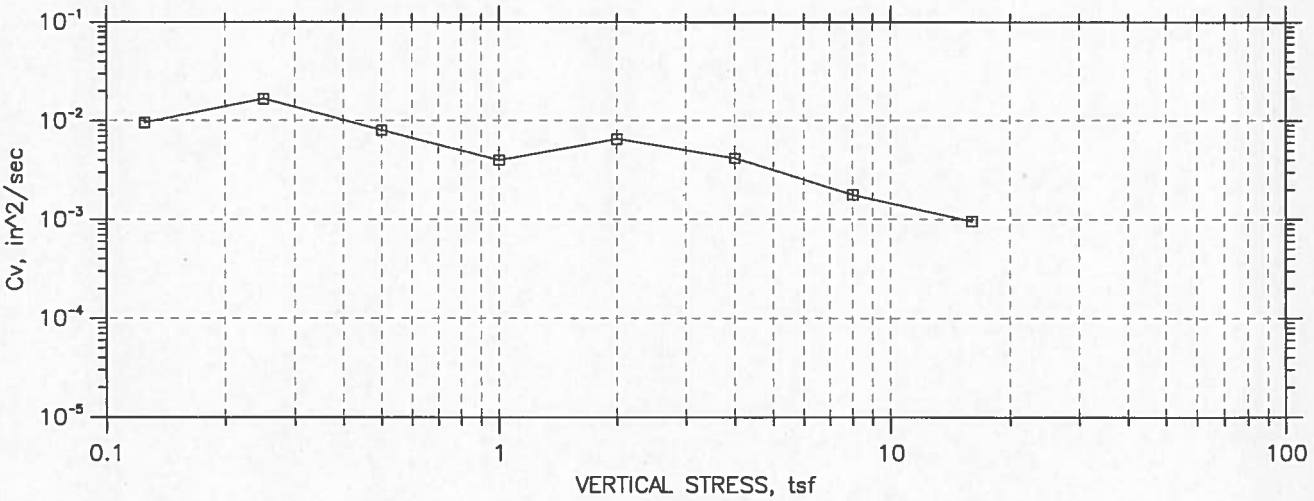
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-289
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-289	Test Date: 5/14/19	Test No.: 1
	Depth: 10-12.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Wed, 22-MAY-2019 13:51:04

CONSOLIDATION TEST DATA

SUMMARY REPORT



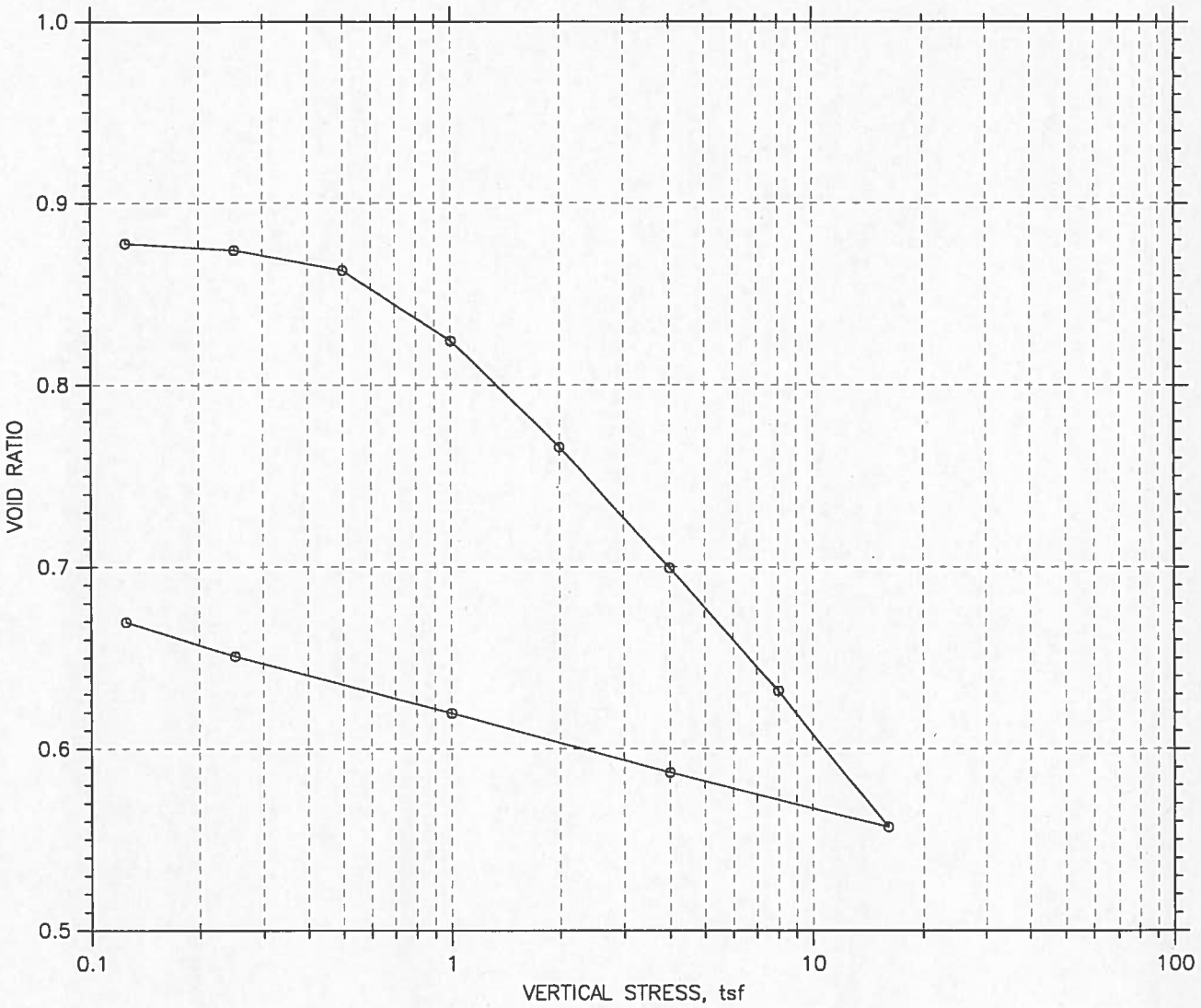


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-289
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-289	Test Date: 5/14/19	Test No.: 1
	Depth: 10-12.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Wed, 22-MAY-2019 13:51:18

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	23.23	24.22
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	90.52	101.8
Compression Index: 3.81959e-313				Saturation, %	71.85	98.17
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.88	0.67
LL: ---	PL: ---	PI: ---	GS: 2.73			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-289
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-289	Test Date: 5/14/19	Test No.: 1
	Depth: 10-12.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Wed, 22-MAY-2019 13:51:19

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/14/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Measured Specific Gravity: 2.73
Initial Void Ratio: 0.88
Final Void Ratio: 0.67

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	182.19	254.47	255.63	215.25
Wt. Container + Dry Soil, gm	160.85	227.26	227.26	186.89
Wt. Container, gm	69	110.16	110.16	69.82
Wt. Dry Soil, gm	91.85	117.1	117.1	117.07
Water Content, %	23.23	23.23	24.22	24.22
Void Ratio	---	0.88	0.67	---
Degree of Saturation, %	---	71.85	98.17	---
Dry Unit Weight, pcf	---	90.519	101.83	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/14/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.002667	0.878	0.27	0.2	1.50e-002	2.12e-002	5.96e-003
2	0.25	0.004644	0.874	0.46	0.1	2.70e-002	1.58e-002	7.96e-003
3	0.5	0.01053	0.863	1.05	0.4	9.19e-003	2.34e-002	4.04e-003
4	1	0.03127	0.824	3.11	1.3	2.69e-003	4.13e-002	2.08e-003
5	2	0.06235	0.766	6.21	0.7	4.76e-003	3.10e-002	2.76e-003
6	4	0.0978	0.699	9.74	1.2	2.50e-003	1.77e-002	8.28e-004
7	8	0.1338	0.632	13.33	1.7	1.65e-003	8.96e-003	2.78e-004
8	16	0.1738	0.557	17.31	2.7	9.29e-004	4.97e-003	8.66e-005
9	4	0.1578	0.587	15.72	0.3	8.37e-003	1.32e-003	2.08e-004
10	1	0.1404	0.620	13.98	29.4	8.80e-005	5.79e-003	9.53e-006
11	0.25	0.1237	0.651	12.32	56.0	4.80e-005	2.22e-002	1.99e-005
12	0.125	0.1136	0.670	11.32	127.5	2.17e-005	8.02e-002	3.26e-005

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.002667	0.878	0.27	0.0	0.00e+000	2.12e-002	0.00e+000
2	0.25	0.004644	0.874	0.46	0.0	0.00e+000	1.58e-002	0.00e+000
3	0.5	0.01053	0.863	1.05	0.1	1.19e-002	2.34e-002	5.22e-003
4	1	0.03127	0.824	3.11	0.1	6.79e-003	4.13e-002	5.25e-003
5	2	0.06235	0.766	6.21	0.1	8.46e-003	3.10e-002	4.90e-003
6	4	0.0978	0.699	9.74	0.1	1.01e-002	1.77e-002	3.34e-003
7	8	0.1338	0.632	13.33	0.0	0.00e+000	8.96e-003	0.00e+000
8	16	0.1738	0.557	17.31	0.0	0.00e+000	4.97e-003	0.00e+000
9	4	0.1578	0.587	15.72	0.0	2.45e-002	1.32e-003	6.08e-004
10	1	0.1404	0.620	13.98	1.9	3.14e-004	5.79e-003	3.40e-005
11	0.25	0.1237	0.651	12.32	0.0	0.00e+000	2.22e-002	0.00e+000
12	0.125	0.1136	0.670	11.32	0.0	0.00e+000	8.02e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/14/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 1 of 12
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.0056	-0.001335	-0.13	0.885
2	0.01	0.09	0.00896	-0.001335	-0.13	0.885
3	0.02	0.13	0.0258	-0.001013	-0.10	0.885
4	0.03	0.16	0.0392	-0.0008295	-0.08	0.884
5	0.04	0.19	0.0493	-0.0006456	-0.06	0.884
6	0.05	0.23	0.065	-0.0003237	-0.03	0.883
7	0.07	0.27	0.0796	0.000136	0.01	0.883
8	0.08	0.29	0.0885	0.0003659	0.04	0.882
9	0.12	0.34	0.105	0.00101	0.10	0.881
10	0.17	0.41	0.117	0.001377	0.14	0.880
11	0.25	0.50	0.122	0.001561	0.16	0.880
12	0.33	0.58	0.128	0.001561	0.16	0.880
13	0.42	0.65	0.132	0.001332	0.13	0.880

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/14/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 2 of 12
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.131	-0.0009674	-0.10	0.885
2	0.01	0.09	0.131	-0.0009674	-0.10	0.885
3	0.02	0.13	0.156	-0.0006916	-0.07	0.884
4	0.03	0.16	0.176	-0.0001858	-0.02	0.883
5	0.03	0.19	0.189	4.409e-005	0.00	0.883
6	0.05	0.23	0.207	0.0004579	0.05	0.882
7	0.07	0.27	0.22	0.0005499	0.05	0.882
8	0.08	0.29	0.225	0.0006878	0.07	0.882
9	0.12	0.34	0.236	0.0008717	0.09	0.881
10	0.17	0.41	0.243	0.00101	0.10	0.881
11	0.25	0.50	0.248	0.001148	0.11	0.881
12	0.34	0.58	0.249	0.001194	0.12	0.881
13	0.50	0.71	0.251	0.001194	0.12	0.881
14	0.75	0.87	0.252	0.001148	0.11	0.881
15	0.81	0.90	0.251	0.001056	0.11	0.881

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/14/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 3 of 12
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.251	-0.001197	-0.12	0.885
2	0.01	0.09	0.255	-0.001197	-0.12	0.885
3	0.02	0.13	0.317	-0.0007828	-0.08	0.884
4	0.03	0.16	0.351	-0.000277	-0.03	0.883
5	0.04	0.19	0.375	0.0001828	0.02	0.882
6	0.05	0.23	0.409	0.0008265	0.08	0.881
7	0.07	0.27	0.435	0.00124	0.12	0.880
8	0.08	0.29	0.447	0.001378	0.14	0.880
9	0.12	0.34	0.468	0.001792	0.18	0.879
10	0.17	0.41	0.483	0.00216	0.22	0.879
11	0.25	0.50	0.492	0.00262	0.26	0.878
12	0.34	0.58	0.496	0.002896	0.29	0.877
13	0.50	0.71	0.499	0.002988	0.30	0.877
14	0.75	0.87	0.499	0.003125	0.31	0.877
15	1.00	1.00	0.499	0.003217	0.32	0.877
16	1.50	1.23	0.499	0.003309	0.33	0.877
17	2.00	1.42	0.5	0.003309	0.33	0.877
18	3.00	1.73	0.5	0.003355	0.33	0.876
19	4.00	2.00	0.5	0.003447	0.34	0.876
20	5.00	2.24	0.499	0.003493	0.35	0.876
21	6.00	2.45	0.499	0.003493	0.35	0.876
22	7.00	2.65	0.5	0.003539	0.35	0.876
23	8.00	2.83	0.5	0.003539	0.35	0.876
24	9.00	3.00	0.5	0.003539	0.35	0.876
25	10.00	3.16	0.5	0.003539	0.35	0.876
26	12.00	3.46	0.5	0.003585	0.36	0.876
27	14.00	3.74	0.5	0.003585	0.36	0.876
28	16.00	4.00	0.5	0.003585	0.36	0.876
29	18.00	4.24	0.5	0.003585	0.36	0.876
30	20.00	4.47	0.5	0.003585	0.36	0.876
31	22.00	4.69	0.501	0.003631	0.36	0.876
32	24.00	4.90	0.5	0.003631	0.36	0.876
33	26.00	5.10	0.499	0.003677	0.37	0.876
34	28.00	5.29	0.5	0.003677	0.37	0.876
35	30.00	5.48	0.5	0.003723	0.37	0.876
36	35.00	5.92	0.499	0.003723	0.37	0.876
37	40.00	6.32	0.5	0.003815	0.38	0.876
38	45.00	6.71	0.5	0.003861	0.38	0.876
39	50.00	7.07	0.501	0.003953	0.39	0.875
40	60.00	7.75	0.499	0.003999	0.40	0.875
41	70.00	8.37	0.5	0.004091	0.41	0.875
42	80.00	8.94	0.499	0.004229	0.42	0.875
43	90.00	9.49	0.5	0.004367	0.43	0.875
44	100.00	10.00	0.5	0.004367	0.43	0.875
45	110.00	10.49	0.5	0.004413	0.44	0.875
46	120.00	10.95	0.5	0.004459	0.44	0.874
47	130.00	11.40	0.5	0.004505	0.45	0.874
48	140.00	11.83	0.5	0.004505	0.45	0.874
49	150.00	12.25	0.5	0.004551	0.45	0.874
50	160.00	12.65	0.5	0.004597	0.46	0.874
51	170.00	13.04	0.5	0.004643	0.46	0.874
52	180.00	13.42	0.5	0.004643	0.46	0.874
53	189.62	13.77	0.499	0.004689	0.47	0.874

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/14/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 4 of 12
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.5	0.003357	0.33	0.876
2	0.01	0.09	0.568	0.003357	0.33	0.876
3	0.02	0.13	0.701	0.004415	0.44	0.875
4	0.03	0.16	0.751	0.005519	0.55	0.872
5	0.04	0.19	0.775	0.006346	0.63	0.871
6	0.05	0.23	0.819	0.007817	0.78	0.868
7	0.07	0.27	0.853	0.009243	0.92	0.865
8	0.08	0.29	0.875	0.009932	0.99	0.864
9	0.12	0.35	0.909	0.01177	1.17	0.861
10	0.17	0.41	0.939	0.01223	1.22	0.860
11	0.25	0.50	0.966	0.01412	1.41	0.856
12	0.34	0.58	0.977	0.01499	1.49	0.855
13	0.50	0.71	0.987	0.01632	1.63	0.852
14	0.75	0.87	0.994	0.01692	1.69	0.851
15	1.00	1.00	0.996	0.01766	1.76	0.850
16	1.50	1.23	0.996	0.0183	1.82	0.848
17	2.00	1.42	0.998	0.01876	1.87	0.848
18	3.00	1.73	0.998	0.01936	1.93	0.846
19	4.00	2.00	0.998	0.02	1.99	0.845
20	5.00	2.24	0.998	0.02028	2.02	0.845
21	6.00	2.45	0.999	0.02042	2.03	0.845
22	7.00	2.65	0.998	0.02055	2.05	0.844
23	8.00	2.83	0.999	0.02078	2.07	0.844
24	9.00	3.00	0.999	0.02092	2.08	0.844
25	10.00	3.16	0.999	0.02097	2.09	0.843
26	12.00	3.46	0.999	0.02115	2.11	0.843
27	14.00	3.74	0.999	0.0217	2.16	0.842
28	16.00	4.00	0.999	0.0223	2.22	0.841
29	18.00	4.24	0.999	0.02244	2.23	0.841
30	20.00	4.47	0.999	0.02262	2.25	0.840
31	22.00	4.69	0.999	0.02271	2.26	0.840
32	24.00	4.90	0.999	0.02281	2.27	0.840
33	26.00	5.10	0.999	0.02285	2.28	0.840
34	28.00	5.29	0.999	0.02294	2.29	0.840
35	30.00	5.48	0.999	0.02299	2.29	0.840
36	35.00	5.92	0.998	0.02304	2.29	0.840
37	40.00	6.32	0.999	0.02313	2.30	0.839
38	45.00	6.71	0.999	0.02313	2.30	0.839
39	50.00	7.07	0.999	0.02317	2.31	0.839
40	60.00	7.75	1	0.02317	2.31	0.839
41	70.00	8.37	0.998	0.02331	2.32	0.839
42	80.00	8.94	0.999	0.02354	2.34	0.839
43	90.00	9.49	0.999	0.02373	2.36	0.838
44	100.00	10.00	0.999	0.02386	2.38	0.838
45	110.00	10.49	0.999	0.02405	2.40	0.838
46	120.00	10.95	0.999	0.02409	2.40	0.838
47	120.15	10.96	0.998	0.02409	2.40	0.838

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/14/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 5 of 12
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.02193	2.18	0.842
2	0.01	0.09	1.16	0.02193	2.18	0.842
3	0.02	0.13	1.42	0.024	2.39	0.838
4	0.03	0.16	1.51	0.02607	2.60	0.834
5	0.04	0.19	1.57	0.02809	2.80	0.830
6	0.05	0.23	1.65	0.03021	3.01	0.826
7	0.07	0.27	1.74	0.03292	3.28	0.821
8	0.09	0.30	1.79	0.03412	3.40	0.819
9	0.12	0.34	1.86	0.03628	3.61	0.815
10	0.17	0.41	1.92	0.03913	3.90	0.809
11	0.25	0.50	1.96	0.04074	4.06	0.806
12	0.33	0.58	1.98	0.04212	4.19	0.804
13	0.50	0.71	1.99	0.04368	4.35	0.801
14	0.75	0.87	1.99	0.04423	4.41	0.800
15	1.00	1.00	1.99	0.04474	4.46	0.799
16	1.50	1.23	2	0.04593	4.57	0.797
17	2.00	1.41	2	0.04658	4.64	0.795
18	3.00	1.73	2	0.04717	4.70	0.794
19	4.00	2.00	2	0.04763	4.74	0.793
20	5.00	2.24	2	0.04851	4.83	0.792
21	6.00	2.45	2	0.04883	4.86	0.791
22	7.00	2.65	2	0.04915	4.90	0.791
23	8.00	2.83	2	0.04929	4.91	0.790
24	9.00	3.00	2	0.04952	4.93	0.790
25	10.00	3.16	2	0.04961	4.94	0.790
26	12.00	3.46	2	0.05012	4.99	0.789
27	14.00	3.74	2	0.05053	5.03	0.788
28	16.00	4.00	2	0.05081	5.06	0.788
29	18.00	4.24	2	0.05076	5.06	0.788
30	20.00	4.47	2	0.05094	5.07	0.787
31	22.00	4.69	2	0.05108	5.09	0.787
32	24.00	4.90	2	0.05113	5.09	0.787
33	26.00	5.10	2	0.05145	5.12	0.786
34	28.00	5.29	2	0.05154	5.13	0.786
35	30.00	5.48	2	0.05159	5.14	0.786
36	35.00	5.92	2	0.05168	5.15	0.786
37	40.00	6.32	2	0.05173	5.15	0.786
38	45.00	6.71	2	0.05191	5.17	0.785
39	50.00	7.07	2	0.052	5.18	0.785
40	60.00	7.75	2	0.05219	5.20	0.785
41	70.00	8.37	2	0.05232	5.21	0.785
42	80.00	8.94	2	0.05251	5.23	0.784
43	90.00	9.49	2	0.05269	5.25	0.784
44	100.00	10.00	2	0.05278	5.26	0.784
45	110.00	10.49	2	0.05292	5.27	0.784
46	120.00	10.95	2	0.05301	5.28	0.783
47	120.19	10.96	2	0.05301	5.28	0.783

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/14/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 6 of 12
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	0.05044	5.02	0.788
2	0.01	0.09	2.36	0.05039	5.02	0.788
3	0.02	0.13	3.11	0.05412	5.39	0.781
4	0.03	0.16	3.34	0.05756	5.73	0.775
5	0.04	0.19	3.49	0.06009	5.99	0.770
6	0.05	0.23	3.66	0.06317	6.29	0.764
7	0.07	0.27	3.79	0.06547	6.52	0.760
8	0.08	0.29	3.84	0.06635	6.61	0.758
9	0.12	0.35	3.91	0.06819	6.79	0.755
10	0.17	0.41	3.95	0.06929	6.90	0.753
11	0.25	0.50	3.97	0.07127	7.10	0.749
12	0.34	0.58	3.98	0.07177	7.15	0.748
13	0.50	0.71	3.99	0.07292	7.26	0.746
14	0.75	0.87	3.99	0.07425	7.40	0.744
15	1.00	1.00	3.99	0.07508	7.48	0.742
16	1.50	1.23	3.99	0.07596	7.57	0.740
17	2.00	1.41	4	0.07646	7.62	0.739
18	3.00	1.73	4	0.07779	7.75	0.737
19	4.00	2.00	4	0.07844	7.81	0.736
20	5.00	2.24	4	0.07885	7.85	0.735
21	6.00	2.45	4	0.07959	7.93	0.734
22	7.00	2.65	4	0.08009	7.98	0.733
23	8.00	2.83	4	0.08046	8.01	0.732
24	9.00	3.00	4	0.08055	8.02	0.732
25	10.00	3.16	4	0.0806	8.03	0.732
26	12.00	3.46	4	0.08097	8.06	0.731
27	14.00	3.74	4	0.08129	8.10	0.730
28	16.00	4.00	4	0.08147	8.11	0.730
29	18.00	4.24	4	0.0817	8.14	0.730
30	20.00	4.47	4	0.08184	8.15	0.729
31	22.00	4.69	4	0.08207	8.17	0.729
32	24.00	4.90	4	0.0823	8.20	0.728
33	26.00	5.10	4	0.08239	8.21	0.728
34	28.00	5.29	4	0.08253	8.22	0.728
35	30.00	5.48	4	0.08285	8.25	0.727
36	35.00	5.92	4	0.08345	8.31	0.726
37	40.00	6.32	4	0.08373	8.34	0.726
38	45.00	6.71	4	0.084	8.37	0.725
39	50.00	7.07	4	0.08423	8.39	0.725
40	60.00	7.75	4	0.08451	8.42	0.724
41	70.00	8.37	4	0.08474	8.44	0.724
42	80.00	8.94	4	0.08497	8.46	0.723
43	90.00	9.49	4	0.08552	8.52	0.722
44	100.00	10.00	4	0.08575	8.54	0.722
45	110.00	10.49	4	0.0858	8.55	0.722
46	120.00	10.95	4	0.08589	8.55	0.722
47	120.15	10.96	4	0.08589	8.55	0.722

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/14/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 7 of 12
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.08258	8.22	0.728
2	0.01	0.09	4.58	0.08262	8.23	0.728
3	0.02	0.13	6.66	0.08704	8.67	0.720
4	0.03	0.16	7.2	0.09256	9.22	0.709
5	0.04	0.19	7.49	0.09541	9.50	0.704
6	0.05	0.23	7.75	0.09816	9.78	0.699
7	0.07	0.27	7.85	0.09964	9.92	0.696
8	0.08	0.29	7.89	0.1006	10.02	0.694
9	0.12	0.34	7.93	0.1017	10.13	0.692
10	0.17	0.41	7.96	0.1026	10.22	0.690
11	0.25	0.50	7.97	0.1037	10.33	0.688
12	0.34	0.58	7.98	0.1045	10.40	0.687
13	0.50	0.71	7.99	0.1056	10.51	0.685
14	0.75	0.87	7.99	0.106	10.56	0.684
15	1.00	1.00	7.99	0.1068	10.63	0.683
16	1.50	1.22	8	0.1076	10.72	0.681
17	2.00	1.41	8	0.1092	10.87	0.678
18	3.00	1.73	7.99	0.1099	10.95	0.677
19	4.00	2.00	8	0.1104	11.00	0.676
20	5.00	2.24	8	0.1109	11.05	0.675
21	6.00	2.45	8	0.1116	11.11	0.674
22	7.00	2.65	8	0.1122	11.17	0.672
23	8.00	2.83	8	0.1128	11.24	0.671
24	9.00	3.00	8	0.1132	11.28	0.670
25	10.00	3.16	8	0.1135	11.30	0.670
26	12.00	3.46	8	0.1138	11.33	0.669
27	14.00	3.74	8	0.1141	11.36	0.669
28	16.00	4.00	8	0.1143	11.39	0.668
29	18.00	4.24	8	0.1145	11.41	0.668
30	20.00	4.47	8	0.1148	11.43	0.668
31	22.00	4.69	8	0.115	11.46	0.667
32	24.00	4.90	8	0.1153	11.48	0.667
33	26.00	5.10	8	0.1156	11.51	0.666
34	28.00	5.29	8	0.1159	11.54	0.666
35	30.00	5.48	8	0.116	11.55	0.665
36	35.00	5.92	8	0.1163	11.59	0.665
37	40.00	6.32	8	0.1167	11.62	0.664
38	45.00	6.71	8	0.117	11.65	0.663
39	50.00	7.07	8	0.1172	11.67	0.663
40	60.00	7.75	8	0.1177	11.72	0.662
41	70.00	8.37	8	0.1178	11.74	0.662
42	80.00	8.94	8	0.118	11.76	0.661
43	90.00	9.49	8	0.1182	11.77	0.661
44	100.00	10.00	8	0.1184	11.79	0.661
45	110.00	10.49	8	0.1184	11.80	0.661
46	120.00	10.95	8	0.1186	11.81	0.660
47	120.12	10.96	8	0.1186	11.81	0.660

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/14/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 8 of 12
Applied Stress: 16 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.1132	11.27	0.671
2	0.01	0.09	8.99	0.1132	11.27	0.671
3	0.02	0.13	14	0.1183	11.78	0.661
4	0.03	0.16	15.3	0.1266	12.61	0.645
5	0.04	0.19	15.7	0.1293	12.88	0.640
6	0.05	0.23	15.8	0.1314	13.09	0.636
7	0.07	0.27	15.9	0.1324	13.18	0.635
8	0.08	0.29	15.9	0.1326	13.21	0.634
9	0.12	0.35	15.9	0.1334	13.29	0.633
10	0.17	0.41	16	0.1345	13.40	0.631
11	0.25	0.50	16	0.1354	13.49	0.629
12	0.34	0.58	16	0.136	13.55	0.628
13	0.50	0.71	16	0.1367	13.62	0.626
14	0.75	0.87	16	0.1379	13.73	0.624
15	1.00	1.00	16	0.1384	13.78	0.623
16	1.50	1.23	16	0.1393	13.88	0.622
17	2.00	1.41	16	0.1405	13.99	0.619
18	3.00	1.73	16	0.1419	14.14	0.617
19	4.00	2.00	16	0.1429	14.23	0.615
20	5.00	2.24	16	0.1435	14.30	0.614
21	6.00	2.45	16	0.1439	14.33	0.613
22	7.00	2.65	16	0.1444	14.38	0.612
23	8.00	2.83	16	0.1447	14.42	0.611
24	9.00	3.00	16	0.1452	14.46	0.610
25	10.00	3.16	16	0.1456	14.50	0.610
26	12.00	3.46	16	0.1465	14.60	0.608
27	14.00	3.74	16	0.1471	14.65	0.607
28	16.00	4.00	16	0.1475	14.69	0.606
29	18.00	4.24	16	0.1479	14.73	0.605
30	20.00	4.47	16	0.1484	14.78	0.605
31	22.00	4.69	16	0.1486	14.80	0.604
32	24.00	4.90	16	0.1487	14.81	0.604
33	26.00	5.10	16	0.1489	14.83	0.604
34	28.00	5.29	16	0.149	14.84	0.603
35	30.00	5.48	16	0.1491	14.85	0.603
36	35.00	5.92	16	0.1495	14.89	0.602
37	40.00	6.32	16	0.1504	14.98	0.601
38	45.00	6.71	16	0.1509	15.03	0.600
39	50.00	7.07	16	0.1514	15.08	0.599
40	60.00	7.75	16	0.152	15.14	0.598
41	70.00	8.37	16	0.1523	15.17	0.597
42	80.00	8.94	16	0.1524	15.18	0.597
43	90.00	9.49	16	0.1527	15.20	0.597
44	100.00	10.00	16	0.1527	15.21	0.596
45	110.00	10.49	16	0.1529	15.23	0.596
46	120.00	10.95	16	0.1531	15.25	0.596
47	120.10	10.96	16	0.1531	15.25	0.596

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/14/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 9 of 12
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	16	0.1716	17.10	0.561
2	0.01	0.09	13.7	0.1716	17.10	0.561
3	0.02	0.13	5.34	0.1679	16.72	0.568
4	0.03	0.16	4.2	0.1621	16.14	0.579
5	0.04	0.19	4.09	0.1613	16.07	0.580
6	0.05	0.23	4.05	0.1607	16.00	0.582
7	0.07	0.27	4.03	0.1605	15.98	0.582
8	0.08	0.29	4.02	0.1604	15.97	0.582
9	0.12	0.35	4.02	0.1602	15.96	0.582
10	0.17	0.41	4.01	0.16	15.93	0.583
11	0.25	0.50	4.01	0.1595	15.89	0.584
12	0.34	0.58	4.01	0.1591	15.85	0.584
13	0.50	0.71	4	0.1587	15.81	0.585
14	0.75	0.87	4	0.1584	15.78	0.586
15	1.00	1.00	4	0.1581	15.74	0.586
16	1.50	1.23	4	0.1578	15.72	0.587
17	2.00	1.41	4	0.1577	15.70	0.587
18	3.00	1.73	4	0.1573	15.67	0.588
19	4.00	2.00	4	0.1572	15.65	0.588
20	5.00	2.24	4	0.1571	15.64	0.588
21	6.00	2.45	4	0.157	15.63	0.588
22	7.00	2.65	4	0.1569	15.63	0.589
23	8.00	2.83	4	0.1569	15.63	0.589
24	9.00	3.00	4	0.1568	15.62	0.589
25	10.00	3.16	4	0.1568	15.62	0.589
26	12.00	3.46	4	0.1567	15.61	0.589
27	14.00	3.74	4	0.1567	15.61	0.589
28	16.00	4.00	4	0.1567	15.60	0.589
29	18.00	4.24	4	0.1566	15.60	0.589
30	20.00	4.47	4	0.1566	15.60	0.589
31	22.00	4.69	4	0.1566	15.59	0.589
32	24.00	4.90	4	0.1565	15.59	0.589
33	26.00	5.10	4	0.1564	15.58	0.589
34	28.00	5.29	4	0.1564	15.58	0.589
35	30.00	5.48	4	0.1564	15.58	0.590
36	35.00	5.92	4	0.1563	15.57	0.590
37	40.00	6.32	4	0.1562	15.56	0.590
38	45.00	6.71	4	0.1561	15.55	0.590
39	50.00	7.07	4	0.1561	15.55	0.590
40	60.00	7.75	4	0.156	15.54	0.590
41	70.00	8.37	4	0.1559	15.52	0.590
42	80.00	8.94	4	0.1558	15.52	0.591
43	90.00	9.49	4	0.1557	15.51	0.591
44	100.00	10.00	4	0.1557	15.51	0.591
45	110.00	10.49	4	0.1557	15.51	0.591
46	120.00	10.95	4	0.1557	15.51	0.591
47	120.04	10.96	4	0.1557	15.51	0.591

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/14/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 10 of 12
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.1557	15.51	0.591
2	0.01	0.09	3.61	0.1557	15.51	0.591
3	0.02	0.13	1.32	0.1532	15.25	0.596
4	0.03	0.16	1.16	0.1515	15.09	0.599
5	0.04	0.19	1.1	0.1512	15.06	0.599
6	0.05	0.23	1.05	0.1508	15.02	0.600
7	0.07	0.27	1.04	0.1504	14.98	0.601
8	0.08	0.29	1.03	0.1502	14.96	0.601
9	0.12	0.35	1.02	0.1498	14.92	0.602
10	0.17	0.41	1.01	0.1494	14.88	0.603
11	0.25	0.50	1.01	0.1492	14.86	0.603
12	0.34	0.58	1.01	0.149	14.84	0.603
13	0.50	0.71	1	0.1487	14.81	0.604
14	0.75	0.87	1	0.1482	14.76	0.605
15	1.00	1.00	1	0.1478	14.72	0.606
16	1.50	1.23	1	0.147	14.65	0.607
17	2.00	1.41	1	0.1466	14.60	0.608
18	3.00	1.73	1	0.1462	14.56	0.609
19	4.00	2.00	1	0.1459	14.54	0.609
20	5.00	2.24	1	0.1457	14.51	0.610
21	6.00	2.45	1	0.1456	14.50	0.610
22	7.00	2.65	1	0.1453	14.48	0.610
23	8.00	2.83	0.999	0.1449	14.43	0.611
24	9.00	3.00	0.999	0.1447	14.41	0.611
25	10.00	3.16	0.999	0.1445	14.39	0.612
26	12.00	3.46	0.998	0.1441	14.36	0.612
27	14.00	3.74	0.999	0.1435	14.29	0.614
28	16.00	4.00	0.999	0.143	14.25	0.615
29	18.00	4.24	0.999	0.1426	14.20	0.615
30	20.00	4.47	0.999	0.1424	14.18	0.616
31	22.00	4.69	1	0.1422	14.16	0.616
32	24.00	4.90	0.999	0.1421	14.15	0.616
33	26.00	5.10	1	0.142	14.14	0.617
34	28.00	5.29	1	0.1419	14.14	0.617
35	30.00	5.48	0.999	0.1417	14.11	0.617
36	35.00	5.92	1	0.1412	14.06	0.618
37	40.00	6.32	1	0.1409	14.04	0.619
38	45.00	6.71	0.999	0.1405	14.00	0.619
39	50.00	7.07	0.999	0.1402	13.97	0.620
40	60.00	7.75	0.999	0.1398	13.92	0.621
41	70.00	8.37	0.999	0.1394	13.89	0.621
42	80.00	8.94	1	0.1392	13.86	0.622
43	90.00	9.49	0.999	0.1389	13.84	0.622
44	100.00	10.00	1	0.1388	13.83	0.622
45	110.00	10.49	1	0.1385	13.80	0.623
46	120.00	10.95	1	0.1383	13.77	0.624
47	120.05	10.96	1	0.1383	13.77	0.624

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/14/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 11 of 12
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	1	0.1383	13.77	0.624
2	0.01	0.09	0.76	0.1383	13.77	0.624
3	0.02	0.13	0.435	0.1373	13.67	0.625
4	0.03	0.16	0.357	0.137	13.65	0.626
5	0.04	0.19	0.323	0.1368	13.62	0.626
6	0.05	0.23	0.29	0.1364	13.58	0.627
7	0.07	0.27	0.279	0.1361	13.55	0.628
8	0.08	0.29	0.272	0.1359	13.53	0.628
9	0.12	0.34	0.263	0.1353	13.47	0.629
10	0.17	0.41	0.259	0.1347	13.42	0.630
11	0.25	0.50	0.257	0.1344	13.39	0.631
12	0.34	0.58	0.255	0.1343	13.37	0.631
13	0.50	0.71	0.253	0.134	13.35	0.631
14	0.75	0.87	0.253	0.1337	13.32	0.632
15	1.00	1.00	0.253	0.1335	13.30	0.632
16	1.50	1.23	0.252	0.1332	13.27	0.633
17	2.00	1.42	0.251	0.1331	13.26	0.633
18	3.00	1.73	0.251	0.1328	13.23	0.634
19	4.00	2.00	0.251	0.1321	13.16	0.635
20	5.00	2.24	0.251	0.1317	13.12	0.636
21	6.00	2.45	0.251	0.1314	13.08	0.636
22	7.00	2.65	0.251	0.1311	13.06	0.637
23	8.00	2.83	0.25	0.1309	13.04	0.637
24	9.00	3.00	0.25	0.1306	13.01	0.638
25	10.00	3.16	0.251	0.1304	12.99	0.638
26	12.00	3.46	0.251	0.1299	12.94	0.639
27	14.00	3.74	0.25	0.1295	12.90	0.640
28	16.00	4.00	0.252	0.1291	12.86	0.641
29	18.00	4.24	0.25	0.1287	12.82	0.641
30	20.00	4.47	0.25	0.1281	12.76	0.642
31	22.00	4.69	0.251	0.1279	12.74	0.643
32	24.00	4.90	0.251	0.1276	12.71	0.643
33	26.00	5.10	0.25	0.1275	12.69	0.644
34	28.00	5.29	0.25	0.1273	12.68	0.644
35	30.00	5.48	0.25	0.127	12.65	0.645
36	35.00	5.92	0.25	0.1267	12.62	0.645
37	40.00	6.32	0.25	0.1263	12.58	0.646
38	45.00	6.71	0.251	0.1257	12.52	0.647
39	50.00	7.07	0.25	0.125	12.45	0.648
40	60.00	7.75	0.25	0.1242	12.37	0.650
41	70.00	8.37	0.25	0.1236	12.31	0.651
42	80.00	8.94	0.25	0.1233	12.28	0.652
43	90.00	9.49	0.25	0.123	12.25	0.652
44	100.00	10.00	0.25	0.1227	12.22	0.653
45	110.00	10.49	0.251	0.1222	12.17	0.654
46	120.00	10.95	0.251	0.1216	12.11	0.655
47	120.04	10.96	0.249	0.1216	12.11	0.655

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/14/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

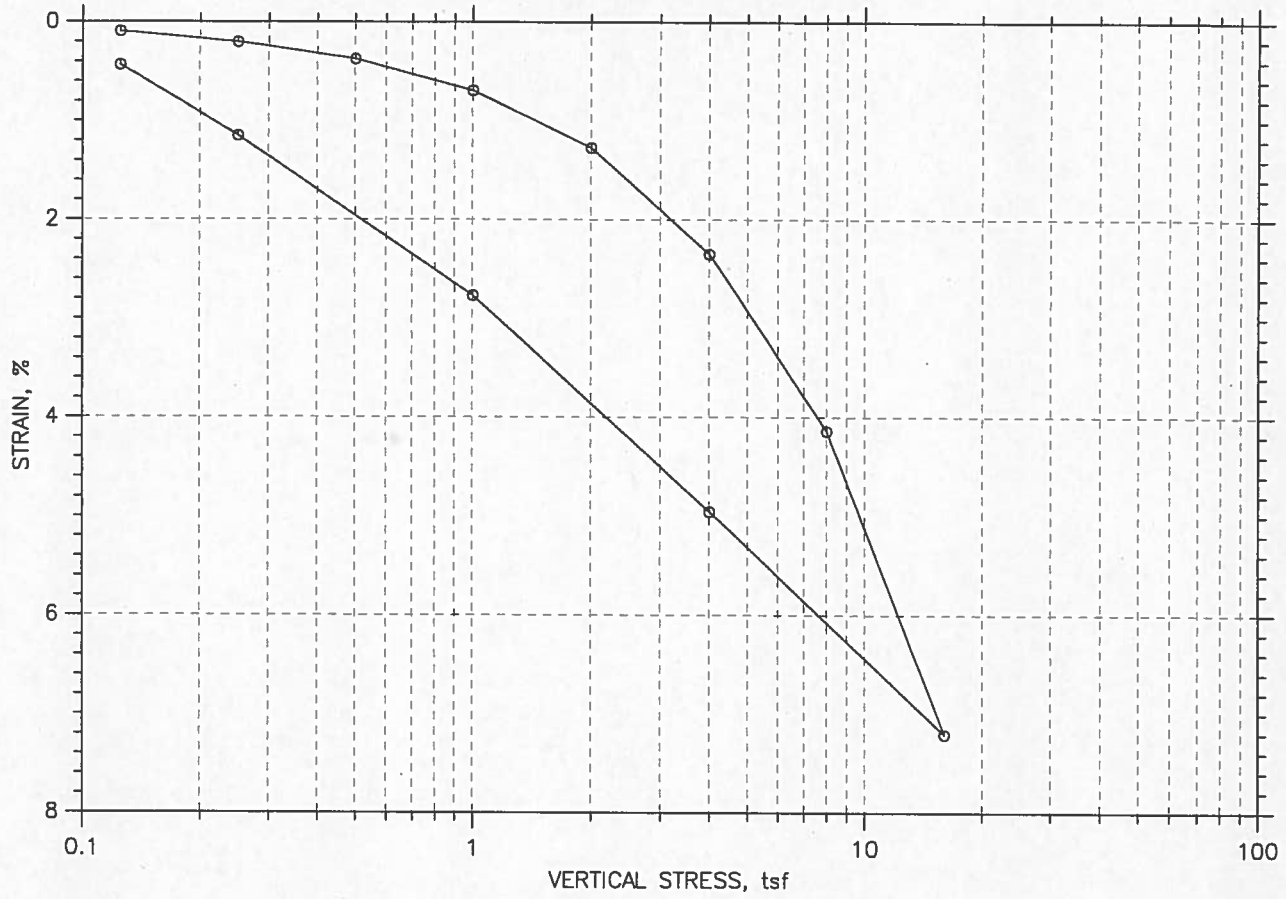
Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

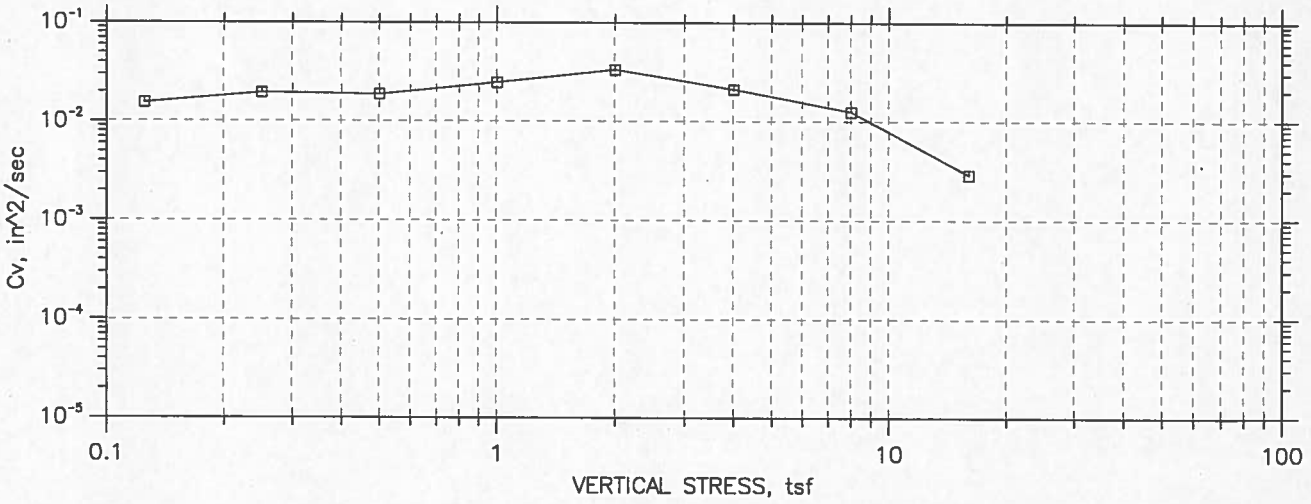
Constant Load Step: 12 of 12
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	0.1216	12.11	0.655
2	0.01	0.09	0.226	0.1216	12.11	0.655
3	0.02	0.13	0.165	0.1212	12.07	0.656
4	0.03	0.16	0.149	0.1209	12.04	0.656
5	0.04	0.19	0.141	0.1208	12.04	0.656
6	0.05	0.23	0.133	0.1208	12.03	0.656
7	0.07	0.27	0.13	0.1207	12.02	0.656
8	0.08	0.29	0.13	0.1207	12.02	0.656
9	0.12	0.35	0.128	0.1206	12.01	0.657
10	0.17	0.41	0.127	0.1206	12.01	0.657
11	0.25	0.50	0.127	0.1206	12.01	0.657
12	0.33	0.58	0.125	0.1205	12.00	0.657
13	0.50	0.71	0.125	0.1205	12.00	0.657
14	0.75	0.87	0.125	0.1204	11.99	0.657
15	1.00	1.00	0.125	0.1203	11.98	0.657
16	1.50	1.23	0.125	0.1202	11.98	0.657
17	2.00	1.42	0.125	0.1201	11.96	0.658
18	3.00	1.73	0.124	0.1198	11.93	0.658
19	4.00	2.00	0.125	0.1197	11.92	0.658
20	5.00	2.24	0.124	0.1195	11.90	0.659
21	6.00	2.45	0.124	0.1194	11.89	0.659
22	7.00	2.65	0.125	0.1194	11.89	0.659
23	8.00	2.83	0.125	0.1192	11.87	0.659
24	9.00	3.00	0.125	0.1191	11.87	0.659
25	10.00	3.16	0.124	0.1191	11.86	0.659
26	12.00	3.46	0.125	0.1189	11.85	0.660
27	14.00	3.74	0.125	0.1189	11.84	0.660
28	16.00	4.00	0.125	0.1187	11.82	0.660
29	18.00	4.24	0.124	0.1186	11.81	0.660
30	20.00	4.47	0.124	0.1184	11.80	0.661
31	22.00	4.69	0.124	0.1183	11.79	0.661
32	24.00	4.90	0.124	0.1182	11.77	0.661
33	26.00	5.10	0.125	0.1179	11.74	0.662
34	28.00	5.29	0.124	0.1176	11.71	0.662
35	30.00	5.48	0.125	0.1173	11.69	0.663
36	35.00	5.92	0.127	0.1169	11.65	0.664
37	40.00	6.32	0.124	0.1166	11.61	0.664
38	45.00	6.71	0.125	0.1162	11.58	0.665
39	50.00	7.07	0.125	0.116	11.55	0.665
40	60.00	7.75	0.124	0.1154	11.49	0.666
41	70.00	8.37	0.124	0.1149	11.44	0.667
42	80.00	8.94	0.123	0.1144	11.40	0.668
43	90.00	9.49	0.124	0.1141	11.36	0.669
44	100.00	10.00	0.124	0.1139	11.35	0.669
45	110.00	10.49	0.124	0.1135	11.31	0.670
46	120.00	10.95	0.124	0.1129	11.25	0.671
47	130.00	11.40	0.124	0.1125	11.21	0.672
48	140.00	11.83	0.124	0.1122	11.18	0.672
49	150.00	12.25	0.124	0.1119	11.15	0.673
50	160.00	12.65	0.124	0.1117	11.12	0.673
51	169.02	13.00	0.124	0.1115	11.11	0.674

CONSOLIDATION TEST DATA

SUMMARY REPORT



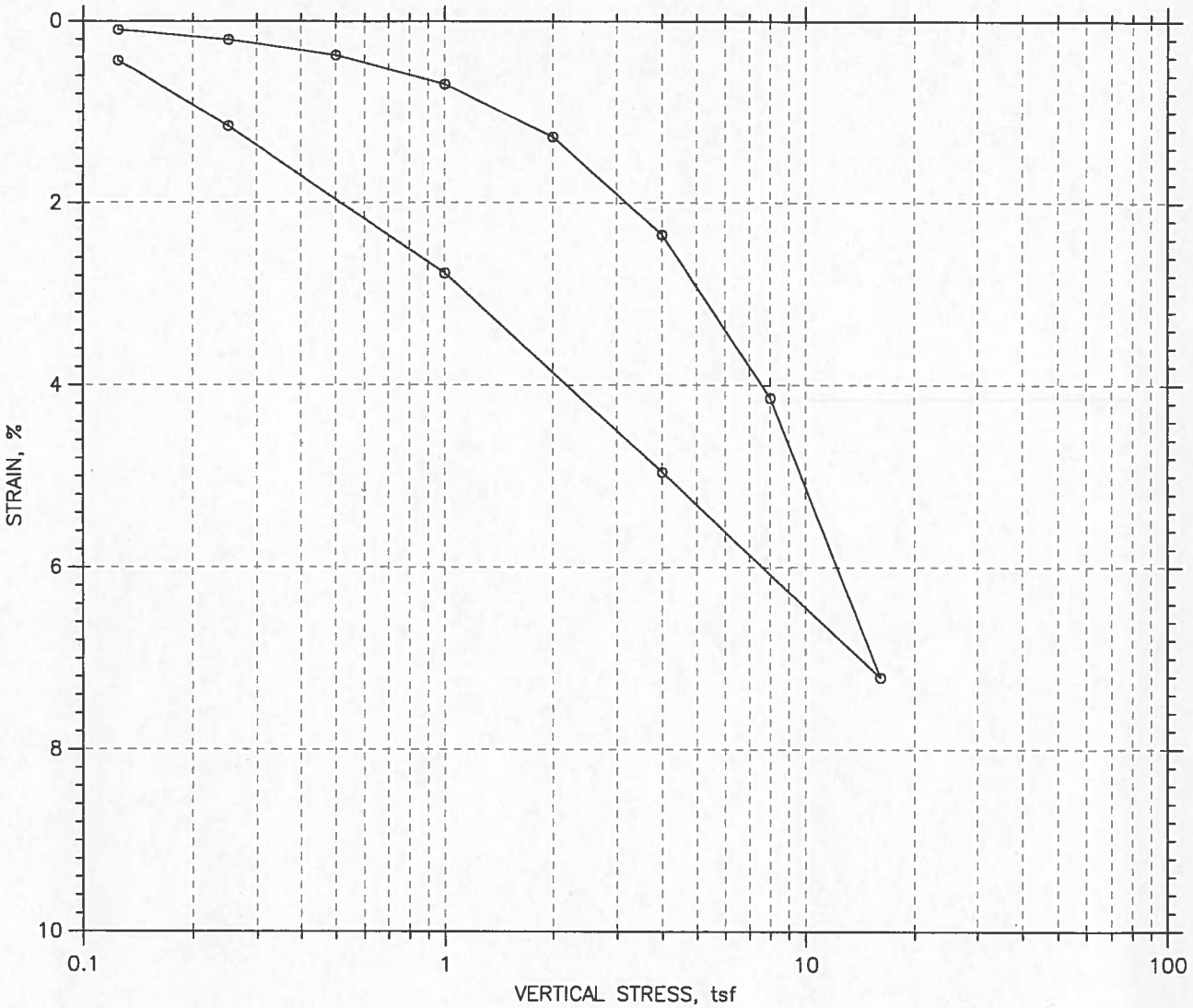


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-290
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-290	Test Date: 8/1/19	Test No.: 1
	Depth: 19-20.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Wed, 07-AUG-2019 08:47:25

CONSOLIDATION TEST DATA

SUMMARY REPORT



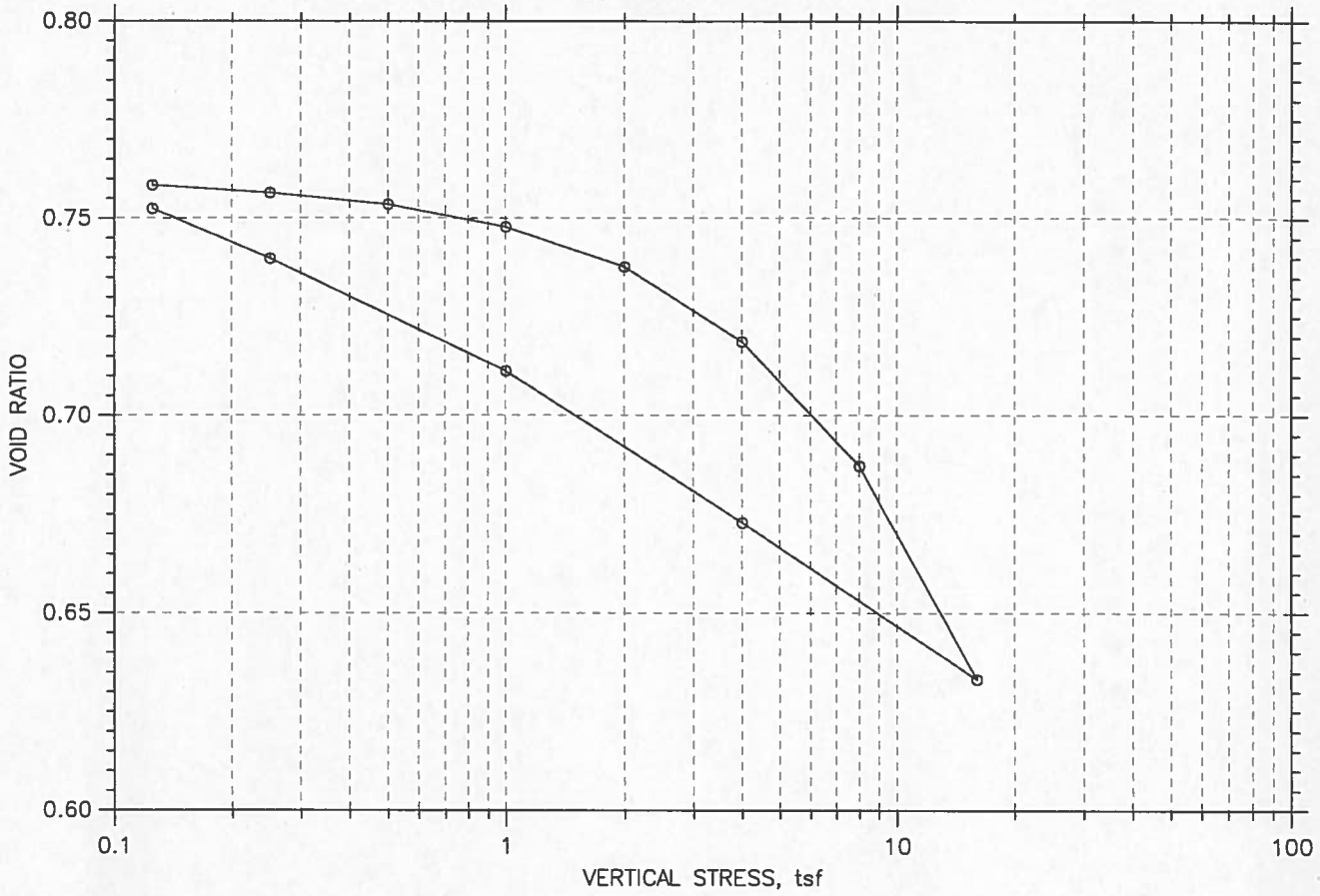
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	23.87	27.38
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	96.83	97.05
Compression Index: 3.81959e-313				Saturation, %	85.74	98.87
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.76	0.76
LL: ---	PL: ---	PI: ---	GS: 2.73			

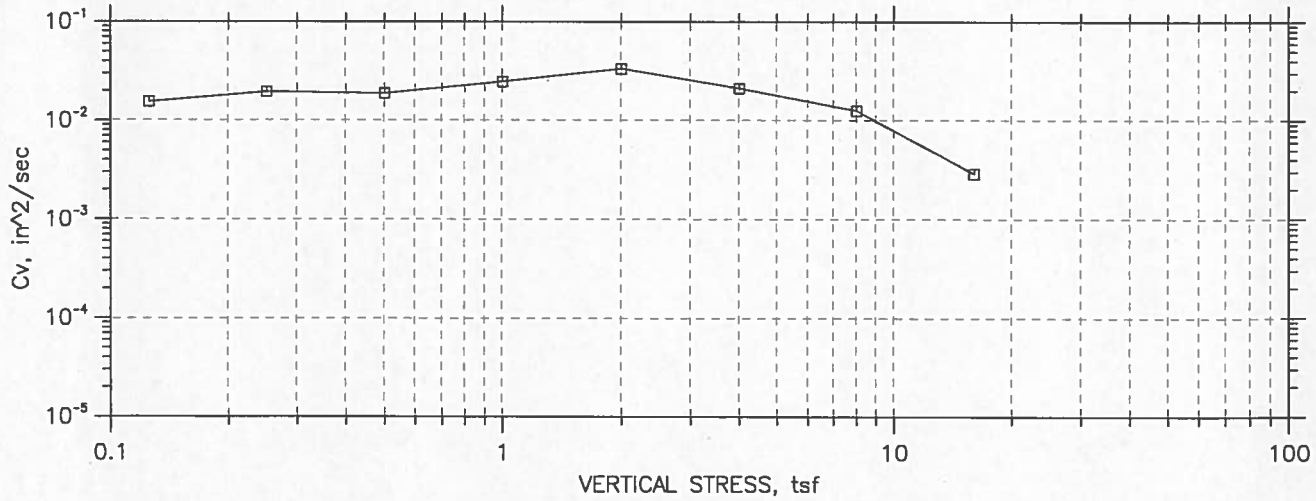
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-290
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-290	Test Date: 8/1/19	Test No.: 1
	Depth: 19-20.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Wed, 07-AUG-2019 08:47:26

CONSOLIDATION TEST DATA

SUMMARY REPORT



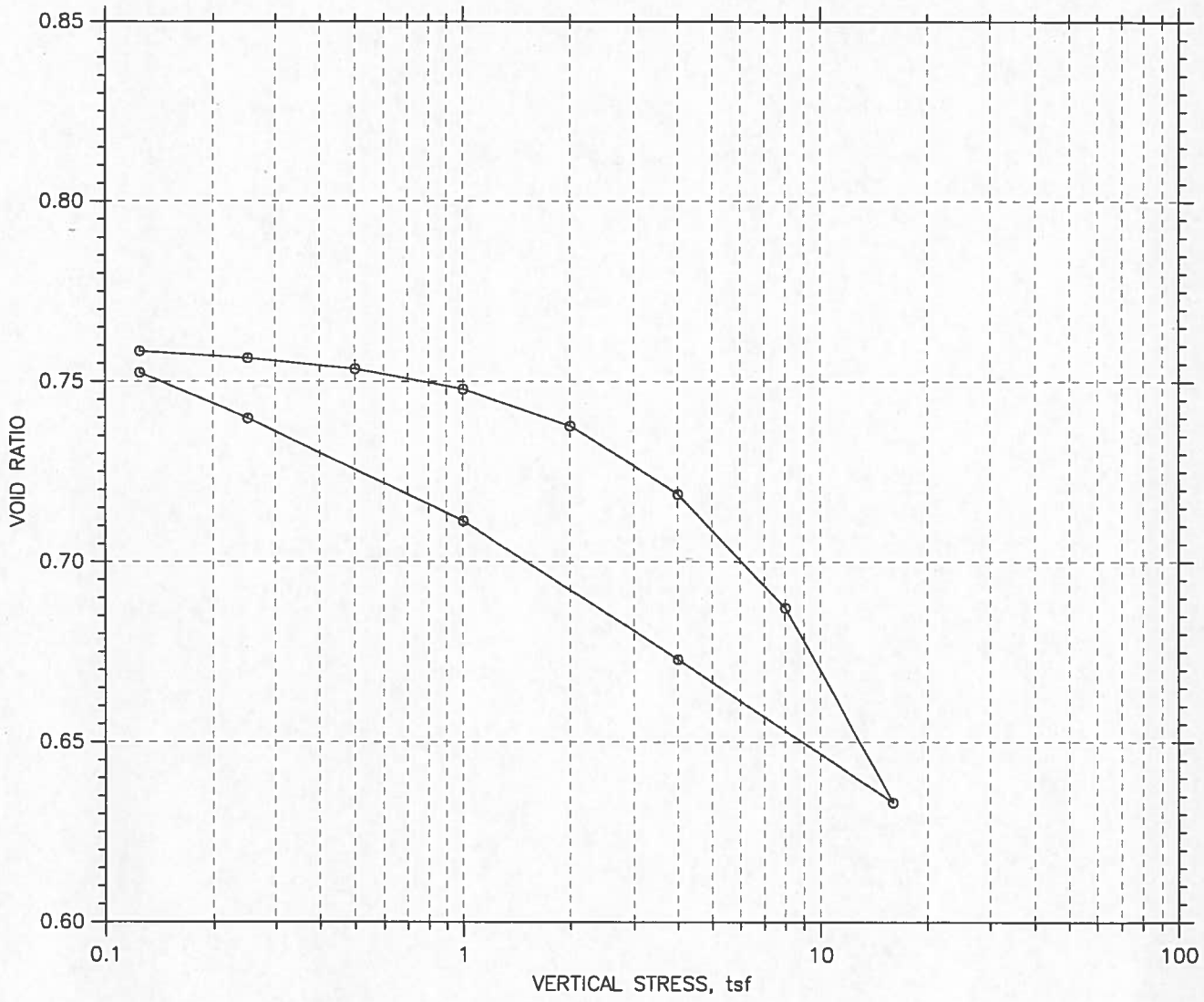


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-290
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-290	Test Date: 8/1/19	Test No.: 1
	Depth: 19-20.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Wed, 07-AUG-2019 08:47:35

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	23.87	27.38
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	96.83	97.05
Compression Index: 3.81959e-313				Saturation, %	85.74	98.87
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.76	0.76
LL: ---	PL: ---	PI: ---	GS: 2.73			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-290
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-290	Test Date: 8/1/19	Test No.: 1
	Depth: 19-20.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Wed, 07-AUG-2019 08:47:35

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/1/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Measured Specific Gravity: 2.73
Initial Void Ratio: 0.76
Final Void Ratio: 0.76

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	135.27	265.32	269.72	218.71
Wt. Container + Dry Soil, gm	119.01	235.42	235.42	184.41
Wt. Container, gm	53.2	110.15	110.15	59.15
Wt. Dry Soil, gm	65.81	125.27	125.27	125.26
Water Content, %	24.71	23.87	27.38	27.38
Void Ratio	---	0.76	0.76	---
Degree of Saturation, %	---	85.74	98.87	---
Dry Unit Weight, pcf	---	96.831	97.049	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/1/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.0009656	0.758	0.10	0.2	2.29e-002	7.69e-003	3.30e-003
2	0.25	0.002069	0.756	0.21	0.1	3.91e-002	8.79e-003	6.44e-003
3	0.5	0.00377	0.753	0.38	0.1	3.57e-002	6.78e-003	4.53e-003
4	1	0.006989	0.748	0.70	0.1	3.88e-002	6.41e-003	4.66e-003
5	2	0.01278	0.738	1.27	0.1	5.42e-002	5.77e-003	5.86e-003
6	4	0.02359	0.719	2.35	0.2	1.47e-002	5.38e-003	1.48e-003
7	8	0.04156	0.687	4.14	0.5	7.31e-003	4.48e-003	6.13e-004
8	16	0.07237	0.633	7.21	0.9	3.37e-003	3.84e-003	2.42e-004
9	4	0.04975	0.673	4.96	0.4	7.43e-003	1.88e-003	2.61e-004
10	1	0.02782	0.711	2.77	14.0	2.36e-004	7.28e-003	3.21e-005
11	0.25	0.01159	0.740	1.15	19.3	1.77e-004	2.16e-002	7.15e-005
12	0.125	0.004368	0.752	0.44	74.0	4.74e-005	5.75e-002	5.10e-005

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.0009656	0.758	0.10	0.0	0.00e+000	7.69e-003	0.00e+000
2	0.25	0.002069	0.756	0.21	0.0	0.00e+000	8.79e-003	0.00e+000
3	0.5	0.00377	0.753	0.38	0.0	0.00e+000	6.78e-003	0.00e+000
4	1	0.006989	0.748	0.70	0.0	0.00e+000	6.41e-003	0.00e+000
5	2	0.01278	0.738	1.27	0.0	0.00e+000	5.77e-003	0.00e+000
6	4	0.02359	0.719	2.35	0.0	2.90e-002	5.38e-003	2.92e-003
7	8	0.04156	0.687	4.14	0.0	3.10e-002	4.48e-003	2.60e-003
8	16	0.07237	0.633	7.21	0.0	0.00e+000	3.84e-003	0.00e+000
9	4	0.04975	0.673	4.96	0.0	3.03e-002	1.88e-003	1.06e-003
10	1	0.02782	0.711	2.77	0.0	0.00e+000	7.28e-003	0.00e+000
11	0.25	0.01159	0.740	1.15	0.0	0.00e+000	2.16e-002	0.00e+000
12	0.125	0.004368	0.752	0.44	22.1	3.69e-005	5.75e-002	3.97e-005

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/1/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 1 of 12
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00224	-0.001335	-0.13	0.762
2	0.01	0.09	0.00672	-0.001335	-0.13	0.762
3	0.02	0.13	0.028	-0.001059	-0.11	0.762
4	0.03	0.16	0.0448	-0.0008295	-0.08	0.762
5	0.04	0.19	0.0515	-0.0007376	-0.07	0.761
6	0.05	0.23	0.065	-0.0005996	-0.06	0.761
7	0.07	0.27	0.0751	-0.0004617	-0.05	0.761
8	0.08	0.29	0.0818	-0.0004157	-0.04	0.761
9	0.12	0.34	0.0997	-0.0003237	-0.03	0.761
10	0.17	0.41	0.115	-0.0002778	-0.03	0.761
11	0.25	0.50	0.127	-0.0002778	-0.03	0.761
12	0.33	0.58	0.131	-0.0003237	-0.03	0.761
13	0.38	0.62	0.131	-0.0003697	-0.04	0.761

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/1/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 2 of 12
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.131	-0.002623	-0.26	0.765
2	0.01	0.09	0.131	-0.002623	-0.26	0.765
3	0.02	0.13	0.161	-0.002577	-0.26	0.765
4	0.03	0.16	0.184	-0.002393	-0.24	0.764
5	0.03	0.19	0.199	-0.002209	-0.22	0.764
6	0.05	0.23	0.217	-0.001933	-0.19	0.763
7	0.07	0.26	0.23	-0.001795	-0.18	0.763
8	0.09	0.30	0.236	-0.001703	-0.17	0.763
9	0.12	0.34	0.243	-0.001611	-0.16	0.763
10	0.17	0.41	0.248	-0.001565	-0.16	0.763
11	0.25	0.50	0.251	-0.001473	-0.15	0.763
12	0.33	0.58	0.255	-0.001519	-0.15	0.763
13	0.37	0.61	0.258	-0.001519	-0.15	0.763

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/1/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 3 of 12
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.258	-0.003771	-0.38	0.767
2	0.01	0.09	0.259	-0.003771	-0.38	0.767
3	0.02	0.13	0.341	-0.003587	-0.36	0.766
4	0.03	0.16	0.391	-0.003174	-0.32	0.766
5	0.04	0.19	0.421	-0.002944	-0.29	0.765
6	0.05	0.23	0.457	-0.002438	-0.24	0.764
7	0.07	0.27	0.475	-0.0023	-0.23	0.764
8	0.08	0.29	0.482	-0.002208	-0.22	0.764
9	0.12	0.35	0.492	-0.002116	-0.21	0.764
10	0.17	0.41	0.495	-0.00207	-0.21	0.764
11	0.25	0.50	0.499	-0.002024	-0.20	0.764
12	0.34	0.58	0.5	-0.002024	-0.20	0.764
13	0.50	0.71	0.505	-0.00207	-0.21	0.764
14	0.60	0.78	0.505	-0.00207	-0.21	0.764

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/1/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 4 of 12
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.506	-0.003401	-0.34	0.766
2	0.01	0.09	0.51	-0.003401	-0.34	0.766
3	0.02	0.13	0.757	-0.00308	-0.31	0.765
4	0.03	0.16	0.857	-0.00216	-0.22	0.764
5	0.03	0.19	0.904	-0.0017	-0.17	0.763
6	0.05	0.23	0.952	-0.001286	-0.13	0.762
7	0.07	0.26	0.973	-0.001011	-0.10	0.762
8	0.09	0.30	0.983	-0.0007806	-0.08	0.761
9	0.12	0.34	0.989	-0.0005047	-0.05	0.761
10	0.17	0.41	0.994	-0.0003208	-0.03	0.761
11	0.25	0.50	0.997	-0.0002289	-0.02	0.760
12	0.33	0.58	0.997	-0.0001829	-0.02	0.760
13	0.50	0.71	0.999	-0.0001369	-0.01	0.760
14	0.75	0.87	0.998	-9.092e-005	-0.01	0.760
15	1.00	1.00	0.999	-9.092e-005	-0.01	0.760
16	1.50	1.23	1	-0.0001369	-0.01	0.760
17	1.79	1.34	0.999	-0.0001829	-0.02	0.760

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/1/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 5 of 12
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	-0.002345	-0.23	0.764
2	0.01	0.09	1.13	-0.002345	-0.23	0.764
3	0.02	0.13	1.64	-0.0008737	-0.09	0.762
4	0.03	0.16	1.8	0.0003678	0.04	0.759
5	0.04	0.19	1.88	0.001057	0.11	0.758
6	0.05	0.23	1.95	0.001839	0.18	0.757
7	0.07	0.27	1.97	0.002161	0.22	0.756
8	0.08	0.29	1.98	0.002299	0.23	0.756
9	0.12	0.35	1.99	0.002621	0.26	0.755
10	0.17	0.41	1.99	0.002851	0.28	0.755
11	0.25	0.50	2	0.003218	0.32	0.754
12	0.34	0.58	2	0.00331	0.33	0.754
13	0.50	0.71	2	0.003402	0.34	0.754
14	0.75	0.87	2	0.003494	0.35	0.754
15	1.00	1.00	2	0.003494	0.35	0.754
16	1.50	1.23	2	0.003586	0.36	0.754
17	2.00	1.42	2	0.003632	0.36	0.754
18	3.00	1.73	2	0.003678	0.37	0.754
19	4.00	2.00	2	0.003678	0.37	0.754
20	5.00	2.24	2	0.003678	0.37	0.754
21	6.00	2.45	2	0.003632	0.36	0.754
22	7.00	2.65	2	0.003632	0.36	0.754
23	8.00	2.83	2	0.003632	0.36	0.754
24	9.00	3.00	2	0.003586	0.36	0.754
25	10.00	3.16	2	0.00354	0.35	0.754
26	12.00	3.46	2	0.003494	0.35	0.754
27	14.00	3.74	2	0.003448	0.34	0.754
28	14.35	3.79	2	0.003448	0.34	0.754

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/1/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 6 of 12
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	0.0008722	0.09	0.759
2	0.01	0.09	2.35	0.0008722	0.09	0.759
3	0.02	0.13	3.47	0.003447	0.34	0.754
4	0.03	0.16	3.74	0.005332	0.53	0.751
5	0.03	0.19	3.85	0.006344	0.63	0.749
6	0.05	0.23	3.93	0.007355	0.73	0.747
7	0.07	0.26	3.96	0.007999	0.80	0.746
8	0.09	0.30	3.97	0.008183	0.82	0.746
9	0.12	0.34	3.98	0.008459	0.84	0.745
10	0.17	0.41	3.99	0.008689	0.87	0.745
11	0.25	0.50	3.99	0.009148	0.91	0.744
12	0.33	0.58	4	0.009424	0.94	0.744
13	0.50	0.71	3.99	0.0097	0.97	0.743
14	0.75	0.87	4	0.009976	0.99	0.743
15	1.00	1.00	4	0.01021	1.02	0.742
16	1.50	1.23	4	0.01048	1.04	0.742
17	2.00	1.41	4	0.01057	1.05	0.742
18	3.00	1.73	4	0.01067	1.06	0.741
19	4.00	2.00	4	0.01071	1.07	0.741
20	5.00	2.24	4	0.01076	1.07	0.741
21	6.00	2.45	4	0.01085	1.08	0.741
22	7.00	2.65	4	0.0109	1.09	0.741
23	8.00	2.83	4	0.01094	1.09	0.741
24	9.00	3.00	4	0.01094	1.09	0.741
25	10.00	3.16	4	0.01099	1.09	0.741
26	12.00	3.46	4	0.01103	1.10	0.741
27	14.00	3.74	4	0.01108	1.10	0.741
28	16.00	4.00	4	0.01108	1.10	0.741
29	18.00	4.24	4	0.01113	1.11	0.741
30	20.00	4.47	4	0.01113	1.11	0.741
31	22.00	4.69	4	0.01117	1.11	0.740
32	24.00	4.90	4	0.01117	1.11	0.740
33	26.00	5.10	4	0.01122	1.12	0.740
34	28.00	5.29	4	0.01126	1.12	0.740
35	30.00	5.48	4	0.01126	1.12	0.740
36	35.00	5.92	4	0.01131	1.13	0.740
37	40.00	6.32	4	0.0114	1.14	0.740
38	45.00	6.71	4	0.01149	1.14	0.740
39	50.00	7.07	4	0.01145	1.14	0.740
40	60.00	7.75	4	0.01136	1.13	0.740
41	70.00	8.37	4	0.01149	1.14	0.740
42	80.00	8.94	4	0.01159	1.15	0.740
43	90.00	9.49	4	0.01149	1.14	0.740
44	100.00	10.00	4	0.01149	1.14	0.740
45	110.00	10.49	4	0.01168	1.16	0.740
46	120.00	10.95	4	0.01168	1.16	0.740
47	120.06	10.96	4	0.01168	1.16	0.740

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/1/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 7 of 12
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.008368	0.83	0.745
2	0.01	0.09	4.58	0.008368	0.83	0.745
3	0.02	0.13	7.36	0.01264	1.26	0.738
4	0.03	0.16	7.73	0.01641	1.63	0.731
5	0.04	0.19	7.84	0.01784	1.78	0.729
6	0.05	0.23	7.92	0.01899	1.89	0.727
7	0.07	0.26	7.94	0.0194	1.93	0.726
8	0.09	0.30	7.96	0.01954	1.95	0.726
9	0.12	0.34	7.97	0.01986	1.98	0.725
10	0.17	0.41	7.98	0.02023	2.01	0.725
11	0.25	0.50	7.99	0.02078	2.07	0.724
12	0.34	0.58	7.99	0.02115	2.11	0.723
13	0.50	0.71	8	0.02184	2.18	0.722
14	0.75	0.87	7.99	0.02244	2.23	0.721
15	1.00	1.00	8	0.0229	2.28	0.720
16	1.50	1.23	8	0.0234	2.33	0.719
17	2.00	1.42	8	0.02368	2.36	0.719
18	3.00	1.73	8	0.02432	2.42	0.717
19	4.00	2.00	8	0.02464	2.45	0.717
20	5.00	2.24	8	0.02478	2.47	0.717
21	6.00	2.45	8	0.02487	2.48	0.716
22	7.00	2.65	8	0.02492	2.48	0.716
23	8.00	2.83	8	0.02497	2.49	0.716
24	9.00	3.00	8	0.02497	2.49	0.716
25	10.00	3.16	8	0.02501	2.49	0.716
26	12.00	3.46	8	0.02515	2.51	0.716
27	14.00	3.74	8	0.0252	2.51	0.716
28	16.00	4.00	8	0.02533	2.52	0.716
29	18.00	4.24	8	0.02538	2.53	0.716
30	20.00	4.47	8	0.02543	2.53	0.715
31	22.00	4.69	8	0.02543	2.53	0.715
32	24.00	4.90	8	0.02547	2.54	0.715
33	26.00	5.10	8	0.02552	2.54	0.715
34	28.00	5.29	8	0.02556	2.55	0.715
35	30.00	5.48	8	0.02561	2.55	0.715
36	35.00	5.92	8	0.0257	2.56	0.715
37	40.00	6.32	8	0.0257	2.56	0.715
38	45.00	6.71	8	0.02575	2.56	0.715
39	50.00	7.07	8	0.02579	2.57	0.715
40	60.00	7.75	8	0.02589	2.58	0.715
41	70.00	8.37	8	0.02602	2.59	0.714
42	80.00	8.94	8	0.02602	2.59	0.714
43	90.00	9.49	8	0.02607	2.60	0.714
44	100.00	10.00	8	0.02621	2.61	0.714
45	110.00	10.49	8	0.02635	2.62	0.714
46	120.00	10.95	8	0.02635	2.62	0.714
47	120.06	10.96	8	0.02635	2.62	0.714

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/1/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 8 of 12
Applied Stress: 16 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.02092	2.08	0.723
2	0.01	0.09	8.86	0.02097	2.09	0.723
3	0.02	0.13	14.9	0.02681	2.67	0.713
4	0.03	0.16	15.7	0.03338	3.32	0.702
5	0.04	0.19	15.8	0.03499	3.49	0.699
6	0.05	0.23	15.9	0.03651	3.64	0.696
7	0.07	0.27	15.9	0.03697	3.68	0.695
8	0.08	0.29	15.9	0.03706	3.69	0.695
9	0.12	0.35	16	0.03784	3.77	0.694
10	0.17	0.41	16	0.03848	3.83	0.693
11	0.25	0.50	16	0.03894	3.88	0.692
12	0.34	0.58	16	0.03996	3.98	0.690
13	0.50	0.71	16	0.04111	4.09	0.688
14	0.75	0.87	16	0.04226	4.21	0.686
15	1.00	1.00	16	0.04276	4.26	0.685
16	1.50	1.23	16	0.04354	4.34	0.684
17	2.00	1.42	16	0.044	4.38	0.683
18	3.00	1.73	16	0.0452	4.50	0.681
19	4.00	2.00	16	0.04589	4.57	0.680
20	5.00	2.24	16	0.0463	4.61	0.679
21	6.00	2.45	16	0.04676	4.66	0.678
22	7.00	2.65	16	0.04708	4.69	0.678
23	8.00	2.83	16	0.04777	4.76	0.676
24	9.00	3.00	16	0.04814	4.79	0.676
25	10.00	3.16	16	0.04823	4.80	0.676
26	12.00	3.46	16	0.04846	4.83	0.675
27	14.00	3.74	16	0.04874	4.85	0.675
28	16.00	4.00	16	0.04911	4.89	0.674
29	18.00	4.24	16	0.04934	4.91	0.674
30	20.00	4.47	16	0.04966	4.95	0.673
31	22.00	4.69	16	0.04993	4.97	0.673
32	24.00	4.90	16	0.05021	5.00	0.672
33	26.00	5.10	16	0.05035	5.01	0.672
34	28.00	5.29	16	0.05044	5.02	0.672
35	30.00	5.48	16	0.05049	5.03	0.672
36	35.00	5.92	16	0.05067	5.05	0.671
37	40.00	6.32	16	0.05081	5.06	0.671
38	45.00	6.71	16	0.05085	5.07	0.671
39	50.00	7.07	16	0.0509	5.07	0.671
40	60.00	7.75	16	0.05104	5.08	0.671
41	70.00	8.37	16	0.05117	5.10	0.670
42	80.00	8.94	16	0.05131	5.11	0.670
43	90.00	9.49	16	0.0514	5.12	0.670
44	100.00	10.00	16	0.0515	5.13	0.670
45	110.00	10.49	16	0.05159	5.14	0.670
46	120.00	10.95	16	0.05173	5.15	0.669
47	120.07	10.96	16	0.05173	5.15	0.669

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/1/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 9 of 12
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	16	0.07026	7.00	0.637
2	0.01	0.09	13	0.07026	7.00	0.637
3	0.02	0.13	5.35	0.06584	6.56	0.645
4	0.03	0.16	4.28	0.05876	5.85	0.657
5	0.04	0.19	4.15	0.0572	5.70	0.660
6	0.05	0.23	4.08	0.05646	5.62	0.661
7	0.07	0.27	4.05	0.05591	5.57	0.662
8	0.08	0.29	4.04	0.05573	5.55	0.662
9	0.12	0.35	4.03	0.05545	5.52	0.663
10	0.17	0.41	4.02	0.05527	5.50	0.663
11	0.25	0.50	4.01	0.05485	5.46	0.664
12	0.34	0.58	4.01	0.05444	5.42	0.665
13	0.50	0.71	4.01	0.0537	5.35	0.666
14	0.75	0.87	4	0.05329	5.31	0.667
15	1.00	1.00	4	0.05301	5.28	0.667
16	1.50	1.23	4	0.05251	5.23	0.668
17	2.00	1.41	4	0.052	5.18	0.669
18	3.00	1.73	4	0.05122	5.10	0.670
19	4.00	2.00	4	0.05099	5.08	0.671
20	5.00	2.24	4	0.05076	5.06	0.671
21	6.00	2.45	4	0.05062	5.04	0.671
22	7.00	2.65	4	0.05048	5.03	0.672
23	8.00	2.83	4	0.05035	5.01	0.672
24	9.00	3.00	4	0.05012	4.99	0.672
25	10.00	3.16	4	0.04993	4.97	0.673
26	12.00	3.46	4	0.04961	4.94	0.673
27	14.00	3.74	4	0.04929	4.91	0.674
28	16.00	4.00	4	0.04883	4.86	0.674
29	18.00	4.24	4	0.04865	4.85	0.675
30	20.00	4.47	4	0.04855	4.84	0.675
31	22.00	4.69	4	0.04846	4.83	0.675
32	24.00	4.90	4	0.04837	4.82	0.675
33	26.00	5.10	4	0.04837	4.82	0.675
34	28.00	5.29	4	0.04823	4.80	0.676
35	30.00	5.48	4	0.04819	4.80	0.676
36	35.00	5.92	4	0.04814	4.79	0.676
37	40.00	6.32	4	0.04805	4.79	0.676
38	45.00	6.71	4	0.04805	4.79	0.676
39	50.00	7.07	4	0.048	4.78	0.676
40	60.00	7.75	4	0.04791	4.77	0.676
41	70.00	8.37	4	0.04791	4.77	0.676
42	80.00	8.94	4	0.04777	4.76	0.676
43	90.00	9.49	4	0.04773	4.75	0.676
44	100.00	10.00	4	0.04768	4.75	0.676
45	110.00	10.49	4	0.04768	4.75	0.676
46	120.00	10.95	4	0.04763	4.74	0.677
47	120.06	10.96	4	0.04763	4.74	0.677

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/1/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 10 of 12
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.04763	4.74	0.677
2	0.01	0.09	3.44	0.04763	4.74	0.677
3	0.02	0.13	1.38	0.04437	4.42	0.682
4	0.03	0.16	1.21	0.04267	4.25	0.685
5	0.03	0.19	1.13	0.04166	4.15	0.687
6	0.05	0.23	1.08	0.04023	4.01	0.690
7	0.07	0.26	1.06	0.03945	3.93	0.691
8	0.09	0.29	1.04	0.0389	3.87	0.692
9	0.12	0.35	1.03	0.03858	3.84	0.692
10	0.17	0.41	1.02	0.03835	3.82	0.693
11	0.25	0.50	1.01	0.03798	3.78	0.693
12	0.34	0.58	1.01	0.03784	3.77	0.694
13	0.50	0.71	1.01	0.03775	3.76	0.694
14	0.75	0.87	1.01	0.03711	3.70	0.695
15	1.00	1.00	1	0.03665	3.65	0.696
16	1.50	1.23	1	0.036	3.59	0.697
17	2.00	1.41	1	0.03531	3.52	0.698
18	3.00	1.73	0.999	0.03439	3.43	0.700
19	4.00	2.00	1	0.03379	3.37	0.701
20	5.00	2.24	0.999	0.03338	3.32	0.702
21	6.00	2.45	1	0.03306	3.29	0.702
22	7.00	2.65	1	0.03274	3.26	0.703
23	8.00	2.83	1	0.0326	3.25	0.703
24	9.00	3.00	1	0.03246	3.23	0.703
25	10.00	3.16	1	0.03237	3.22	0.703
26	12.00	3.46	0.999	0.03196	3.18	0.704
27	14.00	3.74	1	0.0314	3.13	0.705
28	16.00	4.00	0.998	0.03108	3.10	0.706
29	18.00	4.24	0.998	0.03085	3.07	0.706
30	20.00	4.47	0.999	0.03048	3.04	0.707
31	22.00	4.69	1	0.03007	3.00	0.707
32	24.00	4.90	1	0.0297	2.96	0.708
33	26.00	5.10	1	0.02933	2.92	0.709
34	28.00	5.29	1	0.02915	2.90	0.709
35	30.00	5.48	0.999	0.02901	2.89	0.709
36	35.00	5.92	0.998	0.02878	2.87	0.710
37	40.00	6.32	0.999	0.02846	2.83	0.710
38	45.00	6.71	0.998	0.02809	2.80	0.711
39	50.00	7.07	0.999	0.02777	2.77	0.711
40	60.00	7.75	0.999	0.02722	2.71	0.712
41	70.00	8.37	0.999	0.02671	2.66	0.713
42	80.00	8.94	0.998	0.02639	2.63	0.714
43	90.00	9.49	0.999	0.02607	2.60	0.714
44	100.00	10.00	0.999	0.02589	2.58	0.715
45	110.00	10.49	0.999	0.02575	2.56	0.715
46	120.00	10.95	0.999	0.0257	2.56	0.715
47	120.06	10.96	0.999	0.0257	2.56	0.715

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/1/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 11 of 12
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	1	0.0257	2.56	0.715
2	0.01	0.09	0.781	0.02566	2.56	0.715
3	0.02	0.13	0.456	0.02483	2.47	0.717
4	0.03	0.16	0.381	0.02469	2.46	0.717
5	0.03	0.19	0.344	0.02446	2.44	0.717
6	0.05	0.23	0.308	0.02405	2.40	0.718
7	0.07	0.26	0.289	0.02327	2.32	0.719
8	0.09	0.29	0.28	0.02276	2.27	0.720
9	0.12	0.35	0.271	0.02258	2.25	0.720
10	0.17	0.41	0.266	0.02225	2.22	0.721
11	0.25	0.50	0.26	0.02198	2.19	0.722
12	0.34	0.58	0.258	0.02179	2.17	0.722
13	0.50	0.71	0.257	0.02138	2.13	0.723
14	0.75	0.87	0.254	0.02074	2.07	0.724
15	1.00	1.00	0.253	0.02051	2.04	0.724
16	1.50	1.23	0.252	0.01995	1.99	0.725
17	2.00	1.42	0.251	0.01954	1.95	0.726
18	3.00	1.73	0.251	0.01894	1.89	0.727
19	4.00	2.00	0.251	0.0183	1.82	0.728
20	5.00	2.24	0.251	0.01812	1.80	0.728
21	6.00	2.45	0.251	0.01789	1.78	0.729
22	7.00	2.65	0.251	0.01747	1.74	0.729
23	8.00	2.83	0.251	0.0171	1.70	0.730
24	9.00	3.00	0.25	0.01678	1.67	0.731
25	10.00	3.16	0.25	0.01637	1.63	0.731
26	12.00	3.46	0.25	0.01595	1.59	0.732
27	14.00	3.74	0.251	0.01577	1.57	0.732
28	16.00	4.00	0.25	0.01522	1.52	0.733
29	18.00	4.24	0.25	0.0149	1.48	0.734
30	20.00	4.47	0.25	0.01416	1.41	0.735
31	22.00	4.69	0.25	0.01412	1.41	0.735
32	24.00	4.90	0.251	0.01375	1.37	0.736
33	26.00	5.10	0.25	0.0137	1.36	0.736
34	28.00	5.29	0.25	0.01366	1.36	0.736
35	30.00	5.48	0.251	0.01361	1.36	0.736
36	35.00	5.92	0.249	0.01352	1.35	0.736
37	40.00	6.32	0.251	0.01287	1.28	0.737
38	45.00	6.71	0.249	0.01237	1.23	0.738
39	50.00	7.07	0.25	0.01209	1.20	0.739
40	60.00	7.75	0.25	0.01163	1.16	0.740
41	70.00	8.37	0.251	0.01108	1.10	0.741
42	80.00	8.94	0.251	0.01067	1.06	0.741
43	90.00	9.49	0.251	0.01025	1.02	0.742
44	100.00	10.00	0.25	0.01002	1.00	0.742
45	110.00	10.49	0.25	0.009702	0.97	0.743
46	120.00	10.95	0.25	0.009472	0.94	0.743
47	120.05	10.96	0.25	0.009472	0.94	0.743

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/1/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

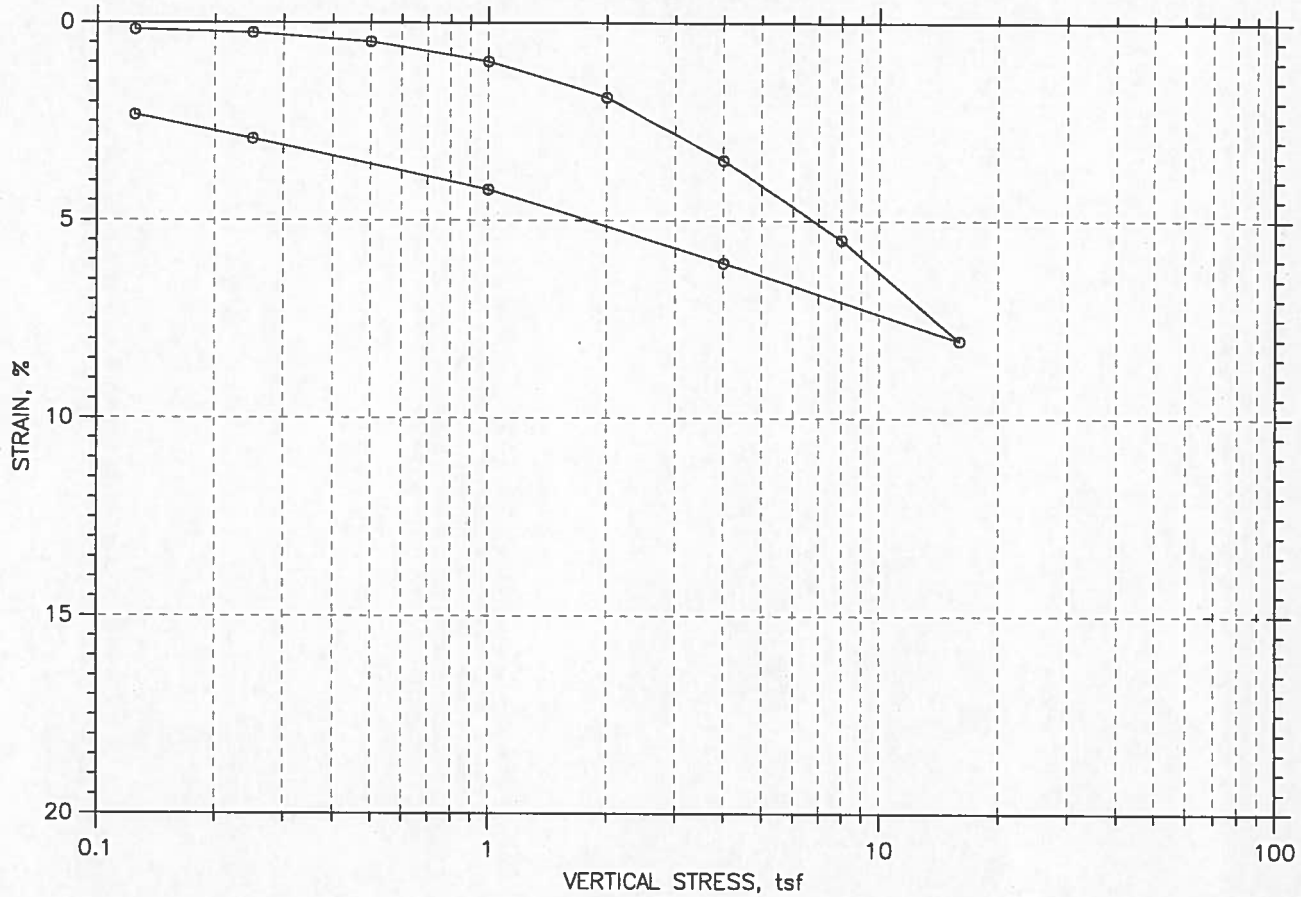
Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

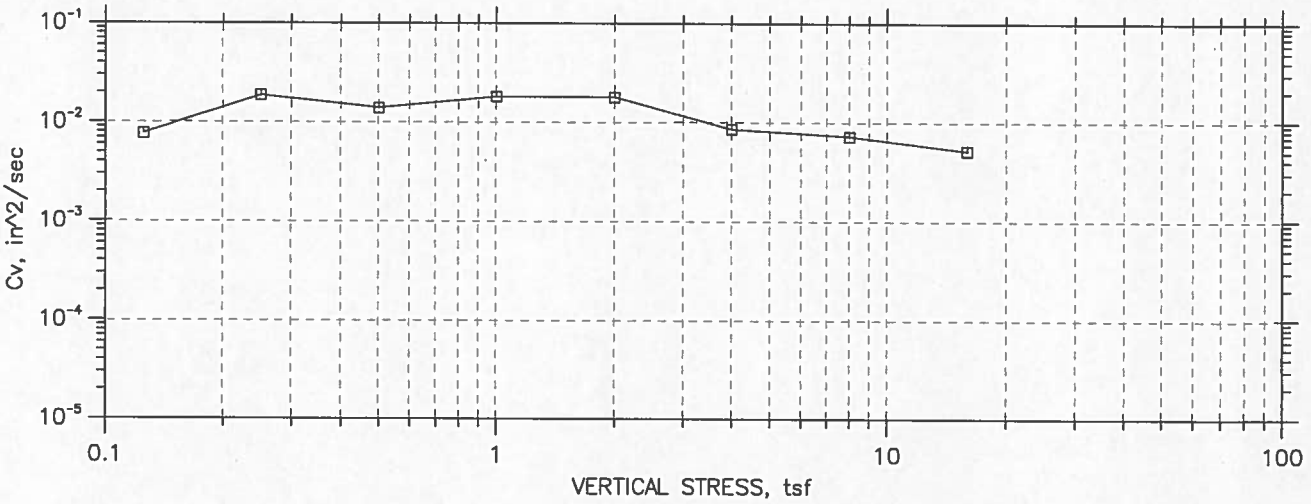
Constant Load Step: 12 of 12
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.249	0.009472	0.94	0.743
2	0.01	0.09	0.229	0.009472	0.94	0.743
3	0.02	0.13	0.185	0.009242	0.92	0.744
4	0.03	0.16	0.165	0.009104	0.91	0.744
5	0.03	0.19	0.155	0.009058	0.90	0.744
6	0.05	0.23	0.145	0.009012	0.90	0.744
7	0.07	0.26	0.138	0.00892	0.89	0.744
8	0.09	0.29	0.133	0.008874	0.88	0.745
9	0.12	0.35	0.13	0.008828	0.88	0.745
10	0.17	0.41	0.128	0.008736	0.87	0.745
11	0.25	0.50	0.127	0.008644	0.86	0.745
12	0.34	0.58	0.127	0.008598	0.86	0.745
13	0.50	0.71	0.127	0.008506	0.85	0.745
14	0.75	0.87	0.125	0.008368	0.83	0.745
15	1.00	1.00	0.125	0.008276	0.82	0.746
16	1.50	1.23	0.125	0.008092	0.81	0.746
17	2.00	1.42	0.127	0.008	0.80	0.746
18	3.00	1.73	0.124	0.007816	0.78	0.746
19	4.00	2.00	0.125	0.007678	0.76	0.747
20	5.00	2.24	0.125	0.007495	0.75	0.747
21	6.00	2.45	0.124	0.007403	0.74	0.747
22	7.00	2.65	0.124	0.007311	0.73	0.747
23	8.00	2.83	0.124	0.007173	0.71	0.747
24	9.00	3.00	0.125	0.007035	0.70	0.748
25	10.00	3.16	0.124	0.006897	0.69	0.748
26	12.00	3.46	0.127	0.006621	0.66	0.748
27	14.00	3.74	0.123	0.006483	0.65	0.749
28	16.00	4.00	0.125	0.006299	0.63	0.749
29	18.00	4.24	0.124	0.006161	0.61	0.749
30	20.00	4.47	0.125	0.005977	0.60	0.750
31	22.00	4.69	0.125	0.005839	0.58	0.750
32	24.00	4.90	0.125	0.005563	0.55	0.750
33	26.00	5.10	0.125	0.005426	0.54	0.751
34	28.00	5.29	0.124	0.005288	0.53	0.751
35	30.00	5.48	0.124	0.005196	0.52	0.751
36	35.00	5.92	0.124	0.00492	0.49	0.751
37	40.00	6.32	0.124	0.00469	0.47	0.752
38	45.00	6.71	0.123	0.004368	0.44	0.752
39	50.00	7.07	0.124	0.004138	0.41	0.753
40	60.00	7.75	0.124	0.003724	0.37	0.754
41	70.00	8.37	0.123	0.003494	0.35	0.754
42	80.00	8.94	0.125	0.003356	0.33	0.754
43	90.00	9.49	0.124	0.003265	0.33	0.754
44	100.00	10.00	0.123	0.002943	0.29	0.755
45	110.00	10.49	0.124	0.002621	0.26	0.755
46	120.00	10.95	0.124	0.002483	0.25	0.756
47	130.00	11.40	0.124	0.002299	0.23	0.756
48	133.65	11.56	0.123	0.002253	0.22	0.756

CONSOLIDATION TEST DATA

SUMMARY REPORT



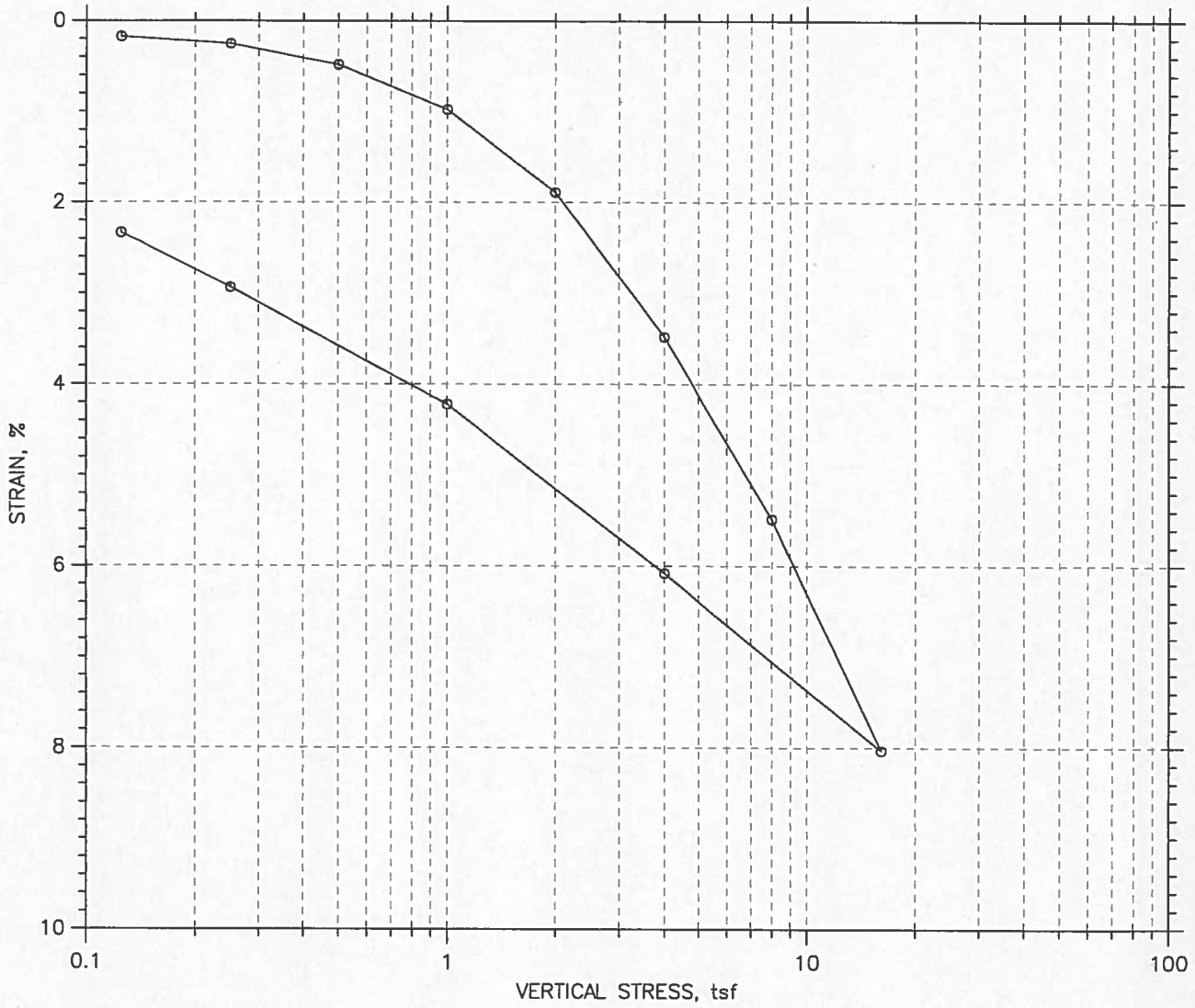


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-292
	Boring No.: B-602	Tested By: SKK	Checked By: SKK
	Sample No.: 19-292	Test Date: 5/15/19	Test No.: 1
	Depth: 15-17'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Thu, 23-MAY-2019 08:00:59

CONSOLIDATION TEST DATA

SUMMARY REPORT



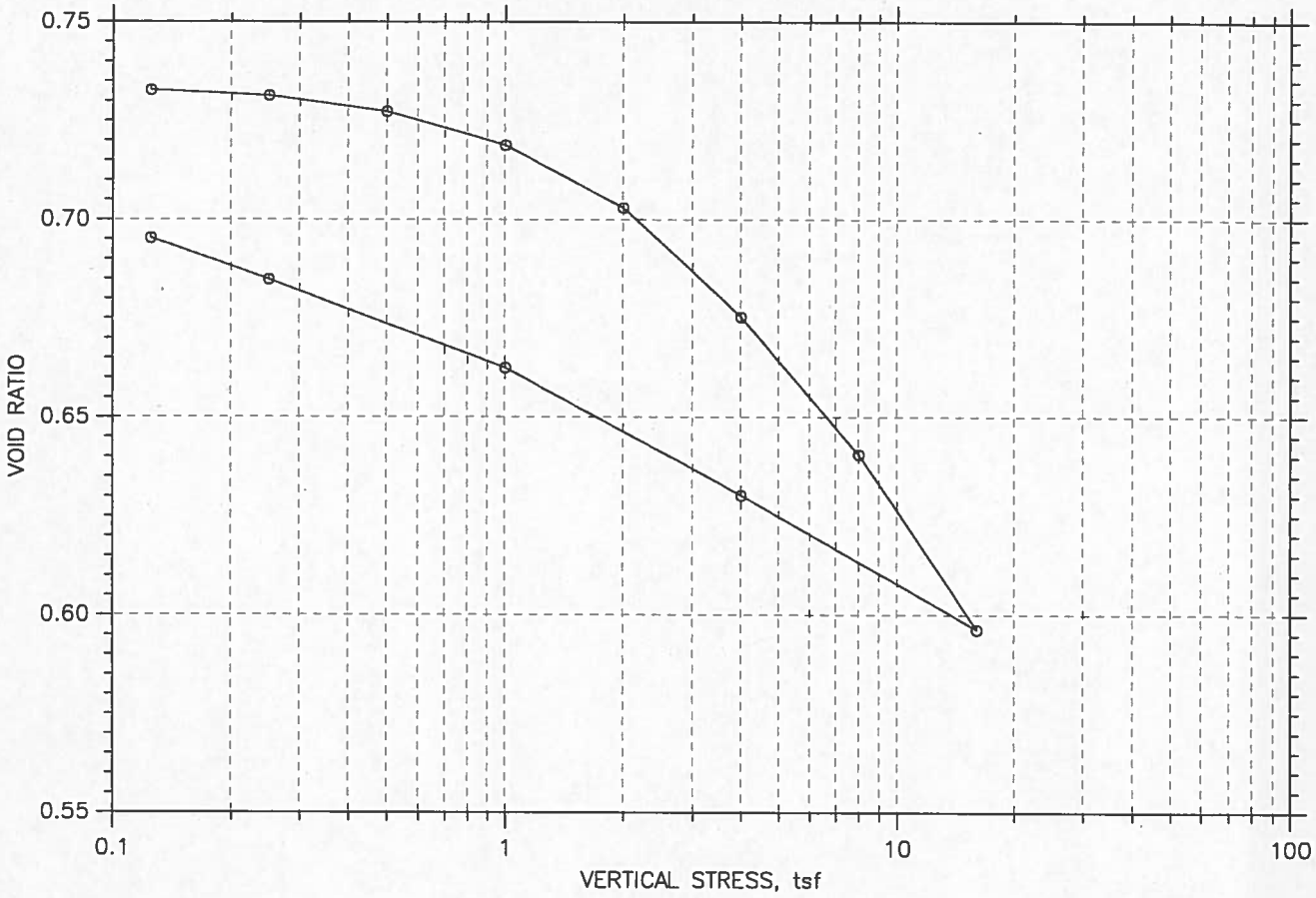
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	22.37	24.78
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	97.83	99.95
Compression Index: 3.81959e-313				Saturation, %	82.72	96.45
Diameter: 2.5 in		Height: 1.005 in		Void Ratio	0.74	0.70
LL: ---	PL: ---	PI: ---	GS: 2.72			

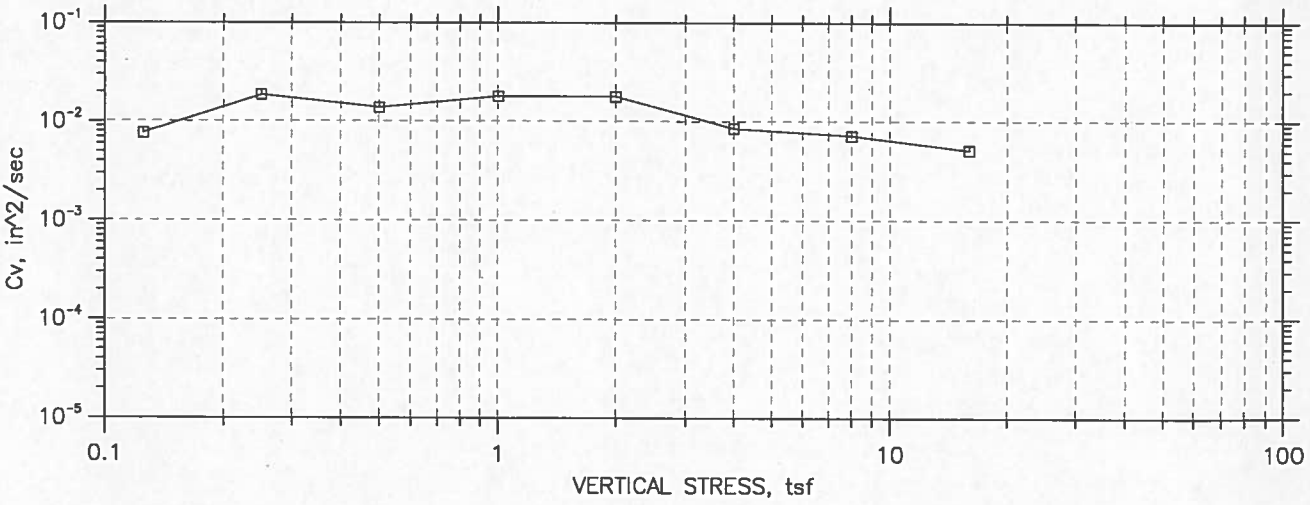
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-292
	Boring No.: B-602	Tested By: SKK	Checked By: SKK
	Sample No.: 19-292	Test Date: 5/15/19	Test No.: 1
	Depth: 15-17'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF., REBOUND		

Thu, 23-MAY-2019 08:01:00

CONSOLIDATION TEST DATA

SUMMARY REPORT



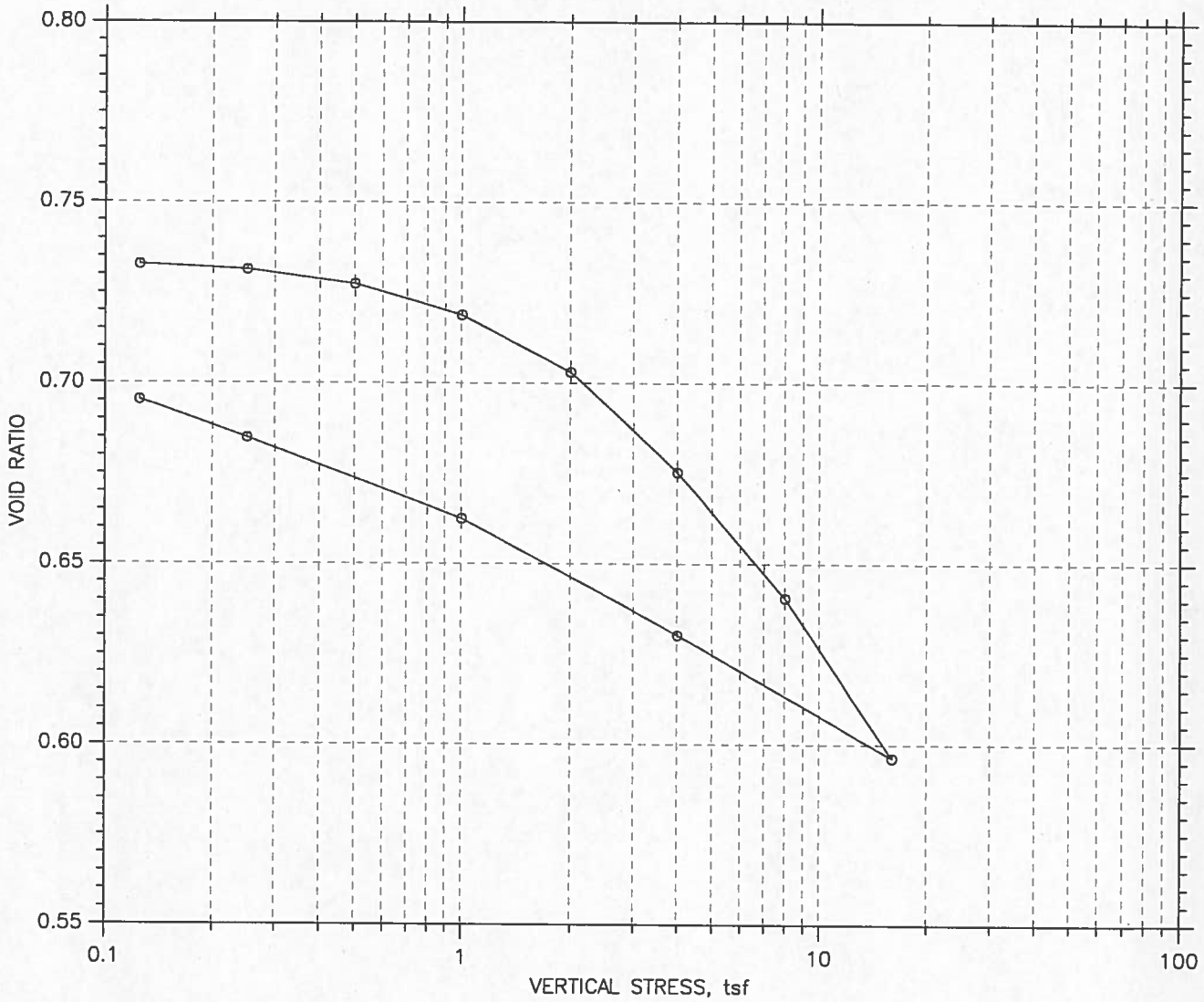


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-292
	Boring No.: B-602	Tested By: SKK	Checked By: SKK
	Sample No.: 19-292	Test Date: 5/15/19	Test No.: 1
	Depth: 15-17'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Thu, 23-MAY-2019 08:01:17

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	22.37	24.78
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	97.83	99.95
Compression Index: 3.81959e-313				Saturation, %	82.72	96.45
Diameter: 2.5 in		Height: 1.005 in		Void Ratio	0.74	0.70
LL: ---	PL: ---	PI: ---	GS: 2.72			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-292
	Boring No.: B-602	Tested By: SKK	Checked By: SKK
	Sample No.: 19-292	Test Date: 5/15/19	Test No.: 1
	Depth: 15-17'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Thu, 23-MAY-2019 08:01:17

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/15/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Measured Specific Gravity: 2.72
Initial Void Ratio: 0.74
Final Void Ratio: 0.70

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	130.12	265.19	268.24	228.73
Wt. Container + Dry Soil, gm	118.37	236.85	236.85	197.35
Wt. Container, gm	70.31	110.16	110.16	70.72
Wt. Dry Soil, gm	48.06	126.69	126.69	126.63
Water Content, %	24.45	22.37	24.78	24.78
Void Ratio	---	0.74	0.70	---
Degree of Saturation, %	---	82.72	96.45	---
Dry Unit Weight, pcf	---	97.83	99.952	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/15/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001747	0.733	0.17	0.1	2.82e-002	1.39e-002	7.34e-003
2	0.25	0.002575	0.731	0.26	0.1	2.58e-002	6.59e-003	3.19e-003
3	0.5	0.004874	0.727	0.48	0.1	2.49e-002	9.15e-003	4.27e-003
4	1	0.009839	0.719	0.98	0.1	2.53e-002	9.88e-003	4.68e-003
5	2	0.01899	0.703	1.89	0.2	1.58e-002	9.10e-003	2.69e-003
6	4	0.03499	0.675	3.48	0.6	5.69e-003	7.96e-003	8.48e-004
7	8	0.05513	0.640	5.49	0.7	4.69e-003	5.01e-003	4.40e-004
8	16	0.08074	0.596	8.03	0.7	4.17e-003	3.19e-003	2.49e-004
9	4	0.06111	0.630	6.08	0.2	1.42e-002	1.63e-003	4.33e-004
10	1	0.04244	0.662	4.22	7.0	4.60e-004	6.19e-003	5.33e-005
11	0.25	0.02952	0.685	2.94	19.7	1.68e-004	1.71e-002	5.40e-005
12	0.125	0.02345	0.695	2.33	49.8	6.80e-005	4.83e-002	6.15e-005

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001747	0.733	0.17	0.0	0.00e+000	1.39e-002	0.00e+000
2	0.25	0.002575	0.731	0.26	0.0	0.00e+000	6.59e-003	0.00e+000
3	0.5	0.004874	0.727	0.48	0.0	0.00e+000	9.15e-003	0.00e+000
4	1	0.009839	0.719	0.98	0.0	0.00e+000	9.88e-003	0.00e+000
5	2	0.01899	0.703	1.89	0.0	1.94e-002	9.10e-003	3.31e-003
6	4	0.03499	0.675	3.48	0.0	2.29e-002	7.96e-003	3.41e-003
7	8	0.05513	0.640	5.49	0.0	2.90e-002	5.01e-003	2.72e-003
8	16	0.08074	0.596	8.03	0.0	3.01e-002	3.19e-003	1.80e-003
9	4	0.06111	0.630	6.08	0.0	3.09e-002	1.63e-003	9.43e-004
10	1	0.04244	0.662	4.22	0.0	0.00e+000	6.19e-003	0.00e+000
11	0.25	0.02952	0.685	2.94	2.7	2.83e-004	1.71e-002	9.09e-005
12	0.125	0.02345	0.695	2.33	0.0	0.00e+000	4.83e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/15/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 1 of 12
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00448	-0.001335	-0.13	0.738
2	0.01	0.09	0.00784	-0.001335	-0.13	0.738
3	0.02	0.13	0.0303	-0.001243	-0.12	0.738
4	0.03	0.16	0.0538	-0.001059	-0.11	0.738
5	0.04	0.19	0.0616	-0.0008755	-0.09	0.737
6	0.05	0.23	0.0773	-0.0005077	-0.05	0.737
7	0.07	0.27	0.0908	-0.0002778	-0.03	0.736
8	0.08	0.29	0.0986	-1.889e-006	-0.00	0.736
9	0.12	0.35	0.114	0.0003659	0.04	0.735
10	0.17	0.41	0.12	0.0004119	0.04	0.735
11	0.25	0.50	0.127	0.0004119	0.04	0.735
12	0.31	0.56	0.13	0.0004119	0.04	0.735

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/15/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 2 of 12
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.131	-0.001841	-0.18	0.739
2	0.01	0.09	0.13	-0.001841	-0.18	0.739
3	0.02	0.13	0.168	-0.001795	-0.18	0.739
4	0.03	0.16	0.189	-0.001657	-0.16	0.739
5	0.04	0.19	0.203	-0.001473	-0.15	0.738
6	0.05	0.23	0.22	-0.001289	-0.13	0.738
7	0.07	0.27	0.231	-0.001243	-0.12	0.738
8	0.08	0.29	0.235	-0.001197	-0.12	0.738
9	0.12	0.35	0.243	-0.001105	-0.11	0.738
10	0.17	0.41	0.248	-0.001013	-0.10	0.737
11	0.25	0.50	0.25	-0.0009674	-0.10	0.737
12	0.34	0.58	0.251	-0.0009674	-0.10	0.737
13	0.44	0.66	0.254	-0.001013	-0.10	0.737

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/15/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 3 of 12
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.254	-0.003266	-0.32	0.741
2	0.01	0.09	0.255	-0.003266	-0.32	0.741
3	0.02	0.13	0.333	-0.003082	-0.31	0.741
4	0.03	0.16	0.376	-0.002576	-0.26	0.740
5	0.04	0.19	0.406	-0.0023	-0.23	0.740
6	0.05	0.23	0.443	-0.001886	-0.19	0.739
7	0.07	0.27	0.463	-0.001564	-0.16	0.738
8	0.08	0.29	0.473	-0.00138	-0.14	0.738
9	0.12	0.35	0.486	-0.001151	-0.11	0.738
10	0.17	0.41	0.493	-0.001059	-0.11	0.738
11	0.25	0.50	0.497	-0.0008747	-0.09	0.737
12	0.33	0.58	0.497	-0.0008287	-0.08	0.737
13	0.50	0.71	0.5	-0.0008287	-0.08	0.737
14	0.75	0.87	0.502	-0.0008287	-0.08	0.737
15	0.98	0.99	0.501	-0.0009667	-0.10	0.737

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/15/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 4 of 12
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.501	-0.002298	-0.23	0.740
2	0.01	0.09	0.517	-0.002298	-0.23	0.740
3	0.02	0.13	0.745	-0.001608	-0.16	0.738
4	0.03	0.16	0.832	-0.0008726	-0.09	0.737
5	0.04	0.19	0.886	-0.0002289	-0.02	0.736
6	0.05	0.23	0.938	0.0003689	0.04	0.735
7	0.07	0.27	0.96	0.0007827	0.08	0.734
8	0.08	0.29	0.969	0.001013	0.10	0.734
9	0.12	0.34	0.983	0.001426	0.14	0.733
10	0.17	0.41	0.99	0.001748	0.17	0.733
11	0.25	0.50	0.995	0.001932	0.19	0.732
12	0.34	0.58	0.997	0.002024	0.20	0.732
13	0.50	0.71	0.998	0.002208	0.22	0.732
14	0.75	0.87	0.998	0.002438	0.24	0.731
15	1.00	1.00	0.998	0.002484	0.25	0.731
16	1.50	1.23	1	0.002576	0.26	0.731
17	2.00	1.42	0.999	0.002576	0.26	0.731
18	3.00	1.73	0.999	0.002622	0.26	0.731
19	4.00	2.00	0.999	0.002668	0.27	0.731
20	5.00	2.24	1	0.002714	0.27	0.731
21	6.00	2.45	0.999	0.002668	0.27	0.731
22	7.00	2.65	0.999	0.002668	0.27	0.731
23	8.00	2.83	0.999	0.002668	0.27	0.731
24	9.00	3.00	0.998	0.002668	0.27	0.731
25	10.00	3.16	0.999	0.002668	0.27	0.731
26	12.00	3.46	1	0.002668	0.27	0.731
27	14.00	3.74	0.999	0.002668	0.27	0.731
28	15.17	3.89	0.999	0.002668	0.27	0.731

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/15/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 5 of 12
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.0005057	0.05	0.735
2	0.01	0.09	1.24	0.0005057	0.05	0.735
3	0.02	0.13	1.62	0.002207	0.22	0.732
4	0.03	0.16	1.76	0.002851	0.28	0.731
5	0.04	0.19	1.84	0.003724	0.37	0.729
6	0.05	0.23	1.91	0.00492	0.49	0.727
7	0.07	0.27	1.95	0.005425	0.54	0.726
8	0.08	0.29	1.96	0.005701	0.57	0.726
9	0.12	0.35	1.98	0.006253	0.62	0.725
10	0.17	0.41	1.99	0.006759	0.67	0.724
11	0.25	0.50	1.99	0.007081	0.70	0.723
12	0.34	0.58	2	0.007219	0.72	0.723
13	0.50	0.71	2	0.007403	0.74	0.723
14	0.75	0.87	2	0.007678	0.76	0.722
15	1.00	1.00	2	0.007908	0.79	0.722
16	1.50	1.23	2	0.008322	0.83	0.721
17	2.00	1.42	2	0.008506	0.85	0.721
18	3.00	1.73	2	0.008644	0.86	0.721
19	4.00	2.00	2	0.008736	0.87	0.721
20	5.00	2.24	2	0.008782	0.87	0.721
21	6.00	2.45	2	0.008874	0.88	0.720
22	7.00	2.65	2	0.008966	0.89	0.720
23	8.00	2.83	2	0.009012	0.90	0.720
24	9.00	3.00	2	0.009104	0.91	0.720
25	10.00	3.16	2	0.00915	0.91	0.720
26	12.00	3.46	2	0.009196	0.91	0.720
27	14.00	3.74	2	0.009242	0.92	0.720
28	16.00	4.00	2	0.009288	0.92	0.720
29	18.00	4.24	2	0.009334	0.93	0.720
30	20.00	4.47	2	0.009334	0.93	0.720
31	22.00	4.69	2	0.00938	0.93	0.720
32	24.00	4.90	2	0.009334	0.93	0.720
33	26.00	5.10	2	0.009426	0.94	0.719
34	28.00	5.29	2	0.00938	0.93	0.720
35	30.00	5.48	2	0.009426	0.94	0.719
36	35.00	5.92	2	0.009472	0.94	0.719
37	40.00	6.32	2	0.009518	0.95	0.719
38	45.00	6.71	2	0.009518	0.95	0.719
39	50.00	7.07	2	0.009518	0.95	0.719
40	60.00	7.75	2	0.009564	0.95	0.719
41	70.00	8.37	2	0.00961	0.96	0.719
42	80.00	8.94	2	0.00961	0.96	0.719
43	90.00	9.49	2	0.009656	0.96	0.719
44	100.00	10.00	2	0.009656	0.96	0.719
45	110.00	10.49	2	0.009701	0.97	0.719
46	120.00	10.95	2	0.009656	0.96	0.719
47	120.06	10.96	2	0.009656	0.96	0.719

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/15/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 6 of 12
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	0.007079	0.70	0.723
2	0.01	0.09	2.4	0.007125	0.71	0.723
3	0.02	0.13	3.43	0.0103	1.02	0.718
4	0.03	0.16	3.7	0.01223	1.22	0.715
5	0.04	0.19	3.83	0.0137	1.36	0.712
6	0.05	0.23	3.91	0.01508	1.50	0.710
7	0.07	0.27	3.94	0.01536	1.53	0.709
8	0.08	0.29	3.96	0.01563	1.56	0.709
9	0.12	0.34	3.97	0.01614	1.61	0.708
10	0.17	0.41	3.98	0.01683	1.67	0.707
11	0.25	0.50	3.99	0.01747	1.74	0.706
12	0.34	0.58	3.99	0.0177	1.76	0.705
13	0.50	0.71	3.99	0.01834	1.83	0.704
14	0.75	0.87	3.99	0.01885	1.88	0.703
15	1.00	1.00	4	0.01899	1.89	0.703
16	1.50	1.23	4	0.01922	1.91	0.703
17	2.00	1.41	4	0.01945	1.94	0.702
18	3.00	1.73	4	0.01991	1.98	0.701
19	4.00	2.00	4	0.02023	2.01	0.701
20	5.00	2.24	4	0.02041	2.03	0.700
21	6.00	2.45	4	0.02064	2.05	0.700
22	7.00	2.65	4	0.02083	2.07	0.700
23	8.00	2.83	4	0.02096	2.09	0.700
24	9.00	3.00	4	0.02115	2.10	0.699
25	10.00	3.16	4	0.02124	2.11	0.699
26	12.00	3.46	4	0.02147	2.14	0.699
27	14.00	3.74	4	0.02161	2.15	0.698
28	16.00	4.00	4	0.02179	2.17	0.698
29	18.00	4.24	4	0.02193	2.18	0.698
30	20.00	4.47	4	0.02198	2.19	0.698
31	22.00	4.69	4	0.02207	2.20	0.698
32	24.00	4.90	4	0.02211	2.20	0.698
33	26.00	5.10	4	0.02221	2.21	0.697
34	28.00	5.29	4	0.02225	2.21	0.697
35	30.00	5.48	4	0.02234	2.22	0.697
36	35.00	5.92	4	0.02253	2.24	0.697
37	40.00	6.32	4	0.02262	2.25	0.697
38	45.00	6.71	4	0.02267	2.26	0.697
39	50.00	7.07	4	0.02276	2.26	0.696
40	60.00	7.75	4	0.0228	2.27	0.696
41	70.00	8.37	4	0.0229	2.28	0.696
42	80.00	8.94	4	0.0229	2.28	0.696
43	90.00	9.49	4	0.0229	2.28	0.696
44	100.00	10.00	4	0.02299	2.29	0.696
45	110.00	10.49	4	0.02303	2.29	0.696
46	120.00	10.95	4	0.02308	2.30	0.696
47	120.06	10.96	4	0.02308	2.30	0.696

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/15/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 7 of 12
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.01977	1.97	0.702
2	0.01	0.09	4.58	0.01982	1.97	0.701
3	0.02	0.13	7.42	0.02418	2.41	0.694
4	0.03	0.16	7.75	0.02773	2.76	0.688
5	0.04	0.19	7.86	0.02897	2.88	0.686
6	0.05	0.23	7.92	0.03016	3.00	0.684
7	0.07	0.27	7.95	0.03085	3.07	0.682
8	0.08	0.29	7.96	0.03104	3.09	0.682
9	0.12	0.34	7.97	0.03127	3.11	0.682
10	0.17	0.41	7.98	0.03159	3.14	0.681
11	0.25	0.50	7.99	0.03214	3.20	0.680
12	0.34	0.58	7.99	0.03287	3.27	0.679
13	0.50	0.71	7.99	0.03361	3.34	0.678
14	0.75	0.87	7.99	0.03402	3.39	0.677
15	1.00	1.00	7.99	0.03435	3.42	0.676
16	1.50	1.23	8	0.03522	3.50	0.675
17	2.00	1.42	8	0.03577	3.56	0.674
18	3.00	1.73	8	0.03637	3.62	0.673
19	4.00	2.00	8	0.03674	3.66	0.672
20	5.00	2.24	8	0.03743	3.72	0.671
21	6.00	2.45	8	0.03775	3.76	0.671
22	7.00	2.65	8	0.03798	3.78	0.670
23	8.00	2.83	8	0.03812	3.79	0.670
24	9.00	3.00	8	0.03835	3.82	0.669
25	10.00	3.16	8	0.03839	3.82	0.669
26	12.00	3.46	8	0.03858	3.84	0.669
27	14.00	3.74	8	0.03867	3.85	0.669
28	16.00	4.00	8	0.03871	3.85	0.669
29	18.00	4.24	8	0.03871	3.85	0.669
30	20.00	4.47	8	0.03871	3.85	0.669
31	22.00	4.69	8	0.03881	3.86	0.669
32	24.00	4.90	8	0.0389	3.87	0.669
33	26.00	5.10	8	0.03894	3.88	0.668
34	28.00	5.29	8	0.03899	3.88	0.668
35	30.00	5.48	8	0.03904	3.88	0.668
36	35.00	5.92	8	0.03913	3.89	0.668
37	40.00	6.32	8	0.03922	3.90	0.668
38	45.00	6.71	8	0.03931	3.91	0.668
39	50.00	7.07	8	0.03931	3.91	0.668
40	60.00	7.75	8	0.03945	3.93	0.668
41	70.00	8.37	8	0.03954	3.93	0.667
42	80.00	8.94	8	0.03968	3.95	0.667
43	90.00	9.49	8	0.03973	3.95	0.667
44	100.00	10.00	8	0.03977	3.96	0.667
45	110.00	10.49	8	0.03982	3.96	0.667
46	120.00	10.95	8	0.03991	3.97	0.667
47	120.06	10.96	8	0.03991	3.97	0.667

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/15/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 8 of 12
Applied Stress: 16 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.03448	3.43	0.676
2	0.01	0.09	8.88	0.03448	3.43	0.676
3	0.02	0.13	15.3	0.03968	3.95	0.667
4	0.03	0.16	15.8	0.04603	4.58	0.656
5	0.04	0.19	15.9	0.04699	4.68	0.655
6	0.05	0.23	15.9	0.04782	4.76	0.653
7	0.07	0.27	15.9	0.04842	4.82	0.652
8	0.08	0.29	16	0.04888	4.86	0.651
9	0.12	0.35	16	0.04947	4.92	0.650
10	0.17	0.41	16	0.04984	4.96	0.650
11	0.25	0.50	16	0.05016	4.99	0.649
12	0.34	0.58	16	0.05095	5.07	0.648
13	0.50	0.71	16	0.05196	5.17	0.646
14	0.75	0.87	16	0.05232	5.21	0.645
15	1.00	1.00	16	0.05265	5.24	0.645
16	1.50	1.23	16	0.05324	5.30	0.644
17	2.00	1.42	16	0.05393	5.37	0.643
18	3.00	1.73	16	0.05518	5.49	0.640
19	4.00	2.00	16	0.05568	5.54	0.640
20	5.00	2.24	16	0.05596	5.57	0.639
21	6.00	2.45	16	0.05637	5.61	0.638
22	7.00	2.65	16	0.05665	5.64	0.638
23	8.00	2.83	16	0.05688	5.66	0.637
24	9.00	3.00	16	0.05706	5.68	0.637
25	10.00	3.16	16	0.05715	5.69	0.637
26	12.00	3.46	16	0.05743	5.71	0.637
27	14.00	3.74	16	0.05766	5.74	0.636
28	16.00	4.00	16	0.05793	5.76	0.636
29	18.00	4.24	16	0.05826	5.80	0.635
30	20.00	4.47	16	0.05853	5.82	0.635
31	22.00	4.69	16	0.05862	5.83	0.634
32	24.00	4.90	16	0.05872	5.84	0.634
33	26.00	5.10	16	0.05881	5.85	0.634
34	28.00	5.29	16	0.05885	5.86	0.634
35	30.00	5.48	16	0.05899	5.87	0.634
36	35.00	5.92	16	0.05918	5.89	0.634
37	40.00	6.32	16	0.05931	5.90	0.633
38	45.00	6.71	16	0.05941	5.91	0.633
39	50.00	7.07	16	0.0595	5.92	0.633
40	60.00	7.75	16	0.05964	5.93	0.633
41	70.00	8.37	16	0.05982	5.95	0.632
42	80.00	8.94	16	0.05991	5.96	0.632
43	90.00	9.49	16	0.05996	5.97	0.632
44	100.00	10.00	16	0.06005	5.98	0.632
45	110.00	10.49	16	0.06	5.97	0.632
46	120.00	10.95	16	0.06009	5.98	0.632
47	120.07	10.96	16	0.06009	5.98	0.632

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/15/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 9 of 12
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	16	0.07862	7.82	0.600
2	0.01	0.09	13.4	0.07862	7.82	0.600
3	0.02	0.13	5.45	0.07384	7.35	0.608
4	0.03	0.16	4.2	0.06741	6.71	0.619
5	0.04	0.19	4.1	0.0663	6.60	0.621
6	0.05	0.23	4.05	0.06566	6.53	0.622
7	0.07	0.27	4.04	0.06543	6.51	0.623
8	0.08	0.29	4.03	0.06529	6.50	0.623
9	0.12	0.34	4.02	0.06501	6.47	0.623
10	0.17	0.41	4.01	0.06465	6.43	0.624
11	0.25	0.50	4.01	0.06432	6.40	0.625
12	0.33	0.58	4.01	0.064	6.37	0.625
13	0.50	0.71	4.01	0.06373	6.34	0.626
14	0.75	0.87	4	0.06331	6.30	0.626
15	1.00	1.00	4	0.06308	6.28	0.627
16	1.50	1.23	4	0.06281	6.25	0.627
17	2.00	1.41	4	0.06244	6.21	0.628
18	3.00	1.73	4	0.06193	6.16	0.629
19	4.00	2.00	4	0.06157	6.13	0.629
20	5.00	2.24	4	0.06129	6.10	0.630
21	6.00	2.45	4	0.06101	6.07	0.630
22	7.00	2.65	4	0.06092	6.06	0.630
23	8.00	2.83	4	0.06083	6.05	0.631
24	9.00	3.00	4	0.06074	6.04	0.631
25	10.00	3.16	4	0.0606	6.03	0.631
26	12.00	3.46	4	0.06046	6.02	0.631
27	14.00	3.74	4	0.06023	5.99	0.632
28	16.00	4.00	4	0.05996	5.97	0.632
29	18.00	4.24	4	0.05982	5.95	0.632
30	20.00	4.47	4	0.05977	5.95	0.632
31	22.00	4.69	4	0.05968	5.94	0.633
32	24.00	4.90	4	0.05968	5.94	0.633
33	26.00	5.10	4	0.05963	5.93	0.633
34	28.00	5.29	4	0.05954	5.92	0.633
35	30.00	5.48	4	0.0595	5.92	0.633
36	35.00	5.92	4	0.0594	5.91	0.633
37	40.00	6.32	4	0.05931	5.90	0.633
38	45.00	6.71	4	0.05927	5.90	0.633
39	50.00	7.07	4	0.05922	5.89	0.633
40	60.00	7.75	4	0.05917	5.89	0.634
41	70.00	8.37	4	0.05913	5.88	0.634
42	80.00	8.94	4	0.05895	5.87	0.634
43	90.00	9.49	4	0.05904	5.87	0.634
44	100.00	10.00	4	0.05904	5.87	0.634
45	110.00	10.49	4	0.05899	5.87	0.634
46	120.00	10.95	4	0.05899	5.87	0.634
47	120.04	10.96	4	0.05899	5.87	0.634

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/15/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 10 of 12
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.05899	5.87	0.634
2	0.01	0.09	3.59	0.05899	5.87	0.634
3	0.02	0.13	1.38	0.05609	5.58	0.639
4	0.03	0.16	1.19	0.05334	5.31	0.644
5	0.04	0.19	1.12	0.05265	5.24	0.645
6	0.05	0.23	1.06	0.052	5.17	0.646
7	0.07	0.27	1.04	0.05177	5.15	0.646
8	0.08	0.29	1.04	0.05163	5.14	0.647
9	0.12	0.35	1.02	0.05127	5.10	0.647
10	0.17	0.41	1.02	0.05081	5.06	0.648
11	0.25	0.50	1.01	0.04998	4.97	0.649
12	0.34	0.58	1.01	0.04966	4.94	0.650
13	0.50	0.71	1.01	0.0492	4.90	0.651
14	0.75	0.87	1	0.04869	4.84	0.652
15	1.00	1.00	1	0.04805	4.78	0.653
16	1.50	1.23	1	0.04736	4.71	0.654
17	2.00	1.41	1	0.04699	4.68	0.655
18	3.00	1.73	1	0.04648	4.63	0.655
19	4.00	2.00	1	0.04584	4.56	0.657
20	5.00	2.24	0.998	0.04506	4.48	0.658
21	6.00	2.45	0.999	0.04474	4.45	0.658
22	7.00	2.65	1	0.04446	4.42	0.659
23	8.00	2.83	1	0.04432	4.41	0.659
24	9.00	3.00	1	0.04414	4.39	0.659
25	10.00	3.16	1	0.04405	4.38	0.660
26	12.00	3.46	0.999	0.04377	4.36	0.660
27	14.00	3.74	0.999	0.04327	4.31	0.661
28	16.00	4.00	1	0.04304	4.28	0.661
29	18.00	4.24	0.999	0.04285	4.26	0.662
30	20.00	4.47	0.999	0.04258	4.24	0.662
31	22.00	4.69	0.999	0.04225	4.20	0.663
32	24.00	4.90	0.999	0.04189	4.17	0.663
33	26.00	5.10	0.999	0.04161	4.14	0.664
34	28.00	5.29	0.999	0.04143	4.12	0.664
35	30.00	5.48	0.998	0.04129	4.11	0.664
36	35.00	5.92	0.999	0.04106	4.09	0.665
37	40.00	6.32	1	0.04097	4.08	0.665
38	45.00	6.71	1	0.04097	4.08	0.665
39	50.00	7.07	0.999	0.04092	4.07	0.665
40	60.00	7.75	0.999	0.04083	4.06	0.665
41	70.00	8.37	0.999	0.04065	4.04	0.666
42	80.00	8.94	0.999	0.04055	4.04	0.666
43	90.00	9.49	0.999	0.04046	4.03	0.666
44	100.00	10.00	0.999	0.04042	4.02	0.666
45	110.00	10.49	0.999	0.04037	4.02	0.666
46	120.00	10.95	0.999	0.04032	4.01	0.666
47	120.05	10.96	0.999	0.04032	4.01	0.666

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/15/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 11 of 12
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.04032	4.01	0.666
2	0.01	0.09	0.816	0.04032	4.01	0.666
3	0.02	0.13	0.453	0.03963	3.94	0.667
4	0.03	0.16	0.376	0.03908	3.89	0.668
5	0.04	0.19	0.341	0.03844	3.82	0.669
6	0.05	0.23	0.305	0.03789	3.77	0.670
7	0.07	0.27	0.288	0.03752	3.73	0.671
8	0.08	0.29	0.283	0.03711	3.69	0.672
9	0.12	0.34	0.271	0.03651	3.63	0.673
10	0.17	0.41	0.266	0.036	3.58	0.674
11	0.25	0.50	0.261	0.03536	3.52	0.675
12	0.34	0.58	0.258	0.03508	3.49	0.675
13	0.50	0.71	0.254	0.0349	3.47	0.675
14	0.75	0.87	0.254	0.03467	3.45	0.676
15	1.00	1.00	0.252	0.03458	3.44	0.676
16	1.50	1.23	0.252	0.0343	3.41	0.676
17	2.00	1.42	0.251	0.03421	3.40	0.677
18	3.00	1.73	0.252	0.03361	3.34	0.678
19	4.00	2.00	0.251	0.03301	3.28	0.679
20	5.00	2.24	0.252	0.03274	3.26	0.679
21	6.00	2.45	0.25	0.03242	3.23	0.680
22	7.00	2.65	0.25	0.03191	3.18	0.681
23	8.00	2.83	0.25	0.0315	3.13	0.681
24	9.00	3.00	0.251	0.03113	3.10	0.682
25	10.00	3.16	0.25	0.03081	3.07	0.683
26	12.00	3.46	0.251	0.03035	3.02	0.683
27	14.00	3.74	0.251	0.03007	2.99	0.684
28	16.00	4.00	0.251	0.02984	2.97	0.684
29	18.00	4.24	0.25	0.02956	2.94	0.685
30	20.00	4.47	0.25	0.02943	2.93	0.685
31	22.00	4.69	0.252	0.02929	2.91	0.685
32	24.00	4.90	0.25	0.02915	2.90	0.685
33	26.00	5.10	0.25	0.0291	2.90	0.685
34	28.00	5.29	0.251	0.02901	2.89	0.686
35	30.00	5.48	0.25	0.02901	2.89	0.686
36	35.00	5.92	0.25	0.02887	2.87	0.686
37	40.00	6.32	0.251	0.02883	2.87	0.686
38	45.00	6.71	0.25	0.02874	2.86	0.686
39	50.00	7.07	0.25	0.02855	2.84	0.686
40	60.00	7.75	0.25	0.02832	2.82	0.687
41	70.00	8.37	0.25	0.02796	2.78	0.687
42	80.00	8.94	0.25	0.02777	2.76	0.688
43	90.00	9.49	0.25	0.02763	2.75	0.688
44	100.00	10.00	0.25	0.02759	2.75	0.688
45	110.00	10.49	0.25	0.0275	2.74	0.688
46	120.00	10.95	0.25	0.0274	2.73	0.688
47	120.04	10.96	0.25	0.0274	2.73	0.688

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/15/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

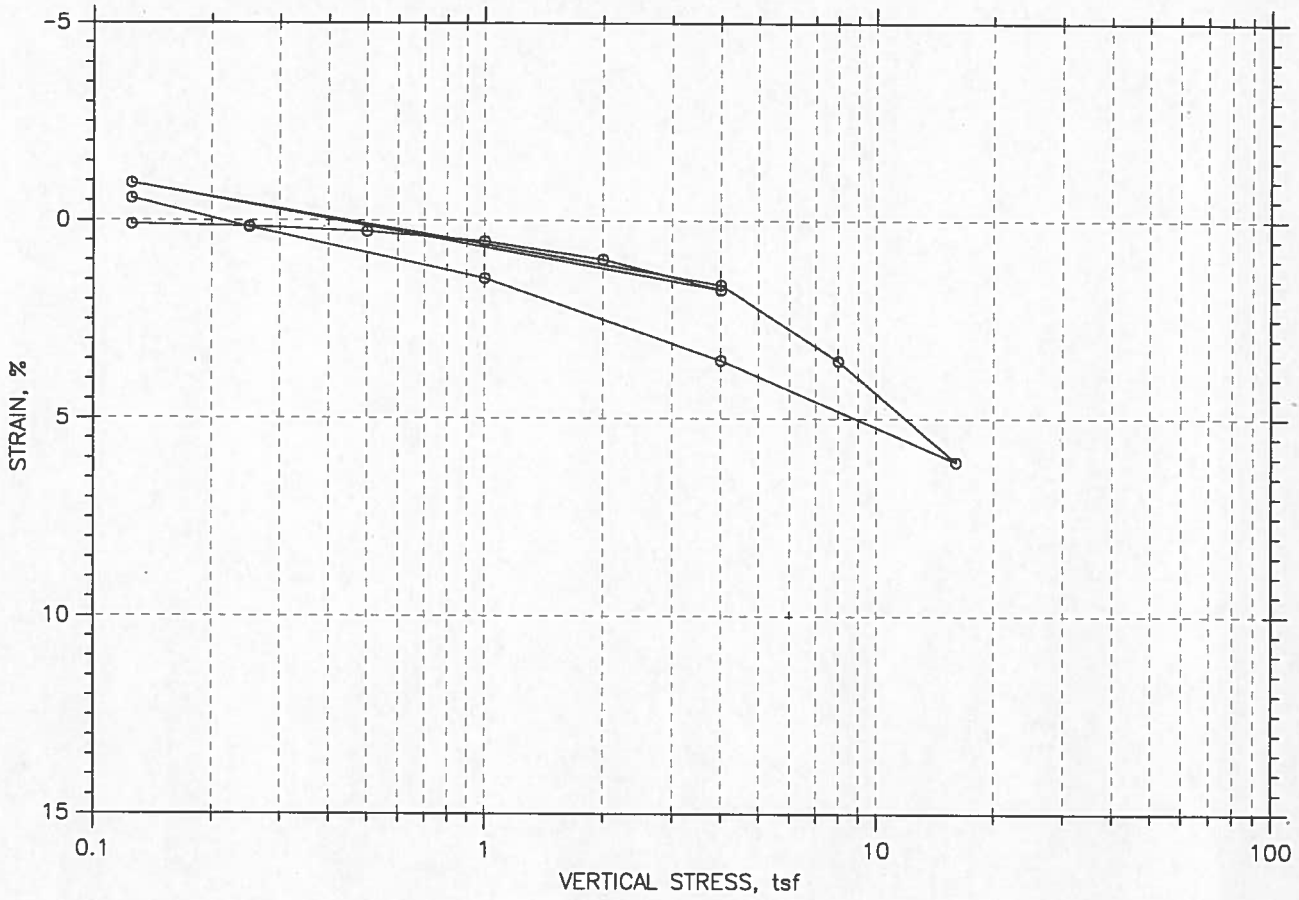
Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

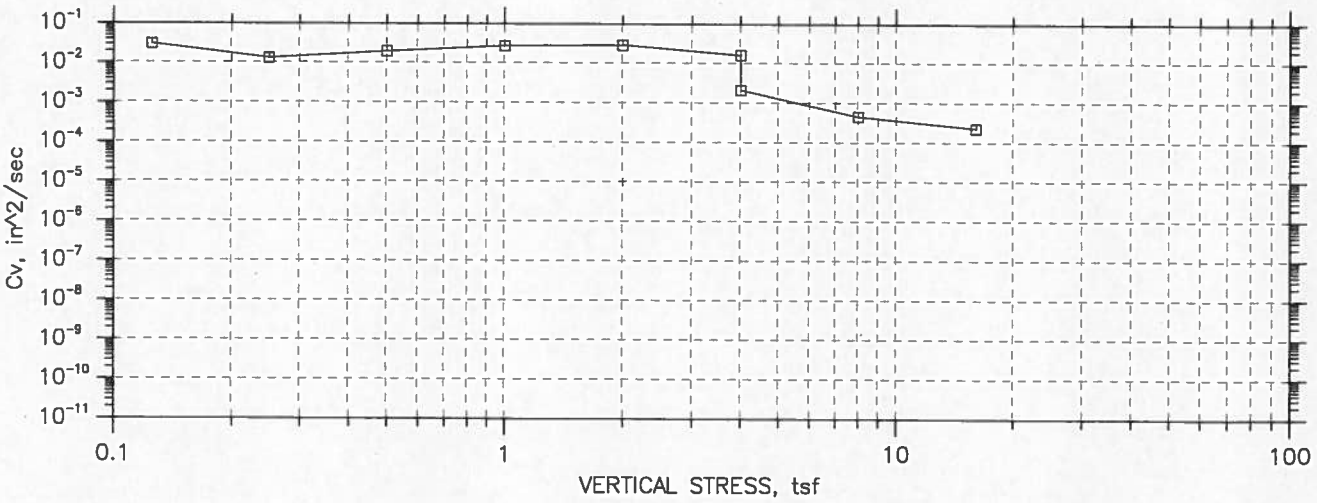
Constant Load Step: 12 of 12
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	0.0274	2.73	0.688
2	0.01	0.09	0.23	0.0274	2.73	0.688
3	0.02	0.13	0.175	0.02717	2.70	0.689
4	0.03	0.16	0.158	0.0269	2.68	0.689
5	0.04	0.19	0.148	0.02681	2.67	0.689
6	0.05	0.23	0.139	0.02658	2.64	0.690
7	0.07	0.27	0.136	0.02648	2.64	0.690
8	0.08	0.29	0.133	0.02644	2.63	0.690
9	0.12	0.35	0.13	0.0263	2.62	0.690
10	0.17	0.41	0.129	0.02612	2.60	0.691
11	0.25	0.50	0.128	0.02602	2.59	0.691
12	0.34	0.58	0.127	0.02593	2.58	0.691
13	0.50	0.71	0.125	0.02575	2.56	0.691
14	0.75	0.87	0.125	0.02561	2.55	0.691
15	1.00	1.00	0.125	0.02552	2.54	0.692
16	1.50	1.23	0.125	0.02538	2.53	0.692
17	2.00	1.41	0.125	0.02533	2.52	0.692
18	3.00	1.73	0.125	0.0252	2.51	0.692
19	4.00	2.00	0.125	0.02501	2.49	0.693
20	5.00	2.24	0.124	0.02497	2.48	0.693
21	6.00	2.45	0.125	0.02483	2.47	0.693
22	7.00	2.65	0.124	0.02464	2.45	0.693
23	8.00	2.83	0.124	0.02455	2.44	0.693
24	9.00	3.00	0.125	0.02446	2.43	0.693
25	10.00	3.16	0.125	0.02432	2.42	0.694
26	12.00	3.46	0.124	0.02418	2.41	0.694
27	14.00	3.74	0.124	0.02405	2.39	0.694
28	16.00	4.00	0.125	0.02391	2.38	0.694
29	18.00	4.24	0.125	0.02377	2.37	0.695
30	20.00	4.47	0.124	0.02363	2.35	0.695
31	22.00	4.69	0.125	0.0235	2.34	0.695
32	24.00	4.90	0.124	0.02336	2.32	0.695
33	26.00	5.10	0.124	0.02327	2.31	0.696
34	28.00	5.29	0.124	0.02322	2.31	0.696
35	30.00	5.48	0.124	0.02317	2.31	0.696
36	35.00	5.92	0.124	0.02281	2.27	0.696
37	40.00	6.32	0.124	0.02267	2.26	0.697
38	45.00	6.71	0.125	0.02258	2.25	0.697
39	50.00	7.07	0.124	0.02253	2.24	0.697
40	60.00	7.75	0.124	0.02239	2.23	0.697
41	70.00	8.37	0.124	0.02216	2.21	0.697
42	80.00	8.94	0.124	0.02198	2.19	0.698
43	90.00	9.49	0.124	0.02175	2.16	0.698
44	100.00	10.00	0.124	0.02156	2.15	0.698
45	110.00	10.49	0.124	0.02133	2.12	0.699
46	120.00	10.95	0.124	0.02133	2.12	0.699
47	120.01	10.95	0.124	0.02133	2.12	0.699

CONSOLIDATION TEST DATA

SUMMARY REPORT



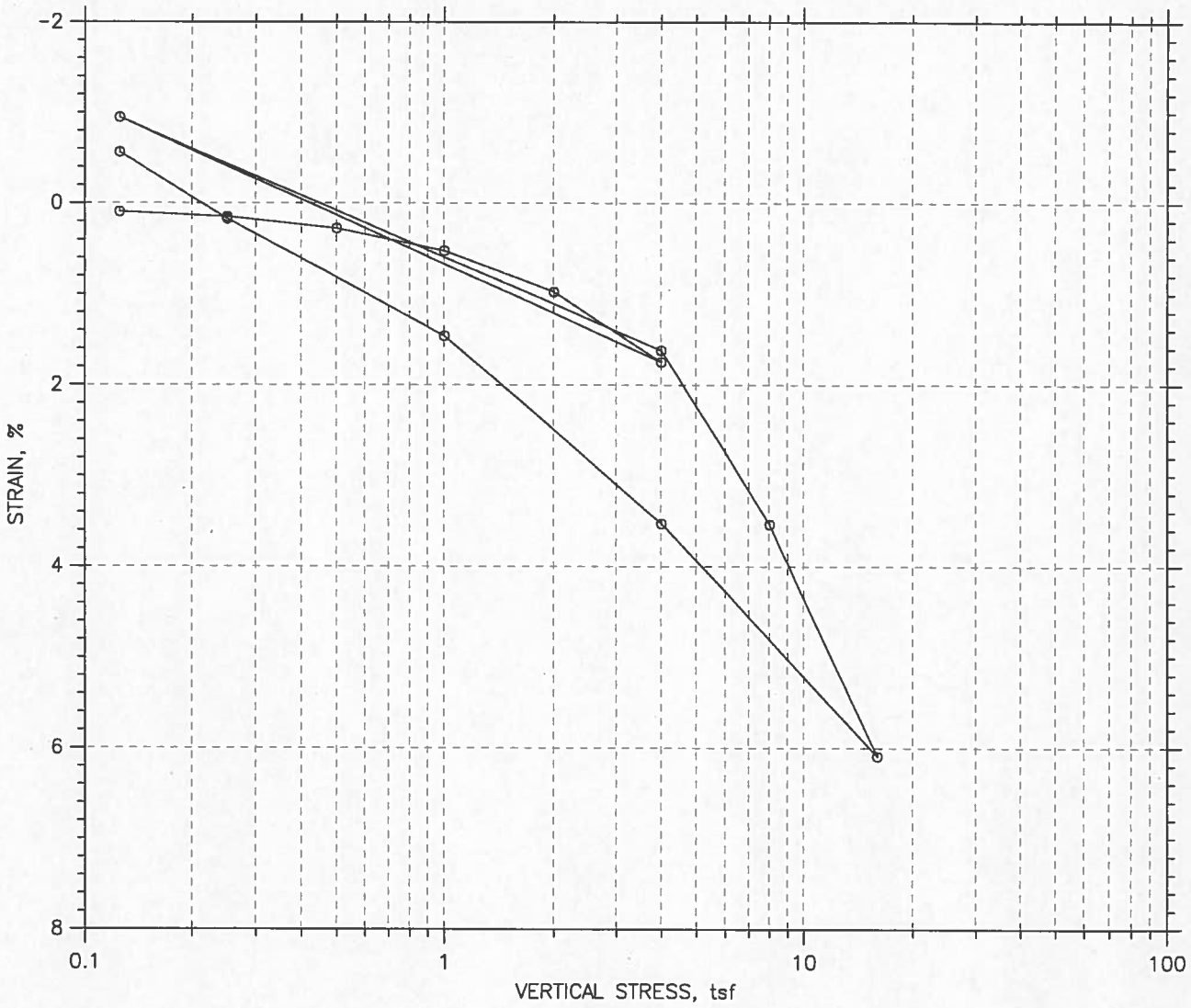


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-297
	Boring No.: B-603	Tested By: SKK	Checked By: SKK
	Sample No.: 19-297	Test Date: 6/5/19	Test No.: 1
	Depth: 15.5-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF,		

Tue, 18-JUN-2019 07:04:51

CONSOLIDATION TEST DATA

SUMMARY REPORT



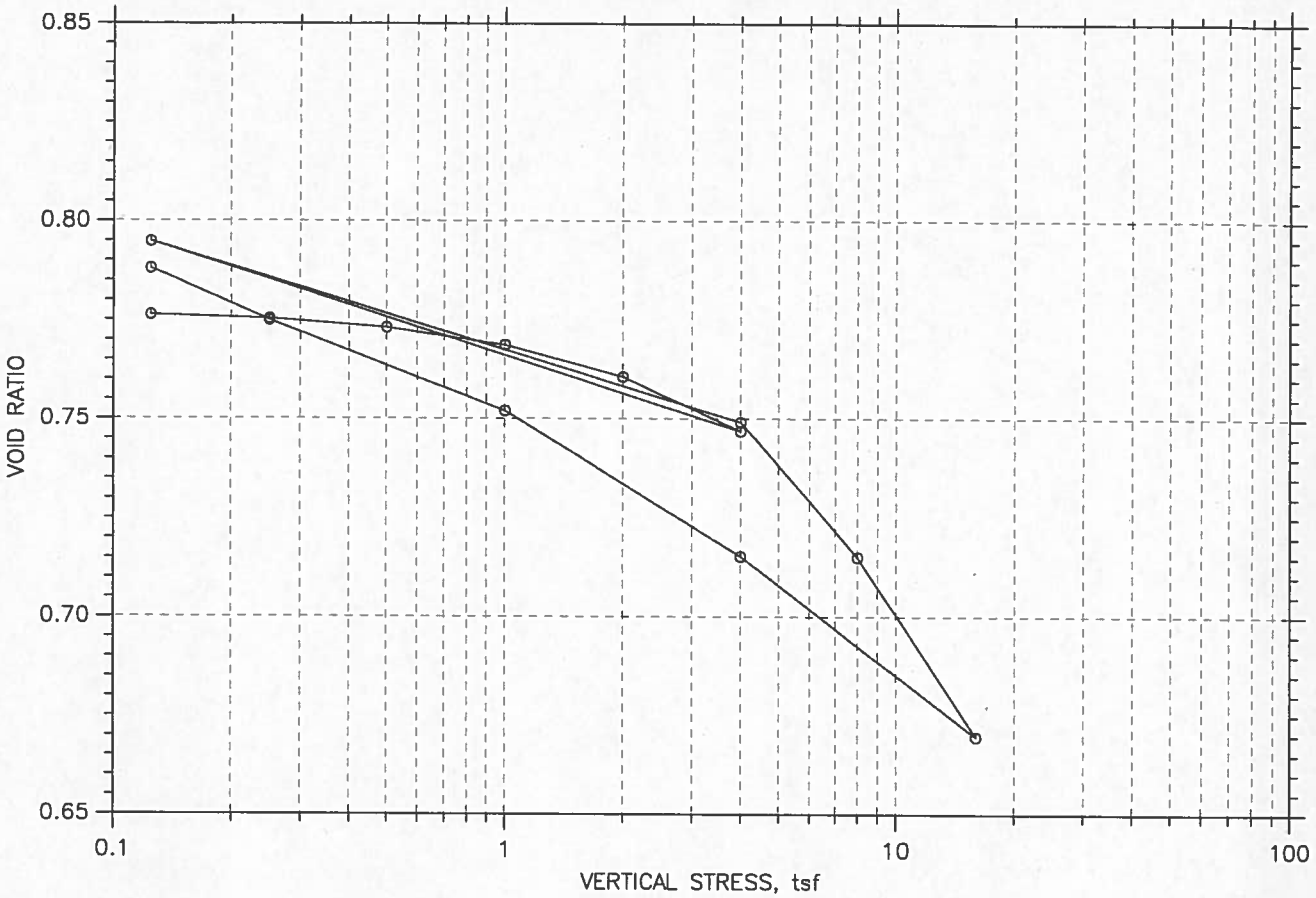
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	26.68	28.66
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	96.21	95.47
Compression Index: 3.81959e-313				Saturation, %	93.97	99.19
Diameter: 2.5 in		Height: 1.006 in		Void Ratio	0.78	0.79
LL: ---	PL: ---	PI: ---	GS: 2.74			

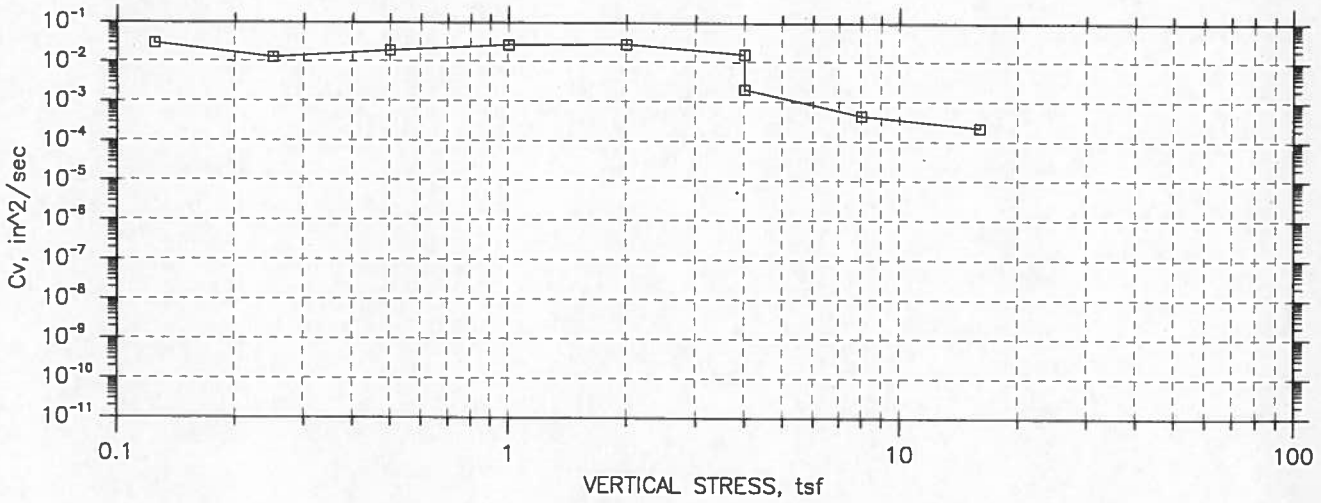
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-297
	Boring No.: B-603	Tested By: SKK	Checked By: SKK
	Sample No.: 19-297	Test Date: 6/5/19	Test No.: 1
	Depth: 15.5-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF,		

Tue, 18-JUN-2019 07:04:51

CONSOLIDATION TEST DATA

SUMMARY REPORT



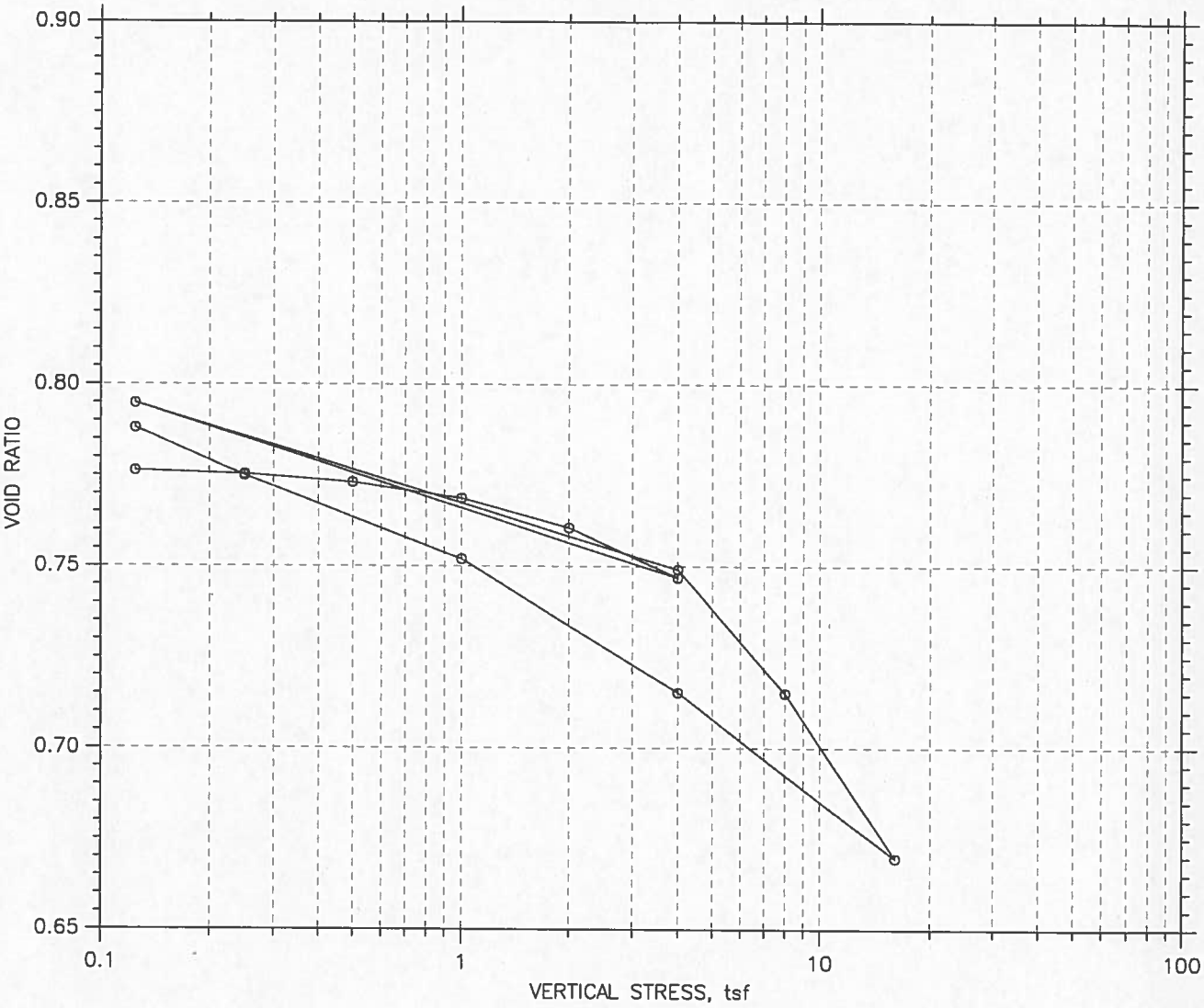


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-297
	Boring No.: B-603	Tested By: SKK	Checked By: SKK
	Sample No.: 19-297	Test Date: 6/5/19	Test No.: 1
	Depth: 15.5-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF,		

Tue, 18-JUN-2019 07:05:00

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	26.68	28.66
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	96.21	95.47
Compression Index: 3.81959e-313				Saturation, %	93.97	99.19
Diameter: 2.5 in		Height: 1.006 in		Void Ratio	0.78	0.79
LL: ---	PL: ---	PI: ---	GS: 2.74			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-297
	Boring No.: B-603	Tested By: SKK	Checked By: SKK
	Sample No.: 19-297	Test Date: 6/5/19	Test No.: 1
	Depth: 15.5-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF,		

Tue, 18-JUN-2019 07:05:01

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Measured Specific Gravity: 2.74
Initial Void Ratio: 0.78
Final Void Ratio: 0.79

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.01 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	107.77	157.98	160.45	214.5
Wt. Container + Dry Soil, gm	96.13	124.71	124.71	178.76
Wt. Container, gm	51.9	0	0	54.06
Wt. Dry Soil, gm	44.23	124.71	124.71	124.7
Water Content, %	26.32	26.68	28.66	28.66
Void Ratio	---	0.78	0.79	---
Degree of Saturation, %	---	93.97	99.19	---
Dry Unit Weight, pcf	---	96.206	95.469	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.0009656	0.776	0.10	0.1	5.65e-002	7.68e-003	8.12e-003
2	0.25	0.001517	0.775	0.15	0.1	2.80e-002	4.39e-003	2.30e-003
3	0.5	0.002805	0.773	0.28	0.1	3.96e-002	5.12e-003	3.80e-003
4	1	0.005288	0.769	0.53	0.1	5.35e-002	4.94e-003	4.95e-003
5	2	0.009839	0.761	0.98	0.1	3.71e-002	4.52e-003	3.14e-003
6	4	0.01761	0.747	1.75	0.2	1.44e-002	3.86e-003	1.04e-003
7	0.125	-0.009518	0.795	-0.95	15.4	2.30e-004	6.96e-003	3.00e-005
8	4	0.01632	0.749	1.62	1.8	1.98e-003	6.63e-003	2.45e-004
9	8	0.03559	0.715	3.54	8.4	4.06e-004	4.79e-003	3.64e-005
10	16	0.06129	0.670	6.09	13.4	2.41e-004	3.19e-003	1.44e-005
11	4	0.0355	0.715	3.53	1.9	1.69e-003	2.14e-003	6.77e-005
12	1	0.01471	0.752	1.46	49.3	6.90e-005	6.89e-003	8.90e-006
13	0.25	0.001747	0.775	0.17	75.3	4.67e-005	1.72e-002	1.50e-005
14	0.125	-0.005655	0.788	-0.56	0.0	0.00e+000	5.89e-002	0.00e+000

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.0009656	0.776	0.10	0.0	0.00e+000	7.68e-003	0.00e+000
2	0.25	0.001517	0.775	0.15	0.0	0.00e+000	4.39e-003	0.00e+000
3	0.5	0.002805	0.773	0.28	0.0	0.00e+000	5.12e-003	0.00e+000
4	1	0.005288	0.769	0.53	0.0	0.00e+000	4.94e-003	0.00e+000
5	2	0.009839	0.761	0.98	0.0	0.00e+000	4.52e-003	0.00e+000
6	4	0.01761	0.747	1.75	0.0	0.00e+000	3.86e-003	0.00e+000
7	0.125	-0.009518	0.795	-0.95	0.0	0.00e+000	6.96e-003	0.00e+000
8	4	0.01632	0.749	1.62	0.0	0.00e+000	6.63e-003	0.00e+000
9	8	0.03559	0.715	3.54	0.0	0.00e+000	4.79e-003	0.00e+000
10	16	0.06129	0.670	6.09	0.0	0.00e+000	3.19e-003	0.00e+000
11	4	0.0355	0.715	3.53	0.0	0.00e+000	2.14e-003	0.00e+000
12	1	0.01471	0.752	1.46	0.0	0.00e+000	6.89e-003	0.00e+000
13	0.25	0.001747	0.775	0.17	0.0	0.00e+000	1.72e-002	0.00e+000
14	0.125	-0.005655	0.788	-0.56	0.0	0.00e+000	5.89e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 1 of 14
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00448	-0.001335	-0.13	0.780
2	0.01	0.09	0.0123	-0.001335	-0.13	0.780
3	0.02	0.13	0.0471	-0.001151	-0.11	0.780
4	0.03	0.16	0.0706	-0.0007376	-0.07	0.779
5	0.03	0.19	0.0863	-0.0005536	-0.06	0.779
6	0.05	0.23	0.101	-0.0004617	-0.05	0.779
7	0.07	0.27	0.112	-0.0003697	-0.04	0.779
8	0.08	0.29	0.118	-0.0003697	-0.04	0.779
9	0.12	0.34	0.123	-0.0003237	-0.03	0.779
10	0.17	0.41	0.125	-0.0003237	-0.03	0.779
11	0.25	0.50	0.133	-0.0003237	-0.03	0.779
12	0.33	0.58	0.128	-0.0003697	-0.04	0.779
13	0.37	0.60	0.128	-0.0003697	-0.04	0.779

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 2 of 14
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.129	-0.002623	-0.26	0.783
2	0.01	0.09	0.128	-0.002623	-0.26	0.783
3	0.02	0.13	0.171	-0.002623	-0.26	0.783
4	0.03	0.16	0.203	-0.002485	-0.25	0.782
5	0.04	0.19	0.217	-0.002393	-0.24	0.782
6	0.05	0.23	0.234	-0.002255	-0.22	0.782
7	0.07	0.27	0.241	-0.002163	-0.22	0.782
8	0.08	0.29	0.243	-0.002117	-0.21	0.782
9	0.12	0.34	0.246	-0.002071	-0.21	0.782
10	0.17	0.41	0.251	-0.002025	-0.20	0.782
11	0.25	0.50	0.257	-0.002071	-0.21	0.782
12	0.26	0.51	0.257	-0.002071	-0.21	0.782

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 3 of 14
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.259	-0.004323	-0.43	0.786
2	0.01	0.09	0.259	-0.004323	-0.43	0.786
3	0.02	0.13	0.346	-0.004185	-0.42	0.785
4	0.03	0.16	0.398	-0.004001	-0.40	0.785
5	0.04	0.19	0.432	-0.003633	-0.36	0.784
6	0.05	0.23	0.471	-0.00322	-0.32	0.784
7	0.07	0.27	0.485	-0.003174	-0.32	0.784
8	0.08	0.29	0.49	-0.003128	-0.31	0.784
9	0.12	0.34	0.496	-0.00299	-0.30	0.783
10	0.17	0.41	0.499	-0.00299	-0.30	0.783
11	0.25	0.50	0.501	-0.00299	-0.30	0.783
12	0.33	0.58	0.505	-0.00299	-0.30	0.783
13	0.43	0.65	0.51	-0.003036	-0.30	0.783

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 4 of 14
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.509	-0.004367	-0.43	0.786
2	0.01	0.09	0.515	-0.004367	-0.43	0.786
3	0.02	0.13	0.799	-0.004045	-0.40	0.785
4	0.03	0.16	0.902	-0.003217	-0.32	0.784
5	0.04	0.19	0.943	-0.002804	-0.28	0.783
6	0.05	0.23	0.975	-0.002436	-0.24	0.782
7	0.07	0.26	0.985	-0.002206	-0.22	0.782
8	0.09	0.30	0.989	-0.002114	-0.21	0.782
9	0.12	0.34	0.995	-0.002022	-0.20	0.782
10	0.17	0.41	0.997	-0.00193	-0.19	0.781
11	0.25	0.50	0.997	-0.001838	-0.18	0.781
12	0.34	0.58	0.998	-0.001792	-0.18	0.781
13	0.50	0.71	0.999	-0.001792	-0.18	0.781
14	0.75	0.87	1	-0.001792	-0.18	0.781
15	0.97	0.99	1	-0.001884	-0.19	0.781

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 5 of 14
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	1	-0.004046	-0.40	0.785
2	0.01	0.09	1.12	-0.004046	-0.40	0.785
3	0.02	0.13	1.76	-0.002667	-0.27	0.783
4	0.03	0.16	1.9	-0.001609	-0.16	0.781
5	0.04	0.19	1.94	-0.00115	-0.11	0.780
6	0.05	0.23	1.97	-0.0008737	-0.09	0.780
7	0.07	0.27	1.98	-0.0006898	-0.07	0.779
8	0.08	0.29	1.99	-0.0005058	-0.05	0.779
9	0.12	0.34	1.99	-0.000276	-0.03	0.778
10	0.17	0.41	1.99	-0.000138	-0.01	0.778
11	0.25	0.50	2	4.59e-005	0.00	0.778
12	0.34	0.58	2	0.0001379	0.01	0.778
13	0.50	0.71	2	0.0004137	0.04	0.777
14	0.75	0.87	2	0.0005057	0.05	0.777
15	1.00	1.00	2	0.0005517	0.05	0.777
16	1.50	1.23	2	0.0005517	0.05	0.777
17	2.00	1.41	2	0.0005517	0.05	0.777
18	2.74	1.66	2	0.0005057	0.05	0.777

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 6 of 14
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	-0.00207	-0.21	0.782
2	0.01	0.09	2.26	-0.00207	-0.21	0.782
3	0.02	0.13	3.72	0.0002744	0.03	0.777
4	0.03	0.16	3.88	0.001056	0.10	0.776
5	0.04	0.19	3.93	0.001424	0.14	0.775
6	0.05	0.23	3.96	0.002114	0.21	0.774
7	0.07	0.27	3.97	0.002481	0.25	0.774
8	0.08	0.29	3.98	0.002619	0.26	0.773
9	0.12	0.34	3.99	0.003033	0.30	0.773
10	0.17	0.41	3.99	0.003171	0.32	0.772
11	0.26	0.51	3.99	0.003355	0.33	0.772
12	0.33	0.58	3.99	0.003539	0.35	0.772
13	0.50	0.71	3.99	0.003861	0.38	0.771
14	0.75	0.87	4	0.004091	0.41	0.771
15	1.00	1.00	4	0.004367	0.43	0.770
16	1.50	1.23	4	0.004642	0.46	0.770
17	2.00	1.42	4	0.004872	0.48	0.769
18	3.00	1.73	4	0.005148	0.51	0.769
19	4.00	2.00	4	0.005286	0.53	0.769
20	5.00	2.24	4	0.005332	0.53	0.769
21	6.00	2.45	4	0.005424	0.54	0.768
22	7.00	2.65	4	0.00547	0.54	0.768
23	8.00	2.83	4	0.00547	0.54	0.768
24	9.00	3.00	4	0.00547	0.54	0.768
25	10.00	3.16	4	0.00547	0.54	0.768
26	12.00	3.46	4	0.005516	0.55	0.768
27	14.00	3.74	4	0.005562	0.55	0.768
28	16.00	4.00	4	0.005562	0.55	0.768
29	18.00	4.24	4	0.005608	0.56	0.768
30	20.00	4.47	4	0.005608	0.56	0.768
31	22.00	4.69	4	0.005654	0.56	0.768
32	24.00	4.90	4	0.005654	0.56	0.768
33	26.00	5.10	4	0.005654	0.56	0.768
34	28.00	5.29	4	0.005654	0.56	0.768
35	30.00	5.48	4	0.005654	0.56	0.768
36	35.00	5.92	4	0.005608	0.56	0.768
37	40.00	6.32	4	0.005608	0.56	0.768
38	45.00	6.71	4	0.005608	0.56	0.768
39	50.00	7.07	4	0.005654	0.56	0.768
40	60.00	7.75	4	0.005746	0.57	0.768
41	70.00	8.37	4	0.0057	0.57	0.768
42	80.00	8.94	4	0.0057	0.57	0.768
43	90.00	9.49	4	0.0057	0.57	0.768
44	100.00	10.00	4	0.005746	0.57	0.768
45	110.00	10.49	4	0.0057	0.57	0.768
46	120.00	10.95	4	0.0057	0.57	0.768
47	120.04	10.96	4	0.0057	0.57	0.768

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 7 of 14
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.01549	1.54	0.751
2	0.01	0.09	3.74	0.01549	1.54	0.751
3	0.02	0.13	0.676	0.01218	1.21	0.756
4	0.03	0.16	0.453	0.009702	0.96	0.761
5	0.04	0.19	0.361	0.008736	0.87	0.763
6	0.05	0.23	0.264	0.007587	0.75	0.765
7	0.07	0.27	0.218	0.006713	0.67	0.766
8	0.08	0.29	0.198	0.006253	0.62	0.767
9	0.12	0.34	0.164	0.005793	0.58	0.768
10	0.17	0.41	0.15	0.005058	0.50	0.769
11	0.25	0.50	0.142	0.004506	0.45	0.770
12	0.34	0.58	0.137	0.004046	0.40	0.771
13	0.50	0.71	0.132	0.00331	0.33	0.772
14	0.75	0.87	0.131	0.002621	0.26	0.773
15	1.00	1.00	0.129	0.002069	0.21	0.774
16	1.50	1.22	0.129	0.001149	0.11	0.776
17	2.00	1.41	0.128	0.0008276	0.08	0.777
18	3.00	1.73	0.125	4.598e-005	0.00	0.778
19	4.00	2.00	0.127	-0.0005517	-0.05	0.779
20	5.00	2.24	0.125	-0.001012	-0.10	0.780
21	6.00	2.45	0.125	-0.001195	-0.12	0.780
22	7.00	2.65	0.125	-0.001609	-0.16	0.781
23	8.00	2.83	0.125	-0.002115	-0.21	0.782
24	9.00	3.00	0.125	-0.002299	-0.23	0.782
25	10.00	3.16	0.124	-0.002667	-0.27	0.783
26	12.00	3.46	0.124	-0.003219	-0.32	0.784
27	14.00	3.74	0.125	-0.00377	-0.37	0.785
28	16.00	4.00	0.125	-0.004046	-0.40	0.785
29	18.00	4.24	0.125	-0.004322	-0.43	0.786
30	20.00	4.47	0.124	-0.004506	-0.45	0.786
31	22.00	4.69	0.125	-0.004782	-0.48	0.786
32	24.00	4.90	0.124	-0.005104	-0.51	0.787
33	26.00	5.10	0.125	-0.005655	-0.56	0.788
34	28.00	5.29	0.124	-0.005931	-0.59	0.788
35	30.00	5.48	0.124	-0.006345	-0.63	0.789
36	35.00	5.92	0.125	-0.006943	-0.69	0.790
37	40.00	6.32	0.125	-0.007449	-0.74	0.791
38	45.00	6.71	0.124	-0.007724	-0.77	0.792
39	50.00	7.07	0.125	-0.007908	-0.79	0.792
40	60.00	7.75	0.124	-0.00869	-0.86	0.793
41	70.00	8.37	0.124	-0.00892	-0.89	0.794
42	80.00	8.94	0.125	-0.009334	-0.93	0.794
43	90.00	9.49	0.123	-0.009931	-0.99	0.796
44	100.00	10.00	0.124	-0.01044	-1.04	0.796
45	110.00	10.49	0.125	-0.01117	-1.11	0.798
46	120.00	10.95	0.123	-0.01168	-1.16	0.799
47	120.09	10.96	0.125	-0.01163	-1.16	0.799

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 8 of 14
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.125	-0.02147	-2.13	0.816
2	0.01	0.09	0.205	-0.02143	-2.13	0.816
3	0.02	0.13	2.88	-0.01784	-1.77	0.810
4	0.03	0.16	3.72	-0.01219	-1.21	0.800
5	0.04	0.19	3.84	-0.01076	-1.07	0.797
6	0.05	0.23	3.92	-0.01021	-1.01	0.796
7	0.07	0.27	3.94	-0.009473	-0.94	0.795
8	0.08	0.29	3.95	-0.009151	-0.91	0.794
9	0.12	0.35	3.97	-0.008737	-0.87	0.793
10	0.17	0.41	3.98	-0.008278	-0.82	0.793
11	0.25	0.50	3.98	-0.00745	-0.74	0.791
12	0.34	0.58	3.99	-0.00676	-0.67	0.790
13	0.50	0.71	3.99	-0.005841	-0.58	0.788
14	0.75	0.87	3.99	-0.005105	-0.51	0.787
15	1.00	1.00	3.99	-0.004507	-0.45	0.786
16	1.50	1.23	4	-0.003542	-0.35	0.784
17	2.00	1.42	4	-0.002898	-0.29	0.783
18	3.00	1.73	4	-0.001703	-0.17	0.781
19	4.00	2.00	4	-0.001105	-0.11	0.780
20	5.00	2.24	4	-0.0007831	-0.08	0.779
21	6.00	2.45	4	-0.0002773	-0.03	0.778
22	7.00	2.65	4	9.052e-005	0.01	0.778
23	8.00	2.83	4	0.0006882	0.07	0.777
24	9.00	3.00	4	0.0009641	0.10	0.776
25	10.00	3.16	4	0.001056	0.10	0.776
26	12.00	3.46	4	0.001102	0.11	0.776
27	14.00	3.74	4	0.001148	0.11	0.776
28	16.00	4.00	4	0.001194	0.12	0.776
29	18.00	4.24	4	0.001286	0.13	0.776
30	20.00	4.47	4	0.001424	0.14	0.775
31	22.00	4.69	4	0.00147	0.15	0.775
32	24.00	4.90	4	0.001608	0.16	0.775
33	26.00	5.10	4	0.001792	0.18	0.775
34	28.00	5.29	4	0.001976	0.20	0.774
35	30.00	5.48	4	0.002206	0.22	0.774
36	35.00	5.92	4	0.002573	0.26	0.773
37	40.00	6.32	4	0.002987	0.30	0.773
38	45.00	6.71	4	0.003217	0.32	0.772
39	50.00	7.07	4	0.003263	0.32	0.772
40	60.00	7.75	4	0.003401	0.34	0.772
41	70.00	8.37	4	0.003769	0.37	0.771
42	80.00	8.94	4	0.003907	0.39	0.771
43	90.00	9.49	4	0.003999	0.40	0.771
44	100.00	10.00	4	0.004183	0.42	0.771
45	110.00	10.49	4	0.004321	0.43	0.770
46	120.00	10.95	4	0.004413	0.44	0.770
47	120.06	10.96	4	0.004413	0.44	0.770

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 9 of 14
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.001103	0.11	0.776
2	0.01	0.09	4.54	0.001103	0.11	0.776
3	0.02	0.13	8.01	0.005012	0.50	0.769
4	0.03	0.16	7.97	0.006161	0.61	0.767
5	0.04	0.19	7.94	0.006529	0.65	0.766
6	0.05	0.23	7.96	0.006851	0.68	0.766
7	0.07	0.27	7.97	0.007494	0.74	0.765
8	0.08	0.29	7.97	0.007954	0.79	0.764
9	0.12	0.35	7.98	0.008414	0.84	0.763
10	0.17	0.41	7.98	0.008644	0.86	0.763
11	0.25	0.50	7.99	0.008782	0.87	0.762
12	0.34	0.58	7.99	0.008828	0.88	0.762
13	0.50	0.71	8	0.009288	0.92	0.762
14	0.75	0.87	8	0.009931	0.99	0.760
15	1.00	1.00	8	0.01021	1.01	0.760
16	1.50	1.22	8	0.01126	1.12	0.758
17	2.00	1.42	8	0.01191	1.18	0.757
18	3.00	1.73	8	0.01274	1.27	0.755
19	4.00	2.00	8	0.01297	1.29	0.755
20	5.00	2.24	8	0.01338	1.33	0.754
21	6.00	2.45	8	0.01379	1.37	0.754
22	7.00	2.65	8	0.01425	1.42	0.753
23	8.00	2.83	8	0.01467	1.46	0.752
24	9.00	3.00	8	0.01494	1.49	0.752
25	10.00	3.16	8	0.01508	1.50	0.751
26	12.00	3.46	8	0.01545	1.54	0.751
27	14.00	3.74	8	0.01595	1.59	0.750
28	16.00	4.00	8	0.01632	1.62	0.749
29	18.00	4.24	8	0.01646	1.64	0.749
30	20.00	4.47	8	0.0166	1.65	0.749
31	22.00	4.69	8	0.01669	1.66	0.748
32	24.00	4.90	8	0.01674	1.66	0.748
33	26.00	5.10	8	0.01683	1.67	0.748
34	28.00	5.29	8	0.01697	1.69	0.748
35	30.00	5.48	8	0.01715	1.70	0.748
36	35.00	5.92	8	0.01743	1.73	0.747
37	40.00	6.32	8	0.01775	1.76	0.747
38	45.00	6.71	8	0.01798	1.79	0.746
39	50.00	7.07	8	0.01825	1.81	0.746
40	60.00	7.75	8	0.01871	1.86	0.745
41	70.00	8.37	8	0.01917	1.91	0.744
42	80.00	8.94	8	0.01949	1.94	0.744
43	90.00	9.49	8	0.01982	1.97	0.743
44	100.00	10.00	8	0.02014	2.00	0.742
45	110.00	10.49	8	0.02023	2.01	0.742
46	120.00	10.95	8	0.02037	2.02	0.742
47	120.02	10.96	8	0.02037	2.02	0.742

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 10 of 14
Applied Stress: 16 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.01494	1.49	0.752
2	0.01	0.09	10.9	0.01499	1.49	0.751
3	0.02	0.13	15.9	0.01922	1.91	0.744
4	0.03	0.16	15.9	0.0223	2.22	0.739
5	0.04	0.19	15.9	0.02262	2.25	0.738
6	0.05	0.23	16	0.02317	2.30	0.737
7	0.07	0.27	16	0.02322	2.31	0.737
8	0.08	0.29	16	0.02336	2.32	0.737
9	0.12	0.35	16	0.02386	2.37	0.736
10	0.17	0.41	16	0.02469	2.45	0.734
11	0.25	0.50	16	0.02524	2.51	0.733
12	0.34	0.58	16	0.02575	2.56	0.732
13	0.50	0.71	16	0.0263	2.61	0.731
14	0.75	0.87	16	0.02671	2.66	0.731
15	1.00	1.00	16	0.02699	2.68	0.730
16	1.50	1.23	16	0.02777	2.76	0.729
17	2.00	1.42	16	0.02846	2.83	0.728
18	3.00	1.73	16	0.02915	2.90	0.726
19	4.00	2.00	16	0.02961	2.94	0.726
20	5.00	2.24	16	0.02998	2.98	0.725
21	6.00	2.45	16	0.03081	3.06	0.724
22	7.00	2.65	16	0.03122	3.10	0.723
23	8.00	2.83	16	0.03159	3.14	0.722
24	9.00	3.00	16	0.03186	3.17	0.722
25	10.00	3.16	16	0.03205	3.19	0.721
26	12.00	3.46	16	0.03283	3.26	0.720
27	14.00	3.74	16	0.03347	3.33	0.719
28	16.00	4.00	16	0.03389	3.37	0.718
29	18.00	4.24	16	0.03407	3.39	0.718
30	20.00	4.47	16	0.03425	3.41	0.717
31	22.00	4.69	16	0.03453	3.43	0.717
32	24.00	4.90	16	0.03485	3.46	0.716
33	26.00	5.10	16	0.03517	3.50	0.716
34	28.00	5.29	16	0.03536	3.51	0.715
35	30.00	5.48	16	0.03559	3.54	0.715
36	35.00	5.92	16	0.03596	3.57	0.714
37	40.00	6.32	16	0.03688	3.67	0.713
38	45.00	6.71	16	0.03743	3.72	0.712
39	50.00	7.07	16	0.03789	3.77	0.711
40	60.00	7.75	16	0.03876	3.85	0.709
41	70.00	8.37	16	0.03945	3.92	0.708
42	80.00	8.94	16	0.03973	3.95	0.708
43	90.00	9.49	16	0.04005	3.98	0.707
44	100.00	10.00	16	0.04028	4.00	0.707
45	110.00	10.49	16	0.04055	4.03	0.706
46	120.00	10.95	16	0.04055	4.03	0.706
47	129.85	11.40	16	0.04065	4.04	0.706

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 11 of 14
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	16	0.05917	5.88	0.673
2	0.01	0.09	12.6	0.05913	5.88	0.673
3	0.02	0.13	4.77	0.05421	5.39	0.682
4	0.03	0.16	4.26	0.04966	4.94	0.690
5	0.04	0.19	4.14	0.04823	4.79	0.693
6	0.05	0.23	4.08	0.04754	4.73	0.694
7	0.07	0.27	4.05	0.04685	4.66	0.695
8	0.08	0.29	4.04	0.04644	4.62	0.696
9	0.12	0.34	4.03	0.04557	4.53	0.697
10	0.17	0.41	4.02	0.0452	4.49	0.698
11	0.25	0.50	4.01	0.04488	4.46	0.699
12	0.34	0.58	4.01	0.04428	4.40	0.700
13	0.51	0.71	4.01	0.04363	4.34	0.701
14	0.75	0.87	4	0.04267	4.24	0.703
15	1.01	1.00	4.01	0.04198	4.17	0.704
16	1.50	1.23	4	0.04152	4.13	0.705
17	2.00	1.42	4	0.04106	4.08	0.705
18	3.00	1.73	4	0.0406	4.04	0.706
19	4.00	2.00	4	0.04019	3.99	0.707
20	5.00	2.24	4	0.03982	3.96	0.708
21	6.00	2.45	4	0.03922	3.90	0.709
22	7.00	2.65	4	0.0389	3.87	0.709
23	8.00	2.83	4	0.03862	3.84	0.710
24	9.00	3.00	4	0.0383	3.81	0.710
25	10.00	3.16	4	0.03784	3.76	0.711
26	12.00	3.46	4	0.0372	3.70	0.712
27	14.00	3.74	4	0.0366	3.64	0.713
28	16.00	4.00	4	0.03619	3.60	0.714
29	18.00	4.24	4	0.03596	3.57	0.714
30	20.00	4.47	4	0.03582	3.56	0.715
31	22.00	4.69	4	0.03573	3.55	0.715
32	24.00	4.90	4	0.03563	3.54	0.715
33	26.00	5.10	4	0.0355	3.53	0.715
34	28.00	5.29	4	0.0355	3.53	0.715
35	30.00	5.48	4	0.0354	3.52	0.715
36	35.00	5.92	4	0.03536	3.51	0.715
37	40.00	6.32	4	0.03531	3.51	0.716
38	45.00	6.71	4	0.03522	3.50	0.716
39	50.00	7.07	4	0.03513	3.49	0.716
40	60.00	7.75	4	0.0349	3.47	0.716
41	70.00	8.37	4	0.03448	3.43	0.717
42	80.00	8.94	4	0.03416	3.40	0.718
43	90.00	9.49	4	0.03389	3.37	0.718
44	100.00	10.00	4	0.03366	3.35	0.718
45	110.00	10.49	4	0.03356	3.34	0.719
46	120.00	10.95	4	0.03338	3.32	0.719
47	120.06	10.96	4	0.03338	3.32	0.719

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 12 of 14
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.03338	3.32	0.719
2	0.01	0.09	3.56	0.03338	3.32	0.719
3	0.02	0.13	1.18	0.03021	3.00	0.725
4	0.03	0.16	1.11	0.02952	2.93	0.726
5	0.04	0.19	1.07	0.02929	2.91	0.726
6	0.05	0.23	1.05	0.0286	2.84	0.727
7	0.07	0.27	1.03	0.02823	2.81	0.728
8	0.08	0.29	1.03	0.02796	2.78	0.729
9	0.12	0.35	1.02	0.02745	2.73	0.729
10	0.17	0.41	1.01	0.02699	2.68	0.730
11	0.25	0.50	1.01	0.02644	2.63	0.731
12	0.34	0.58	1.01	0.02621	2.61	0.732
13	0.50	0.71	1.01	0.02593	2.58	0.732
14	0.75	0.87	1	0.02552	2.54	0.733
15	1.00	1.00	1	0.0252	2.50	0.733
16	1.50	1.23	1	0.02474	2.46	0.734
17	2.00	1.42	1	0.02428	2.41	0.735
18	3.00	1.73	1	0.02354	2.34	0.736
19	4.00	2.00	0.999	0.02313	2.30	0.737
20	5.00	2.24	0.999	0.02258	2.24	0.738
21	6.00	2.45	0.999	0.02221	2.21	0.739
22	7.00	2.65	1	0.02193	2.18	0.739
23	8.00	2.83	1	0.02189	2.18	0.739
24	9.00	3.00	1	0.02179	2.17	0.739
25	10.00	3.16	0.998	0.0217	2.16	0.740
26	12.00	3.46	0.999	0.02152	2.14	0.740
27	14.00	3.74	0.998	0.02106	2.09	0.741
28	16.00	4.00	1	0.02014	2.00	0.742
29	18.00	4.24	0.999	0.01977	1.97	0.743
30	20.00	4.47	0.999	0.01959	1.95	0.743
31	22.00	4.69	1	0.01936	1.92	0.744
32	24.00	4.90	0.997	0.01922	1.91	0.744
33	26.00	5.10	1	0.01913	1.90	0.744
34	28.00	5.29	1	0.01894	1.88	0.744
35	30.00	5.48	0.999	0.01858	1.85	0.745
36	35.00	5.92	0.999	0.01802	1.79	0.746
37	40.00	6.32	0.998	0.01747	1.74	0.747
38	45.00	6.71	0.998	0.01729	1.72	0.747
39	50.00	7.07	0.999	0.01683	1.67	0.748
40	60.00	7.75	1	0.01595	1.59	0.750
41	70.00	8.37	0.999	0.01536	1.53	0.751
42	80.00	8.94	0.999	0.01494	1.49	0.752
43	90.00	9.49	0.999	0.01425	1.42	0.753
44	100.00	10.00	0.999	0.01375	1.37	0.754
45	110.00	10.49	1	0.0132	1.31	0.755
46	120.00	10.95	1	0.01287	1.28	0.755
47	123.83	11.13	1	0.0126	1.25	0.756

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

Constant Load Step: 13 of 14
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.0126	1.25	0.756
2	0.01	0.09	0.76	0.0126	1.25	0.756
3	0.02	0.13	0.373	0.01131	1.12	0.758
4	0.03	0.16	0.319	0.01103	1.10	0.758
5	0.04	0.19	0.292	0.01094	1.09	0.759
6	0.05	0.23	0.276	0.0109	1.08	0.759
7	0.07	0.27	0.269	0.01085	1.08	0.759
8	0.08	0.29	0.263	0.01085	1.08	0.759
9	0.12	0.35	0.26	0.01085	1.08	0.759
10	0.17	0.41	0.258	0.01081	1.07	0.759
11	0.25	0.50	0.257	0.01081	1.07	0.759
12	0.34	0.58	0.253	0.01076	1.07	0.759
13	0.51	0.71	0.253	0.01062	1.06	0.759
14	0.75	0.87	0.252	0.01016	1.01	0.760
15	1.00	1.00	0.252	0.009885	0.98	0.761
16	1.50	1.23	0.25	0.009518	0.95	0.761
17	2.00	1.42	0.251	0.009334	0.93	0.761
18	3.00	1.73	0.251	0.008874	0.88	0.762
19	4.00	2.00	0.249	0.008644	0.86	0.763
20	5.00	2.24	0.251	0.00846	0.84	0.763
21	6.00	2.45	0.251	0.00823	0.82	0.763
22	7.00	2.65	0.251	0.008	0.80	0.764
23	8.00	2.83	0.251	0.00777	0.77	0.764
24	9.00	3.00	0.25	0.007495	0.74	0.765
25	10.00	3.16	0.251	0.007357	0.73	0.765
26	12.00	3.46	0.251	0.006989	0.69	0.766
27	14.00	3.74	0.25	0.006575	0.65	0.766
28	16.00	4.00	0.25	0.006299	0.63	0.767
29	18.00	4.24	0.251	0.006161	0.61	0.767
30	20.00	4.47	0.251	0.006023	0.60	0.767
31	22.00	4.69	0.251	0.005793	0.58	0.768
32	24.00	4.90	0.251	0.005471	0.54	0.768
33	26.00	5.10	0.25	0.005288	0.53	0.769
34	28.00	5.29	0.25	0.005058	0.50	0.769
35	30.00	5.48	0.251	0.004874	0.48	0.769
36	35.00	5.92	0.25	0.004552	0.45	0.770
37	40.00	6.32	0.251	0.004138	0.41	0.771
38	45.00	6.71	0.251	0.003678	0.37	0.771
39	50.00	7.07	0.251	0.003265	0.32	0.772
40	60.00	7.75	0.25	0.002529	0.25	0.774
41	70.00	8.37	0.25	0.001931	0.19	0.775
42	80.00	8.94	0.25	0.001195	0.12	0.776
43	90.00	9.49	0.251	0.0009656	0.10	0.776
44	100.00	10.00	0.25	0.0006437	0.06	0.777
45	110.00	10.49	0.25	0.0001839	0.02	0.778
46	120.00	10.95	0.251	-0.0003678	-0.04	0.779
47	120.03	10.96	0.25	-0.0003678	-0.04	0.779

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/5/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

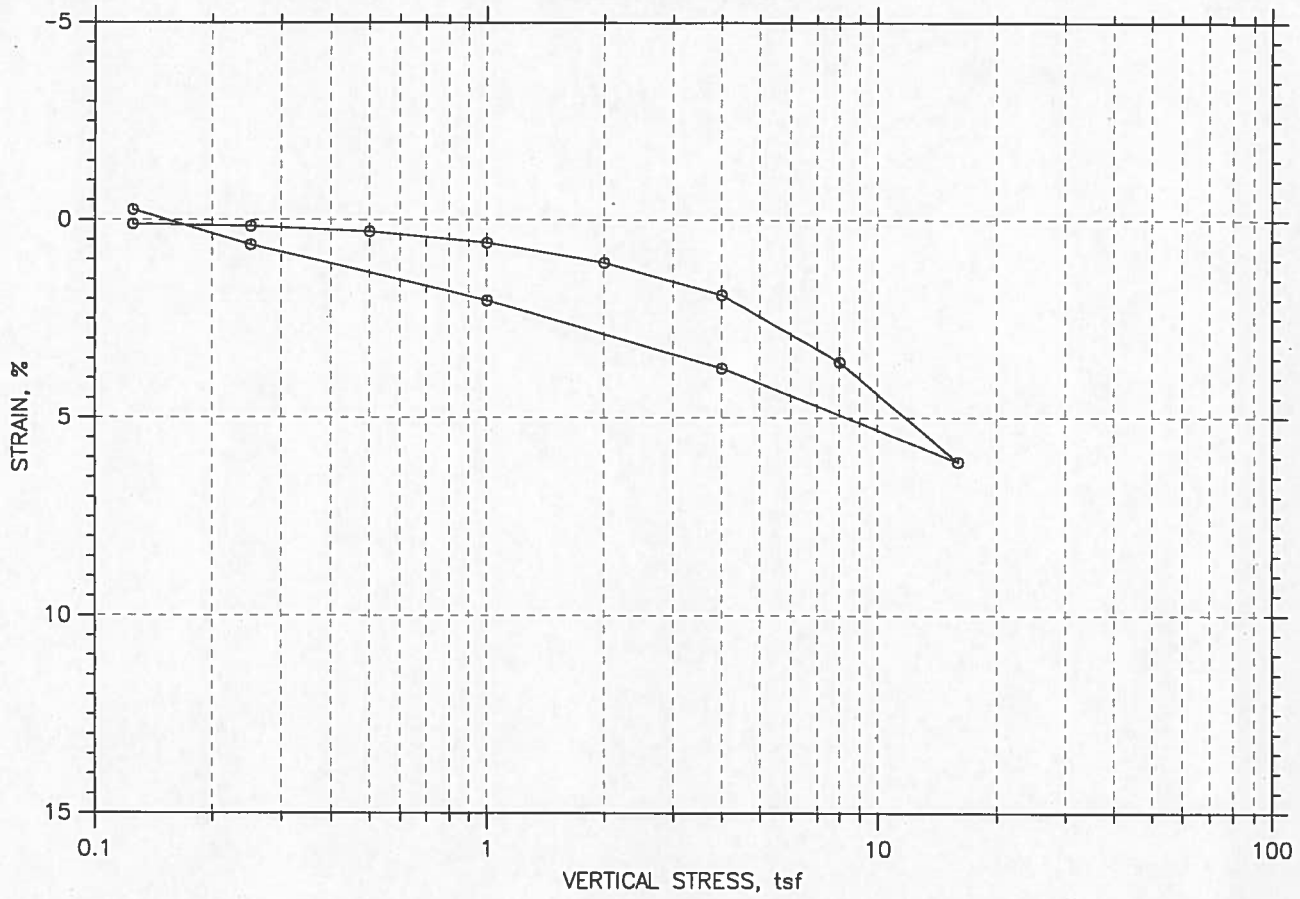
Soil Description:
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REBOUND

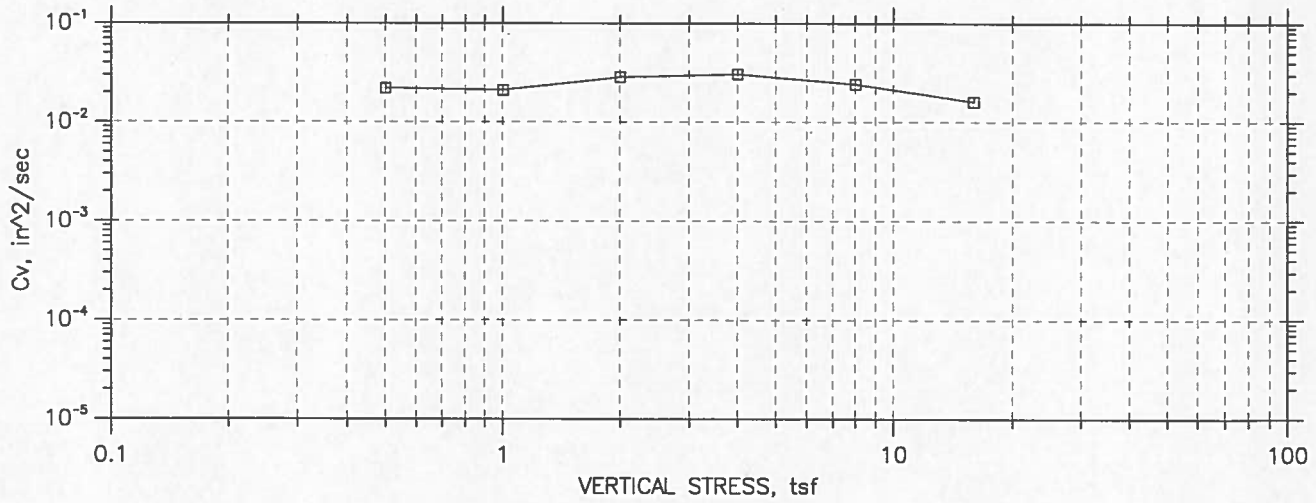
Constant Load Step: 14 of 14
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.251	-0.0003678	-0.04	0.779
2	0.01	0.09	0.214	-0.0003678	-0.04	0.779
3	0.02	0.13	0.149	-0.0004598	-0.05	0.779
4	0.03	0.16	0.136	-0.0005058	-0.05	0.779
5	0.04	0.19	0.13	-0.0005517	-0.05	0.779
6	0.05	0.23	0.128	-0.0005977	-0.06	0.779
7	0.07	0.27	0.128	-0.0006437	-0.06	0.779
8	0.08	0.29	0.128	-0.0006897	-0.07	0.779
9	0.12	0.34	0.127	-0.0006897	-0.07	0.779
10	0.17	0.41	0.125	-0.0006897	-0.07	0.779
11	0.25	0.50	0.124	-0.0007357	-0.07	0.779
12	0.34	0.58	0.125	-0.0007357	-0.07	0.779
13	0.50	0.71	0.125	-0.0007816	-0.08	0.779
14	0.75	0.87	0.124	-0.0008276	-0.08	0.779
15	1.00	1.00	0.125	-0.0008736	-0.09	0.780
16	1.50	1.23	0.124	-0.0009196	-0.09	0.780
17	2.00	1.42	0.125	-0.0009656	-0.10	0.780
18	3.00	1.73	0.125	-0.001058	-0.11	0.780
19	4.00	2.00	0.125	-0.001058	-0.11	0.780
20	5.00	2.24	0.124	-0.001103	-0.11	0.780
21	6.00	2.45	0.124	-0.001195	-0.12	0.780
22	7.00	2.65	0.125	-0.001241	-0.12	0.780
23	8.00	2.83	0.123	-0.001379	-0.14	0.780
24	9.00	3.00	0.125	-0.001563	-0.16	0.781
25	10.00	3.16	0.124	-0.001747	-0.17	0.781
26	12.00	3.46	0.124	-0.001931	-0.19	0.781
27	14.00	3.74	0.124	-0.002023	-0.20	0.782
28	16.00	4.00	0.125	-0.002115	-0.21	0.782
29	18.00	4.24	0.125	-0.002207	-0.22	0.782
30	20.00	4.47	0.124	-0.002391	-0.24	0.782
31	22.00	4.69	0.125	-0.002575	-0.26	0.783
32	24.00	4.90	0.123	-0.002713	-0.27	0.783
33	26.00	5.10	0.124	-0.002851	-0.28	0.783
34	28.00	5.29	0.125	-0.003035	-0.30	0.783
35	30.00	5.48	0.124	-0.003173	-0.32	0.784
36	35.00	5.92	0.124	-0.003402	-0.34	0.784
37	40.00	6.32	0.124	-0.003724	-0.37	0.785
38	45.00	6.71	0.124	-0.003862	-0.38	0.785
39	50.00	7.07	0.124	-0.004092	-0.41	0.785
40	60.00	7.75	0.124	-0.004322	-0.43	0.786
41	70.00	8.37	0.124	-0.004598	-0.46	0.786
42	80.00	8.94	0.125	-0.004966	-0.49	0.787
43	90.00	9.49	0.124	-0.005655	-0.56	0.788
44	100.00	10.00	0.125	-0.006023	-0.60	0.789
45	110.00	10.49	0.123	-0.006529	-0.65	0.790
46	120.00	10.95	0.125	-0.006805	-0.68	0.790
47	130.00	11.40	0.125	-0.007127	-0.71	0.791
48	140.00	11.83	0.124	-0.007357	-0.73	0.791
49	150.00	12.25	0.124	-0.007633	-0.76	0.791
50	160.00	12.65	0.124	-0.007724	-0.77	0.792
51	169.02	13.00	0.124	-0.00777	-0.77	0.792

CONSOLIDATION TEST DATA

SUMMARY REPORT



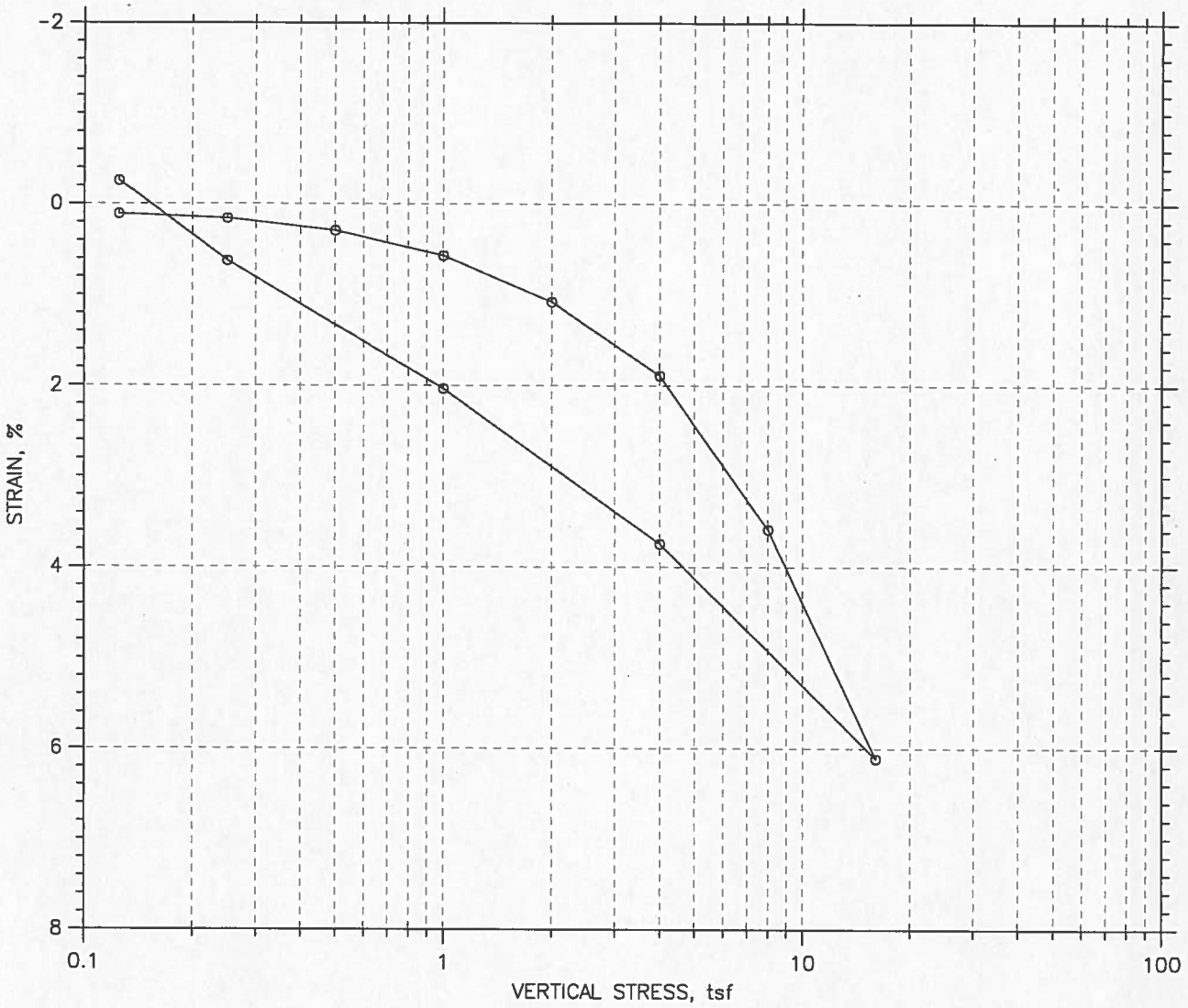


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-305
	Boring No.: B-604	Tested By: SKK	Checked By: SKK
	Sample No.: 19-305	Test Date: 5/16/19	Test No.: 1
	Depth: 20-21'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Fri, 31-MAY-2019 07:38:39

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	21.99	26.95
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	98.02	97.56
Compression Index: 3.81959e-313				Saturation, %	81.26	98.49
Diameter: 2.5 in		Height: 1.005 in		Void Ratio	0.74	0.75
LL: ---	PL: ---	PI: ---	GS: 2.73			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-305
	Boring No.: B-604	Tested By: SKK	Checked By: SKK
	Sample No.: 19-305	Test Date: 5/16/19	Test No.: 1
	Depth: 20-21'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

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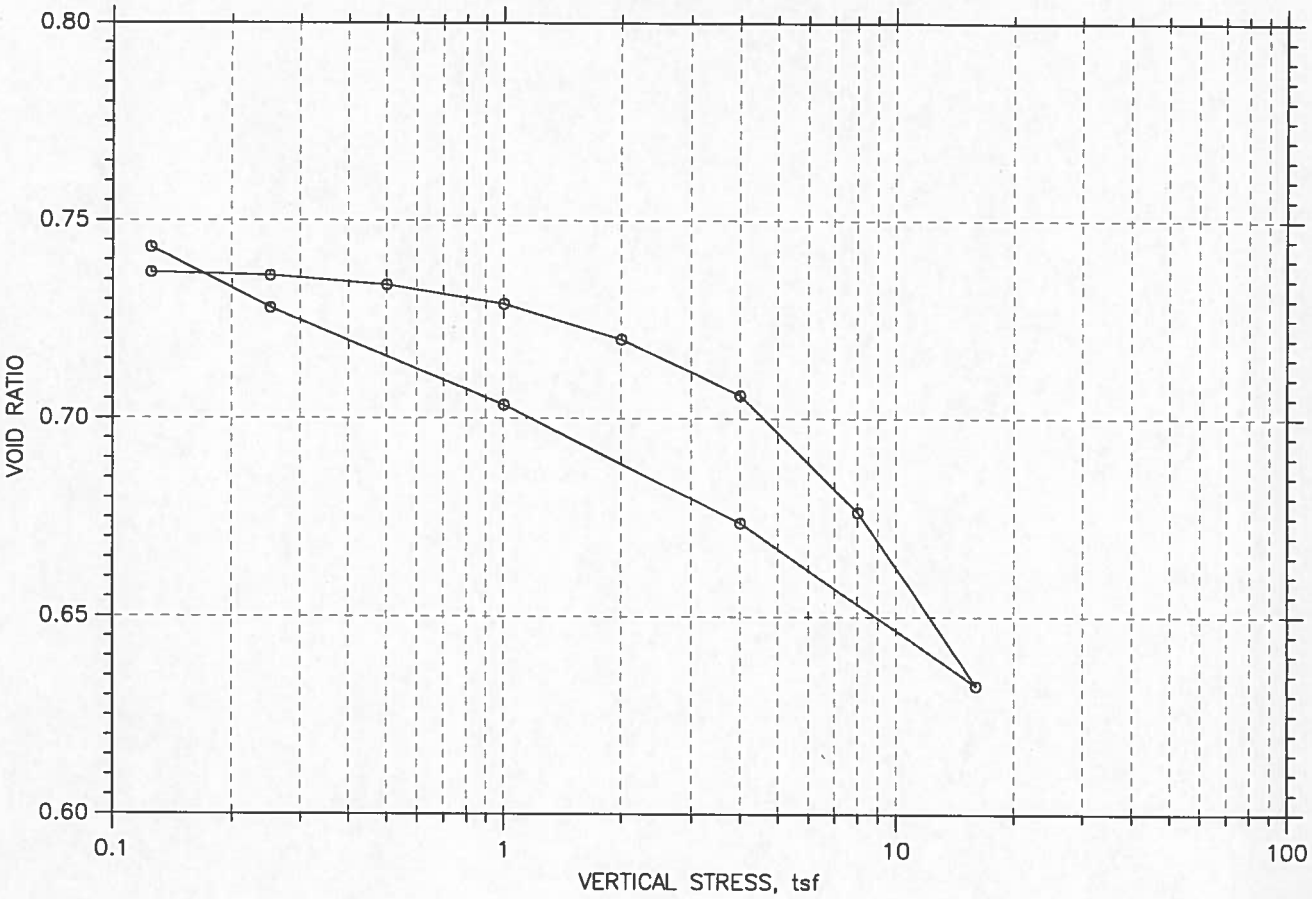
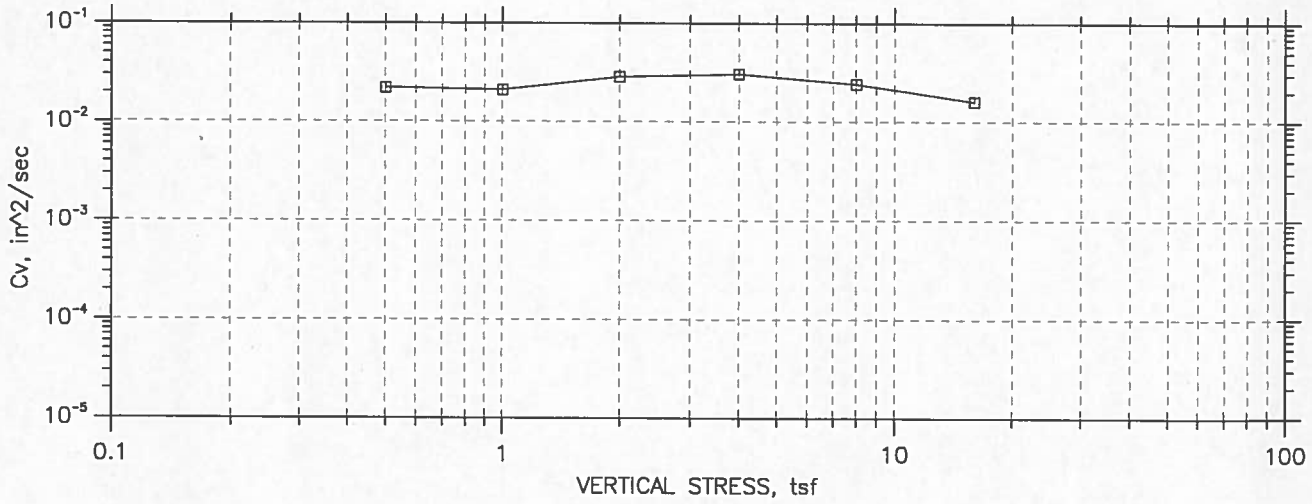
CONSOLIDATION TEST DATA

SUMMARY REPORT





	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-305
	Boring No.: B-604	Tested By: SKK	Checked By: SKK
	Sample No.: 19-305	Test Date: 5/16/19	Test No.: 1
	Depth: 20-21'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

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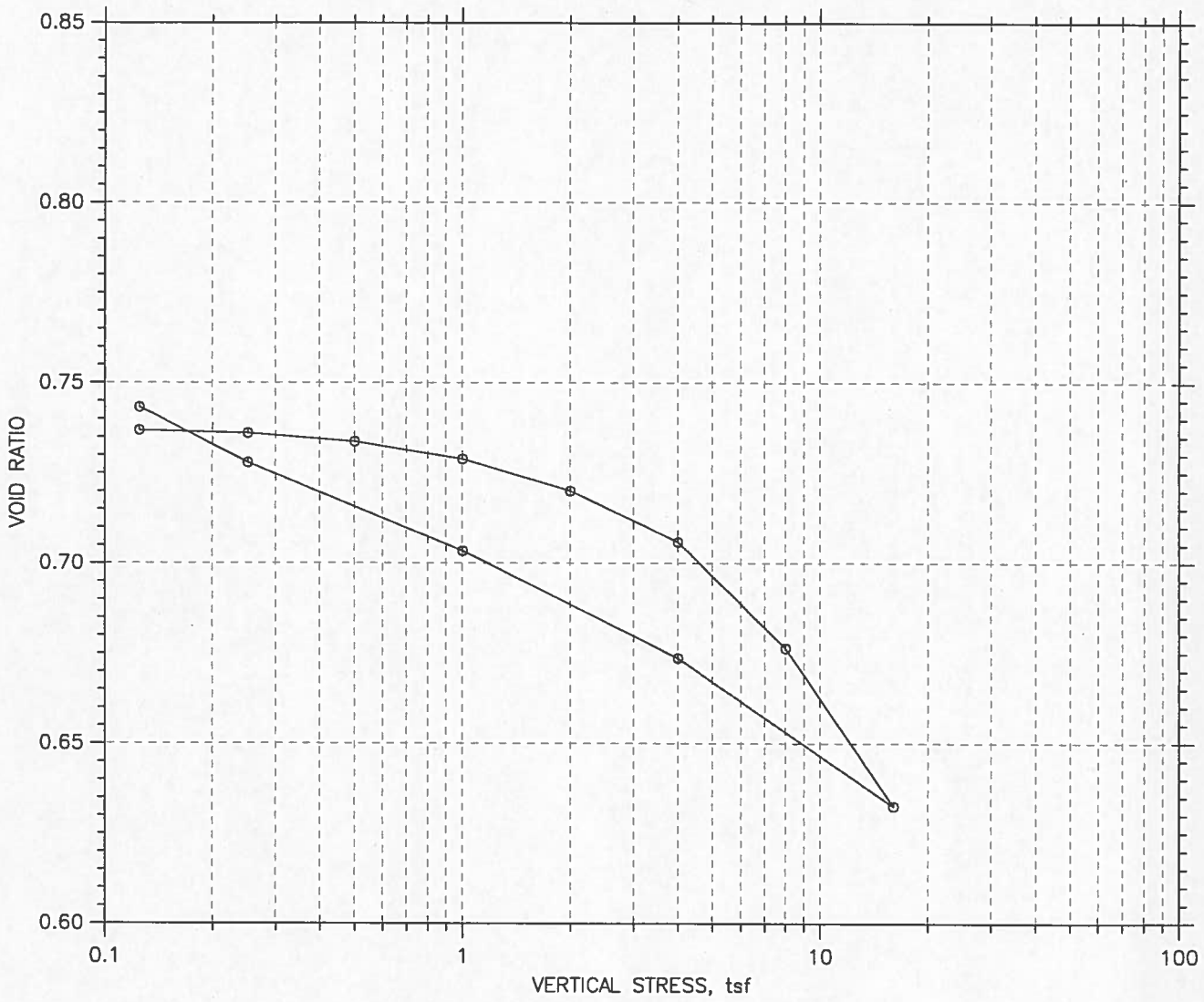
CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	21.99	26.95
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	98.02	97.56
Compression Index: 3.81959e-313				Saturation, %	81.26	98.49
Diameter: 2.5 in		Height: 1.005 in		Void Ratio	0.74	0.75
LL: ---	PL: ---	PI: ---	GS: 2.73			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-305
	Boring No.: B-604	Tested By: SKK	Checked By: SKK
	Sample No.: 19-305	Test Date: 5/16/19	Test No.: 1
	Depth: 20-21'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

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CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/16/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Measured Specific Gravity: 2.73
Initial Void Ratio: 0.74
Final Void Ratio: 0.75

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	122.63	264.99	271.28	231.98
Wt. Container + Dry Soil, gm	113.13	237.08	237.08	197.83
Wt. Container, gm	71	110.15	110.15	71.1
Wt. Dry Soil, gm	42.13	126.93	126.93	126.73
Water Content, %	22.55	21.99	26.95	26.95
Void Ratio	---	0.74	0.75	---
Degree of Saturation, %	---	81.26	98.49	---
Dry Unit Weight, pcf	---	98.016	97.56	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/16/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001103	0.737	0.11	0.0	0.00e+000	8.78e-003	0.00e+000
2	0.25	0.001609	0.736	0.16	0.0	0.00e+000	4.03e-003	0.00e+000
3	0.5	0.002943	0.734	0.29	0.1	3.08e-002	5.31e-003	3.06e-003
4	1	0.005747	0.729	0.57	0.1	3.31e-002	5.58e-003	3.46e-003
5	2	0.01085	0.720	1.08	0.1	5.12e-002	5.08e-003	4.87e-003
6	4	0.01904	0.706	1.89	0.1	6.06e-002	4.07e-003	4.62e-003
7	8	0.03605	0.676	3.59	0.1	4.01e-002	4.23e-003	3.18e-003
8	16	0.06143	0.633	6.11	0.3	9.67e-003	3.16e-003	5.71e-004
9	4	0.03766	0.674	3.75	1.4	2.39e-003	1.97e-003	8.81e-005
10	1	0.02046	0.703	2.04	21.5	1.57e-004	5.70e-003	1.67e-005
11	0.25	0.006299	0.728	0.63	56.5	6.15e-005	1.88e-002	2.16e-005
12	0.125	-0.002575	0.743	-0.26	0.0	0.00e+000	7.06e-002	0.00e+000

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001103	0.737	0.11	0.0	0.00e+000	8.78e-003	0.00e+000
2	0.25	0.001609	0.736	0.16	0.0	0.00e+000	4.03e-003	0.00e+000
3	0.5	0.002943	0.734	0.29	0.0	0.00e+000	5.31e-003	0.00e+000
4	1	0.005747	0.729	0.57	0.0	0.00e+000	5.58e-003	0.00e+000
5	2	0.01085	0.720	1.08	0.0	0.00e+000	5.08e-003	0.00e+000
6	4	0.01904	0.706	1.89	0.0	0.00e+000	4.07e-003	0.00e+000
7	8	0.03605	0.676	3.59	0.0	3.24e-002	4.23e-003	2.57e-003
8	16	0.06143	0.633	6.11	0.0	3.12e-002	3.16e-003	1.84e-003
9	4	0.03766	0.674	3.75	0.0	3.23e-002	1.97e-003	1.19e-003
10	1	0.02046	0.703	2.04	0.0	0.00e+000	5.70e-003	0.00e+000
11	0.25	0.006299	0.728	0.63	0.0	0.00e+000	1.88e-002	0.00e+000
12	0.125	-0.002575	0.743	-0.26	0.0	0.00e+000	7.06e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/16/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 1 of 12
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.0056	-0.001335	-0.13	0.741
2	0.01	0.09	0.00896	-0.001335	-0.13	0.741
3	0.02	0.13	0.0314	-0.0009674	-0.10	0.740
4	0.03	0.16	0.056	-0.0006916	-0.07	0.740
5	0.04	0.19	0.0672	-0.0005996	-0.06	0.740
6	0.05	0.23	0.0896	-0.0004157	-0.04	0.740
7	0.07	0.27	0.106	-0.0002318	-0.02	0.739
8	0.08	0.29	0.117	-9.385e-005	-0.01	0.739
9	0.12	0.34	0.123	-1.889e-006	-0.00	0.739
10	0.17	0.41	0.134	-4.787e-005	-0.00	0.739
11	0.22	0.47	0.133	-0.0002318	-0.02	0.739

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/16/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 2 of 12
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.133	-0.002485	-0.25	0.743
2	0.01	0.09	0.133	-0.002485	-0.25	0.743
3	0.02	0.13	0.171	-0.002439	-0.24	0.743
4	0.03	0.16	0.202	-0.002117	-0.21	0.742
5	0.04	0.19	0.218	-0.001979	-0.20	0.742
6	0.05	0.23	0.236	-0.001887	-0.19	0.742
7	0.07	0.27	0.245	-0.001841	-0.18	0.742
8	0.08	0.29	0.249	-0.001795	-0.18	0.742
9	0.12	0.34	0.259	-0.001795	-0.18	0.742
10	0.17	0.41	0.263	-0.001979	-0.20	0.742
11	0.18	0.42	0.26	-0.001979	-0.20	0.742

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/16/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 3 of 12
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.259	-0.004277	-0.43	0.746
2	0.01	0.09	0.262	-0.004277	-0.43	0.746
3	0.02	0.13	0.327	-0.004139	-0.41	0.746
4	0.03	0.16	0.383	-0.003679	-0.37	0.745
5	0.04	0.19	0.419	-0.003404	-0.34	0.745
6	0.05	0.23	0.46	-0.003174	-0.32	0.744
7	0.07	0.27	0.478	-0.00299	-0.30	0.744
8	0.08	0.29	0.486	-0.002898	-0.29	0.744
9	0.12	0.35	0.496	-0.002852	-0.28	0.744
10	0.17	0.41	0.501	-0.002852	-0.28	0.744
11	0.25	0.50	0.51	-0.002898	-0.29	0.744
12	0.26	0.51	0.511	-0.002898	-0.29	0.744

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/16/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 4 of 12
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.512	-0.004229	-0.42	0.746
2	0.01	0.09	0.521	-0.004229	-0.42	0.746
3	0.02	0.13	0.761	-0.003815	-0.38	0.745
4	0.03	0.16	0.871	-0.002896	-0.29	0.744
5	0.04	0.19	0.922	-0.002344	-0.23	0.743
6	0.05	0.23	0.965	-0.001838	-0.18	0.742
7	0.07	0.27	0.981	-0.001654	-0.16	0.742
8	0.08	0.29	0.988	-0.001516	-0.15	0.741
9	0.12	0.34	0.994	-0.001424	-0.14	0.741
10	0.17	0.41	0.997	-0.001332	-0.13	0.741
11	0.25	0.50	0.998	-0.001286	-0.13	0.741
12	0.34	0.58	0.999	-0.001286	-0.13	0.741
13	0.50	0.71	1	-0.001332	-0.13	0.741
14	0.59	0.77	1	-0.001424	-0.14	0.741

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/16/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 5 of 12
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	1	-0.003632	-0.36	0.745
2	0.01	0.09	1.1	-0.003632	-0.36	0.745
3	0.02	0.13	1.67	-0.002161	-0.22	0.743
4	0.03	0.16	1.84	-0.0008277	-0.08	0.740
5	0.04	0.19	1.9	-7.766e-008	-0.00	0.739
6	0.05	0.23	1.96	0.0005517	0.05	0.738
7	0.07	0.27	1.98	0.0008735	0.09	0.737
8	0.08	0.29	1.98	0.001057	0.11	0.737
9	0.12	0.35	1.99	0.001241	0.12	0.737
10	0.17	0.41	1.99	0.001333	0.13	0.736
11	0.25	0.50	2	0.001425	0.14	0.736
12	0.34	0.58	2	0.001425	0.14	0.736
13	0.50	0.71	2	0.001517	0.15	0.736
14	0.75	0.87	2	0.001563	0.16	0.736
15	1.00	1.00	2	0.001563	0.16	0.736
16	1.50	1.23	2	0.001563	0.16	0.736
17	1.72	1.31	2	0.001517	0.15	0.736

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/16/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 6 of 12
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	-0.001059	-0.11	0.741
2	0.01	0.09	2.4	-0.001059	-0.11	0.741
3	0.02	0.13	3.52	0.001148	0.11	0.737
4	0.03	0.16	3.78	0.003309	0.33	0.733
5	0.04	0.19	3.88	0.004321	0.43	0.731
6	0.05	0.23	3.95	0.00524	0.52	0.730
7	0.07	0.26	3.97	0.005424	0.54	0.729
8	0.09	0.30	3.98	0.005562	0.55	0.729
9	0.12	0.34	3.99	0.005746	0.57	0.729
10	0.17	0.41	3.99	0.006068	0.60	0.728
11	0.25	0.50	3.99	0.006528	0.65	0.727
12	0.33	0.58	3.99	0.00662	0.66	0.727
13	0.50	0.71	4	0.006757	0.67	0.727
14	0.75	0.87	4	0.006849	0.68	0.727
15	1.00	1.00	4	0.006941	0.69	0.727
16	1.50	1.23	4	0.007125	0.71	0.726
17	2.00	1.42	4	0.007263	0.72	0.726
18	3.00	1.73	4	0.007401	0.74	0.726
19	4.00	2.00	4	0.007447	0.74	0.726
20	5.00	2.24	4	0.007493	0.75	0.726
21	6.00	2.45	4	0.007539	0.75	0.726
22	7.00	2.65	4	0.007585	0.75	0.726
23	8.00	2.83	4	0.007585	0.75	0.726
24	9.00	3.00	4	0.007585	0.75	0.726
25	10.00	3.16	4	0.007585	0.75	0.726
26	12.00	3.46	4	0.007631	0.76	0.726
27	14.00	3.74	4	0.007631	0.76	0.726
28	16.00	4.00	4	0.007631	0.76	0.726
29	18.00	4.24	4	0.007631	0.76	0.726
30	20.00	4.47	4	0.007631	0.76	0.726
31	22.00	4.69	4	0.007631	0.76	0.726
32	24.00	4.90	4	0.007631	0.76	0.726
33	26.00	5.10	4	0.007677	0.76	0.726
34	28.00	5.29	4	0.007631	0.76	0.726
35	30.00	5.48	4	0.007585	0.75	0.726
36	35.00	5.92	4	0.007539	0.75	0.726
37	40.00	6.32	4	0.007447	0.74	0.726
38	45.00	6.71	4	0.007355	0.73	0.726
39	50.00	7.07	4	0.007263	0.72	0.726
40	60.00	7.75	4	0.007217	0.72	0.726
41	65.17	8.07	4	0.007125	0.71	0.726

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/16/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 7 of 12
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.003816	0.38	0.732
2	0.01	0.09	4.61	0.003862	0.38	0.732
3	0.02	0.13	7.38	0.00869	0.86	0.724
4	0.03	0.16	7.75	0.01264	1.26	0.717
5	0.04	0.19	7.86	0.01379	1.37	0.715
6	0.05	0.23	7.93	0.01494	1.49	0.713
7	0.07	0.27	7.95	0.0154	1.53	0.712
8	0.08	0.29	7.96	0.01586	1.58	0.711
9	0.12	0.34	7.98	0.01628	1.62	0.711
10	0.17	0.41	7.98	0.01646	1.64	0.710
11	0.25	0.50	7.99	0.01664	1.66	0.710
12	0.34	0.58	7.99	0.01692	1.68	0.710
13	0.50	0.71	8	0.01724	1.72	0.709
14	0.75	0.87	7.99	0.01756	1.75	0.708
15	1.00	1.00	8	0.01779	1.77	0.708
16	1.50	1.23	8	0.0183	1.82	0.707
17	2.00	1.42	8	0.01862	1.85	0.707
18	3.00	1.73	8	0.01908	1.90	0.706
19	4.00	2.00	8	0.01936	1.93	0.705
20	5.00	2.24	8	0.01954	1.94	0.705
21	6.00	2.45	8	0.01968	1.96	0.705
22	7.00	2.65	8	0.01986	1.98	0.704
23	8.00	2.83	8	0.01995	1.99	0.704
24	9.00	3.00	8	0.02005	1.99	0.704
25	10.00	3.16	8	0.02009	2.00	0.704
26	12.00	3.46	8	0.02018	2.01	0.704
27	14.00	3.74	8	0.02023	2.01	0.704
28	16.00	4.00	8	0.02028	2.02	0.704
29	18.00	4.24	8	0.02028	2.02	0.704
30	20.00	4.47	8	0.02032	2.02	0.704
31	22.00	4.69	8	0.02037	2.03	0.704
32	24.00	4.90	8	0.02037	2.03	0.704
33	26.00	5.10	8	0.02037	2.03	0.704
34	28.00	5.29	8	0.02041	2.03	0.703
35	30.00	5.48	8	0.02041	2.03	0.703
36	35.00	5.92	8	0.02046	2.04	0.703
37	40.00	6.32	8	0.02051	2.04	0.703
38	45.00	6.71	8	0.02055	2.05	0.703
39	50.00	7.07	8	0.02055	2.05	0.703
40	60.00	7.75	8	0.02055	2.05	0.703
41	70.00	8.37	8	0.0206	2.05	0.703
42	80.00	8.94	8	0.02069	2.06	0.703
43	90.00	9.49	8	0.02074	2.06	0.703
44	100.00	10.00	8	0.02078	2.07	0.703
45	110.00	10.49	8	0.02083	2.07	0.703
46	120.00	10.95	8	0.02083	2.07	0.703
47	120.05	10.96	8	0.02083	2.07	0.703

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/16/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 8 of 12
Applied Stress: 16 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.0154	1.53	0.712
2	0.01	0.09	8.93	0.0154	1.53	0.712
3	0.02	0.13	15	0.02014	2.00	0.704
4	0.03	0.16	15.7	0.02699	2.69	0.692
5	0.04	0.19	15.8	0.0286	2.85	0.689
6	0.05	0.23	15.9	0.02938	2.92	0.688
7	0.07	0.27	15.9	0.02984	2.97	0.687
8	0.08	0.29	15.9	0.03044	3.03	0.686
9	0.12	0.35	16	0.03122	3.11	0.685
10	0.17	0.41	16	0.03177	3.16	0.684
11	0.25	0.50	16	0.03237	3.22	0.683
12	0.34	0.58	16	0.03306	3.29	0.682
13	0.50	0.71	16	0.0337	3.35	0.680
14	0.75	0.87	16	0.03402	3.39	0.680
15	1.00	1.00	16	0.03448	3.43	0.679
16	1.50	1.23	16	0.03522	3.50	0.678
17	2.00	1.41	16	0.0355	3.53	0.677
18	3.00	1.73	16	0.03632	3.61	0.676
19	4.00	2.00	16	0.03747	3.73	0.674
20	5.00	2.24	16	0.03775	3.76	0.673
21	6.00	2.45	16	0.03812	3.79	0.673
22	7.00	2.65	16	0.03839	3.82	0.672
23	8.00	2.83	16	0.03858	3.84	0.672
24	9.00	3.00	16	0.03881	3.86	0.672
25	10.00	3.16	16	0.03894	3.88	0.671
26	12.00	3.46	16	0.03927	3.91	0.671
27	14.00	3.74	16	0.0394	3.92	0.671
28	16.00	4.00	16	0.03945	3.93	0.671
29	18.00	4.24	16	0.03954	3.93	0.670
30	20.00	4.47	16	0.03963	3.94	0.670
31	22.00	4.69	16	0.03968	3.95	0.670
32	24.00	4.90	16	0.03977	3.96	0.670
33	26.00	5.10	16	0.03986	3.97	0.670
34	28.00	5.29	16	0.03986	3.97	0.670
35	30.00	5.48	16	0.03996	3.98	0.670
36	35.00	5.92	16	0.03996	3.98	0.670
37	40.00	6.32	16	0.04009	3.99	0.669
38	45.00	6.71	16	0.04023	4.00	0.669
39	50.00	7.07	16	0.04032	4.01	0.669
40	60.00	7.75	16	0.04051	4.03	0.669
41	70.00	8.37	16	0.04055	4.04	0.669
42	80.00	8.94	16	0.04065	4.04	0.668
43	90.00	9.49	16	0.04069	4.05	0.668
44	100.00	10.00	16	0.04078	4.06	0.668
45	110.00	10.49	16	0.04078	4.06	0.668
46	120.00	10.95	16	0.04078	4.06	0.668
47	120.06	10.96	16	0.04078	4.06	0.668

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/16/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 9 of 12
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	16	0.05931	5.90	0.636
2	0.01	0.09	13.6	0.05931	5.90	0.636
3	0.02	0.13	5.43	0.05504	5.48	0.644
4	0.03	0.16	4.21	0.04796	4.77	0.656
5	0.04	0.19	4.11	0.04722	4.70	0.657
6	0.05	0.23	4.06	0.04639	4.62	0.659
7	0.07	0.27	4.04	0.0457	4.55	0.660
8	0.08	0.29	4.03	0.04552	4.53	0.660
9	0.12	0.35	4.02	0.04515	4.49	0.661
10	0.17	0.41	4.02	0.04492	4.47	0.661
11	0.25	0.50	4.01	0.04469	4.45	0.661
12	0.34	0.58	4.01	0.04455	4.43	0.662
13	0.50	0.71	4.01	0.044	4.38	0.663
14	0.75	0.87	4.01	0.04359	4.34	0.663
15	1.00	1.00	4	0.04308	4.29	0.664
16	1.50	1.23	4	0.04212	4.19	0.666
17	2.00	1.42	4	0.04175	4.15	0.667
18	3.00	1.73	4	0.04147	4.13	0.667
19	4.00	2.00	4	0.04101	4.08	0.668
20	5.00	2.24	4	0.04078	4.06	0.668
21	6.00	2.45	4	0.0406	4.04	0.669
22	7.00	2.65	4	0.04046	4.03	0.669
23	8.00	2.83	4	0.04028	4.01	0.669
24	9.00	3.00	4	0.04019	4.00	0.669
25	10.00	3.16	4	0.04009	3.99	0.669
26	12.00	3.46	4	0.03982	3.96	0.670
27	14.00	3.74	4	0.03954	3.93	0.670
28	16.00	4.00	4	0.03913	3.89	0.671
29	18.00	4.24	4	0.0389	3.87	0.671
30	20.00	4.47	4	0.03876	3.86	0.672
31	22.00	4.69	4	0.03862	3.84	0.672
32	24.00	4.90	4	0.03848	3.83	0.672
33	26.00	5.10	4	0.03835	3.82	0.672
34	28.00	5.29	4	0.03821	3.80	0.673
35	30.00	5.48	4	0.03812	3.79	0.673
36	35.00	5.92	4	0.03766	3.75	0.674
37	40.00	6.32	4	0.03733	3.71	0.674
38	45.00	6.71	4	0.03701	3.68	0.675
39	50.00	7.07	4	0.03678	3.66	0.675
40	60.00	7.75	4	0.03628	3.61	0.676
41	70.00	8.37	4	0.036	3.58	0.676
42	80.00	8.94	4	0.03586	3.57	0.677
43	90.00	9.49	4	0.03582	3.56	0.677
44	100.00	10.00	4	0.03563	3.55	0.677
45	110.00	10.49	4	0.03559	3.54	0.677
46	120.00	10.95	4	0.03554	3.54	0.677
47	120.05	10.96	4	0.03554	3.54	0.677

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/16/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 10 of 12
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.03554	3.54	0.677
2	0.01	0.09	3.32	0.03554	3.54	0.677
3	0.02	0.13	1.25	0.03292	3.28	0.682
4	0.03	0.16	1.13	0.03113	3.10	0.685
5	0.03	0.19	1.08	0.03058	3.04	0.686
6	0.05	0.23	1.05	0.03016	3.00	0.687
7	0.07	0.27	1.03	0.02993	2.98	0.687
8	0.08	0.29	1.03	0.02979	2.96	0.687
9	0.12	0.34	1.02	0.02966	2.95	0.687
10	0.17	0.41	1.01	0.02952	2.94	0.688
11	0.25	0.50	1.01	0.02938	2.92	0.688
12	0.34	0.58	1.01	0.0292	2.91	0.688
13	0.50	0.71	1	0.02864	2.85	0.689
14	0.75	0.87	1	0.02823	2.81	0.690
15	1.00	1.00	1	0.02773	2.76	0.691
16	1.50	1.23	1	0.02708	2.69	0.692
17	2.00	1.41	1	0.02671	2.66	0.693
18	3.00	1.73	1	0.02612	2.60	0.694
19	4.00	2.00	0.999	0.02579	2.57	0.694
20	5.00	2.24	0.999	0.02552	2.54	0.695
21	6.00	2.45	1	0.02515	2.50	0.695
22	7.00	2.65	0.999	0.02492	2.48	0.696
23	8.00	2.83	1	0.02478	2.47	0.696
24	9.00	3.00	1	0.02455	2.44	0.696
25	10.00	3.16	1	0.02432	2.42	0.697
26	12.00	3.46	1	0.02396	2.38	0.697
27	14.00	3.74	0.999	0.02363	2.35	0.698
28	16.00	4.00	0.999	0.02327	2.31	0.699
29	18.00	4.24	0.998	0.02304	2.29	0.699
30	20.00	4.47	1	0.02271	2.26	0.699
31	22.00	4.69	0.999	0.02239	2.23	0.700
32	24.00	4.90	0.999	0.02225	2.21	0.700
33	26.00	5.10	0.999	0.02212	2.20	0.701
34	28.00	5.29	0.999	0.02189	2.18	0.701
35	30.00	5.48	0.998	0.02179	2.17	0.701
36	35.00	5.92	1	0.02161	2.15	0.701
37	40.00	6.32	0.998	0.02152	2.14	0.702
38	45.00	6.71	1	0.02129	2.12	0.702
39	50.00	7.07	1	0.0211	2.10	0.702
40	60.00	7.75	0.999	0.02005	1.99	0.704
41	70.00	8.37	0.999	0.0195	1.94	0.705
42	80.00	8.94	0.999	0.01931	1.92	0.705
43	90.00	9.49	1	0.01913	1.90	0.706
44	100.00	10.00	0.999	0.01894	1.88	0.706
45	110.00	10.49	0.999	0.01871	1.86	0.706
46	120.00	10.95	0.999	0.01839	1.83	0.707
47	122.49	11.07	0.999	0.01835	1.83	0.707

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/16/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 11 of 12
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.01835	1.83	0.707
2	0.01	0.09	0.815	0.01835	1.83	0.707
3	0.02	0.13	0.431	0.01743	1.73	0.709
4	0.03	0.16	0.354	0.01687	1.68	0.710
5	0.03	0.19	0.324	0.01641	1.63	0.710
6	0.05	0.23	0.292	0.01582	1.57	0.711
7	0.07	0.26	0.28	0.01554	1.55	0.712
8	0.09	0.29	0.272	0.01536	1.53	0.712
9	0.12	0.35	0.266	0.01517	1.51	0.713
10	0.17	0.41	0.26	0.01499	1.49	0.713
11	0.25	0.50	0.257	0.01481	1.47	0.713
12	0.34	0.58	0.255	0.01462	1.45	0.713
13	0.50	0.71	0.254	0.01425	1.42	0.714
14	0.75	0.87	0.253	0.01398	1.39	0.715
15	1.00	1.00	0.252	0.01375	1.37	0.715
16	1.50	1.23	0.251	0.01338	1.33	0.716
17	2.00	1.41	0.251	0.01292	1.29	0.716
18	3.00	1.73	0.251	0.01237	1.23	0.717
19	4.00	2.00	0.25	0.01191	1.18	0.718
20	5.00	2.24	0.251	0.01131	1.13	0.719
21	6.00	2.45	0.25	0.01103	1.10	0.720
22	7.00	2.65	0.249	0.01094	1.09	0.720
23	8.00	2.83	0.251	0.01085	1.08	0.720
24	9.00	3.00	0.25	0.01085	1.08	0.720
25	10.00	3.16	0.251	0.01081	1.08	0.720
26	12.00	3.46	0.25	0.01067	1.06	0.720
27	14.00	3.74	0.251	0.01053	1.05	0.721
28	16.00	4.00	0.25	0.01025	1.02	0.721
29	18.00	4.24	0.251	0.009794	0.97	0.722
30	20.00	4.47	0.251	0.009518	0.95	0.722
31	22.00	4.69	0.251	0.009242	0.92	0.723
32	24.00	4.90	0.252	0.008874	0.88	0.723
33	26.00	5.10	0.251	0.008736	0.87	0.724
34	28.00	5.29	0.251	0.008552	0.85	0.724
35	30.00	5.48	0.25	0.008368	0.83	0.724
36	35.00	5.92	0.249	0.008	0.80	0.725
37	40.00	6.32	0.25	0.007495	0.75	0.726
38	45.00	6.71	0.25	0.007219	0.72	0.726
39	50.00	7.07	0.25	0.006943	0.69	0.727
40	60.00	7.75	0.251	0.006345	0.63	0.728
41	70.00	8.37	0.251	0.006023	0.60	0.728
42	80.00	8.94	0.25	0.005793	0.58	0.729
43	90.00	9.49	0.251	0.005104	0.51	0.730
44	100.00	10.00	0.25	0.004828	0.48	0.730
45	110.00	10.49	0.25	0.004552	0.45	0.731
46	120.00	10.95	0.25	0.004184	0.42	0.732
47	120.04	10.96	0.25	0.004184	0.42	0.732

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 5/16/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

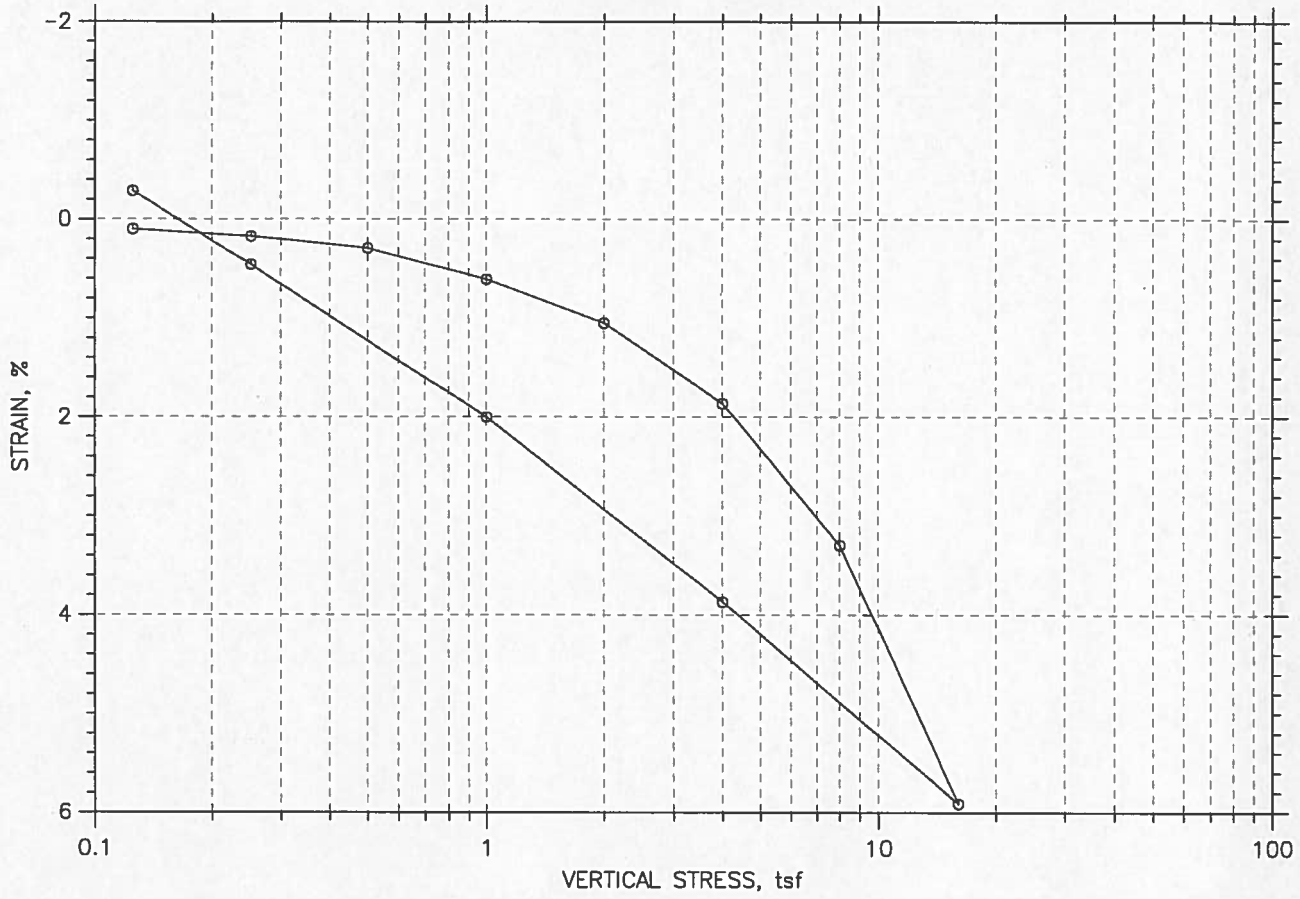
Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

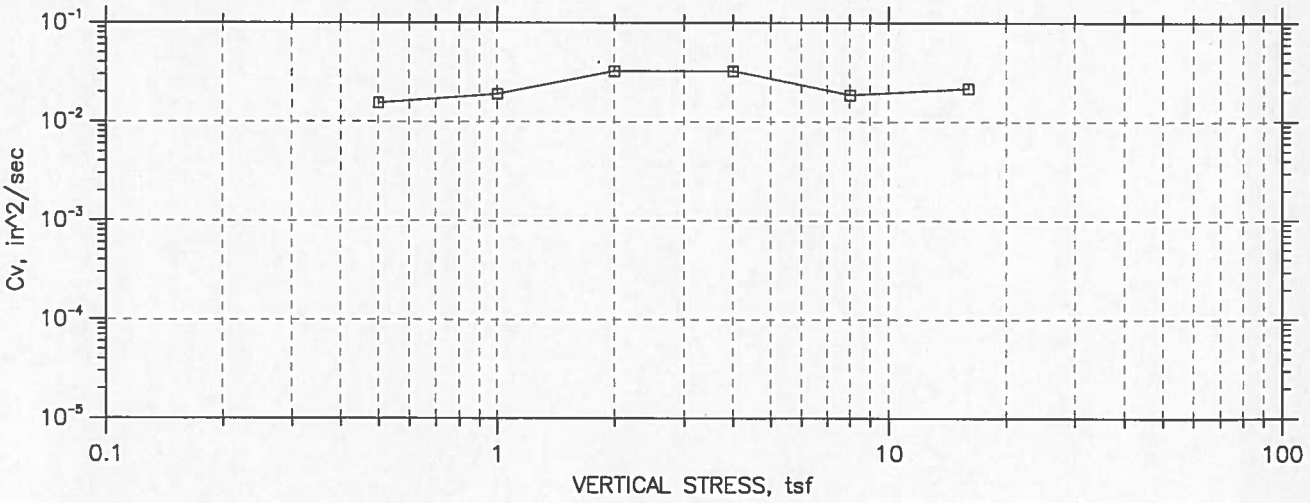
Constant Load Step: 12 of 12
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	0.004184	0.42	0.732
2	0.01	0.09	0.23	0.004184	0.42	0.732
3	0.02	0.13	0.168	0.003908	0.39	0.732
4	0.03	0.16	0.149	0.003724	0.37	0.732
5	0.03	0.19	0.141	0.003632	0.36	0.733
6	0.05	0.23	0.134	0.003494	0.35	0.733
7	0.07	0.26	0.131	0.003402	0.34	0.733
8	0.09	0.30	0.129	0.003356	0.33	0.733
9	0.12	0.34	0.129	0.00331	0.33	0.733
10	0.17	0.41	0.127	0.003265	0.32	0.733
11	0.25	0.50	0.128	0.003219	0.32	0.733
12	0.34	0.58	0.125	0.003127	0.31	0.733
13	0.50	0.71	0.127	0.003035	0.30	0.734
14	0.75	0.87	0.124	0.002943	0.29	0.734
15	1.00	1.00	0.125	0.002851	0.28	0.734
16	1.50	1.23	0.125	0.002621	0.26	0.734
17	2.00	1.42	0.124	0.002483	0.25	0.734
18	3.00	1.73	0.125	0.002023	0.20	0.735
19	4.00	2.00	0.124	0.001839	0.18	0.736
20	5.00	2.24	0.125	0.001609	0.16	0.736
21	6.00	2.45	0.125	0.001471	0.15	0.736
22	7.00	2.65	0.124	0.001287	0.13	0.737
23	8.00	2.83	0.125	0.001195	0.12	0.737
24	9.00	3.00	0.125	0.001103	0.11	0.737
25	10.00	3.16	0.124	0.001012	0.10	0.737
26	12.00	3.46	0.124	0.0009196	0.09	0.737
27	14.00	3.74	0.125	0.0008276	0.08	0.737
28	16.00	4.00	0.125	0.0007357	0.07	0.738
29	18.00	4.24	0.124	0.0005977	0.06	0.738
30	20.00	4.47	0.125	0.0004138	0.04	0.738
31	22.00	4.69	0.124	0.0002759	0.03	0.738
32	24.00	4.90	0.125	9.196e-005	0.01	0.739
33	26.00	5.10	0.124	-0.0002759	-0.03	0.739
34	28.00	5.29	0.125	-0.0004598	-0.05	0.740
35	30.00	5.48	0.124	-0.0004598	-0.05	0.740
36	35.00	5.92	0.125	-0.0005517	-0.05	0.740
37	40.00	6.32	0.124	-0.0005977	-0.06	0.740
38	45.00	6.71	0.124	-0.0007816	-0.08	0.740
39	50.00	7.07	0.124	-0.0008276	-0.08	0.740
40	60.00	7.75	0.124	-0.001103	-0.11	0.741
41	70.00	8.37	0.124	-0.001609	-0.16	0.742
42	80.00	8.94	0.124	-0.002115	-0.21	0.742
43	90.00	9.49	0.124	-0.002621	-0.26	0.743
44	100.00	10.00	0.124	-0.003081	-0.31	0.744
45	110.00	10.49	0.124	-0.003678	-0.37	0.745
46	120.00	10.95	0.124	-0.004	-0.40	0.746
47	130.00	11.40	0.125	-0.004368	-0.43	0.746
48	140.00	11.83	0.125	-0.004552	-0.45	0.747
49	150.00	12.25	0.124	-0.004598	-0.46	0.747
50	156.26	12.50	0.125	-0.00469	-0.47	0.747

CONSOLIDATION TEST DATA

SUMMARY REPORT



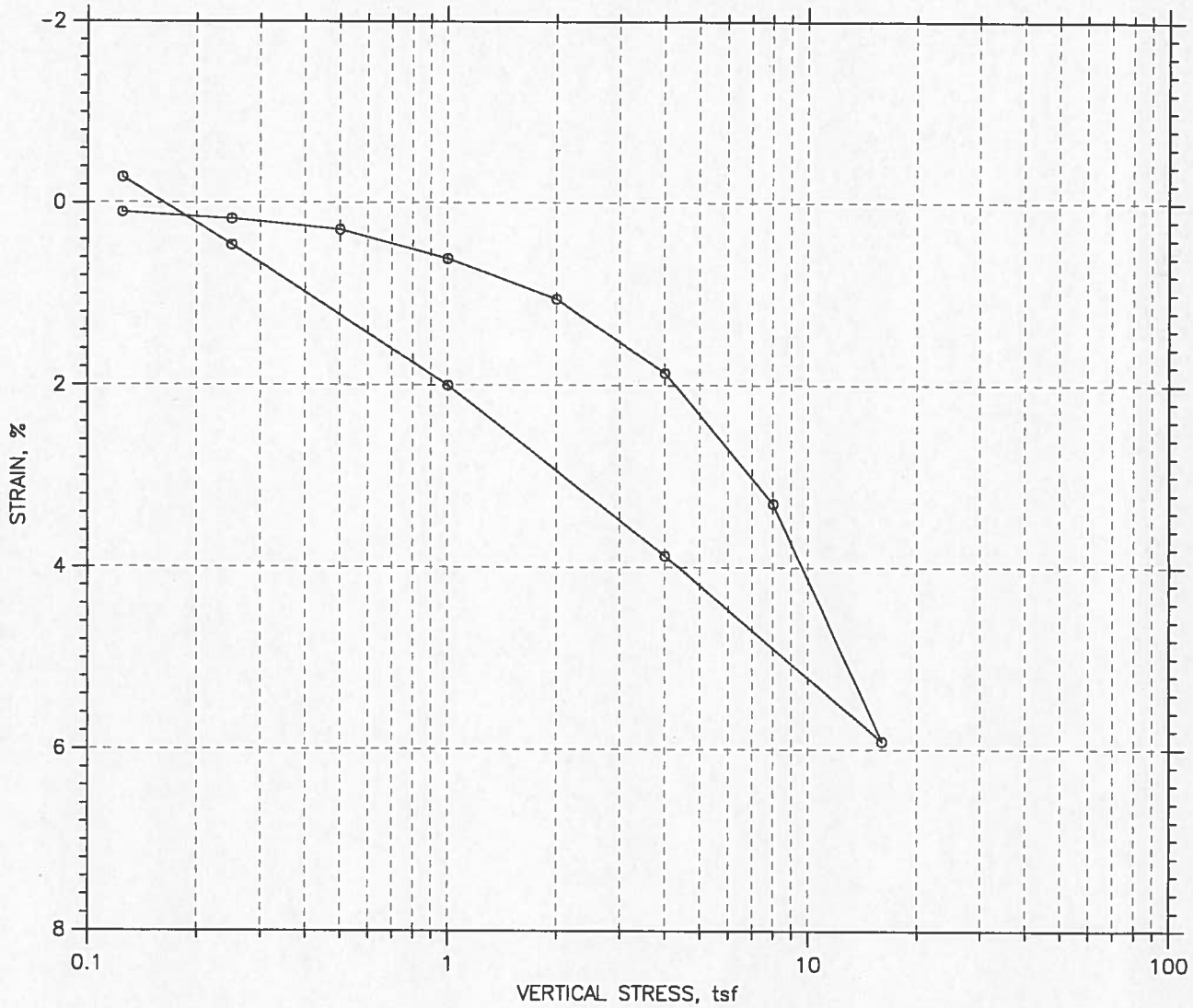


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-722
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-722	Test Date: 8/5/19	Test No.: 1
	Depth: 18-19'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Tue, 27-AUG-2019 10:18:50

CONSOLIDATION TEST DATA

SUMMARY REPORT



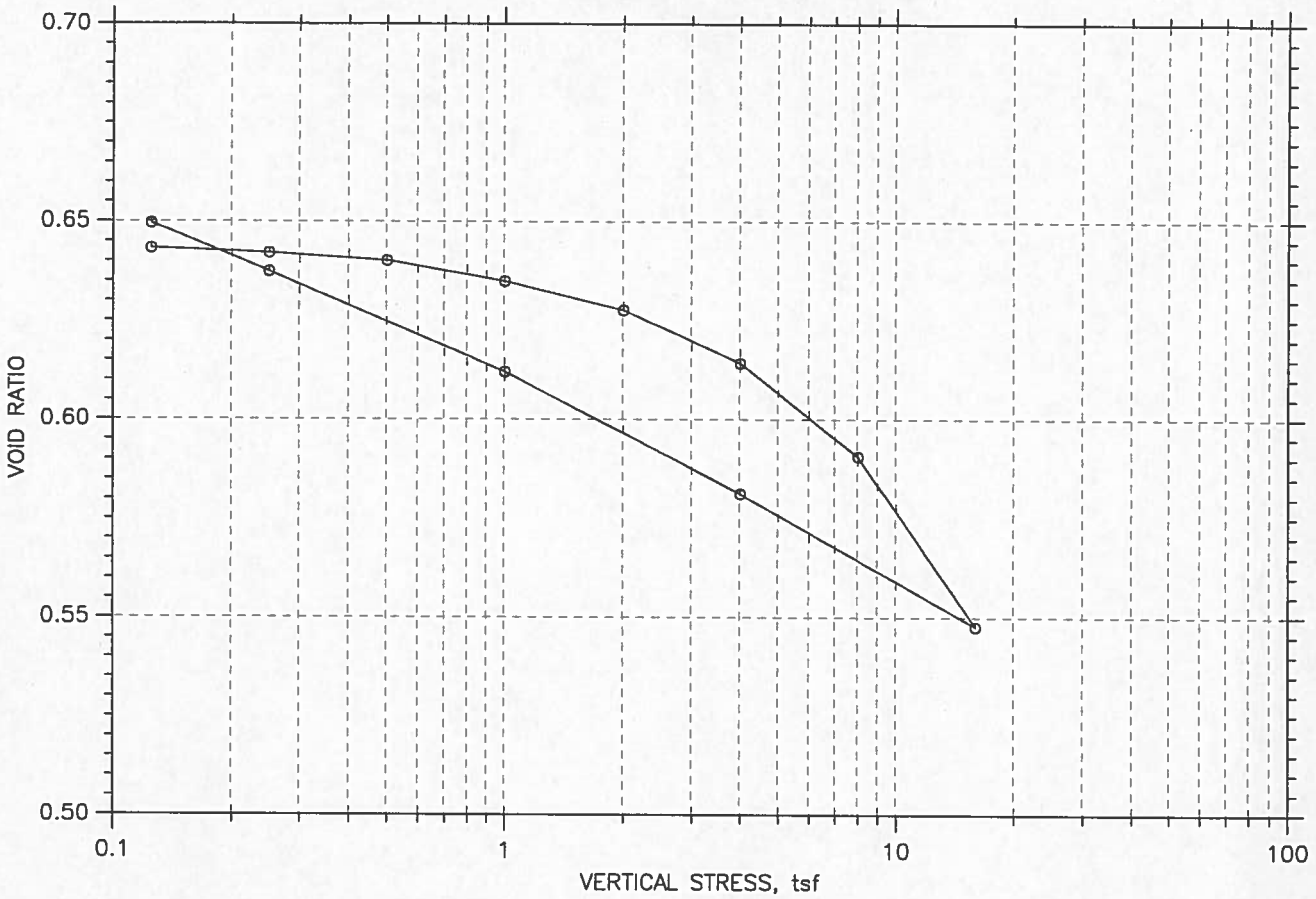
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	19.80	25.27
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	99.82	99.33
Compression Index: 3.81959e-313				Saturation, %	80.76	101.77
Diameter: 2.5 in		Height: 1.001 in		Void Ratio	0.64	0.65
LL: ---	PL: ---	PI: ---	GS: 2.63			

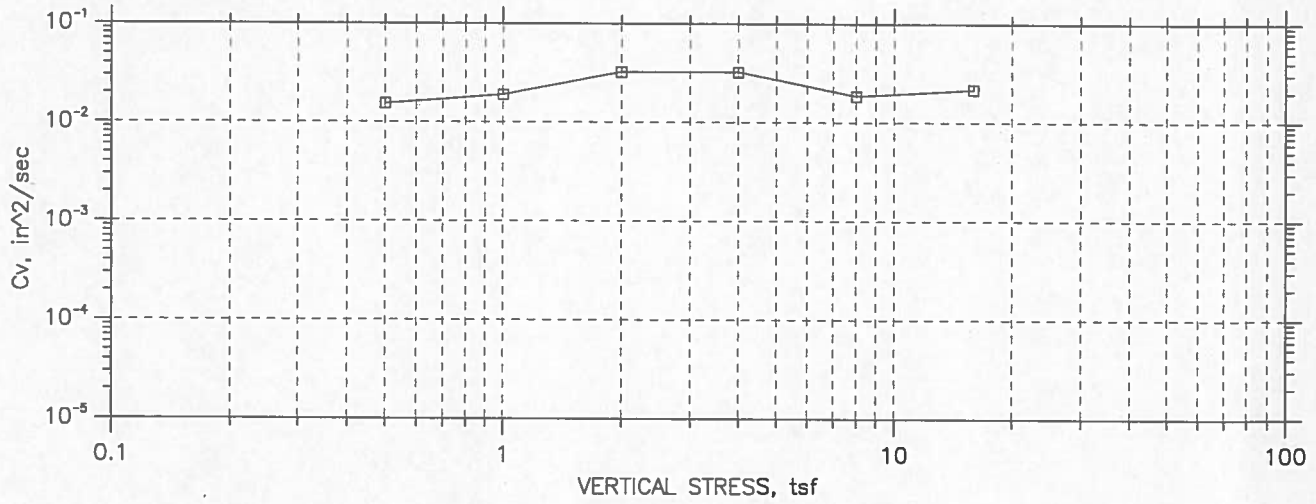
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-722
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-722	Test Date: 8/5/19	Test No.: 1
	Depth: 18-19'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Tue, 27-AUG-2019 10:18:51

CONSOLIDATION TEST DATA

SUMMARY REPORT



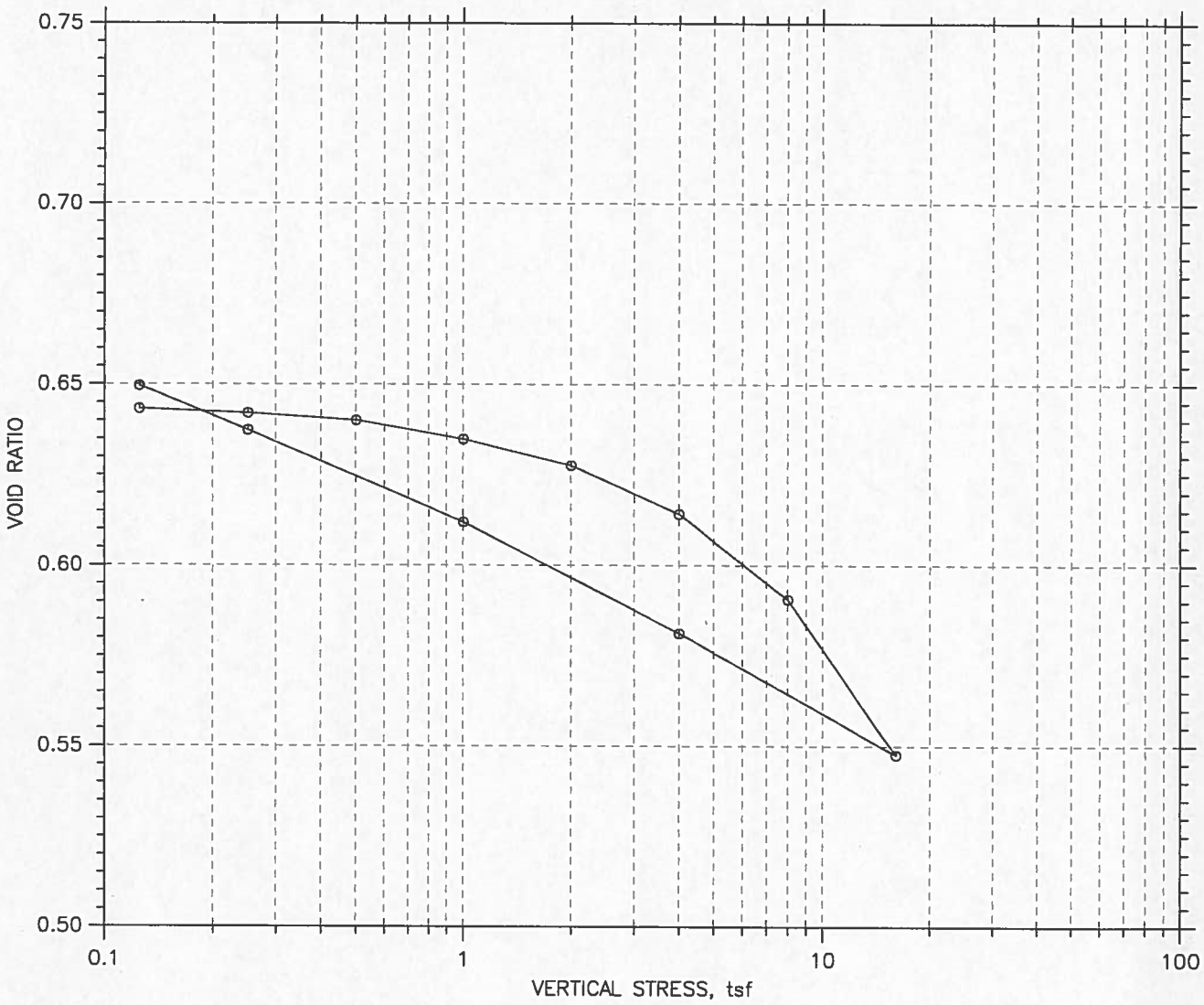


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-722
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-722	Test Date: 8/5/19	Test No.: 1
	Depth: 18-19'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Tue, 27-AUG-2019 10:18:57

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	19.80	25.27
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	99.82	99.33
Compression Index: 3.81959e-313				Saturation, %	80.76	101.77
Diameter: 2.5 in		Height: 1.001 in		Void Ratio	0.64	0.65
LL: ---	PL: ---	PI: ---	GS: 2.63			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-722
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-722	Test Date: 8/5/19	Test No.: 1
	Depth: 18-19'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Tue, 27-AUG-2019 10:18:58

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-722
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/5/19
Sample Type: CORE

Project No.: 19-722
Checked By: SKK
Depth: 18-19'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Measured Specific Gravity: 2.63
Initial Void Ratio: 0.64
Final Void Ratio: 0.65

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	172.71	264.39	271.43	231.92
Wt. Container + Dry Soil, gm	155.22	238.9	238.9	199.4
Wt. Container, gm	70.48	110.15	110.15	70.7
Wt. Dry Soil, gm	84.74	128.75	128.75	128.7
Water Content, %	20.64	19.80	25.27	25.27
Void Ratio	---	0.64	0.65	---
Degree of Saturation, %	---	80.76	101.77	---
Dry Unit Weight, pcf	---	99.819	99.326	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-722
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/5/19
Sample Type: CORE

Project No.: 19-722
Checked By: SKK
Depth: 18-19'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001012	0.643	0.10	0.0	0.00e+000	8.08e-003	0.00e+000
2	0.25	0.001747	0.642	0.17	0.0	0.00e+000	5.88e-003	0.00e+000
3	0.5	0.002943	0.640	0.29	0.1	2.39e-002	4.78e-003	2.14e-003
4	1	0.006115	0.635	0.61	0.1	3.35e-002	6.34e-003	3.97e-003
5	2	0.01053	0.628	1.05	0.1	3.78e-002	4.41e-003	3.12e-003
6	4	0.01867	0.614	1.86	0.1	5.36e-002	4.07e-003	4.08e-003
7	8	0.03301	0.591	3.30	0.3	1.02e-002	3.58e-003	6.83e-004
8	16	0.05917	0.548	5.91	0.2	1.37e-002	3.27e-003	8.37e-004
9	4	0.03876	0.581	3.87	0.2	1.55e-002	1.70e-003	4.95e-004
10	1	0.02005	0.612	2.00	16.5	2.02e-004	6.23e-003	2.36e-005
11	0.25	0.004598	0.637	0.46	20.8	1.66e-004	2.06e-002	6.39e-005
12	0.125	-0.002851	0.650	-0.28	99.8	3.54e-005	5.95e-002	3.95e-005

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001012	0.643	0.10	0.0	0.00e+000	8.08e-003	0.00e+000
2	0.25	0.001747	0.642	0.17	0.0	0.00e+000	5.88e-003	0.00e+000
3	0.5	0.002943	0.640	0.29	0.0	0.00e+000	4.78e-003	0.00e+000
4	1	0.006115	0.635	0.61	0.0	0.00e+000	6.34e-003	0.00e+000
5	2	0.01053	0.628	1.05	0.0	0.00e+000	4.41e-003	0.00e+000
6	4	0.01867	0.614	1.86	0.0	0.00e+000	4.07e-003	0.00e+000
7	8	0.03301	0.591	3.30	0.0	3.41e-002	3.58e-003	2.29e-003
8	16	0.05917	0.548	5.91	0.0	3.08e-002	3.27e-003	1.88e-003
9	4	0.03876	0.581	3.87	0.0	3.22e-002	1.70e-003	1.03e-003
10	1	0.02005	0.612	2.00	0.3	2.44e-003	6.23e-003	2.84e-004
11	0.25	0.004598	0.637	0.46	0.0	0.00e+000	2.06e-002	0.00e+000
12	0.125	-0.002851	0.650	-0.28	17.7	4.64e-005	5.95e-002	5.17e-005

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-722
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/5/19
Sample Type: CORE

Project No.: 19-722
Checked By: SKK
Depth: 18-19'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 1 of 12
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00448	-0.001335	-0.13	0.647
2	0.01	0.09	0.0123	-0.001335	-0.13	0.647
3	0.02	0.13	0.0415	-0.001151	-0.12	0.647
4	0.03	0.16	0.0616	-0.0007376	-0.07	0.646
5	0.04	0.19	0.0773	-0.0004157	-0.04	0.646
6	0.05	0.23	0.0986	-0.0001398	-0.01	0.645
7	0.07	0.27	0.113	0.000136	0.01	0.645
8	0.08	0.29	0.12	0.000182	0.02	0.645
9	0.12	0.35	0.129	0.000182	0.02	0.645
10	0.17	0.41	0.14	9.007e-005	0.01	0.645
11	0.25	0.50	0.132	-0.0002778	-0.03	0.645
12	0.26	0.51	0.13	-0.0003237	-0.03	0.645

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-722
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/5/19
Sample Type: CORE

Project No.: 19-722
Checked By: SKK
Depth: 18-19'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 2 of 12
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.131	-0.002577	-0.26	0.649
2	0.01	0.09	0.131	-0.002577	-0.26	0.649
3	0.02	0.13	0.171	-0.002439	-0.24	0.649
4	0.03	0.16	0.198	-0.002071	-0.21	0.648
5	0.04	0.19	0.216	-0.001933	-0.19	0.648
6	0.05	0.23	0.231	-0.001795	-0.18	0.648
7	0.07	0.27	0.24	-0.001703	-0.17	0.648
8	0.09	0.30	0.245	-0.001657	-0.17	0.648
9	0.12	0.34	0.25	-0.001611	-0.16	0.647
10	0.17	0.41	0.257	-0.001657	-0.17	0.648
11	0.25	0.50	0.266	-0.001703	-0.17	0.648
12	0.29	0.53	0.254	-0.001841	-0.18	0.648

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-722
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/5/19
Sample Type: CORE

Project No.: 19-722
Checked By: SKK
Depth: 18-19'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 3 of 12
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.255	-0.004139	-0.41	0.652
2	0.01	0.09	0.258	-0.004139	-0.41	0.652
3	0.02	0.13	0.316	-0.003955	-0.40	0.651
4	0.03	0.16	0.376	-0.003679	-0.37	0.651
5	0.04	0.19	0.419	-0.003496	-0.35	0.651
6	0.05	0.23	0.464	-0.003174	-0.32	0.650
7	0.07	0.27	0.482	-0.00299	-0.30	0.650
8	0.08	0.29	0.489	-0.002944	-0.29	0.650
9	0.12	0.35	0.495	-0.002806	-0.28	0.649
10	0.17	0.41	0.499	-0.00276	-0.28	0.649
11	0.25	0.50	0.502	-0.00276	-0.28	0.649
12	0.34	0.58	0.508	-0.002806	-0.28	0.649
13	0.39	0.63	0.51	-0.002898	-0.29	0.650

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-722
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/5/19
Sample Type: CORE

Project No.: 19-722
Checked By: SKK
Depth: 18-19'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 4 of 12
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.511	-0.004229	-0.42	0.652
2	0.01	0.09	0.514	-0.004229	-0.42	0.652
3	0.02	0.13	0.783	-0.003585	-0.36	0.651
4	0.03	0.16	0.886	-0.002804	-0.28	0.649
5	0.04	0.19	0.929	-0.002206	-0.22	0.648
6	0.05	0.23	0.967	-0.001608	-0.16	0.647
7	0.07	0.27	0.981	-0.001424	-0.14	0.647
8	0.08	0.29	0.986	-0.001332	-0.13	0.647
9	0.12	0.35	0.993	-0.001194	-0.12	0.647
10	0.17	0.41	0.996	-0.001056	-0.11	0.647
11	0.25	0.50	0.998	-0.001011	-0.10	0.646
12	0.34	0.58	0.998	-0.0009645	-0.10	0.646
13	0.50	0.71	0.999	-0.0009185	-0.09	0.646
14	0.75	0.87	1	-0.001056	-0.11	0.647
15	0.79	0.89	1	-0.001056	-0.11	0.647

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-722
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/5/19
Sample Type: CORE

Project No.: 19-722
Checked By: SKK
Depth: 18-19'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 5 of 12
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	1	-0.003219	-0.32	0.650
2	0.01	0.09	1.11	-0.003219	-0.32	0.650
3	0.02	0.13	1.7	-0.001839	-0.18	0.648
4	0.03	0.16	1.86	-0.0008277	-0.08	0.646
5	0.04	0.19	1.92	-0.0006898	-0.07	0.646
6	0.05	0.23	1.96	-0.000276	-0.03	0.645
7	0.07	0.27	1.98	9.188e-005	0.01	0.645
8	0.09	0.30	1.99	0.0004137	0.04	0.644
9	0.12	0.34	1.99	0.0005976	0.06	0.644
10	0.17	0.41	1.99	0.0007816	0.08	0.644
11	0.25	0.50	2	0.0009195	0.09	0.643
12	0.34	0.58	2	0.001103	0.11	0.643
13	0.50	0.71	2	0.001287	0.13	0.643
14	0.75	0.87	2	0.001379	0.14	0.643
15	1.00	1.00	2	0.001379	0.14	0.643
16	1.50	1.22	2	0.001379	0.14	0.643
17	2.00	1.42	2	0.001379	0.14	0.643
18	3.00	1.73	2	0.001379	0.14	0.643
19	3.96	1.99	2	0.001195	0.12	0.643

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-722
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/5/19
Sample Type: CORE

Project No.: 19-722
Checked By: SKK
Depth: 18-19'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 6 of 12
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	-0.001381	-0.14	0.647
2	0.01	0.09	2.42	-0.001335	-0.13	0.647
3	0.02	0.13	3.6	0.00124	0.12	0.643
4	0.03	0.16	3.83	0.003125	0.31	0.640
5	0.03	0.19	3.91	0.003723	0.37	0.639
6	0.05	0.23	3.96	0.004596	0.46	0.637
7	0.07	0.27	3.97	0.004826	0.48	0.637
8	0.08	0.29	3.98	0.004918	0.49	0.637
9	0.12	0.34	3.99	0.005056	0.51	0.637
10	0.17	0.41	3.99	0.005194	0.52	0.636
11	0.25	0.50	4	0.005378	0.54	0.636
12	0.34	0.58	4	0.005516	0.55	0.636
13	0.50	0.71	4	0.005654	0.56	0.636
14	0.75	0.87	4	0.005746	0.57	0.635
15	1.00	1.00	4	0.005838	0.58	0.635
16	1.50	1.23	4	0.006068	0.61	0.635
17	2.00	1.42	4	0.00639	0.64	0.634
18	3.00	1.73	4	0.00662	0.66	0.634
19	4.00	2.00	4	0.006757	0.68	0.634
20	5.00	2.24	4	0.006849	0.68	0.634
21	6.00	2.45	4	0.006895	0.69	0.633
22	7.00	2.65	4	0.006941	0.69	0.633
23	8.00	2.83	4	0.006941	0.69	0.633
24	9.00	3.00	4	0.006941	0.69	0.633
25	10.00	3.16	4	0.006941	0.69	0.633
26	12.00	3.46	4	0.006895	0.69	0.633
27	14.00	3.74	4	0.006803	0.68	0.634
28	14.62	3.82	4	0.006757	0.68	0.634

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-722
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/5/19
Sample Type: CORE

Project No.: 19-722
Checked By: SKK
Depth: 18-19'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 7 of 12
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.003448	0.34	0.639
2	0.01	0.09	4.67	0.003494	0.35	0.639
3	0.02	0.13	7.42	0.00777	0.78	0.632
4	0.03	0.16	7.77	0.01149	1.15	0.626
5	0.04	0.19	7.87	0.01228	1.23	0.625
6	0.05	0.23	7.94	0.01297	1.30	0.624
7	0.07	0.27	7.96	0.01333	1.33	0.623
8	0.08	0.29	7.97	0.01356	1.36	0.623
9	0.12	0.34	7.98	0.01393	1.39	0.622
10	0.17	0.41	7.99	0.0143	1.43	0.621
11	0.25	0.50	7.99	0.01471	1.47	0.621
12	0.33	0.58	7.99	0.01513	1.51	0.620
13	0.50	0.71	8	0.01563	1.56	0.619
14	0.75	0.87	8	0.016	1.60	0.619
15	1.00	1.00	8	0.01628	1.63	0.618
16	1.50	1.23	8	0.01646	1.64	0.618
17	2.00	1.41	8	0.01674	1.67	0.617
18	3.00	1.73	8	0.0171	1.71	0.617
19	4.00	2.00	8	0.01729	1.73	0.616
20	5.00	2.24	8	0.01738	1.74	0.616
21	6.00	2.45	8	0.01747	1.75	0.616
22	7.00	2.65	8	0.01747	1.75	0.616
23	8.00	2.83	8	0.01747	1.75	0.616
24	9.00	3.00	8	0.01747	1.75	0.616
25	10.00	3.16	8	0.01752	1.75	0.616
26	12.00	3.46	8	0.01752	1.75	0.616
27	14.00	3.74	8	0.01752	1.75	0.616
28	16.00	4.00	8	0.01756	1.75	0.616
29	18.00	4.24	8	0.01756	1.75	0.616
30	20.00	4.47	8	0.01761	1.76	0.616
31	22.00	4.69	8	0.01761	1.76	0.616
32	24.00	4.90	8	0.01766	1.76	0.616
33	26.00	5.10	8	0.01766	1.76	0.616
34	28.00	5.29	8	0.01766	1.76	0.616
35	30.00	5.48	8	0.01766	1.76	0.616
36	35.00	5.92	8	0.01766	1.76	0.616
37	40.00	6.32	8	0.01766	1.76	0.616
38	45.00	6.71	8	0.0177	1.77	0.616
39	50.00	7.07	8	0.0177	1.77	0.616
40	60.00	7.75	8	0.0177	1.77	0.616
41	70.00	8.37	8	0.01775	1.77	0.616
42	80.00	8.94	8	0.01775	1.77	0.616
43	90.00	9.49	8	0.01775	1.77	0.616
44	100.00	10.00	8	0.01779	1.78	0.616
45	110.00	10.49	8	0.01779	1.78	0.616
46	120.00	10.95	8	0.01779	1.78	0.616
47	120.06	10.96	8	0.01779	1.78	0.616

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-722
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/5/19
Sample Type: CORE

Project No.: 19-722
Checked By: SKK
Depth: 18-19'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 8 of 12
Applied Stress: 16 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.01237	1.24	0.625
2	0.01	0.09	8.88	0.01237	1.24	0.625
3	0.02	0.13	14.7	0.01793	1.79	0.615
4	0.03	0.16	15.6	0.02538	2.54	0.603
5	0.03	0.19	15.8	0.02731	2.73	0.600
6	0.05	0.23	15.9	0.02888	2.88	0.597
7	0.07	0.26	15.9	0.02952	2.95	0.596
8	0.09	0.30	15.9	0.02975	2.97	0.596
9	0.12	0.34	16	0.03002	3.00	0.595
10	0.17	0.41	16	0.03062	3.06	0.595
11	0.25	0.50	16	0.03113	3.11	0.594
12	0.33	0.58	16	0.03127	3.12	0.593
13	0.50	0.71	16	0.03191	3.19	0.592
14	0.75	0.87	16	0.03288	3.28	0.591
15	1.00	1.00	16	0.03329	3.33	0.590
16	1.50	1.23	16	0.03398	3.39	0.589
17	2.00	1.42	16	0.03448	3.45	0.588
18	3.00	1.73	16	0.03513	3.51	0.587
19	4.00	2.00	16	0.03536	3.53	0.587
20	5.00	2.24	16	0.03554	3.55	0.586
21	6.00	2.45	16	0.03568	3.56	0.586
22	7.00	2.65	16	0.03582	3.58	0.586
23	8.00	2.83	16	0.036	3.60	0.586
24	9.00	3.00	16	0.03605	3.60	0.586
25	10.00	3.16	16	0.03609	3.61	0.586
26	12.00	3.46	16	0.03614	3.61	0.585
27	14.00	3.74	16	0.03623	3.62	0.585
28	16.00	4.00	16	0.03637	3.63	0.585
29	18.00	4.24	16	0.03665	3.66	0.585
30	20.00	4.47	16	0.03674	3.67	0.584
31	22.00	4.69	16	0.03678	3.67	0.584
32	24.00	4.90	16	0.03683	3.68	0.584
33	26.00	5.10	16	0.03688	3.68	0.584
34	28.00	5.29	16	0.03706	3.70	0.584
35	30.00	5.48	16	0.03711	3.71	0.584
36	35.00	5.92	16	0.03734	3.73	0.583
37	40.00	6.32	16	0.03747	3.74	0.583
38	45.00	6.71	16	0.03757	3.75	0.583
39	50.00	7.07	16	0.0377	3.77	0.583
40	60.00	7.75	16	0.03793	3.79	0.582
41	70.00	8.37	16	0.03816	3.81	0.582
42	80.00	8.94	16	0.03835	3.83	0.582
43	90.00	9.49	16	0.03848	3.84	0.582
44	100.00	10.00	16	0.03848	3.84	0.582
45	110.00	10.49	16	0.03853	3.85	0.582
46	120.00	10.95	16	0.03853	3.85	0.582
47	120.07	10.96	16	0.03853	3.85	0.582

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-722
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/5/19
Sample Type: CORE

Project No.: 19-722
Checked By: SKK
Depth: 18-19'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 9 of 12
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	16	0.05706	5.70	0.551
2	0.01	0.09	13	0.05701	5.70	0.551
3	0.02	0.13	5.28	0.05209	5.20	0.559
4	0.03	0.16	4.23	0.04547	4.54	0.570
5	0.03	0.19	4.12	0.04409	4.40	0.572
6	0.05	0.23	4.06	0.04345	4.34	0.573
7	0.07	0.26	4.04	0.04322	4.32	0.574
8	0.09	0.30	4.03	0.04299	4.29	0.574
9	0.12	0.34	4.02	0.04258	4.25	0.575
10	0.17	0.41	4.01	0.04212	4.21	0.576
11	0.25	0.50	4.01	0.04143	4.14	0.577
12	0.34	0.58	4.01	0.0412	4.12	0.577
13	0.50	0.71	4.01	0.04088	4.08	0.578
14	0.75	0.87	4.01	0.04074	4.07	0.578
15	1.00	1.00	4	0.04051	4.05	0.578
16	1.50	1.23	4	0.04032	4.03	0.579
17	2.00	1.42	4	0.04009	4.01	0.579
18	3.00	1.73	4	0.03954	3.95	0.580
19	4.00	2.00	4	0.03927	3.92	0.580
20	5.00	2.24	4	0.03908	3.90	0.581
21	6.00	2.45	4	0.0389	3.89	0.581
22	7.00	2.65	4	0.03867	3.86	0.581
23	8.00	2.83	4	0.03835	3.83	0.582
24	9.00	3.00	4	0.03812	3.81	0.582
25	10.00	3.16	4	0.03798	3.79	0.582
26	12.00	3.46	4	0.03775	3.77	0.583
27	14.00	3.74	4	0.03761	3.76	0.583
28	16.00	4.00	4	0.03752	3.75	0.583
29	18.00	4.24	4	0.03743	3.74	0.583
30	20.00	4.47	4	0.03738	3.73	0.583
31	22.00	4.69	4	0.03738	3.73	0.583
32	24.00	4.90	4	0.03733	3.73	0.583
33	26.00	5.10	4	0.03733	3.73	0.583
34	28.00	5.29	4	0.03729	3.73	0.584
35	30.00	5.48	4	0.03733	3.73	0.583
36	35.00	5.92	4	0.03729	3.73	0.584
37	40.00	6.32	4	0.03724	3.72	0.584
38	45.00	6.71	4	0.0372	3.72	0.584
39	50.00	7.07	4	0.03715	3.71	0.584
40	60.00	7.75	4	0.03697	3.69	0.584
41	70.00	8.37	4	0.03688	3.68	0.584
42	80.00	8.94	4	0.03678	3.67	0.584
43	90.00	9.49	4	0.03678	3.67	0.584
44	100.00	10.00	4	0.03665	3.66	0.585
45	110.00	10.49	4	0.03665	3.66	0.585
46	120.00	10.95	4	0.03665	3.66	0.585
47	120.05	10.96	4	0.03665	3.66	0.585

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-722
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/5/19
Sample Type: CORE

Project No.: 19-722
Checked By: SKK
Depth: 18-19'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 10 of 12
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.03665	3.66	0.585
2	0.01	0.09	3.6	0.03665	3.66	0.585
3	0.02	0.13	1.41	0.03333	3.33	0.590
4	0.03	0.16	1.21	0.03104	3.10	0.594
5	0.04	0.19	1.13	0.0309	3.09	0.594
6	0.05	0.23	1.07	0.03021	3.02	0.595
7	0.07	0.27	1.05	0.02966	2.96	0.596
8	0.08	0.29	1.04	0.02929	2.93	0.597
9	0.12	0.35	1.03	0.02892	2.89	0.597
10	0.17	0.41	1.02	0.02819	2.82	0.599
11	0.25	0.50	1.01	0.02736	2.73	0.600
12	0.34	0.58	1.01	0.02694	2.69	0.601
13	0.50	0.71	1.01	0.02644	2.64	0.601
14	0.75	0.87	1.01	0.02602	2.60	0.602
15	1.00	1.00	1	0.02584	2.58	0.602
16	1.50	1.23	1	0.02547	2.54	0.603
17	2.00	1.41	1	0.02529	2.53	0.603
18	3.00	1.73	0.999	0.02506	2.50	0.604
19	4.00	2.00	1	0.02474	2.47	0.604
20	5.00	2.24	1	0.02428	2.43	0.605
21	6.00	2.45	0.999	0.02391	2.39	0.606
22	7.00	2.65	0.999	0.02354	2.35	0.606
23	8.00	2.83	1	0.02317	2.32	0.607
24	9.00	3.00	0.999	0.02299	2.30	0.607
25	10.00	3.16	1	0.02271	2.27	0.608
26	12.00	3.46	0.999	0.02235	2.23	0.608
27	14.00	3.74	1	0.02207	2.20	0.609
28	16.00	4.00	0.999	0.02184	2.18	0.609
29	18.00	4.24	1	0.02166	2.16	0.609
30	20.00	4.47	1	0.02156	2.15	0.609
31	22.00	4.69	0.999	0.02143	2.14	0.610
32	24.00	4.90	0.998	0.02133	2.13	0.610
33	26.00	5.10	1	0.0212	2.12	0.610
34	28.00	5.29	0.998	0.02101	2.10	0.610
35	30.00	5.48	0.999	0.02092	2.09	0.610
36	35.00	5.92	0.999	0.0206	2.06	0.611
37	40.00	6.32	0.999	0.02046	2.04	0.611
38	45.00	6.71	0.998	0.02009	2.01	0.612
39	50.00	7.07	1	0.01991	1.99	0.612
40	60.00	7.75	0.999	0.0195	1.95	0.613
41	70.00	8.37	0.999	0.01908	1.91	0.613
42	80.00	8.94	1	0.01894	1.89	0.614
43	90.00	9.49	0.999	0.01881	1.88	0.614
44	100.00	10.00	0.999	0.01853	1.85	0.614
45	110.00	10.49	0.999	0.01821	1.82	0.615
46	120.00	10.95	0.999	0.01793	1.79	0.615
47	120.06	10.96	1	0.01793	1.79	0.615

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-722
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/5/19
Sample Type: CORE

Project No.: 19-722
Checked By: SKK
Depth: 18-19'
Elevation: N/A

Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

Constant Load Step: 11 of 12
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.01793	1.79	0.615
2	0.01	0.09	0.791	0.01793	1.79	0.615
3	0.02	0.13	0.455	0.01752	1.75	0.616
4	0.03	0.16	0.379	0.01706	1.70	0.617
5	0.04	0.19	0.343	0.01614	1.61	0.618
6	0.05	0.23	0.307	0.01545	1.54	0.619
7	0.07	0.27	0.289	0.01517	1.52	0.620
8	0.08	0.29	0.283	0.01504	1.50	0.620
9	0.12	0.35	0.271	0.01485	1.48	0.620
10	0.17	0.41	0.264	0.01448	1.45	0.621
11	0.25	0.50	0.26	0.01398	1.40	0.622
12	0.33	0.58	0.258	0.0137	1.37	0.622
13	0.50	0.71	0.255	0.0132	1.32	0.623
14	0.75	0.87	0.253	0.01297	1.30	0.624
15	1.00	1.00	0.253	0.0126	1.26	0.624
16	1.50	1.23	0.252	0.01214	1.21	0.625
17	2.00	1.42	0.251	0.01163	1.16	0.626
18	3.00	1.73	0.251	0.01113	1.11	0.627
19	4.00	2.00	0.251	0.0109	1.09	0.627
20	5.00	2.24	0.25	0.01058	1.06	0.627
21	6.00	2.45	0.25	0.01016	1.02	0.628
22	7.00	2.65	0.251	0.009931	0.99	0.629
23	8.00	2.83	0.25	0.009656	0.96	0.629
24	9.00	3.00	0.25	0.00938	0.94	0.629
25	10.00	3.16	0.25	0.00915	0.91	0.630
26	12.00	3.46	0.25	0.008782	0.88	0.630
27	14.00	3.74	0.251	0.008414	0.84	0.631
28	16.00	4.00	0.251	0.008046	0.80	0.632
29	18.00	4.24	0.251	0.007724	0.77	0.632
30	20.00	4.47	0.25	0.007265	0.73	0.633
31	22.00	4.69	0.25	0.006989	0.70	0.633
32	24.00	4.90	0.25	0.006897	0.69	0.633
33	26.00	5.10	0.25	0.006759	0.68	0.634
34	28.00	5.29	0.249	0.006667	0.67	0.634
35	30.00	5.48	0.25	0.006667	0.67	0.634
36	35.00	5.92	0.25	0.006621	0.66	0.634
37	40.00	6.32	0.251	0.006483	0.65	0.634
38	45.00	6.71	0.251	0.005977	0.60	0.635
39	50.00	7.07	0.251	0.005471	0.55	0.636
40	60.00	7.75	0.25	0.004782	0.48	0.637
41	70.00	8.37	0.25	0.004414	0.44	0.638
42	80.00	8.94	0.25	0.004046	0.40	0.638
43	90.00	9.49	0.25	0.003678	0.37	0.639
44	100.00	10.00	0.25	0.003173	0.32	0.640
45	110.00	10.49	0.251	0.002897	0.29	0.640
46	120.00	10.95	0.251	0.002483	0.25	0.641
47	120.04	10.96	0.251	0.002483	0.25	0.641

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-722
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/5/19
Sample Type: CORE

Project No.: 19-722
Checked By: SKK
Depth: 18-19'
Elevation: N/A

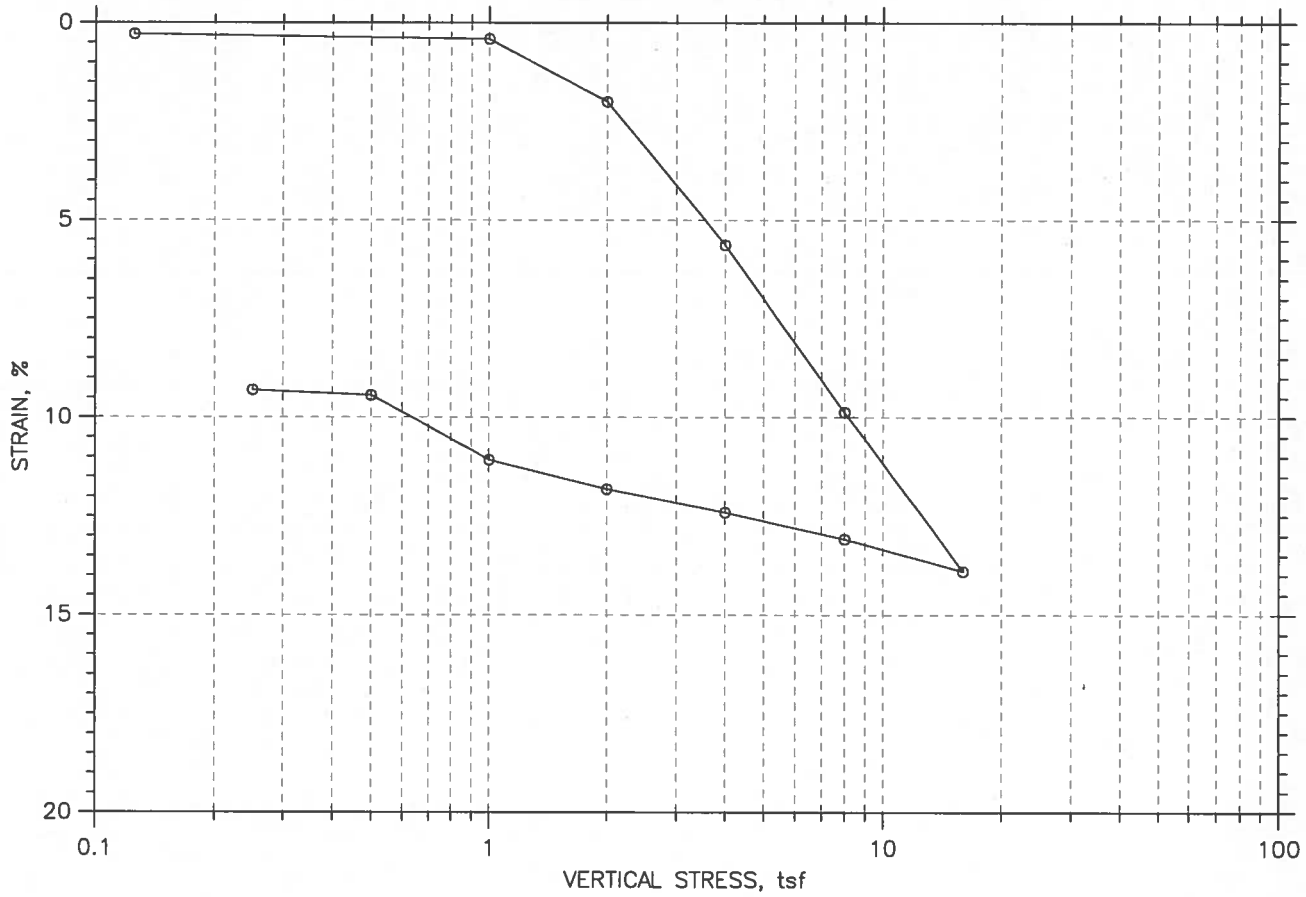
Soil Description:
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND

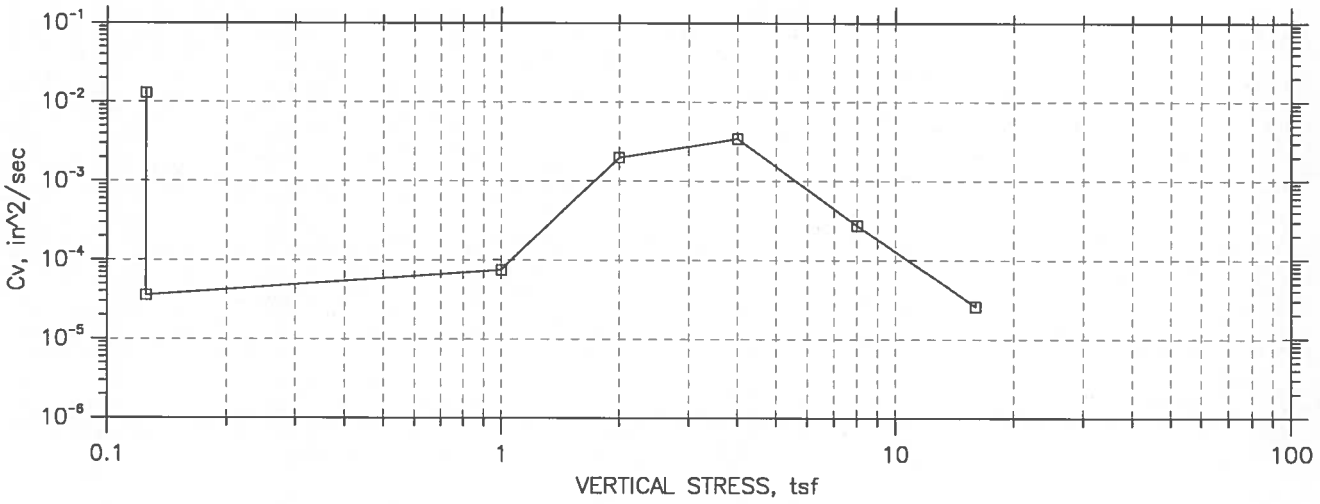
Constant Load Step: 12 of 12
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	0.002483	0.25	0.641
2	0.01	0.09	0.233	0.002483	0.25	0.641
3	0.02	0.13	0.185	0.002299	0.23	0.641
4	0.03	0.16	0.165	0.002207	0.22	0.641
5	0.04	0.19	0.155	0.002115	0.21	0.641
6	0.05	0.23	0.141	0.002023	0.20	0.642
7	0.07	0.27	0.138	0.002023	0.20	0.642
8	0.08	0.29	0.134	0.002023	0.20	0.642
9	0.12	0.35	0.13	0.001931	0.19	0.642
10	0.17	0.41	0.129	0.001885	0.19	0.642
11	0.25	0.50	0.127	0.001839	0.18	0.642
12	0.34	0.58	0.125	0.001793	0.18	0.642
13	0.50	0.71	0.127	0.001747	0.17	0.642
14	0.75	0.87	0.125	0.001609	0.16	0.642
15	1.00	1.00	0.125	0.001471	0.15	0.642
16	1.50	1.23	0.125	0.001241	0.12	0.643
17	2.00	1.42	0.125	0.001012	0.10	0.643
18	3.00	1.73	0.124	0.0007816	0.08	0.644
19	4.00	2.00	0.123	0.0005517	0.06	0.644
20	5.00	2.24	0.124	0.0004598	0.05	0.644
21	6.00	2.45	0.124	0.0003678	0.04	0.644
22	7.00	2.65	0.124	0.0002759	0.03	0.644
23	8.00	2.83	0.124	0.0001839	0.02	0.645
24	9.00	3.00	0.125	4.598e-005	0.00	0.645
25	10.00	3.16	0.125	-4.598e-005	-0.00	0.645
26	12.00	3.46	0.124	-0.0003219	-0.03	0.645
27	14.00	3.74	0.125	-0.0005517	-0.06	0.646
28	16.00	4.00	0.124	-0.0007357	-0.07	0.646
29	18.00	4.24	0.125	-0.0009656	-0.10	0.646
30	20.00	4.47	0.124	-0.001103	-0.11	0.647
31	22.00	4.69	0.124	-0.001195	-0.12	0.647
32	24.00	4.90	0.125	-0.001379	-0.14	0.647
33	26.00	5.10	0.124	-0.001517	-0.15	0.647
34	28.00	5.29	0.125	-0.001701	-0.17	0.648
35	30.00	5.48	0.124	-0.001885	-0.19	0.648
36	35.00	5.92	0.124	-0.002299	-0.23	0.649
37	40.00	6.32	0.124	-0.002667	-0.27	0.649
38	45.00	6.71	0.125	-0.003035	-0.30	0.650
39	50.00	7.07	0.124	-0.003219	-0.32	0.650
40	60.00	7.75	0.125	-0.003448	-0.34	0.650
41	70.00	8.37	0.124	-0.003632	-0.36	0.651
42	80.00	8.94	0.125	-0.004046	-0.40	0.651
43	90.00	9.49	0.124	-0.004322	-0.43	0.652
44	100.00	10.00	0.125	-0.004736	-0.47	0.653
45	110.00	10.49	0.124	-0.004782	-0.48	0.653
46	120.00	10.95	0.124	-0.004874	-0.49	0.653
47	130.00	11.40	0.123	-0.004966	-0.50	0.653
48	131.12	11.45	0.124	-0.004966	-0.50	0.653

CONSOLIDATION TEST DATA

SUMMARY REPORT



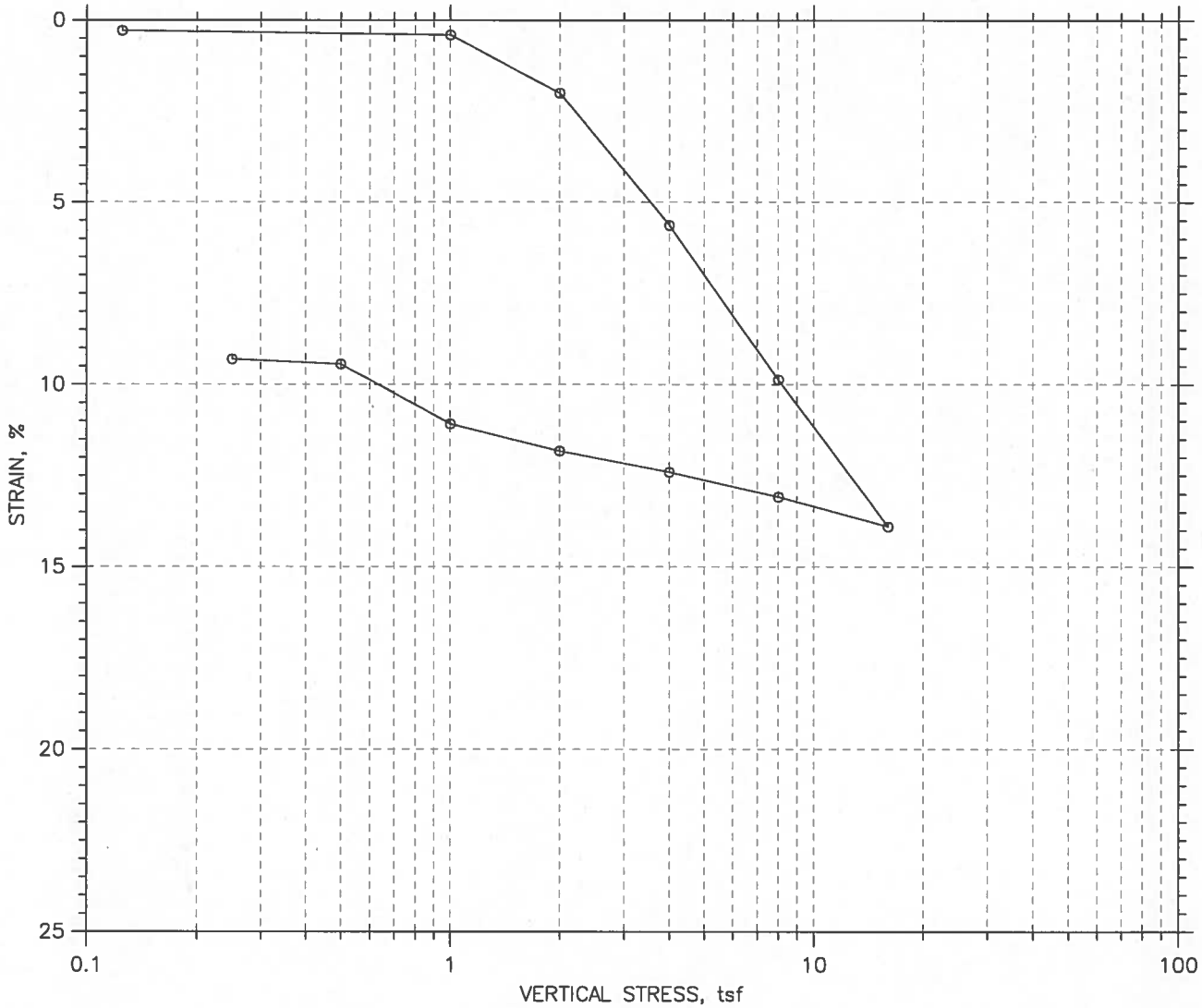


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: COMP 1
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: COMP 1	Test Date: 4/1/19	Test No.: 2
	Depth: 0-4'	Sample Type: REMOLD	Elevation: N/A
	Description: Borrow, B-101, 102, 104, &105		
	Remarks:		

Tue, 16-APR-2019 13:28:07

CONSOLIDATION TEST DATA

SUMMARY REPORT



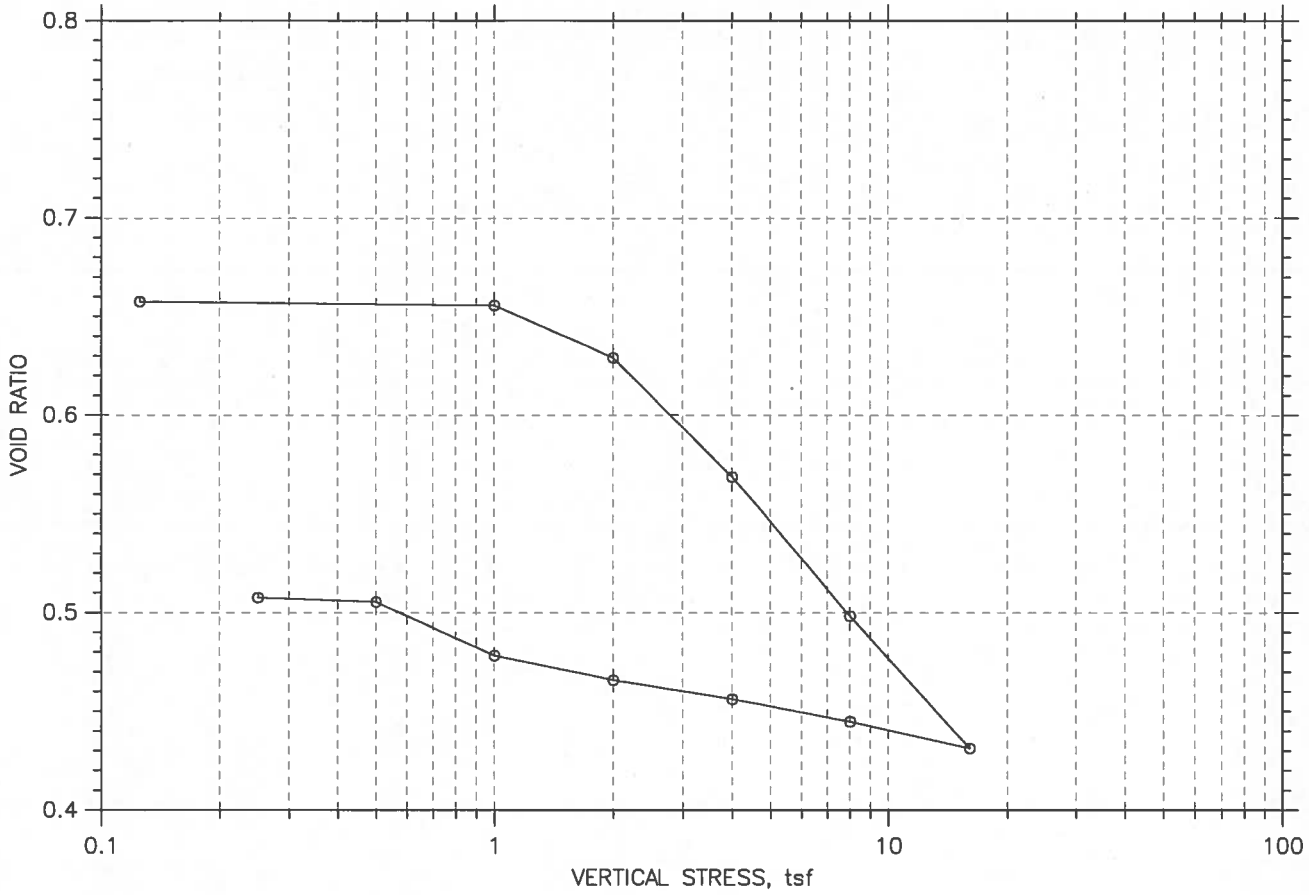
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	18.57	19.20
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	101.4	111.6
Compression Index: 3.81959e-313				Saturation, %	75.70	101.47
Diameter: 2.5 in		Height: 1.003 in		Void Ratio	0.66	0.51
LL: ---	PL: ---	PI: ---	GS: 2.70			

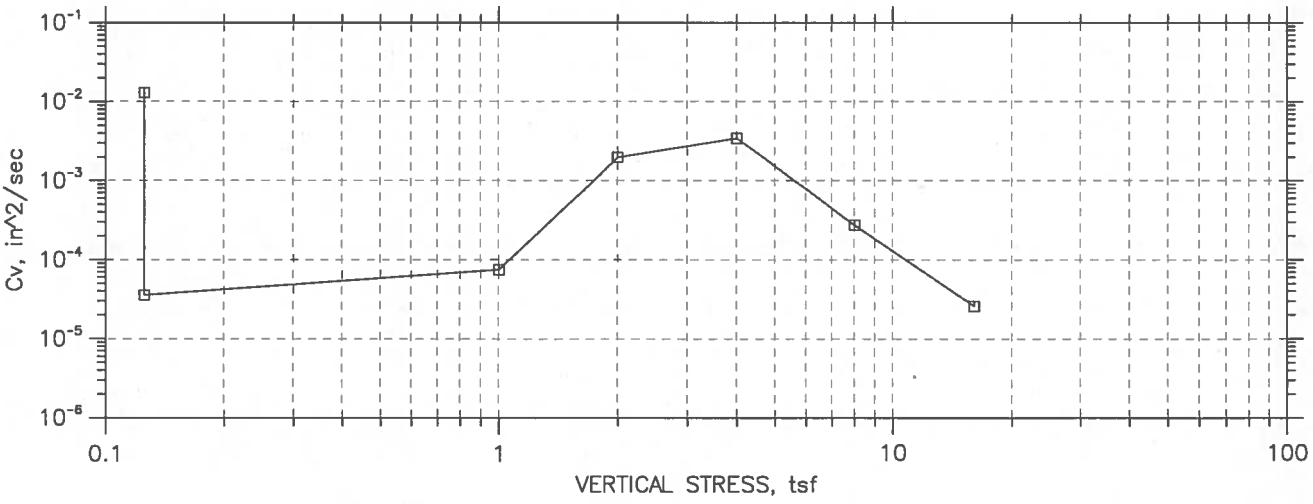
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: COMP 1
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: COMP 1	Test Date: 4/1/19	Test No.: 2
	Depth: 0-4'	Sample Type: REMOLD	Elevation: N/A
	Description: Borrow, B-101, 102, 104, &105		
	Remarks:		

Tue, 16-APR-2019 13:28:07

CONSOLIDATION TEST DATA

SUMMARY REPORT



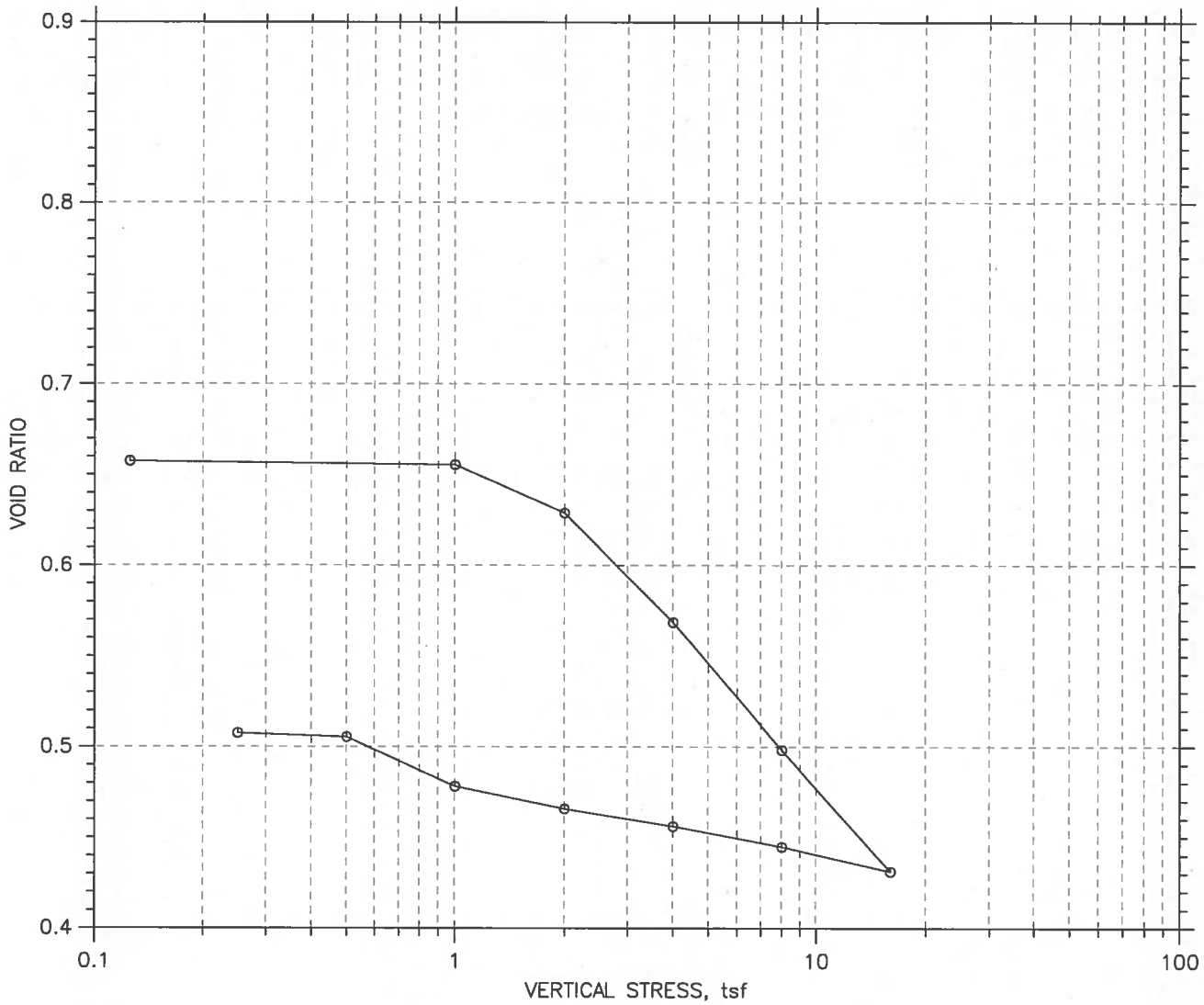


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: COMP 1
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: COMP 1	Test Date: 4/1/19	Test No.: 2
	Depth: 0-4'	Sample Type: REMOLD	Elevation: N/A
	Description: Borrow, B-101, 102, 104, &105		
	Remarks:		

Tue, 16-APR-2019 13:28:24

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	18.57	19.20
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	101.4	111.6
Compression Index: 3.81959e-313				Saturation, %	75.70	101.47
Diameter: 2.5 in		Height: 1.003 in		Void Ratio	0.66	0.51
LL: ---	PL: ---	PI: ---	GS: 2.70			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: COMP 1
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: COMP 1	Test Date: 4/1/19	Test No.: 2
	Depth: 0-4'	Sample Type: REMOLD	Elevation: N/A
	Description: Borrow, B-101, 102, 104, &105		
	Remarks:		

Tue, 16-APR-2019 13:28:24

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 1
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 4/1/19
Sample Type: REMOLD

Project No.: COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: Borrow, B-101, 102, 104, &105
Remarks:

Measured Specific Gravity: 2.70
Initial Void Ratio: 0.66
Final Void Ratio: 0.51

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	155.38	155.38	156.21	211.94
Wt. Container + Dry Soil, gm	131.01	131.05	131.05	186.82
Wt. Container, gm	0	0	0	56
Wt. Dry Soil, gm	131.01	131.05	131.05	130.82
Water Content, %	18.60	18.57	19.20	19.20
Void Ratio	---	0.66	0.51	---
Degree of Saturation, %	---	75.70	101.47	---
Dry Unit Weight, pcf	---	101.4	111.55	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 1
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 4/1/19
Sample Type: REMOLD

Project No.: COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: Borrow, B-101, 102, 104, &105
Remarks:

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.002897	0.658	0.29	0.2	1.84e-002	2.31e-002	7.95e-003
2	0.125	0.002943	0.657	0.29	24.0	1.47e-004	1.#Je+000	1.#Je+000
3	1	0.004138	0.655	0.41	37.0	9.54e-005	1.36e-003	2.43e-006
4	2	0.02014	0.629	2.01	4.9	7.14e-004	1.60e-002	2.13e-004
5	4	0.05655	0.569	5.64	1.9	1.70e-003	1.82e-002	5.76e-004
6	8	0.09904	0.498	9.87	13.9	2.17e-004	1.06e-002	4.31e-005
7	16	0.1395	0.431	13.90	88.1	3.13e-005	5.04e-003	2.95e-006
8	8	0.1313	0.445	13.09	0.4	5.99e-003	1.02e-003	1.14e-004
9	4	0.1245	0.456	12.41	30.0	9.03e-005	1.70e-003	2.87e-006
10	2	0.1186	0.466	11.83	98.7	2.78e-005	2.91e-003	1.52e-006
11	1	0.1112	0.478	11.08	202.1	1.38e-005	7.43e-003	1.92e-006
12	0.5	0.09476	0.505	9.45	1234.2	2.32e-006	3.27e-002	1.42e-006
13	0.25	0.09343	0.507	9.31	9.0	3.25e-004	5.32e-003	3.24e-005

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.002897	0.658	0.29	0.1	1.22e-002	2.31e-002	5.29e-003
2	0.125	0.002943	0.657	0.29	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	1	0.004138	0.655	0.41	0.0	0.00e+000	1.36e-003	0.00e+000
4	2	0.02014	0.629	2.01	0.2	5.34e-003	1.60e-002	1.60e-003
5	4	0.05655	0.569	5.64	0.1	9.45e-003	1.82e-002	3.21e-003
6	8	0.09904	0.498	9.87	0.0	0.00e+000	1.06e-002	0.00e+000
7	16	0.1395	0.431	13.90	0.0	0.00e+000	5.04e-003	0.00e+000
8	8	0.1313	0.445	13.09	0.0	3.58e-002	1.02e-003	6.83e-004
9	4	0.1245	0.456	12.41	0.0	0.00e+000	1.70e-003	0.00e+000
10	2	0.1186	0.466	11.83	0.0	0.00e+000	2.91e-003	0.00e+000
11	1	0.1112	0.478	11.08	0.0	0.00e+000	7.43e-003	0.00e+000
12	0.5	0.09476	0.505	9.45	0.0	0.00e+000	3.27e-002	0.00e+000
13	0.25	0.09343	0.507	9.31	0.0	0.00e+000	5.32e-003	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 1
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 4/1/19
Sample Type: REMOLD

Project No.: COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: Borrow, B-101, 102, 104, &105
Remarks:

Constant Load Step: 1 of 13
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00448	-0.001335	-0.13	0.665
2	0.01	0.09	0.00896	-0.001335	-0.13	0.665
3	0.02	0.13	0.0347	-0.001059	-0.11	0.664
4	0.03	0.16	0.0549	-0.0007376	-0.07	0.664
5	0.04	0.19	0.0717	-0.0004157	-0.04	0.663
6	0.05	0.23	0.0896	-4.787e-005	-0.00	0.662
7	0.07	0.26	0.102	0.000136	0.01	0.662
8	0.09	0.30	0.109	0.000228	0.02	0.662
9	0.12	0.34	0.115	0.00032	0.03	0.662
10	0.17	0.41	0.12	0.0006878	0.07	0.661
11	0.25	0.50	0.121	0.0008257	0.08	0.661
12	0.33	0.58	0.121	0.0008717	0.09	0.661
13	0.50	0.71	0.123	0.0009177	0.09	0.661
14	0.75	0.87	0.123	0.0009637	0.10	0.661
15	1.00	1.00	0.123	0.00101	0.10	0.661
16	1.50	1.23	0.123	0.001056	0.11	0.661
17	2.00	1.42	0.124	0.001102	0.11	0.660
18	3.00	1.73	0.123	0.001148	0.11	0.660
19	4.00	2.00	0.124	0.001194	0.12	0.660
20	5.00	2.24	0.124	0.001194	0.12	0.660
21	6.00	2.45	0.124	0.00124	0.12	0.660
22	7.00	2.65	0.124	0.00124	0.12	0.660
23	8.00	2.83	0.124	0.001286	0.13	0.660
24	9.00	3.00	0.123	0.001332	0.13	0.660
25	10.00	3.16	0.125	0.001377	0.14	0.660
26	12.00	3.46	0.124	0.001423	0.14	0.660
27	14.00	3.74	0.124	0.001515	0.15	0.660
28	15.03	3.88	0.124	0.001561	0.16	0.660

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 1
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 4/1/19
Sample Type: REMOLD

Project No.: COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: Borrow, B-101, 102, 104, &105
Remarks:

Constant Volume Step: 2 of 13
Seating Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.124	0.001561	0.16	0.660
2	0.01	0.09	0.124	0.001561	0.16	0.660
3	0.02	0.13	0.124	0.001561	0.16	0.660
4	0.03	0.16	0.124	0.001561	0.16	0.660
5	0.04	0.19	0.124	0.001561	0.16	0.660
6	0.05	0.23	0.131	0.001561	0.16	0.660
7	0.07	0.27	0.139	0.001561	0.16	0.660
8	0.08	0.29	0.147	0.001561	0.16	0.660
9	0.12	0.34	0.167	0.001561	0.16	0.660
10	0.17	0.41	0.193	0.001515	0.15	0.660
11	0.25	0.50	0.231	0.001515	0.15	0.660
12	0.33	0.58	0.259	0.001469	0.15	0.660
13	0.50	0.71	0.303	0.001377	0.14	0.660
14	0.75	0.87	0.346	0.001377	0.14	0.660
15	1.00	1.00	0.378	0.001332	0.13	0.660
16	1.50	1.22	0.425	0.001332	0.13	0.660
17	2.00	1.42	0.476	0.001332	0.13	0.660
18	3.00	1.73	0.537	0.001515	0.15	0.660
19	4.00	2.00	0.562	0.001515	0.15	0.660
20	5.00	2.24	0.582	0.001515	0.15	0.660
21	6.00	2.45	0.597	0.001515	0.15	0.660
22	7.00	2.65	0.611	0.001515	0.15	0.660
23	8.00	2.83	0.624	0.001515	0.15	0.660
24	9.00	3.00	0.635	0.001515	0.15	0.660
25	10.00	3.16	0.643	0.001515	0.15	0.660
26	12.00	3.46	0.655	0.001515	0.15	0.660
27	14.00	3.74	0.669	0.001515	0.15	0.660
28	16.00	4.00	0.679	0.001561	0.16	0.660
29	18.00	4.24	0.688	0.001561	0.16	0.660
30	20.00	4.47	0.696	0.001561	0.16	0.660
31	22.00	4.69	0.703	0.001561	0.16	0.660
32	24.00	4.90	0.711	0.001607	0.16	0.660
33	26.00	5.10	0.714	0.001607	0.16	0.660
34	28.00	5.29	0.716	0.001607	0.16	0.660
35	30.00	5.48	0.72	0.001607	0.16	0.660
36	35.00	5.92	0.729	0.001607	0.16	0.660
37	40.00	6.32	0.735	0.001607	0.16	0.660
38	45.00	6.71	0.741	0.001607	0.16	0.660
39	50.00	7.07	0.743	0.001607	0.16	0.660
40	60.00	7.75	0.751	0.001607	0.16	0.660
41	70.00	8.37	0.756	0.001607	0.16	0.660
42	80.00	8.94	0.763	0.001607	0.16	0.660
43	90.00	9.49	0.766	0.001607	0.16	0.660
44	100.00	10.00	0.77	0.001607	0.16	0.660
45	110.00	10.49	0.773	0.001607	0.16	0.660
46	120.00	10.95	0.774	0.001607	0.16	0.660
47	130.00	11.40	0.779	0.001607	0.16	0.660
48	140.00	11.83	0.776	0.001607	0.16	0.660
49	150.00	12.25	0.78	0.001607	0.16	0.660
50	160.00	12.65	0.783	0.001607	0.16	0.660
51	170.00	13.04	0.784	0.001607	0.16	0.660
52	180.00	13.42	0.785	0.001607	0.16	0.660
53	190.00	13.78	0.785	0.001607	0.16	0.660
54	200.00	14.14	0.787	0.001607	0.16	0.660
55	210.00	14.49	0.785	0.001607	0.16	0.660
56	220.00	14.83	0.788	0.001607	0.16	0.660
57	230.00	15.17	0.787	0.001607	0.16	0.660
58	240.00	15.49	0.788	0.001607	0.16	0.660
59	250.00	15.81	0.788	0.001607	0.16	0.660
60	260.00	16.12	0.82	0.001607	0.16	0.660
61	270.00	16.43	0.817	0.001607	0.16	0.660
62	280.00	16.73	0.811	0.001607	0.16	0.660
63	290.00	17.03	0.812	0.001607	0.16	0.660
64	300.00	17.32	0.809	0.001607	0.16	0.660
65	310.00	17.61	0.808	0.001561	0.16	0.660
66	320.00	17.89	0.809	0.001607	0.16	0.660
67	330.00	18.17	0.808	0.001607	0.16	0.660
68	340.00	18.44	0.807	0.001607	0.16	0.660
69	350.00	18.71	0.802	0.001607	0.16	0.660
70	360.00	18.97	0.796	0.001607	0.16	0.660
71	370.00	19.24	0.79	0.001607	0.16	0.660
72	380.00	19.49	0.79	0.001607	0.16	0.660
73	390.00	19.75	0.785	0.001607	0.16	0.660
74	400.00	20.00	0.784	0.001607	0.16	0.660
75	410.00	20.25	0.781	0.001607	0.16	0.660
76	420.00	20.49	0.78	0.001607	0.16	0.660
77	430.00	20.74	0.781	0.001607	0.16	0.660
78	440.00	20.98	0.78	0.001607	0.16	0.660
79	450.00	21.21	0.781	0.001607	0.16	0.660
80	460.00	21.45	0.782	0.001607	0.16	0.660
81	470.00	21.68	0.783	0.001607	0.16	0.660

82	480.00	21.91	0.782	0.001607	0.16	0.660
83	490.00	22.14	0.784	0.001607	0.16	0.660
84	500.00	22.36	0.785	0.001607	0.16	0.660
85	510.00	22.58	0.785	0.001561	0.16	0.660
86	520.00	22.80	0.792	0.001607	0.16	0.660
87	530.00	23.02	0.792	0.001607	0.16	0.660
88	540.00	23.24	0.798	0.001607	0.16	0.660
89	550.00	23.45	0.798	0.001607	0.16	0.660
90	560.00	23.66	0.799	0.001607	0.16	0.660
91	570.00	23.87	0.801	0.001607	0.16	0.660
92	580.00	24.08	0.802	0.001607	0.16	0.660
93	590.00	24.29	0.806	0.001607	0.16	0.660
94	600.00	24.49	0.803	0.001607	0.16	0.660
95	610.00	24.70	0.806	0.001607	0.16	0.660
96	620.00	24.90	0.808	0.001607	0.16	0.660
97	630.00	25.10	0.808	0.001607	0.16	0.660
98	640.00	25.30	0.809	0.001607	0.16	0.660
99	650.00	25.50	0.811	0.001607	0.16	0.660
100	660.00	25.69	0.812	0.001607	0.16	0.660
101	670.00	25.88	0.811	0.001607	0.16	0.660
102	680.00	26.08	0.813	0.001607	0.16	0.660
103	690.00	26.27	0.813	0.001607	0.16	0.660
104	700.00	26.46	0.815	0.001607	0.16	0.660
105	710.00	26.65	0.813	0.001607	0.16	0.660
106	720.00	26.83	0.816	0.001607	0.16	0.660
107	730.00	27.02	0.815	0.001607	0.16	0.660
108	740.00	27.20	0.819	0.001607	0.16	0.660
109	750.00	27.39	0.818	0.001607	0.16	0.660
110	760.00	27.57	0.82	0.001607	0.16	0.660
111	770.00	27.75	0.821	0.001607	0.16	0.660
112	780.00	27.93	0.82	0.001607	0.16	0.660
113	790.00	28.11	0.82	0.001607	0.16	0.660
114	800.00	28.28	0.821	0.001607	0.16	0.660
115	810.00	28.46	0.82	0.001607	0.16	0.660
116	820.00	28.64	0.822	0.001607	0.16	0.660
117	830.00	28.81	0.821	0.001607	0.16	0.660
118	840.00	28.98	0.82	0.001607	0.16	0.660
119	850.00	29.15	0.821	0.001607	0.16	0.660
120	860.00	29.33	0.821	0.001607	0.16	0.660
121	870.00	29.50	0.822	0.001607	0.16	0.660
122	880.00	29.66	0.822	0.001607	0.16	0.660
123	890.00	29.83	0.821	0.001607	0.16	0.660
124	900.00	30.00	0.82	0.001607	0.16	0.660
125	910.00	30.17	0.818	0.001607	0.16	0.660
126	920.00	30.33	0.819	0.001607	0.16	0.660
127	930.00	30.50	0.819	0.001607	0.16	0.660
128	940.00	30.66	0.82	0.001607	0.16	0.660
129	950.00	30.82	0.822	0.001653	0.16	0.660
130	960.00	30.98	0.819	0.001607	0.16	0.660
131	970.00	31.14	0.821	0.001607	0.16	0.660
132	980.00	31.30	0.822	0.001607	0.16	0.660
133	990.00	31.46	0.82	0.001607	0.16	0.660
134	1000.00	31.62	0.819	0.001607	0.16	0.660
135	1010.00	31.78	0.819	0.001607	0.16	0.660
136	1020.00	31.94	0.82	0.001607	0.16	0.660
137	1030.00	32.09	0.821	0.001607	0.16	0.660
138	1040.00	32.25	0.821	0.001607	0.16	0.660
139	1050.00	32.40	0.822	0.001607	0.16	0.660
140	1060.00	32.56	0.821	0.001607	0.16	0.660
141	1070.00	32.71	0.826	0.001607	0.16	0.660
142	1080.00	32.86	0.824	0.001607	0.16	0.660
143	1090.00	33.02	0.826	0.001607	0.16	0.660
144	1100.00	33.17	0.825	0.001607	0.16	0.660
145	1110.00	33.32	0.825	0.001607	0.16	0.660
146	1120.00	33.47	0.825	0.001607	0.16	0.660
147	1130.00	33.62	0.825	0.001607	0.16	0.660
148	1140.00	33.76	0.825	0.001607	0.16	0.660
149	1150.00	33.91	0.825	0.001607	0.16	0.660
150	1160.00	34.06	0.827	0.001607	0.16	0.660
151	1170.00	34.21	0.826	0.001607	0.16	0.660
152	1180.00	34.35	0.825	0.001607	0.16	0.660
153	1190.00	34.50	0.825	0.001607	0.16	0.660
154	1200.00	34.64	0.825	0.001607	0.16	0.660
155	1210.00	34.79	0.825	0.001607	0.16	0.660
156	1220.00	34.93	0.826	0.001607	0.16	0.660
157	1230.00	35.07	0.826	0.001607	0.16	0.660
158	1240.00	35.21	0.827	0.001653	0.16	0.660
159	1250.00	35.36	0.826	0.001607	0.16	0.660
160	1260.00	35.50	0.827	0.001607	0.16	0.660
161	1270.00	35.64	0.828	0.001607	0.16	0.660
162	1280.00	35.78	0.827	0.001607	0.16	0.660
163	1290.00	35.92	0.829	0.001607	0.16	0.660
164	1300.00	36.06	0.826	0.001561	0.16	0.660
165	1310.00	36.19	0.828	0.001561	0.16	0.660
166	1320.00	36.33	0.828	0.001607	0.16	0.660
167	1330.00	36.47	0.828	0.001607	0.16	0.660
168	1340.00	36.61	0.826	0.001607	0.16	0.660
169	1347.93	36.71	0.822	0.001607	0.16	0.660

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 1
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 4/1/19
Sample Type: REMOLD

Project No.: COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: Borrow, B-101, 102, 104, &105
Remarks:

Constant Load Step: 3 of 13
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.822	-0.004229	-0.42	0.669
2	0.01	0.09	0.869	-0.004229	-0.42	0.669
3	0.02	0.13	0.977	-0.003999	-0.40	0.669
4	0.03	0.16	0.99	-0.003907	-0.39	0.669
5	0.04	0.19	0.995	-0.003861	-0.38	0.669
6	0.05	0.23	0.998	-0.003815	-0.38	0.669
7	0.07	0.26	0.998	-0.003815	-0.38	0.669
8	0.09	0.30	0.999	-0.003769	-0.38	0.669
9	0.12	0.34	0.998	-0.003769	-0.38	0.669
10	0.17	0.41	0.999	-0.003769	-0.38	0.669
11	0.25	0.50	0.998	-0.003723	-0.37	0.668
12	0.34	0.58	0.998	-0.003723	-0.37	0.668
13	0.50	0.71	0.998	-0.003677	-0.37	0.668
14	0.75	0.87	0.999	-0.003631	-0.36	0.668
15	1.00	1.00	0.999	-0.003585	-0.36	0.668
16	1.50	1.23	1	-0.003585	-0.36	0.668
17	2.00	1.41	0.999	-0.003539	-0.35	0.668
18	3.00	1.73	0.998	-0.003539	-0.35	0.668
19	4.00	2.00	0.999	-0.003539	-0.35	0.668
20	5.00	2.24	0.999	-0.003493	-0.35	0.668
21	6.00	2.45	0.999	-0.003493	-0.35	0.668
22	7.00	2.65	0.999	-0.003493	-0.35	0.668
23	8.00	2.83	0.999	-0.003447	-0.34	0.668
24	9.00	3.00	0.999	-0.003447	-0.34	0.668
25	10.00	3.16	0.998	-0.003447	-0.34	0.668
26	12.00	3.46	0.998	-0.003401	-0.34	0.668
27	14.00	3.74	1	-0.003355	-0.33	0.668
28	16.00	4.00	0.999	-0.003355	-0.33	0.668
29	18.00	4.24	0.999	-0.003309	-0.33	0.668
30	20.00	4.47	0.999	-0.003309	-0.33	0.668
31	22.00	4.69	1	-0.003263	-0.33	0.668
32	24.00	4.90	0.999	-0.003263	-0.33	0.668
33	26.00	5.10	0.999	-0.003263	-0.33	0.668
34	28.00	5.29	0.999	-0.003263	-0.33	0.668
35	30.00	5.48	0.998	-0.003263	-0.33	0.668
36	35.00	5.92	0.999	-0.003172	-0.32	0.668
37	40.00	6.32	0.999	-0.003126	-0.31	0.667
38	45.00	6.71	0.999	-0.003126	-0.31	0.667
39	50.00	7.07	0.999	-0.003126	-0.31	0.667
40	60.00	7.75	0.999	-0.003126	-0.31	0.667
41	70.00	8.37	0.999	-0.003126	-0.31	0.667
42	80.00	8.94	0.999	-0.00308	-0.31	0.667
43	90.00	9.49	0.999	-0.00308	-0.31	0.667
44	100.00	10.00	0.999	-0.00308	-0.31	0.667
45	110.00	10.49	0.999	-0.00308	-0.31	0.667
46	120.00	10.95	0.999	-0.00308	-0.31	0.667
47	130.00	11.40	0.999	-0.00308	-0.31	0.667
48	140.00	11.83	0.999	-0.00308	-0.31	0.667
49	150.00	12.25	0.999	-0.003034	-0.30	0.667
50	160.00	12.65	0.999	-0.00308	-0.31	0.667
51	167.60	12.95	0.999	-0.003034	-0.30	0.667

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 1
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 4/1/19
Sample Type: REMOLD

Project No.: COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: Borrow, B-101, 102, 104, &105
Remarks:

Constant Load Step: 4 of 13
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	-0.005196	-0.52	0.671
2	0.01	0.09	1.27	-0.005196	-0.52	0.671
3	0.02	0.13	1.7	-0.003908	-0.39	0.669
4	0.03	0.16	1.79	-0.002713	-0.27	0.667
5	0.03	0.19	1.84	-0.002023	-0.20	0.666
6	0.05	0.23	1.88	-0.00115	-0.11	0.664
7	0.07	0.26	1.91	-0.0005978	-0.06	0.663
8	0.09	0.29	1.93	-9.204e-005	-0.01	0.662
9	0.12	0.34	1.95	0.0005057	0.05	0.661
10	0.17	0.41	1.97	0.001517	0.15	0.660
11	0.25	0.50	1.98	0.002437	0.24	0.658
12	0.33	0.58	1.99	0.003081	0.31	0.657
13	0.50	0.71	1.99	0.003724	0.37	0.656
14	0.75	0.87	2	0.004828	0.48	0.654
15	1.00	1.00	1.99	0.005058	0.50	0.654
16	1.50	1.23	2	0.005104	0.51	0.654
17	2.00	1.41	2	0.005288	0.53	0.654
18	3.00	1.73	2	0.005977	0.60	0.652
19	4.00	2.00	2	0.006575	0.66	0.651
20	5.00	2.24	2	0.006897	0.69	0.651
21	6.00	2.45	2	0.007219	0.72	0.650
22	7.00	2.65	2	0.007311	0.73	0.650
23	8.00	2.83	2	0.007357	0.73	0.650
24	9.00	3.00	2	0.007494	0.75	0.650
25	10.00	3.16	2	0.007678	0.77	0.650
26	12.00	3.46	2	0.007908	0.79	0.649
27	14.00	3.74	2	0.008092	0.81	0.649
28	16.00	4.00	2	0.008322	0.83	0.649
29	18.00	4.24	2	0.008552	0.85	0.648
30	20.00	4.47	2	0.00869	0.87	0.648
31	22.00	4.69	2	0.008828	0.88	0.648
32	24.00	4.90	2	0.008966	0.89	0.647
33	26.00	5.10	2	0.009058	0.90	0.647
34	28.00	5.29	2	0.009196	0.92	0.647
35	30.00	5.48	2	0.009288	0.93	0.647
36	35.00	5.92	2	0.009426	0.94	0.647
37	40.00	6.32	2	0.009518	0.95	0.647
38	45.00	6.71	2	0.00961	0.96	0.646
39	50.00	7.07	2	0.009656	0.96	0.646
40	60.00	7.75	2	0.009747	0.97	0.646
41	70.00	8.37	2	0.009839	0.98	0.646
42	80.00	8.94	2	0.009931	0.99	0.646
43	90.00	9.49	2	0.01007	1.00	0.646
44	100.00	10.00	2	0.01021	1.02	0.645
45	110.00	10.49	2	0.01035	1.03	0.645
46	120.00	10.95	2	0.01044	1.04	0.645
47	130.00	11.40	2	0.01058	1.05	0.645
48	140.00	11.83	2	0.01067	1.06	0.645
49	150.00	12.25	2	0.0108	1.08	0.644
50	155.71	12.48	2	0.0108	1.08	0.644

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 1
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 4/1/19
Sample Type: REMOLD

Project No.: COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: Borrow, B-101, 102, 104, &105
Remarks:

Constant Load Step: 5 of 13
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	0.008229	0.82	0.649
2	0.01	0.09	2.5	0.008229	0.82	0.649
3	0.02	0.13	3.21	0.01094	1.09	0.644
4	0.03	0.16	3.36	0.01375	1.37	0.640
5	0.04	0.19	3.48	0.01609	1.60	0.636
6	0.05	0.23	3.64	0.01982	1.98	0.629
7	0.07	0.27	3.77	0.0217	2.16	0.626
8	0.09	0.30	3.84	0.02308	2.30	0.624
9	0.12	0.34	3.9	0.02529	2.52	0.620
10	0.17	0.41	3.94	0.02676	2.67	0.618
11	0.25	0.50	3.97	0.02749	2.74	0.617
12	0.33	0.58	3.98	0.02832	2.82	0.615
13	0.50	0.71	3.99	0.03039	3.03	0.612
14	0.75	0.87	3.99	0.03168	3.16	0.610
15	1.00	1.00	3.99	0.03223	3.21	0.609
16	1.50	1.23	4	0.03292	3.28	0.608
17	2.00	1.42	4	0.03352	3.34	0.607
18	3.00	1.73	4	0.03467	3.46	0.605
19	4.00	2.00	4	0.03554	3.54	0.603
20	5.00	2.24	4	0.03614	3.60	0.602
21	6.00	2.45	4	0.03664	3.65	0.602
22	7.00	2.65	4	0.03687	3.68	0.601
23	8.00	2.83	4	0.03697	3.69	0.601
24	9.00	3.00	4	0.03706	3.69	0.601
25	10.00	3.16	4	0.03733	3.72	0.600
26	12.00	3.46	4	0.0377	3.76	0.600
27	14.00	3.74	4	0.03844	3.83	0.599
28	16.00	4.00	4	0.03885	3.87	0.598
29	18.00	4.24	4	0.03926	3.91	0.597
30	20.00	4.47	4	0.03945	3.93	0.597
31	22.00	4.69	4	0.03959	3.95	0.597
32	24.00	4.90	4	0.03968	3.96	0.597
33	26.00	5.10	4	0.03986	3.97	0.596
34	28.00	5.29	4	0.04	3.99	0.596
35	30.00	5.48	4	0.04009	4.00	0.596
36	35.00	5.92	4	0.04055	4.04	0.595
37	40.00	6.32	4	0.04124	4.11	0.594
38	45.00	6.71	4	0.04152	4.14	0.593
39	50.00	7.07	4	0.04184	4.17	0.593
40	60.00	7.75	4	0.04221	4.21	0.592
41	70.00	8.37	4	0.04253	4.24	0.592
42	80.00	8.94	4	0.04294	4.28	0.591
43	90.00	9.49	4	0.0434	4.33	0.590
44	100.00	10.00	4	0.04372	4.36	0.590
45	110.00	10.49	4	0.04391	4.38	0.590
46	120.00	10.95	4	0.04405	4.39	0.589
47	130.00	11.40	4	0.04423	4.41	0.589
48	140.00	11.83	4	0.04432	4.42	0.589
49	150.00	12.25	4	0.04441	4.43	0.589
50	160.00	12.65	4	0.04446	4.43	0.589
51	170.00	13.04	4	0.04451	4.44	0.589
52	180.00	13.42	4	0.0446	4.45	0.588
53	185.98	13.64	4	0.04464	4.45	0.588

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 1
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 4/1/19
Sample Type: REMOLD

Project No.: COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: Borrow, B-101, 102, 104, &105
Remarks:

Constant Load Step: 6 of 13
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.04129	4.12	0.594
2	0.01	0.09	4.79	0.04133	4.12	0.594
3	0.02	0.13	6.81	0.04635	4.62	0.585
4	0.03	0.16	7.21	0.05062	5.05	0.578
5	0.03	0.19	7.47	0.05398	5.38	0.573
6	0.05	0.23	7.74	0.05697	5.68	0.568
7	0.07	0.27	7.85	0.0583	5.81	0.566
8	0.09	0.30	7.9	0.05973	5.95	0.563
9	0.12	0.34	7.94	0.06032	6.01	0.562
10	0.17	0.41	7.96	0.06111	6.09	0.561
11	0.25	0.50	7.98	0.06253	6.23	0.559
12	0.34	0.58	7.98	0.06327	6.31	0.557
13	0.50	0.71	7.99	0.06377	6.36	0.557
14	0.75	0.87	7.99	0.06469	6.45	0.555
15	1.00	1.00	7.99	0.06515	6.50	0.554
16	1.50	1.23	8	0.0663	6.61	0.552
17	2.00	1.42	8	0.06672	6.65	0.552
18	3.00	1.73	8	0.06759	6.74	0.550
19	4.00	2.00	8	0.06809	6.79	0.549
20	5.00	2.24	8	0.06832	6.81	0.549
21	6.00	2.45	8	0.06874	6.85	0.548
22	7.00	2.65	8	0.0692	6.90	0.548
23	8.00	2.83	8	0.06947	6.93	0.547
24	9.00	3.00	8	0.06975	6.95	0.547
25	10.00	3.16	8	0.07003	6.98	0.546
26	12.00	3.46	8	0.07044	7.02	0.546
27	14.00	3.74	8	0.07076	7.05	0.545
28	16.00	4.00	8	0.07127	7.11	0.544
29	18.00	4.24	8	0.07164	7.14	0.544
30	20.00	4.47	8	0.07209	7.19	0.543
31	22.00	4.69	8	0.07232	7.21	0.542
32	24.00	4.90	8	0.07255	7.23	0.542
33	26.00	5.10	8	0.07265	7.24	0.542
34	28.00	5.29	8	0.07278	7.26	0.542
35	30.00	5.48	8	0.07297	7.28	0.541
36	35.00	5.92	8	0.07347	7.33	0.541
37	40.00	6.32	8	0.07384	7.36	0.540
38	45.00	6.71	8	0.0743	7.41	0.539
39	50.00	7.07	8	0.07481	7.46	0.538
40	60.00	7.75	8	0.07605	7.58	0.536
41	70.00	8.37	8	0.07665	7.64	0.535
42	80.00	8.94	8	0.0777	7.75	0.534
43	90.00	9.49	8	0.07803	7.78	0.533
44	100.00	10.00	8	0.07826	7.80	0.533
45	110.00	10.49	8	0.07844	7.82	0.532
46	120.00	10.95	8	0.07881	7.86	0.532
47	130.00	11.40	8	0.07941	7.92	0.531
48	140.00	11.83	8	0.07968	7.94	0.530
49	150.00	12.25	8	0.0801	7.99	0.530
50	160.00	12.65	8	0.08055	8.03	0.529
51	170.00	13.04	8	0.08092	8.07	0.528
52	180.00	13.42	8	0.08129	8.10	0.528
53	190.00	13.78	8	0.08147	8.12	0.527
54	200.00	14.14	8	0.0817	8.15	0.527
55	210.00	14.49	8	0.0818	8.16	0.527
56	220.00	14.83	8	0.08212	8.19	0.526
57	230.00	15.17	8	0.08244	8.22	0.526
58	240.00	15.49	8	0.08249	8.22	0.526
59	250.00	15.81	8	0.0829	8.27	0.525
60	260.00	16.12	8	0.08299	8.27	0.525
61	270.00	16.43	8	0.08313	8.29	0.525
62	280.00	16.73	8	0.08327	8.30	0.524
63	290.00	17.03	8	0.08336	8.31	0.524
64	300.00	17.32	8	0.08368	8.34	0.524
65	309.46	17.59	8	0.08382	8.36	0.523

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 1
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 4/1/19
Sample Type: REMOLD

Project No.: COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: Borrow, B-101, 102, 104, &105
Remarks:

Constant Load Step: 7 of 13
Applied Stress: 16 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.07839	7.82	0.532
2	0.01	0.09	10.2	0.07839	7.82	0.532
3	0.02	0.13	14.8	0.08235	8.21	0.526
4	0.03	0.16	15.7	0.08787	8.76	0.517
5	0.04	0.19	15.8	0.08943	8.92	0.514
6	0.05	0.23	15.9	0.09067	9.04	0.512
7	0.07	0.27	15.9	0.09104	9.08	0.511
8	0.08	0.29	16	0.09136	9.11	0.511
9	0.12	0.34	16	0.09205	9.18	0.510
10	0.17	0.41	16	0.09233	9.20	0.509
11	0.25	0.50	16	0.09288	9.26	0.508
12	0.34	0.58	16	0.09325	9.30	0.508
13	0.50	0.71	16	0.09371	9.34	0.507
14	0.75	0.87	16	0.0943	9.40	0.506
15	1.00	1.00	16	0.09495	9.47	0.505
16	1.50	1.23	16	0.09541	9.51	0.504
17	2.00	1.41	16	0.09559	9.53	0.504
18	3.00	1.73	16	0.09591	9.56	0.503
19	4.00	2.00	16	0.09637	9.61	0.503
20	5.00	2.24	16	0.09683	9.65	0.502
21	6.00	2.45	16	0.09706	9.68	0.501
22	7.00	2.65	16	0.09738	9.71	0.501
23	8.00	2.83	16	0.09761	9.73	0.501
24	9.00	3.00	16	0.09798	9.77	0.500
25	10.00	3.16	16	0.09853	9.82	0.499
26	12.00	3.46	16	0.09936	9.91	0.498
27	14.00	3.74	16	0.09959	9.93	0.497
28	16.00	4.00	16	0.09987	9.96	0.497
29	18.00	4.24	16	0.1	9.97	0.497
30	20.00	4.47	16	0.1002	9.99	0.496
31	22.00	4.69	16	0.1004	10.01	0.496
32	24.00	4.90	16	0.1008	10.05	0.495
33	26.00	5.10	16	0.1011	10.08	0.495
34	28.00	5.29	16	0.1015	10.12	0.494
35	30.00	5.48	16	0.1019	10.16	0.493
36	35.00	5.92	16	0.1029	10.26	0.492
37	40.00	6.32	16	0.1035	10.31	0.491
38	45.00	6.71	16	0.1038	10.35	0.490
39	50.00	7.07	16	0.1042	10.39	0.490
40	60.00	7.75	16	0.105	10.47	0.488
41	70.00	8.37	16	0.1061	10.58	0.487
42	80.00	8.94	16	0.107	10.67	0.485
43	90.00	9.49	16	0.1076	10.73	0.484
44	100.00	10.00	16	0.1082	10.79	0.483
45	110.00	10.49	16	0.1089	10.86	0.482
46	120.00	10.95	16	0.1096	10.92	0.481
47	130.00	11.40	16	0.1098	10.95	0.480
48	140.00	11.83	16	0.1102	10.98	0.480
49	150.00	12.25	16	0.1106	11.03	0.479
50	160.00	12.65	16	0.111	11.07	0.478
51	170.00	13.04	16	0.1114	11.10	0.478
52	180.00	13.42	16	0.1122	11.19	0.476
53	190.00	13.78	16	0.1129	11.25	0.475
54	200.00	14.14	16	0.1133	11.30	0.474
55	210.00	14.49	16	0.1136	11.32	0.474
56	220.00	14.83	16	0.1138	11.34	0.474
57	230.00	15.17	16	0.1139	11.35	0.474
58	240.00	15.49	16	0.1145	11.41	0.473
59	250.00	15.81	16	0.1147	11.44	0.472
60	260.00	16.12	16	0.1151	11.47	0.472
61	270.00	16.43	16	0.1155	11.52	0.471
62	280.00	16.73	16	0.1158	11.54	0.470
63	290.00	17.03	16	0.116	11.56	0.470
64	300.00	17.32	16	0.1162	11.58	0.470
65	310.00	17.61	16	0.1166	11.62	0.469
66	320.00	17.89	16	0.1168	11.65	0.469
67	330.00	18.17	16	0.117	11.67	0.468
68	340.00	18.44	16	0.1174	11.71	0.468
69	350.00	18.71	16	0.1177	11.74	0.467
70	360.00	18.97	16	0.1179	11.75	0.467
71	370.00	19.24	16	0.1182	11.78	0.466
72	380.00	19.49	16	0.1185	11.82	0.466
73	390.00	19.75	16	0.1186	11.82	0.466
74	400.00	20.00	16	0.1187	11.84	0.466
75	410.00	20.25	16	0.1187	11.84	0.466
76	416.27	20.40	16	0.1188	11.85	0.465

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 1
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 4/1/19
Sample Type: REMOLD

Project No.: COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: Borrow, B-101, 102, 104, &105
Remarks:

Constant Load Step: 8 of 13
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	16	0.1373	13.69	0.435
2	0.01	0.09	13.5	0.1373	13.69	0.435
3	0.02	0.13	7.71	0.1334	13.30	0.441
4	0.03	0.16	7.97	0.1322	13.18	0.443
5	0.04	0.19	8.06	0.132	13.16	0.444
6	0.05	0.23	8.01	0.1319	13.15	0.444
7	0.07	0.27	8.01	0.1318	13.14	0.444
8	0.08	0.29	8.01	0.1318	13.14	0.444
9	0.12	0.34	8.01	0.1316	13.12	0.444
10	0.17	0.41	8	0.1315	13.12	0.444
11	0.25	0.50	8	0.1313	13.09	0.445
12	0.33	0.58	8	0.1311	13.07	0.445
13	0.50	0.71	8	0.131	13.06	0.445
14	0.75	0.87	8	0.1308	13.04	0.446
15	1.00	1.00	8	0.1306	13.02	0.446
16	1.50	1.23	8	0.1303	12.99	0.446
17	2.00	1.42	8	0.1301	12.97	0.447
18	3.00	1.73	8	0.1299	12.95	0.447
19	4.00	2.00	8	0.1298	12.94	0.447
20	5.00	2.24	8	0.1298	12.94	0.447
21	6.00	2.45	8	0.1298	12.94	0.447
22	7.00	2.65	8	0.1297	12.93	0.447
23	8.00	2.83	8	0.1297	12.93	0.447
24	9.00	3.00	8	0.1297	12.93	0.447
25	10.00	3.16	8	0.1296	12.92	0.447
26	12.00	3.46	8	0.1296	12.92	0.447
27	14.00	3.74	8	0.1296	12.92	0.448
28	16.00	4.00	8	0.1295	12.91	0.448
29	18.00	4.24	8	0.1295	12.91	0.448
30	20.00	4.47	8	0.1295	12.91	0.448
31	22.00	4.69	8	0.1295	12.91	0.448
32	24.00	4.90	8	0.1294	12.90	0.448
33	26.00	5.10	8	0.1294	12.90	0.448
34	28.00	5.29	8	0.1294	12.90	0.448
35	30.00	5.48	8	0.1294	12.90	0.448
36	35.00	5.92	8	0.1294	12.90	0.448
37	40.00	6.32	8	0.1293	12.90	0.448
38	45.00	6.71	8	0.1293	12.89	0.448
39	50.00	7.07	8	0.1293	12.89	0.448
40	60.00	7.75	8	0.1293	12.89	0.448
41	70.00	8.37	8	0.1293	12.89	0.448
42	80.00	8.94	8	0.1292	12.89	0.448
43	90.00	9.49	8	0.1292	12.89	0.448
44	100.00	10.00	8	0.1292	12.88	0.448
45	110.00	10.49	8	0.1292	12.88	0.448
46	120.00	10.95	8	0.1292	12.88	0.448
47	127.35	11.29	8	0.1292	12.88	0.448

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 1
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 4/1/19
Sample Type: REMOLD

Project No.: COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: Borrow, B-101, 102, 104, &105
Remarks:

Constant Load Step: 9 of 13
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.1292	12.88	0.448
2	0.01	0.09	5.69	0.1292	12.88	0.448
3	0.02	0.13	3.96	0.1272	12.68	0.451
4	0.03	0.16	4.04	0.1269	12.65	0.452
5	0.04	0.19	4.02	0.1268	12.64	0.452
6	0.05	0.23	4.01	0.1267	12.63	0.452
7	0.07	0.27	4.01	0.1266	12.62	0.453
8	0.08	0.29	4	0.1265	12.62	0.453
9	0.12	0.35	4	0.1264	12.61	0.453
10	0.17	0.41	4.01	0.1264	12.60	0.453
11	0.25	0.50	4	0.1264	12.60	0.453
12	0.33	0.58	4	0.1263	12.59	0.453
13	0.50	0.71	4	0.1262	12.58	0.453
14	0.75	0.87	4	0.1261	12.57	0.453
15	1.00	1.00	4	0.1261	12.57	0.453
16	1.50	1.23	4	0.126	12.56	0.454
17	2.00	1.42	4	0.1259	12.55	0.454
18	3.00	1.73	4	0.1258	12.54	0.454
19	4.00	2.00	4	0.1256	12.52	0.454
20	5.00	2.24	4	0.1255	12.51	0.454
21	6.00	2.45	4	0.1254	12.50	0.454
22	7.00	2.65	4	0.1253	12.49	0.455
23	8.00	2.83	4	0.1252	12.49	0.455
24	9.00	3.00	4	0.1252	12.48	0.455
25	10.00	3.16	4	0.1251	12.47	0.455
26	12.00	3.46	4	0.125	12.46	0.455
27	14.00	3.74	4	0.1249	12.46	0.455
28	16.00	4.00	4	0.1248	12.44	0.455
29	18.00	4.24	4	0.1247	12.43	0.456
30	20.00	4.47	4	0.1246	12.42	0.456
31	22.00	4.69	4	0.1246	12.42	0.456
32	24.00	4.90	4	0.1245	12.41	0.456
33	26.00	5.10	4	0.1245	12.41	0.456
34	28.00	5.29	4	0.1244	12.40	0.456
35	30.00	5.48	4	0.1243	12.39	0.456
36	35.00	5.92	4	0.1242	12.39	0.456
37	40.00	6.32	4	0.1241	12.37	0.457
38	45.00	6.71	4	0.1239	12.35	0.457
39	50.00	7.07	4	0.1238	12.35	0.457
40	60.00	7.75	4	0.1235	12.32	0.458
41	70.00	8.37	4	0.1233	12.29	0.458
42	80.00	8.94	4	0.1232	12.29	0.458
43	90.00	9.49	4	0.1231	12.27	0.458
44	100.00	10.00	4	0.123	12.26	0.458
45	110.00	10.49	4	0.1229	12.25	0.459
46	120.00	10.95	4	0.1229	12.26	0.459
47	130.00	11.40	4	0.1229	12.25	0.459
48	140.00	11.83	4	0.1228	12.24	0.459
49	150.00	12.25	4	0.1228	12.24	0.459
50	160.00	12.65	4	0.1227	12.24	0.459
51	170.00	13.04	4	0.1227	12.23	0.459
52	180.00	13.42	4	0.1226	12.23	0.459
53	190.00	13.78	4	0.1225	12.22	0.459
54	200.00	14.14	4	0.1225	12.21	0.459
55	210.00	14.49	4	0.1224	12.21	0.459
56	220.00	14.83	4	0.1224	12.20	0.459
57	228.97	15.13	4	0.1224	12.20	0.460

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 1
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 4/1/19
Sample Type: REMOLD

Project No.: COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: Borrow, B-101, 102, 104, &105
Remarks:

Constant Load Step: 10 of 13
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.1224	12.20	0.460
2	0.01	0.09	3.33	0.1224	12.20	0.460
3	0.02	0.13	1.87	0.1208	12.04	0.462
4	0.03	0.16	2.04	0.1212	12.08	0.462
5	0.04	0.19	2.01	0.121	12.06	0.462
6	0.05	0.23	2	0.1207	12.04	0.462
7	0.07	0.27	2.01	0.1207	12.04	0.462
8	0.08	0.29	2	0.1207	12.03	0.462
9	0.12	0.34	2	0.1206	12.03	0.462
10	0.17	0.41	2	0.1206	12.02	0.462
11	0.25	0.50	2	0.1206	12.02	0.463
12	0.33	0.58	2	0.1205	12.01	0.463
13	0.50	0.71	2	0.1204	12.00	0.463
14	0.75	0.87	2	0.1203	12.00	0.463
15	1.00	1.00	2	0.1203	11.99	0.463
16	1.50	1.23	2	0.1201	11.98	0.463
17	2.00	1.41	2	0.1201	11.97	0.463
18	3.00	1.73	2	0.1199	11.96	0.464
19	4.00	2.00	2	0.1198	11.94	0.464
20	5.00	2.24	2	0.1196	11.93	0.464
21	6.00	2.45	2	0.1195	11.91	0.464
22	7.00	2.65	2	0.1194	11.91	0.464
23	8.00	2.83	2	0.1193	11.90	0.465
24	9.00	3.00	2	0.1193	11.90	0.465
25	10.00	3.16	2	0.1192	11.89	0.465
26	12.00	3.46	2	0.1191	11.87	0.465
27	14.00	3.74	2	0.1189	11.86	0.465
28	16.00	4.00	2	0.1189	11.85	0.465
29	18.00	4.24	2	0.1189	11.85	0.465
30	20.00	4.47	2	0.1188	11.85	0.465
31	22.00	4.69	2	0.1188	11.85	0.465
32	24.00	4.90	2	0.1188	11.84	0.465
33	26.00	5.10	2	0.1187	11.84	0.466
34	28.00	5.29	2	0.1186	11.83	0.466
35	30.00	5.48	2	0.1186	11.82	0.466
36	35.00	5.92	2	0.1185	11.82	0.466
37	40.00	6.32	2	0.1184	11.81	0.466
38	45.00	6.71	2	0.1184	11.80	0.466
39	50.00	7.07	2	0.1183	11.80	0.466
40	60.00	7.75	2	0.1181	11.78	0.467
41	70.00	8.37	2	0.1179	11.76	0.467
42	80.00	8.94	2	0.1178	11.75	0.467
43	90.00	9.49	2	0.1177	11.74	0.467
44	100.00	10.00	2	0.1173	11.69	0.468
45	110.00	10.49	2	0.117	11.67	0.468
46	120.00	10.95	2	0.1167	11.63	0.469
47	125.47	11.20	2	0.1165	11.62	0.469

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 1
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 4/1/19
Sample Type: REMOLD

Project No.: COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: Borrow, B-101, 102, 104, &105
Remarks:

Constant Load Step: 11 of 13
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	0.1165	11.62	0.469
2	0.01	0.09	1.69	0.1165	11.62	0.469
3	0.02	0.13	0.984	0.1155	11.52	0.471
4	0.03	0.16	1	0.1155	11.52	0.471
5	0.04	0.19	1.02	0.1155	11.51	0.471
6	0.05	0.23	1	0.1155	11.51	0.471
7	0.07	0.27	1	0.1154	11.51	0.471
8	0.08	0.29	0.999	0.1154	11.51	0.471
9	0.12	0.34	1	0.1154	11.51	0.471
10	0.17	0.41	0.999	0.1154	11.50	0.471
11	0.25	0.50	1	0.1153	11.50	0.471
12	0.34	0.58	1	0.1153	11.50	0.471
13	0.50	0.71	1	0.1153	11.50	0.471
14	0.75	0.87	0.998	0.1152	11.48	0.471
15	1.00	1.00	0.999	0.1152	11.48	0.471
16	1.50	1.23	0.999	0.1151	11.47	0.472
17	2.00	1.41	0.999	0.115	11.47	0.472
18	3.00	1.73	1	0.1149	11.46	0.472
19	4.00	2.00	1	0.1148	11.44	0.472
20	5.00	2.24	1	0.1147	11.43	0.472
21	6.00	2.45	1	0.1146	11.43	0.472
22	7.00	2.65	1	0.1146	11.42	0.472
23	8.00	2.83	0.999	0.1145	11.42	0.472
24	9.00	3.00	1	0.1145	11.42	0.472
25	10.00	3.16	0.999	0.1144	11.41	0.473
26	12.00	3.46	0.999	0.1144	11.41	0.473
27	14.00	3.74	1	0.1144	11.41	0.473
28	16.00	4.00	0.999	0.1143	11.40	0.473
29	18.00	4.24	0.999	0.1143	11.40	0.473
30	20.00	4.47	0.999	0.1142	11.39	0.473
31	22.00	4.69	0.999	0.1142	11.38	0.473
32	24.00	4.90	0.998	0.1141	11.38	0.473
33	26.00	5.10	0.999	0.114	11.37	0.473
34	28.00	5.29	0.999	0.114	11.37	0.473
35	30.00	5.48	0.998	0.114	11.36	0.473
36	35.00	5.92	1	0.1138	11.35	0.474
37	40.00	6.32	0.998	0.1137	11.34	0.474
38	45.00	6.71	1	0.1136	11.33	0.474
39	50.00	7.07	1	0.1135	11.31	0.474
40	60.00	7.75	0.998	0.1129	11.26	0.475
41	70.00	8.37	0.999	0.1124	11.21	0.476
42	80.00	8.94	1	0.1121	11.18	0.476
43	90.00	9.49	1	0.112	11.17	0.477
44	100.00	10.00	0.998	0.1117	11.14	0.477
45	110.00	10.49	0.999	0.1115	11.12	0.478
46	120.00	10.95	0.998	0.1113	11.09	0.478
47	130.00	11.40	0.999	0.111	11.07	0.478
48	140.00	11.83	1	0.1108	11.05	0.479
49	150.00	12.25	0.999	0.1106	11.03	0.479
50	160.00	12.65	0.998	0.1106	11.02	0.479
51	170.00	13.04	0.999	0.1105	11.02	0.479
52	180.00	13.42	0.999	0.1103	11.00	0.479
53	190.00	13.78	1	0.11	10.97	0.480
54	200.00	14.14	1	0.1098	10.95	0.480
55	210.00	14.49	0.999	0.1097	10.93	0.481
56	220.00	14.83	0.999	0.1095	10.92	0.481
57	230.00	15.17	1	0.1095	10.91	0.481
58	240.00	15.49	0.999	0.1093	10.90	0.481
59	250.00	15.81	0.999	0.1092	10.89	0.481
60	260.00	16.12	0.999	0.1091	10.88	0.481
61	265.70	16.30	0.999	0.1091	10.87	0.482

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 1
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 4/1/19
Sample Type: REMOLD

Project No.: COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: Borrow, B-101, 102, 104, &105
Remarks:

Constant Load Step: 12 of 13
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.1091	10.87	0.482
2	0.01	0.09	0.835	0.1091	10.87	0.482
3	0.02	0.13	0.519	0.1082	10.79	0.483
4	0.03	0.16	0.506	0.1081	10.78	0.483
5	0.04	0.19	0.504	0.1081	10.77	0.483
6	0.05	0.23	0.504	0.1081	10.77	0.483
7	0.07	0.26	0.503	0.1081	10.77	0.483
8	0.08	0.29	0.501	0.1081	10.77	0.483
9	0.12	0.34	0.501	0.1081	10.77	0.483
10	0.17	0.41	0.502	0.108	10.77	0.483
11	0.25	0.50	0.501	0.108	10.77	0.483
12	0.34	0.58	0.5	0.108	10.77	0.483
13	0.50	0.71	0.5	0.108	10.77	0.483
14	0.75	0.87	0.5	0.108	10.76	0.483
15	1.00	1.00	0.5	0.1079	10.76	0.483
16	1.50	1.23	0.5	0.1079	10.75	0.484
17	2.00	1.42	0.501	0.1079	10.75	0.484
18	3.00	1.73	0.5	0.1078	10.75	0.484
19	4.00	2.00	0.499	0.1077	10.74	0.484
20	5.00	2.24	0.499	0.1076	10.73	0.484
21	6.00	2.45	0.5	0.1075	10.72	0.484
22	7.00	2.65	0.5	0.1075	10.71	0.484
23	8.00	2.83	0.5	0.1074	10.70	0.484
24	9.00	3.00	0.5	0.1073	10.70	0.484
25	10.00	3.16	0.5	0.1073	10.69	0.485
26	12.00	3.46	0.5	0.1072	10.69	0.485
27	14.00	3.74	0.5	0.1071	10.68	0.485
28	16.00	4.00	0.5	0.107	10.67	0.485
29	18.00	4.24	0.5	0.1069	10.66	0.485
30	20.00	4.47	0.5	0.1069	10.66	0.485
31	22.00	4.69	0.5	0.1068	10.65	0.485
32	24.00	4.90	0.5	0.1068	10.64	0.485
33	26.00	5.10	0.5	0.1067	10.64	0.485
34	28.00	5.29	0.499	0.1067	10.64	0.486
35	30.00	5.48	0.5	0.1066	10.63	0.486
36	35.00	5.92	0.501	0.1064	10.61	0.486
37	40.00	6.32	0.5	0.1063	10.59	0.486
38	45.00	6.71	0.501	0.106	10.57	0.487
39	50.00	7.07	0.5	0.1058	10.55	0.487
40	60.00	7.75	0.5	0.1055	10.52	0.487
41	70.00	8.37	0.5	0.1052	10.49	0.488
42	80.00	8.94	0.5	0.105	10.47	0.488
43	90.00	9.49	0.501	0.1048	10.45	0.489
44	100.00	10.00	0.5	0.1046	10.43	0.489
45	110.00	10.49	0.5	0.1045	10.42	0.489
46	120.00	10.95	0.5	0.1044	10.41	0.489
47	130.00	11.40	0.501	0.1043	10.40	0.489
48	140.00	11.83	0.5	0.1041	10.38	0.490
49	150.00	12.25	0.5	0.104	10.36	0.490
50	160.00	12.65	0.5	0.1036	10.33	0.491
51	170.00	13.04	0.501	0.1034	10.31	0.491
52	180.00	13.42	0.5	0.1032	10.29	0.491
53	190.00	13.78	0.5	0.1029	10.26	0.492
54	200.00	14.14	0.499	0.1025	10.22	0.492
55	210.00	14.49	0.5	0.1025	10.22	0.492
56	220.00	14.83	0.5	0.1023	10.20	0.493
57	230.00	15.17	0.5	0.1022	10.19	0.493
58	240.00	15.49	0.5	0.102	10.17	0.493
59	250.00	15.81	0.5	0.1018	10.15	0.494
60	260.00	16.12	0.5	0.1018	10.14	0.494
61	270.00	16.43	0.497	0.1016	10.13	0.494
62	280.00	16.73	0.5	0.1015	10.12	0.494
63	290.00	17.03	0.5	0.1014	10.11	0.494
64	300.00	17.32	0.499	0.1013	10.10	0.494
65	310.00	17.61	0.5	0.1013	10.10	0.494
66	320.00	17.89	0.501	0.1012	10.09	0.495
67	330.00	18.17	0.499	0.1011	10.08	0.495
68	340.00	18.44	0.501	0.101	10.07	0.495
69	350.00	18.71	0.5	0.1008	10.05	0.495
70	360.00	18.97	0.5	0.1007	10.04	0.495
71	370.00	19.24	0.499	0.1005	10.02	0.496
72	380.00	19.49	0.5	0.1002	9.99	0.496
73	390.00	19.75	0.5	0.09991	9.96	0.497
74	400.00	20.00	0.501	0.09977	9.95	0.497
75	410.00	20.25	0.5	0.09964	9.93	0.497
76	420.00	20.49	0.5	0.09945	9.92	0.497
77	430.00	20.74	0.499	0.09941	9.91	0.498
78	440.00	20.98	0.5	0.09936	9.91	0.498
79	450.00	21.21	0.499	0.09922	9.89	0.498
80	460.00	21.45	0.499	0.09908	9.88	0.498
81	470.00	21.68	0.5	0.09895	9.87	0.498

82	480.00	21.91	0.5	0.09885	9.86	0.498
83	490.00	22.14	0.502	0.09867	9.84	0.499
84	500.00	22.36	0.5	0.09853	9.82	0.499
85	510.00	22.58	0.5	0.09844	9.81	0.499
86	520.00	22.80	0.5	0.09835	9.81	0.499
87	530.00	23.02	0.5	0.09826	9.80	0.499
88	540.00	23.24	0.5	0.09803	9.77	0.500
89	550.00	23.45	0.5	0.09798	9.77	0.500
90	560.00	23.66	0.5	0.09789	9.76	0.500
91	570.00	23.87	0.501	0.0978	9.75	0.500
92	580.00	24.08	0.501	0.09766	9.74	0.500
93	590.00	24.29	0.5	0.09752	9.72	0.501
94	600.00	24.49	0.5	0.09743	9.71	0.501
95	610.00	24.70	0.5	0.09738	9.71	0.501
96	620.00	24.90	0.5	0.09729	9.70	0.501
97	630.00	25.10	0.5	0.0972	9.69	0.501
98	640.00	25.30	0.5	0.09711	9.68	0.501
99	650.00	25.50	0.501	0.09702	9.67	0.502
100	660.00	25.69	0.5	0.09697	9.67	0.502
101	670.00	25.88	0.5	0.09692	9.66	0.502
102	680.00	26.08	0.5	0.09683	9.65	0.502
103	690.00	26.27	0.5	0.09679	9.65	0.502
104	700.00	26.46	0.5	0.09674	9.65	0.502
105	710.00	26.65	0.5	0.09665	9.64	0.502
106	720.00	26.83	0.5	0.0966	9.63	0.502
107	730.00	27.02	0.501	0.09651	9.62	0.502
108	740.00	27.20	0.5	0.09642	9.61	0.503
109	750.00	27.39	0.5	0.09637	9.61	0.503
110	760.00	27.57	0.5	0.09628	9.60	0.503
111	770.00	27.75	0.5	0.09619	9.59	0.503
112	780.00	27.93	0.5	0.09614	9.59	0.503
113	790.00	28.11	0.5	0.09614	9.59	0.503
114	800.00	28.28	0.499	0.0961	9.58	0.503
115	810.00	28.46	0.5	0.0961	9.58	0.503
116	820.00	28.64	0.5	0.096	9.57	0.503
117	830.00	28.81	0.5	0.09596	9.57	0.503
118	840.00	28.98	0.5	0.09591	9.56	0.503
119	850.00	29.15	0.5	0.09587	9.56	0.503
120	860.00	29.33	0.5	0.09577	9.55	0.504
121	870.00	29.50	0.499	0.09568	9.54	0.504
122	880.00	29.66	0.5	0.09554	9.53	0.504
123	890.00	29.83	0.5	0.0955	9.52	0.504
124	900.00	30.00	0.499	0.09541	9.51	0.504
125	910.00	30.17	0.5	0.09531	9.50	0.504
126	920.00	30.33	0.501	0.09527	9.50	0.504
127	930.00	30.50	0.5	0.09522	9.49	0.504
128	940.00	30.66	0.499	0.09518	9.49	0.505
129	950.00	30.82	0.499	0.09513	9.48	0.505
130	960.00	30.98	0.5	0.09504	9.48	0.505
131	970.00	31.14	0.5	0.09499	9.47	0.505
132	980.00	31.30	0.5	0.0949	9.46	0.505
133	990.00	31.46	0.5	0.09481	9.45	0.505
134	1000.00	31.62	0.5	0.09476	9.45	0.505
135	1010.00	31.78	0.5	0.09467	9.44	0.505
136	1020.00	31.94	0.5	0.09462	9.43	0.505
137	1030.00	32.09	0.5	0.09458	9.43	0.506
138	1040.00	32.25	0.5	0.09453	9.43	0.506
139	1050.00	32.40	0.5	0.09449	9.42	0.506
140	1060.00	32.56	0.499	0.09444	9.42	0.506
141	1070.00	32.71	0.5	0.09439	9.41	0.506
142	1080.00	32.86	0.5	0.09435	9.41	0.506
143	1090.00	33.02	0.5	0.09435	9.41	0.506
144	1100.00	33.17	0.5	0.09426	9.40	0.506
145	1110.00	33.32	0.5	0.09426	9.40	0.506
146	1120.00	33.47	0.5	0.09421	9.39	0.506
147	1130.00	33.62	0.5	0.09421	9.39	0.506
148	1140.00	33.76	0.5	0.09412	9.38	0.506
149	1150.00	33.91	0.5	0.09403	9.37	0.506
150	1160.00	34.06	0.5	0.09398	9.37	0.507
151	1170.00	34.21	0.5	0.09389	9.36	0.507
152	1180.00	34.35	0.5	0.0938	9.35	0.507
153	1190.00	34.50	0.5	0.0938	9.35	0.507
154	1200.00	34.64	0.5	0.09375	9.35	0.507
155	1210.00	34.79	0.499	0.09371	9.34	0.507
156	1220.00	34.93	0.5	0.09361	9.33	0.507
157	1230.00	35.07	0.5	0.09357	9.33	0.507
158	1240.00	35.21	0.5	0.09334	9.31	0.508
159	1250.00	35.36	0.5	0.09348	9.32	0.507
160	1260.00	35.50	0.5	0.09338	9.31	0.508
161	1270.00	35.64	0.501	0.0932	9.29	0.508
162	1280.00	35.78	0.5	0.09315	9.29	0.508
163	1290.00	35.92	0.501	0.09315	9.29	0.508
164	1300.00	36.06	0.5	0.09311	9.28	0.508
165	1310.00	36.19	0.501	0.09297	9.27	0.508
166	1320.00	36.33	0.501	0.09302	9.27	0.508
167	1330.00	36.47	0.5	0.09297	9.27	0.508
168	1340.00	36.61	0.5	0.09292	9.26	0.508
169	1350.00	36.74	0.5	0.09292	9.26	0.508
170	1360.00	36.88	0.499	0.09292	9.26	0.508
171	1370.00	37.01	0.501	0.09283	9.26	0.508
172	1380.00	37.15	0.5	0.09283	9.26	0.508
173	1390.00	37.28	0.499	0.09283	9.26	0.508
174	1400.00	37.42	0.5	0.09279	9.25	0.509
175	1410.00	37.55	0.499	0.09274	9.25	0.509
176	1420.00	37.68	0.499	0.09269	9.24	0.509
177	1430.00	37.82	0.501	0.09265	9.24	0.509
178	1440.00	37.95	0.501	0.09265	9.24	0.509
179	1440.01	37.95	0.5	0.09265	9.24	0.509

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 1
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 4/1/19
Sample Type: REMOLD

Project No.: COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

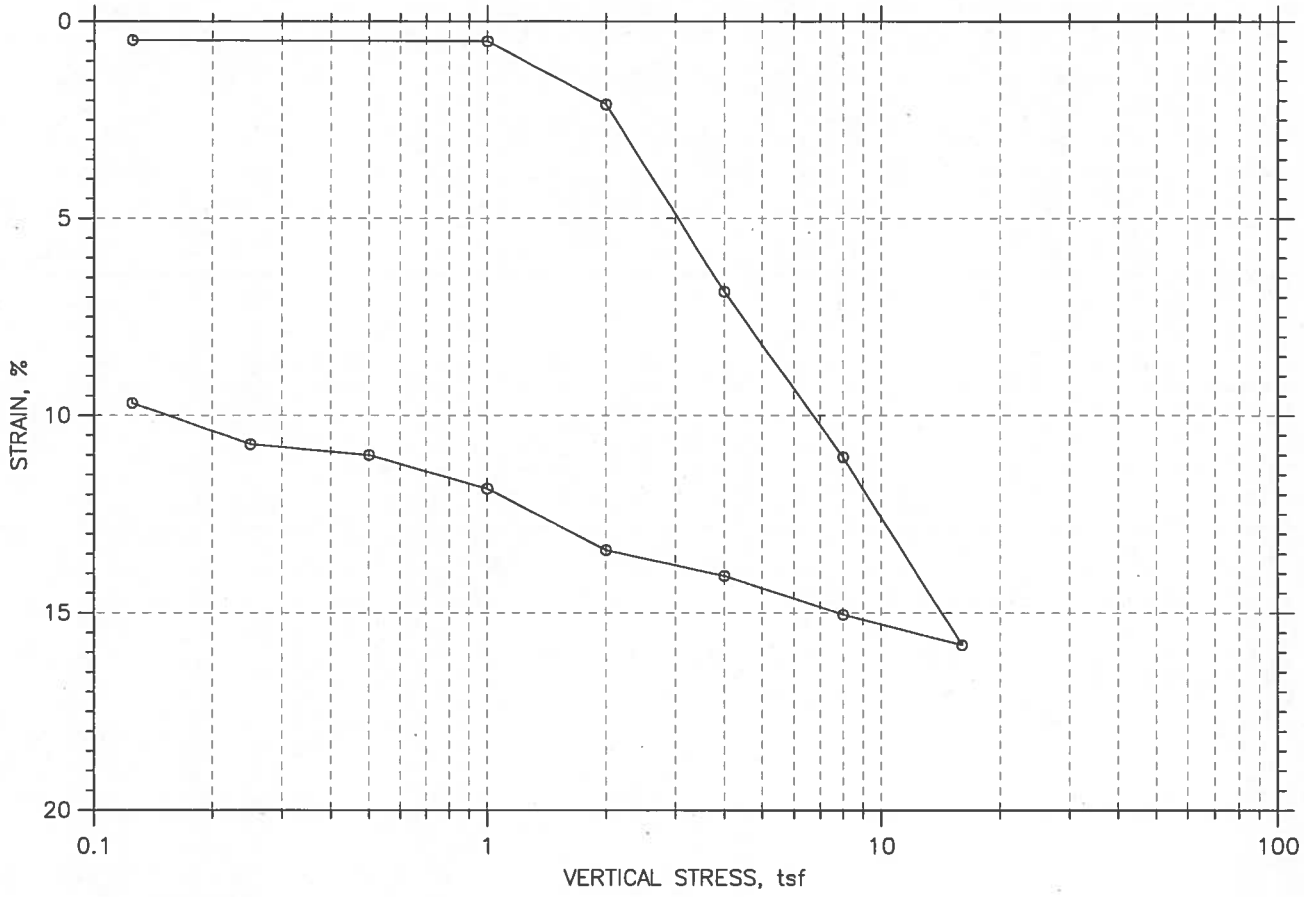
Soil Description: Borrow, B-101, 102, 104, &105
Remarks:

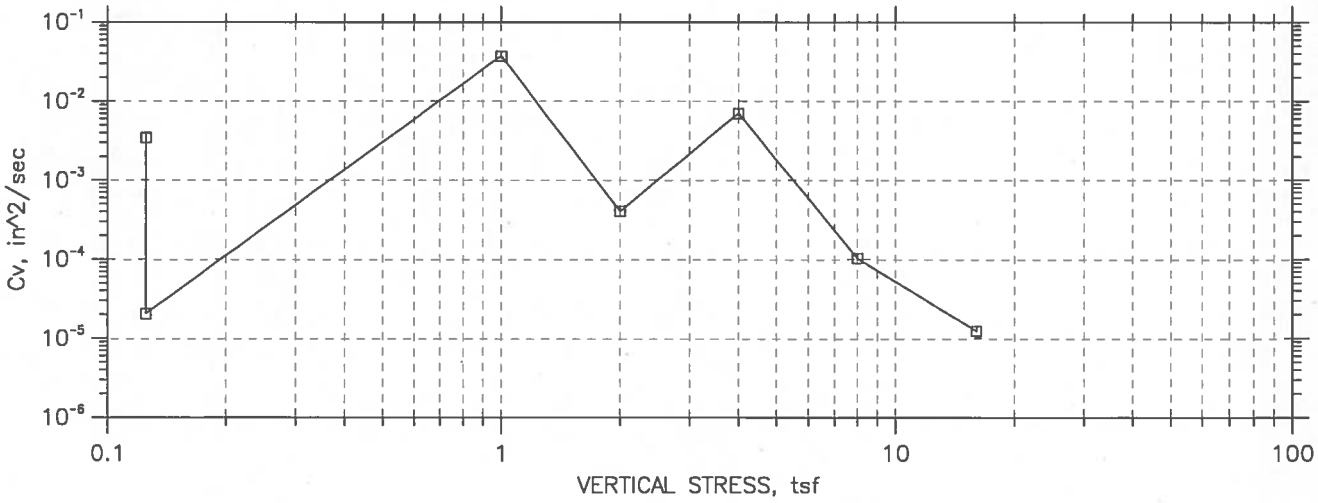
Constant Load Step: 13 of 13
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.501	0.09265	9.24	0.509
2	0.01	0.09	0.4	0.09265	9.24	0.509
3	0.02	0.13	0.272	0.09223	9.20	0.509
4	0.03	0.16	0.26	0.09205	9.18	0.510
5	0.03	0.19	0.255	0.092	9.17	0.510
6	0.05	0.23	0.252	0.09196	9.17	0.510
7	0.07	0.26	0.251	0.09196	9.17	0.510
8	0.09	0.30	0.251	0.09196	9.17	0.510
9	0.12	0.34	0.251	0.09196	9.17	0.510
10	0.17	0.41	0.25	0.09196	9.17	0.510
11	0.25	0.50	0.251	0.09196	9.17	0.510
12	0.33	0.58	0.251	0.09191	9.16	0.510
13	0.50	0.71	0.251	0.09191	9.16	0.510
14	0.75	0.87	0.251	0.09191	9.16	0.510
15	1.00	1.00	0.25	0.09191	9.16	0.510
16	1.50	1.23	0.25	0.09187	9.16	0.510
17	2.00	1.42	0.25	0.09182	9.15	0.510
18	3.00	1.73	0.25	0.09177	9.15	0.510
19	4.00	2.00	0.25	0.09173	9.15	0.510
20	5.00	2.24	0.251	0.09168	9.14	0.510
21	6.00	2.45	0.251	0.09164	9.14	0.510
22	7.00	2.65	0.25	0.09159	9.13	0.511
23	8.00	2.83	0.25	0.09154	9.13	0.511
24	9.00	3.00	0.25	0.0915	9.12	0.511
25	10.00	3.16	0.25	0.09145	9.12	0.511
26	12.00	3.46	0.25	0.09145	9.12	0.511
27	14.00	3.74	0.25	0.09145	9.12	0.511
28	16.00	4.00	0.25	0.09145	9.12	0.511
29	18.00	4.24	0.25	0.09141	9.11	0.511
30	20.00	4.47	0.251	0.09141	9.11	0.511
31	22.00	4.69	0.249	0.09141	9.11	0.511
32	24.00	4.90	0.249	0.09141	9.11	0.511
33	26.00	5.10	0.251	0.09136	9.11	0.511
34	28.00	5.29	0.251	0.09136	9.11	0.511
35	30.00	5.48	0.25	0.09136	9.11	0.511
36	35.00	5.92	0.25	0.09136	9.11	0.511
37	40.00	6.32	0.25	0.09136	9.11	0.511
38	45.00	6.71	0.249	0.09131	9.10	0.511
39	50.00	7.07	0.25	0.09131	9.10	0.511
40	60.00	7.75	0.25	0.09131	9.10	0.511

CONSOLIDATION TEST DATA

SUMMARY REPORT



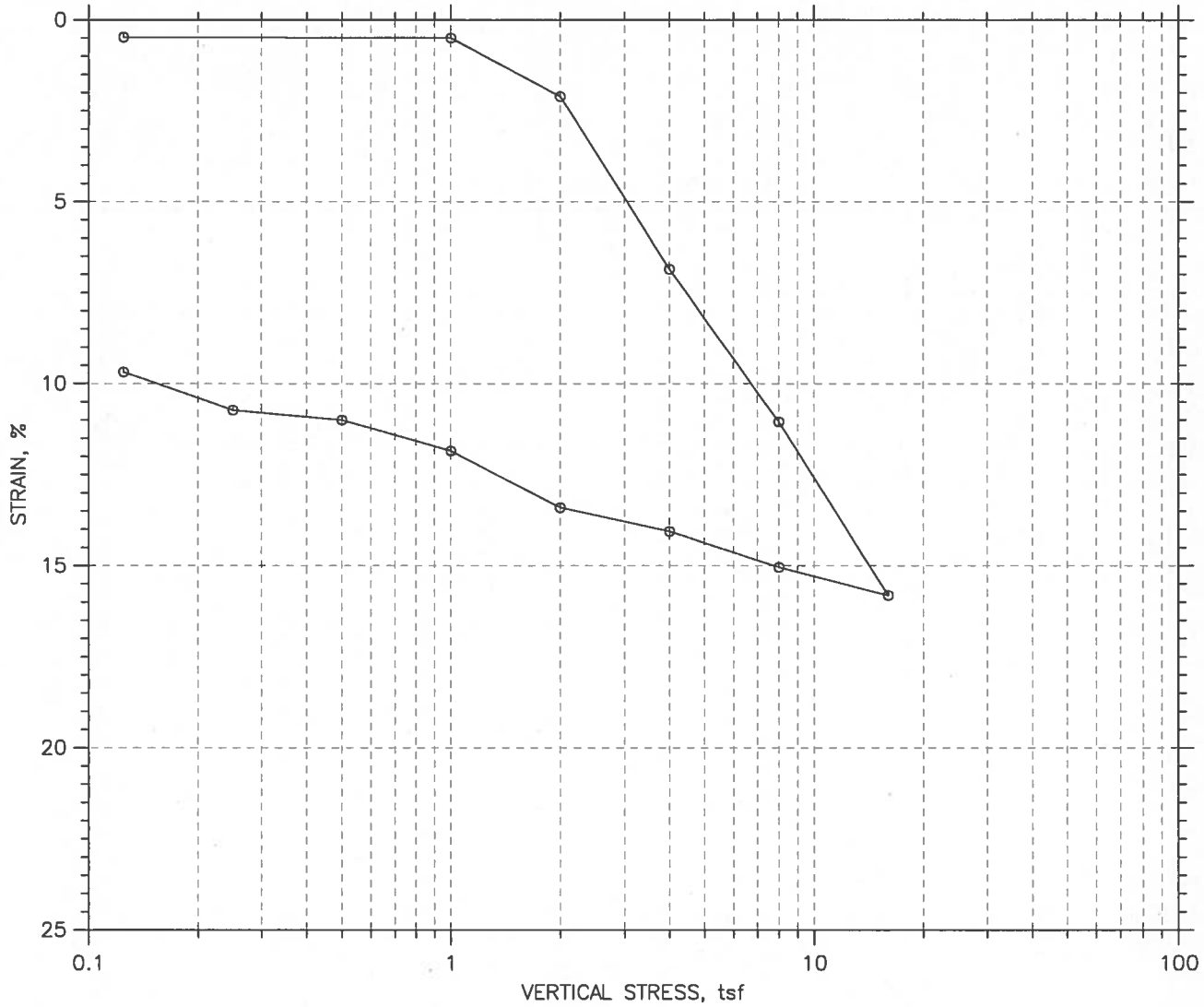


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: COMP 3
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: COMP 3	Test Date: 4/9/19	Test No.: 1
	Depth: 0-3'	Sample Type: REMOLD	Elevation: N/A
	Description: B-107, 108, 109, & 110		
	Remarks:		

Tue, 16-APR-2019 13:46:35

CONSOLIDATION TEST DATA

SUMMARY REPORT



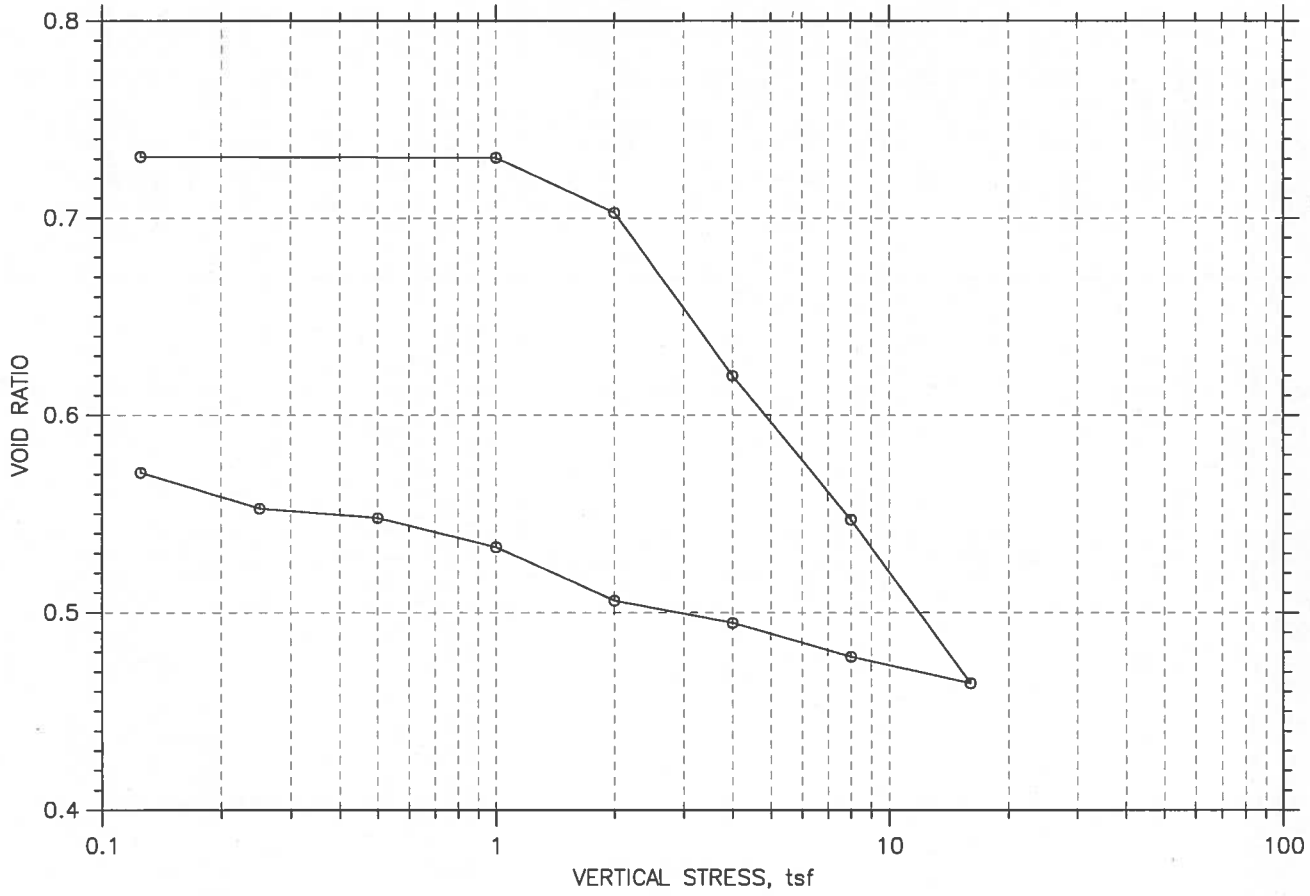
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	19.86	21.60
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	96.91	107.1
Compression Index: 3.81959e-313				Saturation, %	72.53	101.54
Diameter: 2.5 in		Height: 1.001 in		Void Ratio	0.74	0.57
LL: ---	PL: ---	PI: ---	GS: 2.70			

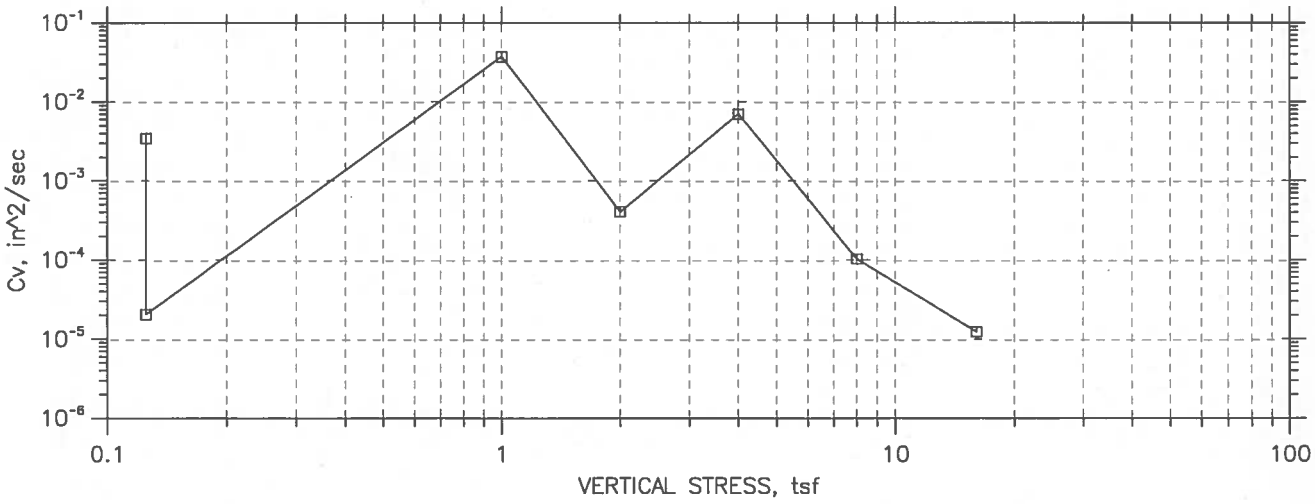
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: COMP 3
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: COMP 3	Test Date: 4/9/19	Test No.: 1
	Depth: 0-3'	Sample Type: REMOLD	Elevation: N/A
	Description: B-107, 108, 109, & 110		
	Remarks:		

Tue, 16-APR-2019 13:46:35

CONSOLIDATION TEST DATA

SUMMARY REPORT



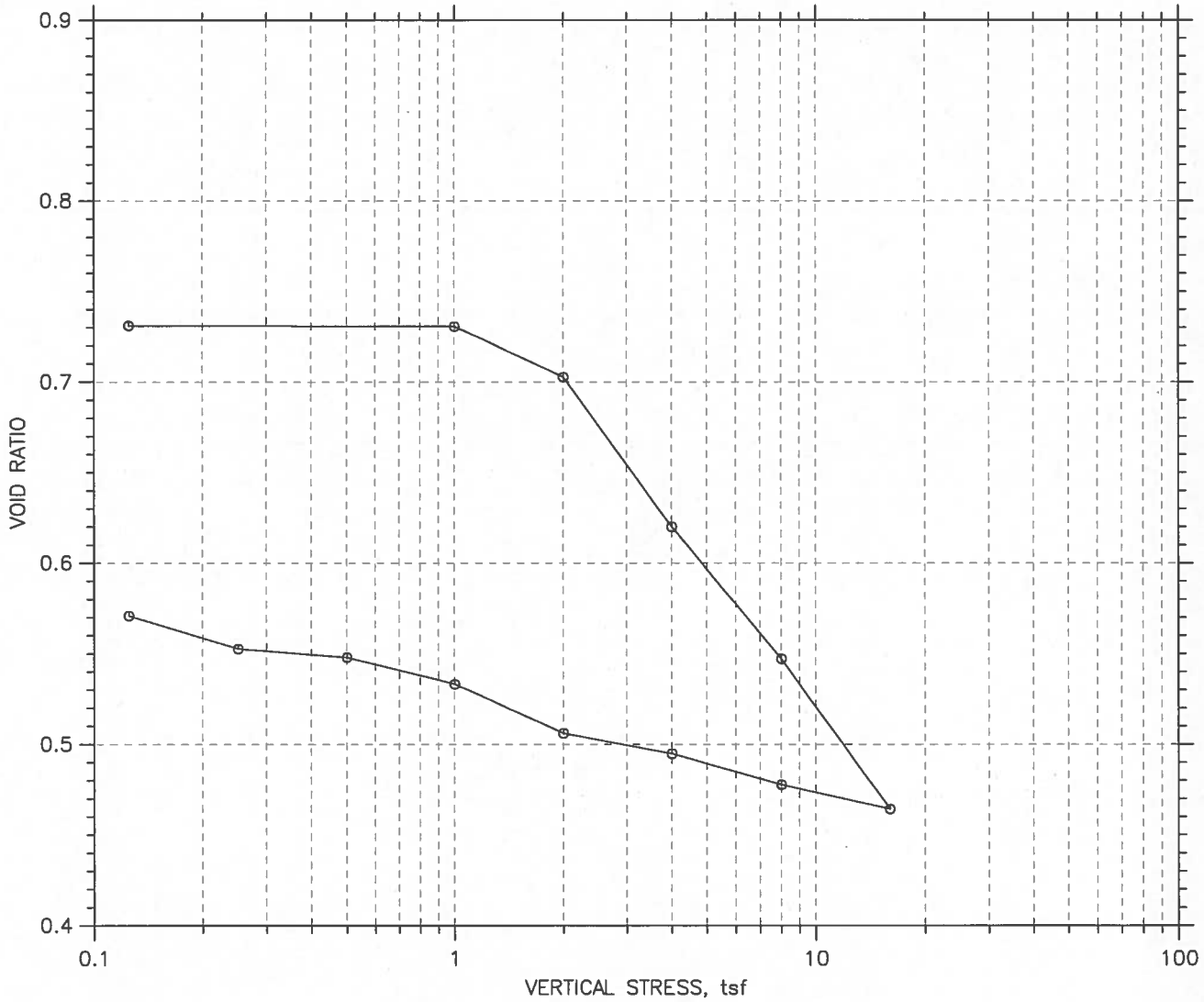


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: COMP 3
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: COMP 3	Test Date: 4/9/19	Test No.: 1
	Depth: 0-3'	Sample Type: REMOLD	Elevation: N/A
	Description: B-107, 108, 109, & 110		
	Remarks:		

Tue, 16-APR-2019 13:46:51

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	19.86	21.60
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	96.91	107.1
Compression Index: 3.81959e-313				Saturation, %	72.53	101.54
Diameter: 2.5 in		Height: 1.001 in		Void Ratio	0.74	0.57
LL: ---	PL: ---	PI: ---	GS: 2.70			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: COMP 3
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: COMP 3	Test Date: 4/9/19	Test No.: 1
	Depth: 0-3'	Sample Type: REMOLD	Elevation: N/A
	Description: B-107, 108, 109, & 110		
	Remarks:		

Tue, 16-APR-2019 13:46:51

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Measured Specific Gravity: 2.70
Initial Void Ratio: 0.74
Final Void Ratio: 0.57

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	149.82	149.82	152	222.46
Wt. Container + Dry Soil, gm	124.95	125	125	195.46
Wt. Container, gm	0	0	0	70.48
Wt. Dry Soil, gm	124.95	125	125	124.98
Water Content, %	19.90	19.86	21.60	21.60
Void Ratio	---	0.74	0.57	---
Degree of Saturation, %	---	72.53	101.54	---
Dry Unit Weight, pcf	---	96.911	107.06	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.004736	0.731	0.47	1.0	3.71e-003	3.78e-002	2.63e-003
2	0.125	0.004828	0.731	0.48	40.0	8.77e-005	1.#Je+000	1.#Je+000
3	1	0.005058	0.730	0.51	0.0	0.00e+000	2.62e-004	0.00e+000
4	2	0.02115	0.703	2.11	8.7	3.97e-004	1.61e-002	1.20e-004
5	4	0.06869	0.620	6.86	0.7	4.48e-003	2.37e-002	1.99e-003
6	8	0.1107	0.547	11.06	27.7	1.06e-004	1.05e-002	2.08e-005
7	16	0.1584	0.464	15.82	76.1	3.49e-005	5.95e-003	3.89e-006
8	8	0.1506	0.478	15.05	0.2	1.66e-002	9.65e-004	2.99e-004
9	4	0.1408	0.495	14.06	167.8	1.54e-005	2.46e-003	7.09e-007
10	2	0.1343	0.506	13.41	149.5	1.76e-005	3.26e-003	1.08e-006
11	1	0.1187	0.533	11.86	1379.2	1.96e-006	1.56e-002	5.71e-007
12	0.5	0.1102	0.548	11.01	617.5	4.50e-006	1.70e-002	1.43e-006
13	0.25	0.1075	0.553	10.73	98.5	2.85e-005	1.08e-002	5.80e-006
14	0.125	0.09697	0.571	9.69	619.1	4.61e-006	8.38e-002	7.23e-006

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.004736	0.731	0.47	0.0	0.00e+000	3.78e-002	0.00e+000
2	0.125	0.004828	0.731	0.48	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	1	0.005058	0.730	0.51	0.0	3.70e-002	2.62e-004	1.82e-004
4	2	0.02115	0.703	2.11	0.0	0.00e+000	1.61e-002	0.00e+000
5	4	0.06869	0.620	6.86	0.1	9.44e-003	2.37e-002	4.20e-003
6	8	0.1107	0.547	11.06	0.0	0.00e+000	1.05e-002	0.00e+000
7	16	0.1584	0.464	15.82	0.0	0.00e+000	5.95e-003	0.00e+000
8	8	0.1506	0.478	15.05	0.0	3.24e-002	9.65e-004	5.86e-004
9	4	0.1408	0.495	14.06	0.0	0.00e+000	2.46e-003	0.00e+000
10	2	0.1343	0.506	13.41	0.0	0.00e+000	3.26e-003	0.00e+000
11	1	0.1187	0.533	11.86	0.0	0.00e+000	1.56e-002	0.00e+000
12	0.5	0.1102	0.548	11.01	0.0	0.00e+000	1.70e-002	0.00e+000
13	0.25	0.1075	0.553	10.73	22.0	2.97e-005	1.08e-002	6.03e-006
14	0.125	0.09697	0.571	9.69	0.0	0.00e+000	8.38e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 1 of 14
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.0056	-0.001335	-0.13	0.742
2	0.01	0.09	0.0112	-0.001335	-0.13	0.742
3	0.02	0.13	0.0336	-0.001013	-0.10	0.741
4	0.03	0.16	0.0504	-0.0007376	-0.07	0.741
5	0.04	0.19	0.0616	-0.0002778	-0.03	0.740
6	0.05	0.23	0.0796	0.0003659	0.04	0.739
7	0.07	0.27	0.0908	0.0009177	0.09	0.738
8	0.08	0.29	0.0975	0.001056	0.11	0.737
9	0.12	0.34	0.109	0.001377	0.14	0.737
10	0.17	0.41	0.115	0.001469	0.15	0.737
11	0.25	0.50	0.12	0.001561	0.16	0.737
12	0.34	0.58	0.12	0.001653	0.17	0.736
13	0.50	0.71	0.123	0.001791	0.18	0.736
14	0.75	0.87	0.123	0.001929	0.19	0.736
15	1.00	1.00	0.123	0.001975	0.20	0.736
16	1.50	1.23	0.123	0.002159	0.22	0.736
17	2.00	1.41	0.123	0.002343	0.23	0.735
18	3.00	1.73	0.123	0.002527	0.25	0.735
19	4.00	2.00	0.124	0.002711	0.27	0.735
20	5.00	2.24	0.123	0.002803	0.28	0.734
21	6.00	2.45	0.124	0.002849	0.28	0.734
22	7.00	2.65	0.124	0.002941	0.29	0.734
23	8.00	2.83	0.124	0.003033	0.30	0.734
24	9.00	3.00	0.124	0.003079	0.31	0.734
25	10.00	3.16	0.124	0.003125	0.31	0.734
26	12.00	3.46	0.124	0.003355	0.34	0.733
27	14.00	3.74	0.124	0.003355	0.34	0.733
28	15.03	3.88	0.124	0.003401	0.34	0.733

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Volume Step: 2 of 14
Seating Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.124	0.003447	0.34	0.733
2	0.01	0.09	0.124	0.003447	0.34	0.733
3	0.02	0.13	0.124	0.003401	0.34	0.733
4	0.03	0.16	0.124	0.003401	0.34	0.733
5	0.03	0.19	0.124	0.003447	0.34	0.733
6	0.05	0.23	0.124	0.003447	0.34	0.733
7	0.07	0.27	0.124	0.003401	0.34	0.733
8	0.09	0.30	0.128	0.003401	0.34	0.733
9	0.12	0.34	0.139	0.003401	0.34	0.733
10	0.17	0.41	0.15	0.003401	0.34	0.733
11	0.25	0.50	0.169	0.003401	0.34	0.733
12	0.33	0.58	0.187	0.003401	0.34	0.733
13	0.50	0.71	0.222	0.003401	0.34	0.733
14	0.75	0.87	0.269	0.003355	0.34	0.733
15	1.00	1.00	0.306	0.003401	0.34	0.733
16	1.50	1.23	0.357	0.003401	0.34	0.733
17	2.00	1.41	0.401	0.003401	0.34	0.733
18	3.00	1.73	0.465	0.003401	0.34	0.733
19	4.00	2.00	0.512	0.003355	0.34	0.733
20	5.00	2.24	0.55	0.003401	0.34	0.733
21	6.00	2.45	0.582	0.003401	0.34	0.733
22	7.00	2.65	0.611	0.003401	0.34	0.733
23	8.00	2.83	0.631	0.003401	0.34	0.733
24	9.00	3.00	0.652	0.003401	0.34	0.733
25	10.00	3.16	0.662	0.003401	0.34	0.733
26	12.00	3.46	0.688	0.003401	0.34	0.733
27	14.00	3.74	0.713	0.003401	0.34	0.733
28	16.00	4.00	0.729	0.003401	0.34	0.733
29	18.00	4.24	0.742	0.003401	0.34	0.733
30	20.00	4.47	0.751	0.003401	0.34	0.733
31	22.00	4.69	0.763	0.003401	0.34	0.733
32	24.00	4.90	0.775	0.003401	0.34	0.733
33	26.00	5.10	0.783	0.003401	0.34	0.733
34	28.00	5.29	0.794	0.003401	0.34	0.733
35	30.00	5.48	0.798	0.003401	0.34	0.733
36	35.00	5.92	0.817	0.003447	0.34	0.733
37	40.00	6.32	0.835	0.003493	0.35	0.733
38	45.00	6.71	0.848	0.003538	0.35	0.733
39	50.00	7.07	0.854	0.003493	0.35	0.733
40	60.00	7.75	0.859	0.003493	0.35	0.733
41	70.00	8.37	0.866	0.003493	0.35	0.733
42	80.00	8.94	0.873	0.003493	0.35	0.733
43	90.00	9.49	0.877	0.003493	0.35	0.733
44	100.00	10.00	0.892	0.003493	0.35	0.733
45	110.00	10.49	0.886	0.003493	0.35	0.733
46	120.00	10.95	0.887	0.003493	0.35	0.733
47	130.00	11.40	0.891	0.003493	0.35	0.733
48	140.00	11.83	0.888	0.003493	0.35	0.733
49	150.00	12.25	0.891	0.003493	0.35	0.733
50	160.00	12.65	0.899	0.003493	0.35	0.733
51	170.00	13.04	0.894	0.003493	0.35	0.733
52	180.00	13.42	0.895	0.003493	0.35	0.733
53	190.00	13.78	0.9	0.003493	0.35	0.733
54	200.00	14.14	0.895	0.003493	0.35	0.733
55	210.00	14.49	0.895	0.003493	0.35	0.733
56	220.00	14.83	0.899	0.003493	0.35	0.733
57	230.00	15.17	0.895	0.003493	0.35	0.733
58	240.00	15.49	0.893	0.003493	0.35	0.733
59	250.00	15.81	0.897	0.003493	0.35	0.733
60	260.00	16.12	0.897	0.003493	0.35	0.733
61	270.00	16.43	0.892	0.003493	0.35	0.733
62	280.00	16.73	0.895	0.003493	0.35	0.733
63	290.00	17.03	0.893	0.003493	0.35	0.733
64	300.00	17.32	0.888	0.003493	0.35	0.733
65	310.00	17.61	0.893	0.003493	0.35	0.733
66	320.00	17.89	0.887	0.003493	0.35	0.733
67	330.00	18.17	0.89	0.003447	0.34	0.733
68	340.00	18.44	0.892	0.003493	0.35	0.733
69	350.00	18.71	0.888	0.003493	0.35	0.733
70	360.00	18.97	0.893	0.003493	0.35	0.733
71	370.00	19.24	0.884	0.003493	0.35	0.733
72	380.00	19.49	0.886	0.003493	0.35	0.733
73	390.00	19.75	0.885	0.003493	0.35	0.733
74	400.00	20.00	0.882	0.003493	0.35	0.733
75	410.00	20.25	0.883	0.003493	0.35	0.733
76	420.00	20.49	0.877	0.003493	0.35	0.733
77	430.00	20.74	0.883	0.003493	0.35	0.733
78	440.00	20.98	0.881	0.003493	0.35	0.733
79	450.00	21.21	0.887	0.003538	0.35	0.733
80	460.00	21.45	0.89	0.003493	0.35	0.733
81	470.00	21.68	0.886	0.003493	0.35	0.733

82	480.00	21.91	0.888	0.003493	0.35	0.733
83	490.00	22.14	0.883	0.003493	0.35	0.733
84	500.00	22.36	0.882	0.003493	0.35	0.733
85	510.00	22.58	0.881	0.003493	0.35	0.733
86	520.00	22.80	0.878	0.003493	0.35	0.733
87	530.00	23.02	0.878	0.003493	0.35	0.733
88	540.00	23.24	0.876	0.003493	0.35	0.733
89	550.00	23.45	0.88	0.003493	0.35	0.733
90	560.00	23.66	0.876	0.003493	0.35	0.733
91	570.00	23.87	0.892	0.003493	0.35	0.733
92	580.00	24.08	0.894	0.003493	0.35	0.733
93	590.00	24.29	0.89	0.003493	0.35	0.733
94	600.00	24.49	0.895	0.003493	0.35	0.733
95	610.00	24.70	0.893	0.003447	0.34	0.733
96	620.00	24.90	0.895	0.003493	0.35	0.733
97	630.00	25.10	0.902	0.003493	0.35	0.733
98	640.00	25.30	0.901	0.003493	0.35	0.733
99	650.00	25.50	0.903	0.003493	0.35	0.733
100	660.00	25.69	0.902	0.003493	0.35	0.733
101	670.00	25.88	0.904	0.003493	0.35	0.733
102	680.00	26.08	0.902	0.003493	0.35	0.733
103	690.00	26.27	0.906	0.003538	0.35	0.733
104	700.00	26.46	0.903	0.003493	0.35	0.733
105	710.00	26.65	0.906	0.003493	0.35	0.733
106	720.00	26.83	0.908	0.003493	0.35	0.733
107	730.00	27.02	0.906	0.003493	0.35	0.733
108	740.00	27.20	0.904	0.003493	0.35	0.733
109	750.00	27.39	0.91	0.003493	0.35	0.733
110	760.00	27.57	0.908	0.003493	0.35	0.733
111	770.00	27.75	0.914	0.003447	0.34	0.733
112	780.00	27.93	0.915	0.003493	0.35	0.733
113	790.00	28.11	0.913	0.003493	0.35	0.733
114	800.00	28.28	0.91	0.003493	0.35	0.733
115	810.00	28.46	0.911	0.003493	0.35	0.733
116	820.00	28.64	0.913	0.003493	0.35	0.733
117	830.00	28.81	0.913	0.003493	0.35	0.733
118	840.00	28.98	0.914	0.003493	0.35	0.733
119	850.00	29.15	0.913	0.003493	0.35	0.733
120	860.00	29.33	0.913	0.003493	0.35	0.733
121	870.00	29.50	0.918	0.003493	0.35	0.733
122	880.00	29.66	0.92	0.003493	0.35	0.733
123	890.00	29.83	0.919	0.003493	0.35	0.733
124	900.00	30.00	0.92	0.003493	0.35	0.733
125	910.00	30.17	0.915	0.003493	0.35	0.733
126	920.00	30.33	0.919	0.003493	0.35	0.733
127	930.00	30.50	0.918	0.003493	0.35	0.733
128	940.00	30.66	0.918	0.003493	0.35	0.733
129	950.00	30.82	0.917	0.003493	0.35	0.733
130	960.00	30.98	0.917	0.003493	0.35	0.733
131	970.00	31.14	0.918	0.003493	0.35	0.733
132	980.00	31.30	0.918	0.003493	0.35	0.733
133	990.00	31.46	0.922	0.003493	0.35	0.733
134	1000.00	31.62	0.925	0.003493	0.35	0.733
135	1010.00	31.78	0.925	0.003493	0.35	0.733
136	1020.00	31.94	0.925	0.003493	0.35	0.733
137	1030.00	32.09	0.925	0.003493	0.35	0.733
138	1040.00	32.25	0.924	0.003493	0.35	0.733
139	1050.00	32.40	0.924	0.003493	0.35	0.733
140	1060.00	32.56	0.922	0.003493	0.35	0.733
141	1070.00	32.71	0.925	0.003493	0.35	0.733
142	1080.00	32.86	0.923	0.003493	0.35	0.733
143	1090.00	33.02	0.923	0.003493	0.35	0.733
144	1100.00	33.17	0.923	0.003493	0.35	0.733
145	1110.00	33.32	0.928	0.003493	0.35	0.733
146	1120.00	33.47	0.925	0.003493	0.35	0.733
147	1130.00	33.62	0.921	0.003493	0.35	0.733
148	1140.00	33.76	0.924	0.003493	0.35	0.733
149	1150.00	33.91	0.923	0.003493	0.35	0.733
150	1160.00	34.06	0.922	0.003493	0.35	0.733
151	1170.00	34.21	0.928	0.003493	0.35	0.733
152	1180.00	34.35	0.925	0.003493	0.35	0.733
153	1190.00	34.50	0.924	0.003493	0.35	0.733
154	1200.00	34.64	0.928	0.003493	0.35	0.733
155	1210.00	34.79	0.924	0.003493	0.35	0.733
156	1220.00	34.93	0.932	0.003493	0.35	0.733
157	1230.00	35.07	0.932	0.003493	0.35	0.733
158	1240.00	35.21	0.939	0.003493	0.35	0.733
159	1250.00	35.36	0.93	0.003493	0.35	0.733
160	1260.00	35.50	0.924	0.003493	0.35	0.733
161	1270.00	35.64	0.917	0.003493	0.35	0.733
162	1280.00	35.78	0.92	0.003493	0.35	0.733
163	1290.00	35.92	0.919	0.003493	0.35	0.733
164	1300.00	36.06	0.912	0.003493	0.35	0.733
165	1310.00	36.19	0.909	0.003493	0.35	0.733
166	1320.00	36.33	0.906	0.003493	0.35	0.733
167	1330.00	36.47	0.909	0.003493	0.35	0.733
168	1340.00	36.61	0.908	0.003493	0.35	0.733
169	1349.42	36.73	0.906	0.003493	0.35	0.733

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 3 of 14
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.906	-0.002344	-0.23	0.743
2	0.01	0.09	0.906	-0.002344	-0.23	0.743
3	0.02	0.13	0.985	-0.002298	-0.23	0.743
4	0.03	0.16	0.997	-0.002206	-0.22	0.743
5	0.04	0.19	0.998	-0.002206	-0.22	0.743
6	0.05	0.23	0.998	-0.002206	-0.22	0.743
7	0.07	0.27	0.999	-0.002206	-0.22	0.743
8	0.08	0.29	0.999	-0.002206	-0.22	0.743
9	0.12	0.34	0.999	-0.002206	-0.22	0.743
10	0.17	0.41	0.999	-0.002206	-0.22	0.743
11	0.25	0.50	0.999	-0.002206	-0.22	0.743
12	0.34	0.58	0.999	-0.002206	-0.22	0.743
13	0.50	0.71	0.999	-0.002206	-0.22	0.743
14	0.75	0.87	0.999	-0.002206	-0.22	0.743
15	1.00	1.00	0.999	-0.002206	-0.22	0.743
16	1.50	1.23	0.999	-0.00216	-0.22	0.743
17	2.00	1.42	0.999	-0.00216	-0.22	0.743
18	3.00	1.73	0.999	-0.00216	-0.22	0.743
19	4.00	2.00	0.999	-0.00216	-0.22	0.743
20	5.00	2.24	0.999	-0.00216	-0.22	0.743
21	6.00	2.45	0.999	-0.00216	-0.22	0.743
22	7.00	2.65	0.999	-0.00216	-0.22	0.743
23	8.00	2.83	0.999	-0.00216	-0.22	0.743
24	9.00	3.00	0.999	-0.00216	-0.22	0.743
25	10.00	3.16	0.999	-0.00216	-0.22	0.743
26	12.00	3.46	0.999	-0.00216	-0.22	0.743
27	14.00	3.74	0.998	-0.002114	-0.21	0.743
28	16.00	4.00	0.999	-0.002114	-0.21	0.743
29	18.00	4.24	0.999	-0.002114	-0.21	0.743
30	20.00	4.47	0.999	-0.002114	-0.21	0.743
31	22.00	4.69	0.999	-0.002114	-0.21	0.743
32	24.00	4.90	0.999	-0.002114	-0.21	0.743
33	26.00	5.10	0.999	-0.00216	-0.22	0.743
34	28.00	5.29	0.999	-0.002114	-0.21	0.743
35	30.00	5.48	0.999	-0.002114	-0.21	0.743
36	35.00	5.92	0.999	-0.002114	-0.21	0.743
37	40.00	6.32	0.999	-0.002114	-0.21	0.743
38	45.00	6.71	0.999	-0.002114	-0.21	0.743
39	50.00	7.07	0.999	-0.002068	-0.21	0.743
40	60.00	7.75	0.998	-0.002068	-0.21	0.743
41	70.00	8.37	0.999	-0.002068	-0.21	0.743
42	80.00	8.94	1	-0.002068	-0.21	0.743
43	90.00	9.49	0.999	-0.002022	-0.20	0.743
44	100.00	10.00	1	-0.002022	-0.20	0.743
45	110.00	10.49	0.999	-0.002068	-0.21	0.743
46	120.00	10.95	0.999	-0.002022	-0.20	0.743
47	130.00	11.40	0.999	-0.002022	-0.20	0.743
48	140.00	11.83	0.999	-0.002022	-0.20	0.743
49	150.00	12.25	0.999	-0.001976	-0.20	0.743
50	160.00	12.65	0.999	-0.001976	-0.20	0.743
51	170.00	13.04	0.999	-0.001976	-0.20	0.743
52	180.00	13.42	0.998	-0.001976	-0.20	0.743
53	190.00	13.78	0.999	-0.001976	-0.20	0.743
54	200.00	14.14	0.999	-0.001976	-0.20	0.743
55	210.00	14.49	0.999	-0.001976	-0.20	0.743
56	220.00	14.83	0.999	-0.001976	-0.20	0.743
57	230.00	15.17	0.999	-0.001976	-0.20	0.743
58	240.00	15.49	0.999	-0.001976	-0.20	0.743
59	250.00	15.81	1	-0.00193	-0.19	0.743
60	260.00	16.12	0.999	-0.001976	-0.20	0.743
61	270.00	16.43	0.999	-0.00193	-0.19	0.743
62	280.00	16.73	0.998	-0.00193	-0.19	0.743
63	290.00	17.03	0.999	-0.00193	-0.19	0.743
64	300.00	17.32	0.999	-0.00193	-0.19	0.743
65	310.00	17.61	0.999	-0.001884	-0.19	0.743
66	320.00	17.89	0.999	-0.001884	-0.19	0.743
67	330.00	18.17	0.999	-0.001884	-0.19	0.743
68	340.00	18.44	0.999	-0.001884	-0.19	0.743
69	350.00	18.71	0.998	-0.001884	-0.19	0.743
70	360.00	18.97	0.999	-0.001838	-0.18	0.742
71	370.00	19.24	0.999	-0.001838	-0.18	0.742
72	380.00	19.49	0.999	-0.001838	-0.18	0.742
73	390.00	19.75	0.999	-0.001792	-0.18	0.742
74	400.00	20.00	0.999	-0.001884	-0.19	0.743
75	410.00	20.25	0.999	-0.002114	-0.21	0.743
76	420.00	20.49	0.999	-0.00216	-0.22	0.743
77	430.00	20.74	0.999	-0.002252	-0.22	0.743
78	440.00	20.98	0.999	-0.002252	-0.22	0.743
79	450.00	21.21	0.999	-0.002252	-0.22	0.743
80	460.00	21.45	1	-0.002298	-0.23	0.743
81	470.00	21.68	0.999	-0.002252	-0.22	0.743

82	480.00	21.91	0.999	-0.002252	-0.22	0.743
83	490.00	22.14	0.999	-0.002252	-0.22	0.743
84	500.00	22.36	0.999	-0.002206	-0.22	0.743
85	510.00	22.58	0.999	-0.00216	-0.22	0.743
86	520.00	22.80	0.999	-0.00216	-0.22	0.743
87	530.00	23.02	0.999	-0.00216	-0.22	0.743
88	540.00	23.24	0.999	-0.002114	-0.21	0.743
89	550.00	23.45	0.999	-0.002114	-0.21	0.743
90	560.00	23.66	0.999	-0.002114	-0.21	0.743
91	570.00	23.87	0.999	-0.002114	-0.21	0.743
92	580.00	24.08	0.999	-0.002114	-0.21	0.743
93	584.20	24.17	0.999	-0.002114	-0.21	0.743

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 4 of 14
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	1	-0.004276	-0.43	0.747
2	0.01	0.09	1.2	-0.004276	-0.43	0.747
3	0.02	0.13	1.78	-0.003173	-0.32	0.745
4	0.03	0.16	1.87	-0.002575	-0.26	0.744
5	0.03	0.19	1.9	-0.001885	-0.19	0.743
6	0.05	0.23	1.93	-0.001517	-0.15	0.742
7	0.07	0.26	1.95	-0.001196	-0.12	0.741
8	0.09	0.29	1.96	-0.001104	-0.11	0.741
9	0.12	0.35	1.97	-0.0004599	-0.05	0.740
10	0.17	0.41	1.98	-7.766e-008	-0.00	0.739
11	0.25	0.50	1.98	0.0009655	0.10	0.738
12	0.34	0.58	1.99	0.001471	0.15	0.737
13	0.50	0.71	1.99	0.002161	0.22	0.736
14	0.75	0.87	1.99	0.002805	0.28	0.734
15	1.00	1.00	1.99	0.00331	0.33	0.734
16	1.50	1.22	2	0.004	0.40	0.732
17	2.00	1.42	2	0.004644	0.46	0.731
18	3.00	1.73	2	0.005701	0.57	0.729
19	4.00	2.00	2	0.006391	0.64	0.728
20	5.00	2.24	2	0.006667	0.67	0.728
21	6.00	2.45	2	0.006989	0.70	0.727
22	7.00	2.65	2	0.007357	0.73	0.727
23	8.00	2.83	2	0.007724	0.77	0.726
24	9.00	3.00	2	0.008322	0.83	0.725
25	10.00	3.16	2	0.00846	0.85	0.725
26	12.00	3.46	2	0.008552	0.85	0.724
27	14.00	3.74	2	0.008552	0.85	0.724
28	16.00	4.00	2	0.008644	0.86	0.724
29	18.00	4.24	2	0.008736	0.87	0.724
30	20.00	4.47	2	0.008828	0.88	0.724
31	22.00	4.69	2	0.00892	0.89	0.724
32	24.00	4.90	2	0.009058	0.90	0.724
33	26.00	5.10	2	0.009242	0.92	0.723
34	28.00	5.29	2	0.009426	0.94	0.723
35	30.00	5.48	2	0.009701	0.97	0.722
36	35.00	5.92	2	0.01007	1.01	0.722
37	40.00	6.32	2	0.01035	1.03	0.721
38	45.00	6.71	2	0.01067	1.07	0.721
39	50.00	7.07	2	0.01071	1.07	0.721
40	60.00	7.75	2	0.0108	1.08	0.721
41	70.00	8.37	2	0.01108	1.11	0.720
42	80.00	8.94	2	0.01136	1.13	0.720
43	90.00	9.49	2	0.01145	1.14	0.719
44	100.00	10.00	2	0.01154	1.15	0.719
45	110.00	10.49	2	0.01168	1.17	0.719
46	120.00	10.95	2	0.01182	1.18	0.719
47	120.05	10.96	2	0.01182	1.18	0.719

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 5 of 14
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	0.00924	0.92	0.723
2	0.01	0.09	2.47	0.00924	0.92	0.723
3	0.02	0.13	3.06	0.01205	1.20	0.718
4	0.03	0.16	3.18	0.01536	1.53	0.713
5	0.04	0.19	3.28	0.01784	1.78	0.708
6	0.05	0.23	3.44	0.02336	2.33	0.699
7	0.07	0.26	3.57	0.02667	2.66	0.693
8	0.09	0.30	3.69	0.03007	3.00	0.687
9	0.12	0.34	3.8	0.03333	3.33	0.681
10	0.17	0.41	3.89	0.03637	3.63	0.676
11	0.25	0.50	3.95	0.03922	3.92	0.671
12	0.33	0.58	3.97	0.04041	4.04	0.669
13	0.50	0.71	3.98	0.04198	4.19	0.666
14	0.75	0.87	3.99	0.04313	4.31	0.664
15	1.00	1.00	3.99	0.04368	4.36	0.663
16	1.50	1.23	4	0.04515	4.51	0.661
17	2.00	1.41	4	0.04575	4.57	0.660
18	3.00	1.73	4	0.04704	4.70	0.658
19	4.00	2.00	4	0.04763	4.76	0.657
20	5.00	2.24	4	0.04782	4.78	0.656
21	6.00	2.45	4	0.04809	4.80	0.656
22	7.00	2.65	4	0.04841	4.84	0.655
23	8.00	2.83	4	0.04878	4.87	0.655
24	9.00	3.00	4	0.04906	4.90	0.654
25	10.00	3.16	4	0.04924	4.92	0.654
26	12.00	3.46	4	0.04947	4.94	0.653
27	14.00	3.74	4	0.04979	4.97	0.653
28	16.00	4.00	4	0.05044	5.04	0.652
29	18.00	4.24	4	0.05085	5.08	0.651
30	20.00	4.47	4	0.05136	5.13	0.650
31	22.00	4.69	4	0.05163	5.16	0.650
32	24.00	4.90	4	0.05191	5.19	0.649
33	26.00	5.10	4	0.05218	5.21	0.649
34	28.00	5.29	4	0.05246	5.24	0.648
35	30.00	5.48	4	0.05274	5.27	0.648
36	35.00	5.92	4	0.05324	5.32	0.647
37	40.00	6.32	4	0.05347	5.34	0.646
38	45.00	6.71	4	0.05366	5.36	0.646
39	50.00	7.07	4	0.05398	5.39	0.645
40	60.00	7.75	4	0.05444	5.44	0.645
41	70.00	8.37	4	0.05481	5.48	0.644
42	80.00	8.94	4	0.05522	5.52	0.643
43	90.00	9.49	4	0.05568	5.56	0.643
44	100.00	10.00	4	0.05623	5.62	0.642
45	110.00	10.49	4	0.05664	5.66	0.641
46	120.00	10.95	4	0.05678	5.67	0.641
47	120.21	10.96	4	0.05678	5.67	0.641

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 6 of 14
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.05347	5.34	0.646
2	0.01	0.09	4.78	0.05347	5.34	0.646
3	0.02	0.13	6.64	0.05793	5.79	0.639
4	0.03	0.16	7.2	0.06327	6.32	0.629
5	0.03	0.19	7.55	0.06649	6.64	0.624
6	0.05	0.23	7.82	0.0692	6.91	0.619
7	0.07	0.27	7.9	0.07062	7.06	0.617
8	0.08	0.29	7.93	0.07113	7.11	0.616
9	0.12	0.34	7.96	0.07177	7.17	0.615
10	0.17	0.41	7.97	0.07228	7.22	0.614
11	0.25	0.50	7.98	0.07315	7.31	0.612
12	0.34	0.58	7.99	0.07361	7.35	0.611
13	0.50	0.71	8	0.07412	7.40	0.611
14	0.75	0.87	8	0.0749	7.48	0.609
15	1.00	1.00	8	0.07536	7.53	0.608
16	1.50	1.23	8	0.0761	7.60	0.607
17	2.00	1.41	8	0.07628	7.62	0.607
18	3.00	1.73	8	0.07692	7.68	0.606
19	4.00	2.00	8	0.07734	7.73	0.605
20	5.00	2.24	8	0.0777	7.76	0.604
21	6.00	2.45	8	0.07816	7.81	0.603
22	7.00	2.65	8	0.07876	7.87	0.602
23	8.00	2.83	8	0.07927	7.92	0.602
24	9.00	3.00	8	0.07968	7.96	0.601
25	10.00	3.16	8	0.07991	7.98	0.600
26	12.00	3.46	8	0.08033	8.02	0.600
27	14.00	3.74	8	0.08124	8.12	0.598
28	16.00	4.00	8	0.08147	8.14	0.598
29	18.00	4.24	8	0.0817	8.16	0.597
30	20.00	4.47	8	0.08175	8.17	0.597
31	22.00	4.69	8	0.08189	8.18	0.597
32	24.00	4.90	8	0.08212	8.20	0.597
33	26.00	5.10	8	0.08226	8.22	0.596
34	28.00	5.29	8	0.08281	8.27	0.595
35	30.00	5.48	8	0.08299	8.29	0.595
36	35.00	5.92	8	0.08368	8.36	0.594
37	40.00	6.32	8	0.08442	8.43	0.593
38	45.00	6.71	8	0.08492	8.48	0.592
39	50.00	7.07	8	0.08524	8.52	0.591
40	60.00	7.75	8	0.08635	8.63	0.589
41	70.00	8.37	8	0.0869	8.68	0.588
42	80.00	8.94	8	0.08754	8.75	0.587
43	90.00	9.49	8	0.08833	8.82	0.586
44	100.00	10.00	8	0.08883	8.87	0.585
45	110.00	10.49	8	0.08947	8.94	0.584
46	120.00	10.95	8	0.09012	9.00	0.583
47	130.00	11.40	8	0.09067	9.06	0.582
48	140.00	11.83	8	0.09154	9.15	0.580
49	150.00	12.25	8	0.09177	9.17	0.580
50	160.00	12.65	8	0.092	9.19	0.579
51	170.00	13.04	8	0.09246	9.24	0.579
52	180.00	13.42	8	0.09274	9.26	0.578
53	190.00	13.78	8	0.09315	9.31	0.577
54	200.00	14.14	8	0.09361	9.35	0.577
55	210.00	14.49	8	0.09416	9.41	0.576
56	220.00	14.83	8	0.09449	9.44	0.575
57	230.00	15.17	8	0.09476	9.47	0.575
58	240.00	15.49	8	0.0949	9.48	0.574
59	250.00	15.81	8	0.09513	9.50	0.574
60	260.00	16.12	8	0.09531	9.52	0.574
61	265.54	16.30	8	0.09545	9.54	0.573

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 7 of 14
Applied Stress: 16 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.09003	8.99	0.583
2	0.01	0.09	10.9	0.09003	8.99	0.583
3	0.02	0.13	15.6	0.09472	9.46	0.575
4	0.03	0.16	15.9	0.09922	9.91	0.567
5	0.03	0.19	15.9	0.09973	9.96	0.566
6	0.05	0.23	16	0.1003	10.02	0.565
7	0.07	0.27	16	0.1005	10.04	0.565
8	0.08	0.29	16	0.1006	10.05	0.564
9	0.12	0.34	16	0.1009	10.08	0.564
10	0.17	0.41	16	0.1012	10.11	0.563
11	0.25	0.50	16	0.1019	10.18	0.562
12	0.33	0.58	16	0.1026	10.25	0.561
13	0.50	0.71	16	0.1029	10.28	0.561
14	0.75	0.87	16	0.1031	10.30	0.560
15	1.00	1.00	16	0.1033	10.32	0.560
16	1.50	1.23	16	0.1035	10.34	0.559
17	2.00	1.41	16	0.1038	10.37	0.559
18	3.00	1.73	16	0.1044	10.43	0.558
19	4.00	2.00	16	0.1051	10.50	0.557
20	5.00	2.24	16	0.1056	10.55	0.556
21	6.00	2.45	16	0.1062	10.61	0.555
22	7.00	2.65	16	0.1065	10.64	0.554
23	8.00	2.83	16	0.1069	10.68	0.554
24	9.00	3.00	16	0.107	10.69	0.553
25	10.00	3.16	16	0.1072	10.71	0.553
26	12.00	3.46	16	0.1075	10.74	0.552
27	14.00	3.74	16	0.1078	10.77	0.552
28	16.00	4.00	16	0.1082	10.81	0.551
29	18.00	4.24	16	0.1086	10.84	0.551
30	20.00	4.47	16	0.1091	10.90	0.550
31	22.00	4.69	16	0.1094	10.93	0.549
32	24.00	4.90	16	0.1098	10.97	0.549
33	26.00	5.10	16	0.1101	11.00	0.548
34	28.00	5.29	16	0.1104	11.03	0.547
35	30.00	5.48	16	0.1108	11.07	0.547
36	35.00	5.92	16	0.1113	11.12	0.546
37	40.00	6.32	16	0.1118	11.17	0.545
38	45.00	6.71	16	0.1125	11.24	0.544
39	50.00	7.07	16	0.1131	11.30	0.543
40	50.00	7.07	16	0.1264	12.63	0.520
41	50.01	7.07	16	0.1264	12.63	0.520
42	50.02	7.07	16	0.1264	12.63	0.520
43	50.03	7.07	16	0.1264	12.63	0.520
44	50.04	7.07	16	0.1264	12.63	0.520
45	50.05	7.07	16	0.1264	12.63	0.520
46	50.07	7.08	16	0.1264	12.62	0.520
47	50.08	7.08	16	0.1264	12.63	0.520
48	50.12	7.08	16	0.1264	12.63	0.520
49	50.17	7.08	16	0.1264	12.63	0.520
50	50.25	7.09	16	0.1264	12.63	0.520
51	50.34	7.09	16	0.1264	12.63	0.520
52	50.50	7.11	16	0.1264	12.63	0.520
53	50.75	7.12	16	0.1264	12.63	0.520
54	51.01	7.14	16	0.1264	12.63	0.520
55	51.50	7.18	16	0.1264	12.63	0.520
56	52.00	7.21	16	0.1264	12.63	0.520
57	53.00	7.28	16	0.1264	12.63	0.520
58	54.00	7.35	16	0.1265	12.64	0.520
59	55.00	7.42	16	0.1265	12.64	0.519
60	56.00	7.48	16	0.1265	12.64	0.519
61	57.00	7.55	16	0.1266	12.65	0.519
62	58.00	7.62	16	0.1266	12.65	0.519
63	59.00	7.68	16	0.1266	12.65	0.519
64	60.01	7.75	16	0.1267	12.65	0.519
65	62.00	7.87	16	0.1268	12.66	0.519
66	64.00	8.00	16	0.1268	12.67	0.519
67	66.00	8.12	16	0.1269	12.68	0.519
68	68.00	8.25	16	0.127	12.69	0.519
69	70.00	8.37	16	0.1272	12.71	0.518
70	72.00	8.49	16	0.1273	12.71	0.518
71	74.00	8.60	16	0.1274	12.72	0.518
72	76.00	8.72	16	0.1275	12.73	0.518
73	78.00	8.83	16	0.1275	12.74	0.518
74	80.00	8.94	16	0.1277	12.76	0.517
75	85.00	9.22	16	0.1279	12.78	0.517
76	90.00	9.49	16	0.1283	12.82	0.516
77	95.00	9.75	16	0.1286	12.84	0.516
78	100.00	10.00	16	0.1289	12.88	0.515
79	110.01	10.49	16	0.1292	12.90	0.515
80	120.00	10.95	16	0.1294	12.93	0.514
81	130.00	11.40	16	0.1296	12.95	0.514

82	140.00	11.83	16	0.1298	12.97	0.514
83	150.00	12.25	16	0.1303	13.01	0.513
84	160.00	12.65	16	0.1305	13.04	0.512
85	170.00	13.04	16	0.1309	13.08	0.512
86	180.00	13.42	16	0.1312	13.10	0.511
87	190.00	13.78	16	0.1313	13.12	0.511
88	200.00	14.14	16	0.1315	13.14	0.511
89	210.00	14.49	16	0.1317	13.16	0.510
90	220.00	14.83	16	0.132	13.18	0.510
91	230.00	15.17	16	0.1321	13.20	0.510
92	240.00	15.49	16	0.1326	13.25	0.509
93	250.00	15.81	16	0.1328	13.27	0.508
94	260.00	16.12	16	0.1333	13.32	0.508
95	270.00	16.43	16	0.1334	13.33	0.508
96	280.00	16.73	16	0.1336	13.35	0.507
97	290.00	17.03	16	0.1338	13.37	0.507
98	300.00	17.32	16	0.134	13.38	0.506
99	310.00	17.61	16	0.1343	13.42	0.506
100	320.00	17.89	16	0.1345	13.44	0.506
101	330.00	18.17	16	0.1347	13.46	0.505
102	340.00	18.44	16	0.1349	13.48	0.505
103	350.00	18.71	16	0.1349	13.48	0.505
104	360.00	18.97	16	0.1351	13.50	0.504
105	370.00	19.24	16	0.1353	13.51	0.504
106	380.00	19.49	16	0.1355	13.54	0.504
107	390.00	19.75	16	0.1358	13.56	0.503
108	400.00	20.00	16	0.1357	13.56	0.503
109	410.00	20.25	16	0.1361	13.60	0.503
110	420.00	20.49	16	0.1364	13.62	0.502
111	430.00	20.74	16	0.1365	13.64	0.502
112	440.00	20.98	16	0.1366	13.65	0.502
113	450.00	21.21	16	0.1368	13.67	0.502
114	460.00	21.45	16	0.1369	13.68	0.501
115	470.00	21.68	16	0.137	13.69	0.501
116	480.00	21.91	16	0.1371	13.69	0.501
117	490.00	22.14	16	0.1372	13.70	0.501
118	500.00	22.36	16	0.1372	13.71	0.501
119	510.00	22.58	16	0.1373	13.72	0.501
120	520.00	22.80	16	0.1374	13.72	0.501
121	530.00	23.02	16	0.1375	13.73	0.500
122	540.00	23.24	16	0.1376	13.74	0.500
123	550.00	23.45	16	0.1377	13.76	0.500
124	551.77	23.49	16	0.1377	13.76	0.500

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 8 of 14
Applied Stress: 8 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	16	0.1562	15.61	0.468
2	0.01	0.09	13.5	0.1562	15.61	0.468
3	0.02	0.13	7.67	0.1528	15.26	0.474
4	0.03	0.16	7.96	0.1519	15.17	0.475
5	0.04	0.19	8.05	0.1515	15.13	0.476
6	0.05	0.23	8.01	0.1513	15.12	0.476
7	0.07	0.27	8.01	0.1512	15.10	0.477
8	0.08	0.29	8.01	0.1511	15.09	0.477
9	0.12	0.34	8	0.1509	15.08	0.477
10	0.17	0.41	8	0.1508	15.06	0.477
11	0.25	0.50	8.01	0.1506	15.05	0.478
12	0.34	0.58	8	0.1506	15.04	0.478
13	0.50	0.71	8	0.1505	15.03	0.478
14	0.75	0.87	8	0.1504	15.02	0.478
15	1.00	1.00	8	0.1503	15.02	0.478
16	1.50	1.23	8	0.1502	15.00	0.478
17	2.00	1.42	8	0.1501	15.00	0.478
18	3.00	1.73	8	0.15	14.98	0.479
19	4.00	2.00	8	0.1499	14.97	0.479
20	5.00	2.24	8	0.1498	14.96	0.479
21	6.00	2.45	8	0.1498	14.96	0.479
22	7.00	2.65	8	0.1498	14.96	0.479
23	8.00	2.83	8	0.1498	14.96	0.479
24	9.00	3.00	8	0.1498	14.96	0.479
25	10.00	3.16	8	0.1497	14.96	0.479
26	12.00	3.46	8	0.1497	14.95	0.479
27	14.00	3.74	8	0.1496	14.94	0.479
28	16.00	4.00	8	0.1495	14.94	0.479
29	18.00	4.24	8	0.1495	14.93	0.480
30	20.00	4.47	8	0.1494	14.93	0.480
31	22.00	4.69	8	0.1494	14.93	0.480
32	24.00	4.90	8	0.1493	14.92	0.480
33	26.00	5.10	8	0.1493	14.92	0.480
34	28.00	5.29	8	0.1493	14.91	0.480
35	30.00	5.48	8	0.1492	14.91	0.480
36	35.00	5.92	8	0.1491	14.90	0.480
37	40.00	6.32	8	0.1491	14.89	0.480
38	45.00	6.71	8	0.149	14.88	0.480
39	50.00	7.07	8	0.1489	14.88	0.481
40	60.00	7.75	8	0.1488	14.87	0.481
41	70.00	8.37	8	0.1488	14.86	0.481
42	80.00	8.94	8	0.1487	14.86	0.481
43	90.00	9.49	8	0.1486	14.85	0.481
44	100.00	10.00	8	0.1486	14.85	0.481
45	110.00	10.49	8	0.1485	14.84	0.481
46	120.00	10.95	8	0.1486	14.84	0.481
47	130.00	11.40	8	0.1485	14.84	0.481
48	131.74	11.48	8	0.1485	14.84	0.481

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 9 of 14
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	8	0.1485	14.84	0.481
2	0.01	0.09	5.66	0.1485	14.84	0.481
3	0.02	0.13	3.9	0.1461	14.60	0.485
4	0.03	0.16	4.05	0.1458	14.57	0.486
5	0.04	0.19	4.01	0.1456	14.54	0.486
6	0.05	0.23	4.01	0.1454	14.52	0.487
7	0.07	0.27	4	0.1454	14.52	0.487
8	0.08	0.29	4.01	0.1453	14.52	0.487
9	0.12	0.34	4.01	0.1453	14.51	0.487
10	0.17	0.41	4	0.1452	14.51	0.487
11	0.25	0.50	4	0.1452	14.51	0.487
12	0.33	0.58	4	0.1452	14.50	0.487
13	0.82	0.91	4	0.145	14.49	0.487
14	0.83	0.91	4	0.145	14.49	0.487
15	1.00	1.00	4	0.145	14.48	0.487
16	1.50	1.23	4	0.1449	14.48	0.487
17	2.00	1.42	4	0.1449	14.47	0.488
18	3.00	1.73	4	0.1448	14.46	0.488
19	4.00	2.00	4	0.1447	14.46	0.488
20	5.00	2.24	4	0.1446	14.45	0.488
21	6.00	2.45	4	0.1446	14.45	0.488
22	7.00	2.65	4	0.1445	14.44	0.488
23	8.00	2.83	4	0.1445	14.43	0.488
24	9.00	3.00	4	0.1445	14.43	0.488
25	10.00	3.16	4	0.1444	14.42	0.488
26	12.00	3.46	4	0.1444	14.42	0.488
27	14.00	3.74	4	0.1443	14.41	0.489
28	16.00	4.00	4	0.1442	14.40	0.489
29	18.00	4.24	4	0.1441	14.40	0.489
30	20.00	4.47	4	0.144	14.39	0.489
31	22.00	4.69	4	0.1439	14.37	0.489
32	24.00	4.90	4	0.1438	14.36	0.489
33	26.00	5.10	4	0.1437	14.35	0.490
34	28.00	5.29	4	0.1436	14.34	0.490
35	30.00	5.48	4	0.1435	14.34	0.490
36	35.00	5.92	4	0.1434	14.32	0.490
37	40.00	6.32	4	0.1432	14.31	0.490
38	45.00	6.71	4	0.1431	14.30	0.491
39	50.00	7.07	4	0.143	14.29	0.491
40	60.00	7.75	4	0.1428	14.27	0.491
41	70.00	8.37	4	0.1424	14.22	0.492
42	80.00	8.94	4	0.1419	14.18	0.493
43	90.00	9.49	4	0.1417	14.16	0.493
44	100.00	10.00	4	0.1414	14.13	0.494
45	110.00	10.49	4	0.1411	14.10	0.494
46	120.00	10.95	4	0.141	14.09	0.494
47	130.00	11.40	4	0.1409	14.07	0.495
48	140.00	11.83	4	0.1408	14.07	0.495
49	150.00	12.25	4	0.1408	14.07	0.495
50	160.00	12.65	4	0.1407	14.06	0.495
51	170.00	13.04	4	0.1407	14.06	0.495
52	180.00	13.42	4	0.1406	14.05	0.495
53	190.00	13.78	4	0.1406	14.05	0.495
54	200.00	14.14	4	0.1406	14.05	0.495
55	210.00	14.49	4	0.1406	14.04	0.495
56	220.00	14.83	4	0.1405	14.03	0.495
57	230.00	15.17	4	0.1403	14.02	0.495
58	240.00	15.49	4	0.1402	14.00	0.496
59	250.00	15.81	4	0.1401	13.99	0.496
60	260.00	16.12	4	0.14	13.99	0.496
61	270.00	16.43	4	0.1399	13.98	0.496
62	280.00	16.73	4	0.1399	13.97	0.496
63	290.00	17.03	4	0.1398	13.97	0.496
64	300.00	17.32	4	0.1398	13.96	0.496
65	310.00	17.61	4	0.1396	13.95	0.497
66	320.00	17.89	4	0.1395	13.94	0.497
67	330.00	18.17	4	0.1395	13.94	0.497
68	340.00	18.44	4	0.1394	13.93	0.497
69	350.00	18.71	4	0.1393	13.92	0.497
70	360.00	18.97	4	0.1392	13.90	0.497
71	370.00	19.24	4	0.139	13.89	0.498
72	380.00	19.49	4	0.139	13.89	0.498
73	390.00	19.75	4	0.1389	13.88	0.498
74	400.00	20.00	4	0.1389	13.88	0.498
75	410.00	20.25	4	0.1389	13.88	0.498
76	420.00	20.49	4	0.1389	13.87	0.498
77	430.00	20.74	4	0.1388	13.87	0.498
78	440.00	20.98	4	0.1387	13.86	0.498
79	446.43	21.13	4	0.1387	13.85	0.498

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 10 of 14
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.1387	13.85	0.498
2	0.01	0.09	3.18	0.1386	13.85	0.498
3	0.02	0.13	1.89	0.1369	13.68	0.501
4	0.03	0.16	2.04	0.1373	13.72	0.501
5	0.03	0.19	2.02	0.1372	13.70	0.501
6	0.05	0.23	2	0.137	13.69	0.501
7	0.07	0.26	2	0.137	13.68	0.501
8	0.09	0.29	2	0.1369	13.68	0.501
9	0.12	0.35	2	0.1369	13.68	0.501
10	0.17	0.41	2	0.1369	13.67	0.501
11	0.25	0.50	2	0.1369	13.67	0.501
12	0.34	0.58	2	0.1368	13.67	0.502
13	0.50	0.71	2	0.1367	13.66	0.502
14	0.75	0.87	2	0.1367	13.66	0.502
15	1.00	1.00	2	0.1366	13.65	0.502
16	1.50	1.23	2	0.1366	13.65	0.502
17	2.00	1.42	2	0.1366	13.65	0.502
18	3.00	1.73	2	0.1365	13.64	0.502
19	4.00	2.00	2	0.1363	13.62	0.502
20	5.00	2.24	2	0.1362	13.61	0.503
21	6.00	2.45	2	0.1361	13.60	0.503
22	7.00	2.65	2	0.136	13.59	0.503
23	8.00	2.83	2	0.136	13.58	0.503
24	9.00	3.00	2	0.1359	13.57	0.503
25	10.00	3.16	2	0.1359	13.57	0.503
26	12.00	3.46	2	0.1358	13.57	0.503
27	14.00	3.74	2	0.1358	13.56	0.503
28	16.00	4.00	2	0.1357	13.56	0.503
29	18.00	4.24	2	0.1357	13.56	0.503
30	20.00	4.47	2	0.1357	13.56	0.503
31	22.00	4.69	2	0.1357	13.56	0.503
32	24.00	4.90	2	0.1357	13.55	0.504
33	26.00	5.10	2	0.1356	13.55	0.504
34	28.00	5.29	2	0.1356	13.55	0.504
35	30.00	5.48	2	0.1355	13.54	0.504
36	35.00	5.92	2	0.1354	13.53	0.504
37	40.00	6.32	2	0.1353	13.52	0.504
38	45.00	6.71	2	0.1352	13.50	0.504
39	50.00	7.07	2	0.135	13.49	0.505
40	60.00	7.75	2	0.1346	13.45	0.505
41	70.00	8.37	2	0.1342	13.40	0.506
42	80.00	8.94	2	0.1337	13.35	0.507
43	90.00	9.49	2	0.1333	13.32	0.508
44	100.00	10.00	2	0.1332	13.31	0.508
45	110.00	10.49	2	0.1331	13.29	0.508
46	120.00	10.95	2	0.1329	13.28	0.508
47	130.00	11.40	2	0.1328	13.27	0.509
48	140.00	11.83	2	0.1326	13.25	0.509
49	150.00	12.25	2	0.1325	13.23	0.509
50	160.00	12.65	2	0.1323	13.22	0.509
51	170.00	13.04	2	0.1322	13.21	0.510
52	180.00	13.42	2	0.1321	13.20	0.510
53	182.27	13.50	2	0.1321	13.20	0.510

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 11 of 14
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	0.1321	13.20	0.510
2	0.01	0.09	1.68	0.1321	13.20	0.510
3	0.02	0.13	0.995	0.1317	13.16	0.510
4	0.03	0.16	1.01	0.1317	13.16	0.510
5	0.03	0.19	1	0.1317	13.16	0.510
6	0.05	0.23	1	0.1317	13.16	0.510
7	0.07	0.26	1	0.1318	13.16	0.510
8	0.09	0.29	1	0.1317	13.16	0.510
9	0.12	0.34	1	0.1317	13.16	0.510
10	0.17	0.41	1	0.1318	13.16	0.510
11	0.25	0.50	0.999	0.1317	13.16	0.510
12	0.33	0.58	1	0.1317	13.16	0.510
13	0.50	0.71	1	0.1317	13.16	0.510
14	0.75	0.87	0.999	0.1317	13.16	0.510
15	1.00	1.00	0.999	0.1317	13.16	0.510
16	1.50	1.23	1	0.1316	13.15	0.511
17	2.00	1.42	1	0.1316	13.15	0.511
18	3.00	1.73	1	0.1314	13.12	0.511
19	4.00	2.00	0.999	0.1313	13.11	0.511
20	5.00	2.24	0.999	0.1312	13.10	0.511
21	6.00	2.45	1	0.1311	13.10	0.512
22	7.00	2.65	1	0.1309	13.08	0.512
23	8.00	2.83	0.999	0.1309	13.07	0.512
24	9.00	3.00	0.999	0.1308	13.07	0.512
25	10.00	3.16	1	0.1308	13.06	0.512
26	12.00	3.46	0.999	0.1307	13.05	0.512
27	14.00	3.74	0.999	0.1305	13.04	0.513
28	16.00	4.00	0.999	0.1304	13.03	0.513
29	18.00	4.24	1	0.1304	13.02	0.513
30	20.00	4.47	1	0.1303	13.01	0.513
31	22.00	4.69	0.999	0.1301	13.00	0.513
32	24.00	4.90	0.999	0.1301	12.99	0.513
33	26.00	5.10	1	0.13	12.99	0.513
34	28.00	5.29	0.998	0.1299	12.98	0.514
35	30.00	5.48	1	0.1298	12.97	0.514
36	35.00	5.92	1	0.1297	12.96	0.514
37	40.00	6.32	0.999	0.1296	12.95	0.514
38	45.00	6.71	1	0.1295	12.93	0.514
39	50.00	7.07	0.998	0.1292	12.91	0.515
40	60.00	7.75	0.998	0.129	12.88	0.515
41	70.00	8.37	0.999	0.1286	12.85	0.516
42	80.00	8.94	0.999	0.1284	12.82	0.516
43	90.00	9.49	1	0.1281	12.80	0.517
44	100.00	10.00	1	0.1279	12.77	0.517
45	110.00	10.49	0.998	0.1275	12.74	0.518
46	120.00	10.95	0.999	0.1272	12.71	0.518
47	130.00	11.40	0.999	0.1269	12.68	0.519
48	140.00	11.83	0.998	0.1267	12.65	0.519
49	150.00	12.25	0.998	0.1265	12.64	0.520
50	160.00	12.65	0.999	0.1264	12.62	0.520
51	170.00	13.04	0.999	0.1262	12.61	0.520
52	180.00	13.42	0.999	0.1261	12.60	0.520
53	190.00	13.78	1	0.1259	12.58	0.520
54	200.00	14.14	1	0.1258	12.57	0.521
55	210.00	14.49	0.998	0.1257	12.56	0.521
56	220.00	14.83	1	0.1257	12.55	0.521
57	230.00	15.17	1	0.1256	12.54	0.521
58	240.00	15.49	0.999	0.1254	12.53	0.521
59	250.00	15.81	1	0.1253	12.52	0.522
60	260.00	16.12	0.999	0.1252	12.50	0.522
61	270.00	16.43	0.999	0.125	12.48	0.522
62	280.00	16.73	0.998	0.1248	12.47	0.522
63	290.00	17.03	0.999	0.1246	12.45	0.523
64	300.00	17.32	1	0.1243	12.42	0.523
65	310.00	17.61	0.999	0.124	12.39	0.524
66	320.00	17.89	0.998	0.1238	12.37	0.524
67	330.00	18.17	0.998	0.1237	12.36	0.524
68	340.00	18.44	0.998	0.1235	12.34	0.525
69	350.00	18.71	0.998	0.1234	12.33	0.525
70	360.00	18.97	0.999	0.1232	12.31	0.525
71	370.00	19.24	0.999	0.123	12.29	0.526
72	380.00	19.49	1	0.1229	12.27	0.526
73	390.00	19.75	0.999	0.1227	12.26	0.526
74	400.00	20.00	0.999	0.1225	12.24	0.526
75	410.00	20.25	0.999	0.1224	12.23	0.527
76	420.00	20.49	0.999	0.1224	12.23	0.527
77	430.00	20.74	0.999	0.1223	12.22	0.527
78	440.00	20.98	1	0.1223	12.22	0.527
79	450.00	21.21	0.999	0.1222	12.21	0.527
80	460.00	21.45	0.999	0.1221	12.20	0.527
81	470.00	21.68	1	0.1221	12.20	0.527

82	480.00	21.91	1	0.122	12.19	0.527
83	490.00	22.14	0.999	0.1219	12.18	0.527
84	500.00	22.36	0.999	0.1219	12.18	0.527
85	510.00	22.58	1	0.1218	12.17	0.528
86	520.00	22.80	0.999	0.1218	12.16	0.528
87	530.00	23.02	0.999	0.1217	12.16	0.528
88	540.00	23.24	0.999	0.1217	12.15	0.528
89	550.00	23.45	0.999	0.1216	12.15	0.528
90	560.00	23.66	1	0.1215	12.14	0.528
91	570.00	23.87	1	0.1214	12.13	0.528
92	580.00	24.08	0.999	0.1214	12.13	0.528
93	590.00	24.29	0.999	0.1213	12.12	0.528
94	600.00	24.49	0.998	0.1212	12.11	0.529
95	610.00	24.70	0.999	0.1211	12.09	0.529
96	620.00	24.90	0.999	0.1208	12.07	0.529
97	630.00	25.10	0.999	0.1206	12.05	0.530
98	640.00	25.30	0.999	0.1205	12.04	0.530
99	650.00	25.50	1	0.1204	12.03	0.530
100	660.00	25.69	0.999	0.1202	12.01	0.530
101	670.00	25.88	1	0.1201	11.99	0.531
102	680.00	26.08	0.999	0.1199	11.98	0.531
103	690.00	26.27	0.999	0.1198	11.97	0.531
104	700.00	26.46	0.999	0.1197	11.96	0.531
105	710.00	26.65	0.999	0.1196	11.95	0.531
106	720.00	26.83	0.998	0.1195	11.94	0.532
107	730.00	27.02	1	0.1195	11.94	0.532
108	740.00	27.20	0.998	0.1194	11.93	0.532
109	750.00	27.39	0.999	0.1193	11.92	0.532
110	760.00	27.57	0.999	0.1193	11.92	0.532
111	770.00	27.75	1	0.1193	11.92	0.532
112	780.00	27.93	1	0.1192	11.91	0.532
113	790.00	28.11	0.999	0.1192	11.91	0.532
114	800.00	28.28	0.998	0.1191	11.90	0.532
115	810.00	28.46	0.999	0.119	11.89	0.532
116	820.00	28.64	0.999	0.119	11.89	0.532
117	830.00	28.81	1	0.119	11.89	0.533
118	840.00	28.98	0.999	0.1189	11.88	0.533
119	850.00	29.15	0.998	0.1188	11.87	0.533
120	860.00	29.33	0.999	0.1188	11.86	0.533
121	870.00	29.50	1	0.1187	11.86	0.533
122	880.00	29.66	0.998	0.1186	11.85	0.533
123	890.00	29.83	1	0.1185	11.84	0.533
124	900.00	30.00	0.999	0.1184	11.83	0.533
125	910.00	30.17	1	0.1183	11.82	0.534
126	920.00	30.33	0.999	0.1183	11.82	0.534
127	930.00	30.50	0.999	0.1183	11.81	0.534
128	940.00	30.66	0.999	0.1183	11.81	0.534
129	950.00	30.82	0.999	0.1182	11.80	0.534
130	960.00	30.98	0.998	0.1182	11.80	0.534
131	970.00	31.14	1	0.1182	11.80	0.534
132	980.00	31.30	0.999	0.118	11.79	0.534
133	990.00	31.46	1	0.118	11.79	0.534
134	1000.00	31.62	0.999	0.118	11.79	0.534
135	1010.00	31.78	0.999	0.1179	11.78	0.534
136	1020.00	31.94	1	0.1179	11.78	0.534
137	1030.00	32.09	0.999	0.1179	11.78	0.534
138	1040.00	32.25	1	0.1179	11.78	0.534
139	1050.00	32.40	0.999	0.1179	11.78	0.534
140	1060.00	32.56	0.999	0.1178	11.77	0.535
141	1070.00	32.71	0.999	0.1177	11.76	0.535
142	1080.00	32.86	1	0.1177	11.76	0.535
143	1090.00	33.02	1	0.1177	11.76	0.535
144	1100.00	33.17	0.999	0.1177	11.75	0.535
145	1110.00	33.32	1	0.1176	11.75	0.535
146	1120.00	33.47	1	0.1176	11.75	0.535
147	1130.00	33.62	0.999	0.1176	11.75	0.535
148	1140.00	33.76	1	0.1176	11.75	0.535
149	1150.00	33.91	0.999	0.1176	11.75	0.535
150	1160.00	34.06	0.999	0.1176	11.75	0.535
151	1170.00	34.21	0.999	0.1175	11.74	0.535
152	1180.00	34.35	0.999	0.1175	11.74	0.535
153	1190.00	34.50	0.999	0.1175	11.74	0.535
154	1200.00	34.64	0.999	0.1175	11.74	0.535
155	1210.00	34.79	1	0.1174	11.73	0.535
156	1220.00	34.93	1	0.1174	11.73	0.535
157	1230.00	35.07	0.999	0.1173	11.72	0.535
158	1240.00	35.21	0.999	0.1173	11.72	0.535
159	1250.00	35.36	0.999	0.1173	11.72	0.535
160	1260.00	35.50	0.999	0.1173	11.72	0.535
161	1270.00	35.64	1	0.1172	11.71	0.536
162	1280.00	35.78	0.999	0.1172	11.71	0.536
163	1290.00	35.92	1	0.1172	11.71	0.536
164	1300.00	36.06	0.999	0.1172	11.70	0.536
165	1310.00	36.19	0.999	0.1172	11.70	0.536
166	1320.00	36.33	1	0.1172	11.70	0.536
167	1330.00	36.47	0.999	0.1171	11.70	0.536
168	1340.00	36.61	1	0.1171	11.69	0.536
169	1350.00	36.74	1	0.1171	11.69	0.536
170	1360.00	36.88	0.999	0.117	11.69	0.536
171	1370.00	37.01	0.999	0.117	11.69	0.536
172	1380.00	37.15	0.999	0.1169	11.68	0.536
173	1390.00	37.28	1	0.1169	11.68	0.536
174	1400.00	37.42	0.999	0.1168	11.67	0.536
175	1410.00	37.55	1	0.1167	11.66	0.537
176	1420.00	37.68	0.999	0.1166	11.65	0.537
177	1430.00	37.82	1	0.1166	11.65	0.537
178	1440.00	37.95	0.999	0.1166	11.64	0.537
179	1440.02	37.95	0.999	0.1166	11.64	0.537

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 12 of 14
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.1166	11.64	0.537
2	0.01	0.09	0.778	0.1166	11.64	0.537
3	0.02	0.13	0.514	0.1157	11.56	0.538
4	0.03	0.16	0.506	0.1156	11.55	0.538
5	0.03	0.19	0.504	0.1156	11.55	0.538
6	0.05	0.23	0.503	0.1155	11.54	0.539
7	0.07	0.26	0.502	0.1156	11.55	0.538
8	0.09	0.29	0.501	0.1156	11.55	0.538
9	0.12	0.35	0.5	0.1156	11.55	0.538
10	0.17	0.41	0.501	0.1156	11.55	0.538
11	0.25	0.50	0.501	0.1156	11.55	0.538
12	0.34	0.58	0.497	0.1155	11.54	0.539
13	0.50	0.71	0.5	0.1155	11.54	0.539
14	0.75	0.87	0.499	0.1155	11.54	0.539
15	1.00	1.00	0.501	0.1155	11.54	0.539
16	1.50	1.23	0.5	0.1155	11.54	0.539
17	2.00	1.41	0.501	0.1155	11.54	0.539
18	3.00	1.73	0.499	0.1154	11.53	0.539
19	4.00	2.00	0.5	0.1153	11.52	0.539
20	5.00	2.24	0.5	0.1153	11.52	0.539
21	6.00	2.45	0.5	0.1153	11.52	0.539
22	7.00	2.65	0.499	0.1152	11.51	0.539
23	8.00	2.83	0.501	0.1152	11.51	0.539
24	9.00	3.00	0.499	0.1152	11.51	0.539
25	10.00	3.16	0.499	0.1152	11.51	0.539
26	12.00	3.46	0.5	0.1151	11.50	0.539
27	14.00	3.74	0.5	0.115	11.49	0.539
28	16.00	4.00	0.5	0.115	11.49	0.539
29	18.00	4.24	0.501	0.115	11.49	0.539
30	20.00	4.47	0.5	0.1149	11.48	0.540
31	22.00	4.69	0.499	0.1149	11.48	0.540
32	24.00	4.90	0.5	0.1149	11.47	0.540
33	26.00	5.10	0.5	0.1148	11.47	0.540
34	28.00	5.29	0.499	0.1148	11.47	0.540
35	30.00	5.48	0.5	0.1148	11.46	0.540
36	35.00	5.92	0.501	0.1146	11.45	0.540
37	40.00	6.32	0.5	0.1145	11.44	0.540
38	45.00	6.71	0.5	0.1144	11.43	0.541
39	50.00	7.07	0.501	0.1143	11.42	0.541
40	60.00	7.75	0.502	0.1142	11.41	0.541
41	70.00	8.37	0.499	0.1141	11.40	0.541
42	80.00	8.94	0.5	0.1141	11.40	0.541
43	90.00	9.49	0.501	0.1139	11.38	0.541
44	100.00	10.00	0.501	0.1138	11.37	0.542
45	110.00	10.49	0.501	0.1136	11.35	0.542
46	120.00	10.95	0.501	0.1134	11.33	0.542
47	130.00	11.40	0.5	0.1132	11.31	0.543
48	140.00	11.83	0.501	0.1131	11.30	0.543
49	150.00	12.25	0.5	0.113	11.29	0.543
50	160.00	12.65	0.5	0.1129	11.28	0.543
51	170.00	13.04	0.501	0.1128	11.27	0.543
52	180.00	13.42	0.5	0.1127	11.26	0.543
53	190.00	13.78	0.499	0.1126	11.25	0.544
54	200.00	14.14	0.5	0.1126	11.25	0.544
55	210.00	14.49	0.5	0.1125	11.24	0.544
56	220.00	14.83	0.502	0.1124	11.23	0.544
57	230.00	15.17	0.501	0.1123	11.22	0.544
58	240.00	15.49	0.497	0.1122	11.21	0.544
59	250.00	15.81	0.5	0.1118	11.17	0.545
60	260.00	16.12	0.5	0.1116	11.15	0.545
61	270.00	16.43	0.5	0.1115	11.14	0.545
62	280.00	16.73	0.5	0.1115	11.13	0.546
63	290.00	17.03	0.501	0.1114	11.12	0.546
64	300.00	17.32	0.5	0.1113	11.12	0.546
65	310.00	17.61	0.5	0.1112	11.11	0.546
66	320.00	17.89	0.499	0.1111	11.10	0.546
67	330.00	18.17	0.497	0.111	11.09	0.546
68	340.00	18.44	0.501	0.1109	11.08	0.547
69	350.00	18.71	0.5	0.1108	11.07	0.547
70	360.00	18.97	0.5	0.1107	11.06	0.547
71	370.00	19.24	0.501	0.1106	11.05	0.547
72	380.00	19.49	0.501	0.1105	11.04	0.547
73	390.00	19.75	0.5	0.1105	11.04	0.547
74	400.00	20.00	0.5	0.1104	11.03	0.547
75	410.00	20.25	0.501	0.1104	11.03	0.547
76	420.00	20.49	0.499	0.1103	11.02	0.548
77	430.00	20.74	0.499	0.1103	11.02	0.548
78	440.00	20.98	0.5	0.1103	11.01	0.548
79	450.00	21.21	0.499	0.1102	11.01	0.548
80	460.00	21.45	0.5	0.1101	11.00	0.548
81	470.00	21.68	0.5	0.11	10.99	0.548

82	480.00	21.91	0.499	0.1099	10.98	0.548
83	490.00	22.14	0.501	0.1098	10.97	0.548
84	500.00	22.36	0.5	0.1098	10.97	0.549
85	510.00	22.58	0.501	0.1097	10.96	0.549
86	520.00	22.80	0.5	0.1095	10.94	0.549
87	530.00	23.02	0.5	0.1094	10.93	0.549
88	540.00	23.24	0.5	0.1093	10.92	0.549
89	550.00	23.45	0.5	0.1092	10.91	0.549
90	560.00	23.66	0.501	0.1092	10.90	0.550
91	570.00	23.87	0.499	0.1091	10.90	0.550
92	580.00	24.08	0.5	0.1091	10.90	0.550
93	590.00	24.29	0.5	0.109	10.89	0.550
94	600.00	24.49	0.5	0.109	10.89	0.550
95	610.00	24.70	0.5	0.1089	10.88	0.550
96	620.00	24.90	0.499	0.1088	10.87	0.550
97	630.00	25.10	0.501	0.1087	10.86	0.550
98	640.00	25.30	0.501	0.1086	10.85	0.551
99	650.00	25.50	0.5	0.1086	10.84	0.551
100	660.00	25.69	0.5	0.1085	10.84	0.551
101	670.00	25.88	0.5	0.1085	10.84	0.551
102	680.00	26.08	0.5	0.1084	10.83	0.551
103	690.00	26.27	0.5	0.1084	10.83	0.551
104	700.00	26.46	0.5	0.1084	10.83	0.551
105	710.00	26.65	0.501	0.1083	10.82	0.551
106	720.00	26.83	0.5	0.1083	10.82	0.551
107	730.00	27.02	0.499	0.1082	10.81	0.551
108	740.00	27.20	0.5	0.1081	10.80	0.551
109	750.00	27.39	0.5	0.1081	10.80	0.551
110	760.00	27.57	0.499	0.1081	10.80	0.551
111	770.00	27.75	0.5	0.1081	10.79	0.552
112	780.00	27.93	0.501	0.108	10.79	0.552
113	790.00	28.11	0.5	0.1081	10.79	0.552
114	800.00	28.28	0.5	0.108	10.79	0.552
115	806.57	28.40	0.499	0.1081	10.79	0.552

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 13 of 14
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.5	0.1081	10.79	0.552
2	0.01	0.09	0.441	0.108	10.79	0.552
3	0.02	0.13	0.279	0.1079	10.78	0.552
4	0.03	0.16	0.262	0.1079	10.78	0.552
5	0.03	0.19	0.255	0.1078	10.77	0.552
6	0.05	0.23	0.254	0.1078	10.77	0.552
7	0.07	0.26	0.252	0.1078	10.77	0.552
8	0.09	0.29	0.251	0.1078	10.77	0.552
9	0.12	0.35	0.25	0.1078	10.77	0.552
10	0.17	0.41	0.251	0.1078	10.77	0.552
11	0.25	0.50	0.25	0.1078	10.77	0.552
12	0.34	0.58	0.251	0.1078	10.77	0.552
13	0.50	0.71	0.25	0.1078	10.77	0.552
14	0.75	0.87	0.251	0.1078	10.77	0.552
15	1.00	1.00	0.249	0.1077	10.76	0.552
16	1.50	1.22	0.25	0.1077	10.76	0.552
17	2.00	1.42	0.25	0.1077	10.76	0.552
18	3.00	1.73	0.25	0.1076	10.75	0.552
19	4.00	2.00	0.251	0.1076	10.75	0.552
20	5.00	2.24	0.25	0.1075	10.74	0.552
21	6.00	2.45	0.25	0.1075	10.74	0.553
22	7.00	2.65	0.25	0.1075	10.73	0.553
23	8.00	2.83	0.25	0.1074	10.73	0.553
24	9.00	3.00	0.249	0.1073	10.72	0.553
25	10.00	3.16	0.251	0.1072	10.71	0.553
26	12.00	3.46	0.25	0.1071	10.70	0.553
27	14.00	3.74	0.25	0.1071	10.70	0.553
28	16.00	4.00	0.25	0.107	10.69	0.553
29	18.00	4.24	0.25	0.107	10.69	0.553
30	20.00	4.47	0.251	0.1069	10.68	0.553
31	22.00	4.69	0.249	0.1069	10.68	0.554
32	24.00	4.90	0.25	0.1069	10.67	0.554
33	26.00	5.10	0.25	0.1068	10.67	0.554
34	28.00	5.29	0.249	0.1068	10.67	0.554
35	30.00	5.48	0.25	0.1067	10.66	0.554
36	35.00	5.92	0.25	0.1066	10.65	0.554
37	40.00	6.32	0.25	0.1064	10.63	0.554
38	45.00	6.71	0.25	0.1063	10.62	0.555
39	50.00	7.07	0.25	0.1062	10.61	0.555
40	60.00	7.75	0.25	0.106	10.59	0.555
41	70.00	8.37	0.25	0.1059	10.58	0.555
42	80.00	8.94	0.25	0.1058	10.57	0.555
43	90.00	9.49	0.251	0.1057	10.56	0.556
44	100.00	10.00	0.25	0.1056	10.55	0.556
45	110.00	10.49	0.25	0.1055	10.54	0.556
46	120.00	10.95	0.25	0.1054	10.53	0.556
47	125.01	11.18	0.25	0.1053	10.52	0.556

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: COMP 3
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 4/9/19
Sample Type: REMOLD

Project No.: COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 14 of 14
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.249	0.1053	10.52	0.556
2	0.01	0.09	0.217	0.1053	10.52	0.556
3	0.02	0.13	0.149	0.1052	10.51	0.556
4	0.03	0.16	0.133	0.1052	10.50	0.557
5	0.03	0.19	0.129	0.1052	10.50	0.557
6	0.05	0.23	0.124	0.1051	10.50	0.557
7	0.07	0.26	0.125	0.1051	10.50	0.557
8	0.09	0.29	0.124	0.1052	10.50	0.557
9	0.12	0.35	0.124	0.1051	10.50	0.557
10	0.17	0.41	0.124	0.1051	10.50	0.557
11	0.25	0.50	0.124	0.1051	10.50	0.557
12	0.34	0.58	0.124	0.1051	10.50	0.557
13	0.50	0.71	0.124	0.1051	10.50	0.557
14	0.75	0.87	0.125	0.1051	10.50	0.557
15	1.00	1.00	0.124	0.105	10.49	0.557
16	1.50	1.22	0.124	0.105	10.49	0.557
17	2.00	1.42	0.125	0.105	10.49	0.557
18	3.00	1.73	0.125	0.105	10.49	0.557
19	4.00	2.00	0.124	0.105	10.49	0.557
20	5.00	2.24	0.125	0.105	10.49	0.557
21	6.00	2.45	0.125	0.1049	10.48	0.557
22	7.00	2.65	0.123	0.105	10.49	0.557
23	8.00	2.83	0.124	0.1049	10.48	0.557
24	9.00	3.00	0.124	0.1049	10.48	0.557
25	10.00	3.16	0.124	0.1049	10.48	0.557
26	12.00	3.46	0.125	0.1048	10.47	0.557
27	14.00	3.74	0.124	0.1048	10.47	0.557
28	16.00	4.00	0.124	0.1047	10.46	0.557
29	18.00	4.24	0.125	0.1046	10.45	0.557
30	20.00	4.47	0.125	0.1046	10.45	0.557
31	22.00	4.69	0.125	0.1046	10.45	0.558
32	24.00	4.90	0.125	0.1046	10.45	0.558
33	26.00	5.10	0.125	0.1045	10.44	0.558
34	28.00	5.29	0.124	0.1045	10.44	0.558
35	30.00	5.48	0.124	0.1044	10.43	0.558
36	35.00	5.92	0.124	0.1043	10.42	0.558
37	40.00	6.32	0.124	0.1041	10.40	0.558
38	45.00	6.71	0.124	0.1039	10.38	0.559
39	50.00	7.07	0.125	0.1036	10.35	0.559
40	60.00	7.75	0.124	0.1033	10.32	0.560
41	70.00	8.37	0.124	0.103	10.29	0.560
42	80.00	8.94	0.124	0.1029	10.28	0.561
43	90.00	9.49	0.124	0.1027	10.26	0.561
44	100.00	10.00	0.124	0.1025	10.24	0.561
45	110.00	10.49	0.125	0.1023	10.22	0.562
46	120.00	10.95	0.125	0.1021	10.20	0.562
47	130.00	11.40	0.125	0.1019	10.18	0.562
48	140.00	11.83	0.125	0.1017	10.16	0.563
49	150.00	12.25	0.124	0.1015	10.14	0.563
50	160.00	12.65	0.125	0.1014	10.13	0.563
51	170.00	13.04	0.124	0.1012	10.11	0.563
52	180.00	13.42	0.124	0.101	10.09	0.564
53	190.00	13.78	0.125	0.1009	10.08	0.564
54	200.00	14.14	0.124	0.1008	10.07	0.564
55	210.00	14.49	0.125	0.1006	10.05	0.564
56	220.00	14.83	0.123	0.1005	10.04	0.565
57	230.00	15.17	0.124	0.1004	10.03	0.565
58	240.00	15.49	0.124	0.1003	10.02	0.565
59	250.00	15.81	0.124	0.1001	10.00	0.565
60	260.00	16.12	0.124	0.1001	10.00	0.565
61	270.00	16.43	0.124	0.09996	9.99	0.566
62	280.00	16.73	0.125	0.09982	9.97	0.566
63	290.00	17.03	0.124	0.09973	9.96	0.566
64	300.00	17.32	0.123	0.09964	9.95	0.566
65	310.00	17.61	0.124	0.09959	9.95	0.566
66	320.00	17.89	0.124	0.0995	9.94	0.566
67	330.00	18.17	0.124	0.09941	9.93	0.567
68	340.00	18.44	0.124	0.09927	9.92	0.567
69	350.00	18.71	0.123	0.09913	9.90	0.567
70	360.00	18.97	0.124	0.0989	9.88	0.567
71	370.00	19.24	0.125	0.09881	9.87	0.568
72	380.00	19.49	0.124	0.09872	9.86	0.568
73	390.00	19.75	0.125	0.09853	9.84	0.568
74	400.00	20.00	0.124	0.09839	9.83	0.568
75	410.00	20.25	0.125	0.09835	9.83	0.568
76	420.00	20.49	0.124	0.09821	9.81	0.569
77	430.00	20.74	0.124	0.09812	9.80	0.569
78	440.00	20.98	0.123	0.09794	9.78	0.569
79	450.00	21.21	0.125	0.09789	9.78	0.569
80	460.00	21.45	0.125	0.0978	9.77	0.569
81	470.00	21.68	0.124	0.09766	9.76	0.570

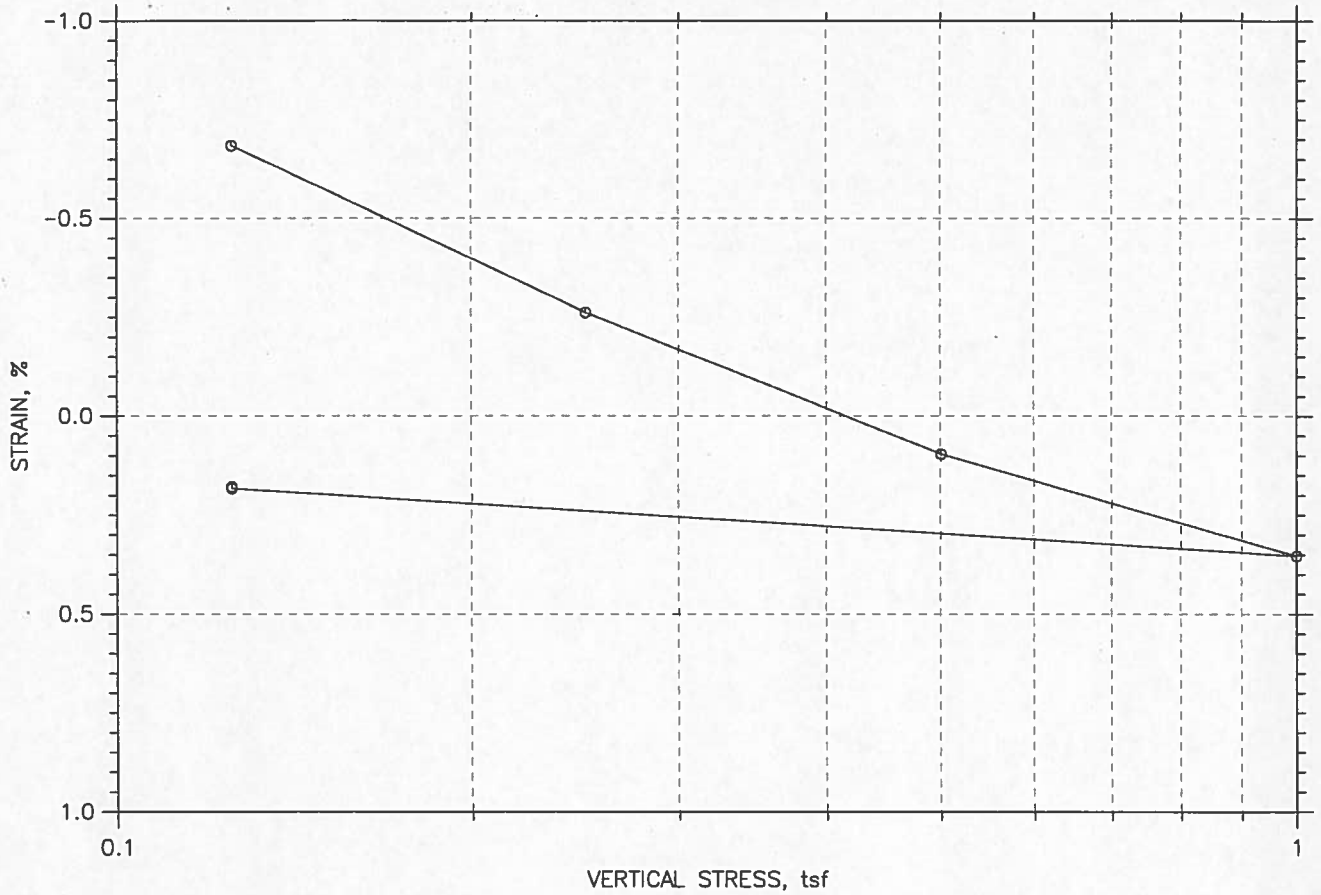
82	480.00	21.91	0.124	0.09752	9.74	0.570
83	490.00	22.14	0.124	0.09734	9.72	0.570
84	500.00	22.36	0.124	0.09725	9.71	0.570
85	510.00	22.58	0.124	0.09711	9.70	0.571
86	520.00	22.80	0.124	0.09688	9.68	0.571
87	530.00	23.02	0.123	0.09674	9.66	0.571
88	540.00	23.24	0.124	0.09656	9.65	0.572
89	550.00	23.45	0.124	0.09646	9.64	0.572
90	560.00	23.66	0.125	0.09642	9.63	0.572
91	570.00	23.87	0.124	0.09633	9.62	0.572
92	580.00	24.08	0.124	0.09623	9.61	0.572
93	590.00	24.29	0.124	0.09614	9.60	0.572
94	600.00	24.49	0.123	0.09605	9.60	0.572
95	610.00	24.70	0.124	0.09591	9.58	0.573
96	620.00	24.90	0.124	0.09577	9.57	0.573
97	630.00	25.10	0.124	0.09564	9.55	0.573
98	640.00	25.30	0.124	0.0955	9.54	0.573
99	650.00	25.50	0.124	0.0955	9.54	0.573
100	660.00	25.69	0.124	0.09545	9.54	0.573
101	670.00	25.88	0.123	0.09536	9.53	0.574
102	680.00	26.08	0.123	0.09527	9.52	0.574
103	690.00	26.27	0.124	0.09513	9.50	0.574
104	700.00	26.46	0.124	0.09508	9.50	0.574
105	710.00	26.65	0.123	0.09504	9.49	0.574
106	720.00	26.83	0.123	0.09504	9.49	0.574
107	730.00	27.02	0.124	0.09499	9.49	0.574
108	740.00	27.20	0.124	0.09499	9.49	0.574
109	750.00	27.39	0.124	0.09495	9.49	0.574
110	760.00	27.57	0.125	0.09495	9.49	0.574
111	770.00	27.75	0.123	0.09495	9.49	0.574
112	780.00	27.93	0.124	0.0949	9.48	0.574
113	790.00	28.11	0.125	0.0949	9.48	0.574
114	800.00	28.28	0.125	0.09485	9.48	0.574
115	806.58	28.40	0.124	0.09485	9.48	0.574

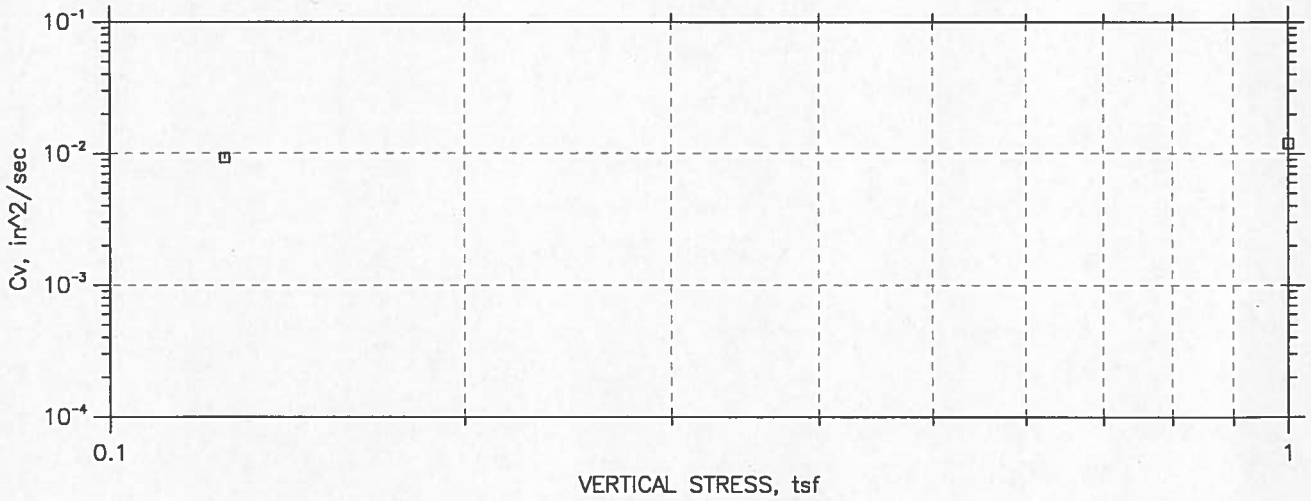
ATTACHMENT 6

SWELL TEST DATA

CONSOLIDATION TEST DATA

SUMMARY REPORT



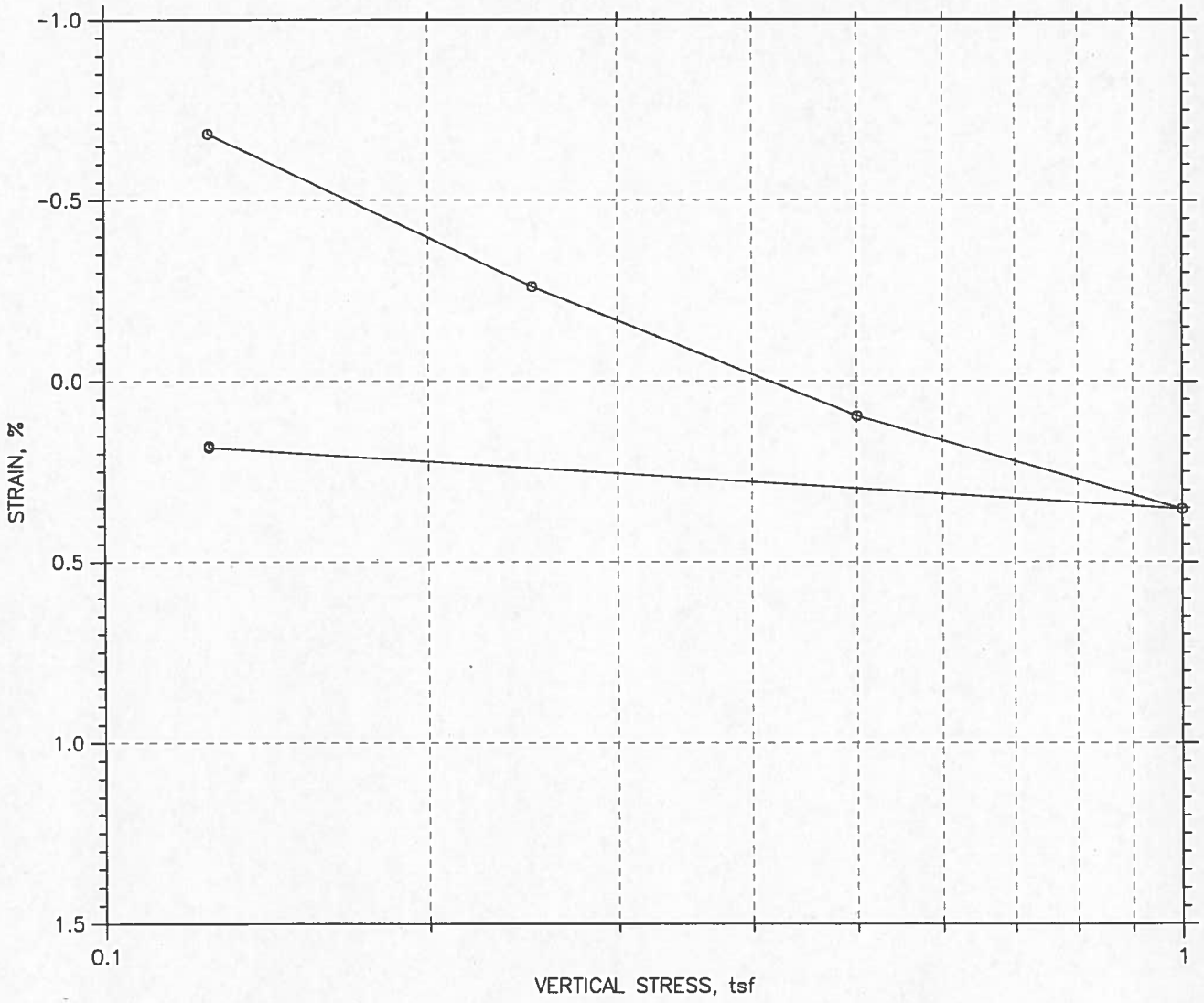


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-253
	Boring No.: B-05	Tested By: SKK	Checked By: SKK
	Sample No.: 19-253	Test Date: 6/18/19	Test No.: 2
	Depth: 7.5-10'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND		

Fri, 21-JUN-2019 10:11:01

CONSOLIDATION TEST DATA

SUMMARY REPORT



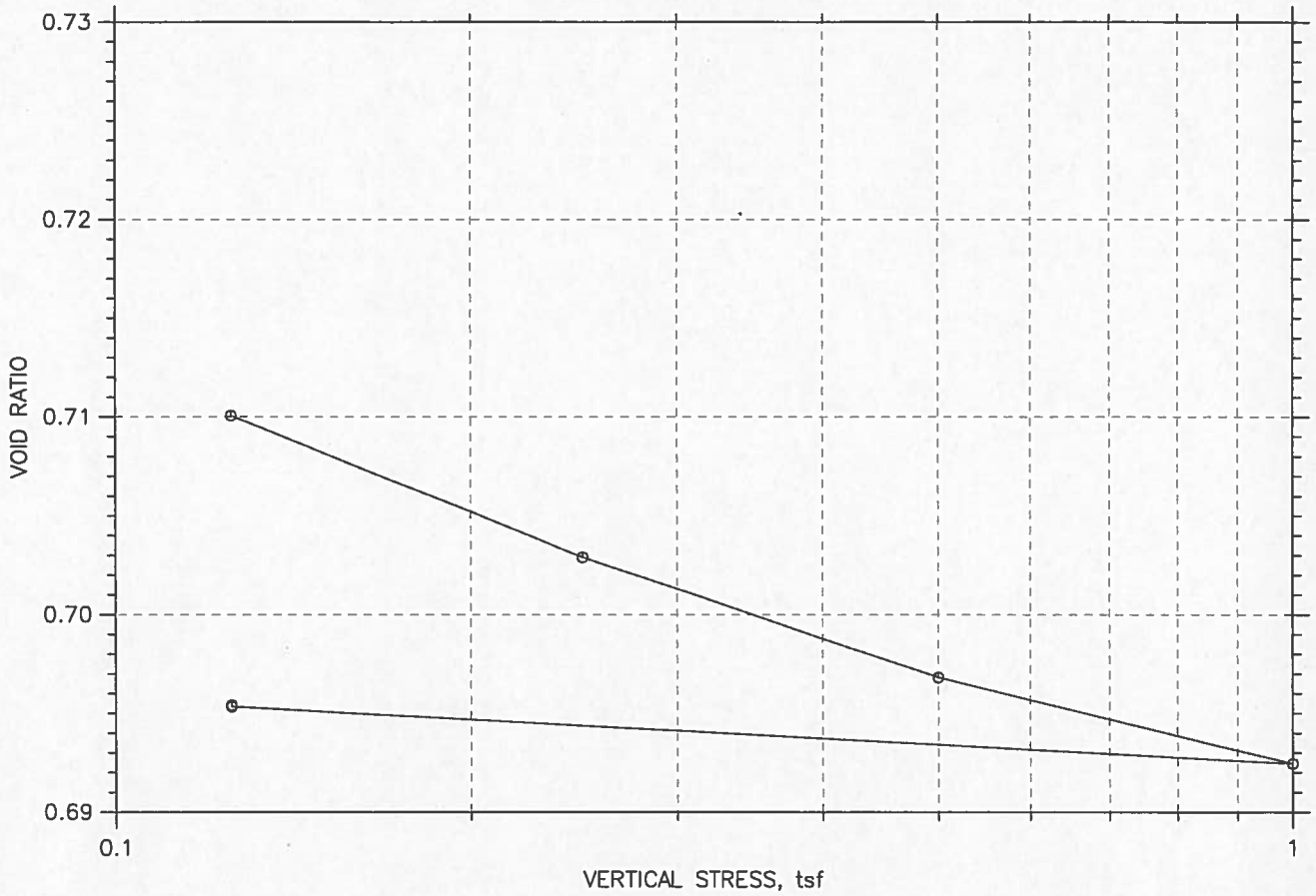
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	18.25	24.87
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	99.24	98.36
Compression Index: 3.81959e-313				Saturation, %	70.57	94.11
Diameter: 2.5 in		Height: 1.002 in		Void Ratio	0.70	0.71
LL: ---	PL: ---	PI: ---	GS: 2.70			

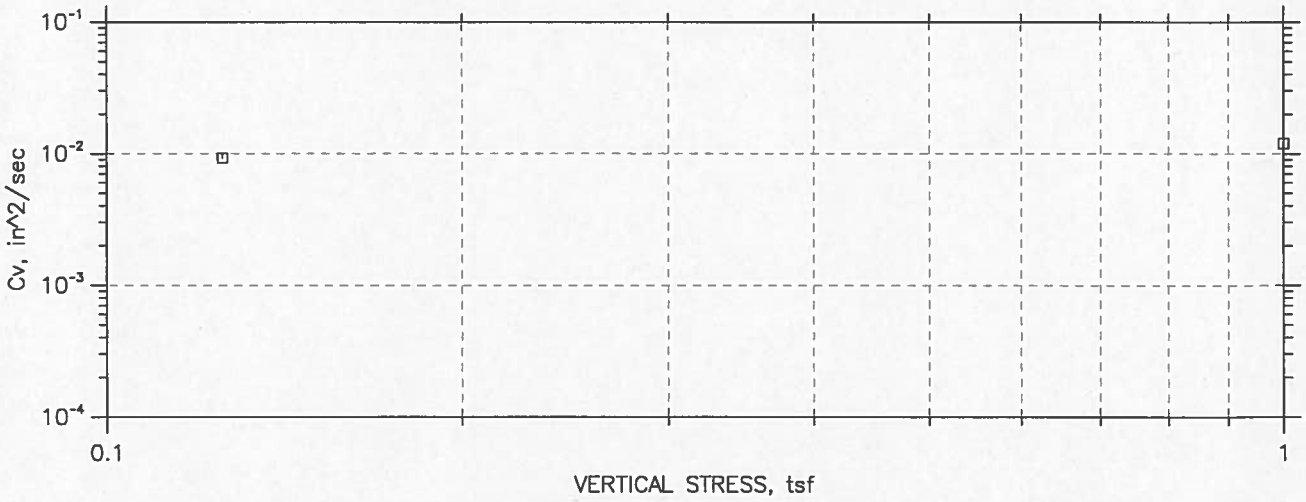
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-253
	Boring No.: B-05	Tested By: SKK	Checked By: SKK
	Sample No.: 19-253	Test Date: 6/18/19	Test No.: 2
	Depth: 7.5-10'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND		

Fri, 21-JUN-2019 10:11:01

CONSOLIDATION TEST DATA

SUMMARY REPORT



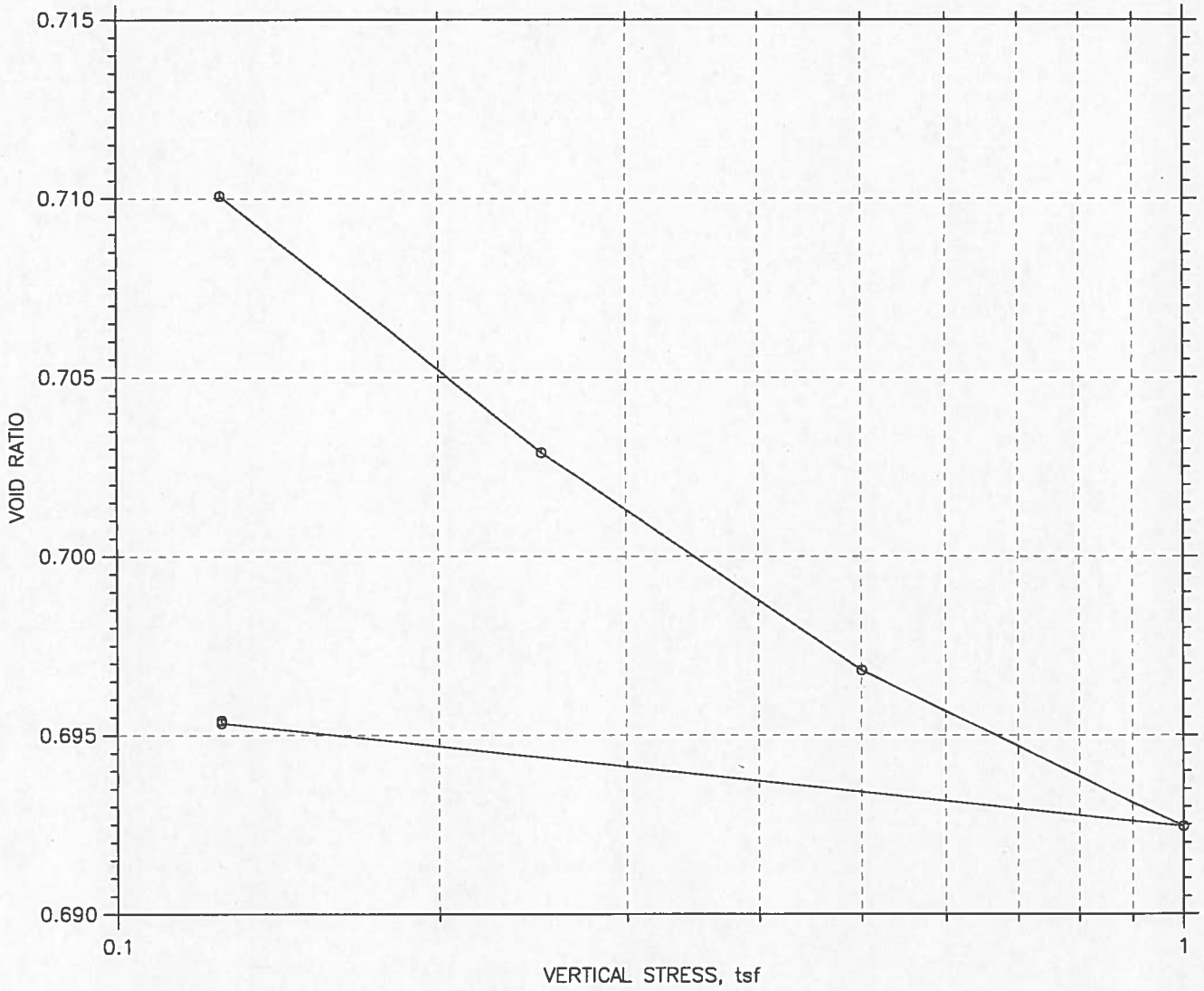


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-253
	Boring No.: B-05	Tested By: SKK	Checked By: SKK
	Sample No.: 19-253	Test Date: 6/18/19	Test No.: 2
	Depth: 7.5-10'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND		

Fri, 21-JUN-2019 10:11:17

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	18.25	24.87
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	99.24	98.36
Compression Index: 3.81959e-313				Saturation, %	70.57	94.11
Diameter: 2.5 in		Height: 1.002 in		Void Ratio	0.70	0.71
LL: ---	PL: ---	PI: ---	GS: 2.70			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-253
	Boring No.: B-05	Tested By: SKK	Checked By: SKK
	Sample No.: 19-253	Test Date: 6/18/19	Test No.: 2
	Depth: 7.5-10'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Fri, 21-JUN-2019 10:11:17

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-253
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 6/18/19
Sample Type: CORE

Project No.: 19-253
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Measured Specific Gravity: 2.70
Initial Void Ratio: 0.70
Final Void Ratio: 0.71

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	138.72	261.67	270.15	213.54
Wt. Container + Dry Soil, gm	125.03	238.28	238.28	181.67
Wt. Container, gm	51.49	110.15	110.15	53.54
Wt. Dry Soil, gm	73.54	128.13	128.13	128.13
Water Content, %	18.62	18.25	24.87	24.87
Void Ratio	---	0.70	0.71	---
Degree of Saturation, %	---	70.57	94.11	---
Dry Unit Weight, pcf	---	99.241	98.361	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-253
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 6/18/19
Sample Type: CORE

Project No.: 19-253
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001793	0.695	0.18	0.3	1.27e-002	1.43e-002	3.41e-003
2	0.125	0.001839	0.695	0.18	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	1	0.00354	0.692	0.35	0.4	7.92e-003	1.94e-003	2.88e-004
4	0.5	0.0009656	0.697	0.10	0.3	1.20e-002	5.14e-003	1.15e-003
5	0.25	-0.002621	0.703	-0.26	17.7	2.00e-004	1.43e-002	5.37e-005
6	0.125	-0.006851	0.710	-0.68	13.3	2.69e-004	3.38e-002	1.70e-004

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001793	0.695	0.18	0.0	0.00e+000	1.43e-002	0.00e+000
2	0.125	0.001839	0.695	0.18	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	1	0.00354	0.692	0.35	0.0	2.77e-002	1.94e-003	1.01e-003
4	0.5	0.0009656	0.697	0.10	0.0	3.66e-002	5.14e-003	3.53e-003
5	0.25	-0.002621	0.703	-0.26	0.0	0.00e+000	1.43e-002	0.00e+000
6	0.125	-0.006851	0.710	-0.68	0.0	0.00e+000	3.38e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-253
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 6/18/19
Sample Type: CORE

Project No.: 19-253
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 1 of 6
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.0056	-0.001335	-0.13	0.701
2	0.01	0.09	0.0101	-0.001335	-0.13	0.701
3	0.02	0.13	0.0415	-0.001243	-0.12	0.701
4	0.03	0.16	0.0627	-0.001013	-0.10	0.700
5	0.03	0.19	0.0784	-0.0007376	-0.07	0.700
6	0.05	0.23	0.0986	-0.0005996	-0.06	0.699
7	0.07	0.26	0.108	-0.0004157	-0.04	0.699
8	0.09	0.29	0.113	-0.0002778	-0.03	0.699
9	0.12	0.34	0.119	-0.0001398	-0.01	0.699
10	0.17	0.41	0.121	-1.889e-006	-0.00	0.698
11	0.25	0.50	0.122	9.007e-005	0.01	0.698
12	0.34	0.58	0.123	0.000182	0.02	0.698
13	0.50	0.71	0.124	0.000182	0.02	0.698
14	0.75	0.87	0.124	0.000228	0.02	0.698
15	1.00	1.00	0.123	0.000228	0.02	0.698
16	1.50	1.23	0.124	0.000274	0.03	0.698
17	2.00	1.42	0.124	0.00032	0.03	0.698
18	3.00	1.73	0.124	0.00032	0.03	0.698
19	4.00	2.00	0.124	0.0003659	0.04	0.698
20	5.00	2.24	0.123	0.0004119	0.04	0.698
21	6.00	2.45	0.125	0.0004119	0.04	0.698
22	7.00	2.65	0.124	0.0004119	0.04	0.698
23	8.00	2.83	0.123	0.0004579	0.05	0.698
24	9.00	3.00	0.124	0.0004579	0.05	0.698
25	10.00	3.16	0.124	0.0004579	0.05	0.698
26	12.00	3.46	0.124	0.0004579	0.05	0.698
27	14.00	3.74	0.124	0.0004579	0.05	0.698
28	15.03	3.88	0.124	0.0004579	0.05	0.698

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-253
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 6/18/19
Sample Type: CORE

Project No.: 19-253
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Volume Step: 2 of 6
Seating Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.124	0.0005039	0.05	0.698
2	0.01	0.09	0.124	0.0005039	0.05	0.698
3	0.02	0.13	0.124	0.0004579	0.05	0.698
4	0.03	0.16	0.124	0.0004579	0.05	0.698
5	0.03	0.19	0.123	0.0004579	0.05	0.698
6	0.05	0.23	0.123	0.0004579	0.05	0.698
7	0.07	0.26	0.125	0.0004579	0.05	0.698
8	0.09	0.30	0.131	0.0004579	0.05	0.698
9	0.12	0.34	0.14	0.0004579	0.05	0.698
10	0.17	0.41	0.152	0.0004579	0.05	0.698
11	0.25	0.50	0.176	0.0004119	0.04	0.698
12	0.33	0.58	0.196	0.0004119	0.04	0.698
13	0.50	0.71	0.232	0.0004119	0.04	0.698
14	0.75	0.87	0.271	0.0003659	0.04	0.698
15	1.00	1.00	0.303	0.0003659	0.04	0.698
16	1.50	1.23	0.362	0.0004119	0.04	0.698
17	2.00	1.42	0.404	0.0004579	0.05	0.698
18	3.00	1.73	0.469	0.0004579	0.05	0.698
19	4.00	2.00	0.518	0.0004579	0.05	0.698
20	5.00	2.24	0.553	0.0004579	0.05	0.698
21	6.00	2.45	0.573	0.0004579	0.05	0.698
22	7.00	2.65	0.59	0.0004579	0.05	0.698
23	8.00	2.83	0.61	0.0004579	0.05	0.698
24	9.00	3.00	0.618	0.0004579	0.05	0.698
25	10.00	3.16	0.626	0.0004579	0.05	0.698
26	12.00	3.46	0.638	0.0005039	0.05	0.698
27	14.00	3.74	0.645	0.0005039	0.05	0.698
28	16.00	4.00	0.651	0.0005039	0.05	0.698
29	18.00	4.24	0.657	0.0005499	0.05	0.698
30	20.00	4.47	0.663	0.0005499	0.05	0.698
31	22.00	4.69	0.666	0.0005499	0.05	0.698
32	24.00	4.90	0.667	0.0005499	0.05	0.698
33	26.00	5.10	0.67	0.0005499	0.05	0.698
34	28.00	5.29	0.668	0.0005499	0.05	0.698
35	30.00	5.48	0.666	0.0005499	0.05	0.698
36	35.00	5.92	0.666	0.0005499	0.05	0.698
37	40.00	6.32	0.663	0.0005499	0.05	0.698
38	45.00	6.71	0.667	0.0005499	0.05	0.698
39	50.00	7.07	0.664	0.0005499	0.05	0.698
40	60.00	7.75	0.664	0.0005039	0.05	0.698
41	70.00	8.37	0.668	0.0005499	0.05	0.698
42	80.00	8.94	0.669	0.0005499	0.05	0.698
43	90.00	9.49	0.668	0.0005499	0.05	0.698
44	100.00	10.00	0.668	0.0005499	0.05	0.698
45	110.00	10.49	0.677	0.0005499	0.05	0.698
46	120.00	10.95	0.672	0.0005499	0.05	0.698
47	130.00	11.40	0.686	0.0005499	0.05	0.698
48	140.00	11.83	0.699	0.0005499	0.05	0.698
49	150.00	12.25	0.713	0.0005499	0.05	0.698
50	160.00	12.65	0.72	0.0005499	0.05	0.698
51	170.00	13.04	0.729	0.0005499	0.05	0.698
52	180.00	13.42	0.734	0.0005499	0.05	0.698
53	190.00	13.78	0.742	0.0005958	0.06	0.697
54	200.00	14.14	0.747	0.0005499	0.05	0.698
55	210.00	14.49	0.748	0.0005499	0.05	0.698
56	220.00	14.83	0.739	0.0005499	0.05	0.698
57	230.00	15.17	0.742	0.0005499	0.05	0.698
58	240.00	15.49	0.744	0.0005499	0.05	0.698
59	250.00	15.81	0.75	0.0005499	0.05	0.698
60	260.00	16.12	0.769	0.0005499	0.05	0.698
61	270.00	16.43	0.752	0.0004579	0.05	0.698
62	280.00	16.73	0.756	0.0005039	0.05	0.698
63	290.00	17.03	0.769	0.0005499	0.05	0.698
64	300.00	17.32	0.76	0.0005499	0.05	0.698
65	310.00	17.61	0.761	0.0005499	0.05	0.698
66	320.00	17.89	0.753	0.0005039	0.05	0.698
67	330.00	18.17	0.753	0.0004579	0.05	0.698
68	340.00	18.44	0.754	0.0005499	0.05	0.698
69	350.00	18.71	0.747	0.0005039	0.05	0.698
70	360.00	18.97	0.743	0.0004579	0.05	0.698
71	370.00	19.24	0.747	0.0005499	0.05	0.698
72	380.00	19.49	0.747	0.0005499	0.05	0.698
73	390.00	19.75	0.743	0.0005499	0.05	0.698
74	400.00	20.00	0.744	0.0005039	0.05	0.698
75	410.00	20.25	0.737	0.0005499	0.05	0.698
76	420.00	20.49	0.741	0.0005039	0.05	0.698
77	430.00	20.74	0.748	0.0005039	0.05	0.698
78	440.00	20.98	0.747	0.0005499	0.05	0.698
79	450.00	21.21	0.745	0.0005499	0.05	0.698
80	460.00	21.45	0.743	0.0005499	0.05	0.698
81	470.00	21.68	0.742	0.0005499	0.05	0.698

82	480.00	21.91	0.744	0.0005499	0.05	0.698
83	490.00	22.14	0.735	0.0005499	0.05	0.698
84	500.00	22.36	0.736	0.0005499	0.05	0.698
85	510.00	22.58	0.738	0.0005499	0.05	0.698
86	520.00	22.80	0.734	0.0005499	0.05	0.698
87	530.00	23.02	0.727	0.0005499	0.05	0.698
88	540.00	23.24	0.729	0.0005499	0.05	0.698
89	550.00	23.45	0.733	0.0005039	0.05	0.698
90	560.00	23.66	0.731	0.0005499	0.05	0.698
91	570.00	23.87	0.725	0.0005499	0.05	0.698
92	580.00	24.08	0.735	0.0005499	0.05	0.698
93	590.00	24.29	0.735	0.0005499	0.05	0.698
94	600.00	24.49	0.727	0.0005499	0.05	0.698
95	610.00	24.70	0.727	0.0005499	0.05	0.698
96	620.00	24.90	0.734	0.0005499	0.05	0.698
97	630.00	25.10	0.732	0.0005499	0.05	0.698
98	640.00	25.30	0.724	0.0005039	0.05	0.698
99	650.00	25.50	0.731	0.0005499	0.05	0.698
100	660.00	25.69	0.738	0.0005039	0.05	0.698
101	670.00	25.88	0.731	0.0005499	0.05	0.698
102	680.00	26.08	0.728	0.0005499	0.05	0.698
103	690.00	26.27	0.729	0.0005039	0.05	0.698
104	700.00	26.46	0.732	0.0005499	0.05	0.698
105	710.00	26.65	0.732	0.0005499	0.05	0.698
106	720.00	26.83	0.734	0.0005499	0.05	0.698
107	730.00	27.02	0.735	0.0005499	0.05	0.698
108	740.00	27.20	0.735	0.0005499	0.05	0.698
109	750.00	27.39	0.741	0.0005499	0.05	0.698
110	760.00	27.57	0.736	0.0005499	0.05	0.698
111	770.00	27.75	0.733	0.0005499	0.05	0.698
112	780.00	27.93	0.736	0.0005499	0.05	0.698
113	790.00	28.11	0.734	0.0005499	0.05	0.698
114	800.00	28.28	0.736	0.0005499	0.05	0.698
115	810.00	28.46	0.733	0.0005039	0.05	0.698
116	820.00	28.64	0.735	0.0005499	0.05	0.698
117	830.00	28.81	0.728	0.0005499	0.05	0.698
118	840.00	28.98	0.728	0.0005499	0.05	0.698
119	850.00	29.15	0.726	0.0005499	0.05	0.698
120	860.00	29.33	0.727	0.0005499	0.05	0.698
121	870.00	29.50	0.726	0.0005499	0.05	0.698
122	880.00	29.66	0.725	0.0005499	0.05	0.698
123	890.00	29.83	0.723	0.0005499	0.05	0.698
124	900.00	30.00	0.718	0.0005499	0.05	0.698
125	910.00	30.17	0.713	0.0005039	0.05	0.698
126	920.00	30.33	0.71	0.0005039	0.05	0.698
127	930.00	30.50	0.711	0.0005499	0.05	0.698
128	940.00	30.66	0.707	0.0005499	0.05	0.698
129	950.00	30.82	0.705	0.0005499	0.05	0.698
130	960.00	30.98	0.705	0.0005499	0.05	0.698
131	970.00	31.14	0.707	0.0005499	0.05	0.698
132	980.00	31.30	0.707	0.0005039	0.05	0.698
133	990.00	31.46	0.706	0.0005499	0.05	0.698
134	1000.00	31.62	0.706	0.0005499	0.05	0.698
135	1010.00	31.78	0.707	0.0005499	0.05	0.698
136	1020.00	31.94	0.705	0.0005499	0.05	0.698
137	1030.00	32.09	0.706	0.0005499	0.05	0.698
138	1040.00	32.25	0.71	0.0005499	0.05	0.698
139	1050.00	32.40	0.706	0.0005499	0.05	0.698
140	1060.00	32.56	0.71	0.0005499	0.05	0.698
141	1070.00	32.71	0.707	0.0005499	0.05	0.698
142	1080.00	32.86	0.706	0.0005499	0.05	0.698
143	1090.00	33.02	0.705	0.0005499	0.05	0.698
144	1100.00	33.17	0.71	0.0005499	0.05	0.698
145	1110.00	33.32	0.709	0.0005499	0.05	0.698
146	1120.00	33.47	0.703	0.0005499	0.05	0.698
147	1130.00	33.62	0.708	0.0005499	0.05	0.698
148	1140.00	33.76	0.704	0.0005499	0.05	0.698
149	1150.00	33.91	0.698	0.0005499	0.05	0.698
150	1160.00	34.06	0.69	0.0005499	0.05	0.698
151	1170.00	34.21	0.692	0.0005499	0.05	0.698
152	1180.00	34.35	0.688	0.0005499	0.05	0.698
153	1190.00	34.50	0.687	0.0005499	0.05	0.698
154	1200.00	34.64	0.683	0.0005499	0.05	0.698
155	1203.71	34.69	0.683	0.0005039	0.05	0.698

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-253
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 6/18/19
Sample Type: CORE

Project No.: 19-253
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 3 of 6
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.682	-0.005333	-0.53	0.707
2	0.01	0.09	0.716	-0.005333	-0.53	0.707
3	0.02	0.13	0.93	-0.005057	-0.50	0.707
4	0.03	0.16	0.971	-0.004735	-0.47	0.706
5	0.03	0.19	0.985	-0.004597	-0.46	0.706
6	0.05	0.23	0.992	-0.004459	-0.45	0.706
7	0.07	0.27	0.995	-0.004413	-0.44	0.706
8	0.08	0.29	0.998	-0.004367	-0.44	0.706
9	0.12	0.34	0.998	-0.004321	-0.43	0.706
10	0.17	0.41	0.998	-0.004229	-0.42	0.706
11	0.25	0.50	0.998	-0.004183	-0.42	0.706
12	0.34	0.58	0.998	-0.004183	-0.42	0.706
13	0.50	0.71	0.998	-0.004137	-0.41	0.705
14	0.75	0.87	0.999	-0.004091	-0.41	0.705
15	1.00	1.00	0.999	-0.004091	-0.41	0.705
16	1.50	1.23	0.999	-0.004091	-0.41	0.705
17	2.00	1.41	0.999	-0.004045	-0.40	0.705
18	3.00	1.73	0.999	-0.003999	-0.40	0.705
19	4.00	2.00	0.999	-0.003999	-0.40	0.705
20	5.00	2.24	0.999	-0.003953	-0.39	0.705
21	6.00	2.45	0.999	-0.003953	-0.39	0.705
22	7.00	2.65	0.999	-0.003953	-0.39	0.705
23	8.00	2.83	0.999	-0.003953	-0.39	0.705
24	9.00	3.00	0.999	-0.003907	-0.39	0.705
25	10.00	3.16	0.999	-0.003907	-0.39	0.705
26	12.00	3.46	0.999	-0.003861	-0.39	0.705
27	14.00	3.74	0.999	-0.003861	-0.39	0.705
28	16.00	4.00	0.999	-0.003861	-0.39	0.705
29	18.00	4.24	0.999	-0.003815	-0.38	0.705
30	20.00	4.47	0.999	-0.003815	-0.38	0.705
31	22.00	4.69	0.999	-0.003815	-0.38	0.705
32	24.00	4.90	0.999	-0.003815	-0.38	0.705
33	26.00	5.10	0.999	-0.003815	-0.38	0.705
34	28.00	5.29	0.999	-0.003769	-0.38	0.705
35	30.00	5.48	0.999	-0.003769	-0.38	0.705
36	35.00	5.92	1	-0.003769	-0.38	0.705
37	40.00	6.32	0.999	-0.003769	-0.38	0.705
38	45.00	6.71	0.999	-0.003723	-0.37	0.705
39	50.00	7.07	0.999	-0.003723	-0.37	0.705
40	60.00	7.75	0.999	-0.003677	-0.37	0.705
41	70.00	8.37	0.999	-0.003723	-0.37	0.705
42	80.00	8.94	0.999	-0.003677	-0.37	0.705
43	90.00	9.49	0.999	-0.003677	-0.37	0.705
44	100.00	10.00	0.999	-0.003631	-0.36	0.705
45	110.00	10.49	0.999	-0.003631	-0.36	0.705
46	120.00	10.95	0.999	-0.003631	-0.36	0.705
47	120.02	10.96	0.999	-0.003631	-0.36	0.705

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-253
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 6/18/19
Sample Type: CORE

Project No.: 19-253
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 4 of 6
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.998	0.001425	0.14	0.696
2	0.01	0.09	0.964	0.001425	0.14	0.696
3	0.02	0.13	0.646	0.0005977	0.06	0.697
4	0.03	0.16	0.582	4.598e-005	0.00	0.698
5	0.04	0.19	0.551	-9.196e-005	-0.01	0.699
6	0.05	0.23	0.523	-0.0001839	-0.02	0.699
7	0.07	0.27	0.513	-0.0003219	-0.03	0.699
8	0.08	0.29	0.51	-0.0003678	-0.04	0.699
9	0.12	0.35	0.504	-0.0004138	-0.04	0.699
10	0.17	0.41	0.502	-0.0004138	-0.04	0.699
11	0.25	0.50	0.502	-0.0004598	-0.05	0.699
12	0.34	0.58	0.501	-0.0005058	-0.05	0.699
13	0.50	0.71	0.501	-0.0005517	-0.06	0.699
14	0.75	0.87	0.501	-0.0005517	-0.06	0.699
15	1.00	1.00	0.501	-0.0005977	-0.06	0.699
16	1.50	1.23	0.501	-0.0005977	-0.06	0.699
17	2.00	1.42	0.5	-0.0005977	-0.06	0.699
18	3.00	1.73	0.5	-0.0005977	-0.06	0.699
19	4.00	2.00	0.501	-0.0006897	-0.07	0.700
20	5.00	2.24	0.5	-0.0007357	-0.07	0.700
21	6.00	2.45	0.5	-0.0007357	-0.07	0.700
22	7.00	2.65	0.5	-0.0007816	-0.08	0.700
23	8.00	2.83	0.501	-0.0008276	-0.08	0.700
24	9.00	3.00	0.5	-0.0008276	-0.08	0.700
25	10.00	3.16	0.5	-0.0008736	-0.09	0.700
26	12.00	3.46	0.5	-0.0008736	-0.09	0.700
27	14.00	3.74	0.499	-0.0009196	-0.09	0.700
28	16.00	4.00	0.5	-0.0009196	-0.09	0.700
29	18.00	4.24	0.5	-0.0009656	-0.10	0.700
30	20.00	4.47	0.5	-0.0009656	-0.10	0.700
31	22.00	4.69	0.5	-0.0009656	-0.10	0.700
32	24.00	4.90	0.501	-0.001012	-0.10	0.700
33	26.00	5.10	0.5	-0.0009656	-0.10	0.700
34	28.00	5.29	0.5	-0.001012	-0.10	0.700
35	30.00	5.48	0.5	-0.001012	-0.10	0.700
36	35.00	5.92	0.5	-0.001012	-0.10	0.700
37	40.00	6.32	0.5	-0.001012	-0.10	0.700
38	45.00	6.71	0.499	-0.001058	-0.11	0.700
39	50.00	7.07	0.5	-0.001058	-0.11	0.700
40	60.00	7.75	0.5	-0.001058	-0.11	0.700
41	70.00	8.37	0.501	-0.001149	-0.11	0.700
42	80.00	8.94	0.5	-0.001149	-0.11	0.700
43	90.00	9.49	0.5	-0.001103	-0.11	0.700
44	100.00	10.00	0.5	-0.001103	-0.11	0.700
45	110.00	10.49	0.5	-0.001103	-0.11	0.700
46	120.00	10.95	0.5	-0.001149	-0.11	0.700
47	120.03	10.96	0.499	-0.001149	-0.11	0.700

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-253
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 6/18/19
Sample Type: CORE

Project No.: 19-253
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 5 of 6
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.5	-0.001149	-0.11	0.700
2	0.01	0.09	0.495	-0.001149	-0.11	0.700
3	0.02	0.13	0.389	-0.001379	-0.14	0.701
4	0.03	0.16	0.335	-0.001655	-0.17	0.701
5	0.04	0.19	0.308	-0.001839	-0.18	0.702
6	0.05	0.23	0.281	-0.002069	-0.21	0.702
7	0.07	0.27	0.269	-0.002115	-0.21	0.702
8	0.08	0.29	0.263	-0.002161	-0.22	0.702
9	0.12	0.34	0.259	-0.002253	-0.22	0.702
10	0.17	0.41	0.255	-0.002345	-0.23	0.702
11	0.25	0.50	0.253	-0.002437	-0.24	0.703
12	0.34	0.58	0.253	-0.002483	-0.25	0.703
13	0.50	0.71	0.251	-0.002575	-0.26	0.703
14	0.75	0.87	0.25	-0.002943	-0.29	0.703
15	1.00	1.00	0.251	-0.003035	-0.30	0.704
16	1.50	1.23	0.251	-0.003081	-0.31	0.704
17	2.00	1.41	0.25	-0.003173	-0.32	0.704
18	3.00	1.73	0.25	-0.003265	-0.33	0.704
19	4.00	2.00	0.251	-0.00331	-0.33	0.704
20	5.00	2.24	0.25	-0.003402	-0.34	0.704
21	6.00	2.45	0.25	-0.003494	-0.35	0.704
22	7.00	2.65	0.251	-0.00354	-0.35	0.704
23	8.00	2.83	0.25	-0.003586	-0.36	0.705
24	9.00	3.00	0.251	-0.003678	-0.37	0.705
25	10.00	3.16	0.25	-0.003678	-0.37	0.705
26	12.00	3.46	0.25	-0.00377	-0.38	0.705
27	14.00	3.74	0.251	-0.003862	-0.39	0.705
28	16.00	4.00	0.25	-0.003908	-0.39	0.705
29	18.00	4.24	0.25	-0.003954	-0.39	0.705
30	20.00	4.47	0.25	-0.004	-0.40	0.705
31	22.00	4.69	0.25	-0.004	-0.40	0.705
32	24.00	4.90	0.25	-0.004046	-0.40	0.705
33	26.00	5.10	0.25	-0.004092	-0.41	0.705
34	28.00	5.29	0.25	-0.004092	-0.41	0.705
35	30.00	5.48	0.25	-0.004138	-0.41	0.705
36	35.00	5.92	0.25	-0.00423	-0.42	0.706
37	40.00	6.32	0.25	-0.004322	-0.43	0.706
38	45.00	6.71	0.25	-0.004322	-0.43	0.706
39	50.00	7.07	0.25	-0.004322	-0.43	0.706
40	60.00	7.75	0.25	-0.004414	-0.44	0.706
41	70.00	8.37	0.25	-0.00446	-0.45	0.706
42	80.00	8.94	0.25	-0.004598	-0.46	0.706
43	90.00	9.49	0.25	-0.00469	-0.47	0.706
44	100.00	10.00	0.25	-0.004736	-0.47	0.706
45	110.00	10.49	0.25	-0.004782	-0.48	0.707
46	120.00	10.95	0.25	-0.004736	-0.47	0.706
47	120.03	10.96	0.251	-0.004736	-0.47	0.706

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-253
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 6/18/19
Sample Type: CORE

Project No.: 19-253
Checked By: SKK
Depth: 7.5-10'
Elevation: N/A

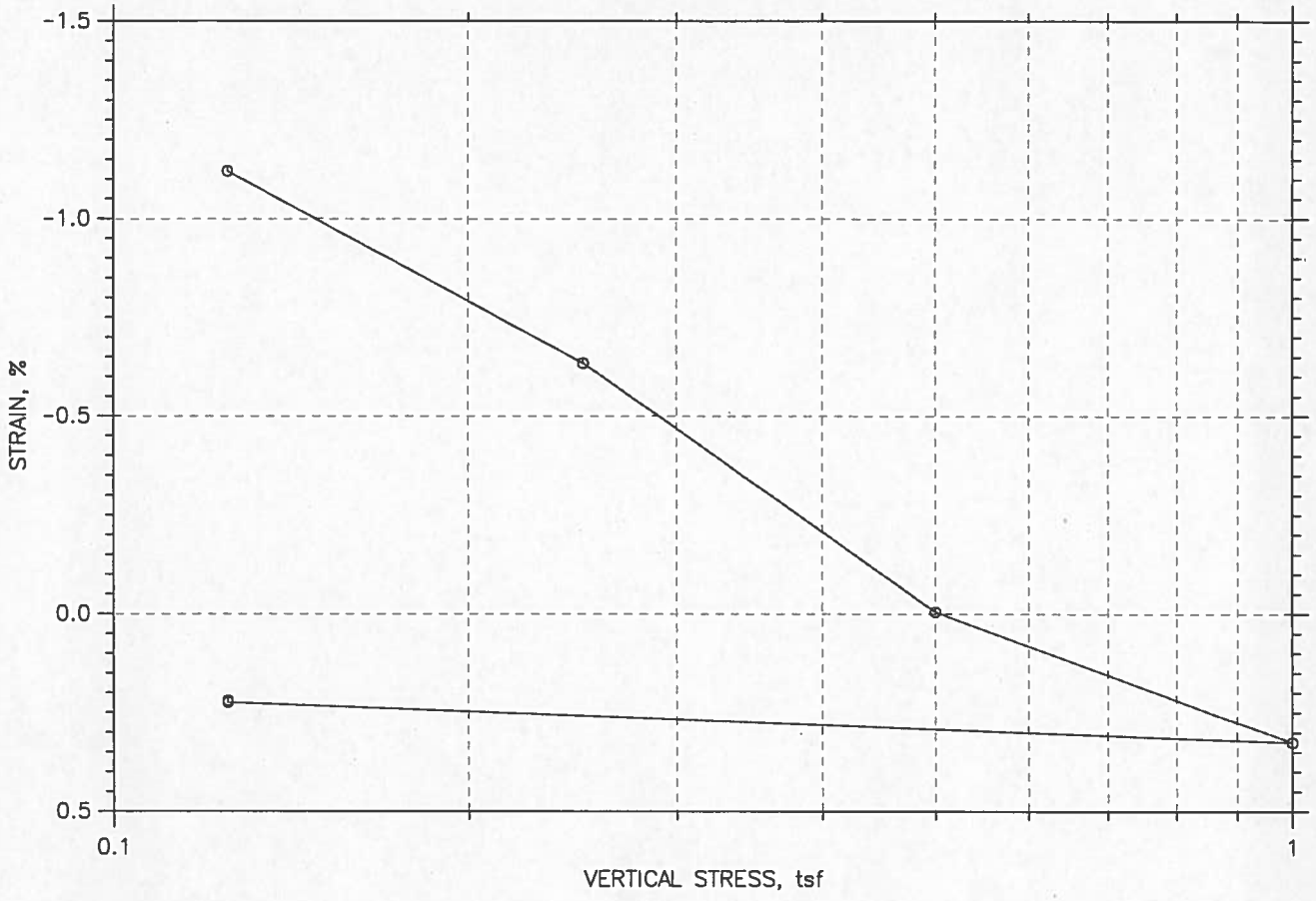
Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

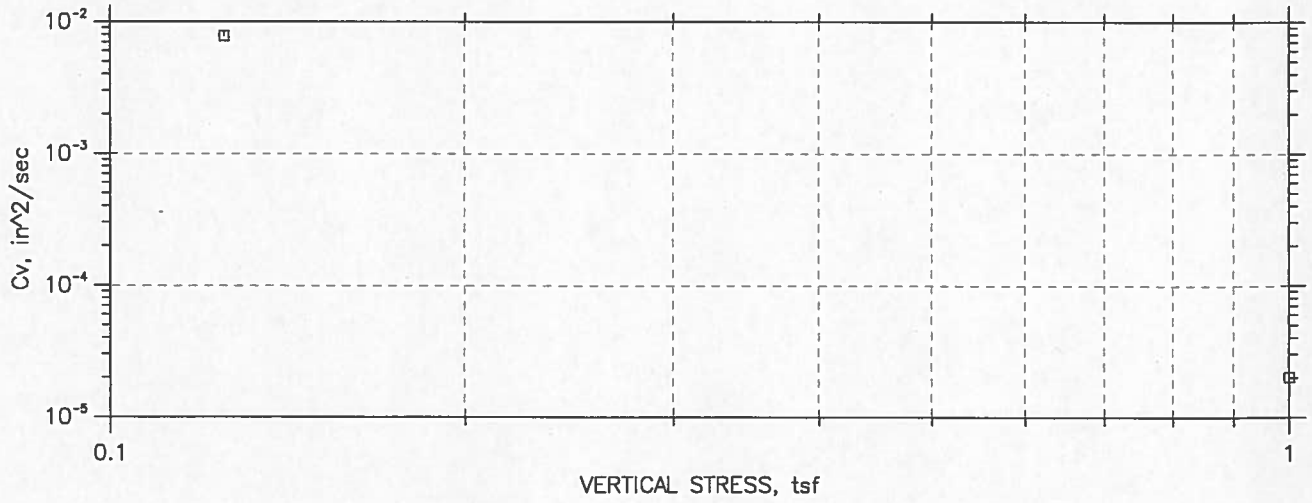
Constant Load Step: 6 of 6
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	-0.004736	-0.47	0.706
2	0.01	0.09	0.232	-0.004736	-0.47	0.706
3	0.02	0.13	0.183	-0.004874	-0.49	0.707
4	0.03	0.16	0.164	-0.005012	-0.50	0.707
5	0.04	0.19	0.153	-0.005058	-0.50	0.707
6	0.05	0.23	0.142	-0.00515	-0.51	0.707
7	0.07	0.27	0.138	-0.005196	-0.52	0.707
8	0.08	0.29	0.134	-0.005288	-0.53	0.707
9	0.12	0.34	0.131	-0.00538	-0.54	0.708
10	0.17	0.41	0.13	-0.005471	-0.55	0.708
11	0.25	0.50	0.128	-0.005563	-0.56	0.708
12	0.34	0.58	0.128	-0.005609	-0.56	0.708
13	0.50	0.71	0.125	-0.005747	-0.57	0.708
14	0.75	0.87	0.125	-0.005885	-0.59	0.708
15	1.00	1.00	0.125	-0.006023	-0.60	0.709
16	1.50	1.23	0.125	-0.006207	-0.62	0.709
17	2.00	1.41	0.124	-0.006437	-0.64	0.709
18	3.00	1.73	0.125	-0.006713	-0.67	0.710
19	4.00	2.00	0.125	-0.006805	-0.68	0.710
20	5.00	2.24	0.124	-0.006943	-0.69	0.710
21	6.00	2.45	0.125	-0.007035	-0.70	0.710
22	7.00	2.65	0.124	-0.007173	-0.72	0.711
23	8.00	2.83	0.125	-0.007403	-0.74	0.711
24	9.00	3.00	0.124	-0.007541	-0.75	0.711
25	10.00	3.16	0.124	-0.007587	-0.76	0.711
26	12.00	3.46	0.125	-0.007678	-0.77	0.711
27	14.00	3.74	0.124	-0.007724	-0.77	0.712
28	16.00	4.00	0.125	-0.00777	-0.78	0.712
29	18.00	4.24	0.124	-0.007908	-0.79	0.712
30	20.00	4.47	0.124	-0.008046	-0.80	0.712
31	22.00	4.69	0.124	-0.008092	-0.81	0.712
32	24.00	4.90	0.124	-0.00823	-0.82	0.712
33	26.00	5.10	0.125	-0.008276	-0.83	0.712
34	28.00	5.29	0.125	-0.008322	-0.83	0.713
35	30.00	5.48	0.124	-0.008368	-0.84	0.713
36	35.00	5.92	0.124	-0.008414	-0.84	0.713
37	40.00	6.32	0.124	-0.00846	-0.84	0.713
38	45.00	6.71	0.124	-0.008552	-0.85	0.713
39	50.00	7.07	0.124	-0.008644	-0.86	0.713
40	60.00	7.75	0.123	-0.00869	-0.87	0.713
41	70.00	8.37	0.124	-0.008782	-0.88	0.713
42	80.00	8.94	0.124	-0.008828	-0.88	0.713
43	90.00	9.49	0.125	-0.008828	-0.88	0.713
44	100.00	10.00	0.124	-0.00892	-0.89	0.714
45	110.00	10.49	0.125	-0.008966	-0.89	0.714
46	120.00	10.95	0.124	-0.008966	-0.89	0.714
47	120.02	10.96	0.127	-0.008966	-0.89	0.714

CONSOLIDATION TEST DATA

SUMMARY REPORT





	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-255
	Boring No.: B-05	Tested By: SKK	Checked By: SKK
	Sample No.: 19-255	Test Date: 6/20/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

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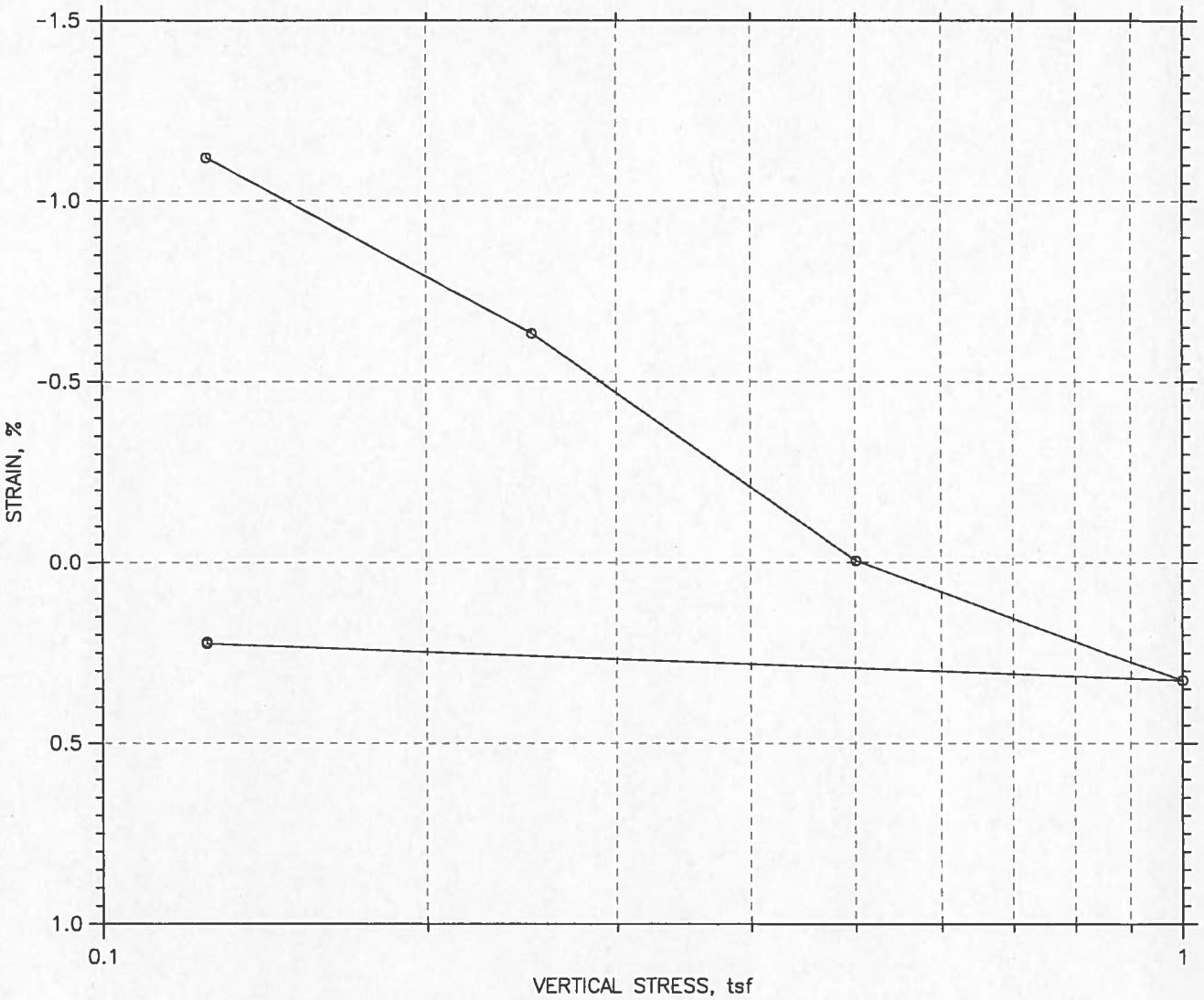
CONSOLIDATION TEST DATA

SUMMARY REPORT



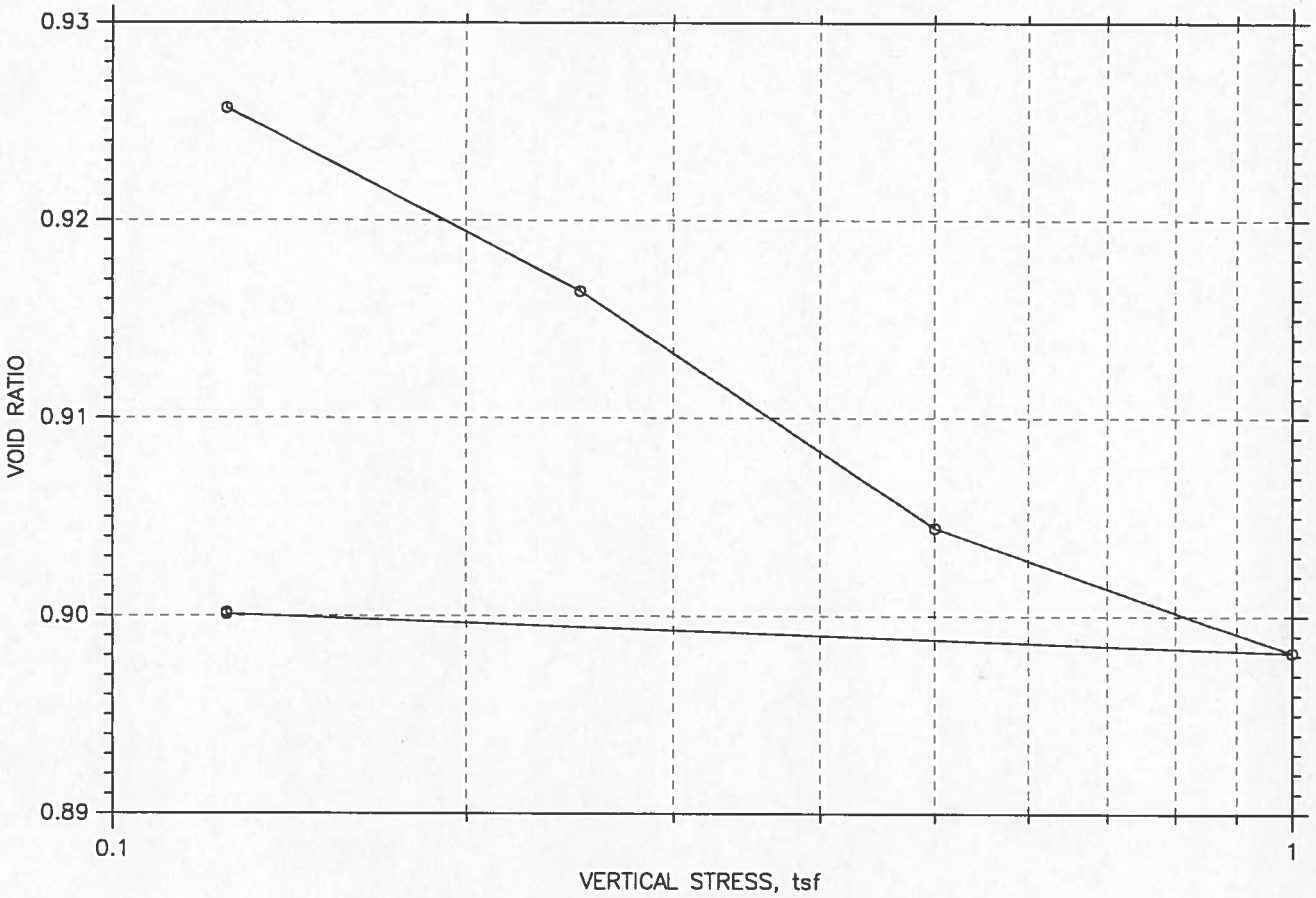
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	30.62	33.84
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	89.17	88.
Compression Index: 3.81959e-313				Saturation, %	92.09	99.01
Diameter: 2.5 in		Height: 1.002 in		Void Ratio	0.90	0.93
LL: ---	PL: ---	PI: ---	GS: 2.72			

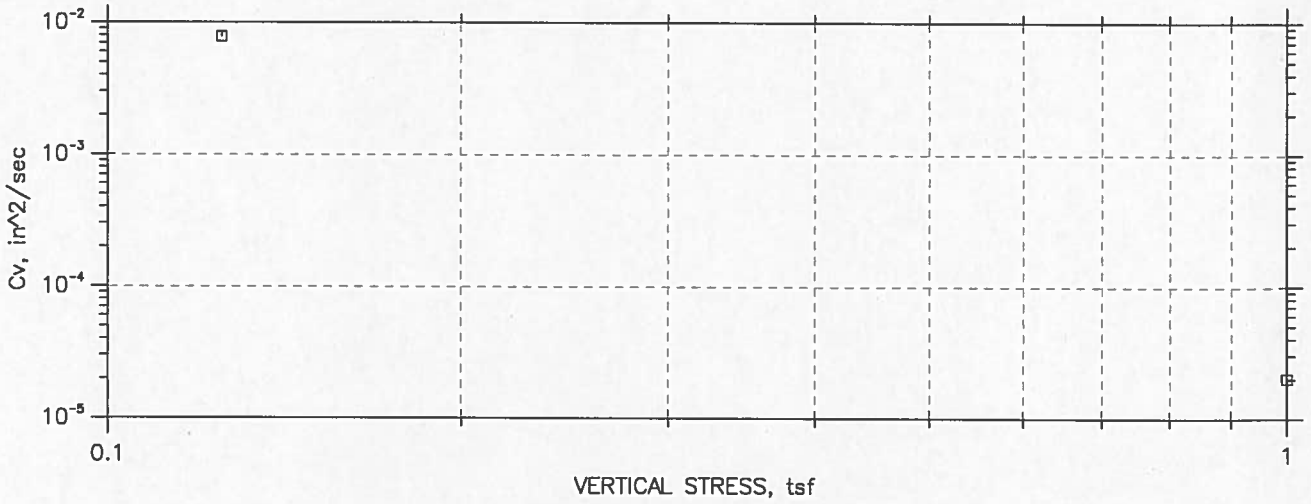
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-255
	Boring No.: B-05	Tested By: SKK	Checked By: SKK
	Sample No.: 19-255	Test Date: 6/20/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Tue, 02-JUL-2019 10:21:44

CONSOLIDATION TEST DATA

SUMMARY REPORT



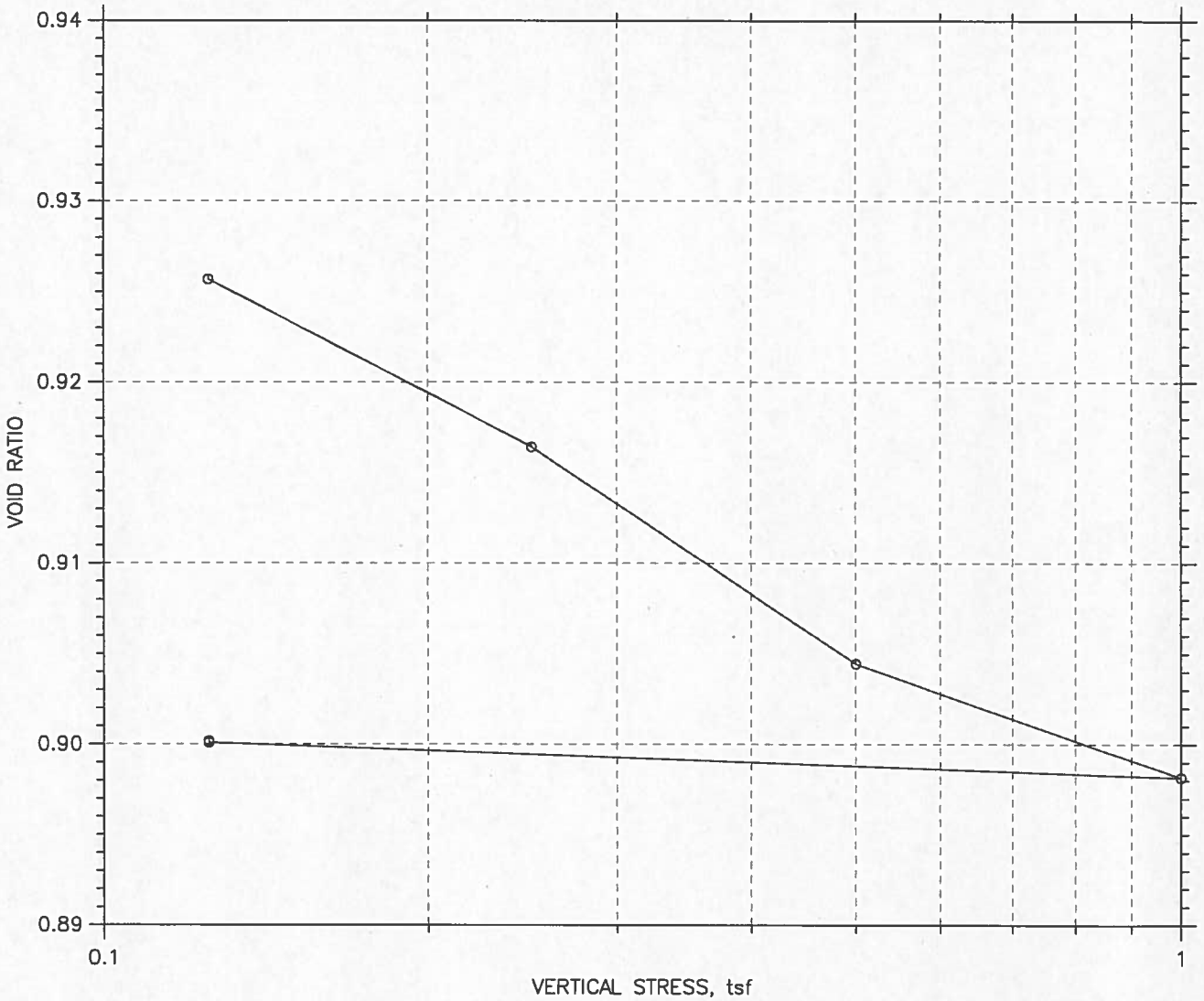


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-255
	Boring No.: B-05	Tested By: SKK	Checked By: SKK
	Sample No.: 19-255	Test Date: 6/20/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Tue, 02-JUL-2019 10:23:25

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	30.62	33.84
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	89.17	88.
Compression Index: 3.81959e-313				Saturation, %	92.09	99.01
Diameter: 2.5 in		Height: 1.002 in		Void Ratio	0.90	0.93
LL: ---	PL: ---	PI: ---	GS: 2.72			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-255
	Boring No.: B-05	Tested By: SKK	Checked By: SKK
	Sample No.: 19-255	Test Date: 6/20/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Tue, 02-JUL-2019 10:23:25

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Measured Specific Gravity: 2.72
Initial Void Ratio: 0.90
Final Void Ratio: 0.93

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	148.41	260.52	264.23	211.83
Wt. Container + Dry Soil, gm	125.99	225.27	225.27	173.12
Wt. Container, gm	53.84	110.15	110.15	58.73
Wt. Dry Soil, gm	72.15	115.12	115.12	114.39
Water Content, %	31.07	30.62	33.84	33.84
Void Ratio	---	0.90	0.93	---
Degree of Saturation, %	---	92.09	99.01	---
Dry Unit Weight, pcf	---	89.166	87.995	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.002207	0.900	0.22	0.4	8.11e-003	1.76e-002	2.67e-003
2	0.125	0.002253	0.900	0.22	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	1	0.003265	0.898	0.33	144.5	2.44e-005	1.15e-003	5.27e-007
4	0.5	-4.598e-005	0.904	-0.00	2.5	1.41e-003	6.61e-003	1.74e-004
5	0.25	-0.006345	0.916	-0.63	168.9	2.11e-005	2.51e-002	9.95e-006
6	0.125	-0.01122	0.926	-1.12	91.4	3.95e-005	3.89e-002	2.88e-005

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.002207	0.900	0.22	0.1	9.22e-003	1.76e-002	3.04e-003
2	0.125	0.002253	0.900	0.22	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	1	0.003265	0.898	0.33	0.0	0.00e+000	1.15e-003	0.00e+000
4	0.5	-4.598e-005	0.904	-0.00	0.0	0.00e+000	6.61e-003	0.00e+000
5	0.25	-0.006345	0.916	-0.63	0.0	0.00e+000	2.51e-002	0.00e+000
6	0.125	-0.01122	0.926	-1.12	0.0	0.00e+000	3.89e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 1 of 6
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.0056	-0.001335	-0.13	0.907
2	0.01	0.09	0.00896	-0.001335	-0.13	0.907
3	0.02	0.13	0.0303	-0.001243	-0.12	0.907
4	0.03	0.16	0.0459	-0.001151	-0.11	0.907
5	0.03	0.19	0.0627	-0.001013	-0.10	0.906
6	0.05	0.23	0.084	-0.0006916	-0.07	0.906
7	0.07	0.26	0.0975	-0.0003697	-0.04	0.905
8	0.09	0.30	0.105	-0.0003237	-0.03	0.905
9	0.12	0.34	0.114	-0.0002318	-0.02	0.905
10	0.17	0.41	0.119	-9.385e-005	-0.01	0.905
11	0.25	0.50	0.121	9.007e-005	0.01	0.904
12	0.33	0.58	0.122	0.000182	0.02	0.904
13	0.50	0.71	0.123	0.00032	0.03	0.904
14	0.75	0.87	0.123	0.0004119	0.04	0.904
15	1.00	1.00	0.124	0.0004579	0.05	0.903
16	1.50	1.23	0.123	0.0005039	0.05	0.903
17	2.00	1.41	0.123	0.0005499	0.05	0.903
18	3.00	1.73	0.124	0.0005958	0.06	0.903
19	4.00	2.00	0.125	0.0006418	0.06	0.903
20	5.00	2.24	0.124	0.0006878	0.07	0.903
21	6.00	2.45	0.124	0.0007338	0.07	0.903
22	7.00	2.65	0.124	0.0007338	0.07	0.903
23	8.00	2.83	0.124	0.0007338	0.07	0.903
24	9.00	3.00	0.124	0.0007798	0.08	0.903
25	10.00	3.16	0.123	0.0007798	0.08	0.903
26	12.00	3.46	0.124	0.0008257	0.08	0.903
27	14.00	3.74	0.124	0.0008717	0.09	0.903
28	15.03	3.88	0.124	0.0008717	0.09	0.903

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Volume Step: 2 of 6
Seating Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.124	0.0008717	0.09	0.903
2	0.01	0.09	0.124	0.0008717	0.09	0.903
3	0.02	0.13	0.124	0.0008717	0.09	0.903
4	0.03	0.16	0.124	0.0008717	0.09	0.903
5	0.03	0.19	0.125	0.0008717	0.09	0.903
6	0.05	0.23	0.129	0.0008717	0.09	0.903
7	0.07	0.27	0.137	0.0008717	0.09	0.903
8	0.08	0.29	0.142	0.0008717	0.09	0.903
9	0.12	0.34	0.153	0.0008717	0.09	0.903
10	0.17	0.41	0.166	0.0008717	0.09	0.903
11	0.25	0.50	0.18	0.0008257	0.08	0.903
12	0.33	0.58	0.192	0.0008257	0.08	0.903
13	0.50	0.71	0.211	0.0008257	0.08	0.903
14	0.75	0.87	0.235	0.0008257	0.08	0.903
15	1.00	1.00	0.255	0.0007798	0.08	0.903
16	1.50	1.23	0.288	0.0007798	0.08	0.903
17	2.00	1.41	0.314	0.0008257	0.08	0.903
18	3.00	1.73	0.355	0.0008257	0.08	0.903
19	4.00	2.00	0.383	0.0008257	0.08	0.903
20	5.00	2.24	0.404	0.0008257	0.08	0.903
21	6.00	2.45	0.426	0.0008257	0.08	0.903
22	7.00	2.65	0.439	0.0008717	0.09	0.903
23	8.00	2.83	0.452	0.0008257	0.08	0.903
24	9.00	3.00	0.463	0.0008257	0.08	0.903
25	10.00	3.16	0.476	0.0008717	0.09	0.903
26	12.00	3.46	0.494	0.0008717	0.09	0.903
27	14.00	3.74	0.509	0.0008717	0.09	0.903
28	16.00	4.00	0.521	0.0008717	0.09	0.903
29	18.00	4.24	0.533	0.0008257	0.08	0.903
30	20.00	4.47	0.545	0.0008257	0.08	0.903
31	22.00	4.69	0.555	0.0008257	0.08	0.903
32	24.00	4.90	0.566	0.0008717	0.09	0.903
33	26.00	5.10	0.578	0.0008717	0.09	0.903
34	28.00	5.29	0.587	0.0008717	0.09	0.903
35	30.00	5.48	0.596	0.0009177	0.09	0.903
36	35.00	5.92	0.617	0.0008717	0.09	0.903
37	40.00	6.32	0.627	0.0009177	0.09	0.903
38	45.00	6.71	0.639	0.0008717	0.09	0.903
39	50.00	7.07	0.648	0.0009177	0.09	0.903
40	60.00	7.75	0.667	0.0009177	0.09	0.903
41	70.00	8.37	0.685	0.0009177	0.09	0.903
42	80.00	8.94	0.71	0.0009177	0.09	0.903
43	90.00	9.49	0.727	0.0009177	0.09	0.903
44	100.00	10.00	0.736	0.0008717	0.09	0.903
45	110.00	10.49	0.752	0.0009177	0.09	0.903
46	120.00	10.95	0.765	0.0009177	0.09	0.903
47	130.00	11.40	0.772	0.0008717	0.09	0.903
48	140.00	11.83	0.788	0.0009177	0.09	0.903
49	150.00	12.25	0.796	0.0009177	0.09	0.903
50	160.00	12.65	0.804	0.0009177	0.09	0.903
51	170.00	13.04	0.81	0.0009637	0.10	0.903
52	180.00	13.42	0.809	0.0009177	0.09	0.903
53	190.00	13.78	0.809	0.0009177	0.09	0.903
54	200.00	14.14	0.813	0.0009177	0.09	0.903
55	210.00	14.49	0.817	0.0009177	0.09	0.903
56	220.00	14.83	0.819	0.0009177	0.09	0.903
57	230.00	15.17	0.818	0.0009177	0.09	0.903
58	240.00	15.49	0.819	0.0009177	0.09	0.903
59	250.00	15.81	0.821	0.0009177	0.09	0.903
60	260.00	16.12	0.82	0.0009177	0.09	0.903
61	270.00	16.43	0.822	0.0009177	0.09	0.903
62	280.00	16.73	0.822	0.0009177	0.09	0.903
63	290.00	17.03	0.825	0.0009177	0.09	0.903
64	300.00	17.32	0.825	0.0009177	0.09	0.903
65	310.00	17.61	0.824	0.0009177	0.09	0.903
66	320.00	17.89	0.829	0.0009177	0.09	0.903
67	330.00	18.17	0.827	0.0009177	0.09	0.903
68	340.00	18.44	0.827	0.0009177	0.09	0.903
69	350.00	18.71	0.834	0.0009177	0.09	0.903
70	360.00	18.97	0.839	0.0009177	0.09	0.903
71	370.00	19.24	0.835	0.0009177	0.09	0.903
72	380.00	19.49	0.844	0.0009177	0.09	0.903
73	390.00	19.75	0.836	0.0009177	0.09	0.903
74	400.00	20.00	0.837	0.0009177	0.09	0.903
75	410.00	20.25	0.835	0.0009177	0.09	0.903
76	420.00	20.49	0.837	0.0009177	0.09	0.903
77	430.00	20.74	0.836	0.0009177	0.09	0.903
78	440.00	20.98	0.832	0.0009177	0.09	0.903
79	450.00	21.21	0.832	0.0009177	0.09	0.903
80	460.00	21.45	0.83	0.0009177	0.09	0.903
81	470.00	21.68	0.835	0.0009177	0.09	0.903

82	480.00	21.91	0.831	0.0009177	0.09	0.903
83	490.00	22.14	0.831	0.0009177	0.09	0.903
84	500.00	22.36	0.831	0.0008717	0.09	0.903
85	510.00	22.58	0.84	0.0009177	0.09	0.903
86	520.00	22.80	0.843	0.0009177	0.09	0.903
87	530.00	23.02	0.845	0.0009177	0.09	0.903
88	540.00	23.24	0.844	0.0008717	0.09	0.903
89	550.00	23.45	0.846	0.0009177	0.09	0.903
90	560.00	23.66	0.846	0.0009637	0.10	0.903
91	570.00	23.87	0.852	0.0009177	0.09	0.903
92	580.00	24.08	0.853	0.0009177	0.09	0.903
93	590.00	24.29	0.858	0.0009177	0.09	0.903
94	600.00	24.49	0.854	0.0009177	0.09	0.903
95	610.00	24.70	0.855	0.0009177	0.09	0.903
96	620.00	24.90	0.854	0.0009177	0.09	0.903
97	630.00	25.10	0.853	0.0009177	0.09	0.903
98	640.00	25.30	0.855	0.0009177	0.09	0.903
99	650.00	25.50	0.85	0.0009177	0.09	0.903
100	660.00	25.69	0.854	0.0009177	0.09	0.903
101	670.00	25.88	0.853	0.0009177	0.09	0.903
102	680.00	26.08	0.848	0.0009177	0.09	0.903
103	690.00	26.27	0.848	0.0009177	0.09	0.903
104	700.00	26.46	0.85	0.0009177	0.09	0.903
105	710.00	26.65	0.853	0.0009177	0.09	0.903
106	720.00	26.83	0.853	0.0009177	0.09	0.903
107	730.00	27.02	0.852	0.0009177	0.09	0.903
108	740.00	27.20	0.848	0.0009177	0.09	0.903
109	750.00	27.39	0.848	0.0009177	0.09	0.903
110	760.00	27.57	0.85	0.0009177	0.09	0.903
111	770.00	27.75	0.844	0.0009177	0.09	0.903
112	780.00	27.93	0.846	0.0009177	0.09	0.903
113	790.00	28.11	0.844	0.0009177	0.09	0.903
114	800.00	28.28	0.847	0.0009177	0.09	0.903
115	810.00	28.46	0.839	0.0009177	0.09	0.903
116	820.00	28.64	0.847	0.0009637	0.10	0.903
117	830.00	28.81	0.843	0.0009177	0.09	0.903
118	840.00	28.98	0.848	0.0009177	0.09	0.903
119	850.00	29.15	0.846	0.0009177	0.09	0.903
120	860.00	29.33	0.848	0.0009177	0.09	0.903
121	870.00	29.50	0.843	0.0009177	0.09	0.903
122	880.00	29.66	0.848	0.0009177	0.09	0.903
123	890.00	29.83	0.847	0.0009177	0.09	0.903
124	900.00	30.00	0.848	0.0009177	0.09	0.903
125	910.00	30.17	0.843	0.0009177	0.09	0.903
126	920.00	30.33	0.848	0.0009177	0.09	0.903
127	930.00	30.50	0.843	0.0009177	0.09	0.903
128	940.00	30.66	0.849	0.0009177	0.09	0.903
129	950.00	30.82	0.847	0.0008717	0.09	0.903
130	960.00	30.98	0.853	0.0009177	0.09	0.903
131	970.00	31.14	0.847	0.0009177	0.09	0.903
132	980.00	31.30	0.849	0.0009177	0.09	0.903
133	990.00	31.46	0.846	0.0008717	0.09	0.903
134	1000.00	31.62	0.857	0.0009177	0.09	0.903
135	1010.00	31.78	0.856	0.0009177	0.09	0.903
136	1020.00	31.94	0.858	0.0009177	0.09	0.903
137	1030.00	32.09	0.857	0.0009177	0.09	0.903
138	1040.00	32.25	0.857	0.0009177	0.09	0.903
139	1050.00	32.40	0.857	0.0009177	0.09	0.903
140	1060.00	32.56	0.855	0.0009177	0.09	0.903
141	1070.00	32.71	0.854	0.0009177	0.09	0.903
142	1080.00	32.86	0.854	0.0009177	0.09	0.903
143	1090.00	33.02	0.858	0.0009177	0.09	0.903
144	1100.00	33.17	0.852	0.0009177	0.09	0.903
145	1110.00	33.32	0.853	0.0009177	0.09	0.903
146	1120.00	33.47	0.849	0.0009177	0.09	0.903
147	1130.00	33.62	0.853	0.0009177	0.09	0.903
148	1140.00	33.76	0.848	0.0009177	0.09	0.903
149	1150.00	33.91	0.852	0.0009177	0.09	0.903
150	1160.00	34.06	0.845	0.0009177	0.09	0.903
151	1170.00	34.21	0.849	0.0009177	0.09	0.903
152	1180.00	34.35	0.845	0.0009177	0.09	0.903
153	1190.00	34.50	0.845	0.0009177	0.09	0.903
154	1200.00	34.64	0.846	0.0008717	0.09	0.903
155	1210.00	34.79	0.85	0.0009177	0.09	0.903
156	1220.00	34.93	0.85	0.0009177	0.09	0.903
157	1230.00	35.07	0.846	0.0009177	0.09	0.903
158	1240.00	35.21	0.853	0.0009177	0.09	0.903
159	1250.00	35.36	0.849	0.0009177	0.09	0.903
160	1260.00	35.50	0.849	0.0009177	0.09	0.903
161	1270.00	35.64	0.852	0.0009177	0.09	0.903
162	1280.00	35.78	0.85	0.0009177	0.09	0.903
163	1290.00	35.92	0.854	0.0009177	0.09	0.903
164	1300.00	36.06	0.849	0.0008717	0.09	0.903
165	1310.00	36.19	0.854	0.0009177	0.09	0.903
166	1320.00	36.33	0.853	0.0009177	0.09	0.903
167	1330.00	36.47	0.855	0.0009177	0.09	0.903
168	1338.26	36.58	0.854	0.0009177	0.09	0.903

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 3 of 6
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.854	-0.004919	-0.49	0.914
2	0.01	0.09	0.894	-0.004919	-0.49	0.914
3	0.02	0.13	0.981	-0.004827	-0.48	0.914
4	0.03	0.16	0.993	-0.004735	-0.47	0.913
5	0.04	0.19	0.997	-0.004735	-0.47	0.913
6	0.05	0.23	0.997	-0.004689	-0.47	0.913
7	0.07	0.27	0.998	-0.004643	-0.46	0.913
8	0.08	0.29	0.998	-0.004643	-0.46	0.913
9	0.12	0.34	0.998	-0.004643	-0.46	0.913
10	0.17	0.41	0.999	-0.004643	-0.46	0.913
11	0.25	0.50	0.999	-0.004597	-0.46	0.913
12	0.34	0.58	0.998	-0.004597	-0.46	0.913
13	0.50	0.71	1	-0.004597	-0.46	0.913
14	0.75	0.87	0.999	-0.004597	-0.46	0.913
15	1.00	1.00	0.999	-0.004551	-0.45	0.913
16	1.50	1.23	0.999	-0.004551	-0.45	0.913
17	2.00	1.42	1	-0.004551	-0.45	0.913
18	3.00	1.73	1	-0.004505	-0.45	0.913
19	4.00	2.00	1	-0.004505	-0.45	0.913
20	5.00	2.24	0.998	-0.004505	-0.45	0.913
21	6.00	2.45	0.999	-0.004459	-0.45	0.913
22	7.00	2.65	0.999	-0.004459	-0.45	0.913
23	8.00	2.83	0.999	-0.004459	-0.45	0.913
24	9.00	3.00	0.999	-0.004459	-0.45	0.913
25	10.00	3.16	0.999	-0.004459	-0.45	0.913
26	12.00	3.46	0.999	-0.004413	-0.44	0.913
27	14.00	3.74	0.999	-0.004413	-0.44	0.913
28	16.00	4.00	1	-0.004413	-0.44	0.913
29	18.00	4.24	0.999	-0.004413	-0.44	0.913
30	20.00	4.47	0.998	-0.004367	-0.44	0.913
31	22.00	4.69	0.999	-0.004367	-0.44	0.913
32	24.00	4.90	0.999	-0.004367	-0.44	0.913
33	26.00	5.10	0.999	-0.004367	-0.44	0.913
34	28.00	5.29	0.999	-0.004367	-0.44	0.913
35	30.00	5.48	0.999	-0.004367	-0.44	0.913
36	35.00	5.92	0.998	-0.004367	-0.44	0.913
37	40.00	6.32	0.998	-0.004321	-0.43	0.913
38	45.00	6.71	0.998	-0.004275	-0.43	0.912
39	50.00	7.07	0.999	-0.004275	-0.43	0.912
40	60.00	7.75	0.999	-0.004229	-0.42	0.912
41	70.00	8.37	0.999	-0.004183	-0.42	0.912
42	80.00	8.94	0.999	-0.004137	-0.41	0.912
43	90.00	9.49	0.999	-0.004137	-0.41	0.912
44	100.00	10.00	0.999	-0.004091	-0.41	0.912
45	110.00	10.49	0.999	-0.004045	-0.40	0.912
46	120.00	10.95	0.998	-0.004045	-0.40	0.912
47	130.00	11.40	0.999	-0.004045	-0.40	0.912
48	140.00	11.83	0.999	-0.003999	-0.40	0.912
49	150.00	12.25	0.999	-0.003953	-0.39	0.912
50	160.00	12.65	0.999	-0.003953	-0.39	0.912
51	170.00	13.04	0.999	-0.003907	-0.39	0.912
52	180.00	13.42	0.999	-0.003907	-0.39	0.912
53	186.77	13.67	0.999	-0.003907	-0.39	0.912

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 4 of 6
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.001149	0.11	0.902
2	0.01	0.09	0.964	0.001149	0.11	0.902
3	0.02	0.13	0.639	0.0002759	0.03	0.904
4	0.03	0.16	0.573	2.732e-019	0.00	0.904
5	0.04	0.19	0.542	-9.196e-005	-0.01	0.905
6	0.05	0.23	0.52	-0.0002299	-0.02	0.905
7	0.07	0.27	0.512	-0.0003219	-0.03	0.905
8	0.08	0.29	0.509	-0.0003678	-0.04	0.905
9	0.12	0.35	0.505	-0.0003678	-0.04	0.905
10	0.17	0.41	0.503	-0.0005058	-0.05	0.905
11	0.25	0.50	0.502	-0.0006437	-0.06	0.906
12	0.34	0.58	0.502	-0.0007357	-0.07	0.906
13	0.50	0.71	0.501	-0.0007816	-0.08	0.906
14	0.75	0.87	0.501	-0.0009196	-0.09	0.906
15	1.00	1.00	0.5	-0.001012	-0.10	0.906
16	1.50	1.23	0.501	-0.001103	-0.11	0.906
17	2.00	1.41	0.501	-0.001149	-0.11	0.907
18	3.00	1.73	0.5	-0.001195	-0.12	0.907
19	4.00	2.00	0.501	-0.001241	-0.12	0.907
20	5.00	2.24	0.5	-0.001241	-0.12	0.907
21	6.00	2.45	0.5	-0.001333	-0.13	0.907
22	7.00	2.65	0.5	-0.001379	-0.14	0.907
23	8.00	2.83	0.5	-0.001425	-0.14	0.907
24	9.00	3.00	0.5	-0.001471	-0.15	0.907
25	10.00	3.16	0.499	-0.001517	-0.15	0.907
26	12.00	3.46	0.5	-0.001563	-0.16	0.907
27	14.00	3.74	0.5	-0.001563	-0.16	0.907
28	16.00	4.00	0.5	-0.001609	-0.16	0.907
29	18.00	4.24	0.5	-0.001655	-0.17	0.908
30	20.00	4.47	0.499	-0.001655	-0.17	0.908
31	22.00	4.69	0.501	-0.001655	-0.17	0.908
32	24.00	4.90	0.5	-0.001701	-0.17	0.908
33	26.00	5.10	0.5	-0.001701	-0.17	0.908
34	28.00	5.29	0.501	-0.001747	-0.17	0.908
35	30.00	5.48	0.5	-0.001793	-0.18	0.908
36	35.00	5.92	0.499	-0.001793	-0.18	0.908
37	40.00	6.32	0.5	-0.001793	-0.18	0.908
38	45.00	6.71	0.5	-0.001839	-0.18	0.908
39	50.00	7.07	0.5	-0.001885	-0.19	0.908
40	60.00	7.75	0.501	-0.001885	-0.19	0.908
41	70.00	8.37	0.5	-0.001977	-0.20	0.908
42	80.00	8.94	0.5	-0.002069	-0.21	0.908
43	90.00	9.49	0.5	-0.002069	-0.21	0.908
44	100.00	10.00	0.501	-0.002161	-0.22	0.908
45	100.03	10.00	0.501	-0.002161	-0.22	0.908

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 5 of 6
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.501	-0.002161	-0.22	0.908
2	0.01	0.09	0.471	-0.002207	-0.22	0.909
3	0.02	0.13	0.346	-0.002667	-0.27	0.909
4	0.03	0.16	0.308	-0.002897	-0.29	0.910
5	0.03	0.19	0.291	-0.002989	-0.30	0.910
6	0.05	0.23	0.271	-0.003081	-0.31	0.910
7	0.07	0.27	0.263	-0.003173	-0.32	0.910
8	0.08	0.29	0.259	-0.003265	-0.33	0.911
9	0.12	0.34	0.258	-0.003448	-0.34	0.911
10	0.17	0.41	0.254	-0.003586	-0.36	0.911
11	0.25	0.50	0.253	-0.003724	-0.37	0.911
12	0.33	0.58	0.252	-0.00377	-0.38	0.912
13	0.50	0.71	0.252	-0.003908	-0.39	0.912
14	0.75	0.87	0.251	-0.004	-0.40	0.912
15	1.00	1.00	0.251	-0.004092	-0.41	0.912
16	1.50	1.23	0.251	-0.00423	-0.42	0.912
17	2.00	1.41	0.25	-0.004368	-0.44	0.913
18	3.00	1.73	0.25	-0.004552	-0.45	0.913
19	4.00	2.00	0.25	-0.004644	-0.46	0.913
20	5.00	2.24	0.25	-0.004736	-0.47	0.913
21	6.00	2.45	0.25	-0.004782	-0.48	0.913
22	7.00	2.65	0.251	-0.004828	-0.48	0.914
23	8.00	2.83	0.249	-0.004874	-0.49	0.914
24	9.00	3.00	0.251	-0.00492	-0.49	0.914
25	10.00	3.16	0.249	-0.004966	-0.50	0.914
26	12.00	3.46	0.25	-0.005012	-0.50	0.914
27	14.00	3.74	0.25	-0.005058	-0.50	0.914
28	16.00	4.00	0.251	-0.005104	-0.51	0.914
29	18.00	4.24	0.25	-0.005196	-0.52	0.914
30	20.00	4.47	0.25	-0.005288	-0.53	0.914
31	22.00	4.69	0.25	-0.005334	-0.53	0.914
32	24.00	4.90	0.251	-0.00538	-0.54	0.915
33	26.00	5.10	0.251	-0.005426	-0.54	0.915
34	28.00	5.29	0.25	-0.005517	-0.55	0.915
35	30.00	5.48	0.25	-0.005563	-0.56	0.915
36	35.00	5.92	0.251	-0.005701	-0.57	0.915
37	40.00	6.32	0.251	-0.005885	-0.59	0.916
38	45.00	6.71	0.249	-0.006161	-0.61	0.916
39	50.00	7.07	0.25	-0.006391	-0.64	0.917
40	60.00	7.75	0.251	-0.006621	-0.66	0.917
41	70.00	8.37	0.251	-0.006805	-0.68	0.917
42	80.00	8.94	0.25	-0.007127	-0.71	0.918
43	90.00	9.49	0.249	-0.007357	-0.73	0.918
44	100.00	10.00	0.25	-0.007449	-0.74	0.919
45	110.00	10.49	0.25	-0.007587	-0.76	0.919
46	120.00	10.95	0.249	-0.007678	-0.77	0.919
47	130.00	11.40	0.251	-0.00777	-0.78	0.919
48	140.00	11.83	0.251	-0.007908	-0.79	0.919
49	150.00	12.25	0.251	-0.008046	-0.80	0.920
50	160.00	12.65	0.249	-0.008092	-0.81	0.920
51	170.00	13.04	0.25	-0.008184	-0.82	0.920
52	180.00	13.42	0.249	-0.008276	-0.83	0.920
53	190.00	13.78	0.25	-0.008276	-0.83	0.920
54	200.00	14.14	0.25	-0.008322	-0.83	0.920
55	210.00	14.49	0.25	-0.008368	-0.84	0.920
56	220.00	14.83	0.25	-0.008414	-0.84	0.920
57	230.00	15.17	0.25	-0.008506	-0.85	0.921
58	240.00	15.49	0.25	-0.00846	-0.84	0.920
59	250.00	15.81	0.251	-0.00846	-0.84	0.920
60	260.00	16.12	0.251	-0.008506	-0.85	0.921
61	270.00	16.43	0.251	-0.00846	-0.84	0.920
62	275.09	16.59	0.249	-0.00846	-0.84	0.920

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-05
Sample No.: 19-255
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/20/19
Sample Type: CORE

Project No.: 19-255
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

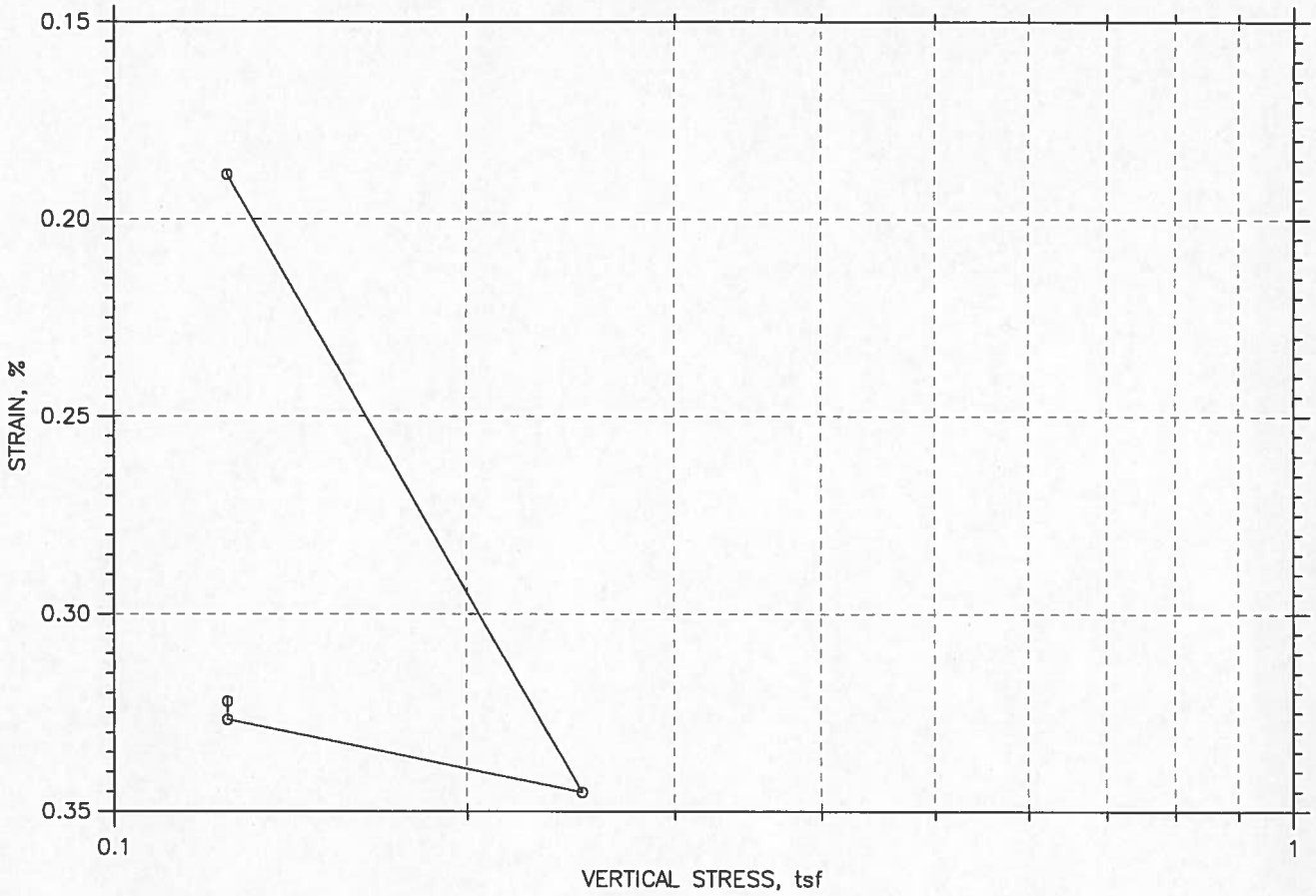
Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

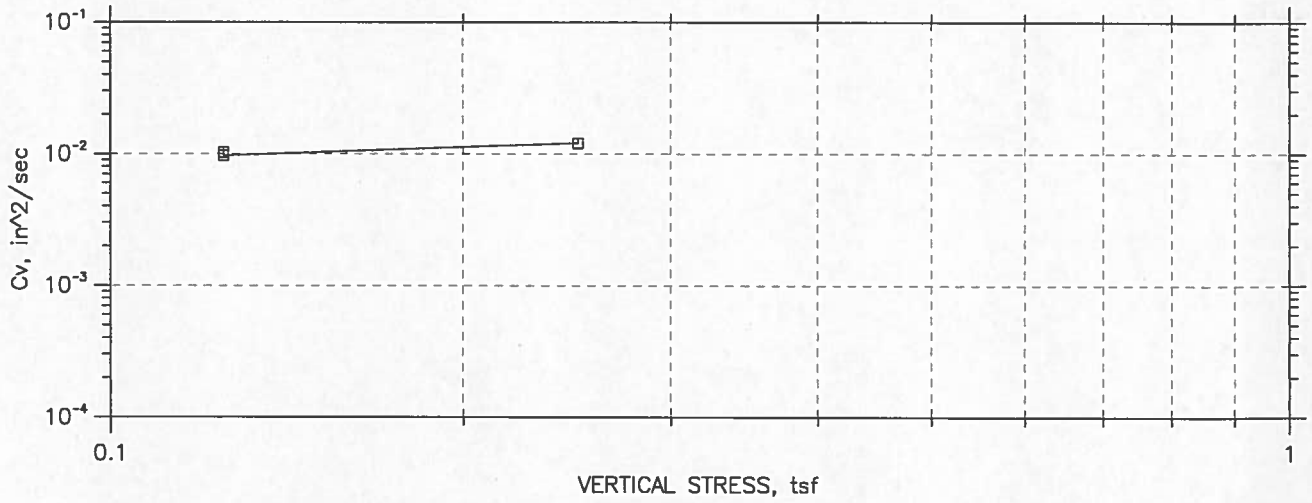
Constant Load Step: 6 of 6
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	-0.00846	-0.84	0.920
2	0.01	0.09	0.231	-0.00846	-0.84	0.920
3	0.02	0.13	0.168	-0.008552	-0.85	0.921
4	0.03	0.16	0.151	-0.008598	-0.86	0.921
5	0.04	0.19	0.141	-0.00869	-0.87	0.921
6	0.05	0.23	0.133	-0.008828	-0.88	0.921
7	0.07	0.27	0.131	-0.00892	-0.89	0.921
8	0.08	0.29	0.131	-0.009012	-0.90	0.921
9	0.12	0.35	0.129	-0.009012	-0.90	0.921
10	0.17	0.41	0.125	-0.009058	-0.90	0.922
11	0.25	0.50	0.125	-0.009196	-0.92	0.922
12	0.34	0.58	0.127	-0.009242	-0.92	0.922
13	0.50	0.71	0.127	-0.009288	-0.93	0.922
14	0.75	0.87	0.127	-0.009334	-0.93	0.922
15	1.00	1.00	0.125	-0.00938	-0.94	0.922
16	1.50	1.23	0.125	-0.009426	-0.94	0.922
17	2.00	1.42	0.124	-0.009472	-0.95	0.922
18	3.00	1.73	0.124	-0.009564	-0.95	0.923
19	4.00	2.00	0.125	-0.009564	-0.95	0.923
20	5.00	2.24	0.124	-0.00961	-0.96	0.923
21	6.00	2.45	0.125	-0.009656	-0.96	0.923
22	7.00	2.65	0.123	-0.009702	-0.97	0.923
23	8.00	2.83	0.125	-0.009748	-0.97	0.923
24	9.00	3.00	0.125	-0.009748	-0.97	0.923
25	10.00	3.16	0.125	-0.009794	-0.98	0.923
26	12.00	3.46	0.125	-0.009839	-0.98	0.923
27	14.00	3.74	0.125	-0.009931	-0.99	0.923
28	16.00	4.00	0.124	-0.01002	-1.00	0.923
29	18.00	4.24	0.124	-0.01007	-1.00	0.923
30	20.00	4.47	0.125	-0.01021	-1.02	0.924
31	22.00	4.69	0.125	-0.0103	-1.03	0.924
32	24.00	4.90	0.125	-0.01039	-1.04	0.924
33	26.00	5.10	0.125	-0.01053	-1.05	0.924
34	28.00	5.29	0.124	-0.01062	-1.06	0.925
35	30.00	5.48	0.124	-0.01067	-1.06	0.925
36	35.00	5.92	0.124	-0.01085	-1.08	0.925
37	40.00	6.32	0.124	-0.01108	-1.11	0.925
38	45.00	6.71	0.123	-0.01117	-1.12	0.926
39	50.00	7.07	0.124	-0.01136	-1.13	0.926
40	60.00	7.75	0.124	-0.01191	-1.19	0.927
41	70.00	8.37	0.125	-0.01218	-1.22	0.928
42	80.00	8.94	0.124	-0.01241	-1.24	0.928
43	90.00	9.49	0.124	-0.01251	-1.25	0.928
44	100.00	10.00	0.123	-0.01274	-1.27	0.929
45	110.00	10.49	0.124	-0.01297	-1.29	0.929
46	120.00	10.95	0.124	-0.01315	-1.31	0.929
47	130.00	11.40	0.125	-0.01329	-1.33	0.930
48	136.91	11.70	0.124	-0.01333	-1.33	0.930

CONSOLIDATION TEST DATA

SUMMARY REPORT



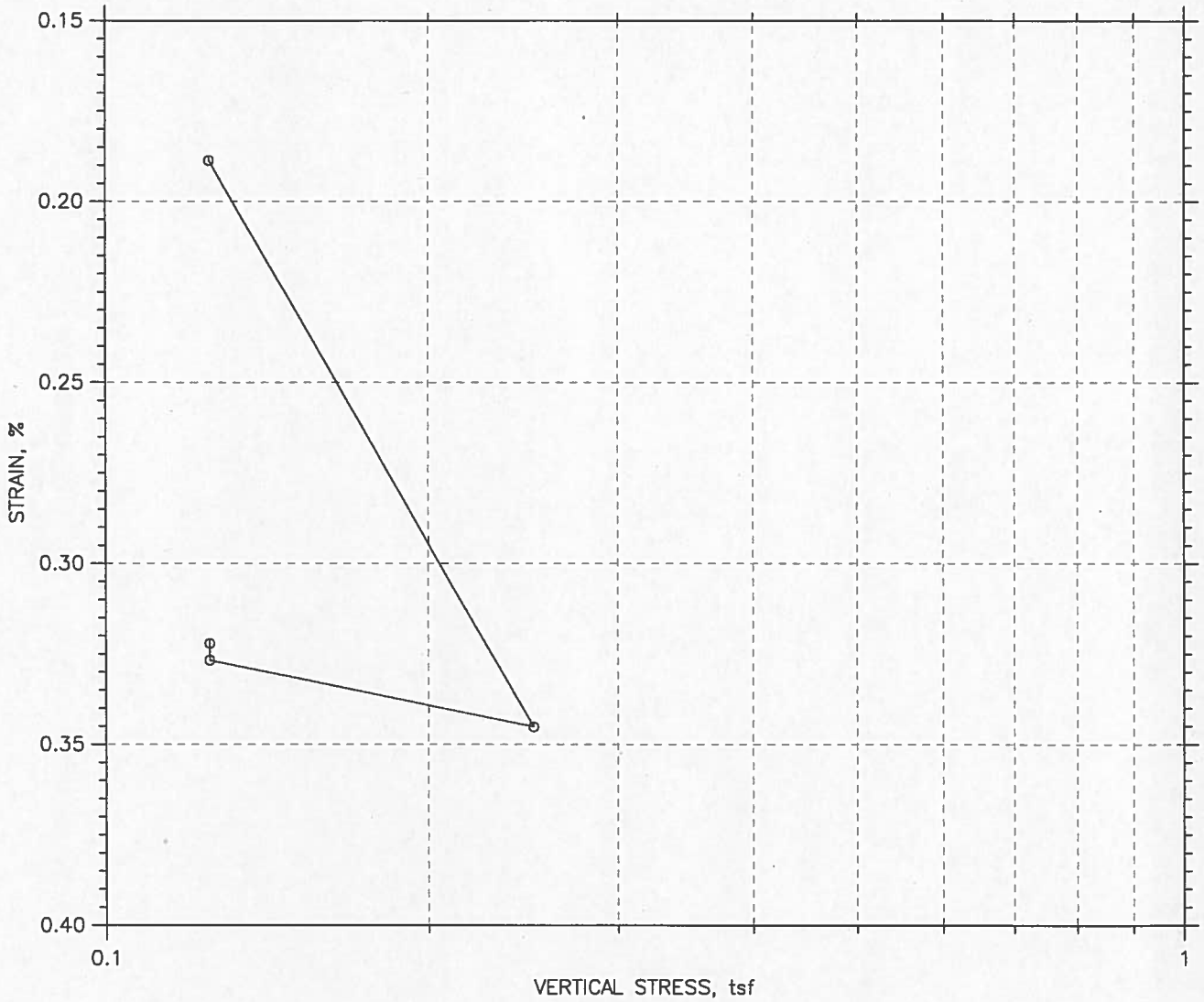


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-260
	Boring No.: B-06P	Tested By: SKK	Checked By: SKK
	Sample No.: 19-260	Test Date: 6/26/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Tue, 02-JUL-2019 13:05:12

CONSOLIDATION TEST DATA

SUMMARY REPORT



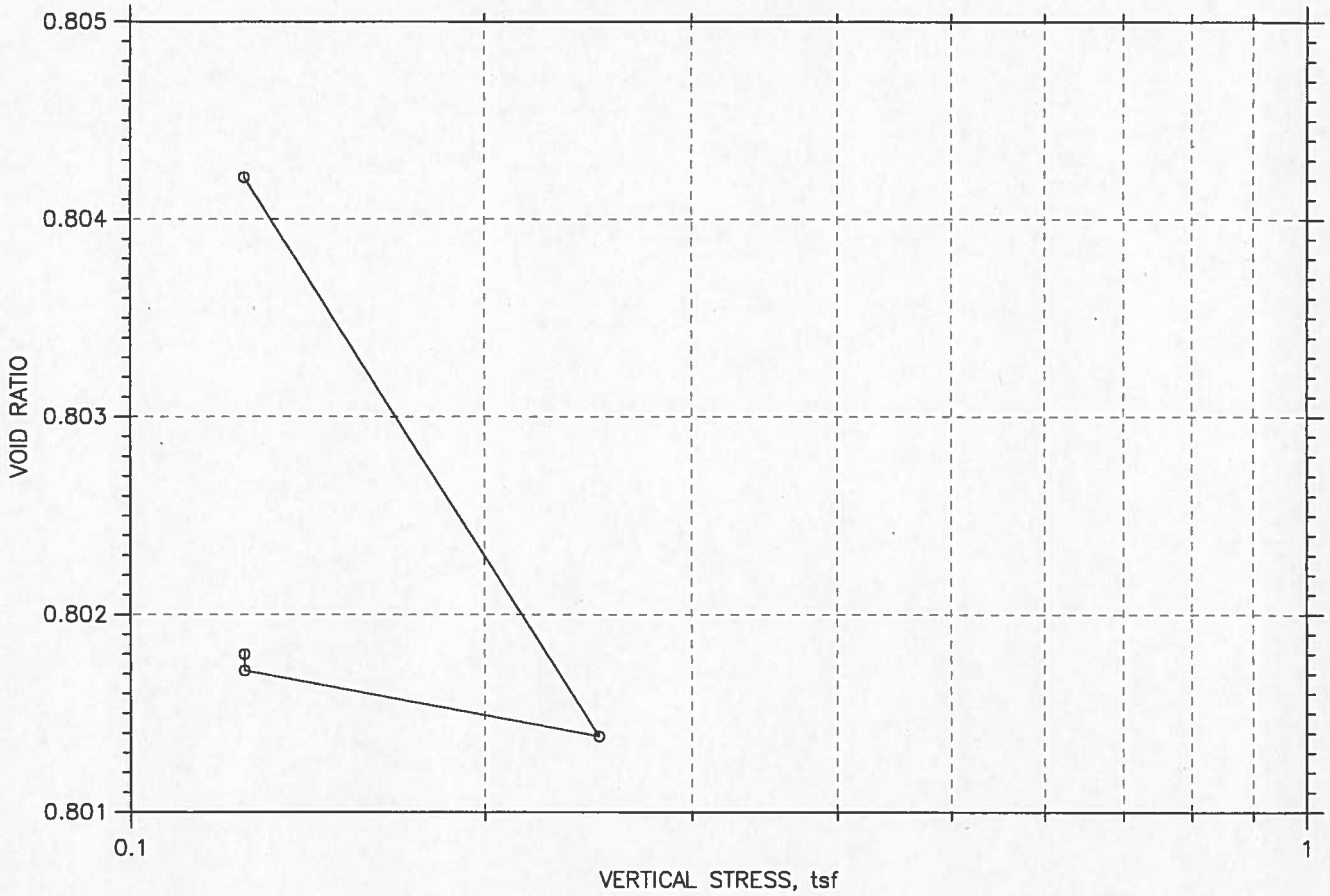
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	23.77	27.35
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	94.97	94.95
Compression Index: 3.81959e-313				Saturation, %	80.93	93.08
Diameter: 2.5 in		Height: 0.999 in		Void Ratio	0.81	0.81
LL: ---	PL: ---	PI: ---	GS: 2.75			

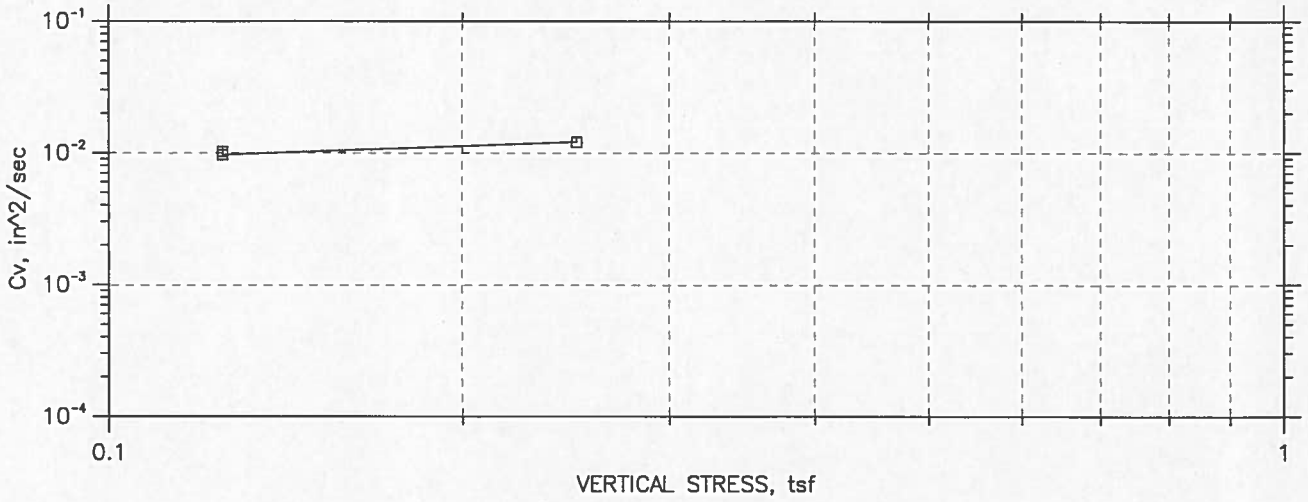
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-260
	Boring No.: B-06P	Tested By: SKK	Checked By: SKK
	Sample No.: 19-260	Test Date: 6/26/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Tue, 02-JUL-2019 13:05:13

CONSOLIDATION TEST DATA

SUMMARY REPORT



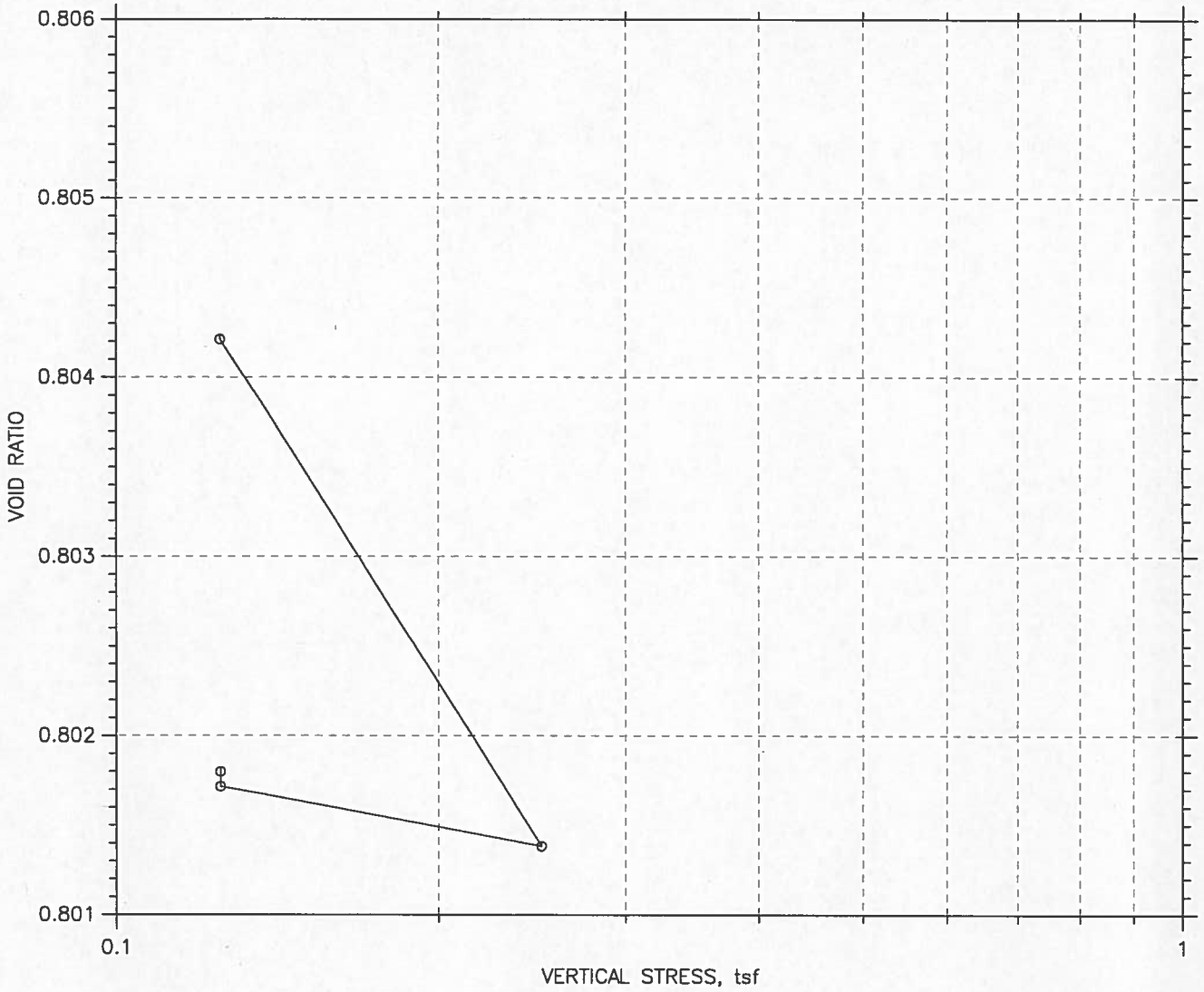


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-260
	Boring No.: B-06P	Tested By: SKK	Checked By: SKK
	Sample No.: 19-260	Test Date: 6/26/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Tue, 02-JUL-2019 13:05:22

CONSOLIDATION TEST DATA

SUMMARY REPORT



				Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	23.77	27.35
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	94.97	94.95
Compression Index: 3.81959e-313				Saturation, %	80.93	93.08
Diameter: 2.5 in		Height: 0.999 in		Void Ratio	0.81	0.81
LL: ---	PL: ---	PI: ---	GS: 2.75			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-260
	Boring No.: B-06P	Tested By: SKK	Checked By: SKK
	Sample No.: 19-260	Test Date: 6/26/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (I		

Tue, 02-JUL-2019 13:05:22

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/26/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Measured Specific Gravity: 2.75
Initial Void Ratio: 0.81
Final Void Ratio: 0.81

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	168.07	261.46	265.84	214.67
Wt. Container + Dry Soil, gm	146.77	232.4	232.4	181.24
Wt. Container, gm	58.56	110.15	110.15	59.01
Wt. Dry Soil, gm	88.21	122.25	122.25	122.23
Water Content, %	24.15	23.77	27.35	27.35
Void Ratio	---	0.81	0.81	---
Degree of Saturation, %	---	80.93	93.08	---
Dry Unit Weight, pcf	---	94.974	94.952	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/26/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.003219	0.802	0.32	0.3	1.09e-002	2.58e-002	5.24e-003
2	0.125	0.003265	0.802	0.33	0.1	4.02e-002	1.#Je+000	1.#Je+000
3	0.25	0.003448	0.801	0.35	17.8	1.96e-004	1.47e-003	5.42e-006
4	0.125	0.001885	0.804	0.19	0.4	7.95e-003	1.25e-002	1.86e-003

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.003219	0.802	0.32	0.0	0.00e+000	2.58e-002	0.00e+000
2	0.125	0.003265	0.802	0.33	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	0.25	0.003448	0.801	0.35	0.0	0.00e+000	1.47e-003	0.00e+000
4	0.125	0.001885	0.804	0.19	0.0	0.00e+000	1.25e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/26/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 1 of 4
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00336	-0.001335	-0.13	0.810
2	0.01	0.09	0.0179	-0.001335	-0.13	0.810
3	0.02	0.13	0.0325	-0.001105	-0.11	0.810
4	0.03	0.16	0.0504	-0.0007835	-0.08	0.809
5	0.04	0.19	0.0639	-0.0004617	-0.05	0.808
6	0.05	0.23	0.0829	-4.787e-005	-0.00	0.808
7	0.07	0.26	0.0941	0.000182	0.02	0.807
8	0.09	0.30	0.102	0.00032	0.03	0.807
9	0.12	0.34	0.111	0.0005039	0.05	0.807
10	0.17	0.41	0.117	0.0005958	0.06	0.807
11	0.25	0.50	0.121	0.0007798	0.08	0.806
12	0.33	0.58	0.122	0.0009177	0.09	0.806
13	0.50	0.71	0.123	0.001102	0.11	0.806
14	0.75	0.87	0.123	0.001286	0.13	0.805
15	1.00	1.00	0.123	0.001377	0.14	0.805
16	1.50	1.23	0.124	0.001423	0.14	0.805
17	2.00	1.42	0.124	0.001515	0.15	0.805
18	3.00	1.73	0.124	0.001561	0.16	0.805
19	4.00	2.00	0.124	0.001607	0.16	0.805
20	5.00	2.24	0.123	0.001653	0.17	0.805
21	6.00	2.45	0.124	0.001745	0.17	0.804
22	7.00	2.65	0.123	0.001791	0.18	0.804
23	8.00	2.83	0.124	0.001791	0.18	0.804
24	9.00	3.00	0.123	0.001791	0.18	0.804
25	10.00	3.16	0.124	0.001791	0.18	0.804
26	12.00	3.46	0.124	0.001837	0.18	0.804
27	14.00	3.74	0.124	0.001883	0.19	0.804
28	15.03	3.88	0.125	0.001883	0.19	0.804

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/26/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Volume Step: 2 of 4
Seating Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.124	0.001883	0.19	0.804
2	0.01	0.09	0.124	0.001883	0.19	0.804
3	0.02	0.13	0.124	0.001883	0.19	0.804
4	0.03	0.16	0.124	0.001883	0.19	0.804
5	0.03	0.19	0.123	0.001883	0.19	0.804
6	0.05	0.23	0.122	0.001883	0.19	0.804
7	0.07	0.26	0.124	0.001883	0.19	0.804
8	0.09	0.30	0.127	0.001929	0.19	0.804
9	0.12	0.34	0.131	0.001929	0.19	0.804
10	0.17	0.41	0.138	0.001883	0.19	0.804
11	0.25	0.50	0.146	0.001883	0.19	0.804
12	0.33	0.58	0.152	0.001883	0.19	0.804
13	0.50	0.71	0.161	0.001883	0.19	0.804
14	0.75	0.87	0.171	0.001883	0.19	0.804
15	1.00	1.00	0.177	0.001883	0.19	0.804
16	1.50	1.22	0.186	0.001837	0.18	0.804
17	2.00	1.41	0.192	0.001837	0.18	0.804
18	3.00	1.73	0.199	0.001837	0.18	0.804
19	4.00	2.00	0.208	0.001837	0.18	0.804
20	5.00	2.24	0.214	0.001837	0.18	0.804
21	6.00	2.45	0.217	0.001837	0.18	0.804
22	7.00	2.65	0.222	0.001837	0.18	0.804
23	8.00	2.83	0.225	0.001837	0.18	0.804
24	9.00	3.00	0.225	0.001837	0.18	0.804
25	10.00	3.16	0.226	0.001837	0.18	0.804
26	12.00	3.46	0.23	0.001837	0.18	0.804
27	14.00	3.74	0.231	0.001837	0.18	0.804
28	16.00	4.00	0.232	0.001929	0.19	0.804
29	18.00	4.24	0.233	0.001929	0.19	0.804
30	20.00	4.47	0.234	0.001929	0.19	0.804
31	22.00	4.69	0.234	0.001929	0.19	0.804
32	24.00	4.90	0.235	0.001929	0.19	0.804
33	26.00	5.10	0.238	0.001929	0.19	0.804
34	28.00	5.29	0.235	0.001929	0.19	0.804
35	30.00	5.48	0.235	0.001929	0.19	0.804
36	35.00	5.92	0.234	0.001929	0.19	0.804
37	40.00	6.32	0.233	0.001929	0.19	0.804
38	45.00	6.71	0.234	0.001929	0.19	0.804
39	50.00	7.07	0.233	0.001929	0.19	0.804
40	60.00	7.75	0.234	0.001929	0.19	0.804
41	70.00	8.37	0.235	0.001929	0.19	0.804
42	80.00	8.94	0.234	0.001929	0.19	0.804
43	90.00	9.49	0.234	0.001929	0.19	0.804
44	100.00	10.00	0.234	0.001929	0.19	0.804
45	110.00	10.49	0.234	0.001883	0.19	0.804
46	120.00	10.95	0.234	0.001929	0.19	0.804
47	130.00	11.40	0.233	0.001929	0.19	0.804
48	140.00	11.83	0.233	0.001975	0.20	0.804
49	150.00	12.25	0.233	0.001929	0.19	0.804
50	160.00	12.65	0.232	0.001929	0.19	0.804
51	170.00	13.04	0.233	0.001929	0.19	0.804
52	180.00	13.42	0.232	0.001929	0.19	0.804
53	190.00	13.78	0.233	0.001929	0.19	0.804
54	200.00	14.14	0.231	0.001929	0.19	0.804
55	210.00	14.49	0.231	0.001929	0.19	0.804
56	220.00	14.83	0.23	0.001929	0.19	0.804
57	230.00	15.17	0.231	0.001929	0.19	0.804
58	240.00	15.49	0.231	0.001929	0.19	0.804
59	250.00	15.81	0.23	0.001929	0.19	0.804
60	260.00	16.12	0.23	0.001929	0.19	0.804
61	270.00	16.43	0.229	0.001929	0.19	0.804
62	280.00	16.73	0.23	0.001929	0.19	0.804
63	290.00	17.03	0.23	0.001929	0.19	0.804
64	300.00	17.32	0.23	0.001929	0.19	0.804
65	310.00	17.61	0.231	0.001929	0.19	0.804
66	320.00	17.89	0.23	0.001929	0.19	0.804
67	330.00	18.17	0.226	0.001929	0.19	0.804
68	340.00	18.44	0.226	0.001929	0.19	0.804
69	350.00	18.71	0.227	0.001929	0.19	0.804
70	360.00	18.97	0.229	0.001929	0.19	0.804
71	370.00	19.24	0.226	0.001883	0.19	0.804
72	380.00	19.49	0.225	0.001929	0.19	0.804
73	390.00	19.75	0.224	0.001929	0.19	0.804
74	400.00	20.00	0.224	0.001883	0.19	0.804
75	410.00	20.25	0.224	0.001929	0.19	0.804
76	420.00	20.49	0.225	0.001929	0.19	0.804
77	430.00	20.74	0.225	0.001929	0.19	0.804
78	440.00	20.98	0.225	0.001929	0.19	0.804
79	450.00	21.21	0.224	0.001929	0.19	0.804
80	460.00	21.45	0.226	0.001929	0.19	0.804
81	470.00	21.68	0.223	0.001929	0.19	0.804

82	480.00	21.91	0.222	0.001929	0.19	0.804
83	490.00	22.14	0.222	0.001929	0.19	0.804
84	500.00	22.36	0.222	0.001929	0.19	0.804
85	510.00	22.58	0.222	0.001929	0.19	0.804
86	520.00	22.80	0.222	0.001929	0.19	0.804
87	530.00	23.02	0.222	0.001929	0.19	0.804
88	540.00	23.24	0.223	0.001929	0.19	0.804
89	550.00	23.45	0.224	0.001929	0.19	0.804
90	560.00	23.66	0.224	0.001975	0.20	0.804
91	570.00	23.87	0.225	0.001929	0.19	0.804
92	580.00	24.08	0.224	0.001929	0.19	0.804
93	590.00	24.29	0.224	0.001929	0.19	0.804
94	600.00	24.49	0.225	0.001929	0.19	0.804
95	610.00	24.70	0.225	0.001929	0.19	0.804
96	620.00	24.90	0.225	0.001929	0.19	0.804
97	630.00	25.10	0.224	0.001929	0.19	0.804
98	640.00	25.30	0.224	0.001929	0.19	0.804
99	650.00	25.50	0.221	0.001929	0.19	0.804
100	660.00	25.69	0.222	0.001929	0.19	0.804
101	670.00	25.88	0.223	0.001929	0.19	0.804
102	680.00	26.08	0.222	0.001929	0.19	0.804
103	690.00	26.27	0.223	0.001929	0.19	0.804
104	700.00	26.46	0.223	0.001929	0.19	0.804
105	710.00	26.65	0.223	0.001929	0.19	0.804
106	720.00	26.83	0.223	0.001929	0.19	0.804
107	730.00	27.02	0.223	0.001929	0.19	0.804
108	740.00	27.20	0.222	0.001929	0.19	0.804
109	750.00	27.39	0.224	0.001929	0.19	0.804
110	760.00	27.57	0.226	0.001929	0.19	0.804
111	770.00	27.75	0.225	0.001929	0.19	0.804
112	780.00	27.93	0.226	0.001929	0.19	0.804
113	790.00	28.11	0.226	0.001929	0.19	0.804
114	800.00	28.28	0.225	0.001929	0.19	0.804
115	810.00	28.46	0.226	0.001929	0.19	0.804
116	820.00	28.64	0.227	0.001929	0.19	0.804
117	830.00	28.81	0.229	0.001929	0.19	0.804
118	840.00	28.98	0.227	0.001929	0.19	0.804
119	850.00	29.15	0.226	0.001929	0.19	0.804
120	860.00	29.33	0.226	0.001929	0.19	0.804
121	870.00	29.50	0.227	0.001929	0.19	0.804
122	880.00	29.66	0.227	0.001883	0.19	0.804
123	890.00	29.83	0.23	0.001929	0.19	0.804
124	900.00	30.00	0.231	0.001929	0.19	0.804
125	910.00	30.17	0.231	0.001929	0.19	0.804
126	920.00	30.33	0.229	0.001929	0.19	0.804
127	930.00	30.50	0.232	0.001929	0.19	0.804
128	940.00	30.66	0.231	0.001929	0.19	0.804
129	950.00	30.82	0.23	0.001883	0.19	0.804
130	960.00	30.98	0.231	0.001883	0.19	0.804
131	970.00	31.14	0.233	0.001929	0.19	0.804
132	980.00	31.31	0.234	0.001929	0.19	0.804
133	990.00	31.46	0.235	0.001929	0.19	0.804
134	1000.00	31.62	0.233	0.001929	0.19	0.804
135	1010.00	31.78	0.232	0.001929	0.19	0.804
136	1020.00	31.94	0.233	0.001929	0.19	0.804
137	1030.00	32.09	0.233	0.001929	0.19	0.804
138	1040.00	32.25	0.233	0.001929	0.19	0.804
139	1050.00	32.40	0.233	0.001929	0.19	0.804
140	1060.00	32.56	0.232	0.001929	0.19	0.804
141	1070.00	32.71	0.232	0.001929	0.19	0.804
142	1080.00	32.86	0.233	0.001929	0.19	0.804
143	1090.00	33.02	0.234	0.001929	0.19	0.804
144	1100.00	33.17	0.235	0.001929	0.19	0.804
145	1110.00	33.32	0.232	0.001929	0.19	0.804
146	1120.00	33.47	0.234	0.001929	0.19	0.804
147	1130.00	33.62	0.233	0.001929	0.19	0.804
148	1140.00	33.76	0.232	0.001929	0.19	0.804
149	1150.00	33.91	0.233	0.001929	0.19	0.804
150	1160.00	34.06	0.233	0.001929	0.19	0.804
151	1170.00	34.21	0.232	0.001883	0.19	0.804
152	1180.00	34.35	0.233	0.001929	0.19	0.804
153	1190.00	34.50	0.232	0.001929	0.19	0.804
154	1200.00	34.64	0.234	0.001929	0.19	0.804
155	1210.00	34.79	0.233	0.001929	0.19	0.804
156	1220.00	34.93	0.234	0.001975	0.20	0.804
157	1230.00	35.07	0.234	0.001929	0.19	0.804
158	1240.00	35.21	0.234	0.001929	0.19	0.804
159	1250.00	35.36	0.234	0.001929	0.19	0.804
160	1260.00	35.50	0.234	0.001929	0.19	0.804
161	1270.00	35.64	0.235	0.001929	0.19	0.804
162	1280.00	35.78	0.235	0.001929	0.19	0.804
163	1290.00	35.92	0.236	0.001929	0.19	0.804
164	1300.00	36.06	0.236	0.001929	0.19	0.804
165	1310.00	36.19	0.236	0.001929	0.19	0.804
166	1320.00	36.33	0.236	0.001929	0.19	0.804
167	1330.00	36.47	0.236	0.001929	0.19	0.804
168	1340.00	36.61	0.239	0.001929	0.19	0.804
169	1350.00	36.74	0.24	0.001929	0.19	0.804
170	1360.00	36.88	0.236	0.001929	0.19	0.804
171	1370.00	37.01	0.236	0.001929	0.19	0.804
172	1380.00	37.15	0.232	0.001929	0.19	0.804
173	1389.74	37.28	0.232	0.001929	0.19	0.804

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/26/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 3 of 4
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.232	-0.0003237	-0.03	0.808
2	0.01	0.09	0.232	-0.0003237	-0.03	0.808
3	0.02	0.13	0.233	-0.0003237	-0.03	0.808
4	0.03	0.16	0.234	-0.0003237	-0.03	0.808
5	0.04	0.19	0.24	-0.0002778	-0.03	0.808
6	0.05	0.23	0.248	-0.0002778	-0.03	0.808
7	0.07	0.27	0.25	-0.0002318	-0.02	0.808
8	0.08	0.29	0.25	-0.0002318	-0.02	0.808
9	0.12	0.35	0.25	-0.0002318	-0.02	0.808
10	0.17	0.41	0.25	-0.0002318	-0.02	0.808
11	0.25	0.50	0.25	-0.0002318	-0.02	0.808
12	0.34	0.58	0.251	-0.0002318	-0.02	0.808
13	0.50	0.71	0.25	-0.0002318	-0.02	0.808
14	0.75	0.87	0.25	-0.0002318	-0.02	0.808
15	1.00	1.00	0.25	-0.0002318	-0.02	0.808
16	1.50	1.23	0.25	-0.0002318	-0.02	0.808
17	2.00	1.41	0.25	-0.0002318	-0.02	0.808
18	3.00	1.73	0.25	-0.0002318	-0.02	0.808
19	4.00	2.00	0.25	-0.0002318	-0.02	0.808
20	5.00	2.24	0.25	-0.0002318	-0.02	0.808
21	6.00	2.45	0.25	-0.0002778	-0.03	0.808
22	7.00	2.65	0.25	-0.0002318	-0.02	0.808
23	8.00	2.83	0.25	-0.0002318	-0.02	0.808
24	9.00	3.00	0.251	-0.0002318	-0.02	0.808
25	10.00	3.16	0.25	-0.0002318	-0.02	0.808
26	12.00	3.46	0.25	-0.0002318	-0.02	0.808
27	14.00	3.74	0.25	-0.0002318	-0.02	0.808
28	16.00	4.00	0.249	-0.0002318	-0.02	0.808
29	18.00	4.24	0.25	-0.0001858	-0.02	0.808
30	20.00	4.47	0.25	-0.0002318	-0.02	0.808
31	22.00	4.69	0.25	-0.0001858	-0.02	0.808
32	24.00	4.90	0.249	-0.0001858	-0.02	0.808
33	26.00	5.10	0.25	-0.0002318	-0.02	0.808
34	28.00	5.29	0.25	-0.0001858	-0.02	0.808
35	30.00	5.48	0.25	-0.0001858	-0.02	0.808
36	35.00	5.92	0.25	-0.0001858	-0.02	0.808
37	40.00	6.32	0.249	-0.0001858	-0.02	0.808
38	45.00	6.71	0.25	-0.0001858	-0.02	0.808
39	50.00	7.07	0.25	-0.0001858	-0.02	0.808
40	60.00	7.75	0.25	-0.0001858	-0.02	0.808
41	70.00	8.37	0.25	-0.0001858	-0.02	0.808
42	80.00	8.94	0.25	-0.0001858	-0.02	0.808
43	90.00	9.49	0.25	-0.0001398	-0.01	0.808
44	100.00	10.00	0.25	-0.0001398	-0.01	0.808
45	110.00	10.49	0.251	-0.0001858	-0.02	0.808
46	120.00	10.95	0.25	-0.0001398	-0.01	0.808
47	130.00	11.40	0.25	-0.0001398	-0.01	0.808
48	140.00	11.83	0.25	-0.0001398	-0.01	0.808
49	140.82	11.87	0.249	-0.0001398	-0.01	0.808

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-06P
Sample No.: 19-260
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 6/26/19
Sample Type: CORE

Project No.: 19-260
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

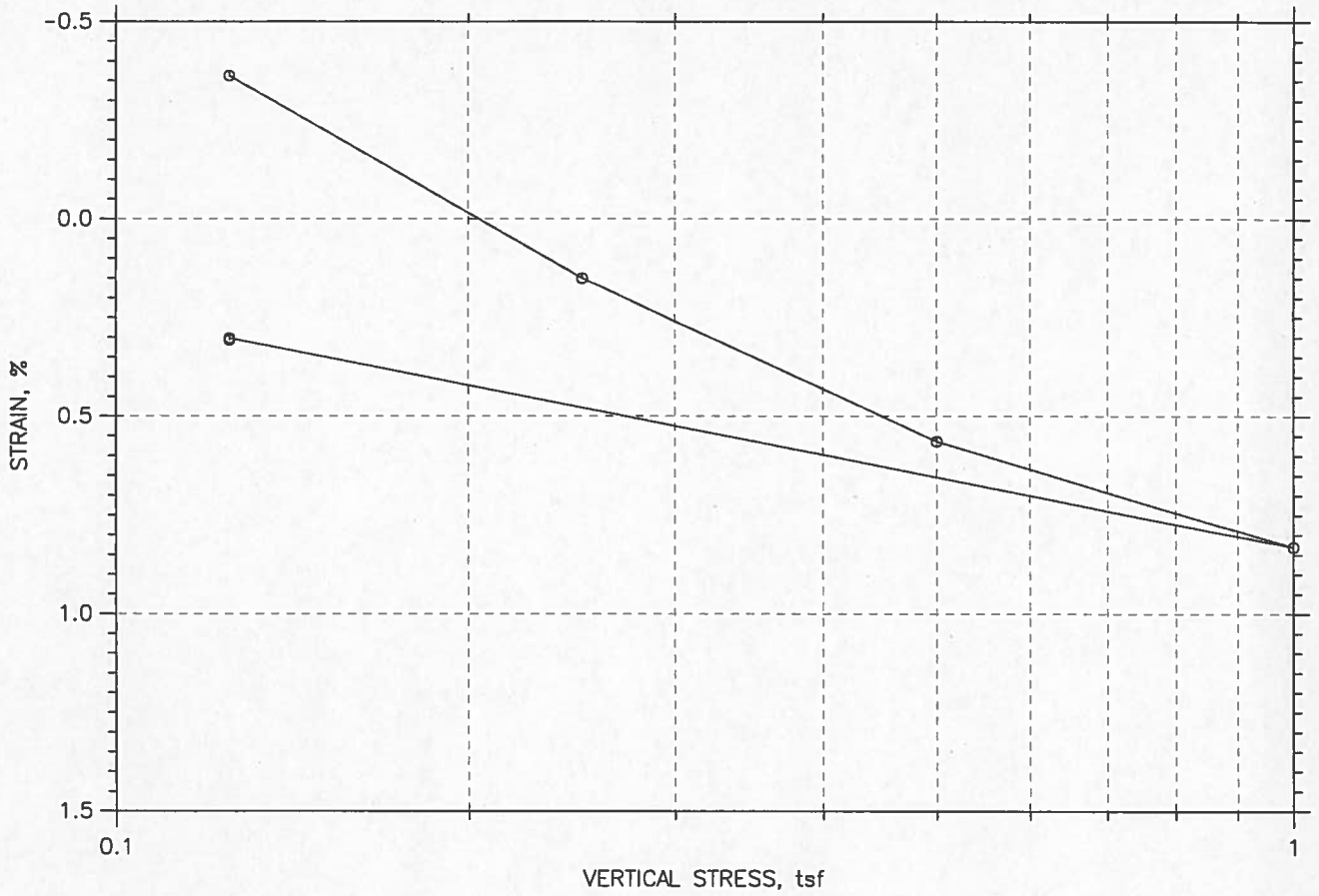
Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

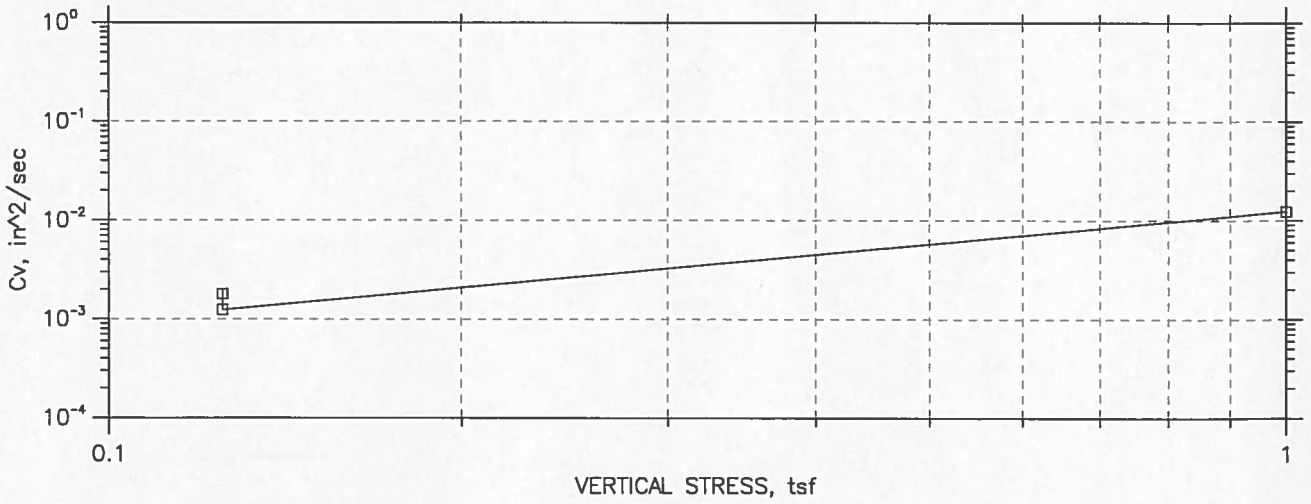
Constant Load Step: 4 of 4
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	0.001333	0.13	0.805
2	0.01	0.09	0.249	0.001333	0.13	0.805
3	0.02	0.13	0.241	0.001287	0.13	0.805
4	0.03	0.16	0.18	0.001058	0.11	0.806
5	0.04	0.19	0.158	0.0008276	0.08	0.806
6	0.05	0.23	0.14	0.0006437	0.06	0.806
7	0.07	0.27	0.132	0.0005517	0.06	0.807
8	0.08	0.29	0.13	0.0004598	0.05	0.807
9	0.12	0.35	0.128	0.0003678	0.04	0.807
10	0.17	0.41	0.127	0.0003219	0.03	0.807
11	0.25	0.50	0.127	0.0002759	0.03	0.807
12	0.34	0.58	0.125	0.0002759	0.03	0.807
13	0.50	0.71	0.124	0.0001839	0.02	0.807
14	0.75	0.87	0.124	0.0001839	0.02	0.807
15	1.00	1.00	0.124	0.0001379	0.01	0.807
16	1.50	1.23	0.124	9.196e-005	0.01	0.807
17	2.00	1.42	0.124	4.598e-005	0.00	0.808
18	3.00	1.73	0.124	4.598e-005	0.00	0.808
19	4.00	2.00	0.124	0	0.00	0.808
20	5.00	2.24	0.124	0	0.00	0.808
21	6.00	2.45	0.124	-4.598e-005	-0.00	0.808
22	7.00	2.65	0.124	-4.598e-005	-0.00	0.808
23	8.00	2.83	0.124	-9.196e-005	-0.01	0.808
24	9.00	3.00	0.124	-9.196e-005	-0.01	0.808
25	10.00	3.16	0.124	-9.196e-005	-0.01	0.808
26	12.00	3.46	0.125	-9.196e-005	-0.01	0.808
27	14.00	3.74	0.124	-0.0001379	-0.01	0.808
28	16.00	4.00	0.124	-0.0001379	-0.01	0.808
29	18.00	4.24	0.123	-0.0001379	-0.01	0.808
30	20.00	4.47	0.124	-0.0001839	-0.02	0.808
31	22.00	4.69	0.124	-0.0001839	-0.02	0.808
32	24.00	4.90	0.123	-0.0001839	-0.02	0.808
33	26.00	5.10	0.124	-0.0001839	-0.02	0.808
34	28.00	5.29	0.124	-0.0001839	-0.02	0.808
35	30.00	5.48	0.124	-0.0002299	-0.02	0.808
36	35.00	5.92	0.124	-0.0002299	-0.02	0.808
37	40.00	6.32	0.124	-0.0002299	-0.02	0.808
38	45.00	6.71	0.124	-0.0002299	-0.02	0.808
39	50.00	7.07	0.125	-0.0002759	-0.03	0.808
40	60.00	7.75	0.124	-0.0002299	-0.02	0.808
41	70.00	8.37	0.124	-0.0002299	-0.02	0.808
42	80.00	8.94	0.124	-0.0002299	-0.02	0.808
43	90.00	9.49	0.124	-0.0002299	-0.02	0.808
44	100.00	10.00	0.124	-0.0002759	-0.03	0.808
45	110.00	10.49	0.124	-0.0002299	-0.02	0.808
46	120.00	10.95	0.124	-0.0002299	-0.02	0.808
47	120.02	10.96	0.124	-0.0002299	-0.02	0.808

CONSOLIDATION TEST DATA

SUMMARY REPORT



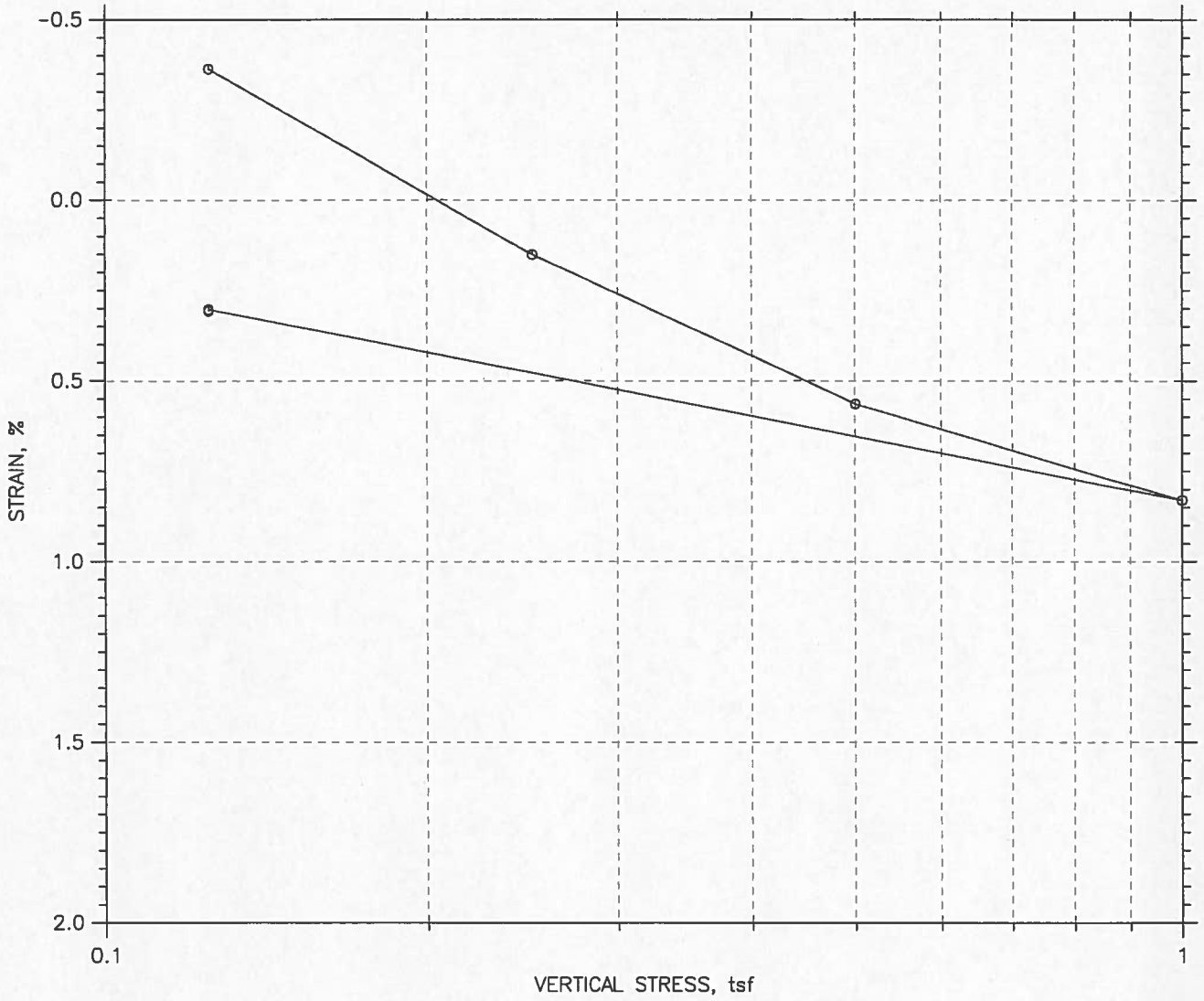


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-265
	Boring No.: B-07	Tested By: SKK	Checked By: SKK
	Sample No.: 19-265	Test Date: 7/1/19	Test No.: 1
	Depth: 10-12'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 11-JUL-2019 07:38:09

CONSOLIDATION TEST DATA

SUMMARY REPORT



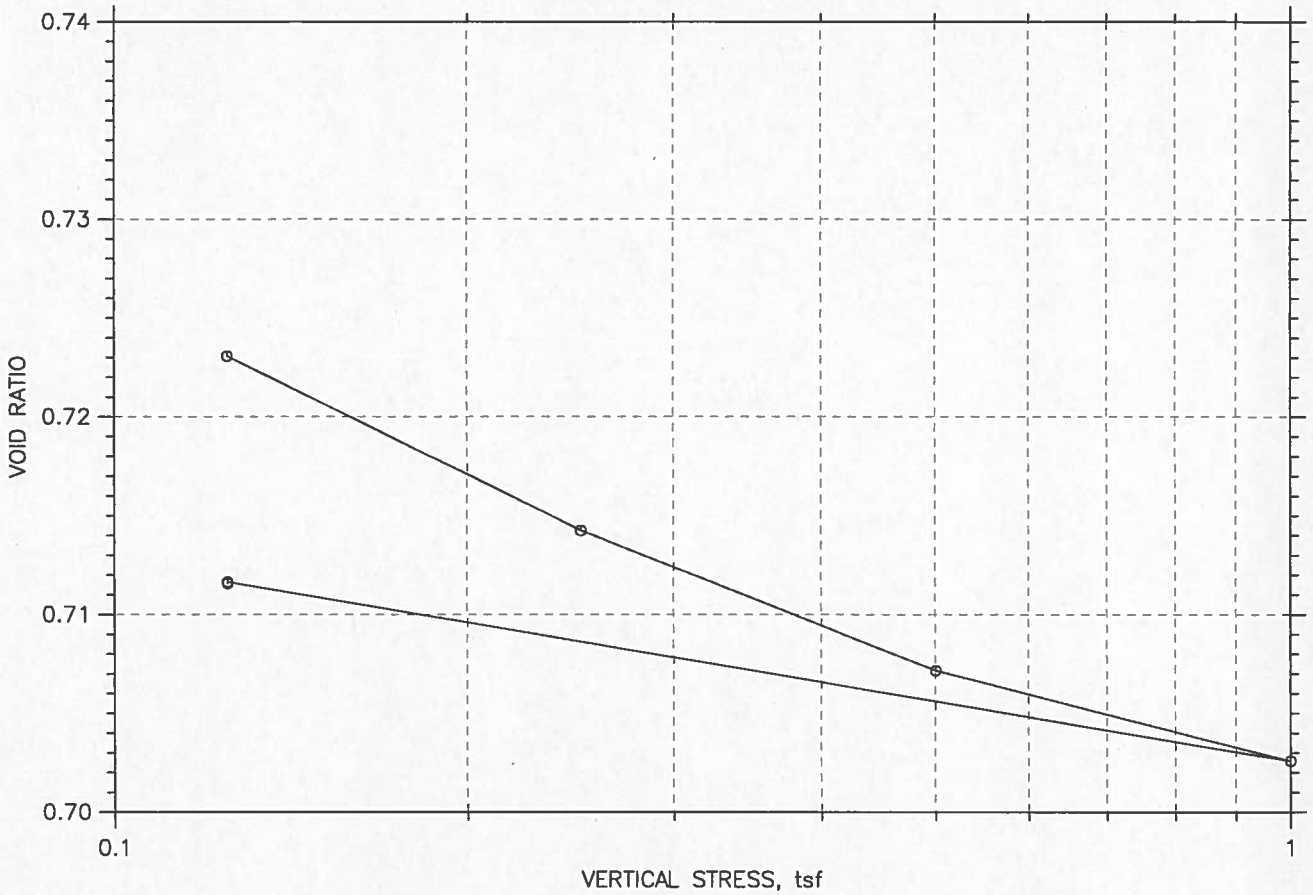
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	13.63	25.34
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	98.9	98.34
Compression Index: 3.81959e-313				Saturation, %	51.72	94.86
Diameter: 2.5 in		Height: 1.002 in		Void Ratio	0.72	0.73
LL: ---	PL: ---	PI: ---	GS: 2.72			

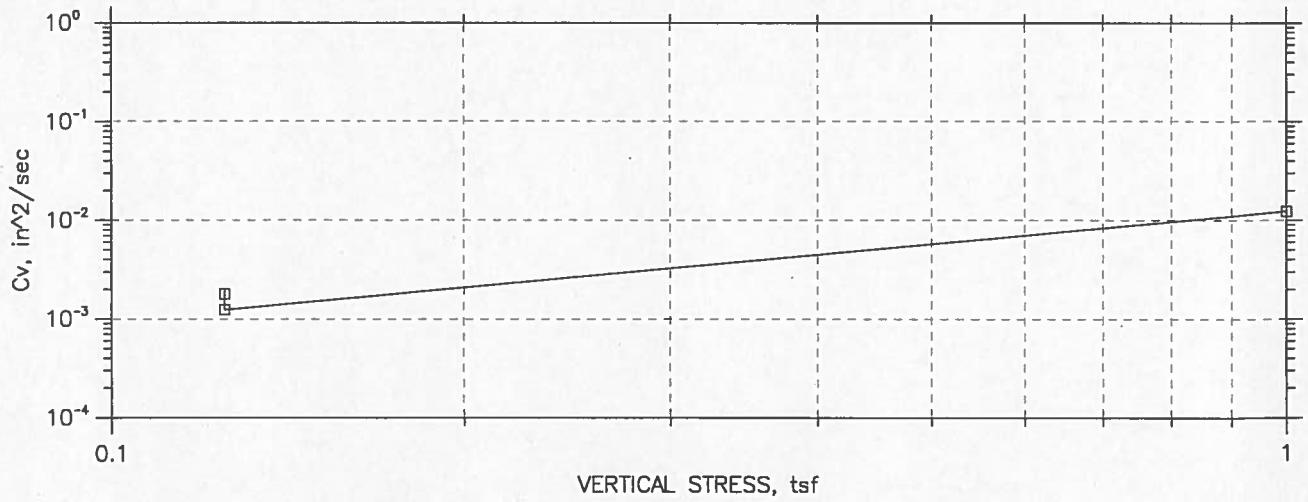
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-265
	Boring No.: B-07	Tested By: SKK	Checked By: SKK
	Sample No.: 19-265	Test Date: 7/1/19	Test No.: 1
	Depth: 10-12'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 11-JUL-2019 07:38:10

CONSOLIDATION TEST DATA

SUMMARY REPORT



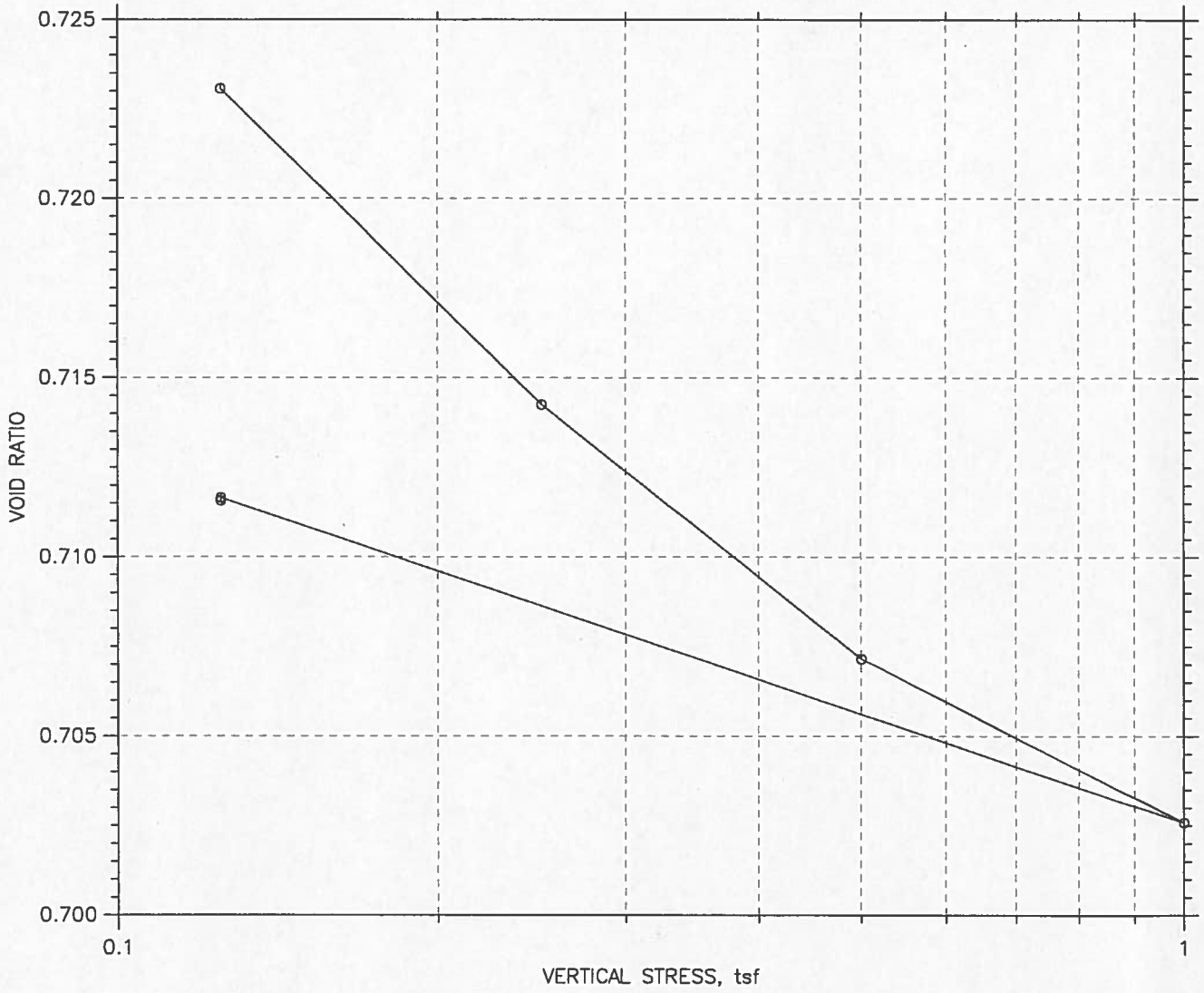


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-265
	Boring No.: B-07	Tested By: SKK	Checked By: SKK
	Sample No.: 19-265	Test Date: 7/1/19	Test No.: 1
	Depth: 10-12'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 11-JUL-2019 07:38:19

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	13.63	25.34
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	98.9	98.34
Compression Index: 3.81959e-313				Saturation, %	51.72	94.86
Diameter: 2.5 in		Height: 1.002 in		Void Ratio	0.72	0.73
LL: ---	PL: ---	PI: ---	GS: 2.72			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-265
	Boring No.: B-07	Tested By: SKK	Checked By: SKK
	Sample No.: 19-265	Test Date: 7/1/19	Test No.: 1
	Depth: 10-12'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (I		

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CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-265
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/1/19
Sample Type: CORE

Project No.: 19-265
Checked By: SKK
Depth: 10-12'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Measured Specific Gravity: 2.72
Initial Void Ratio: 0.72
Final Void Ratio: 0.73

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	159.04	255.25	270.21	219.12
Wt. Container + Dry Soil, gm	147.39	237.85	237.85	186.76
Wt. Container, gm	59.05	110.15	110.15	59.08
Wt. Dry Soil, gm	88.34	127.7	127.7	127.68
Water Content, %	13.19	13.63	25.34	25.34
Void Ratio	---	0.72	0.73	---
Degree of Saturation, %	---	51.72	94.86	---
Dry Unit Weight, pcf	---	98.905	98.341	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-265
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/1/19
Sample Type: CORE

Project No.: 19-265
Checked By: SKK
Depth: 10-12'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.003081	0.712	0.31	1.6	2.20e-003	2.46e-002	1.01e-003
2	0.125	0.003035	0.712	0.30	0.0	6.77e-001	-1.#Je+000	-1.#Je+000
3	1	0.008322	0.703	0.83	0.4	9.11e-003	6.03e-003	1.03e-003
4	0.5	0.005655	0.707	0.56	0.4	9.11e-003	5.32e-003	9.08e-004
5	0.25	0.001517	0.714	0.15	3.5	1.00e-003	1.65e-002	3.11e-004
6	0.125	-0.003632	0.723	-0.36	19.6	1.82e-004	4.11e-002	1.40e-004

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.003081	0.712	0.31	0.0	0.00e+000	2.46e-002	0.00e+000
2	0.125	0.003035	0.712	0.30	0.0	0.00e+000	-1.#Je+000	-1.#Je+000
3	1	0.008322	0.703	0.83	0.0	2.29e-002	6.03e-003	2.59e-003
4	0.5	0.005655	0.707	0.56	0.0	0.00e+000	5.32e-003	0.00e+000
5	0.25	0.001517	0.714	0.15	0.0	0.00e+000	1.65e-002	0.00e+000
6	0.125	-0.003632	0.723	-0.36	0.0	0.00e+000	4.11e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-265
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/1/19
Sample Type: CORE

Project No.: 19-265
Checked By: SKK
Depth: 10-12'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 1 of 6
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00336	-0.001335	-0.13	0.719
2	0.01	0.09	0.00784	-0.001335	-0.13	0.719
3	0.02	0.13	0.0314	-0.001197	-0.12	0.719
4	0.03	0.16	0.0459	-0.001059	-0.11	0.719
5	0.04	0.19	0.056	-0.0009674	-0.10	0.719
6	0.05	0.23	0.0683	-0.0006916	-0.07	0.718
7	0.07	0.27	0.0796	-0.0004157	-0.04	0.718
8	0.08	0.29	0.0852	-9.385e-005	-0.01	0.717
9	0.12	0.35	0.0964	4.409e-005	0.00	0.717
10	0.17	0.41	0.109	0.000136	0.01	0.717
11	0.25	0.50	0.117	0.000274	0.03	0.716
12	0.33	0.58	0.12	0.00032	0.03	0.716
13	0.50	0.71	0.122	0.0004119	0.04	0.716
14	0.75	0.87	0.123	0.0005499	0.05	0.716
15	1.00	1.00	0.123	0.0006878	0.07	0.716
16	1.50	1.22	0.124	0.0008717	0.09	0.715
17	2.00	1.42	0.124	0.0009177	0.09	0.715
18	3.00	1.73	0.124	0.0009637	0.10	0.715
19	4.00	2.00	0.123	0.001102	0.11	0.715
20	5.00	2.24	0.124	0.001194	0.12	0.715
21	6.00	2.45	0.124	0.00124	0.12	0.715
22	7.00	2.65	0.124	0.001286	0.13	0.715
23	8.00	2.83	0.123	0.001377	0.14	0.714
24	9.00	3.00	0.125	0.001469	0.15	0.714
25	10.00	3.16	0.124	0.001515	0.15	0.714
26	12.00	3.46	0.123	0.001653	0.17	0.714
27	14.00	3.74	0.124	0.001699	0.17	0.714
28	15.04	3.88	0.124	0.001745	0.17	0.714

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-265
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/1/19
Sample Type: CORE

Project No.: 19-265
Checked By: SKK
Depth: 10-12'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Volume Step: 2 of 6
Seating Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.124	0.001745	0.17	0.714
2	0.01	0.09	0.124	0.001699	0.17	0.714
3	0.02	0.13	0.123	0.001745	0.17	0.714
4	0.03	0.16	0.123	0.001745	0.17	0.714
5	0.04	0.19	0.125	0.001745	0.17	0.714
6	0.05	0.23	0.122	0.001745	0.17	0.714
7	0.07	0.27	0.121	0.001745	0.17	0.714
8	0.08	0.29	0.125	0.001745	0.17	0.714
9	0.12	0.35	0.132	0.001745	0.17	0.714
10	0.17	0.41	0.142	0.001745	0.17	0.714
11	0.25	0.50	0.157	0.001745	0.17	0.714
12	0.34	0.58	0.173	0.001745	0.17	0.714
13	0.50	0.71	0.199	0.001699	0.17	0.714
14	0.75	0.87	0.233	0.001561	0.16	0.714
15	1.00	1.00	0.266	0.001469	0.15	0.714
16	1.50	1.23	0.32	0.001515	0.15	0.714
17	2.00	1.41	0.362	0.001653	0.17	0.714
18	3.00	1.73	0.399	0.001699	0.17	0.714
19	4.00	2.00	0.421	0.001653	0.17	0.714
20	5.00	2.24	0.445	0.001607	0.16	0.714
21	6.00	2.45	0.466	0.001653	0.17	0.714
22	7.00	2.65	0.477	0.001699	0.17	0.714
23	8.00	2.83	0.478	0.001699	0.17	0.714
24	9.00	3.00	0.486	0.001699	0.17	0.714
25	10.00	3.16	0.492	0.001699	0.17	0.714
26	12.00	3.46	0.5	0.001699	0.17	0.714
27	14.00	3.74	0.504	0.001745	0.17	0.714
28	16.00	4.00	0.505	0.001745	0.17	0.714
29	18.00	4.24	0.506	0.001745	0.17	0.714
30	20.00	4.47	0.509	0.001699	0.17	0.714
31	22.00	4.69	0.509	0.001653	0.17	0.714
32	24.00	4.90	0.514	0.001653	0.17	0.714
33	26.00	5.10	0.515	0.001653	0.17	0.714
34	28.00	5.29	0.52	0.001699	0.17	0.714
35	30.00	5.48	0.522	0.001699	0.17	0.714
36	35.00	5.92	0.518	0.001745	0.17	0.714
37	40.00	6.32	0.519	0.001745	0.17	0.714
38	45.00	6.71	0.52	0.001653	0.17	0.714
39	50.00	7.07	0.523	0.001653	0.17	0.714
40	60.00	7.75	0.524	0.001745	0.17	0.714
41	70.00	8.37	0.527	0.001653	0.17	0.714
42	80.00	8.94	0.531	0.001699	0.17	0.714
43	90.00	9.49	0.529	0.001745	0.17	0.714
44	100.00	10.00	0.53	0.001745	0.17	0.714
45	110.00	10.49	0.522	0.001607	0.16	0.714
46	120.00	10.95	0.532	0.001745	0.17	0.714
47	130.00	11.40	0.521	0.001653	0.17	0.714
48	140.00	11.83	0.54	0.001745	0.17	0.714
49	150.00	12.25	0.53	0.001745	0.17	0.714
50	160.00	12.65	0.527	0.001653	0.17	0.714
51	170.00	13.04	0.531	0.001745	0.17	0.714
52	180.00	13.42	0.528	0.001745	0.17	0.714
53	190.00	13.78	0.528	0.001699	0.17	0.714
54	200.00	14.14	0.536	0.001745	0.17	0.714
55	210.00	14.49	0.53	0.001699	0.17	0.714
56	220.00	14.83	0.538	0.001745	0.17	0.714
57	230.00	15.17	0.531	0.001699	0.17	0.714
58	240.00	15.49	0.537	0.001745	0.17	0.714
59	250.00	15.81	0.519	0.001699	0.17	0.714
60	260.00	16.12	0.536	0.001745	0.17	0.714
61	270.00	16.43	0.534	0.001791	0.18	0.714
62	280.00	16.73	0.53	0.001699	0.17	0.714
63	290.00	17.03	0.527	0.001653	0.17	0.714
64	300.00	17.32	0.534	0.001745	0.17	0.714
65	310.00	17.61	0.53	0.001699	0.17	0.714
66	320.00	17.89	0.529	0.001653	0.17	0.714
67	330.00	18.17	0.532	0.001745	0.17	0.714
68	340.00	18.44	0.529	0.001699	0.17	0.714
69	350.00	18.71	0.531	0.001653	0.17	0.714
70	360.00	18.97	0.539	0.001791	0.18	0.714
71	370.00	19.24	0.533	0.001745	0.17	0.714
72	380.00	19.49	0.532	0.001653	0.17	0.714
73	390.00	19.75	0.54	0.001745	0.17	0.714
74	400.00	20.00	0.525	0.001653	0.17	0.714
75	410.00	20.25	0.54	0.001699	0.17	0.714
76	420.00	20.49	0.538	0.001745	0.17	0.714
77	430.00	20.74	0.522	0.001653	0.17	0.714
78	440.00	20.98	0.539	0.001745	0.17	0.714
79	450.00	21.21	0.525	0.001745	0.17	0.714
80	460.00	21.45	0.531	0.001745	0.17	0.714
81	470.00	21.68	0.527	0.001745	0.17	0.714

82	480.00	21.91	0.53	0.001745	0.17	0.714
83	490.00	22.14	0.527	0.001745	0.17	0.714
84	500.00	22.36	0.521	0.001653	0.17	0.714
85	510.00	22.58	0.532	0.001745	0.17	0.714
86	520.00	22.80	0.525	0.001745	0.17	0.714
87	530.00	23.02	0.523	0.001699	0.17	0.714
88	540.00	23.24	0.528	0.001653	0.17	0.714
89	550.00	23.45	0.53	0.001745	0.17	0.714
90	560.00	23.66	0.53	0.001745	0.17	0.714
91	570.00	23.87	0.528	0.001745	0.17	0.714
92	580.00	24.08	0.525	0.001699	0.17	0.714
93	590.00	24.29	0.525	0.001745	0.17	0.714
94	600.00	24.49	0.522	0.001745	0.17	0.714
95	610.00	24.70	0.522	0.001745	0.17	0.714
96	620.00	24.90	0.514	0.001699	0.17	0.714
97	630.00	25.10	0.52	0.001745	0.17	0.714
98	640.00	25.30	0.51	0.001745	0.17	0.714
99	650.00	25.50	0.513	0.001653	0.17	0.714
100	660.00	25.69	0.547	0.001699	0.17	0.714
101	670.00	25.88	0.523	0.001653	0.17	0.714
102	680.00	26.08	0.53	0.001745	0.17	0.714
103	690.00	26.27	0.527	0.001745	0.17	0.714
104	700.00	26.46	0.523	0.001745	0.17	0.714
105	710.00	26.65	0.517	0.001653	0.17	0.714
106	720.00	26.83	0.519	0.001699	0.17	0.714
107	730.00	27.02	0.517	0.001745	0.17	0.714
108	740.00	27.20	0.518	0.001745	0.17	0.714
109	750.00	27.39	0.519	0.001745	0.17	0.714
110	760.00	27.57	0.511	0.001745	0.17	0.714
111	770.00	27.75	0.511	0.001653	0.17	0.714
112	780.00	27.93	0.518	0.001745	0.17	0.714
113	790.00	28.11	0.513	0.001745	0.17	0.714
114	800.00	28.28	0.514	0.001699	0.17	0.714
115	810.00	28.46	0.515	0.001745	0.17	0.714
116	820.00	28.64	0.519	0.001699	0.17	0.714
117	830.00	28.81	0.518	0.001745	0.17	0.714
118	840.00	28.98	0.517	0.001653	0.17	0.714
119	850.00	29.15	0.525	0.001791	0.18	0.714
120	860.00	29.33	0.514	0.001745	0.17	0.714
121	870.00	29.50	0.517	0.001653	0.17	0.714
122	880.00	29.66	0.525	0.001745	0.17	0.714
123	890.00	29.83	0.517	0.001745	0.17	0.714
124	900.00	30.00	0.513	0.001653	0.17	0.714
125	910.00	30.17	0.522	0.001699	0.17	0.714
126	920.00	30.33	0.518	0.001745	0.17	0.714
127	930.00	30.50	0.525	0.001745	0.17	0.714
128	940.00	30.66	0.525	0.001699	0.17	0.714
129	950.00	30.82	0.522	0.001699	0.17	0.714
130	960.00	30.98	0.534	0.001791	0.18	0.714
131	970.00	31.14	0.524	0.001653	0.17	0.714
132	980.00	31.30	0.529	0.001745	0.17	0.714
133	990.00	31.46	0.533	0.001745	0.17	0.714
134	1000.00	31.62	0.528	0.001653	0.17	0.714
135	1010.00	31.78	0.533	0.001745	0.17	0.714
136	1020.00	31.94	0.532	0.001745	0.17	0.714
137	1030.00	32.09	0.524	0.001653	0.17	0.714
138	1040.00	32.25	0.534	0.001745	0.17	0.714
139	1050.00	32.40	0.53	0.001791	0.18	0.714
140	1060.00	32.56	0.527	0.001653	0.17	0.714
141	1070.00	32.71	0.533	0.001745	0.17	0.714
142	1080.00	32.86	0.525	0.001745	0.17	0.714
143	1090.00	33.02	0.527	0.001653	0.17	0.714
144	1100.00	33.17	0.524	0.001699	0.17	0.714
145	1110.00	33.32	0.532	0.001745	0.17	0.714
146	1120.00	33.47	0.525	0.001699	0.17	0.714
147	1130.00	33.62	0.53	0.001745	0.17	0.714
148	1140.00	33.76	0.525	0.001745	0.17	0.714
149	1150.00	33.91	0.524	0.001653	0.17	0.714
150	1160.00	34.06	0.536	0.001745	0.17	0.714
151	1170.00	34.21	0.533	0.001745	0.17	0.714
152	1180.00	34.35	0.53	0.001699	0.17	0.714
153	1190.00	34.50	0.532	0.001791	0.18	0.714
154	1200.00	34.64	0.53	0.001745	0.17	0.714
155	1210.00	34.79	0.523	0.001653	0.17	0.714
156	1220.00	34.93	0.529	0.001745	0.17	0.714
157	1230.00	35.07	0.528	0.001745	0.17	0.714
158	1240.00	35.21	0.524	0.001699	0.17	0.714
159	1250.00	35.36	0.527	0.001745	0.17	0.714
160	1260.00	35.50	0.531	0.001745	0.17	0.714
161	1270.00	35.64	0.529	0.001745	0.17	0.714
162	1280.00	35.78	0.528	0.001745	0.17	0.714
163	1290.00	35.92	0.529	0.001745	0.17	0.714
164	1300.00	36.06	0.534	0.001745	0.17	0.714
165	1310.00	36.19	0.53	0.001699	0.17	0.714
166	1320.00	36.33	0.537	0.001745	0.17	0.714
167	1330.00	36.47	0.533	0.001745	0.17	0.714
168	1340.00	36.61	0.532	0.001745	0.17	0.714
169	1344.05	36.66	0.531	0.001699	0.17	0.714

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-265
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/1/19
Sample Type: CORE

Project No.: 19-265
Checked By: SKK
Depth: 10-12'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 3 of 6
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.53	-0.004137	-0.41	0.724
2	0.01	0.09	0.541	-0.004137	-0.41	0.724
3	0.02	0.13	0.794	-0.003401	-0.34	0.723
4	0.03	0.16	0.881	-0.002436	-0.24	0.721
5	0.04	0.19	0.919	-0.002114	-0.21	0.720
6	0.05	0.23	0.956	-0.001746	-0.17	0.720
7	0.07	0.27	0.973	-0.001516	-0.15	0.719
8	0.08	0.29	0.98	-0.001286	-0.13	0.719
9	0.12	0.34	0.987	-0.001056	-0.11	0.719
10	0.17	0.41	0.99	-0.0009185	-0.09	0.718
11	0.25	0.50	0.995	-0.0005967	-0.06	0.718
12	0.34	0.58	0.997	-0.0004128	-0.04	0.718
13	0.50	0.71	0.997	-0.0002748	-0.03	0.717
14	0.75	0.87	0.997	-0.0001369	-0.01	0.717
15	1.00	1.00	0.999	-9.092e-005	-0.01	0.717
16	1.50	1.23	0.999	4.701e-005	0.00	0.717
17	2.00	1.41	0.999	9.299e-005	0.01	0.717
18	3.00	1.73	0.999	0.0002309	0.02	0.716
19	4.00	2.00	0.999	0.0004148	0.04	0.716
20	5.00	2.24	0.999	0.0005988	0.06	0.716
21	6.00	2.45	0.999	0.0006447	0.06	0.716
22	7.00	2.65	1	0.0006447	0.06	0.716
23	8.00	2.83	0.999	0.0006447	0.06	0.716
24	9.00	3.00	0.999	0.0006907	0.07	0.716
25	10.00	3.16	1	0.0006907	0.07	0.716
26	12.00	3.46	0.999	0.0007367	0.07	0.716
27	14.00	3.74	0.999	0.0007827	0.08	0.716
28	16.00	4.00	0.999	0.0007827	0.08	0.716
29	18.00	4.24	0.999	0.0008287	0.08	0.715
30	20.00	4.47	0.999	0.0008287	0.08	0.715
31	22.00	4.69	0.999	0.0008746	0.09	0.715
32	24.00	4.90	1	0.0008746	0.09	0.715
33	26.00	5.10	0.998	0.0008746	0.09	0.715
34	28.00	5.29	0.999	0.0009206	0.09	0.715
35	30.00	5.48	0.998	0.0009206	0.09	0.715
36	35.00	5.92	0.999	0.0009206	0.09	0.715
37	40.00	6.32	0.999	0.0009206	0.09	0.715
38	45.00	6.71	0.998	0.0009206	0.09	0.715
39	50.00	7.07	0.998	0.0009666	0.10	0.715
40	60.00	7.75	0.999	0.001013	0.10	0.715
41	70.00	8.37	0.998	0.001013	0.10	0.715
42	80.00	8.94	1	0.0009666	0.10	0.715
43	90.00	9.49	1	0.001105	0.11	0.715
44	100.00	10.00	0.999	0.001059	0.11	0.715
45	110.00	10.49	1	0.001105	0.11	0.715
46	120.00	10.95	1	0.001151	0.11	0.715
47	120.04	10.96	0.998	0.001151	0.11	0.715

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-265
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/1/19
Sample Type: CORE

Project No.: 19-265
Checked By: SKK
Depth: 10-12'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 4 of 6
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.006207	0.62	0.706
2	0.01	0.09	0.979	0.006207	0.62	0.706
3	0.02	0.13	0.67	0.005839	0.58	0.707
4	0.03	0.16	0.585	0.005471	0.55	0.707
5	0.03	0.19	0.553	0.005104	0.51	0.708
6	0.05	0.23	0.524	0.004874	0.49	0.708
7	0.07	0.27	0.513	0.004782	0.48	0.709
8	0.08	0.29	0.51	0.004736	0.47	0.709
9	0.12	0.34	0.503	0.004644	0.46	0.709
10	0.17	0.41	0.503	0.004506	0.45	0.709
11	0.25	0.50	0.503	0.004414	0.44	0.709
12	0.34	0.58	0.501	0.004322	0.43	0.709
13	0.50	0.71	0.501	0.00423	0.42	0.710
14	0.75	0.87	0.501	0.004184	0.42	0.710
15	1.00	1.00	0.5	0.004138	0.41	0.710
16	1.50	1.23	0.499	0.004092	0.41	0.710
17	2.00	1.41	0.5	0.004046	0.40	0.710
18	3.00	1.73	0.5	0.004	0.40	0.710
19	4.00	2.00	0.5	0.004	0.40	0.710
20	5.00	2.24	0.501	0.003954	0.39	0.710
21	6.00	2.45	0.501	0.003908	0.39	0.710
22	7.00	2.65	0.499	0.003908	0.39	0.710
23	8.00	2.83	0.499	0.003862	0.39	0.710
24	9.00	3.00	0.5	0.003862	0.39	0.710
25	10.00	3.16	0.5	0.003862	0.39	0.710
26	12.00	3.46	0.499	0.003816	0.38	0.710
27	14.00	3.74	0.501	0.00377	0.38	0.710
28	16.00	4.00	0.501	0.00377	0.38	0.710
29	18.00	4.24	0.501	0.003816	0.38	0.710
30	20.00	4.47	0.501	0.003816	0.38	0.710
31	22.00	4.69	0.5	0.00377	0.38	0.710
32	24.00	4.90	0.501	0.00377	0.38	0.710
33	26.00	5.10	0.499	0.003724	0.37	0.710
34	28.00	5.29	0.499	0.003724	0.37	0.710
35	30.00	5.48	0.501	0.003724	0.37	0.710
36	35.00	5.92	0.5	0.003724	0.37	0.710
37	40.00	6.32	0.499	0.003816	0.38	0.710
38	45.00	6.71	0.5	0.00377	0.38	0.710
39	50.00	7.07	0.5	0.00377	0.38	0.710
40	60.00	7.75	0.5	0.00377	0.38	0.710
41	70.00	8.37	0.501	0.003678	0.37	0.711
42	80.00	8.94	0.501	0.003724	0.37	0.710
43	90.00	9.49	0.499	0.003632	0.36	0.711
44	100.00	10.00	0.499	0.003586	0.36	0.711
45	110.00	10.49	0.501	0.003586	0.36	0.711
46	120.00	10.95	0.499	0.00354	0.35	0.711
47	120.04	10.96	0.501	0.00354	0.35	0.711

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-265
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/1/19
Sample Type: CORE

Project No.: 19-265
Checked By: SKK
Depth: 10-12'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 5 of 6
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.5	0.00354	0.35	0.711
2	0.01	0.09	0.497	0.00354	0.35	0.711
3	0.02	0.13	0.41	0.003448	0.34	0.711
4	0.03	0.16	0.348	0.003127	0.31	0.711
5	0.03	0.19	0.32	0.002943	0.29	0.712
6	0.05	0.23	0.286	0.002713	0.27	0.712
7	0.07	0.26	0.272	0.002575	0.26	0.712
8	0.09	0.29	0.266	0.002437	0.24	0.713
9	0.12	0.34	0.26	0.002345	0.23	0.713
10	0.17	0.41	0.255	0.002161	0.22	0.713
11	0.25	0.50	0.254	0.001931	0.19	0.714
12	0.33	0.58	0.253	0.001655	0.17	0.714
13	0.50	0.71	0.252	0.001379	0.14	0.714
14	0.75	0.87	0.252	0.001195	0.12	0.715
15	1.00	1.00	0.252	0.001149	0.11	0.715
16	1.50	1.22	0.25	0.001012	0.10	0.715
17	2.00	1.42	0.25	0.0008736	0.09	0.715
18	3.00	1.73	0.249	0.0006437	0.06	0.716
19	4.00	2.00	0.251	0.0004598	0.05	0.716
20	5.00	2.24	0.251	0.0004138	0.04	0.716
21	6.00	2.45	0.25	0.0003678	0.04	0.716
22	7.00	2.65	0.251	0.0003219	0.03	0.716
23	8.00	2.83	0.25	0.0003219	0.03	0.716
24	9.00	3.00	0.25	0.0003219	0.03	0.716
25	10.00	3.16	0.25	0.0003219	0.03	0.716
26	12.00	3.46	0.25	0.0002299	0.02	0.716
27	14.00	3.74	0.25	0.0001839	0.02	0.717
28	16.00	4.00	0.25	0.0001379	0.01	0.717
29	18.00	4.24	0.25	4.598e-005	0.00	0.717
30	20.00	4.47	0.251	0	0.00	0.717
31	22.00	4.69	0.249	-9.196e-005	-0.01	0.717
32	24.00	4.90	0.25	-0.0001379	-0.01	0.717
33	26.00	5.10	0.251	-0.0001839	-0.02	0.717
34	28.00	5.29	0.25	-0.0002299	-0.02	0.717
35	30.00	5.48	0.25	-0.0002299	-0.02	0.717
36	35.00	5.92	0.25	-0.0002299	-0.02	0.717
37	40.00	6.32	0.249	-0.0002759	-0.03	0.717
38	45.00	6.71	0.251	-0.0003678	-0.04	0.717
39	50.00	7.07	0.249	-0.0004138	-0.04	0.718
40	60.00	7.75	0.249	-0.0003219	-0.03	0.717
41	70.00	8.37	0.249	-0.0004138	-0.04	0.718
42	80.00	8.94	0.25	-0.0004598	-0.05	0.718
43	90.00	9.49	0.25	-0.0005058	-0.05	0.718
44	100.00	10.00	0.249	-0.0004598	-0.05	0.718
45	110.00	10.49	0.25	-0.0005517	-0.06	0.718
46	120.00	10.95	0.251	-0.0005977	-0.06	0.718
47	120.03	10.96	0.25	-0.0005977	-0.06	0.718

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-265
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/1/19
Sample Type: CORE

Project No.: 19-265
Checked By: SKK
Depth: 10-12'
Elevation: N/A

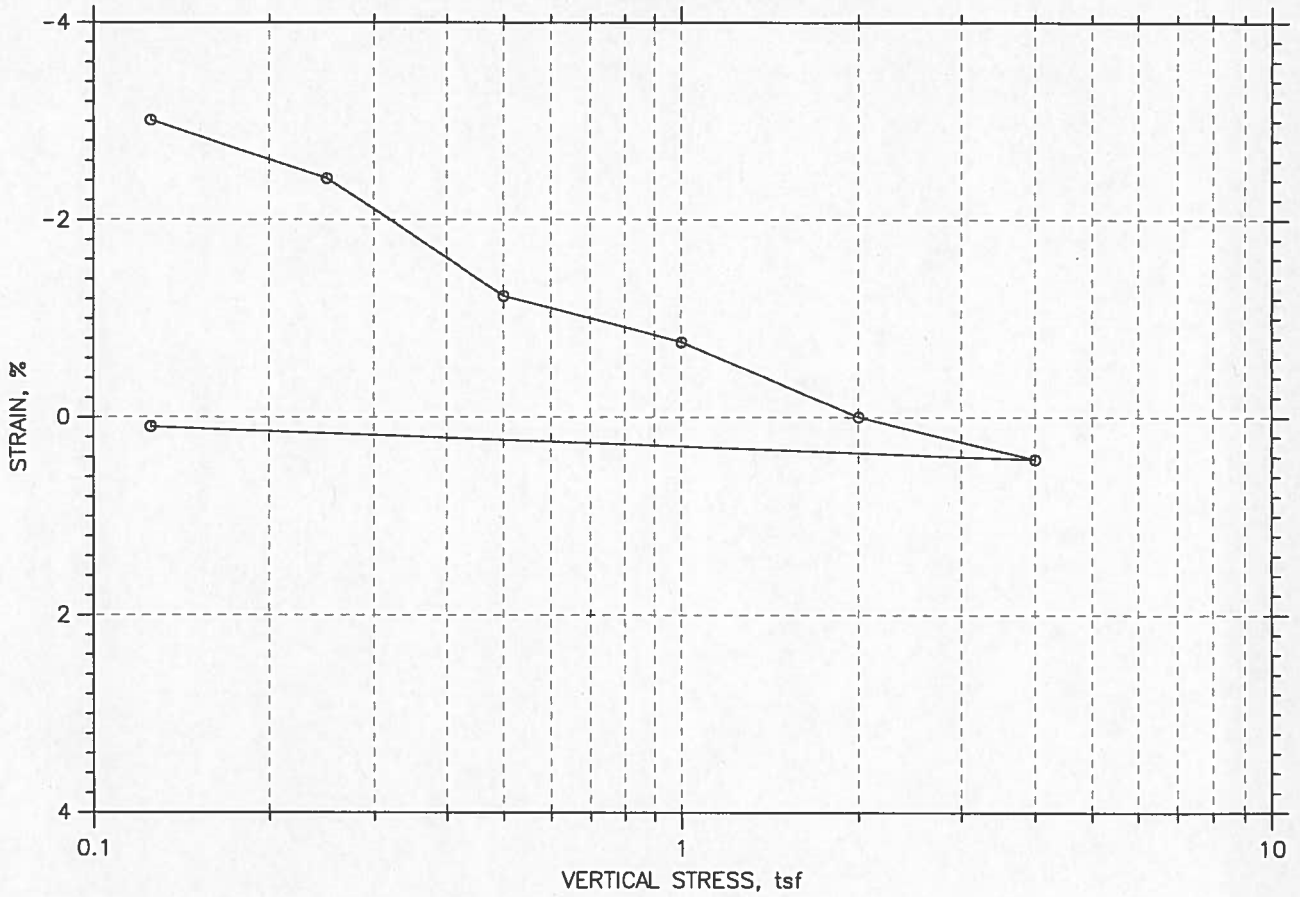
Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

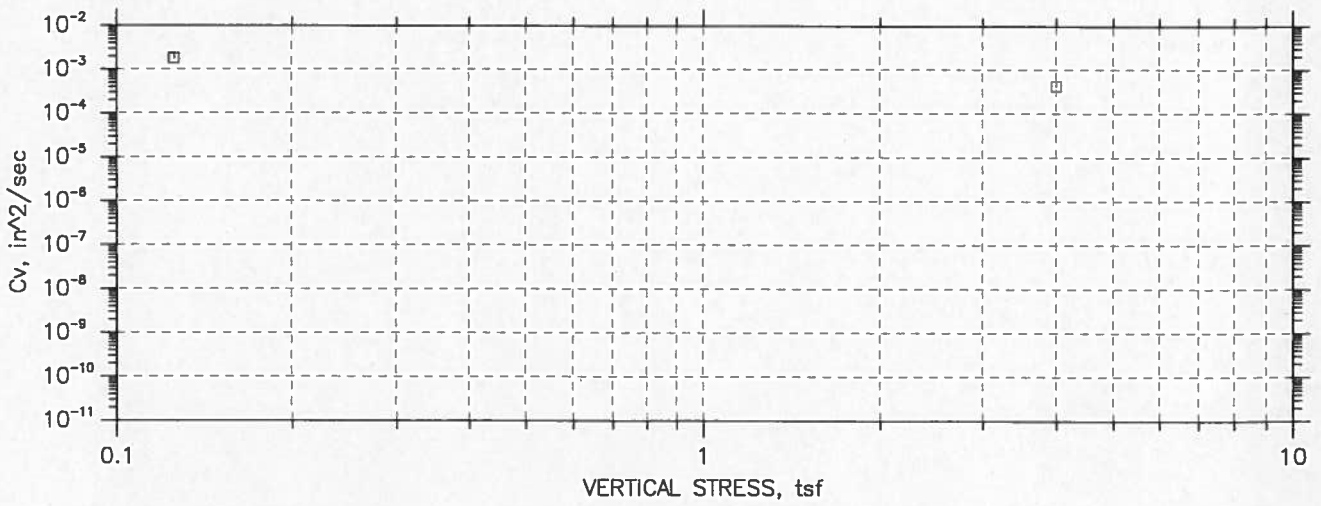
Constant Load Step: 6 of 6
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.249	-0.0005977	-0.06	0.718
2	0.01	0.09	0.249	-0.0005977	-0.06	0.718
3	0.02	0.13	0.195	-0.0006897	-0.07	0.718
4	0.03	0.16	0.173	-0.0007816	-0.08	0.718
5	0.04	0.19	0.16	-0.0008276	-0.08	0.718
6	0.05	0.23	0.147	-0.001103	-0.11	0.719
7	0.07	0.27	0.141	-0.001287	-0.13	0.719
8	0.08	0.29	0.139	-0.001379	-0.14	0.719
9	0.12	0.35	0.133	-0.001517	-0.15	0.719
10	0.17	0.41	0.132	-0.001655	-0.17	0.720
11	0.25	0.50	0.129	-0.001793	-0.18	0.720
12	0.34	0.58	0.129	-0.001793	-0.18	0.720
13	0.50	0.71	0.128	-0.001885	-0.19	0.720
14	0.75	0.87	0.128	-0.001977	-0.20	0.720
15	1.00	1.00	0.125	-0.002069	-0.21	0.720
16	1.50	1.23	0.125	-0.002299	-0.23	0.721
17	2.00	1.41	0.127	-0.002437	-0.24	0.721
18	3.00	1.73	0.125	-0.002713	-0.27	0.721
19	4.00	2.00	0.125	-0.002851	-0.28	0.722
20	5.00	2.24	0.125	-0.002989	-0.30	0.722
21	6.00	2.45	0.124	-0.003081	-0.31	0.722
22	7.00	2.65	0.124	-0.003173	-0.32	0.722
23	8.00	2.83	0.123	-0.003265	-0.33	0.722
24	9.00	3.00	0.124	-0.003448	-0.34	0.723
25	10.00	3.16	0.125	-0.00354	-0.35	0.723
26	12.00	3.46	0.125	-0.003678	-0.37	0.723
27	14.00	3.74	0.124	-0.003862	-0.39	0.723
28	16.00	4.00	0.124	-0.004	-0.40	0.724
29	18.00	4.24	0.125	-0.004138	-0.41	0.724
30	20.00	4.47	0.124	-0.004184	-0.42	0.724
31	22.00	4.69	0.124	-0.004276	-0.43	0.724
32	24.00	4.90	0.125	-0.004414	-0.44	0.724
33	26.00	5.10	0.125	-0.004506	-0.45	0.725
34	28.00	5.29	0.124	-0.004552	-0.45	0.725
35	30.00	5.48	0.124	-0.004552	-0.45	0.725
36	35.00	5.92	0.125	-0.004598	-0.46	0.725
37	40.00	6.32	0.123	-0.004644	-0.46	0.725
38	45.00	6.71	0.124	-0.004782	-0.48	0.725
39	50.00	7.07	0.125	-0.004966	-0.50	0.725
40	60.00	7.75	0.123	-0.005104	-0.51	0.726
41	70.00	8.37	0.123	-0.005196	-0.52	0.726
42	80.00	8.94	0.124	-0.005426	-0.54	0.726
43	90.00	9.49	0.124	-0.005471	-0.55	0.726
44	100.00	10.00	0.125	-0.005609	-0.56	0.726
45	110.00	10.49	0.124	-0.005701	-0.57	0.727
46	120.00	10.95	0.124	-0.005747	-0.57	0.727
47	120.02	10.96	0.125	-0.005747	-0.57	0.727

CONSOLIDATION TEST DATA

SUMMARY REPORT



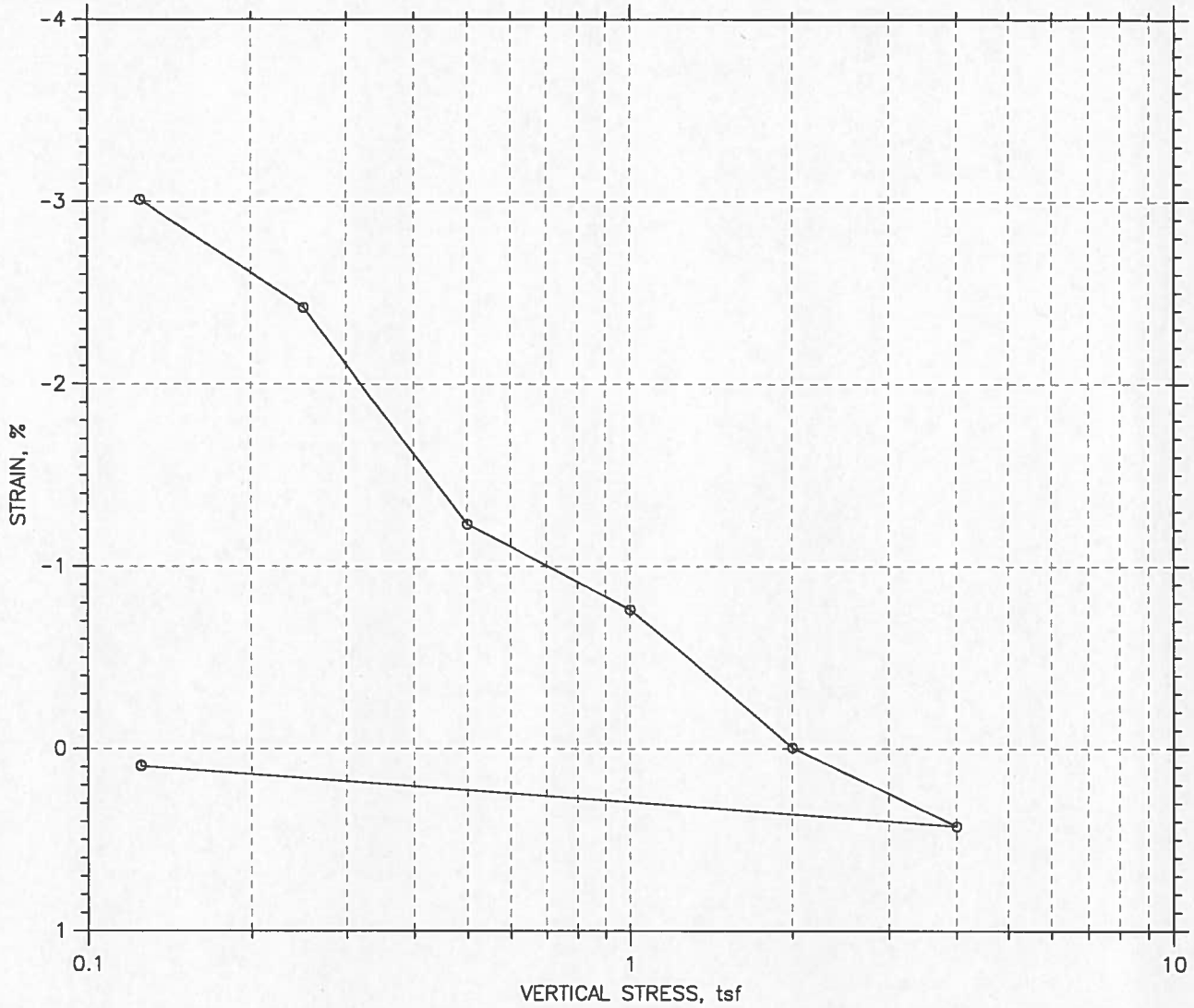


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-266
	Boring No.: B-07	Tested By: SKK	Checked By: SKK
	Sample No.: 19-266	Test Date: 7/8/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Mon, 15-JUL-2019 07:35:03

CONSOLIDATION TEST DATA

SUMMARY REPORT



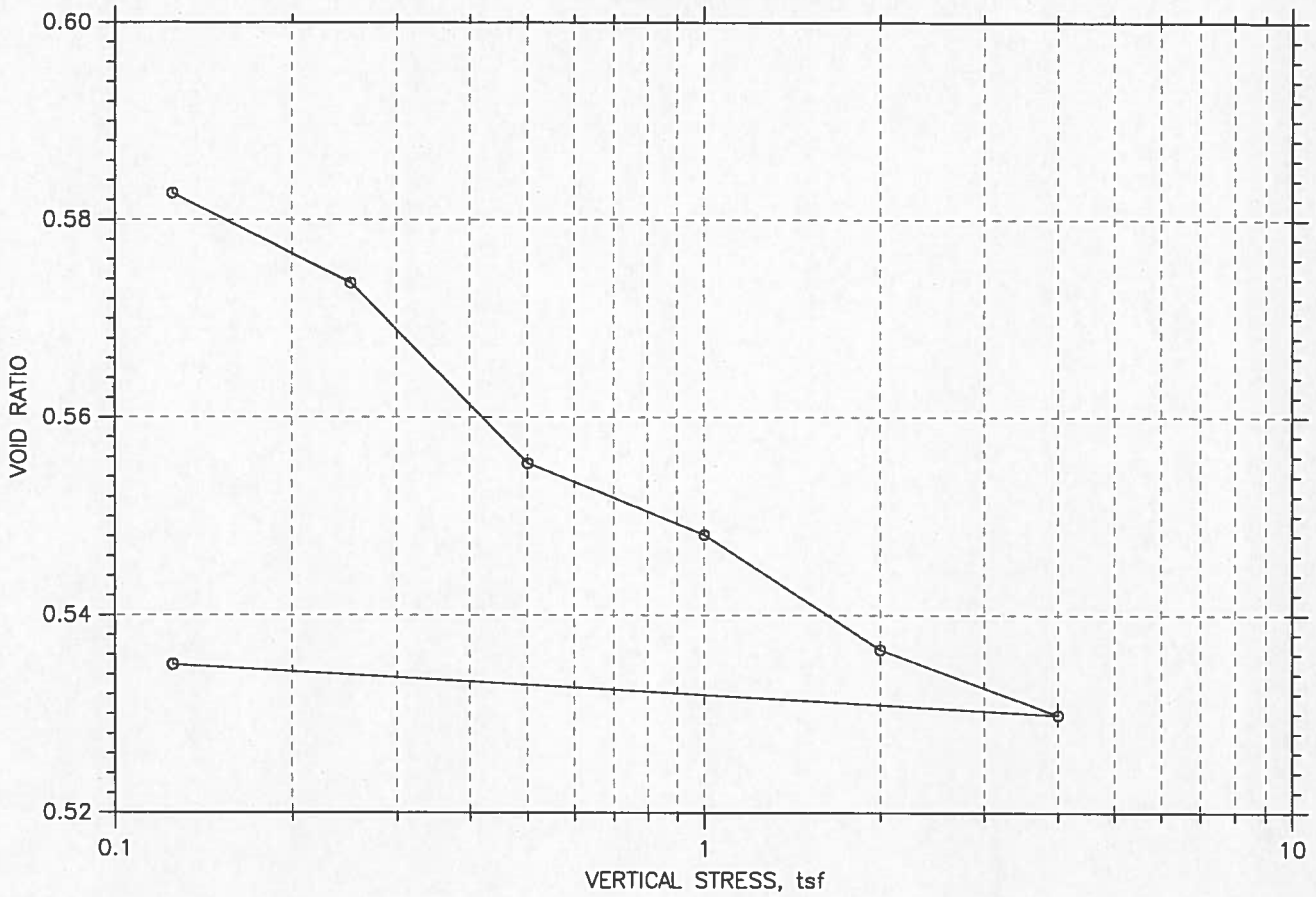
				Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	16.47	19.69
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	112.1	108.6
Compression Index: 3.81959e-313				Saturation, %	84.76	92.73
Diameter: 2.5 in		Height: 1.002 in		Void Ratio	0.54	0.59
LL: ---	PL: ---	PI: ---	GS: 2.76			

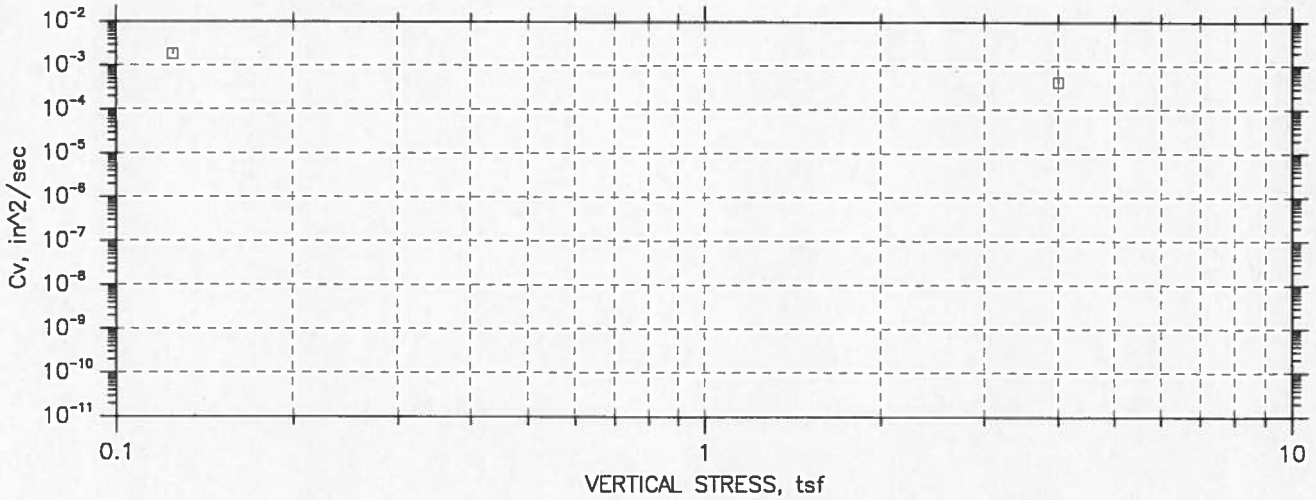
Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-266
Boring No.: B-07	Tested By: SKK	Checked By: SKK
Sample No.: 19-266	Test Date: 7/8/19	Test No.: 1
Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
Description: SWELL TEST		
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Mon, 15-JUL-2019 07:35:04

CONSOLIDATION TEST DATA

SUMMARY REPORT



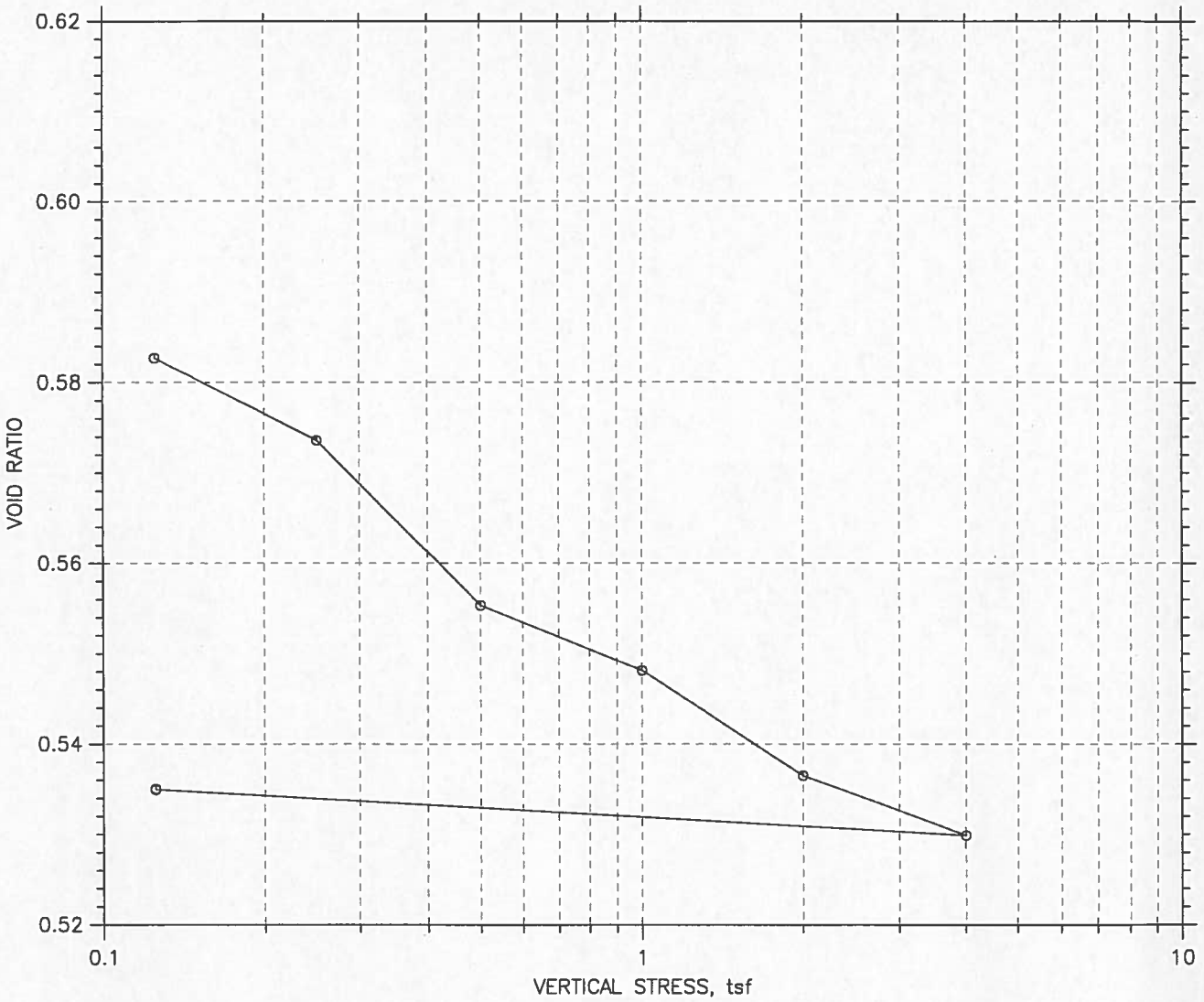


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-266
	Boring No.: B-07	Tested By: SKK	Checked By: SKK
	Sample No.: 19-266	Test Date: 7/8/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Mon, 15-JUL-2019 07:35:13

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	16.47	19.69
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	112.1	108.6
Compression Index: 3.81959e-313				Saturation, %	84.76	92.73
Diameter: 2.5 in		Height: 1.002 in		Void Ratio	0.54	0.59
LL: ---	PL: ---	PI: ---	GS: 2.76			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-266
	Boring No.: B-07	Tested By: SKK	Checked By: SKK
	Sample No.: 19-266	Test Date: 7/8/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Mon, 15-JUL-2019 07:35:13

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/8/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Measured Specific Gravity: 2.76
Initial Void Ratio: 0.54
Final Void Ratio: 0.59

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	133.25	278.79	283.44	243.1
Wt. Container + Dry Soil, gm	121.95	254.94	254.94	214.6
Wt. Container, gm	59.1	110.15	110.15	69.82
Wt. Dry Soil, gm	62.85	144.79	144.79	144.78
Water Content, %	17.98	16.47	19.69	19.69
Void Ratio	---	0.54	0.59	---
Degree of Saturation, %	---	84.76	92.73	---
Dry Unit Weight, pcf	---	112.14	108.64	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/8/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.0009196	0.535	0.09	2.0	1.80e-003	7.34e-003	2.48e-004
2	0.125	0.0009656	0.535	0.10	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	4	0.004276	0.530	0.43	11.8	2.99e-004	8.53e-004	4.77e-006
4	2	-4.598e-005	0.537	-0.00	8.5	4.17e-004	2.16e-003	1.68e-005
5	1	-0.007633	0.548	-0.76	314.6	1.14e-005	7.57e-003	1.61e-006
6	0.5	-0.01232	0.555	-1.23	108.0	3.35e-005	9.36e-003	5.88e-006
7	0.25	-0.02423	0.574	-2.42	667.5	5.51e-006	4.75e-002	4.91e-006
8	0.125	-0.03016	0.583	-3.01	481.2	7.78e-006	4.74e-002	6.90e-006

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.0009196	0.535	0.09	0.0	0.00e+000	7.34e-003	0.00e+000
2	0.125	0.0009656	0.535	0.10	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	4	0.004276	0.530	0.43	0.0	0.00e+000	8.53e-004	0.00e+000
4	2	-4.598e-005	0.537	-0.00	0.0	0.00e+000	2.16e-003	0.00e+000
5	1	-0.007633	0.548	-0.76	0.0	0.00e+000	7.57e-003	0.00e+000
6	0.5	-0.01232	0.555	-1.23	0.0	0.00e+000	9.36e-003	0.00e+000
7	0.25	-0.02423	0.574	-2.42	0.0	0.00e+000	4.75e-002	0.00e+000
8	0.125	-0.03016	0.583	-3.01	0.0	0.00e+000	4.74e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/8/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 1 of 8
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00336	-0.001335	-0.13	0.538
2	0.01	0.09	0.0101	-0.001335	-0.13	0.538
3	0.02	0.13	0.0448	-0.001243	-0.12	0.538
4	0.03	0.16	0.0683	-0.001151	-0.11	0.538
5	0.03	0.19	0.0852	-0.001059	-0.11	0.538
6	0.05	0.23	0.105	-0.001013	-0.10	0.538
7	0.07	0.27	0.114	-0.0009674	-0.10	0.538
8	0.08	0.29	0.118	-0.0009215	-0.09	0.538
9	0.12	0.35	0.121	-0.0009215	-0.09	0.538
10	0.17	0.41	0.123	-0.0008755	-0.09	0.538
11	0.25	0.50	0.123	-0.0008295	-0.08	0.538
12	0.34	0.58	0.124	-0.0008295	-0.08	0.538
13	0.50	0.71	0.123	-0.0007835	-0.08	0.538
14	0.75	0.87	0.124	-0.0007376	-0.07	0.538
15	1.00	1.00	0.124	-0.0007376	-0.07	0.538
16	1.50	1.23	0.124	-0.0006456	-0.06	0.537
17	2.00	1.41	0.124	-0.0005996	-0.06	0.537
18	3.00	1.73	0.124	-0.0005996	-0.06	0.537
19	4.00	2.00	0.123	-0.0005536	-0.06	0.537
20	5.00	2.24	0.124	-0.0005536	-0.06	0.537
21	6.00	2.45	0.124	-0.0005536	-0.06	0.537
22	7.00	2.65	0.124	-0.0005536	-0.06	0.537
23	8.00	2.83	0.124	-0.0005536	-0.06	0.537
24	9.00	3.00	0.124	-0.0005536	-0.06	0.537
25	10.00	3.16	0.124	-0.0005077	-0.05	0.537
26	12.00	3.46	0.124	-0.0005077	-0.05	0.537
27	14.00	3.74	0.124	-0.0004157	-0.04	0.537
28	15.02	3.88	0.124	-0.0004157	-0.04	0.537

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/8/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Volume Step: 2 of 8
Seating Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.123	-0.0004157	-0.04	0.537
2	0.01	0.09	0.124	-0.0004157	-0.04	0.537
3	0.02	0.13	0.124	-0.0004157	-0.04	0.537
4	0.03	0.16	0.124	-0.0004157	-0.04	0.537
5	0.04	0.19	0.124	-0.0004157	-0.04	0.537
6	0.05	0.23	0.122	-0.0004157	-0.04	0.537
7	0.07	0.27	0.124	-0.0004157	-0.04	0.537
8	0.08	0.29	0.13	-0.0004157	-0.04	0.537
9	0.12	0.35	0.145	-0.0004617	-0.05	0.537
10	0.17	0.41	0.159	-0.0004617	-0.05	0.537
11	0.25	0.50	0.184	-0.0005536	-0.06	0.537
12	0.34	0.58	0.208	-0.0006456	-0.06	0.537
13	0.50	0.71	0.246	-0.0006916	-0.07	0.537
14	0.75	0.87	0.291	-0.0009674	-0.10	0.538
15	1.00	1.00	0.331	-0.001013	-0.10	0.538
16	1.50	1.23	0.406	-0.001105	-0.11	0.538
17	2.00	1.41	0.489	-0.001105	-0.11	0.538
18	3.00	1.73	0.669	-0.0009674	-0.10	0.538
19	4.00	2.00	0.854	-0.0005536	-0.06	0.537
20	5.00	2.24	0.908	-0.0005077	-0.05	0.537
21	6.00	2.45	0.937	-0.0004617	-0.05	0.537
22	7.00	2.65	0.979	-0.0004617	-0.05	0.537
23	8.00	2.83	1.01	-0.0004617	-0.05	0.537
24	9.00	3.00	1.04	-0.0004617	-0.05	0.537
25	10.00	3.16	1.08	-0.0004617	-0.05	0.537
26	12.00	3.46	1.12	-0.0004617	-0.05	0.537
27	14.00	3.74	1.17	-0.0004617	-0.05	0.537
28	16.00	4.00	1.21	-0.0004617	-0.05	0.537
29	18.00	4.24	1.25	-0.0004617	-0.05	0.537
30	20.00	4.47	1.3	-0.0004617	-0.05	0.537
31	22.00	4.69	1.32	-0.0004617	-0.05	0.537
32	24.00	4.90	1.35	-0.0004617	-0.05	0.537
33	26.00	5.10	1.39	-0.0004617	-0.05	0.537
34	28.00	5.29	1.42	-0.0004617	-0.05	0.537
35	30.00	5.48	1.45	-0.0004617	-0.05	0.537
36	35.00	5.92	1.51	-0.0004157	-0.04	0.537
37	40.00	6.32	1.56	-0.0003697	-0.04	0.537
38	45.00	6.71	1.58	-0.0004617	-0.05	0.537
39	50.00	7.07	1.62	-0.0004157	-0.04	0.537
40	60.00	7.75	1.7	-0.0004157	-0.04	0.537
41	70.00	8.37	1.77	-0.0004157	-0.04	0.537
42	80.00	8.94	1.84	-0.0003697	-0.04	0.537
43	90.00	9.49	1.89	-0.0003697	-0.04	0.537
44	100.00	10.00	1.93	-0.0004157	-0.04	0.537
45	110.00	10.49	1.99	-0.0003697	-0.04	0.537
46	120.00	10.95	2.03	-0.0003697	-0.04	0.537
47	130.00	11.40	2.05	-0.0003697	-0.04	0.537
48	140.00	11.83	2.09	-0.0003697	-0.04	0.537
49	150.00	12.25	2.12	-0.0003697	-0.04	0.537
50	160.00	12.65	2.13	-0.0003697	-0.04	0.537
51	170.00	13.04	2.15	-0.0003697	-0.04	0.537
52	180.00	13.42	2.2	-0.0003697	-0.04	0.537
53	190.00	13.78	2.2	-0.0003697	-0.04	0.537
54	200.00	14.14	2.24	-0.0003697	-0.04	0.537
55	210.00	14.49	2.24	-0.0003697	-0.04	0.537
56	220.00	14.83	2.25	-0.0003697	-0.04	0.537
57	230.00	15.17	2.28	-0.0004157	-0.04	0.537
58	240.00	15.49	2.29	-0.0003697	-0.04	0.537
59	250.00	15.81	2.31	-0.0003697	-0.04	0.537
60	260.00	16.12	2.34	-0.0003697	-0.04	0.537
61	270.00	16.43	2.34	-0.0003697	-0.04	0.537
62	280.00	16.73	2.33	-0.0003697	-0.04	0.537
63	290.00	17.03	2.36	-0.0003697	-0.04	0.537
64	300.00	17.32	2.36	-0.0003697	-0.04	0.537
65	310.00	17.61	2.39	-0.0004157	-0.04	0.537
66	320.00	17.89	2.4	-0.0003697	-0.04	0.537
67	330.00	18.17	2.41	-0.0003697	-0.04	0.537
68	340.00	18.44	2.41	-0.0003697	-0.04	0.537
69	350.00	18.71	2.43	-0.0004157	-0.04	0.537
70	360.00	18.97	2.45	-0.0003697	-0.04	0.537
71	370.00	19.24	2.42	-0.0003697	-0.04	0.537
72	380.00	19.49	2.43	-0.0003697	-0.04	0.537
73	390.00	19.75	2.44	-0.0003697	-0.04	0.537
74	400.00	20.00	2.46	-0.0003697	-0.04	0.537
75	410.00	20.25	2.44	-0.0003697	-0.04	0.537
76	420.00	20.49	2.45	-0.0003697	-0.04	0.537
77	430.00	20.74	2.47	-0.0003697	-0.04	0.537
78	440.00	20.98	2.45	-0.0003697	-0.04	0.537
79	450.00	21.21	2.47	-0.0003697	-0.04	0.537
80	460.00	21.45	2.47	-0.0003697	-0.04	0.537
81	470.00	21.68	2.48	-0.0003697	-0.04	0.537

82	480.00	21.91	2.47	-0.0003697	-0.04	0.537
83	490.00	22.14	2.51	-0.0003697	-0.04	0.537
84	500.00	22.36	2.54	-0.0003697	-0.04	0.537
85	510.00	22.58	2.58	-0.0003697	-0.04	0.537
86	520.00	22.80	2.61	-0.0004157	-0.04	0.537
87	530.00	23.02	2.63	-0.0003697	-0.04	0.537
88	540.00	23.24	2.67	-0.0003697	-0.04	0.537
89	550.00	23.45	2.69	-0.0003697	-0.04	0.537
90	560.00	23.66	2.68	-0.0004157	-0.04	0.537
91	570.00	23.87	2.72	-0.0003697	-0.04	0.537
92	580.00	24.08	2.73	-0.0003697	-0.04	0.537
93	590.00	24.29	2.73	-0.0003697	-0.04	0.537
94	600.00	24.49	2.77	-0.0003697	-0.04	0.537
95	610.00	24.70	2.77	-0.0003697	-0.04	0.537
96	620.00	24.90	2.79	-0.0003697	-0.04	0.537
97	630.00	25.10	2.8	-0.0003697	-0.04	0.537
98	640.00	25.30	2.79	-0.0004617	-0.05	0.537
99	650.00	25.50	2.82	-0.0003697	-0.04	0.537
100	660.00	25.69	2.84	-0.0003237	-0.03	0.537
101	670.00	25.88	2.83	-0.0003697	-0.04	0.537
102	680.00	26.08	2.86	-0.0003697	-0.04	0.537
103	690.00	26.27	2.85	-0.0003697	-0.04	0.537
104	700.00	26.46	2.83	-0.0003697	-0.04	0.537
105	710.00	26.65	2.86	-0.0003697	-0.04	0.537
106	720.00	26.83	2.86	-0.0003697	-0.04	0.537
107	730.00	27.02	2.83	-0.0003697	-0.04	0.537
108	740.00	27.20	2.88	-0.0003697	-0.04	0.537
109	750.00	27.39	2.85	-0.0003697	-0.04	0.537
110	760.00	27.57	2.84	-0.0004157	-0.04	0.537
111	770.00	27.75	2.86	-0.0003697	-0.04	0.537
112	780.00	27.93	2.87	-0.0003697	-0.04	0.537
113	790.00	28.11	2.88	-0.0003697	-0.04	0.537
114	800.00	28.28	2.87	-0.0003697	-0.04	0.537
115	810.00	28.46	2.82	-0.0003697	-0.04	0.537
116	820.00	28.64	2.85	-0.0003697	-0.04	0.537
117	830.00	28.81	2.87	-0.0003697	-0.04	0.537
118	840.00	28.98	2.85	-0.0003697	-0.04	0.537
119	850.00	29.15	2.82	-0.0004157	-0.04	0.537
120	860.00	29.33	2.86	-0.0003697	-0.04	0.537
121	870.00	29.50	2.86	-0.0003697	-0.04	0.537
122	880.00	29.66	2.81	-0.0003697	-0.04	0.537
123	890.00	29.83	2.88	-0.0003697	-0.04	0.537
124	900.00	30.00	2.86	-0.0003697	-0.04	0.537
125	910.00	30.17	2.83	-0.0003697	-0.04	0.537
126	920.00	30.33	2.85	-0.0003697	-0.04	0.537
127	930.00	30.50	2.83	-0.0004157	-0.04	0.537
128	940.00	30.66	2.83	-0.0003697	-0.04	0.537
129	950.00	30.82	2.84	-0.0003697	-0.04	0.537
130	960.00	30.98	2.79	-0.0004617	-0.05	0.537
131	970.00	31.14	2.84	-0.0003697	-0.04	0.537
132	980.00	31.30	2.83	-0.0004157	-0.04	0.537
133	990.00	31.46	2.82	-0.0004157	-0.04	0.537
134	1000.00	31.62	2.84	-0.0003697	-0.04	0.537
135	1010.00	31.78	2.85	-0.0003237	-0.03	0.537
136	1020.00	31.94	2.82	-0.0003697	-0.04	0.537
137	1030.00	32.09	2.81	-0.0003697	-0.04	0.537
138	1040.00	32.25	2.84	-0.0003697	-0.04	0.537
139	1050.00	32.40	2.84	-0.0003697	-0.04	0.537
140	1060.00	32.56	2.83	-0.0003697	-0.04	0.537
141	1070.00	32.71	2.84	-0.0003697	-0.04	0.537
142	1080.00	32.86	2.83	-0.0003697	-0.04	0.537
143	1090.00	33.02	2.81	-0.0003697	-0.04	0.537
144	1100.00	33.17	2.83	-0.0003697	-0.04	0.537
145	1110.00	33.32	2.83	-0.0003697	-0.04	0.537
146	1120.00	33.47	2.83	-0.0003697	-0.04	0.537
147	1130.00	33.62	2.85	-0.0004157	-0.04	0.537
148	1140.00	33.76	2.85	-0.0003697	-0.04	0.537
149	1150.00	33.91	2.82	-0.0003697	-0.04	0.537
150	1160.00	34.06	2.86	-0.0003697	-0.04	0.537
151	1170.00	34.21	2.85	-0.0003697	-0.04	0.537
152	1180.00	34.35	2.83	-0.0003697	-0.04	0.537
153	1190.00	34.50	2.85	-0.0004157	-0.04	0.537
154	1200.00	34.64	2.85	-0.0003697	-0.04	0.537
155	1210.00	34.79	2.82	-0.0003697	-0.04	0.537
156	1220.00	34.93	2.85	-0.0003697	-0.04	0.537
157	1230.00	35.07	2.83	-0.0004157	-0.04	0.537
158	1240.00	35.21	2.83	-0.0003697	-0.04	0.537
159	1250.00	35.36	2.85	-0.0003697	-0.04	0.537
160	1260.00	35.50	2.84	-0.0003697	-0.04	0.537
161	1270.00	35.64	2.82	-0.0003697	-0.04	0.537
162	1280.00	35.78	2.86	-0.0003697	-0.04	0.537
163	1290.00	35.92	2.85	-0.0003697	-0.04	0.537
164	1300.00	36.06	2.85	-0.0003697	-0.04	0.537
165	1310.00	36.19	2.87	-0.0003697	-0.04	0.537
166	1320.00	36.33	2.84	-0.0003697	-0.04	0.537
167	1330.00	36.47	2.84	-0.0003697	-0.04	0.537
168	1340.00	36.61	2.88	-0.0003237	-0.03	0.537
169	1350.00	36.74	2.87	-0.0003237	-0.03	0.537
170	1360.00	36.88	2.81	-0.0003697	-0.04	0.537
171	1370.00	37.01	2.84	-0.0003697	-0.04	0.537
172	1380.00	37.15	2.84	-0.0003697	-0.04	0.537
173	1390.00	37.28	2.82	-0.0003697	-0.04	0.537
174	1400.00	37.42	2.8	-0.0003697	-0.04	0.537
175	1410.00	37.55	2.85	-0.0003697	-0.04	0.537
176	1420.00	37.68	2.89	-0.0003697	-0.04	0.537
177	1430.00	37.82	2.84	-0.0003697	-0.04	0.537
178	1440.00	37.95	2.83	-0.0003697	-0.04	0.537
179	1450.00	38.08	2.85	-0.0003697	-0.04	0.537

180	1451.49	38.10	2.82	-0.0003697	-0.04	0.537

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/8/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 3 of 8
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2.82	-0.01094	-1.09	0.553
2	0.01	0.09	3.33	-0.01094	-1.09	0.553
3	0.02	0.13	3.97	-0.009887	-0.99	0.552
4	0.03	0.16	3.99	-0.009795	-0.98	0.551
5	0.04	0.19	3.99	-0.009749	-0.97	0.551
6	0.05	0.23	3.99	-0.009703	-0.97	0.551
7	0.07	0.26	3.99	-0.009657	-0.96	0.551
8	0.09	0.30	3.99	-0.009657	-0.96	0.551
9	0.12	0.34	4	-0.009565	-0.95	0.551
10	0.17	0.41	4	-0.009519	-0.95	0.551
11	0.25	0.50	4	-0.009427	-0.94	0.551
12	0.34	0.58	4	-0.009381	-0.94	0.551
13	0.50	0.71	4	-0.009243	-0.92	0.551
14	0.75	0.87	4	-0.009151	-0.91	0.550
15	1.00	1.00	4	-0.009059	-0.90	0.550
16	1.50	1.23	4	-0.008921	-0.89	0.550
17	2.00	1.41	4	-0.008829	-0.88	0.550
18	3.00	1.73	4	-0.008783	-0.88	0.550
19	4.00	2.00	4	-0.008737	-0.87	0.550
20	5.00	2.24	4	-0.008691	-0.87	0.550
21	6.00	2.45	4	-0.008691	-0.87	0.550
22	7.00	2.65	4	-0.008645	-0.86	0.550
23	8.00	2.83	4	-0.0086	-0.86	0.550
24	9.00	3.00	4	-0.008554	-0.85	0.550
25	10.00	3.16	4	-0.008554	-0.85	0.550
26	12.00	3.46	4	-0.008462	-0.84	0.549
27	14.00	3.74	4	-0.008416	-0.84	0.549
28	16.00	4.00	4	-0.00837	-0.84	0.549
29	18.00	4.24	4	-0.00837	-0.84	0.549
30	20.00	4.47	4	-0.008278	-0.83	0.549
31	22.00	4.69	4	-0.008232	-0.82	0.549
32	24.00	4.90	4	-0.008232	-0.82	0.549
33	26.00	5.10	4	-0.008186	-0.82	0.549
34	28.00	5.29	4	-0.00814	-0.81	0.549
35	30.00	5.48	4	-0.008186	-0.82	0.549
36	35.00	5.92	4	-0.008186	-0.82	0.549
37	40.00	6.32	4	-0.008048	-0.80	0.549
38	45.00	6.71	4	-0.007956	-0.79	0.549
39	50.00	7.07	4	-0.00791	-0.79	0.549
40	60.00	7.75	4	-0.007864	-0.78	0.548
41	70.00	8.37	4	-0.007726	-0.77	0.548
42	80.00	8.94	4	-0.007726	-0.77	0.548
43	90.00	9.49	4	-0.007588	-0.76	0.548
44	100.00	10.00	4	-0.007634	-0.76	0.548
45	110.00	10.49	4	-0.007588	-0.76	0.548
46	120.00	10.95	4	-0.007634	-0.76	0.548
47	120.01	10.96	4	-0.007634	-0.76	0.548

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/8/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 4 of 8
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.002161	0.22	0.533
2	0.01	0.09	3.58	0.002161	0.22	0.533
3	0.02	0.13	1.98	9.196e-005	0.01	0.536
4	0.03	0.16	2.04	-9.196e-005	-0.01	0.537
5	0.04	0.19	2.02	-0.0002299	-0.02	0.537
6	0.05	0.23	2.01	-0.0003219	-0.03	0.537
7	0.07	0.27	2.01	-0.0003678	-0.04	0.537
8	0.08	0.29	2.01	-0.0003678	-0.04	0.537
9	0.12	0.34	2.01	-0.0003678	-0.04	0.537
10	0.17	0.41	2	-0.0004138	-0.04	0.537
11	0.25	0.50	2	-0.0004598	-0.05	0.537
12	0.34	0.58	2	-0.0004598	-0.05	0.537
13	0.50	0.71	2	-0.0005517	-0.06	0.537
14	0.75	0.87	2	-0.0005977	-0.06	0.537
15	1.00	1.00	2	-0.0005977	-0.06	0.537
16	1.50	1.22	2	-0.0006437	-0.06	0.537
17	2.00	1.42	2	-0.0007816	-0.08	0.538
18	3.00	1.73	2	-0.0009196	-0.09	0.538
19	4.00	2.00	2	-0.001012	-0.10	0.538
20	5.00	2.24	2	-0.001103	-0.11	0.538
21	6.00	2.45	2	-0.001195	-0.12	0.538
22	7.00	2.65	2	-0.001241	-0.12	0.538
23	8.00	2.83	2	-0.001287	-0.13	0.538
24	9.00	3.00	2	-0.001333	-0.13	0.538
25	10.00	3.16	2	-0.001333	-0.13	0.538
26	12.00	3.46	2	-0.001333	-0.13	0.538
27	14.00	3.74	2	-0.001379	-0.14	0.539
28	16.00	4.00	2	-0.001379	-0.14	0.539
29	18.00	4.24	2	-0.001379	-0.14	0.539
30	20.00	4.47	2	-0.001471	-0.15	0.539
31	22.00	4.69	2	-0.001517	-0.15	0.539
32	24.00	4.90	2	-0.001655	-0.17	0.539
33	26.00	5.10	2	-0.001701	-0.17	0.539
34	28.00	5.29	2	-0.001701	-0.17	0.539
35	30.00	5.48	2	-0.001747	-0.17	0.539
36	35.00	5.92	2	-0.001747	-0.17	0.539
37	40.00	6.32	2	-0.001793	-0.18	0.539
38	45.00	6.71	2	-0.001839	-0.18	0.539
39	50.00	7.07	2	-0.001885	-0.19	0.539
40	60.00	7.75	2	-0.002023	-0.20	0.540
41	70.00	8.37	2	-0.002023	-0.20	0.540
42	80.00	8.94	2	-0.002069	-0.21	0.540
43	90.00	9.49	2	-0.002069	-0.21	0.540
44	100.00	10.00	2	-0.002115	-0.21	0.540
45	110.00	10.49	2	-0.002069	-0.21	0.540
46	120.00	10.95	2	-0.002161	-0.22	0.540
47	120.01	10.95	2	-0.002161	-0.22	0.540

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/8/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 5 of 8
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	-0.002161	-0.22	0.540
2	0.01	0.09	1.74	-0.002161	-0.22	0.540
3	0.02	0.13	1.06	-0.002989	-0.30	0.541
4	0.03	0.16	1.03	-0.003265	-0.33	0.541
5	0.04	0.19	1.02	-0.003356	-0.33	0.542
6	0.05	0.23	1.01	-0.003448	-0.34	0.542
7	0.07	0.26	1.01	-0.003494	-0.35	0.542
8	0.09	0.30	1.01	-0.003586	-0.36	0.542
9	0.12	0.34	1	-0.003632	-0.36	0.542
10	0.17	0.41	1	-0.003724	-0.37	0.542
11	0.25	0.50	1	-0.003816	-0.38	0.542
12	0.33	0.58	1	-0.003908	-0.39	0.542
13	0.50	0.71	1	-0.004046	-0.40	0.543
14	0.75	0.87	1	-0.004092	-0.41	0.543
15	1.00	1.00	1	-0.004138	-0.41	0.543
16	1.50	1.22	0.999	-0.00423	-0.42	0.543
17	2.00	1.42	0.999	-0.004368	-0.44	0.543
18	3.00	1.73	0.999	-0.00446	-0.45	0.543
19	4.00	2.00	0.998	-0.004552	-0.45	0.543
20	5.00	2.24	0.999	-0.004644	-0.46	0.544
21	6.00	2.45	1	-0.004736	-0.47	0.544
22	7.00	2.65	1	-0.004782	-0.48	0.544
23	8.00	2.83	0.999	-0.004828	-0.48	0.544
24	9.00	3.00	1	-0.004874	-0.49	0.544
25	10.00	3.16	0.999	-0.004874	-0.49	0.544
26	12.00	3.46	0.999	-0.005012	-0.50	0.544
27	14.00	3.74	0.999	-0.005012	-0.50	0.544
28	16.00	4.00	0.998	-0.005104	-0.51	0.544
29	18.00	4.24	0.999	-0.005104	-0.51	0.544
30	20.00	4.47	0.998	-0.00515	-0.51	0.544
31	22.00	4.69	0.998	-0.00515	-0.51	0.544
32	24.00	4.90	0.998	-0.005196	-0.52	0.544
33	26.00	5.10	0.998	-0.005242	-0.52	0.544
34	28.00	5.29	1	-0.005288	-0.53	0.545
35	30.00	5.48	0.998	-0.005288	-0.53	0.545
36	35.00	5.92	0.999	-0.005426	-0.54	0.545
37	40.00	6.32	1	-0.005517	-0.55	0.545
38	45.00	6.71	0.997	-0.005609	-0.56	0.545
39	50.00	7.07	1	-0.005655	-0.56	0.545
40	60.00	7.75	1	-0.005793	-0.58	0.545
41	70.00	8.37	0.999	-0.005977	-0.60	0.546
42	80.00	8.94	0.998	-0.006115	-0.61	0.546
43	90.00	9.49	1	-0.006437	-0.64	0.546
44	100.00	10.00	0.999	-0.006667	-0.67	0.547
45	110.00	10.49	0.999	-0.006805	-0.68	0.547
46	120.00	10.95	1	-0.006943	-0.69	0.547
47	130.00	11.40	0.998	-0.007081	-0.71	0.547
48	140.00	11.83	0.998	-0.007265	-0.73	0.548
49	150.00	12.25	0.999	-0.007403	-0.74	0.548
50	160.00	12.65	0.999	-0.007633	-0.76	0.548
51	170.00	13.04	1	-0.007678	-0.77	0.548
52	180.00	13.42	0.999	-0.007816	-0.78	0.548
53	190.00	13.78	1	-0.007954	-0.79	0.549
54	200.00	14.14	0.999	-0.008	-0.80	0.549
55	210.00	14.49	0.999	-0.008138	-0.81	0.549
56	220.00	14.83	0.999	-0.008276	-0.83	0.549
57	230.00	15.17	0.998	-0.008322	-0.83	0.549
58	240.00	15.49	0.999	-0.008414	-0.84	0.549
59	250.00	15.81	1	-0.008506	-0.85	0.549
60	260.00	16.12	1	-0.008506	-0.85	0.549
61	270.00	16.43	0.997	-0.008552	-0.85	0.550
62	280.00	16.73	0.999	-0.008598	-0.86	0.550
63	290.00	17.03	1	-0.00869	-0.87	0.550
64	300.00	17.32	0.997	-0.00869	-0.87	0.550
65	310.00	17.61	0.999	-0.00869	-0.87	0.550
66	320.00	17.89	1	-0.008736	-0.87	0.550
67	330.00	18.17	0.999	-0.008782	-0.88	0.550
68	340.00	18.44	1	-0.008782	-0.88	0.550
69	350.00	18.71	0.999	-0.008782	-0.88	0.550
70	360.00	18.97	1	-0.008782	-0.88	0.550
71	370.00	19.24	0.999	-0.008828	-0.88	0.550
72	380.00	19.49	0.998	-0.008828	-0.88	0.550
73	390.00	19.75	0.999	-0.008782	-0.88	0.550
74	400.00	20.00	0.999	-0.008828	-0.88	0.550
75	410.00	20.25	0.999	-0.00892	-0.89	0.550
76	420.00	20.49	0.999	-0.009012	-0.90	0.550
77	430.00	20.74	0.999	-0.009104	-0.91	0.550
78	440.00	20.98	1	-0.00915	-0.91	0.550
79	450.00	21.21	1	-0.009242	-0.92	0.551
80	460.00	21.45	0.999	-0.009242	-0.92	0.551
81	470.00	21.68	0.999	-0.009288	-0.93	0.551

82	480.00	21.91	1	-0.009334	-0.93	0.551
83	490.00	22.14	0.999	-0.009426	-0.94	0.551
84	500.00	22.36	0.999	-0.009426	-0.94	0.551
85	510.00	22.58	0.997	-0.009426	-0.94	0.551
86	520.00	22.80	0.998	-0.009564	-0.95	0.551
87	530.00	23.02	0.999	-0.009564	-0.95	0.551
88	540.00	23.24	0.999	-0.00961	-0.96	0.551
89	550.00	23.45	1	-0.00961	-0.96	0.551
90	560.00	23.66	1	-0.009656	-0.96	0.551
91	570.00	23.87	0.998	-0.009656	-0.96	0.551
92	580.00	24.08	0.998	-0.009702	-0.97	0.551
93	590.00	24.29	0.999	-0.009748	-0.97	0.551
94	600.00	24.49	0.999	-0.009794	-0.98	0.551
95	605.81	24.61	0.999	-0.009748	-0.97	0.551

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/8/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 6 of 8
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	-0.009748	-0.97	0.551
2	0.01	0.09	0.897	-0.009748	-0.97	0.551
3	0.02	0.13	0.612	-0.009931	-0.99	0.552
4	0.03	0.16	0.54	-0.01007	-1.00	0.552
5	0.04	0.19	0.521	-0.01016	-1.01	0.552
6	0.05	0.23	0.51	-0.0103	-1.03	0.552
7	0.07	0.27	0.506	-0.01035	-1.03	0.552
8	0.08	0.29	0.506	-0.01035	-1.03	0.552
9	0.12	0.35	0.503	-0.01039	-1.04	0.552
10	0.17	0.41	0.504	-0.01044	-1.04	0.552
11	0.25	0.50	0.501	-0.01048	-1.05	0.553
12	0.34	0.58	0.501	-0.01048	-1.05	0.553
13	0.50	0.71	0.502	-0.01053	-1.05	0.553
14	0.75	0.87	0.501	-0.01062	-1.06	0.553
15	1.00	1.00	0.501	-0.01067	-1.06	0.553
16	1.50	1.22	0.5	-0.01081	-1.08	0.553
17	2.00	1.42	0.5	-0.01085	-1.08	0.553
18	3.00	1.73	0.5	-0.01094	-1.09	0.553
19	4.00	2.00	0.499	-0.01103	-1.10	0.553
20	5.00	2.24	0.5	-0.01113	-1.11	0.553
21	6.00	2.45	0.5	-0.01122	-1.12	0.554
22	7.00	2.65	0.5	-0.01131	-1.13	0.554
23	8.00	2.83	0.499	-0.01145	-1.14	0.554
24	9.00	3.00	0.501	-0.01149	-1.15	0.554
25	10.00	3.16	0.5	-0.01159	-1.16	0.554
26	12.00	3.46	0.5	-0.01168	-1.17	0.554
27	14.00	3.74	0.501	-0.01177	-1.17	0.554
28	16.00	4.00	0.499	-0.01191	-1.19	0.555
29	18.00	4.24	0.502	-0.01205	-1.20	0.555
30	20.00	4.47	0.5	-0.01209	-1.21	0.555
31	22.00	4.69	0.499	-0.01214	-1.21	0.555
32	24.00	4.90	0.501	-0.01218	-1.22	0.555
33	26.00	5.10	0.501	-0.01223	-1.22	0.555
34	28.00	5.29	0.499	-0.01223	-1.22	0.555
35	30.00	5.48	0.5	-0.01228	-1.23	0.555
36	35.00	5.92	0.501	-0.01246	-1.24	0.556
37	40.00	6.32	0.499	-0.01255	-1.25	0.556
38	45.00	6.71	0.5	-0.01264	-1.26	0.556
39	50.00	7.07	0.5	-0.01274	-1.27	0.556
40	60.00	7.75	0.501	-0.01297	-1.29	0.556
41	70.00	8.37	0.499	-0.0132	-1.32	0.557
42	80.00	8.94	0.499	-0.01333	-1.33	0.557
43	90.00	9.49	0.5	-0.01361	-1.36	0.557
44	100.00	10.00	0.497	-0.01375	-1.37	0.558
45	110.00	10.49	0.499	-0.01384	-1.38	0.558
46	120.00	10.95	0.499	-0.01393	-1.39	0.558
47	130.00	11.40	0.5	-0.01402	-1.40	0.558
48	140.00	11.83	0.499	-0.01407	-1.40	0.558
49	150.00	12.25	0.501	-0.01416	-1.41	0.558
50	160.00	12.65	0.5	-0.01425	-1.42	0.558
51	170.00	13.04	0.501	-0.01435	-1.43	0.558
52	174.44	13.21	0.501	-0.01444	-1.44	0.559

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/8/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 7 of 8
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.501	-0.01444	-1.44	0.559
2	0.01	0.09	0.438	-0.01444	-1.44	0.559
3	0.02	0.13	0.314	-0.01476	-1.47	0.559
4	0.03	0.16	0.273	-0.01494	-1.49	0.559
5	0.04	0.19	0.26	-0.01504	-1.50	0.559
6	0.05	0.23	0.254	-0.01508	-1.51	0.560
7	0.07	0.27	0.253	-0.01513	-1.51	0.560
8	0.08	0.29	0.253	-0.01517	-1.51	0.560
9	0.12	0.34	0.252	-0.01522	-1.52	0.560
10	0.17	0.41	0.252	-0.01527	-1.52	0.560
11	0.25	0.50	0.252	-0.01527	-1.52	0.560
12	0.34	0.58	0.25	-0.01531	-1.53	0.560
13	0.50	0.71	0.25	-0.01536	-1.53	0.560
14	0.75	0.87	0.25	-0.01545	-1.54	0.560
15	1.00	1.00	0.25	-0.01549	-1.55	0.560
16	1.50	1.23	0.251	-0.01554	-1.55	0.560
17	2.00	1.41	0.251	-0.01563	-1.56	0.560
18	3.00	1.73	0.25	-0.01577	-1.57	0.561
19	4.00	2.00	0.25	-0.01586	-1.58	0.561
20	5.00	2.24	0.25	-0.01595	-1.59	0.561
21	6.00	2.45	0.25	-0.016	-1.60	0.561
22	7.00	2.65	0.251	-0.01605	-1.60	0.561
23	8.00	2.83	0.251	-0.01605	-1.60	0.561
24	9.00	3.00	0.25	-0.01609	-1.61	0.561
25	10.00	3.16	0.249	-0.01609	-1.61	0.561
26	12.00	3.46	0.249	-0.01614	-1.61	0.561
27	14.00	3.74	0.251	-0.01628	-1.62	0.561
28	16.00	4.00	0.25	-0.01641	-1.64	0.562
29	18.00	4.24	0.25	-0.01646	-1.64	0.562
30	20.00	4.47	0.251	-0.01651	-1.65	0.562
31	22.00	4.69	0.25	-0.01655	-1.65	0.562
32	24.00	4.90	0.249	-0.01655	-1.65	0.562
33	26.00	5.10	0.25	-0.01655	-1.65	0.562
34	28.00	5.29	0.25	-0.01655	-1.65	0.562
35	30.00	5.48	0.25	-0.0166	-1.66	0.562
36	35.00	5.92	0.251	-0.01664	-1.66	0.562
37	40.00	6.32	0.249	-0.01664	-1.66	0.562
38	45.00	6.71	0.249	-0.01674	-1.67	0.562
39	50.00	7.07	0.25	-0.01678	-1.67	0.562
40	60.00	7.75	0.249	-0.01687	-1.68	0.562
41	70.00	8.37	0.25	-0.0172	-1.72	0.563
42	80.00	8.94	0.25	-0.01747	-1.74	0.563
43	90.00	9.49	0.251	-0.01766	-1.76	0.564
44	100.00	10.00	0.25	-0.01802	-1.80	0.564
45	110.00	10.49	0.251	-0.01821	-1.82	0.564
46	120.00	10.95	0.25	-0.01848	-1.84	0.565
47	130.00	11.40	0.25	-0.01867	-1.86	0.565
48	140.00	11.83	0.251	-0.0189	-1.89	0.565
49	150.00	12.25	0.251	-0.01894	-1.89	0.565
50	160.00	12.65	0.251	-0.01899	-1.90	0.566
51	170.00	13.04	0.25	-0.01913	-1.91	0.566
52	180.00	13.42	0.25	-0.01922	-1.92	0.566
53	190.00	13.78	0.249	-0.01931	-1.93	0.566
54	200.00	14.14	0.25	-0.01945	-1.94	0.566
55	210.00	14.49	0.25	-0.01963	-1.96	0.567
56	220.00	14.83	0.249	-0.01972	-1.97	0.567
57	230.00	15.17	0.251	-0.01982	-1.98	0.567
58	240.00	15.49	0.25	-0.01986	-1.98	0.567
59	250.00	15.81	0.25	-0.01995	-1.99	0.567
60	260.00	16.12	0.25	-0.01995	-1.99	0.567
61	270.00	16.43	0.25	-0.02023	-2.02	0.567
62	280.00	16.73	0.251	-0.02032	-2.03	0.568
63	290.00	17.03	0.251	-0.02055	-2.05	0.568
64	300.00	17.32	0.25	-0.02069	-2.06	0.568
65	310.00	17.61	0.25	-0.02092	-2.09	0.569
66	320.00	17.89	0.249	-0.02101	-2.10	0.569
67	330.00	18.17	0.25	-0.02115	-2.11	0.569
68	340.00	18.44	0.251	-0.02133	-2.13	0.569
69	350.00	18.71	0.249	-0.02147	-2.14	0.569
70	360.00	18.97	0.25	-0.02152	-2.15	0.569
71	370.00	19.24	0.25	-0.02161	-2.16	0.570
72	380.00	19.49	0.249	-0.02161	-2.16	0.570
73	390.00	19.75	0.251	-0.02175	-2.17	0.570
74	400.00	20.00	0.249	-0.02184	-2.18	0.570
75	410.00	20.25	0.251	-0.02189	-2.18	0.570
76	420.00	20.49	0.249	-0.02193	-2.19	0.570
77	430.00	20.74	0.251	-0.02202	-2.20	0.570
78	440.00	20.98	0.249	-0.02212	-2.21	0.570
79	450.00	21.21	0.25	-0.0223	-2.23	0.571
80	460.00	21.45	0.249	-0.02239	-2.23	0.571
81	470.00	21.68	0.251	-0.02248	-2.24	0.571

82	480.00	21.91	0.251	-0.02258	-2.25	0.571
83	490.00	22.14	0.25	-0.02271	-2.27	0.571
84	500.00	22.36	0.25	-0.02276	-2.27	0.571
85	510.00	22.58	0.251	-0.02285	-2.28	0.571
86	520.00	22.80	0.251	-0.02285	-2.28	0.571
87	530.00	23.02	0.25	-0.02294	-2.29	0.572
88	540.00	23.24	0.251	-0.02299	-2.29	0.572
89	550.00	23.45	0.25	-0.02313	-2.31	0.572
90	560.00	23.66	0.25	-0.02322	-2.32	0.572
91	570.00	23.87	0.251	-0.02331	-2.33	0.572
92	580.00	24.08	0.25	-0.0234	-2.34	0.572
93	590.00	24.29	0.249	-0.02345	-2.34	0.572
94	600.00	24.49	0.251	-0.02345	-2.34	0.572
95	610.00	24.70	0.25	-0.02354	-2.35	0.573
96	620.00	24.90	0.249	-0.02359	-2.35	0.573
97	630.00	25.10	0.25	-0.02368	-2.36	0.573
98	640.00	25.30	0.25	-0.02373	-2.37	0.573
99	650.00	25.50	0.249	-0.02373	-2.37	0.573
100	660.00	25.69	0.25	-0.02386	-2.38	0.573
101	670.00	25.88	0.249	-0.02391	-2.39	0.573
102	680.00	26.08	0.25	-0.024	-2.40	0.573
103	690.00	26.27	0.251	-0.02414	-2.41	0.573
104	700.00	26.46	0.25	-0.02414	-2.41	0.573
105	710.00	26.65	0.25	-0.02432	-2.43	0.574
106	720.00	26.83	0.25	-0.02441	-2.44	0.574
107	730.00	27.02	0.25	-0.02455	-2.45	0.574
108	740.00	27.20	0.25	-0.02455	-2.45	0.574
109	750.00	27.39	0.251	-0.02464	-2.46	0.574
110	760.00	27.57	0.25	-0.02469	-2.46	0.574
111	770.00	27.75	0.251	-0.02478	-2.47	0.574
112	780.00	27.93	0.25	-0.02474	-2.47	0.574
113	790.00	28.11	0.25	-0.02487	-2.48	0.575
114	800.00	28.28	0.251	-0.02492	-2.49	0.575
115	810.00	28.46	0.25	-0.02506	-2.50	0.575
116	820.00	28.64	0.249	-0.02506	-2.50	0.575
117	830.00	28.81	0.251	-0.0251	-2.51	0.575
118	840.00	28.98	0.249	-0.02515	-2.51	0.575
119	850.00	29.15	0.25	-0.02524	-2.52	0.575
120	860.00	29.33	0.249	-0.02533	-2.53	0.575
121	870.00	29.50	0.25	-0.02538	-2.53	0.575
122	880.00	29.66	0.25	-0.02538	-2.53	0.575
123	890.00	29.83	0.25	-0.02543	-2.54	0.575
124	900.00	30.00	0.251	-0.02552	-2.55	0.576
125	910.00	30.17	0.25	-0.02552	-2.55	0.576
126	920.00	30.33	0.25	-0.02561	-2.56	0.576
127	930.00	30.50	0.25	-0.02566	-2.56	0.576
128	940.00	30.66	0.251	-0.02566	-2.56	0.576
129	950.00	30.82	0.249	-0.0257	-2.57	0.576
130	960.00	30.98	0.25	-0.02589	-2.58	0.576
131	970.00	31.14	0.251	-0.02589	-2.58	0.576
132	980.00	31.30	0.25	-0.02593	-2.59	0.576
133	990.00	31.46	0.25	-0.02602	-2.60	0.576
134	1000.00	31.62	0.25	-0.02612	-2.61	0.576
135	1010.00	31.78	0.25	-0.02616	-2.61	0.577
136	1020.00	31.94	0.251	-0.02616	-2.61	0.577
137	1030.00	32.09	0.25	-0.02621	-2.62	0.577
138	1040.00	32.25	0.251	-0.02625	-2.62	0.577
139	1050.00	32.40	0.25	-0.0263	-2.62	0.577
140	1060.00	32.56	0.25	-0.02635	-2.63	0.577
141	1069.31	32.70	0.25	-0.02635	-2.63	0.577

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-07
Sample No.: 19-266
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/8/19
Sample Type: CORE

Project No.: 19-266
Checked By: SKK
Depth: 15-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

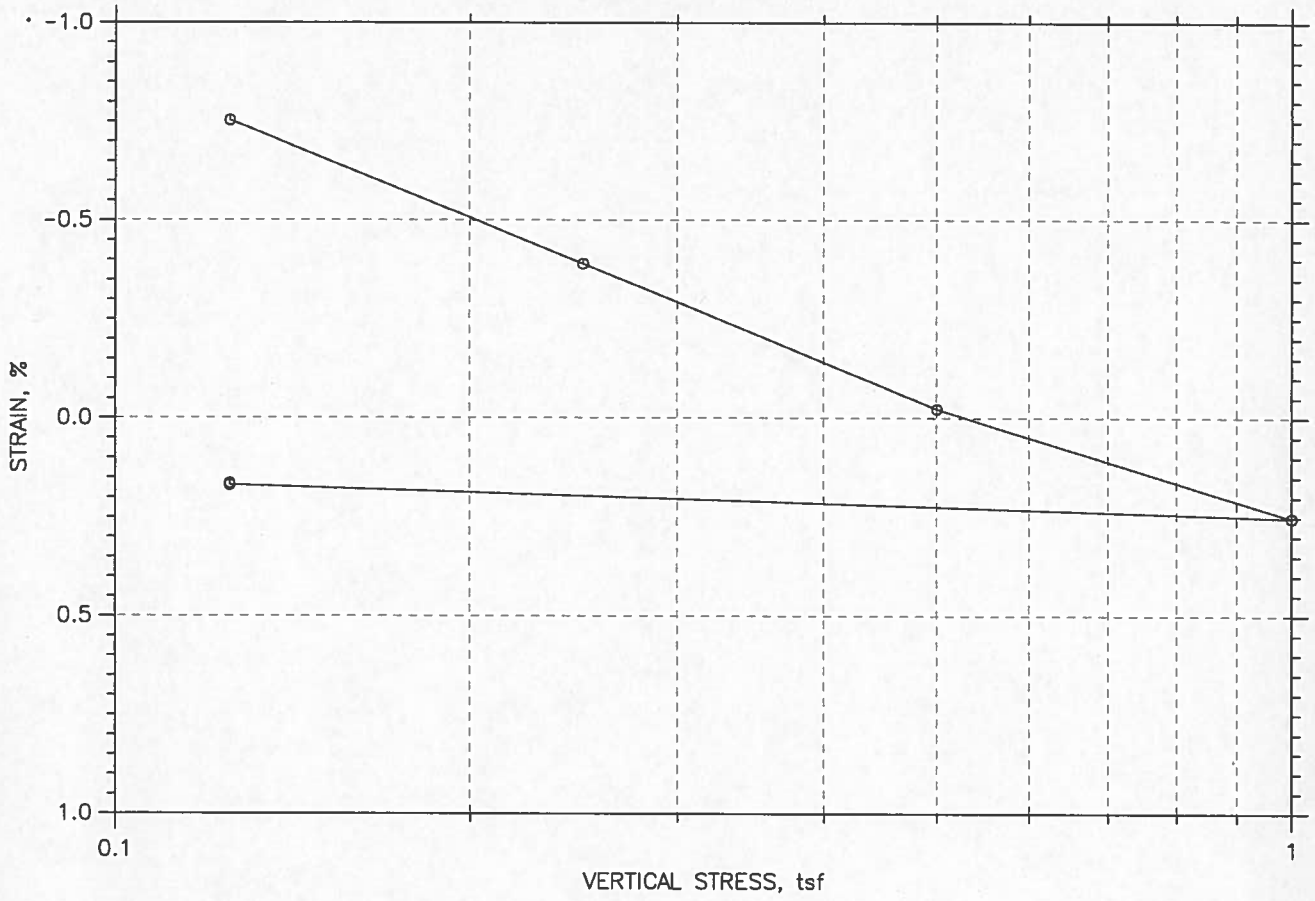
Constant Load Step: 8 of 8
Applied Stress: 0.125 tsf

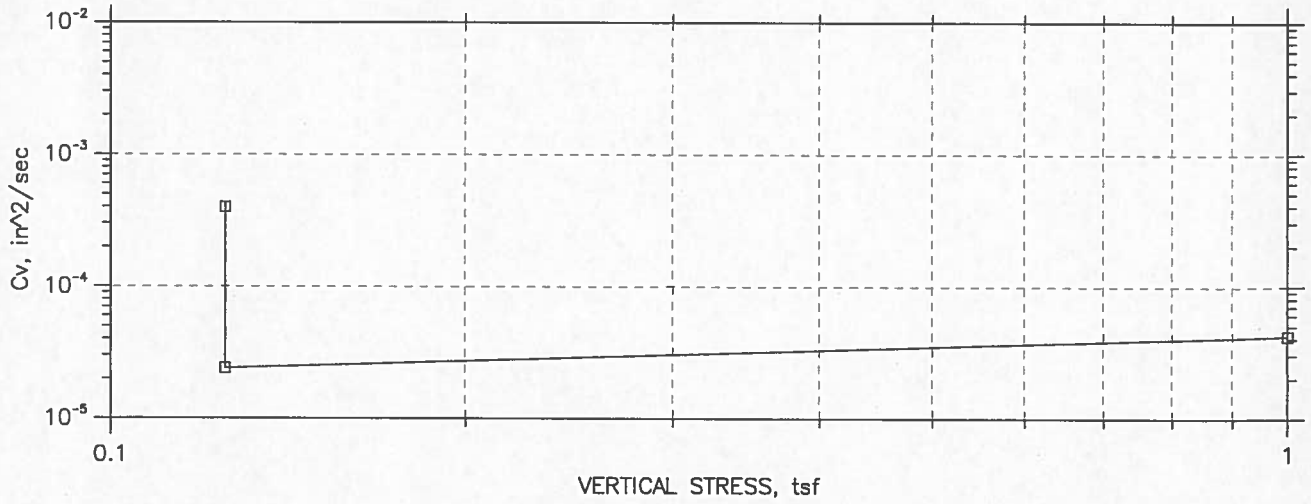
	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	-0.02635	-2.63	0.577
2	0.01	0.09	0.223	-0.02635	-2.63	0.577
3	0.02	0.13	0.15	-0.02644	-2.64	0.577
4	0.03	0.16	0.136	-0.02648	-2.64	0.577
5	0.03	0.19	0.13	-0.02648	-2.64	0.577
6	0.05	0.23	0.128	-0.02648	-2.64	0.577
7	0.07	0.26	0.128	-0.02648	-2.64	0.577
8	0.09	0.30	0.125	-0.02648	-2.64	0.577
9	0.12	0.34	0.125	-0.02648	-2.64	0.577
10	0.17	0.41	0.124	-0.02653	-2.65	0.577
11	0.25	0.50	0.127	-0.02653	-2.65	0.577
12	0.33	0.58	0.124	-0.02653	-2.65	0.577
13	0.50	0.71	0.124	-0.02653	-2.65	0.577
14	0.75	0.87	0.124	-0.02658	-2.65	0.577
15	1.00	1.00	0.124	-0.02658	-2.65	0.577
16	1.50	1.23	0.124	-0.02658	-2.65	0.577
17	2.00	1.41	0.124	-0.02662	-2.66	0.577
18	3.00	1.73	0.124	-0.02662	-2.66	0.577
19	4.00	2.00	0.123	-0.02671	-2.67	0.577
20	5.00	2.24	0.123	-0.02671	-2.67	0.577
21	6.00	2.45	0.124	-0.02671	-2.67	0.577
22	7.00	2.65	0.125	-0.02671	-2.67	0.577
23	8.00	2.83	0.124	-0.02676	-2.67	0.577
24	9.00	3.00	0.125	-0.02676	-2.67	0.577
25	10.00	3.16	0.124	-0.02676	-2.67	0.577
26	12.00	3.46	0.124	-0.02681	-2.68	0.578
27	14.00	3.74	0.123	-0.02685	-2.68	0.578
28	16.00	4.00	0.124	-0.02685	-2.68	0.578
29	18.00	4.24	0.124	-0.0269	-2.68	0.578
30	20.00	4.47	0.125	-0.0269	-2.68	0.578
31	22.00	4.69	0.125	-0.02694	-2.69	0.578
32	24.00	4.90	0.125	-0.02694	-2.69	0.578
33	26.00	5.10	0.123	-0.02694	-2.69	0.578
34	28.00	5.29	0.124	-0.02699	-2.69	0.578
35	30.00	5.48	0.124	-0.02704	-2.70	0.578
36	35.00	5.92	0.124	-0.02708	-2.70	0.578
37	40.00	6.32	0.125	-0.02708	-2.70	0.578
38	45.00	6.71	0.124	-0.02713	-2.71	0.578
39	50.00	7.07	0.124	-0.02717	-2.71	0.578
40	60.00	7.75	0.124	-0.02717	-2.71	0.578
41	70.00	8.37	0.124	-0.02727	-2.72	0.578
42	80.00	8.94	0.125	-0.0274	-2.73	0.578
43	90.00	9.49	0.124	-0.02754	-2.75	0.579
44	100.00	10.00	0.124	-0.02768	-2.76	0.579
45	110.00	10.49	0.124	-0.02786	-2.78	0.579
46	120.00	10.95	0.125	-0.02819	-2.81	0.580
47	130.00	11.40	0.124	-0.02832	-2.83	0.580
48	140.00	11.83	0.124	-0.02846	-2.84	0.580
49	150.00	12.25	0.123	-0.02864	-2.86	0.580
50	160.00	12.65	0.124	-0.02887	-2.88	0.581
51	170.00	13.04	0.124	-0.02901	-2.90	0.581
52	180.00	13.42	0.124	-0.02915	-2.91	0.581
53	190.00	13.78	0.124	-0.0292	-2.91	0.581
54	200.00	14.14	0.124	-0.02929	-2.92	0.581
55	210.00	14.49	0.124	-0.02924	-2.92	0.581
56	220.00	14.83	0.124	-0.02938	-2.93	0.581
57	230.00	15.17	0.124	-0.02952	-2.95	0.582
58	240.00	15.49	0.124	-0.02961	-2.96	0.582
59	250.00	15.81	0.124	-0.02966	-2.96	0.582
60	260.00	16.12	0.124	-0.02975	-2.97	0.582
61	270.00	16.43	0.125	-0.02979	-2.97	0.582
62	280.00	16.73	0.123	-0.02998	-2.99	0.582
63	290.00	17.03	0.125	-0.03012	-3.01	0.583
64	300.00	17.32	0.123	-0.03016	-3.01	0.583
65	310.00	17.61	0.123	-0.03021	-3.01	0.583
66	320.00	17.89	0.123	-0.0303	-3.02	0.583
67	330.00	18.17	0.123	-0.03035	-3.03	0.583
68	340.00	18.44	0.124	-0.03048	-3.04	0.583
69	350.00	18.71	0.125	-0.03053	-3.05	0.583
70	360.00	18.97	0.125	-0.03062	-3.06	0.583
71	370.00	19.24	0.123	-0.03071	-3.07	0.584
72	380.00	19.49	0.124	-0.03085	-3.08	0.584
73	390.00	19.75	0.124	-0.03094	-3.09	0.584
74	400.00	20.00	0.125	-0.03104	-3.10	0.584
75	410.00	20.25	0.124	-0.03104	-3.10	0.584
76	420.00	20.49	0.125	-0.03108	-3.10	0.584
77	430.00	20.74	0.124	-0.03117	-3.11	0.584
78	440.00	20.98	0.123	-0.03122	-3.12	0.584
79	450.00	21.21	0.123	-0.03127	-3.12	0.584
80	460.00	21.45	0.124	-0.03131	-3.12	0.584
81	470.00	21.68	0.124	-0.03136	-3.13	0.585

82	480.00	21.91	0.125	-0.0315	-3.14	0.585
83	490.00	22.14	0.123	-0.03159	-3.15	0.585
84	500.00	22.36	0.124	-0.03173	-3.17	0.585
85	510.00	22.58	0.124	-0.03173	-3.17	0.585
86	520.00	22.80	0.123	-0.03182	-3.18	0.585
87	530.00	23.02	0.125	-0.03186	-3.18	0.585
88	540.00	23.24	0.124	-0.03191	-3.18	0.585
89	550.00	23.45	0.124	-0.03196	-3.19	0.585
90	560.00	23.66	0.124	-0.03196	-3.19	0.585
91	570.00	23.87	0.124	-0.032	-3.19	0.586
92	580.00	24.08	0.123	-0.03205	-3.20	0.586
93	590.00	24.29	0.125	-0.03214	-3.21	0.586
94	600.00	24.49	0.124	-0.03214	-3.21	0.586
95	610.00	24.70	0.123	-0.03219	-3.21	0.586
96	620.00	24.90	0.124	-0.03223	-3.22	0.586
97	630.00	25.10	0.124	-0.03223	-3.22	0.586
98	640.00	25.30	0.125	-0.03223	-3.22	0.586
99	650.00	25.50	0.125	-0.03228	-3.22	0.586
100	660.00	25.69	0.124	-0.03228	-3.22	0.586
101	660.51	25.70	0.125	-0.03228	-3.22	0.586

CONSOLIDATION TEST DATA

SUMMARY REPORT



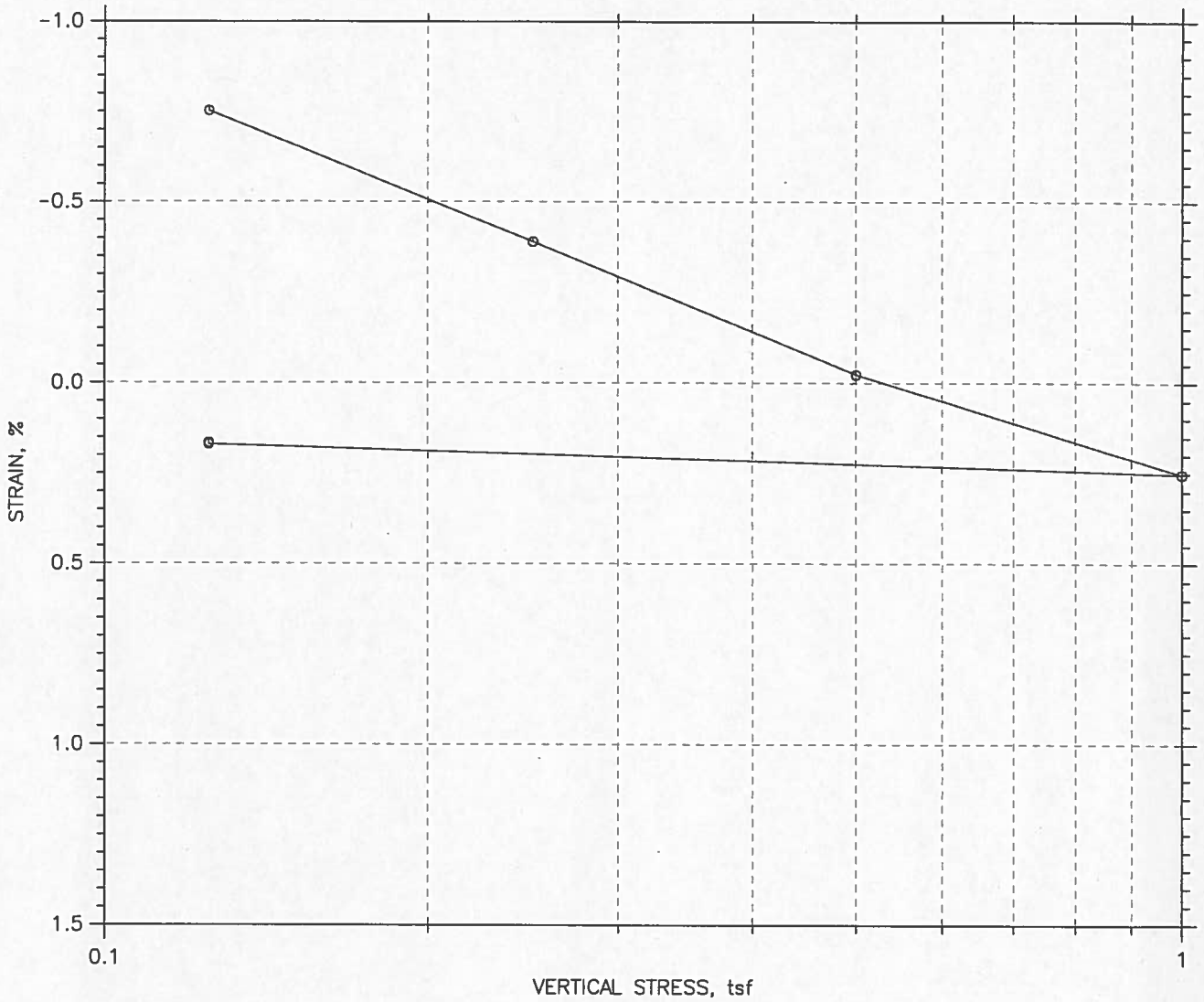


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-282
	Boring No.: B-301	Tested By: SKK	Checked By: SKK
	Sample No.: 19-282	Test Date: 7/11/19	Test No.: 1
	Depth: 18-20'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Mon, 15-JUL-2019 07:54:57

CONSOLIDATION TEST DATA

SUMMARY REPORT



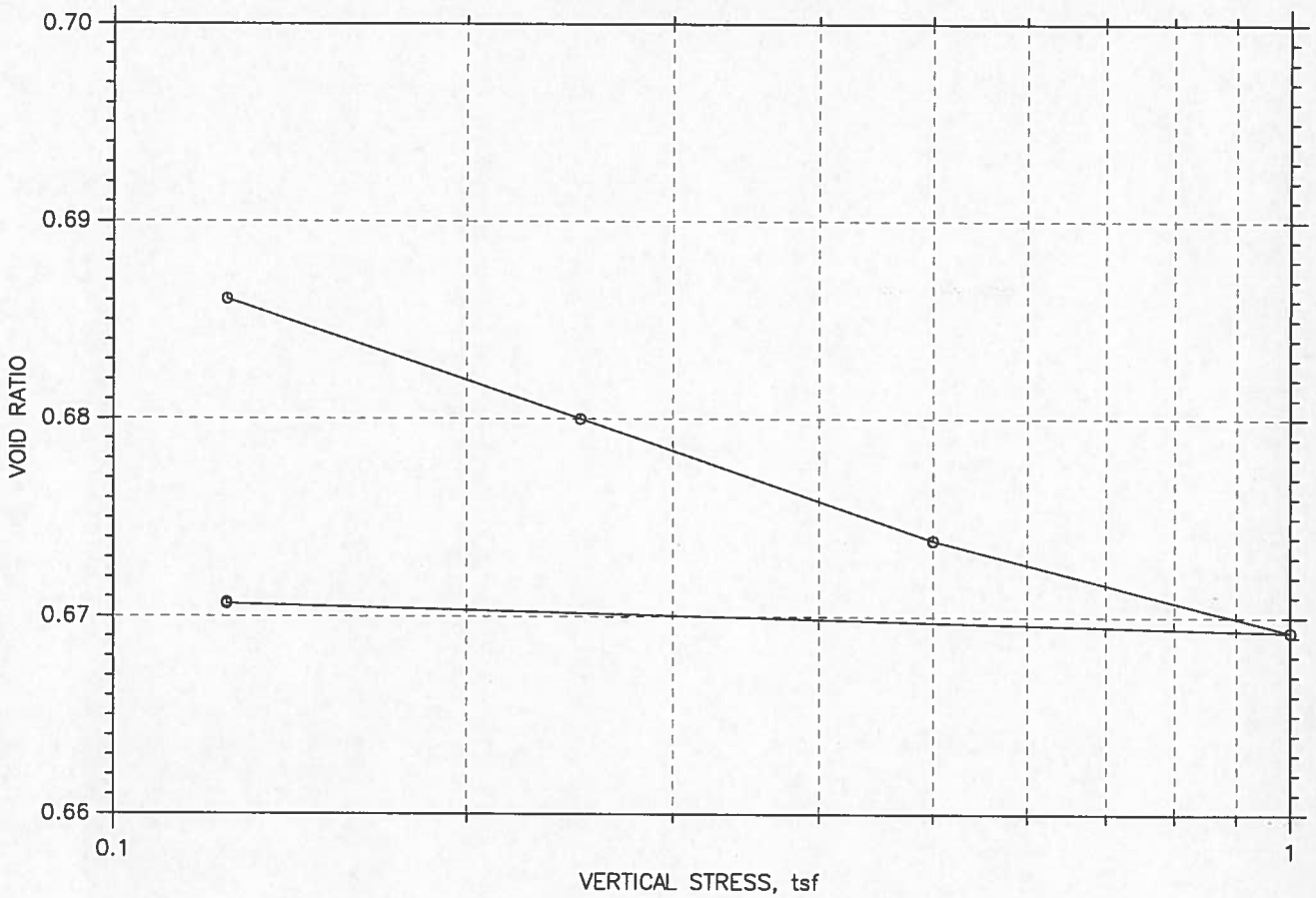
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	19.66	24.38
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	101.8	100.9
Compression Index: 3.81959e-313				Saturation, %	79.70	96.50
Diameter: 2.5 in		Height: 1.002 in		Void Ratio	0.67	0.69
LL: ---	PL: ---	PI: ---	GS: 2.73			

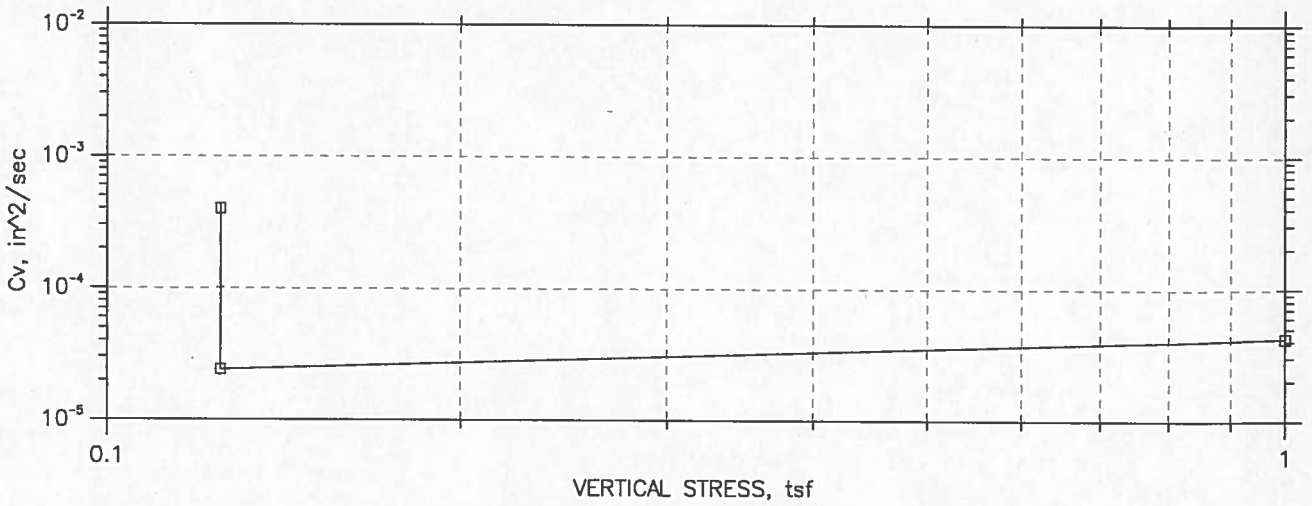
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-282
	Boring No.: B-301	Tested By: SKK	Checked By: SKK
	Sample No.: 19-282	Test Date: 7/11/19	Test No.: 1
	Depth: 18-20'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Mon, 15-JUL-2019 07:54:57

CONSOLIDATION TEST DATA

SUMMARY REPORT





	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-282
	Boring No.: B-301	Tested By: SKK	Checked By: SKK
	Sample No.: 19-282	Test Date: 7/11/19	Test No.: 1
	Depth: 18-20'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

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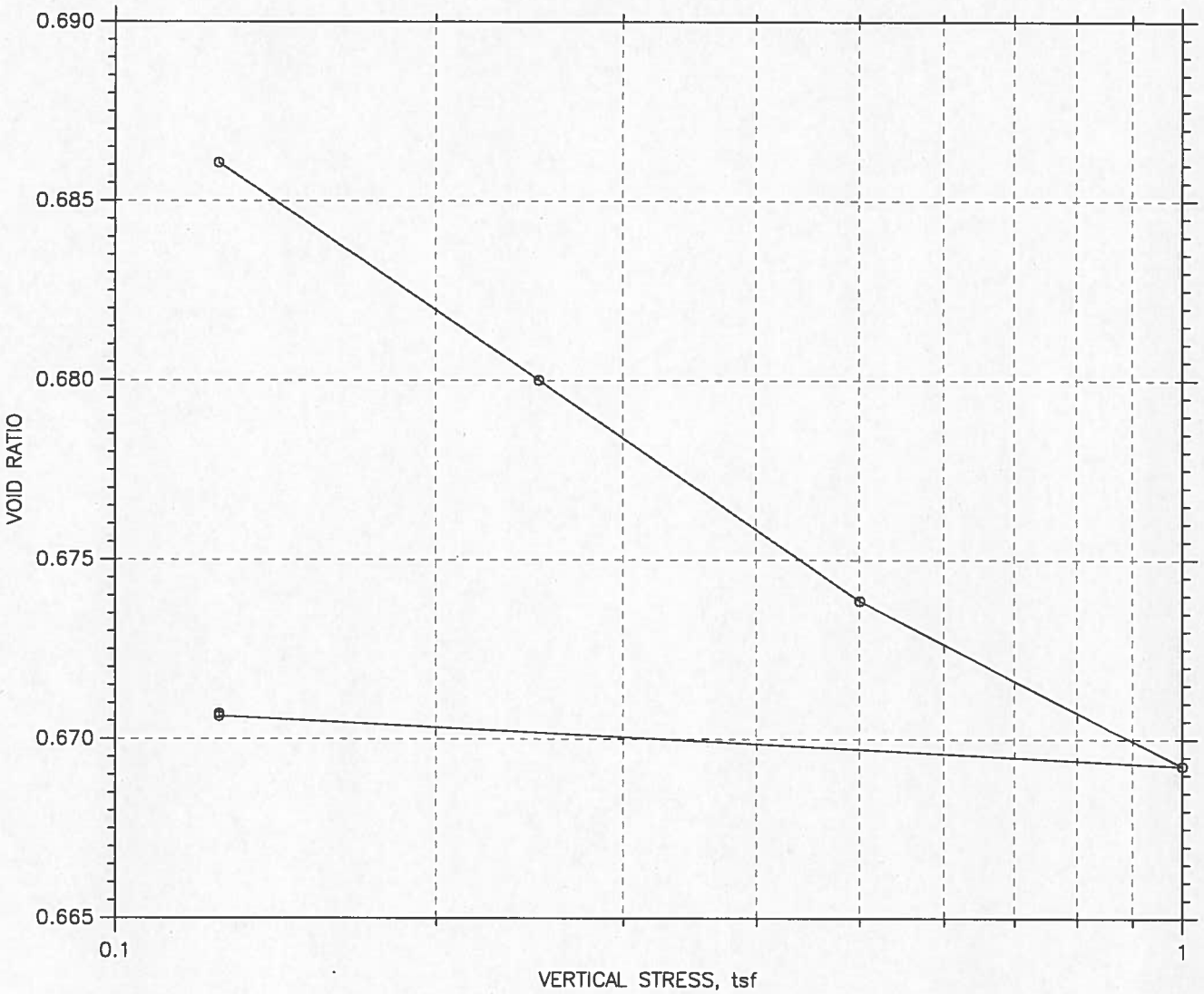
CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	19.66	24.38
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	101.8	100.9
Compression Index: 3.81959e-313				Saturation, %	79.70	96.50
Diameter: 2.5 in		Height: 1.002 in		Void Ratio	0.67	0.69
LL: ---	PL: ---	PI: ---	GS: 2.73			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-282
	Boring No.: B-301	Tested By: SKK	Checked By: SKK
	Sample No.: 19-282	Test Date: 7/11/19	Test No.: 1
	Depth: 18-20'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (I		

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CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/11/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Measured Specific Gravity: 2.73
Initial Void Ratio: 0.67
Final Void Ratio: 0.69

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	121.58	267.49	273.69	214.24
Wt. Container + Dry Soil, gm	112.87	241.64	241.64	182.25
Wt. Container, gm	70.23	110.15	110.15	51.02
Wt. Dry Soil, gm	42.64	131.49	131.49	131.23
Water Content, %	20.43	19.66	24.38	24.38
Void Ratio	---	0.67	0.69	---
Degree of Saturation, %	---	79.70	96.50	---
Dry Unit Weight, pcf	---	101.84	100.87	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/11/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001655	0.671	0.17	10.5	3.38e-004	1.32e-002	8.37e-005
2	0.125	0.001701	0.671	0.17	35.0	1.01e-004	1.#Je+000	1.#Je+000
3	1	0.002529	0.669	0.25	119.1	2.97e-005	9.44e-004	5.24e-007
4	0.5	-0.0002299	0.674	-0.02	1.4	2.54e-003	5.51e-003	2.62e-004
5	0.25	-0.003908	0.680	-0.39	21.3	1.67e-004	1.47e-002	4.59e-005
6	0.125	-0.007541	0.686	-0.75	13.2	2.71e-004	2.90e-002	1.47e-004

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001655	0.671	0.17	0.0	0.00e+000	1.32e-002	0.00e+000
2	0.125	0.001701	0.671	0.17	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	1	0.002529	0.669	0.25	0.0	0.00e+000	9.44e-004	0.00e+000
4	0.5	-0.0002299	0.674	-0.02	0.0	0.00e+000	5.51e-003	0.00e+000
5	0.25	-0.003908	0.680	-0.39	0.0	0.00e+000	1.47e-002	0.00e+000
6	0.125	-0.007541	0.686	-0.75	3.1	2.67e-004	2.90e-002	1.45e-004

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/11/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 1 of 6
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.0056	-0.001335	-0.13	0.676
2	0.01	0.09	0.0146	-0.001289	-0.13	0.676
3	0.02	0.13	0.0527	-0.0009674	-0.10	0.675
4	0.03	0.16	0.0762	-0.0007376	-0.07	0.675
5	0.03	0.19	0.0919	-0.0005996	-0.06	0.674
6	0.05	0.23	0.108	-0.0005077	-0.05	0.674
7	0.07	0.26	0.117	-0.0004157	-0.04	0.674
8	0.08	0.29	0.119	-0.0003697	-0.04	0.674
9	0.12	0.34	0.121	-0.0002778	-0.03	0.674
10	0.17	0.41	0.122	-0.0002778	-0.03	0.674
11	0.25	0.50	0.123	-0.0002318	-0.02	0.674
12	0.33	0.58	0.124	-0.0002318	-0.02	0.674
13	0.50	0.71	0.123	-0.0002318	-0.02	0.674
14	0.75	0.87	0.123	-0.0001858	-0.02	0.674
15	1.00	1.00	0.123	-0.0001398	-0.01	0.674
16	1.50	1.23	0.124	-0.0001398	-0.01	0.674
17	2.00	1.42	0.124	-9.385e-005	-0.01	0.674
18	3.00	1.73	0.125	-4.787e-005	-0.00	0.674
19	4.00	2.00	0.124	-1.889e-006	-0.00	0.673
20	5.00	2.24	0.125	-1.889e-006	-0.00	0.673
21	6.00	2.45	0.124	9.007e-005	0.01	0.673
22	7.00	2.65	0.124	9.007e-005	0.01	0.673
23	8.00	2.83	0.124	0.000136	0.01	0.673
24	9.00	3.00	0.124	0.000182	0.02	0.673
25	10.00	3.16	0.124	0.000182	0.02	0.673
26	12.00	3.46	0.124	0.000274	0.03	0.673
27	14.00	3.74	0.124	0.00032	0.03	0.673
28	15.02	3.88	0.125	0.00032	0.03	0.673

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/11/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Volume Step: 2 of 6
Seating Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.124	0.00032	0.03	0.673
2	0.01	0.09	0.125	0.00032	0.03	0.673
3	0.02	0.13	0.124	0.00032	0.03	0.673
4	0.03	0.16	0.124	0.00032	0.03	0.673
5	0.04	0.19	0.128	0.00032	0.03	0.673
6	0.05	0.23	0.136	0.00032	0.03	0.673
7	0.07	0.27	0.146	0.00032	0.03	0.673
8	0.08	0.29	0.153	0.00032	0.03	0.673
9	0.12	0.34	0.171	0.00032	0.03	0.673
10	0.17	0.41	0.195	0.00032	0.03	0.673
11	0.25	0.50	0.221	0.00032	0.03	0.673
12	0.34	0.58	0.238	0.00032	0.03	0.673
13	0.50	0.71	0.263	0.00032	0.03	0.673
14	0.75	0.87	0.292	0.00032	0.03	0.673
15	1.00	1.00	0.314	0.000274	0.03	0.673
16	1.50	1.23	0.352	0.000228	0.02	0.673
17	2.00	1.41	0.381	0.000274	0.03	0.673
18	3.00	1.73	0.422	0.000274	0.03	0.673
19	4.00	2.00	0.455	0.000274	0.03	0.673
20	5.00	2.24	0.481	0.000274	0.03	0.673
21	6.00	2.45	0.503	0.000274	0.03	0.673
22	7.00	2.65	0.522	0.000274	0.03	0.673
23	8.00	2.83	0.539	0.000274	0.03	0.673
24	9.00	3.00	0.553	0.000274	0.03	0.673
25	10.00	3.16	0.567	0.000274	0.03	0.673
26	12.00	3.46	0.59	0.000274	0.03	0.673
27	14.00	3.74	0.611	0.000274	0.03	0.673
28	16.00	4.00	0.63	0.000274	0.03	0.673
29	18.00	4.24	0.644	0.000274	0.03	0.673
30	20.00	4.47	0.659	0.000274	0.03	0.673
31	22.00	4.69	0.671	0.000274	0.03	0.673
32	24.00	4.90	0.683	0.000274	0.03	0.673
33	26.00	5.10	0.694	0.000274	0.03	0.673
34	28.00	5.29	0.704	0.000274	0.03	0.673
35	30.00	5.48	0.714	0.00032	0.03	0.673
36	35.00	5.92	0.739	0.0003659	0.04	0.673
37	40.00	6.32	0.766	0.0003659	0.04	0.673
38	45.00	6.71	0.783	0.0003659	0.04	0.673
39	50.00	7.07	0.794	0.0003659	0.04	0.673
40	60.00	7.75	0.806	0.0003659	0.04	0.673
41	70.00	8.37	0.817	0.0003659	0.04	0.673
42	80.00	8.94	0.825	0.0003659	0.04	0.673
43	90.00	9.49	0.83	0.0003659	0.04	0.673
44	100.00	10.00	0.832	0.0003659	0.04	0.673
45	110.00	10.49	0.836	0.0003659	0.04	0.673
46	120.00	10.95	0.84	0.0003659	0.04	0.673
47	130.00	11.40	0.841	0.0003659	0.04	0.673
48	140.00	11.83	0.846	0.0003659	0.04	0.673
49	150.00	12.25	0.845	0.0003659	0.04	0.673
50	160.00	12.65	0.845	0.0003659	0.04	0.673
51	170.00	13.04	0.845	0.0003659	0.04	0.673
52	180.00	13.42	0.846	0.0003659	0.04	0.673
53	190.00	13.78	0.843	0.0003659	0.04	0.673
54	200.00	14.14	0.845	0.0003659	0.04	0.673
55	210.00	14.49	0.852	0.0003659	0.04	0.673
56	220.00	14.83	0.871	0.0003659	0.04	0.673
57	230.00	15.17	0.886	0.0003659	0.04	0.673
58	240.00	15.49	0.894	0.0003659	0.04	0.673
59	250.00	15.81	0.899	0.0003659	0.04	0.673
60	260.00	16.12	0.903	0.0003659	0.04	0.673
61	270.00	16.43	0.914	0.0003659	0.04	0.673
62	280.00	16.73	0.918	0.0003659	0.04	0.673
63	290.00	17.03	0.923	0.0003659	0.04	0.673
64	300.00	17.32	0.921	0.0003659	0.04	0.673
65	310.00	17.61	0.927	0.0003659	0.04	0.673
66	320.00	17.89	0.927	0.0003659	0.04	0.673
67	330.00	18.17	0.931	0.0003659	0.04	0.673
68	340.00	18.44	0.922	0.000274	0.03	0.673
69	350.00	18.71	0.939	0.0003659	0.04	0.673
70	360.00	18.97	0.934	0.0003659	0.04	0.673
71	370.00	19.24	0.932	0.0003659	0.04	0.673
72	380.00	19.49	0.93	0.0003659	0.04	0.673
73	390.00	19.75	0.933	0.0004119	0.04	0.673
74	400.00	20.00	0.927	0.0003659	0.04	0.673
75	410.00	20.25	0.928	0.0003659	0.04	0.673
76	420.00	20.49	0.927	0.0003659	0.04	0.673
77	430.00	20.74	0.929	0.0003659	0.04	0.673
78	440.00	20.98	0.919	0.0003659	0.04	0.673
79	450.00	21.21	0.919	0.0003659	0.04	0.673
80	460.00	21.45	0.92	0.0003659	0.04	0.673
81	470.00	21.68	0.918	0.0003659	0.04	0.673

82	480.00	21.91	0.921	0.0003659	0.04	0.673
83	490.00	22.14	0.913	0.0003659	0.04	0.673
84	500.00	22.36	0.915	0.0003659	0.04	0.673
85	510.00	22.58	0.92	0.0003659	0.04	0.673
86	520.00	22.80	0.912	0.0003659	0.04	0.673
87	530.00	23.02	0.918	0.0003659	0.04	0.673
88	540.00	23.24	0.919	0.0003659	0.04	0.673
89	550.00	23.45	0.917	0.0003659	0.04	0.673
90	560.00	23.66	0.925	0.0003659	0.04	0.673
91	570.00	23.87	0.923	0.0003659	0.04	0.673
92	580.00	24.08	0.925	0.0003659	0.04	0.673
93	590.00	24.29	0.924	0.0003659	0.04	0.673
94	600.00	24.49	0.925	0.0003659	0.04	0.673
95	610.00	24.70	0.925	0.0003659	0.04	0.673
96	620.00	24.90	0.92	0.0003659	0.04	0.673
97	630.00	25.10	0.923	0.0003659	0.04	0.673
98	640.00	25.30	0.921	0.0003659	0.04	0.673
99	650.00	25.50	0.928	0.0003659	0.04	0.673
100	660.00	25.69	0.922	0.0003659	0.04	0.673
101	670.00	25.88	0.925	0.0003659	0.04	0.673
102	680.00	26.08	0.925	0.0003659	0.04	0.673
103	690.00	26.27	0.928	0.0003659	0.04	0.673
104	700.00	26.46	0.92	0.0003659	0.04	0.673
105	710.00	26.65	0.918	0.0003659	0.04	0.673
106	720.00	26.83	0.914	0.0003659	0.04	0.673
107	730.00	27.02	0.912	0.0003659	0.04	0.673
108	740.00	27.20	0.908	0.0003659	0.04	0.673
109	750.00	27.39	0.901	0.0003659	0.04	0.673
110	760.00	27.57	0.899	0.0003659	0.04	0.673
111	770.00	27.75	0.901	0.0003659	0.04	0.673
112	780.00	27.93	0.906	0.0003659	0.04	0.673
113	790.00	28.11	0.899	0.0003659	0.04	0.673
114	800.00	28.28	0.893	0.0003659	0.04	0.673
115	810.00	28.46	0.901	0.0003659	0.04	0.673
116	820.00	28.64	0.911	0.0003659	0.04	0.673
117	830.00	28.81	0.901	0.0003659	0.04	0.673
118	840.00	28.98	0.897	0.0003659	0.04	0.673
119	850.00	29.15	0.904	0.0003659	0.04	0.673
120	860.00	29.33	0.906	0.0004119	0.04	0.673
121	870.00	29.50	0.9	0.0003659	0.04	0.673
122	880.00	29.66	0.899	0.0003659	0.04	0.673
123	890.00	29.83	0.912	0.0003659	0.04	0.673
124	900.00	30.00	0.909	0.0003659	0.04	0.673
125	910.00	30.17	0.902	0.0003659	0.04	0.673
126	920.00	30.33	0.908	0.0003659	0.04	0.673
127	930.00	30.50	0.903	0.0003659	0.04	0.673
128	940.00	30.66	0.902	0.0003659	0.04	0.673
129	950.00	30.82	0.905	0.0004119	0.04	0.673
130	960.00	30.98	0.903	0.0003659	0.04	0.673
131	970.00	31.14	0.899	0.000274	0.03	0.673
132	980.00	31.31	0.903	0.0003659	0.04	0.673
133	990.00	31.46	0.905	0.0003659	0.04	0.673
134	1000.00	31.62	0.903	0.0003659	0.04	0.673
135	1010.00	31.78	0.901	0.0003659	0.04	0.673
136	1020.00	31.94	0.902	0.0003659	0.04	0.673
137	1030.00	32.09	0.906	0.0003659	0.04	0.673
138	1040.00	32.25	0.905	0.0003659	0.04	0.673
139	1050.00	32.40	0.904	0.0003659	0.04	0.673
140	1060.00	32.56	0.905	0.0003659	0.04	0.673
141	1070.00	32.71	0.903	0.0003659	0.04	0.673
142	1080.00	32.86	0.906	0.0003659	0.04	0.673
143	1090.00	33.02	0.906	0.0003659	0.04	0.673
144	1100.00	33.17	0.908	0.0003659	0.04	0.673
145	1110.00	33.32	0.904	0.0003659	0.04	0.673
146	1120.00	33.47	0.905	0.0003659	0.04	0.673
147	1130.00	33.62	0.905	0.0003659	0.04	0.673
148	1140.00	33.76	0.904	0.0003659	0.04	0.673
149	1150.00	33.91	0.904	0.0003659	0.04	0.673
150	1160.00	34.06	0.906	0.0003659	0.04	0.673
151	1170.00	34.21	0.903	0.0003659	0.04	0.673
152	1180.00	34.35	0.896	0.0003659	0.04	0.673
153	1190.00	34.50	0.891	0.0004119	0.04	0.673
154	1200.00	34.64	0.884	0.0003659	0.04	0.673
155	1210.00	34.79	0.88	0.0003659	0.04	0.673
156	1220.00	34.93	0.877	0.0003659	0.04	0.673
157	1230.00	35.07	0.872	0.0003659	0.04	0.673
158	1240.00	35.21	0.868	0.0003659	0.04	0.673
159	1250.00	35.36	0.865	0.0003659	0.04	0.673
160	1260.00	35.50	0.864	0.0003659	0.04	0.673
161	1270.00	35.64	0.86	0.0003659	0.04	0.673
162	1280.00	35.78	0.86	0.0003659	0.04	0.673
163	1290.00	35.92	0.86	0.0003659	0.04	0.673
164	1300.00	36.06	0.858	0.0003659	0.04	0.673
165	1310.00	36.19	0.86	0.0003659	0.04	0.673
166	1320.00	36.33	0.857	0.0003659	0.04	0.673
167	1330.00	36.47	0.858	0.0003659	0.04	0.673
168	1340.00	36.61	0.857	0.0003659	0.04	0.673
169	1350.00	36.74	0.854	0.0003659	0.04	0.673
170	1360.00	36.88	0.85	0.0003659	0.04	0.673
171	1370.00	37.01	0.847	0.0003659	0.04	0.673
172	1380.00	37.15	0.841	0.0003659	0.04	0.673
173	1385.13	37.22	0.844	0.0003659	0.04	0.673

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/11/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 3 of 6
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.844	-0.00547	-0.55	0.683
2	0.01	0.09	0.876	-0.00547	-0.55	0.683
3	0.02	0.13	0.989	-0.005057	-0.50	0.682
4	0.03	0.16	0.996	-0.005011	-0.50	0.682
5	0.04	0.19	0.997	-0.004965	-0.50	0.682
6	0.05	0.23	0.999	-0.004965	-0.50	0.682
7	0.07	0.27	0.998	-0.004919	-0.49	0.682
8	0.08	0.29	0.999	-0.004919	-0.49	0.682
9	0.12	0.35	1	-0.004919	-0.49	0.682
10	0.17	0.41	0.998	-0.004919	-0.49	0.682
11	0.25	0.50	0.999	-0.004919	-0.49	0.682
12	0.34	0.58	0.998	-0.004919	-0.49	0.682
13	0.50	0.71	0.999	-0.004919	-0.49	0.682
14	0.75	0.87	0.999	-0.004919	-0.49	0.682
15	1.00	1.00	0.999	-0.004919	-0.49	0.682
16	1.50	1.23	0.999	-0.004873	-0.49	0.682
17	2.00	1.41	0.999	-0.004873	-0.49	0.682
18	3.00	1.73	0.999	-0.004873	-0.49	0.682
19	4.00	2.00	0.999	-0.004873	-0.49	0.682
20	5.00	2.24	0.999	-0.004827	-0.48	0.682
21	6.00	2.45	0.999	-0.004827	-0.48	0.682
22	7.00	2.65	1	-0.004827	-0.48	0.682
23	8.00	2.83	0.998	-0.004827	-0.48	0.682
24	9.00	3.00	0.999	-0.004873	-0.49	0.682
25	10.00	3.16	0.999	-0.004827	-0.48	0.682
26	12.00	3.46	1	-0.004827	-0.48	0.682
27	14.00	3.74	0.999	-0.004827	-0.48	0.682
28	16.00	4.00	0.999	-0.004827	-0.48	0.682
29	18.00	4.24	0.999	-0.004827	-0.48	0.682
30	20.00	4.47	0.999	-0.004781	-0.48	0.681
31	22.00	4.69	0.999	-0.004781	-0.48	0.681
32	24.00	4.90	0.999	-0.004781	-0.48	0.681
33	26.00	5.10	0.999	-0.004781	-0.48	0.681
34	28.00	5.29	0.999	-0.004781	-0.48	0.681
35	30.00	5.48	0.999	-0.004827	-0.48	0.682
36	35.00	5.92	0.999	-0.004781	-0.48	0.681
37	40.00	6.32	0.999	-0.004781	-0.48	0.681
38	45.00	6.71	0.999	-0.004781	-0.48	0.681
39	50.00	7.07	0.999	-0.004735	-0.47	0.681
40	60.00	7.75	0.999	-0.004735	-0.47	0.681
41	70.00	8.37	0.999	-0.004735	-0.47	0.681
42	80.00	8.94	0.999	-0.004735	-0.47	0.681
43	90.00	9.49	1	-0.004735	-0.47	0.681
44	100.00	10.00	0.999	-0.004735	-0.47	0.681
45	110.00	10.49	0.999	-0.004735	-0.47	0.681
46	120.00	10.95	0.999	-0.004643	-0.46	0.681
47	130.00	11.40	0.999	-0.004643	-0.46	0.681
48	140.00	11.83	0.999	-0.004643	-0.46	0.681
49	150.00	12.25	1	-0.004643	-0.46	0.681
50	160.00	12.65	0.999	-0.004689	-0.47	0.681
51	170.00	13.04	0.999	-0.004643	-0.46	0.681
52	180.00	13.42	0.999	-0.004689	-0.47	0.681
53	190.00	13.78	0.999	-0.004643	-0.46	0.681
54	200.00	14.14	0.999	-0.004643	-0.46	0.681
55	204.76	14.31	0.999	-0.004643	-0.46	0.681

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/11/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 4 of 6
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.0004138	0.04	0.673
2	0.01	0.09	0.966	0.0004138	0.04	0.673
3	0.02	0.13	0.632	-0.0003219	-0.03	0.674
4	0.03	0.16	0.57	-0.0008276	-0.08	0.675
5	0.03	0.19	0.541	-0.0009656	-0.10	0.675
6	0.05	0.23	0.519	-0.001058	-0.11	0.675
7	0.07	0.26	0.511	-0.001103	-0.11	0.675
8	0.09	0.30	0.506	-0.001149	-0.11	0.675
9	0.12	0.34	0.504	-0.001195	-0.12	0.675
10	0.17	0.41	0.502	-0.001241	-0.12	0.676
11	0.25	0.50	0.502	-0.001287	-0.13	0.676
12	0.33	0.58	0.501	-0.001333	-0.13	0.676
13	0.50	0.71	0.501	-0.001333	-0.13	0.676
14	0.75	0.87	0.5	-0.001379	-0.14	0.676
15	1.00	1.00	0.501	-0.001425	-0.14	0.676
16	1.50	1.23	0.501	-0.001517	-0.15	0.676
17	2.00	1.41	0.501	-0.001563	-0.16	0.676
18	3.00	1.73	0.501	-0.001609	-0.16	0.676
19	4.00	2.00	0.5	-0.001655	-0.17	0.676
20	5.00	2.24	0.5	-0.001701	-0.17	0.676
21	6.00	2.45	0.501	-0.001747	-0.17	0.676
22	7.00	2.65	0.5	-0.001793	-0.18	0.676
23	8.00	2.83	0.5	-0.001839	-0.18	0.677
24	9.00	3.00	0.5	-0.001839	-0.18	0.677
25	10.00	3.16	0.5	-0.001885	-0.19	0.677
26	12.00	3.46	0.5	-0.001931	-0.19	0.677
27	14.00	3.74	0.5	-0.001977	-0.20	0.677
28	16.00	4.00	0.5	-0.001977	-0.20	0.677
29	18.00	4.24	0.5	-0.002023	-0.20	0.677
30	20.00	4.47	0.5	-0.002069	-0.21	0.677
31	22.00	4.69	0.5	-0.002069	-0.21	0.677
32	24.00	4.90	0.5	-0.002115	-0.21	0.677
33	26.00	5.10	0.5	-0.002115	-0.21	0.677
34	28.00	5.29	0.5	-0.002161	-0.22	0.677
35	30.00	5.48	0.499	-0.002161	-0.22	0.677
36	35.00	5.92	0.501	-0.002207	-0.22	0.677
37	40.00	6.32	0.5	-0.002207	-0.22	0.677
38	45.00	6.71	0.499	-0.002253	-0.22	0.677
39	50.00	7.07	0.5	-0.002299	-0.23	0.677
40	60.00	7.75	0.5	-0.002345	-0.23	0.677
41	70.00	8.37	0.5	-0.002299	-0.23	0.677
42	80.00	8.94	0.5	-0.002345	-0.23	0.677
43	90.00	9.49	0.5	-0.002345	-0.23	0.677
44	100.00	10.00	0.5	-0.002391	-0.24	0.677
45	110.00	10.49	0.5	-0.002345	-0.23	0.677
46	120.00	10.95	0.501	-0.002345	-0.23	0.677
47	120.03	10.96	0.5	-0.002345	-0.23	0.677

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/11/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 5 of 6
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.5	-0.002345	-0.23	0.677
2	0.01	0.09	0.495	-0.002345	-0.23	0.677
3	0.02	0.13	0.371	-0.002483	-0.25	0.678
4	0.03	0.16	0.318	-0.002759	-0.28	0.678
5	0.03	0.19	0.29	-0.002851	-0.28	0.678
6	0.05	0.23	0.27	-0.003035	-0.30	0.679
7	0.07	0.26	0.262	-0.003081	-0.31	0.679
8	0.09	0.30	0.259	-0.003127	-0.31	0.679
9	0.12	0.34	0.257	-0.003127	-0.31	0.679
10	0.17	0.41	0.253	-0.003173	-0.32	0.679
11	0.25	0.50	0.252	-0.003219	-0.32	0.679
12	0.34	0.58	0.252	-0.003265	-0.33	0.679
13	0.50	0.71	0.251	-0.00331	-0.33	0.679
14	0.75	0.87	0.251	-0.003448	-0.34	0.679
15	1.00	1.00	0.251	-0.003586	-0.36	0.679
16	1.50	1.23	0.25	-0.003816	-0.38	0.680
17	2.00	1.41	0.25	-0.004	-0.40	0.680
18	3.00	1.73	0.251	-0.004046	-0.40	0.680
19	4.00	2.00	0.251	-0.004092	-0.41	0.680
20	5.00	2.24	0.25	-0.004184	-0.42	0.680
21	6.00	2.45	0.251	-0.00423	-0.42	0.681
22	7.00	2.65	0.25	-0.004276	-0.43	0.681
23	8.00	2.83	0.25	-0.004322	-0.43	0.681
24	9.00	3.00	0.251	-0.004414	-0.44	0.681
25	10.00	3.16	0.25	-0.004506	-0.45	0.681
26	12.00	3.46	0.25	-0.004598	-0.46	0.681
27	14.00	3.74	0.25	-0.004736	-0.47	0.681
28	16.00	4.00	0.25	-0.004782	-0.48	0.681
29	18.00	4.24	0.25	-0.004828	-0.48	0.682
30	20.00	4.47	0.25	-0.004874	-0.49	0.682
31	22.00	4.69	0.25	-0.00492	-0.49	0.682
32	24.00	4.90	0.25	-0.00492	-0.49	0.682
33	26.00	5.10	0.25	-0.004966	-0.50	0.682
34	28.00	5.29	0.25	-0.005012	-0.50	0.682
35	30.00	5.48	0.25	-0.005058	-0.50	0.682
36	35.00	5.92	0.25	-0.00515	-0.51	0.682
37	40.00	6.32	0.25	-0.00515	-0.51	0.682
38	45.00	6.71	0.25	-0.005242	-0.52	0.682
39	50.00	7.07	0.251	-0.005288	-0.53	0.682
40	60.00	7.75	0.25	-0.005426	-0.54	0.683
41	70.00	8.37	0.25	-0.005655	-0.56	0.683
42	80.00	8.94	0.249	-0.005701	-0.57	0.683
43	90.00	9.49	0.249	-0.005747	-0.57	0.683
44	100.00	10.00	0.25	-0.005839	-0.58	0.683
45	110.00	10.49	0.25	-0.005839	-0.58	0.683
46	120.00	10.95	0.249	-0.005931	-0.59	0.683
47	130.00	11.40	0.25	-0.005977	-0.60	0.683
48	138.71	11.78	0.25	-0.006023	-0.60	0.684

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-301
Sample No.: 19-282
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/11/19
Sample Type: CORE

Project No.: 19-282
Checked By: SKK
Depth: 18-20'
Elevation: N/A

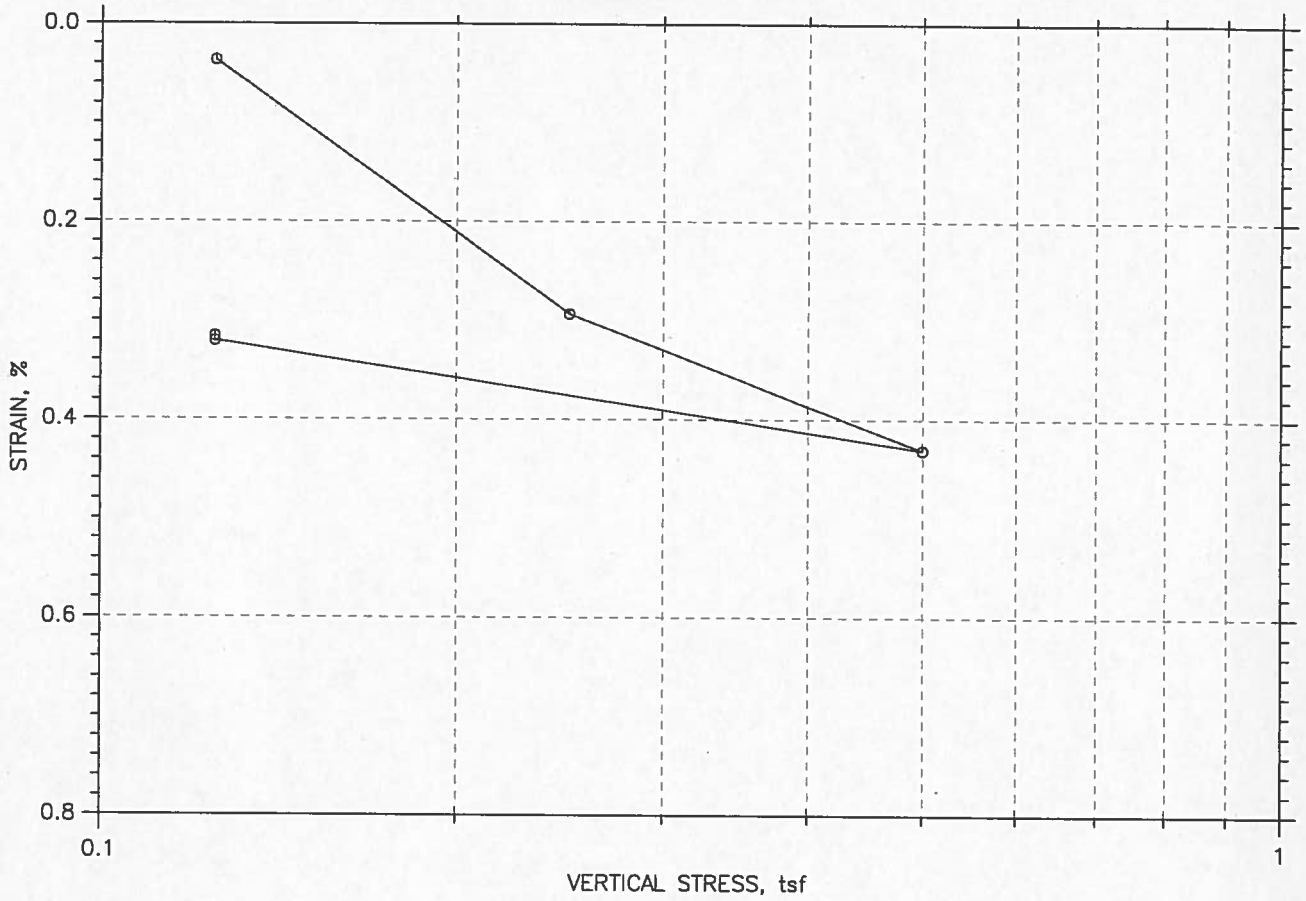
Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

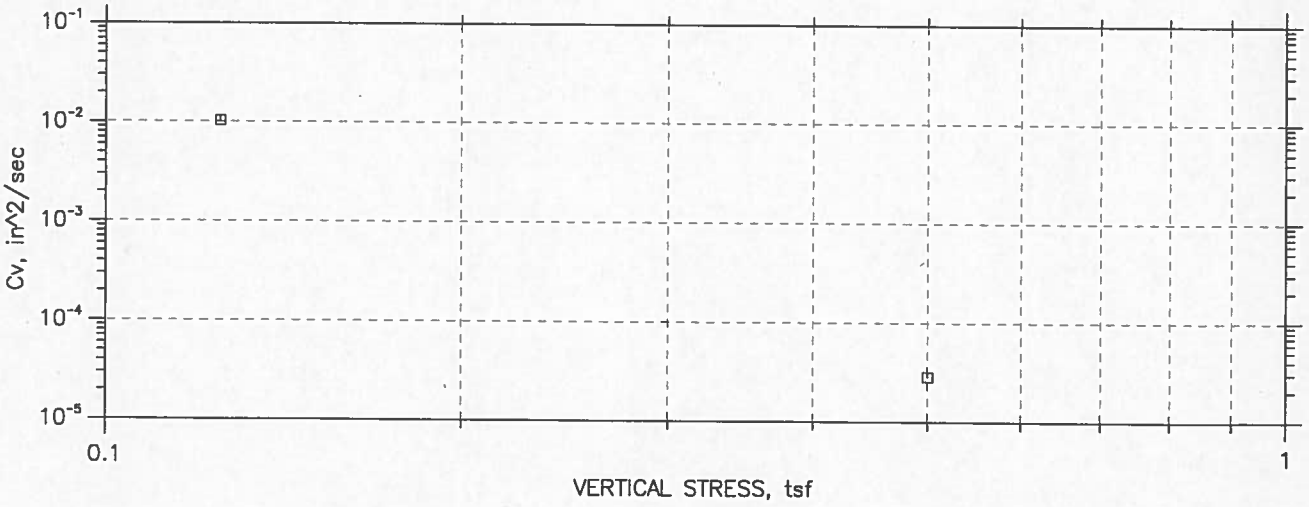
Constant Load Step: 6 of 6
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.249	-0.006023	-0.60	0.684
2	0.01	0.09	0.239	-0.006023	-0.60	0.684
3	0.02	0.13	0.17	-0.006161	-0.61	0.684
4	0.03	0.16	0.151	-0.006299	-0.63	0.684
5	0.04	0.19	0.142	-0.006299	-0.63	0.684
6	0.05	0.23	0.134	-0.006391	-0.64	0.684
7	0.07	0.27	0.13	-0.006437	-0.64	0.684
8	0.08	0.29	0.13	-0.006483	-0.65	0.684
9	0.12	0.35	0.129	-0.006529	-0.65	0.684
10	0.17	0.41	0.127	-0.006575	-0.66	0.684
11	0.25	0.50	0.127	-0.006667	-0.67	0.685
12	0.34	0.58	0.125	-0.006713	-0.67	0.685
13	0.50	0.71	0.125	-0.006805	-0.68	0.685
14	0.75	0.87	0.124	-0.006897	-0.69	0.685
15	1.00	1.00	0.125	-0.006989	-0.70	0.685
16	1.50	1.23	0.124	-0.007173	-0.72	0.685
17	2.00	1.41	0.124	-0.007357	-0.73	0.686
18	3.00	1.73	0.124	-0.007587	-0.76	0.686
19	4.00	2.00	0.124	-0.007678	-0.77	0.686
20	5.00	2.24	0.124	-0.007816	-0.78	0.687
21	6.00	2.45	0.124	-0.007954	-0.79	0.687
22	7.00	2.65	0.124	-0.008046	-0.80	0.687
23	8.00	2.83	0.125	-0.008138	-0.81	0.687
24	9.00	3.00	0.125	-0.00823	-0.82	0.687
25	10.00	3.16	0.124	-0.008368	-0.84	0.687
26	12.00	3.46	0.123	-0.008506	-0.85	0.688
27	14.00	3.74	0.123	-0.008598	-0.86	0.688
28	16.00	4.00	0.125	-0.008644	-0.86	0.688
29	18.00	4.24	0.124	-0.008736	-0.87	0.688
30	20.00	4.47	0.124	-0.008782	-0.88	0.688
31	22.00	4.69	0.124	-0.008782	-0.88	0.688
32	24.00	4.90	0.125	-0.008782	-0.88	0.688
33	26.00	5.10	0.125	-0.008874	-0.89	0.688
34	28.00	5.29	0.125	-0.008874	-0.89	0.688
35	30.00	5.48	0.124	-0.00892	-0.89	0.688
36	35.00	5.92	0.124	-0.009058	-0.90	0.689
37	40.00	6.32	0.124	-0.009196	-0.92	0.689
38	45.00	6.71	0.123	-0.009242	-0.92	0.689
39	50.00	7.07	0.125	-0.009288	-0.93	0.689
40	60.00	7.75	0.125	-0.009334	-0.93	0.689
41	70.00	8.37	0.124	-0.00938	-0.94	0.689
42	80.00	8.94	0.124	-0.009518	-0.95	0.689
43	90.00	9.49	0.124	-0.009564	-0.95	0.689
44	100.00	10.00	0.125	-0.009564	-0.95	0.689
45	110.00	10.49	0.125	-0.00961	-0.96	0.690
46	120.00	10.95	0.124	-0.009656	-0.96	0.690
47	120.01	10.96	0.124	-0.009656	-0.96	0.690

CONSOLIDATION TEST DATA

SUMMARY REPORT



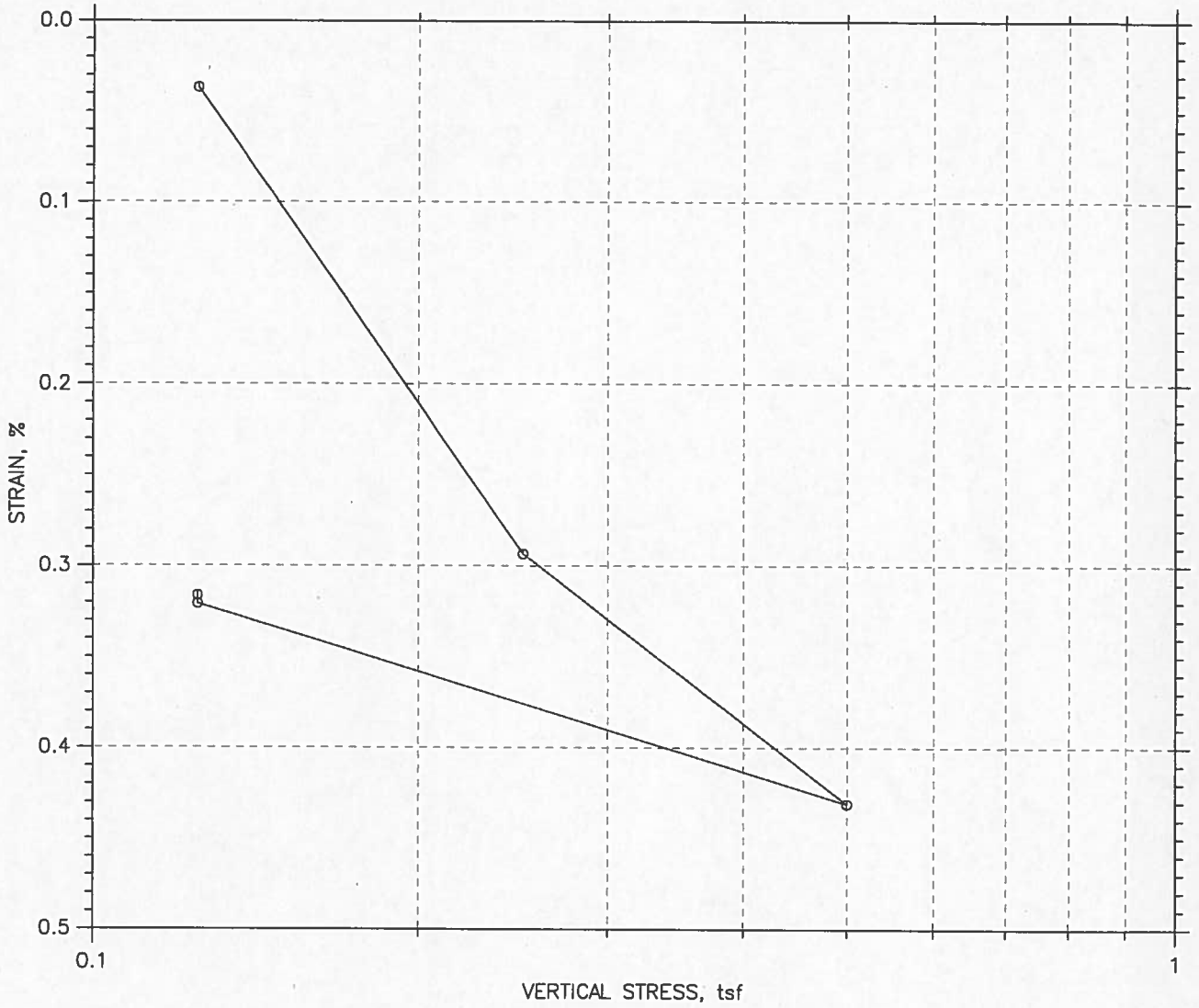


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-289
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-289	Test Date: 7/15/19	Test No.: 1
	Depth: 10-12.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 25-JUL-2019 13:53:49

CONSOLIDATION TEST DATA

SUMMARY REPORT



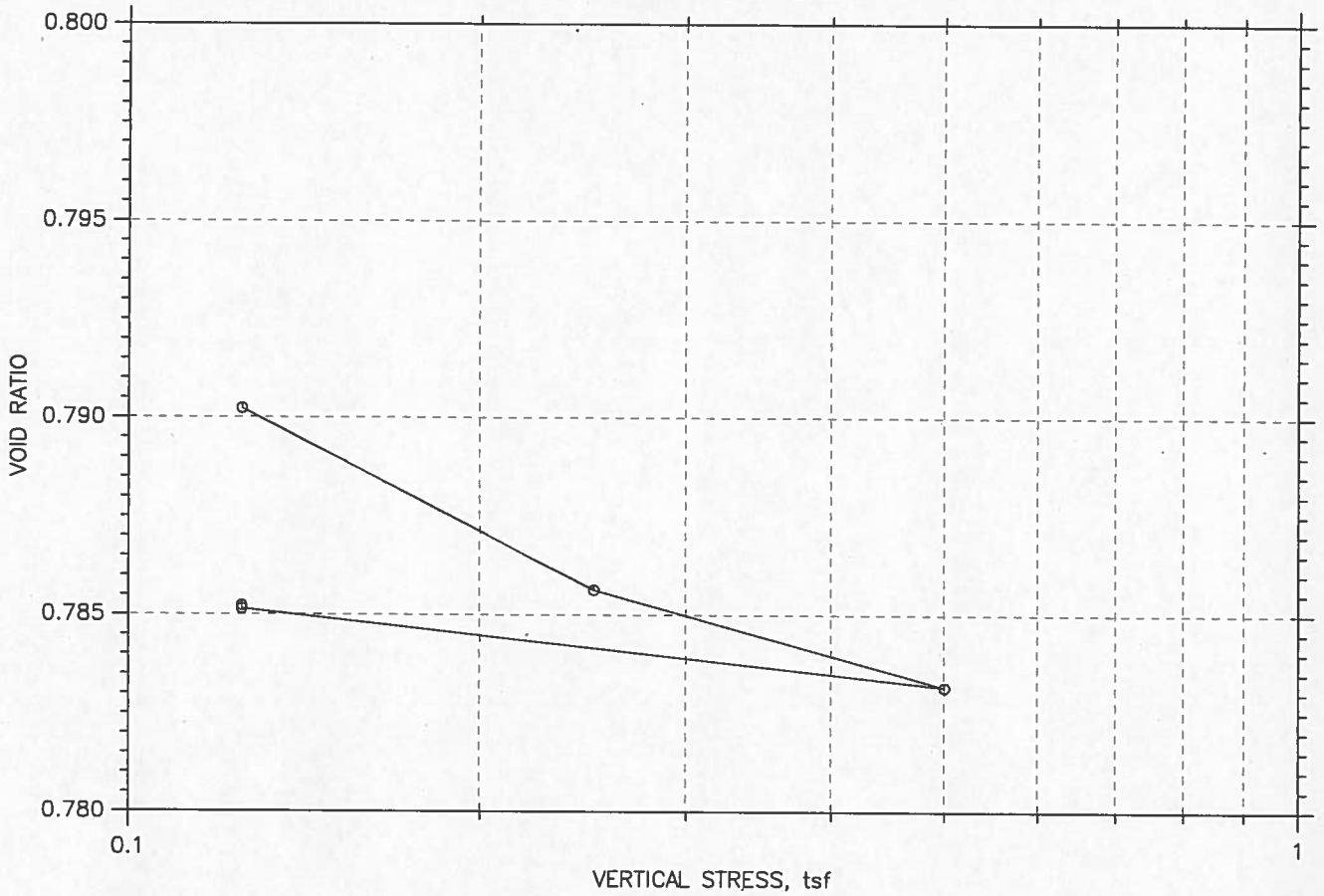
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	21.52	26.25
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	95.16	95.
Compression Index: 3.81959e-313				Saturation, %	74.29	90.24
Diameter: 2.5 in		Height: 1.003 in		Void Ratio	0.79	0.79
LL: ---	PL: ---	PI: ---	GS: 2.73			

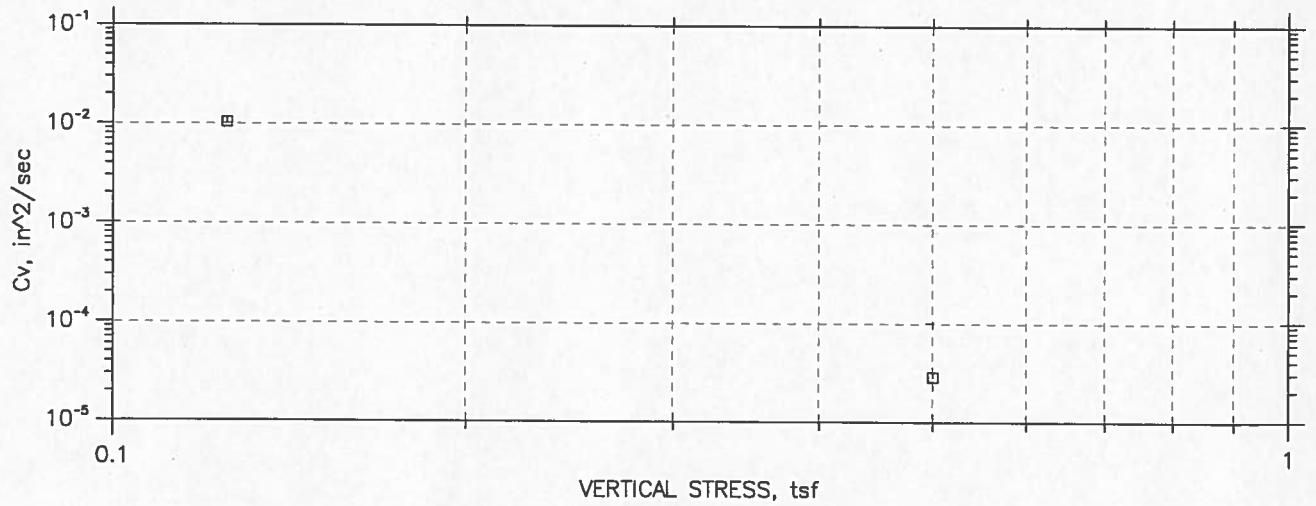
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-289
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-289	Test Date: 7/15/19	Test No.: 1
	Depth: 10-12.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 25-JUL-2019 13:53:50

CONSOLIDATION TEST DATA

SUMMARY REPORT



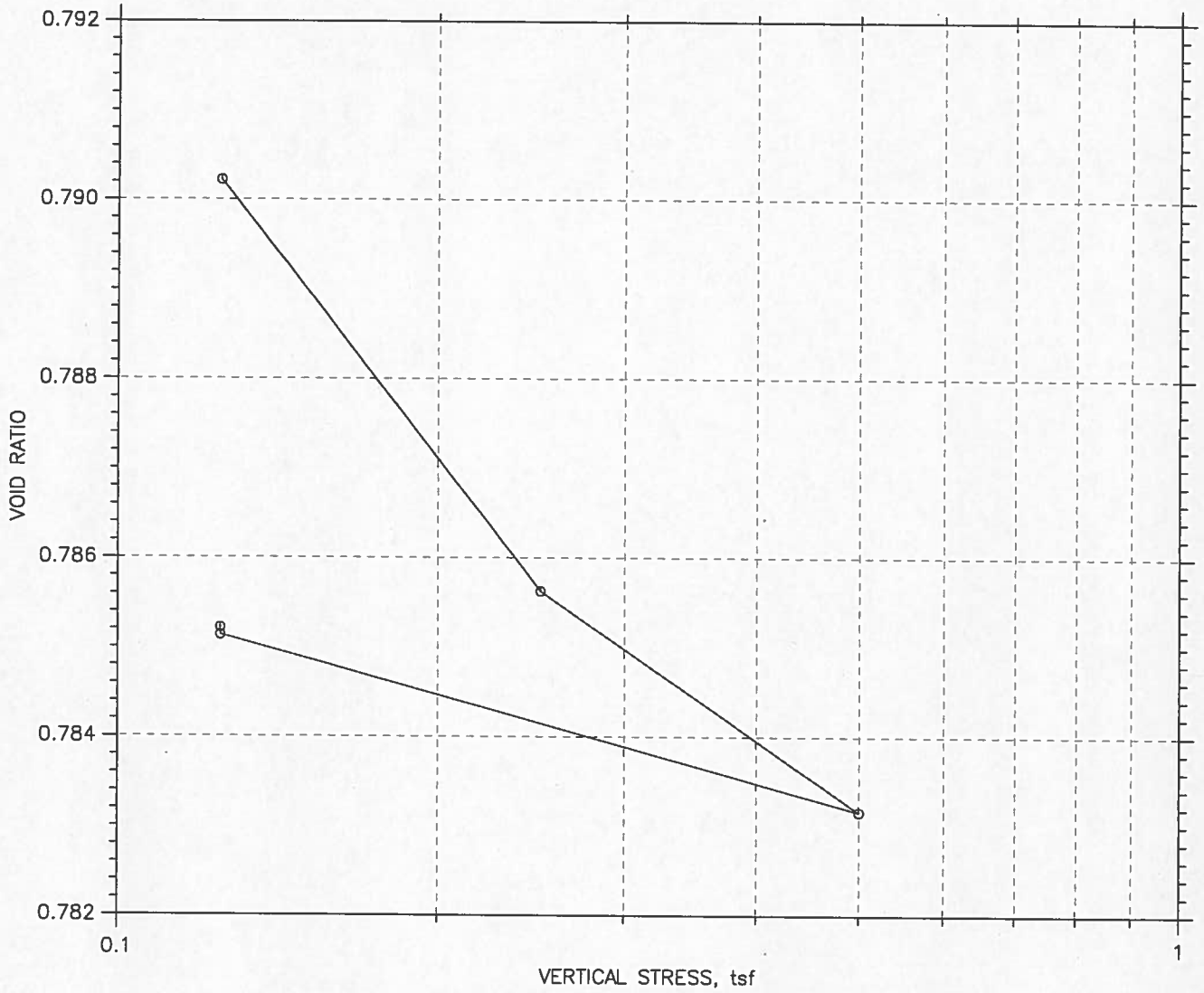


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-289
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-289	Test Date: 7/15/19	Test No.: 1
	Depth: 10-12.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 25-JUL-2019 13:54:00

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	21.52	26.25
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	95.16	95.
Compression Index: 3.81959e-313				Saturation, %	74.29	90.24
Diameter: 2.5 in		Height: 1.003 in		Void Ratio	0.79	0.79
LL: ---	PL: ---	PI: ---	GS: 2.73			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-289
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-289	Test Date: 7/15/19	Test No.: 1
	Depth: 10-12.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 25-JUL-2019 13:54:00

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/15/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Measured Specific Gravity: 2.73
Initial Void Ratio: 0.79
Final Void Ratio: 0.79

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	149.67	259.61	265.42	205.95
Wt. Container + Dry Soil, gm	131.14	233.14	233.14	173.68
Wt. Container, gm	50.53	110.15	110.15	50.73
Wt. Dry Soil, gm	80.61	122.99	122.99	122.95
Water Content, %	22.99	21.52	26.25	26.25
Void Ratio	---	0.79	0.79	---
Degree of Saturation, %	---	74.29	90.24	---
Dry Unit Weight, pcf	---	95.165	94.999	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/15/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.003173	0.785	0.32	0.3	1.14e-002	2.53e-002	5.42e-003
2	0.125	0.003219	0.785	0.32	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	0.5	0.004322	0.783	0.43	108.4	3.25e-005	2.93e-003	1.79e-006
4	0.25	0.002943	0.786	0.29	0.1	4.50e-002	5.50e-003	4.64e-003
5	0.125	0.0003678	0.790	0.04	3.6	9.76e-004	2.05e-002	3.75e-004

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.003173	0.785	0.32	0.1	1.18e-002	2.53e-002	5.60e-003
2	0.125	0.003219	0.785	0.32	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	0.5	0.004322	0.783	0.43	0.0	0.00e+000	2.93e-003	0.00e+000
4	0.25	0.002943	0.786	0.29	0.0	0.00e+000	5.50e-003	0.00e+000
5	0.125	0.0003678	0.790	0.04	0.0	0.00e+000	2.05e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/15/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 1 of 5
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00448	-0.001335	-0.13	0.793
2	0.01	0.09	0.00784	-0.001335	-0.13	0.793
3	0.02	0.13	0.028	-0.001151	-0.11	0.793
4	0.03	0.16	0.0437	-0.0009215	-0.09	0.793
5	0.04	0.19	0.0571	-0.0006456	-0.06	0.792
6	0.05	0.23	0.0739	-0.0001858	-0.02	0.791
7	0.07	0.27	0.0874	9.007e-005	0.01	0.791
8	0.08	0.29	0.0952	0.00032	0.03	0.790
9	0.12	0.35	0.108	0.0006418	0.06	0.790
10	0.17	0.41	0.117	0.0008257	0.08	0.789
11	0.25	0.50	0.12	0.0009637	0.10	0.789
12	0.34	0.58	0.122	0.001056	0.11	0.789
13	0.50	0.71	0.123	0.001194	0.12	0.789
14	0.75	0.87	0.123	0.001469	0.15	0.788
15	1.00	1.00	0.124	0.001515	0.15	0.788
16	1.50	1.23	0.124	0.001561	0.16	0.788
17	2.00	1.41	0.124	0.001607	0.16	0.788
18	3.00	1.73	0.123	0.001699	0.17	0.788
19	4.00	2.00	0.124	0.001699	0.17	0.788
20	5.00	2.24	0.124	0.001745	0.17	0.788
21	6.00	2.45	0.124	0.001699	0.17	0.788
22	7.00	2.65	0.124	0.001745	0.17	0.788
23	8.00	2.83	0.123	0.001745	0.17	0.788
24	9.00	3.00	0.124	0.001745	0.17	0.788
25	10.00	3.16	0.124	0.001745	0.17	0.788
26	12.00	3.46	0.124	0.001791	0.18	0.788
27	14.00	3.74	0.124	0.001791	0.18	0.788
28	15.04	3.88	0.124	0.001837	0.18	0.788

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/15/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Volume Step: 2 of 5
Seating Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.124	0.001837	0.18	0.788
2	0.01	0.09	0.124	0.001837	0.18	0.788
3	0.02	0.13	0.124	0.001791	0.18	0.788
4	0.03	0.16	0.124	0.001837	0.18	0.788
5	0.04	0.19	0.127	0.001837	0.18	0.788
6	0.05	0.23	0.129	0.001837	0.18	0.788
7	0.07	0.27	0.13	0.001837	0.18	0.788
8	0.08	0.29	0.131	0.001837	0.18	0.788
9	0.12	0.35	0.134	0.001837	0.18	0.788
10	0.17	0.41	0.138	0.001837	0.18	0.788
11	0.25	0.50	0.142	0.001791	0.18	0.788
12	0.34	0.58	0.147	0.001791	0.18	0.788
13	0.50	0.71	0.158	0.001837	0.18	0.788
14	0.75	0.87	0.167	0.001791	0.18	0.788
15	1.00	1.00	0.176	0.001791	0.18	0.788
16	1.50	1.23	0.194	0.001791	0.18	0.788
17	2.00	1.41	0.206	0.001745	0.17	0.788
18	3.00	1.73	0.224	0.001791	0.18	0.788
19	4.00	2.00	0.232	0.001745	0.17	0.788
20	5.00	2.24	0.242	0.001791	0.18	0.788
21	6.00	2.45	0.251	0.001791	0.18	0.788
22	7.00	2.65	0.251	0.001791	0.18	0.788
23	8.00	2.83	0.257	0.001791	0.18	0.788
24	9.00	3.00	0.262	0.001791	0.18	0.788
25	10.00	3.16	0.266	0.001791	0.18	0.788
26	12.00	3.46	0.275	0.001791	0.18	0.788
27	14.00	3.74	0.285	0.001791	0.18	0.788
28	16.00	4.00	0.287	0.001791	0.18	0.788
29	18.00	4.24	0.296	0.001791	0.18	0.788
30	20.00	4.47	0.295	0.001837	0.18	0.788
31	22.00	4.69	0.299	0.001837	0.18	0.788
32	24.00	4.90	0.308	0.001883	0.19	0.788
33	26.00	5.10	0.31	0.001883	0.19	0.788
34	28.00	5.29	0.31	0.001883	0.19	0.788
35	30.00	5.48	0.313	0.001883	0.19	0.788
36	35.00	5.92	0.318	0.001883	0.19	0.788
37	40.00	6.32	0.315	0.001883	0.19	0.788
38	45.00	6.71	0.317	0.001837	0.18	0.788
39	50.00	7.07	0.316	0.001837	0.18	0.788
40	60.00	7.75	0.323	0.001883	0.19	0.788
41	70.00	8.37	0.324	0.001883	0.19	0.788
42	80.00	8.94	0.333	0.001883	0.19	0.788
43	90.00	9.49	0.331	0.001883	0.19	0.788
44	100.00	10.00	0.332	0.001837	0.18	0.788
45	110.00	10.49	0.338	0.001883	0.19	0.788
46	120.00	10.95	0.352	0.001883	0.19	0.788
47	130.00	11.40	0.324	0.001883	0.19	0.788
48	140.00	11.83	0.327	0.001837	0.18	0.788
49	150.00	12.25	0.329	0.001883	0.19	0.788
50	160.00	12.65	0.328	0.001883	0.19	0.788
51	170.00	13.04	0.335	0.001883	0.19	0.788
52	180.00	13.42	0.323	0.001883	0.19	0.788
53	190.00	13.78	0.332	0.001837	0.18	0.788
54	200.00	14.14	0.343	0.001883	0.19	0.788
55	210.00	14.49	0.333	0.001883	0.19	0.788
56	220.00	14.83	0.332	0.001883	0.19	0.788
57	230.00	15.17	0.333	0.001837	0.18	0.788
58	240.00	15.49	0.333	0.001791	0.18	0.788
59	250.00	15.81	0.364	0.001883	0.19	0.788
60	260.00	16.12	0.362	0.001883	0.19	0.788
61	270.00	16.43	0.36	0.001883	0.19	0.788
62	280.00	16.73	0.355	0.001883	0.19	0.788
63	290.00	17.03	0.355	0.001883	0.19	0.788
64	300.00	17.32	0.361	0.001883	0.19	0.788
65	310.00	17.61	0.367	0.001883	0.19	0.788
66	320.00	17.89	0.364	0.001883	0.19	0.788
67	330.00	18.17	0.356	0.001883	0.19	0.788
68	340.00	18.44	0.359	0.001883	0.19	0.788
69	350.00	18.71	0.361	0.001883	0.19	0.788
70	360.00	18.97	0.361	0.001883	0.19	0.788
71	370.00	19.24	0.367	0.001883	0.19	0.788
72	380.00	19.49	0.367	0.001883	0.19	0.788
73	390.00	19.75	0.366	0.001883	0.19	0.788
74	400.00	20.00	0.367	0.001883	0.19	0.788
75	410.00	20.25	0.389	0.001837	0.18	0.788
76	420.00	20.49	0.401	0.001883	0.19	0.788
77	430.00	20.74	0.393	0.001883	0.19	0.788
78	440.00	20.98	0.388	0.001883	0.19	0.788
79	450.00	21.21	0.379	0.001883	0.19	0.788
80	460.00	21.45	0.373	0.001883	0.19	0.788
81	470.00	21.68	0.37	0.001883	0.19	0.788

82	480.00	21.91	0.365	0.001791	0.18	0.788
83	490.00	22.14	0.361	0.001837	0.18	0.788
84	500.00	22.36	0.382	0.001883	0.19	0.788
85	510.00	22.58	0.367	0.001883	0.19	0.788
86	520.00	22.80	0.355	0.001883	0.19	0.788
87	530.00	23.02	0.362	0.001883	0.19	0.788
88	540.00	23.24	0.364	0.001883	0.19	0.788
89	550.00	23.45	0.366	0.001929	0.19	0.787
90	560.00	23.66	0.362	0.001883	0.19	0.788
91	570.00	23.87	0.365	0.001883	0.19	0.788
92	580.00	24.08	0.361	0.001837	0.18	0.788
93	590.00	24.29	0.36	0.001837	0.18	0.788
94	600.00	24.49	0.378	0.001883	0.19	0.788
95	610.00	24.70	0.374	0.001883	0.19	0.788
96	620.00	24.90	0.364	0.001883	0.19	0.788
97	630.00	25.10	0.36	0.001837	0.18	0.788
98	640.00	25.30	0.36	0.001837	0.18	0.788
99	650.00	25.50	0.355	0.001837	0.18	0.788
100	660.00	25.69	0.396	0.001883	0.19	0.788
101	670.00	25.88	0.371	0.001883	0.19	0.788
102	680.00	26.08	0.402	0.001791	0.18	0.788
103	690.00	26.27	0.369	0.001883	0.19	0.788
104	700.00	26.46	0.365	0.001837	0.18	0.788
105	710.00	26.65	0.367	0.001883	0.19	0.788
106	720.00	26.83	0.372	0.001883	0.19	0.788
107	730.00	27.02	0.392	0.001883	0.19	0.788
108	740.00	27.20	0.392	0.001929	0.19	0.787
109	750.00	27.39	0.373	0.001883	0.19	0.788
110	760.00	27.57	0.361	0.001883	0.19	0.788
111	770.00	27.75	0.361	0.001837	0.18	0.788
112	780.00	27.93	0.364	0.001883	0.19	0.788
113	790.00	28.11	0.378	0.001883	0.19	0.788
114	800.00	28.28	0.346	0.001883	0.19	0.788
115	810.00	28.46	0.344	0.001837	0.18	0.788
116	820.00	28.64	0.344	0.001791	0.18	0.788
117	830.00	28.81	0.348	0.001837	0.18	0.788
118	840.00	28.98	0.372	0.001883	0.19	0.788
119	850.00	29.15	0.347	0.001883	0.19	0.788
120	860.00	29.33	0.342	0.001883	0.19	0.788
121	870.00	29.50	0.342	0.001837	0.18	0.788
122	880.00	29.66	0.367	0.001883	0.19	0.788
123	890.00	29.83	0.344	0.001883	0.19	0.788
124	900.00	30.00	0.329	0.001883	0.19	0.788
125	910.00	30.17	0.333	0.001883	0.19	0.788
126	920.00	30.33	0.357	0.001883	0.19	0.788
127	930.00	30.50	0.362	0.001883	0.19	0.788
128	940.00	30.66	0.372	0.001883	0.19	0.788
129	950.00	30.82	0.363	0.001883	0.19	0.788
130	960.00	30.98	0.348	0.001883	0.19	0.788
131	970.00	31.14	0.346	0.001883	0.19	0.788
132	980.00	31.31	0.348	0.001883	0.19	0.788
133	990.00	31.46	0.352	0.001837	0.18	0.788
134	1000.00	31.62	0.366	0.001883	0.19	0.788
135	1010.00	31.78	0.37	0.001883	0.19	0.788
136	1020.00	31.94	0.367	0.001883	0.19	0.788
137	1030.00	32.09	0.363	0.001883	0.19	0.788
138	1040.00	32.25	0.365	0.001883	0.19	0.788
139	1050.00	32.40	0.353	0.001837	0.18	0.788
140	1060.00	32.56	0.359	0.001837	0.18	0.788
141	1070.00	32.71	0.366	0.001883	0.19	0.788
142	1080.00	32.86	0.363	0.001883	0.19	0.788
143	1090.00	33.02	0.362	0.001883	0.19	0.788
144	1100.00	33.17	0.356	0.001883	0.19	0.788
145	1110.00	33.32	0.356	0.001883	0.19	0.788
146	1120.00	33.47	0.36	0.001883	0.19	0.788
147	1130.00	33.62	0.353	0.001883	0.19	0.788
148	1140.00	33.76	0.352	0.001883	0.19	0.788
149	1150.00	33.91	0.352	0.001883	0.19	0.788
150	1160.00	34.06	0.347	0.001883	0.19	0.788
151	1170.00	34.21	0.347	0.001883	0.19	0.788
152	1180.00	34.35	0.366	0.001883	0.19	0.788
153	1190.00	34.50	0.355	0.001883	0.19	0.788
154	1200.00	34.64	0.355	0.001883	0.19	0.788
155	1210.00	34.79	0.352	0.001883	0.19	0.788
156	1220.00	34.93	0.347	0.001837	0.18	0.788
157	1230.00	35.07	0.347	0.001837	0.18	0.788
158	1240.00	35.21	0.364	0.001883	0.19	0.788
159	1250.00	35.36	0.372	0.001837	0.18	0.788
160	1260.00	35.50	0.375	0.001929	0.19	0.787
161	1270.00	35.64	0.37	0.001883	0.19	0.788
162	1280.00	35.78	0.369	0.001837	0.18	0.788
163	1290.00	35.92	0.38	0.001883	0.19	0.788
164	1300.00	36.06	0.378	0.001883	0.19	0.788
165	1310.00	36.19	0.379	0.001883	0.19	0.788
166	1320.00	36.33	0.381	0.001883	0.19	0.788
167	1330.00	36.47	0.374	0.001883	0.19	0.788
168	1340.00	36.61	0.373	0.001883	0.19	0.788
169	1350.00	36.74	0.366	0.001883	0.19	0.788
170	1360.00	36.88	0.37	0.001883	0.19	0.788
171	1370.00	37.01	0.369	0.001883	0.19	0.788
172	1380.00	37.15	0.371	0.001929	0.19	0.787
173	1390.00	37.28	0.364	0.001883	0.19	0.788
174	1397.79	37.39	0.342	0.001883	0.19	0.788

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/15/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 3 of 5
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.342	-0.002622	-0.26	0.796
2	0.01	0.09	0.345	-0.002622	-0.26	0.796
3	0.02	0.13	0.364	-0.002622	-0.26	0.796
4	0.03	0.16	0.417	-0.00253	-0.25	0.795
5	0.03	0.19	0.453	-0.002438	-0.24	0.795
6	0.05	0.23	0.483	-0.002208	-0.22	0.795
7	0.07	0.26	0.49	-0.002116	-0.21	0.795
8	0.09	0.30	0.495	-0.002116	-0.21	0.795
9	0.12	0.34	0.497	-0.00207	-0.21	0.795
10	0.17	0.41	0.5	-0.002024	-0.20	0.794
11	0.25	0.50	0.497	-0.001978	-0.20	0.794
12	0.33	0.58	0.499	-0.001932	-0.19	0.794
13	0.50	0.71	0.5	-0.001886	-0.19	0.794
14	0.75	0.87	0.501	-0.001932	-0.19	0.794
15	1.00	1.00	0.501	-0.001886	-0.19	0.794
16	1.50	1.23	0.5	-0.00184	-0.18	0.794
17	2.00	1.41	0.499	-0.00184	-0.18	0.794
18	3.00	1.73	0.501	-0.00184	-0.18	0.794
19	4.00	2.00	0.499	-0.001886	-0.19	0.794
20	5.00	2.24	0.501	-0.00184	-0.18	0.794
21	6.00	2.45	0.499	-0.00184	-0.18	0.794
22	7.00	2.65	0.5	-0.00184	-0.18	0.794
23	8.00	2.83	0.499	-0.00184	-0.18	0.794
24	9.00	3.00	0.5	-0.00184	-0.18	0.794
25	10.00	3.16	0.499	-0.00184	-0.18	0.794
26	12.00	3.46	0.501	-0.00184	-0.18	0.794
27	14.00	3.74	0.499	-0.00184	-0.18	0.794
28	16.00	4.00	0.5	-0.00184	-0.18	0.794
29	18.00	4.24	0.501	-0.00184	-0.18	0.794
30	20.00	4.47	0.501	-0.00184	-0.18	0.794
31	22.00	4.69	0.5	-0.00184	-0.18	0.794
32	24.00	4.90	0.499	-0.00184	-0.18	0.794
33	26.00	5.10	0.5	-0.00184	-0.18	0.794
34	28.00	5.29	0.5	-0.00184	-0.18	0.794
35	30.00	5.48	0.5	-0.001794	-0.18	0.794
36	35.00	5.92	0.501	-0.001748	-0.17	0.794
37	40.00	6.32	0.5	-0.001702	-0.17	0.794
38	45.00	6.71	0.5	-0.001748	-0.17	0.794
39	50.00	7.07	0.5	-0.001656	-0.17	0.794
40	60.00	7.75	0.499	-0.001702	-0.17	0.794
41	70.00	8.37	0.501	-0.001656	-0.17	0.794
42	80.00	8.94	0.499	-0.00161	-0.16	0.794
43	90.00	9.49	0.499	-0.001656	-0.17	0.794
44	100.00	10.00	0.5	-0.00161	-0.16	0.794
45	110.00	10.49	0.5	-0.001518	-0.15	0.794
46	120.00	10.95	0.5	-0.00161	-0.16	0.794
47	130.00	11.40	0.5	-0.001656	-0.17	0.794
48	140.00	11.83	0.499	-0.001564	-0.16	0.794
49	150.00	12.25	0.5	-0.001518	-0.15	0.794
50	160.00	12.65	0.5	-0.00161	-0.16	0.794
51	170.00	13.04	0.5	-0.00161	-0.16	0.794
52	180.00	13.42	0.5	-0.001518	-0.15	0.794
53	190.00	13.78	0.501	-0.001518	-0.15	0.794
54	191.86	13.85	0.501	-0.001518	-0.15	0.794

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/15/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 4 of 5
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.5	0.002207	0.22	0.787
2	0.01	0.09	0.495	0.002207	0.22	0.787
3	0.02	0.13	0.384	0.001839	0.18	0.788
4	0.03	0.16	0.332	0.001655	0.17	0.788
5	0.04	0.19	0.301	0.001471	0.15	0.788
6	0.05	0.23	0.275	0.001333	0.13	0.788
7	0.07	0.27	0.263	0.001241	0.12	0.789
8	0.08	0.29	0.259	0.001195	0.12	0.789
9	0.12	0.34	0.253	0.001149	0.11	0.789
10	0.17	0.41	0.252	0.001149	0.11	0.789
11	0.25	0.50	0.251	0.001149	0.11	0.789
12	0.33	0.58	0.251	0.001103	0.11	0.789
13	0.50	0.71	0.25	0.001103	0.11	0.789
14	0.75	0.87	0.251	0.001103	0.11	0.789
15	1.00	1.00	0.251	0.001058	0.11	0.789
16	1.50	1.23	0.25	0.001058	0.11	0.789
17	2.00	1.41	0.249	0.001058	0.11	0.789
18	3.00	1.73	0.25	0.001012	0.10	0.789
19	4.00	2.00	0.251	0.001012	0.10	0.789
20	5.00	2.24	0.251	0.0009656	0.10	0.789
21	6.00	2.45	0.25	0.0009656	0.10	0.789
22	7.00	2.65	0.25	0.0009196	0.09	0.789
23	8.00	2.83	0.251	0.0009196	0.09	0.789
24	9.00	3.00	0.251	0.0009196	0.09	0.789
25	10.00	3.16	0.25	0.0009196	0.09	0.789
26	12.00	3.46	0.251	0.0009196	0.09	0.789
27	14.00	3.74	0.251	0.0008736	0.09	0.789
28	16.00	4.00	0.25	0.0009196	0.09	0.789
29	18.00	4.24	0.25	0.0009196	0.09	0.789
30	20.00	4.47	0.25	0.0008736	0.09	0.789
31	22.00	4.69	0.249	0.0009196	0.09	0.789
32	24.00	4.90	0.25	0.0009196	0.09	0.789
33	26.00	5.10	0.251	0.0009196	0.09	0.789
34	28.00	5.29	0.25	0.0009196	0.09	0.789
35	30.00	5.48	0.251	0.0009196	0.09	0.789
36	35.00	5.92	0.25	0.0008736	0.09	0.789
37	40.00	6.32	0.25	0.0008736	0.09	0.789
38	45.00	6.71	0.25	0.0008276	0.08	0.789
39	50.00	7.07	0.249	0.0008276	0.08	0.789
40	60.00	7.75	0.25	0.0008736	0.09	0.789
41	70.00	8.37	0.25	0.0008276	0.08	0.789
42	80.00	8.94	0.25	0.0007816	0.08	0.789
43	90.00	9.49	0.249	0.0008276	0.08	0.789
44	100.00	10.00	0.25	0.0008276	0.08	0.789
45	110.00	10.49	0.251	0.0007816	0.08	0.789
46	120.00	10.95	0.25	0.0008276	0.08	0.789
47	120.03	10.96	0.249	0.0008276	0.08	0.789

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-289
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/15/19
Sample Type: CORE

Project No.: 19-289
Checked By: SKK
Depth: 10-12.5'
Elevation: N/A

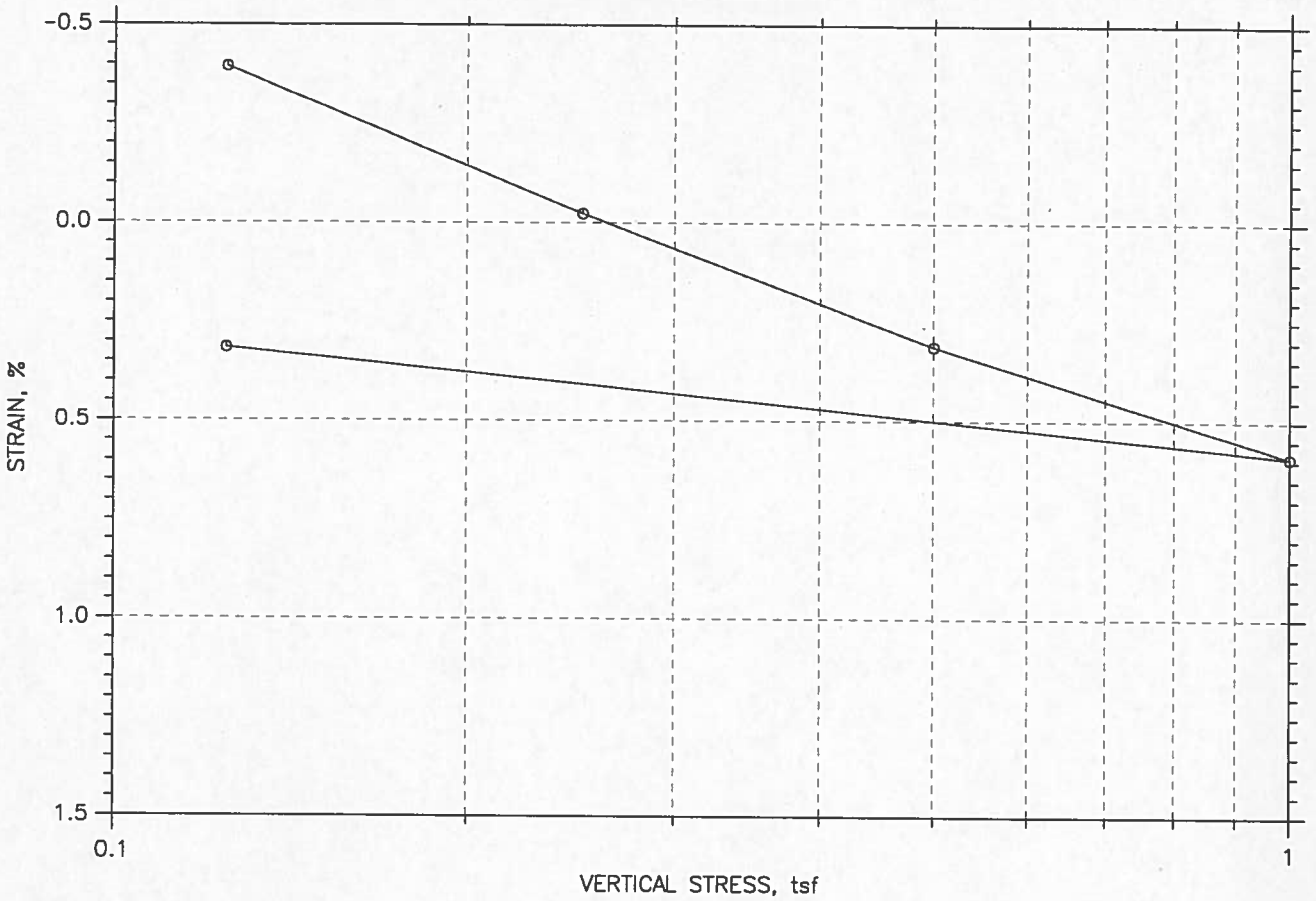
Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

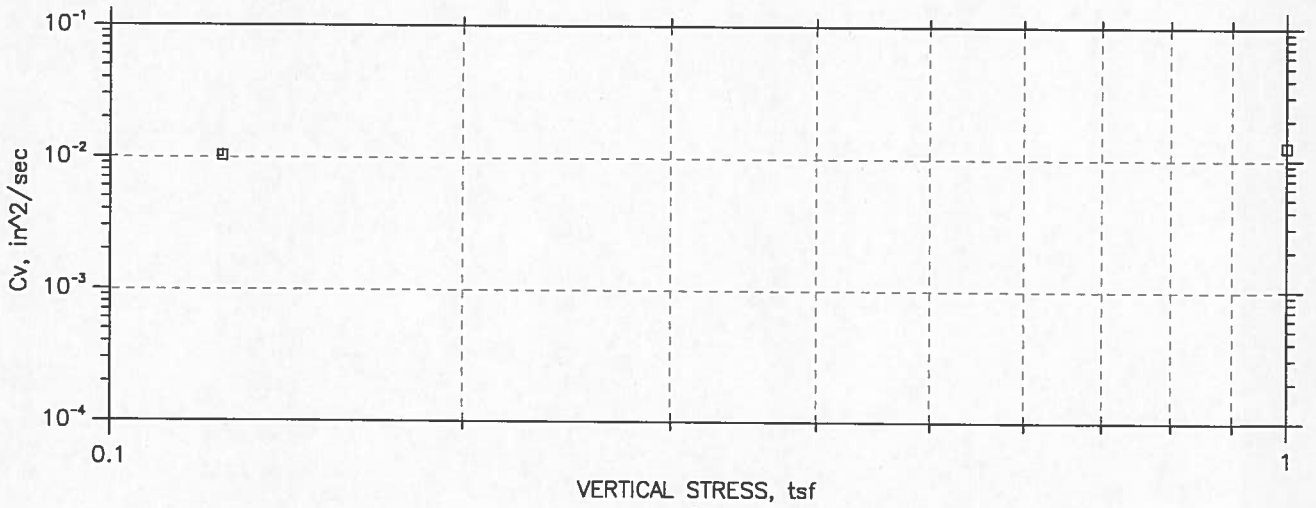
Constant Load Step: 5 of 5
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.251	0.0008276	0.08	0.789
2	0.01	0.09	0.25	0.0008276	0.08	0.789
3	0.02	0.13	0.212	0.0007357	0.07	0.790
4	0.03	0.16	0.176	0.0002299	0.02	0.790
5	0.04	0.19	0.161	9.196e-005	0.01	0.791
6	0.05	0.23	0.146	-4.598e-005	-0.00	0.791
7	0.07	0.27	0.138	-9.196e-005	-0.01	0.791
8	0.08	0.29	0.134	-0.0001379	-0.01	0.791
9	0.12	0.34	0.129	-0.0002299	-0.02	0.791
10	0.17	0.41	0.128	-0.0004138	-0.04	0.792
11	0.25	0.50	0.127	-0.0005058	-0.05	0.792
12	0.34	0.58	0.127	-0.0005517	-0.06	0.792
13	0.50	0.71	0.125	-0.0006437	-0.06	0.792
14	0.75	0.87	0.127	-0.0007357	-0.07	0.792
15	1.00	1.00	0.123	-0.0007816	-0.08	0.792
16	1.50	1.23	0.125	-0.0008736	-0.09	0.792
17	2.00	1.42	0.125	-0.0009656	-0.10	0.793
18	3.00	1.73	0.122	-0.001012	-0.10	0.793
19	4.00	2.00	0.124	-0.001103	-0.11	0.793
20	5.00	2.24	0.124	-0.001149	-0.11	0.793
21	6.00	2.45	0.124	-0.001149	-0.11	0.793
22	7.00	2.65	0.124	-0.001195	-0.12	0.793
23	8.00	2.83	0.123	-0.001241	-0.12	0.793
24	9.00	3.00	0.125	-0.001241	-0.12	0.793
25	10.00	3.16	0.124	-0.001241	-0.12	0.793
26	12.00	3.46	0.124	-0.001241	-0.12	0.793
27	14.00	3.74	0.124	-0.001287	-0.13	0.793
28	16.00	4.00	0.123	-0.001333	-0.13	0.793
29	18.00	4.24	0.124	-0.001471	-0.15	0.794
30	20.00	4.47	0.125	-0.001517	-0.15	0.794
31	22.00	4.69	0.124	-0.001563	-0.16	0.794
32	24.00	4.90	0.124	-0.001609	-0.16	0.794
33	26.00	5.10	0.124	-0.001609	-0.16	0.794
34	28.00	5.29	0.124	-0.001609	-0.16	0.794
35	30.00	5.48	0.124	-0.001609	-0.16	0.794
36	35.00	5.92	0.124	-0.001609	-0.16	0.794
37	40.00	6.32	0.124	-0.001563	-0.16	0.794
38	45.00	6.71	0.125	-0.001563	-0.16	0.794
39	50.00	7.07	0.124	-0.001609	-0.16	0.794
40	60.00	7.75	0.124	-0.001701	-0.17	0.794
41	70.00	8.37	0.123	-0.001701	-0.17	0.794
42	80.00	8.94	0.124	-0.001655	-0.17	0.794
43	90.00	9.49	0.123	-0.001747	-0.17	0.794
44	100.00	10.00	0.125	-0.001793	-0.18	0.794
45	110.00	10.49	0.124	-0.001747	-0.17	0.794
46	120.00	10.95	0.124	-0.001747	-0.17	0.794
47	120.02	10.96	0.125	-0.001747	-0.17	0.794

CONSOLIDATION TEST DATA

SUMMARY REPORT



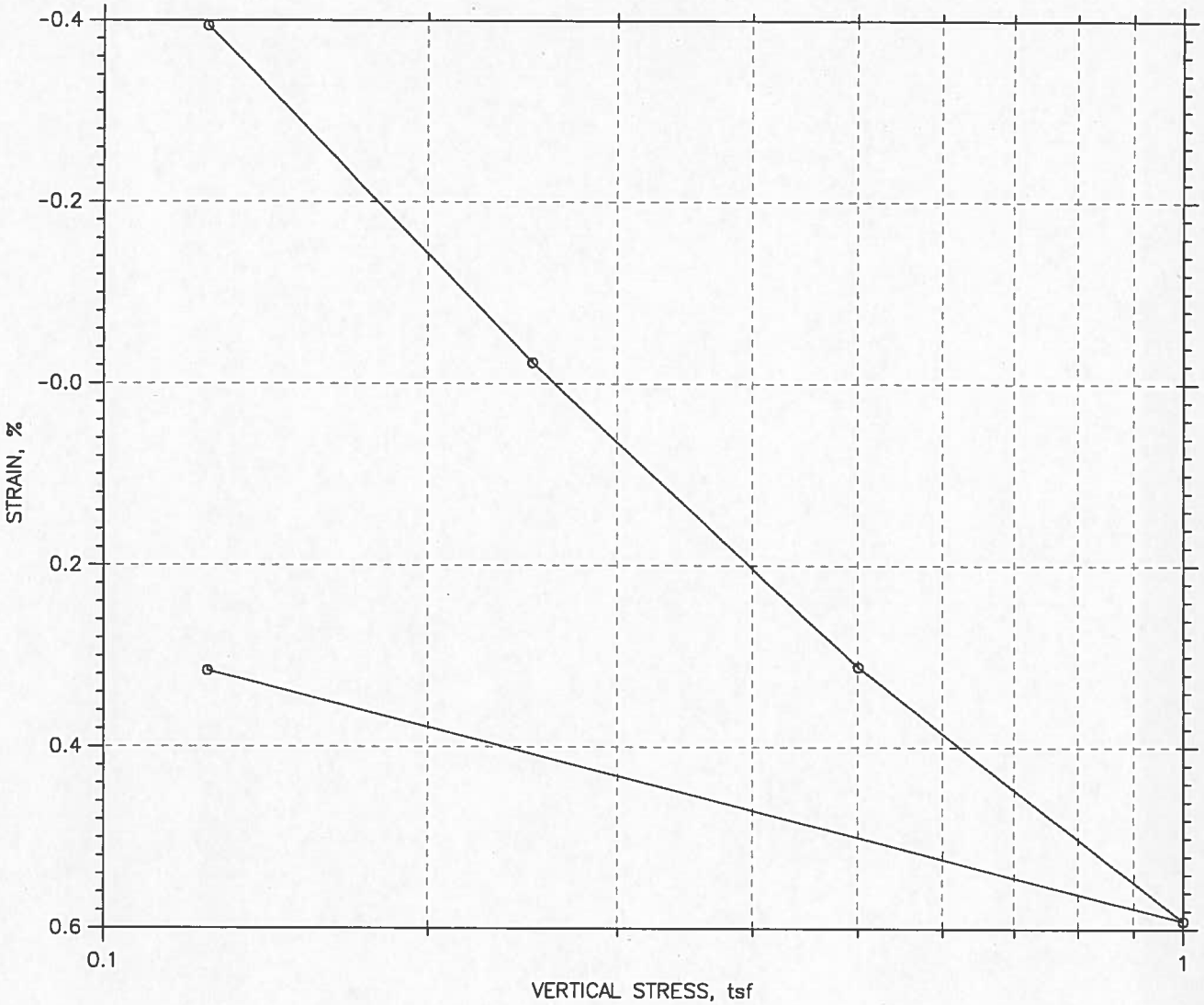


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-290
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-290	Test Date: 7/17/19	Test No.: 1
	Depth: 19-20.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 01-AUG-2019 11:01:05

CONSOLIDATION TEST DATA

SUMMARY REPORT



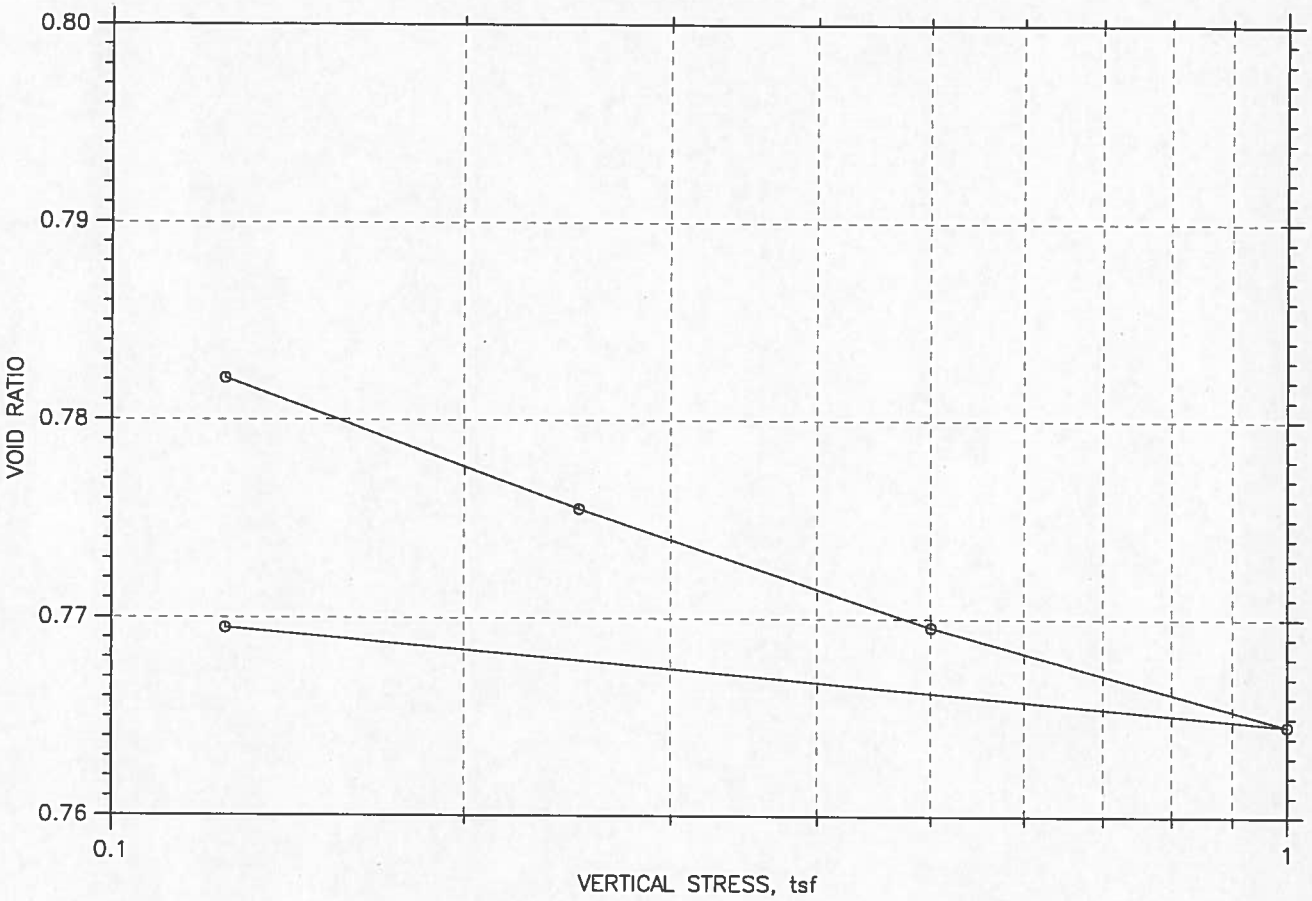
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	20.56	27.87
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	96.01	95.43
Compression Index: 3.81959e-313				Saturation, %	72.40	96.83
Diameter: 2.5 in		Height: 1.003 in		Void Ratio	0.78	0.79
LL: ---	PL: ---	PI: ---	GS: 2.73			

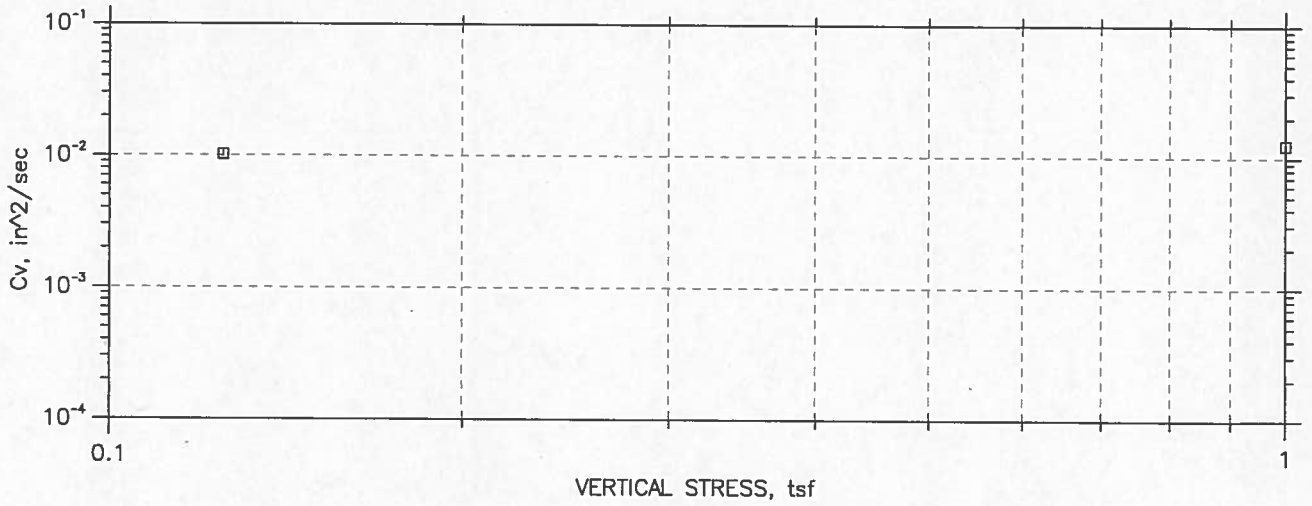
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-290
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-290	Test Date: 7/17/19	Test No.: 1
	Depth: 19-20.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 01-AUG-2019 11:01:05

CONSOLIDATION TEST DATA

SUMMARY REPORT



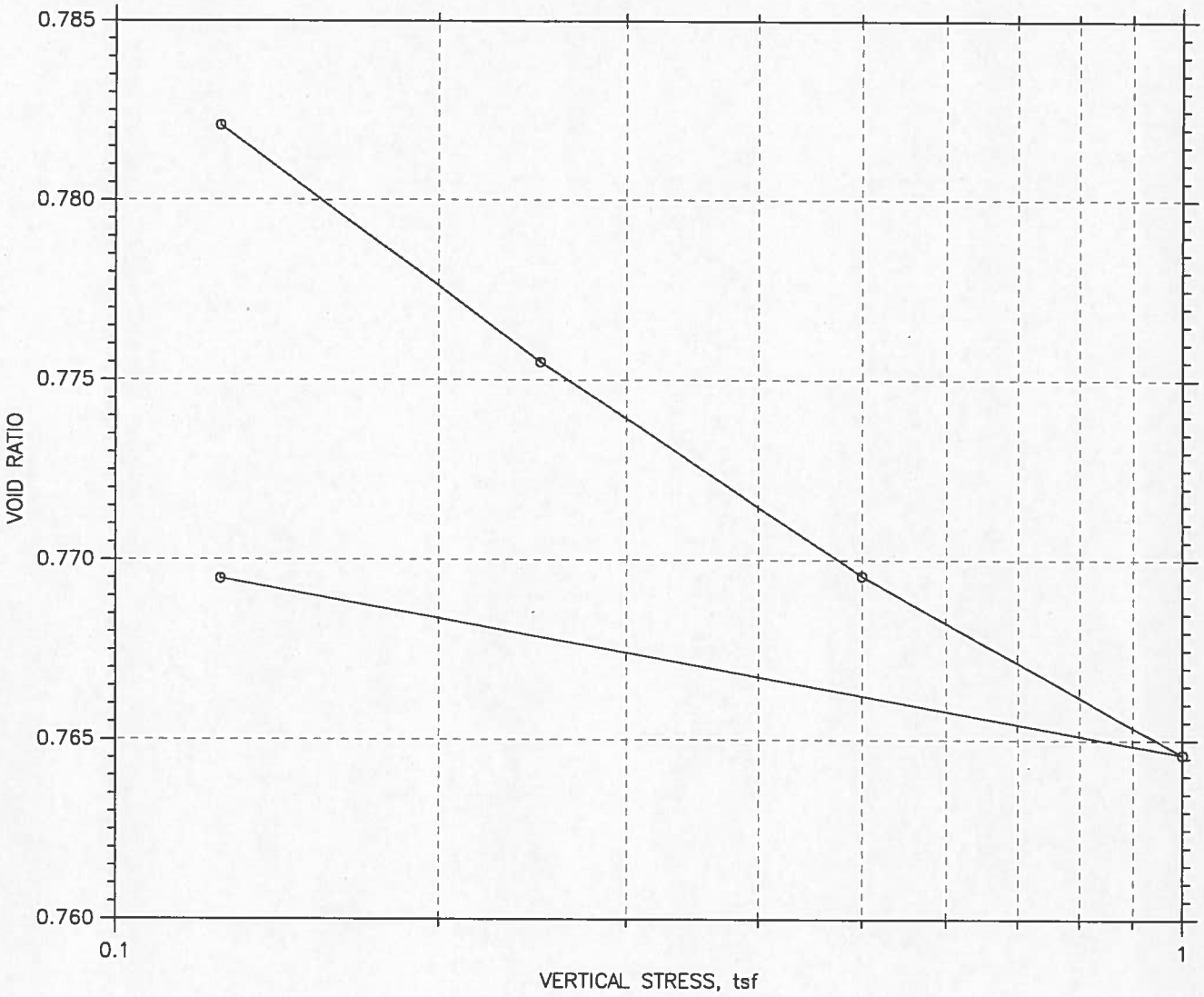


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-290
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-290	Test Date: 7/17/19	Test No.: 1
	Depth: 19-20.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 01-AUG-2019 11:01:12

CONSOLIDATION TEST DATA

SUMMARY REPORT



				Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	20.56	27.87
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	96.01	95.43
Compression Index: 3.81959e-313				Saturation, %	72.40	96.83
Diameter: 2.5 in		Height: 1.003 in		Void Ratio	0.78	0.79
LL: ---	PL: ---	PI: ---	GS: 2.73			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-290
	Boring No.: B-601	Tested By: SKK	Checked By: SKK
	Sample No.: 19-290	Test Date: 7/17/19	Test No.: 1
	Depth: 19-20.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 01-AUG-2019 11:01:13

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/17/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Measured Specific Gravity: 2.73
Initial Void Ratio: 0.78
Final Void Ratio: 0.79

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	153.92	259.74	268.82	210.13
Wt. Container + Dry Soil, gm	134.93	234.23	234.23	175.55
Wt. Container, gm	50.78	110.15	110.15	51.49
Wt. Dry Soil, gm	84.15	124.08	124.08	124.06
Water Content, %	22.57	20.56	27.87	27.87
Void Ratio	---	0.78	0.79	---
Degree of Saturation, %	---	72.40	96.83	---
Dry Unit Weight, pcf	---	96.011	95.434	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/17/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.003173	0.769	0.32	0.3	1.26e-002	2.53e-002	5.98e-003
2	0.125	0.003173	0.769	0.32	0.0	0.00e+000	-1.#Je+000	-1.#Je+000
3	1	0.005931	0.765	0.59	0.5	7.69e-003	3.14e-003	4.53e-004
4	0.5	0.003127	0.770	0.31	0.2	2.20e-002	5.59e-003	2.31e-003
5	0.25	-0.0002299	0.775	-0.02	4.7	7.47e-004	1.34e-002	1.87e-004
6	0.125	-0.003954	0.782	-0.39	11.5	3.10e-004	2.97e-002	1.73e-004

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.003173	0.769	0.32	0.1	1.18e-002	2.53e-002	5.60e-003
2	0.125	0.003173	0.769	0.32	0.0	0.00e+000	-1.#Je+000	-1.#Je+000
3	1	0.005931	0.765	0.59	0.0	2.43e-002	3.14e-003	1.43e-003
4	0.5	0.003127	0.770	0.31	0.0	0.00e+000	5.59e-003	0.00e+000
5	0.25	-0.0002299	0.775	-0.02	0.0	0.00e+000	1.34e-002	0.00e+000
6	0.125	-0.003954	0.782	-0.39	0.0	0.00e+000	2.97e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/17/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 1 of 6
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00336	-0.001335	-0.13	0.777
2	0.01	0.09	0.0056	-0.001335	-0.13	0.777
3	0.02	0.13	0.0202	-0.0009674	-0.10	0.777
4	0.03	0.16	0.0381	-0.0006916	-0.07	0.776
5	0.04	0.19	0.0504	-0.0004617	-0.05	0.776
6	0.05	0.23	0.0717	-0.0001858	-0.02	0.775
7	0.07	0.26	0.0863	4.409e-005	0.00	0.775
8	0.09	0.30	0.0964	0.000274	0.03	0.775
9	0.12	0.34	0.109	0.0005958	0.06	0.774
10	0.17	0.41	0.117	0.0007338	0.07	0.774
11	0.25	0.50	0.12	0.0009177	0.09	0.773
12	0.34	0.58	0.121	0.001056	0.11	0.773
13	0.50	0.71	0.124	0.001194	0.12	0.773
14	0.75	0.87	0.124	0.001286	0.13	0.773
15	1.00	1.00	0.124	0.001377	0.14	0.773
16	1.50	1.23	0.123	0.001423	0.14	0.773
17	2.00	1.41	0.124	0.001469	0.15	0.772
18	3.00	1.73	0.124	0.001561	0.16	0.772
19	4.00	2.00	0.124	0.001607	0.16	0.772
20	5.00	2.24	0.125	0.001607	0.16	0.772
21	6.00	2.45	0.123	0.001653	0.16	0.772
22	7.00	2.65	0.124	0.001653	0.16	0.772
23	8.00	2.83	0.125	0.001699	0.17	0.772
24	9.00	3.00	0.124	0.001699	0.17	0.772
25	10.00	3.16	0.124	0.001699	0.17	0.772
26	12.00	3.46	0.125	0.001745	0.17	0.772
27	14.00	3.74	0.124	0.001791	0.18	0.772
28	15.04	3.88	0.124	0.001837	0.18	0.772

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/17/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Volume Step: 2 of 6
Seating Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.124	0.001837	0.18	0.772
2	0.01	0.09	0.124	0.001837	0.18	0.772
3	0.02	0.13	0.124	0.001837	0.18	0.772
4	0.03	0.16	0.124	0.001837	0.18	0.772
5	0.04	0.19	0.122	0.001837	0.18	0.772
6	0.05	0.23	0.123	0.001883	0.19	0.772
7	0.07	0.27	0.127	0.001883	0.19	0.772
8	0.08	0.29	0.13	0.001837	0.18	0.772
9	0.12	0.35	0.139	0.001837	0.18	0.772
10	0.17	0.41	0.15	0.001791	0.18	0.772
11	0.25	0.50	0.168	0.001745	0.17	0.772
12	0.34	0.58	0.184	0.001745	0.17	0.772
13	0.50	0.71	0.21	0.001745	0.17	0.772
14	0.75	0.87	0.241	0.001745	0.17	0.772
15	1.00	1.00	0.266	0.001791	0.18	0.772
16	1.50	1.23	0.303	0.001791	0.18	0.772
17	2.00	1.42	0.325	0.001791	0.18	0.772
18	3.00	1.73	0.366	0.001791	0.18	0.772
19	4.00	2.00	0.394	0.001791	0.18	0.772
20	5.00	2.24	0.418	0.001791	0.18	0.772
21	6.00	2.45	0.435	0.001745	0.17	0.772
22	7.00	2.65	0.452	0.001791	0.18	0.772
23	8.00	2.83	0.463	0.001791	0.18	0.772
24	9.00	3.00	0.474	0.001791	0.18	0.772
25	10.00	3.16	0.484	0.001791	0.18	0.772
26	12.00	3.46	0.504	0.001883	0.19	0.772
27	14.00	3.74	0.515	0.001883	0.19	0.772
28	16.00	4.00	0.528	0.001837	0.18	0.772
29	18.00	4.24	0.536	0.001883	0.19	0.772
30	20.00	4.47	0.545	0.001837	0.18	0.772
31	22.00	4.69	0.551	0.001791	0.18	0.772
32	24.00	4.90	0.558	0.001883	0.19	0.772
33	26.00	5.10	0.562	0.001929	0.19	0.772
34	28.00	5.29	0.567	0.001883	0.19	0.772
35	30.00	5.48	0.573	0.001883	0.19	0.772
36	35.00	5.92	0.583	0.001883	0.19	0.772
37	40.00	6.32	0.588	0.001837	0.18	0.772
38	45.00	6.71	0.593	0.001883	0.19	0.772
39	50.00	7.07	0.596	0.001883	0.19	0.772
40	60.00	7.75	0.601	0.001883	0.19	0.772
41	70.00	8.37	0.598	0.001883	0.19	0.772
42	80.00	8.94	0.598	0.001883	0.19	0.772
43	90.00	9.49	0.604	0.001883	0.19	0.772
44	100.00	10.00	0.604	0.001883	0.19	0.772
45	110.00	10.49	0.597	0.001837	0.18	0.772
46	120.00	10.95	0.604	0.001883	0.19	0.772
47	130.00	11.40	0.61	0.001883	0.19	0.772
48	140.00	11.83	0.606	0.001837	0.18	0.772
49	150.00	12.25	0.605	0.001883	0.19	0.772
50	160.00	12.65	0.607	0.001837	0.18	0.772
51	170.00	13.04	0.607	0.001791	0.18	0.772
52	180.00	13.42	0.61	0.001883	0.19	0.772
53	190.00	13.78	0.612	0.001883	0.19	0.772
54	200.00	14.14	0.614	0.001883	0.19	0.772
55	210.00	14.49	0.607	0.001883	0.19	0.772
56	220.00	14.83	0.608	0.001883	0.19	0.772
57	230.00	15.17	0.616	0.001883	0.19	0.772
58	240.00	15.49	0.612	0.001883	0.19	0.772
59	250.00	15.81	0.612	0.001883	0.19	0.772
60	260.00	16.12	0.615	0.001883	0.19	0.772
61	270.00	16.43	0.616	0.001883	0.19	0.772
62	280.00	16.73	0.611	0.001883	0.19	0.772
63	290.00	17.03	0.612	0.001883	0.19	0.772
64	300.00	17.32	0.616	0.001883	0.19	0.772
65	310.00	17.61	0.615	0.001883	0.19	0.772
66	320.00	17.89	0.61	0.001883	0.19	0.772
67	330.00	18.17	0.614	0.001883	0.19	0.772
68	340.00	18.44	0.621	0.001883	0.19	0.772
69	350.00	18.71	0.617	0.001883	0.19	0.772
70	360.00	18.97	0.615	0.001883	0.19	0.772
71	370.00	19.24	0.622	0.001929	0.19	0.772
72	380.00	19.49	0.624	0.001883	0.19	0.772
73	390.00	19.75	0.621	0.001883	0.19	0.772
74	400.00	20.00	0.618	0.001883	0.19	0.772
75	410.00	20.25	0.621	0.001837	0.18	0.772
76	420.00	20.49	0.625	0.001883	0.19	0.772
77	430.00	20.74	0.62	0.001883	0.19	0.772
78	440.00	20.98	0.62	0.001883	0.19	0.772
79	450.00	21.21	0.623	0.001883	0.19	0.772
80	460.00	21.45	0.623	0.001883	0.19	0.772
81	470.00	21.68	0.618	0.001883	0.19	0.772

82	480.00	21.91	0.617	0.001883	0.19	0.772
83	490.00	22.14	0.616	0.001883	0.19	0.772
84	500.00	22.36	0.616	0.001883	0.19	0.772
85	510.00	22.58	0.61	0.001837	0.18	0.772
86	520.00	22.80	0.607	0.001883	0.19	0.772
87	530.00	23.02	0.613	0.001883	0.19	0.772
88	540.00	23.24	0.615	0.001883	0.19	0.772
89	550.00	23.45	0.616	0.001883	0.19	0.772
90	560.00	23.66	0.612	0.001883	0.19	0.772
91	570.00	23.87	0.615	0.001883	0.19	0.772
92	580.00	24.08	0.617	0.001883	0.19	0.772
93	590.00	24.29	0.615	0.001883	0.19	0.772
94	600.00	24.49	0.612	0.001883	0.19	0.772
95	610.00	24.70	0.611	0.001883	0.19	0.772
96	620.00	24.90	0.606	0.001883	0.19	0.772
97	630.00	25.10	0.607	0.001929	0.19	0.772
98	640.00	25.30	0.608	0.001929	0.19	0.772
99	650.00	25.50	0.612	0.001883	0.19	0.772
100	660.00	25.69	0.612	0.001883	0.19	0.772
101	670.00	25.88	0.61	0.001837	0.18	0.772
102	680.00	26.08	0.614	0.001837	0.18	0.772
103	690.00	26.27	0.61	0.001883	0.19	0.772
104	700.00	26.46	0.607	0.001837	0.18	0.772
105	710.00	26.65	0.607	0.001883	0.19	0.772
106	720.00	26.83	0.604	0.001883	0.19	0.772
107	730.00	27.02	0.607	0.001883	0.19	0.772
108	740.00	27.20	0.606	0.001883	0.19	0.772
109	750.00	27.39	0.607	0.001883	0.19	0.772
110	760.00	27.57	0.604	0.001929	0.19	0.772
111	770.00	27.75	0.604	0.001837	0.18	0.772
112	780.00	27.93	0.602	0.001883	0.19	0.772
113	790.00	28.11	0.601	0.001883	0.19	0.772
114	800.00	28.28	0.604	0.001883	0.19	0.772
115	810.00	28.46	0.606	0.001883	0.19	0.772
116	820.00	28.64	0.603	0.001883	0.19	0.772
117	830.00	28.81	0.597	0.001883	0.19	0.772
118	840.00	28.98	0.599	0.001883	0.19	0.772
119	850.00	29.15	0.594	0.001791	0.18	0.772
120	860.00	29.33	0.608	0.001883	0.19	0.772
121	870.00	29.50	0.607	0.001837	0.18	0.772
122	880.00	29.66	0.606	0.001883	0.19	0.772
123	890.00	29.83	0.601	0.001883	0.19	0.772
124	900.00	30.00	0.605	0.001883	0.19	0.772
125	910.00	30.17	0.613	0.001883	0.19	0.772
126	920.00	30.33	0.608	0.001837	0.18	0.772
127	930.00	30.50	0.608	0.001883	0.19	0.772
128	940.00	30.66	0.605	0.001883	0.19	0.772
129	950.00	30.82	0.606	0.001883	0.19	0.772
130	960.00	30.98	0.611	0.001883	0.19	0.772
131	970.00	31.14	0.608	0.001837	0.18	0.772
132	980.00	31.30	0.613	0.001883	0.19	0.772
133	990.00	31.46	0.61	0.001883	0.19	0.772
134	1000.00	31.62	0.611	0.001883	0.19	0.772
135	1010.00	31.78	0.613	0.001837	0.18	0.772
136	1020.00	31.94	0.617	0.001883	0.19	0.772
137	1030.00	32.09	0.614	0.001883	0.19	0.772
138	1040.00	32.25	0.612	0.001883	0.19	0.772
139	1050.00	32.40	0.611	0.001883	0.19	0.772
140	1060.00	32.56	0.615	0.001883	0.19	0.772
141	1070.00	32.71	0.613	0.001883	0.19	0.772
142	1080.00	32.86	0.615	0.001883	0.19	0.772
143	1090.00	33.02	0.613	0.001837	0.18	0.772
144	1100.00	33.17	0.611	0.001837	0.18	0.772
145	1110.00	33.32	0.615	0.001883	0.19	0.772
146	1120.00	33.47	0.616	0.001883	0.19	0.772
147	1130.00	33.62	0.614	0.001837	0.18	0.772
148	1140.00	33.76	0.618	0.001883	0.19	0.772
149	1150.00	33.91	0.614	0.001883	0.19	0.772
150	1160.00	34.06	0.615	0.001883	0.19	0.772
151	1170.00	34.21	0.616	0.001883	0.19	0.772
152	1180.00	34.35	0.613	0.001883	0.19	0.772
153	1190.00	34.50	0.615	0.001883	0.19	0.772
154	1200.00	34.64	0.615	0.001883	0.19	0.772
155	1210.00	34.79	0.614	0.001883	0.19	0.772
156	1220.00	34.93	0.612	0.001883	0.19	0.772
157	1230.00	35.07	0.613	0.001883	0.19	0.772
158	1240.00	35.21	0.612	0.001837	0.18	0.772
159	1250.00	35.36	0.61	0.001837	0.18	0.772
160	1260.00	35.50	0.611	0.001837	0.18	0.772
161	1270.00	35.64	0.616	0.001883	0.19	0.772
162	1280.00	35.78	0.617	0.001883	0.19	0.772
163	1290.00	35.92	0.618	0.001883	0.19	0.772
164	1300.00	36.06	0.616	0.001883	0.19	0.772
165	1310.00	36.19	0.616	0.001883	0.19	0.772
166	1320.00	36.33	0.617	0.001883	0.19	0.772
167	1330.00	36.47	0.614	0.001883	0.19	0.772
168	1340.00	36.61	0.616	0.001883	0.19	0.772
169	1350.00	36.74	0.614	0.001883	0.19	0.772
170	1360.00	36.88	0.621	0.001883	0.19	0.772
171	1370.00	37.01	0.62	0.001883	0.19	0.772
172	1380.00	37.15	0.615	0.001837	0.18	0.772
173	1390.00	37.28	0.616	0.001883	0.19	0.772
174	1400.00	37.42	0.614	0.001837	0.18	0.772
175	1410.00	37.55	0.605	0.001883	0.19	0.772
176	1420.00	37.68	0.601	0.001883	0.19	0.772
177	1430.00	37.82	0.601	0.001883	0.19	0.772
178	1440.00	37.95	0.612	0.001883	0.19	0.772
179	1440.02	37.95	0.612	0.001837	0.18	0.772

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/17/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 3 of 6
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.612	-0.003999	-0.40	0.782
2	0.01	0.09	0.683	-0.003953	-0.39	0.782
3	0.02	0.13	0.882	-0.003309	-0.33	0.781
4	0.03	0.16	0.937	-0.00308	-0.31	0.781
5	0.04	0.19	0.959	-0.00285	-0.28	0.780
6	0.05	0.23	0.98	-0.002574	-0.26	0.780
7	0.07	0.27	0.987	-0.002436	-0.24	0.779
8	0.08	0.29	0.99	-0.00239	-0.24	0.779
9	0.12	0.35	0.993	-0.002344	-0.23	0.779
10	0.17	0.41	0.994	-0.002206	-0.22	0.779
11	0.25	0.50	0.998	-0.002068	-0.21	0.779
12	0.34	0.58	0.996	-0.001976	-0.20	0.779
13	0.50	0.71	0.998	-0.001792	-0.18	0.778
14	0.75	0.87	0.998	-0.0017	-0.17	0.778
15	1.00	1.00	0.998	-0.001654	-0.16	0.778
16	1.50	1.23	0.998	-0.001608	-0.16	0.778
17	2.00	1.41	0.999	-0.001608	-0.16	0.778
18	3.00	1.73	0.998	-0.001562	-0.16	0.778
19	4.00	2.00	0.999	-0.001516	-0.15	0.778
20	5.00	2.24	0.999	-0.00147	-0.15	0.778
21	6.00	2.45	0.999	-0.001516	-0.15	0.778
22	7.00	2.65	0.998	-0.00147	-0.15	0.778
23	8.00	2.83	0.999	-0.00147	-0.15	0.778
24	9.00	3.00	1	-0.00147	-0.15	0.778
25	10.00	3.16	0.999	-0.001424	-0.14	0.778
26	12.00	3.46	0.998	-0.001424	-0.14	0.778
27	14.00	3.74	0.999	-0.001424	-0.14	0.778
28	16.00	4.00	0.999	-0.001424	-0.14	0.778
29	18.00	4.24	1	-0.001378	-0.14	0.778
30	20.00	4.47	1	-0.001378	-0.14	0.778
31	22.00	4.69	0.999	-0.001378	-0.14	0.778
32	24.00	4.90	0.999	-0.001332	-0.13	0.777
33	26.00	5.10	1	-0.001332	-0.13	0.777
34	28.00	5.29	1	-0.001332	-0.13	0.777
35	30.00	5.48	0.999	-0.001332	-0.13	0.777
36	35.00	5.92	0.999	-0.001286	-0.13	0.777
37	40.00	6.32	0.999	-0.001286	-0.13	0.777
38	45.00	6.71	0.999	-0.001332	-0.13	0.777
39	50.00	7.07	0.998	-0.001332	-0.13	0.777
40	60.00	7.75	0.998	-0.001286	-0.13	0.777
41	70.00	8.37	1	-0.001194	-0.12	0.777
42	80.00	8.94	1	-0.001286	-0.13	0.777
43	90.00	9.49	1	-0.001286	-0.13	0.777
44	100.00	10.00	1	-0.00124	-0.12	0.777
45	110.00	10.49	1	-0.001194	-0.12	0.777
46	120.00	10.95	1	-0.00124	-0.12	0.777
47	120.03	10.96	0.998	-0.00124	-0.12	0.777

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/17/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 4 of 6
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	1	0.003816	0.38	0.768
2	0.01	0.09	0.941	0.003816	0.38	0.768
3	0.02	0.13	0.659	0.003219	0.32	0.769
4	0.03	0.16	0.592	0.002621	0.26	0.770
5	0.04	0.19	0.557	0.002437	0.24	0.771
6	0.05	0.23	0.529	0.002115	0.21	0.771
7	0.07	0.27	0.517	0.002023	0.20	0.772
8	0.08	0.29	0.511	0.001977	0.20	0.772
9	0.12	0.35	0.506	0.001885	0.19	0.772
10	0.17	0.41	0.504	0.001839	0.18	0.772
11	0.25	0.50	0.502	0.001793	0.18	0.772
12	0.34	0.58	0.501	0.001747	0.17	0.772
13	0.50	0.71	0.501	0.001747	0.17	0.772
14	0.75	0.87	0.501	0.001747	0.17	0.772
15	1.00	1.00	0.501	0.001701	0.17	0.772
16	1.50	1.23	0.5	0.001655	0.17	0.772
17	2.00	1.41	0.501	0.001609	0.16	0.772
18	3.00	1.73	0.499	0.001609	0.16	0.772
19	4.00	2.00	0.5	0.001563	0.16	0.772
20	5.00	2.24	0.5	0.001517	0.15	0.772
21	6.00	2.45	0.5	0.001517	0.15	0.772
22	7.00	2.65	0.5	0.001517	0.15	0.772
23	8.00	2.83	0.499	0.001517	0.15	0.772
24	9.00	3.00	0.501	0.001517	0.15	0.772
25	10.00	3.16	0.501	0.001517	0.15	0.772
26	12.00	3.46	0.499	0.001471	0.15	0.772
27	14.00	3.74	0.501	0.001471	0.15	0.772
28	16.00	4.00	0.501	0.001517	0.15	0.772
29	18.00	4.24	0.501	0.001517	0.15	0.772
30	20.00	4.47	0.499	0.001517	0.15	0.772
31	22.00	4.69	0.5	0.001517	0.15	0.772
32	24.00	4.90	0.499	0.001517	0.15	0.772
33	26.00	5.10	0.5	0.001471	0.15	0.772
34	28.00	5.29	0.5	0.001471	0.15	0.772
35	30.00	5.48	0.5	0.001471	0.15	0.772
36	35.00	5.92	0.499	0.001425	0.14	0.773
37	40.00	6.32	0.5	0.001379	0.14	0.773
38	45.00	6.71	0.501	0.001379	0.14	0.773
39	50.00	7.07	0.5	0.001425	0.14	0.773
40	60.00	7.75	0.501	0.001425	0.14	0.773
41	70.00	8.37	0.501	0.001287	0.13	0.773
42	80.00	8.94	0.5	0.001287	0.13	0.773
43	90.00	9.49	0.501	0.001379	0.14	0.773
44	100.00	10.00	0.501	0.001241	0.12	0.773
45	110.00	10.49	0.501	0.001103	0.11	0.773
46	120.00	10.95	0.501	0.001195	0.12	0.773
47	130.00	11.40	0.5	0.001195	0.12	0.773
48	140.00	11.83	0.5	0.001103	0.11	0.773
49	150.00	12.25	0.5	0.001058	0.11	0.773
50	160.00	12.65	0.5	0.001149	0.11	0.773
51	170.00	13.04	0.5	0.001103	0.11	0.773
52	180.00	13.42	0.5	0.001058	0.11	0.773
53	190.00	13.78	0.5	0.001012	0.10	0.773
54	197.26	14.05	0.499	0.001012	0.10	0.773

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/17/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 5 of 6
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.501	0.001012	0.10	0.773
2	0.01	0.09	0.483	0.001012	0.10	0.773
3	0.02	0.13	0.381	0.0008276	0.08	0.774
4	0.03	0.16	0.336	0.0006437	0.06	0.774
5	0.04	0.19	0.309	0.0004598	0.05	0.774
6	0.05	0.23	0.28	-2.732e-019	-0.00	0.775
7	0.07	0.27	0.268	-0.0001379	-0.01	0.775
8	0.08	0.29	0.262	-0.0002299	-0.02	0.775
9	0.12	0.35	0.257	-0.0004138	-0.04	0.776
10	0.17	0.41	0.255	-0.0005058	-0.05	0.776
11	0.25	0.50	0.253	-0.0007816	-0.08	0.776
12	0.34	0.58	0.252	-0.0008276	-0.08	0.777
13	0.50	0.71	0.252	-0.0009196	-0.09	0.777
14	0.75	0.87	0.251	-0.001058	-0.11	0.777
15	1.00	1.00	0.251	-0.001103	-0.11	0.777
16	1.50	1.23	0.25	-0.001195	-0.12	0.777
17	2.00	1.42	0.25	-0.001241	-0.12	0.777
18	3.00	1.73	0.249	-0.001333	-0.13	0.777
19	4.00	2.00	0.251	-0.001379	-0.14	0.778
20	5.00	2.24	0.251	-0.001425	-0.14	0.778
21	6.00	2.45	0.25	-0.001471	-0.15	0.778
22	7.00	2.65	0.249	-0.001517	-0.15	0.778
23	8.00	2.83	0.25	-0.001517	-0.15	0.778
24	9.00	3.00	0.25	-0.001563	-0.16	0.778
25	10.00	3.16	0.251	-0.001563	-0.16	0.778
26	12.00	3.46	0.25	-0.001609	-0.16	0.778
27	14.00	3.74	0.25	-0.001609	-0.16	0.778
28	16.00	4.00	0.25	-0.001655	-0.17	0.778
29	18.00	4.24	0.25	-0.001701	-0.17	0.778
30	20.00	4.47	0.25	-0.001747	-0.17	0.778
31	22.00	4.69	0.251	-0.001793	-0.18	0.778
32	24.00	4.90	0.25	-0.001793	-0.18	0.778
33	26.00	5.10	0.25	-0.001839	-0.18	0.778
34	28.00	5.29	0.25	-0.001839	-0.18	0.778
35	30.00	5.48	0.251	-0.001885	-0.19	0.778
36	35.00	5.92	0.249	-0.001885	-0.19	0.778
37	40.00	6.32	0.251	-0.001885	-0.19	0.778
38	45.00	6.71	0.25	-0.001885	-0.19	0.778
39	50.00	7.07	0.25	-0.001931	-0.19	0.779
40	60.00	7.75	0.25	-0.002023	-0.20	0.779
41	70.00	8.37	0.25	-0.002115	-0.21	0.779
42	80.00	8.94	0.25	-0.002115	-0.21	0.779
43	90.00	9.49	0.251	-0.002115	-0.21	0.779
44	100.00	10.00	0.25	-0.002253	-0.22	0.779
45	110.00	10.49	0.25	-0.002345	-0.23	0.779
46	120.00	10.95	0.25	-0.002345	-0.23	0.779
47	120.04	10.96	0.25	-0.002345	-0.23	0.779

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-601
Sample No.: 19-290
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/17/19
Sample Type: CORE

Project No.: 19-290
Checked By: SKK
Depth: 19-20.5'
Elevation: N/A

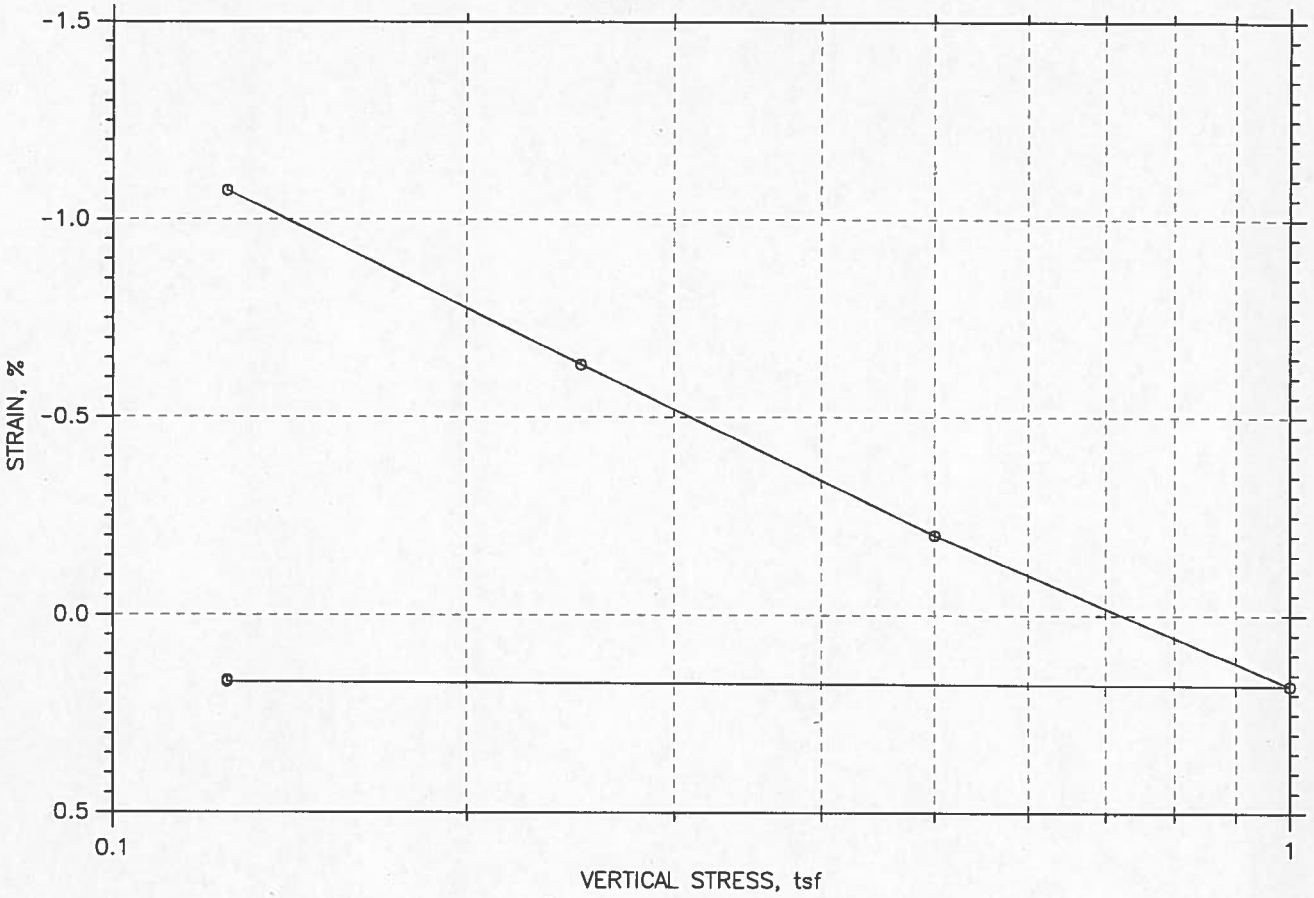
Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

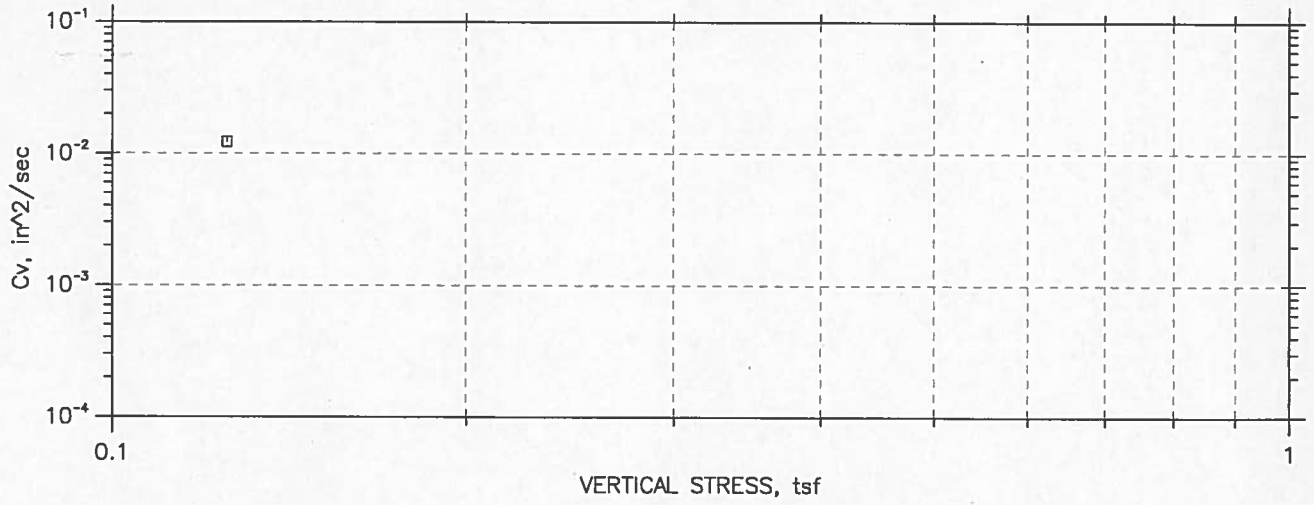
Constant Load Step: 6 of 6
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	-0.002345	-0.23	0.779
2	0.01	0.09	0.232	-0.002345	-0.23	0.779
3	0.02	0.13	0.18	-0.002667	-0.27	0.780
4	0.03	0.16	0.164	-0.002943	-0.29	0.780
5	0.04	0.19	0.155	-0.003127	-0.31	0.781
6	0.05	0.23	0.143	-0.003494	-0.35	0.781
7	0.07	0.27	0.138	-0.003632	-0.36	0.782
8	0.08	0.29	0.136	-0.003678	-0.37	0.782
9	0.12	0.35	0.131	-0.003816	-0.38	0.782
10	0.17	0.41	0.129	-0.003908	-0.39	0.782
11	0.25	0.50	0.13	-0.004092	-0.41	0.782
12	0.34	0.58	0.127	-0.00423	-0.42	0.783
13	0.50	0.71	0.125	-0.004368	-0.44	0.783
14	0.75	0.87	0.125	-0.004506	-0.45	0.783
15	1.00	1.00	0.125	-0.004644	-0.46	0.783
16	1.50	1.23	0.125	-0.004736	-0.47	0.783
17	2.00	1.41	0.124	-0.004828	-0.48	0.784
18	3.00	1.73	0.125	-0.004874	-0.49	0.784
19	4.00	2.00	0.124	-0.00492	-0.49	0.784
20	5.00	2.24	0.124	-0.005058	-0.50	0.784
21	6.00	2.45	0.124	-0.00515	-0.51	0.784
22	7.00	2.65	0.125	-0.005288	-0.53	0.784
23	8.00	2.83	0.125	-0.005334	-0.53	0.785
24	9.00	3.00	0.125	-0.00538	-0.54	0.785
25	10.00	3.16	0.124	-0.005426	-0.54	0.785
26	12.00	3.46	0.124	-0.005517	-0.55	0.785
27	14.00	3.74	0.124	-0.005563	-0.55	0.785
28	16.00	4.00	0.124	-0.005609	-0.56	0.785
29	18.00	4.24	0.124	-0.005701	-0.57	0.785
30	20.00	4.47	0.124	-0.005747	-0.57	0.785
31	22.00	4.69	0.124	-0.005747	-0.57	0.785
32	24.00	4.90	0.125	-0.005747	-0.57	0.785
33	26.00	5.10	0.124	-0.005793	-0.58	0.785
34	28.00	5.29	0.124	-0.005839	-0.58	0.785
35	30.00	5.48	0.124	-0.005839	-0.58	0.785
36	35.00	5.92	0.124	-0.005885	-0.59	0.786
37	40.00	6.32	0.122	-0.005885	-0.59	0.786
38	45.00	6.71	0.124	-0.005885	-0.59	0.786
39	50.00	7.07	0.122	-0.005885	-0.59	0.786
40	60.00	7.75	0.125	-0.005885	-0.59	0.786
41	70.00	8.37	0.124	-0.005977	-0.60	0.786
42	80.00	8.94	0.124	-0.006023	-0.60	0.786
43	90.00	9.49	0.124	-0.006023	-0.60	0.786
44	100.00	10.00	0.124	-0.006069	-0.61	0.786
45	110.00	10.49	0.123	-0.006069	-0.61	0.786
46	120.00	10.95	0.124	-0.006069	-0.61	0.786
47	120.02	10.96	0.124	-0.006069	-0.61	0.786

CONSOLIDATION TEST DATA

SUMMARY REPORT



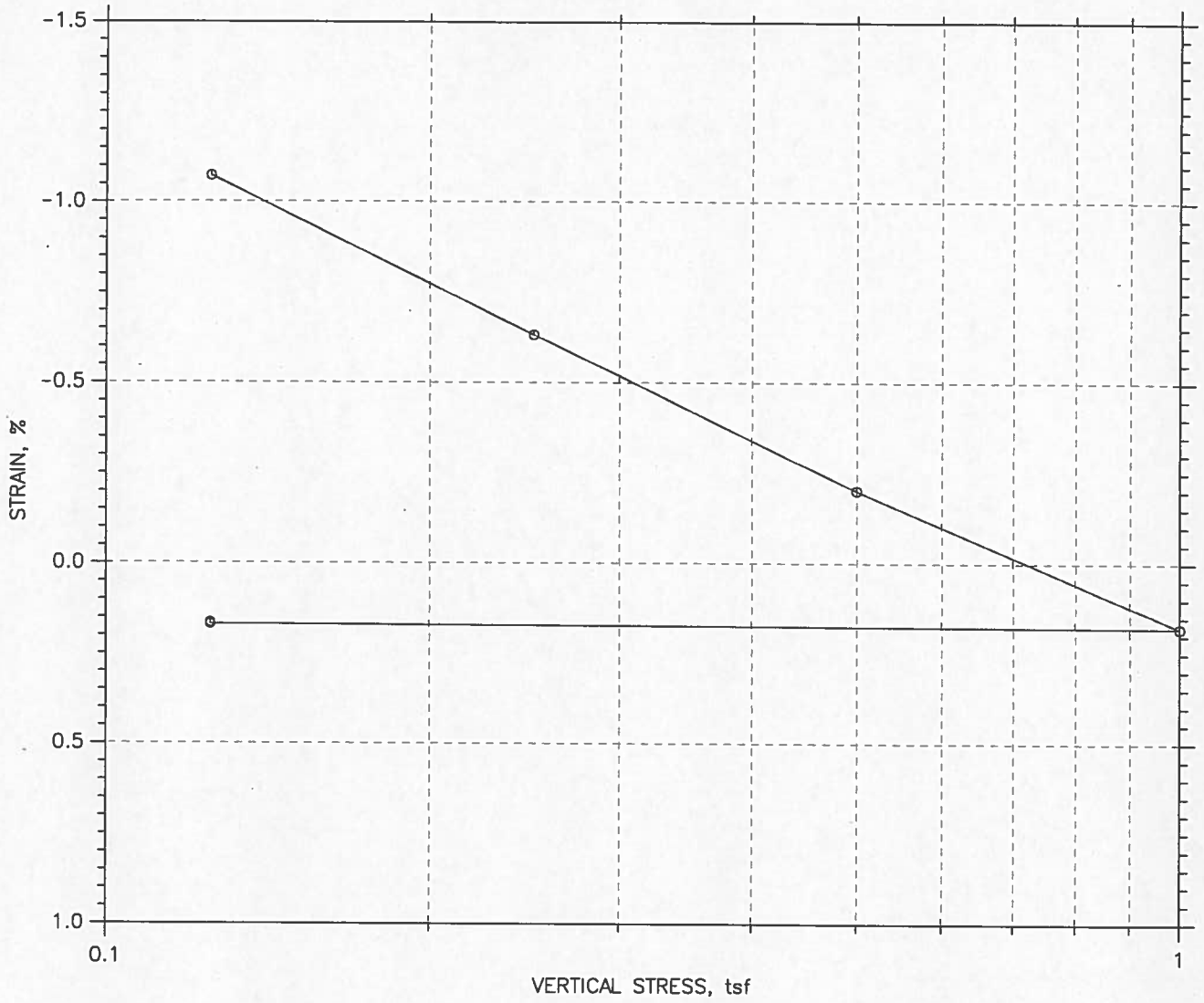


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-292
	Boring No.: B-602	Tested By: SKK	Checked By: SKK
	Sample No.: 19-292	Test Date: 7/22/19	Test No.: 1
	Depth: 15-17'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 25-JUL-2019 14:14:43

CONSOLIDATION TEST DATA

SUMMARY REPORT



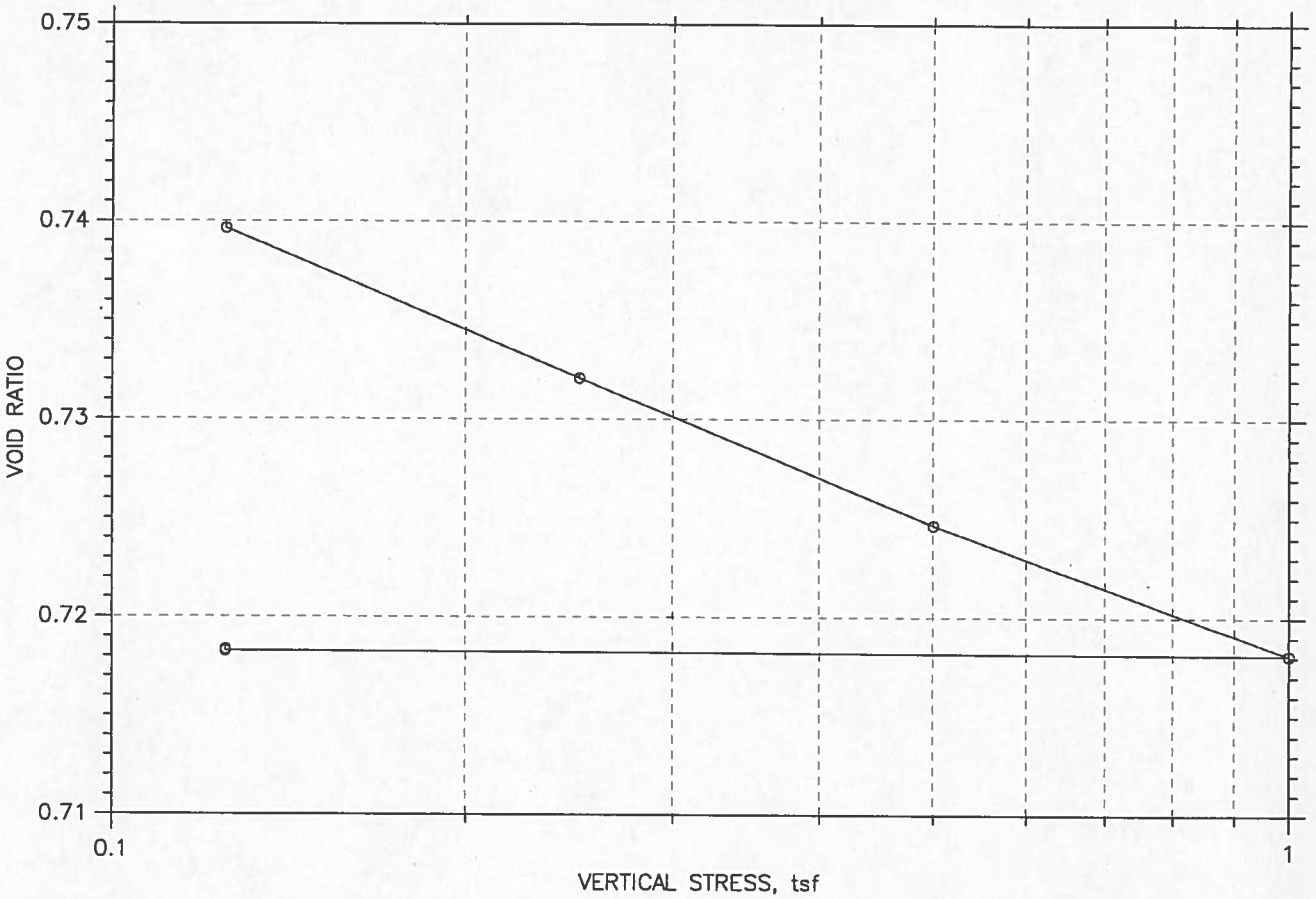
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	22.30	26.05
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	98.66	97.41
Compression Index: 3.81959e-313				Saturation, %	84.09	95.34
Diameter: 2.5 in		Height: 1.003 in		Void Ratio	0.72	0.74
LL: ---	PL: ---	PI: ---	GS: 2.72			

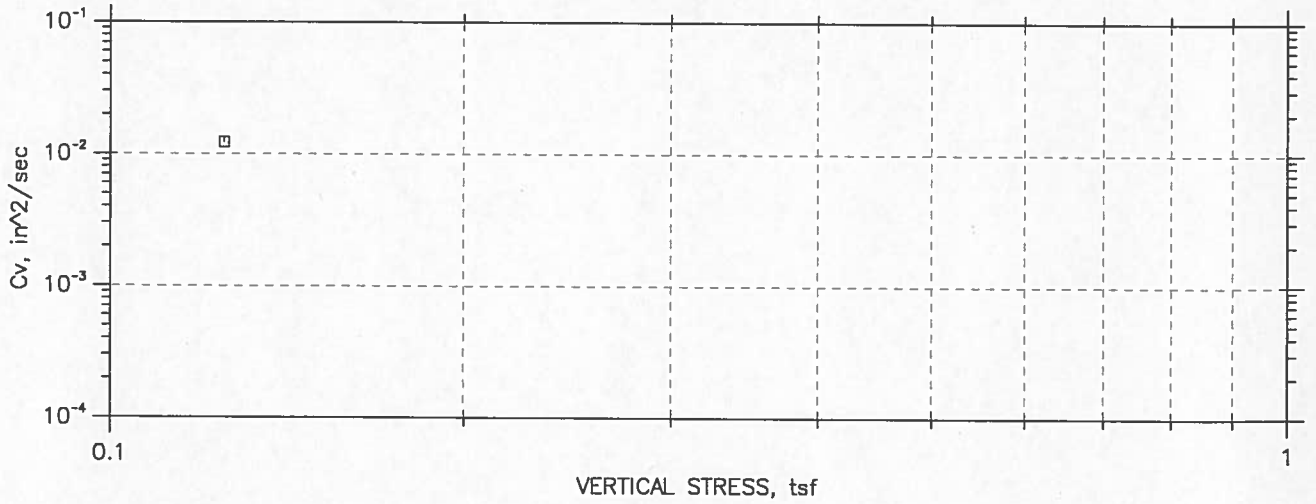
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-292
	Boring No.: B-602	Tested By: SKK	Checked By: SKK
	Sample No.: 19-292	Test Date: 7/22/19	Test No.: 1
	Depth: 15-17'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 25-JUL-2019 14:14:44

CONSOLIDATION TEST DATA

SUMMARY REPORT



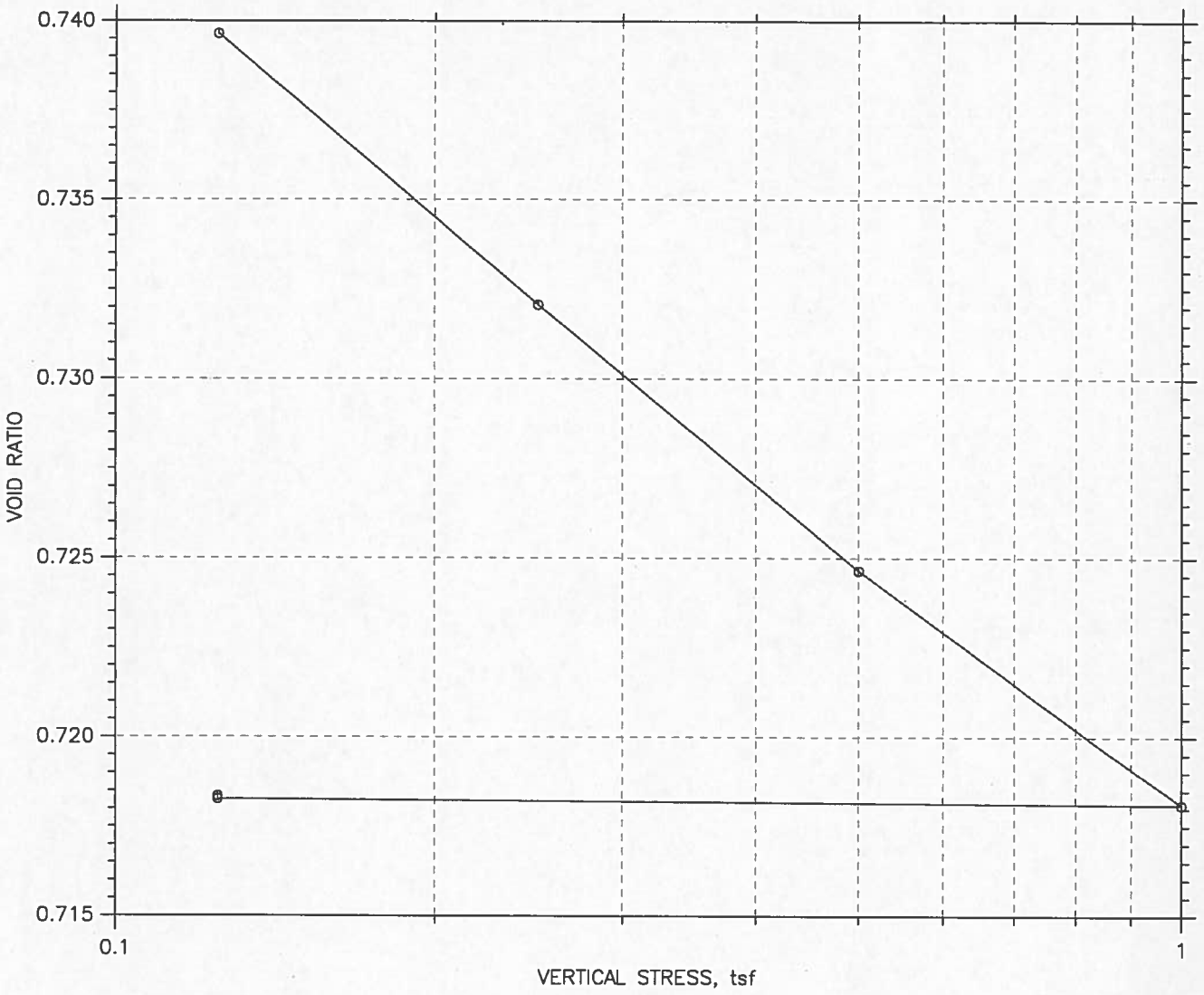


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-292
	Boring No.: B-602	Tested By: SKK	Checked By: SKK
	Sample No.: 19-292	Test Date: 7/22/19	Test No.: 1
	Depth: 15-17'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 25-JUL-2019 14:14:52

CONSOLIDATION TEST DATA

SUMMARY REPORT



				Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	22.30	26.05
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	98.66	97.41
Compression Index: 3.81959e-313				Saturation, %	84.09	95.34
Diameter: 2.5 in		Height: 1.003 in		Void Ratio	0.72	0.74
LL: ---	PL: ---	PI: ---	GS: 2.72			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-292
	Boring No.: B-602	Tested By: SKK	Checked By: SKK
	Sample No.: 19-292	Test Date: 7/22/19	Test No.: 1
	Depth: 15-17'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 25-JUL-2019 14:14:52

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/22/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Measured Specific Gravity: 2.72
Initial Void Ratio: 0.72
Final Void Ratio: 0.74

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	203.79	266.08	270.87	214.47
Wt. Container + Dry Soil, gm	176.49	237.65	237.65	181.27
Wt. Container, gm	51.5	110.15	110.15	53.84
Wt. Dry Soil, gm	124.99	127.5	127.5	127.43
Water Content, %	21.84	22.30	26.05	26.05
Void Ratio	---	0.72	0.74	---
Degree of Saturation, %	---	84.09	95.34	---
Dry Unit Weight, pcf	---	98.656	97.405	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/22/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001655	0.718	0.17	0.1	2.91e-002	1.32e-002	7.19e-003
2	0.125	0.001701	0.718	0.17	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	1	0.001793	0.718	0.18	0.0	0.00e+000	1.05e-004	0.00e+000
4	0.5	-0.002023	0.725	-0.20	6.8	5.26e-004	7.61e-003	7.49e-005
5	0.25	-0.006345	0.732	-0.63	6.6	5.42e-004	1.72e-002	1.75e-004
6	0.125	-0.01076	0.740	-1.07	20.8	1.74e-004	3.52e-002	1.14e-004

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001655	0.718	0.17	0.0	0.00e+000	1.32e-002	0.00e+000
2	0.125	0.001701	0.718	0.17	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	1	0.001793	0.718	0.18	0.0	0.00e+000	1.05e-004	0.00e+000
4	0.5	-0.002023	0.725	-0.20	0.0	0.00e+000	7.61e-003	0.00e+000
5	0.25	-0.006345	0.732	-0.63	0.0	0.00e+000	1.72e-002	0.00e+000
6	0.125	-0.01076	0.740	-1.07	0.0	0.00e+000	3.52e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/22/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 1 of 6
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00448	-0.001335	-0.13	0.723
2	0.01	0.09	0.0146	-0.001335	-0.13	0.723
3	0.02	0.13	0.0471	-0.001105	-0.11	0.723
4	0.03	0.16	0.0706	-0.0009215	-0.09	0.723
5	0.04	0.19	0.084	-0.0008295	-0.08	0.723
6	0.05	0.23	0.102	-0.0005536	-0.06	0.722
7	0.07	0.27	0.111	-0.0002778	-0.03	0.722
8	0.08	0.29	0.114	-0.0002318	-0.02	0.722
9	0.12	0.35	0.121	-0.0001858	-0.02	0.721
10	0.17	0.41	0.123	-0.0001398	-0.01	0.721
11	0.25	0.50	0.123	-0.0001398	-0.01	0.721
12	0.33	0.58	0.123	-9.385e-005	-0.01	0.721
13	0.50	0.71	0.124	-4.787e-005	-0.00	0.721
14	0.75	0.87	0.124	-1.889e-006	-0.00	0.721
15	1.00	1.00	0.123	-1.889e-006	-0.00	0.721
16	1.50	1.23	0.124	4.409e-005	0.00	0.721
17	2.00	1.42	0.124	4.409e-005	0.00	0.721
18	3.00	1.73	0.123	9.007e-005	0.01	0.721
19	4.00	2.00	0.125	0.000136	0.01	0.721
20	5.00	2.24	0.124	0.000182	0.02	0.721
21	6.00	2.45	0.124	0.000182	0.02	0.721
22	7.00	2.65	0.123	0.000182	0.02	0.721
23	8.00	2.83	0.125	0.000182	0.02	0.721
24	9.00	3.00	0.124	0.000182	0.02	0.721
25	10.00	3.16	0.124	0.000182	0.02	0.721
26	12.00	3.46	0.125	0.000228	0.02	0.721
27	14.00	3.74	0.124	0.000274	0.03	0.721
28	15.03	3.88	0.123	0.00032	0.03	0.721

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/22/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Volume Step: 2 of 6
Seating Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.123	0.00032	0.03	0.721
2	0.01	0.09	0.124	0.00032	0.03	0.721
3	0.02	0.13	0.123	0.00032	0.03	0.721
4	0.03	0.16	0.124	0.00032	0.03	0.721
5	0.04	0.19	0.125	0.00032	0.03	0.721
6	0.05	0.23	0.122	0.00032	0.03	0.721
7	0.07	0.27	0.123	0.00032	0.03	0.721
8	0.08	0.29	0.128	0.00032	0.03	0.721
9	0.12	0.34	0.138	0.00032	0.03	0.721
10	0.17	0.41	0.157	0.00032	0.03	0.721
11	0.25	0.50	0.176	0.00032	0.03	0.721
12	0.33	0.58	0.192	0.000274	0.03	0.721
13	0.50	0.71	0.216	0.000274	0.03	0.721
14	0.75	0.87	0.249	0.000228	0.02	0.721
15	1.00	1.00	0.278	0.000228	0.02	0.721
16	1.50	1.22	0.324	0.000228	0.02	0.721
17	2.00	1.41	0.36	0.000274	0.03	0.721
18	3.00	1.73	0.419	0.000274	0.03	0.721
19	4.00	2.00	0.462	0.000274	0.03	0.721
20	5.00	2.24	0.501	0.000274	0.03	0.721
21	6.00	2.45	0.53	0.000274	0.03	0.721
22	7.00	2.65	0.552	0.000274	0.03	0.721
23	8.00	2.83	0.576	0.000274	0.03	0.721
24	9.00	3.00	0.594	0.000274	0.03	0.721
25	10.00	3.16	0.613	0.000274	0.03	0.721
26	12.00	3.46	0.648	0.000274	0.03	0.721
27	14.00	3.74	0.679	0.000274	0.03	0.721
28	16.00	4.00	0.708	0.0003659	0.04	0.721
29	18.00	4.24	0.732	0.0003659	0.04	0.721
30	20.00	4.47	0.751	0.0003659	0.04	0.721
31	22.00	4.69	0.769	0.0003659	0.04	0.721
32	24.00	4.90	0.781	0.00032	0.03	0.721
33	26.00	5.10	0.791	0.000274	0.03	0.721
34	28.00	5.29	0.802	0.000274	0.03	0.721
35	30.00	5.48	0.813	0.000274	0.03	0.721
36	35.00	5.92	0.839	0.000274	0.03	0.721
37	40.00	6.32	0.85	0.000274	0.03	0.721
38	45.00	6.71	0.878	0.00032	0.03	0.721
39	50.00	7.07	0.895	0.0003659	0.04	0.721
40	60.00	7.75	0.909	0.0003659	0.04	0.721
41	70.00	8.37	0.929	0.0003659	0.04	0.721
42	80.00	8.94	0.932	0.0003659	0.04	0.721
43	90.00	9.49	0.94	0.0003659	0.04	0.721
44	100.00	10.00	0.948	0.0003659	0.04	0.721
45	110.00	10.49	0.951	0.0003659	0.04	0.721
46	120.00	10.95	0.953	0.0003659	0.04	0.721
47	130.00	11.40	0.967	0.0003659	0.04	0.721
48	140.00	11.83	0.96	0.0003659	0.04	0.721
49	150.00	12.25	0.956	0.0003659	0.04	0.721
50	160.00	12.65	0.967	0.0003659	0.04	0.721
51	170.00	13.04	0.96	0.0003659	0.04	0.721
52	180.00	13.42	0.958	0.0003659	0.04	0.721
53	190.00	13.78	0.961	0.00032	0.03	0.721
54	200.00	14.14	0.961	0.0003659	0.04	0.721
55	210.00	14.49	0.953	0.0003659	0.04	0.721
56	220.00	14.83	0.96	0.0003659	0.04	0.721
57	230.00	15.17	0.964	0.0003659	0.04	0.721
58	240.00	15.49	0.953	0.0003659	0.04	0.721
59	250.00	15.81	0.958	0.0003659	0.04	0.721
60	260.00	16.12	0.959	0.000274	0.03	0.721
61	270.00	16.43	0.956	0.00032	0.03	0.721
62	280.00	16.73	0.956	0.0003659	0.04	0.721
63	290.00	17.03	0.961	0.00032	0.03	0.721
64	300.00	17.32	0.965	0.0003659	0.04	0.721
65	310.00	17.61	0.959	0.0004119	0.04	0.720
66	320.00	17.89	0.965	0.0003659	0.04	0.721
67	330.00	18.17	0.961	0.0003659	0.04	0.721
68	340.00	18.44	0.968	0.0003659	0.04	0.721
69	350.00	18.71	0.966	0.0003659	0.04	0.721
70	360.00	18.97	0.971	0.0004119	0.04	0.720
71	370.00	19.24	0.958	0.0003659	0.04	0.721
72	380.00	19.49	0.967	0.0003659	0.04	0.721
73	390.00	19.75	0.967	0.0003659	0.04	0.721
74	400.00	20.00	0.959	0.0003659	0.04	0.721
75	410.00	20.25	0.953	0.0003659	0.04	0.721
76	420.00	20.49	0.961	0.0003659	0.04	0.721
77	430.00	20.74	0.96	0.000274	0.03	0.721
78	440.00	20.98	0.956	0.00032	0.03	0.721
79	450.00	21.21	0.958	0.0003659	0.04	0.721
80	460.00	21.45	0.96	0.0003659	0.04	0.721
81	470.00	21.68	0.956	0.0003659	0.04	0.721

82	480.00	21.91	0.948	0.0003659	0.04	0.721
83	490.00	22.14	0.953	0.0003659	0.04	0.721
84	500.00	22.36	0.959	0.00032	0.03	0.721
85	510.00	22.58	0.962	0.0003659	0.04	0.721
86	520.00	22.80	0.958	0.0003659	0.04	0.721
87	530.00	23.02	0.961	0.0003659	0.04	0.721
88	540.00	23.24	0.966	0.0003659	0.04	0.721
89	550.00	23.45	0.964	0.0003659	0.04	0.721
90	560.00	23.66	0.958	0.0003659	0.04	0.721
91	570.00	23.87	0.95	0.0003659	0.04	0.721
92	580.00	24.08	0.957	0.0003659	0.04	0.721
93	590.00	24.29	0.966	0.0003659	0.04	0.721
94	600.00	24.49	0.965	0.0003659	0.04	0.721
95	610.00	24.70	0.962	0.0003659	0.04	0.721
96	620.00	24.90	0.957	0.0003659	0.04	0.721
97	630.00	25.10	0.952	0.0003659	0.04	0.721
98	640.00	25.30	0.957	0.0003659	0.04	0.721
99	650.00	25.50	0.955	0.0003659	0.04	0.721
100	660.00	25.69	0.958	0.00032	0.03	0.721
101	670.00	25.88	0.958	0.0003659	0.04	0.721
102	680.00	26.08	0.961	0.0003659	0.04	0.721
103	690.00	26.27	0.964	0.0003659	0.04	0.721
104	700.00	26.46	0.96	0.0003659	0.04	0.721
105	710.00	26.65	0.955	0.00032	0.03	0.721
106	720.00	26.83	0.955	0.0003659	0.04	0.721
107	730.00	27.02	0.956	0.0003659	0.04	0.721
108	740.00	27.20	0.953	0.00032	0.03	0.721
109	750.00	27.39	0.95	0.00032	0.03	0.721
110	760.00	27.57	0.952	0.0003659	0.04	0.721
111	770.00	27.75	0.948	0.0003659	0.04	0.721
112	780.00	27.93	0.943	0.0003659	0.04	0.721
113	790.00	28.11	0.94	0.0003659	0.04	0.721
114	800.00	28.28	0.937	0.0003659	0.04	0.721
115	810.00	28.46	0.937	0.0003659	0.04	0.721
116	820.00	28.64	0.942	0.0003659	0.04	0.721
117	830.00	28.81	0.942	0.00032	0.03	0.721
118	840.00	28.98	0.939	0.000274	0.03	0.721
119	850.00	29.15	0.941	0.0003659	0.04	0.721
120	860.00	29.33	0.938	0.0003659	0.04	0.721
121	870.00	29.50	0.947	0.0003659	0.04	0.721
122	880.00	29.66	0.953	0.0003659	0.04	0.721
123	890.00	29.83	0.951	0.0003659	0.04	0.721
124	900.00	30.00	0.946	0.0003659	0.04	0.721
125	910.00	30.17	0.943	0.0003659	0.04	0.721
126	920.00	30.33	0.95	0.0003659	0.04	0.721
127	930.00	30.50	0.951	0.00032	0.03	0.721
128	940.00	30.66	0.951	0.0003659	0.04	0.721
129	950.00	30.82	0.956	0.0003659	0.04	0.721
130	960.00	30.98	0.95	0.00032	0.03	0.721
131	970.00	31.14	0.95	0.0003659	0.04	0.721
132	980.00	31.30	0.957	0.0003659	0.04	0.721
133	990.00	31.46	0.947	0.00032	0.03	0.721
134	1000.00	31.62	0.941	0.000274	0.03	0.721
135	1010.00	31.78	0.951	0.0003659	0.04	0.721
136	1020.00	31.94	0.953	0.0003659	0.04	0.721
137	1030.00	32.09	0.948	0.0003659	0.04	0.721
138	1040.00	32.25	0.953	0.0003659	0.04	0.721
139	1050.00	32.40	0.953	0.0003659	0.04	0.721
140	1060.00	32.56	0.947	0.0003659	0.04	0.721
141	1070.00	32.71	0.951	0.0003659	0.04	0.721
142	1080.00	32.86	0.956	0.0003659	0.04	0.721
143	1090.00	33.02	0.955	0.0003659	0.04	0.721
144	1100.00	33.17	0.951	0.0003659	0.04	0.721
145	1110.00	33.32	0.952	0.0003659	0.04	0.721
146	1120.00	33.47	0.95	0.0003659	0.04	0.721
147	1130.00	33.62	0.951	0.0003659	0.04	0.721
148	1140.00	33.76	0.951	0.0003659	0.04	0.721
149	1150.00	33.91	0.951	0.0003659	0.04	0.721
150	1160.00	34.06	0.95	0.0003659	0.04	0.721
151	1170.00	34.21	0.951	0.0003659	0.04	0.721
152	1180.00	34.35	0.949	0.0003659	0.04	0.721
153	1190.00	34.50	0.95	0.0003659	0.04	0.721
154	1200.00	34.64	0.953	0.0003659	0.04	0.721
155	1210.00	34.79	0.95	0.00032	0.03	0.721
156	1220.00	34.93	0.953	0.0003659	0.04	0.721
157	1230.00	35.07	0.951	0.0003659	0.04	0.721
158	1240.00	35.21	0.955	0.0003659	0.04	0.721
159	1250.00	35.36	0.955	0.0003659	0.04	0.721
160	1260.00	35.50	0.956	0.0003659	0.04	0.721
161	1270.00	35.64	0.953	0.0003659	0.04	0.721
162	1280.00	35.78	0.95	0.0003659	0.04	0.721
163	1290.00	35.92	0.953	0.0003659	0.04	0.721
164	1300.00	36.06	0.951	0.0003659	0.04	0.721
165	1310.00	36.19	0.953	0.0003659	0.04	0.721
166	1320.00	36.33	0.95	0.0003659	0.04	0.721
167	1330.00	36.47	0.952	0.0003659	0.04	0.721
168	1340.00	36.61	0.953	0.0003659	0.04	0.721
169	1350.00	36.74	0.951	0.0003659	0.04	0.721
170	1360.00	36.88	0.949	0.0003659	0.04	0.721
171	1370.00	37.01	0.943	0.0003659	0.04	0.721
172	1380.00	37.15	0.953	0.0003659	0.04	0.721
173	1390.00	37.28	0.953	0.0003659	0.04	0.721
174	1400.00	37.42	0.945	0.0003659	0.04	0.721
175	1410.00	37.55	0.94	0.0003659	0.04	0.721
176	1420.00	37.68	0.959	0.00032	0.03	0.721
177	1430.00	37.82	0.952	0.0003659	0.04	0.721
178	1440.00	37.95	0.942	0.0003659	0.04	0.721
179	1440.62	37.96	0.942	0.0003659	0.04	0.721

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/22/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 3 of 6
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.942	-0.00547	-0.55	0.731
2	0.01	0.09	0.943	-0.00547	-0.55	0.731
3	0.02	0.13	0.975	-0.005424	-0.54	0.730
4	0.03	0.16	0.996	-0.005195	-0.52	0.730
5	0.04	0.19	0.999	-0.005195	-0.52	0.730
6	0.05	0.23	0.998	-0.005149	-0.51	0.730
7	0.07	0.27	0.998	-0.005149	-0.51	0.730
8	0.08	0.29	0.999	-0.005149	-0.51	0.730
9	0.12	0.34	0.999	-0.005149	-0.51	0.730
10	0.17	0.41	0.998	-0.005149	-0.51	0.730
11	0.25	0.50	0.999	-0.005103	-0.51	0.730
12	0.33	0.58	0.999	-0.005103	-0.51	0.730
13	0.50	0.71	0.998	-0.005103	-0.51	0.730
14	0.75	0.87	1	-0.005103	-0.51	0.730
15	1.00	1.00	0.998	-0.005103	-0.51	0.730
16	1.50	1.23	1	-0.005057	-0.50	0.730
17	2.00	1.42	0.999	-0.005057	-0.50	0.730
18	3.00	1.73	1	-0.005057	-0.50	0.730
19	4.00	2.00	0.999	-0.005057	-0.50	0.730
20	5.00	2.24	0.999	-0.005057	-0.50	0.730
21	6.00	2.45	0.999	-0.005057	-0.50	0.730
22	7.00	2.65	1	-0.005103	-0.51	0.730
23	8.00	2.83	0.998	-0.005149	-0.51	0.730
24	9.00	3.00	0.999	-0.005195	-0.52	0.730
25	10.00	3.16	0.998	-0.005195	-0.52	0.730
26	12.00	3.46	1	-0.005241	-0.52	0.730
27	14.00	3.74	0.998	-0.005287	-0.53	0.730
28	16.00	4.00	0.999	-0.005287	-0.53	0.730
29	18.00	4.24	0.999	-0.005333	-0.53	0.730
30	20.00	4.47	0.999	-0.005333	-0.53	0.730
31	22.00	4.69	0.999	-0.005287	-0.53	0.730
32	24.00	4.90	1	-0.005287	-0.53	0.730
33	26.00	5.10	0.998	-0.005195	-0.52	0.730
34	28.00	5.29	0.999	-0.005103	-0.51	0.730
35	30.00	5.48	1	-0.005103	-0.51	0.730
36	35.00	5.92	0.999	-0.005057	-0.50	0.730
37	40.00	6.32	0.999	-0.005057	-0.50	0.730
38	45.00	6.71	0.999	-0.005241	-0.52	0.730
39	50.00	7.07	0.999	-0.005333	-0.53	0.730
40	60.00	7.75	0.999	-0.005379	-0.54	0.730
41	70.00	8.37	0.999	-0.005103	-0.51	0.730
42	80.00	8.94	0.999	-0.005241	-0.52	0.730
43	90.00	9.49	0.999	-0.005424	-0.54	0.730
44	100.00	10.00	0.999	-0.005379	-0.54	0.730
45	110.00	10.49	1	-0.005103	-0.51	0.730
46	120.00	10.95	0.999	-0.005424	-0.54	0.730
47	120.01	10.96	0.999	-0.005379	-0.54	0.730

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/22/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 4 of 6
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.998	-0.0003219	-0.03	0.722
2	0.01	0.09	0.915	-0.0003678	-0.04	0.722
3	0.02	0.13	0.648	-0.0007816	-0.08	0.723
4	0.03	0.16	0.583	-0.001012	-0.10	0.723
5	0.04	0.19	0.549	-0.001287	-0.13	0.723
6	0.05	0.23	0.523	-0.001609	-0.16	0.724
7	0.07	0.27	0.512	-0.001655	-0.17	0.724
8	0.08	0.29	0.509	-0.001701	-0.17	0.724
9	0.12	0.35	0.506	-0.001793	-0.18	0.724
10	0.17	0.41	0.503	-0.001885	-0.19	0.724
11	0.25	0.50	0.502	-0.001977	-0.20	0.725
12	0.34	0.58	0.502	-0.002023	-0.20	0.725
13	0.50	0.71	0.502	-0.002161	-0.22	0.725
14	0.75	0.87	0.501	-0.002345	-0.23	0.725
15	1.00	1.00	0.501	-0.002437	-0.24	0.725
16	1.50	1.23	0.501	-0.002575	-0.26	0.726
17	2.00	1.42	0.501	-0.002621	-0.26	0.726
18	3.00	1.73	0.501	-0.002851	-0.28	0.726
19	4.00	2.00	0.5	-0.002989	-0.30	0.726
20	5.00	2.24	0.5	-0.003081	-0.31	0.726
21	6.00	2.45	0.501	-0.003219	-0.32	0.727
22	7.00	2.65	0.501	-0.00331	-0.33	0.727
23	8.00	2.83	0.501	-0.003356	-0.33	0.727
24	9.00	3.00	0.501	-0.003402	-0.34	0.727
25	10.00	3.16	0.501	-0.003448	-0.34	0.727
26	12.00	3.46	0.5	-0.003494	-0.35	0.727
27	14.00	3.74	0.5	-0.00354	-0.35	0.727
28	16.00	4.00	0.501	-0.003632	-0.36	0.727
29	18.00	4.24	0.5	-0.003678	-0.37	0.727
30	20.00	4.47	0.5	-0.003724	-0.37	0.728
31	22.00	4.69	0.501	-0.00377	-0.38	0.728
32	24.00	4.90	0.499	-0.003724	-0.37	0.728
33	26.00	5.10	0.501	-0.00377	-0.38	0.728
34	28.00	5.29	0.501	-0.00377	-0.38	0.728
35	30.00	5.48	0.501	-0.003816	-0.38	0.728
36	35.00	5.92	0.501	-0.003908	-0.39	0.728
37	40.00	6.32	0.501	-0.003908	-0.39	0.728
38	45.00	6.71	0.5	-0.004	-0.40	0.728
39	50.00	7.07	0.501	-0.003954	-0.39	0.728
40	60.00	7.75	0.499	-0.004	-0.40	0.728
41	70.00	8.37	0.5	-0.004046	-0.40	0.728
42	80.00	8.94	0.499	-0.004092	-0.41	0.728
43	90.00	9.49	0.501	-0.003954	-0.39	0.728
44	100.00	10.00	0.5	-0.004092	-0.41	0.728
45	110.00	10.49	0.499	-0.004138	-0.41	0.728
46	120.00	10.95	0.5	-0.004138	-0.41	0.728
47	120.03	10.96	0.501	-0.004138	-0.41	0.728

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/22/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 5 of 6
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.5	-0.004138	-0.41	0.728
2	0.01	0.09	0.487	-0.004138	-0.41	0.728
3	0.02	0.13	0.362	-0.004276	-0.43	0.729
4	0.03	0.16	0.313	-0.004598	-0.46	0.729
5	0.04	0.19	0.29	-0.004874	-0.49	0.730
6	0.05	0.23	0.27	-0.005196	-0.52	0.730
7	0.07	0.27	0.262	-0.005334	-0.53	0.730
8	0.08	0.29	0.26	-0.00538	-0.54	0.730
9	0.12	0.35	0.257	-0.005471	-0.55	0.731
10	0.17	0.41	0.254	-0.005563	-0.55	0.731
11	0.25	0.50	0.253	-0.005747	-0.57	0.731
12	0.33	0.58	0.252	-0.005885	-0.59	0.731
13	0.50	0.71	0.251	-0.006069	-0.61	0.732
14	0.75	0.87	0.252	-0.006161	-0.61	0.732
15	1.00	1.00	0.249	-0.006253	-0.62	0.732
16	1.50	1.23	0.251	-0.006391	-0.64	0.732
17	2.00	1.42	0.25	-0.006529	-0.65	0.732
18	3.00	1.73	0.25	-0.006805	-0.68	0.733
19	4.00	2.00	0.25	-0.006943	-0.69	0.733
20	5.00	2.24	0.25	-0.007035	-0.70	0.733
21	6.00	2.45	0.251	-0.007127	-0.71	0.733
22	7.00	2.65	0.25	-0.007219	-0.72	0.734
23	8.00	2.83	0.251	-0.007265	-0.72	0.734
24	9.00	3.00	0.25	-0.007265	-0.72	0.734
25	10.00	3.16	0.249	-0.007311	-0.73	0.734
26	12.00	3.46	0.25	-0.007357	-0.73	0.734
27	14.00	3.74	0.249	-0.007449	-0.74	0.734
28	16.00	4.00	0.249	-0.007587	-0.76	0.734
29	18.00	4.24	0.249	-0.007724	-0.77	0.734
30	20.00	4.47	0.25	-0.007816	-0.78	0.735
31	22.00	4.69	0.25	-0.007862	-0.78	0.735
32	24.00	4.90	0.249	-0.007908	-0.79	0.735
33	26.00	5.10	0.25	-0.008	-0.80	0.735
34	28.00	5.29	0.25	-0.008	-0.80	0.735
35	30.00	5.48	0.251	-0.008046	-0.80	0.735
36	35.00	5.92	0.251	-0.008092	-0.81	0.735
37	40.00	6.32	0.25	-0.008184	-0.82	0.735
38	45.00	6.71	0.25	-0.008276	-0.83	0.735
39	50.00	7.07	0.25	-0.008276	-0.83	0.735
40	60.00	7.75	0.25	-0.008276	-0.83	0.735
41	70.00	8.37	0.251	-0.008368	-0.83	0.736
42	80.00	8.94	0.25	-0.008414	-0.84	0.736
43	90.00	9.49	0.249	-0.008414	-0.84	0.736
44	100.00	10.00	0.25	-0.008414	-0.84	0.736
45	110.00	10.49	0.25	-0.008414	-0.84	0.736
46	120.00	10.95	0.249	-0.00846	-0.84	0.736
47	120.03	10.96	0.25	-0.00846	-0.84	0.736

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-292
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/22/19
Sample Type: CORE

Project No.: 19-292
Checked By: SKK
Depth: 15-17'
Elevation: N/A

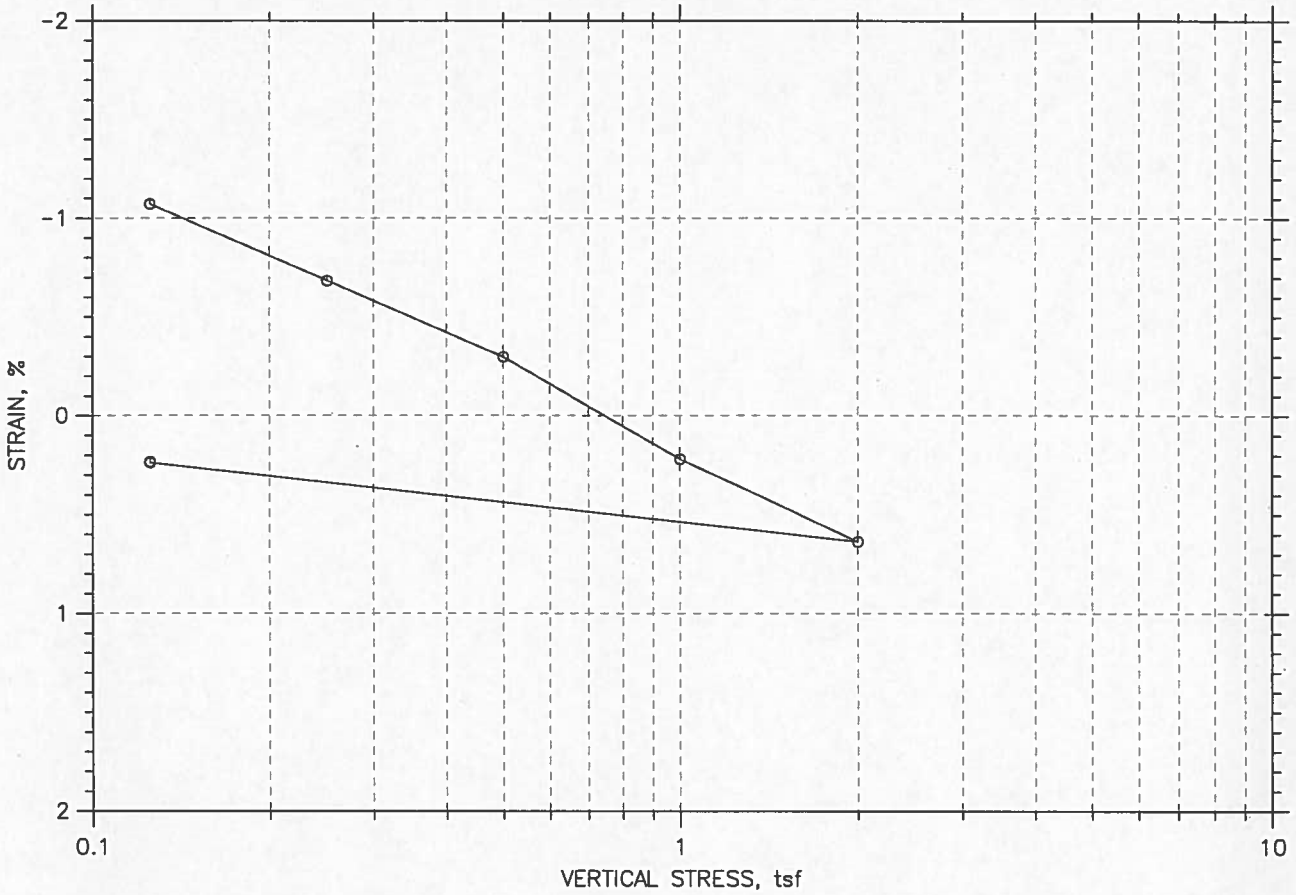
Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

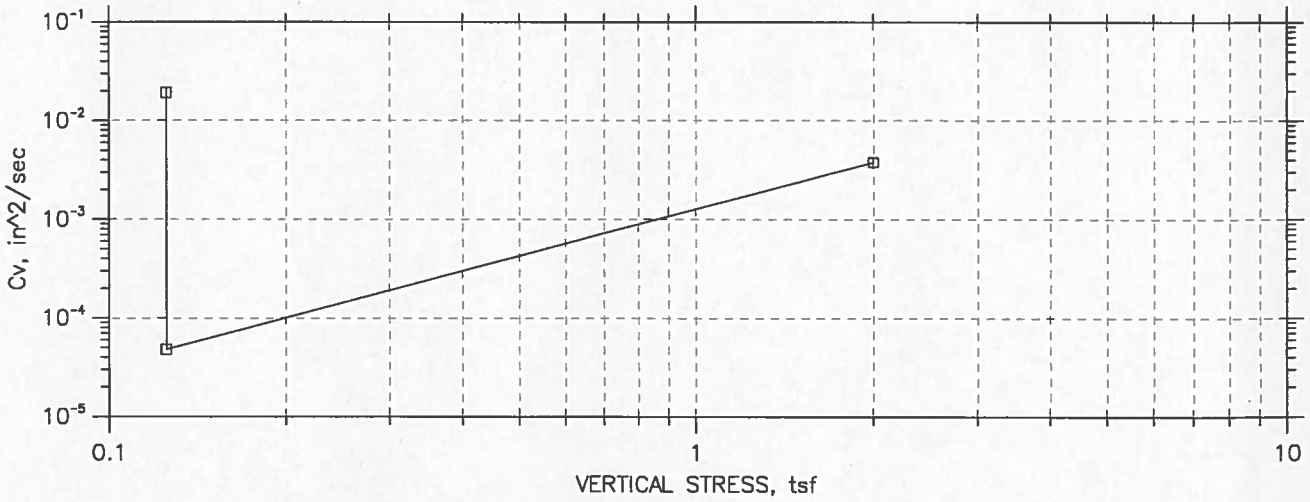
Constant Load Step: 6 of 6
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	-0.00846	-0.84	0.736
2	0.01	0.09	0.232	-0.00846	-0.84	0.736
3	0.02	0.13	0.176	-0.008552	-0.85	0.736
4	0.03	0.16	0.155	-0.008598	-0.86	0.736
5	0.04	0.19	0.146	-0.00869	-0.87	0.736
6	0.05	0.23	0.137	-0.008736	-0.87	0.736
7	0.07	0.27	0.133	-0.008782	-0.88	0.736
8	0.08	0.29	0.132	-0.008828	-0.88	0.736
9	0.12	0.35	0.129	-0.00892	-0.89	0.736
10	0.17	0.41	0.129	-0.008966	-0.89	0.737
11	0.25	0.50	0.127	-0.009058	-0.90	0.737
12	0.34	0.58	0.127	-0.009104	-0.91	0.737
13	0.50	0.71	0.127	-0.00915	-0.91	0.737
14	0.75	0.87	0.124	-0.009288	-0.93	0.737
15	1.00	1.00	0.124	-0.00938	-0.94	0.737
16	1.50	1.23	0.125	-0.009472	-0.94	0.737
17	2.00	1.41	0.124	-0.00961	-0.96	0.738
18	3.00	1.73	0.124	-0.009839	-0.98	0.738
19	4.00	2.00	0.124	-0.01007	-1.00	0.738
20	5.00	2.24	0.123	-0.01035	-1.03	0.739
21	6.00	2.45	0.123	-0.01048	-1.05	0.739
22	7.00	2.65	0.124	-0.01062	-1.06	0.739
23	8.00	2.83	0.124	-0.01076	-1.07	0.740
24	9.00	3.00	0.124	-0.0109	-1.09	0.740
25	10.00	3.16	0.125	-0.01099	-1.10	0.740
26	12.00	3.46	0.124	-0.01122	-1.12	0.740
27	14.00	3.74	0.127	-0.01131	-1.13	0.741
28	16.00	4.00	0.124	-0.0114	-1.14	0.741
29	18.00	4.24	0.124	-0.01154	-1.15	0.741
30	20.00	4.47	0.125	-0.01172	-1.17	0.741
31	22.00	4.69	0.125	-0.01182	-1.18	0.741
32	24.00	4.90	0.124	-0.01186	-1.18	0.742
33	26.00	5.10	0.125	-0.01195	-1.19	0.742
34	28.00	5.29	0.127	-0.012	-1.20	0.742
35	30.00	5.48	0.125	-0.01205	-1.20	0.742
36	35.00	5.92	0.124	-0.01214	-1.21	0.742
37	40.00	6.32	0.125	-0.01228	-1.22	0.742
38	45.00	6.71	0.125	-0.01241	-1.24	0.742
39	50.00	7.07	0.125	-0.01251	-1.25	0.743
40	60.00	7.75	0.125	-0.0126	-1.26	0.743
41	70.00	8.37	0.125	-0.01264	-1.26	0.743
42	80.00	8.94	0.124	-0.01274	-1.27	0.743
43	90.00	9.49	0.125	-0.01283	-1.28	0.743
44	100.00	10.00	0.124	-0.01301	-1.30	0.744
45	110.00	10.49	0.125	-0.01292	-1.29	0.743
46	120.00	10.95	0.125	-0.01292	-1.29	0.743
47	120.02	10.96	0.124	-0.01287	-1.28	0.743

CONSOLIDATION TEST DATA

SUMMARY REPORT



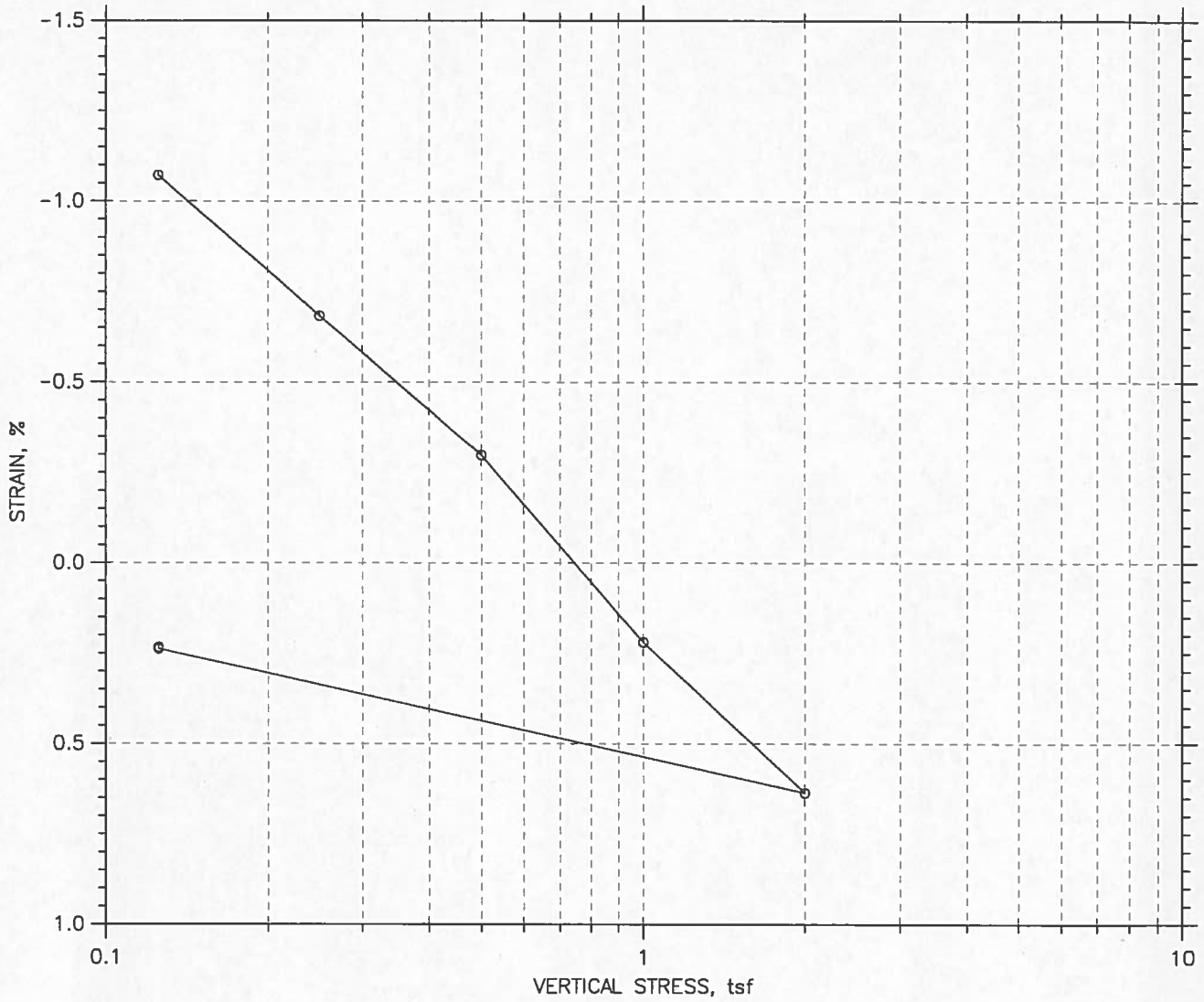


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-297
	Boring No.: B-603	Tested By: SKK	Checked By: SKK
	Sample No.: 19-297	Test Date: 7/24/19	Test No.: 1
	Depth: 15.5-17.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND		

Tue, 30-JUL-2019 07:53:48

CONSOLIDATION TEST DATA

SUMMARY REPORT



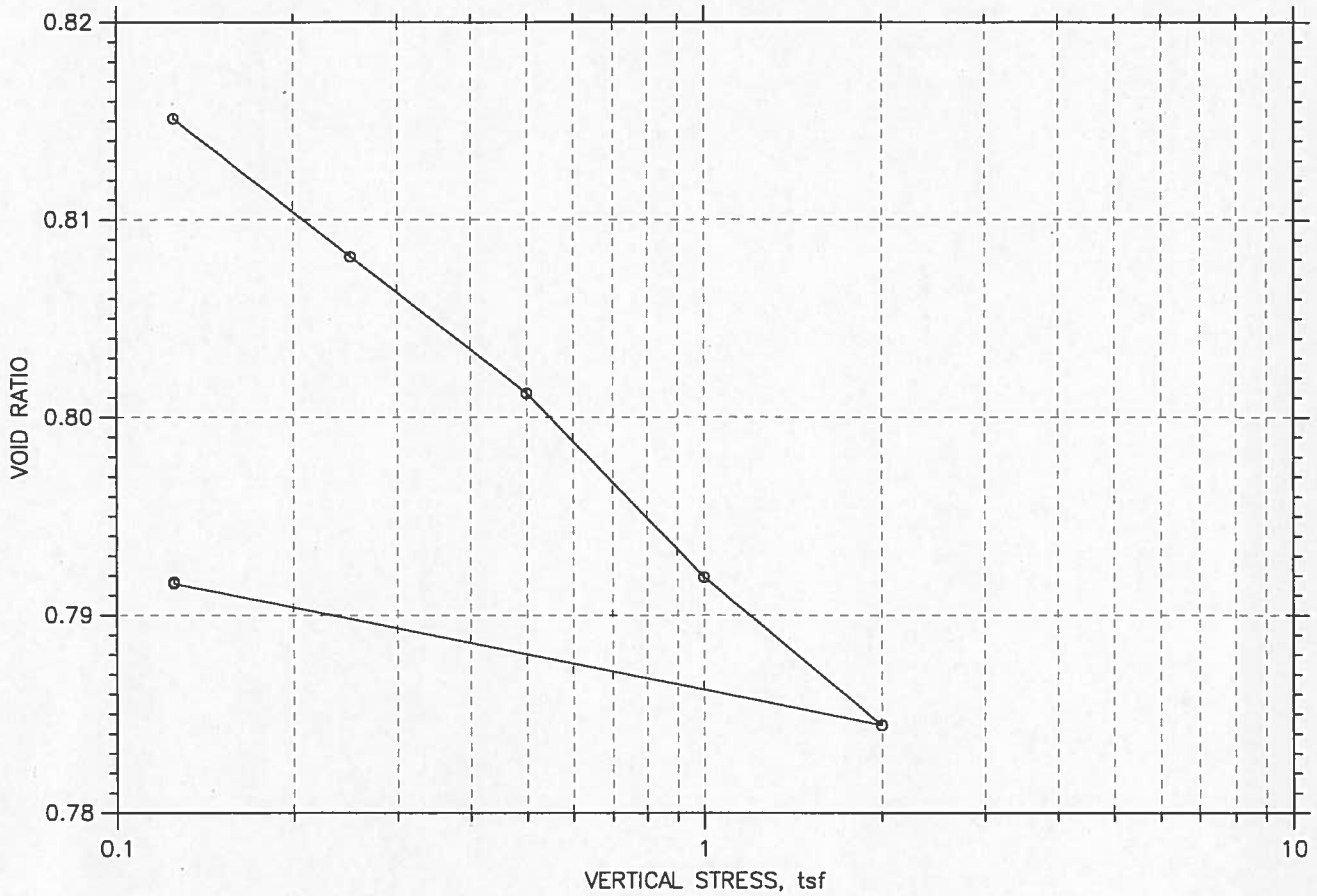
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	25.96	29.59
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	95.25	94.04
Compression Index: 3.81959e-313				Saturation, %	89.38	99.01
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.80	0.82
LL: ---	PL: ---	PI: ---	GS: 2.74			

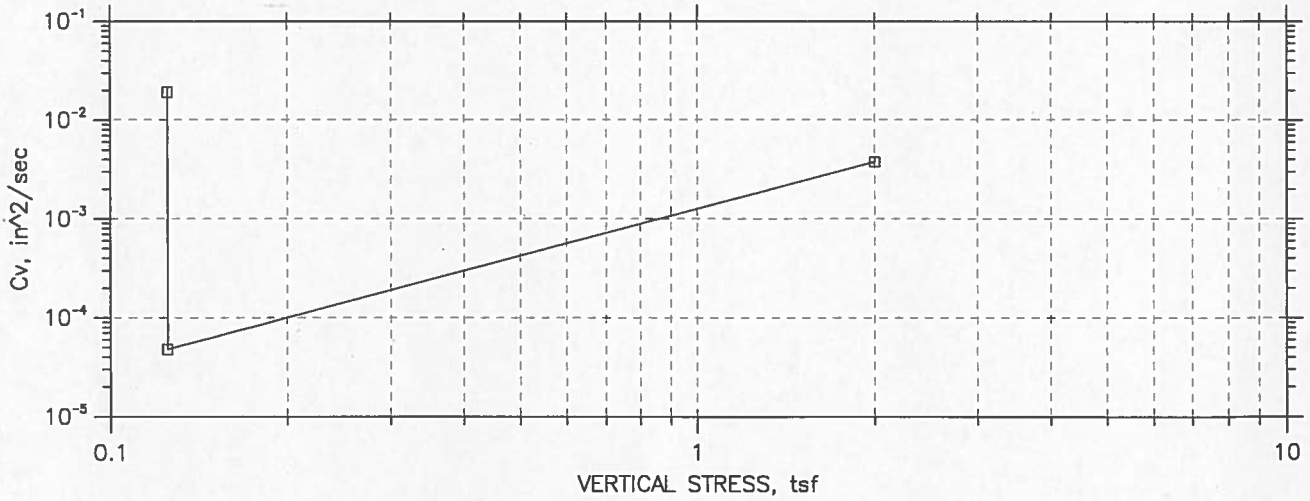
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-297
	Boring No.: B-603	Tested By: SKK	Checked By: SKK
	Sample No.: 19-297	Test Date: 7/24/19	Test No.: 1
	Depth: 15.5-17.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND		

Tue, 30-JUL-2019 07:53:48

CONSOLIDATION TEST DATA

SUMMARY REPORT





	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-297
	Boring No.: B-603	Tested By: SKK	Checked By: SKK
	Sample No.: 19-297	Test Date: 7/24/19	Test No.: 1
	Depth: 15.5-17.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND		

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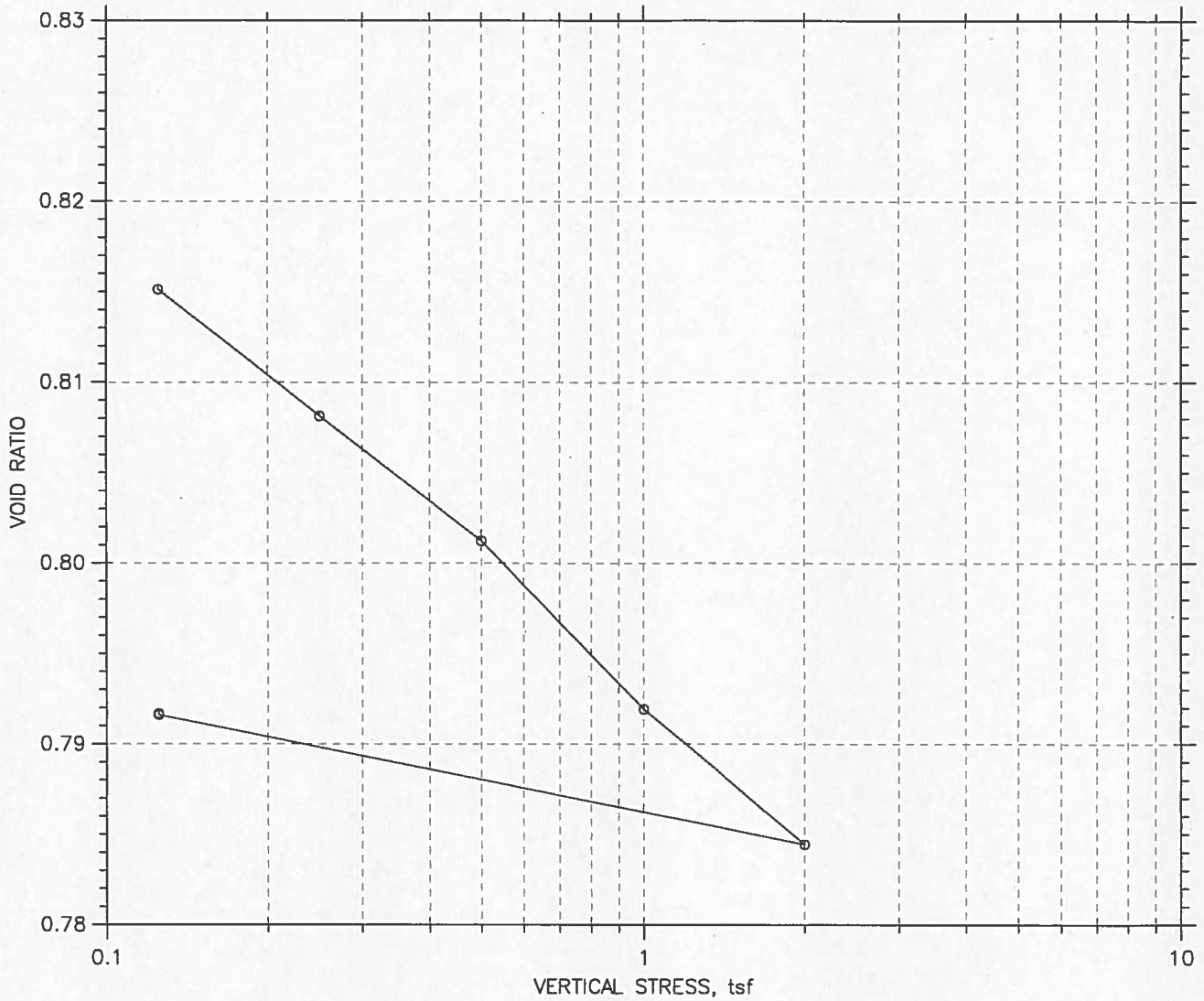
CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	25.96	29.59
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	95.25	94.04
Compression Index: 3.81959e-313				Saturation, %	89.38	99.01
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.80	0.82
LL: ---	PL: ---	PI: ---	GS: 2.74			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-297
	Boring No.: B-603	Tested By: SKK	Checked By: SKK
	Sample No.: 19-297	Test Date: 7/24/19	Test No.: 1
	Depth: 15.5-17.5'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND		

Tue, 30-JUL-2019 07:53:57

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Measured Specific Gravity: 2.74
Initial Void Ratio: 0.80
Final Void Ratio: 0.82

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	141.03	265.36	269.83	228.57
Wt. Container + Dry Soil, gm	123.34	233.37	233.37	192.11
Wt. Container, gm	54.06	110.15	110.15	68.89
Wt. Dry Soil, gm	69.28	123.22	123.22	123.22
Water Content, %	25.53	25.96	29.59	29.59
Void Ratio	---	0.80	0.82	---
Degree of Saturation, %	---	89.38	99.01	---
Dry Unit Weight, pcf	---	95.248	94.042	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.002345	0.792	0.23	0.2	2.35e-002	1.87e-002	8.22e-003
2	0.125	0.002391	0.792	0.24	150.9	2.35e-005	1.#Je+000	1.#Je+000
3	2	0.006391	0.784	0.64	1.4	2.52e-003	2.12e-003	1.00e-004
4	1	0.002207	0.792	0.22	0.9	4.12e-003	4.17e-003	3.22e-004
5	0.5	-0.002989	0.801	-0.30	88.8	4.01e-005	1.03e-002	7.78e-006
6	0.25	-0.006851	0.808	-0.68	38.5	9.33e-005	1.54e-002	2.69e-005
7	0.125	-0.01076	0.815	-1.07	26.9	1.35e-004	3.11e-002	7.85e-005

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.002345	0.792	0.23	0.0	1.80e-002	1.87e-002	6.29e-003
2	0.125	0.002391	0.792	0.24	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	2	0.006391	0.784	0.64	0.1	8.65e-003	2.12e-003	3.44e-004
4	1	0.002207	0.792	0.22	0.0	3.83e-002	4.17e-003	2.99e-003
5	0.5	-0.002989	0.801	-0.30	0.0	0.00e+000	1.03e-002	0.00e+000
6	0.25	-0.006851	0.808	-0.68	0.0	0.00e+000	1.54e-002	0.00e+000
7	0.125	-0.01076	0.815	-1.07	0.0	0.00e+000	3.11e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 1 of 7
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00448	-0.001335	-0.13	0.798
2	0.01	0.09	0.00896	-0.001335	-0.13	0.798
3	0.02	0.13	0.0303	-0.001059	-0.11	0.798
4	0.03	0.16	0.0482	-0.0007376	-0.07	0.797
5	0.04	0.19	0.0661	-0.0003697	-0.04	0.797
6	0.05	0.23	0.0874	-0.0001398	-0.01	0.796
7	0.07	0.26	0.0997	-1.889e-006	-0.00	0.796
8	0.09	0.30	0.108	0.000136	0.01	0.796
9	0.12	0.34	0.115	0.000228	0.02	0.795
10	0.17	0.41	0.12	0.0005499	0.05	0.795
11	0.25	0.50	0.122	0.0006418	0.06	0.795
12	0.34	0.58	0.123	0.0006878	0.07	0.795
13	0.50	0.71	0.123	0.0007338	0.07	0.795
14	0.75	0.87	0.123	0.0007798	0.08	0.794
15	1.00	1.00	0.123	0.0007798	0.08	0.794
16	1.50	1.23	0.124	0.0008257	0.08	0.794
17	2.00	1.42	0.123	0.0008717	0.09	0.794
18	3.00	1.73	0.124	0.0008717	0.09	0.794
19	4.00	2.00	0.124	0.0009177	0.09	0.794
20	5.00	2.24	0.125	0.0009177	0.09	0.794
21	6.00	2.45	0.124	0.0009177	0.09	0.794
22	7.00	2.65	0.124	0.0009637	0.10	0.794
23	8.00	2.83	0.124	0.0009637	0.10	0.794
24	9.00	3.00	0.123	0.0009637	0.10	0.794
25	10.00	3.16	0.124	0.0009637	0.10	0.794
26	12.00	3.46	0.123	0.00101	0.10	0.794
27	14.00	3.74	0.124	0.00101	0.10	0.794
28	15.03	3.88	0.124	0.00101	0.10	0.794

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Volume Step: 2 of 7
Seating Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.124	0.00101	0.10	0.794
2	0.01	0.09	0.124	0.00101	0.10	0.794
3	0.02	0.13	0.124	0.00101	0.10	0.794
4	0.03	0.16	0.124	0.00101	0.10	0.794
5	0.04	0.19	0.124	0.00101	0.10	0.794
6	0.05	0.23	0.128	0.00101	0.10	0.794
7	0.07	0.26	0.13	0.00101	0.10	0.794
8	0.09	0.30	0.138	0.00101	0.10	0.794
9	0.12	0.34	0.147	0.00101	0.10	0.794
10	0.17	0.41	0.166	0.0009637	0.10	0.794
11	0.25	0.50	0.183	0.0009637	0.10	0.794
12	0.33	0.58	0.197	0.0009637	0.10	0.794
13	0.50	0.71	0.223	0.0009177	0.09	0.794
14	0.75	0.87	0.252	0.0009177	0.09	0.794
15	1.00	1.00	0.28	0.0009177	0.09	0.794
16	1.50	1.22	0.334	0.0009177	0.09	0.794
17	2.00	1.42	0.385	0.0009177	0.09	0.794
18	3.00	1.73	0.432	0.0009637	0.10	0.794
19	4.00	2.00	0.464	0.0009637	0.10	0.794
20	5.00	2.24	0.495	0.0009637	0.10	0.794
21	6.00	2.45	0.524	0.0009637	0.10	0.794
22	7.00	2.65	0.546	0.0009637	0.10	0.794
23	8.00	2.83	0.561	0.0009637	0.10	0.794
24	9.00	3.00	0.583	0.0009637	0.10	0.794
25	10.00	3.16	0.599	0.0009637	0.10	0.794
26	12.00	3.46	0.631	0.0009637	0.10	0.794
27	14.00	3.74	0.663	0.00101	0.10	0.794
28	16.00	4.00	0.7	0.00101	0.10	0.794
29	18.00	4.24	0.723	0.001056	0.11	0.794
30	20.00	4.47	0.744	0.001056	0.11	0.794
31	22.00	4.69	0.762	0.001056	0.11	0.794
32	24.00	4.90	0.784	0.001056	0.11	0.794
33	26.00	5.10	0.801	0.001056	0.11	0.794
34	28.00	5.29	0.815	0.00101	0.10	0.794
35	30.00	5.48	0.831	0.00101	0.10	0.794
36	35.00	5.92	0.866	0.00101	0.10	0.794
37	40.00	6.32	0.897	0.00101	0.10	0.794
38	45.00	6.71	0.925	0.00101	0.10	0.794
39	50.00	7.07	0.951	0.00101	0.10	0.794
40	60.00	7.75	0.996	0.001056	0.11	0.794
41	70.00	8.37	1.03	0.001056	0.11	0.794
42	80.00	8.94	1.06	0.001056	0.11	0.794
43	90.00	9.49	1.08	0.001056	0.11	0.794
44	100.00	10.00	1.09	0.001056	0.11	0.794
45	110.00	10.49	1.1	0.001056	0.11	0.794
46	120.00	10.95	1.11	0.001056	0.11	0.794
47	130.00	11.40	1.12	0.001056	0.11	0.794
48	140.00	11.83	1.14	0.001056	0.11	0.794
49	150.00	12.25	1.13	0.001056	0.11	0.794
50	160.00	12.65	1.13	0.001102	0.11	0.794
51	170.00	13.04	1.15	0.001056	0.11	0.794
52	180.00	13.42	1.13	0.001056	0.11	0.794
53	190.00	13.78	1.15	0.001056	0.11	0.794
54	200.00	14.14	1.15	0.00101	0.10	0.794
55	210.00	14.49	1.16	0.001056	0.11	0.794
56	220.00	14.83	1.16	0.001056	0.11	0.794
57	230.00	15.17	1.16	0.001056	0.11	0.794
58	240.00	15.49	1.16	0.00101	0.10	0.794
59	250.00	15.81	1.17	0.001056	0.11	0.794
60	260.00	16.12	1.16	0.001056	0.11	0.794
61	270.00	16.43	1.18	0.001056	0.11	0.794
62	280.00	16.73	1.2	0.001056	0.11	0.794
63	290.00	17.03	1.19	0.001056	0.11	0.794
64	300.00	17.32	1.2	0.001056	0.11	0.794
65	310.00	17.61	1.19	0.001056	0.11	0.794
66	320.00	17.89	1.19	0.001056	0.11	0.794
67	330.00	18.17	1.2	0.001056	0.11	0.794
68	340.00	18.44	1.21	0.001056	0.11	0.794
69	350.00	18.71	1.25	0.00101	0.10	0.794
70	360.00	18.97	1.23	0.001056	0.11	0.794
71	370.00	19.24	1.22	0.001056	0.11	0.794
72	380.00	19.49	1.21	0.001056	0.11	0.794
73	390.00	19.75	1.22	0.001102	0.11	0.794
74	400.00	20.00	1.2	0.00101	0.10	0.794
75	410.00	20.25	1.2	0.0009637	0.10	0.794
76	420.00	20.49	1.21	0.001056	0.11	0.794
77	430.00	20.74	1.2	0.00101	0.10	0.794
78	440.00	20.98	1.21	0.001056	0.11	0.794
79	450.00	21.21	1.21	0.001056	0.11	0.794
80	460.00	21.45	1.21	0.001056	0.11	0.794
81	470.00	21.68	1.21	0.001056	0.11	0.794

82	480.00	21.91	1.22	0.001056	0.11	0.794
83	490.00	22.14	1.21	0.001056	0.11	0.794
84	500.00	22.36	1.21	0.001056	0.11	0.794
85	510.00	22.58	1.22	0.001056	0.11	0.794
86	520.00	22.80	1.23	0.001056	0.11	0.794
87	530.00	23.02	1.22	0.001056	0.11	0.794
88	540.00	23.24	1.22	0.001056	0.11	0.794
89	550.00	23.45	1.21	0.001056	0.11	0.794
90	560.00	23.66	1.21	0.001056	0.11	0.794
91	570.00	23.87	1.21	0.001056	0.11	0.794
92	580.00	24.08	1.22	0.001056	0.11	0.794
93	590.00	24.29	1.21	0.001056	0.11	0.794
94	600.00	24.49	1.21	0.001056	0.11	0.794
95	610.00	24.70	1.2	0.001056	0.11	0.794
96	620.00	24.90	1.2	0.001056	0.11	0.794
97	630.00	25.10	1.2	0.001056	0.11	0.794
98	640.00	25.30	1.19	0.00101	0.10	0.794
99	650.00	25.50	1.2	0.001056	0.11	0.794
100	660.00	25.69	1.21	0.001056	0.11	0.794
101	670.00	25.88	1.21	0.001056	0.11	0.794
102	680.00	26.08	1.21	0.001056	0.11	0.794
103	690.00	26.27	1.21	0.001056	0.11	0.794
104	700.00	26.46	1.2	0.001056	0.11	0.794
105	710.00	26.65	1.2	0.001056	0.11	0.794
106	720.00	26.83	1.21	0.001056	0.11	0.794
107	730.00	27.02	1.21	0.001056	0.11	0.794
108	740.00	27.20	1.2	0.001056	0.11	0.794
109	750.00	27.39	1.2	0.001056	0.11	0.794
110	760.00	27.57	1.2	0.001056	0.11	0.794
111	770.00	27.75	1.2	0.001056	0.11	0.794
112	780.00	27.93	1.21	0.001056	0.11	0.794
113	790.00	28.11	1.21	0.00101	0.10	0.794
114	800.00	28.28	1.22	0.001056	0.11	0.794
115	810.00	28.46	1.2	0.001102	0.11	0.794
116	820.00	28.64	1.2	0.001056	0.11	0.794
117	830.00	28.81	1.2	0.001056	0.11	0.794
118	840.00	28.98	1.21	0.001056	0.11	0.794
119	850.00	29.15	1.21	0.001056	0.11	0.794
120	860.00	29.33	1.2	0.001056	0.11	0.794
121	870.00	29.50	1.2	0.001056	0.11	0.794
122	880.00	29.66	1.19	0.001056	0.11	0.794
123	890.00	29.83	1.21	0.001056	0.11	0.794
124	900.00	30.00	1.21	0.001056	0.11	0.794
125	910.00	30.17	1.2	0.001056	0.11	0.794
126	920.00	30.33	1.21	0.001056	0.11	0.794
127	930.00	30.50	1.2	0.001056	0.11	0.794
128	940.00	30.66	1.21	0.001056	0.11	0.794
129	950.00	30.82	1.2	0.001056	0.11	0.794
130	960.00	30.98	1.2	0.001056	0.11	0.794
131	970.00	31.14	1.2	0.001056	0.11	0.794
132	980.00	31.31	1.2	0.001056	0.11	0.794
133	990.00	31.46	1.2	0.001056	0.11	0.794
134	1000.00	31.62	1.2	0.001056	0.11	0.794
135	1010.00	31.78	1.2	0.001056	0.11	0.794
136	1020.00	31.94	1.21	0.001056	0.11	0.794
137	1030.00	32.09	1.2	0.001056	0.11	0.794
138	1040.00	32.25	1.19	0.001056	0.11	0.794
139	1050.00	32.40	1.19	0.001056	0.11	0.794
140	1060.00	32.56	1.21	0.001056	0.11	0.794
141	1070.00	32.71	1.2	0.001056	0.11	0.794
142	1080.00	32.86	1.2	0.001056	0.11	0.794
143	1090.00	33.02	1.2	0.001056	0.11	0.794
144	1100.00	33.17	1.19	0.001056	0.11	0.794
145	1110.00	33.32	1.2	0.001056	0.11	0.794
146	1120.00	33.47	1.2	0.001056	0.11	0.794
147	1130.00	33.62	1.2	0.001056	0.11	0.794
148	1140.00	33.76	1.21	0.001056	0.11	0.794
149	1150.00	33.91	1.21	0.001102	0.11	0.794
150	1160.00	34.06	1.21	0.001056	0.11	0.794
151	1170.00	34.21	1.2	0.001056	0.11	0.794
152	1180.00	34.35	1.21	0.001056	0.11	0.794
153	1190.00	34.50	1.21	0.001056	0.11	0.794
154	1200.00	34.64	1.2	0.001056	0.11	0.794
155	1210.00	34.79	1.21	0.001056	0.11	0.794
156	1220.00	34.93	1.21	0.001056	0.11	0.794
157	1230.00	35.07	1.21	0.001056	0.11	0.794
158	1240.00	35.21	1.21	0.001056	0.11	0.794
159	1250.00	35.36	1.2	0.001056	0.11	0.794
160	1260.00	35.50	1.21	0.001056	0.11	0.794
161	1270.00	35.64	1.21	0.001056	0.11	0.794
162	1280.00	35.78	1.21	0.001056	0.11	0.794
163	1290.00	35.92	1.21	0.001056	0.11	0.794
164	1300.00	36.06	1.22	0.001056	0.11	0.794
165	1310.00	36.19	1.21	0.001056	0.11	0.794
166	1320.00	36.33	1.21	0.001056	0.11	0.794
167	1330.00	36.47	1.21	0.001056	0.11	0.794
168	1340.00	36.61	1.21	0.001056	0.11	0.794
169	1350.00	36.74	1.21	0.001102	0.11	0.794
170	1360.00	36.88	1.21	0.001056	0.11	0.794
171	1370.00	37.01	1.21	0.001056	0.11	0.794
172	1380.00	37.15	1.2	0.001056	0.11	0.794
173	1383.60	37.20	1.2	0.001056	0.11	0.794

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 3 of 7
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	1.2	-0.006943	-0.69	0.808
2	0.01	0.09	1.48	-0.006897	-0.69	0.808
3	0.02	0.13	1.89	-0.005839	-0.58	0.806
4	0.03	0.16	1.95	-0.005426	-0.54	0.806
5	0.04	0.19	1.97	-0.005334	-0.53	0.805
6	0.05	0.23	1.98	-0.005196	-0.52	0.805
7	0.07	0.27	1.99	-0.00515	-0.51	0.805
8	0.08	0.29	1.99	-0.005104	-0.51	0.805
9	0.12	0.34	1.99	-0.005012	-0.50	0.805
10	0.17	0.41	2	-0.00492	-0.49	0.805
11	0.25	0.50	2	-0.004782	-0.48	0.804
12	0.33	0.58	2	-0.00469	-0.47	0.804
13	0.50	0.71	2	-0.004506	-0.45	0.804
14	0.75	0.87	2	-0.004322	-0.43	0.804
15	1.00	1.00	2	-0.004184	-0.42	0.803
16	1.50	1.23	2	-0.004046	-0.40	0.803
17	2.00	1.41	2	-0.003954	-0.39	0.803
18	3.00	1.73	2	-0.003908	-0.39	0.803
19	4.00	2.00	2	-0.003816	-0.38	0.803
20	5.00	2.24	2	-0.003816	-0.38	0.803
21	6.00	2.45	2	-0.003724	-0.37	0.803
22	7.00	2.65	2	-0.003678	-0.37	0.802
23	8.00	2.83	2	-0.003632	-0.36	0.802
24	9.00	3.00	2	-0.003586	-0.36	0.802
25	10.00	3.16	2	-0.00354	-0.35	0.802
26	12.00	3.46	2	-0.00354	-0.35	0.802
27	14.00	3.74	2	-0.003449	-0.34	0.802
28	16.00	4.00	2	-0.003403	-0.34	0.802
29	18.00	4.24	2	-0.003403	-0.34	0.802
30	20.00	4.47	2	-0.003403	-0.34	0.802
31	22.00	4.69	2	-0.003357	-0.33	0.802
32	24.00	4.90	2	-0.003357	-0.33	0.802
33	26.00	5.10	2	-0.003311	-0.33	0.802
34	28.00	5.29	2	-0.003311	-0.33	0.802
35	30.00	5.48	2	-0.003357	-0.33	0.802
36	35.00	5.92	2	-0.003357	-0.33	0.802
37	40.00	6.32	2	-0.003311	-0.33	0.802
38	45.00	6.71	2	-0.003265	-0.33	0.802
39	50.00	7.07	2	-0.003219	-0.32	0.802
40	60.00	7.75	2	-0.003173	-0.32	0.802
41	70.00	8.37	2	-0.003127	-0.31	0.801
42	80.00	8.94	2	-0.003127	-0.31	0.801
43	90.00	9.49	2	-0.003081	-0.31	0.801
44	100.00	10.00	2	-0.003035	-0.30	0.801
45	110.00	10.49	2	-0.003081	-0.31	0.801
46	120.00	10.95	2	-0.002943	-0.29	0.801
47	120.03	10.96	2	-0.002943	-0.29	0.801

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 4 of 7
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	0.00423	0.42	0.788
2	0.01	0.09	1.88	0.00423	0.42	0.788
3	0.02	0.13	1.11	0.002989	0.30	0.791
4	0.03	0.16	1.05	0.002253	0.22	0.792
5	0.03	0.19	1.03	0.002161	0.22	0.792
6	0.05	0.23	1.02	0.001977	0.20	0.792
7	0.07	0.26	1.01	0.001931	0.19	0.792
8	0.09	0.29	1.01	0.001885	0.19	0.792
9	0.12	0.35	1.01	0.001839	0.18	0.793
10	0.17	0.41	1.01	0.001747	0.17	0.793
11	0.25	0.50	1	0.001701	0.17	0.793
12	0.34	0.58	1	0.001609	0.16	0.793
13	0.50	0.71	1	0.001471	0.15	0.793
14	0.75	0.87	0.999	0.001287	0.13	0.794
15	1.00	1.00	1	0.001149	0.11	0.794
16	1.50	1.23	0.999	0.001012	0.10	0.794
17	2.00	1.41	0.999	0.0009196	0.09	0.794
18	3.00	1.73	1	0.0008736	0.09	0.794
19	4.00	2.00	1	0.0007357	0.07	0.795
20	5.00	2.24	1	0.0006437	0.06	0.795
21	6.00	2.45	1	0.0005058	0.05	0.795
22	7.00	2.65	1	0.0004598	0.05	0.795
23	8.00	2.83	0.999	0.0004598	0.05	0.795
24	9.00	3.00	0.999	0.0004598	0.05	0.795
25	10.00	3.16	0.999	0.0004138	0.04	0.795
26	12.00	3.46	1	0.0003678	0.04	0.795
27	14.00	3.74	0.998	0.0003219	0.03	0.795
28	16.00	4.00	1	0.0002759	0.03	0.795
29	18.00	4.24	0.999	0.0002759	0.03	0.795
30	20.00	4.47	0.998	0.0002299	0.02	0.795
31	22.00	4.69	1	0.0002299	0.02	0.795
32	24.00	4.90	1	0.0001839	0.02	0.796
33	26.00	5.10	0.999	0.0001839	0.02	0.796
34	28.00	5.29	0.999	0.0001839	0.02	0.796
35	30.00	5.48	0.998	0.0001839	0.02	0.796
36	35.00	5.92	0.999	0.0001379	0.01	0.796
37	40.00	6.32	0.998	0.0001379	0.01	0.796
38	45.00	6.71	0.999	0.0001379	0.01	0.796
39	50.00	7.07	1	0.0001379	0.01	0.796
40	60.00	7.75	1	9.196e-005	0.01	0.796
41	70.00	8.37	0.999	4.598e-005	0.00	0.796
42	80.00	8.94	0.998	4.598e-005	0.00	0.796
43	90.00	9.49	1	4.598e-005	0.00	0.796
44	100.00	10.00	0.999	2.732e-019	0.00	0.796
45	110.00	10.49	0.998	2.732e-019	0.00	0.796
46	120.00	10.95	0.999	9.196e-005	0.01	0.796
47	120.03	10.96	0.998	9.196e-005	0.01	0.796

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 5 of 7
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	9.196e-005	0.01	0.796
2	0.01	0.09	0.913	9.196e-005	0.01	0.796
3	0.02	0.13	0.642	-0.0002759	-0.03	0.796
4	0.03	0.16	0.578	-0.0007357	-0.07	0.797
5	0.04	0.19	0.549	-0.0008736	-0.09	0.797
6	0.05	0.23	0.525	-0.001058	-0.11	0.798
7	0.07	0.27	0.517	-0.001149	-0.11	0.798
8	0.08	0.29	0.512	-0.001195	-0.12	0.798
9	0.12	0.35	0.51	-0.001379	-0.14	0.798
10	0.17	0.41	0.504	-0.001517	-0.15	0.799
11	0.25	0.50	0.503	-0.001655	-0.16	0.799
12	0.33	0.58	0.503	-0.001793	-0.18	0.799
13	0.50	0.71	0.502	-0.001885	-0.19	0.799
14	0.75	0.87	0.502	-0.002069	-0.21	0.800
15	1.00	1.00	0.502	-0.002115	-0.21	0.800
16	1.50	1.23	0.5	-0.002345	-0.23	0.800
17	2.00	1.41	0.5	-0.002483	-0.25	0.800
18	3.00	1.73	0.499	-0.002575	-0.26	0.800
19	4.00	2.00	0.5	-0.002713	-0.27	0.801
20	5.00	2.24	0.501	-0.002759	-0.27	0.801
21	6.00	2.45	0.5	-0.002851	-0.28	0.801
22	7.00	2.65	0.5	-0.002897	-0.29	0.801
23	8.00	2.83	0.501	-0.002943	-0.29	0.801
24	9.00	3.00	0.5	-0.003035	-0.30	0.801
25	10.00	3.16	0.5	-0.003081	-0.31	0.801
26	12.00	3.46	0.501	-0.003219	-0.32	0.802
27	14.00	3.74	0.499	-0.003265	-0.33	0.802
28	16.00	4.00	0.5	-0.00331	-0.33	0.802
29	18.00	4.24	0.501	-0.003356	-0.33	0.802
30	20.00	4.47	0.501	-0.003448	-0.34	0.802
31	22.00	4.69	0.5	-0.003448	-0.34	0.802
32	24.00	4.90	0.499	-0.00354	-0.35	0.802
33	26.00	5.10	0.499	-0.003586	-0.36	0.802
34	28.00	5.29	0.497	-0.003632	-0.36	0.802
35	30.00	5.48	0.499	-0.003724	-0.37	0.803
36	35.00	5.92	0.501	-0.003862	-0.38	0.803
37	40.00	6.32	0.5	-0.004092	-0.41	0.803
38	45.00	6.71	0.5	-0.00423	-0.42	0.803
39	50.00	7.07	0.5	-0.004322	-0.43	0.804
40	60.00	7.75	0.501	-0.004506	-0.45	0.804
41	70.00	8.37	0.502	-0.004552	-0.45	0.804
42	80.00	8.94	0.499	-0.00469	-0.47	0.804
43	90.00	9.49	0.499	-0.004828	-0.48	0.805
44	100.00	10.00	0.499	-0.004828	-0.48	0.805
45	110.00	10.49	0.501	-0.004966	-0.49	0.805
46	120.00	10.95	0.499	-0.005104	-0.51	0.805
47	120.03	10.96	0.5	-0.005104	-0.51	0.805

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 6 of 7
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.5	-0.005104	-0.51	0.805
2	0.01	0.09	0.48	-0.005104	-0.51	0.805
3	0.02	0.13	0.347	-0.005426	-0.54	0.806
4	0.03	0.16	0.309	-0.005655	-0.56	0.806
5	0.04	0.19	0.29	-0.005839	-0.58	0.806
6	0.05	0.23	0.271	-0.005977	-0.60	0.807
7	0.07	0.27	0.262	-0.006161	-0.61	0.807
8	0.08	0.29	0.26	-0.006207	-0.62	0.807
9	0.12	0.34	0.258	-0.006253	-0.62	0.807
10	0.17	0.41	0.254	-0.006299	-0.63	0.807
11	0.25	0.50	0.252	-0.006345	-0.63	0.807
12	0.34	0.58	0.252	-0.006391	-0.64	0.807
13	0.50	0.71	0.252	-0.006437	-0.64	0.807
14	0.75	0.87	0.251	-0.006483	-0.65	0.807
15	1.00	1.00	0.25	-0.006529	-0.65	0.808
16	1.50	1.23	0.251	-0.006529	-0.65	0.808
17	2.00	1.42	0.251	-0.006575	-0.65	0.808
18	3.00	1.73	0.251	-0.006621	-0.66	0.808
19	4.00	2.00	0.25	-0.006667	-0.66	0.808
20	5.00	2.24	0.251	-0.006897	-0.69	0.808
21	6.00	2.45	0.251	-0.007035	-0.70	0.808
22	7.00	2.65	0.25	-0.007127	-0.71	0.809
23	8.00	2.83	0.25	-0.007127	-0.71	0.809
24	9.00	3.00	0.25	-0.007219	-0.72	0.809
25	10.00	3.16	0.25	-0.007265	-0.72	0.809
26	12.00	3.46	0.251	-0.007357	-0.73	0.809
27	14.00	3.74	0.25	-0.007403	-0.74	0.809
28	16.00	4.00	0.252	-0.007495	-0.75	0.809
29	18.00	4.24	0.25	-0.007495	-0.75	0.809
30	20.00	4.47	0.25	-0.007541	-0.75	0.809
31	22.00	4.69	0.25	-0.007587	-0.76	0.809
32	24.00	4.90	0.25	-0.007633	-0.76	0.810
33	26.00	5.10	0.25	-0.007633	-0.76	0.810
34	28.00	5.29	0.25	-0.007678	-0.76	0.810
35	30.00	5.48	0.25	-0.007724	-0.77	0.810
36	35.00	5.92	0.251	-0.00777	-0.77	0.810
37	40.00	6.32	0.25	-0.007862	-0.78	0.810
38	45.00	6.71	0.25	-0.007862	-0.78	0.810
39	50.00	7.07	0.25	-0.007908	-0.79	0.810
40	60.00	7.75	0.25	-0.008138	-0.81	0.810
41	70.00	8.37	0.25	-0.008276	-0.82	0.811
42	80.00	8.94	0.25	-0.008368	-0.83	0.811
43	90.00	9.49	0.25	-0.008414	-0.84	0.811
44	100.00	10.00	0.251	-0.008598	-0.86	0.811
45	110.00	10.49	0.251	-0.008736	-0.87	0.811
46	120.00	10.95	0.25	-0.008782	-0.87	0.812
47	130.00	11.40	0.249	-0.008828	-0.88	0.812
48	140.00	11.83	0.25	-0.00892	-0.89	0.812
49	150.00	12.25	0.249	-0.00892	-0.89	0.812
50	160.00	12.65	0.25	-0.008966	-0.89	0.812
51	165.34	12.86	0.25	-0.008966	-0.89	0.812

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-297
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

Project No.: 19-297
Checked By: SKK
Depth: 15.5-17.5'
Elevation: N/A

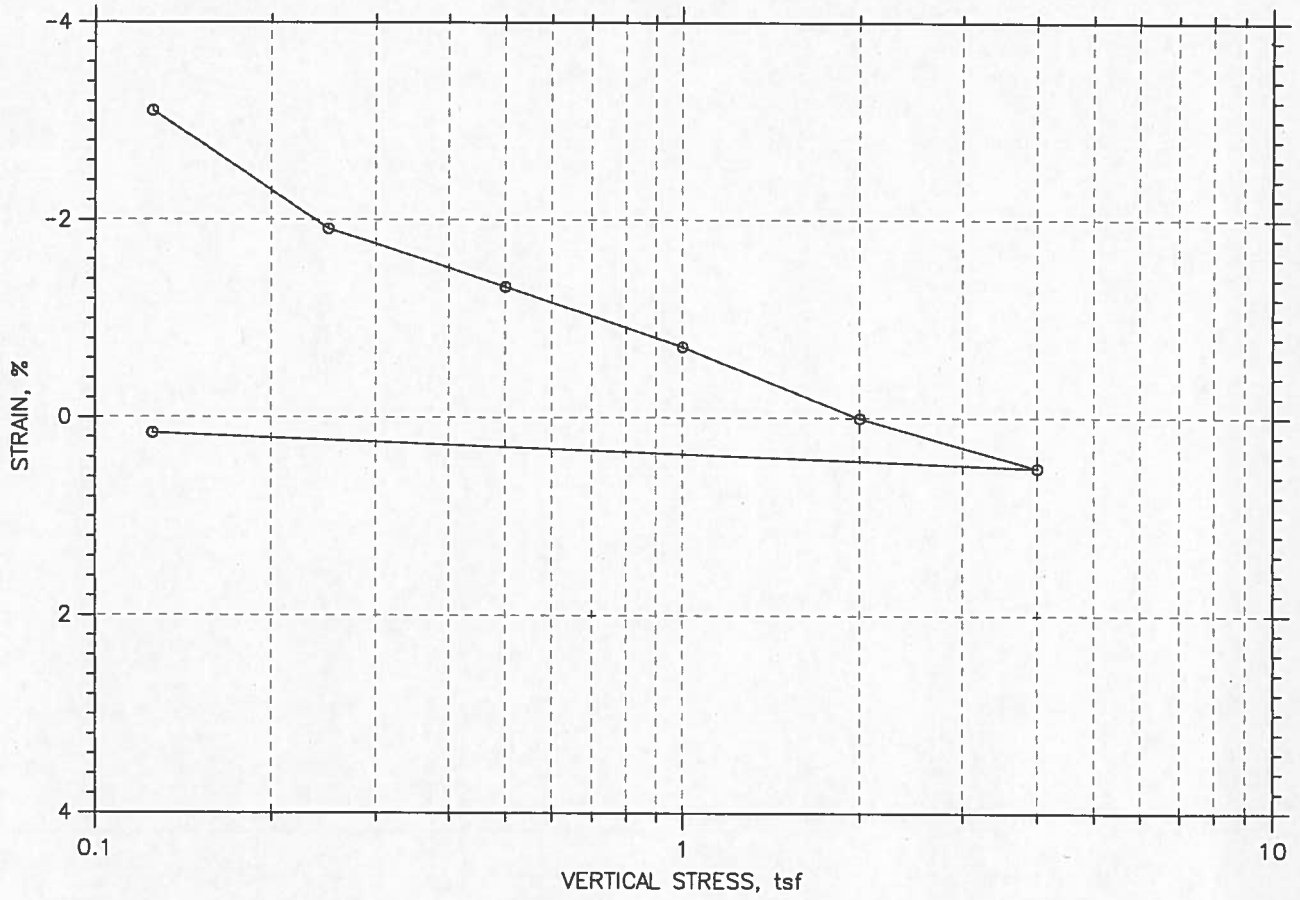
Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

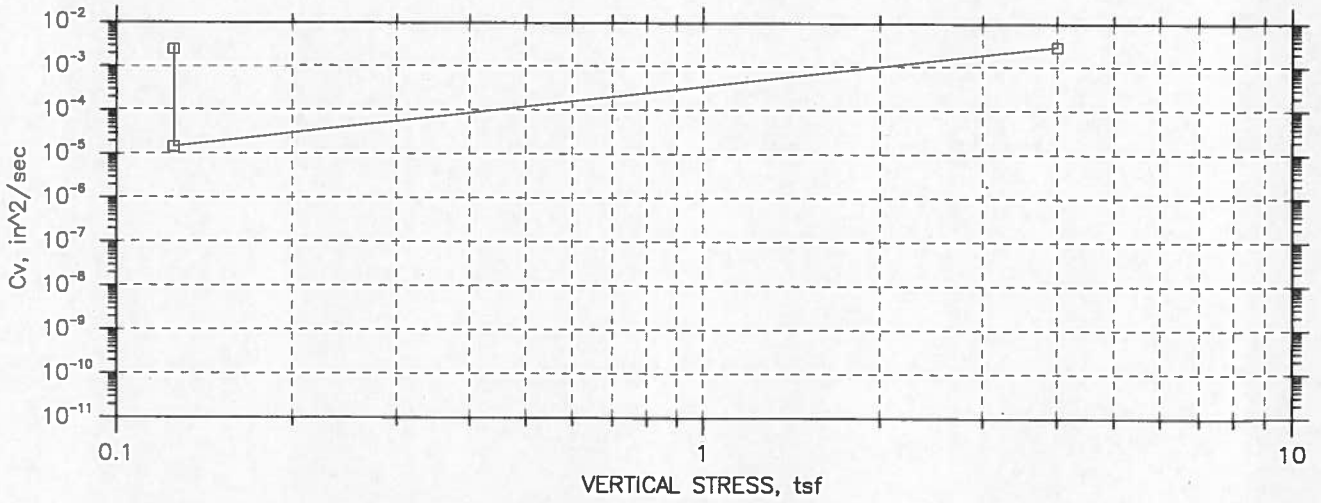
Constant Load Step: 7 of 7
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	-0.008966	-0.89	0.812
2	0.01	0.09	0.229	-0.008966	-0.89	0.812
3	0.02	0.13	0.17	-0.009242	-0.92	0.812
4	0.03	0.16	0.153	-0.009426	-0.94	0.813
5	0.04	0.19	0.143	-0.009472	-0.94	0.813
6	0.05	0.23	0.136	-0.009518	-0.95	0.813
7	0.07	0.27	0.133	-0.009518	-0.95	0.813
8	0.08	0.29	0.13	-0.009564	-0.95	0.813
9	0.12	0.35	0.128	-0.009564	-0.95	0.813
10	0.17	0.41	0.129	-0.009656	-0.96	0.813
11	0.25	0.50	0.127	-0.009748	-0.97	0.813
12	0.34	0.58	0.127	-0.009794	-0.98	0.813
13	0.50	0.71	0.127	-0.009931	-0.99	0.814
14	0.75	0.87	0.125	-0.01002	-1.00	0.814
15	1.00	1.00	0.125	-0.01012	-1.01	0.814
16	1.50	1.23	0.125	-0.0103	-1.03	0.814
17	2.00	1.42	0.124	-0.01039	-1.03	0.814
18	3.00	1.73	0.123	-0.01044	-1.04	0.815
19	4.00	2.00	0.124	-0.01053	-1.05	0.815
20	5.00	2.24	0.124	-0.01062	-1.06	0.815
21	6.00	2.45	0.125	-0.01071	-1.07	0.815
22	7.00	2.65	0.124	-0.01081	-1.08	0.815
23	8.00	2.83	0.124	-0.01085	-1.08	0.815
24	9.00	3.00	0.124	-0.01094	-1.09	0.815
25	10.00	3.16	0.124	-0.01103	-1.10	0.816
26	12.00	3.46	0.124	-0.01117	-1.11	0.816
27	14.00	3.74	0.124	-0.01126	-1.12	0.816
28	16.00	4.00	0.124	-0.01136	-1.13	0.816
29	18.00	4.24	0.125	-0.0114	-1.14	0.816
30	20.00	4.47	0.125	-0.01149	-1.14	0.816
31	22.00	4.69	0.123	-0.01154	-1.15	0.817
32	24.00	4.90	0.124	-0.01168	-1.16	0.817
33	26.00	5.10	0.125	-0.01168	-1.16	0.817
34	28.00	5.29	0.123	-0.01177	-1.17	0.817
35	30.00	5.48	0.123	-0.01177	-1.17	0.817
36	35.00	5.92	0.125	-0.01182	-1.18	0.817
37	40.00	6.32	0.124	-0.01191	-1.19	0.817
38	45.00	6.71	0.125	-0.012	-1.20	0.817
39	50.00	7.07	0.122	-0.01209	-1.20	0.817
40	60.00	7.75	0.125	-0.01228	-1.22	0.818
41	70.00	8.37	0.125	-0.01241	-1.24	0.818
42	80.00	8.94	0.124	-0.01251	-1.25	0.818
43	90.00	9.49	0.125	-0.0126	-1.25	0.818
44	100.00	10.00	0.125	-0.01269	-1.26	0.819
45	110.00	10.49	0.124	-0.01283	-1.28	0.819
46	120.00	10.95	0.123	-0.01287	-1.28	0.819
47	120.01	10.96	0.124	-0.01287	-1.28	0.819

CONSOLIDATION TEST DATA

SUMMARY REPORT



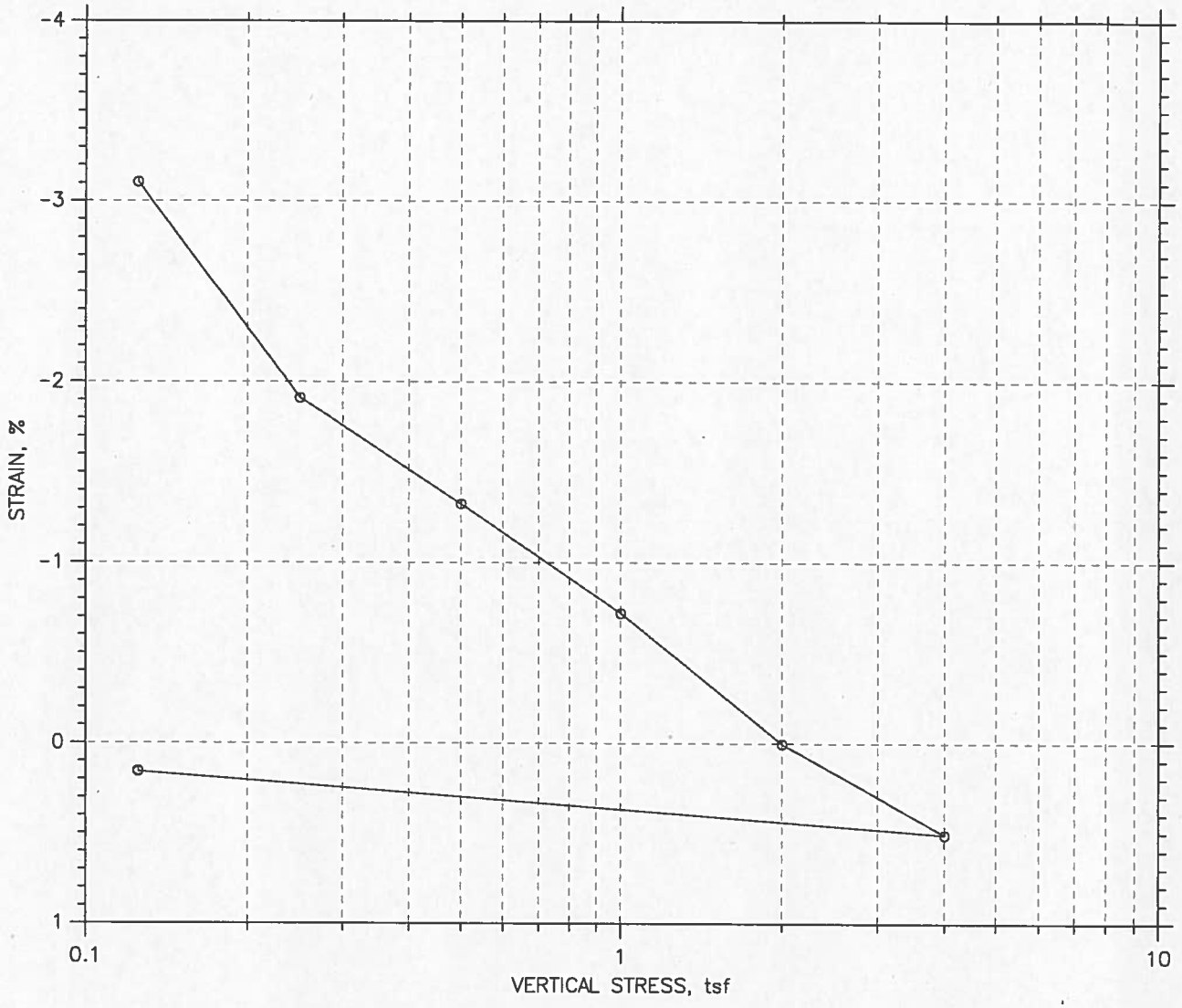


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-305
	Boring No.: B-604	Tested By: SKK	Checked By: SKK
	Sample No.: 19-305	Test Date: 7/29/19	Test No.: 1
	Depth: 20-21'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 01-AUG-2019 11:12:36

CONSOLIDATION TEST DATA

SUMMARY REPORT



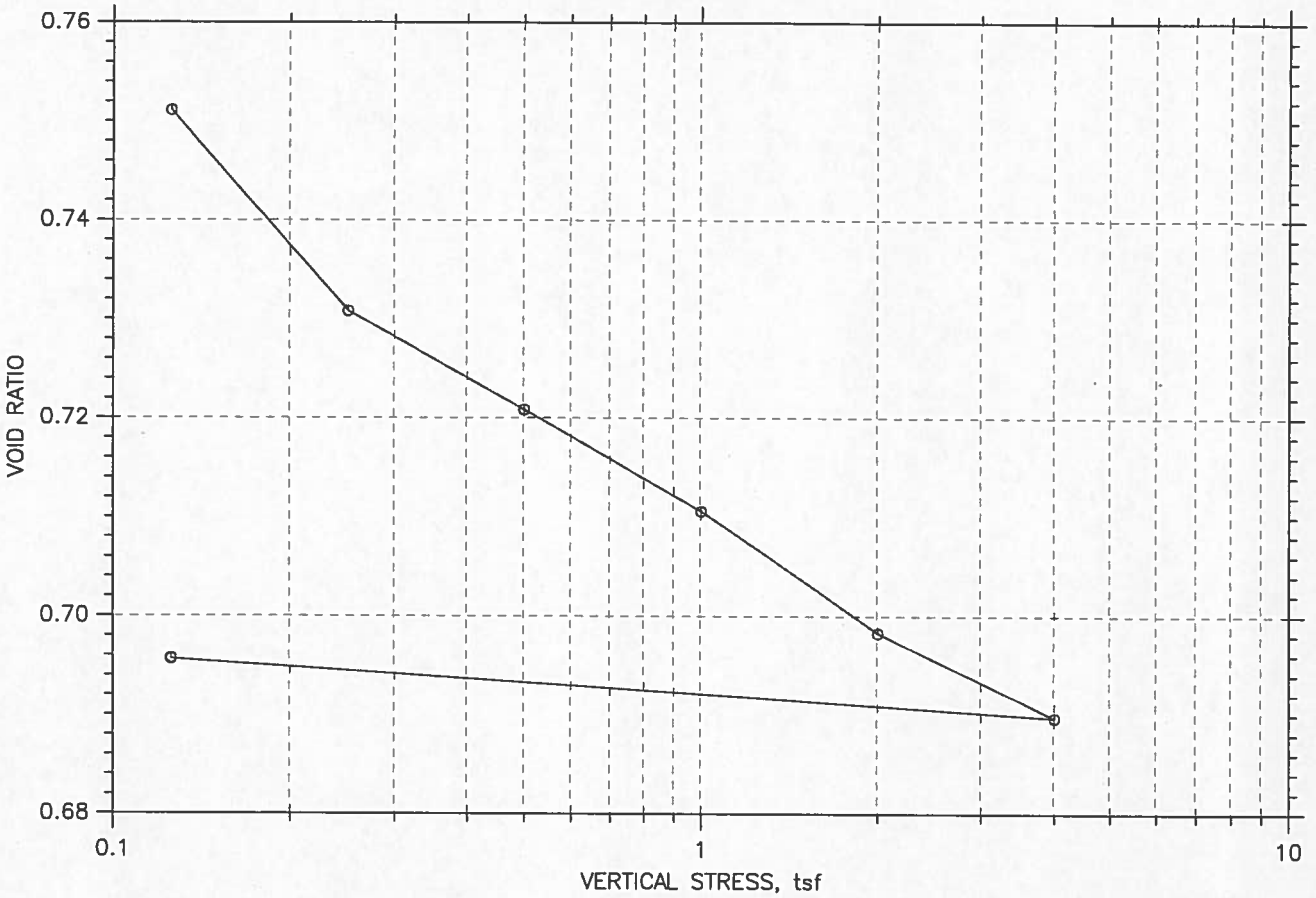
				Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	23.24	27.69
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	100.3	97.13
Compression Index: 3.81959e-313				Saturation, %	90.85	100.18
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.70	0.75
LL: ---	PL: ---	PI: ---	GS: 2.73			

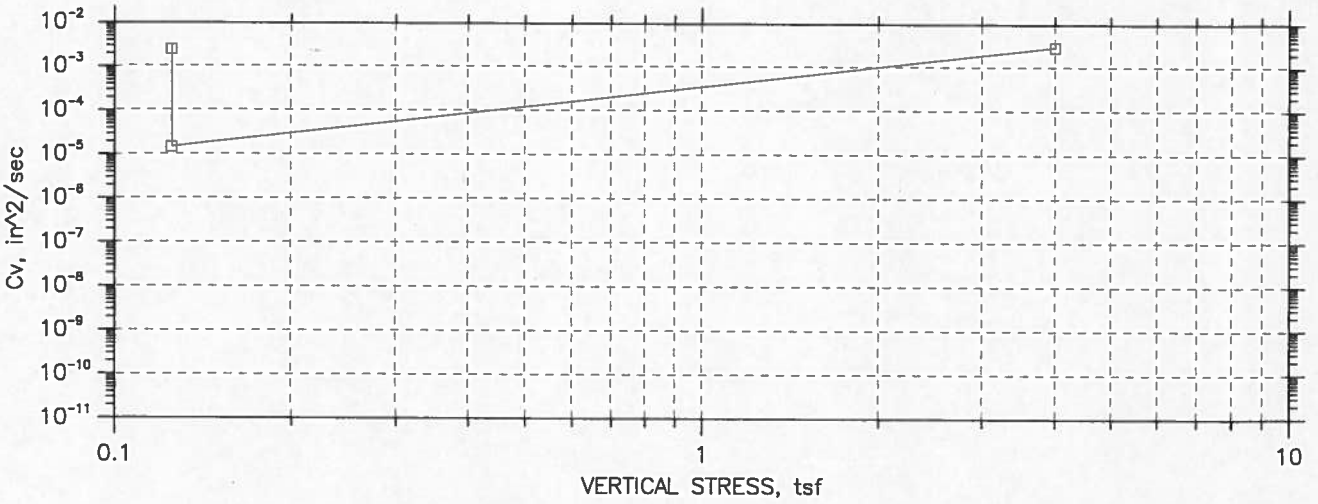
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-305
	Boring No.: B-604	Tested By: SKK	Checked By: SKK
	Sample No.: 19-305	Test Date: 7/29/19	Test No.: 1
	Depth: 20-21'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 01-AUG-2019 11:12:36

CONSOLIDATION TEST DATA

SUMMARY REPORT



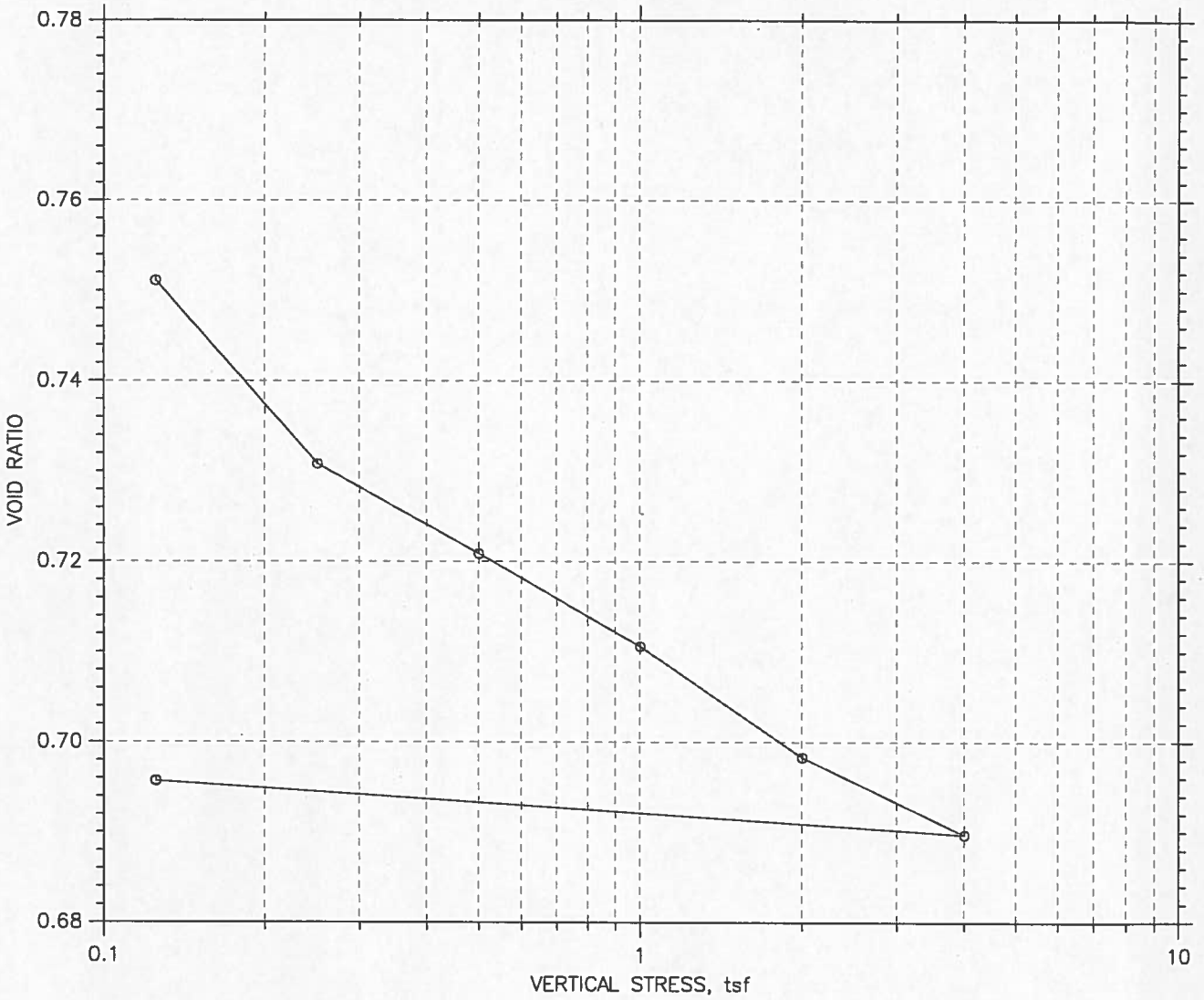


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-305
	Boring No.: B-604	Tested By: SKK	Checked By: SKK
	Sample No.: 19-305	Test Date: 7/29/19	Test No.: 1
	Depth: 20-21'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 01-AUG-2019 11:12:45

CONSOLIDATION TEST DATA

SUMMARY REPORT



				Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	23.24	27.69
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	100.3	97.13
Compression Index: 3.81959e-313				Saturation, %	90.85	100.18
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.70	0.75
LL: ---	PL: ---	PI: ---	GS: 2.73			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-305
	Boring No.: B-604	Tested By: SKK	Checked By: SKK
	Sample No.: 19-305	Test Date: 7/29/19	Test No.: 1
	Depth: 20-21'	Sample Type: CORE	Elevation: N/A
	Description: SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Thu, 01-AUG-2019 11:12:46

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/29/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Measured Specific Gravity: 2.73
Initial Void Ratio: 0.70
Final Void Ratio: 0.75

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	183.12	270.14	275.92	218.09
Wt. Container + Dry Soil, gm	162.54	239.97	239.97	182.15
Wt. Container, gm	68.63	110.15	110.15	52.37
Wt. Dry Soil, gm	93.91	129.82	129.82	129.78
Water Content, %	21.91	23.24	27.69	27.69
Void Ratio	---	0.70	0.75	---
Degree of Saturation, %	---	90.85	100.18	---
Dry Unit Weight, pcf	---	100.35	97.129	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/29/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001563	0.696	0.16	1.4	2.60e-003	1.25e-002	6.06e-004
2	0.125	0.001609	0.696	0.16	59.8	5.94e-005	1.#Je+000	1.#Je+000
3	4	0.005104	0.690	0.51	1.4	2.59e-003	8.98e-004	4.35e-005
4	2	4.598e-005	0.698	0.00	4.8	7.43e-004	2.52e-003	3.51e-005
5	1	-0.007219	0.711	-0.72	82.7	4.34e-005	7.24e-003	5.88e-006
6	0.5	-0.01329	0.721	-1.32	103.8	3.50e-005	1.21e-002	7.93e-006
7	0.25	-0.01917	0.731	-1.91	120.1	3.06e-005	2.34e-002	1.34e-005
8	0.125	-0.03117	0.751	-3.10	734.9	5.09e-006	9.56e-002	9.12e-006

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.001563	0.696	0.16	0.0	0.00e+000	1.25e-002	0.00e+000
2	0.125	0.001609	0.696	0.16	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	4	0.005104	0.690	0.51	0.0	0.00e+000	8.98e-004	0.00e+000
4	2	4.598e-005	0.698	0.00	0.0	0.00e+000	2.52e-003	0.00e+000
5	1	-0.007219	0.711	-0.72	0.0	0.00e+000	7.24e-003	0.00e+000
6	0.5	-0.01329	0.721	-1.32	0.0	0.00e+000	1.21e-002	0.00e+000
7	0.25	-0.01917	0.731	-1.91	0.0	0.00e+000	2.34e-002	0.00e+000
8	0.125	-0.03117	0.751	-3.10	0.0	0.00e+000	9.56e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/29/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 1 of 8
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00336	-0.001335	-0.13	0.701
2	0.01	0.09	0.0112	-0.001335	-0.13	0.701
3	0.02	0.13	0.0426	-0.001197	-0.12	0.700
4	0.03	0.16	0.0661	-0.001059	-0.11	0.700
5	0.04	0.19	0.0807	-0.0009215	-0.09	0.700
6	0.05	0.23	0.0986	-0.0007376	-0.07	0.700
7	0.07	0.26	0.109	-0.0007376	-0.07	0.700
8	0.08	0.29	0.112	-0.0006456	-0.06	0.699
9	0.12	0.34	0.119	-0.0006456	-0.06	0.699
10	0.17	0.41	0.122	-0.0005536	-0.06	0.699
11	0.25	0.50	0.123	-0.0005077	-0.05	0.699
12	0.34	0.58	0.123	-0.0004617	-0.05	0.699
13	0.50	0.71	0.124	-0.0003697	-0.04	0.699
14	0.75	0.87	0.123	-0.0003237	-0.03	0.699
15	1.00	1.00	0.124	-0.0002778	-0.03	0.699
16	1.50	1.23	0.124	-0.0001858	-0.02	0.699
17	2.00	1.42	0.124	-0.0001398	-0.01	0.699
18	3.00	1.73	0.123	-9.385e-005	-0.01	0.699
19	4.00	2.00	0.123	-1.889e-006	-0.00	0.698
20	5.00	2.24	0.125	4.409e-005	0.00	0.698
21	6.00	2.45	0.124	9.007e-005	0.01	0.698
22	7.00	2.65	0.124	0.000136	0.01	0.698
23	8.00	2.83	0.125	0.000136	0.01	0.698
24	9.00	3.00	0.125	0.000182	0.02	0.698
25	10.00	3.16	0.124	0.000182	0.02	0.698
26	12.00	3.46	0.124	0.000228	0.02	0.698
27	14.00	3.74	0.123	0.000228	0.02	0.698
28	15.03	3.88	0.124	0.000228	0.02	0.698

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/29/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Volume Step: 2 of 8
Seating Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.124	0.000228	0.02	0.698
2	0.01	0.09	0.124	0.000228	0.02	0.698
3	0.02	0.13	0.124	0.000228	0.02	0.698
4	0.03	0.16	0.122	0.000228	0.02	0.698
5	0.04	0.19	0.121	0.000228	0.02	0.698
6	0.05	0.23	0.128	0.000228	0.02	0.698
7	0.07	0.27	0.138	0.000228	0.02	0.698
8	0.08	0.29	0.147	0.000228	0.02	0.698
9	0.12	0.34	0.165	0.000136	0.01	0.698
10	0.17	0.41	0.186	4.409e-005	0.00	0.698
11	0.25	0.50	0.213	-9.385e-005	-0.01	0.699
12	0.34	0.58	0.231	-0.0001398	-0.01	0.699
13	0.50	0.71	0.261	-0.0002318	-0.02	0.699
14	0.75	0.87	0.295	-0.0002778	-0.03	0.699
15	1.00	1.00	0.323	-0.0003237	-0.03	0.699
16	1.50	1.22	0.385	-0.0003237	-0.03	0.699
17	2.00	1.42	0.455	-9.385e-005	-0.01	0.699
18	3.00	1.73	0.541	0.000136	0.01	0.698
19	4.00	2.00	0.604	0.000182	0.02	0.698
20	5.00	2.24	0.657	0.000182	0.02	0.698
21	6.00	2.45	0.705	0.000136	0.01	0.698
22	7.00	2.65	0.745	0.000182	0.02	0.698
23	8.00	2.83	0.776	0.000182	0.02	0.698
24	9.00	3.00	0.818	0.000182	0.02	0.698
25	10.00	3.16	0.858	0.000182	0.02	0.698
26	12.00	3.46	0.913	0.000182	0.02	0.698
27	14.00	3.74	0.96	0.000182	0.02	0.698
28	16.00	4.00	1.01	0.000182	0.02	0.698
29	18.00	4.24	1.05	0.000182	0.02	0.698
30	20.00	4.47	1.09	0.000182	0.02	0.698
31	22.00	4.69	1.13	0.000182	0.02	0.698
32	24.00	4.90	1.16	0.000182	0.02	0.698
33	26.00	5.10	1.19	0.000182	0.02	0.698
34	28.00	5.29	1.22	0.000182	0.02	0.698
35	30.00	5.48	1.25	0.000182	0.02	0.698
36	35.00	5.92	1.31	0.000228	0.02	0.698
37	40.00	6.32	1.36	0.000228	0.02	0.698
38	45.00	6.71	1.4	0.000182	0.02	0.698
39	50.00	7.07	1.45	0.000182	0.02	0.698
40	60.00	7.75	1.54	0.000274	0.03	0.698
41	70.00	8.37	1.61	0.000274	0.03	0.698
42	80.00	8.94	1.69	0.000274	0.03	0.698
43	90.00	9.49	1.73	0.000274	0.03	0.698
44	100.00	10.00	1.79	0.000274	0.03	0.698
45	110.00	10.49	1.85	0.000274	0.03	0.698
46	120.00	10.95	1.89	0.000274	0.03	0.698
47	130.00	11.40	1.93	0.000274	0.03	0.698
48	140.00	11.83	1.97	0.000274	0.03	0.698
49	150.00	12.25	2.02	0.000274	0.03	0.698
50	160.00	12.65	2.04	0.000274	0.03	0.698
51	170.00	13.04	2.08	0.000274	0.03	0.698
52	180.00	13.42	2.11	0.000274	0.03	0.698
53	190.00	13.78	2.14	0.000274	0.03	0.698
54	200.00	14.14	2.16	0.000274	0.03	0.698
55	210.00	14.49	2.18	0.000274	0.03	0.698
56	220.00	14.83	2.21	0.000274	0.03	0.698
57	230.00	15.17	2.24	0.000274	0.03	0.698
58	240.00	15.49	2.28	0.000274	0.03	0.698
59	250.00	15.81	2.32	0.000274	0.03	0.698
60	260.00	16.12	2.35	0.000274	0.03	0.698
61	270.00	16.43	2.38	0.000274	0.03	0.698
62	280.00	16.73	2.4	0.000274	0.03	0.698
63	290.00	17.03	2.43	0.000274	0.03	0.698
64	300.00	17.32	2.46	0.000274	0.03	0.698
65	310.00	17.61	2.47	0.000274	0.03	0.698
66	320.00	17.89	2.52	0.000274	0.03	0.698
67	330.00	18.17	2.54	0.000274	0.03	0.698
68	340.00	18.44	2.55	0.000274	0.03	0.698
69	350.00	18.71	2.55	0.000274	0.03	0.698
70	360.00	18.97	2.57	0.000274	0.03	0.698
71	370.00	19.24	2.58	0.000274	0.03	0.698
72	380.00	19.49	2.59	0.000274	0.03	0.698
73	390.00	19.75	2.6	0.000274	0.03	0.698
74	400.00	20.00	2.62	0.000274	0.03	0.698
75	410.00	20.25	2.61	0.000228	0.02	0.698
76	420.00	20.49	2.62	0.00032	0.03	0.698
77	430.00	20.74	2.62	0.000274	0.03	0.698
78	440.00	20.98	2.63	0.000274	0.03	0.698
79	450.00	21.21	2.65	0.000274	0.03	0.698
80	460.00	21.45	2.66	0.000274	0.03	0.698
81	470.00	21.68	2.65	0.000274	0.03	0.698

82	480.00	21.91	2.65	0.000274	0.03	0.698
83	490.00	22.14	2.65	0.000274	0.03	0.698
84	500.00	22.36	2.66	0.000274	0.03	0.698
85	510.00	22.58	2.67	0.000274	0.03	0.698
86	520.00	22.80	2.7	0.000274	0.03	0.698
87	530.00	23.02	2.7	0.000274	0.03	0.698
88	540.00	23.24	2.69	0.000274	0.03	0.698
89	550.00	23.45	2.7	0.000274	0.03	0.698
90	560.00	23.66	2.69	0.000274	0.03	0.698
91	570.00	23.87	2.7	0.000274	0.03	0.698
92	580.00	24.08	2.72	0.000274	0.03	0.698
93	590.00	24.29	2.7	0.000274	0.03	0.698
94	600.00	24.49	2.7	0.000274	0.03	0.698
95	610.00	24.70	2.7	0.000274	0.03	0.698
96	620.00	24.90	2.7	0.000274	0.03	0.698
97	630.00	25.10	2.71	0.000274	0.03	0.698
98	640.00	25.30	2.7	0.000274	0.03	0.698
99	650.00	25.50	2.69	0.000274	0.03	0.698
100	660.00	25.69	2.68	0.000182	0.02	0.698
101	670.00	25.88	2.71	0.000274	0.03	0.698
102	680.00	26.08	2.72	0.000274	0.03	0.698
103	690.00	26.27	2.71	0.000274	0.03	0.698
104	700.00	26.46	2.72	0.000274	0.03	0.698
105	710.00	26.65	2.71	0.000274	0.03	0.698
106	720.00	26.83	2.7	0.000274	0.03	0.698
107	730.00	27.02	2.7	0.000274	0.03	0.698
108	740.00	27.20	2.72	0.000274	0.03	0.698
109	750.00	27.39	2.73	0.000274	0.03	0.698
110	760.00	27.57	2.73	0.000274	0.03	0.698
111	770.00	27.75	2.72	0.000274	0.03	0.698
112	780.00	27.93	2.71	0.000274	0.03	0.698
113	790.00	28.11	2.7	0.000274	0.03	0.698
114	800.00	28.28	2.73	0.000274	0.03	0.698
115	810.00	28.46	2.73	0.000274	0.03	0.698
116	820.00	28.64	2.73	0.000274	0.03	0.698
117	830.00	28.81	2.7	0.000274	0.03	0.698
118	840.00	28.98	2.7	0.000274	0.03	0.698
119	850.00	29.15	2.72	0.000274	0.03	0.698
120	860.00	29.33	2.75	0.000274	0.03	0.698
121	870.00	29.50	2.74	0.000274	0.03	0.698
122	880.00	29.66	2.73	0.000274	0.03	0.698
123	890.00	29.83	2.7	0.000182	0.02	0.698
124	900.00	30.00	2.72	0.000274	0.03	0.698
125	910.00	30.17	2.73	0.000274	0.03	0.698
126	920.00	30.33	2.71	0.000274	0.03	0.698
127	930.00	30.50	2.72	0.000274	0.03	0.698
128	940.00	30.66	2.72	0.000274	0.03	0.698
129	950.00	30.82	2.73	0.000274	0.03	0.698
130	960.00	30.98	2.73	0.000182	0.02	0.698
131	970.00	31.14	2.73	0.000274	0.03	0.698
132	980.00	31.30	2.73	0.000274	0.03	0.698
133	990.00	31.46	2.74	0.000274	0.03	0.698
134	1000.00	31.62	2.75	0.000274	0.03	0.698
135	1010.00	31.78	2.76	0.000274	0.03	0.698
136	1020.00	31.94	2.75	0.000274	0.03	0.698
137	1030.00	32.09	2.76	0.000274	0.03	0.698
138	1040.00	32.25	2.74	0.000274	0.03	0.698
139	1050.00	32.40	2.74	0.000274	0.03	0.698
140	1060.00	32.56	2.75	0.000274	0.03	0.698
141	1070.00	32.71	2.74	0.000274	0.03	0.698
142	1080.00	32.86	2.75	0.000274	0.03	0.698
143	1090.00	33.02	2.75	0.000274	0.03	0.698
144	1100.00	33.17	2.74	0.000274	0.03	0.698
145	1110.00	33.32	2.74	0.000274	0.03	0.698
146	1120.00	33.47	2.74	0.000274	0.03	0.698
147	1130.00	33.62	2.73	0.000274	0.03	0.698
148	1140.00	33.76	2.75	0.000274	0.03	0.698
149	1150.00	33.91	2.74	0.000274	0.03	0.698
150	1160.00	34.06	2.74	0.000274	0.03	0.698
151	1170.00	34.21	2.75	0.000274	0.03	0.698
152	1180.00	34.35	2.73	0.000274	0.03	0.698
153	1190.00	34.50	2.73	0.000274	0.03	0.698
154	1200.00	34.64	2.74	0.000274	0.03	0.698
155	1210.00	34.79	2.74	0.000274	0.03	0.698
156	1220.00	34.93	2.74	0.000274	0.03	0.698
157	1230.00	35.07	2.74	0.000274	0.03	0.698
158	1240.00	35.21	2.73	0.000274	0.03	0.698
159	1250.00	35.36	2.74	0.000274	0.03	0.698
160	1260.00	35.50	2.76	0.000274	0.03	0.698
161	1270.00	35.64	2.76	0.000274	0.03	0.698
162	1280.00	35.78	2.77	0.000274	0.03	0.698
163	1290.00	35.92	2.75	0.000274	0.03	0.698
164	1300.00	36.06	2.76	0.000274	0.03	0.698
165	1310.00	36.19	2.77	0.000274	0.03	0.698
166	1320.00	36.33	2.76	0.000274	0.03	0.698
167	1330.00	36.47	2.77	0.000274	0.03	0.698
168	1340.00	36.61	2.77	0.000274	0.03	0.698
169	1350.00	36.74	2.77	0.000274	0.03	0.698
170	1360.00	36.88	2.77	0.000274	0.03	0.698
171	1370.00	37.01	2.76	0.000274	0.03	0.698
172	1380.00	37.15	2.76	0.000274	0.03	0.698
173	1390.00	37.28	2.74	0.000274	0.03	0.698
174	1400.00	37.42	2.74	0.00032	0.03	0.698
175	1410.00	37.55	2.76	0.000274	0.03	0.698
176	1420.00	37.68	2.75	0.000274	0.03	0.698
177	1430.00	37.82	2.74	0.000274	0.03	0.698
178	1440.00	37.95	2.73	0.000228	0.02	0.698
179	1440.05	37.95	2.73	0.000274	0.03	0.698

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/29/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 3 of 8
Applied Stress: 4 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2.73	-0.01035	-1.03	0.716
2	0.01	0.09	3.09	-0.01035	-1.03	0.716
3	0.02	0.13	3.95	-0.008921	-0.89	0.713
4	0.03	0.16	3.97	-0.008691	-0.87	0.713
5	0.04	0.19	3.98	-0.008554	-0.85	0.713
6	0.05	0.23	3.99	-0.008462	-0.84	0.713
7	0.07	0.27	3.99	-0.00837	-0.83	0.713
8	0.08	0.29	3.99	-0.00837	-0.83	0.713
9	0.12	0.34	3.99	-0.008278	-0.82	0.712
10	0.17	0.41	3.99	-0.008186	-0.82	0.712
11	0.25	0.50	4	-0.00814	-0.81	0.712
12	0.34	0.58	4	-0.008002	-0.80	0.712
13	0.50	0.71	4	-0.007956	-0.79	0.712
14	0.75	0.87	4	-0.007864	-0.78	0.712
15	1.00	1.00	4	-0.007818	-0.78	0.712
16	1.50	1.23	4	-0.00768	-0.76	0.711
17	2.00	1.41	4	-0.007634	-0.76	0.711
18	3.00	1.73	4	-0.007542	-0.75	0.711
19	4.00	2.00	4	-0.00745	-0.74	0.711
20	5.00	2.24	4	-0.007404	-0.74	0.711
21	6.00	2.45	4	-0.007404	-0.74	0.711
22	7.00	2.65	4	-0.007358	-0.73	0.711
23	8.00	2.83	4	-0.007358	-0.73	0.711
24	9.00	3.00	4	-0.007312	-0.73	0.711
25	10.00	3.16	4	-0.007266	-0.72	0.711
26	12.00	3.46	4	-0.007266	-0.72	0.711
27	14.00	3.74	4	-0.00722	-0.72	0.711
28	16.00	4.00	4	-0.00722	-0.72	0.711
29	18.00	4.24	4	-0.00722	-0.72	0.711
30	20.00	4.47	4	-0.007174	-0.71	0.710
31	22.00	4.69	4	-0.007174	-0.71	0.710
32	24.00	4.90	4	-0.007128	-0.71	0.710
33	26.00	5.10	4	-0.007036	-0.70	0.710
34	28.00	5.29	4	-0.00699	-0.70	0.710
35	30.00	5.48	4	-0.00699	-0.70	0.710
36	35.00	5.92	4	-0.006944	-0.69	0.710
37	40.00	6.32	4	-0.006944	-0.69	0.710
38	45.00	6.71	4	-0.006944	-0.69	0.710
39	50.00	7.07	4	-0.006944	-0.69	0.710
40	60.00	7.75	4	-0.006898	-0.69	0.710
41	70.00	8.37	4	-0.006806	-0.68	0.710
42	80.00	8.94	4	-0.006898	-0.69	0.710
43	90.00	9.49	4	-0.006852	-0.68	0.710
44	100.00	10.00	4	-0.006806	-0.68	0.710
45	110.00	10.49	4	-0.00676	-0.67	0.710
46	120.00	10.95	4	-0.006806	-0.68	0.710
47	120.01	10.96	4	-0.006806	-0.68	0.710

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/29/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 4 of 8
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	4	0.002943	0.29	0.693
2	0.01	0.09	3.77	0.002989	0.30	0.693
3	0.02	0.13	2.01	0.001149	0.11	0.696
4	0.03	0.16	2.03	0.0007357	0.07	0.697
5	0.04	0.19	2.02	0.0005977	0.06	0.697
6	0.05	0.23	2.01	0.0004138	0.04	0.698
7	0.07	0.26	2.01	0.0002759	0.03	0.698
8	0.09	0.30	2.01	0.0001839	0.02	0.698
9	0.12	0.34	2.01	4.598e-005	0.00	0.698
10	0.17	0.41	2	-4.598e-005	-0.00	0.698
11	0.25	0.50	2.01	-0.0001379	-0.01	0.699
12	0.34	0.58	2	-0.0002299	-0.02	0.699
13	0.50	0.71	2	-0.0002759	-0.03	0.699
14	0.75	0.87	2	-0.0004138	-0.04	0.699
15	1.00	1.00	2	-0.0005058	-0.05	0.699
16	1.50	1.23	2	-0.0005977	-0.06	0.699
17	2.00	1.41	2	-0.0007357	-0.07	0.700
18	3.00	1.73	2	-0.0009656	-0.10	0.700
19	4.00	2.00	2	-0.001058	-0.11	0.700
20	5.00	2.24	2	-0.001195	-0.12	0.700
21	6.00	2.45	2	-0.001241	-0.12	0.700
22	7.00	2.65	2	-0.001333	-0.13	0.701
23	8.00	2.83	2	-0.001379	-0.14	0.701
24	9.00	3.00	2	-0.001471	-0.15	0.701
25	10.00	3.16	2	-0.001471	-0.15	0.701
26	12.00	3.46	2	-0.001563	-0.16	0.701
27	14.00	3.74	2	-0.001655	-0.16	0.701
28	16.00	4.00	2	-0.001609	-0.16	0.701
29	18.00	4.24	2	-0.001609	-0.16	0.701
30	20.00	4.47	2	-0.001609	-0.16	0.701
31	22.00	4.69	2	-0.001609	-0.16	0.701
32	24.00	4.90	2	-0.001609	-0.16	0.701
33	26.00	5.10	2	-0.001655	-0.16	0.701
34	28.00	5.29	2	-0.001701	-0.17	0.701
35	30.00	5.48	2	-0.001701	-0.17	0.701
36	35.00	5.92	2	-0.001839	-0.18	0.701
37	40.00	6.32	2	-0.001839	-0.18	0.701
38	45.00	6.71	2	-0.001839	-0.18	0.701
39	50.00	7.07	2	-0.001839	-0.18	0.701
40	60.00	7.75	2	-0.001885	-0.19	0.702
41	70.00	8.37	2	-0.001931	-0.19	0.702
42	80.00	8.94	2	-0.001977	-0.20	0.702
43	90.00	9.49	2	-0.002023	-0.20	0.702
44	100.00	10.00	2	-0.001977	-0.20	0.702
45	110.00	10.49	2	-0.002023	-0.20	0.702
46	120.00	10.95	2	-0.002069	-0.21	0.702
47	120.01	10.95	2	-0.002069	-0.21	0.702

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/29/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 5 of 8
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	-0.002069	-0.21	0.702
2	0.01	0.09	1.75	-0.002069	-0.21	0.702
3	0.02	0.13	1.08	-0.00331	-0.33	0.704
4	0.03	0.16	1.04	-0.003586	-0.36	0.704
5	0.04	0.19	1.03	-0.003678	-0.37	0.705
6	0.05	0.23	1.01	-0.003724	-0.37	0.705
7	0.07	0.27	1.01	-0.003816	-0.38	0.705
8	0.08	0.29	1.01	-0.003862	-0.38	0.705
9	0.12	0.34	1.01	-0.003908	-0.39	0.705
10	0.17	0.41	1	-0.003954	-0.39	0.705
11	0.25	0.50	1	-0.004046	-0.40	0.705
12	0.33	0.58	1	-0.004138	-0.41	0.705
13	0.50	0.71	1	-0.00446	-0.44	0.706
14	0.75	0.87	1	-0.004552	-0.45	0.706
15	1.00	1.00	0.999	-0.004644	-0.46	0.706
16	1.50	1.23	1	-0.004736	-0.47	0.706
17	2.00	1.41	0.999	-0.004874	-0.49	0.707
18	3.00	1.73	0.999	-0.005058	-0.50	0.707
19	4.00	2.00	1	-0.005242	-0.52	0.707
20	5.00	2.24	1	-0.005334	-0.53	0.707
21	6.00	2.45	0.999	-0.005517	-0.55	0.708
22	7.00	2.65	0.998	-0.005609	-0.56	0.708
23	8.00	2.83	0.998	-0.005655	-0.56	0.708
24	9.00	3.00	0.999	-0.005701	-0.57	0.708
25	10.00	3.16	1	-0.005793	-0.58	0.708
26	12.00	3.46	0.999	-0.005839	-0.58	0.708
27	14.00	3.74	1	-0.005977	-0.60	0.708
28	16.00	4.00	0.999	-0.006115	-0.61	0.709
29	18.00	4.24	0.998	-0.006207	-0.62	0.709
30	20.00	4.47	0.999	-0.006253	-0.62	0.709
31	22.00	4.69	0.998	-0.006299	-0.63	0.709
32	24.00	4.90	1	-0.006391	-0.64	0.709
33	26.00	5.10	1	-0.006391	-0.64	0.709
34	28.00	5.29	0.999	-0.006437	-0.64	0.709
35	30.00	5.48	0.999	-0.006529	-0.65	0.709
36	35.00	5.92	0.999	-0.006621	-0.66	0.710
37	40.00	6.32	0.999	-0.006759	-0.67	0.710
38	45.00	6.71	1	-0.006851	-0.68	0.710
39	50.00	7.07	1	-0.006989	-0.70	0.710
40	60.00	7.75	1	-0.007127	-0.71	0.710
41	70.00	8.37	0.999	-0.007311	-0.73	0.711
42	80.00	8.94	0.999	-0.007541	-0.75	0.711
43	90.00	9.49	0.999	-0.007678	-0.76	0.711
44	100.00	10.00	1	-0.007954	-0.79	0.712
45	110.00	10.49	1	-0.008276	-0.82	0.712
46	120.00	10.95	0.999	-0.008368	-0.83	0.713
47	130.00	11.40	0.999	-0.00846	-0.84	0.713
48	140.00	11.83	1	-0.008644	-0.86	0.713
49	150.00	12.25	0.999	-0.008828	-0.88	0.713
50	160.00	12.65	0.999	-0.009012	-0.90	0.714
51	170.00	13.04	0.999	-0.009104	-0.91	0.714
52	180.00	13.42	1	-0.009196	-0.92	0.714
53	188.79	13.74	1	-0.009334	-0.93	0.714

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/29/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 6 of 8
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	1	-0.009334	-0.93	0.714
2	0.01	0.09	0.844	-0.009334	-0.93	0.714
3	0.02	0.13	0.605	-0.009977	-0.99	0.715
4	0.03	0.16	0.55	-0.01021	-1.02	0.716
5	0.04	0.19	0.529	-0.01025	-1.02	0.716
6	0.05	0.23	0.515	-0.0103	-1.03	0.716
7	0.07	0.27	0.51	-0.01035	-1.03	0.716
8	0.08	0.29	0.506	-0.01035	-1.03	0.716
9	0.12	0.34	0.505	-0.01039	-1.03	0.716
10	0.17	0.41	0.504	-0.01044	-1.04	0.716
11	0.25	0.50	0.503	-0.01044	-1.04	0.716
12	0.33	0.58	0.502	-0.01048	-1.04	0.716
13	0.50	0.71	0.502	-0.01062	-1.06	0.716
14	0.75	0.87	0.502	-0.01081	-1.08	0.717
15	1.00	1.00	0.501	-0.0109	-1.09	0.717
16	1.50	1.23	0.501	-0.01108	-1.10	0.717
17	2.00	1.42	0.501	-0.01117	-1.11	0.717
18	3.00	1.73	0.501	-0.01126	-1.12	0.717
19	4.00	2.00	0.5	-0.01131	-1.13	0.717
20	5.00	2.24	0.499	-0.0114	-1.14	0.718
21	6.00	2.45	0.5	-0.01145	-1.14	0.718
22	7.00	2.65	0.501	-0.01149	-1.14	0.718
23	8.00	2.83	0.5	-0.01149	-1.14	0.718
24	9.00	3.00	0.5	-0.01154	-1.15	0.718
25	10.00	3.16	0.5	-0.01154	-1.15	0.718
26	12.00	3.46	0.5	-0.01159	-1.15	0.718
27	14.00	3.74	0.501	-0.01163	-1.16	0.718
28	16.00	4.00	0.501	-0.01172	-1.17	0.718
29	18.00	4.24	0.5	-0.01182	-1.18	0.718
30	20.00	4.47	0.501	-0.01191	-1.19	0.718
31	22.00	4.69	0.501	-0.01195	-1.19	0.719
32	24.00	4.90	0.499	-0.01205	-1.20	0.719
33	26.00	5.10	0.499	-0.01209	-1.20	0.719
34	28.00	5.29	0.499	-0.01218	-1.21	0.719
35	30.00	5.48	0.5	-0.01232	-1.23	0.719
36	35.00	5.92	0.501	-0.01251	-1.25	0.720
37	40.00	6.32	0.499	-0.01274	-1.27	0.720
38	45.00	6.71	0.501	-0.01297	-1.29	0.720
39	50.00	7.07	0.501	-0.01324	-1.32	0.721
40	60.00	7.75	0.5	-0.01356	-1.35	0.721
41	70.00	8.37	0.5	-0.01384	-1.38	0.722
42	80.00	8.94	0.501	-0.01421	-1.42	0.722
43	90.00	9.49	0.499	-0.01439	-1.43	0.723
44	100.00	10.00	0.499	-0.01467	-1.46	0.723
45	110.00	10.49	0.499	-0.01481	-1.47	0.723
46	120.00	10.95	0.5	-0.01499	-1.49	0.724
47	130.00	11.40	0.499	-0.01522	-1.52	0.724
48	140.00	11.83	0.499	-0.01536	-1.53	0.724
49	146.44	12.10	0.5	-0.0154	-1.53	0.724

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/29/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 7 of 8
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.501	-0.0154	-1.53	0.724
2	0.01	0.09	0.432	-0.01545	-1.54	0.724
3	0.02	0.13	0.326	-0.01559	-1.55	0.725
4	0.03	0.16	0.281	-0.01577	-1.57	0.725
5	0.04	0.19	0.268	-0.01582	-1.58	0.725
6	0.05	0.23	0.259	-0.01591	-1.58	0.725
7	0.07	0.27	0.257	-0.01595	-1.59	0.725
8	0.08	0.29	0.254	-0.016	-1.59	0.725
9	0.12	0.35	0.254	-0.016	-1.59	0.725
10	0.17	0.41	0.254	-0.01609	-1.60	0.726
11	0.25	0.50	0.251	-0.01614	-1.61	0.726
12	0.34	0.58	0.251	-0.01618	-1.61	0.726
13	0.50	0.71	0.252	-0.01628	-1.62	0.726
14	0.75	0.87	0.251	-0.01637	-1.63	0.726
15	1.00	1.00	0.25	-0.01637	-1.63	0.726
16	1.50	1.23	0.25	-0.01651	-1.64	0.726
17	2.00	1.41	0.25	-0.0166	-1.65	0.726
18	3.00	1.73	0.251	-0.01678	-1.67	0.727
19	4.00	2.00	0.25	-0.01687	-1.68	0.727
20	5.00	2.24	0.251	-0.01701	-1.69	0.727
21	6.00	2.45	0.25	-0.0171	-1.70	0.727
22	7.00	2.65	0.251	-0.01724	-1.72	0.728
23	8.00	2.83	0.249	-0.01733	-1.73	0.728
24	9.00	3.00	0.25	-0.01743	-1.74	0.728
25	10.00	3.16	0.251	-0.01752	-1.74	0.728
26	12.00	3.46	0.25	-0.01761	-1.75	0.728
27	14.00	3.74	0.25	-0.01766	-1.76	0.728
28	16.00	4.00	0.25	-0.01775	-1.77	0.728
29	18.00	4.24	0.25	-0.01789	-1.78	0.729
30	20.00	4.47	0.25	-0.01802	-1.80	0.729
31	22.00	4.69	0.251	-0.01807	-1.80	0.729
32	24.00	4.90	0.249	-0.01807	-1.80	0.729
33	26.00	5.10	0.251	-0.01812	-1.80	0.729
34	28.00	5.29	0.249	-0.01812	-1.80	0.729
35	30.00	5.48	0.25	-0.01812	-1.80	0.729
36	35.00	5.92	0.249	-0.01821	-1.81	0.729
37	40.00	6.32	0.251	-0.01825	-1.82	0.729
38	45.00	6.71	0.251	-0.01835	-1.83	0.729
39	50.00	7.07	0.25	-0.01844	-1.84	0.730
40	60.00	7.75	0.25	-0.01894	-1.89	0.730
41	70.00	8.37	0.25	-0.01917	-1.91	0.731
42	80.00	8.94	0.25	-0.01963	-1.96	0.732
43	90.00	9.49	0.25	-0.02	-1.99	0.732
44	100.00	10.00	0.25	-0.02028	-2.02	0.733
45	110.00	10.49	0.25	-0.02051	-2.04	0.733
46	120.00	10.95	0.25	-0.02051	-2.04	0.733
47	130.00	11.40	0.25	-0.02064	-2.06	0.733
48	140.00	11.83	0.251	-0.02087	-2.08	0.734
49	150.00	12.25	0.25	-0.02097	-2.09	0.734
50	160.00	12.65	0.25	-0.0212	-2.11	0.734
51	170.00	13.04	0.249	-0.02129	-2.12	0.734
52	171.63	13.10	0.25	-0.02129	-2.12	0.734

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-305
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/29/19
Sample Type: CORE

Project No.: 19-305
Checked By: SKK
Depth: 20-21'
Elevation: N/A

Soil Description: SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

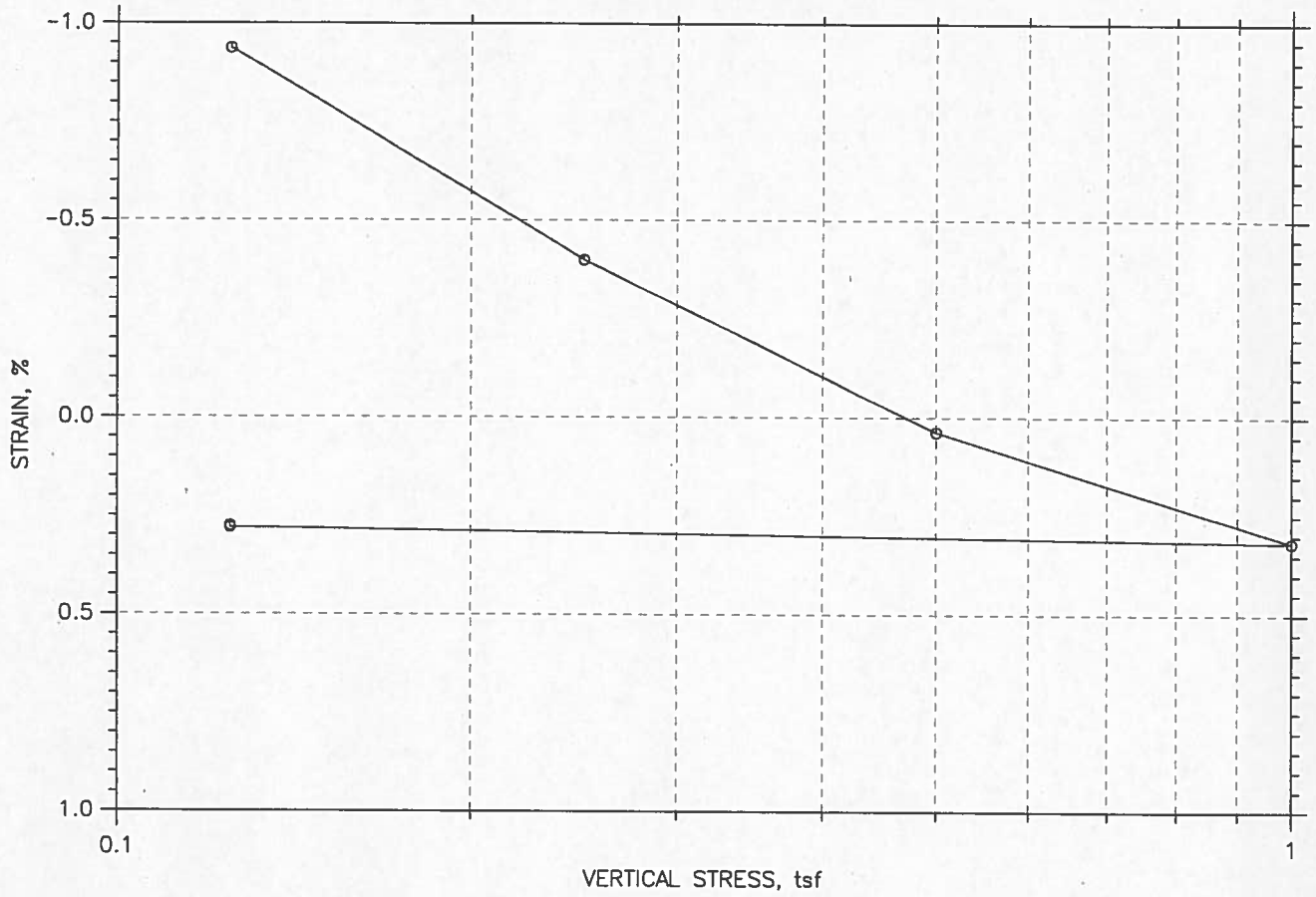
Constant Load Step: 8 of 8
Applied Stress: 0.125 tsf

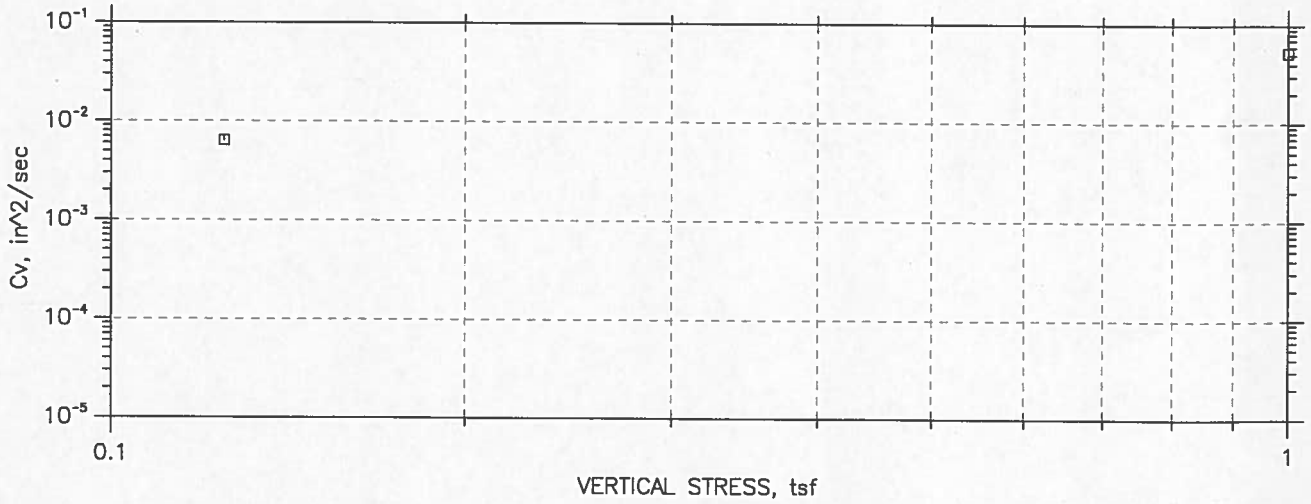
	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.251	-0.02129	-2.12	0.734
2	0.01	0.09	0.215	-0.02129	-2.12	0.734
3	0.02	0.13	0.152	-0.02133	-2.12	0.734
4	0.03	0.16	0.141	-0.02138	-2.13	0.735
5	0.04	0.19	0.133	-0.02143	-2.13	0.735
6	0.05	0.23	0.129	-0.02143	-2.13	0.735
7	0.07	0.27	0.129	-0.02147	-2.14	0.735
8	0.08	0.29	0.129	-0.02147	-2.14	0.735
9	0.12	0.34	0.127	-0.02152	-2.14	0.735
10	0.17	0.41	0.125	-0.02152	-2.14	0.735
11	0.25	0.50	0.124	-0.02152	-2.14	0.735
12	0.34	0.58	0.124	-0.02156	-2.15	0.735
13	0.50	0.71	0.127	-0.02166	-2.16	0.735
14	0.75	0.87	0.125	-0.02175	-2.17	0.735
15	1.00	1.00	0.124	-0.02179	-2.17	0.735
16	1.50	1.23	0.125	-0.02193	-2.18	0.735
17	2.00	1.42	0.123	-0.02202	-2.19	0.736
18	3.00	1.73	0.125	-0.02221	-2.21	0.736
19	4.00	2.00	0.125	-0.02244	-2.23	0.736
20	5.00	2.24	0.124	-0.02253	-2.24	0.736
21	6.00	2.45	0.123	-0.02262	-2.25	0.737
22	7.00	2.65	0.125	-0.02267	-2.26	0.737
23	8.00	2.83	0.125	-0.02276	-2.27	0.737
24	9.00	3.00	0.124	-0.02285	-2.28	0.737
25	10.00	3.16	0.127	-0.0229	-2.28	0.737
26	12.00	3.46	0.124	-0.02304	-2.29	0.737
27	14.00	3.74	0.124	-0.02313	-2.30	0.737
28	16.00	4.00	0.124	-0.02322	-2.31	0.738
29	18.00	4.24	0.123	-0.02327	-2.32	0.738
30	20.00	4.47	0.125	-0.02331	-2.32	0.738
31	22.00	4.69	0.124	-0.02336	-2.33	0.738
32	24.00	4.90	0.124	-0.02336	-2.33	0.738
33	26.00	5.10	0.124	-0.0235	-2.34	0.738
34	28.00	5.29	0.124	-0.02354	-2.34	0.738
35	30.00	5.48	0.124	-0.02368	-2.36	0.738
36	35.00	5.92	0.125	-0.02396	-2.39	0.739
37	40.00	6.32	0.125	-0.02418	-2.41	0.739
38	45.00	6.71	0.125	-0.02432	-2.42	0.739
39	50.00	7.07	0.124	-0.02451	-2.44	0.740
40	60.00	7.75	0.125	-0.02487	-2.48	0.740
41	70.00	8.37	0.124	-0.0251	-2.50	0.741
42	80.00	8.94	0.124	-0.02543	-2.53	0.741
43	90.00	9.49	0.125	-0.02575	-2.56	0.742
44	100.00	10.00	0.123	-0.02621	-2.61	0.743
45	110.00	10.49	0.124	-0.02644	-2.63	0.743
46	120.00	10.95	0.124	-0.02667	-2.66	0.743
47	130.00	11.40	0.124	-0.0269	-2.68	0.744
48	140.00	11.83	0.124	-0.02713	-2.70	0.744
49	150.00	12.25	0.124	-0.02736	-2.72	0.745
50	160.00	12.65	0.127	-0.02754	-2.74	0.745
51	170.00	13.04	0.123	-0.02768	-2.76	0.745
52	180.00	13.42	0.125	-0.02782	-2.77	0.745
53	190.00	13.78	0.125	-0.02791	-2.78	0.746
54	200.00	14.14	0.124	-0.02809	-2.80	0.746
55	210.00	14.49	0.125	-0.02814	-2.80	0.746
56	220.00	14.83	0.123	-0.02823	-2.81	0.746
57	230.00	15.17	0.125	-0.02837	-2.83	0.746
58	240.00	15.49	0.124	-0.02846	-2.83	0.746
59	250.00	15.81	0.125	-0.0286	-2.85	0.747
60	260.00	16.12	0.124	-0.02864	-2.85	0.747
61	270.00	16.43	0.125	-0.02874	-2.86	0.747
62	280.00	16.73	0.125	-0.02878	-2.87	0.747
63	290.00	17.03	0.125	-0.02887	-2.88	0.747
64	300.00	17.32	0.125	-0.02901	-2.89	0.747
65	310.00	17.61	0.124	-0.0292	-2.91	0.748
66	320.00	17.89	0.127	-0.02933	-2.92	0.748
67	330.00	18.17	0.123	-0.02947	-2.94	0.748
68	340.00	18.44	0.125	-0.02979	-2.97	0.749
69	350.00	18.71	0.124	-0.02984	-2.97	0.749
70	360.00	18.97	0.123	-0.02998	-2.99	0.749
71	370.00	19.24	0.124	-0.03012	-3.00	0.749
72	380.00	19.49	0.124	-0.03035	-3.02	0.750
73	390.00	19.75	0.124	-0.03048	-3.04	0.750
74	400.00	20.00	0.124	-0.03062	-3.05	0.750
75	410.00	20.25	0.124	-0.03067	-3.05	0.750
76	420.00	20.49	0.123	-0.03076	-3.06	0.750
77	430.00	20.74	0.123	-0.03081	-3.07	0.750
78	440.00	20.98	0.125	-0.03085	-3.07	0.751
79	450.00	21.21	0.125	-0.03085	-3.07	0.751
80	460.00	21.45	0.124	-0.03094	-3.08	0.751
81	470.00	21.68	0.124	-0.03094	-3.08	0.751

82	480.00	21.91	0.125	-0.03104	-3.09	0.751
83	490.00	22.14	0.123	-0.03117	-3.10	0.751
84	500.00	22.36	0.124	-0.03127	-3.11	0.751
85	510.00	22.58	0.125	-0.03131	-3.12	0.751
86	520.00	22.80	0.124	-0.03136	-3.12	0.751
87	530.00	23.02	0.125	-0.0314	-3.13	0.751
88	540.00	23.24	0.124	-0.0315	-3.14	0.752
89	550.00	23.45	0.124	-0.03159	-3.15	0.752
90	560.00	23.66	0.124	-0.03168	-3.16	0.752
91	570.00	23.87	0.125	-0.03173	-3.16	0.752
92	580.00	24.08	0.125	-0.03173	-3.16	0.752
93	590.00	24.29	0.124	-0.03182	-3.17	0.752
94	600.00	24.49	0.123	-0.03182	-3.17	0.752
95	610.00	24.70	0.124	-0.03186	-3.17	0.752
96	620.00	24.90	0.123	-0.03186	-3.17	0.752
97	630.00	25.10	0.125	-0.03196	-3.18	0.752
98	640.00	25.30	0.124	-0.03205	-3.19	0.753
99	650.00	25.50	0.125	-0.03205	-3.19	0.753
100	660.00	25.69	0.124	-0.03209	-3.20	0.753
101	670.00	25.88	0.124	-0.03219	-3.21	0.753
102	680.00	26.08	0.124	-0.03223	-3.21	0.753
103	690.00	26.27	0.125	-0.03219	-3.21	0.753
104	700.00	26.46	0.125	-0.03223	-3.21	0.753
105	710.00	26.65	0.124	-0.03228	-3.21	0.753
106	720.00	26.83	0.124	-0.03232	-3.22	0.753
107	730.00	27.02	0.124	-0.03242	-3.23	0.753
108	740.00	27.20	0.123	-0.03255	-3.24	0.753
109	750.00	27.39	0.124	-0.03251	-3.24	0.753
110	760.00	27.57	0.124	-0.03251	-3.24	0.753
111	770.00	27.75	0.125	-0.0326	-3.25	0.753
112	780.00	27.93	0.125	-0.03265	-3.25	0.754
113	790.00	28.11	0.123	-0.0326	-3.25	0.753
114	800.00	28.28	0.125	-0.03265	-3.25	0.754
115	810.00	28.46	0.124	-0.03274	-3.26	0.754
116	820.00	28.64	0.125	-0.03278	-3.27	0.754
117	830.00	28.81	0.123	-0.03278	-3.27	0.754
118	840.00	28.98	0.122	-0.03283	-3.27	0.754
119	850.00	29.15	0.124	-0.03283	-3.27	0.754
120	860.00	29.33	0.123	-0.03287	-3.27	0.754
121	870.00	29.50	0.124	-0.03278	-3.27	0.754
122	880.00	29.66	0.125	-0.03292	-3.28	0.754
123	890.00	29.83	0.125	-0.03292	-3.28	0.754
124	900.00	30.00	0.124	-0.03292	-3.28	0.754
125	910.00	30.17	0.124	-0.03292	-3.28	0.754
126	920.00	30.33	0.124	-0.03306	-3.29	0.754
127	930.00	30.50	0.124	-0.03301	-3.29	0.754
128	940.00	30.66	0.124	-0.03301	-3.29	0.754
129	950.00	30.82	0.124	-0.03306	-3.29	0.754
130	960.00	30.98	0.125	-0.0332	-3.31	0.755
131	970.00	31.14	0.124	-0.0332	-3.31	0.755
132	980.00	31.30	0.123	-0.03315	-3.30	0.754
133	990.00	31.46	0.124	-0.0332	-3.31	0.755
134	1000.00	31.62	0.124	-0.03333	-3.32	0.755
135	1006.17	31.72	0.124	-0.03329	-3.32	0.755

CONSOLIDATION TEST DATA

SUMMARY REPORT



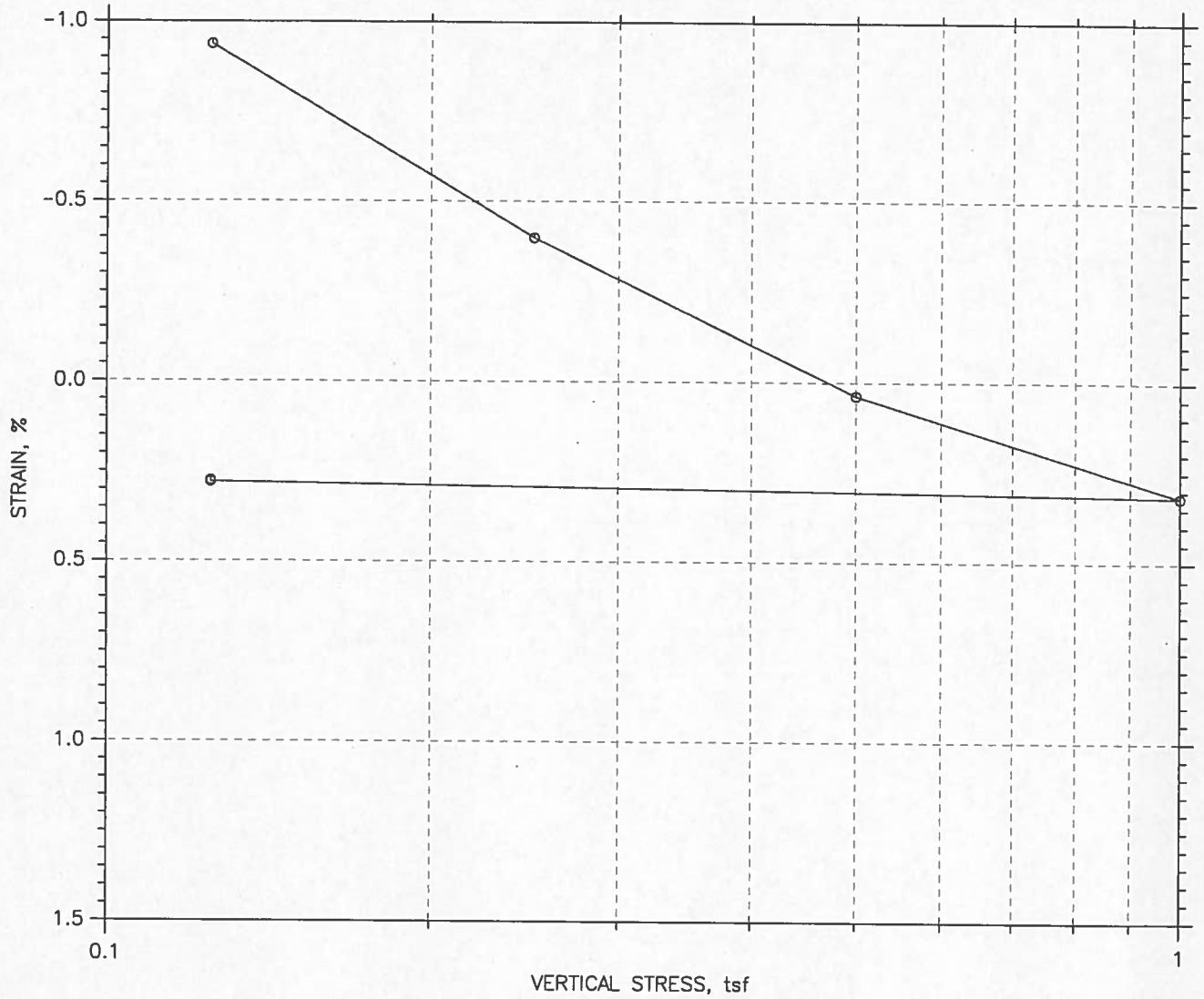


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-COMP 1
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: 19-COMP 1	Test Date: 8/7/19	Test No.: 3
	Depth: 0-4'	Sample Type: REMOLD	Elevation: N/A
	Description: BORROW B-101, 102, 104 & 105 SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND		

Fri, 16-AUG-2019 07:08:01

CONSOLIDATION TEST DATA

SUMMARY REPORT



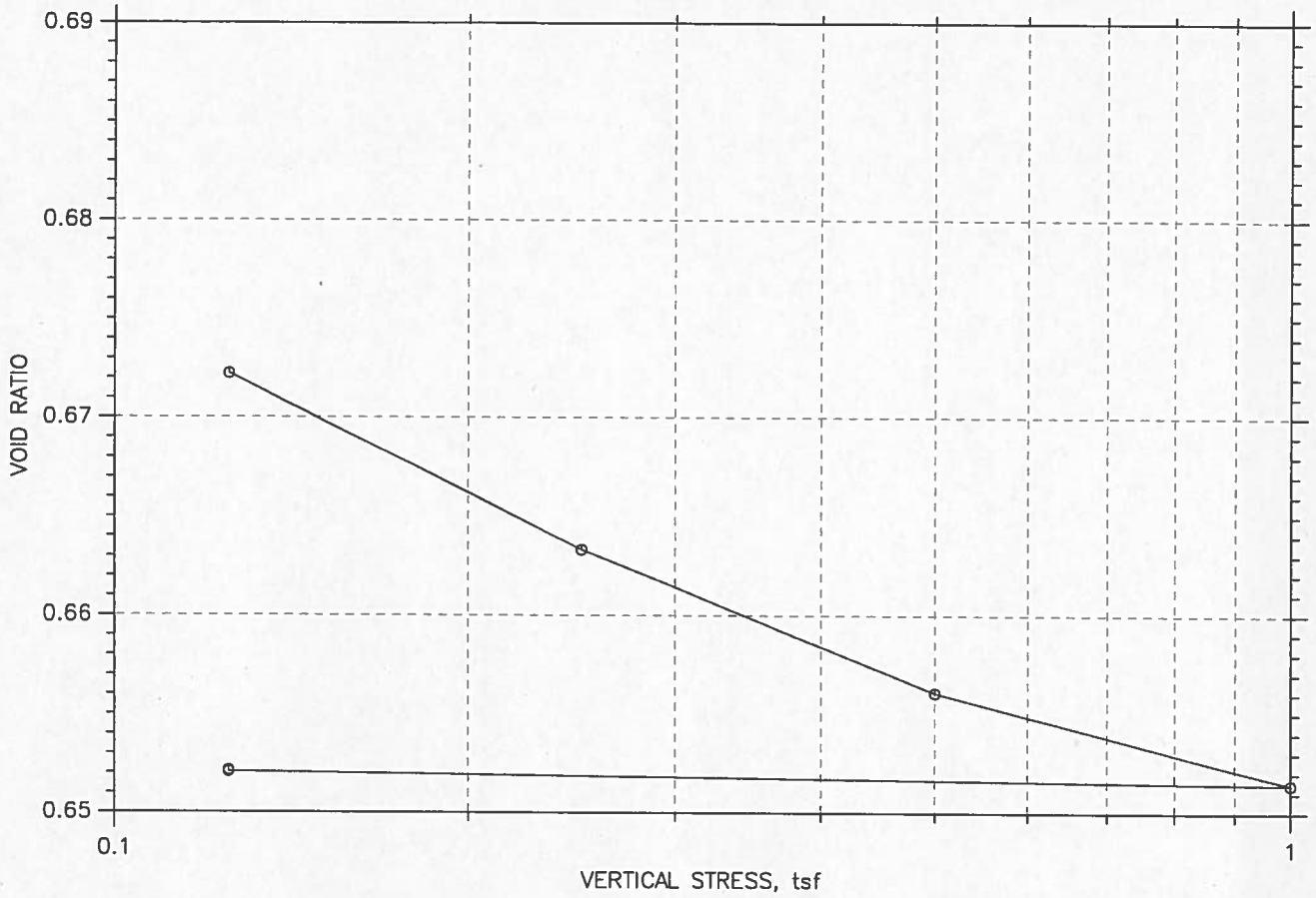
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	17.95	22.63
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	101.7	100.6
Compression Index: 3.81959e-313				Saturation, %	73.79	90.41
Diameter: 2.5 in		Height: 1.001 in		Void Ratio	0.66	0.68
LL: ---	PL: ---	PI: ---	GS: 2.70			

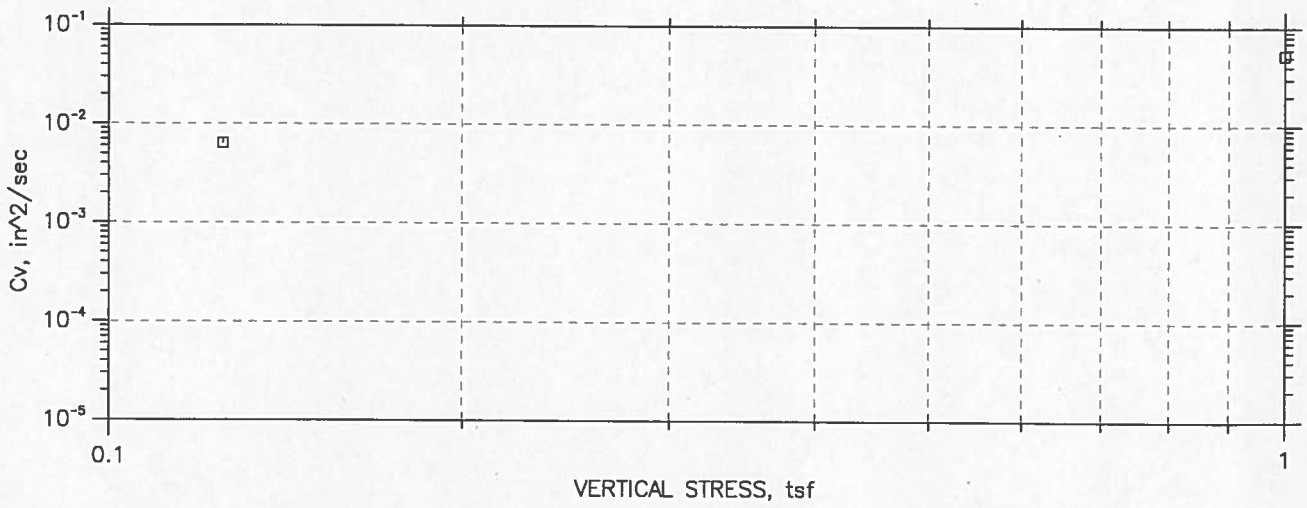
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-COMP 1
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: 19-COMP 1	Test Date: 8/7/19	Test No.: 3
	Depth: 0-4'	Sample Type: REMOLD	Elevation: N/A
	Description: BORROW B-101, 102, 104 & 105 SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Fri, 16-AUG-2019 07:08:01

CONSOLIDATION TEST DATA

SUMMARY REPORT



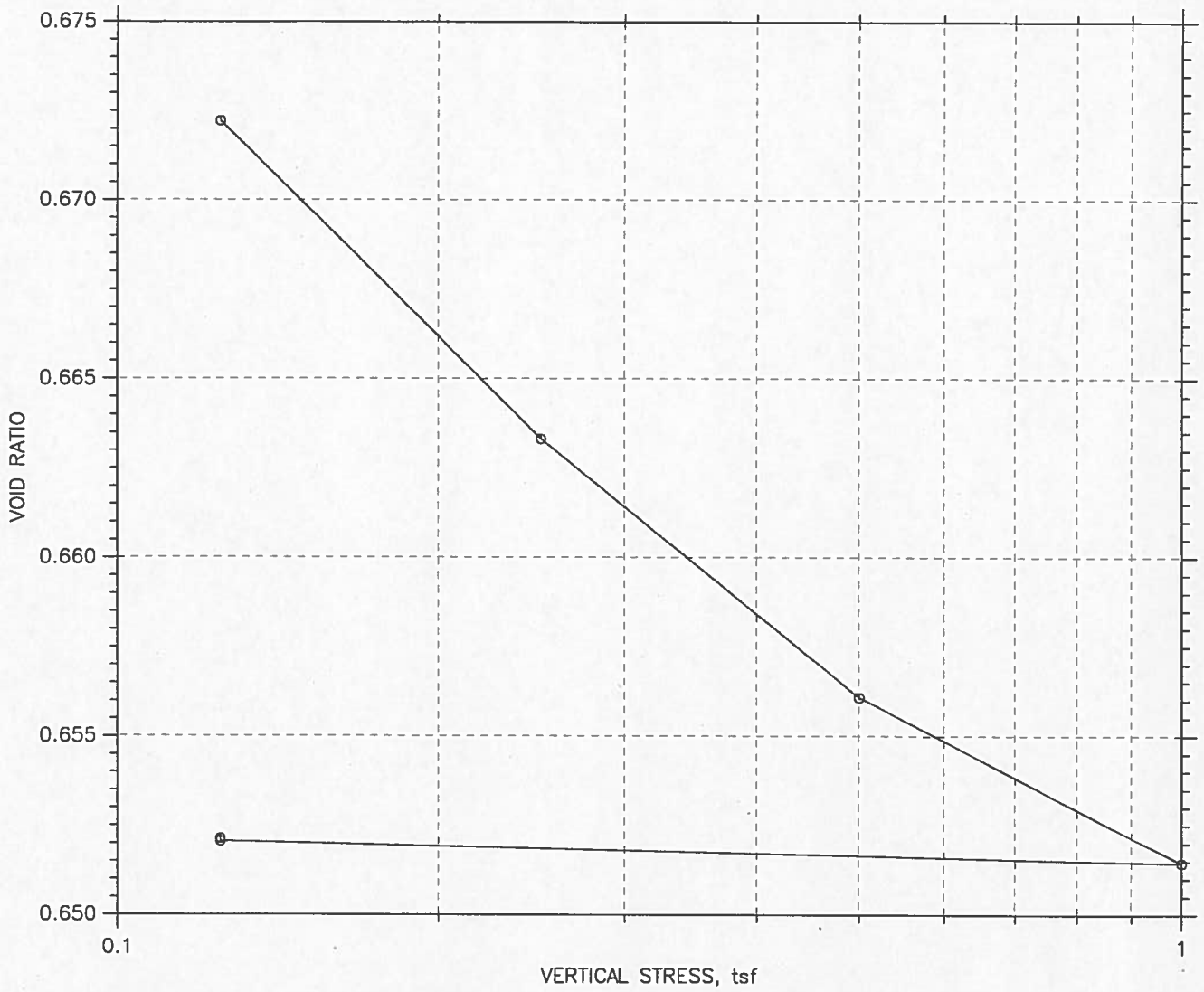


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-COMP 1
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: 19-COMP 1	Test Date: 8/7/19	Test No.: 3
	Depth: 0-4'	Sample Type: REMOLD	Elevation: N/A
	Description: BORROW B-101, 102, 104 & 105 SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Fri, 16-AUG-2019 07:08:11

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	17.95	22.63
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	101.7	100.6
Compression Index: 3.81959e-313				Saturation, %	73.79	90.41
Diameter: 2.5 in		Height: 1.001 in		Void Ratio	0.66	0.68
LL: ---	PL: ---	PI: ---	GS: 2.70			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-COMP 1
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: 19-COMP 1	Test Date: 8/7/19	Test No.: 3
	Depth: 0-4'	Sample Type: REMOLD	Elevation: N/A
	Description: BORROW B-101, 102, 104 & 105 SWELL TEST		
	Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (		

Fri, 16-AUG-2019 07:08:11

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 1
Test No.: 3

Location: TX
Tested By: SKK
Test Date: 8/7/19
Sample Type: REMOLD

Project No.: 19-COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: BORROW B-101, 102, 104 & 105 SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Measured Specific Gravity: 2.70
Initial Void Ratio: 0.66
Final Void Ratio: 0.68

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	118.1	264.93	271.07	214.37
Wt. Container + Dry Soil, gm	100	241.38	241.38	184.75
Wt. Container, gm	0	110.15	110.15	53.84
Wt. Dry Soil, gm	100	131.23	131.23	130.91
Water Content, %	18.10	17.95	22.63	22.63
Void Ratio	---	0.66	0.68	---
Degree of Saturation, %	---	73.79	90.41	---
Dry Unit Weight, pcf	---	101.74	100.59	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 1
Test No.: 3

Location: TX
Tested By: SKK
Test Date: 8/7/19
Sample Type: REMOLD

Project No.: 19-COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: BORROW B-101, 102, 104 & 105 SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.002759	0.652	0.28	0.7	4.85e-003	2.20e-002	2.00e-003
2	0.125	0.002805	0.652	0.28	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	1	0.003173	0.651	0.32	0.1	6.45e-002	4.20e-004	5.07e-004
4	0.5	0.0003678	0.656	0.04	1.4	2.47e-003	5.60e-003	2.59e-004
5	0.25	-0.004	0.663	-0.40	17.6	2.02e-004	1.75e-002	6.60e-005
6	0.125	-0.00938	0.672	-0.94	156.5	2.29e-005	4.30e-002	1.85e-005

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.002759	0.652	0.28	0.1	9.70e-003	2.20e-002	4.01e-003
2	0.125	0.002805	0.652	0.28	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	1	0.003173	0.651	0.32	0.0	0.00e+000	4.20e-004	0.00e+000
4	0.5	0.0003678	0.656	0.04	0.0	0.00e+000	5.60e-003	0.00e+000
5	0.25	-0.004	0.663	-0.40	0.0	0.00e+000	1.75e-002	0.00e+000
6	0.125	-0.00938	0.672	-0.94	41.7	2.00e-005	4.30e-002	1.61e-005

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 1
Test No.: 3

Location: TX
Tested By: SKK
Test Date: 8/7/19
Sample Type: REMOLD

Project No.: 19-COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: BORROW B-101, 102, 104 & 105 SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 1 of 6
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00448	-0.001335	-0.13	0.659
2	0.01	0.09	0.0112	-0.001335	-0.13	0.659
3	0.02	0.13	0.0415	-0.001151	-0.12	0.659
4	0.03	0.16	0.0616	-0.0009674	-0.10	0.658
5	0.04	0.19	0.0762	-0.0007835	-0.08	0.658
6	0.05	0.23	0.093	-0.0005077	-0.05	0.658
7	0.07	0.26	0.104	-0.0002778	-0.03	0.657
8	0.08	0.29	0.109	-9.385e-005	-0.01	0.657
9	0.12	0.34	0.115	9.007e-005	0.01	0.657
10	0.17	0.41	0.12	0.000182	0.02	0.656
11	0.25	0.50	0.122	0.000274	0.03	0.656
12	0.34	0.58	0.123	0.0004119	0.04	0.656
13	0.50	0.71	0.123	0.0005499	0.05	0.656
14	0.75	0.87	0.124	0.0006418	0.06	0.656
15	1.00	1.00	0.123	0.0007338	0.07	0.655
16	1.50	1.23	0.123	0.0007798	0.08	0.655
17	2.00	1.42	0.123	0.0008717	0.09	0.655
18	3.00	1.73	0.124	0.0009637	0.10	0.655
19	4.00	2.00	0.124	0.00101	0.10	0.655
20	5.00	2.24	0.124	0.001056	0.11	0.655
21	6.00	2.45	0.124	0.001102	0.11	0.655
22	7.00	2.65	0.125	0.001148	0.11	0.655
23	8.00	2.83	0.124	0.001194	0.12	0.655
24	9.00	3.00	0.124	0.001194	0.12	0.655
25	10.00	3.16	0.125	0.00124	0.12	0.655
26	12.00	3.46	0.123	0.001286	0.13	0.655
27	14.00	3.74	0.124	0.001332	0.13	0.654
28	15.03	3.88	0.124	0.001423	0.14	0.654

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 1
Test No.: 3

Location: TX
Tested By: SKK
Test Date: 8/7/19
Sample Type: REMOLD

Project No.: 19-COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: BORROW B-101, 102, 104 & 105 SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Volume Step: 2 of 6
Seating Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.124	0.001423	0.14	0.654
2	0.01	0.09	0.124	0.001423	0.14	0.654
3	0.02	0.13	0.125	0.001423	0.14	0.654
4	0.03	0.16	0.124	0.001423	0.14	0.654
5	0.04	0.19	0.124	0.001423	0.14	0.654
6	0.05	0.23	0.125	0.001423	0.14	0.654
7	0.07	0.27	0.129	0.001423	0.14	0.654
8	0.08	0.29	0.133	0.001423	0.14	0.654
9	0.12	0.34	0.145	0.001423	0.14	0.654
10	0.17	0.41	0.159	0.001469	0.15	0.654
11	0.25	0.50	0.183	0.001469	0.15	0.654
12	0.33	0.58	0.202	0.001515	0.15	0.654
13	0.50	0.71	0.23	0.001469	0.15	0.654
14	0.75	0.87	0.272	0.001423	0.14	0.654
15	1.00	1.00	0.316	0.001286	0.13	0.655
16	1.50	1.23	0.393	0.001332	0.13	0.654
17	2.00	1.41	0.444	0.001332	0.13	0.654
18	3.00	1.73	0.515	0.001332	0.13	0.654
19	4.00	2.00	0.56	0.001332	0.13	0.654
20	5.00	2.24	0.595	0.001377	0.14	0.654
21	6.00	2.45	0.614	0.001377	0.14	0.654
22	7.00	2.65	0.631	0.001377	0.14	0.654
23	8.00	2.83	0.651	0.001423	0.14	0.654
24	9.00	3.00	0.662	0.001377	0.14	0.654
25	10.00	3.16	0.674	0.001377	0.14	0.654
26	12.00	3.46	0.7	0.001377	0.14	0.654
27	14.00	3.74	0.72	0.001469	0.15	0.654
28	16.00	4.00	0.736	0.001469	0.15	0.654
29	18.00	4.24	0.748	0.001469	0.15	0.654
30	20.00	4.47	0.76	0.001469	0.15	0.654
31	22.00	4.69	0.766	0.001469	0.15	0.654
32	24.00	4.90	0.775	0.001469	0.15	0.654
33	26.00	5.10	0.778	0.001469	0.15	0.654
34	28.00	5.29	0.783	0.001469	0.15	0.654
35	30.00	5.48	0.784	0.001469	0.15	0.654
36	35.00	5.92	0.797	0.001469	0.15	0.654
37	40.00	6.32	0.809	0.001469	0.15	0.654
38	45.00	6.71	0.816	0.001469	0.15	0.654
39	50.00	7.07	0.825	0.001469	0.15	0.654
40	60.00	7.75	0.839	0.001469	0.15	0.654
41	70.00	8.37	0.841	0.001469	0.15	0.654
42	80.00	8.94	0.856	0.001469	0.15	0.654
43	90.00	9.49	0.863	0.001469	0.15	0.654
44	100.00	10.00	0.864	0.001469	0.15	0.654
45	110.00	10.49	0.868	0.001469	0.15	0.654
46	120.00	10.95	0.878	0.001469	0.15	0.654
47	130.00	11.40	0.878	0.001469	0.15	0.654
48	140.00	11.83	0.878	0.001469	0.15	0.654
49	150.00	12.25	0.887	0.001469	0.15	0.654
50	160.00	12.65	0.892	0.001469	0.15	0.654
51	170.00	13.04	0.884	0.001515	0.15	0.654
52	180.00	13.42	0.886	0.001469	0.15	0.654
53	190.00	13.78	0.895	0.001469	0.15	0.654
54	200.00	14.14	0.892	0.001469	0.15	0.654
55	210.00	14.49	0.888	0.001469	0.15	0.654
56	220.00	14.83	0.891	0.001469	0.15	0.654
57	230.00	15.17	0.9	0.001469	0.15	0.654
58	240.00	15.49	0.897	0.001423	0.14	0.654
59	250.00	15.81	0.891	0.001469	0.15	0.654
60	260.00	16.12	0.89	0.001469	0.15	0.654
61	270.00	16.43	0.899	0.001469	0.15	0.654
62	280.00	16.73	0.9	0.001469	0.15	0.654
63	290.00	17.03	0.895	0.001469	0.15	0.654
64	300.00	17.32	0.892	0.001469	0.15	0.654
65	310.00	17.61	0.901	0.001469	0.15	0.654
66	320.00	17.89	0.9	0.001469	0.15	0.654
67	330.00	18.17	0.892	0.001469	0.15	0.654
68	340.00	18.44	0.89	0.001469	0.15	0.654
69	350.00	18.71	0.9	0.001469	0.15	0.654
70	360.00	18.97	0.899	0.001469	0.15	0.654
71	370.00	19.24	0.891	0.001423	0.14	0.654
72	380.00	19.49	0.892	0.001469	0.15	0.654
73	390.00	19.75	0.893	0.001423	0.14	0.654
74	400.00	20.00	0.894	0.001469	0.15	0.654
75	410.00	20.25	0.89	0.001469	0.15	0.654
76	420.00	20.49	0.888	0.001469	0.15	0.654
77	430.00	20.74	0.896	0.001469	0.15	0.654
78	440.00	20.98	0.893	0.001469	0.15	0.654
79	450.00	21.21	0.892	0.001469	0.15	0.654
80	460.00	21.45	0.893	0.001469	0.15	0.654
81	470.00	21.68	0.9	0.001469	0.15	0.654

82	480.00	21.91	0.903	0.001469	0.15	0.654
83	490.00	22.14	0.896	0.001469	0.15	0.654
84	500.00	22.36	0.895	0.001469	0.15	0.654
85	510.00	22.58	0.901	0.001469	0.15	0.654
86	520.00	22.80	0.901	0.001469	0.15	0.654
87	530.00	23.02	0.9	0.001469	0.15	0.654
88	540.00	23.24	0.895	0.001469	0.15	0.654
89	550.00	23.45	0.89	0.001469	0.15	0.654
90	560.00	23.66	0.887	0.001469	0.15	0.654
91	570.00	23.87	0.891	0.001469	0.15	0.654
92	580.00	24.08	0.892	0.001469	0.15	0.654
93	590.00	24.29	0.892	0.001469	0.15	0.654
94	600.00	24.49	0.893	0.001469	0.15	0.654
95	610.00	24.70	0.89	0.001469	0.15	0.654
96	620.00	24.90	0.887	0.001469	0.15	0.654
97	630.00	25.10	0.891	0.001469	0.15	0.654
98	640.00	25.30	0.895	0.001469	0.15	0.654
99	650.00	25.50	0.895	0.001469	0.15	0.654
100	660.00	25.69	0.899	0.001469	0.15	0.654
101	670.00	25.88	0.9	0.001469	0.15	0.654
102	680.00	26.08	0.896	0.001469	0.15	0.654
103	690.00	26.27	0.895	0.001469	0.15	0.654
104	700.00	26.46	0.894	0.001469	0.15	0.654
105	710.00	26.65	0.896	0.001423	0.14	0.654
106	720.00	26.83	0.896	0.001423	0.14	0.654
107	730.00	27.02	0.894	0.001469	0.15	0.654
108	740.00	27.20	0.893	0.001469	0.15	0.654
109	750.00	27.39	0.891	0.001469	0.15	0.654
110	760.00	27.57	0.895	0.001469	0.15	0.654
111	770.00	27.75	0.893	0.001469	0.15	0.654
112	780.00	27.93	0.89	0.001469	0.15	0.654
113	790.00	28.11	0.886	0.001469	0.15	0.654
114	800.00	28.28	0.891	0.001469	0.15	0.654
115	810.00	28.46	0.896	0.001469	0.15	0.654
116	820.00	28.64	0.89	0.001469	0.15	0.654
117	830.00	28.81	0.886	0.001469	0.15	0.654
118	840.00	28.98	0.886	0.001469	0.15	0.654
119	850.00	29.15	0.897	0.001469	0.15	0.654
120	860.00	29.33	0.902	0.001469	0.15	0.654
121	870.00	29.50	0.899	0.001469	0.15	0.654
122	880.00	29.66	0.894	0.001469	0.15	0.654
123	890.00	29.83	0.899	0.001469	0.15	0.654
124	900.00	30.00	0.901	0.001469	0.15	0.654
125	910.00	30.17	0.904	0.001469	0.15	0.654
126	920.00	30.33	0.906	0.001469	0.15	0.654
127	930.00	30.50	0.909	0.001469	0.15	0.654
128	940.00	30.66	0.91	0.001423	0.14	0.654
129	950.00	30.82	0.91	0.001469	0.15	0.654
130	960.00	30.98	0.914	0.001469	0.15	0.654
131	970.00	31.14	0.912	0.001469	0.15	0.654
132	980.00	31.30	0.912	0.001469	0.15	0.654
133	990.00	31.46	0.911	0.001469	0.15	0.654
134	1000.00	31.62	0.912	0.001469	0.15	0.654
135	1010.00	31.78	0.912	0.001469	0.15	0.654
136	1020.00	31.94	0.911	0.001469	0.15	0.654
137	1030.00	32.09	0.913	0.001469	0.15	0.654
138	1040.00	32.25	0.909	0.001469	0.15	0.654
139	1050.00	32.40	0.909	0.001515	0.15	0.654
140	1060.00	32.56	0.91	0.001423	0.14	0.654
141	1070.00	32.71	0.91	0.001469	0.15	0.654
142	1080.00	32.86	0.91	0.001469	0.15	0.654
143	1090.00	33.02	0.908	0.001469	0.15	0.654
144	1100.00	33.17	0.906	0.001469	0.15	0.654
145	1110.00	33.32	0.905	0.001469	0.15	0.654
146	1120.00	33.47	0.906	0.001515	0.15	0.654
147	1130.00	33.62	0.905	0.001469	0.15	0.654
148	1140.00	33.76	0.908	0.001469	0.15	0.654
149	1150.00	33.91	0.9	0.001469	0.15	0.654
150	1160.00	34.06	0.894	0.001469	0.15	0.654
151	1170.00	34.21	0.902	0.001469	0.15	0.654
152	1180.00	34.35	0.901	0.001469	0.15	0.654
153	1190.00	34.50	0.905	0.001469	0.15	0.654
154	1200.00	34.64	0.906	0.001469	0.15	0.654
155	1210.00	34.79	0.905	0.001469	0.15	0.654
156	1220.00	34.93	0.906	0.001469	0.15	0.654
157	1230.00	35.07	0.904	0.001469	0.15	0.654
158	1240.00	35.21	0.905	0.001469	0.15	0.654
159	1250.00	35.36	0.908	0.001469	0.15	0.654
160	1260.00	35.50	0.906	0.001469	0.15	0.654
161	1270.00	35.64	0.906	0.001469	0.15	0.654
162	1280.00	35.78	0.904	0.001469	0.15	0.654
163	1290.00	35.92	0.904	0.001469	0.15	0.654
164	1300.00	36.06	0.9	0.001469	0.15	0.654
165	1310.00	36.19	0.903	0.001469	0.15	0.654
166	1320.00	36.33	0.904	0.001469	0.15	0.654
167	1330.00	36.47	0.901	0.001469	0.15	0.654
168	1340.00	36.61	0.895	0.001469	0.15	0.654
169	1350.00	36.74	0.886	0.001469	0.15	0.654
170	1360.00	36.88	0.897	0.001469	0.15	0.654
171	1370.00	37.01	0.9	0.001469	0.15	0.654
172	1380.00	37.15	0.893	0.001469	0.15	0.654
173	1390.00	37.28	0.878	0.001469	0.15	0.654
174	1400.00	37.42	0.888	0.001469	0.15	0.654
175	1410.00	37.55	0.894	0.001469	0.15	0.654
176	1420.00	37.68	0.893	0.001469	0.15	0.654
177	1430.00	37.82	0.884	0.001469	0.15	0.654
178	1440.00	37.95	0.9	0.001469	0.15	0.654
179	1440.02	37.95	0.9	0.001469	0.15	0.654

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 1
Test No.: 3

Location: TX
Tested By: SKK
Test Date: 8/7/19
Sample Type: REMOLD

Project No.: 19-COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: BORROW B-101, 102, 104 & 105 SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 3 of 6
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.9	-0.004367	-0.44	0.664
2	0.01	0.09	0.906	-0.004367	-0.44	0.664
3	0.02	0.13	0.988	-0.004091	-0.41	0.663
4	0.03	0.16	0.997	-0.004045	-0.40	0.663
5	0.04	0.19	0.996	-0.004045	-0.40	0.663
6	0.05	0.23	1	-0.004045	-0.40	0.663
7	0.07	0.27	0.999	-0.003999	-0.40	0.663
8	0.08	0.29	0.999	-0.003999	-0.40	0.663
9	0.12	0.35	0.998	-0.003999	-0.40	0.663
10	0.17	0.41	0.999	-0.003999	-0.40	0.663
11	0.25	0.50	0.999	-0.003999	-0.40	0.663
12	0.34	0.58	0.999	-0.003999	-0.40	0.663
13	0.50	0.71	0.999	-0.003999	-0.40	0.663
14	0.75	0.87	0.999	-0.003999	-0.40	0.663
15	1.00	1.00	1	-0.003999	-0.40	0.663
16	1.50	1.23	0.999	-0.003999	-0.40	0.663
17	2.00	1.42	0.999	-0.003999	-0.40	0.663
18	3.00	1.73	0.999	-0.003999	-0.40	0.663
19	4.00	2.00	0.999	-0.003999	-0.40	0.663
20	5.00	2.24	0.999	-0.003999	-0.40	0.663
21	6.00	2.45	0.999	-0.003999	-0.40	0.663
22	7.00	2.65	0.999	-0.003999	-0.40	0.663
23	8.00	2.83	0.999	-0.003999	-0.40	0.663
24	9.00	3.00	0.999	-0.004045	-0.40	0.663
25	10.00	3.16	1	-0.004045	-0.40	0.663
26	12.00	3.46	1	-0.004045	-0.40	0.663
27	14.00	3.74	0.999	-0.004045	-0.40	0.663
28	16.00	4.00	0.999	-0.004045	-0.40	0.663
29	18.00	4.24	1	-0.004045	-0.40	0.663
30	20.00	4.47	0.999	-0.004045	-0.40	0.663
31	22.00	4.69	0.999	-0.003999	-0.40	0.663
32	24.00	4.90	1	-0.004045	-0.40	0.663
33	26.00	5.10	0.999	-0.003999	-0.40	0.663
34	28.00	5.29	0.999	-0.003999	-0.40	0.663
35	30.00	5.48	0.999	-0.004045	-0.40	0.663
36	35.00	5.92	0.998	-0.003999	-0.40	0.663
37	40.00	6.32	1	-0.003999	-0.40	0.663
38	45.00	6.71	0.999	-0.004045	-0.40	0.663
39	50.00	7.07	0.999	-0.003999	-0.40	0.663
40	60.00	7.75	0.999	-0.003999	-0.40	0.663
41	70.00	8.37	0.999	-0.003999	-0.40	0.663
42	80.00	8.94	0.998	-0.004091	-0.41	0.663
43	90.00	9.49	0.998	-0.004045	-0.40	0.663
44	100.00	10.00	1	-0.003999	-0.40	0.663
45	110.00	10.49	0.999	-0.003999	-0.40	0.663
46	120.00	10.95	0.999	-0.004091	-0.41	0.663
47	130.00	11.40	1	-0.004045	-0.40	0.663
48	140.00	11.83	0.999	-0.003999	-0.40	0.663
49	150.00	12.25	0.999	-0.004091	-0.41	0.663
50	160.00	12.65	0.999	-0.004091	-0.41	0.663
51	170.00	13.04	0.998	-0.004045	-0.40	0.663
52	180.00	13.42	0.999	-0.004045	-0.40	0.663
53	190.00	13.78	1	-0.004045	-0.40	0.663
54	200.00	14.14	1	-0.004091	-0.41	0.663
55	210.00	14.49	0.999	-0.004045	-0.40	0.663
56	220.00	14.83	0.999	-0.003999	-0.40	0.663
57	230.00	15.17	0.999	-0.004045	-0.40	0.663
58	240.00	15.49	0.999	-0.004045	-0.40	0.663
59	250.00	15.81	1	-0.003999	-0.40	0.663
60	260.00	16.12	1	-0.004045	-0.40	0.663
61	270.00	16.43	0.999	-0.004045	-0.40	0.663
62	280.00	16.73	1	-0.004045	-0.40	0.663
63	290.00	17.03	0.999	-0.004045	-0.40	0.663
64	299.02	17.29	0.999	-0.003999	-0.40	0.663

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 1
Test No.: 3

Location: TX
Tested By: SKK
Test Date: 8/7/19
Sample Type: REMOLD

Project No.: 19-COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: BORROW B-101, 102, 104 & 105 SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 4 of 6
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.001058	0.11	0.655
2	0.01	0.09	0.955	0.001058	0.11	0.655
3	0.02	0.13	0.639	0.0003219	0.03	0.656
4	0.03	0.16	0.569	9.196e-005	0.01	0.657
5	0.04	0.19	0.539	-4.598e-005	-0.00	0.657
6	0.05	0.23	0.515	-0.0002759	-0.03	0.657
7	0.07	0.27	0.51	-0.0003678	-0.04	0.657
8	0.08	0.29	0.505	-0.0004138	-0.04	0.657
9	0.12	0.35	0.504	-0.0005058	-0.05	0.658
10	0.17	0.41	0.502	-0.0005517	-0.06	0.658
11	0.25	0.50	0.502	-0.0005977	-0.06	0.658
12	0.34	0.58	0.502	-0.0006897	-0.07	0.658
13	0.50	0.71	0.502	-0.0006897	-0.07	0.658
14	0.75	0.87	0.501	-0.0007357	-0.07	0.658
15	1.00	1.00	0.501	-0.0008276	-0.08	0.658
16	1.50	1.23	0.499	-0.0009196	-0.09	0.658
17	2.00	1.42	0.5	-0.0009656	-0.10	0.658
18	3.00	1.73	0.501	-0.001012	-0.10	0.658
19	4.00	2.00	0.501	-0.001012	-0.10	0.658
20	5.00	2.24	0.501	-0.001012	-0.10	0.658
21	6.00	2.45	0.501	-0.001103	-0.11	0.659
22	7.00	2.65	0.501	-0.001149	-0.11	0.659
23	8.00	2.83	0.499	-0.001241	-0.12	0.659
24	9.00	3.00	0.501	-0.001287	-0.13	0.659
25	10.00	3.16	0.501	-0.001287	-0.13	0.659
26	12.00	3.46	0.5	-0.001333	-0.13	0.659
27	14.00	3.74	0.501	-0.001379	-0.14	0.659
28	16.00	4.00	0.5	-0.001425	-0.14	0.659
29	18.00	4.24	0.5	-0.001425	-0.14	0.659
30	20.00	4.47	0.5	-0.001471	-0.15	0.659
31	22.00	4.69	0.499	-0.001471	-0.15	0.659
32	24.00	4.90	0.501	-0.001517	-0.15	0.659
33	26.00	5.10	0.499	-0.001517	-0.15	0.659
34	28.00	5.29	0.501	-0.001563	-0.16	0.659
35	30.00	5.48	0.501	-0.001563	-0.16	0.659
36	35.00	5.92	0.501	-0.001563	-0.16	0.659
37	40.00	6.32	0.5	-0.001563	-0.16	0.659
38	45.00	6.71	0.5	-0.001563	-0.16	0.659
39	50.00	7.07	0.501	-0.001609	-0.16	0.659
40	60.00	7.75	0.499	-0.001609	-0.16	0.659
41	70.00	8.37	0.499	-0.001701	-0.17	0.660
42	80.00	8.94	0.5	-0.001701	-0.17	0.660
43	90.00	9.49	0.501	-0.001701	-0.17	0.660
44	100.00	10.00	0.5	-0.001747	-0.17	0.660
45	110.00	10.49	0.499	-0.001793	-0.18	0.660
46	120.00	10.95	0.5	-0.001747	-0.17	0.660
47	120.02	10.96	0.501	-0.001747	-0.17	0.660

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 1
Test No.: 3

Location: TX
Tested By: SKK
Test Date: 8/7/19
Sample Type: REMOLD

Project No.: 19-COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

Soil Description: BORROW B-101, 102, 104 & 105 SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

Constant Load Step: 5 of 6
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.5	-0.001747	-0.17	0.660
2	0.01	0.09	0.499	-0.001747	-0.17	0.660
3	0.02	0.13	0.37	-0.001839	-0.18	0.660
4	0.03	0.16	0.309	-0.002115	-0.21	0.660
5	0.04	0.19	0.287	-0.002253	-0.23	0.660
6	0.05	0.23	0.268	-0.002345	-0.23	0.661
7	0.07	0.27	0.26	-0.002437	-0.24	0.661
8	0.08	0.29	0.257	-0.002483	-0.25	0.661
9	0.12	0.34	0.253	-0.002575	-0.26	0.661
10	0.17	0.41	0.254	-0.002667	-0.27	0.661
11	0.25	0.50	0.253	-0.002759	-0.28	0.661
12	0.34	0.58	0.252	-0.002851	-0.28	0.661
13	0.50	0.71	0.252	-0.003035	-0.30	0.662
14	0.75	0.87	0.25	-0.003219	-0.32	0.662
15	1.00	1.00	0.251	-0.003356	-0.34	0.662
16	1.50	1.23	0.251	-0.003448	-0.34	0.662
17	2.00	1.41	0.251	-0.00354	-0.35	0.663
18	3.00	1.73	0.25	-0.003724	-0.37	0.663
19	4.00	2.00	0.25	-0.003954	-0.40	0.663
20	5.00	2.24	0.25	-0.004184	-0.42	0.664
21	6.00	2.45	0.25	-0.004276	-0.43	0.664
22	7.00	2.65	0.249	-0.004322	-0.43	0.664
23	8.00	2.83	0.249	-0.004368	-0.44	0.664
24	9.00	3.00	0.251	-0.004414	-0.44	0.664
25	10.00	3.16	0.25	-0.00446	-0.45	0.664
26	12.00	3.46	0.249	-0.004598	-0.46	0.664
27	14.00	3.74	0.25	-0.00469	-0.47	0.664
28	16.00	4.00	0.25	-0.004828	-0.48	0.665
29	18.00	4.24	0.251	-0.00492	-0.49	0.665
30	20.00	4.47	0.25	-0.004966	-0.50	0.665
31	22.00	4.69	0.25	-0.005012	-0.50	0.665
32	24.00	4.90	0.251	-0.005058	-0.51	0.665
33	26.00	5.10	0.25	-0.005104	-0.51	0.665
34	28.00	5.29	0.25	-0.00515	-0.51	0.665
35	30.00	5.48	0.251	-0.005196	-0.52	0.665
36	35.00	5.92	0.249	-0.005242	-0.52	0.665
37	40.00	6.32	0.251	-0.005288	-0.53	0.665
38	45.00	6.71	0.25	-0.00538	-0.54	0.666
39	50.00	7.07	0.251	-0.005426	-0.54	0.666
40	60.00	7.75	0.25	-0.005426	-0.54	0.666
41	70.00	8.37	0.249	-0.005563	-0.56	0.666
42	80.00	8.94	0.251	-0.005655	-0.56	0.666
43	90.00	9.49	0.251	-0.005747	-0.57	0.666
44	100.00	10.00	0.249	-0.005885	-0.59	0.666
45	110.00	10.49	0.251	-0.006023	-0.60	0.667
46	120.00	10.95	0.249	-0.006115	-0.61	0.667
47	120.03	10.96	0.251	-0.006115	-0.61	0.667

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 1
Test No.: 3

Location: TX
Tested By: SKK
Test Date: 8/7/19
Sample Type: REMOLD

Project No.: 19-COMP 1
Checked By: SKK
Depth: 0-4'
Elevation: N/A

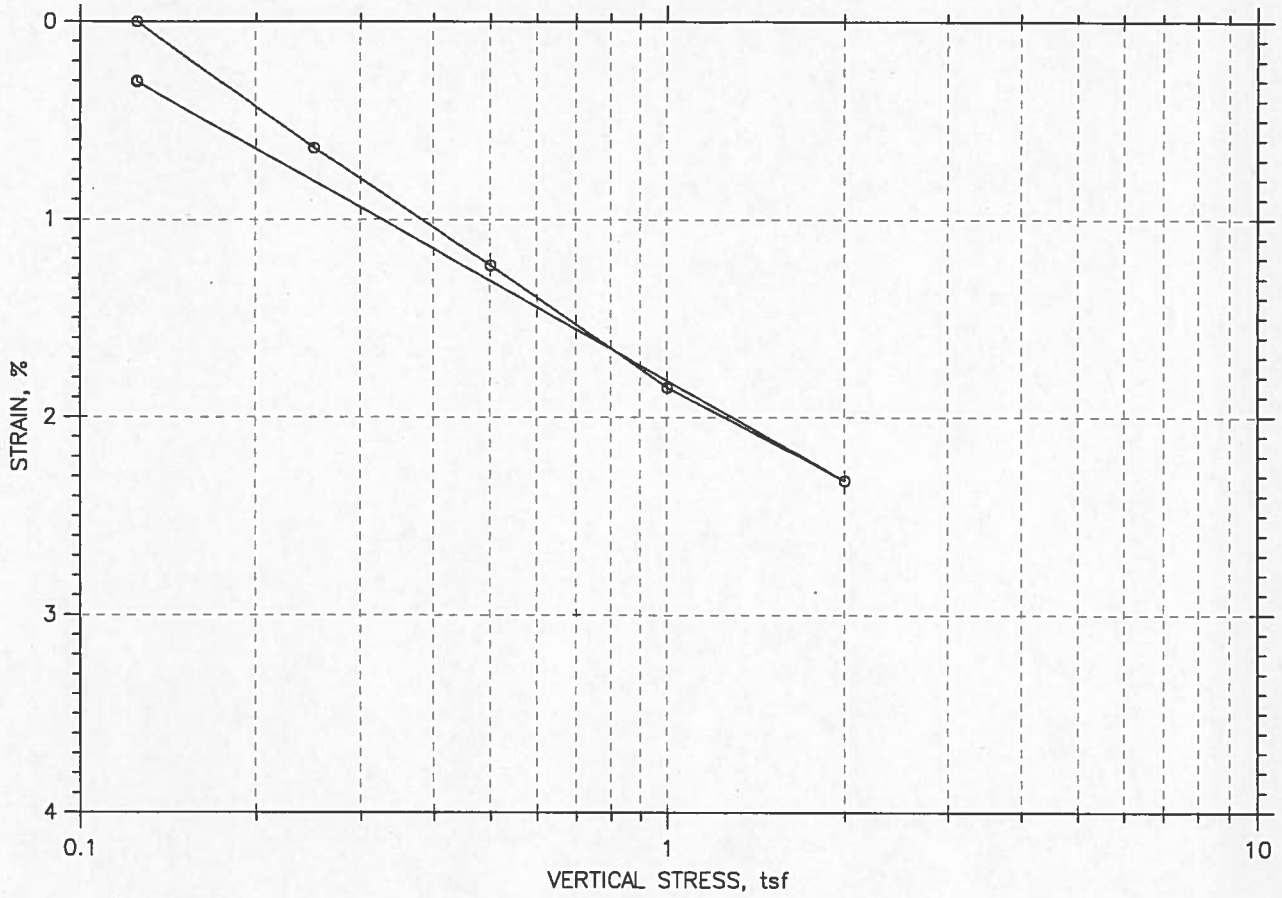
Soil Description: BORROW B-101, 102, 104 & 105 SWELL TEST
Remarks: APPLY SEATING LOAD, THEN SATURATE, PREVENT SWELLING, LOAD NEXT INCREMENT, REBOUND (INCREMENTALLY)

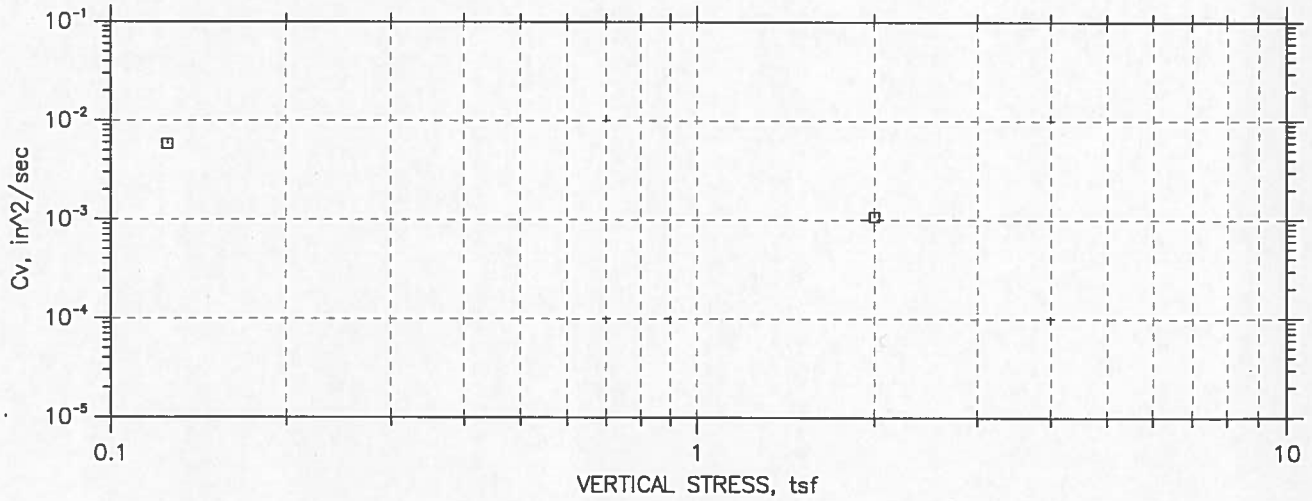
Constant Load Step: 6 of 6
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.251	-0.006115	-0.61	0.667
2	0.01	0.09	0.226	-0.006115	-0.61	0.667
3	0.02	0.13	0.164	-0.006253	-0.62	0.667
4	0.03	0.16	0.147	-0.006345	-0.63	0.667
5	0.03	0.19	0.139	-0.006391	-0.64	0.667
6	0.05	0.23	0.132	-0.006437	-0.64	0.667
7	0.07	0.26	0.13	-0.006483	-0.65	0.667
8	0.09	0.30	0.129	-0.006483	-0.65	0.667
9	0.12	0.34	0.127	-0.006483	-0.65	0.667
10	0.17	0.41	0.128	-0.006483	-0.65	0.667
11	0.25	0.50	0.125	-0.006483	-0.65	0.667
12	0.34	0.58	0.127	-0.006483	-0.65	0.667
13	0.50	0.71	0.124	-0.006575	-0.66	0.668
14	0.75	0.87	0.125	-0.006575	-0.66	0.668
15	1.00	1.00	0.125	-0.006575	-0.66	0.668
16	1.50	1.23	0.124	-0.006621	-0.66	0.668
17	2.00	1.42	0.124	-0.006667	-0.67	0.668
18	3.00	1.73	0.123	-0.006805	-0.68	0.668
19	4.00	2.00	0.125	-0.006851	-0.68	0.668
20	5.00	2.24	0.125	-0.006989	-0.70	0.668
21	6.00	2.45	0.124	-0.007035	-0.70	0.668
22	7.00	2.65	0.123	-0.007127	-0.71	0.668
23	8.00	2.83	0.123	-0.007219	-0.72	0.669
24	9.00	3.00	0.123	-0.007265	-0.73	0.669
25	10.00	3.16	0.124	-0.007403	-0.74	0.669
26	12.00	3.46	0.124	-0.007495	-0.75	0.669
27	14.00	3.74	0.125	-0.007587	-0.76	0.669
28	16.00	4.00	0.125	-0.007678	-0.77	0.669
29	18.00	4.24	0.124	-0.00777	-0.78	0.670
30	20.00	4.47	0.124	-0.007862	-0.79	0.670
31	22.00	4.69	0.124	-0.008	-0.80	0.670
32	24.00	4.90	0.125	-0.008092	-0.81	0.670
33	26.00	5.10	0.124	-0.008276	-0.83	0.670
34	28.00	5.29	0.124	-0.00846	-0.85	0.671
35	30.00	5.48	0.125	-0.008506	-0.85	0.671
36	35.00	5.92	0.124	-0.00869	-0.87	0.671
37	40.00	6.32	0.124	-0.008874	-0.89	0.671
38	45.00	6.71	0.124	-0.008966	-0.90	0.672
39	50.00	7.07	0.124	-0.009196	-0.92	0.672
40	60.00	7.75	0.124	-0.009426	-0.94	0.672
41	70.00	8.37	0.125	-0.00961	-0.96	0.673
42	80.00	8.94	0.123	-0.009839	-0.98	0.673
43	90.00	9.49	0.124	-0.01002	-1.00	0.673
44	100.00	10.00	0.125	-0.01025	-1.02	0.674
45	110.00	10.49	0.123	-0.0103	-1.03	0.674
46	120.00	10.95	0.125	-0.01044	-1.04	0.674
47	130.00	11.40	0.124	-0.01062	-1.06	0.674
48	140.00	11.83	0.125	-0.01067	-1.07	0.674
49	150.00	12.25	0.124	-0.01071	-1.07	0.674
50	160.00	12.65	0.122	-0.01081	-1.08	0.675
51	170.00	13.04	0.125	-0.01085	-1.08	0.675
52	180.00	13.42	0.124	-0.01094	-1.09	0.675
53	190.00	13.78	0.125	-0.01103	-1.10	0.675
54	200.00	14.14	0.124	-0.01108	-1.11	0.675
55	210.00	14.49	0.123	-0.01117	-1.12	0.675
56	220.00	14.83	0.124	-0.01122	-1.12	0.675
57	230.00	15.17	0.125	-0.01131	-1.13	0.675
58	240.00	15.49	0.125	-0.01136	-1.13	0.675
59	250.00	15.81	0.124	-0.01145	-1.14	0.676
60	260.00	16.12	0.125	-0.01149	-1.15	0.676
61	270.00	16.43	0.124	-0.01154	-1.15	0.676
62	270.71	16.45	0.125	-0.01149	-1.15	0.676

CONSOLIDATION TEST DATA

SUMMARY REPORT



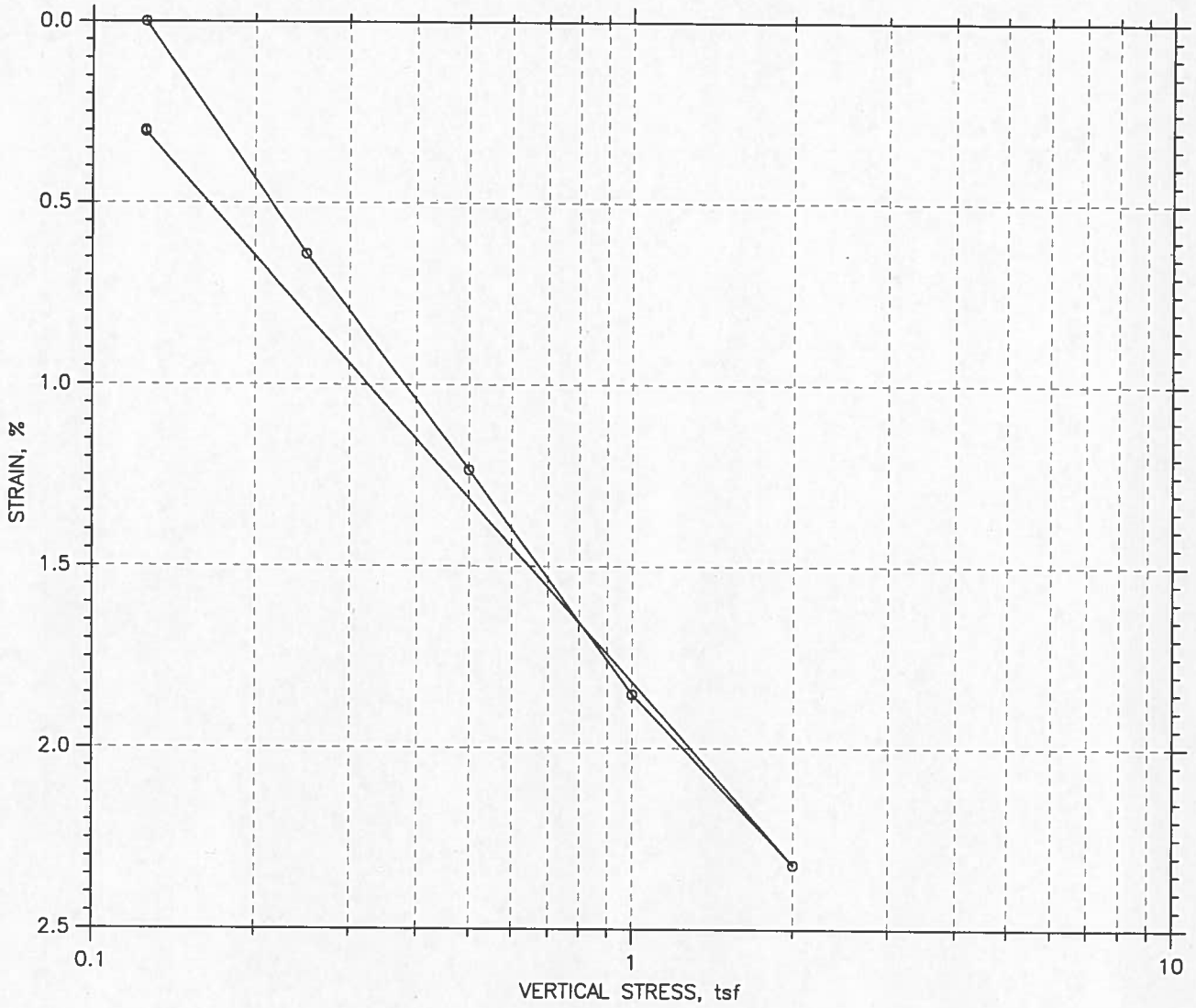


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-COMP 3
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: 19-COMP 3	Test Date: 8/12/19	Test No.: 2
	Depth: 0-3'	Sample Type: REMOLD	Elevation: N/A
	Description: B-107, 108, 109, & 110		
	Remarks:		

Fri 16 AUG 2019 07:17:41

CONSOLIDATION TEST DATA

SUMMARY REPORT



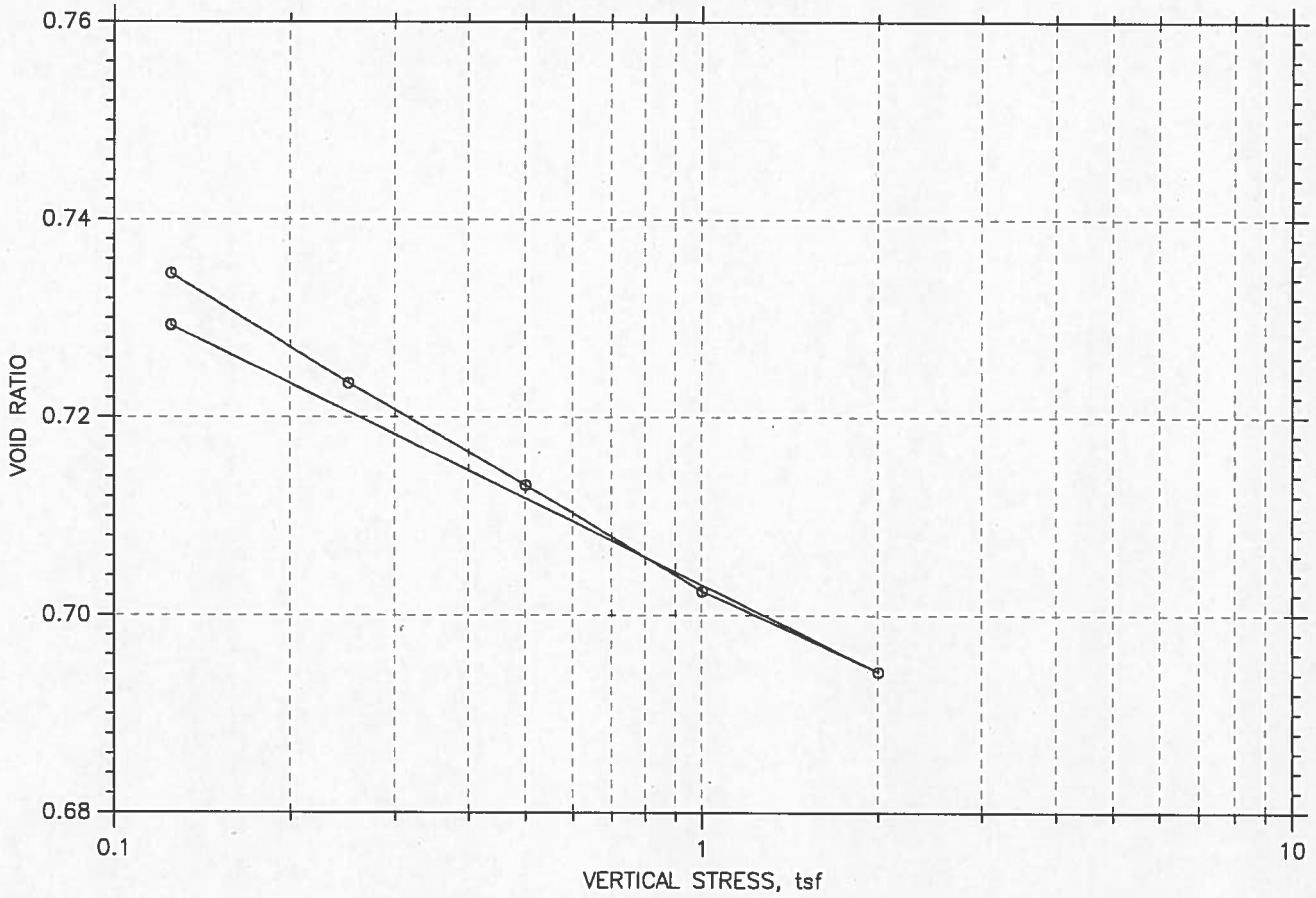
					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	19.81	24.75
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	97.18	96.97
Compression Index: 3.81959e-313				Saturation, %	72.82	90.52
Diameter: 2.5 in		Height: 0.998 in		Void Ratio	0.73	0.74
LL: ---	PL: ---	PI: ---	GS: 2.70			

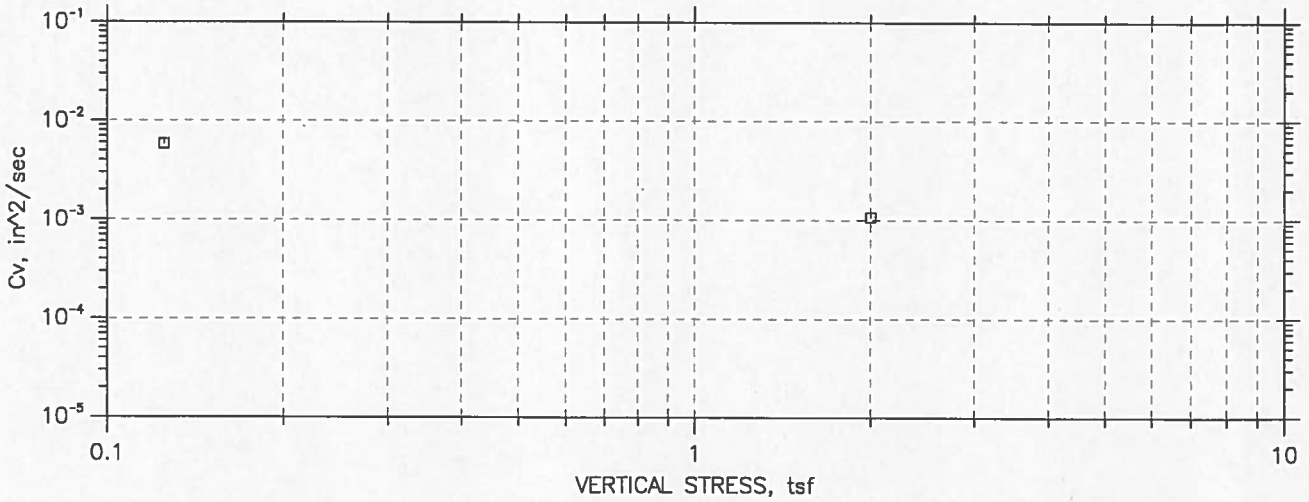
	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-COMP 3
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: 19-COMP 3	Test Date: 8/12/19	Test No.: 2
	Depth: 0-3'	Sample Type: REMOLD	Elevation: N/A
	Description: B-107, 108, 109, & 110		
	Remarks:		

Fri 16-AUG-2019 07:17:42

CONSOLIDATION TEST DATA

SUMMARY REPORT



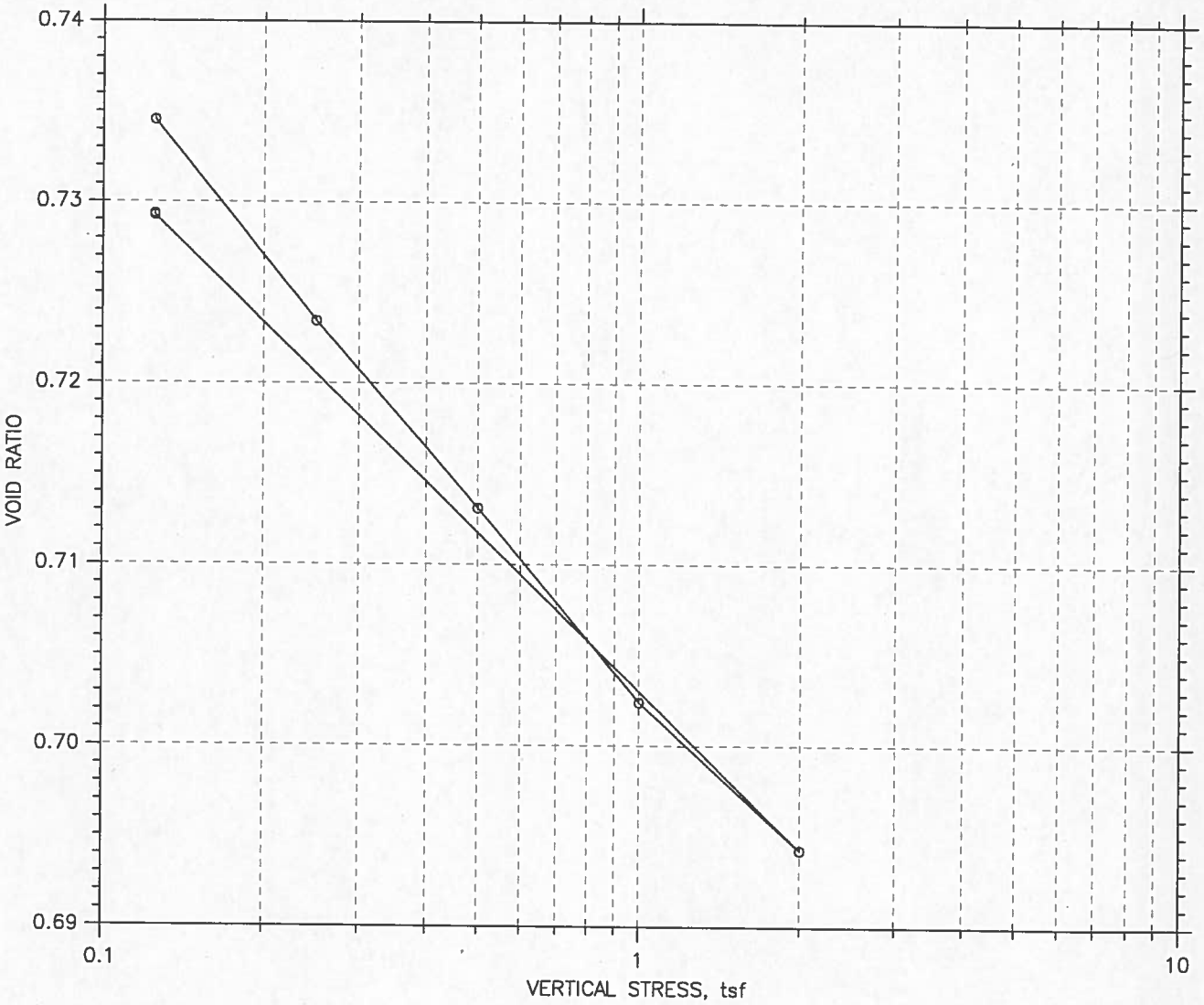


	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-COMP 3
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: 19-COMP 3	Test Date: 8/12/19	Test No.: 2
	Depth: 0-3'	Sample Type: REMOLD	Elevation: N/A
	Description: B-107, 108, 109, & 110		
	Remarks:		

Fri 16 AUG 2019 07:17:49

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	19.81	24.75
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	97.18	96.97
Compression Index: 3.81959e-313				Saturation, %	72.82	90.52
Diameter: 2.5 in		Height: 0.998 in		Void Ratio	0.73	0.74
LL: ---	PL: ---	PI: ---	GS: 2.70			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-COMP 3
	Boring No.:	Tested By: SKK	Checked By: SKK
	Sample No.: 19-COMP 3	Test Date: 8/12/19	Test No.: 2
	Depth: 0-3'	Sample Type: REMOLD	Elevation: N/A
	Description: B-107, 108, 109, & 110		
	Remarks:		

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CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 3
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 8/12/19
Sample Type: REMOLD

Project No.: 19-COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Measured Specific Gravity: 2.70
Initial Void Ratio: 0.73
Final Void Ratio: 0.74

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID		RING		
Wt. Container + Wet Soil, gm	119.8	259.87	266.04	208.22
Wt. Container + Dry Soil, gm	100	235.11	235.11	177.3
Wt. Container, gm	0	110.15	110.15	52.36
Wt. Dry Soil, gm	100	124.96	124.96	124.94
Water Content, %	19.80	19.81	24.75	24.75
Void Ratio	---	0.73	0.74	---
Degree of Saturation, %	---	72.82	90.52	---
Dry Unit Weight, pcf	---	97.177	96.971	---

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 3
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 8/12/19
Sample Type: REMOLD

Project No.: 19-COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt. T90 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.002989	0.729	0.30	1.0	3.60e-003	2.40e-002	1.61e-003
2	0.125	0.003035	0.729	0.30	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	2	0.02317	0.694	2.32	5.7	5.96e-004	1.08e-002	1.20e-004
4	1	0.01848	0.702	1.85	0.2	1.83e-002	4.70e-003	1.61e-003
5	0.5	0.01232	0.713	1.23	19.6	1.74e-004	1.23e-002	4.02e-005
6	0.25	0.006391	0.723	0.64	137.9	2.50e-005	2.38e-002	1.12e-005
7	0.125	0	0.735	0.00	153.2	2.28e-005	5.12e-002	2.19e-005

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log. T50 min	Cv in^2/sec	Mv 1/tsf	k ft/day
1	0.125	0.002989	0.729	0.30	0.1	1.57e-002	2.40e-002	7.05e-003
2	0.125	0.003035	0.729	0.30	0.0	0.00e+000	1.#Je+000	-1.#Je+000
3	2	0.02317	0.694	2.32	0.3	2.35e-003	1.08e-002	4.74e-004
4	1	0.01848	0.702	1.85	0.0	3.91e-002	4.70e-003	3.44e-003
5	0.5	0.01232	0.713	1.23	0.0	0.00e+000	1.23e-002	0.00e+000
6	0.25	0.006391	0.723	0.64	0.0	0.00e+000	2.38e-002	0.00e+000
7	0.125	0	0.735	0.00	0.0	0.00e+000	5.12e-002	0.00e+000

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 3
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 8/12/19
Sample Type: REMOLD

Project No.: 19-COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 1 of 7
Applied Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.00448	-0.001335	-0.13	0.737
2	0.01	0.09	0.0123	-0.001335	-0.13	0.737
3	0.02	0.13	0.037	-0.001105	-0.11	0.736
4	0.03	0.16	0.056	-0.0007835	-0.08	0.736
5	0.04	0.19	0.0706	-0.0005077	-0.05	0.735
6	0.05	0.23	0.0885	-0.0001398	-0.01	0.735
7	0.07	0.26	0.102	-1.889e-006	-0.00	0.735
8	0.09	0.30	0.108	0.000136	0.01	0.734
9	0.12	0.34	0.114	0.00032	0.03	0.734
10	0.17	0.41	0.118	0.0004579	0.05	0.734
11	0.25	0.50	0.122	0.0005958	0.06	0.733
12	0.33	0.58	0.122	0.0006878	0.07	0.733
13	0.50	0.71	0.123	0.0007338	0.07	0.733
14	0.75	0.87	0.123	0.0008717	0.09	0.733
15	1.00	1.00	0.122	0.0009177	0.09	0.733
16	1.50	1.23	0.124	0.0009637	0.10	0.733
17	2.00	1.42	0.124	0.00101	0.10	0.733
18	3.00	1.73	0.124	0.001102	0.11	0.733
19	4.00	2.00	0.124	0.001194	0.12	0.732
20	5.00	2.24	0.124	0.001286	0.13	0.732
21	6.00	2.45	0.123	0.001332	0.13	0.732
22	7.00	2.65	0.124	0.001377	0.14	0.732
23	8.00	2.83	0.124	0.001423	0.14	0.732
24	9.00	3.00	0.125	0.001469	0.15	0.732
25	10.00	3.16	0.123	0.001515	0.15	0.732
26	12.00	3.46	0.125	0.001561	0.16	0.732
27	14.00	3.74	0.124	0.001607	0.16	0.732
28	15.03	3.88	0.123	0.001653	0.17	0.732

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 3
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 8/12/19
Sample Type: REMOLD

Project No.: 19-COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Volume Step: 2 of 7
Seating Stress: 0.125 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.124	0.001653	0.17	0.732
2	0.01	0.09	0.124	0.001653	0.17	0.732
3	0.02	0.13	0.124	0.001653	0.17	0.732
4	0.03	0.16	0.124	0.001653	0.17	0.732
5	0.04	0.19	0.125	0.001653	0.17	0.732
6	0.05	0.23	0.129	0.001653	0.17	0.732
7	0.07	0.26	0.138	0.001607	0.16	0.732
8	0.09	0.30	0.147	0.001607	0.16	0.732
9	0.12	0.34	0.158	0.001561	0.16	0.732
10	0.17	0.41	0.178	0.001515	0.15	0.732
11	0.25	0.50	0.206	0.001469	0.15	0.732
12	0.33	0.58	0.231	0.001332	0.13	0.732
13	0.50	0.71	0.273	0.001194	0.12	0.732
14	0.75	0.87	0.331	0.001102	0.11	0.733
15	1.00	1.00	0.379	0.001056	0.11	0.733
16	1.50	1.23	0.467	0.00101	0.10	0.733
17	2.00	1.42	0.539	0.001056	0.11	0.733
18	3.00	1.73	0.669	0.001607	0.16	0.732
19	4.00	2.00	0.71	0.001607	0.16	0.732
20	5.00	2.24	0.746	0.001607	0.16	0.732
21	6.00	2.45	0.773	0.001607	0.16	0.732
22	7.00	2.65	0.794	0.001653	0.17	0.732
23	8.00	2.83	0.812	0.001653	0.17	0.732
24	9.00	3.00	0.829	0.001699	0.17	0.732
25	10.00	3.16	0.84	0.001699	0.17	0.732
26	12.00	3.46	0.859	0.001699	0.17	0.732
27	14.00	3.74	0.873	0.001699	0.17	0.732
28	16.00	4.00	0.884	0.001699	0.17	0.732
29	18.00	4.24	0.895	0.001699	0.17	0.732
30	20.00	4.47	0.904	0.001699	0.17	0.732
31	22.00	4.69	0.91	0.001699	0.17	0.732
32	24.00	4.90	0.915	0.001699	0.17	0.732
33	26.00	5.10	0.919	0.001699	0.17	0.732
34	28.00	5.29	0.923	0.001699	0.17	0.732
35	30.00	5.48	0.927	0.001699	0.17	0.732
36	35.00	5.92	0.936	0.001699	0.17	0.732
37	40.00	6.32	0.943	0.001699	0.17	0.732
38	45.00	6.71	0.946	0.001699	0.17	0.732
39	50.00	7.07	0.95	0.001653	0.17	0.732
40	60.00	7.75	0.958	0.001699	0.17	0.732
41	70.00	8.37	0.967	0.001699	0.17	0.732
42	80.00	8.94	0.969	0.001699	0.17	0.732
43	90.00	9.49	0.977	0.001699	0.17	0.732
44	100.00	10.00	0.985	0.001699	0.17	0.732
45	110.00	10.49	0.98	0.001699	0.17	0.732
46	120.00	10.95	0.984	0.001699	0.17	0.732
47	130.00	11.40	0.994	0.001699	0.17	0.732
48	140.00	11.83	0.999	0.001699	0.17	0.732
49	150.00	12.25	0.995	0.001699	0.17	0.732
50	160.00	12.65	0.998	0.001699	0.17	0.732
51	170.00	13.04	0.985	0.001653	0.17	0.732
52	180.00	13.42	0.998	0.001699	0.17	0.732
53	190.00	13.78	0.992	0.001699	0.17	0.732
54	200.00	14.14	0.992	0.001699	0.17	0.732
55	210.00	14.49	0.996	0.001699	0.17	0.732
56	220.00	14.83	1.01	0.001699	0.17	0.732
57	230.00	15.17	0.999	0.001699	0.17	0.732
58	240.00	15.49	0.998	0.001699	0.17	0.732
59	250.00	15.81	1.01	0.001699	0.17	0.732
60	260.00	16.12	1	0.001699	0.17	0.732
61	270.00	16.43	0.997	0.001699	0.17	0.732
62	280.00	16.73	0.998	0.001699	0.17	0.732
63	290.00	17.03	1.01	0.001699	0.17	0.732
64	300.00	17.32	1.01	0.001699	0.17	0.732
65	310.00	17.61	1	0.001699	0.17	0.732
66	320.00	17.89	0.983	0.001699	0.17	0.732
67	330.00	18.17	0.989	0.001607	0.16	0.732
68	340.00	18.44	0.987	0.001607	0.16	0.732
69	350.00	18.71	0.995	0.001699	0.17	0.732
70	360.00	18.97	0.997	0.001699	0.17	0.732
71	370.00	19.24	0.989	0.001607	0.16	0.732
72	380.00	19.49	1.01	0.001699	0.17	0.732
73	390.00	19.75	1	0.001745	0.17	0.731
74	400.00	20.00	1	0.001699	0.17	0.732
75	410.00	20.25	1	0.001699	0.17	0.732
76	420.00	20.49	0.996	0.001745	0.17	0.731
77	430.00	20.74	0.994	0.001699	0.17	0.732
78	440.00	20.98	0.997	0.001699	0.17	0.732
79	450.00	21.21	0.996	0.001699	0.17	0.732
80	460.00	21.45	1	0.001699	0.17	0.732
81	470.00	21.68	0.994	0.001699	0.17	0.732

82	480.00	21.91	0.988	0.001699	0.17	0.732
83	490.00	22.14	0.993	0.001699	0.17	0.732
84	500.00	22.36	0.99	0.001699	0.17	0.732
85	510.00	22.58	0.989	0.001699	0.17	0.732
86	520.00	22.80	0.981	0.001699	0.17	0.732
87	530.00	23.02	0.979	0.001699	0.17	0.732
88	540.00	23.24	0.989	0.001699	0.17	0.732
89	550.00	23.45	0.99	0.001699	0.17	0.732
90	560.00	23.66	0.99	0.001699	0.17	0.732
91	570.00	23.87	0.987	0.001699	0.17	0.732
92	580.00	24.08	0.986	0.001699	0.17	0.732
93	590.00	24.29	0.989	0.001699	0.17	0.732
94	600.00	24.49	0.993	0.001699	0.17	0.732
95	610.00	24.70	0.99	0.001699	0.17	0.732
96	620.00	24.90	0.985	0.001699	0.17	0.732
97	630.00	25.10	0.987	0.001699	0.17	0.732
98	640.00	25.30	0.996	0.001699	0.17	0.732
99	650.00	25.50	0.994	0.001699	0.17	0.732
100	660.00	25.69	0.993	0.001699	0.17	0.732
101	670.00	25.88	0.987	0.001699	0.17	0.732
102	680.00	26.08	0.988	0.001653	0.17	0.732
103	690.00	26.27	0.987	0.001699	0.17	0.732
104	700.00	26.46	0.981	0.001699	0.17	0.732
105	710.00	26.65	0.984	0.001699	0.17	0.732
106	720.00	26.83	0.983	0.001699	0.17	0.732
107	730.00	27.02	0.979	0.001699	0.17	0.732
108	740.00	27.20	0.983	0.001699	0.17	0.732
109	750.00	27.39	0.984	0.001699	0.17	0.732
110	760.00	27.57	0.98	0.001699	0.17	0.732
111	770.00	27.75	0.984	0.001699	0.17	0.732
112	780.00	27.93	0.981	0.001699	0.17	0.732
113	790.00	28.11	0.977	0.001699	0.17	0.732
114	800.00	28.28	0.971	0.001699	0.17	0.732
115	810.00	28.46	0.973	0.001699	0.17	0.732
116	820.00	28.64	0.981	0.001699	0.17	0.732
117	830.00	28.81	0.979	0.001699	0.17	0.732
118	840.00	28.98	0.974	0.001699	0.17	0.732
119	850.00	29.15	0.969	0.001699	0.17	0.732
120	860.00	29.33	0.966	0.001699	0.17	0.732
121	870.00	29.50	0.966	0.001699	0.17	0.732
122	880.00	29.66	0.969	0.001699	0.17	0.732
123	890.00	29.83	0.962	0.001699	0.17	0.732
124	900.00	30.00	0.969	0.001699	0.17	0.732
125	910.00	30.17	0.965	0.001699	0.17	0.732
126	920.00	30.33	0.969	0.001699	0.17	0.732
127	930.00	30.50	0.973	0.001699	0.17	0.732
128	940.00	30.66	0.973	0.001745	0.17	0.731
129	950.00	30.82	0.976	0.001745	0.17	0.731
130	960.00	30.98	0.974	0.001699	0.17	0.732
131	970.00	31.14	0.978	0.001699	0.17	0.732
132	980.00	31.30	0.985	0.001699	0.17	0.732
133	990.00	31.46	0.979	0.001699	0.17	0.732
134	1000.00	31.62	0.987	0.001699	0.17	0.732
135	1010.00	31.78	0.984	0.001699	0.17	0.732
136	1020.00	31.94	0.98	0.001699	0.17	0.732
137	1030.00	32.09	0.983	0.001745	0.17	0.731
138	1040.00	32.25	0.984	0.001699	0.17	0.732
139	1050.00	32.40	0.985	0.001699	0.17	0.732
140	1060.00	32.56	0.98	0.001699	0.17	0.732
141	1070.00	32.71	0.985	0.001699	0.17	0.732
142	1080.00	32.86	0.98	0.001699	0.17	0.732
143	1090.00	33.02	0.987	0.001699	0.17	0.732
144	1100.00	33.17	0.99	0.001699	0.17	0.732
145	1110.00	33.32	0.987	0.001699	0.17	0.732
146	1120.00	33.47	0.989	0.001699	0.17	0.732
147	1130.00	33.62	0.989	0.001699	0.17	0.732
148	1140.00	33.76	0.987	0.001699	0.17	0.732
149	1150.00	33.91	0.984	0.001699	0.17	0.732
150	1160.00	34.06	0.986	0.001699	0.17	0.732
151	1170.00	34.21	0.989	0.001699	0.17	0.732
152	1180.00	34.35	0.987	0.001699	0.17	0.732
153	1190.00	34.50	0.989	0.001699	0.17	0.732
154	1200.00	34.64	0.988	0.001699	0.17	0.732
155	1210.00	34.79	0.985	0.001699	0.17	0.732
156	1220.00	34.93	0.984	0.001699	0.17	0.732
157	1230.00	35.07	0.99	0.001699	0.17	0.732
158	1240.00	35.21	0.987	0.001699	0.17	0.732
159	1250.00	35.36	0.988	0.001699	0.17	0.732
160	1260.00	35.50	0.986	0.001699	0.17	0.732
161	1270.00	35.64	0.988	0.001699	0.17	0.732
162	1280.00	35.78	0.986	0.001653	0.17	0.732
163	1290.00	35.92	0.988	0.001699	0.17	0.732
164	1300.00	36.06	0.994	0.001699	0.17	0.732
165	1310.00	36.19	0.992	0.001699	0.17	0.732
166	1320.00	36.33	0.993	0.001699	0.17	0.732
167	1330.00	36.47	0.989	0.001699	0.17	0.732
168	1340.00	36.61	0.981	0.001699	0.17	0.732
169	1350.00	36.74	0.974	0.001699	0.17	0.732
170	1360.00	36.88	0.966	0.001699	0.17	0.732
171	1370.00	37.01	0.96	0.001699	0.17	0.732
172	1380.00	37.15	0.953	0.001699	0.17	0.732
173	1390.00	37.28	0.952	0.001699	0.17	0.732
174	1400.00	37.42	0.945	0.001699	0.17	0.732
175	1410.00	37.55	0.939	0.001699	0.17	0.732
176	1420.00	37.68	0.941	0.001699	0.17	0.732
177	1430.00	37.82	0.939	0.001699	0.17	0.732
178	1440.00	37.95	0.936	0.001699	0.17	0.732
179	1440.02	37.95	0.934	0.001699	0.17	0.732

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 3
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 8/12/19
Sample Type: REMOLD

Project No.: 19-COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 3 of 7
Applied Stress: 2 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.936	-0.006299	-0.63	0.745
2	0.01	0.09	1.24	-0.006299	-0.63	0.745
3	0.02	0.13	1.78	-0.004598	-0.46	0.743
4	0.03	0.16	1.86	-0.003494	-0.35	0.741
5	0.04	0.19	1.89	-0.002805	-0.28	0.739
6	0.05	0.23	1.92	-0.002207	-0.22	0.738
7	0.07	0.27	1.94	-0.001517	-0.15	0.737
8	0.08	0.29	1.94	-0.0009197	-0.09	0.736
9	0.12	0.35	1.95	-0.0007817	-0.08	0.736
10	0.17	0.41	1.97	-0.0003679	-0.04	0.735
11	0.25	0.50	1.97	0.0009195	0.09	0.733
12	0.33	0.58	1.98	0.001609	0.16	0.732
13	0.50	0.71	1.99	0.002943	0.29	0.729
14	0.75	0.87	1.99	0.003862	0.39	0.728
15	1.00	1.00	2	0.004828	0.48	0.726
16	1.50	1.23	2	0.005931	0.59	0.724
17	2.00	1.41	2	0.006529	0.65	0.723
18	3.00	1.73	2	0.007678	0.77	0.721
19	4.00	2.00	2	0.008276	0.83	0.720
20	5.00	2.24	2	0.008782	0.88	0.719
21	6.00	2.45	2	0.009701	0.97	0.718
22	7.00	2.65	2	0.01002	1.00	0.717
23	8.00	2.83	2	0.01025	1.03	0.717
24	9.00	3.00	2	0.01035	1.04	0.717
25	10.00	3.16	2	0.01039	1.04	0.716
26	12.00	3.46	2	0.01044	1.05	0.716
27	14.00	3.74	2	0.01053	1.06	0.716
28	16.00	4.00	2	0.01071	1.07	0.716
29	18.00	4.24	2	0.01094	1.10	0.716
30	20.00	4.47	2	0.01108	1.11	0.715
31	22.00	4.69	2	0.01126	1.13	0.715
32	24.00	4.90	2	0.01126	1.13	0.715
33	26.00	5.10	2	0.01145	1.15	0.715
34	28.00	5.29	2	0.01149	1.15	0.715
35	30.00	5.48	2	0.01159	1.16	0.714
36	35.00	5.92	2	0.01177	1.18	0.714
37	40.00	6.32	2	0.01209	1.21	0.714
38	45.00	6.71	2	0.01232	1.23	0.713
39	50.00	7.07	2	0.01255	1.26	0.713
40	60.00	7.75	2	0.01292	1.29	0.712
41	70.00	8.37	2	0.01315	1.32	0.712
42	80.00	8.94	2	0.01333	1.34	0.711
43	90.00	9.49	2	0.01347	1.35	0.711
44	100.00	10.00	2	0.01366	1.37	0.711
45	110.00	10.49	2	0.01379	1.38	0.711
46	120.00	10.95	2	0.01384	1.39	0.710
47	120.07	10.96	2	0.01384	1.39	0.710

Appendix J Foundation Settlement Analysis

AECOM

JOB TITLE Plum 21 Rehab
JOB NO.
CALCULATION NO. Foundation Settlement
ORIGINATOR LTF
DATE 7/22/2020
REVIEWER
DATE
SCALE
SHEET NO. 1 OF

Objectives

- Analyze laboratory consolidation test results
- Develop estimates of soil consolidation parameters for each geologic unit
- Develop estimates of settlement for each proposed structure

Given

- Consolidation test data from NRCS lab
- Geologic Investigation (GI) Report – Balcones, 2021
- Lab Testing & MR – NRCS, 2019
- Unfactored gross foundation bearing pressures (q_{max}) for static usual loading and foundation dimensions:

Structure	q_{max} (psf)	B (ft)	L (ft)
ASW RCC Chute Slab	3'×150pcf = 450psf	300'	see below*
ASW RCC Walls – Crest Structure	2812	12'	51.2'
ASW RCC Walls – Chute Structure	1429	12'	74'
ASW RCC Walls – Chute Structure (below exist. toe)	1429	12'	13'
ASW RCC Walls – Stilling Basin	3658	12'	24'
PSW Impact Basin	2310	17.8'	23.2'
PSW Intake Tower	1530	12.5'	14.5'

* RCC Chute: L = 51.2' on crest
L = 87' on slopes
L = 24' in stilling basin

Grid: 5x5 = 1 in

AECOM

JOB TITLE
JOB NO.
CALCULATION NO. Foundation Settlement
ORIGINATOR
DATE
REVIEWER
DATE
SCALE
SHEET NO. 2 OF

Consolidation Test Analyses

- Estimate P'_c and OCR per the Casagrande graphical procedure and Boone (2010) procedure to compare. See Appendix G of SMR for results.

- Estimate C_c and C_r graphically. Where available, use slope of unload-reload curve to obtain C_r. Due to simple swell during unloading, consider the slope of the loading curve between in-situ overburden pressure (σ'_{vo}) and P'_c value for C_r, or slope of a straight line from σ'_{vo} on loading curve to point where the extension of the virgin compression curve intersects P'_c. Results in Appendix G of SMR.

Settlement Analysis

- Analyze settlement of each structure; consider Sections A-E for ASW
- Profiles of each structure + applicable borings on following sheets with design consolidation parameters. Use $P'_c = 3000$ psf minimum to account for desiccation near the surface, which is supported by plots in Appendix G.
- Where structures will be founded below grade, consider the net stress increase from foundation relative to the existing σ'_{vo}:

$$q_{net} = q_{max} - (\gamma \times D)_{removed}$$

(this assumes foundation construction occurs more quickly than rebound due to unloading)

- Subdivide subsurface into layers.
- Use Boussinesq equations to calculate stress increase with depth below the footing. Calculate influence factor (I_4) for stress below center of uniformly loaded rectangular area to calculate $\Delta P = (q_{net})(I_4)$.

Grid: 5x5 = 1 in

Settlement Analysis Cont'd

- For PSW Inlet Tower and PSW Impact Basin, overexcavation + replacement with granular flexbase is planned below structure. It is assumed that all settlement in granular flexbase is immediate and occurs during placement, and does not contribute significantly to overall settlement. Single-step analysis is OK.

- For ASW RCC Walls, overexcavation + replacement with lime-treated clay is planned to provide adequate bearing capacity. Design requires UCS = 25 psi (3600 psf) for 7 day and UCS = 50 psi (7200 psf) for 14 day curing, which will ensure lime-treated clay is stabilized and compressibility reduced from that of natural compacted clay. Assume lime-treated clay experiences consolidation, and use compressibility of 50% less than natural recompacted clay (i.e. 50% of C_c and C_r from remolded borrow samples, and same P'_c = 3,000 psf). Settlement analysis conducted in 2 parts:
  - Part 1: Ignore compressibility of overex/replace layer, account for existing in-situ stresses on subgrade to remain for calculating q_{net}, and consider distribution of foundation stress thru overex/replace layer per Boussinesq to obtain ΔP and calculate settlement in existing subgrade layers only.
  - Part 2: Consider compressibility of only the overex/replace layer. Consider in-situ stress equal to self weight only (i.e. $q_{net} = q_{max}$), and use Boussinesq to obtain ΔP and calculate settlement in new fill layer only.
  - Total footing settlement = Part 1 (subgrade) + Part 2 (new fill)

Settlement Analysis Cont'd

- Calculate settlement according to following equation:

$$\text{Settle} = \begin{cases} \sum_{i=1}^{n} \left[H_i \left(\frac{C_r}{1+e_0} \right) \log \left(\frac{\sigma'_{vo} + \Delta P}{\sigma'_{vo}} \right) \right] & \text{where } P_c \geq (\sigma'_{vo} + \Delta P) \\ \sum_{i=1}^{n} \left[H_i \left(\frac{C_c}{1+e_0} \right) \log \left(\frac{P'_c}{\sigma'_{vo}} \right) + H_i \left(\frac{C_r}{1+e_0} \right) \log \left(\frac{\sigma'_{vo} + \Delta P}{P'_c} \right) \right] & \text{where } P_c < (\sigma'_{vo} + \Delta P) \end{cases}$$

- Use spreadsheets to perform calculations; see Attachments

Analysis Results

- Estimated settlements are as follows, considering the planned overex/replace:

ASW Walls - Section A (Left): 0.66" (sub.) + 0.44" (fill) = 1.10"
" - Section A (Right): Not analyzed
" - Section B (Left): 1.57" (sub.) + 0.22" (fill) = 1.79"
" - Section B (Right): not analyzed
" - Section C (Left): 1.63" (sub.) + 0.09" (fill) = 1.72"
" - Section C (Right): not analyzed
" - Section D (Left): 0.11" (sub.) + 0.27" (fill) = 0.38"
" - Section D (Right): not analyzed

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Analysis Results Cont'd

- Estimated Settlement Cont'd

ASW Walls – Section E (left): 0.45" (sub.) + 1.16" (fill) = 1.61"
" – Section E (right): not analyzed

PSW Impact Basin: 0.50" (sub.) + 0.0" (fill) = 0.50"
PSW Inlet Tower: 0.59" (sub.) + 0.0" (fill) = 0.59"

*.

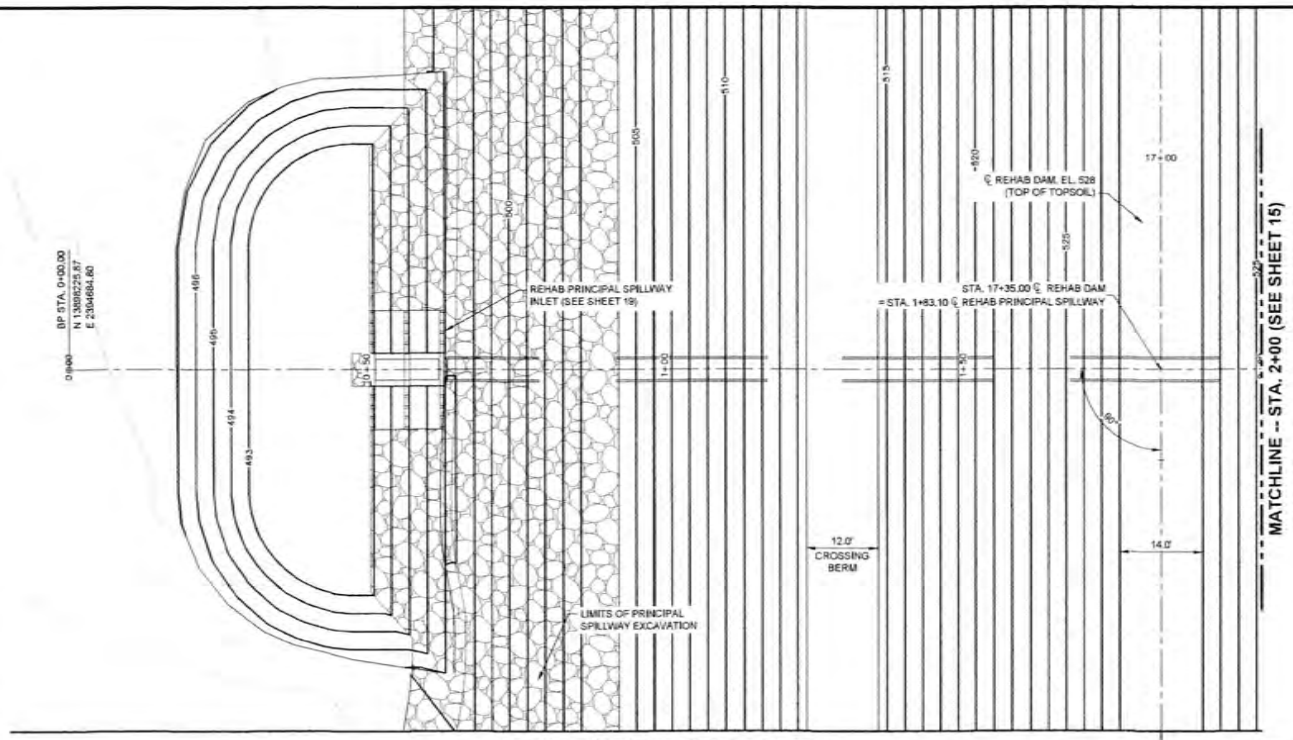
Conclusions & Recommendations

- Planned depth over-excavation + replacement should be performed under the proposed PSW and ASW RCC structures to limit settlements to less than 1" and 2", respectively. Use of lime-treated clay with improved strength and compressibility is required for RCC ASW to achieve settlements reported herein. Use of natural recompacted clay will result in larger settlements.

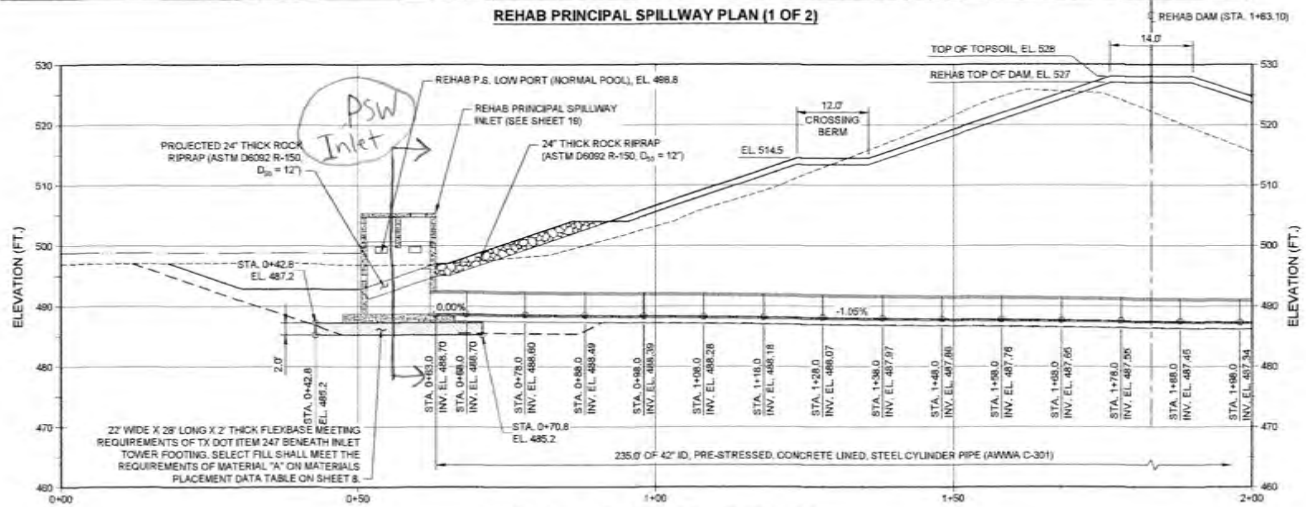
Attachments

1. Structure Layouts
2. Settlements Analysis Sections for Structures
3. Foundation Settlement Calculations

4x4 = 1 in



REHAB PRINCIPAL SPILLWAY PLAN (1 OF 2)



REHAB PRINCIPAL SPILLWAY PROFILE (1 OF 2)

SCALE IN FEET

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PRINCIPAL SPILLWAY PLAN & PROFILE (1 OF 2)
FLOODWATER RETARDING STRUCTURE SITE NO. 21 REHABILITATION
PLUM CREEK WATERSHED
IN
CALDWELL COUNTY, TEXAS

USDA United States Department of Agriculture
Natural Resources Conservation Service

DRAWING NO. TX-EN-0754
SHEET NO. 14
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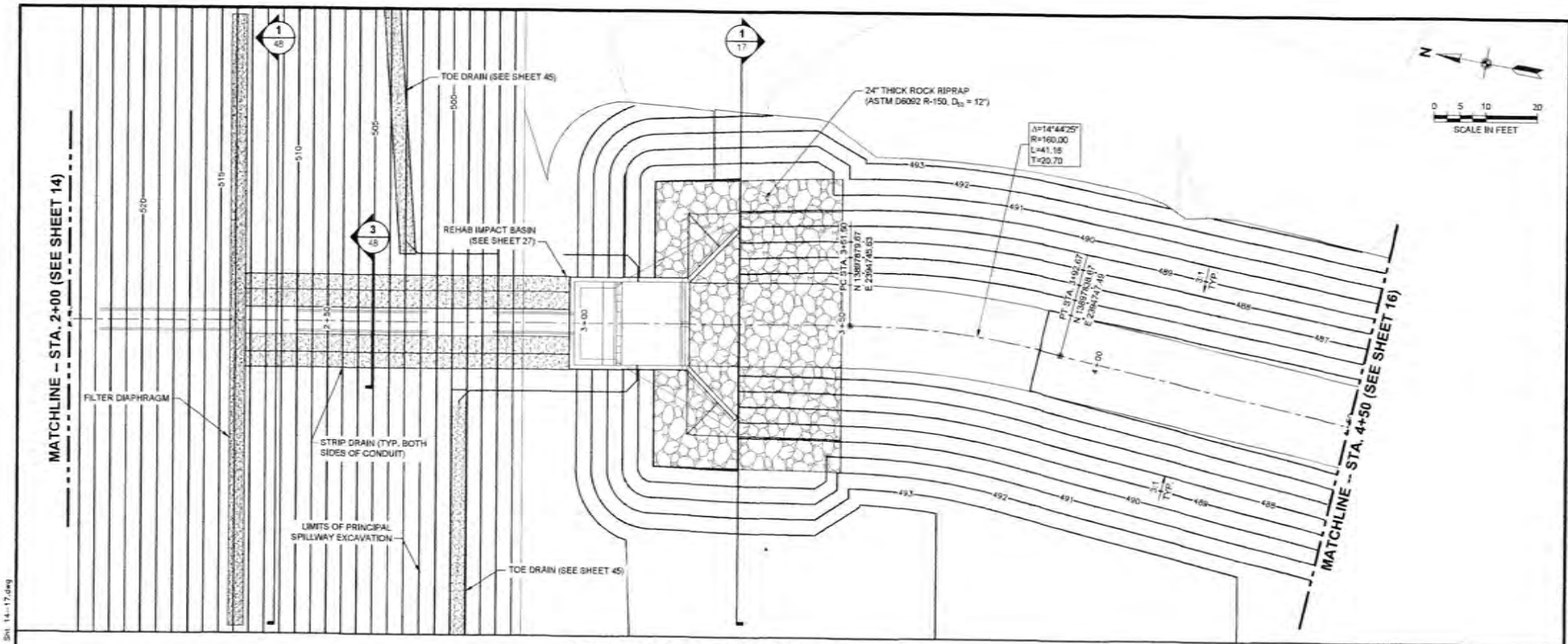
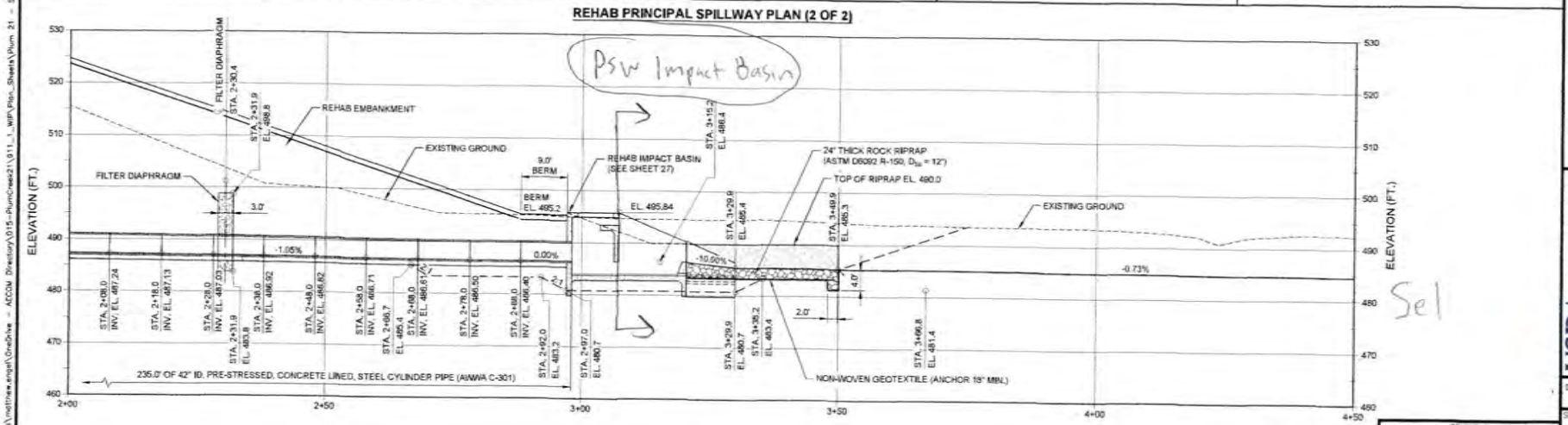
Settlement Analysis Sections



REHAB PRINCIPAL SPILLWAY PLAN (2 OF 2)



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PRINCIPAL SPILLWAY PLAN & PROFILE (2 OF 2)
FLOODWATER RETARDING STRUCTURE SITE NO. 21 REHABILITATION
PLUM CREEK WATERSHED
IN
CALDWELL COUNTY, TEXAS

USDA United States Department of Agriculture
Natural Resources Conservation Service

DRAWING NO. TX-EN-0754
SHEET NO. 15
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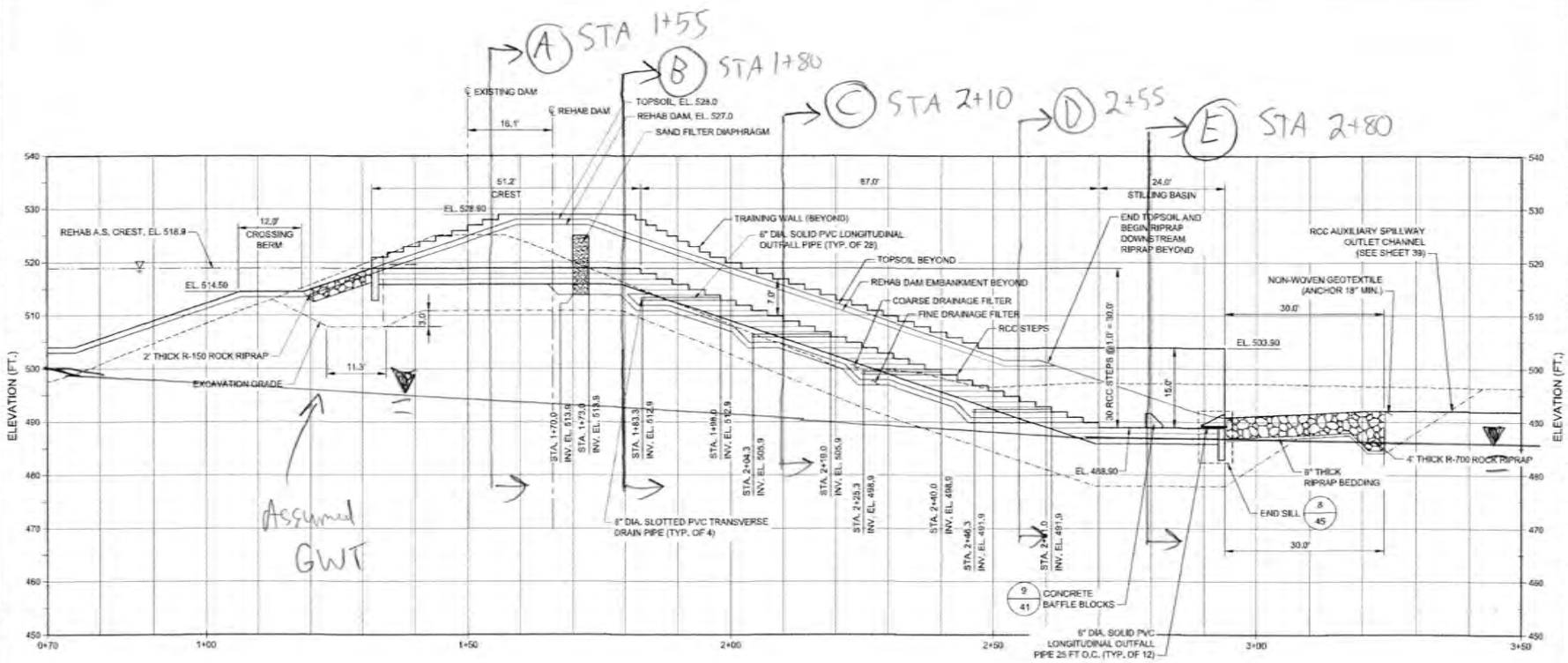
Settlement Analysis Sections



1/34 **TYPICAL AUXILIARY SPILLWAY SECTION AT OUTFALL PIPES**

0 10 20 30 HORIZONTAL SCALE IN FEET

0 10 20 30 VERTICAL SCALE IN FEET

Page 8

Settlement Analysis Sections

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AUXILIARY SPILLWAY PROFILE 1 OF 2

FLOODWATER RETARDING STRUCTURE SITE NO. 21 REHABILITATION

PLUM CREEK WATERSHED

IN

CALDWELL COUNTY, TEXAS

USDA United States Department of Agriculture

Natural Resources Conservation Service

DRAWING NO. TX-EN-0754

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REVISIONS		
DATE	APPROVED	TITLE

C:\Users\matthew.engel\onedrive – Aecom Directory\015-plumcreek21\911_1_wlp\plan_sheets\Plum 21 – Sht 38.dwg

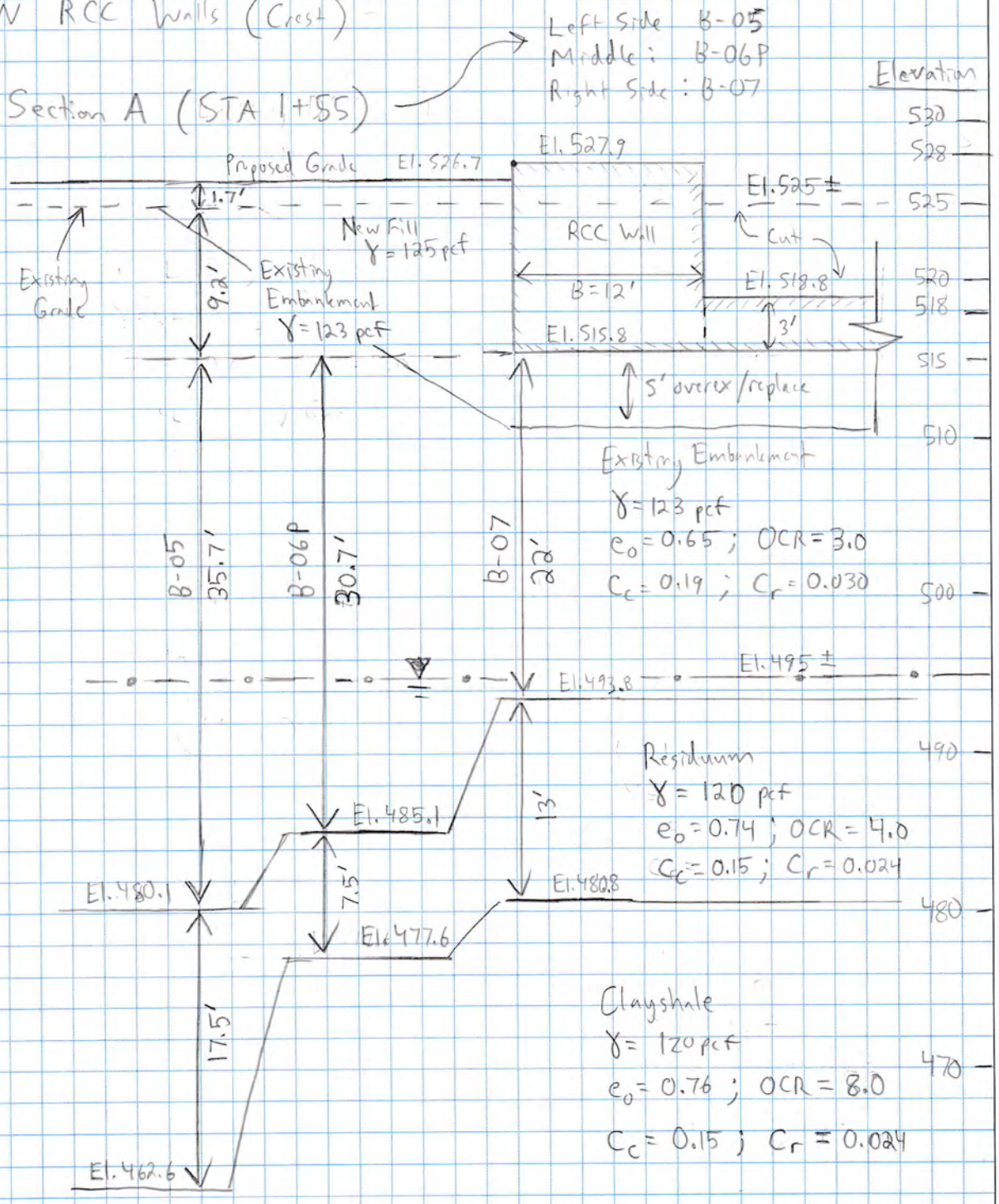
AECOM

JOB TITLE
JOB NO. CALCULATION NO.
ORIGINATOR DATE
REVIEWER DATE
SCALE SHEET NO. 9 OF

Structure Settlement Analysis Cont'd

- ASW RCC Walls (Crest)
  - Section A (STA 1+55)

Left Side B-05
Middle: B-06P
Right Side: B-07



Grid: 5x5 = 1 in

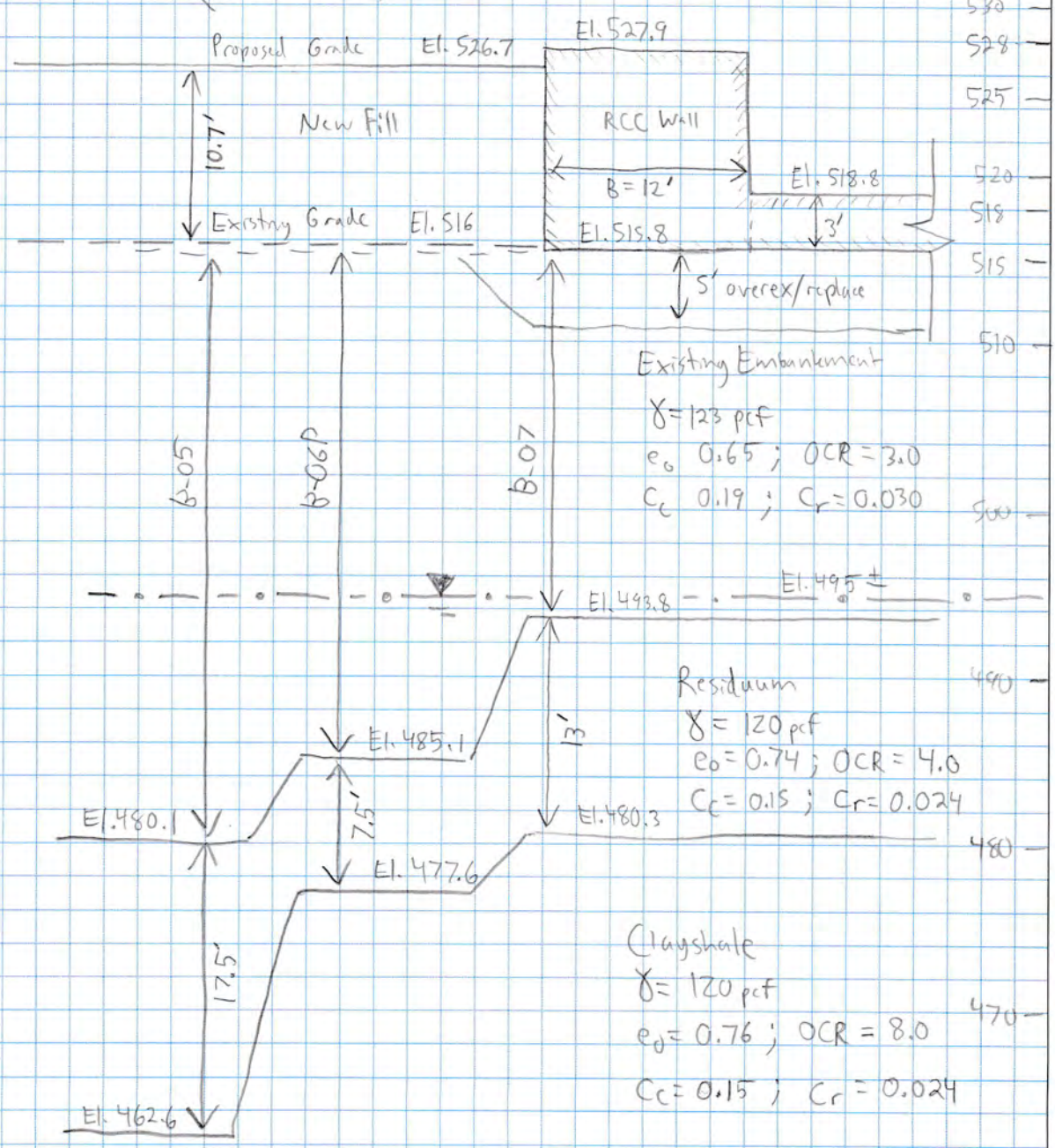
AECOM

JOB TITLE
JOB NO. CALCULATION NO.
ORIGINATOR DATE
REVIEWER DATE
SCALE SHEET NO. 10 OF

Sturcture Settlement Analysis Con'td

- ASW RCC Walls (Crest)
  - Section B (STA 1+80)

Left Side : B-05
Middle : B-06P
Right Side : B-07



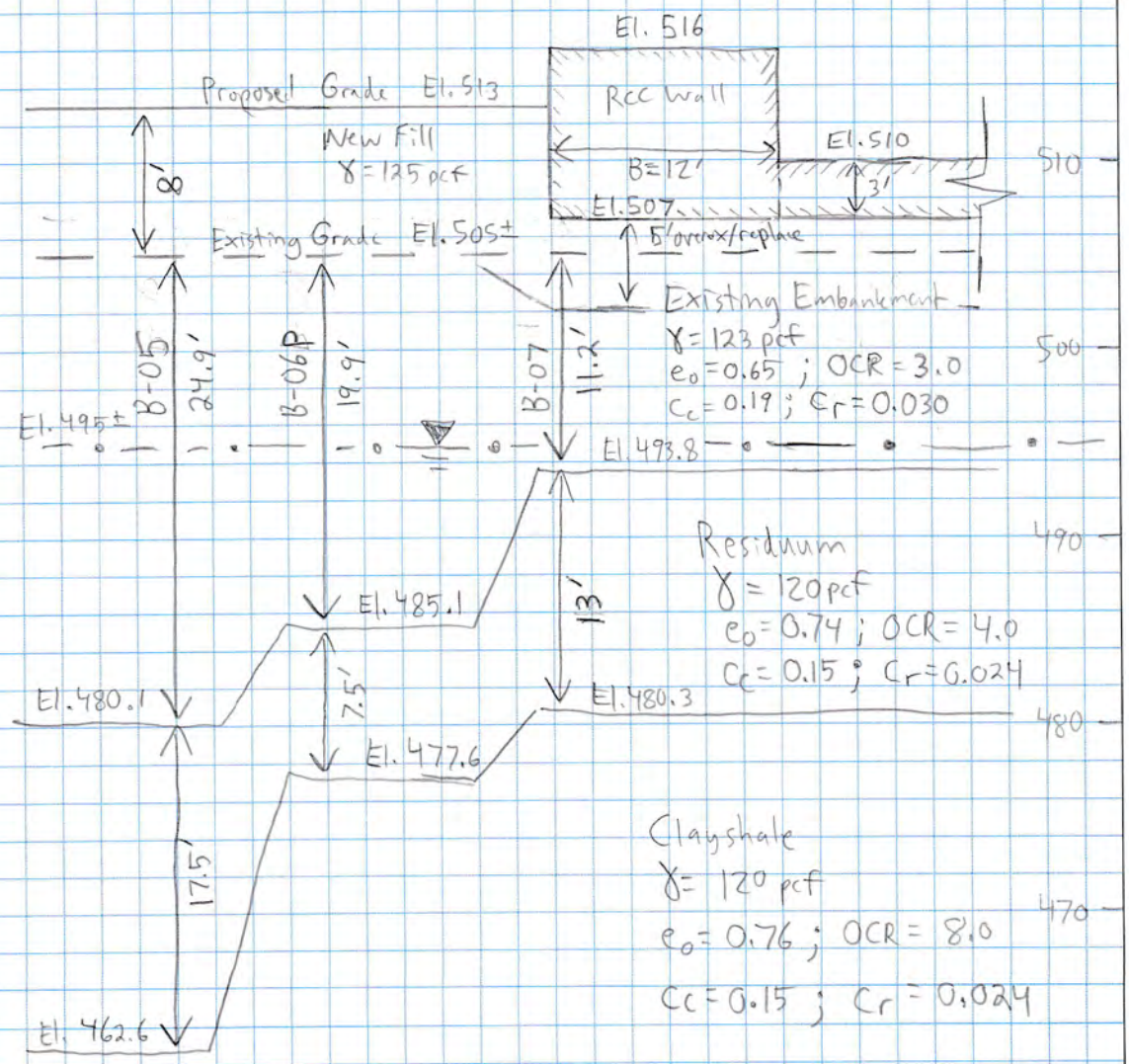
Grid: 5x5 = 1 in

AECOM

JOB TITLE
JOB NO. CALCULATION NO.
ORIGINATOR DATE
REVIEWER DATE
SCALE SHEET NO. 11 OF

Structure Settlement Analyses Cont'd

- ASW RCC Walls (Slope)
  - Section C (STA 2+10)
    - Left Side : B-05
    - Middle : B-06P
    - Right Side : B-07



Grid: 5x5 = 1 in

AECOM

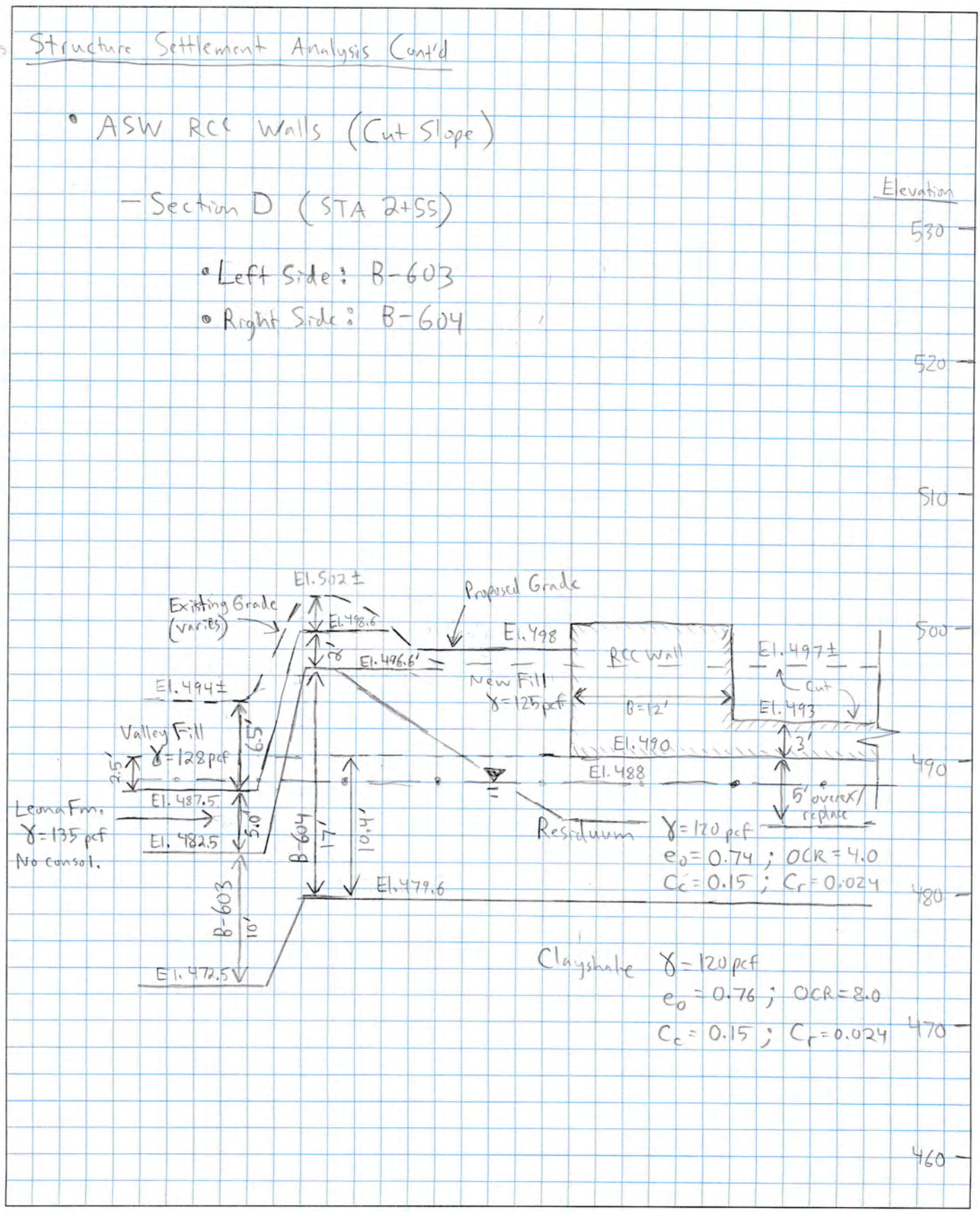
JOB TITLE
JOB NO. CALCULATION NO.
ORIGINATOR DATE
REVIEWER DATE
SCALE SHEET NO. 12 OF

Structure Settlement Analysis Cont'd

- ASW RCC Walls (Cut Slope)

  - Section D (STA 2+55)

    - Left Side: B-603
    - Right Side: B-604



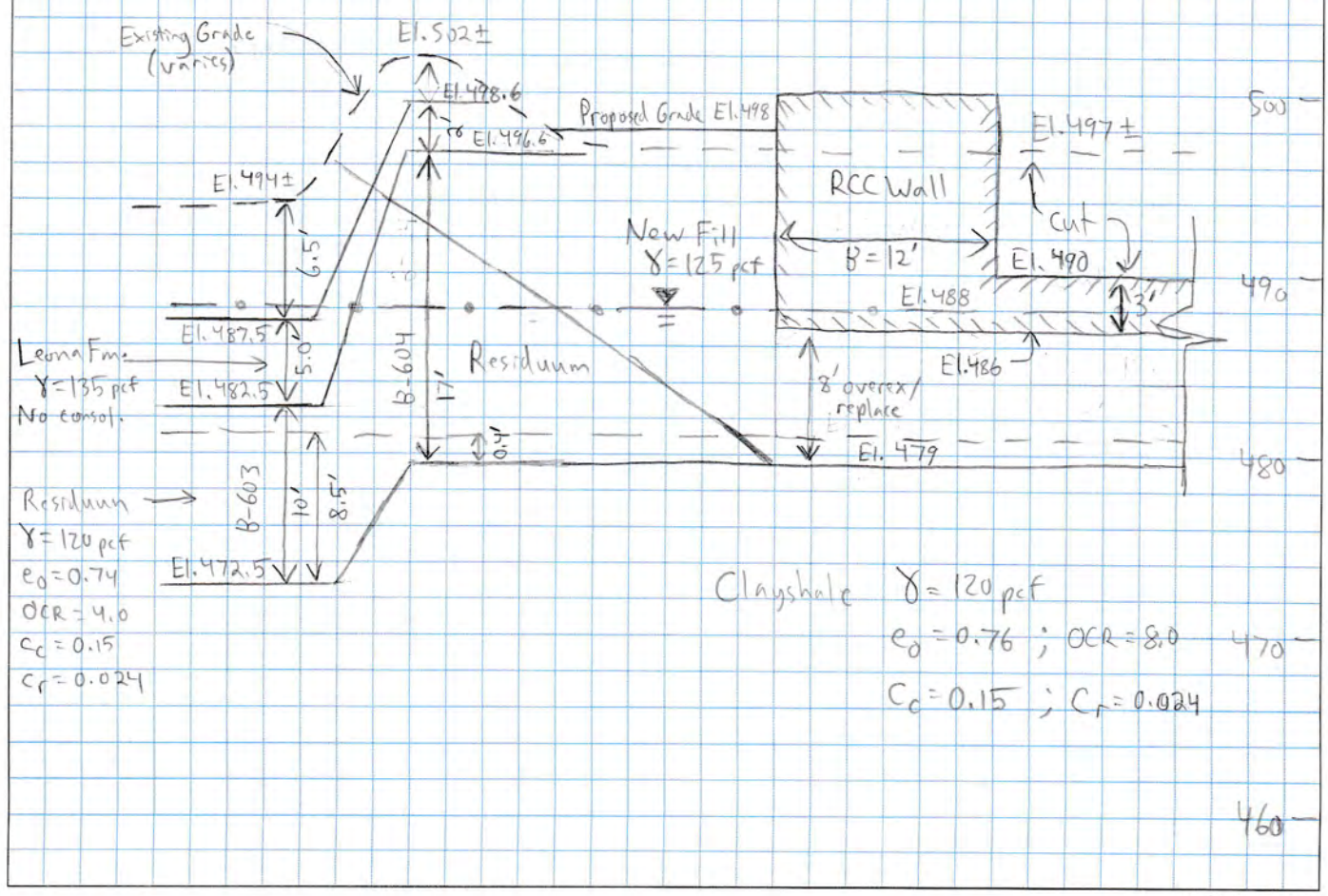
Grid: 5x5 = 1 in

AECOM

JOB TITLE
JOB NO. CALCULATION NO.
ORIGINATOR DATE
REVIEWER DATE
SCALE SHEET NO. 13 OF

Structure Settlement Analysis Cont'd

- ASW RCC Walls (Stilling Basin)
  - Section E (STA 2+90)
    - Left Side : B-603
    - Right Side : B-604



Grid: 5x5 = 1 in

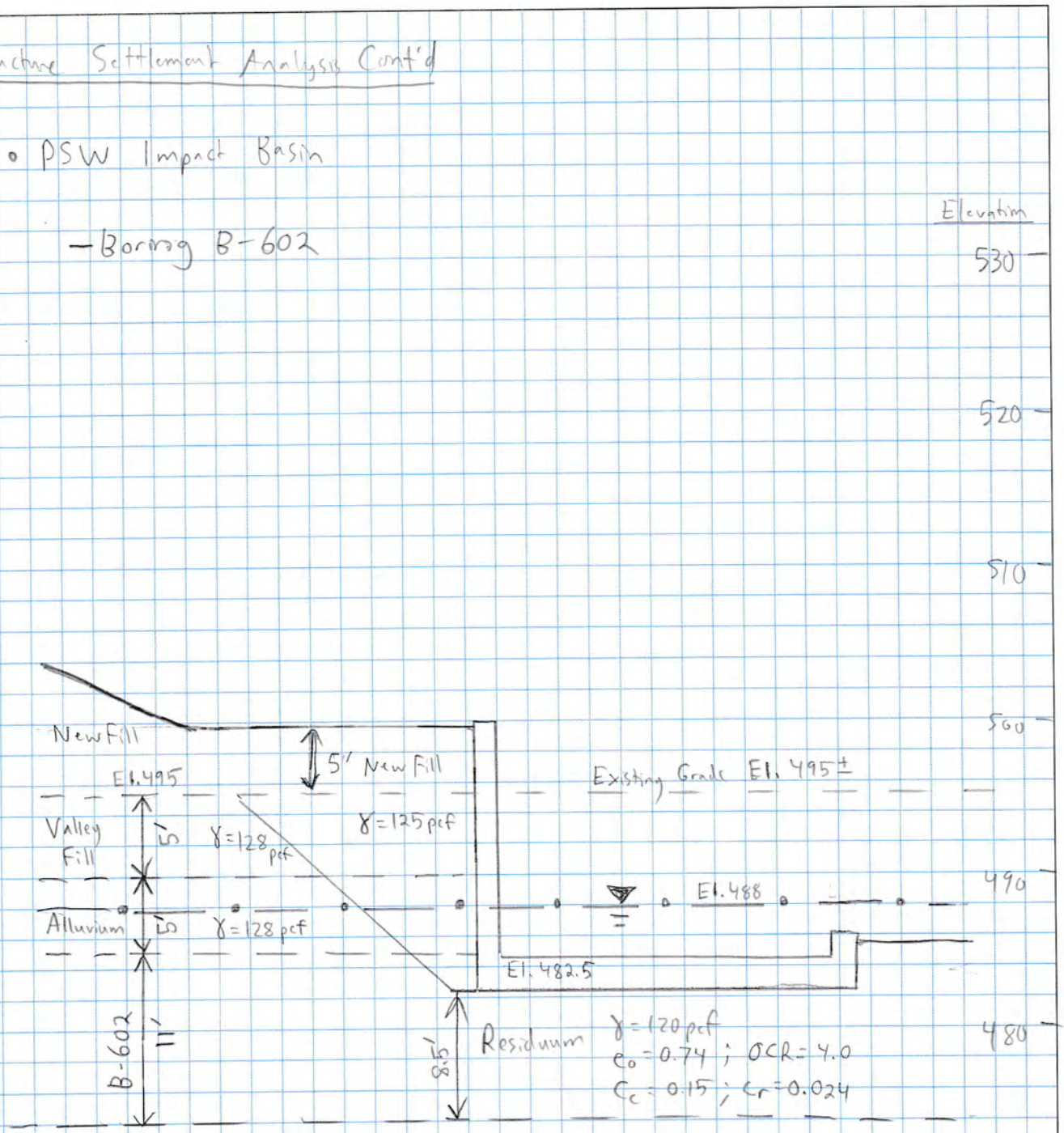
AECOM

JOB TITLE
JOB NO. CALCULATION NO.
ORIGINATOR DATE
REVIEWER DATE
SCALE SHEET NO. 14 OF

Structure Settlement Analysis Cont'd

- PSW Impact Basin

  - Boring B-602



Grid: 5x5 = 1 in

AECOM

JOB TITLE _____

JOB NO. _____ CALCULATION NO. _____

ORIGINATOR _____ DATE _____

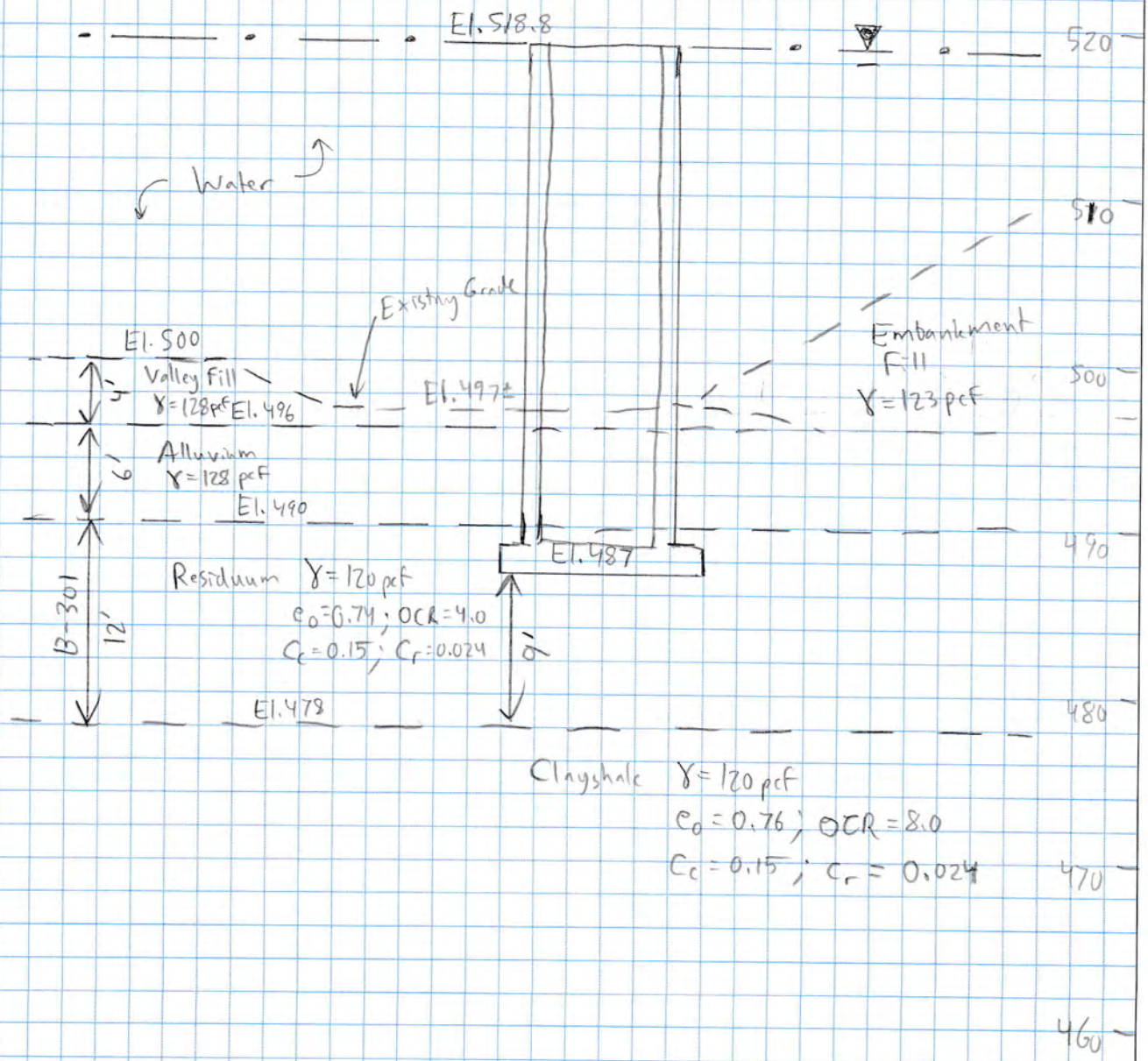
REVIEWER _____ DATE _____

SCALE _____ SHEET NO. 15 OF _____

Structure Settlement Analysis Cont'd

- PSW Inlet Tower

  - Boring B-301



Grid: 5x5 = 1 in

Project Name:	Plum Creek FRS No. 21 Rehabilitation
Job Number:	60586838
Client:	TSSWCB

Structure	PSW Inlet Tower
Analysis Section	Upstream toe, center of footing
Notes	2' overex./replace with flexbase

Geotechnical Data

Relevant Boring	B-301	-
Boring Ground Elev.	500	ft NAVD88
Depth to GWT at Boring:	0	feet
GWT Elev.	500	ft NAVD88

Exiting Ground at Structure Location

Structure Existing Ground:	497	ft NAVD88
Footing Bearing Elev.:	487	ft NAVD88
Footing Bearing Elev.:	10	ft below existing (cut)
GWT Depth below Exist.:	0	feet
GWT Depth below footing.:	0	feet

Area Fill

Fill between existing/footing?	no	-
Include load from area fill?	no	-
Finish Grade of Area Fill:	487	ft NAVD88
Height above existing:	#N/A	feet
Height above footing base:	#N/A	feet
Thickness under footing:	#N/A	feet
Area Fill Unit Weight:	120	pcf

Subgrade Overexcavation/Replacement

Include Overex/Replacement?	yes	-
Overex/Replace Bottom Elev.	485	ft NAVD88
Depth below footing:	2	feet
Depth below existing:	12	feet

Structure Footing Size & Maximum Bearing Pressure

Footing Width, B:	12.5	feet
Footing Length, L (rect):	18.5	feet
Gross Footing Pressure, $q_{0\text{-gross}}$	1,530	psf

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula do not edit

Design Soil Profile and Properties

Depth at Boring (feet)		Elevation (feet)		Thickness in Boring	Existing Depth at Structure (feet)		Thickness at Structure	Layer Name	Total Unit Wt	Initial Void Ratio, e_0*	Compression Index, C_c*	Recomp. Index, C_r*	Min. Over Consolidation Ratio, OCR*	Min. Preconsol. Pressure, P'c*
					1	2	3	4	5	6	7	8	9	10
Top	Bottom	Top	Bottom	(feet)	Top	Bottom	(feet)		(pcf)	(-)				(psf)
0	4	500.0	496.0	4.0	0.0	1.0	1.0	Valley Fill	128	0.55	0.20	0.030	3.0	3,000
4	10	496.0	490.0	6.0	1.0	7.0	6.0	Alluvium	128	0.55	0.20	0.030	3.0	3,000
10	22	490.0	478.0	12.0	7.0	19.0	12.0	Residuum	120	0.74	0.15	0.024	4.0	3,000
22	40	478.0	460.0	18.0	19.0	37.0	18.0	Clayshale	120	0.76	0.15	0.020	8.0	3,000

Notes: *Copy down elevation and thickness formulas if more layers are needed, delete formulas where not needed.*

*Enter "0" for incompressible layers (i.e., granular soils and bedrock)

Method: Settlement Below Center of Uniformly Loaded Rectangular Footing

Project	Plum Creek FRS No. 21 Rehabilitation
Structure	PSW Inlet Tower
Analysis Section	Upstream toe, center of footing

Elev. - Existing Ground @ Structure:	497	ft NAVD88	-10	ft from footing base (above)	0	ft from existing (below)
Elev. - Base of Footing / Bearing Depth	487	ft NAVD88	0	ft from footing base (below)	10	ft from existing (below)
Elev. - Top of Area Fill	#N/A	ft NAVD88	#N/A	#N/A	#N/A	#N/A
Elev. - Bottom of Overex./Replace	485	ft NAVD88	2	ft from footing base (below)	12	ft from existing (below)
Elev. - Groundwater	500	ft NAVD88	-13	ft from footing base (above)	-3	ft from existing (above)
Thickness - Area Fill	#N/A	feet below footing base				
Thickness - Overex/Replace	2	feet below footing base				

Footing Width, B:	12.5	feet
Footing Length, L (square):	12.5	feet
Footing Length, L (rect):	18.5	feet

Gross Footing Pressure, $q_{0\text{-gross}}$	1,530	psf
Removed in-situ stress	469	psf
Net Footing Pressure, $q_{0\text{-net}}$	1,061	psf

$$\Delta\sigma_z = qI_4 \tag{10.34}$$

where

$$I_4 = \frac{2}{\pi}\left[\frac{m_1 n_1}{\sqrt{1+m_1^2+n_1^2}}\frac{1+m_1^2+2n_1^2}{(1+n_1^2)(m_1^2+n_1^2)} + \sin^{-1}\frac{m_1}{\sqrt{m_1^2+n_1^2}\sqrt{1+n_1^2}}\right] \tag{10.35}$$

$$m_1 = \frac{L}{B} \tag{10.36}$$

$$n_1 = \frac{z}{b} \tag{10.37}$$

$$b = \frac{B}{2} \tag{10.38}$$

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula (do not edit)
xxx	= Unique Formula (do not edit)

**Negative values indicate height above existing ground*

**Assume granular*

Total Settlement (inch) = 0.59

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
Fill below footing/above exist.	0.0	0.0	0.0	497.0	497.0	0.0	120	-	-	-	-	-	-	-	-	0	0	-	1	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-
Existing Soil Above Footing	0.0	10.0	5.0	497.0	487.0	10.0	128	-	-	-	-	-	-	-	-	0	0	-	1	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-
Overex. below Existing	0.0	12.0	6.0	497.0	485.0	12.0	128	-	-	-	-	-	-	-	-	0	0	-	1	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-
Residuum	12.0	13.0	12.5	485.0	484.0	1.0	120	1,596	967	629	0.15	0.024	0.74	4.0	3,000	0	0	-	1	2.50	0.4	6.3	0.97	1,032	0.07	0.00	**0.070**
Residuum	13.0	14.0	13.5	484.0	483.0	1.0	120	1,716	1,030	686	0.15	0.024	0.74	4.0	3,000	0	0	-	1	3.50	0.6	6.3	0.93	992	0.06	0.00	**0.064**
Residuum	14.0	15.0	14.5	483.0	482.0	1.0	120	1,836	1,092	744	0.15	0.024	0.74	4.0	3,000	0	0	-	1	4.50	0.7	6.3	0.88	937	0.06	0.00	**0.059**
Residuum	15.0	16.0	15.5	482.0	481.0	1.0	120	1,956	1,154	802	0.15	0.024	0.74	4.0	3,206	0	0	-	1	5.50	0.9	6.3	0.82	872	0.05	0.00	**0.053**
Residuum	16.0	17.0	16.5	481.0	480.0	1.0	120	2,076	1,217	859	0.15	0.024	0.74	4.0	3,437	0	0	-	1	6.50	1.0	6.3	0.76	803	0.05	0.00	**0.047**
Residuum	17.0	18.0	17.5	480.0	479.0	1.0	120	2,196	1,279	917	0.15	0.024	0.74	4.0	3,667	0	0	-	1	7.50	1.2	6.3	0.69	734	0.04	0.00	**0.042**
Residuum	18.0	19.0	18.5	479.0	478.0	1.0	120	2,316	1,342	974	0.15	0.024	0.74	4.0	3,898	0	0	-	1	8.50	1.4	6.3	0.63	667	0.04	0.00	**0.038**
Clayshale	19.0	20.0	19.5	478.0	477.0	1.0	120	2,436	1,404	1,032	0.15	0.020	0.76	8.0	8,256	0	0	-	1	9.50	1.5	6.3	0.57	606	0.03	0.00	**0.027**
Clayshale	20.0	21.0	20.5	477.0	476.0	1.0	120	2,556	1,466	1,090	0.15	0.020	0.76	8.0	8,717	0	0	-	1	10.50	1.7	6.3	0.52	549	0.02	0.00	**0.024**
Clayshale	21.0	22.0	21.5	476.0	475.0	1.0	120	2,676	1,529	1,147	0.15	0.020	0.76	8.0	9,178	0	0	-	1	11.50	1.8	6.3	0.47	498	0.02	0.00	**0.021**
Clayshale	22.0	23.0	22.5	475.0	474.0	1.0	120	2,796	1,591	1,205	0.15	0.020	0.76	8.0	9,638	0	0	-	1	12.50	2.0	6.3	0.43	452	0.02	0.00	**0.019**
Clayshale	23.0	24.0	23.5	474.0	473.0	1.0	120	2,916	1,654	1,262	0.15	0.020	0.76	8.0	10,099	0	0	-	1	13.50	2.2	6.3	0.39	410	0.02	0.00	**0.017**
Clayshale	24.0	25.0	24.5	473.0	472.0	1.0	120	3,036	1,716	1,320	0.15	0.020	0.76	8.0	10,560	0	0	-	1	14.50	2.3	6.3	0.35	374	0.01	0.00	**0.015**
Clayshale	25.0	26.0	25.5	472.0	471.0	1.0	120	3,156	1,778	1,378	0.15	0.020	0.76	8.0	11,021	0	0	-	1	15.50	2.5	6.3	0.32	341	0.01	0.00	**0.013**
Clayshale	26.0	27.0	26.5	471.0	470.0	1.0	120	3,276	1,841	1,435	0.15	0.020	0.76	8.0	11,482	0	0	-	1	16.50	2.6	6.3	0.29	312	0.01	0.00	**0.012**
Clayshale	27.0	28.0	27.5	470.0	469.0	1.0	120	3,396	1,903	1,493	0.15	0.020	0.76	8.0	11,942	0	0	-	1	17.50	2.8	6.3	0.27	286	0.01	0.00	**0.010**
Clayshale	28.0	29.0	28.5	469.0	468.0	1.0	120	3,516	1,966	1,550	0.15	0.020	0.76	8.0	12,403	0	0	-	1	18.50	3.0	6.3	0.25	263	0.01	0.00	**0.009**
Clayshale	29.0	30.0	29.5	468.0	467.0	1.0	120	3,636	2,028	1,608	0.15	0.020	0.76	8.0	12,864	0	0	-	1	19.50	3.1	6.3	0.23	242	0.01	0.00	**0.008**
Clayshale	30.0	31.0	30.5	467.0	466.0	1.0	120	3,756	2,090	1,666	0.15	0.020	0.76	8.0	13,325	0	0	-	1	20.50	3.3	6.3	0.21	224	0.01	0.00	**0.007**
Clayshale	31.0	32.0	31.5	466.0	465.0	1.0	120	3,876	2,153	1,723	0.15	0.020	0.76	8.0	13,786	0	0	-	1	21.50	3.4	6.3	0.20	207	0.01	0.00	**0.007**
Clayshale	32.0	33.0	32.5	465.0	464.0	1.0	120	3,996	2,215	1,781	0.15	0.020	0.76	8.0	14,246	0	0	-	1	22.50	3.6	6.3	0.18	192	0.01	0.00	**0.006**
Clayshale	33.0	34.0	33.5	464.0	463.0	1.0	120	4,116	2,278	1,838	0.15	0.020	0.76	8.0	14,707	0	0	-	1	23.50	3.8	6.3	0.17	179	0.01	0.00	**0.005**
Clayshale	34.0	35.0	34.5	463.0	462.0	1.0	120	4,236	2,340	1,896	0.15	0.020	0.76	8.0	15,168	0	0	-	1	24.50	3.9	6.3	0.16	166	0.00	0.00	**0.005**
Clayshale	35.0	36.0	35.5	462.0	461.0	1.0	120	4,356	2,402	1,954	0.15	0.020	0.76	8.0	15,629	0	0	-	1	25.50	4.1	6.3	0.15	155	0.00	0.00	**0.005**
Clayshale	36.0	37.0	36.5	461.0	460.0	1.0	120	4,476	2,465	2,011	0.15	0.020	0.76	8.0	16,090	0	0	-	1	26.50	4.2	6.3	0.14	145	0.00	0.00	**0.004**
#N/A	37.0	38.0	37.5	460.0	459.0	1.0	#N/A	#N/A	2,527	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	27.50	4.4	6.3	0.13	136	-	-	-
#N/A	38.0	39.0	38.5	459.0	458.0	1.0	#N/A	#N/A	2,590	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	28.50	4.6	6.3	0.12	128	-	-	-
#N/A	39.0	40.0	39.5	458.0	457.0	1.0	#N/A	#N/A	2,652	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	29.50	4.7	6.3	0.11	120	-	-	-
#N/A	40.0	41.0	40.5	457.0	456.0	1.0	#N/A	#N/A	2,714	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	30.50	4.9	6.3	0.11	113	-	-	-
#N/A	41.0	42.0	41.5	456.0	455.0	1.0	#N/A	#N/A	2,777	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	31.50	5.0	6.3	0.10	107	-	-	-
#N/A	42.0	43.0	42.5	455.0	454.0	1.0	#N/A	#N/A	2,839	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	32.50	5.2	6.3	0.10	101	-	-	-
#N/A	43.0	44.0	43.5	454.0	453.0	1.0	#N/A	#N/A	2,902	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	33.50	5.4	6.3	0.09	96	-	-	-
#N/A	44.0	45.0	44.5	453.0	452.0	1.0	#N/A	#N/A	2,964	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	34.50	5.5	6.3	0.09	91	-	-	-
#N/A	45.0	46.0	45.5	452.0	451.0	1.0	#N/A	#N/A	3,026	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	35.50	5.7	6.3	0.08	86	-	-	-
#N/A	46.0	47.0	46.5	451.0	450.0	1.0	#N/A	#N/A	3,089	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	36.50	5.8	6.3	0.08	82	-	-	-
#N/A	47.0	48.0	47.5	450.0	449.0	1.0	#N/A	#N/A	3,151	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	37.50	6.0	6.3	0.07	78	-	-	-
#N/A	48.0	49.0	48.5	449.0	448.0	1.0	#N/A	#N/A	3,214	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	38.50	6.2	6.3	0.07	74	-	-	-
#N/A	49.0	50.0	49.5	448.0	447.0	1.0	#N/A	#N/A	3,276	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	39.50	6.3	6.3	0.07	70	-	-	-
#N/A	50.0	51.0	50.5	447.0	446.0	1.0	#N/A	#N/A	3,338	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	40.50	6.5	6.3	0.06	67	-	-	-
#N/A	51.0	52.0	51.5	446.0	445.0	1.0	#N/A	#N/A	3,401	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	41.50	6.6	6.3	0.06	64	-	-	-
#N/A	52.0	53.0	52.5	445.0	444.0	1.0	#N/A	#N/A	3,463	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	42.50	6.8	6.3	0.06	61	-	-	-

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
#N/A	53.0	54.0	53.5	444.0	443.0	1.0	#N/A	#N/A	3,526	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	43.50	7.0	6.3	0.06	59	-	-	-
#N/A	54.0	55.0	54.5	443.0	442.0	1.0	#N/A	#N/A	3,588	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	44.50	7.1	6.3	0.05	56	-	-	-
#N/A	55.0	56.0	55.5	442.0	441.0	1.0	#N/A	#N/A	3,650	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	45.50	7.3	6.3	0.05	54	-	-	-
#N/A	56.0	57.0	56.5	441.0	440.0	1.0	#N/A	#N/A	3,713	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	46.50	7.4	6.3	0.05	52	-	-	-
#N/A	57.0	58.0	57.5	440.0	439.0	1.0	#N/A	#N/A	3,775	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	47.50	7.6	6.3	0.05	50	-	-	-
#N/A	58.0	59.0	58.5	439.0	438.0	1.0	#N/A	#N/A	3,838	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	48.50	7.8	6.3	0.04	48	-	-	-
#N/A	59.0	60.0	59.5	438.0	437.0	1.0	#N/A	#N/A	3,900	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	49.50	7.9	6.3	0.04	46	-	-	-
#N/A	60.0	61.0	60.5	437.0	436.0	1.0	#N/A	#N/A	3,962	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	50.50	8.1	6.3	0.04	44	-	-	-
#N/A	61.0	62.0	61.5	436.0	435.0	1.0	#N/A	#N/A	4,025	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	51.50	8.2	6.3	0.04	43	-	-	-
#N/A	62.0	63.0	62.5	435.0	434.0	1.0	#N/A	#N/A	4,087	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	52.50	8.4	6.3	0.04	41	-	-	-
#N/A	63.0	64.0	63.5	434.0	433.0	1.0	#N/A	#N/A	4,150	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	53.50	8.6	6.3	0.04	40	-	-	-
#N/A	64.0	65.0	64.5	433.0	432.0	1.0	#N/A	#N/A	4,212	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	54.50	8.7	6.3	0.04	38	-	-	-
#N/A	65.0	66.0	65.5	432.0	431.0	1.0	#N/A	#N/A	4,274	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	55.50	8.9	6.3	0.03	37	-	-	-
#N/A	66.0	67.0	66.5	431.0	430.0	1.0	#N/A	#N/A	4,337	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	56.50	9.0	6.3	0.03	36	-	-	-
#N/A	67.0	68.0	67.5	430.0	429.0	1.0	#N/A	#N/A	4,399	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	57.50	9.2	6.3	0.03	34	-	-	-
#N/A	68.0	69.0	68.5	429.0	428.0	1.0	#N/A	#N/A	4,462	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	58.50	9.4	6.3	0.03	33	-	-	-
#N/A	69.0	70.0	69.5	428.0	427.0	1.0	#N/A	#N/A	4,524	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	59.50	9.5	6.3	0.03	32	-	-	-
#N/A	70.0	71.0	70.5	427.0	426.0	1.0	#N/A	#N/A	4,586	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	60.50	9.7	6.3	0.03	31	-	-	-
#N/A	71.0	72.0	71.5	426.0	425.0	1.0	#N/A	#N/A	4,649	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	61.50	9.8	6.3	0.03	30	-	-	-
#N/A	72.0	73.0	72.5	425.0	424.0	1.0	#N/A	#N/A	4,711	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	62.50	10.0	6.3	0.03	29	-	-	-
#N/A	73.0	74.0	73.5	424.0	423.0	1.0	#N/A	#N/A	4,774	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	63.50	10.2	6.3	0.03	28	-	-	-
#N/A	74.0	75.0	74.5	423.0	422.0	1.0	#N/A	#N/A	4,836	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	64.50	10.3	6.3	0.03	27	-	-	-
#N/A	75.0	76.0	75.5	422.0	421.0	1.0	#N/A	#N/A	4,898	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	65.50	10.5	6.3	0.03	27	-	-	-
#N/A	76.0	77.0	76.5	421.0	420.0	1.0	#N/A	#N/A	4,961	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	66.50	10.6	6.3	0.02	26	-	-	-
#N/A	77.0	78.0	77.5	420.0	419.0	1.0	#N/A	#N/A	5,023	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	67.50	10.8	6.3	0.02	25	-	-	-
#N/A	78.0	79.0	78.5	419.0	418.0	1.0	#N/A	#N/A	5,086	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	68.50	11.0	6.3	0.02	24	-	-	-
#N/A	79.0	80.0	79.5	418.0	417.0	1.0	#N/A	#N/A	5,148	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	69.50	11.1	6.3	0.02	24	-	-	-
#N/A	80.0	81.0	80.5	417.0	416.0	1.0	#N/A	#N/A	5,210	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	70.50	11.3	6.3	0.02	23	-	-	-
#N/A	81.0	82.0	81.5	416.0	415.0	1.0	#N/A	#N/A	5,273	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	71.50	11.4	6.3	0.02	22	-	-	-
#N/A	82.0	83.0	82.5	415.0	414.0	1.0	#N/A	#N/A	5,335	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	72.50	11.6	6.3	0.02	22	-	-	-
#N/A	83.0	84.0	83.5	414.0	413.0	1.0	#N/A	#N/A	5,398	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	73.50	11.8	6.3	0.02	21	-	-	-
#N/A	84.0	85.0	84.5	413.0	412.0	1.0	#N/A	#N/A	5,460	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	74.50	11.9	6.3	0.02	21	-	-	-
#N/A	85.0	86.0	85.5	412.0	411.0	1.0	#N/A	#N/A	5,522	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	75.50	12.1	6.3	0.02	20	-	-	-
#N/A	86.0	87.0	86.5	411.0	410.0	1.0	#N/A	#N/A	5,585	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	76.50	12.2	6.3	0.02	20	-	-	-
#N/A	87.0	88.0	87.5	410.0	409.0	1.0	#N/A	#N/A	5,647	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	77.50	12.4	6.3	0.02	19	-	-	-
#N/A	88.0	89.0	88.5	409.0	408.0	1.0	#N/A	#N/A	5,710	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	78.50	12.6	6.3	0.02	19	-	-	-
#N/A	89.0	90.0	89.5	408.0	407.0	1.0	#N/A	#N/A	5,772	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	79.50	12.7	6.3	0.02	18	-	-	-
#N/A	90.0	91.0	90.5	407.0	406.0	1.0	#N/A	#N/A	5,834	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	80.50	12.9	6.3	0.02	18	-	-	-
#N/A	91.0	92.0	91.5	406.0	405.0	1.0	#N/A	#N/A	5,897	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	81.50	13.0	6.3	0.02	17	-	-	-
#N/A	92.0	93.0	92.5	405.0	404.0	1.0	#N/A	#N/A	5,959	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	82.50	13.2	6.3	0.02	17	-	-	-
#N/A	93.0	94.0	93.5	404.0	403.0	1.0	#N/A	#N/A	6,022	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	83.50	13.4	6.3	0.02	17	-	-	-
#N/A	94.0	95.0	94.5	403.0	402.0	1.0	#N/A	#N/A	6,084	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	84.50	13.5	6.3	0.02	16	-	-	-
#N/A	95.0	96.0	95.5	402.0	401.0	1.0	#N/A	#N/A	6,146	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	85.50	13.7	6.3	0.01	16	-	-	-
#N/A	96.0	97.0	96.5	401.0	400.0	1.0	#N/A	#N/A	6,209	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	86.50	13.8	6.3	0.01	15	-	-	-
#N/A	97.0	98.0	97.5	400.0	399.0	1.0	#N/A	#N/A	6,271	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	87.50	14.0	6.3	0.01	15	-	-	-
#N/A	98.0	99.0	98.5	399.0	398.0	1.0	#N/A	#N/A	6,334	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	88.50	14.2	6.3	0.01	15	-	-	-
#N/A	99.0	100.0	99.5	398.0	397.0	1.0	#N/A	#N/A	6,396	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	89.50	14.3	6.3	0.01	14	-	-	-
#N/A	100.0	101.0	100.5	397.0	396.0	1.0	#N/A	#N/A	6,458	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	90.50	14.5	6.3	0.01	14	-	-	-
#N/A	101.0	102.0	101.5	396.0	395.0	1.0	#N/A	#N/A	6,521	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	91.50	14.6	6.3	0.01	14	-	-	-
#N/A	102.0	103.0	102.5	395.0	394.0	1.0	#N/A	#N/A	6,583	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	92.50	14.8	6.3	0.01	14	-	-	-
#N/A	103.0	104.0	103.5	394.0	393.0	1.0	#N/A	#N/A	6,646	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	93.50	15.0	6.3	0.01	13	-	-	-
#N/A	104.0	105.0	104.5	393.0	392.0	1.0	#N/A	#N/A	6,708	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	94.50	15.1	6.3	0.01	13	-	-	-
#N/A	105.0	106.0	105.5	392.0	391.0	1.0	#N/A	#N/A	6,770	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	95.50	15.3	6.3	0.01	13	-	-	-
#N/A	106.0	107.0	106.5	391.0	390.0	1.0	#N/A	#N/A	6,833	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	96.50	15.4	6.3	0.01	12	-	-	-
#N/A	107.0	108.0	107.5	390.0	389.0	1.0	#N/A	#N/A	6,895	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	97.50	15.6	6.3	0.01	12	-	-	-
#N/A	108.0	109.0	108.5	389.0	388.0	1.0	#N/A	#N/A	6,958	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	98.50	15.8	6.3	0.01	12	-	-	-
#N/A	109.0	110.0	109.5	388.0	387.0	1.0	#N/A	#N/A	7,020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	99.50	15.9	6.3	0.01	12	-	-	-
#N/A	110.0	111.0	110.5	387.0	386.0	1.0	#N/A	#N/A	7,082	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	100.50	16.1	6.3	0.01	11	-	-	-
#N/A	111.0	112.0	111.5	386.0	385.0	1.0	#N/A	#N/A	7,145	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	101.50	16.2	6.3	0.01	11	-	-	-
#N/A	112.0	113.0	112.5	385.0	384.0	1.0	#N/A	#N/A	7,207	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	102.50	16.4	6.3	0.01	11	-	-	-
#N/A	113.0	114.0	113.5	384.0	383.0	1.0	#N/A	#N/A	7,270	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	103.50	16.6	6.3	0.01	11	-	-	-
#N/A	114.0	115.0	114.5	383.0	382.0	1.0	#N/A	#N/A	7,332	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	104.50	16.7	6.3	0.01	11	-	-	-
#N/A	115.0	200.0	157.5	382.0	297.0	85.0	#N/A	#N/A	10,015	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	147.50	23.6	6.3	0.01	5	-	-	-

Project Name:	Plum Creek FRS No. 21 Rehabilitation
Job Number:	60586838
Client:	TSSWCB

Structure	PSW Impact Basin
Analysis Section	Downstream toe, center of footing
Notes	2' overex./replace with flexbase

Geotechnical Data

Relevant Boring	B-602	-
Boring Ground Elev.	494.98	ft NAVD88
Depth to GWT at Boring:	6.98	feet
GWT Elev.	488	ft NAVD88

Exiting Ground at Structure Location

Structure Existing Ground:	495	ft NAVD88
Footing Bearing Elev.:	482.5	ft NAVD88
Footing Bearing Elev.:	12.5	ft below existing (cut)
GWT Depth below Exist.:	7	feet
GWT Depth below footing.:	0	feet

Area Fill

Fill between existing/footing?	no	-
Include load from area fill?	no	-
Finish Grade of Area Fill:	495	ft NAVD88
Height above existing:	#N/A	feet
Height above footing base:	#N/A	feet
Thickness under footing:	#N/A	feet
Area Fill Unit Weight:	120	pcf

Subgrade Overexcavation/Replacement

Include Overex/Replacement?	yes	-
Overex/Replace Bottom Elev.	480.5	ft NAVD88
Depth below footing:	2	feet
Depth below existing:	14.5	feet

Structure Footing Size & Maximum Bearing Pressure

Footing Width, B:	17.67	feet
Footing Length, L (rect):	23.17	feet
Gross Footing Pressure, $q_{0\text{-gross}}$	2,310	psf

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula do not edit

Design Soil Profile and Properties

Depth at Boring (feet)		Elevation (feet)		Thickness in Boring	Existing Depth at Structure (feet)		Thickness at Structure	Layer Name	Total Unit Wt	Initial Void Ratio, e_0*	Compression Index, C_c*	Recomp. Index, C_r*	Min. Over Consolidation Ratio, OCR*	Min. Preconsol. Pressure, P'c*
					1	2	3	4	5	6	7	8	9	10
Top	Bottom	Top	Bottom	(feet)	Top	Bottom	(feet)		(pcf)	(-)				(psf)
0	5	495.0	490.0	5.0	0.0	5.0	5.0	Valley Fill	128	0.55	0.20	0.030	3.0	3,000
5	10	490.0	485.0	5.0	5.0	10.0	5.0	Alluvium	128	0.55	0.20	0.030	3.0	3,000
10	21	485.0	474.0	11.0	10.0	21.0	11.0	Residuum	120	0.74	0.15	0.024	4.0	3,000
21	40	474.0	455.0	19.0	21.0	40.0	19.0	Clayshale	120	0.76	0.15	0.020	8.0	3,000

Notes: *Copy down elevation and thickness formulas if more layers are needed, delete formulas where not needed.*

*Enter "0" for incompressible layers (i.e., granular soils and bedrock)

Method: Settlement Below Center of Uniformly Loaded Rectangular Footing

Project	Plum Creek FRS No. 21 Rehabilitation
Structure	PSW Impact Basin
Analysis Section	Downstream toe, center of footing

Elev. - Existing Ground @ Structure:	495	ft NAVD88	-12.5	ft from footing base (above)	0	ft from existing (below)
Elev. - Base of Footing / Bearing Depth	482.5	ft NAVD88	0	ft from footing base (below)	12.5	ft from existing (below)
Elev. - Top of Area Fill	#N/A	ft NAVD88	#N/A	#N/A	#N/A	#N/A
Elev. - Bottom of Overex./Replace	480.5	ft NAVD88	2	ft from footing base (below)	14.5	ft from existing (below)
Elev. - Groundwater	488	ft NAVD88	-5.5	ft from footing base (above)	7	ft from existing (below)
Thickness - Area Fill	#N/A	feet below footing base				
Thickness - Overex/Replace	2	feet below footing base				

Footing Width, B:	17.67	feet
Footing Length, L (square):	17.67	feet
Footing Length, L (rect):	23.17	feet

Gross Footing Pressure, $q_{0\text{-gross}}$	2,310	psf
Removed in-situ stress	1,157	psf
Net Footing Pressure, $q_{0\text{-net}}$	1,153	psf

$$\Delta\sigma_z = qI_4 \tag{10.34}$$

where

$$I_4 = \frac{2}{\pi}\left[\frac{m_1 n_1}{\sqrt{1+m_1^2+n_1^2}}\,\frac{1+m_1^2+2n_1^2}{(1+n_1^2)(m_1^2+n_1^2)} + \sin^{-1}\frac{m_1}{\sqrt{m_1^2+n_1^2}\,\sqrt{1+n_1^2}}\right] \tag{10.35}$$

$$m_1 = \frac{L}{B} \tag{10.36}$$

$$n_1 = \frac{z}{b} \tag{10.37}$$

$$b = \frac{B}{2} \tag{10.38}$$

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula (do not edit)
xxx	= Unique Formula (do not edit)

**Negative values indicate height above existing ground*

**Assume granular*

Total Settlement (inch) = 0.50

Stratum	Depth from Existing* Top	Depth from Existing* Bottom	Depth from Existing* MP	Elevation Top	Elevation Bottom	Layer Thickness	Layer Unit Wt.	In-Situ Stress at MP: Total P_0	In-Situ Stress at MP: μ	In-Situ Stress at MP: Eff. P'_0	Consolidation Parameters: Cc	Cr	e0	OCR	P'_c	Area Fill above Existing: Thick-ness	ΔP_{Fill}	Self Compress*	Rectangular Footing: m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
Fill below footing/above exist.	0.0	0.0	0.0	495.0	495.0	0.0	120	-	-	-	-	-	-	-	-	0	0	-	1	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	**-**
Existing Soil Above Footing	0.0	12.5	6.3	495.0	482.5	12.5	120	-	-	-	-	-	-	-	-	0	0	-	1	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	**-**
Overex. below Existing	0.0	14.5	7.3	495.0	480.5	14.5	120	-	-	-	-	-	-	-	-	0	0	-	1	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	**-**
Residuum	14.5	15.5	15	480.5	479.5	1.0	120	1,800	499	1,301	0.15	0.024	0.74	4.0	5,203	0	0	-	1	2.50	0.3	8.8	0.99	1,140	0.05	0.00	**0.045**
Residuum	15.5	16.5	16	479.5	478.5	1.0	120	1,920	562	1,358	0.15	0.024	0.74	4.0	5,434	0	0	-	1	3.50	0.4	8.8	0.97	1,120	0.04	0.00	**0.043**
Residuum	16.5	17.5	17	478.5	477.5	1.0	120	2,040	624	1,416	0.15	0.024	0.74	4.0	5,664	0	0	-	1	4.50	0.5	8.8	0.94	1,089	0.04	0.00	**0.041**
Residuum	17.5	18.5	18	477.5	476.5	1.0	120	2,160	686	1,474	0.15	0.024	0.74	4.0	5,894	0	0	-	1	5.50	0.6	8.8	0.91	1,048	0.04	0.00	**0.039**
Residuum	18.5	19.5	19	476.5	475.5	1.0	120	2,280	749	1,531	0.15	0.024	0.74	4.0	6,125	0	0	-	1	6.50	0.7	8.8	0.87	1,000	0.04	0.00	**0.036**
Residuum	19.5	20.5	20	475.5	474.5	1.0	120	2,400	811	1,589	0.15	0.024	0.74	4.0	6,355	0	0	-	1	7.50	0.8	8.8	0.82	946	0.03	0.00	**0.034**
Residuum	20.5	21.5	21	474.5	473.5	1.0	120	2,520	874	1,646	0.15	0.024	0.74	4.0	6,586	0	0	-	1	8.50	1.0	8.8	0.77	890	0.03	0.00	**0.031**
Clayshale	21.5	22.5	22	473.5	472.5	1.0	120	2,640	936	1,704	0.15	0.020	0.76	8.0	13,632	0	0	-	1	9.50	1.1	8.8	0.72	834	0.02	0.00	**0.024**
Clayshale	22.5	23.5	23	472.5	471.5	1.0	120	2,760	998	1,762	0.15	0.020	0.76	8.0	14,093	0	0	-	1	10.50	1.2	8.8	0.67	778	0.02	0.00	**0.022**
Clayshale	23.5	24.5	24	471.5	470.5	1.0	120	2,880	1,061	1,819	0.15	0.020	0.76	8.0	14,554	0	0	-	1	11.50	1.3	8.8	0.63	724	0.02	0.00	**0.020**
Clayshale	24.5	25.5	25	470.5	469.5	1.0	120	3,000	1,123	1,877	0.15	0.020	0.76	8.0	15,014	0	0	-	1	12.50	1.4	8.8	0.58	673	0.02	0.00	**0.018**
Clayshale	25.5	26.5	26	469.5	468.5	1.0	120	3,120	1,186	1,934	0.15	0.020	0.76	8.0	15,475	0	0	-	1	13.50	1.5	8.8	0.54	625	0.02	0.00	**0.017**
Clayshale	26.5	27.5	27	468.5	467.5	1.0	120	3,240	1,248	1,992	0.15	0.020	0.76	8.0	15,936	0	0	-	1	14.50	1.6	8.8	0.50	581	0.02	0.00	**0.015**
Clayshale	27.5	28.5	28	467.5	466.5	1.0	120	3,360	1,310	2,050	0.15	0.020	0.76	8.0	16,397	0	0	-	1	15.50	1.8	8.8	0.47	539	0.01	0.00	**0.014**
Clayshale	28.5	29.5	29	466.5	465.5	1.0	120	3,480	1,373	2,107	0.15	0.020	0.76	8.0	16,858	0	0	-	1	16.50	1.9	8.8	0.43	501	0.01	0.00	**0.013**
Clayshale	29.5	30.5	30	465.5	464.5	1.0	120	3,600	1,435	2,165	0.15	0.020	0.76	8.0	17,318	0	0	-	1	17.50	2.0	8.8	0.40	466	0.01	0.00	**0.012**
Clayshale	30.5	31.5	31	464.5	463.5	1.0	120	3,720	1,498	2,222	0.15	0.020	0.76	8.0	17,779	0	0	-	1	18.50	2.1	8.8	0.38	434	0.01	0.00	**0.011**
Clayshale	31.5	32.5	32	463.5	462.5	1.0	120	3,840	1,560	2,280	0.15	0.020	0.76	8.0	18,240	0	0	-	1	19.50	2.2	8.8	0.35	404	0.01	0.00	**0.010**
Clayshale	32.5	33.5	33	462.5	461.5	1.0	120	3,960	1,622	2,338	0.15	0.020	0.76	8.0	18,701	0	0	-	1	20.50	2.3	8.8	0.33	377	0.01	0.00	**0.009**
Clayshale	33.5	34.5	34	461.5	460.5	1.0	120	4,080	1,685	2,395	0.15	0.020	0.76	8.0	19,162	0	0	-	1	21.50	2.4	8.8	0.31	353	0.01	0.00	**0.008**
Clayshale	34.5	35.5	35	460.5	459.5	1.0	120	4,200	1,747	2,453	0.15	0.020	0.76	8.0	19,622	0	0	-	1	22.50	2.5	8.8	0.29	330	0.01	0.00	**0.007**
Clayshale	35.5	36.5	36	459.5	458.5	1.0	120	4,320	1,810	2,510	0.15	0.020	0.76	8.0	20,083	0	0	-	1	23.50	2.7	8.8	0.27	309	0.01	0.00	**0.007**
Clayshale	36.5	37.5	37	458.5	457.5	1.0	120	4,440	1,872	2,568	0.15	0.020	0.76	8.0	20,544	0	0	-	1	24.50	2.8	8.8	0.25	290	0.01	0.00	**0.006**
Clayshale	37.5	38.5	38	457.5	456.5	1.0	120	4,560	1,934	2,626	0.15	0.020	0.76	8.0	21,005	0	0	-	1	25.50	2.9	8.8	0.24	272	0.01	0.00	**0.006**
Clayshale	38.5	39.5	39	456.5	455.5	1.0	120	4,680	1,997	2,683	0.15	0.020	0.76	8.0	21,466	0	0	-	1	26.50	3.0	8.8	0.22	256	0.01	0.00	**0.005**
Clayshale	39.5	40.5	40	455.5	454.5	1.0	120	4,800	2,059	2,741	0.15	0.020	0.76	8.0	21,926	0	0	-	1	27.50	3.1	8.8	0.21	242	0.01	0.00	**0.005**
#N/A	40.5	41.5	41	454.5	453.5	1.0	#N/A	#N/A	2,122	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	28.50	3.2	8.8	0.20	228	-	-	**-**
#N/A	41.5	42.5	42	453.5	452.5	1.0	#N/A	#N/A	2,184	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	29.50	3.3	8.8	0.19	215	-	-	**-**
#N/A	42.5	43.5	43	452.5	451.5	1.0	#N/A	#N/A	2,246	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	30.50	3.5	8.8	0.18	204	-	-	**-**
#N/A	43.5	44.5	44	451.5	450.5	1.0	#N/A	#N/A	2,309	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	31.50	3.6	8.8	0.17	193	-	-	**-**
#N/A	44.5	45.5	45	450.5	449.5	1.0	#N/A	#N/A	2,371	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	32.50	3.7	8.8	0.16	183	-	-	**-**
#N/A	45.5	46.5	46	449.5	448.5	1.0	#N/A	#N/A	2,434	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	33.50	3.8	8.8	0.15	174	-	-	**-**
#N/A	46.5	47.5	47	448.5	447.5	1.0	#N/A	#N/A	2,496	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	34.50	3.9	8.8	0.14	165	-	-	**-**
#N/A	47.5	48.5	48	447.5	446.5	1.0	#N/A	#N/A	2,558	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	35.50	4.0	8.8	0.14	157	-	-	**-**
#N/A	48.5	49.5	49	446.5	445.5	1.0	#N/A	#N/A	2,621	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	36.50	4.1	8.8	0.13	149	-	-	**-**
#N/A	49.5	50.5	50	445.5	444.5	1.0	#N/A	#N/A	2,683	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	37.50	4.2	8.8	0.12	142	-	-	**-**
#N/A	50.5	51.5	51	444.5	443.5	1.0	#N/A	#N/A	2,746	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	38.50	4.4	8.8	0.12	136	-	-	**-**
#N/A	51.5	52.5	52	443.5	442.5	1.0	#N/A	#N/A	2,808	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	39.50	4.5	8.8	0.11	130	-	-	**-**
#N/A	52.5	53.5	53	442.5	441.5	1.0	#N/A	#N/A	2,870	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	40.50	4.6	8.8	0.11	124	-	-	**-**
#N/A	53.5	54.5	54	441.5	440.5	1.0	#N/A	#N/A	2,933	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	41.50	4.7	8.8	0.10	119	-	-	**-**
#N/A	54.5	55.5	55	440.5	439.5	1.0	#N/A	#N/A	2,995	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	42.50	4.8	8.8	0.10	114	-	-	**-**

	Depth from Existing*			Elevation		Layer Thickness	Layer Unit Wt.	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom			Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
#N/A	55.5	56.5	56	439.5	438.5	1.0	#N/A	#N/A	3,058	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	43.50	4.9	8.8	0.09	109	-	-	-
#N/A	56.5	57.5	57	438.5	437.5	1.0	#N/A	#N/A	3,120	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	44.50	5.0	8.8	0.09	105	-	-	-
#N/A	57.5	58.5	58	437.5	436.5	1.0	#N/A	#N/A	3,182	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	45.50	5.1	8.8	0.09	100	-	-	-
#N/A	58.5	59.5	59	436.5	435.5	1.0	#N/A	#N/A	3,245	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	46.50	5.3	8.8	0.08	96	-	-	-
#N/A	59.5	60.5	60	435.5	434.5	1.0	#N/A	#N/A	3,307	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	47.50	5.4	8.8	0.08	93	-	-	-
#N/A	60.5	61.5	61	434.5	433.5	1.0	#N/A	#N/A	3,370	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	48.50	5.5	8.8	0.08	89	-	-	-
#N/A	61.5	62.5	62	433.5	432.5	1.0	#N/A	#N/A	3,432	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	49.50	5.6	8.8	0.07	86	-	-	-
#N/A	62.5	63.5	63	432.5	431.5	1.0	#N/A	#N/A	3,494	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	50.50	5.7	8.8	0.07	83	-	-	-
#N/A	63.5	64.5	64	431.5	430.5	1.0	#N/A	#N/A	3,557	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	51.50	5.8	8.8	0.07	80	-	-	-
#N/A	64.5	65.5	65	430.5	429.5	1.0	#N/A	#N/A	3,619	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	52.50	5.9	8.8	0.07	77	-	-	-
#N/A	65.5	66.5	66	429.5	428.5	1.0	#N/A	#N/A	3,682	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	53.50	6.1	8.8	0.06	74	-	-	-
#N/A	66.5	67.5	67	428.5	427.5	1.0	#N/A	#N/A	3,744	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	54.50	6.2	8.8	0.06	72	-	-	-
#N/A	67.5	68.5	68	427.5	426.5	1.0	#N/A	#N/A	3,806	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	55.50	6.3	8.8	0.06	69	-	-	-
#N/A	68.5	69.5	69	426.5	425.5	1.0	#N/A	#N/A	3,869	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	56.50	6.4	8.8	0.06	67	-	-	-
#N/A	69.5	70.5	70	425.5	424.5	1.0	#N/A	#N/A	3,931	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	57.50	6.5	8.8	0.06	65	-	-	-
#N/A	70.5	71.5	71	424.5	423.5	1.0	#N/A	#N/A	3,994	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	58.50	6.6	8.8	0.05	63	-	-	-
#N/A	71.5	72.5	72	423.5	422.5	1.0	#N/A	#N/A	4,056	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	59.50	6.7	8.8	0.05	61	-	-	-
#N/A	72.5	73.5	73	422.5	421.5	1.0	#N/A	#N/A	4,118	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	60.50	6.8	8.8	0.05	59	-	-	-
#N/A	73.5	74.5	74	421.5	420.5	1.0	#N/A	#N/A	4,181	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	61.50	7.0	8.8	0.05	57	-	-	-
#N/A	74.5	75.5	75	420.5	419.5	1.0	#N/A	#N/A	4,243	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	62.50	7.1	8.8	0.05	55	-	-	-
#N/A	75.5	76.5	76	419.5	418.5	1.0	#N/A	#N/A	4,306	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	63.50	7.2	8.8	0.05	54	-	-	-
#N/A	76.5	77.5	77	418.5	417.5	1.0	#N/A	#N/A	4,368	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	64.50	7.3	8.8	0.05	52	-	-	-
#N/A	77.5	78.5	78	417.5	416.5	1.0	#N/A	#N/A	4,430	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	65.50	7.4	8.8	0.04	50	-	-	-
#N/A	78.5	79.5	79	416.5	415.5	1.0	#N/A	#N/A	4,493	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	66.50	7.5	8.8	0.04	49	-	-	-
#N/A	79.5	80.5	80	415.5	414.5	1.0	#N/A	#N/A	4,555	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	67.50	7.6	8.8	0.04	48	-	-	-
#N/A	80.5	81.5	81	414.5	413.5	1.0	#N/A	#N/A	4,618	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	68.50	7.8	8.8	0.04	46	-	-	-
#N/A	81.5	82.5	82	413.5	412.5	1.0	#N/A	#N/A	4,680	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	69.50	7.9	8.8	0.04	45	-	-	-
#N/A	82.5	83.5	83	412.5	411.5	1.0	#N/A	#N/A	4,742	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	70.50	8.0	8.8	0.04	44	-	-	-
#N/A	83.5	84.5	84	411.5	410.5	1.0	#N/A	#N/A	4,805	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	71.50	8.1	8.8	0.04	43	-	-	-
#N/A	84.5	85.5	85	410.5	409.5	1.0	#N/A	#N/A	4,867	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	72.50	8.2	8.8	0.04	41	-	-	-
#N/A	85.5	86.5	86	409.5	408.5	1.0	#N/A	#N/A	4,930	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	73.50	8.3	8.8	0.04	40	-	-	-
#N/A	86.5	87.5	87	408.5	407.5	1.0	#N/A	#N/A	4,992	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	74.50	8.4	8.8	0.03	39	-	-	-
#N/A	87.5	88.5	88	407.5	406.5	1.0	#N/A	#N/A	5,054	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	75.50	8.5	8.8	0.03	38	-	-	-
#N/A	88.5	89.5	89	406.5	405.5	1.0	#N/A	#N/A	5,117	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	76.50	8.7	8.8	0.03	37	-	-	-
#N/A	89.5	90.5	90	405.5	404.5	1.0	#N/A	#N/A	5,179	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	77.50	8.8	8.8	0.03	36	-	-	-
#N/A	90.5	91.5	91	404.5	403.5	1.0	#N/A	#N/A	5,242	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	78.50	8.9	8.8	0.03	36	-	-	-
#N/A	91.5	92.5	92	403.5	402.5	1.0	#N/A	#N/A	5,304	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	79.50	9.0	8.8	0.03	35	-	-	-
#N/A	92.5	93.5	93	402.5	401.5	1.0	#N/A	#N/A	5,366	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	80.50	9.1	8.8	0.03	34	-	-	-
#N/A	93.5	94.5	94	401.5	400.5	1.0	#N/A	#N/A	5,429	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	81.50	9.2	8.8	0.03	33	-	-	-
#N/A	94.5	95.5	95	400.5	399.5	1.0	#N/A	#N/A	5,491	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	82.50	9.3	8.8	0.03	32	-	-	-
#N/A	95.5	96.5	96	399.5	398.5	1.0	#N/A	#N/A	5,554	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	83.50	9.5	8.8	0.03	32	-	-	-
#N/A	96.5	97.5	97	398.5	397.5	1.0	#N/A	#N/A	5,616	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	84.50	9.6	8.8	0.03	31	-	-	-
#N/A	97.5	98.5	98	397.5	396.5	1.0	#N/A	#N/A	5,678	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	85.50	9.7	8.8	0.03	30	-	-	-
#N/A	98.5	99.5	99	396.5	395.5	1.0	#N/A	#N/A	5,741	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	86.50	9.8	8.8	0.03	29	-	-	-
#N/A	99.5	100.5	100	395.5	394.5	1.0	#N/A	#N/A	5,803	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	87.50	9.9	8.8	0.02	29	-	-	-
#N/A	100.5	101.5	101	394.5	393.5	1.0	#N/A	#N/A	5,866	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	88.50	10.0	8.8	0.02	28	-	-	-
#N/A	101.5	102.5	102	393.5	392.5	1.0	#N/A	#N/A	5,928	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	89.50	10.1	8.8	0.02	28	-	-	-
#N/A	102.5	103.5	103	392.5	391.5	1.0	#N/A	#N/A	5,990	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	90.50	10.2	8.8	0.02	27	-	-	-
#N/A	103.5	104.5	104	391.5	390.5	1.0	#N/A	#N/A	6,053	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	91.50	10.4	8.8	0.02	26	-	-	-
#N/A	104.5	105.5	105	390.5	389.5	1.0	#N/A	#N/A	6,115	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	92.50	10.5	8.8	0.02	26	-	-	-
#N/A	105.5	106.5	106	389.5	388.5	1.0	#N/A	#N/A	6,178	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	93.50	10.6	8.8	0.02	25	-	-	-
#N/A	106.5	107.5	107	388.5	387.5	1.0	#N/A	#N/A	6,240	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	94.50	10.7	8.8	0.02	25	-	-	-
#N/A	107.5	108.5	108	387.5	386.5	1.0	#N/A	#N/A	6,302	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	95.50	10.8	8.8	0.02	24	-	-	-
#N/A	108.5	109.5	109	386.5	385.5	1.0	#N/A	#N/A	6,365	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	96.50	10.9	8.8	0.02	24	-	-	-
#N/A	109.5	110.5	110	385.5	384.5	1.0	#N/A	#N/A	6,427	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	97.50	11.0	8.8	0.02	23	-	-	-
#N/A	110.5	111.5	111	384.5	383.5	1.0	#N/A	#N/A	6,490	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	98.50	11.1	8.8	0.02	23	-	-	-
#N/A	111.5	112.5	112	383.5	382.5	1.0	#N/A	#N/A	6,552	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	99.50	11.3	8.8	0.02	22	-	-	-
#N/A	112.5	113.5	113	382.5	381.5	1.0	#N/A	#N/A	6,614	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	100.50	11.4	8.8	0.02	22	-	-	-
#N/A	113.5	114.5	114	381.5	380.5	1.0	#N/A	#N/A	6,677	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	101.50	11.5	8.8	0.02	22	-	-	-
#N/A	114.5	115.5	115	380.5	379.5	1.0	#N/A	#N/A	6,739	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	102.50	11.6	8.8	0.02	21	-	-	-
#N/A	115.5	116.5	116	379.5	378.5	1.0	#N/A	#N/A	6,802	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	103.50	11.7	8.8	0.02	21	-	-	-
#N/A	116.5	117.5	117	378.5	377.5	1.0	#N/A	#N/A	6,864	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	104.50	11.8	8.8	0.02	20	-	-	-
#N/A	117.5	200.0	158.8	377.5	295.0	82.5	#N/A	#N/A	9,469	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	146.25	16.6	8.8	0.01	10	-	-	-

Project Name:	Plum Creek FRS No. 21 Rehabilitation
Job Number:	60586838
Client:	TSSWCB

Structure	Overtopping RCC Spillway - Crest Structure - Walls
Analysis Section	Section A - Prop. dam crest centerline (Left Side, Unsaturated)
Notes	Part 1 - existing subgrade under prop. overexcav./replace

Geotechnical Data

Relevant Boring	B-05	-
Boring Ground Elev.	525	ft NAVD88
Depth to GWT at Boring:	30	feet
GWT Elev.	495	ft NAVD88

Exiting Ground at Structure Location

Structure Existing Ground:	525	ft NAVD88
Footing Bearing Elev.:	515.8	ft NAVD88
Footing Bearing Elev.:	9.2	ft below existing (cut)
GWT Depth below Exist.:	30	feet
GWT Depth below footing.:	20.8	feet

Area Fill

Fill between existing/footing?	no	-
Include load from area fill?	no	-
Finish Grade of Area Fill:	528	ft NAVD88
Height above existing:	#N/A	feet
Height above footing base:	#N/A	feet
Thickness under footing:	#N/A	feet
Area Fill Unit Weight:	126	pcf

Subgrade Overexcavation/Replacement

Include Overex/Replacement?	yes	-
Overex/Replace Bottom Elev.	510.8	ft NAVD88
Depth below footing:	5	feet
Depth below existing:	14.2	feet

Structure Footing Size & Maximum Bearing Pressure

Footing Width, B:	12	feet
Footing Length, L (rect):	51.2	feet
Gross Footing Pressure, $q_{0\text{-gross}}$	2,800	psf

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula do not edit

Design Soil Profile and Properties

Depth at Boring (feet)		Elevation (feet)		Thickness in Boring	Existing Depth at Structure (feet)		Thickness at Structure	Layer Name	Total Unit Wt	Initial Void Ratio, e_0*	Compression Index, C_c*	Recomp. Index, C_r*	Min. Over Consolidation Ratio, OCR*	Min. Preconsol. Pressure, P'c*
					1	2	3	4	5	6	7	8	9	10
Top	Bottom	Top	Bottom	(feet)	Top	Bottom	(feet)		(pcf)	(-)				(psf)
0	44.9	525.0	480.1	44.9	0.0	44.9	44.9	Embank. Fill (Core)	123	0.65	0.20	0.030	3.0	3,000
44.9	62.4	480.1	462.6	17.5	44.9	62.4	17.5	Residuum	120	0.74	0.15	0.024	4.0	3,000
62.4	100	462.6	425.0	37.6	62.4	100.0	37.6	Clayshale	120	0.76	0.15	0.020	10.0	3,000

Notes: *Copy down elevation and thickness formulas if more layers are needed, delete formulas where not needed.*

*Enter "0" for incompressible layers (i.e., granular soils and bedrock)

Method: Settlement Below Center of Uniformly Loaded Rectangular Footing

Project	Plum Creek FRS No. 21 Rehabilitation
Structure	Overtopping RCC Spillway - Crest Structure - Walls
Analysis Section	Section A - Prop. dam crest centerline (Left Side, Unsaturated)

Elev. - Existing Ground @ Structure:	525	ft NAVD88	-9.2	ft from footing base (above)	0	ft from existing (below)
Elev. - Base of Footing / Bearing Depth	515.8	ft NAVD88	0	ft from footing base (below)	9.2	ft from existing (below)
Elev. - Top of Area Fill	#N/A	ft NAVD88	#N/A	#N/A	#N/A	#N/A
Elev. - Bottom of Overex./Replace	510.8	ft NAVD88	5	ft from footing base (below)	14.2	ft from existing (below)
Elev. - Groundwater	495	ft NAVD88	20.8	ft from footing base (below)	30	ft from existing (below)
Thickness - Area Fill	#N/A	feet below footing base				
Thickness - Overex/Replace	5	feet below footing base				

Footing Width, B:	12	feet
Footing Length, L (square):	12	feet
Footing Length, L (rect):	51.2	feet

Gross Footing Pressure, $q_{0\text{-gross}}$	2,800	psf
Removed in-situ stress	1,132	psf
Net Footing Pressure, $q_{0\text{-net}}$	1,668	psf

$$\Delta\sigma_z = qI_4 \tag{10.34}$$

where

$$I_4 = \frac{2}{\pi}\left[\frac{m_1 n_1}{\sqrt{1+m_1^2+n_1^2}}\frac{1+m_1^2+2n_1^2}{(1+n_1^2)(m_1^2+n_1^2)} + \sin^{-1}\frac{m_1}{\sqrt{m_1^2+n_1^2}\sqrt{1+n_1^2}}\right] \tag{10.35}$$

$$m_1 = \frac{L}{B} \tag{10.36}$$

$$n_1 = \frac{z}{b} \tag{10.37}$$

$$b = \frac{B}{2} \tag{10.38}$$

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula (do not edit)
xxx	= Unique Formula (do not edit)

**Negative values indicate height above existing ground*

**Assume granular*

Total Settlement (inch) = 0.66

Stratum	Depth from Existing* Top	Bottom	MP	Elevation Top	Bottom	Layer Thickness	Layer Unit Wt.	In-Situ Stress at MP Total P_0	μ	Eff. P'_0	Consolidation Parameters Cc	Cr	e0	OCR	P'_c	Area Fill above Existing Thick-ness	ΔP_{Fill}	Self Compress*	Rectangular Footing m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
Fill below footing/above exist.	0.0	0.0	0.0	525.0	525.0	0.0	126	-	-	-	-	-	-	-	-	0	0	-	4	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	**-**
Existing Soil Above Footing	0.0	9.2	4.6	525.0	515.8	9.2	123	-	-	-	-	-	-	-	-	0	0	-	4	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	**-**
Overex. below Existing	0.0	14.2	7.1	525.0	510.8	14.2	123	-	-	-	-	-	-	-	-	0	0	-	4	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	**-**
Embank. Fill (Core)	14.2	15.2	14.7	510.8	509.8	1.0	123	1,808	0	1,808	0.20	0.030	0.65	3.0	5,424	0	0	-	4	5.50	0.9	6.0	0.84	1,408	0.05	0.00	**0.055**
Embank. Fill (Core)	15.2	16.2	15.7	509.8	508.8	1.0	123	1,931	0	1,931	0.20	0.030	0.65	3.0	5,793	0	0	-	4	6.50	1.1	6.0	0.79	1,318	0.05	0.00	**0.049**
Embank. Fill (Core)	16.2	17.2	16.7	508.8	507.8	1.0	123	2,054	0	2,054	0.20	0.030	0.65	3.0	6,162	0	0	-	4	7.50	1.3	6.0	0.74	1,231	0.04	0.00	**0.044**
Embank. Fill (Core)	17.2	18.2	17.7	507.8	506.8	1.0	123	2,177	0	2,177	0.20	0.030	0.65	3.0	6,531	0	0	-	4	8.50	1.4	6.0	0.69	1,148	0.04	0.00	**0.040**
Embank. Fill (Core)	18.2	19.2	18.7	506.8	505.8	1.0	123	2,300	0	2,300	0.20	0.030	0.65	3.0	6,900	0	0	-	4	9.50	1.6	6.0	0.64	1,070	0.04	0.00	**0.036**
Embank. Fill (Core)	19.2	20.2	19.7	505.8	504.8	1.0	123	2,423	0	2,423	0.20	0.030	0.65	3.0	7,269	0	0	-	4	10.50	1.8	6.0	0.60	999	0.03	0.00	**0.033**
Embank. Fill (Core)	20.2	21.2	20.7	504.8	503.8	1.0	123	2,546	0	2,546	0.20	0.030	0.65	3.0	7,638	0	0	-	4	11.50	1.9	6.0	0.56	934	0.03	0.00	**0.030**
Embank. Fill (Core)	21.2	22.2	21.7	503.8	502.8	1.0	123	2,669	0	2,669	0.20	0.030	0.65	3.0	8,007	0	0	-	4	12.50	2.1	6.0	0.52	875	0.03	0.00	**0.027**
Embank. Fill (Core)	22.2	23.2	22.7	502.8	501.8	1.0	123	2,792	0	2,792	0.20	0.030	0.65	3.0	8,376	0	0	-	4	13.50	2.3	6.0	0.49	821	0.02	0.00	**0.024**
Embank. Fill (Core)	23.2	24.2	23.7	501.8	500.8	1.0	123	2,915	0	2,915	0.20	0.030	0.65	3.0	8,745	0	0	-	4	14.50	2.4	6.0	0.46	771	0.02	0.00	**0.022**
Embank. Fill (Core)	24.2	25.2	24.7	500.8	499.8	1.0	123	3,038	0	3,038	0.20	0.030	0.65	3.0	9,114	0	0	-	4	15.50	2.6	6.0	0.44	726	0.02	0.00	**0.020**
Embank. Fill (Core)	25.2	26.2	25.7	499.8	498.8	1.0	123	3,161	0	3,161	0.20	0.030	0.65	3.0	9,483	0	0	-	4	16.50	2.8	6.0	0.41	684	0.02	0.00	**0.019**
Embank. Fill (Core)	26.2	27.2	26.7	498.8	497.8	1.0	123	3,284	0	3,284	0.20	0.030	0.65	3.0	9,852	0	0	-	4	17.50	2.9	6.0	0.39	646	0.02	0.00	**0.017**
Embank. Fill (Core)	27.2	28.2	27.7	497.8	496.8	1.0	123	3,407	0	3,407	0.20	0.030	0.65	3.0	10,221	0	0	-	4	18.50	3.1	6.0	0.37	611	0.02	0.00	**0.016**
Embank. Fill (Core)	28.2	29.2	28.7	496.8	495.8	1.0	123	3,530	0	3,530	0.20	0.030	0.65	3.0	10,590	0	0	-	4	19.50	3.3	6.0	0.35	578	0.01	0.00	**0.014**
Embank. Fill (Core)	29.2	30.2	29.7	495.8	494.8	1.0	123	3,653	0	3,653	0.20	0.030	0.65	3.0	10,959	0	0	-	4	20.50	3.4	6.0	0.33	548	0.01	0.00	**0.013**
Embank. Fill (Core)	30.2	31.2	30.7	494.8	493.8	1.0	123	3,776	44	3,732	0.20	0.030	0.65	3.0	11,197	0	0	-	4	21.50	3.6	6.0	0.31	520	0.01	0.00	**0.012**
Embank. Fill (Core)	31.2	32.2	31.7	493.8	492.8	1.0	123	3,899	106	3,793	0.20	0.030	0.65	3.0	11,379	0	0	-	4	22.50	3.8	6.0	0.30	494	0.01	0.00	**0.012**
Embank. Fill (Core)	32.2	33.2	32.7	492.8	491.8	1.0	123	4,022	168	3,854	0.20	0.030	0.65	3.0	11,561	0	0	-	4	23.50	3.9	6.0	0.28	469	0.01	0.00	**0.011**
Embank. Fill (Core)	33.2	34.2	33.7	491.8	490.8	1.0	123	4,145	231	3,914	0.20	0.030	0.65	3.0	11,743	0	0	-	4	24.50	4.1	6.0	0.27	447	0.01	0.00	**0.010**
Embank. Fill (Core)	34.2	35.2	34.7	490.8	489.8	1.0	123	4,268	293	3,975	0.20	0.030	0.65	3.0	11,924	0	0	-	4	25.50	4.3	6.0	0.26	426	0.01	0.00	**0.010**
Embank. Fill (Core)	35.2	36.2	35.7	489.8	488.8	1.0	123	4,391	356	4,035	0.20	0.030	0.65	3.0	12,106	0	0	-	4	26.50	4.4	6.0	0.24	406	0.01	0.00	**0.009**
Embank. Fill (Core)	36.2	37.2	36.7	488.8	487.8	1.0	123	4,514	418	4,096	0.20	0.030	0.65	3.0	12,288	0	0	-	4	27.50	4.6	6.0	0.23	387	0.01	0.00	**0.009**
Embank. Fill (Core)	37.2	38.2	37.7	487.8	486.8	1.0	123	4,637	480	4,157	0.20	0.030	0.65	3.0	12,470	0	0	-	4	28.50	4.8	6.0	0.22	370	0.01	0.00	**0.008**
Embank. Fill (Core)	38.2	39.2	38.7	486.8	485.8	1.0	123	4,760	543	4,217	0.20	0.030	0.65	3.0	12,652	0	0	-	4	29.50	4.9	6.0	0.21	353	0.01	0.00	**0.008**
Embank. Fill (Core)	39.2	40.2	39.7	485.8	484.8	1.0	123	4,883	605	4,278	0.20	0.030	0.65	3.0	12,833	0	0	-	4	30.50	5.1	6.0	0.20	338	0.01	0.00	**0.007**
Embank. Fill (Core)	40.2	41.2	40.7	484.8	483.8	1.0	123	5,006	668	4,338	0.20	0.030	0.65	3.0	13,015	0	0	-	4	31.50	5.3	6.0	0.19	323	0.01	0.00	**0.007**
Embank. Fill (Core)	41.2	42.2	41.7	483.8	482.8	1.0	123	5,129	730	4,399	0.20	0.030	0.65	3.0	13,197	0	0	-	4	32.50	5.4	6.0	0.19	310	0.01	0.00	**0.006**
Embank. Fill (Core)	42.2	43.2	42.7	482.8	481.8	1.0	123	5,252	792	4,460	0.20	0.030	0.65	3.0	13,379	0	0	-	4	33.50	5.6	6.0	0.18	297	0.01	0.00	**0.006**
Embank. Fill (Core)	43.2	44.2	43.7	481.8	480.8	1.0	123	5,375	855	4,520	0.20	0.030	0.65	3.0	13,561	0	0	-	4	34.50	5.8	6.0	0.17	285	0.01	0.00	**0.006**
Embank. Fill (Core)	44.2	45.2	44.7	480.8	479.8	1.0	123	5,498	917	4,581	0.20	0.030	0.65	3.0	13,742	0	0	-	4	35.50	5.9	6.0	0.16	273	0.01	0.00	**0.005**
Residuum	45.2	46.2	45.7	479.8	478.8	1.0	120	5,620	980	4,640	0.15	0.024	0.74	4.0	18,560	0	0	-	4	36.50	6.1	6.0	0.16	262	0.00	0.00	**0.004**
Residuum	46.2	47.2	46.7	478.8	477.8	1.0	120	5,740	1,042	4,698	0.15	0.024	0.74	4.0	18,790	0	0	-	4	37.50	6.3	6.0	0.15	252	0.00	0.00	**0.004**
Residuum	47.2	48.2	47.7	477.8	476.8	1.0	120	5,860	1,104	4,755	0.15	0.024	0.74	4.0	19,020	0	0	-	4	38.50	6.4	6.0	0.15	242	0.00	0.00	**0.004**
Residuum	48.2	49.2	48.7	476.8	475.8	1.0	120	5,980	1,167	4,813	0.15	0.024	0.74	4.0	19,251	0	0	-	4	39.50	6.6	6.0	0.14	233	0.00	0.00	**0.003**
Residuum	49.2	50.2	49.7	475.8	474.8	1.0	120	6,100	1,229	4,870	0.15	0.024	0.74	4.0	19,481	0	0	-	4	40.50	6.8	6.0	0.13	224	0.00	0.00	**0.003**
Residuum	50.2	51.2	50.7	474.8	473.8	1.0	120	6,220	1,292	4,928	0.15	0.024	0.74	4.0	19,712	0	0	-	4	41.50	6.9	6.0	0.13	216	0.00	0.00	**0.003**
Residuum	51.2	52.2	51.7	473.8	472.8	1.0	120	6,340	1,354	4,986	0.15	0.024	0.74	4.0	19,942	0	0	-	4	42.50	7.1	6.0	0.12	208	0.00	0.00	**0.003**
Residuum	52.2	53.2	52.7	472.8	471.8	1.0	120	6,460	1,416	5,043	0.15	0.024	0.74	4.0	20,172	0	0	-	4	43.50	7.3	6.0	0.12	201	0.00	0.00	**0.003**
Residuum	53.2	54.2	53.7	471.8	470.8	1.0	120	6,580	1,479	5,101	0.15	0.024	0.74	4.0	20,403	0	0	-	4	44.50	7.4	6.0	0.12	194	0.00	0.00	**0.003**
Residuum	54.2	55.2	54.7	470.8	469.8	1.0	120	6,700	1,541	5,158	0.15	0.024	0.74	4.0	20,633	0	0	-	4	45.50	7.6	6.0	0.11	187	0.00	0.00	**0.003**

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
Residuum	55.2	56.2	55.7	469.8	468.8	1.0	120	6,820	1,604	5,216	0.15	0.024	0.74	4.0	20,864	0	0	-	4	46.50	7.8	6.0	0.11	181	0.00	0.00	**0.002**
Residuum	56.2	57.2	56.7	468.8	467.8	1.0	120	6,940	1,666	5,274	0.15	0.024	0.74	4.0	21,094	0	0	-	4	47.50	7.9	6.0	0.10	174	0.00	0.00	**0.002**
Residuum	57.2	58.2	57.7	467.8	466.8	1.0	120	7,060	1,728	5,331	0.15	0.024	0.74	4.0	21,324	0	0	-	4	48.50	8.1	6.0	0.10	169	0.00	0.00	**0.002**
Residuum	58.2	59.2	58.7	466.8	465.8	1.0	120	7,180	1,791	5,389	0.15	0.024	0.74	4.0	21,555	0	0	-	4	49.50	8.3	6.0	0.10	163	0.00	0.00	**0.002**
Residuum	59.2	60.2	59.7	465.8	464.8	1.0	120	7,300	1,853	5,446	0.15	0.024	0.74	4.0	21,785	0	0	-	4	50.50	8.4	6.0	0.09	158	0.00	0.00	**0.002**
Residuum	60.2	61.2	60.7	464.8	463.8	1.0	120	7,420	1,916	5,504	0.15	0.024	0.74	4.0	22,016	0	0	-	4	51.50	8.6	6.0	0.09	153	0.00	0.00	**0.002**
Residuum	61.2	62.2	61.7	463.8	462.8	1.0	120	7,540	1,978	5,562	0.15	0.024	0.74	4.0	22,246	0	0	-	4	52.50	8.8	6.0	0.09	148	0.00	0.00	**0.002**
Residuum	62.2	63.2	62.7	462.8	461.8	1.0	120	7,660	2,040	5,619	0.15	0.024	0.74	4.0	22,476	0	0	-	4	53.50	8.9	6.0	0.09	143	0.00	0.00	**0.002**
Clayshale	63.2	64.2	63.7	461.8	460.8	1.0	120	7,780	2,103	5,677	0.15	0.020	0.76	10.0	56,767	0	0	-	4	54.50	9.1	6.0	0.08	139	0.00	0.00	**0.001**
Clayshale	64.2	65.2	64.7	460.8	459.8	1.0	120	7,900	2,165	5,734	0.15	0.020	0.76	10.0	57,343	0	0	-	4	55.50	9.3	6.0	0.08	135	0.00	0.00	**0.001**
Clayshale	65.2	66.2	65.7	459.8	458.8	1.0	120	8,020	2,228	5,792	0.15	0.020	0.76	10.0	57,919	0	0	-	4	56.50	9.4	6.0	0.08	131	0.00	0.00	**0.001**
Clayshale	66.2	67.2	66.7	458.8	457.8	1.0	120	8,140	2,290	5,850	0.15	0.020	0.76	10.0	58,495	0	0	-	4	57.50	9.6	6.0	0.08	127	0.00	0.00	**0.001**
Clayshale	67.2	68.2	67.7	457.8	456.8	1.0	120	8,260	2,352	5,907	0.15	0.020	0.76	10.0	59,071	0	0	-	4	58.50	9.8	6.0	0.07	123	0.00	0.00	**0.001**
Clayshale	68.2	69.2	68.7	456.8	455.8	1.0	120	8,380	2,415	5,965	0.15	0.020	0.76	10.0	59,647	0	0	-	4	59.50	9.9	6.0	0.07	119	0.00	0.00	**0.001**
Clayshale	69.2	70.2	69.7	455.8	454.8	1.0	120	8,500	2,477	6,022	0.15	0.020	0.76	10.0	60,223	0	0	-	4	60.50	10.1	6.0	0.07	116	0.00	0.00	**0.001**
Clayshale	70.2	71.2	70.7	454.8	453.8	1.0	120	8,620	2,540	6,080	0.15	0.020	0.76	10.0	60,799	0	0	-	4	61.50	10.3	6.0	0.07	113	0.00	0.00	**0.001**
Clayshale	71.2	72.2	71.7	453.8	452.8	1.0	120	8,740	2,602	6,138	0.15	0.020	0.76	10.0	61,375	0	0	-	4	62.50	10.4	6.0	0.07	110	0.00	0.00	**0.001**
Clayshale	72.2	73.2	72.7	452.8	451.8	1.0	120	8,860	2,664	6,195	0.15	0.020	0.76	10.0	61,951	0	0	-	4	63.50	10.6	6.0	0.06	107	0.00	0.00	**0.001**
Clayshale	73.2	74.2	73.7	451.8	450.8	1.0	120	8,980	2,727	6,253	0.15	0.020	0.76	10.0	62,527	0	0	-	4	64.50	10.8	6.0	0.06	104	0.00	0.00	**0.001**
Clayshale	74.2	75.2	74.7	450.8	449.8	1.0	120	9,100	2,789	6,310	0.15	0.020	0.76	10.0	63,103	0	0	-	4	65.50	10.9	6.0	0.06	101	0.00	0.00	**0.001**
Clayshale	75.2	76.2	75.7	449.8	448.8	1.0	120	9,220	2,852	6,368	0.15	0.020	0.76	10.0	63,679	0	0	-	4	66.50	11.1	6.0	0.06	98	0.00	0.00	**0.001**
Clayshale	76.2	77.2	76.7	448.8	447.8	1.0	120	9,340	2,914	6,426	0.15	0.020	0.76	10.0	64,255	0	0	-	4	67.50	11.3	6.0	0.06	96	0.00	0.00	**0.001**
Clayshale	77.2	78.2	77.7	447.8	446.8	1.0	120	9,460	2,976	6,483	0.15	0.020	0.76	10.0	64,831	0	0	-	4	68.50	11.4	6.0	0.06	93	0.00	0.00	**0.001**
Clayshale	78.2	79.2	78.7	446.8	445.8	1.0	120	9,580	3,039	6,541	0.15	0.020	0.76	10.0	65,407	0	0	-	4	69.50	11.6	6.0	0.05	91	0.00	0.00	**0.001**
Clayshale	79.2	80.2	79.7	445.8	444.8	1.0	120	9,700	3,101	6,598	0.15	0.020	0.76	10.0	65,983	0	0	-	4	70.50	11.8	6.0	0.05	88	0.00	0.00	**0.001**
Clayshale	80.2	81.2	80.7	444.8	443.8	1.0	120	9,820	3,164	6,656	0.15	0.020	0.76	10.0	66,559	0	0	-	4	71.50	11.9	6.0	0.05	86	0.00	0.00	**0.001**
Clayshale	81.2	82.2	81.7	443.8	442.8	1.0	120	9,940	3,226	6,714	0.15	0.020	0.76	10.0	67,135	0	0	-	4	72.50	12.1	6.0	0.05	84	0.00	0.00	**0.001**
Clayshale	82.2	83.2	82.7	442.8	441.8	1.0	120	10,060	3,288	6,771	0.15	0.020	0.76	10.0	67,711	0	0	-	4	73.50	12.3	6.0	0.05	82	0.00	0.00	**0.001**
Clayshale	83.2	84.2	83.7	441.8	440.8	1.0	120	10,180	3,351	6,829	0.15	0.020	0.76	10.0	68,287	0	0	-	4	74.50	12.4	6.0	0.05	80	0.00	0.00	**0.001**
Clayshale	84.2	85.2	84.7	440.8	439.8	1.0	120	10,300	3,413	6,886	0.15	0.020	0.76	10.0	68,863	0	0	-	4	75.50	12.6	6.0	0.05	78	0.00	0.00	**0.001**
Clayshale	85.2	86.2	85.7	439.8	438.8	1.0	120	10,420	3,476	6,944	0.15	0.020	0.76	10.0	69,439	0	0	-	4	76.50	12.8	6.0	0.05	76	0.00	0.00	**0.001**
Clayshale	86.2	87.2	86.7	438.8	437.8	1.0	120	10,540	3,538	7,002	0.15	0.020	0.76	10.0	70,015	0	0	-	4	77.50	12.9	6.0	0.04	74	0.00	0.00	**0.001**
Clayshale	87.2	88.2	87.7	437.8	436.8	1.0	120	10,660	3,600	7,059	0.15	0.020	0.76	10.0	70,591	0	0	-	4	78.50	13.1	6.0	0.04	73	0.00	0.00	**0.001**
Clayshale	88.2	89.2	88.7	436.8	435.8	1.0	120	10,780	3,663	7,117	0.15	0.020	0.76	10.0	71,167	0	0	-	4	79.50	13.3	6.0	0.04	71	0.00	0.00	**0.001**
Clayshale	89.2	90.2	89.7	435.8	434.8	1.0	120	10,900	3,725	7,174	0.15	0.020	0.76	10.0	71,743	0	0	-	4	80.50	13.4	6.0	0.04	69	0.00	0.00	**0.001**
Clayshale	90.2	91.2	90.7	434.8	433.8	1.0	120	11,020	3,788	7,232	0.15	0.020	0.76	10.0	72,319	0	0	-	4	81.50	13.6	6.0	0.04	68	0.00	0.00	**0.001**
Clayshale	91.2	92.2	91.7	433.8	432.8	1.0	120	11,140	3,850	7,290	0.15	0.020	0.76	10.0	72,895	0	0	-	4	82.50	13.8	6.0	0.04	66	0.00	0.00	**0.001**
Clayshale	92.2	93.2	92.7	432.8	431.8	1.0	120	11,260	3,912	7,347	0.15	0.020	0.76	10.0	73,471	0	0	-	4	83.50	13.9	6.0	0.04	65	0.00	0.00	**0.001**
Clayshale	93.2	94.2	93.7	431.8	430.8	1.0	120	11,380	3,975	7,405	0.15	0.020	0.76	10.0	74,047	0	0	-	4	84.50	14.1	6.0	0.04	64	0.00	0.00	**0.001**
Clayshale	94.2	95.2	94.7	430.8	429.8	1.0	120	11,500	4,037	7,462	0.15	0.020	0.76	10.0	74,623	0	0	-	4	85.50	14.3	6.0	0.04	62	0.00	0.00	**0.000**
Clayshale	95.2	96.2	95.7	429.8	428.8	1.0	120	11,620	4,100	7,520	0.15	0.020	0.76	10.0	75,199	0	0	-	4	86.50	14.4	6.0	0.04	61	0.00	0.00	**0.000**
Clayshale	96.2	97.2	96.7	428.8	427.8	1.0	120	11,740	4,162	7,578	0.15	0.020	0.76	10.0	75,775	0	0	-	4	87.50	14.6	6.0	0.04	60	0.00	0.00	**0.000**
Clayshale	97.2	98.2	97.7	427.8	426.8	1.0	120	11,860	4,224	7,635	0.15	0.020	0.76	10.0	76,351	0	0	-	4	88.50	14.8	6.0	0.03	58	0.00	0.00	**0.000**
Clayshale	98.2	99.2	98.7	426.8	425.8	1.0	120	11,980	4,287	7,693	0.15	0.020	0.76	10.0	76,927	0	0	-	4	89.50	14.9	6.0	0.03	57	0.00	0.00	**0.000**
Clayshale	99.2	100.2	99.7	425.8	424.8	1.0	120	12,100	4,349	7,750	0.15	0.020	0.76	10.0	77,503	0	0	-	4	90.50	15.1	6.0	0.03	56	0.00	0.00	**0.000**
#N/A	100.2	101.2	100.7	424.8	423.8	1.0	#N/A	#N/A	4,412	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	91.50	15.3	6.0	0.03	55	-	-	**-**
#N/A	101.2	102.2	101.7	423.8	422.8	1.0	#N/A	#N/A	4,474	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	92.50	15.4	6.0	0.03	54	-	-	**-**
#N/A	102.2	103.2	102.7	422.8	421.8	1.0	#N/A	#N/A	4,536	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	93.50	15.6	6.0	0.03	53	-	-	**-**
#N/A	103.2	104.2	103.7	421.8	420.8	1.0	#N/A	#N/A	4,599	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	94.50	15.8	6.0	0.03	52	-	-	**-**
#N/A	104.2	105.2	104.7	420.8	419.8	1.0	#N/A	#N/A	4,661	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	95.50	15.9	6.0	0.03	51	-	-	**-**
#N/A	105.2	106.2	105.7	419.8	418.8	1.0	#N/A	#N/A	4,724	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	96.50	16.1	6.0	0.03	50	-	-	**-**
#N/A	106.2	107.2	106.7	418.8	417.8	1.0	#N/A	#N/A	4,786	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	97.50	16.3	6.0	0.03	49	-	-	**-**
#N/A	107.2	108.2	107.7	417.8	416.8	1.0	#N/A	#N/A	4,848	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	98.50	16.4	6.0	0.03	48	-	-	**-**
#N/A	108.2	109.2	108.7	416.8	415.8	1.0	#N/A	#N/A	4,911	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	99.50	16.6	6.0	0.03	47	-	-	**-**
#N/A	109.2	110.2	109.7	415.8	414.8	1.0	#N/A	#N/A	4,973	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	100.50	16.8	6.0	0.03	46	-	-	**-**
#N/A	110.2	111.2	110.7	414.8	413.8	1.0	#N/A	#N/A	5,036	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	101.50	16.9	6.0	0.03	45	-	-	**-**
#N/A	111.2	112.2	111.7	413.8	412.8	1.0	#N/A	#N/A	5,098	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	102.50	17.1	6.0	0.03	44	-	-	**-**
#N/A	112.2	113.2	112.7	412.8	411.8	1.0	#N/A	#N/A	5,160	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	103.50	17.3	6.0	0.03	43	-	-	**-**
#N/A	113.2	114.2	113.7	411.8	410.8	1.0	#N/A	#N/A	5,223	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	104.50	17.4	6.0	0.03	43	-	-	**-**
#N/A	114.2	115.2	114.7	410.8	409.8	1.0	#N/A	#N/A	5,285	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	105.50	17.6	6.0	0.03	42	-	-	**-**
#N/A	115.2	116.2	115.7	409.8	408.8	1.0	#N/A	#N/A	5,348	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	106.50	17.8	6.0	0.02	41	-	-	**-**
#N/A	116.2	117.2	116.7	408.8	407.8	1.0	#N/A	#N/A	5,410	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	107.50	17.9	6.0	0.02	40	-	-	**-**
#N/A	117.2	200.0	158.6	407.8	325.0	82.8	#N/A	#N/A	8,025	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	149.40	24.9	6.0	0.01	21	-	-	**-**

Project Name:	Plum Creek FRS No. 21 Rehabilitation
Job Number:	60586838
Client:	TSSWCB

Structure	Overtopping RCC Spillway - Crest Structure - Walls
Analysis Section	Section A - Prop. dam crest centerline (Left Side, Unsaturated)
Notes	Part 2 - new lime-treated fill in prop. overex./replace

Geotechnical Data

Relevant Boring	n/a	-
Boring Ground Elev.	515.8	ft NAVD88
Depth to GWT at Boring:	20.8	feet
GWT Elev.	495	ft NAVD88

Exiting Ground at Structure Location

Structure Existing Ground:	515.8	ft NAVD88
Footing Bearing Elev.:	515.8	ft NAVD88
Footing Bearing Elev.:	0	ft below existing (cut)
GWT Depth below Exist.:	20.8	feet
GWT Depth below footing.:	20.8	feet

Area Fill

Fill between existing/footing?	no	-
Include load from area fill?	no	-
Finish Grade of Area Fill:	528	ft NAVD88
Height above existing:	#N/A	feet
Height above footing base:	#N/A	feet
Thickness under footing:	#N/A	feet
Area Fill Unit Weight:	126	pcf

Subgrade Overexcavation/Replacement

Include Overex/Replacement?	no	-
Overex/Replace Bottom Elev.	515.8	ft NAVD88
Depth below footing:	#N/A	feet
Depth below existing:	#N/A	feet

Structure Footing Size & Maximum Bearing Pressure

Footing Width, B:	12	feet
Footing Length, L (rect):	51.2	feet
Gross Footing Pressure, $q_{0\text{-gross}}$	2,812	psf

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula do not edit

Design Soil Profile and Properties

Depth at Boring (feet)		Elevation (feet)		Thickness in Boring	Existing Depth at Structure (feet)		Thickness at Structure	Layer Name	Total Unit Wt	Initial Void Ratio, e_0*	Compression Index, C_c*	Recomp. Index, C_r*	Min. Over Consolidation Ratio, OCR*	Min. Preconsol. Pressure, P'c*
					1	2	3	4	5	6	7	8	9	10
Top	Bottom	Top	Bottom	(feet)	Top	Bottom	(feet)		(pcf)	(-)				(psf)
0	5	515.8	510.8	5.0	0.0	5.0	5.0	New Lime-Treat Fill	120	0.80	0.12	0.012	2.0	3,000

Notes: *Copy down elevation and thickness formulas if more layers are needed, delete formulas where not needed.*

*Enter "0" for incompressible layers (i.e., granular soils and bedrock)

Method: Settlement Below Center of Uniformly Loaded Rectangular Footing

Project	Plum Creek FRS No. 21 Rehabilitation
Structure	Overtopping RCC Spillway - Crest Structure - Walls
Analysis Section	Section A - Prop. dam crest centerline (Left Side, Unsaturated)

Elev. - Existing Ground @ Structure:	515.8	ft NAVD88	0	ft from footing base (below)	0	ft from existing (below)
Elev. - Base of Footing / Bearing Depth	515.8	ft NAVD88	0	ft from footing base (below)	0	ft from existing (below)
Elev. - Top of Area Fill	#N/A	ft NAVD88	#N/A	#N/A	#N/A	#N/A
Elev. - Bottom of Overex./Replace	#N/A	ft NAVD88	#N/A	#N/A	#N/A	#N/A
Elev. - Groundwater	495	ft NAVD88	20.8	ft from footing base (below)	20.8	ft from existing (below)
Thickness - Area Fill	#N/A	feet below footing base				
Thickness - Overex/Replace	#N/A	feet below footing base				

Footing Width, B:	12	feet
Footing Length, L (square):	12	feet
Footing Length, L (rect):	51.2	feet

Gross Footing Pressure, $q_{0\text{-gross}}$	2,812	psf
Removed in-situ stress	0	psf
Net Footing Pressure, $q_{0\text{-net}}$	2,812	psf

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula (do not edit)
xxx	= Unique Formula (do not edit)

$$\Delta\sigma_z = qI_4 \tag{10.34}$$

where

$$I_4 = \frac{2}{\pi}\left[\frac{m_1 n_1}{\sqrt{1+m_1^2+n_1^2}}\frac{1+m_1^2+2n_1^2}{(1+n_1^2)(m_1^2+n_1^2)} + \sin^{-1}\frac{m_1}{\sqrt{m_1^2+n_1^2}\sqrt{1+n_1^2}}\right] \tag{10.35}$$

$$m_1 = \frac{L}{B} \tag{10.36}$$

$$n_1 = \frac{z}{b} \tag{10.37}$$

$$b = \frac{B}{2} \tag{10.38}$$

**Negative values indicate height above existing ground*

**Assume granular*

Total Settlement (inch) = 0.44

Stratum	Depth from Existing* Top	Bottom	MP	Elevation Top	Bottom	Layer Thickness	Layer Unit Wt.	In-Situ Stress at MP Total P_0	μ	Eff. P'_0	Consolidation Parameters Cc	Cr	e0	OCR	P'_c	Area Fill above Existing Thick-ness	ΔP_{Fill}	Self Compress*	Rectangular Footing m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
Fill below footing/above exist.	0.0	0.0	0.0	515.8	515.8	0.0	126	-	-	-	-	-	-	-	-	0	0	-	4	0.00	0.0	6.0	1.00	2,812	-	-	-
Existing Soil Above Footing	0.0	0.0	0.0	515.8	515.8	0.0	120	-	-	-	-	-	-	-	-	0	0	-	4	0.00	0.0	6.0	1.00	2,812	-	-	-
Overex. below Existing	0.0	0.0	0.0	515.8	515.8	0.0	120	-	-	-	-	-	-	-	-	0	0	-	4	0.00	0.0	6.0	1.00	2,812	-	-	-
New Lime-Treat Fill	0.0	1.0	0.5	515.8	514.8	1.0	120	60	0	60	0.12	0.012	0.80	2.0	3,000	0	0	-	4	0.50	0.1	6.0	1.00	2,811	0.13	0.00	**0.129**
New Lime-Treat Fill	1.0	2.0	1.5	514.8	513.8	1.0	120	180	0	180	0.12	0.012	0.80	2.0	3,000	0	0	-	4	1.50	0.3	6.0	0.99	2,795	0.09	0.00	**0.093**
New Lime-Treat Fill	2.0	3.0	2.5	513.8	512.8	1.0	120	300	0	300	0.12	0.012	0.80	2.0	3,000	0	0	-	4	2.50	0.4	6.0	0.97	2,741	0.08	0.00	**0.081**
New Lime-Treat Fill	3.0	4.0	3.5	512.8	511.8	1.0	120	420	0	420	0.12	0.012	0.80	2.0	3,000	0	0	-	4	3.50	0.6	6.0	0.94	2,645	0.07	0.01	**0.073**
New Lime-Treat Fill	4.0	5.0	4.5	511.8	510.8	1.0	120	540	0	540	0.12	0.012	0.80	2.0	3,000	0	0	-	4	4.50	0.8	6.0	0.90	2,518	0.06	0.01	**0.064**
#N/A	5.0	6.0	5.5	510.8	509.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	5.50	0.9	6.0	0.84	2,373	-	-	-
#N/A	6.0	7.0	6.5	509.8	508.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	6.50	1.1	6.0	0.79	2,222	-	-	-
#N/A	7.0	8.0	7.5	508.8	507.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	7.50	1.3	6.0	0.74	2,074	-	-	-
#N/A	8.0	9.0	8.5	507.8	506.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	8.50	1.4	6.0	0.69	1,934	-	-	-
#N/A	9.0	10.0	9.5	506.8	505.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	9.50	1.6	6.0	0.64	1,804	-	-	-
#N/A	10.0	11.0	10.5	505.8	504.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	10.50	1.8	6.0	0.60	1,684	-	-	-
#N/A	11.0	12.0	11.5	504.8	503.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	11.50	1.9	6.0	0.56	1,575	-	-	-
#N/A	12.0	13.0	12.5	503.8	502.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	12.50	2.1	6.0	0.52	1,475	-	-	-
#N/A	13.0	14.0	13.5	502.8	501.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	13.50	2.3	6.0	0.49	1,383	-	-	-
#N/A	14.0	15.0	14.5	501.8	500.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	14.50	2.4	6.0	0.46	1,300	-	-	-
#N/A	15.0	16.0	15.5	500.8	499.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	15.50	2.6	6.0	0.44	1,223	-	-	-
#N/A	16.0	17.0	16.5	499.8	498.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	16.50	2.8	6.0	0.41	1,153	-	-	-
#N/A	17.0	18.0	17.5	498.8	497.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	17.50	2.9	6.0	0.39	1,089	-	-	-
#N/A	18.0	19.0	18.5	497.8	496.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	18.50	3.1	6.0	0.37	1,029	-	-	-
#N/A	19.0	20.0	19.5	496.8	495.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	19.50	3.3	6.0	0.35	974	-	-	-
#N/A	20.0	21.0	20.5	495.8	494.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	20.50	3.4	6.0	0.33	923	-	-	-
#N/A	21.0	22.0	21.5	494.8	493.8	1.0	#N/A	#N/A	44	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	21.50	3.6	6.0	0.31	876	-	-	-
#N/A	22.0	23.0	22.5	493.8	492.8	1.0	#N/A	#N/A	106	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	22.50	3.8	6.0	0.30	832	-	-	-
#N/A	23.0	24.0	23.5	492.8	491.8	1.0	#N/A	#N/A	168	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	23.50	3.9	6.0	0.28	791	-	-	-
#N/A	24.0	25.0	24.5	491.8	490.8	1.0	#N/A	#N/A	231	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	24.50	4.1	6.0	0.27	753	-	-	-
#N/A	25.0	26.0	25.5	490.8	489.8	1.0	#N/A	#N/A	293	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	25.50	4.3	6.0	0.26	717	-	-	-
#N/A	26.0	27.0	26.5	489.8	488.8	1.0	#N/A	#N/A	356	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	26.50	4.4	6.0	0.24	684	-	-	-
#N/A	27.0	28.0	27.5	488.8	487.8	1.0	#N/A	#N/A	418	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	27.50	4.6	6.0	0.23	653	-	-	-
#N/A	28.0	29.0	28.5	487.8	486.8	1.0	#N/A	#N/A	480	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	28.50	4.8	6.0	0.22	623	-	-	-
#N/A	29.0	30.0	29.5	486.8	485.8	1.0	#N/A	#N/A	543	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	29.50	4.9	6.0	0.21	596	-	-	-
#N/A	30.0	31.0	30.5	485.8	484.8	1.0	#N/A	#N/A	605	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	30.50	5.1	6.0	0.20	570	-	-	-
#N/A	31.0	32.0	31.5	484.8	483.8	1.0	#N/A	#N/A	668	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	31.50	5.3	6.0	0.19	545	-	-	-
#N/A	32.0	33.0	32.5	483.8	482.8	1.0	#N/A	#N/A	730	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	32.50	5.4	6.0	0.19	522	-	-	-
#N/A	33.0	34.0	33.5	482.8	481.8	1.0	#N/A	#N/A	792	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	33.50	5.6	6.0	0.18	500	-	-	-
#N/A	34.0	35.0	34.5	481.8	480.8	1.0	#N/A	#N/A	855	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	34.50	5.8	6.0	0.17	480	-	-	-
#N/A	35.0	36.0	35.5	480.8	479.8	1.0	#N/A	#N/A	917	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	35.50	5.9	6.0	0.16	461	-	-	-
#N/A	36.0	37.0	36.5	479.8	478.8	1.0	#N/A	#N/A	980	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	36.50	6.1	6.0	0.16	442	-	-	-
#N/A	37.0	38.0	37.5	478.8	477.8	1.0	#N/A	#N/A	1,042	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	37.50	6.3	6.0	0.15	425	-	-	-
#N/A	38.0	39.0	38.5	477.8	476.8	1.0	#N/A	#N/A	1,104	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	38.50	6.4	6.0	0.15	409	-	-	-
#N/A	39.0	40.0	39.5	476.8	475.8	1.0	#N/A	#N/A	1,167	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	39.50	6.6	6.0	0.14	393	-	-	-
#N/A	40.0	41.0	40.5	475.8	474.8	1.0	#N/A	#N/A	1,229	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	40.50	6.8	6.0	0.13	378	-	-	-

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
#N/A	41.0	42.0	41.5	474.8	473.8	1.0	#N/A	#N/A	1,292	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	41.50	6.9	6.0	0.13	364	-	-	-
#N/A	42.0	43.0	42.5	473.8	472.8	1.0	#N/A	#N/A	1,354	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	42.50	7.1	6.0	0.12	351	-	-	-
#N/A	43.0	44.0	43.5	472.8	471.8	1.0	#N/A	#N/A	1,416	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	43.50	7.3	6.0	0.12	339	-	-	-
#N/A	44.0	45.0	44.5	471.8	470.8	1.0	#N/A	#N/A	1,479	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	44.50	7.4	6.0	0.12	327	-	-	-
#N/A	45.0	46.0	45.5	470.8	469.8	1.0	#N/A	#N/A	1,541	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	45.50	7.6	6.0	0.11	315	-	-	-
#N/A	46.0	47.0	46.5	469.8	468.8	1.0	#N/A	#N/A	1,604	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	46.50	7.8	6.0	0.11	304	-	-	-
#N/A	47.0	48.0	47.5	468.8	467.8	1.0	#N/A	#N/A	1,666	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	47.50	7.9	6.0	0.10	294	-	-	-
#N/A	48.0	49.0	48.5	467.8	466.8	1.0	#N/A	#N/A	1,728	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	48.50	8.1	6.0	0.10	284	-	-	-
#N/A	49.0	50.0	49.5	466.8	465.8	1.0	#N/A	#N/A	1,791	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	49.50	8.3	6.0	0.10	275	-	-	-
#N/A	50.0	51.0	50.5	465.8	464.8	1.0	#N/A	#N/A	1,853	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	50.50	8.4	6.0	0.09	266	-	-	-
#N/A	51.0	52.0	51.5	464.8	463.8	1.0	#N/A	#N/A	1,916	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	51.50	8.6	6.0	0.09	257	-	-	-
#N/A	52.0	53.0	52.5	463.8	462.8	1.0	#N/A	#N/A	1,978	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	52.50	8.8	6.0	0.09	249	-	-	-
#N/A	53.0	54.0	53.5	462.8	461.8	1.0	#N/A	#N/A	2,040	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	53.50	8.9	6.0	0.09	241	-	-	-
#N/A	54.0	55.0	54.5	461.8	460.8	1.0	#N/A	#N/A	2,103	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	54.50	9.1	6.0	0.08	234	-	-	-
#N/A	55.0	56.0	55.5	460.8	459.8	1.0	#N/A	#N/A	2,165	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	55.50	9.3	6.0	0.08	227	-	-	-
#N/A	56.0	57.0	56.5	459.8	458.8	1.0	#N/A	#N/A	2,228	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	56.50	9.4	6.0	0.08	220	-	-	-
#N/A	57.0	58.0	57.5	458.8	457.8	1.0	#N/A	#N/A	2,290	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	57.50	9.6	6.0	0.08	214	-	-	-
#N/A	58.0	59.0	58.5	457.8	456.8	1.0	#N/A	#N/A	2,352	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	58.50	9.8	6.0	0.07	207	-	-	-
#N/A	59.0	60.0	59.5	456.8	455.8	1.0	#N/A	#N/A	2,415	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	59.50	9.9	6.0	0.07	201	-	-	-
#N/A	60.0	61.0	60.5	455.8	454.8	1.0	#N/A	#N/A	2,477	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	60.50	10.1	6.0	0.07	196	-	-	-
#N/A	61.0	62.0	61.5	454.8	453.8	1.0	#N/A	#N/A	2,540	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	61.50	10.3	6.0	0.07	190	-	-	-
#N/A	62.0	63.0	62.5	453.8	452.8	1.0	#N/A	#N/A	2,602	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	62.50	10.4	6.0	0.07	185	-	-	-
#N/A	63.0	64.0	63.5	452.8	451.8	1.0	#N/A	#N/A	2,664	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	63.50	10.6	6.0	0.06	180	-	-	-
#N/A	64.0	65.0	64.5	451.8	450.8	1.0	#N/A	#N/A	2,727	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	64.50	10.8	6.0	0.06	175	-	-	-
#N/A	65.0	66.0	65.5	450.8	449.8	1.0	#N/A	#N/A	2,789	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	65.50	10.9	6.0	0.06	170	-	-	-
#N/A	66.0	67.0	66.5	449.8	448.8	1.0	#N/A	#N/A	2,852	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	66.50	11.1	6.0	0.06	166	-	-	-
#N/A	67.0	68.0	67.5	448.8	447.8	1.0	#N/A	#N/A	2,914	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	67.50	11.3	6.0	0.06	161	-	-	-
#N/A	68.0	69.0	68.5	447.8	446.8	1.0	#N/A	#N/A	2,976	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	68.50	11.4	6.0	0.06	157	-	-	-
#N/A	69.0	70.0	69.5	446.8	445.8	1.0	#N/A	#N/A	3,039	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	69.50	11.6	6.0	0.05	153	-	-	-
#N/A	70.0	71.0	70.5	445.8	444.8	1.0	#N/A	#N/A	3,101	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	70.50	11.8	6.0	0.05	149	-	-	-
#N/A	71.0	72.0	71.5	444.8	443.8	1.0	#N/A	#N/A	3,164	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	71.50	11.9	6.0	0.05	145	-	-	-
#N/A	72.0	73.0	72.5	443.8	442.8	1.0	#N/A	#N/A	3,226	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	72.50	12.1	6.0	0.05	142	-	-	-
#N/A	73.0	74.0	73.5	442.8	441.8	1.0	#N/A	#N/A	3,288	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	73.50	12.3	6.0	0.05	138	-	-	-
#N/A	74.0	75.0	74.5	441.8	440.8	1.0	#N/A	#N/A	3,351	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	74.50	12.4	6.0	0.05	135	-	-	-
#N/A	75.0	76.0	75.5	440.8	439.8	1.0	#N/A	#N/A	3,413	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	75.50	12.6	6.0	0.05	132	-	-	-
#N/A	76.0	77.0	76.5	439.8	438.8	1.0	#N/A	#N/A	3,476	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	76.50	12.8	6.0	0.05	129	-	-	-
#N/A	77.0	78.0	77.5	438.8	437.8	1.0	#N/A	#N/A	3,538	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	77.50	12.9	6.0	0.04	126	-	-	-
#N/A	78.0	79.0	78.5	437.8	436.8	1.0	#N/A	#N/A	3,600	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	78.50	13.1	6.0	0.04	123	-	-	-
#N/A	79.0	80.0	79.5	436.8	435.8	1.0	#N/A	#N/A	3,663	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	79.50	13.3	6.0	0.04	120	-	-	-
#N/A	80.0	81.0	80.5	435.8	434.8	1.0	#N/A	#N/A	3,725	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	80.50	13.4	6.0	0.04	117	-	-	-
#N/A	81.0	82.0	81.5	434.8	433.8	1.0	#N/A	#N/A	3,788	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	81.50	13.6	6.0	0.04	114	-	-	-
#N/A	82.0	83.0	82.5	433.8	432.8	1.0	#N/A	#N/A	3,850	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	82.50	13.8	6.0	0.04	112	-	-	-
#N/A	83.0	84.0	83.5	432.8	431.8	1.0	#N/A	#N/A	3,912	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	83.50	13.9	6.0	0.04	109	-	-	-
#N/A	84.0	85.0	84.5	431.8	430.8	1.0	#N/A	#N/A	3,975	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	84.50	14.1	6.0	0.04	107	-	-	-
#N/A	85.0	86.0	85.5	430.8	429.8	1.0	#N/A	#N/A	4,037	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	85.50	14.3	6.0	0.04	105	-	-	-
#N/A	86.0	87.0	86.5	429.8	428.8	1.0	#N/A	#N/A	4,100	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	86.50	14.4	6.0	0.04	102	-	-	-
#N/A	87.0	88.0	87.5	428.8	427.8	1.0	#N/A	#N/A	4,162	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	87.50	14.6	6.0	0.04	100	-	-	-
#N/A	88.0	89.0	88.5	427.8	426.8	1.0	#N/A	#N/A	4,224	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	88.50	14.8	6.0	0.03	98	-	-	-
#N/A	89.0	90.0	89.5	426.8	425.8	1.0	#N/A	#N/A	4,287	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	89.50	14.9	6.0	0.03	96	-	-	-
#N/A	90.0	91.0	90.5	425.8	424.8	1.0	#N/A	#N/A	4,349	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	90.50	15.1	6.0	0.03	94	-	-	-
#N/A	91.0	92.0	91.5	424.8	423.8	1.0	#N/A	#N/A	4,412	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	91.50	15.3	6.0	0.03	92	-	-	-
#N/A	92.0	93.0	92.5	423.8	422.8	1.0	#N/A	#N/A	4,474	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	92.50	15.4	6.0	0.03	90	-	-	-
#N/A	93.0	94.0	93.5	422.8	421.8	1.0	#N/A	#N/A	4,536	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	93.50	15.6	6.0	0.03	89	-	-	-
#N/A	94.0	95.0	94.5	421.8	420.8	1.0	#N/A	#N/A	4,599	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	94.50	15.8	6.0	0.03	87	-	-	-
#N/A	95.0	96.0	95.5	420.8	419.8	1.0	#N/A	#N/A	4,661	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	95.50	15.9	6.0	0.03	85	-	-	-
#N/A	96.0	97.0	96.5	419.8	418.8	1.0	#N/A	#N/A	4,724	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	96.50	16.1	6.0	0.03	83	-	-	-
#N/A	97.0	98.0	97.5	418.8	417.8	1.0	#N/A	#N/A	4,786	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	97.50	16.3	6.0	0.03	82	-	-	-
#N/A	98.0	99.0	98.5	417.8	416.8	1.0	#N/A	#N/A	4,848	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	98.50	16.4	6.0	0.03	80	-	-	-
#N/A	99.0	100.0	99.5	416.8	415.8	1.0	#N/A	#N/A	4,911	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	99.50	16.6	6.0	0.03	79	-	-	-
#N/A	100.0	101.0	100.5	415.8	414.8	1.0	#N/A	#N/A	4,973	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	100.50	16.8	6.0	0.03	77	-	-	-
#N/A	101.0	102.0	101.5	414.8	413.8	1.0	#N/A	#N/A	5,036	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	101.50	16.9	6.0	0.03	76	-	-	-
#N/A	102.0	103.0	102.5	413.8	412.8	1.0	#N/A	#N/A	5,098	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	102.50	17.1	6.0	0.03	74	-	-	-
#N/A	103.0	200.0	151.5	412.8	315.8	97.0	#N/A	#N/A	8,156	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	151.50	25.3	6.0	0.01	35	-	-	-

Project Name:	Plum Creek FRS No. 21 Rehabilitation
Job Number:	60586838
Client:	TSSWCB

Structure	Overtopping RCC Spillway - Crest Structure - Walls
Analysis Section	Section B - Prop. downstream end of crest (Left Side)
Notes	Part 1 - existing subgrade under prop. overexcav./replace

Geotechnical Data

Relevant Boring	B-05	-
Boring Ground Elev.	525	ft NAVD88
Depth to GWT at Boring:	30	feet
GWT Elev.	495	ft NAVD88

Exiting Ground at Structure Location

Structure Existing Ground:	515.8	ft NAVD88
Footing Bearing Elev.:	515.8	ft NAVD88
Footing Bearing Elev.:	0	ft below existing (cut)
GWT Depth below Exist.:	20.8	feet
GWT Depth below footing.:	20.8	feet

Area Fill

Fill between existing/footing?	no	-
Include load from area fill?	no	-
Finish Grade of Area Fill:	528	ft NAVD88
Height above existing:	#N/A	feet
Height above footing base:	#N/A	feet
Thickness under footing:	#N/A	feet
Area Fill Unit Weight:	120	pcf

Subgrade Overexcavation/Replacement

Include Overex/Replacement?	yes	-
Overex/Replace Bottom Elev.	510.8	ft NAVD88
Depth below footing:	5	feet
Depth below existing:	5	feet

Structure Footing Size & Maximum Bearing Pressure

Footing Width, B:	12	feet
Footing Length, L (rect):	51.2	feet
Gross Footing Pressure, $q_{0\text{-gross}}$	2,812	psf

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula do not edit

Design Soil Profile and Properties

Depth at Boring (feet)		Elevation (feet)		Thickness in Boring	Existing Depth at Structure (feet)		Thickness at Structure	Layer Name	Total Unit Wt	Initial Void Ratio, e_0*	Compression Index, C_c*	Recomp. Index, C_r*	Min. Over Consolidation Ratio, OCR*	Min. Preconsol. Pressure, P'c*
					1	2	3	4	5	6	7	8	9	10
Top	Bottom	Top	Bottom	(feet)	Top	Bottom	(feet)		(pcf)	(-)				(psf)
0	44.9	525.0	480.1	44.9	0.0	35.7	35.7	Embank. Fill (Core)	123	0.65	0.20	0.030	3.0	3,000
44.9	62.4	480.1	462.6	17.5	35.7	53.2	17.5	Residuum	120	0.74	0.15	0.024	4.0	3,000
62.4	100	462.6	425.0	37.6	53.2	90.8	37.6	Clayshale	120	0.76	0.15	0.020	10.0	3,000

Notes: *Copy down elevation and thickness formulas if more layers are needed, delete formulas where not needed.*

*Enter "0" for incompressible layers (i.e., granular soils and bedrock)

Method: Settlement Below Center of Uniformly Loaded Rectangular Footing

Project	Plum Creek FRS No. 21 Rehabilitation
Structure	Overtopping RCC Spillway - Crest Structure - Walls
Analysis Section	Section B - Prop. downstream end of crest (Left Side)

Elev. - Existing Ground @ Structure:	515.8	ft NAVD88	0	ft from footing base (below)	0	ft from existing (below)
Elev. - Base of Footing / Bearing Depth	515.8	ft NAVD88	0	ft from footing base (below)	0	ft from existing (below)
Elev. - Top of Area Fill	#N/A	ft NAVD88	#N/A	#N/A	#N/A	#N/A
Elev. - Bottom of Overex./Replace	510.8	ft NAVD88	5	ft from footing base (below)	5	ft from existing (below)
Elev. - Groundwater	495	ft NAVD88	20.8	ft from footing base (below)	20.8	ft from existing (below)
Thickness - Area Fill	#N/A	feet below footing base				
Thickness - Overex/Replace	5	feet below footing base				

Footing Width, B:	12	feet
Footing Length, L (square):	12	feet
Footing Length, L (rect):	51.2	feet

Gross Footing Pressure, $q_{0\text{-gross}}$	2,812	psf
Removed in-situ stress	0	psf
Net Footing Pressure, $q_{0\text{-net}}$	2,812	psf

$$\Delta\sigma_z = qI_4 \tag{10.34}$$

where

$$I_4 = \frac{2}{\pi}\left[\frac{m_1 n_1}{\sqrt{1+m_1^2+n_1^2}}\frac{1+m_1^2+2n_1^2}{(1+n_1^2)(m_1^2+n_1^2)} + \sin^{-1}\frac{m_1}{\sqrt{m_1^2+n_1^2}\sqrt{1+n_1^2}}\right] \tag{10.35}$$

$$m_1 = \frac{L}{B} \tag{10.36}$$

$$n_1 = \frac{z}{b} \tag{10.37}$$

$$b = \frac{B}{2} \tag{10.38}$$

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula (do not edit)
xxx	= Unique Formula (do not edit)

**Negative values indicate height above existing ground*

**Assume granular*

Total Settlement (inch) = 1.57

Stratum	Depth from Existing* Top	Depth from Existing* Bottom	Depth from Existing* MP	Elevation Top	Elevation Bottom	Layer Thickness	Layer Unit Wt.	In-Situ Stress at MP: Total P_0	In-Situ Stress at MP: μ	In-Situ Stress at MP: Eff. P'_0	Consolidation Parameters: Cc	Consolidation Parameters: Cr	Consolidation Parameters: e0	Consolidation Parameters: OCR	Consolidation Parameters: P'_c	Area Fill above Existing: Thick-ness	Area Fill above Existing: ΔP_{Fill}	Area Fill above Existing: Self Compress*	Rectangular Footing: m1	Rectangular Footing: Eff. Z	Rectangular Footing: n1	Rectangular Footing: b	Rectangular Footing: I4	Rectangular Footing: ΔP_{Fndn}	Rectangular Footing: S_{re}	Rectangular Footing: S_c	Rectangular Footing: S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
Fill below footing/above exist.	0.0	0.0	0.0	515.8	515.8	0.0	120	-	-	-	-	-	-	-	-	0	0	-	4	0.00	0.0	6.0	1.00	2,812	-	-	**-**
Existing Soil Above Footing	0.0	0.0	0.0	515.8	515.8	0.0	123	-	-	-	-	-	-	-	-	0	0	-	4	0.00	0.0	6.0	1.00	2,812	-	-	**-**
Overex. below Existing	0.0	5.0	2.5	515.8	510.8	5.0	123	-	-	-	-	-	-	-	-	0	0	-	4	2.50	0.4	6.0	0.97	2,741	-	-	**-**
Embank. Fill (Core)	5.0	6.0	5.5	510.8	509.8	1.0	123	677	0	677	0.20	0.030	0.65	3.0	3,000	0	0	-	4	5.50	0.9	6.0	0.84	2,373	0.14	0.01	**0.151**
Embank. Fill (Core)	6.0	7.0	6.5	509.8	508.8	1.0	123	800	0	800	0.20	0.030	0.65	3.0	3,000	0	0	-	4	6.50	1.1	6.0	0.79	2,222	0.13	0.00	**0.130**
Embank. Fill (Core)	7.0	8.0	7.5	508.8	507.8	1.0	123	923	0	923	0.20	0.030	0.65	3.0	3,000	0	0	-	4	7.50	1.3	6.0	0.74	2,074	0.11	0.00	**0.112**
Embank. Fill (Core)	8.0	9.0	8.5	507.8	506.8	1.0	123	1,046	0	1,046	0.20	0.030	0.65	3.0	3,137	0	0	-	4	8.50	1.4	6.0	0.69	1,934	0.10	0.00	**0.099**
Embank. Fill (Core)	9.0	10.0	9.5	506.8	505.8	1.0	123	1,169	0	1,169	0.20	0.030	0.65	3.0	3,506	0	0	-	4	9.50	1.6	6.0	0.64	1,804	0.09	0.00	**0.088**
Embank. Fill (Core)	10.0	11.0	10.5	505.8	504.8	1.0	123	1,292	0	1,292	0.20	0.030	0.65	3.0	3,875	0	0	-	4	10.50	1.8	6.0	0.60	1,684	0.08	0.00	**0.079**
Embank. Fill (Core)	11.0	12.0	11.5	504.8	503.8	1.0	123	1,415	0	1,415	0.20	0.030	0.65	3.0	4,244	0	0	-	4	11.50	1.9	6.0	0.56	1,575	0.07	0.00	**0.071**
Embank. Fill (Core)	12.0	13.0	12.5	503.8	502.8	1.0	123	1,538	0	1,538	0.20	0.030	0.65	3.0	4,613	0	0	-	4	12.50	2.1	6.0	0.52	1,475	0.06	0.00	**0.064**
Embank. Fill (Core)	13.0	14.0	13.5	502.8	501.8	1.0	123	1,661	0	1,661	0.20	0.030	0.65	3.0	4,982	0	0	-	4	13.50	2.3	6.0	0.49	1,383	0.06	0.00	**0.057**
Embank. Fill (Core)	14.0	15.0	14.5	501.8	500.8	1.0	123	1,784	0	1,784	0.20	0.030	0.65	3.0	5,351	0	0	-	4	14.50	2.4	6.0	0.46	1,300	0.05	0.00	**0.052**
Embank. Fill (Core)	15.0	16.0	15.5	500.8	499.8	1.0	123	1,907	0	1,907	0.20	0.030	0.65	3.0	5,720	0	0	-	4	15.50	2.6	6.0	0.44	1,223	0.05	0.00	**0.047**
Embank. Fill (Core)	16.0	17.0	16.5	499.8	498.8	1.0	123	2,030	0	2,030	0.20	0.030	0.65	3.0	6,089	0	0	-	4	16.50	2.8	6.0	0.41	1,153	0.04	0.00	**0.043**
Embank. Fill (Core)	17.0	18.0	17.5	498.8	497.8	1.0	123	2,153	0	2,153	0.20	0.030	0.65	3.0	6,458	0	0	-	4	17.50	2.9	6.0	0.39	1,089	0.04	0.00	**0.039**
Embank. Fill (Core)	18.0	19.0	18.5	497.8	496.8	1.0	123	2,276	0	2,276	0.20	0.030	0.65	3.0	6,827	0	0	-	4	18.50	3.1	6.0	0.37	1,029	0.04	0.00	**0.035**
Embank. Fill (Core)	19.0	20.0	19.5	496.8	495.8	1.0	123	2,399	0	2,399	0.20	0.030	0.65	3.0	7,196	0	0	-	4	19.50	3.3	6.0	0.35	974	0.03	0.00	**0.032**
Embank. Fill (Core)	20.0	21.0	20.5	495.8	494.8	1.0	123	2,522	0	2,522	0.20	0.030	0.65	3.0	7,565	0	0	-	4	20.50	3.4	6.0	0.33	923	0.03	0.00	**0.030**
Embank. Fill (Core)	21.0	22.0	21.5	494.8	493.8	1.0	123	2,645	44	2,601	0.20	0.030	0.65	3.0	7,802	0	0	-	4	21.50	3.6	6.0	0.31	876	0.03	0.00	**0.028**
Embank. Fill (Core)	22.0	23.0	22.5	493.8	492.8	1.0	123	2,768	106	2,661	0.20	0.030	0.65	3.0	7,984	0	0	-	4	22.50	3.8	6.0	0.30	832	0.03	0.00	**0.026**
Embank. Fill (Core)	23.0	24.0	23.5	492.8	491.8	1.0	123	2,891	168	2,722	0.20	0.030	0.65	3.0	8,166	0	0	-	4	23.50	3.9	6.0	0.28	791	0.02	0.00	**0.024**
Embank. Fill (Core)	24.0	25.0	24.5	491.8	490.8	1.0	123	3,014	231	2,783	0.20	0.030	0.65	3.0	8,348	0	0	-	4	24.50	4.1	6.0	0.27	753	0.02	0.00	**0.023**
Embank. Fill (Core)	25.0	26.0	25.5	490.8	489.8	1.0	123	3,137	293	2,843	0.20	0.030	0.65	3.0	8,530	0	0	-	4	25.50	4.3	6.0	0.26	717	0.02	0.00	**0.021**
Embank. Fill (Core)	26.0	27.0	26.5	489.8	488.8	1.0	123	3,260	356	2,904	0.20	0.030	0.65	3.0	8,711	0	0	-	4	26.50	4.4	6.0	0.24	684	0.02	0.00	**0.020**
Embank. Fill (Core)	27.0	28.0	27.5	488.8	487.8	1.0	123	3,383	418	2,964	0.20	0.030	0.65	3.0	8,893	0	0	-	4	27.50	4.6	6.0	0.23	653	0.02	0.00	**0.019**
Embank. Fill (Core)	28.0	29.0	28.5	487.8	486.8	1.0	123	3,506	480	3,025	0.20	0.030	0.65	3.0	9,075	0	0	-	4	28.50	4.8	6.0	0.22	623	0.02	0.00	**0.018**
Embank. Fill (Core)	29.0	30.0	29.5	486.8	485.8	1.0	123	3,629	543	3,086	0.20	0.030	0.65	3.0	9,257	0	0	-	4	29.50	4.9	6.0	0.21	596	0.02	0.00	**0.017**
Embank. Fill (Core)	30.0	31.0	30.5	485.8	484.8	1.0	123	3,752	605	3,146	0.20	0.030	0.65	3.0	9,439	0	0	-	4	30.50	5.1	6.0	0.20	570	0.02	0.00	**0.016**
Embank. Fill (Core)	31.0	32.0	31.5	484.8	483.8	1.0	123	3,875	668	3,207	0.20	0.030	0.65	3.0	9,620	0	0	-	4	31.50	5.3	6.0	0.19	545	0.01	0.00	**0.015**
Embank. Fill (Core)	32.0	33.0	32.5	483.8	482.8	1.0	123	3,998	730	3,267	0.20	0.030	0.65	3.0	9,802	0	0	-	4	32.50	5.4	6.0	0.19	522	0.01	0.00	**0.014**
Embank. Fill (Core)	33.0	34.0	33.5	482.8	481.8	1.0	123	4,121	792	3,328	0.20	0.030	0.65	3.0	9,984	0	0	-	4	33.50	5.6	6.0	0.18	500	0.01	0.00	**0.013**
Embank. Fill (Core)	34.0	35.0	34.5	481.8	480.8	1.0	123	4,244	855	3,389	0.20	0.030	0.65	3.0	10,166	0	0	-	4	34.50	5.8	6.0	0.17	480	0.01	0.00	**0.013**
Embank. Fill (Core)	35.0	36.0	35.5	480.8	479.8	1.0	123	4,367	917	3,449	0.20	0.030	0.65	3.0	10,348	0	0	-	4	35.50	5.9	6.0	0.16	461	0.01	0.00	**0.012**
Residuum	36.0	37.0	36.5	479.8	478.8	1.0	120	4,488	980	3,508	0.15	0.024	0.74	4.0	14,033	0	0	-	4	36.50	6.1	6.0	0.16	442	0.01	0.00	**0.009**
Residuum	37.0	38.0	37.5	478.8	477.8	1.0	120	4,608	1,042	3,566	0.15	0.024	0.74	4.0	14,264	0	0	-	4	37.50	6.3	6.0	0.15	425	0.01	0.00	**0.008**
Residuum	38.0	39.0	38.5	477.8	476.8	1.0	120	4,728	1,104	3,624	0.15	0.024	0.74	4.0	14,494	0	0	-	4	38.50	6.4	6.0	0.15	409	0.01	0.00	**0.008**
Residuum	39.0	40.0	39.5	476.8	475.8	1.0	120	4,848	1,167	3,681	0.15	0.024	0.74	4.0	14,724	0	0	-	4	39.50	6.6	6.0	0.14	393	0.01	0.00	**0.007**
Residuum	40.0	41.0	40.5	475.8	474.8	1.0	120	4,968	1,229	3,739	0.15	0.024	0.74	4.0	14,955	0	0	-	4	40.50	6.8	6.0	0.13	378	0.01	0.00	**0.007**
Residuum	41.0	42.0	41.5	474.8	473.8	1.0	120	5,088	1,292	3,796	0.15	0.024	0.74	4.0	15,185	0	0	-	4	41.50	6.9	6.0	0.13	364	0.01	0.00	**0.007**
Residuum	42.0	43.0	42.5	473.8	472.8	1.0	120	5,208	1,354	3,854	0.15	0.024	0.74	4.0	15,416	0	0	-	4	42.50	7.1	6.0	0.12	351	0.01	0.00	**0.006**
Residuum	43.0	44.0	43.5	472.8	471.8	1.0	120	5,328	1,416	3,912	0.15	0.024	0.74	4.0	15,646	0	0	-	4	43.50	7.3	6.0	0.12	339	0.01	0.00	**0.006**
Residuum	44.0	45.0	44.5	471.8	470.8	1.0	120	5,448	1,479	3,969	0.15	0.024	0.74	4.0	15,876	0	0	-	4	44.50	7.4	6.0	0.12	327	0.01	0.00	**0.006**
Residuum	45.0	46.0	45.5	470.8	469.8	1.0	120	5,568	1,541	4,027	0.15	0.024	0.74	4.0	16,107	0	0	-	4	45.50	7.6	6.0	0.11	315	0.01	0.00	**0.005**

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
Residuum	46.0	47.0	46.5	469.8	468.8	1.0	120	5,688	1,604	4,084	0.15	0.024	0.74	4.0	16,337	0	0	-	4	46.50	7.8	6.0	0.11	304	0.01	0.00	**0.005**
Residuum	47.0	48.0	47.5	468.8	467.8	1.0	120	5,808	1,666	4,142	0.15	0.024	0.74	4.0	16,568	0	0	-	4	47.50	7.9	6.0	0.10	294	0.00	0.00	**0.005**
Residuum	48.0	49.0	48.5	467.8	466.8	1.0	120	5,928	1,728	4,200	0.15	0.024	0.74	4.0	16,798	0	0	-	4	48.50	8.1	6.0	0.10	284	0.00	0.00	**0.005**
Residuum	49.0	50.0	49.5	466.8	465.8	1.0	120	6,048	1,791	4,257	0.15	0.024	0.74	4.0	17,028	0	0	-	4	49.50	8.3	6.0	0.10	275	0.00	0.00	**0.004**
Residuum	50.0	51.0	50.5	465.8	464.8	1.0	120	6,168	1,853	4,315	0.15	0.024	0.74	4.0	17,259	0	0	-	4	50.50	8.4	6.0	0.09	266	0.00	0.00	**0.004**
Residuum	51.0	52.0	51.5	464.8	463.8	1.0	120	6,288	1,916	4,372	0.15	0.024	0.74	4.0	17,489	0	0	-	4	51.50	8.6	6.0	0.09	257	0.00	0.00	**0.004**
Residuum	52.0	53.0	52.5	463.8	462.8	1.0	120	6,408	1,978	4,430	0.15	0.024	0.74	4.0	17,720	0	0	-	4	52.50	8.8	6.0	0.09	249	0.00	0.00	**0.004**
Residuum	53.0	54.0	53.5	462.8	461.8	1.0	120	6,528	2,040	4,488	0.15	0.024	0.74	4.0	17,950	0	0	-	4	53.50	8.9	6.0	0.09	241	0.00	0.00	**0.004**
Clayshale	54.0	55.0	54.5	461.8	460.8	1.0	120	6,648	2,103	4,545	0.15	0.020	0.76	10.0	45,451	0	0	-	4	54.50	9.1	6.0	0.08	234	0.00	0.00	**0.003**
Clayshale	55.0	56.0	55.5	460.8	459.8	1.0	120	6,768	2,165	4,603	0.15	0.020	0.76	10.0	46,027	0	0	-	4	55.50	9.3	6.0	0.08	227	0.00	0.00	**0.003**
Clayshale	56.0	57.0	56.5	459.8	458.8	1.0	120	6,888	2,228	4,660	0.15	0.020	0.76	10.0	46,603	0	0	-	4	56.50	9.4	6.0	0.08	220	0.00	0.00	**0.003**
Clayshale	57.0	58.0	57.5	458.8	457.8	1.0	120	7,008	2,290	4,718	0.15	0.020	0.76	10.0	47,179	0	0	-	4	57.50	9.6	6.0	0.08	214	0.00	0.00	**0.003**
Clayshale	58.0	59.0	58.5	457.8	456.8	1.0	120	7,128	2,352	4,776	0.15	0.020	0.76	10.0	47,755	0	0	-	4	58.50	9.8	6.0	0.07	207	0.00	0.00	**0.003**
Clayshale	59.0	60.0	59.5	456.8	455.8	1.0	120	7,248	2,415	4,833	0.15	0.020	0.76	10.0	48,331	0	0	-	4	59.50	9.9	6.0	0.07	201	0.00	0.00	**0.002**
Clayshale	60.0	61.0	60.5	455.8	454.8	1.0	120	7,368	2,477	4,891	0.15	0.020	0.76	10.0	48,907	0	0	-	4	60.50	10.1	6.0	0.07	196	0.00	0.00	**0.002**
Clayshale	61.0	62.0	61.5	454.8	453.8	1.0	120	7,488	2,540	4,948	0.15	0.020	0.76	10.0	49,483	0	0	-	4	61.50	10.3	6.0	0.07	190	0.00	0.00	**0.002**
Clayshale	62.0	63.0	62.5	453.8	452.8	1.0	120	7,608	2,602	5,006	0.15	0.020	0.76	10.0	50,059	0	0	-	4	62.50	10.4	6.0	0.07	185	0.00	0.00	**0.002**
Clayshale	63.0	64.0	63.5	452.8	451.8	1.0	120	7,728	2,664	5,064	0.15	0.020	0.76	10.0	50,635	0	0	-	4	63.50	10.6	6.0	0.06	180	0.00	0.00	**0.002**
Clayshale	64.0	65.0	64.5	451.8	450.8	1.0	120	7,848	2,727	5,121	0.15	0.020	0.76	10.0	51,211	0	0	-	4	64.50	10.8	6.0	0.06	175	0.00	0.00	**0.002**
Clayshale	65.0	66.0	65.5	450.8	449.8	1.0	120	7,968	2,789	5,179	0.15	0.020	0.76	10.0	51,787	0	0	-	4	65.50	10.9	6.0	0.06	170	0.00	0.00	**0.002**
Clayshale	66.0	67.0	66.5	449.8	448.8	1.0	120	8,088	2,852	5,236	0.15	0.020	0.76	10.0	52,363	0	0	-	4	66.50	11.1	6.0	0.06	166	0.00	0.00	**0.002**
Clayshale	67.0	68.0	67.5	448.8	447.8	1.0	120	8,208	2,914	5,294	0.15	0.020	0.76	10.0	52,939	0	0	-	4	67.50	11.3	6.0	0.06	161	0.00	0.00	**0.002**
Clayshale	68.0	69.0	68.5	447.8	446.8	1.0	120	8,328	2,976	5,352	0.15	0.020	0.76	10.0	53,515	0	0	-	4	68.50	11.4	6.0	0.06	157	0.00	0.00	**0.002**
Clayshale	69.0	70.0	69.5	446.8	445.8	1.0	120	8,448	3,039	5,409	0.15	0.020	0.76	10.0	54,091	0	0	-	4	69.50	11.6	6.0	0.05	153	0.00	0.00	**0.002**
Clayshale	70.0	71.0	70.5	445.8	444.8	1.0	120	8,568	3,101	5,467	0.15	0.020	0.76	10.0	54,667	0	0	-	4	70.50	11.8	6.0	0.05	149	0.00	0.00	**0.002**
Clayshale	71.0	72.0	71.5	444.8	443.8	1.0	120	8,688	3,164	5,524	0.15	0.020	0.76	10.0	55,243	0	0	-	4	71.50	11.9	6.0	0.05	145	0.00	0.00	**0.002**
Clayshale	72.0	73.0	72.5	443.8	442.8	1.0	120	8,808	3,226	5,582	0.15	0.020	0.76	10.0	55,819	0	0	-	4	72.50	12.1	6.0	0.05	142	0.00	0.00	**0.001**
Clayshale	73.0	74.0	73.5	442.8	441.8	1.0	120	8,928	3,288	5,640	0.15	0.020	0.76	10.0	56,395	0	0	-	4	73.50	12.3	6.0	0.05	138	0.00	0.00	**0.001**
Clayshale	74.0	75.0	74.5	441.8	440.8	1.0	120	9,048	3,351	5,697	0.15	0.020	0.76	10.0	56,971	0	0	-	4	74.50	12.4	6.0	0.05	135	0.00	0.00	**0.001**
Clayshale	75.0	76.0	75.5	440.8	439.8	1.0	120	9,168	3,413	5,755	0.15	0.020	0.76	10.0	57,547	0	0	-	4	75.50	12.6	6.0	0.05	132	0.00	0.00	**0.001**
Clayshale	76.0	77.0	76.5	439.8	438.8	1.0	120	9,288	3,476	5,812	0.15	0.020	0.76	10.0	58,123	0	0	-	4	76.50	12.8	6.0	0.05	129	0.00	0.00	**0.001**
Clayshale	77.0	78.0	77.5	438.8	437.8	1.0	120	9,408	3,538	5,870	0.15	0.020	0.76	10.0	58,699	0	0	-	4	77.50	12.9	6.0	0.04	126	0.00	0.00	**0.001**
Clayshale	78.0	79.0	78.5	437.8	436.8	1.0	120	9,528	3,600	5,928	0.15	0.020	0.76	10.0	59,275	0	0	-	4	78.50	13.1	6.0	0.04	123	0.00	0.00	**0.001**
Clayshale	79.0	80.0	79.5	436.8	435.8	1.0	120	9,648	3,663	5,985	0.15	0.020	0.76	10.0	59,851	0	0	-	4	79.50	13.3	6.0	0.04	120	0.00	0.00	**0.001**
Clayshale	80.0	81.0	80.5	435.8	434.8	1.0	120	9,768	3,725	6,043	0.15	0.020	0.76	10.0	60,427	0	0	-	4	80.50	13.4	6.0	0.04	117	0.00	0.00	**0.001**
Clayshale	81.0	82.0	81.5	434.8	433.8	1.0	120	9,888	3,788	6,100	0.15	0.020	0.76	10.0	61,003	0	0	-	4	81.50	13.6	6.0	0.04	114	0.00	0.00	**0.001**
Clayshale	82.0	83.0	82.5	433.8	432.8	1.0	120	10,008	3,850	6,158	0.15	0.020	0.76	10.0	61,579	0	0	-	4	82.50	13.8	6.0	0.04	112	0.00	0.00	**0.001**
Clayshale	83.0	84.0	83.5	432.8	431.8	1.0	120	10,128	3,912	6,216	0.15	0.020	0.76	10.0	62,155	0	0	-	4	83.50	13.9	6.0	0.04	109	0.00	0.00	**0.001**
Clayshale	84.0	85.0	84.5	431.8	430.8	1.0	120	10,248	3,975	6,273	0.15	0.020	0.76	10.0	62,731	0	0	-	4	84.50	14.1	6.0	0.04	107	0.00	0.00	**0.001**
Clayshale	85.0	86.0	85.5	430.8	429.8	1.0	120	10,368	4,037	6,331	0.15	0.020	0.76	10.0	63,307	0	0	-	4	85.50	14.3	6.0	0.04	105	0.00	0.00	**0.001**
Clayshale	86.0	87.0	86.5	429.8	428.8	1.0	120	10,488	4,100	6,388	0.15	0.020	0.76	10.0	63,883	0	0	-	4	86.50	14.4	6.0	0.04	102	0.00	0.00	**0.001**
Clayshale	87.0	88.0	87.5	428.8	427.8	1.0	120	10,608	4,162	6,446	0.15	0.020	0.76	10.0	64,459	0	0	-	4	87.50	14.6	6.0	0.04	100	0.00	0.00	**0.001**
Clayshale	88.0	89.0	88.5	427.8	426.8	1.0	120	10,728	4,224	6,504	0.15	0.020	0.76	10.0	65,035	0	0	-	4	88.50	14.8	6.0	0.03	98	0.00	0.00	**0.001**
Clayshale	89.0	90.0	89.5	426.8	425.8	1.0	120	10,848	4,287	6,561	0.15	0.020	0.76	10.0	65,611	0	0	-	4	89.50	14.9	6.0	0.03	96	0.00	0.00	**0.001**
Clayshale	90.0	91.0	90.5	425.8	424.8	1.0	120	10,968	4,349	6,619	0.15	0.020	0.76	10.0	66,187	0	0	-	4	90.50	15.1	6.0	0.03	94	0.00	0.00	**0.001**
#N/A	91.0	92.0	91.5	424.8	423.8	1.0	#N/A	#N/A	4,412	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	91.50	15.3	6.0	0.03	92	-	-	**-**
#N/A	92.0	93.0	92.5	423.8	422.8	1.0	#N/A	#N/A	4,474	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	92.50	15.4	6.0	0.03	90	-	-	**-**
#N/A	93.0	94.0	93.5	422.8	421.8	1.0	#N/A	#N/A	4,536	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	93.50	15.6	6.0	0.03	89	-	-	**-**
#N/A	94.0	95.0	94.5	421.8	420.8	1.0	#N/A	#N/A	4,599	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	94.50	15.8	6.0	0.03	87	-	-	**-**
#N/A	95.0	96.0	95.5	420.8	419.8	1.0	#N/A	#N/A	4,661	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	95.50	15.9	6.0	0.03	85	-	-	**-**
#N/A	96.0	97.0	96.5	419.8	418.8	1.0	#N/A	#N/A	4,724	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	96.50	16.1	6.0	0.03	83	-	-	**-**
#N/A	97.0	98.0	97.5	418.8	417.8	1.0	#N/A	#N/A	4,786	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	97.50	16.3	6.0	0.03	82	-	-	**-**
#N/A	98.0	99.0	98.5	417.8	416.8	1.0	#N/A	#N/A	4,848	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	98.50	16.4	6.0	0.03	80	-	-	**-**
#N/A	99.0	100.0	99.5	416.8	415.8	1.0	#N/A	#N/A	4,911	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	99.50	16.6	6.0	0.03	79	-	-	**-**
#N/A	100.0	101.0	100.5	415.8	414.8	1.0	#N/A	#N/A	4,973	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	100.50	16.8	6.0	0.03	77	-	-	**-**
#N/A	101.0	102.0	101.5	414.8	413.8	1.0	#N/A	#N/A	5,036	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	101.50	16.9	6.0	0.03	76	-	-	**-**
#N/A	102.0	103.0	102.5	413.8	412.8	1.0	#N/A	#N/A	5,098	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	102.50	17.1	6.0	0.03	74	-	-	**-**
#N/A	103.0	104.0	103.5	412.8	411.8	1.0	#N/A	#N/A	5,160	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	103.50	17.3	6.0	0.03	73	-	-	**-**
#N/A	104.0	105.0	104.5	411.8	410.8	1.0	#N/A	#N/A	5,223	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	104.50	17.4	6.0	0.03	72	-	-	**-**
#N/A	105.0	106.0	105.5	410.8	409.8	1.0	#N/A	#N/A	5,285	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	105.50	17.6	6.0	0.03	71	-	-	**-**
#N/A	106.0	107.0	106.5	409.8	408.8	1.0	#N/A	#N/A	5,348	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	106.50	17.8	6.0	0.02	69	-	-	**-**
#N/A	107.0	108.0	107.5	408.8	407.8	1.0	#N/A	#N/A	5,410	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	107.50	17.9	6.0	0.02	68	-	-	**-**
#N/A	108.0	200.0	154	407.8	315.8	92.0	#N/A	#N/A	8,312	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	154.00	25.7	6.0	0.01	34	-	-	**-**

Project Name:	Plum Creek FRS No. 21 Rehabilitation
Job Number:	60586838
Client:	TSSWCB

Structure	Overtopping RCC Spillway - Crest Structure - Walls
Analysis Section	Section B - Prop. downstream end of crest (Left Side)
Notes	Part 2 - new lime-treated & drain fill in prop. Overex./replace

Geotechnical Data

Relevant Boring	n/a	-
Boring Ground Elev.	515.8	ft NAVD88
Depth to GWT at Boring:	20.8	feet
GWT Elev.	495	ft NAVD88

Exiting Ground at Structure Location

Structure Existing Ground:	515.8	ft NAVD88
Footing Bearing Elev.:	515.8	ft NAVD88
Footing Bearing Elev.:	0	ft below existing (cut)
GWT Depth below Exist.:	20.8	feet
GWT Depth below footing.:	20.8	feet

Area Fill

Fill between existing/footing?	no	-
Include load from area fill?	no	-
Finish Grade of Area Fill:	528	ft NAVD88
Height above existing:	#N/A	feet
Height above footing base:	#N/A	feet
Thickness under footing:	#N/A	feet
Area Fill Unit Weight:	126	pcf

Subgrade Overexcavation/Replacement

Include Overex/Replacement?	yes	-
Overex/Replace Bottom Elev.	513.8	ft NAVD88
Depth below footing:	2	feet
Depth below existing:	2	feet

Structure Footing Size & Maximum Bearing Pressure

Footing Width, B:	12	feet
Footing Length, L (rect):	51.2	feet
Gross Footing Pressure, $q_{0\text{-gross}}$	2,812	psf

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula do not edit

Design Soil Profile and Properties

Depth at Boring (feet)		Elevation (feet)		Thickness in Boring	Existing Depth at Structure (feet)		Thickness at Structure	Layer Name	Total Unit Wt	Initial Void Ratio, e_0*	Compression Index, C_c*	Recomp. Index, C_r*	Min. Over Consolidation Ratio, OCR*	Min. Preconsol. Pressure, P'c*
					1	2	3	4	5	6	7	8	9	10
Top	Bottom	Top	Bottom	(feet)	Top	Bottom	(feet)		(pcf)	(-)				(psf)
0	5	515.8	510.8	5.0	0.0	5.0	5.0	New Lime-Treat Fill	120	0.80	0.12	0.012	2.0	3,000

Notes: *Copy down elevation and thickness formulas if more layers are needed, delete formulas where not needed.*

*Enter "0" for incompressible layers (i.e., granular soils and bedrock)

Method: Settlement Below Center of Uniformly Loaded Rectangular Footing

Project	Plum Creek FRS No. 21 Rehabilitation
Structure	Overtopping RCC Spillway - Crest Structure - Walls
Analysis Section	Section B - Prop. downstream end of crest (Left Side)

Elev. - Existing Ground @ Structure:	515.8	ft NAVD88	0	ft from footing base (below)	0	ft from existing (below)
Elev. - Base of Footing / Bearing Depth	515.8	ft NAVD88	0	ft from footing base (below)	0	ft from existing (below)
Elev. - Top of Area Fill	#N/A	ft NAVD88	#N/A	#N/A	#N/A	#N/A
Elev. - Bottom of Overex./Replace	513.8	ft NAVD88	2	ft from footing base (below)	2	ft from existing (below)
Elev. - Groundwater	495	ft NAVD88	20.8	ft from footing base (below)	20.8	ft from existing (below)
Thickness - Area Fill	#N/A	feet below footing base				
Thickness - Overex/Replace	2	feet below footing base				

Footing Width, B:	12	feet
Footing Length, L (square):	12	feet
Footing Length, L (rect):	51.2	feet

Gross Footing Pressure, $q_{0\text{-gross}}$	2,812	psf
Removed in-situ stress	0	psf
Net Footing Pressure, $q_{0\text{-net}}$	2,812	psf

$$\Delta\sigma_z = qI_4 \tag{10.34}$$

where

$$I_4 = \frac{2}{\pi}\left[\frac{m_1 n_1}{\sqrt{1+m_1^2+n_1^2}}\,\frac{1+m_1^2+2n_1^2}{(1+n_1^2)(m_1^2+n_1^2)} + \sin^{-1}\frac{m_1}{\sqrt{m_1^2+n_1^2}\,\sqrt{1+n_1^2}}\right] \tag{10.35}$$

$$m_1 = \frac{L}{B} \tag{10.36}$$

$$n_1 = \frac{z}{b} \tag{10.37}$$

$$b = \frac{B}{2} \tag{10.38}$$

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula (do not edit)
xxx	= Unique Formula (do not edit)

**Negative values indicate height above existing ground*

**Assume granular*

Total Settlement (inch) = 0.22

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
Fill below footing/above exist.	0.0	0.0	0.0	515.8	515.8	0.0	126	-	-	-	-	-	-	-	-	0	0	-	4	0.00	0.0	6.0	1.00	2,812	-	-	**-**
Existing Soil Above Footing	0.0	0.0	0.0	515.8	515.8	0.0	120	-	-	-	-	-	-	-	-	0	0	-	4	0.00	0.0	6.0	1.00	2,812	-	-	**-**
Overex. below Existing	0.0	2.0	1.0	515.8	513.8	2.0	120	-	-	-	-	-	-	-	-	0	0	-	4	1.00	0.2	6.0	1.00	2,807	-	-	**-**
New Lime-Treat Fill	2.0	3.0	2.5	513.8	512.8	1.0	120	300	0	300	0.12	0.012	0.80	2.0	3,000	0	0	-	4	2.50	0.4	6.0	0.97	2,741	0.08	0.00	**0.081**
New Lime-Treat Fill	3.0	4.0	3.5	512.8	511.8	1.0	120	420	0	420	0.12	0.012	0.80	2.0	3,000	0	0	-	4	3.50	0.6	6.0	0.94	2,645	0.07	0.01	**0.073**
New Lime-Treat Fill	4.0	5.0	4.5	511.8	510.8	1.0	120	540	0	540	0.12	0.012	0.80	2.0	3,000	0	0	-	4	4.50	0.8	6.0	0.90	2,518	0.06	0.01	**0.064**
#N/A	5.0	6.0	5.5	510.8	509.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	5.50	0.9	6.0	0.84	2,373	-	-	**-**
#N/A	6.0	7.0	6.5	509.8	508.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	6.50	1.1	6.0	0.79	2,222	-	-	**-**
#N/A	7.0	8.0	7.5	508.8	507.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	7.50	1.3	6.0	0.74	2,074	-	-	**-**
#N/A	8.0	9.0	8.5	507.8	506.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	8.50	1.4	6.0	0.69	1,934	-	-	**-**
#N/A	9.0	10.0	9.5	506.8	505.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	9.50	1.6	6.0	0.64	1,804	-	-	**-**
#N/A	10.0	11.0	10.5	505.8	504.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	10.50	1.8	6.0	0.60	1,684	-	-	**-**
#N/A	11.0	12.0	11.5	504.8	503.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	11.50	1.9	6.0	0.56	1,575	-	-	**-**
#N/A	12.0	13.0	12.5	503.8	502.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	12.50	2.1	6.0	0.52	1,475	-	-	**-**
#N/A	13.0	14.0	13.5	502.8	501.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	13.50	2.3	6.0	0.49	1,383	-	-	**-**
#N/A	14.0	15.0	14.5	501.8	500.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	14.50	2.4	6.0	0.46	1,300	-	-	**-**
#N/A	15.0	16.0	15.5	500.8	499.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	15.50	2.6	6.0	0.44	1,223	-	-	**-**
#N/A	16.0	17.0	16.5	499.8	498.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	16.50	2.8	6.0	0.41	1,153	-	-	**-**
#N/A	17.0	18.0	17.5	498.8	497.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	17.50	2.9	6.0	0.39	1,089	-	-	**-**
#N/A	18.0	19.0	18.5	497.8	496.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	18.50	3.1	6.0	0.37	1,029	-	-	**-**
#N/A	19.0	20.0	19.5	496.8	495.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	19.50	3.3	6.0	0.35	974	-	-	**-**
#N/A	20.0	21.0	20.5	495.8	494.8	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	20.50	3.4	6.0	0.33	923	-	-	**-**
#N/A	21.0	22.0	21.5	494.8	493.8	1.0	#N/A	#N/A	44	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	21.50	3.6	6.0	0.31	876	-	-	**-**
#N/A	22.0	23.0	22.5	493.8	492.8	1.0	#N/A	#N/A	106	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	22.50	3.8	6.0	0.30	832	-	-	**-**
#N/A	23.0	24.0	23.5	492.8	491.8	1.0	#N/A	#N/A	168	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	23.50	3.9	6.0	0.28	791	-	-	**-**
#N/A	24.0	25.0	24.5	491.8	490.8	1.0	#N/A	#N/A	231	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	24.50	4.1	6.0	0.27	753	-	-	**-**
#N/A	25.0	26.0	25.5	490.8	489.8	1.0	#N/A	#N/A	293	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	25.50	4.3	6.0	0.26	717	-	-	**-**
#N/A	26.0	27.0	26.5	489.8	488.8	1.0	#N/A	#N/A	356	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	26.50	4.4	6.0	0.24	684	-	-	**-**
#N/A	27.0	28.0	27.5	488.8	487.8	1.0	#N/A	#N/A	418	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	27.50	4.6	6.0	0.23	653	-	-	**-**
#N/A	28.0	29.0	28.5	487.8	486.8	1.0	#N/A	#N/A	480	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	28.50	4.8	6.0	0.22	623	-	-	**-**
#N/A	29.0	30.0	29.5	486.8	485.8	1.0	#N/A	#N/A	543	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	29.50	4.9	6.0	0.21	596	-	-	**-**
#N/A	30.0	31.0	30.5	485.8	484.8	1.0	#N/A	#N/A	605	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	30.50	5.1	6.0	0.20	570	-	-	**-**
#N/A	31.0	32.0	31.5	484.8	483.8	1.0	#N/A	#N/A	668	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	31.50	5.3	6.0	0.19	545	-	-	**-**
#N/A	32.0	33.0	32.5	483.8	482.8	1.0	#N/A	#N/A	730	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	32.50	5.4	6.0	0.19	522	-	-	**-**
#N/A	33.0	34.0	33.5	482.8	481.8	1.0	#N/A	#N/A	792	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	33.50	5.6	6.0	0.18	500	-	-	**-**
#N/A	34.0	35.0	34.5	481.8	480.8	1.0	#N/A	#N/A	855	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	34.50	5.8	6.0	0.17	480	-	-	**-**
#N/A	35.0	36.0	35.5	480.8	479.8	1.0	#N/A	#N/A	917	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	35.50	5.9	6.0	0.16	461	-	-	**-**
#N/A	36.0	37.0	36.5	479.8	478.8	1.0	#N/A	#N/A	980	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	36.50	6.1	6.0	0.16	442	-	-	**-**
#N/A	37.0	38.0	37.5	478.8	477.8	1.0	#N/A	#N/A	1,042	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	37.50	6.3	6.0	0.15	425	-	-	**-**
#N/A	38.0	39.0	38.5	477.8	476.8	1.0	#N/A	#N/A	1,104	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	38.50	6.4	6.0	0.15	409	-	-	**-**
#N/A	39.0	40.0	39.5	476.8	475.8	1.0	#N/A	#N/A	1,167	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	39.50	6.6	6.0	0.14	393	-	-	**-**
#N/A	40.0	41.0	40.5	475.8	474.8	1.0	#N/A	#N/A	1,229	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	40.50	6.8	6.0	0.13	378	-	-	**-**
#N/A	41.0	42.0	41.5	474.8	473.8	1.0	#N/A	#N/A	1,292	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	41.50	6.9	6.0	0.13	364	-	-	**-**
#N/A	42.0	43.0	42.5	473.8	472.8	1.0	#N/A	#N/A	1,354	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	42.50	7.1	6.0	0.12	351	-	-	**-**

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
#N/A	43.0	44.0	43.5	472.8	471.8	1.0	#N/A	#N/A	1,416	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	43.50	7.3	6.0	0.12	339	-	-	-
#N/A	44.0	45.0	44.5	471.8	470.8	1.0	#N/A	#N/A	1,479	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	44.50	7.4	6.0	0.12	327	-	-	-
#N/A	45.0	46.0	45.5	470.8	469.8	1.0	#N/A	#N/A	1,541	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	45.50	7.6	6.0	0.11	315	-	-	-
#N/A	46.0	47.0	46.5	469.8	468.8	1.0	#N/A	#N/A	1,604	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	46.50	7.8	6.0	0.11	304	-	-	-
#N/A	47.0	48.0	47.5	468.8	467.8	1.0	#N/A	#N/A	1,666	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	47.50	7.9	6.0	0.10	294	-	-	-
#N/A	48.0	49.0	48.5	467.8	466.8	1.0	#N/A	#N/A	1,728	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	48.50	8.1	6.0	0.10	284	-	-	-
#N/A	49.0	50.0	49.5	466.8	465.8	1.0	#N/A	#N/A	1,791	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	49.50	8.3	6.0	0.10	275	-	-	-
#N/A	50.0	51.0	50.5	465.8	464.8	1.0	#N/A	#N/A	1,853	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	50.50	8.4	6.0	0.09	266	-	-	-
#N/A	51.0	52.0	51.5	464.8	463.8	1.0	#N/A	#N/A	1,916	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	51.50	8.6	6.0	0.09	257	-	-	-
#N/A	52.0	53.0	52.5	463.8	462.8	1.0	#N/A	#N/A	1,978	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	52.50	8.8	6.0	0.09	249	-	-	-
#N/A	53.0	54.0	53.5	462.8	461.8	1.0	#N/A	#N/A	2,040	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	53.50	8.9	6.0	0.09	241	-	-	-
#N/A	54.0	55.0	54.5	461.8	460.8	1.0	#N/A	#N/A	2,103	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	54.50	9.1	6.0	0.08	234	-	-	-
#N/A	55.0	56.0	55.5	460.8	459.8	1.0	#N/A	#N/A	2,165	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	55.50	9.3	6.0	0.08	227	-	-	-
#N/A	56.0	57.0	56.5	459.8	458.8	1.0	#N/A	#N/A	2,228	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	56.50	9.4	6.0	0.08	220	-	-	-
#N/A	57.0	58.0	57.5	458.8	457.8	1.0	#N/A	#N/A	2,290	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	57.50	9.6	6.0	0.08	214	-	-	-
#N/A	58.0	59.0	58.5	457.8	456.8	1.0	#N/A	#N/A	2,352	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	58.50	9.8	6.0	0.07	207	-	-	-
#N/A	59.0	60.0	59.5	456.8	455.8	1.0	#N/A	#N/A	2,415	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	59.50	9.9	6.0	0.07	201	-	-	-
#N/A	60.0	61.0	60.5	455.8	454.8	1.0	#N/A	#N/A	2,477	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	60.50	10.1	6.0	0.07	196	-	-	-
#N/A	61.0	62.0	61.5	454.8	453.8	1.0	#N/A	#N/A	2,540	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	61.50	10.3	6.0	0.07	190	-	-	-
#N/A	62.0	63.0	62.5	453.8	452.8	1.0	#N/A	#N/A	2,602	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	62.50	10.4	6.0	0.07	185	-	-	-
#N/A	63.0	64.0	63.5	452.8	451.8	1.0	#N/A	#N/A	2,664	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	63.50	10.6	6.0	0.06	180	-	-	-
#N/A	64.0	65.0	64.5	451.8	450.8	1.0	#N/A	#N/A	2,727	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	64.50	10.8	6.0	0.06	175	-	-	-
#N/A	65.0	66.0	65.5	450.8	449.8	1.0	#N/A	#N/A	2,789	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	65.50	10.9	6.0	0.06	170	-	-	-
#N/A	66.0	67.0	66.5	449.8	448.8	1.0	#N/A	#N/A	2,852	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	66.50	11.1	6.0	0.06	166	-	-	-
#N/A	67.0	68.0	67.5	448.8	447.8	1.0	#N/A	#N/A	2,914	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	67.50	11.3	6.0	0.06	161	-	-	-
#N/A	68.0	69.0	68.5	447.8	446.8	1.0	#N/A	#N/A	2,976	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	68.50	11.4	6.0	0.06	157	-	-	-
#N/A	69.0	70.0	69.5	446.8	445.8	1.0	#N/A	#N/A	3,039	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	69.50	11.6	6.0	0.05	153	-	-	-
#N/A	70.0	71.0	70.5	445.8	444.8	1.0	#N/A	#N/A	3,101	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	70.50	11.8	6.0	0.05	149	-	-	-
#N/A	71.0	72.0	71.5	444.8	443.8	1.0	#N/A	#N/A	3,164	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	71.50	11.9	6.0	0.05	145	-	-	-
#N/A	72.0	73.0	72.5	443.8	442.8	1.0	#N/A	#N/A	3,226	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	72.50	12.1	6.0	0.05	142	-	-	-
#N/A	73.0	74.0	73.5	442.8	441.8	1.0	#N/A	#N/A	3,288	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	73.50	12.3	6.0	0.05	138	-	-	-
#N/A	74.0	75.0	74.5	441.8	440.8	1.0	#N/A	#N/A	3,351	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	74.50	12.4	6.0	0.05	135	-	-	-
#N/A	75.0	76.0	75.5	440.8	439.8	1.0	#N/A	#N/A	3,413	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	75.50	12.6	6.0	0.05	132	-	-	-
#N/A	76.0	77.0	76.5	439.8	438.8	1.0	#N/A	#N/A	3,476	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	76.50	12.8	6.0	0.05	129	-	-	-
#N/A	77.0	78.0	77.5	438.8	437.8	1.0	#N/A	#N/A	3,538	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	77.50	12.9	6.0	0.04	126	-	-	-
#N/A	78.0	79.0	78.5	437.8	436.8	1.0	#N/A	#N/A	3,600	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	78.50	13.1	6.0	0.04	123	-	-	-
#N/A	79.0	80.0	79.5	436.8	435.8	1.0	#N/A	#N/A	3,663	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	79.50	13.3	6.0	0.04	120	-	-	-
#N/A	80.0	81.0	80.5	435.8	434.8	1.0	#N/A	#N/A	3,725	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	80.50	13.4	6.0	0.04	117	-	-	-
#N/A	81.0	82.0	81.5	434.8	433.8	1.0	#N/A	#N/A	3,788	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	81.50	13.6	6.0	0.04	114	-	-	-
#N/A	82.0	83.0	82.5	433.8	432.8	1.0	#N/A	#N/A	3,850	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	82.50	13.8	6.0	0.04	112	-	-	-
#N/A	83.0	84.0	83.5	432.8	431.8	1.0	#N/A	#N/A	3,912	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	83.50	13.9	6.0	0.04	109	-	-	-
#N/A	84.0	85.0	84.5	431.8	430.8	1.0	#N/A	#N/A	3,975	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	84.50	14.1	6.0	0.04	107	-	-	-
#N/A	85.0	86.0	85.5	430.8	429.8	1.0	#N/A	#N/A	4,037	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	85.50	14.3	6.0	0.04	105	-	-	-
#N/A	86.0	87.0	86.5	429.8	428.8	1.0	#N/A	#N/A	4,100	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	86.50	14.4	6.0	0.04	102	-	-	-
#N/A	87.0	88.0	87.5	428.8	427.8	1.0	#N/A	#N/A	4,162	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	87.50	14.6	6.0	0.04	100	-	-	-
#N/A	88.0	89.0	88.5	427.8	426.8	1.0	#N/A	#N/A	4,224	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	88.50	14.8	6.0	0.03	98	-	-	-
#N/A	89.0	90.0	89.5	426.8	425.8	1.0	#N/A	#N/A	4,287	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	89.50	14.9	6.0	0.03	96	-	-	-
#N/A	90.0	91.0	90.5	425.8	424.8	1.0	#N/A	#N/A	4,349	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	90.50	15.1	6.0	0.03	94	-	-	-
#N/A	91.0	92.0	91.5	424.8	423.8	1.0	#N/A	#N/A	4,412	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	91.50	15.3	6.0	0.03	92	-	-	-
#N/A	92.0	93.0	92.5	423.8	422.8	1.0	#N/A	#N/A	4,474	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	92.50	15.4	6.0	0.03	90	-	-	-
#N/A	93.0	94.0	93.5	422.8	421.8	1.0	#N/A	#N/A	4,536	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	93.50	15.6	6.0	0.03	89	-	-	-
#N/A	94.0	95.0	94.5	421.8	420.8	1.0	#N/A	#N/A	4,599	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	94.50	15.8	6.0	0.03	87	-	-	-
#N/A	95.0	96.0	95.5	420.8	419.8	1.0	#N/A	#N/A	4,661	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	95.50	15.9	6.0	0.03	85	-	-	-
#N/A	96.0	97.0	96.5	419.8	418.8	1.0	#N/A	#N/A	4,724	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	96.50	16.1	6.0	0.03	83	-	-	-
#N/A	97.0	98.0	97.5	418.8	417.8	1.0	#N/A	#N/A	4,786	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	97.50	16.3	6.0	0.03	82	-	-	-
#N/A	98.0	99.0	98.5	417.8	416.8	1.0	#N/A	#N/A	4,848	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	98.50	16.4	6.0	0.03	80	-	-	-
#N/A	99.0	100.0	99.5	416.8	415.8	1.0	#N/A	#N/A	4,911	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	99.50	16.6	6.0	0.03	79	-	-	-
#N/A	100.0	101.0	100.5	415.8	414.8	1.0	#N/A	#N/A	4,973	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	100.50	16.8	6.0	0.03	77	-	-	-
#N/A	101.0	102.0	101.5	414.8	413.8	1.0	#N/A	#N/A	5,036	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	101.50	16.9	6.0	0.03	76	-	-	-
#N/A	102.0	103.0	102.5	413.8	412.8	1.0	#N/A	#N/A	5,098	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	102.50	17.1	6.0	0.03	74	-	-	-
#N/A	103.0	104.0	103.5	412.8	411.8	1.0	#N/A	#N/A	5,160	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	103.50	17.3	6.0	0.03	73	-	-	-
#N/A	104.0	105.0	104.5	411.8	410.8	1.0	#N/A	#N/A	5,223	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	104.50	17.4	6.0	0.03	72	-	-	-
#N/A	105.0	200.0	152.5	410.8	315.8	95.0	#N/A	#N/A	8,218	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	4	152.50	25.4	6.0	0.01	35	-	-	-

Project Name:	Plum Creek FRS No. 21 Rehabilitation
Job Number:	60586838
Client:	TSSWCB

Structure	Overtopping RCC Spillway - Crest Structure - Walls
Analysis Section	Section C - Prop. Midslope of Chute (Left Side)
Notes	Part 1 - existing subgrade under prop. overexcav./replace

Geotechnical Data

Relevant Boring	B-05	-
Boring Ground Elev.	525	ft NAVD88
Depth to GWT at Boring:	30	feet
GWT Elev.	495	ft NAVD88

Exiting Ground at Structure Location

Structure Existing Ground:	505	ft NAVD88
Footing Bearing Elev.:	507	ft NAVD88
Footing Bearing Elev.:	2	ft above existing (fill)
GWT Depth below Exist.:	10	feet
GWT Depth below footing.:	12	feet

Area Fill

Fill between existing/footing?	yes	-
Include load from area fill?	yes	-
Finish Grade of Area Fill:	507	ft NAVD88
Height above existing:	2	feet
Height above footing base:	0	feet
Thickness under footing:	2	feet
Area Fill Unit Weight:	120	pcf

Subgrade Overexcavation/Replacement

Include Overex/Replacement?	yes	-
Overex/Replace Bottom Elev.	502	ft NAVD88
Depth below footing:	5	feet
Depth below existing:	3	feet

Structure Footing Size & Maximum Bearing Pressure

Footing Width, B:	12	feet
Footing Length, L (rect):	74	feet
Gross Footing Pressure, $q_{0\text{-gross}}$	1,429	psf

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula do not edit

Design Soil Profile and Properties

Depth at Boring (feet)		Elevation (feet)		Thickness in Boring	Existing Depth at Structure (feet)		Thickness at Structure	Layer Name	Total Unit Wt	Initial Void Ratio, e_0*	Compression Index, C_c*	Recomp. Index, C_r*	Min. Over Consolidation Ratio, OCR*	Min. Preconsol. Pressure, P'c*
					1	2	3	4	5	6	7	8	9	10
Top	Bottom	Top	Bottom	(feet)	Top	Bottom	(feet)		(pcf)	(-)				(psf)
0	44.9	525.0	480.1	44.9	0.0	24.9	24.9	Embank. Fill (Core)	123	0.65	0.20	0.030	3.0	3,000
44.9	62.4	480.1	462.6	17.5	24.9	42.4	17.5	Residuum	120	0.74	0.15	0.024	4.0	3,000
62.4	100	462.6	425.0	37.6	42.4	80.0	37.6	Clayshale	120	0.76	0.15	0.020	8.0	3,000

Notes: *Copy down elevation and thickness formulas if more layers are needed, delete formulas where not needed.*

*Enter "0" for incompressible layers (i.e., granular soils and bedrock)

Method: Settlement Below Center of Uniformly Loaded Rectangular Footing

Project	Plum Creek FRS No. 21 Rehabilitation
Structure	Overtopping RCC Spillway - Crest Structure - Walls
Analysis Section	Section C - Prop. Midslope of Chute (Left Side)

Elev. - Existing Ground @ Structure:	505	ft NAVD88	2	ft from footing base (below)	0	ft from existing (below)
Elev. - Base of Footing / Bearing Depth	507	ft NAVD88	0	ft from footing base (below)	-2	ft from existing (above)
Elev. - Top of Area Fill	507	ft NAVD88	0	ft from footing base (below)	-2	ft from existing (above)
Elev. - Bottom of Overex./Replace	502	ft NAVD88	5	ft from footing base (below)	3	ft from existing (below)
Elev. - Groundwater	495	ft NAVD88	12	ft from footing base (below)	10	ft from existing (below)
Thickness - Area Fill	2	feet below footing base				
Thickness - Overex/Replace	3	feet below footing base				

Footing Width, B:	12	feet
Footing Length, L (square):	12	feet
Footing Length, L (rect):	74	feet

Gross Footing Pressure, $q_{0\text{-gross}}$	1,429	psf
Removed in-situ stress	0	psf
Net Footing Pressure, $q_{0\text{-net}}$	1,429	psf

$$\Delta\sigma_z = qI_4 \tag{10.34}$$

where

$$I_4 = \frac{2}{\pi}\left[\frac{m_1 n_1}{\sqrt{1+m_1^2+n_1^2}}\frac{1+m_1^2+2n_1^2}{(1+n_1^2)(m_1^2+n_1^2)} + \sin^{-1}\frac{m_1}{\sqrt{m_1^2+n_1^2}\sqrt{1+n_1^2}}\right] \tag{10.35}$$

$$m_1 = \frac{L}{B} \tag{10.36}$$

$$n_1 = \frac{z}{b} \tag{10.37}$$

$$b = \frac{B}{2} \tag{10.38}$$

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula (do not edit)
xxx	= Unique Formula (do not edit)

**Negative values indicate height above existing ground*

**Assume granular*

Total Settlement (inch) = 1.63

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
Fill below footing/above exist.	-2.0	0.0	-1.0	507.0	505.0	2.0	120	-	-	-	-	-	-	-	-	2	240	-	6	1.00	0.2	6.0	1.00	1,426	-	-	**-**
Existing Soil Above Footing	0.0	0.0	0.0	505.0	505.0	0.0	123	-	-	-	-	-	-	-	-	2	240	-	6	2.00	0.3	6.0	0.99	1,409	-	-	**-**
Overex. below Existing	0.0	3.0	1.5	505.0	502.0	3.0	123	-	-	-	-	-	-	-	-	2	240	-	6	3.50	0.6	6.0	0.94	1,344	-	-	**-**
Embank. Fill (Core)	3.0	4.0	3.5	502.0	501.0	1.0	123	431	0	431	0.20	0.030	0.65	3.0	3,000	2	240	-	6	5.50	0.9	6.0	0.84	1,207	0.14	0.00	**0.140**
Embank. Fill (Core)	4.0	5.0	4.5	501.0	500.0	1.0	123	554	0	554	0.20	0.030	0.65	3.0	3,000	2	240	-	6	6.50	1.1	6.0	0.79	1,131	0.12	0.00	**0.118**
Embank. Fill (Core)	5.0	6.0	5.5	500.0	499.0	1.0	123	677	0	677	0.20	0.030	0.65	3.0	3,000	2	240	-	6	7.50	1.3	6.0	0.74	1,057	0.10	0.00	**0.101**
Embank. Fill (Core)	6.0	7.0	6.5	499.0	498.0	1.0	123	800	0	800	0.20	0.030	0.65	3.0	3,000	2	240	-	6	8.50	1.4	6.0	0.69	987	0.09	0.00	**0.088**
Embank. Fill (Core)	7.0	8.0	7.5	498.0	497.0	1.0	123	923	0	923	0.20	0.030	0.65	3.0	3,000	2	240	-	6	9.50	1.6	6.0	0.64	922	0.08	0.00	**0.077**
Embank. Fill (Core)	8.0	9.0	8.5	497.0	496.0	1.0	123	1,046	0	1,046	0.20	0.030	0.65	3.0	3,137	2	240	-	6	10.50	1.8	6.0	0.60	862	0.07	0.00	**0.068**
Embank. Fill (Core)	9.0	10.0	9.5	496.0	495.0	1.0	123	1,169	0	1,169	0.20	0.030	0.65	3.0	3,506	2	240	-	6	11.50	1.9	6.0	0.57	808	0.06	0.00	**0.061**
Embank. Fill (Core)	10.0	11.0	10.5	495.0	494.0	1.0	123	1,292	31	1,260	0.20	0.030	0.65	3.0	3,781	2	240	-	6	12.50	2.1	6.0	0.53	759	0.06	0.00	**0.055**
Embank. Fill (Core)	11.0	12.0	11.5	494.0	493.0	1.0	123	1,415	94	1,321	0.20	0.030	0.65	3.0	3,963	2	240	-	6	13.50	2.3	6.0	0.50	714	0.05	0.00	**0.052**
Embank. Fill (Core)	12.0	13.0	12.5	493.0	492.0	1.0	123	1,538	156	1,382	0.20	0.030	0.65	3.0	4,145	2	240	-	6	14.50	2.4	6.0	0.47	673	0.05	0.00	**0.048**
Embank. Fill (Core)	13.0	14.0	13.5	492.0	491.0	1.0	123	1,661	218	1,442	0.20	0.030	0.65	3.0	4,326	2	240	-	6	15.50	2.6	6.0	0.45	636	0.04	0.00	**0.045**
Embank. Fill (Core)	14.0	15.0	14.5	491.0	490.0	1.0	123	1,784	281	1,503	0.20	0.030	0.65	3.0	4,508	2	240	-	6	16.50	2.8	6.0	0.42	602	0.04	0.00	**0.042**
Embank. Fill (Core)	15.0	16.0	15.5	490.0	489.0	1.0	123	1,907	343	1,563	0.20	0.030	0.65	3.0	4,690	2	240	-	6	17.50	2.9	6.0	0.40	571	0.04	0.00	**0.040**
Embank. Fill (Core)	16.0	17.0	16.5	489.0	488.0	1.0	123	2,030	406	1,624	0.20	0.030	0.65	3.0	4,872	2	240	-	6	18.50	3.1	6.0	0.38	543	0.04	0.00	**0.037**
Embank. Fill (Core)	17.0	18.0	17.5	488.0	487.0	1.0	123	2,153	468	1,685	0.20	0.030	0.65	3.0	5,054	2	240	-	6	19.50	3.3	6.0	0.36	517	0.04	0.00	**0.035**
Embank. Fill (Core)	18.0	19.0	18.5	487.0	486.0	1.0	123	2,276	530	1,745	0.20	0.030	0.65	3.0	5,235	2	240	-	6	20.50	3.4	6.0	0.34	492	0.03	0.00	**0.033**
Embank. Fill (Core)	19.0	20.0	19.5	486.0	485.0	1.0	123	2,399	593	1,806	0.20	0.030	0.65	3.0	5,417	2	240	-	6	21.50	3.6	6.0	0.33	470	0.03	0.00	**0.031**
Embank. Fill (Core)	20.0	21.0	20.5	485.0	484.0	1.0	123	2,522	655	1,866	0.20	0.030	0.65	3.0	5,599	2	240	-	6	22.50	3.8	6.0	0.31	449	0.03	0.00	**0.030**
Embank. Fill (Core)	21.0	22.0	21.5	484.0	483.0	1.0	123	2,645	718	1,927	0.20	0.030	0.65	3.0	5,781	2	240	-	6	23.50	3.9	6.0	0.30	430	0.03	0.00	**0.028**
Embank. Fill (Core)	22.0	23.0	22.5	483.0	482.0	1.0	123	2,768	780	1,988	0.20	0.030	0.65	3.0	5,963	2	240	-	6	24.50	4.1	6.0	0.29	411	0.03	0.00	**0.027**
Embank. Fill (Core)	23.0	24.0	23.5	482.0	481.0	1.0	123	2,891	842	2,048	0.20	0.030	0.65	3.0	6,144	2	240	-	6	25.50	4.3	6.0	0.28	394	0.03	0.00	**0.026**
Embank. Fill (Core)	24.0	25.0	24.5	481.0	480.0	1.0	123	3,014	905	2,109	0.20	0.030	0.65	3.0	6,326	2	240	-	6	26.50	4.4	6.0	0.26	378	0.02	0.00	**0.024**
Residuum	25.0	26.0	25.5	480.0	479.0	1.0	120	3,135	967	2,168	0.15	0.024	0.74	4.0	8,671	2	240	-	6	27.50	4.6	6.0	0.25	363	0.02	0.00	**0.018**
Residuum	26.0	27.0	26.5	479.0	478.0	1.0	120	3,255	1,030	2,225	0.15	0.024	0.74	4.0	8,902	2	240	-	6	28.50	4.8	6.0	0.24	349	0.02	0.00	**0.017**
Residuum	27.0	28.0	27.5	478.0	477.0	1.0	120	3,375	1,092	2,283	0.15	0.024	0.74	4.0	9,132	2	240	-	6	29.50	4.9	6.0	0.24	336	0.02	0.00	**0.016**
Residuum	28.0	29.0	28.5	477.0	476.0	1.0	120	3,495	1,154	2,341	0.15	0.024	0.74	4.0	9,362	2	240	-	6	30.50	5.1	6.0	0.23	323	0.02	0.00	**0.016**
Residuum	29.0	30.0	29.5	476.0	475.0	1.0	120	3,615	1,217	2,398	0.15	0.024	0.74	4.0	9,593	2	240	-	6	31.50	5.3	6.0	0.22	311	0.01	0.00	**0.015**
Residuum	30.0	31.0	30.5	475.0	474.0	1.0	120	3,735	1,279	2,456	0.15	0.024	0.74	4.0	9,823	2	240	-	6	32.50	5.4	6.0	0.21	300	0.01	0.00	**0.014**
Residuum	31.0	32.0	31.5	474.0	473.0	1.0	120	3,855	1,342	2,513	0.15	0.024	0.74	4.0	10,054	2	240	-	6	33.50	5.6	6.0	0.20	289	0.01	0.00	**0.014**
Residuum	32.0	33.0	32.5	473.0	472.0	1.0	120	3,975	1,404	2,571	0.15	0.024	0.74	4.0	10,284	2	240	-	6	34.50	5.8	6.0	0.20	279	0.01	0.00	**0.013**
Residuum	33.0	34.0	33.5	472.0	471.0	1.0	120	4,095	1,466	2,629	0.15	0.024	0.74	4.0	10,514	2	240	-	6	35.50	5.9	6.0	0.19	270	0.01	0.00	**0.013**
Residuum	34.0	35.0	34.5	471.0	470.0	1.0	120	4,215	1,529	2,686	0.15	0.024	0.74	4.0	10,745	2	240	-	6	36.50	6.1	6.0	0.18	260	0.01	0.00	**0.012**
Residuum	35.0	36.0	35.5	470.0	469.0	1.0	120	4,335	1,591	2,744	0.15	0.024	0.74	4.0	10,975	2	240	-	6	37.50	6.3	6.0	0.18	252	0.01	0.00	**0.012**
Residuum	36.0	37.0	36.5	469.0	468.0	1.0	120	4,455	1,654	2,801	0.15	0.024	0.74	4.0	11,206	2	240	-	6	38.50	6.4	6.0	0.17	243	0.01	0.00	**0.011**
Residuum	37.0	38.0	37.5	468.0	467.0	1.0	120	4,575	1,716	2,859	0.15	0.024	0.74	4.0	11,436	2	240	-	6	39.50	6.6	6.0	0.16	235	0.01	0.00	**0.011**
Residuum	38.0	39.0	38.5	467.0	466.0	1.0	120	4,695	1,778	2,917	0.15	0.024	0.74	4.0	11,666	2	240	-	6	40.50	6.8	6.0	0.16	228	0.01	0.00	**0.011**
Residuum	39.0	40.0	39.5	466.0	465.0	1.0	120	4,815	1,841	2,974	0.15	0.024	0.74	4.0	11,897	2	240	-	6	41.50	6.9	6.0	0.15	220	0.01	0.00	**0.010**
Residuum	40.0	41.0	40.5	465.0	464.0	1.0	120	4,935	1,903	3,032	0.15	0.024	0.74	4.0	12,127	2	240	-	6	42.50	7.1	6.0	0.15	214	0.01	0.00	**0.010**
Residuum	41.0	42.0	41.5	464.0	463.0	1.0	120	5,055	1,966	3,089	0.15	0.024	0.74	4.0	12,358	2	240	-	6	43.50	7.3	6.0	0.14	207	0.01	0.00	**0.010**
Residuum	42.0	43.0	42.5	463.0	462.0	1.0	120	5,175	2,028	3,147	0.15	0.024	0.74	4.0	12,588	2	240	-	6	44.50	7.4	6.0	0.14	201	0.01	0.00	**0.009**
Clayshale	43.0	44.0	43.5	462.0	461.0	1.0	120	5,295	2,090	3,205	0.15	0.020	0.76	8.0	25,637	2	240	-	6	45.50	7.6	6.0	0.14	194	0.01	0.00	**0.008**

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
Clayshale	44.0	45.0	44.5	461.0	460.0	1.0	120	5,415	2,153	3,262	0.15	0.020	0.76	8.0	26,098	2	240	-	6	46.50	7.8	6.0	0.13	189	0.01	0.00	**0.007**
Clayshale	45.0	46.0	45.5	460.0	459.0	1.0	120	5,535	2,215	3,320	0.15	0.020	0.76	8.0	26,558	2	240	-	6	47.50	7.9	6.0	0.13	183	0.01	0.00	**0.007**
Clayshale	46.0	47.0	46.5	459.0	458.0	1.0	120	5,655	2,278	3,377	0.15	0.020	0.76	8.0	27,019	2	240	-	6	48.50	8.1	6.0	0.12	178	0.01	0.00	**0.007**
Clayshale	47.0	48.0	47.5	458.0	457.0	1.0	120	5,775	2,340	3,435	0.15	0.020	0.76	8.0	27,480	2	240	-	6	49.50	8.3	6.0	0.12	173	0.01	0.00	**0.007**
Clayshale	48.0	49.0	48.5	457.0	456.0	1.0	120	5,895	2,402	3,493	0.15	0.020	0.76	8.0	27,941	2	240	-	6	50.50	8.4	6.0	0.12	168	0.01	0.00	**0.007**
Clayshale	49.0	50.0	49.5	456.0	455.0	1.0	120	6,015	2,465	3,550	0.15	0.020	0.76	8.0	28,402	2	240	-	6	51.50	8.6	6.0	0.11	163	0.01	0.00	**0.006**
Clayshale	50.0	51.0	50.5	455.0	454.0	1.0	120	6,135	2,527	3,608	0.15	0.020	0.76	8.0	28,862	2	240	-	6	52.50	8.8	6.0	0.11	158	0.01	0.00	**0.006**
Clayshale	51.0	52.0	51.5	454.0	453.0	1.0	120	6,255	2,590	3,665	0.15	0.020	0.76	8.0	29,323	2	240	-	6	53.50	8.9	6.0	0.11	154	0.01	0.00	**0.006**
Clayshale	52.0	53.0	52.5	453.0	452.0	1.0	120	6,375	2,652	3,723	0.15	0.020	0.76	8.0	29,784	2	240	-	6	54.50	9.1	6.0	0.10	150	0.01	0.00	**0.006**
Clayshale	53.0	54.0	53.5	452.0	451.0	1.0	120	6,495	2,714	3,781	0.15	0.020	0.76	8.0	30,245	2	240	-	6	55.50	9.3	6.0	0.10	146	0.01	0.00	**0.006**
Clayshale	54.0	55.0	54.5	451.0	450.0	1.0	120	6,615	2,777	3,838	0.15	0.020	0.76	8.0	30,706	2	240	-	6	56.50	9.4	6.0	0.10	142	0.01	0.00	**0.006**
Clayshale	55.0	56.0	55.5	450.0	449.0	1.0	120	6,735	2,839	3,896	0.15	0.020	0.76	8.0	31,166	2	240	-	6	57.50	9.6	6.0	0.10	138	0.01	0.00	**0.005**
Clayshale	56.0	57.0	56.5	449.0	448.0	1.0	120	6,855	2,902	3,953	0.15	0.020	0.76	8.0	31,627	2	240	-	6	58.50	9.8	6.0	0.09	134	0.01	0.00	**0.005**
Clayshale	57.0	58.0	57.5	448.0	447.0	1.0	120	6,975	2,964	4,011	0.15	0.020	0.76	8.0	32,088	2	240	-	6	59.50	9.9	6.0	0.09	131	0.01	0.00	**0.005**
Clayshale	58.0	59.0	58.5	447.0	446.0	1.0	120	7,095	3,026	4,069	0.15	0.020	0.76	8.0	32,549	2	240	-	6	60.50	10.1	6.0	0.09	127	0.01	0.00	**0.005**
Clayshale	59.0	60.0	59.5	446.0	445.0	1.0	120	7,215	3,089	4,126	0.15	0.020	0.76	8.0	33,010	2	240	-	6	61.50	10.3	6.0	0.09	124	0.01	0.00	**0.005**
Clayshale	60.0	61.0	60.5	445.0	444.0	1.0	120	7,335	3,151	4,184	0.15	0.020	0.76	8.0	33,470	2	240	-	6	62.50	10.4	6.0	0.08	121	0.00	0.00	**0.005**
Clayshale	61.0	62.0	61.5	444.0	443.0	1.0	120	7,455	3,214	4,241	0.15	0.020	0.76	8.0	33,931	2	240	-	6	63.50	10.6	6.0	0.08	118	0.00	0.00	**0.005**
Clayshale	62.0	63.0	62.5	443.0	442.0	1.0	120	7,575	3,276	4,299	0.15	0.020	0.76	8.0	34,392	2	240	-	6	64.50	10.8	6.0	0.08	115	0.00	0.00	**0.005**
Clayshale	63.0	64.0	63.5	442.0	441.0	1.0	120	7,695	3,338	4,357	0.15	0.020	0.76	8.0	34,853	2	240	-	6	65.50	10.9	6.0	0.08	112	0.00	0.00	**0.005**
Clayshale	64.0	65.0	64.5	441.0	440.0	1.0	120	7,815	3,401	4,414	0.15	0.020	0.76	8.0	35,314	2	240	-	6	66.50	11.1	6.0	0.08	110	0.00	0.00	**0.005**
Clayshale	65.0	66.0	65.5	440.0	439.0	1.0	120	7,935	3,463	4,472	0.15	0.020	0.76	8.0	35,774	2	240	-	6	67.50	11.3	6.0	0.07	107	0.00	0.00	**0.004**
Clayshale	66.0	67.0	66.5	439.0	438.0	1.0	120	8,055	3,526	4,529	0.15	0.020	0.76	8.0	36,235	2	240	-	6	68.50	11.4	6.0	0.07	104	0.00	0.00	**0.004**
Clayshale	67.0	68.0	67.5	438.0	437.0	1.0	120	8,175	3,588	4,587	0.15	0.020	0.76	8.0	36,696	2	240	-	6	69.50	11.6	6.0	0.07	102	0.00	0.00	**0.004**
Clayshale	68.0	69.0	68.5	437.0	436.0	1.0	120	8,295	3,650	4,645	0.15	0.020	0.76	8.0	37,157	2	240	-	6	70.50	11.8	6.0	0.07	100	0.00	0.00	**0.004**
Clayshale	69.0	70.0	69.5	436.0	435.0	1.0	120	8,415	3,713	4,702	0.15	0.020	0.76	8.0	37,618	2	240	-	6	71.50	11.9	6.0	0.07	97	0.00	0.00	**0.004**
Clayshale	70.0	71.0	70.5	435.0	434.0	1.0	120	8,535	3,775	4,760	0.15	0.020	0.76	8.0	38,078	2	240	-	6	72.50	12.1	6.0	0.07	95	0.00	0.00	**0.004**
Clayshale	71.0	72.0	71.5	434.0	433.0	1.0	120	8,655	3,838	4,817	0.15	0.020	0.76	8.0	38,539	2	240	-	6	73.50	12.3	6.0	0.07	93	0.00	0.00	**0.004**
Clayshale	72.0	73.0	72.5	433.0	432.0	1.0	120	8,775	3,900	4,875	0.15	0.020	0.76	8.0	39,000	2	240	-	6	74.50	12.4	6.0	0.06	91	0.00	0.00	**0.004**
Clayshale	73.0	74.0	73.5	432.0	431.0	1.0	120	8,895	3,962	4,933	0.15	0.020	0.76	8.0	39,461	2	240	-	6	75.50	12.6	6.0	0.06	89	0.00	0.00	**0.004**
Clayshale	74.0	75.0	74.5	431.0	430.0	1.0	120	9,015	4,025	4,990	0.15	0.020	0.76	8.0	39,922	2	240	-	6	76.50	12.8	6.0	0.06	87	0.00	0.00	**0.004**
Clayshale	75.0	76.0	75.5	430.0	429.0	1.0	120	9,135	4,087	5,048	0.15	0.020	0.76	8.0	40,382	2	240	-	6	77.50	12.9	6.0	0.06	85	0.00	0.00	**0.004**
Clayshale	76.0	77.0	76.5	429.0	428.0	1.0	120	9,255	4,150	5,105	0.15	0.020	0.76	8.0	40,843	2	240	-	6	78.50	13.1	6.0	0.06	83	0.00	0.00	**0.004**
Clayshale	77.0	78.0	77.5	428.0	427.0	1.0	120	9,375	4,212	5,163	0.15	0.020	0.76	8.0	41,304	2	240	-	6	79.50	13.3	6.0	0.06	81	0.00	0.00	**0.004**
Clayshale	78.0	79.0	78.5	427.0	426.0	1.0	120	9,495	4,274	5,221	0.15	0.020	0.76	8.0	41,765	2	240	-	6	80.50	13.4	6.0	0.06	80	0.00	0.00	**0.004**
Clayshale	79.0	80.0	79.5	426.0	425.0	1.0	120	9,615	4,337	5,278	0.15	0.020	0.76	8.0	42,226	2	240	-	6	81.50	13.6	6.0	0.05	78	0.00	0.00	**0.003**
#N/A	80.0	81.0	80.5	425.0	424.0	1.0	#N/A	#N/A	4,399	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	82.50	13.8	6.0	0.05	76	-	-	**-**
#N/A	81.0	82.0	81.5	424.0	423.0	1.0	#N/A	#N/A	4,462	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	83.50	13.9	6.0	0.05	75	-	-	**-**
#N/A	82.0	83.0	82.5	423.0	422.0	1.0	#N/A	#N/A	4,524	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	84.50	14.1	6.0	0.05	73	-	-	**-**
#N/A	83.0	84.0	83.5	422.0	421.0	1.0	#N/A	#N/A	4,586	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	85.50	14.3	6.0	0.05	72	-	-	**-**
#N/A	84.0	85.0	84.5	421.0	420.0	1.0	#N/A	#N/A	4,649	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	86.50	14.4	6.0	0.05	70	-	-	**-**
#N/A	85.0	86.0	85.5	420.0	419.0	1.0	#N/A	#N/A	4,711	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	87.50	14.6	6.0	0.05	69	-	-	**-**
#N/A	86.0	87.0	86.5	419.0	418.0	1.0	#N/A	#N/A	4,774	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	88.50	14.8	6.0	0.05	68	-	-	**-**
#N/A	87.0	88.0	87.5	418.0	417.0	1.0	#N/A	#N/A	4,836	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	89.50	14.9	6.0	0.05	66	-	-	**-**
#N/A	88.0	89.0	88.5	417.0	416.0	1.0	#N/A	#N/A	4,898	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	90.50	15.1	6.0	0.05	65	-	-	**-**
#N/A	89.0	90.0	89.5	416.0	415.0	1.0	#N/A	#N/A	4,961	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	91.50	15.3	6.0	0.04	64	-	-	**-**
#N/A	90.0	91.0	90.5	415.0	414.0	1.0	#N/A	#N/A	5,023	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	92.50	15.4	6.0	0.04	63	-	-	**-**
#N/A	91.0	92.0	91.5	414.0	413.0	1.0	#N/A	#N/A	5,086	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	93.50	15.6	6.0	0.04	61	-	-	**-**
#N/A	92.0	93.0	92.5	413.0	412.0	1.0	#N/A	#N/A	5,148	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	94.50	15.8	6.0	0.04	60	-	-	**-**
#N/A	93.0	94.0	93.5	412.0	411.0	1.0	#N/A	#N/A	5,210	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	95.50	15.9	6.0	0.04	59	-	-	**-**
#N/A	94.0	95.0	94.5	411.0	410.0	1.0	#N/A	#N/A	5,273	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	96.50	16.1	6.0	0.04	58	-	-	**-**
#N/A	95.0	96.0	95.5	410.0	409.0	1.0	#N/A	#N/A	5,335	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	97.50	16.3	6.0	0.04	57	-	-	**-**
#N/A	96.0	97.0	96.5	409.0	408.0	1.0	#N/A	#N/A	5,398	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	98.50	16.4	6.0	0.04	56	-	-	**-**
#N/A	97.0	98.0	97.5	408.0	407.0	1.0	#N/A	#N/A	5,460	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	99.50	16.6	6.0	0.04	55	-	-	**-**
#N/A	98.0	99.0	98.5	407.0	406.0	1.0	#N/A	#N/A	5,522	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	100.50	16.8	6.0	0.04	54	-	-	**-**
#N/A	99.0	100.0	99.5	406.0	405.0	1.0	#N/A	#N/A	5,585	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	101.50	16.9	6.0	0.04	53	-	-	**-**
#N/A	100.0	101.0	100.5	405.0	404.0	1.0	#N/A	#N/A	5,647	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	102.50	17.1	6.0	0.04	52	-	-	**-**
#N/A	101.0	102.0	101.5	404.0	403.0	1.0	#N/A	#N/A	5,710	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	103.50	17.3	6.0	0.04	51	-	-	**-**
#N/A	102.0	103.0	102.5	403.0	402.0	1.0	#N/A	#N/A	5,772	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	104.50	17.4	6.0	0.04	50	-	-	**-**
#N/A	103.0	104.0	103.5	402.0	401.0	1.0	#N/A	#N/A	5,834	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	105.50	17.6	6.0	0.03	49	-	-	**-**
#N/A	104.0	105.0	104.5	401.0	400.0	1.0	#N/A	#N/A	5,897	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	106.50	17.8	6.0	0.03	49	-	-	**-**
#N/A	105.0	106.0	105.5	400.0	399.0	1.0	#N/A	#N/A	5,959	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	107.50	17.9	6.0	0.03	48	-	-	**-**
#N/A	106.0	200.0	153	399.0	305.0	94.0	#N/A	#N/A	8,923	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	155.00	25.8	6.0	0.02	24	-	-	**-**

Project Name:	Plum Creek FRS No. 21 Rehabilitation
Job Number:	60586838
Client:	TSSWCB

Structure	Overtopping RCC Spillway - Crest Structure - Walls
Analysis Section	Section C - Prop. Midslope of Chute (Left Side)
Notes	Part 2 - new lime-treated & drain fill in prop. overex./replace

Geotechnical Data

Relevant Boring	n/a	-
Boring Ground Elev.	505	ft NAVD88
Depth to GWT at Boring:	10	feet
GWT Elev.	495	ft NAVD88

Exiting Ground at Structure Location

Structure Existing Ground:	505	ft NAVD88
Footing Bearing Elev.:	507	ft NAVD88
Footing Bearing Elev.:	2	ft above existing (fill)
GWT Depth below Exist.:	10	feet
GWT Depth below footing.:	12	feet

Area Fill

Fill between existing/footing?	yes	-
Include load from area fill?	yes	-
Finish Grade of Area Fill:	507	ft NAVD88
Height above existing:	2	feet
Height above footing base:	0	feet
Thickness under footing:	2	feet
Area Fill Unit Weight:	120	pcf

Subgrade Overexcavation/Replacement

Include Overex/Replacement?	yes	-
Overex/Replace Bottom Elev.	502	ft NAVD88
Depth below footing:	5	feet
Depth below existing:	3	feet

Structure Footing Size & Maximum Bearing Pressure

Footing Width, B:	12	feet
Footing Length, L (rect):	74	feet
Gross Footing Pressure, $q_{0\text{-gross}}$	1,429	psf

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula do not edit

Design Soil Profile and Properties

					1	2	3	4	5	6	7	8	9	10
Depth at Boring (feet)		Elevation (feet)		Thickness in Boring	Existing Depth at Structure (feet)		Thickness at Structure	Layer Name	Total Unit Wt	Initial Void Ratio, e_0*	Compression Index, C_c*	Recomp. Index, C_r*	Min. Over Consolidation Ratio, OCR*	Min. Preconsol. Pressure, P'c*
Top	Bottom	Top	Bottom	(feet)	Top	Bottom	(feet)		(pcf)	(-)				(psf)
0	5	505.0	500.0	5.0	0.0	5.0	5.0	New Lime-Treat Fill	120	0.80	0.12	0.012	2.0	3,000

Notes: *Copy down elevation and thickness formulas if more layers are needed, delete formulas where not needed.*

*Enter "0" for incompressible layers (i.e., granular soils and bedrock)

Method: Settlement Below Center of Uniformly Loaded Rectangular Footing

Project	Plum Creek FRS No. 21 Rehabilitation
Structure	Overtopping RCC Spillway - Crest Structure - Walls
Analysis Section	Section C - Prop. Midslope of Chute (Left Side)

Elev. - Existing Ground @ Structure:	505	ft NAVD88	2	ft from footing base (below)	0	ft from existing (below)
Elev. - Base of Footing / Bearing Depth	507	ft NAVD88	0	ft from footing base (below)	-2	ft from existing (above)
Elev. - Top of Area Fill	507	ft NAVD88	0	ft from footing base (below)	-2	ft from existing (above)
Elev. - Bottom of Overex./Replace	502	ft NAVD88	5	ft from footing base (below)	3	ft from existing (below)
Elev. - Groundwater	495	ft NAVD88	12	ft from footing base (below)	10	ft from existing (below)
Thickness - Area Fill	2	feet below footing base				
Thickness - Overex/Replace	3	feet below footing base				

Footing Width, B:	12	feet
Footing Length, L (square):	12	feet
Footing Length, L (rect):	74	feet

Gross Footing Pressure, $q_{0\text{-gross}}$	1,429	psf
Removed in-situ stress	0	psf
Net Footing Pressure, $q_{0\text{-net}}$	1,429	psf

$$\Delta\sigma_z = qI_4 \tag{10.34}$$

where

$$I_4 = \frac{2}{\pi}\left[\frac{m_1 n_1}{\sqrt{1+m_1^2+n_1^2}}\frac{1+m_1^2+2n_1^2}{(1+n_1^2)(m_1^2+n_1^2)} + \sin^{-1}\frac{m_1}{\sqrt{m_1^2+n_1^2}\sqrt{1+n_1^2}}\right] \tag{10.35}$$

$$m_1 = \frac{L}{B} \tag{10.36}$$

$$n_1 = \frac{z}{b} \tag{10.37}$$

$$b = \frac{B}{2} \tag{10.38}$$

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula (do not edit)
xxx	= Unique Formula (do not edit)

**Negative values indicate height above existing ground*

**Assume granular*

Total Settlement (inch) = 0.09

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
Fill below footing/above exist.	-2.0	0.0	-1.0	507.0	505.0	2.0	120	-	-	-	-	-	-	-	-	2	240	-	6	1.00	0.2	6.0	1.00	1,426	-	-	-
Existing Soil Above Footing	0.0	0.0	0.0	505.0	505.0	0.0	120	-	-	-	-	-	-	-	-	2	240	-	6	2.00	0.3	6.0	0.99	1,409	-	-	-
Overex. below Existing	0.0	3.0	1.5	505.0	502.0	3.0	120	-	-	-	-	-	-	-	-	2	240	-	6	3.50	0.6	6.0	0.94	1,344	-	-	-
New Lime-Treat Fill	3.0	4.0	3.5	502.0	501.0	1.0	120	420	0	420	0.12	0.012	0.80	2.0	3,000	2	240	-	6	5.50	0.9	6.0	0.84	1,207	0.05	0.00	**0.050**
New Lime-Treat Fill	4.0	5.0	4.5	501.0	500.0	1.0	120	540	0	540	0.12	0.012	0.80	2.0	3,000	2	240	-	6	6.50	1.1	6.0	0.79	1,131	0.04	0.00	**0.042**
#N/A	5.0	6.0	5.5	500.0	499.0	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	7.50	1.3	6.0	0.74	1,057	-	-	-
#N/A	6.0	7.0	6.5	499.0	498.0	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	8.50	1.4	6.0	0.69	987	-	-	-
#N/A	7.0	8.0	7.5	498.0	497.0	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	9.50	1.6	6.0	0.64	922	-	-	-
#N/A	8.0	9.0	8.5	497.0	496.0	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	10.50	1.8	6.0	0.60	862	-	-	-
#N/A	9.0	10.0	9.5	496.0	495.0	1.0	#N/A	#N/A	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	11.50	1.9	6.0	0.57	808	-	-	-
#N/A	10.0	11.0	10.5	495.0	494.0	1.0	#N/A	#N/A	31	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	12.50	2.1	6.0	0.53	759	-	-	-
#N/A	11.0	12.0	11.5	494.0	493.0	1.0	#N/A	#N/A	94	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	13.50	2.3	6.0	0.50	714	-	-	-
#N/A	12.0	13.0	12.5	493.0	492.0	1.0	#N/A	#N/A	156	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	14.50	2.4	6.0	0.47	673	-	-	-
#N/A	13.0	14.0	13.5	492.0	491.0	1.0	#N/A	#N/A	218	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	15.50	2.6	6.0	0.45	636	-	-	-
#N/A	14.0	15.0	14.5	491.0	490.0	1.0	#N/A	#N/A	281	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	16.50	2.8	6.0	0.42	602	-	-	-
#N/A	15.0	16.0	15.5	490.0	489.0	1.0	#N/A	#N/A	343	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	17.50	2.9	6.0	0.40	571	-	-	-
#N/A	16.0	17.0	16.5	489.0	488.0	1.0	#N/A	#N/A	406	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	18.50	3.1	6.0	0.38	543	-	-	-
#N/A	17.0	18.0	17.5	488.0	487.0	1.0	#N/A	#N/A	468	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	19.50	3.3	6.0	0.36	517	-	-	-
#N/A	18.0	19.0	18.5	487.0	486.0	1.0	#N/A	#N/A	530	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	20.50	3.4	6.0	0.34	492	-	-	-
#N/A	19.0	20.0	19.5	486.0	485.0	1.0	#N/A	#N/A	593	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	21.50	3.6	6.0	0.33	470	-	-	-
#N/A	20.0	21.0	20.5	485.0	484.0	1.0	#N/A	#N/A	655	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	22.50	3.8	6.0	0.31	449	-	-	-
#N/A	21.0	22.0	21.5	484.0	483.0	1.0	#N/A	#N/A	718	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	23.50	3.9	6.0	0.30	430	-	-	-
#N/A	22.0	23.0	22.5	483.0	482.0	1.0	#N/A	#N/A	780	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	24.50	4.1	6.0	0.29	411	-	-	-
#N/A	23.0	24.0	23.5	482.0	481.0	1.0	#N/A	#N/A	842	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	25.50	4.3	6.0	0.28	394	-	-	-
#N/A	24.0	25.0	24.5	481.0	480.0	1.0	#N/A	#N/A	905	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	26.50	4.4	6.0	0.26	378	-	-	-
#N/A	25.0	26.0	25.5	480.0	479.0	1.0	#N/A	#N/A	967	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	27.50	4.6	6.0	0.25	363	-	-	-
#N/A	26.0	27.0	26.5	479.0	478.0	1.0	#N/A	#N/A	1,030	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	28.50	4.8	6.0	0.24	349	-	-	-
#N/A	27.0	28.0	27.5	478.0	477.0	1.0	#N/A	#N/A	1,092	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	29.50	4.9	6.0	0.24	336	-	-	-
#N/A	28.0	29.0	28.5	477.0	476.0	1.0	#N/A	#N/A	1,154	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	30.50	5.1	6.0	0.23	323	-	-	-
#N/A	29.0	30.0	29.5	476.0	475.0	1.0	#N/A	#N/A	1,217	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	31.50	5.3	6.0	0.22	311	-	-	-
#N/A	30.0	31.0	30.5	475.0	474.0	1.0	#N/A	#N/A	1,279	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	32.50	5.4	6.0	0.21	300	-	-	-
#N/A	31.0	32.0	31.5	474.0	473.0	1.0	#N/A	#N/A	1,342	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	33.50	5.6	6.0	0.20	289	-	-	-
#N/A	32.0	33.0	32.5	473.0	472.0	1.0	#N/A	#N/A	1,404	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	34.50	5.8	6.0	0.20	279	-	-	-
#N/A	33.0	34.0	33.5	472.0	471.0	1.0	#N/A	#N/A	1,466	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	35.50	5.9	6.0	0.19	270	-	-	-
#N/A	34.0	35.0	34.5	471.0	470.0	1.0	#N/A	#N/A	1,529	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	36.50	6.1	6.0	0.18	260	-	-	-
#N/A	35.0	36.0	35.5	470.0	469.0	1.0	#N/A	#N/A	1,591	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	37.50	6.3	6.0	0.18	252	-	-	-
#N/A	36.0	37.0	36.5	469.0	468.0	1.0	#N/A	#N/A	1,654	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	38.50	6.4	6.0	0.17	243	-	-	-
#N/A	37.0	38.0	37.5	468.0	467.0	1.0	#N/A	#N/A	1,716	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	39.50	6.6	6.0	0.16	235	-	-	-
#N/A	38.0	39.0	38.5	467.0	466.0	1.0	#N/A	#N/A	1,778	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	40.50	6.8	6.0	0.16	228	-	-	-
#N/A	39.0	40.0	39.5	466.0	465.0	1.0	#N/A	#N/A	1,841	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	41.50	6.9	6.0	0.15	220	-	-	-
#N/A	40.0	41.0	40.5	465.0	464.0	1.0	#N/A	#N/A	1,903	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	42.50	7.1	6.0	0.15	214	-	-	-
#N/A	41.0	42.0	41.5	464.0	463.0	1.0	#N/A	#N/A	1,966	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	43.50	7.3	6.0	0.14	207	-	-	-
#N/A	42.0	43.0	42.5	463.0	462.0	1.0	#N/A	#N/A	2,028	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	44.50	7.4	6.0	0.14	201	-	-	-
#N/A	43.0	44.0	43.5	462.0	461.0	1.0	#N/A	#N/A	2,090	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	45.50	7.6	6.0	0.14	194	-	-	-

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
#N/A	44.0	45.0	44.5	461.0	460.0	1.0	#N/A	#N/A	2,153	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	46.50	7.8	6.0	0.13	189	-	-	-
#N/A	45.0	46.0	45.5	460.0	459.0	1.0	#N/A	#N/A	2,215	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	47.50	7.9	6.0	0.13	183	-	-	-
#N/A	46.0	47.0	46.5	459.0	458.0	1.0	#N/A	#N/A	2,278	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	48.50	8.1	6.0	0.12	178	-	-	-
#N/A	47.0	48.0	47.5	458.0	457.0	1.0	#N/A	#N/A	2,340	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	49.50	8.3	6.0	0.12	173	-	-	-
#N/A	48.0	49.0	48.5	457.0	456.0	1.0	#N/A	#N/A	2,402	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	50.50	8.4	6.0	0.12	168	-	-	-
#N/A	49.0	50.0	49.5	456.0	455.0	1.0	#N/A	#N/A	2,465	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	51.50	8.6	6.0	0.11	163	-	-	-
#N/A	50.0	51.0	50.5	455.0	454.0	1.0	#N/A	#N/A	2,527	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	52.50	8.8	6.0	0.11	158	-	-	-
#N/A	51.0	52.0	51.5	454.0	453.0	1.0	#N/A	#N/A	2,590	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	53.50	8.9	6.0	0.11	154	-	-	-
#N/A	52.0	53.0	52.5	453.0	452.0	1.0	#N/A	#N/A	2,652	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	54.50	9.1	6.0	0.10	150	-	-	-
#N/A	53.0	54.0	53.5	452.0	451.0	1.0	#N/A	#N/A	2,714	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	55.50	9.3	6.0	0.10	146	-	-	-
#N/A	54.0	55.0	54.5	451.0	450.0	1.0	#N/A	#N/A	2,777	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	56.50	9.4	6.0	0.10	142	-	-	-
#N/A	55.0	56.0	55.5	450.0	449.0	1.0	#N/A	#N/A	2,839	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	57.50	9.6	6.0	0.10	138	-	-	-
#N/A	56.0	57.0	56.5	449.0	448.0	1.0	#N/A	#N/A	2,902	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	58.50	9.8	6.0	0.09	134	-	-	-
#N/A	57.0	58.0	57.5	448.0	447.0	1.0	#N/A	#N/A	2,964	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	59.50	9.9	6.0	0.09	131	-	-	-
#N/A	58.0	59.0	58.5	447.0	446.0	1.0	#N/A	#N/A	3,026	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	60.50	10.1	6.0	0.09	127	-	-	-
#N/A	59.0	60.0	59.5	446.0	445.0	1.0	#N/A	#N/A	3,089	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	61.50	10.3	6.0	0.09	124	-	-	-
#N/A	60.0	61.0	60.5	445.0	444.0	1.0	#N/A	#N/A	3,151	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	62.50	10.4	6.0	0.08	121	-	-	-
#N/A	61.0	62.0	61.5	444.0	443.0	1.0	#N/A	#N/A	3,214	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	63.50	10.6	6.0	0.08	118	-	-	-
#N/A	62.0	63.0	62.5	443.0	442.0	1.0	#N/A	#N/A	3,276	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	64.50	10.8	6.0	0.08	115	-	-	-
#N/A	63.0	64.0	63.5	442.0	441.0	1.0	#N/A	#N/A	3,338	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	65.50	10.9	6.0	0.08	112	-	-	-
#N/A	64.0	65.0	64.5	441.0	440.0	1.0	#N/A	#N/A	3,401	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	66.50	11.1	6.0	0.08	110	-	-	-
#N/A	65.0	66.0	65.5	440.0	439.0	1.0	#N/A	#N/A	3,463	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	67.50	11.3	6.0	0.07	107	-	-	-
#N/A	66.0	67.0	66.5	439.0	438.0	1.0	#N/A	#N/A	3,526	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	68.50	11.4	6.0	0.07	104	-	-	-
#N/A	67.0	68.0	67.5	438.0	437.0	1.0	#N/A	#N/A	3,588	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	69.50	11.6	6.0	0.07	102	-	-	-
#N/A	68.0	69.0	68.5	437.0	436.0	1.0	#N/A	#N/A	3,650	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	70.50	11.8	6.0	0.07	100	-	-	-
#N/A	69.0	70.0	69.5	436.0	435.0	1.0	#N/A	#N/A	3,713	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	71.50	11.9	6.0	0.07	97	-	-	-
#N/A	70.0	71.0	70.5	435.0	434.0	1.0	#N/A	#N/A	3,775	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	72.50	12.1	6.0	0.07	95	-	-	-
#N/A	71.0	72.0	71.5	434.0	433.0	1.0	#N/A	#N/A	3,838	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	73.50	12.3	6.0	0.07	93	-	-	-
#N/A	72.0	73.0	72.5	433.0	432.0	1.0	#N/A	#N/A	3,900	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	74.50	12.4	6.0	0.06	91	-	-	-
#N/A	73.0	74.0	73.5	432.0	431.0	1.0	#N/A	#N/A	3,962	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	75.50	12.6	6.0	0.06	89	-	-	-
#N/A	74.0	75.0	74.5	431.0	430.0	1.0	#N/A	#N/A	4,025	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	76.50	12.8	6.0	0.06	87	-	-	-
#N/A	75.0	76.0	75.5	430.0	429.0	1.0	#N/A	#N/A	4,087	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	77.50	12.9	6.0	0.06	85	-	-	-
#N/A	76.0	77.0	76.5	429.0	428.0	1.0	#N/A	#N/A	4,150	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	78.50	13.1	6.0	0.06	83	-	-	-
#N/A	77.0	78.0	77.5	428.0	427.0	1.0	#N/A	#N/A	4,212	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	79.50	13.3	6.0	0.06	81	-	-	-
#N/A	78.0	79.0	78.5	427.0	426.0	1.0	#N/A	#N/A	4,274	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	80.50	13.4	6.0	0.06	80	-	-	-
#N/A	79.0	80.0	79.5	426.0	425.0	1.0	#N/A	#N/A	4,337	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	81.50	13.6	6.0	0.05	78	-	-	-
#N/A	80.0	81.0	80.5	425.0	424.0	1.0	#N/A	#N/A	4,399	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	82.50	13.8	6.0	0.05	76	-	-	-
#N/A	81.0	82.0	81.5	424.0	423.0	1.0	#N/A	#N/A	4,462	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	83.50	13.9	6.0	0.05	75	-	-	-
#N/A	82.0	83.0	82.5	423.0	422.0	1.0	#N/A	#N/A	4,524	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	84.50	14.1	6.0	0.05	73	-	-	-
#N/A	83.0	84.0	83.5	422.0	421.0	1.0	#N/A	#N/A	4,586	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	85.50	14.3	6.0	0.05	72	-	-	-
#N/A	84.0	85.0	84.5	421.0	420.0	1.0	#N/A	#N/A	4,649	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	86.50	14.4	6.0	0.05	70	-	-	-
#N/A	85.0	86.0	85.5	420.0	419.0	1.0	#N/A	#N/A	4,711	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	87.50	14.6	6.0	0.05	69	-	-	-
#N/A	86.0	87.0	86.5	419.0	418.0	1.0	#N/A	#N/A	4,774	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	88.50	14.8	6.0	0.05	68	-	-	-
#N/A	87.0	88.0	87.5	418.0	417.0	1.0	#N/A	#N/A	4,836	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	89.50	14.9	6.0	0.05	66	-	-	-
#N/A	88.0	89.0	88.5	417.0	416.0	1.0	#N/A	#N/A	4,898	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	90.50	15.1	6.0	0.05	65	-	-	-
#N/A	89.0	90.0	89.5	416.0	415.0	1.0	#N/A	#N/A	4,961	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	91.50	15.3	6.0	0.04	64	-	-	-
#N/A	90.0	91.0	90.5	415.0	414.0	1.0	#N/A	#N/A	5,023	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	92.50	15.4	6.0	0.04	63	-	-	-
#N/A	91.0	92.0	91.5	414.0	413.0	1.0	#N/A	#N/A	5,086	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	93.50	15.6	6.0	0.04	61	-	-	-
#N/A	92.0	93.0	92.5	413.0	412.0	1.0	#N/A	#N/A	5,148	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	94.50	15.8	6.0	0.04	60	-	-	-
#N/A	93.0	94.0	93.5	412.0	411.0	1.0	#N/A	#N/A	5,210	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	95.50	15.9	6.0	0.04	59	-	-	-
#N/A	94.0	95.0	94.5	411.0	410.0	1.0	#N/A	#N/A	5,273	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	96.50	16.1	6.0	0.04	58	-	-	-
#N/A	95.0	96.0	95.5	410.0	409.0	1.0	#N/A	#N/A	5,335	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	97.50	16.3	6.0	0.04	57	-	-	-
#N/A	96.0	97.0	96.5	409.0	408.0	1.0	#N/A	#N/A	5,398	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	98.50	16.4	6.0	0.04	56	-	-	-
#N/A	97.0	98.0	97.5	408.0	407.0	1.0	#N/A	#N/A	5,460	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	99.50	16.6	6.0	0.04	55	-	-	-
#N/A	98.0	99.0	98.5	407.0	406.0	1.0	#N/A	#N/A	5,522	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	100.50	16.8	6.0	0.04	54	-	-	-
#N/A	99.0	100.0	99.5	406.0	405.0	1.0	#N/A	#N/A	5,585	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	101.50	16.9	6.0	0.04	53	-	-	-
#N/A	100.0	101.0	100.5	405.0	404.0	1.0	#N/A	#N/A	5,647	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	102.50	17.1	6.0	0.04	52	-	-	-
#N/A	101.0	102.0	101.5	404.0	403.0	1.0	#N/A	#N/A	5,710	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	103.50	17.3	6.0	0.04	51	-	-	-
#N/A	102.0	103.0	102.5	403.0	402.0	1.0	#N/A	#N/A	5,772	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	104.50	17.4	6.0	0.04	50	-	-	-
#N/A	103.0	104.0	103.5	402.0	401.0	1.0	#N/A	#N/A	5,834	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	105.50	17.6	6.0	0.03	49	-	-	-
#N/A	104.0	105.0	104.5	401.0	400.0	1.0	#N/A	#N/A	5,897	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	106.50	17.8	6.0	0.03	49	-	-	-
#N/A	105.0	106.0	105.5	400.0	399.0	1.0	#N/A	#N/A	5,959	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	107.50	17.9	6.0	0.03	48	-	-	-
#N/A	106.0	200.0	153	399.0	305.0	94.0	#N/A	#N/A	8,923	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2	240	-	6	155.00	25.8	6.0	0.02	24	-	-	-

Project Name:	Plum Creek FRS No. 21 Rehabilitation
Job Number:	60586838
Client:	TSSWCB

Structure	Overtopping RCC Spillway - Chute Structure - Walls
Analysis Section	Section D - Prop. Chute at Existing Downstream Toe (Left Side)
Notes	Part 1 - existing subgrade under prop. overexcav./replace

Geotechnical Data

Relevant Boring	B-603	-
Boring Ground Elev.	494	ft NAVD88
Depth to GWT at Boring:	6	feet
GWT Elev.	488	ft NAVD88

Exiting Ground at Structure Location

Structure Existing Ground:	497	ft NAVD88
Footing Bearing Elev.:	490	ft NAVD88
Footing Bearing Elev.:	7	ft below existing (cut)
GWT Depth below Exist.:	9	feet
GWT Depth below footing.:	2	feet

Area Fill

Fill between existing/footing?	no	-
Include load from area fill?	no	-
Finish Grade of Area Fill:	497	ft NAVD88
Height above existing:	#N/A	feet
Height above footing base:	#N/A	feet
Thickness under footing:	#N/A	feet
Area Fill Unit Weight:	120	pcf

Subgrade Overexcavation/Replacement

Include Overex/Replacement?	yes	-
Overex/Replace Bottom Elev.	482	ft NAVD88
Depth below footing:	8	feet
Depth below existing:	15	feet

Structure Footing Size & Maximum Bearing Pressure

Footing Width, B:	12	feet
Footing Length, L (rect):	13	feet
Gross Footing Pressure, $q_{0\text{-gross}}$	1,429	psf

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula do not edit

Design Soil Profile and Properties

Depth at Boring (feet)		Elevation (feet)		Thickness in Boring	Existing Depth at Structure (feet)		Thickness at Structure	Layer Name	Total Unit Wt	Initial Void Ratio, e_0*	Compression Index, C_c*	Recomp. Index, C_r*	Min. Over Consolidation Ratio, OCR*	Min. Preconsol. Pressure, P'c*
					1	2	3	4	5	6	7	8	9	10
Top	Bottom	Top	Bottom	(feet)	Top	Bottom	(feet)		(pcf)	(-)				(psf)
0	6.5	494.0	487.5	6.5	3.0	9.5	6.5	Valley Fill/Alluv.	128	0.55	0.20	0.030	3.0	3,000
6.5	11.5	487.5	482.5	5.0	9.5	14.5	5.0	Leona Fm	135	0.30	0.00	0.000	10.0	10,000
11.5	21.5	482.5	472.5	10.0	14.5	24.5	10.0	Residuum	120	0.74	0.15	0.024	4.0	3,000
21.5	40	472.5	454.0	18.5	24.5	43.0	18.5	Clayshale	120	0.76	0.15	0.020	8.0	3,000

Notes: *Copy down elevation and thickness formulas if more layers are needed, delete formulas where not needed.*

*Enter "0" for incompressible layers (i.e., granular soils and bedrock)

Method: Settlement Below Center of Uniformly Loaded Rectangular Footing

Project	Plum Creek FRS No. 21 Rehabilitation
Structure	Overtopping RCC Spillway - Chute Structure - Walls
Analysis Section	Section D - Prop. Chute at Existing Downstream Toe (Left Side)

Elev. - Existing Ground @ Structure:	497	ft NAVD88	-7	ft from footing base (above)	0	ft from existing (below)
Elev. - Base of Footing / Bearing Depth	490	ft NAVD88	0	ft from footing base (below)	7	ft from existing (below)
Elev. - Top of Area Fill	#N/A	ft NAVD88	#N/A	#N/A	#N/A	#N/A
Elev. - Bottom of Overex./Replace	482	ft NAVD88	8	ft from footing base (below)	15	ft from existing (below)
Elev. - Groundwater	488	ft NAVD88	2	ft from footing base (below)	9	ft from existing (below)
Thickness - Area Fill	#N/A	feet below footing base				
Thickness - Overex/Replace	8	feet below footing base				

Footing Width, B:	12	feet
Footing Length, L (square):	12	feet
Footing Length, L (rect):	13	feet

Gross Footing Pressure, $q_{0\text{-gross}}$	1,429	psf
Removed in-situ stress	840	psf
Net Footing Pressure, $q_{0\text{-net}}$	589	psf

$$\Delta\sigma_z = qI_4 \tag{10.34}$$

where

$$I_4 = \frac{2}{\pi}\left[\frac{m_1 n_1}{\sqrt{1+m_1^2+n_1^2}}\,\frac{1+m_1^2+2n_1^2}{(1+n_1^2)(m_1^2+n_1^2)} + \sin^{-1}\frac{m_1}{\sqrt{m_1^2+n_1^2}\,\sqrt{1+n_1^2}}\right] \tag{10.35}$$

$$m_1 = \frac{L}{B} \tag{10.36}$$

$$n_1 = \frac{z}{b} \tag{10.37}$$

$$b = \frac{B}{2} \tag{10.38}$$

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula (do not edit)
xxx	= Unique Formula (do not edit)

**Negative values indicate height above existing ground*

**Assume granular*

Total Settlement (inch) = 0.11

Stratum	Depth from Existing* Top	Depth from Existing* Bottom	Depth from Existing* MP	Elevation Top	Elevation Bottom	Layer Thickness	Layer Unit Wt.	In-Situ Stress at MP: Total P_0	In-Situ Stress at MP: μ	In-Situ Stress at MP: Eff. P'_0	Consolidation Parameters: Cc	Consolidation Parameters: Cr	Consolidation Parameters: e0	Consolidation Parameters: OCR	Consolidation Parameters: P'_c	Area Fill above Existing: Thick-ness	Area Fill above Existing: ΔP_{Fill}	Area Fill above Existing: Self Compress*	Rectangular Footing: m1	Rectangular Footing: Eff. Z	Rectangular Footing: n1	Rectangular Footing: b	Rectangular Footing: I4	Rectangular Footing: ΔP_{Fndn}	Rectangular Footing: S_{re}	Rectangular Footing: S_c	Rectangular Footing: S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
Fill below footing/above exist.	0.0	0.0	0.0	497.0	497.0	0.0	120	-	-	-	-	-	-	-	-	0	0	-	1	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-
Existing Soil Above Footing	0.0	7.0	3.5	497.0	490.0	7.0	120	-	-	-	-	-	-	-	-	0	0	-	1	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-
Overex. below Existing	0.0	15.0	7.5	497.0	482.0	15.0	120	-	-	-	-	-	-	-	-	0	0	-	1	0.50	0.1	6.0	1.00	589	-	-	-
Residuum	15.0	16.0	15.5	482.0	481.0	1.0	120	1,860	406	1,454	0.15	0.024	0.74	4.0	5,818	0	0	-	1	8.50	1.4	6.0	0.54	316	0.01	0.00	**0.014**
Residuum	16.0	17.0	16.5	481.0	480.0	1.0	120	1,980	468	1,512	0.15	0.024	0.74	4.0	6,048	0	0	-	1	9.50	1.6	6.0	0.48	280	0.01	0.00	**0.012**
Residuum	17.0	18.0	17.5	480.0	479.0	1.0	120	2,100	530	1,570	0.15	0.024	0.74	4.0	6,278	0	0	-	1	10.50	1.8	6.0	0.42	249	0.01	0.00	**0.011**
Residuum	18.0	19.0	18.5	479.0	478.0	1.0	120	2,220	593	1,627	0.15	0.024	0.74	4.0	6,509	0	0	-	1	11.50	1.9	6.0	0.38	221	0.01	0.00	**0.009**
Residuum	19.0	20.0	19.5	478.0	477.0	1.0	120	2,340	655	1,685	0.15	0.024	0.74	4.0	6,739	0	0	-	1	12.50	2.1	6.0	0.34	198	0.01	0.00	**0.008**
Residuum	20.0	21.0	20.5	477.0	476.0	1.0	120	2,460	718	1,742	0.15	0.024	0.74	4.0	6,970	0	0	-	1	13.50	2.3	6.0	0.30	177	0.01	0.00	**0.007**
Residuum	21.0	22.0	21.5	476.0	475.0	1.0	120	2,580	780	1,800	0.15	0.024	0.74	4.0	7,200	0	0	-	1	14.50	2.4	6.0	0.27	159	0.01	0.00	**0.006**
Residuum	22.0	23.0	22.5	475.0	474.0	1.0	120	2,700	842	1,858	0.15	0.024	0.74	4.0	7,430	0	0	-	1	15.50	2.6	6.0	0.24	143	0.01	0.00	**0.005**
Residuum	23.0	24.0	23.5	474.0	473.0	1.0	120	2,820	905	1,915	0.15	0.024	0.74	4.0	7,661	0	0	-	1	16.50	2.8	6.0	0.22	130	0.00	0.00	**0.005**
Residuum	24.0	25.0	24.5	473.0	472.0	1.0	120	2,940	967	1,973	0.15	0.024	0.74	4.0	7,891	0	0	-	1	17.50	2.9	6.0	0.20	118	0.00	0.00	**0.004**
Clayshale	25.0	26.0	25.5	472.0	471.0	1.0	120	3,060	1,030	2,030	0.15	0.020	0.76	8.0	16,243	0	0	-	1	18.50	3.1	6.0	0.18	108	0.00	0.00	**0.003**
Clayshale	26.0	27.0	26.5	471.0	470.0	1.0	120	3,180	1,092	2,088	0.15	0.020	0.76	8.0	16,704	0	0	-	1	19.50	3.3	6.0	0.17	98	0.00	0.00	**0.003**
Clayshale	27.0	28.0	27.5	470.0	469.0	1.0	120	3,300	1,154	2,146	0.15	0.020	0.76	8.0	17,165	0	0	-	1	20.50	3.4	6.0	0.15	90	0.00	0.00	**0.002**
Clayshale	28.0	29.0	28.5	469.0	468.0	1.0	120	3,420	1,217	2,203	0.15	0.020	0.76	8.0	17,626	0	0	-	1	21.50	3.6	6.0	0.14	83	0.00	0.00	**0.002**
Clayshale	29.0	30.0	29.5	468.0	467.0	1.0	120	3,540	1,279	2,261	0.15	0.020	0.76	8.0	18,086	0	0	-	1	22.50	3.8	6.0	0.13	77	0.00	0.00	**0.002**
Clayshale	30.0	31.0	30.5	467.0	466.0	1.0	120	3,660	1,342	2,318	0.15	0.020	0.76	8.0	18,547	0	0	-	1	23.50	3.9	6.0	0.12	71	0.00	0.00	**0.002**
Clayshale	31.0	32.0	31.5	466.0	465.0	1.0	120	3,780	1,404	2,376	0.15	0.020	0.76	8.0	19,008	0	0	-	1	24.50	4.1	6.0	0.11	66	0.00	0.00	**0.002**
Clayshale	32.0	33.0	32.5	465.0	464.0	1.0	120	3,900	1,466	2,434	0.15	0.020	0.76	8.0	19,469	0	0	-	1	25.50	4.3	6.0	0.10	61	0.00	0.00	**0.001**
Clayshale	33.0	34.0	33.5	464.0	463.0	1.0	120	4,020	1,529	2,491	0.15	0.020	0.76	8.0	19,930	0	0	-	1	26.50	4.4	6.0	0.10	57	0.00	0.00	**0.001**
Clayshale	34.0	35.0	34.5	463.0	462.0	1.0	120	4,140	1,591	2,549	0.15	0.020	0.76	8.0	20,390	0	0	-	1	27.50	4.6	6.0	0.09	53	0.00	0.00	**0.001**
Clayshale	35.0	36.0	35.5	462.0	461.0	1.0	120	4,260	1,654	2,606	0.15	0.020	0.76	8.0	20,851	0	0	-	1	28.50	4.8	6.0	0.08	50	0.00	0.00	**0.001**
Clayshale	36.0	37.0	36.5	461.0	460.0	1.0	120	4,380	1,716	2,664	0.15	0.020	0.76	8.0	21,312	0	0	-	1	29.50	4.9	6.0	0.08	47	0.00	0.00	**0.001**
Clayshale	37.0	38.0	37.5	460.0	459.0	1.0	120	4,500	1,778	2,722	0.15	0.020	0.76	8.0	21,773	0	0	-	1	30.50	5.1	6.0	0.07	44	0.00	0.00	**0.001**
Clayshale	38.0	39.0	38.5	459.0	458.0	1.0	120	4,620	1,841	2,779	0.15	0.020	0.76	8.0	22,234	0	0	-	1	31.50	5.3	6.0	0.07	41	0.00	0.00	**0.001**
Clayshale	39.0	40.0	39.5	458.0	457.0	1.0	120	4,740	1,903	2,837	0.15	0.020	0.76	8.0	22,694	0	0	-	1	32.50	5.4	6.0	0.07	39	0.00	0.00	**0.001**
Clayshale	40.0	41.0	40.5	457.0	456.0	1.0	120	4,860	1,966	2,894	0.15	0.020	0.76	8.0	23,155	0	0	-	1	33.50	5.6	6.0	0.06	37	0.00	0.00	**0.001**
Clayshale	41.0	42.0	41.5	456.0	455.0	1.0	120	4,980	2,028	2,952	0.15	0.020	0.76	8.0	23,616	0	0	-	1	34.50	5.8	6.0	0.06	35	0.00	0.00	**0.001**
Clayshale	42.0	43.0	42.5	455.0	454.0	1.0	120	5,100	2,090	3,010	0.15	0.020	0.76	8.0	24,077	0	0	-	1	35.50	5.9	6.0	0.06	33	0.00	0.00	**0.001**
#N/A	43.0	44.0	43.5	454.0	453.0	1.0	#N/A	#N/A	2,153	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	36.50	6.1	6.0	0.05	31	-	-	-
#N/A	44.0	45.0	44.5	453.0	452.0	1.0	#N/A	#N/A	2,215	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	37.50	6.3	6.0	0.05	30	-	-	-
#N/A	45.0	46.0	45.5	452.0	451.0	1.0	#N/A	#N/A	2,278	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	38.50	6.4	6.0	0.05	28	-	-	-
#N/A	46.0	47.0	46.5	451.0	450.0	1.0	#N/A	#N/A	2,340	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	39.50	6.6	6.0	0.05	27	-	-	-
#N/A	47.0	48.0	47.5	450.0	449.0	1.0	#N/A	#N/A	2,402	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	40.50	6.8	6.0	0.04	26	-	-	-
#N/A	48.0	49.0	48.5	449.0	448.0	1.0	#N/A	#N/A	2,465	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	41.50	6.9	6.0	0.04	25	-	-	-
#N/A	49.0	50.0	49.5	448.0	447.0	1.0	#N/A	#N/A	2,527	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	42.50	7.1	6.0	0.04	23	-	-	-
#N/A	50.0	51.0	50.5	447.0	446.0	1.0	#N/A	#N/A	2,590	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	43.50	7.3	6.0	0.04	22	-	-	-
#N/A	51.0	52.0	51.5	446.0	445.0	1.0	#N/A	#N/A	2,652	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	44.50	7.4	6.0	0.04	21	-	-	-
#N/A	52.0	53.0	52.5	445.0	444.0	1.0	#N/A	#N/A	2,714	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	45.50	7.6	6.0	0.03	21	-	-	-
#N/A	53.0	54.0	53.5	444.0	443.0	1.0	#N/A	#N/A	2,777	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	46.50	7.8	6.0	0.03	20	-	-	-
#N/A	54.0	55.0	54.5	443.0	442.0	1.0	#N/A	#N/A	2,839	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	47.50	7.9	6.0	0.03	19	-	-	-
#N/A	55.0	56.0	55.5	442.0	441.0	1.0	#N/A	#N/A	2,902	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	48.50	8.1	6.0	0.03	18	-	-	-

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
#N/A	56.0	57.0	56.5	441.0	440.0	1.0	#N/A	#N/A	2,964	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	49.50	8.3	6.0	0.03	17	-	-	-
#N/A	57.0	58.0	57.5	440.0	439.0	1.0	#N/A	#N/A	3,026	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	50.50	8.4	6.0	0.03	17	-	-	-
#N/A	58.0	59.0	58.5	439.0	438.0	1.0	#N/A	#N/A	3,089	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	51.50	8.6	6.0	0.03	16	-	-	-
#N/A	59.0	60.0	59.5	438.0	437.0	1.0	#N/A	#N/A	3,151	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	52.50	8.8	6.0	0.03	16	-	-	-
#N/A	60.0	61.0	60.5	437.0	436.0	1.0	#N/A	#N/A	3,214	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	53.50	8.9	6.0	0.03	15	-	-	-
#N/A	61.0	62.0	61.5	436.0	435.0	1.0	#N/A	#N/A	3,276	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	54.50	9.1	6.0	0.02	14	-	-	-
#N/A	62.0	63.0	62.5	435.0	434.0	1.0	#N/A	#N/A	3,338	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	55.50	9.3	6.0	0.02	14	-	-	-
#N/A	63.0	64.0	63.5	434.0	433.0	1.0	#N/A	#N/A	3,401	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	56.50	9.4	6.0	0.02	13	-	-	-
#N/A	64.0	65.0	64.5	433.0	432.0	1.0	#N/A	#N/A	3,463	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	57.50	9.6	6.0	0.02	13	-	-	-
#N/A	65.0	66.0	65.5	432.0	431.0	1.0	#N/A	#N/A	3,526	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	58.50	9.8	6.0	0.02	13	-	-	-
#N/A	66.0	67.0	66.5	431.0	430.0	1.0	#N/A	#N/A	3,588	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	59.50	9.9	6.0	0.02	12	-	-	-
#N/A	67.0	68.0	67.5	430.0	429.0	1.0	#N/A	#N/A	3,650	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	60.50	10.1	6.0	0.02	12	-	-	-
#N/A	68.0	69.0	68.5	429.0	428.0	1.0	#N/A	#N/A	3,713	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	61.50	10.3	6.0	0.02	11	-	-	-
#N/A	69.0	70.0	69.5	428.0	427.0	1.0	#N/A	#N/A	3,775	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	62.50	10.4	6.0	0.02	11	-	-	-
#N/A	70.0	71.0	70.5	427.0	426.0	1.0	#N/A	#N/A	3,838	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	63.50	10.6	6.0	0.02	11	-	-	-
#N/A	71.0	72.0	71.5	426.0	425.0	1.0	#N/A	#N/A	3,900	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	64.50	10.8	6.0	0.02	10	-	-	-
#N/A	72.0	73.0	72.5	425.0	424.0	1.0	#N/A	#N/A	3,962	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	65.50	10.9	6.0	0.02	10	-	-	-
#N/A	73.0	74.0	73.5	424.0	423.0	1.0	#N/A	#N/A	4,025	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	66.50	11.1	6.0	0.02	10	-	-	-
#N/A	74.0	75.0	74.5	423.0	422.0	1.0	#N/A	#N/A	4,087	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	67.50	11.3	6.0	0.02	9	-	-	-
#N/A	75.0	76.0	75.5	422.0	421.0	1.0	#N/A	#N/A	4,150	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	68.50	11.4	6.0	0.02	9	-	-	-
#N/A	76.0	77.0	76.5	421.0	420.0	1.0	#N/A	#N/A	4,212	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	69.50	11.6	6.0	0.02	9	-	-	-
#N/A	77.0	78.0	77.5	420.0	419.0	1.0	#N/A	#N/A	4,274	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	70.50	11.8	6.0	0.01	9	-	-	-
#N/A	78.0	79.0	78.5	419.0	418.0	1.0	#N/A	#N/A	4,337	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	71.50	11.9	6.0	0.01	8	-	-	-
#N/A	79.0	80.0	79.5	418.0	417.0	1.0	#N/A	#N/A	4,399	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	72.50	12.1	6.0	0.01	8	-	-	-
#N/A	80.0	81.0	80.5	417.0	416.0	1.0	#N/A	#N/A	4,462	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	73.50	12.3	6.0	0.01	8	-	-	-
#N/A	81.0	82.0	81.5	416.0	415.0	1.0	#N/A	#N/A	4,524	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	74.50	12.4	6.0	0.01	8	-	-	-
#N/A	82.0	83.0	82.5	415.0	414.0	1.0	#N/A	#N/A	4,586	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	75.50	12.6	6.0	0.01	8	-	-	-
#N/A	83.0	84.0	83.5	414.0	413.0	1.0	#N/A	#N/A	4,649	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	76.50	12.8	6.0	0.01	7	-	-	-
#N/A	84.0	85.0	84.5	413.0	412.0	1.0	#N/A	#N/A	4,711	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	77.50	12.9	6.0	0.01	7	-	-	-
#N/A	85.0	86.0	85.5	412.0	411.0	1.0	#N/A	#N/A	4,774	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	78.50	13.1	6.0	0.01	7	-	-	-
#N/A	86.0	87.0	86.5	411.0	410.0	1.0	#N/A	#N/A	4,836	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	79.50	13.3	6.0	0.01	7	-	-	-
#N/A	87.0	88.0	87.5	410.0	409.0	1.0	#N/A	#N/A	4,898	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	80.50	13.4	6.0	0.01	7	-	-	-
#N/A	88.0	89.0	88.5	409.0	408.0	1.0	#N/A	#N/A	4,961	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	81.50	13.6	6.0	0.01	7	-	-	-
#N/A	89.0	90.0	89.5	408.0	407.0	1.0	#N/A	#N/A	5,023	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	82.50	13.8	6.0	0.01	6	-	-	-
#N/A	90.0	91.0	90.5	407.0	406.0	1.0	#N/A	#N/A	5,086	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	83.50	13.9	6.0	0.01	6	-	-	-
#N/A	91.0	92.0	91.5	406.0	405.0	1.0	#N/A	#N/A	5,148	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	84.50	14.1	6.0	0.01	6	-	-	-
#N/A	92.0	93.0	92.5	405.0	404.0	1.0	#N/A	#N/A	5,210	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	85.50	14.3	6.0	0.01	6	-	-	-
#N/A	93.0	94.0	93.5	404.0	403.0	1.0	#N/A	#N/A	5,273	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	86.50	14.4	6.0	0.01	6	-	-	-
#N/A	94.0	95.0	94.5	403.0	402.0	1.0	#N/A	#N/A	5,335	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	87.50	14.6	6.0	0.01	6	-	-	-
#N/A	95.0	96.0	95.5	402.0	401.0	1.0	#N/A	#N/A	5,398	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	88.50	14.8	6.0	0.01	6	-	-	-
#N/A	96.0	97.0	96.5	401.0	400.0	1.0	#N/A	#N/A	5,460	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	89.50	14.9	6.0	0.01	5	-	-	-
#N/A	97.0	98.0	97.5	400.0	399.0	1.0	#N/A	#N/A	5,522	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	90.50	15.1	6.0	0.01	5	-	-	-
#N/A	98.0	99.0	98.5	399.0	398.0	1.0	#N/A	#N/A	5,585	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	91.50	15.3	6.0	0.01	5	-	-	-
#N/A	99.0	100.0	99.5	398.0	397.0	1.0	#N/A	#N/A	5,647	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	92.50	15.4	6.0	0.01	5	-	-	-
#N/A	100.0	101.0	100.5	397.0	396.0	1.0	#N/A	#N/A	5,710	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	93.50	15.6	6.0	0.01	5	-	-	-
#N/A	101.0	102.0	101.5	396.0	395.0	1.0	#N/A	#N/A	5,772	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	94.50	15.8	6.0	0.01	5	-	-	-
#N/A	102.0	103.0	102.5	395.0	394.0	1.0	#N/A	#N/A	5,834	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	95.50	15.9	6.0	0.01	5	-	-	-
#N/A	103.0	104.0	103.5	394.0	393.0	1.0	#N/A	#N/A	5,897	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	96.50	16.1	6.0	0.01	5	-	-	-
#N/A	104.0	105.0	104.5	393.0	392.0	1.0	#N/A	#N/A	5,959	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	97.50	16.3	6.0	0.01	5	-	-	-
#N/A	105.0	106.0	105.5	392.0	391.0	1.0	#N/A	#N/A	6,022	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	98.50	16.4	6.0	0.01	4	-	-	-
#N/A	106.0	107.0	106.5	391.0	390.0	1.0	#N/A	#N/A	6,084	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	99.50	16.6	6.0	0.01	4	-	-	-
#N/A	107.0	108.0	107.5	390.0	389.0	1.0	#N/A	#N/A	6,146	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	100.50	16.8	6.0	0.01	4	-	-	-
#N/A	108.0	109.0	108.5	389.0	388.0	1.0	#N/A	#N/A	6,209	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	101.50	16.9	6.0	0.01	4	-	-	-
#N/A	109.0	110.0	109.5	388.0	387.0	1.0	#N/A	#N/A	6,271	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	102.50	17.1	6.0	0.01	4	-	-	-
#N/A	110.0	111.0	110.5	387.0	386.0	1.0	#N/A	#N/A	6,334	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	103.50	17.3	6.0	0.01	4	-	-	-
#N/A	111.0	112.0	111.5	386.0	385.0	1.0	#N/A	#N/A	6,396	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	104.50	17.4	6.0	0.01	4	-	-	-
#N/A	112.0	113.0	112.5	385.0	384.0	1.0	#N/A	#N/A	6,458	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	105.50	17.6	6.0	0.01	4	-	-	-
#N/A	113.0	114.0	113.5	384.0	383.0	1.0	#N/A	#N/A	6,521	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	106.50	17.8	6.0	0.01	4	-	-	-
#N/A	114.0	115.0	114.5	383.0	382.0	1.0	#N/A	#N/A	6,583	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	107.50	17.9	6.0	0.01	4	-	-	-
#N/A	115.0	116.0	115.5	382.0	381.0	1.0	#N/A	#N/A	6,646	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	108.50	18.1	6.0	0.01	4	-	-	-
#N/A	116.0	117.0	116.5	381.0	380.0	1.0	#N/A	#N/A	6,708	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	109.50	18.3	6.0	0.01	4	-	-	-
#N/A	117.0	118.0	117.5	380.0	379.0	1.0	#N/A	#N/A	6,770	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	110.50	18.4	6.0	0.01	4	-	-	-
#N/A	118.0	200.0	159	379.0	297.0	82.0	#N/A	#N/A	9,360	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	152.00	25.3	6.0	0.00	2	-	-	-

Project Name:	Plum Creek FRS No. 21 Rehabilitation
Job Number:	60586838
Client:	TSSWCB

Structure	Overtopping RCC Spillway - Chute Structure - Walls
Analysis Section	Section D - Prop. Chute at Existing Downstream Toe (Left Side)
Notes	Part 2 - new lime-treated & drain fill in prop. overex./replace

Geotechnical Data

Relevant Boring	n/a	-
Boring Ground Elev.	490	ft NAVD88
Depth to GWT at Boring:	2	feet
GWT Elev.	488	ft NAVD88

Exiting Ground at Structure Location

Structure Existing Ground:	490	ft NAVD88
Footing Bearing Elev.:	490	ft NAVD88
Footing Bearing Elev.:	0	ft below existing (cut)
GWT Depth below Exist.:	2	feet
GWT Depth below footing.:	2	feet

Area Fill

Fill between existing/footing?	no	-
Include load from area fill?	no	-
Finish Grade of Area Fill:	490	ft NAVD88
Height above existing:	#N/A	feet
Height above footing base:	#N/A	feet
Thickness under footing:	#N/A	feet
Area Fill Unit Weight:	120	pcf

Subgrade Overexcavation/Replacement

Include Overex/Replacement?	yes	-
Overex/Replace Bottom Elev.	488	ft NAVD88
Depth below footing:	2	feet
Depth below existing:	2	feet

Structure Footing Size & Maximum Bearing Pressure

Footing Width, B:	12	feet
Footing Length, L (rect):	13	feet
Gross Footing Pressure, $q_{0\text{-gross}}$	1,429	psf

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula do not edit

Design Soil Profile and Properties

Depth at Boring (feet)		Elevation (feet)		Thickness in Boring	Existing Depth at Structure (feet)		Thickness at Structure	Layer Name	Total Unit Wt	Initial Void Ratio, e_0*	Compression Index, C_c*	Recomp. Index, C_r*	Min. Over Consolidation Ratio, OCR*	Min. Preconsol. Pressure, P'c*
					1	2	3	4	5	6	7	8	9	10
Top	Bottom	Top	Bottom	(feet)	Top	Bottom	(feet)		(pcf)	(-)				(psf)
0	8	490.0	482.0	8.0	0.0	8.0	8.0	New Lime-Treat Fill	120	0.80	0.12	0.012	2.0	3,000

Notes: *Copy down elevation and thickness formulas if more layers are needed, delete formulas where not needed.*

*Enter "0" for incompressible layers (i.e., granular soils and bedrock)

Method: Settlement Below Center of Uniformly Loaded Rectangular Footing

Project	Plum Creek FRS No. 21 Rehabilitation
Structure	Overtopping RCC Spillway - Chute Structure - Walls
Analysis Section	Section D - Prop. Chute at Existing Downstream Toe (Left Side)

Elev. - Existing Ground @ Structure:	490	ft NAVD88	0	ft from footing base (below)	0	ft from existing (below)
Elev. - Base of Footing / Bearing Depth	490	ft NAVD88	0	ft from footing base (below)	0	ft from existing (below)
Elev. - Top of Area Fill	#N/A	ft NAVD88	#N/A	#N/A	#N/A	#N/A
Elev. - Bottom of Overex./Replace	488	ft NAVD88	2	ft from footing base (below)	2	ft from existing (below)
Elev. - Groundwater	488	ft NAVD88	2	ft from footing base (below)	2	ft from existing (below)
Thickness - Area Fill	#N/A	feet below footing base				
Thickness - Overex/Replace	2	feet below footing base				

Footing Width, B:	12	feet
Footing Length, L (square):	12	feet
Footing Length, L (rect):	13	feet

Gross Footing Pressure, $q_{0\text{-gross}}$	1,429	psf
Removed in-situ stress	0	psf
Net Footing Pressure, $q_{0\text{-net}}$	1,429	psf

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula (do not edit)
xxx	= Unique Formula (do not edit)

$$\Delta\sigma_z = qI_4 \tag{10.34}$$

where

$$I_4 = \frac{2}{\pi}\left[\frac{m_1 n_1}{\sqrt{1+m_1^2+n_1^2}}\frac{1+m_1^2+2n_1^2}{(1+n_1^2)(m_1^2+n_1^2)} + \sin^{-1}\frac{m_1}{\sqrt{m_1^2+n_1^2}\sqrt{1+n_1^2}}\right] \tag{10.35}$$

$$m_1 = \frac{L}{B} \tag{10.36}$$

$$n_1 = \frac{z}{b} \tag{10.37}$$

$$b = \frac{B}{2} \tag{10.38}$$

**Negative values indicate height above existing ground*

**Assume granular*

Total Settlement (inch) = 0.27

Stratum	Depth from Existing* Top	Bottom	MP	Elevation Top	Bottom	Layer Thickness	Layer Unit Wt.	In-Situ Stress at MP Total P_0	μ	Eff. P'_0	Consolidation Parameters Cc	Cr	e0	OCR	P'_c	Area Fill above Existing Thick-ness	ΔP_{Fill}	Self Compress*	Rectangular Footing m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
Fill below footing/above exist.	0.0	0.0	0.0	490.0	490.0	0.0	120	-	-	-	-	-	-	-	-	0	0	-	1	0.00	0.0	6.0	1.00	1,429	-	-	-
Existing Soil Above Footing	0.0	0.0	0.0	490.0	490.0	0.0	120	-	-	-	-	-	-	-	-	0	0	-	1	0.00	0.0	6.0	1.00	1,429	-	-	-
Overex. below Existing	0.0	2.0	1.0	490.0	488.0	2.0	120	-	-	-	-	-	-	-	-	0	0	-	1	1.00	0.2	6.0	1.00	1,425	-	-	-
New Lime-Treat Fill	2.0	3.0	2.5	488.0	487.0	1.0	120	300	31	269	0.12	0.012	0.80	2.0	3,000	0	0	-	1	2.50	0.4	6.0	0.96	1,372	0.06	0.00	**0.060**
New Lime-Treat Fill	3.0	4.0	3.5	487.0	486.0	1.0	120	420	94	326	0.12	0.012	0.80	2.0	3,000	0	0	-	1	3.50	0.6	6.0	0.91	1,296	0.05	0.00	**0.053**
New Lime-Treat Fill	4.0	5.0	4.5	486.0	485.0	1.0	120	540	156	384	0.12	0.012	0.80	2.0	3,000	0	0	-	1	4.50	0.8	6.0	0.84	1,196	0.05	0.00	**0.047**
New Lime-Treat Fill	5.0	6.0	5.5	485.0	484.0	1.0	120	660	218	442	0.12	0.012	0.80	2.0	3,000	0	0	-	1	5.50	0.9	6.0	0.76	1,085	0.04	0.00	**0.041**
New Lime-Treat Fill	6.0	7.0	6.5	484.0	483.0	1.0	120	780	281	499	0.12	0.012	0.80	2.0	3,000	0	0	-	1	6.50	1.1	6.0	0.68	972	0.04	0.00	**0.036**
New Lime-Treat Fill	7.0	8.0	7.5	483.0	482.0	1.0	120	900	343	557	0.12	0.012	0.80	2.0	3,000	0	0	-	1	7.50	1.3	6.0	0.61	865	0.03	0.00	**0.031**
#N/A	8.0	9.0	8.5	482.0	481.0	1.0	#N/A	#N/A	406	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	8.50	1.4	6.0	0.54	767	-	-	-
#N/A	9.0	10.0	9.5	481.0	480.0	1.0	#N/A	#N/A	468	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	9.50	1.6	6.0	0.48	680	-	-	-
#N/A	10.0	11.0	10.5	480.0	479.0	1.0	#N/A	#N/A	530	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	10.50	1.8	6.0	0.42	604	-	-	-
#N/A	11.0	12.0	11.5	479.0	478.0	1.0	#N/A	#N/A	593	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	11.50	1.9	6.0	0.38	537	-	-	-
#N/A	12.0	13.0	12.5	478.0	477.0	1.0	#N/A	#N/A	655	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	12.50	2.1	6.0	0.34	479	-	-	-
#N/A	13.0	14.0	13.5	477.0	476.0	1.0	#N/A	#N/A	718	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	13.50	2.3	6.0	0.30	429	-	-	-
#N/A	14.0	15.0	14.5	476.0	475.0	1.0	#N/A	#N/A	780	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	14.50	2.4	6.0	0.27	386	-	-	-
#N/A	15.0	16.0	15.5	475.0	474.0	1.0	#N/A	#N/A	842	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	15.50	2.6	6.0	0.24	348	-	-	-
#N/A	16.0	17.0	16.5	474.0	473.0	1.0	#N/A	#N/A	905	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	16.50	2.8	6.0	0.22	315	-	-	-
#N/A	17.0	18.0	17.5	473.0	472.0	1.0	#N/A	#N/A	967	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	17.50	2.9	6.0	0.20	286	-	-	-
#N/A	18.0	19.0	18.5	472.0	471.0	1.0	#N/A	#N/A	1,030	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	18.50	3.1	6.0	0.18	261	-	-	-
#N/A	19.0	20.0	19.5	471.0	470.0	1.0	#N/A	#N/A	1,092	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	19.50	3.3	6.0	0.17	239	-	-	-
#N/A	20.0	21.0	20.5	470.0	469.0	1.0	#N/A	#N/A	1,154	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	20.50	3.4	6.0	0.15	219	-	-	-
#N/A	21.0	22.0	21.5	469.0	468.0	1.0	#N/A	#N/A	1,217	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	21.50	3.6	6.0	0.14	202	-	-	-
#N/A	22.0	23.0	22.5	468.0	467.0	1.0	#N/A	#N/A	1,279	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	22.50	3.8	6.0	0.13	186	-	-	-
#N/A	23.0	24.0	23.5	467.0	466.0	1.0	#N/A	#N/A	1,342	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	23.50	3.9	6.0	0.12	172	-	-	-
#N/A	24.0	25.0	24.5	466.0	465.0	1.0	#N/A	#N/A	1,404	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	24.50	4.1	6.0	0.11	160	-	-	-
#N/A	25.0	26.0	25.5	465.0	464.0	1.0	#N/A	#N/A	1,466	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	25.50	4.3	6.0	0.10	149	-	-	-
#N/A	26.0	27.0	26.5	464.0	463.0	1.0	#N/A	#N/A	1,529	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	26.50	4.4	6.0	0.10	139	-	-	-
#N/A	27.0	28.0	27.5	463.0	462.0	1.0	#N/A	#N/A	1,591	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	27.50	4.6	6.0	0.09	130	-	-	-
#N/A	28.0	29.0	28.5	462.0	461.0	1.0	#N/A	#N/A	1,654	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	28.50	4.8	6.0	0.08	121	-	-	-
#N/A	29.0	30.0	29.5	461.0	460.0	1.0	#N/A	#N/A	1,716	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	29.50	4.9	6.0	0.08	114	-	-	-
#N/A	30.0	31.0	30.5	460.0	459.0	1.0	#N/A	#N/A	1,778	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	30.50	5.1	6.0	0.07	107	-	-	-
#N/A	31.0	32.0	31.5	459.0	458.0	1.0	#N/A	#N/A	1,841	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	31.50	5.3	6.0	0.07	101	-	-	-
#N/A	32.0	33.0	32.5	458.0	457.0	1.0	#N/A	#N/A	1,903	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	32.50	5.4	6.0	0.07	95	-	-	-
#N/A	33.0	34.0	33.5	457.0	456.0	1.0	#N/A	#N/A	1,966	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	33.50	5.6	6.0	0.06	90	-	-	-
#N/A	34.0	35.0	34.5	456.0	455.0	1.0	#N/A	#N/A	2,028	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	34.50	5.8	6.0	0.06	85	-	-	-
#N/A	35.0	36.0	35.5	455.0	454.0	1.0	#N/A	#N/A	2,090	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	35.50	5.9	6.0	0.06	80	-	-	-
#N/A	36.0	37.0	36.5	454.0	453.0	1.0	#N/A	#N/A	2,153	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	36.50	6.1	6.0	0.05	76	-	-	-
#N/A	37.0	38.0	37.5	453.0	452.0	1.0	#N/A	#N/A	2,215	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	37.50	6.3	6.0	0.05	72	-	-	-
#N/A	38.0	39.0	38.5	452.0	451.0	1.0	#N/A	#N/A	2,278	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	38.50	6.4	6.0	0.05	69	-	-	-
#N/A	39.0	40.0	39.5	451.0	450.0	1.0	#N/A	#N/A	2,340	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	39.50	6.6	6.0	0.05	65	-	-	-
#N/A	40.0	41.0	40.5	450.0	449.0	1.0	#N/A	#N/A	2,402	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	40.50	6.8	6.0	0.04	62	-	-	-
#N/A	41.0	42.0	41.5	449.0	448.0	1.0	#N/A	#N/A	2,465	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	41.50	6.9	6.0	0.04	60	-	-	-
#N/A	42.0	43.0	42.5	448.0	447.0	1.0	#N/A	#N/A	2,527	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	42.50	7.1	6.0	0.04	57	-	-	-

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
#N/A	43.0	44.0	43.5	447.0	446.0	1.0	#N/A	#N/A	2,590	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	43.50	7.3	6.0	0.04	54	-	-	-
#N/A	44.0	45.0	44.5	446.0	445.0	1.0	#N/A	#N/A	2,652	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	44.50	7.4	6.0	0.04	52	-	-	-
#N/A	45.0	46.0	45.5	445.0	444.0	1.0	#N/A	#N/A	2,714	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	45.50	7.6	6.0	0.03	50	-	-	-
#N/A	46.0	47.0	46.5	444.0	443.0	1.0	#N/A	#N/A	2,777	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	46.50	7.8	6.0	0.03	48	-	-	-
#N/A	47.0	48.0	47.5	443.0	442.0	1.0	#N/A	#N/A	2,839	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	47.50	7.9	6.0	0.03	46	-	-	-
#N/A	48.0	49.0	48.5	442.0	441.0	1.0	#N/A	#N/A	2,902	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	48.50	8.1	6.0	0.03	44	-	-	-
#N/A	49.0	50.0	49.5	441.0	440.0	1.0	#N/A	#N/A	2,964	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	49.50	8.3	6.0	0.03	42	-	-	-
#N/A	50.0	51.0	50.5	440.0	439.0	1.0	#N/A	#N/A	3,026	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	50.50	8.4	6.0	0.03	41	-	-	-
#N/A	51.0	52.0	51.5	439.0	438.0	1.0	#N/A	#N/A	3,089	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	51.50	8.6	6.0	0.03	39	-	-	-
#N/A	52.0	53.0	52.5	438.0	437.0	1.0	#N/A	#N/A	3,151	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	52.50	8.8	6.0	0.03	38	-	-	-
#N/A	53.0	54.0	53.5	437.0	436.0	1.0	#N/A	#N/A	3,214	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	53.50	8.9	6.0	0.03	36	-	-	-
#N/A	54.0	55.0	54.5	436.0	435.0	1.0	#N/A	#N/A	3,276	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	54.50	9.1	6.0	0.02	35	-	-	-
#N/A	55.0	56.0	55.5	435.0	434.0	1.0	#N/A	#N/A	3,338	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	55.50	9.3	6.0	0.02	34	-	-	-
#N/A	56.0	57.0	56.5	434.0	433.0	1.0	#N/A	#N/A	3,401	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	56.50	9.4	6.0	0.02	33	-	-	-
#N/A	57.0	58.0	57.5	433.0	432.0	1.0	#N/A	#N/A	3,463	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	57.50	9.6	6.0	0.02	32	-	-	-
#N/A	58.0	59.0	58.5	432.0	431.0	1.0	#N/A	#N/A	3,526	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	58.50	9.8	6.0	0.02	31	-	-	-
#N/A	59.0	60.0	59.5	431.0	430.0	1.0	#N/A	#N/A	3,588	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	59.50	9.9	6.0	0.02	30	-	-	-
#N/A	60.0	61.0	60.5	430.0	429.0	1.0	#N/A	#N/A	3,650	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	60.50	10.1	6.0	0.02	29	-	-	-
#N/A	61.0	62.0	61.5	429.0	428.0	1.0	#N/A	#N/A	3,713	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	61.50	10.3	6.0	0.02	28	-	-	-
#N/A	62.0	63.0	62.5	428.0	427.0	1.0	#N/A	#N/A	3,775	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	62.50	10.4	6.0	0.02	27	-	-	-
#N/A	63.0	64.0	63.5	427.0	426.0	1.0	#N/A	#N/A	3,838	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	63.50	10.6	6.0	0.02	26	-	-	-
#N/A	64.0	65.0	64.5	426.0	425.0	1.0	#N/A	#N/A	3,900	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	64.50	10.8	6.0	0.02	25	-	-	-
#N/A	65.0	66.0	65.5	425.0	424.0	1.0	#N/A	#N/A	3,962	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	65.50	10.9	6.0	0.02	24	-	-	-
#N/A	66.0	67.0	66.5	424.0	423.0	1.0	#N/A	#N/A	4,025	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	66.50	11.1	6.0	0.02	24	-	-	-
#N/A	67.0	68.0	67.5	423.0	422.0	1.0	#N/A	#N/A	4,087	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	67.50	11.3	6.0	0.02	23	-	-	-
#N/A	68.0	69.0	68.5	422.0	421.0	1.0	#N/A	#N/A	4,150	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	68.50	11.4	6.0	0.02	22	-	-	-
#N/A	69.0	70.0	69.5	421.0	420.0	1.0	#N/A	#N/A	4,212	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	69.50	11.6	6.0	0.02	22	-	-	-
#N/A	70.0	71.0	70.5	420.0	419.0	1.0	#N/A	#N/A	4,274	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	70.50	11.8	6.0	0.01	21	-	-	-
#N/A	71.0	72.0	71.5	419.0	418.0	1.0	#N/A	#N/A	4,337	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	71.50	11.9	6.0	0.01	21	-	-	-
#N/A	72.0	73.0	72.5	418.0	417.0	1.0	#N/A	#N/A	4,399	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	72.50	12.1	6.0	0.01	20	-	-	-
#N/A	73.0	74.0	73.5	417.0	416.0	1.0	#N/A	#N/A	4,462	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	73.50	12.3	6.0	0.01	19	-	-	-
#N/A	74.0	75.0	74.5	416.0	415.0	1.0	#N/A	#N/A	4,524	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	74.50	12.4	6.0	0.01	19	-	-	-
#N/A	75.0	76.0	75.5	415.0	414.0	1.0	#N/A	#N/A	4,586	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	75.50	12.6	6.0	0.01	18	-	-	-
#N/A	76.0	77.0	76.5	414.0	413.0	1.0	#N/A	#N/A	4,649	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	76.50	12.8	6.0	0.01	18	-	-	-
#N/A	77.0	78.0	77.5	413.0	412.0	1.0	#N/A	#N/A	4,711	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	77.50	12.9	6.0	0.01	18	-	-	-
#N/A	78.0	79.0	78.5	412.0	411.0	1.0	#N/A	#N/A	4,774	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	78.50	13.1	6.0	0.01	17	-	-	-
#N/A	79.0	80.0	79.5	411.0	410.0	1.0	#N/A	#N/A	4,836	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	79.50	13.3	6.0	0.01	17	-	-	-
#N/A	80.0	81.0	80.5	410.0	409.0	1.0	#N/A	#N/A	4,898	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	80.50	13.4	6.0	0.01	16	-	-	-
#N/A	81.0	82.0	81.5	409.0	408.0	1.0	#N/A	#N/A	4,961	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	81.50	13.6	6.0	0.01	16	-	-	-
#N/A	82.0	83.0	82.5	408.0	407.0	1.0	#N/A	#N/A	5,023	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	82.50	13.8	6.0	0.01	15	-	-	-
#N/A	83.0	84.0	83.5	407.0	406.0	1.0	#N/A	#N/A	5,086	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	83.50	13.9	6.0	0.01	15	-	-	-
#N/A	84.0	85.0	84.5	406.0	405.0	1.0	#N/A	#N/A	5,148	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	84.50	14.1	6.0	0.01	15	-	-	-
#N/A	85.0	86.0	85.5	405.0	404.0	1.0	#N/A	#N/A	5,210	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	85.50	14.3	6.0	0.01	14	-	-	-
#N/A	86.0	87.0	86.5	404.0	403.0	1.0	#N/A	#N/A	5,273	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	86.50	14.4	6.0	0.01	14	-	-	-
#N/A	87.0	88.0	87.5	403.0	402.0	1.0	#N/A	#N/A	5,335	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	87.50	14.6	6.0	0.01	14	-	-	-
#N/A	88.0	89.0	88.5	402.0	401.0	1.0	#N/A	#N/A	5,398	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	88.50	14.8	6.0	0.01	13	-	-	-
#N/A	89.0	90.0	89.5	401.0	400.0	1.0	#N/A	#N/A	5,460	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	89.50	14.9	6.0	0.01	13	-	-	-
#N/A	90.0	91.0	90.5	400.0	399.0	1.0	#N/A	#N/A	5,522	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	90.50	15.1	6.0	0.01	13	-	-	-
#N/A	91.0	92.0	91.5	399.0	398.0	1.0	#N/A	#N/A	5,585	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	91.50	15.3	6.0	0.01	13	-	-	-
#N/A	92.0	93.0	92.5	398.0	397.0	1.0	#N/A	#N/A	5,647	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	92.50	15.4	6.0	0.01	12	-	-	-
#N/A	93.0	94.0	93.5	397.0	396.0	1.0	#N/A	#N/A	5,710	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	93.50	15.6	6.0	0.01	12	-	-	-
#N/A	94.0	95.0	94.5	396.0	395.0	1.0	#N/A	#N/A	5,772	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	94.50	15.8	6.0	0.01	12	-	-	-
#N/A	95.0	96.0	95.5	395.0	394.0	1.0	#N/A	#N/A	5,834	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	95.50	15.9	6.0	0.01	12	-	-	-
#N/A	96.0	97.0	96.5	394.0	393.0	1.0	#N/A	#N/A	5,897	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	96.50	16.1	6.0	0.01	11	-	-	-
#N/A	97.0	98.0	97.5	393.0	392.0	1.0	#N/A	#N/A	5,959	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	97.50	16.3	6.0	0.01	11	-	-	-
#N/A	98.0	99.0	98.5	392.0	391.0	1.0	#N/A	#N/A	6,022	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	98.50	16.4	6.0	0.01	11	-	-	-
#N/A	99.0	100.0	99.5	391.0	390.0	1.0	#N/A	#N/A	6,084	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	99.50	16.6	6.0	0.01	11	-	-	-
#N/A	100.0	101.0	100.5	390.0	389.0	1.0	#N/A	#N/A	6,146	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	100.50	16.8	6.0	0.01	10	-	-	-
#N/A	101.0	102.0	101.5	389.0	388.0	1.0	#N/A	#N/A	6,209	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	101.50	16.9	6.0	0.01	10	-	-	-
#N/A	102.0	103.0	102.5	388.0	387.0	1.0	#N/A	#N/A	6,271	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	102.50	17.1	6.0	0.01	10	-	-	-
#N/A	103.0	104.0	103.5	387.0	386.0	1.0	#N/A	#N/A	6,334	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	103.50	17.3	6.0	0.01	10	-	-	-
#N/A	104.0	105.0	104.5	386.0	385.0	1.0	#N/A	#N/A	6,396	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	104.50	17.4	6.0	0.01	10	-	-	-
#N/A	105.0	200.0	152.5	385.0	290.0	95.0	#N/A	#N/A	9,391	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	1	152.50	25.4	6.0	0.00	5	-	-	-

Project Name:	Plum Creek FRS No. 21 Rehabilitation
Job Number:	60586838
Client:	TSSWCB

Structure	Overtopping RCC Spillway - Stilling Basin - Walls
Analysis Section	Section E - Stilling Basin (Left Side)
Notes	Part 1 - existing subgrade under prop. overexcav./replace

Geotechnical Data

Relevant Boring	B-603	-
Boring Ground Elev.	494	ft NAVD88
Depth to GWT at Boring:	6	feet
GWT Elev.	488	ft NAVD88

Exiting Ground at Structure Location

Structure Existing Ground:	497	ft NAVD88
Footing Bearing Elev.:	486	ft NAVD88
Footing Bearing Elev.:	11	ft below existing (cut)
GWT Depth below Exist.:	9	feet
GWT Depth below footing.:	0	feet

Area Fill

Fill between existing/footing?	no	-
Include load from area fill?	no	-
Finish Grade of Area Fill:	486	ft NAVD88
Height above existing:	#N/A	feet
Height above footing base:	#N/A	feet
Thickness under footing:	#N/A	feet
Area Fill Unit Weight:	120	pcf

Subgrade Overexcavation/Replacement

Include Overex/Replacement?	yes	-
Overex/Replace Bottom Elev.	478	ft NAVD88
Depth below footing:	8	feet
Depth below existing:	19	feet

Structure Footing Size & Maximum Bearing Pressure

Footing Width, B:	12	feet
Footing Length, L (rect):	24.5	feet
Gross Footing Pressure, $q_{0\text{-gross}}$	3,658	psf

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula do not edit

Design Soil Profile and Properties

Depth at Boring (feet)		Elevation (feet)		Thickness in Boring	Existing Depth at Structure (feet)		Thickness at Structure	Layer Name	Total Unit Wt	Initial Void Ratio, e_0*	Compression Index, C_c*	Recomp. Index, C_r*	Min. Over Consolidation Ratio, OCR*	Min. Preconsol. Pressure, P'c*
					1	2	3	4	5	6	7	8	9	10
Top	Bottom	Top	Bottom	(feet)	Top	Bottom	(feet)		(pcf)	(-)				(psf)
0	6.5	494.0	487.5	6.5	3.0	9.5	6.5	Valley Fill/Alluv.	128	0.55	0.20	0.030	3.0	3,000
6.5	11.5	487.5	482.5	5.0	9.5	14.5	5.0	Leona Fm	135	0.30	0.00	0.000	10.0	10,000
11.5	21.5	482.5	472.5	10.0	14.5	24.5	10.0	Residuum	120	0.74	0.15	0.024	4.0	3,000
21.5	40	472.5	454.0	18.5	24.5	43.0	18.5	Clayshale	120	0.76	0.15	0.020	8.0	3,000

Notes: *Copy down elevation and thickness formulas if more layers are needed, delete formulas where not needed.*

*Enter "0" for incompressible layers (i.e., granular soils and bedrock)

Method: Settlement Below Center of Uniformly Loaded Rectangular Footing

Project	Plum Creek FRS No. 21 Rehabilitation
Structure	Overtopping RCC Spillway - Stilling Basin - Walls
Analysis Section	Section E - Stilling Basin (Left Side)

Elev. - Existing Ground @ Structure:	497	ft NAVD88	-11	ft from footing base (above)	0	ft from existing (below)
Elev. - Base of Footing / Bearing Depth	486	ft NAVD88	0	ft from footing base (below)	11	ft from existing (below)
Elev. - Top of Area Fill	#N/A	ft NAVD88	#N/A	#N/A	#N/A	#N/A
Elev. - Bottom of Overex./Replace	478	ft NAVD88	8	ft from footing base (below)	19	ft from existing (below)
Elev. - Groundwater	488	ft NAVD88	-2	ft from footing base (above)	9	ft from existing (below)
Thickness - Area Fill	#N/A	feet below footing base				
Thickness - Overex/Replace	8	feet below footing base				

Footing Width, B:	12	feet
Footing Length, L (square):	12	feet
Footing Length, L (rect):	24.5	feet

Gross Footing Pressure, $q_{0\text{-gross}}$	3,658	psf
Removed in-situ stress	1,195	psf
Net Footing Pressure, $q_{0\text{-net}}$	2,463	psf

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula (do not edit)
xxx	= Unique Formula (do not edit)

$$\Delta\sigma_z = qI_4 \tag{10.34}$$

where

$$I_4 = \frac{2}{\pi}\left[\frac{m_1 n_1}{\sqrt{1+m_1^2+n_1^2}}\,\frac{1+m_1^2+2n_1^2}{(1+n_1^2)(m_1^2+n_1^2)} + \sin^{-1}\frac{m_1}{\sqrt{m_1^2+n_1^2}\,\sqrt{1+n_1^2}}\right] \tag{10.35}$$

$$m_1 = \frac{L}{B} \tag{10.36}$$

$$n_1 = \frac{z}{b} \tag{10.37}$$

$$b = \frac{B}{2} \tag{10.38}$$

**Negative values indicate height above existing ground*

**Assume granular*

Total Settlement (inch) = 0.45

Stratum	Depth from Existing* Top	Depth from Existing* Bottom	Depth from Existing* MP	Elevation Top	Elevation Bottom	Layer Thickness	Layer Unit Wt.	In-Situ Stress at MP: Total P_0	In-Situ Stress at MP: μ	In-Situ Stress at MP: Eff. P'_0	Consolidation Parameters: Cc	Consolidation Parameters: Cr	Consolidation Parameters: e0	Consolidation Parameters: OCR	Consolidation Parameters: P'_c	Area Fill above Existing: Thick-ness	Area Fill above Existing: ΔP_{Fill}	Area Fill above Existing: Self Compress*	Rectangular Footing: m1	Rectangular Footing: Eff. Z	Rectangular Footing: n1	Rectangular Footing: b	Rectangular Footing: I4	Rectangular Footing: ΔP_{Fndn}	Rectangular Footing: S_{re}	Rectangular Footing: S_c	Rectangular Footing: S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
Fill below footing/above exist.	0.0	0.0	0.0	497.0	497.0	0.0	120	-	-	-	-	-	-	-	-	0	0	-	2	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-
Existing Soil Above Footing	0.0	11.0	5.5	497.0	486.0	11.0	120	-	-	-	-	-	-	-	-	0	0	-	2	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-
Overex. below Existing	0.0	19.0	9.5	497.0	478.0	19.0	120	-	-	-	-	-	-	-	-	0	0	-	2	#N/A	#N/A	#N/A	#N/A	#N/A	-	-	-
Residuum	19.0	20.0	19.5	478.0	477.0	1.0	120	2,340	655	1,685	0.15	0.024	0.74	4.0	6,739	0	0	-	2	8.50	1.4	6.0	0.65	1,611	0.05	0.00	**0.048**
Residuum	20.0	21.0	20.5	477.0	476.0	1.0	120	2,460	718	1,742	0.15	0.024	0.74	4.0	6,970	0	0	-	2	9.50	1.6	6.0	0.60	1,479	0.04	0.00	**0.044**
Residuum	21.0	22.0	21.5	476.0	475.0	1.0	120	2,580	780	1,800	0.15	0.024	0.74	4.0	7,200	0	0	-	2	10.50	1.8	6.0	0.55	1,356	0.04	0.00	**0.040**
Residuum	22.0	23.0	22.5	475.0	474.0	1.0	120	2,700	842	1,858	0.15	0.024	0.74	4.0	7,430	0	0	-	2	11.50	1.9	6.0	0.51	1,244	0.04	0.00	**0.037**
Residuum	23.0	24.0	23.5	474.0	473.0	1.0	120	2,820	905	1,915	0.15	0.024	0.74	4.0	7,661	0	0	-	2	12.50	2.1	6.0	0.46	1,142	0.03	0.00	**0.034**
Residuum	24.0	25.0	24.5	473.0	472.0	1.0	120	2,940	967	1,973	0.15	0.024	0.74	4.0	7,891	0	0	-	2	13.50	2.3	6.0	0.43	1,049	0.03	0.00	**0.031**
Clayshale	25.0	26.0	25.5	472.0	471.0	1.0	120	3,060	1,030	2,030	0.15	0.020	0.76	8.0	16,243	0	0	-	2	14.50	2.4	6.0	0.39	965	0.02	0.00	**0.023**
Clayshale	26.0	27.0	26.5	471.0	470.0	1.0	120	3,180	1,092	2,088	0.15	0.020	0.76	8.0	16,704	0	0	-	2	15.50	2.6	6.0	0.36	889	0.02	0.00	**0.021**
Clayshale	27.0	28.0	27.5	470.0	469.0	1.0	120	3,300	1,154	2,146	0.15	0.020	0.76	8.0	17,165	0	0	-	2	16.50	2.8	6.0	0.33	820	0.02	0.00	**0.019**
Clayshale	28.0	29.0	28.5	469.0	468.0	1.0	120	3,420	1,217	2,203	0.15	0.020	0.76	8.0	17,626	0	0	-	2	17.50	2.9	6.0	0.31	758	0.02	0.00	**0.018**
Clayshale	29.0	30.0	29.5	468.0	467.0	1.0	120	3,540	1,279	2,261	0.15	0.020	0.76	8.0	18,086	0	0	-	2	18.50	3.1	6.0	0.29	702	0.02	0.00	**0.016**
Clayshale	30.0	31.0	30.5	467.0	466.0	1.0	120	3,660	1,342	2,318	0.15	0.020	0.76	8.0	18,547	0	0	-	2	19.50	3.3	6.0	0.26	651	0.01	0.00	**0.015**
Clayshale	31.0	32.0	31.5	466.0	465.0	1.0	120	3,780	1,404	2,376	0.15	0.020	0.76	8.0	19,008	0	0	-	2	20.50	3.4	6.0	0.25	605	0.01	0.00	**0.013**
Clayshale	32.0	33.0	32.5	465.0	464.0	1.0	120	3,900	1,466	2,434	0.15	0.020	0.76	8.0	19,469	0	0	-	2	21.50	3.6	6.0	0.23	563	0.01	0.00	**0.012**
Clayshale	33.0	34.0	33.5	464.0	463.0	1.0	120	4,020	1,529	2,491	0.15	0.020	0.76	8.0	19,930	0	0	-	2	22.50	3.8	6.0	0.21	526	0.01	0.00	**0.011**
Clayshale	34.0	35.0	34.5	463.0	462.0	1.0	120	4,140	1,591	2,549	0.15	0.020	0.76	8.0	20,390	0	0	-	2	23.50	3.9	6.0	0.20	491	0.01	0.00	**0.010**
Clayshale	35.0	36.0	35.5	462.0	461.0	1.0	120	4,260	1,654	2,606	0.15	0.020	0.76	8.0	20,851	0	0	-	2	24.50	4.1	6.0	0.19	460	0.01	0.00	**0.010**
Clayshale	36.0	37.0	36.5	461.0	460.0	1.0	120	4,380	1,716	2,664	0.15	0.020	0.76	8.0	21,312	0	0	-	2	25.50	4.3	6.0	0.17	431	0.01	0.00	**0.009**
Clayshale	37.0	38.0	37.5	460.0	459.0	1.0	120	4,500	1,778	2,722	0.15	0.020	0.76	8.0	21,773	0	0	-	2	26.50	4.4	6.0	0.16	404	0.01	0.00	**0.008**
Clayshale	38.0	39.0	38.5	459.0	458.0	1.0	120	4,620	1,841	2,779	0.15	0.020	0.76	8.0	22,234	0	0	-	2	27.50	4.6	6.0	0.15	380	0.01	0.00	**0.008**
Clayshale	39.0	40.0	39.5	458.0	457.0	1.0	120	4,740	1,903	2,837	0.15	0.020	0.76	8.0	22,694	0	0	-	2	28.50	4.8	6.0	0.15	358	0.01	0.00	**0.007**
Clayshale	40.0	41.0	40.5	457.0	456.0	1.0	120	4,860	1,966	2,894	0.15	0.020	0.76	8.0	23,155	0	0	-	2	29.50	4.9	6.0	0.14	338	0.01	0.00	**0.007**
Clayshale	41.0	42.0	41.5	456.0	455.0	1.0	120	4,980	2,028	2,952	0.15	0.020	0.76	8.0	23,616	0	0	-	2	30.50	5.1	6.0	0.13	319	0.01	0.00	**0.006**
Clayshale	42.0	43.0	42.5	455.0	454.0	1.0	120	5,100	2,090	3,010	0.15	0.020	0.76	8.0	24,077	0	0	-	2	31.50	5.3	6.0	0.12	302	0.01	0.00	**0.006**
#N/A	43.0	44.0	43.5	454.0	453.0	1.0	#N/A	#N/A	2,153	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	32.50	5.4	6.0	0.12	286	-	-	-
#N/A	44.0	45.0	44.5	453.0	452.0	1.0	#N/A	#N/A	2,215	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	33.50	5.6	6.0	0.11	271	-	-	-
#N/A	45.0	46.0	45.5	452.0	451.0	1.0	#N/A	#N/A	2,278	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	34.50	5.8	6.0	0.10	257	-	-	-
#N/A	46.0	47.0	46.5	451.0	450.0	1.0	#N/A	#N/A	2,340	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	35.50	5.9	6.0	0.10	245	-	-	-
#N/A	47.0	48.0	47.5	450.0	449.0	1.0	#N/A	#N/A	2,402	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	36.50	6.1	6.0	0.09	233	-	-	-
#N/A	48.0	49.0	48.5	449.0	448.0	1.0	#N/A	#N/A	2,465	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	37.50	6.3	6.0	0.09	222	-	-	-
#N/A	49.0	50.0	49.5	448.0	447.0	1.0	#N/A	#N/A	2,527	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	38.50	6.4	6.0	0.09	211	-	-	-
#N/A	50.0	51.0	50.5	447.0	446.0	1.0	#N/A	#N/A	2,590	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	39.50	6.6	6.0	0.08	202	-	-	-
#N/A	51.0	52.0	51.5	446.0	445.0	1.0	#N/A	#N/A	2,652	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	40.50	6.8	6.0	0.08	193	-	-	-
#N/A	52.0	53.0	52.5	445.0	444.0	1.0	#N/A	#N/A	2,714	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	41.50	6.9	6.0	0.07	184	-	-	-
#N/A	53.0	54.0	53.5	444.0	443.0	1.0	#N/A	#N/A	2,777	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	42.50	7.1	6.0	0.07	176	-	-	-
#N/A	54.0	55.0	54.5	443.0	442.0	1.0	#N/A	#N/A	2,839	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	43.50	7.3	6.0	0.07	169	-	-	-
#N/A	55.0	56.0	55.5	442.0	441.0	1.0	#N/A	#N/A	2,902	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	44.50	7.4	6.0	0.07	162	-	-	-
#N/A	56.0	57.0	56.5	441.0	440.0	1.0	#N/A	#N/A	2,964	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	45.50	7.6	6.0	0.06	155	-	-	-
#N/A	57.0	58.0	57.5	440.0	439.0	1.0	#N/A	#N/A	3,026	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	46.50	7.8	6.0	0.06	149	-	-	-
#N/A	58.0	59.0	58.5	439.0	438.0	1.0	#N/A	#N/A	3,089	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	47.50	7.9	6.0	0.06	143	-	-	-
#N/A	59.0	60.0	59.5	438.0	437.0	1.0	#N/A	#N/A	3,151	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	48.50	8.1	6.0	0.06	138	-	-	-

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
#N/A	60.0	61.0	60.5	437.0	436.0	1.0	#N/A	#N/A	3,214	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	49.50	8.3	6.0	0.05	133	-	-	-
#N/A	61.0	62.0	61.5	436.0	435.0	1.0	#N/A	#N/A	3,276	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	50.50	8.4	6.0	0.05	128	-	-	-
#N/A	62.0	63.0	62.5	435.0	434.0	1.0	#N/A	#N/A	3,338	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	51.50	8.6	6.0	0.05	123	-	-	-
#N/A	63.0	64.0	63.5	434.0	433.0	1.0	#N/A	#N/A	3,401	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	52.50	8.8	6.0	0.05	119	-	-	-
#N/A	64.0	65.0	64.5	433.0	432.0	1.0	#N/A	#N/A	3,463	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	53.50	8.9	6.0	0.05	115	-	-	-
#N/A	65.0	66.0	65.5	432.0	431.0	1.0	#N/A	#N/A	3,526	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	54.50	9.1	6.0	0.04	111	-	-	-
#N/A	66.0	67.0	66.5	431.0	430.0	1.0	#N/A	#N/A	3,588	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	55.50	9.3	6.0	0.04	107	-	-	-
#N/A	67.0	68.0	67.5	430.0	429.0	1.0	#N/A	#N/A	3,650	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	56.50	9.4	6.0	0.04	103	-	-	-
#N/A	68.0	69.0	68.5	429.0	428.0	1.0	#N/A	#N/A	3,713	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	57.50	9.6	6.0	0.04	100	-	-	-
#N/A	69.0	70.0	69.5	428.0	427.0	1.0	#N/A	#N/A	3,775	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	58.50	9.8	6.0	0.04	97	-	-	-
#N/A	70.0	71.0	70.5	427.0	426.0	1.0	#N/A	#N/A	3,838	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	59.50	9.9	6.0	0.04	94	-	-	-
#N/A	71.0	72.0	71.5	426.0	425.0	1.0	#N/A	#N/A	3,900	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	60.50	10.1	6.0	0.04	91	-	-	-
#N/A	72.0	73.0	72.5	425.0	424.0	1.0	#N/A	#N/A	3,962	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	61.50	10.3	6.0	0.04	88	-	-	-
#N/A	73.0	74.0	73.5	424.0	423.0	1.0	#N/A	#N/A	4,025	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	62.50	10.4	6.0	0.03	85	-	-	-
#N/A	74.0	75.0	74.5	423.0	422.0	1.0	#N/A	#N/A	4,087	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	63.50	10.6	6.0	0.03	83	-	-	-
#N/A	75.0	76.0	75.5	422.0	421.0	1.0	#N/A	#N/A	4,150	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	64.50	10.8	6.0	0.03	80	-	-	-
#N/A	76.0	77.0	76.5	421.0	420.0	1.0	#N/A	#N/A	4,212	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	65.50	10.9	6.0	0.03	78	-	-	-
#N/A	77.0	78.0	77.5	420.0	419.0	1.0	#N/A	#N/A	4,274	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	66.50	11.1	6.0	0.03	76	-	-	-
#N/A	78.0	79.0	78.5	419.0	418.0	1.0	#N/A	#N/A	4,337	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	67.50	11.3	6.0	0.03	73	-	-	-
#N/A	79.0	80.0	79.5	418.0	417.0	1.0	#N/A	#N/A	4,399	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	68.50	11.4	6.0	0.03	71	-	-	-
#N/A	80.0	81.0	80.5	417.0	416.0	1.0	#N/A	#N/A	4,462	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	69.50	11.6	6.0	0.03	69	-	-	-
#N/A	81.0	82.0	81.5	416.0	415.0	1.0	#N/A	#N/A	4,524	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	70.50	11.8	6.0	0.03	67	-	-	-
#N/A	82.0	83.0	82.5	415.0	414.0	1.0	#N/A	#N/A	4,586	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	71.50	11.9	6.0	0.03	66	-	-	-
#N/A	83.0	84.0	83.5	414.0	413.0	1.0	#N/A	#N/A	4,649	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	72.50	12.1	6.0	0.03	64	-	-	-
#N/A	84.0	85.0	84.5	413.0	412.0	1.0	#N/A	#N/A	4,711	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	73.50	12.3	6.0	0.03	62	-	-	-
#N/A	85.0	86.0	85.5	412.0	411.0	1.0	#N/A	#N/A	4,774	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	74.50	12.4	6.0	0.02	61	-	-	-
#N/A	86.0	87.0	86.5	411.0	410.0	1.0	#N/A	#N/A	4,836	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	75.50	12.6	6.0	0.02	59	-	-	-
#N/A	87.0	88.0	87.5	410.0	409.0	1.0	#N/A	#N/A	4,898	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	76.50	12.8	6.0	0.02	58	-	-	-
#N/A	88.0	89.0	88.5	409.0	408.0	1.0	#N/A	#N/A	4,961	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	77.50	12.9	6.0	0.02	56	-	-	-
#N/A	89.0	90.0	89.5	408.0	407.0	1.0	#N/A	#N/A	5,023	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	78.50	13.1	6.0	0.02	55	-	-	-
#N/A	90.0	91.0	90.5	407.0	406.0	1.0	#N/A	#N/A	5,086	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	79.50	13.3	6.0	0.02	53	-	-	-
#N/A	91.0	92.0	91.5	406.0	405.0	1.0	#N/A	#N/A	5,148	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	80.50	13.4	6.0	0.02	52	-	-	-
#N/A	92.0	93.0	92.5	405.0	404.0	1.0	#N/A	#N/A	5,210	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	81.50	13.6	6.0	0.02	51	-	-	-
#N/A	93.0	94.0	93.5	404.0	403.0	1.0	#N/A	#N/A	5,273	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	82.50	13.8	6.0	0.02	50	-	-	-
#N/A	94.0	95.0	94.5	403.0	402.0	1.0	#N/A	#N/A	5,335	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	83.50	13.9	6.0	0.02	49	-	-	-
#N/A	95.0	96.0	95.5	402.0	401.0	1.0	#N/A	#N/A	5,398	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	84.50	14.1	6.0	0.02	47	-	-	-
#N/A	96.0	97.0	96.5	401.0	400.0	1.0	#N/A	#N/A	5,460	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	85.50	14.3	6.0	0.02	46	-	-	-
#N/A	97.0	98.0	97.5	400.0	399.0	1.0	#N/A	#N/A	5,522	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	86.50	14.4	6.0	0.02	45	-	-	-
#N/A	98.0	99.0	98.5	399.0	398.0	1.0	#N/A	#N/A	5,585	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	87.50	14.6	6.0	0.02	44	-	-	-
#N/A	99.0	100.0	99.5	398.0	397.0	1.0	#N/A	#N/A	5,647	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	88.50	14.8	6.0	0.02	43	-	-	-
#N/A	100.0	101.0	100.5	397.0	396.0	1.0	#N/A	#N/A	5,710	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	89.50	14.9	6.0	0.02	42	-	-	-
#N/A	101.0	102.0	101.5	396.0	395.0	1.0	#N/A	#N/A	5,772	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	90.50	15.1	6.0	0.02	41	-	-	-
#N/A	102.0	103.0	102.5	395.0	394.0	1.0	#N/A	#N/A	5,834	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	91.50	15.3	6.0	0.02	41	-	-	-
#N/A	103.0	104.0	103.5	394.0	393.0	1.0	#N/A	#N/A	5,897	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	92.50	15.4	6.0	0.02	40	-	-	-
#N/A	104.0	105.0	104.5	393.0	392.0	1.0	#N/A	#N/A	5,959	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	93.50	15.6	6.0	0.02	39	-	-	-
#N/A	105.0	106.0	105.5	392.0	391.0	1.0	#N/A	#N/A	6,022	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	94.50	15.8	6.0	0.02	38	-	-	-
#N/A	106.0	107.0	106.5	391.0	390.0	1.0	#N/A	#N/A	6,084	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	95.50	15.9	6.0	0.02	37	-	-	-
#N/A	107.0	108.0	107.5	390.0	389.0	1.0	#N/A	#N/A	6,146	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	96.50	16.1	6.0	0.01	37	-	-	-
#N/A	108.0	109.0	108.5	389.0	388.0	1.0	#N/A	#N/A	6,209	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	97.50	16.3	6.0	0.01	36	-	-	-
#N/A	109.0	110.0	109.5	388.0	387.0	1.0	#N/A	#N/A	6,271	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	98.50	16.4	6.0	0.01	35	-	-	-
#N/A	110.0	111.0	110.5	387.0	386.0	1.0	#N/A	#N/A	6,334	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	99.50	16.6	6.0	0.01	34	-	-	-
#N/A	111.0	112.0	111.5	386.0	385.0	1.0	#N/A	#N/A	6,396	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	100.50	16.8	6.0	0.01	34	-	-	-
#N/A	112.0	113.0	112.5	385.0	384.0	1.0	#N/A	#N/A	6,458	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	101.50	16.9	6.0	0.01	33	-	-	-
#N/A	113.0	114.0	113.5	384.0	383.0	1.0	#N/A	#N/A	6,521	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	102.50	17.1	6.0	0.01	32	-	-	-
#N/A	114.0	115.0	114.5	383.0	382.0	1.0	#N/A	#N/A	6,583	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	103.50	17.3	6.0	0.01	32	-	-	-
#N/A	115.0	116.0	115.5	382.0	381.0	1.0	#N/A	#N/A	6,646	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	104.50	17.4	6.0	0.01	31	-	-	-
#N/A	116.0	117.0	116.5	381.0	380.0	1.0	#N/A	#N/A	6,708	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	105.50	17.6	6.0	0.01	31	-	-	-
#N/A	117.0	118.0	117.5	380.0	379.0	1.0	#N/A	#N/A	6,770	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	106.50	17.8	6.0	0.01	30	-	-	-
#N/A	118.0	119.0	118.5	379.0	378.0	1.0	#N/A	#N/A	6,833	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	107.50	17.9	6.0	0.01	30	-	-	-
#N/A	119.0	120.0	119.5	378.0	377.0	1.0	#N/A	#N/A	6,895	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	108.50	18.1	6.0	0.01	29	-	-	-
#N/A	120.0	121.0	120.5	377.0	376.0	1.0	#N/A	#N/A	6,958	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	109.50	18.3	6.0	0.01	28	-	-	-
#N/A	121.0	122.0	121.5	376.0	375.0	1.0	#N/A	#N/A	7,020	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	110.50	18.4	6.0	0.01	28	-	-	-
#N/A	122.0	200.0	161	375.0	297.0	78.0	#N/A	#N/A	9,485	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	150.00	25.0	6.0	0.01	15	-	-	-

Project Name:	Plum Creek FRS No. 21 Rehabilitation
Job Number:	60586838
Client:	TSSWCB

Structure	Overtopping RCC Spillway - Stilling Basin - Walls
Analysis Section	Section E - Stilling Basin (Left Side)
Notes	Part 2 - new lime-treated & drain fill in prop. overex./replace

Geotechnical Data

Relevant Boring	n/a	-
Boring Ground Elev.	486	ft NAVD88
Depth to GWT at Boring:	0	feet
GWT Elev.	486	ft NAVD88

Exiting Ground at Structure Location

Structure Existing Ground:	486	ft NAVD88
Footing Bearing Elev.:	486	ft NAVD88
Footing Bearing Elev.:	0	ft below existing (cut)
GWT Depth below Exist.:	0	feet
GWT Depth below footing.:	0	feet

Area Fill

Fill between existing/footing?	no	-
Include load from area fill?	no	-
Finish Grade of Area Fill:	486	ft NAVD88
Height above existing:	#N/A	feet
Height above footing base:	#N/A	feet
Thickness under footing:	#N/A	feet
Area Fill Unit Weight:	120	pcf

Subgrade Overexcavation/Replacement

Include Overex/Replacement?	no	-
Overex/Replace Bottom Elev.	486	ft NAVD88
Depth below footing:	#N/A	feet
Depth below existing:	#N/A	feet

Structure Footing Size & Maximum Bearing Pressure

Footing Width, B:	12	feet
Footing Length, L (rect):	24.5	feet
Gross Footing Pressure, $q_{0\text{-gross}}$	3,658	psf

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula do not edit

Design Soil Profile and Properties

Depth at Boring (feet)		Elevation (feet)		Thickness in Boring	Existing Depth at Structure (feet)		Thickness at Structure	Layer Name	Total Unit Wt	Initial Void Ratio, e_0*	Compression Index, C_c*	Recomp. Index, C_r*	Min. Over Consolidation Ratio, OCR*	Min. Preconsol. Pressure, P'c*
					1	2	3	4	5	6	7	8	9	10
Top	Bottom	Top	Bottom	(feet)	Top	Bottom	(feet)		(pcf)	(-)				(psf)
0	8	486.0	478.0	8.0	0.0	8.0	8.0	New Lime-Treat Fill	120	0.80	0.12	0.012	2.0	3,000

Notes: *Copy down elevation and thickness formulas if more layers are needed, delete formulas where not needed.*

*Enter "0" for incompressible layers (i.e., granular soils and bedrock)

Method: Settlement Below Center of Uniformly Loaded Rectangular Footing

Project	Plum Creek FRS No. 21 Rehabilitation
Structure	Overtopping RCC Spillway - Stilling Basin - Walls
Analysis Section	Section E - Stilling Basin (Left Side)

Elev. - Existing Ground @ Structure:	486	ft NAVD88	0	ft from footing base (below)	0	ft from existing (below)
Elev. - Base of Footing / Bearing Depth	486	ft NAVD88	0	ft from footing base (below)	0	ft from existing (below)
Elev. - Top of Area Fill	#N/A	ft NAVD88	#N/A	#N/A	#N/A	#N/A
Elev. - Bottom of Overex./Replace	#N/A	ft NAVD88	#N/A	#N/A	#N/A	#N/A
Elev. - Groundwater	486	ft NAVD88	0	ft from footing base (below)	0	ft from existing (below)
Thickness - Area Fill	#N/A	feet below footing base				
Thickness - Overex/Replace	#N/A	feet below footing base				

Footing Width, B:	12	feet
Footing Length, L (square):	12	feet
Footing Length, L (rect):	24.5	feet

Gross Footing Pressure, $q_{0\text{-gross}}$	3,658	psf
Removed in-situ stress	0	psf
Net Footing Pressure, $q_{0\text{-net}}$	3,658	psf

$$\Delta\sigma_z = qI_4 \tag{10.34}$$

where

$$I_4 = \frac{2}{\pi}\left[\frac{m_1 n_1}{\sqrt{1+m_1^2+n_1^2}}\,\frac{1+m_1^2+2n_1^2}{(1+n_1^2)(m_1^2+n_1^2)} + \sin^{-1}\frac{m_1}{\sqrt{m_1^2+n_1^2}\,\sqrt{1+n_1^2}}\right] \tag{10.35}$$

$$m_1 = \frac{L}{B} \tag{10.36}$$

$$n_1 = \frac{z}{b} \tag{10.37}$$

$$b = \frac{B}{2} \tag{10.38}$$

Legend:

xxx	= Dropdown menu
xxx	= Input cell
xxx	= Cell formula overwritten
xxx	= Formula (do not edit)
xxx	= Unique Formula (do not edit)

**Negative values indicate height above existing ground*

**Assume granular*

Total Settlement (inch) = 1.16

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
Fill below footing/above exist.	0.0	0.0	0.0	486.0	486.0	0.0	120	-	-	-	-	-	-	-	-	0	0	-	2	0.00	0.0	6.0	1.00	3,658	-	-	**-**
Existing Soil Above Footing	0.0	0.0	0.0	486.0	486.0	0.0	120	-	-	-	-	-	-	-	-	0	0	-	2	0.00	0.0	6.0	1.00	3,658	-	-	**-**
Overex. below Existing	0.0	0.0	0.0	486.0	486.0	0.0	120	-	-	-	-	-	-	-	-	0	0	-	2	0.00	0.0	6.0	1.00	3,658	-	-	**-**
New Lime-Treat Fill	0.0	1.0	0.5	486.0	485.0	1.0	120	60	31	29	0.12	0.012	0.80	2.0	3,000	0	0	-	2	0.50	0.1	6.0	1.00	3,657	0.15	0.07	**0.226**
New Lime-Treat Fill	1.0	2.0	1.5	485.0	484.0	1.0	120	180	94	86	0.12	0.012	0.80	2.0	3,000	0	0	-	2	1.50	0.3	6.0	0.99	3,634	0.12	0.07	**0.193**
New Lime-Treat Fill	2.0	3.0	2.5	484.0	483.0	1.0	120	300	156	144	0.12	0.012	0.80	2.0	3,000	0	0	-	2	2.50	0.4	6.0	0.97	3,559	0.10	0.07	**0.174**
New Lime-Treat Fill	3.0	4.0	3.5	483.0	482.0	1.0	120	420	218	202	0.12	0.012	0.80	2.0	3,000	0	0	-	2	3.50	0.6	6.0	0.94	3,426	0.09	0.07	**0.156**
New Lime-Treat Fill	4.0	5.0	4.5	482.0	481.0	1.0	120	540	281	259	0.12	0.012	0.80	2.0	3,000	0	0	-	2	4.50	0.8	6.0	0.89	3,246	0.08	0.05	**0.136**
New Lime-Treat Fill	5.0	6.0	5.5	481.0	480.0	1.0	120	660	343	317	0.12	0.012	0.80	2.0	3,000	0	0	-	2	5.50	0.9	6.0	0.83	3,039	0.07	0.04	**0.114**
New Lime-Treat Fill	6.0	7.0	6.5	480.0	479.0	1.0	120	780	406	374	0.12	0.012	0.80	2.0	3,000	0	0	-	2	6.50	1.1	6.0	0.77	2,820	0.07	0.02	**0.091**
New Lime-Treat Fill	7.0	8.0	7.5	479.0	478.0	1.0	120	900	468	432	0.12	0.012	0.80	2.0	3,000	0	0	-	2	7.50	1.3	6.0	0.71	2,602	0.06	0.00	**0.068**
#N/A	8.0	9.0	8.5	478.0	477.0	1.0	#N/A	#N/A	530	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	8.50	1.4	6.0	0.65	2,393	-	-	**-**
#N/A	9.0	10.0	9.5	477.0	476.0	1.0	#N/A	#N/A	593	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	9.50	1.6	6.0	0.60	2,196	-	-	**-**
#N/A	10.0	11.0	10.5	476.0	475.0	1.0	#N/A	#N/A	655	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	10.50	1.8	6.0	0.55	2,014	-	-	**-**
#N/A	11.0	12.0	11.5	475.0	474.0	1.0	#N/A	#N/A	718	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	11.50	1.9	6.0	0.51	1,848	-	-	**-**
#N/A	12.0	13.0	12.5	474.0	473.0	1.0	#N/A	#N/A	780	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	12.50	2.1	6.0	0.46	1,696	-	-	**-**
#N/A	13.0	14.0	13.5	473.0	472.0	1.0	#N/A	#N/A	842	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	13.50	2.3	6.0	0.43	1,558	-	-	**-**
#N/A	14.0	15.0	14.5	472.0	471.0	1.0	#N/A	#N/A	905	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	14.50	2.4	6.0	0.39	1,433	-	-	**-**
#N/A	15.0	16.0	15.5	471.0	470.0	1.0	#N/A	#N/A	967	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	15.50	2.6	6.0	0.36	1,320	-	-	**-**
#N/A	16.0	17.0	16.5	470.0	469.0	1.0	#N/A	#N/A	1,030	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	16.50	2.8	6.0	0.33	1,218	-	-	**-**
#N/A	17.0	18.0	17.5	469.0	468.0	1.0	#N/A	#N/A	1,092	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	17.50	2.9	6.0	0.31	1,126	-	-	**-**
#N/A	18.0	19.0	18.5	468.0	467.0	1.0	#N/A	#N/A	1,154	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	18.50	3.1	6.0	0.29	1,043	-	-	**-**
#N/A	19.0	20.0	19.5	467.0	466.0	1.0	#N/A	#N/A	1,217	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	19.50	3.3	6.0	0.26	967	-	-	**-**
#N/A	20.0	21.0	20.5	466.0	465.0	1.0	#N/A	#N/A	1,279	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	20.50	3.4	6.0	0.25	899	-	-	**-**
#N/A	21.0	22.0	21.5	465.0	464.0	1.0	#N/A	#N/A	1,342	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	21.50	3.6	6.0	0.23	837	-	-	**-**
#N/A	22.0	23.0	22.5	464.0	463.0	1.0	#N/A	#N/A	1,404	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	22.50	3.8	6.0	0.21	781	-	-	**-**
#N/A	23.0	24.0	23.5	463.0	462.0	1.0	#N/A	#N/A	1,466	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	23.50	3.9	6.0	0.20	729	-	-	**-**
#N/A	24.0	25.0	24.5	462.0	461.0	1.0	#N/A	#N/A	1,529	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	24.50	4.1	6.0	0.19	683	-	-	**-**
#N/A	25.0	26.0	25.5	461.0	460.0	1.0	#N/A	#N/A	1,591	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	25.50	4.3	6.0	0.17	640	-	-	**-**
#N/A	26.0	27.0	26.5	460.0	459.0	1.0	#N/A	#N/A	1,654	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	26.50	4.4	6.0	0.16	601	-	-	**-**
#N/A	27.0	28.0	27.5	459.0	458.0	1.0	#N/A	#N/A	1,716	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	27.50	4.6	6.0	0.15	565	-	-	**-**
#N/A	28.0	29.0	28.5	458.0	457.0	1.0	#N/A	#N/A	1,778	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	28.50	4.8	6.0	0.15	532	-	-	**-**
#N/A	29.0	30.0	29.5	457.0	456.0	1.0	#N/A	#N/A	1,841	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	29.50	4.9	6.0	0.14	502	-	-	**-**
#N/A	30.0	31.0	30.5	456.0	455.0	1.0	#N/A	#N/A	1,903	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	30.50	5.1	6.0	0.13	474	-	-	**-**
#N/A	31.0	32.0	31.5	455.0	454.0	1.0	#N/A	#N/A	1,966	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	31.50	5.3	6.0	0.12	448	-	-	**-**
#N/A	32.0	33.0	32.5	454.0	453.0	1.0	#N/A	#N/A	2,028	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	32.50	5.4	6.0	0.12	425	-	-	**-**
#N/A	33.0	34.0	33.5	453.0	452.0	1.0	#N/A	#N/A	2,090	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	33.50	5.6	6.0	0.11	403	-	-	**-**
#N/A	34.0	35.0	34.5	452.0	451.0	1.0	#N/A	#N/A	2,153	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	34.50	5.8	6.0	0.10	382	-	-	**-**
#N/A	35.0	36.0	35.5	451.0	450.0	1.0	#N/A	#N/A	2,215	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	35.50	5.9	6.0	0.10	363	-	-	**-**
#N/A	36.0	37.0	36.5	450.0	449.0	1.0	#N/A	#N/A	2,278	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	36.50	6.1	6.0	0.09	346	-	-	**-**
#N/A	37.0	38.0	37.5	449.0	448.0	1.0	#N/A	#N/A	2,340	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	37.50	6.3	6.0	0.09	329	-	-	**-**
#N/A	38.0	39.0	38.5	448.0	447.0	1.0	#N/A	#N/A	2,402	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	38.50	6.4	6.0	0.09	314	-	-	**-**
#N/A	39.0	40.0	39.5	447.0	446.0	1.0	#N/A	#N/A	2,465	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	39.50	6.6	6.0	0.08	300	-	-	**-**
#N/A	40.0	41.0	40.5	446.0	445.0	1.0	#N/A	#N/A	2,527	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	40.50	6.8	6.0	0.08	286	-	-	**-**

	Depth from Existing*			Elevation		Layer	Layer	In-Situ Stress at MP			Consolidation Parameters					Area Fill above Existing			Rectangular Footing								
Stratum	Top	Bottom	MP	Top	Bottom	Thickness	Unit Wt.	Total P_0	μ	Eff. P'_0	Cc	Cr	e0	OCR	P'_c	Thick-ness	ΔP_{Fill}	Self Compress*	m1	Eff. Z	n1	b	I4	ΔP_{Fndn}	S_{re}	S_c	S_t
(-)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(pcf)	(psf)	(psf)	(psf)	(-)	(-)	(-)	(-)	(psf)	(ft)	(psf)	(inch)	(-)	(ft)	(-)	(ft)	(-)	(psf)	(inch)	(inch)	**(inch)**
#N/A	41.0	42.0	41.5	445.0	444.0	1.0	#N/A	#N/A	2,590	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	41.50	6.9	6.0	0.07	274	-	-	-
#N/A	42.0	43.0	42.5	444.0	443.0	1.0	#N/A	#N/A	2,652	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	42.50	7.1	6.0	0.07	262	-	-	-
#N/A	43.0	44.0	43.5	443.0	442.0	1.0	#N/A	#N/A	2,714	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	43.50	7.3	6.0	0.07	251	-	-	-
#N/A	44.0	45.0	44.5	442.0	441.0	1.0	#N/A	#N/A	2,777	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	44.50	7.4	6.0	0.07	241	-	-	-
#N/A	45.0	46.0	45.5	441.0	440.0	1.0	#N/A	#N/A	2,839	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	45.50	7.6	6.0	0.06	231	-	-	-
#N/A	46.0	47.0	46.5	440.0	439.0	1.0	#N/A	#N/A	2,902	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	46.50	7.8	6.0	0.06	222	-	-	-
#N/A	47.0	48.0	47.5	439.0	438.0	1.0	#N/A	#N/A	2,964	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	47.50	7.9	6.0	0.06	213	-	-	-
#N/A	48.0	49.0	48.5	438.0	437.0	1.0	#N/A	#N/A	3,026	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	48.50	8.1	6.0	0.06	205	-	-	-
#N/A	49.0	50.0	49.5	437.0	436.0	1.0	#N/A	#N/A	3,089	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	49.50	8.3	6.0	0.05	197	-	-	-
#N/A	50.0	51.0	50.5	436.0	435.0	1.0	#N/A	#N/A	3,151	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	50.50	8.4	6.0	0.05	190	-	-	-
#N/A	51.0	52.0	51.5	435.0	434.0	1.0	#N/A	#N/A	3,214	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	51.50	8.6	6.0	0.05	183	-	-	-
#N/A	52.0	53.0	52.5	434.0	433.0	1.0	#N/A	#N/A	3,276	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	52.50	8.8	6.0	0.05	176	-	-	-
#N/A	53.0	54.0	53.5	433.0	432.0	1.0	#N/A	#N/A	3,338	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	53.50	8.9	6.0	0.05	170	-	-	-
#N/A	54.0	55.0	54.5	432.0	431.0	1.0	#N/A	#N/A	3,401	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	54.50	9.1	6.0	0.04	164	-	-	-
#N/A	55.0	56.0	55.5	431.0	430.0	1.0	#N/A	#N/A	3,463	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	55.50	9.3	6.0	0.04	159	-	-	-
#N/A	56.0	57.0	56.5	430.0	429.0	1.0	#N/A	#N/A	3,526	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	56.50	9.4	6.0	0.04	153	-	-	-
#N/A	57.0	58.0	57.5	429.0	428.0	1.0	#N/A	#N/A	3,588	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	57.50	9.6	6.0	0.04	148	-	-	-
#N/A	58.0	59.0	58.5	428.0	427.0	1.0	#N/A	#N/A	3,650	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	58.50	9.8	6.0	0.04	144	-	-	-
#N/A	59.0	60.0	59.5	427.0	426.0	1.0	#N/A	#N/A	3,713	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	59.50	9.9	6.0	0.04	139	-	-	-
#N/A	60.0	61.0	60.5	426.0	425.0	1.0	#N/A	#N/A	3,775	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	60.50	10.1	6.0	0.04	135	-	-	-
#N/A	61.0	62.0	61.5	425.0	424.0	1.0	#N/A	#N/A	3,838	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	61.50	10.3	6.0	0.04	130	-	-	-
#N/A	62.0	63.0	62.5	424.0	423.0	1.0	#N/A	#N/A	3,900	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	62.50	10.4	6.0	0.03	126	-	-	-
#N/A	63.0	64.0	63.5	423.0	422.0	1.0	#N/A	#N/A	3,962	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	63.50	10.6	6.0	0.03	123	-	-	-
#N/A	64.0	65.0	64.5	422.0	421.0	1.0	#N/A	#N/A	4,025	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	64.50	10.8	6.0	0.03	119	-	-	-
#N/A	65.0	66.0	65.5	421.0	420.0	1.0	#N/A	#N/A	4,087	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	65.50	10.9	6.0	0.03	116	-	-	-
#N/A	66.0	67.0	66.5	420.0	419.0	1.0	#N/A	#N/A	4,150	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	66.50	11.1	6.0	0.03	112	-	-	-
#N/A	67.0	68.0	67.5	419.0	418.0	1.0	#N/A	#N/A	4,212	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	67.50	11.3	6.0	0.03	109	-	-	-
#N/A	68.0	69.0	68.5	418.0	417.0	1.0	#N/A	#N/A	4,274	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	68.50	11.4	6.0	0.03	106	-	-	-
#N/A	69.0	70.0	69.5	417.0	416.0	1.0	#N/A	#N/A	4,337	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	69.50	11.6	6.0	0.03	103	-	-	-
#N/A	70.0	71.0	70.5	416.0	415.0	1.0	#N/A	#N/A	4,399	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	70.50	11.8	6.0	0.03	100	-	-	-
#N/A	71.0	72.0	71.5	415.0	414.0	1.0	#N/A	#N/A	4,462	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	71.50	11.9	6.0	0.03	97	-	-	-
#N/A	72.0	73.0	72.5	414.0	413.0	1.0	#N/A	#N/A	4,524	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	72.50	12.1	6.0	0.03	95	-	-	-
#N/A	73.0	74.0	73.5	413.0	412.0	1.0	#N/A	#N/A	4,586	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	73.50	12.3	6.0	0.03	92	-	-	-
#N/A	74.0	75.0	74.5	412.0	411.0	1.0	#N/A	#N/A	4,649	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	74.50	12.4	6.0	0.02	90	-	-	-
#N/A	75.0	76.0	75.5	411.0	410.0	1.0	#N/A	#N/A	4,711	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	75.50	12.6	6.0	0.02	88	-	-	-
#N/A	76.0	77.0	76.5	410.0	409.0	1.0	#N/A	#N/A	4,774	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	76.50	12.8	6.0	0.02	85	-	-	-
#N/A	77.0	78.0	77.5	409.0	408.0	1.0	#N/A	#N/A	4,836	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	77.50	12.9	6.0	0.02	83	-	-	-
#N/A	78.0	79.0	78.5	408.0	407.0	1.0	#N/A	#N/A	4,898	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	78.50	13.1	6.0	0.02	81	-	-	-
#N/A	79.0	80.0	79.5	407.0	406.0	1.0	#N/A	#N/A	4,961	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	79.50	13.3	6.0	0.02	79	-	-	-
#N/A	80.0	81.0	80.5	406.0	405.0	1.0	#N/A	#N/A	5,023	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	80.50	13.4	6.0	0.02	77	-	-	-
#N/A	81.0	82.0	81.5	405.0	404.0	1.0	#N/A	#N/A	5,086	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	81.50	13.6	6.0	0.02	76	-	-	-
#N/A	82.0	83.0	82.5	404.0	403.0	1.0	#N/A	#N/A	5,148	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	82.50	13.8	6.0	0.02	74	-	-	-
#N/A	83.0	84.0	83.5	403.0	402.0	1.0	#N/A	#N/A	5,210	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	83.50	13.9	6.0	0.02	72	-	-	-
#N/A	84.0	85.0	84.5	402.0	401.0	1.0	#N/A	#N/A	5,273	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	84.50	14.1	6.0	0.02	70	-	-	-
#N/A	85.0	86.0	85.5	401.0	400.0	1.0	#N/A	#N/A	5,335	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	85.50	14.3	6.0	0.02	69	-	-	-
#N/A	86.0	87.0	86.5	400.0	399.0	1.0	#N/A	#N/A	5,398	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	86.50	14.4	6.0	0.02	67	-	-	-
#N/A	87.0	88.0	87.5	399.0	398.0	1.0	#N/A	#N/A	5,460	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	87.50	14.6	6.0	0.02	66	-	-	-
#N/A	88.0	89.0	88.5	398.0	397.0	1.0	#N/A	#N/A	5,522	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	88.50	14.8	6.0	0.02	64	-	-	-
#N/A	89.0	90.0	89.5	397.0	396.0	1.0	#N/A	#N/A	5,585	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	89.50	14.9	6.0	0.02	63	-	-	-
#N/A	90.0	91.0	90.5	396.0	395.0	1.0	#N/A	#N/A	5,647	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	90.50	15.1	6.0	0.02	62	-	-	-
#N/A	91.0	92.0	91.5	395.0	394.0	1.0	#N/A	#N/A	5,710	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	91.50	15.3	6.0	0.02	60	-	-	-
#N/A	92.0	93.0	92.5	394.0	393.0	1.0	#N/A	#N/A	5,772	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	92.50	15.4	6.0	0.02	59	-	-	-
#N/A	93.0	94.0	93.5	393.0	392.0	1.0	#N/A	#N/A	5,834	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	93.50	15.6	6.0	0.02	58	-	-	-
#N/A	94.0	95.0	94.5	392.0	391.0	1.0	#N/A	#N/A	5,897	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	94.50	15.8	6.0	0.02	57	-	-	-
#N/A	95.0	96.0	95.5	391.0	390.0	1.0	#N/A	#N/A	5,959	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	95.50	15.9	6.0	0.02	55	-	-	-
#N/A	96.0	97.0	96.5	390.0	389.0	1.0	#N/A	#N/A	6,022	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	96.50	16.1	6.0	0.01	54	-	-	-
#N/A	97.0	98.0	97.5	389.0	388.0	1.0	#N/A	#N/A	6,084	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	97.50	16.3	6.0	0.01	53	-	-	-
#N/A	98.0	99.0	98.5	388.0	387.0	1.0	#N/A	#N/A	6,146	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	98.50	16.4	6.0	0.01	52	-	-	-
#N/A	99.0	100.0	99.5	387.0	386.0	1.0	#N/A	#N/A	6,209	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	99.50	16.6	6.0	0.01	51	-	-	-
#N/A	100.0	101.0	100.5	386.0	385.0	1.0	#N/A	#N/A	6,271	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	100.50	16.8	6.0	0.01	50	-	-	-
#N/A	101.0	102.0	101.5	385.0	384.0	1.0	#N/A	#N/A	6,334	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	101.50	16.9	6.0	0.01	49	-	-	-
#N/A	102.0	103.0	102.5	384.0	383.0	1.0	#N/A	#N/A	6,396	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	102.50	17.1	6.0	0.01	48	-	-	-
#N/A	103.0	200.0	151.5	383.0	286.0	97.0	#N/A	#N/A	9,454	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0	0	-	2	151.50	25.3	6.0	0.01	22	-	-	-

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 3
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 8/12/19
Sample Type: REMOLD

Project No.: 19-COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 4 of 7
Applied Stress: 1 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	2	0.02106	2.11	0.698
2	0.01	0.09	1.84	0.02106	2.11	0.698
3	0.02	0.13	1.12	0.0194	1.94	0.701
4	0.03	0.16	1.06	0.01858	1.86	0.702
5	0.04	0.19	1.03	0.01848	1.85	0.702
6	0.05	0.23	1.02	0.01835	1.84	0.703
7	0.07	0.27	1.01	0.01825	1.83	0.703
8	0.08	0.29	1.01	0.01812	1.82	0.703
9	0.12	0.35	1.01	0.01798	1.80	0.703
10	0.17	0.41	1	0.01779	1.78	0.704
11	0.25	0.50	1	0.01766	1.77	0.704
12	0.34	0.58	1	0.01761	1.76	0.704
13	0.50	0.71	1	0.01761	1.76	0.704
14	0.75	0.87	0.999	0.01756	1.76	0.704
15	1.00	1.00	1	0.01761	1.76	0.704
16	1.50	1.22	1	0.01756	1.76	0.704
17	2.00	1.41	0.999	0.01756	1.76	0.704
18	3.00	1.73	1	0.01752	1.76	0.704
19	4.00	2.00	0.999	0.01747	1.75	0.704
20	5.00	2.24	0.999	0.01738	1.74	0.704
21	6.00	2.45	1	0.01733	1.74	0.704
22	7.00	2.65	0.998	0.01733	1.74	0.704
23	8.00	2.83	0.999	0.01733	1.74	0.704
24	9.00	3.00	1	0.01729	1.73	0.704
25	10.00	3.16	0.999	0.01729	1.73	0.704
26	12.00	3.46	1	0.0172	1.72	0.705
27	14.00	3.74	1	0.01715	1.72	0.705
28	16.00	4.00	0.999	0.0171	1.71	0.705
29	18.00	4.24	0.999	0.0171	1.71	0.705
30	20.00	4.47	1	0.0171	1.71	0.705
31	22.00	4.69	0.999	0.01706	1.71	0.705
32	24.00	4.90	0.999	0.01701	1.70	0.705
33	26.00	5.10	1	0.01701	1.70	0.705
34	28.00	5.29	1	0.01701	1.70	0.705
35	30.00	5.48	0.999	0.01701	1.70	0.705
36	35.00	5.92	0.999	0.01697	1.70	0.705
37	40.00	6.32	1	0.01692	1.70	0.705
38	45.00	6.71	0.999	0.01687	1.69	0.705
39	50.00	7.07	0.999	0.01687	1.69	0.705
40	60.00	7.75	1	0.01678	1.68	0.705
41	70.00	8.37	0.999	0.01678	1.68	0.705
42	80.00	8.94	0.999	0.01674	1.68	0.705
43	90.00	9.49	0.999	0.01669	1.67	0.706
44	100.00	10.00	0.999	0.0166	1.66	0.706
45	110.00	10.49	0.999	0.01651	1.65	0.706
46	120.00	10.95	0.999	0.01651	1.65	0.706
47	130.00	11.40	0.999	0.01641	1.64	0.706
48	140.00	11.83	0.999	0.01641	1.64	0.706
49	143.66	11.99	0.999	0.01637	1.64	0.706

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 3
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 8/12/19
Sample Type: REMOLD

Project No.: 19-COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 5 of 7
Applied Stress: 0.5 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.999	0.01637	1.64	0.706
2	0.01	0.09	0.905	0.01637	1.64	0.706
3	0.02	0.13	0.593	0.01531	1.53	0.708
4	0.03	0.16	0.549	0.0149	1.49	0.709
5	0.04	0.19	0.531	0.01481	1.48	0.709
6	0.05	0.23	0.519	0.01471	1.47	0.709
7	0.07	0.27	0.513	0.01462	1.47	0.709
8	0.08	0.29	0.51	0.01458	1.46	0.709
9	0.12	0.34	0.509	0.01444	1.45	0.709
10	0.17	0.41	0.505	0.01435	1.44	0.710
11	0.25	0.50	0.504	0.01407	1.41	0.710
12	0.34	0.58	0.502	0.01384	1.39	0.710
13	0.50	0.71	0.503	0.01361	1.36	0.711
14	0.75	0.87	0.501	0.01347	1.35	0.711
15	1.00	1.00	0.501	0.01338	1.34	0.711
16	1.50	1.23	0.502	0.01324	1.33	0.712
17	2.00	1.41	0.5	0.0131	1.31	0.712
18	3.00	1.73	0.501	0.01283	1.29	0.712
19	4.00	2.00	0.5	0.01264	1.27	0.713
20	5.00	2.24	0.501	0.01251	1.25	0.713
21	6.00	2.45	0.5	0.01237	1.24	0.713
22	7.00	2.65	0.5	0.01228	1.23	0.713
23	8.00	2.83	0.5	0.01223	1.23	0.713
24	9.00	3.00	0.5	0.01218	1.22	0.713
25	10.00	3.16	0.5	0.01214	1.22	0.713
26	12.00	3.46	0.5	0.012	1.20	0.714
27	14.00	3.74	0.501	0.01186	1.19	0.714
28	16.00	4.00	0.5	0.01168	1.17	0.714
29	18.00	4.24	0.5	0.01154	1.16	0.714
30	20.00	4.47	0.501	0.01145	1.15	0.715
31	22.00	4.69	0.5	0.01136	1.14	0.715
32	24.00	4.90	0.5	0.01126	1.13	0.715
33	26.00	5.10	0.501	0.01117	1.12	0.715
34	28.00	5.29	0.5	0.01113	1.11	0.715
35	30.00	5.48	0.5	0.01113	1.11	0.715
36	35.00	5.92	0.5	0.01103	1.11	0.715
37	40.00	6.32	0.5	0.01094	1.10	0.716
38	45.00	6.71	0.5	0.01094	1.10	0.716
39	50.00	7.07	0.5	0.01085	1.09	0.716
40	60.00	7.75	0.5	0.01076	1.08	0.716
41	70.00	8.37	0.5	0.01067	1.07	0.716
42	80.00	8.94	0.5	0.01062	1.06	0.716
43	90.00	9.49	0.5	0.01048	1.05	0.716
44	100.00	10.00	0.5	0.01044	1.05	0.716
45	110.00	10.49	0.5	0.01035	1.04	0.717
46	120.00	10.95	0.5	0.01021	1.02	0.717
47	120.02	10.96	0.5	0.01021	1.02	0.717

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 3
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 8/12/19
Sample Type: REMOLD

Project No.: 19-COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

Constant Load Step: 6 of 7
Applied Stress: 0.25 tsf

	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.5	0.01021	1.02	0.717
2	0.01	0.09	0.465	0.01025	1.03	0.717
3	0.02	0.13	0.346	0.009977	1.00	0.717
4	0.03	0.16	0.305	0.009702	0.97	0.718
5	0.03	0.19	0.286	0.009472	0.95	0.718
6	0.05	0.23	0.27	0.009242	0.93	0.718
7	0.07	0.26	0.263	0.009104	0.91	0.719
8	0.09	0.30	0.26	0.009058	0.91	0.719
9	0.12	0.34	0.258	0.008966	0.90	0.719
10	0.17	0.41	0.255	0.008874	0.89	0.719
11	0.25	0.50	0.253	0.008782	0.88	0.719
12	0.34	0.58	0.253	0.008736	0.88	0.719
13	0.50	0.71	0.252	0.008644	0.87	0.720
14	0.75	0.87	0.252	0.008598	0.86	0.720
15	1.00	1.00	0.251	0.008506	0.85	0.720
16	1.50	1.23	0.25	0.00823	0.82	0.720
17	2.00	1.41	0.251	0.008046	0.81	0.721
18	3.00	1.73	0.251	0.007816	0.78	0.721
19	4.00	2.00	0.25	0.007541	0.76	0.721
20	5.00	2.24	0.25	0.007311	0.73	0.722
21	6.00	2.45	0.25	0.007081	0.71	0.722
22	7.00	2.65	0.25	0.006943	0.70	0.722
23	8.00	2.83	0.25	0.006851	0.69	0.723
24	9.00	3.00	0.251	0.006759	0.68	0.723
25	10.00	3.16	0.25	0.006713	0.67	0.723
26	12.00	3.46	0.251	0.006621	0.66	0.723
27	14.00	3.74	0.25	0.006529	0.65	0.723
28	16.00	4.00	0.25	0.006437	0.64	0.723
29	18.00	4.24	0.25	0.006437	0.64	0.723
30	20.00	4.47	0.25	0.006391	0.64	0.723
31	22.00	4.69	0.25	0.006391	0.64	0.723
32	24.00	4.90	0.25	0.006391	0.64	0.723
33	26.00	5.10	0.251	0.006391	0.64	0.723
34	28.00	5.29	0.25	0.006391	0.64	0.723
35	30.00	5.48	0.25	0.006345	0.64	0.723
36	35.00	5.92	0.25	0.006299	0.63	0.724
37	40.00	6.32	0.25	0.006253	0.63	0.724
38	45.00	6.71	0.25	0.005977	0.60	0.724
39	50.00	7.07	0.25	0.005747	0.58	0.725
40	60.00	7.75	0.25	0.005334	0.53	0.725
41	70.00	8.37	0.251	0.005196	0.52	0.725
42	80.00	8.94	0.25	0.005012	0.50	0.726
43	90.00	9.49	0.25	0.004874	0.49	0.726
44	100.00	10.00	0.25	0.00469	0.47	0.726
45	110.00	10.49	0.25	0.004598	0.46	0.727
46	120.00	10.95	0.25	0.00446	0.45	0.727
47	130.00	11.40	0.249	0.004414	0.44	0.727
48	140.00	11.83	0.25	0.004322	0.43	0.727
49	142.13	11.92	0.25	0.004276	0.43	0.727

CONSOLIDATION TEST DATA

Project: PLUM CREEK SITE 21
Boring No.:
Sample No.: 19-COMP 3
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 8/12/19
Sample Type: REMOLD

Project No.: 19-COMP 3
Checked By: SKK
Depth: 0-3'
Elevation: N/A

Soil Description: B-107, 108, 109, & 110
Remarks:

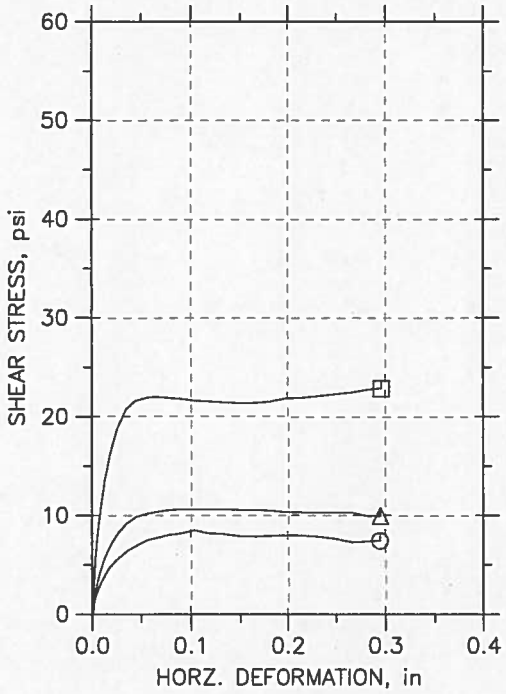
Constant Load Step: 7 of 7
Applied Stress: 0.125 tsf

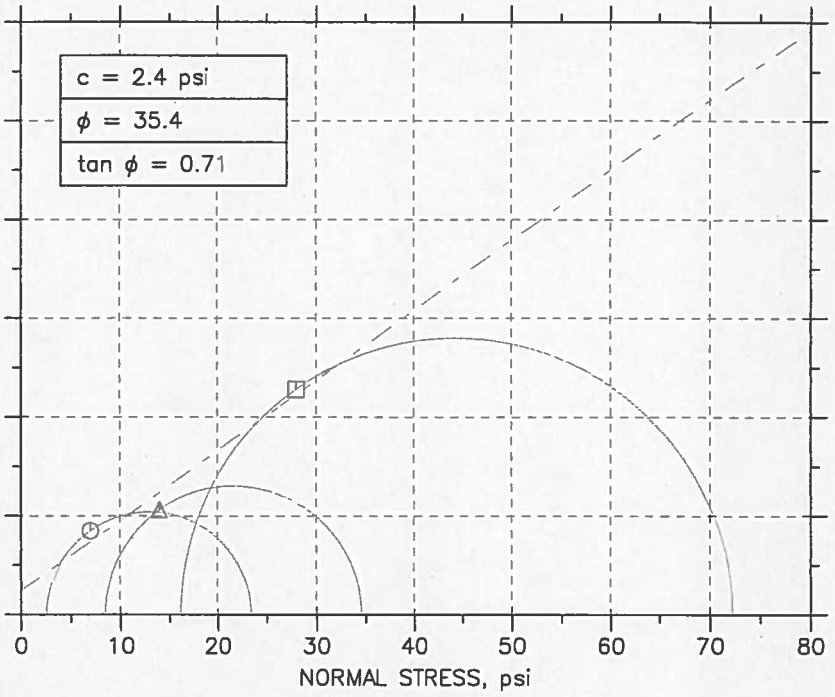
	Elapsed Time min	Sq.Rt. of Time min	Stress tsf	Displacement in	Strain %	Void Ratio
1	0.00	0.00	0.25	0.004276	0.43	0.727
2	0.01	0.09	0.235	0.004276	0.43	0.727
3	0.02	0.13	0.183	0.004138	0.41	0.727
4	0.03	0.16	0.158	0.004	0.40	0.728
5	0.04	0.19	0.148	0.003908	0.39	0.728
6	0.05	0.23	0.139	0.003816	0.38	0.728
7	0.07	0.26	0.132	0.003678	0.37	0.728
8	0.08	0.29	0.13	0.003632	0.36	0.728
9	0.12	0.34	0.128	0.00354	0.35	0.728
10	0.17	0.41	0.128	0.003494	0.35	0.728
11	0.25	0.50	0.127	0.003402	0.34	0.729
12	0.34	0.58	0.125	0.00331	0.33	0.729
13	0.50	0.71	0.125	0.003173	0.32	0.729
14	0.75	0.87	0.124	0.003081	0.31	0.729
15	1.00	1.00	0.125	0.003035	0.30	0.729
16	1.50	1.23	0.124	0.002897	0.29	0.729
17	2.00	1.41	0.125	0.002759	0.28	0.730
18	3.00	1.73	0.124	0.002575	0.26	0.730
19	4.00	2.00	0.125	0.002437	0.24	0.730
20	5.00	2.24	0.124	0.002253	0.23	0.731
21	6.00	2.45	0.125	0.002115	0.21	0.731
22	7.00	2.65	0.125	0.002023	0.20	0.731
23	8.00	2.83	0.124	0.001931	0.19	0.731
24	9.00	3.00	0.124	0.001885	0.19	0.731
25	10.00	3.16	0.124	0.001839	0.18	0.731
26	12.00	3.46	0.125	0.001793	0.18	0.731
27	14.00	3.74	0.124	0.001701	0.17	0.732
28	16.00	4.00	0.124	0.001609	0.16	0.732
29	18.00	4.24	0.124	0.001471	0.15	0.732
30	20.00	4.47	0.124	0.001333	0.13	0.732
31	22.00	4.69	0.124	0.001149	0.12	0.733
32	24.00	4.90	0.124	0.001058	0.11	0.733
33	26.00	5.10	0.124	0.0009656	0.10	0.733
34	28.00	5.29	0.124	0.0009196	0.09	0.733
35	30.00	5.48	0.125	0.0007816	0.08	0.733
36	35.00	5.92	0.124	0.0005517	0.06	0.734
37	40.00	6.32	0.123	0.0004138	0.04	0.734
38	45.00	6.71	0.124	0.0002299	0.02	0.734
39	50.00	7.07	0.123	0.0001839	0.02	0.734
40	60.00	7.75	0.124	-0.0001839	-0.02	0.735
41	70.00	8.37	0.125	-0.0005058	-0.05	0.735
42	80.00	8.94	0.124	-0.0007357	-0.07	0.736
43	90.00	9.49	0.124	-0.001012	-0.10	0.736
44	100.00	10.00	0.124	-0.001195	-0.12	0.737
45	110.00	10.49	0.124	-0.001333	-0.13	0.737
46	120.00	10.95	0.124	-0.001563	-0.16	0.737
47	130.00	11.40	0.124	-0.001701	-0.17	0.737
48	140.00	11.83	0.124	-0.001931	-0.19	0.738
49	150.00	12.25	0.124	-0.002069	-0.21	0.738
50	153.23	12.38	0.124	-0.002115	-0.21	0.738

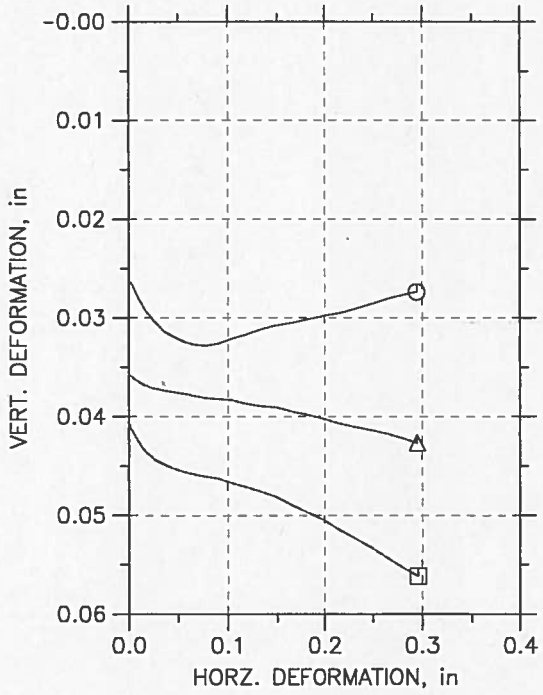
ATTACHMENT 7

DIRECT SHEAR TEST DATA

DIRECT SHEAR TEST REPORT







Symbol		⊙	△	⊡	
Test No.		1	2	3	
Sample No.		19-294	19-294	19-294	
Shape		Circular	Circular	Circular	
Initial	Dimension, in	2.5	2.5	2.5	
	Area, in^2	4.9087	4.9087	4.9087	
	Height, in	1	1	1	
	Water Content, %	25.43	22.59	18.60	
	Dry Density, pcf	91.325	88.759	95.081	
	Saturation, %	79.82	66.75	63.78	
	Void Ratio	0.87301	0.92717	0.79901	
Consol. Height, in		0.97467	0.96528	0.96069	
Consol. Void Ratio		0.82557	0.86025	0.7283	
Final	Water Content, %	31.70	29.78	29.48	
	Dry Density, pcf	93.896	92.717	100.74	
	Saturation, %	105.71	96.59	115.72	
	Void Ratio	0.82172	0.84489	0.69796	
Normal Stress, psi		6.9977	13.998	27.999	
Max. Shear Stress, psi		8.4963	10.631	22.837	
Ult. Shear Stress, psi		7.4141	9.932	22.837	
Time to Failure, min		72.252	64.003	190.46	
Disp. Rate, in/min		0.0016	0.0016	0.0016	
Specific Gravity		2.74	2.74	2.74	
Liquid Limit		0	0	0	
Plastic Limit		0	0	0	
Plasticity Index		0	0	0	

Project: PLUM CREEK SITE 21	
Location: TX	
Project No.: 19-294	
Boring No.: B-602	
Sample Type: CORE	
Description:	
Remarks:	

DIRECT SHEAR TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-294
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/22/19
Sample Type: CORE

Project No.: 19-294
Checked By: SKK
Depth: 25-26'
Elevation: N/A

Soil Description:
Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress psi	Vertical Displacement in	Horizontal Stress psi	Horizontal Displacement in	Cumulative Displacement in
1	0.00	7.003	0.02631	-0.00274	0	0
2	0.01	6.998	0.02633	0.00274	0	0
3	0.04	6.995	0.02633	0.0137	3.355e-005	3.355e-005
4	0.09	6.995	0.02633	0.0274	0.0001342	0.0001342
5	0.16	6.995	0.02633	0.04384	0.0002349	0.0002349
6	0.25	6.995	0.02633	0.09316	0.0003523	0.0003523
7	0.36	6.998	0.02633	0.1178	0.0005033	0.0005033
8	0.49	6.995	0.02633	0.126	0.0006375	0.0006375
9	0.64	6.995	0.02634	0.137	0.0008724	0.0008724
10	0.81	6.995	0.02634	0.2137	0.0009898	0.0009898
11	1.00	6.998	0.02636	0.2329	0.00104	0.00104
12	1.21	7.001	0.02636	0.2329	0.001023	0.001023
13	1.44	6.998	0.02638	0.2329	0.001023	0.001023
14	1.69	6.995	0.02636	0.2411	0.001057	0.001057
15	2.00	7.001	0.02636	0.2384	0.00104	0.00104
16	2.25	7.001	0.02636	0.2301	0.00104	0.00104
17	2.56	6.995	0.02638	0.2411	0.00104	0.00104
18	2.89	6.998	0.02638	0.2301	0.001023	0.001023
19	3.24	6.995	0.02639	0.3233	0.00109	0.00109
20	3.61	6.992	0.02639	0.3123	0.001107	0.001107
21	4.00	7.006	0.02639	0.3096	0.001107	0.001107
22	4.84	6.998	0.02641	0.3233	0.001107	0.001107
23	5.76	6.995	0.02641	0.326	0.001107	0.001107
24	6.76	6.992	0.02649	1.222	0.002064	0.002064
25	7.84	6.995	0.02671	1.773	0.003389	0.003389
26	9.00	6.995	0.02697	2.164	0.004714	0.004714
27	10.24	6.992	0.02729	2.523	0.006157	0.006157
28	11.56	6.992	0.02759	2.858	0.007516	0.007516
29	12.96	6.992	0.02795	3.28	0.009378	0.009378
30	14.94	6.995	0.0285	3.806	0.01223	0.01223
31	16.00	6.992	0.02872	4.071	0.01382	0.01382
32	17.64	6.989	0.02913	4.45	0.01619	0.01619
33	19.36	6.992	0.02951	4.797	0.01881	0.01881
34	21.16	6.992	0.02983	5.104	0.02157	0.02157
35	23.04	6.992	0.03018	5.398	0.02446	0.02446
36	25.00	6.995	0.03056	5.691	0.02753	0.02753
37	30.25	6.995	0.03139	6.4	0.03573	0.03573
38	36.00	6.998	0.03192	6.946	0.04478	0.04478
39	43.56	6.995	0.03245	7.535	0.05694	0.05694
40	49.00	6.995	0.03272	7.699	0.06577	0.06577
41	56.25	6.992	0.03282	8.022	0.07739	0.07739
42	64.00	7.001	0.03263	8.176	0.09007	0.09007
43	72.25	6.998	0.03215	8.496	0.1035	0.1035
44	81.00	6.998	0.0317	8.17	0.1179	0.1179
45	90.25	6.998	0.03119	8.113	0.1329	0.1329
46	100.00	7.001	0.03077	7.866	0.1488	0.1488
47	110.25	6.998	0.03051	7.841	0.1655	0.1655
48	120.50	7.001	0.03016	7.896	0.1821	0.1821
49	130.75	6.998	0.02983	7.987	0.1989	0.1989
50	141.00	6.998	0.02953	7.957	0.2157	0.2157
51	151.25	7.001	0.02906	7.82	0.2325	0.2325
52	161.50	6.998	0.02858	7.631	0.2493	0.2493
53	171.75	6.998	0.02803	7.244	0.2661	0.2661
54	182.00	6.995	0.02764	7.367	0.2829	0.2829
55	188.97	6.998	0.02739	7.414	0.2945	0.2945

DIRECT SHEAR TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-294
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 7/23/19
Sample Type: CORE

Project No.: 19-294
Checked By: SKK
Depth: 25-26'
Elevation: N/A

Soil Description:
Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress psi	Vertical Displacement in	Horizontal Stress psi	Horizontal Displacement in	Cumulative Displacement in
1	0.00	14	0.03574	0.01096	0	0
2	0.01	14	0.03574	0.04384	3.355e-005	3.355e-005
3	0.04	13.99	0.03574	0.1452	5.033e-005	5.033e-005
4	0.09	14	0.03575	0.2575	0.0001342	0.0001342
5	0.16	14	0.03575	0.4055	0.0001678	0.0001678
6	0.25	14	0.03575	0.5452	0.0002852	0.0002852
7	0.36	14	0.03575	0.6822	0.0004026	0.0004026
8	0.49	14	0.03577	0.7973	0.0004865	0.0004865
9	0.64	14	0.03579	0.822	0.0005369	0.0005369
10	0.81	14	0.0358	0.822	0.0005369	0.0005369
11	1.00	14	0.0358	0.822	0.0005704	0.0005704
12	1.21	14	0.0358	0.8083	0.0005872	0.0005872
13	1.44	14	0.0358	0.7973	0.0005872	0.0005872
14	1.69	14	0.0358	0.8	0.0005704	0.0005704
15	2.00	14	0.03582	0.7946	0.0005704	0.0005704
16	2.25	14	0.03582	0.7918	0.0005704	0.0005704
17	2.56	14	0.03582	0.7946	0.000604	0.000604
18	2.89	14	0.03582	0.8631	0.0006375	0.0006375
19	3.24	14	0.03584	0.8795	0.0006543	0.0006543
20	3.61	14	0.03584	0.8822	0.0006711	0.0006711
21	4.00	14	0.03584	0.8795	0.0006543	0.0006543
22	4.84	14	0.03585	0.8795	0.0006878	0.0006878
23	5.76	14	0.03587	1.101	0.0008556	0.0008556
24	6.76	14	0.0359	1.792	0.001963	0.001963
25	7.84	14	0.03599	2.403	0.003255	0.003255
26	9.00	14	0.0361	2.822	0.004295	0.004295
27	10.24	14	0.03622	3.37	0.00557	0.00557
28	11.56	14	0.03632	4.022	0.007399	0.007399
29	12.96	14	0.03645	4.66	0.009328	0.009328
30	14.94	14	0.0366	5.469	0.01201	0.01201
31	16.00	14	0.0367	5.841	0.01345	0.01345
32	17.64	14	0.03683	6.359	0.01575	0.01575
33	19.36	14	0.03692	6.863	0.0183	0.0183
34	21.16	14	0.03703	7.326	0.021	0.021
35	23.04	14	0.03711	7.787	0.02392	0.02392
36	25.00	14	0.03718	8.228	0.02699	0.02699
37	30.25	14	0.03736	9.179	0.03532	0.03532
38	36.00	14	0.03751	9.817	0.04449	0.04449
39	43.56	14	0.03773	10.2	0.05657	0.05657
40	49.00	14	0.03789	10.35	0.06541	0.06541
41	56.25	14	0.03813	10.53	0.07711	0.07711
42	64.00	14	0.03824	10.63	0.08969	0.08969
43	72.25	14	0.03834	10.62	0.1031	0.1031
44	81.00	14	0.03871	10.58	0.1173	0.1173
45	90.25	13.99	0.03896	10.62	0.1326	0.1326
46	100.00	14	0.03909	10.56	0.1487	0.1487
47	110.25	14	0.03952	10.55	0.1653	0.1653
48	120.50	13.99	0.03984	10.44	0.1816	0.1816
49	130.75	14	0.04023	10.31	0.1985	0.1985
50	141.00	14	0.0407	10.3	0.2153	0.2153
51	151.25	14	0.04108	10.3	0.232	0.232
52	161.50	14	0.0414	10.28	0.2488	0.2488
53	171.75	14	0.04178	10.26	0.2656	0.2656
54	182.00	14	0.04229	9.905	0.2825	0.2825
55	189.50	14	0.04269	9.932	0.2949	0.2949

DIRECT SHEAR TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-602
Sample No.: 19-294
Test No.: 3

Location: TX
Tested By: SKK
Test Date: 7/24/19
Sample Type: CORE

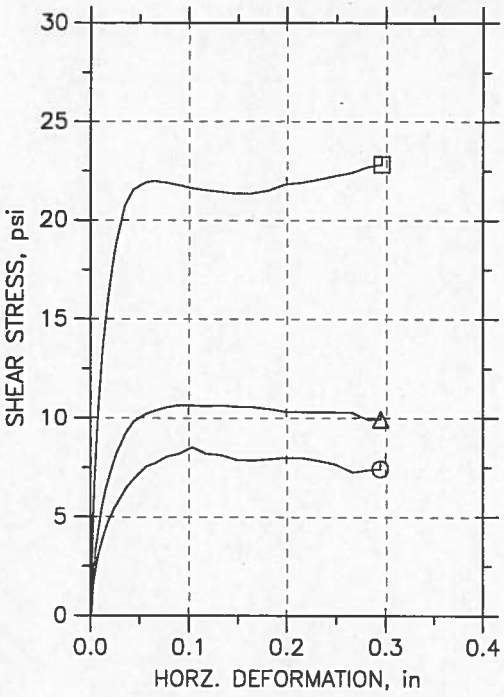
Project No.: 19-294
Checked By: SKK
Depth: 25-26'
Elevation: N/A

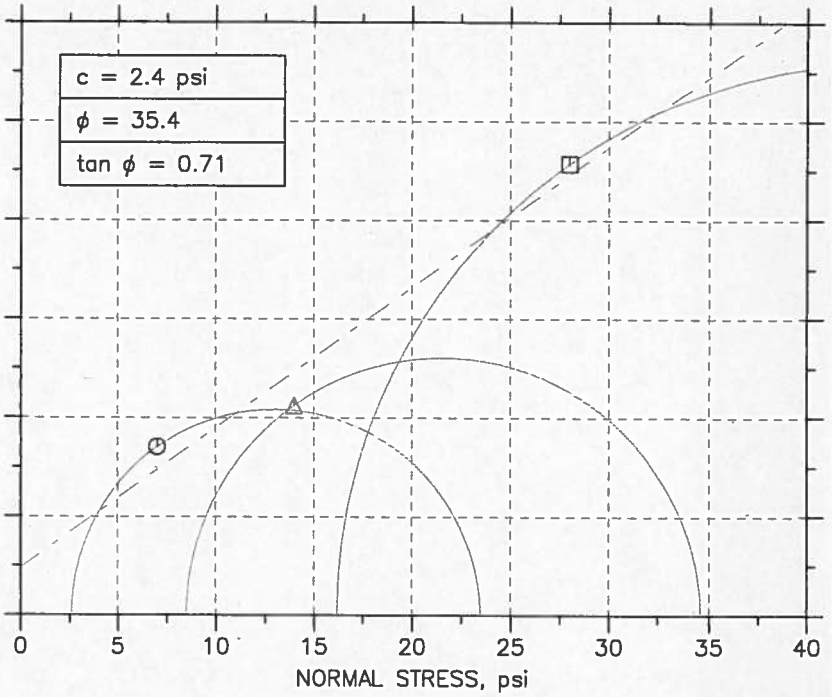
Soil Description:
Remarks:

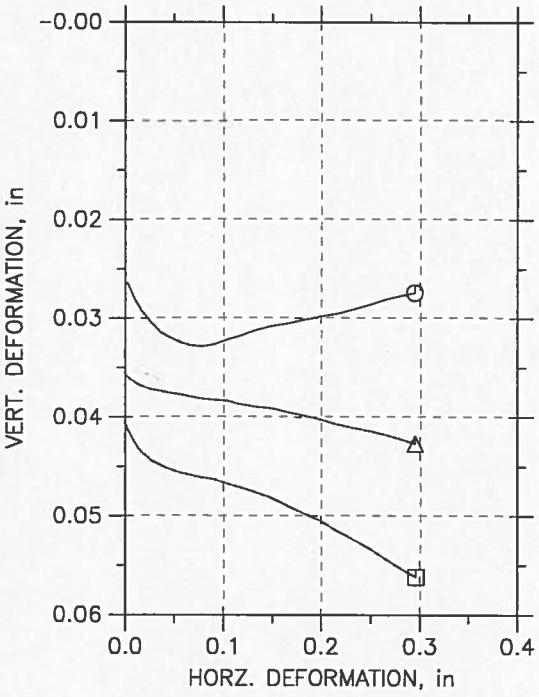
Step: 1 of 1

	Elapsed Time min	Vertical Stress psi	Vertical Displacement in	Horizontal Stress psi	Horizontal Displacement in	Cumulative Displacement in
1	0.00	28	0.04087	-0.00274	0	0
2	0.01	28	0.04088	0.00548	-3.355e-005	3.355e-005
3	0.04	28	0.04088	0.02192	1.678e-005	1.678e-005
4	0.09	28	0.04088	0.03562	6.711e-005	6.711e-005
5	0.16	28	0.04088	0.05206	0.0001678	0.0001678
6	0.25	28	0.04088	0.1178	0.000302	0.000302
7	0.36	28	0.04088	0.2877	0.0004698	0.0004698
8	0.49	28	0.04088	0.6137	0.0006207	0.0006207
9	0.64	27.99	0.04088	0.9726	0.0007885	0.0007885
10	0.81	28	0.0409	1.241	0.0009227	0.0009227
11	1.00	28	0.0409	1.351	0.0009898	0.0009898
12	1.21	28	0.04092	1.373	0.001007	0.001007
13	1.44	28	0.04092	1.386	0.001007	0.001007
14	1.69	28	0.04093	1.389	0.001057	0.001057
15	2.00	27.99	0.04093	1.389	0.00104	0.00104
16	2.25	27.99	0.04097	1.389	0.00104	0.00104
17	2.56	28	0.04098	1.381	0.001074	0.001074
18	2.89	28.01	0.041	1.378	0.001057	0.001057
19	3.24	28	0.04102	1.378	0.001074	0.001074
20	3.61	27.99	0.04103	1.474	0.00109	0.00109
21	4.00	27.99	0.04103	1.471	0.001107	0.001107
22	4.84	27.99	0.04105	1.474	0.001124	0.001124
23	5.76	28	0.04106	1.471	0.001107	0.001107
24	6.76	28	0.04111	2.507	0.001527	0.001527
25	7.84	28	0.04125	3.967	0.002315	0.002315
26	9.00	27.99	0.0414	5.502	0.003238	0.003238
27	10.24	27.99	0.0417	7.441	0.004916	0.004916
28	11.56	27.99	0.04204	9.206	0.006761	0.006761
29	12.96	28	0.04241	10.79	0.008791	0.008791
30	14.94	28	0.04284	12.68	0.01156	0.01156
31	16.00	27.99	0.04306	13.54	0.013	0.013
32	17.64	28	0.04337	14.74	0.01543	0.01543
33	19.36	27.99	0.04364	15.88	0.01793	0.01793
34	21.16	27.99	0.04389	16.99	0.02065	0.02065
35	23.04	28	0.04415	18.02	0.02355	0.02355
36	25.00	28	0.0444	18.94	0.02659	0.02659
37	30.25	27.99	0.04482	20.71	0.03481	0.03481
38	36.00	28	0.0452	21.55	0.04396	0.04396
39	43.56	28	0.04563	21.92	0.05614	0.05614
40	49.00	27.99	0.04585	21.98	0.06491	0.06491
41	56.25	28	0.04608	21.91	0.07659	0.07659
42	64.00	28	0.04624	21.79	0.08932	0.08932
43	72.25	28	0.04671	21.62	0.1028	0.1028
44	81.00	28	0.04709	21.53	0.1171	0.1171
45	90.25	28	0.04757	21.44	0.1321	0.1321
46	100.00	28	0.04812	21.35	0.1479	0.1479
47	110.25	28	0.04895	21.36	0.1646	0.1646
48	120.50	28	0.0497	21.49	0.1814	0.1814
49	130.75	28	0.05044	21.82	0.1981	0.1981
50	141.00	28	0.05146	21.91	0.2149	0.2149
51	151.25	28	0.05234	22.06	0.2316	0.2316
52	161.50	28	0.05326	22.24	0.2484	0.2484
53	171.75	27.99	0.05436	22.41	0.2651	0.2651
54	182.00	28	0.05541	22.72	0.282	0.282
55	190.46	28	0.05617	22.84	0.296	0.296

DIRECT SHEAR TEST REPORT



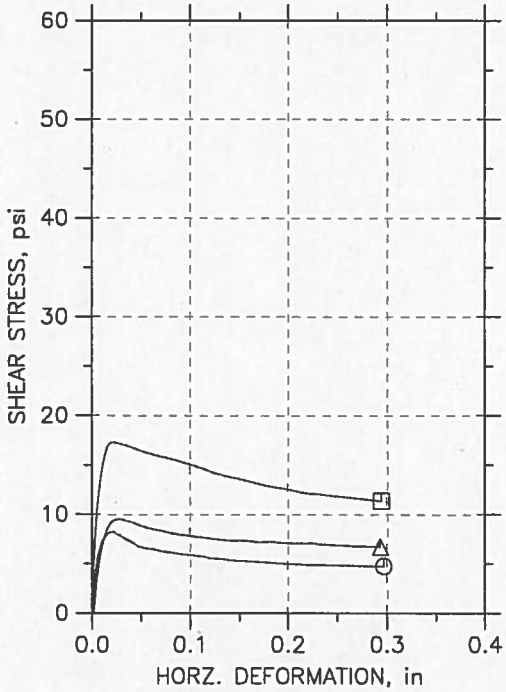


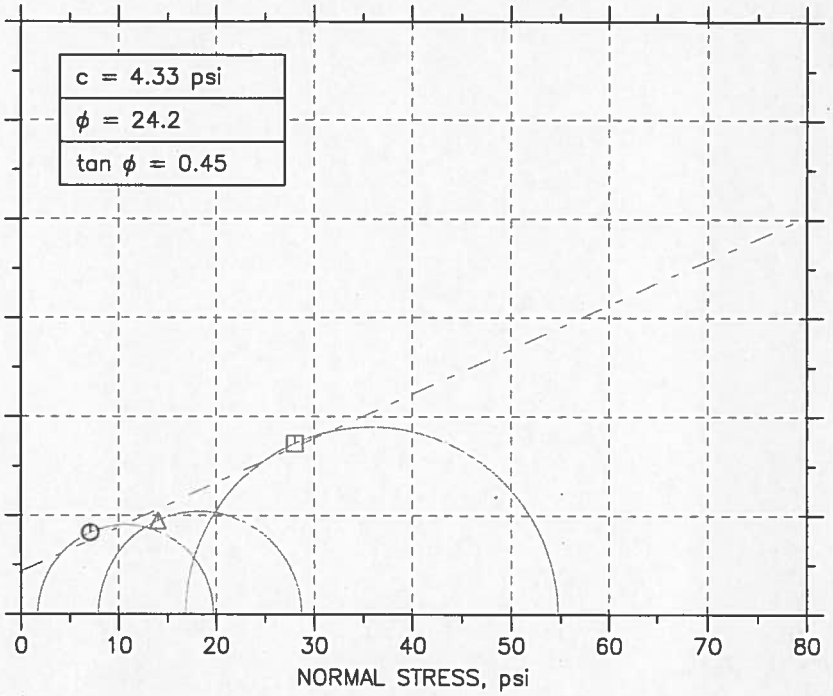


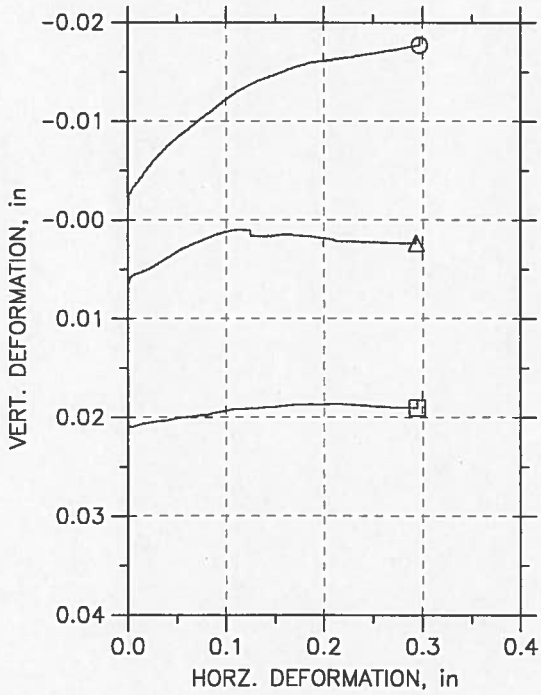
Symbol		○	△	□	
Test No.		1	2	3	
Sample No.		19-294	19-294	19-294	
Shape		Circular	Circular	Circular	
Initial	Dimension, in	2.5	2.5	2.5	
	Area, in^2	4.9087	4.9087	4.9087	
	Height, in	1	1	1	
	Water Content, %	25.43	22.59	18.60	
	Dry Density, pcf	91.325	88.759	95.081	
	Saturation, %	79.82	66.75	63.78	
	Void Ratio	0.87301	0.92717	0.79901	
Consol. Height, in		0.97467	0.96528	0.96069	
Consol. Void Ratio		0.82557	0.86025	0.7283	
Final	Water Content, %	31.70	29.78	29.48	
	Dry Density, pcf	93.896	92.717	100.74	
	Saturation, %	105.71	96.59	115.72	
	Void Ratio	0.82172	0.84489	0.69796	
Normal Stress, psi		6.9977	13.998	27.999	
Max. Shear Stress, psi		8.4963	10.631	22.837	
Ult. Shear Stress, psi		7.4141	9.932	22.837	
Time to Failure, min		72.252	64.003	190.46	
Disp. Rate, in/min		0.0016	0.0016	0.0016	
Specific Gravity		2.74	2.74	2.74	
Liquid Limit		0	0	0	
Plastic Limit		0	0	0	
Plasticity Index		0	0	0	

Project: PLUM CREEK SITE 21	
Location: TX	
Project No.: 19-294	
Boring No.: B-602	
Sample Type: CORE	
Description:	
Remarks:	

DIRECT SHEAR TEST REPORT







Symbol		⏲	△	⊡	
Test No.		1	2	3	
Sample No.		19-300	19-300	19-300	
Shape		Circular	Circular	Circular	
Initial	Dimension, in	2.5	2.5	2.5	
	Area, in^2	4.9087	4.9087	4.9087	
	Height, in	1	1	1	
	Water Content, %	21.15	21.79	21.59	
	Dry Density, pcf	100.06	99.345	100.21	
	Saturation, %	81.68	82.71	83.68	
	Void Ratio	0.70947	0.72181	0.70698	
Consol. Height, in		0.99902	0.99213	0.97733	
Consol. Void Ratio		0.7078	0.70826	0.66827	
Final	Water Content, %	29.70	30.06	29.49	
	Dry Density, pcf	98.32	99.578	102.15	
	Saturation, %	110.00	114.76	119.80	
	Void Ratio	0.73975	0.71778	0.67451	
Normal Stress, psi		6.995	13.998	27.997	
Max. Shear Stress, psi		8.2196	9.4991	17.286	
Ult. Shear Stress, psi		4.7235	6.699	11.34	
Time to Failure, min		417.75	499.75	458.75	
Disp. Rate, in/min		8e-005	8e-005	8e-005	
Specific Gravity		2.74	2.74	2.74	
Liquid Limit		0	0	0	
Plastic Limit		0	0	0	
Plasticity Index		0	0	0	

Project: PLUM CREEK SITE 21	
Location: TX	
Project No.: 19-300	
Boring No.: B-603	
Sample Type: CORE	
Description:	
Remarks:	

DIRECT SHEAR TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-300
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 7/29/19
Sample Type: CORE

Project No.: 19-300
Checked By: SKK
Depth: 30-31'
Elevation: N/A

Soil Description:
Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress psi	Vertical Displacement in	Horizontal Stress psi	Horizontal Displacement in	Cumulative Displacement in
1	0.00	7.001	-0.001361	-0.00548	0	0
2	0.01	7.003	-0.001361	-0.00274	1.678e-005	1.678e-005
3	0.04	6.998	-0.001361	-0.00548	3.355e-005	3.355e-005
4	0.09	7.001	-0.001378	-0.01096	3.355e-005	3.355e-005
5	0.16	7.003	-0.001378	-0.01096	0	0
6	0.25	6.995	-0.001378	-0.00822	3.355e-005	3.355e-005
7	0.36	7.001	-0.001378	-0.01096	8.388e-005	8.388e-005
8	0.49	7.001	-0.001394	-0.00548	3.355e-005	3.355e-005
9	0.64	7.003	-0.001411	0	6.711e-005	6.711e-005
10	0.81	7.001	-0.001461	0	6.711e-005	6.711e-005
11	1.00	7.001	-0.001444	0.00274	0.0001007	0.0001007
12	1.21	6.998	-0.001444	0.00274	8.388e-005	8.388e-005
13	1.44	7.001	-0.001461	0.00548	0.000151	0.000151
14	1.69	7.001	-0.001461	0.00548	0.0001342	0.0001342
15	2.00	7.001	-0.001477	0.01096	0.0001174	0.0001174
16	2.25	7.003	-0.001477	0.00822	0.000151	0.000151
17	2.56	7.001	-0.001494	0.01096	0.0002181	0.0002181
18	2.89	6.995	-0.001494	0.0137	0.0002013	0.0002013
19	3.24	6.998	-0.00151	0.01918	0.0002517	0.0002517
20	3.61	6.998	-0.00151	0.02192	0.0002684	0.0002684
21	4.00	7.001	-0.00151	0.02466	0.0003188	0.0003188
22	4.84	6.998	-0.001527	0.0274	0.0004026	0.0004026
23	5.76	7.001	-0.001544	0.03836	0.0003859	0.0003859
24	6.76	7.003	-0.001577	0.04658	0.0004362	0.0004362
25	7.84	7.001	-0.001593	0.04658	0.0005369	0.0005369
26	9.00	6.998	-0.00161	0.05206	0.0006207	0.0006207
27	10.24	6.998	-0.001627	0.0685	0.0007214	0.0007214
28	11.56	6.995	-0.001643	0.1644	0.0007382	0.0007382
29	12.96	7.001	-0.00166	0.2438	0.0008053	0.0008053
30	14.94	6.998	-0.001676	0.3233	0.0009059	0.0009059
31	16.00	6.998	-0.001693	0.3343	0.0009059	0.0009059
32	17.64	6.995	-0.00171	0.3343	0.0009059	0.0009059
33	19.36	7.001	-0.00171	0.3343	0.0009563	0.0009563
34	21.16	6.998	-0.001726	0.3425	0.0009227	0.0009227
35	23.04	6.995	-0.001743	0.3343	0.0009059	0.0009059
36	25.00	7.001	-0.001743	0.3397	0.0009395	0.0009395
37	30.25	7.001	-0.001793	0.3288	0.0008892	0.0008892
38	36.00	6.998	-0.001909	0.3425	0.0009563	0.0009563
39	43.56	7.001	-0.002025	0.3836	0.0009227	0.0009227
40	49.00	6.998	-0.002091	0.4192	0.001107	0.001107
41	56.25	7.001	-0.002191	0.4302	0.0009227	0.0009227
42	64.00	6.998	-0.002274	0.4329	0.0009227	0.0009227
43	72.25	7.001	-0.002357	0.4356	0.0009395	0.0009395
44	81.00	6.995	-0.002423	0.4439	0.0009059	0.0009059
45	90.25	6.998	-0.002506	0.4466	0.0009059	0.0009059
46	100.00	7.001	-0.002606	0.4466	0.0008892	0.0008892
47	110.25	7.001	-0.002689	0.4713	0.0008724	0.0008724
48	120.50	6.998	-0.002689	1.332	0.001208	0.001208
49	130.75	6.995	-0.002672	2.052	0.001678	0.001678
50	141.00	6.998	-0.002689	2.301	0.001896	0.001896
51	151.25	7.001	-0.002772	2.54	0.00208	0.00208
52	161.50	6.998	-0.002739	3.321	0.002684	0.002684
53	171.75	6.998	-0.002988	3.973	0.003355	0.003355
54	182.00	7.003	-0.003004	4.529	0.004077	0.004077
55	192.25	6.998	-0.00317	4.997	0.004748	0.004748
56	202.50	6.995	-0.003336	5.43	0.005452	0.005452
57	212.75	7.001	-0.00337	5.787	0.006157	0.006157
58	223.00	7.001	-0.003436	6.115	0.006912	0.006912
59	233.25	6.995	-0.003552	6.425	0.007583	0.007583
60	243.50	6.998	-0.003701	6.685	0.008338	0.008338
61	253.75	6.998	-0.003718	6.907	0.00911	0.00911
62	264.00	7.001	-0.003768	7.091	0.009747	0.009747
63	274.25	6.995	-0.003834	7.247	0.01054	0.01054
64	284.50	6.998	-0.00395	7.389	0.01129	0.01129
65	294.75	6.995	-0.0041	7.491	0.01206	0.01206
66	305.00	6.992	-0.004249	7.589	0.01285	0.01285
67	315.25	6.998	-0.004266	7.685	0.01359	0.01359
68	325.50	6.995	-0.004332	7.787	0.01434	0.01434
69	335.75	6.998	-0.004465	7.877	0.0151	0.0151
70	346.00	6.998	-0.004631	7.965	0.01589	0.01589
71	356.25	6.998	-0.004747	8.052	0.01663	0.01663
72	366.50	7.001	-0.004847	8.113	0.01741	0.01741
73	376.75	6.995	-0.00493	8.143	0.0182	0.0182
74	387.00	7.001	-0.005013	8.159	0.01896	0.01896

77	417.75	6.995	-0.005345	8.22	0.02129	0.02129
78	428.00	6.995	-0.005428	8.211	0.02206	0.02206
79	438.25	6.995	-0.005511	8.184	0.02287	0.02287
80	448.50	7.001	-0.005644	8.069	0.02364	0.02364
81	458.75	7.001	-0.005727	8.033	0.02441	0.02441
82	469.00	7.001	-0.005859	7.989	0.02523	0.02523
83	479.25	7.001	-0.005926	7.946	0.02602	0.02602
84	489.50	7.001	-0.006009	7.91	0.02684	0.02684
85	499.75	6.998	-0.006125	7.899	0.02763	0.02763
86	510.00	6.998	-0.006191	7.883	0.02844	0.02844
87	520.25	7.001	-0.006307	7.814	0.02923	0.02923
88	530.50	7.001	-0.006357	7.754	0.03001	0.03001
89	540.75	6.998	-0.006473	7.715	0.03082	0.03082
90	551.00	7.001	-0.006573	7.677	0.03166	0.03166
91	561.25	6.998	-0.006656	7.595	0.03246	0.03246
92	571.50	7.001	-0.006739	7.54	0.03329	0.03329
93	581.75	7.001	-0.006805	7.502	0.03411	0.03411
94	592.00	7.001	-0.006905	7.45	0.03486	0.03486
95	602.25	6.998	-0.007021	7.4	0.03565	0.03565
96	612.50	6.995	-0.007088	7.365	0.03651	0.03651
97	622.75	6.995	-0.007154	7.321	0.03731	0.03731
98	633.00	6.998	-0.007237	7.288	0.03813	0.03813
99	643.25	6.998	-0.007353	7.244	0.03889	0.03889
100	653.50	6.995	-0.007453	7.187	0.03974	0.03974
101	663.75	7.001	-0.007503	7.135	0.04057	0.04057
102	674.00	6.995	-0.007569	7.088	0.04135	0.04135
103	684.25	6.998	-0.007635	7.025	0.04223	0.04223
104	694.50	7.001	-0.007768	6.989	0.04298	0.04298
105	704.75	6.995	-0.007785	6.94	0.04385	0.04385
106	715.00	6.992	-0.007868	6.891	0.04464	0.04464
107	725.25	6.998	-0.007918	6.822	0.04543	0.04543
108	735.50	7.003	-0.008017	6.781	0.04627	0.04627
109	745.75	6.995	-0.008084	6.748	0.04698	0.04698
110	756.00	6.995	-0.008117	6.726	0.04791	0.04791
111	766.25	6.992	-0.0082	6.699	0.04872	0.04872
112	776.50	7.001	-0.008266	6.688	0.04954	0.04954
113	786.75	6.998	-0.008332	6.652	0.05038	0.05038
114	797.00	6.998	-0.008432	6.666	0.0512	0.0512
115	807.25	6.995	-0.008498	6.619	0.05206	0.05206
116	817.50	6.998	-0.008548	6.578	0.05288	0.05288
117	827.75	6.998	-0.008615	6.592	0.05367	0.05367
118	838.00	6.995	-0.008648	6.556	0.05447	0.05447
119	848.25	6.998	-0.008747	6.548	0.05528	0.05528
120	858.50	6.998	-0.00883	6.546	0.05612	0.05612
121	868.75	7.001	-0.008864	6.535	0.05692	0.05692
122	879.00	7.001	-0.008947	6.507	0.05771	0.05771
123	889.25	7.001	-0.009013	6.504	0.05858	0.05858
124	899.50	6.995	-0.009096	6.499	0.05936	0.05936
125	909.75	6.995	-0.009162	6.472	0.06018	0.06018
126	920.00	6.998	-0.009196	6.452	0.06105	0.06105
127	930.25	6.998	-0.009295	6.461	0.06186	0.06186
128	940.50	7.001	-0.009362	6.425	0.06268	0.06268
129	950.75	6.998	-0.009428	6.409	0.06347	0.06347
130	961.00	7.001	-0.009511	6.376	0.06432	0.06432
131	971.25	6.998	-0.009577	6.37	0.06513	0.06513
132	981.50	6.998	-0.009594	6.362	0.06593	0.06593
133	991.75	6.998	-0.009677	6.335	0.06677	0.06677
134	1002.00	7.012	-0.009777	6.324	0.06761	0.06761
135	1012.25	7.001	-0.00981	6.291	0.06838	0.06838
136	1022.50	6.998	-0.009909	6.291	0.06927	0.06927
137	1032.75	7.001	-0.009893	6.261	0.07011	0.07011
138	1043.00	6.995	-0.01003	6.25	0.07093	0.07093
139	1053.25	6.998	-0.01011	6.258	0.07177	0.07177
140	1063.50	6.998	-0.01013	6.225	0.07261	0.07261
141	1073.75	7.006	-0.01021	6.228	0.07343	0.07343
142	1084.00	7.001	-0.01027	6.2	0.07425	0.07425
143	1094.25	6.989	-0.01029	6.195	0.07506	0.07506
144	1104.50	7.012	-0.01036	6.189	0.07593	0.07593
145	1114.75	6.995	-0.01044	6.165	0.07675	0.07675
146	1125.00	6.995	-0.01049	6.162	0.07758	0.07758
147	1135.25	6.998	-0.01052	6.151	0.07841	0.07841
148	1145.50	7.001	-0.01064	6.14	0.07925	0.07925
149	1155.75	6.995	-0.01067	6.126	0.08004	0.08004
150	1166.00	6.992	-0.01079	6.118	0.08091	0.08091
151	1176.25	6.998	-0.01081	6.104	0.08174	0.08174
152	1186.50	6.998	-0.01082	6.093	0.08263	0.08263
153	1196.75	6.998	-0.01084	6.069	0.08343	0.08343
154	1207.00	6.998	-0.01105	6.055	0.08425	0.08425
155	1217.25	6.998	-0.01104	6.044	0.08506	0.08506
156	1227.50	6.998	-0.01105	6.028	0.08591	0.08591
157	1237.75	6.995	-0.01112	6.003	0.08675	0.08675
158	1248.00	6.998	-0.01129	5.995	0.08759	0.08759
159	1258.25	7.001	-0.01129	5.987	0.08841	0.08841
160	1268.50	6.998	-0.01134	5.965	0.08929	0.08929
161	1278.75	6.995	-0.01147	5.965	0.09011	0.09011
162	1289.00	6.995	-0.01155	5.956	0.091	0.091
163	1299.25	6.998	-0.01157	5.948	0.0918	0.0918
164	1309.50	6.995	-0.01162	5.926	0.09262	0.09262
165	1319.75	6.998	-0.01177	5.943	0.09355	0.09355
166	1330.00	7.006	-0.01178	5.924	0.0944	0.0944

169	1360.75	6.998	-0.01203	5.899	0.09694	0.09694
170	1371.00	6.995	-0.01203	5.902	0.09772	0.09772
171	1381.25	6.995	-0.0121	5.891	0.09858	0.09858
172	1391.50	7.001	-0.0122	5.882	0.0994	0.0994
173	1401.75	7.001	-0.01225	5.893	0.1002	0.1002
174	1412.00	6.998	-0.01228	5.858	0.1011	0.1011
175	1422.25	7.001	-0.01235	5.841	0.1019	0.1019
176	1432.50	6.998	-0.01247	5.825	0.1028	0.1028
177	1442.75	6.998	-0.01248	5.836	0.1036	0.1036
178	1453.00	6.998	-0.01253	5.808	0.1044	0.1044
179	1463.25	6.998	-0.01258	5.792	0.1052	0.1052
180	1473.50	6.998	-0.01266	5.773	0.1061	0.1061
181	1483.75	6.998	-0.01271	5.781	0.1069	0.1069
182	1494.00	6.995	-0.01275	5.765	0.1077	0.1077
183	1504.25	6.992	-0.01281	5.756	0.1085	0.1085
184	1514.50	7.001	-0.01288	5.737	0.1094	0.1094
185	1524.75	7.003	-0.01293	5.745	0.1102	0.1102
186	1535.00	6.998	-0.01301	5.724	0.111	0.111
187	1545.25	7.006	-0.01301	5.726	0.1119	0.1119
188	1555.50	7.001	-0.01306	5.726	0.1127	0.1127
189	1565.75	6.998	-0.01315	5.688	0.1135	0.1135
190	1576.00	6.998	-0.01318	5.672	0.1143	0.1143
191	1586.25	7.001	-0.0132	5.661	0.1152	0.1152
192	1596.50	6.998	-0.01325	5.644	0.116	0.116
193	1606.75	7.003	-0.0133	5.625	0.1168	0.1168
194	1617.00	6.998	-0.01331	5.608	0.1176	0.1176
195	1627.25	6.998	-0.01335	5.606	0.1184	0.1184
196	1637.50	7.001	-0.01344	5.578	0.1192	0.1192
197	1647.75	6.989	-0.01346	5.573	0.12	0.12
198	1658.00	6.998	-0.01348	5.578	0.1209	0.1209
199	1668.25	6.995	-0.01354	5.543	0.1217	0.1217
200	1678.50	6.995	-0.01359	5.535	0.1225	0.1225
201	1688.75	6.995	-0.01363	5.551	0.1233	0.1233
202	1699.00	6.995	-0.01366	5.524	0.1242	0.1242
203	1709.25	6.995	-0.01369	5.54	0.1251	0.1251
204	1719.50	6.998	-0.01374	5.518	0.1259	0.1259
205	1729.75	6.995	-0.01381	5.51	0.1267	0.1267
206	1740.00	7.001	-0.01384	5.513	0.1276	0.1276
207	1750.25	6.998	-0.01388	5.502	0.1284	0.1284
208	1760.50	6.995	-0.01391	5.485	0.1292	0.1292
209	1770.75	6.992	-0.01398	5.482	0.13	0.13
210	1781.00	7.009	-0.01398	5.499	0.1308	0.1308
211	1791.25	6.998	-0.01403	5.485	0.1317	0.1317
212	1801.50	6.998	-0.01408	5.502	0.1324	0.1324
213	1811.75	7.001	-0.01414	5.471	0.1333	0.1333
214	1822.00	7.001	-0.01416	5.455	0.1342	0.1342
215	1832.25	7.006	-0.01414	5.425	0.135	0.135
216	1842.50	6.998	-0.01418	5.419	0.1358	0.1358
217	1852.75	6.998	-0.01424	5.408	0.1366	0.1366
218	1863.00	7.003	-0.01427	5.406	0.1374	0.1374
219	1873.25	6.998	-0.01427	5.392	0.1382	0.1382
220	1883.50	7.001	-0.01431	5.378	0.139	0.139
221	1893.75	6.992	-0.01437	5.348	0.1399	0.1399
222	1904.00	7.001	-0.01439	5.343	0.1407	0.1407
223	1914.25	6.995	-0.01439	5.354	0.1415	0.1415
224	1924.50	6.998	-0.01442	5.329	0.1424	0.1424
225	1934.75	6.998	-0.01444	5.345	0.1433	0.1433
226	1945.00	6.992	-0.01452	5.326	0.144	0.144
227	1955.25	6.998	-0.01456	5.318	0.1449	0.1449
228	1965.50	7.001	-0.01461	5.318	0.1457	0.1457
229	1975.75	6.998	-0.01459	5.307	0.1465	0.1465
230	1986.00	7.001	-0.01459	5.304	0.1473	0.1473
231	1996.25	7.003	-0.01462	5.307	0.1482	0.1482
232	2006.50	6.998	-0.01469	5.302	0.149	0.149
233	2016.75	6.995	-0.01472	5.304	0.1499	0.1499
234	2027.00	7.001	-0.01472	5.299	0.1507	0.1507
235	2037.25	7.001	-0.01477	5.293	0.1516	0.1516
236	2047.50	6.998	-0.01481	5.291	0.1524	0.1524
237	2057.75	6.998	-0.01489	5.282	0.1533	0.1533
238	2068.00	6.998	-0.01492	5.277	0.1541	0.1541
239	2078.25	6.995	-0.01491	5.28	0.1549	0.1549
240	2088.50	6.992	-0.01494	5.269	0.1558	0.1558
241	2098.75	7.001	-0.01497	5.261	0.1566	0.1566
242	2109.00	7.003	-0.01502	5.258	0.1574	0.1574
243	2119.25	7.001	-0.01505	5.247	0.1582	0.1582
244	2129.50	7.003	-0.01505	5.247	0.1591	0.1591
245	2139.75	6.992	-0.01512	5.239	0.1599	0.1599
246	2150.00	6.998	-0.01512	5.239	0.1607	0.1607
247	2160.25	6.995	-0.0152	5.222	0.1615	0.1615
248	2170.50	7.001	-0.01519	5.228	0.1624	0.1624
249	2180.75	6.998	-0.01527	5.23	0.1632	0.1632
250	2191.00	6.987	-0.0153	5.222	0.1641	0.1641
251	2201.25	7.001	-0.0153	5.206	0.1649	0.1649
252	2211.50	6.998	-0.01529	5.203	0.1658	0.1658
253	2221.75	7.001	-0.01537	5.184	0.1666	0.1666
254	2232.00	6.998	-0.01539	5.189	0.1674	0.1674
255	2242.25	6.998	-0.01544	5.184	0.1683	0.1683
256	2252.50	6.998	-0.01545	5.176	0.1691	0.1691
257	2262.75	7.009	-0.01547	5.165	0.1699	0.1699
258	2273.00	6.989	-0.0155	5.159	0.1707	0.1707

261	2303.75	6.987	-0.01559	5.143	0.1733	0.1733
262	2314.00	7.003	-0.01562	5.137	0.1741	0.1741
263	2324.25	7.001	-0.0156	5.137	0.1749	0.1749
264	2334.50	6.998	-0.0156	5.134	0.1758	0.1758
265	2344.75	7.001	-0.01565	5.129	0.1766	0.1766
266	2355.00	7.009	-0.01569	5.126	0.1775	0.1775
267	2365.25	6.998	-0.0157	5.124	0.1783	0.1783
268	2375.50	7.012	-0.01572	5.11	0.1791	0.1791
269	2385.75	6.989	-0.01575	5.118	0.1799	0.1799
270	2396.00	6.995	-0.01574	5.113	0.1808	0.1808
271	2406.25	6.998	-0.01579	5.093	0.1815	0.1815
272	2416.50	7.009	-0.01582	5.085	0.1824	0.1824
273	2426.75	7.001	-0.01585	5.091	0.1833	0.1833
274	2437.00	7.001	-0.01587	5.074	0.1841	0.1841
275	2447.25	6.995	-0.0159	5.077	0.1849	0.1849
276	2457.50	7.006	-0.01592	5.077	0.1858	0.1858
277	2467.75	7.001	-0.01595	5.063	0.1866	0.1866
278	2478.00	6.998	-0.01597	5.058	0.1874	0.1874
279	2488.25	7.003	-0.01598	5.052	0.1883	0.1883
280	2498.50	7.014	-0.01595	5.044	0.1891	0.1891
281	2508.75	7.001	-0.01598	5.044	0.1899	0.1899
282	2519.00	7.001	-0.01602	5.033	0.1907	0.1907
283	2529.25	6.995	-0.01595	5.036	0.1916	0.1916
284	2539.50	6.998	-0.01603	5.025	0.1924	0.1924
285	2549.75	6.998	-0.01607	5.019	0.1933	0.1933
286	2560.00	6.998	-0.01605	5.019	0.1941	0.1941
287	2570.25	6.998	-0.01607	5.008	0.1949	0.1949
288	2580.50	6.995	-0.01608	5.008	0.1958	0.1958
289	2590.75	7.001	-0.0161	4.984	0.1966	0.1966
290	2601.00	6.995	-0.01605	4.989	0.1975	0.1975
291	2611.25	6.995	-0.01608	4.981	0.1983	0.1983
292	2621.50	6.998	-0.01608	4.976	0.1991	0.1991
293	2631.75	6.998	-0.01607	4.976	0.1999	0.1999
294	2642.00	6.998	-0.01608	4.97	0.2007	0.2007
295	2652.25	6.998	-0.01618	4.967	0.2016	0.2016
296	2662.50	6.998	-0.01612	4.965	0.2024	0.2024
297	2672.75	6.998	-0.0161	4.962	0.2033	0.2033
298	2683.00	6.998	-0.01618	4.956	0.2041	0.2041
299	2693.25	6.998	-0.0162	4.962	0.205	0.205
300	2703.50	6.995	-0.01613	4.965	0.2058	0.2058
301	2713.75	7.012	-0.01617	4.951	0.2066	0.2066
302	2724.00	6.981	-0.01627	4.951	0.2075	0.2075
303	2734.25	7.001	-0.01623	4.937	0.2083	0.2083
304	2744.50	6.998	-0.01617	4.934	0.2092	0.2092
305	2754.75	6.992	-0.01633	4.932	0.2101	0.2101
306	2765.00	6.998	-0.01633	4.934	0.2109	0.2109
307	2775.25	6.998	-0.01627	4.921	0.2118	0.2118
308	2785.50	6.998	-0.01628	4.929	0.2126	0.2126
309	2795.75	6.995	-0.01635	4.926	0.2135	0.2135
310	2806.00	6.998	-0.01632	4.902	0.2143	0.2143
311	2816.25	6.995	-0.01625	4.902	0.2151	0.2151
312	2826.50	6.998	-0.01637	4.904	0.216	0.216
313	2836.75	7.001	-0.01642	4.902	0.2169	0.2169
314	2847.00	6.998	-0.01633	4.888	0.2176	0.2176
315	2857.25	6.998	-0.01637	4.896	0.2185	0.2185
316	2867.50	6.995	-0.01642	4.888	0.2194	0.2194
317	2877.75	6.995	-0.0164	4.893	0.2201	0.2201
318	2888.00	6.998	-0.01642	4.888	0.2209	0.2209
319	2898.25	6.998	-0.01648	4.885	0.2219	0.2219
320	2908.50	6.998	-0.01645	4.885	0.2227	0.2227
321	2918.75	6.998	-0.01642	4.888	0.2235	0.2235
322	2929.00	7.003	-0.01643	4.88	0.2243	0.2243
323	2939.25	6.995	-0.0165	4.885	0.2252	0.2252
324	2949.50	7.001	-0.0165	4.874	0.2261	0.2261
325	2959.75	6.995	-0.01652	4.877	0.2268	0.2268
326	2970.00	6.998	-0.01648	4.874	0.2277	0.2277
327	2980.25	7.001	-0.01653	4.874	0.2286	0.2286
328	2990.50	6.992	-0.01653	4.877	0.2294	0.2294
329	3000.75	6.951	-0.01652	4.874	0.2302	0.2302
330	3011.00	6.998	-0.01655	4.88	0.2311	0.2311
331	3021.25	6.998	-0.01665	4.88	0.232	0.232
332	3031.50	6.998	-0.01665	4.88	0.2327	0.2327
333	3041.75	6.998	-0.01666	4.88	0.2336	0.2336
334	3052.00	7.001	-0.01665	4.863	0.2345	0.2345
335	3062.25	6.998	-0.01668	4.869	0.2353	0.2353
336	3072.50	6.998	-0.01668	4.871	0.2361	0.2361
337	3082.75	6.998	-0.01665	4.861	0.2369	0.2369
338	3093.00	7.001	-0.01671	4.874	0.2378	0.2378
339	3103.25	7.001	-0.0167	4.869	0.2387	0.2387
340	3113.50	6.995	-0.01673	4.855	0.2393	0.2393
341	3123.75	6.998	-0.01675	4.861	0.2402	0.2402
342	3134.00	6.992	-0.01676	4.863	0.2412	0.2412
343	3144.25	6.995	-0.01676	4.863	0.242	0.242
344	3154.50	6.998	-0.01676	4.855	0.2427	0.2427
345	3164.75	7.001	-0.01678	4.861	0.2435	0.2435
346	3175.00	7.003	-0.0168	4.858	0.2446	0.2446
347	3185.25	6.992	-0.01678	4.85	0.2453	0.2453
348	3195.50	6.998	-0.01683	4.847	0.246	0.246
349	3205.75	6.998	-0.01683	4.847	0.2469	0.2469
350	3216.00	7.003	-0.01685	4.839	0.2478	0.2478

353	3246.75	7.031	-0.0169	4.847	0.2504	0.2504
354	3257.00	7.042	-0.0169	4.847	0.2512	0.2512
355	3267.25	7.001	-0.01691	4.833	0.2519	0.2519
356	3277.50	6.995	-0.01693	4.828	0.2527	0.2527
357	3287.75	6.998	-0.01695	4.828	0.2537	0.2537
358	3298.00	7.001	-0.01695	4.822	0.2545	0.2545
359	3308.25	6.992	-0.01696	4.819	0.2552	0.2552
360	3318.50	6.995	-0.017	4.841	0.256	0.256
361	3328.75	7.001	-0.017	4.836	0.257	0.257
362	3339.00	6.998	-0.01701	4.836	0.2578	0.2578
363	3349.25	6.995	-0.01703	4.817	0.2586	0.2586
364	3359.50	6.998	-0.0171	4.817	0.2594	0.2594
365	3369.75	6.998	-0.01705	4.814	0.2602	0.2602
366	3380.00	6.931	-0.01706	4.811	0.261	0.261
367	3390.25	6.998	-0.01711	4.806	0.2618	0.2618
368	3400.50	7.001	-0.01716	4.806	0.2627	0.2627
369	3410.75	6.998	-0.01713	4.808	0.2635	0.2635
370	3421.00	6.998	-0.01713	4.8	0.2644	0.2644
371	3431.25	6.984	-0.01716	4.8	0.2651	0.2651
372	3441.50	6.998	-0.0172	4.795	0.266	0.266
373	3451.75	7.001	-0.01711	4.795	0.2669	0.2669
374	3462.00	6.984	-0.01713	4.789	0.2677	0.2677
375	3472.25	6.984	-0.01721	4.789	0.2685	0.2685
376	3482.50	7.001	-0.01721	4.781	0.2694	0.2694
377	3492.75	6.998	-0.01723	4.77	0.2702	0.2702
378	3503.00	6.995	-0.0172	4.778	0.2711	0.2711
379	3513.25	7.001	-0.01725	4.762	0.2719	0.2719
380	3523.50	6.998	-0.0173	4.767	0.2727	0.2727
381	3533.75	6.998	-0.01728	4.778	0.2736	0.2736
382	3544.00	6.998	-0.01728	4.765	0.2744	0.2744
383	3554.25	7.001	-0.0173	4.765	0.2753	0.2753
384	3564.50	6.995	-0.01735	4.759	0.2761	0.2761
385	3574.75	6.998	-0.01733	4.762	0.277	0.277
386	3585.00	7.001	-0.01736	4.762	0.2778	0.2778
387	3595.25	6.998	-0.01743	4.765	0.2787	0.2787
388	3605.50	6.998	-0.01741	4.754	0.2795	0.2795
389	3615.75	6.995	-0.01738	4.756	0.2803	0.2803
390	3626.00	6.995	-0.01743	4.759	0.2812	0.2812
391	3636.25	6.998	-0.01748	4.751	0.2821	0.2821
392	3646.50	6.998	-0.01745	4.748	0.2829	0.2829
393	3656.75	6.998	-0.01746	4.748	0.2836	0.2836
394	3667.00	6.967	-0.01749	4.745	0.2842	0.2842
395	3677.25	6.948	-0.01753	4.748	0.2853	0.2853
396	3687.50	6.998	-0.01754	4.756	0.2861	0.2861
397	3697.75	6.998	-0.01758	4.759	0.2871	0.2871
398	3708.00	6.998	-0.01753	4.756	0.288	0.288
399	3718.25	7.001	-0.01756	4.756	0.2887	0.2887
400	3728.50	7.001	-0.01759	4.756	0.2896	0.2896
401	3738.75	7.028	-0.01761	4.748	0.2905	0.2905
402	3749.00	7.001	-0.01759	4.745	0.2914	0.2914
403	3759.25	7.023	-0.01761	4.74	0.2921	0.2921
404	3769.50	7.001	-0.01764	4.745	0.293	0.293
405	3779.75	6.998	-0.01763	4.737	0.2938	0.2938
406	3790.00	6.967	-0.01766	4.732	0.2947	0.2947
407	3800.25	6.995	-0.01769	4.737	0.2954	0.2954
408	3810.50	6.995	-0.01773	4.724	0.2963	0.2963
409	3814.97	6.995	-0.01771	4.724	0.2968	0.2968

DIRECT SHEAR TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-300
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 8/1/19
Sample Type: CORE

Project No.: 19-300
Checked By: SKK
Depth: 30-31'
Elevation: N/A

Soil Description:
Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress psi	Vertical Displacement in	Horizontal Stress psi	Horizontal Displacement in	Cumulative Displacement in
1	0.00	13.99	0.00649	-0.0137	0	0
2	0.01	14	0.006507	-0.0137	0	0
3	0.04	14	0.00649	-0.01096	0	0
4	0.09	14	0.00649	-0.01096	0	0
5	0.16	14	0.00649	-0.01096	0	0
6	0.25	14	0.00649	-0.01096	1.678e-005	1.678e-005
7	0.36	14	0.006473	-0.01096	1.678e-005	1.678e-005
8	0.49	14	0.006473	-0.00822	0	0
9	0.64	14	0.006473	-0.00548	3.355e-005	3.355e-005
10	0.81	14	0.006473	-0.00822	1.678e-005	1.678e-005
11	1.00	14	0.006457	-0.00274	1.678e-005	1.678e-005
12	1.21	14	0.006457	0	0	0
13	1.44	14	0.006473	0.00274	1.678e-005	1.678e-005
14	1.69	14	0.006457	0.00548	3.355e-005	3.355e-005
15	2.00	14	0.006457	0.01096	3.355e-005	3.355e-005
16	2.25	14	0.006457	0.00822	5.033e-005	5.033e-005
17	2.56	14	0.006457	0.01096	5.033e-005	5.033e-005
18	2.89	14	0.00644	0.0137	6.711e-005	6.711e-005
19	3.24	14	0.00644	0.02192	6.711e-005	6.711e-005
20	3.61	14	0.00644	0.02192	8.388e-005	8.388e-005
21	4.00	14	0.006424	0.02466	0.0001174	0.0001174
22	4.84	14	0.006424	0.03014	0.0002181	0.0002181
23	5.76	14	0.006424	0.03836	0.0002684	0.0002684
24	6.76	14	0.00639	0.04384	0.0003523	0.0003523
25	7.84	14	0.00639	0.04658	0.0004194	0.0004194
26	9.00	14	0.006374	0.0548	0.0004865	0.0004865
27	10.24	14	0.006357	0.06028	0.0005872	0.0005872
28	11.56	14	0.006357	0.06576	0.0006711	0.0006711
29	12.96	14	0.006341	0.07398	0.0007717	0.0007717
30	14.94	14	0.006341	0.0822	0.0009227	0.0009227
31	16.00	14	0.006324	0.09316	0.001007	0.001007
32	17.64	14	0.006324	0.1233	0.00109	0.00109
33	19.36	14	0.006324	0.1233	0.00109	0.00109
34	21.16	14	0.006291	0.1151	0.001141	0.001141
35	23.04	14	0.006258	0.09589	0.001292	0.001292
36	25.00	14	0.006191	0.1014	0.001392	0.001392
37	30.25	14	0.006141	0.1014	0.00156	0.00156
38	36.00	14	0.006141	0.1041	0.001627	0.001627
39	43.56	14	0.006108	0.1014	0.001678	0.001678
40	49.00	14	0.006092	0.1014	0.001611	0.001611
41	56.25	14	0.006058	0.09589	0.001627	0.001627
42	64.00	14	0.006009	0.09589	0.001661	0.001661
43	72.25	14	0.005992	0.09863	0.001661	0.001661
44	81.00	14	0.005975	0.1836	0.001728	0.001728
45	90.25	14	0.005942	0.1836	0.001778	0.001778
46	100.00	14	0.005942	0.2	0.001795	0.001795
47	110.25	14	0.005926	0.2	0.001845	0.001845
48	120.50	14	0.005892	0.1781	0.001845	0.001845
49	130.75	14	0.005826	0.1754	0.001829	0.001829
50	141.00	14	0.005876	0.7261	0.002332	0.002332
51	151.25	14	0.00581	1.293	0.002886	0.002886
52	161.50	14	0.005793	1.606	0.003221	0.003221
53	171.75	14	0.00571	1.704	0.003406	0.003406
54	182.00	14	0.005743	2.337	0.003875	0.003875
55	192.25	14	0.005644	3.028	0.004563	0.004563
56	202.50	14	0.005644	3.652	0.005251	0.005251
57	212.75	14	0.005577	4.208	0.005989	0.005989
58	223.00	14	0.005544	4.762	0.006694	0.006694
59	233.25	14	0.005494	5.261	0.007432	0.007432
60	243.50	14	0.005461	5.699	0.008187	0.008187
61	253.75	14	0.005461	6.088	0.008942	0.008942
62	264.00	14	0.005411	6.425	0.009663	0.009663
63	274.25	14	0.005444	6.778	0.01042	0.01042
64	284.50	13.99	0.005361	7.074	0.01119	0.01119
65	294.75	14	0.005361	7.351	0.01196	0.01196
66	305.00	14	0.005345	7.628	0.01267	0.01267
67	315.25	14	0.005328	7.863	0.01342	0.01342
68	325.50	14	0.005312	8.072	0.01418	0.01418
69	335.75	14	0.005262	8.277	0.01495	0.01495
70	346.00	14	0.005179	8.461	0.01577	0.01577
71	356.25	14	0.005195	8.625	0.01654	0.01654
72	366.50	14	0.005162	8.784	0.01733	0.01733
73	376.75	14	0.005096	8.915	0.01812	0.01812
74	387.00	14	0.005096	9.017	0.01892	0.01892

77	417.75	14	0.00498	9.266	0.02131	0.02131
78	428.00	14	0.004963	9.337	0.02208	0.02208
79	438.25	14	0.004946	9.379	0.02283	0.02283
80	448.50	14	0.004897	9.414	0.02366	0.02366
81	458.75	14	0.004814	9.444	0.02446	0.02446
82	469.00	14	0.00478	9.466	0.02528	0.02528
83	479.25	14	0.004747	9.488	0.02602	0.02602
84	489.50	14	0.004697	9.494	0.02684	0.02684
85	499.75	14	0.004614	9.499	0.0277	0.0277
86	510.00	14	0.004531	9.494	0.0285	0.0285
87	520.25	14	0.004482	9.499	0.02936	0.02936
88	530.50	14	0.004498	9.472	0.03005	0.03005
89	540.75	14	0.004432	9.442	0.03089	0.03089
90	551.00	14	0.004349	9.436	0.03169	0.03169
91	561.25	14	0.004266	9.403	0.03256	0.03256
92	571.50	14	0.004299	9.379	0.03334	0.03334
93	581.75	14	0.004233	9.359	0.03417	0.03417
94	592.00	14	0.004166	9.326	0.03496	0.03496
95	602.25	14	0.004116	9.302	0.03577	0.03577
96	612.50	14	0.004033	9.291	0.03662	0.03662
97	622.75	14	0.004	9.255	0.03745	0.03745
98	633.00	14	0.00395	9.244	0.03825	0.03825
99	643.25	14	0.003901	9.242	0.03906	0.03906
100	653.50	14	0.003834	9.225	0.03986	0.03986
101	663.75	14	0.003784	9.184	0.04068	0.04068
102	674.00	14	0.003735	9.162	0.04157	0.04157
103	684.25	14	0.003685	9.129	0.04236	0.04236
104	694.50	14	0.003668	9.077	0.04322	0.04322
105	704.75	14	0.003585	9.044	0.04404	0.04404
106	715.00	14	0.003535	9.025	0.04486	0.04486
107	725.25	14	0.003486	8.995	0.0457	0.0457
108	735.50	14	0.003419	8.959	0.04651	0.04651
109	745.75	14	0.003403	8.932	0.04733	0.04733
110	756.00	14	0.003336	8.891	0.0482	0.0482
111	766.25	14	0.003287	8.863	0.04902	0.04902
112	776.50	14	0.003237	8.833	0.04981	0.04981
113	786.75	14	0.003187	8.8	0.05063	0.05063
114	797.00	14	0.003121	8.781	0.05144	0.05144
115	807.25	14	0.003071	8.746	0.05228	0.05228
116	817.50	14	0.003038	8.718	0.05308	0.05308
117	827.75	14	0.003004	8.696	0.05387	0.05387
118	838.00	14	0.002955	8.663	0.05473	0.05473
119	848.25	14	0.002888	8.636	0.05558	0.05558
120	858.50	14	0.002838	8.617	0.05639	0.05639
121	868.75	14	0.002838	8.592	0.05723	0.05723
122	879.00	14	0.002789	8.568	0.05806	0.05806
123	889.25	14	0.002722	8.548	0.0589	0.0589
124	899.50	14	0.002706	8.521	0.05971	0.05971
125	909.75	14	0.002656	8.491	0.06055	0.06055
126	920.00	14	0.002606	8.488	0.06137	0.06137
127	930.25	14	0.00254	8.458	0.06217	0.06217
128	940.50	14	0.00254	8.441	0.06306	0.06306
129	950.75	14	0.00249	8.428	0.06379	0.06379
130	961.00	14	0.00249	8.417	0.06471	0.06471
131	971.25	14	0.002423	8.398	0.06553	0.06553
132	981.50	14	0.002374	8.389	0.06637	0.06637
133	991.75	14	0.002357	8.384	0.06719	0.06719
134	1002.00	14	0.002324	8.357	0.068	0.068
135	1012.25	14	0.002291	8.343	0.06885	0.06885
136	1022.50	14	0.002257	8.326	0.06967	0.06967
137	1032.75	14	0.002224	8.307	0.07053	0.07053
138	1043.00	14	0.002241	8.299	0.07144	0.07144
139	1053.25	14	0.002191	8.283	0.07212	0.07212
140	1063.50	14	0.002108	8.263	0.07291	0.07291
141	1073.75	13.99	0.002125	8.222	0.07383	0.07383
142	1084.00	14	0.002125	8.209	0.07474	0.07474
143	1094.25	14	0.002075	8.203	0.07548	0.07548
144	1104.50	14	0.001975	8.198	0.07633	0.07633
145	1114.75	14	0.001992	8.146	0.07709	0.07709
146	1125.00	14	0.001975	8.132	0.07803	0.07803
147	1135.25	14	0.001892	8.143	0.07882	0.07882
148	1145.50	14	0.001859	8.121	0.07967	0.07967
149	1155.75	13.99	0.001859	8.074	0.08053	0.08053
150	1166.00	14	0.001842	8.091	0.08133	0.08133
151	1176.25	14	0.001726	8.074	0.08216	0.08216
152	1186.50	14	0.001726	8.025	0.08306	0.08306
153	1196.75	13.99	0.001759	8.02	0.08385	0.08385
154	1207.00	14	0.001676	8.028	0.08476	0.08476
155	1217.25	14	0.001593	8.011	0.08554	0.08554
156	1227.50	14	0.001643	7.965	0.08638	0.08638
157	1237.75	14	0.001643	7.978	0.08727	0.08727
158	1248.00	14	0.001527	7.97	0.08804	0.08804
159	1258.25	14	0.001494	7.921	0.0889	0.0889
160	1268.50	14	0.001544	7.904	0.08977	0.08977
161	1278.75	14	0.001494	7.918	0.09059	0.09059
162	1289.00	14	0.001394	7.915	0.09142	0.09142
163	1299.25	14	0.001411	7.874	0.09229	0.09229
164	1309.50	14	0.001427	7.866	0.09309	0.09309
165	1319.75	14	0.001378	7.894	0.09395	0.09395
166	1330.00	14	0.001295	7.885	0.09477	0.09477

169	1360.75	14	0.001228	7.855	0.09724	0.09724
170	1371.00	14	0.001212	7.833	0.09814	0.09814
171	1381.25	14	0.001228	7.809	0.09897	0.09897
172	1391.50	14	0.001195	7.82	0.09975	0.09975
173	1401.75	14	0.001178	7.811	0.1007	0.1007
174	1412.00	14	0.001162	7.767	0.1015	0.1015
175	1422.25	14	0.001129	7.759	0.1023	0.1023
176	1432.50	14	0.001129	7.773	0.1031	0.1031
177	1442.75	14	0.001096	7.754	0.104	0.104
178	1453.00	14	0.001129	7.715	0.1048	0.1048
179	1463.25	14	0.001079	7.729	0.1056	0.1056
180	1473.50	14	0.001029	7.721	0.1065	0.1065
181	1483.75	14	0.001029	7.694	0.1074	0.1074
182	1494.00	14	0.001046	7.677	0.1081	0.1081
183	1504.25	14	0.001013	7.688	0.1089	0.1089
184	1514.50	14	0.0009793	7.707	0.1099	0.1099
185	1524.75	14	0.0009793	7.683	0.1107	0.1107
186	1535.00	14	0.0009959	7.652	0.1114	0.1114
187	1545.25	14	0.0009793	7.641	0.1123	0.1123
188	1555.50	14	0.0009627	7.65	0.1132	0.1132
189	1565.75	14	0.0009627	7.617	0.114	0.114
190	1576.00	14	0.0009959	7.606	0.1148	0.1148
191	1586.25	14	0.0009793	7.592	0.1156	0.1156
192	1596.50	14	0.0009793	7.606	0.1165	0.1165
193	1606.75	14	0.0009793	7.606	0.1173	0.1173
194	1617.00	14	0.001013	7.559	0.1181	0.1181
195	1627.25	14	0.0009959	7.551	0.1189	0.1189
196	1637.50	14	0.001013	7.576	0.1197	0.1197
197	1647.75	14	0.0009959	7.554	0.1206	0.1206
198	1658.00	14	0.001029	7.515	0.1213	0.1213
199	1668.25	14	0.001029	7.504	0.1222	0.1222
200	1678.50	14	0.001029	7.535	0.123	0.123
201	1688.75	14	0.0009793	7.532	0.1239	0.1239
202	1699.00	14	0.001029	7.477	0.1247	0.1247
203	1709.25	14	0.001627	7.472	0.1256	0.1256
204	1719.50	14	0.00156	7.48	0.1263	0.1263
205	1729.75	14	0.00156	7.477	0.1273	0.1273
206	1740.00	14	0.001627	7.433	0.128	0.128
207	1750.25	13.99	0.00161	7.43	0.1288	0.1288
208	1760.50	14	0.001593	7.447	0.1296	0.1296
209	1770.75	14	0.001577	7.439	0.1306	0.1306
210	1781.00	14	0.001643	7.398	0.1313	0.1313
211	1791.25	13.99	0.001627	7.395	0.1321	0.1321
212	1801.50	14	0.001643	7.42	0.1329	0.1329
213	1811.75	14	0.001593	7.417	0.1339	0.1339
214	1822.00	14	0.001676	7.378	0.1347	0.1347
215	1832.25	14	0.001643	7.367	0.1355	0.1355
216	1842.50	14	0.001593	7.392	0.1363	0.1363
217	1852.75	13.99	0.001676	7.37	0.1372	0.1372
218	1863.00	14	0.001676	7.351	0.138	0.138
219	1873.25	13.99	0.001627	7.348	0.1388	0.1388
220	1883.50	14	0.001577	7.381	0.1397	0.1397
221	1893.75	14	0.001676	7.343	0.1406	0.1406
222	1904.00	14	0.001676	7.332	0.1414	0.1414
223	1914.25	13.99	0.00166	7.332	0.1421	0.1421
224	1924.50	14	0.00156	7.362	0.1431	0.1431
225	1934.75	14	0.001627	7.321	0.1439	0.1439
226	1945.00	14	0.001676	7.31	0.1448	0.1448
227	1955.25	13.99	0.00166	7.315	0.1456	0.1456
228	1965.50	14	0.001544	7.359	0.1465	0.1465
229	1975.75	14	0.00161	7.324	0.1473	0.1473
230	1986.00	14	0.001643	7.315	0.1481	0.1481
231	1996.25	14	0.001643	7.313	0.1489	0.1489
232	2006.50	14	0.001544	7.365	0.1497	0.1497
233	2016.75	14	0.00156	7.318	0.1506	0.1506
234	2027.00	14	0.001527	7.34	0.1514	0.1514
235	2037.25	14	0.00156	7.313	0.1523	0.1523
236	2047.50	14	0.001527	7.324	0.1531	0.1531
237	2057.75	14	0.001527	7.307	0.1539	0.1539
238	2068.00	14	0.001477	7.332	0.1548	0.1548
239	2078.25	14	0.001477	7.321	0.1556	0.1556
240	2088.50	14	0.001461	7.299	0.1565	0.1565
241	2098.75	14	0.001461	7.313	0.1573	0.1573
242	2109.00	14	0.001494	7.258	0.1581	0.1581
243	2119.25	14	0.001461	7.291	0.159	0.159
244	2129.50	14	0.001494	7.266	0.1597	0.1597
245	2139.75	14	0.001461	7.285	0.1606	0.1606
246	2150.00	14	0.001461	7.272	0.1615	0.1615
247	2160.25	14	0.001444	7.233	0.1622	0.1622
248	2170.50	14	0.001444	7.255	0.1631	0.1631
249	2180.75	14	0.001461	7.214	0.1639	0.1639
250	2191.00	14	0.001461	7.247	0.1648	0.1648
251	2201.25	14	0.001461	7.2	0.1656	0.1656
252	2211.50	14	0.001427	7.187	0.1663	0.1663
253	2221.75	13.99	0.001494	7.178	0.1672	0.1672
254	2232.00	14	0.001527	7.178	0.1681	0.1681
255	2242.25	14	0.001544	7.173	0.1688	0.1688
256	2252.50	14	0.001544	7.167	0.1698	0.1698
257	2262.75	14	0.001544	7.173	0.1706	0.1706
258	2273.00	14	0.00156	7.176	0.1713	0.1713

261	2303.75	14	0.001577	7.173	0.1738	0.1738
262	2314.00	13.99	0.001577	7.187	0.1746	0.1746
263	2324.25	13.99	0.001577	7.181	0.1754	0.1754
264	2334.50	13.99	0.001593	7.184	0.1762	0.1762
265	2344.75	14	0.001577	7.2	0.177	0.177
266	2355.00	14	0.001593	7.203	0.1779	0.1779
267	2365.25	14	0.00161	7.195	0.1787	0.1787
268	2375.50	13.99	0.001627	7.214	0.1796	0.1796
269	2385.75	14	0.00161	7.22	0.1803	0.1803
270	2396.00	14	0.001627	7.214	0.1812	0.1812
271	2406.25	14	0.001627	7.217	0.1819	0.1819
272	2416.50	14	0.001627	7.22	0.1828	0.1828
273	2426.75	14	0.001643	7.209	0.1836	0.1836
274	2437.00	13.99	0.001627	7.211	0.1845	0.1845
275	2447.25	14	0.001627	7.211	0.1854	0.1854
276	2457.50	14	0.001643	7.203	0.1862	0.1862
277	2467.75	14	0.00166	7.187	0.187	0.187
278	2478.00	14	0.00166	7.162	0.1878	0.1878
279	2488.25	13.99	0.001693	7.129	0.1886	0.1886
280	2498.50	14	0.001676	7.118	0.1894	0.1894
281	2508.75	13.99	0.00171	7.118	0.1902	0.1902
282	2519.00	13.99	0.001726	7.118	0.1912	0.1912
283	2529.25	14	0.001743	7.121	0.1919	0.1919
284	2539.50	14	0.001743	7.104	0.1928	0.1928
285	2549.75	14	0.001759	7.107	0.1936	0.1936
286	2560.00	14	0.001759	7.102	0.1945	0.1945
287	2570.25	14	0.001759	7.099	0.1953	0.1953
288	2580.50	14	0.001776	7.104	0.1962	0.1962
289	2590.75	14.01	0.001793	7.093	0.1969	0.1969
290	2601.00	14	0.001809	7.096	0.1978	0.1978
291	2611.25	14	0.001809	7.091	0.1986	0.1986
292	2621.50	14	0.001809	7.08	0.1994	0.1994
293	2631.75	14	0.001842	7.08	0.2004	0.2004
294	2642.00	14	0.001842	7.074	0.2012	0.2012
295	2652.25	13.98	0.001859	7.072	0.2021	0.2021
296	2662.50	14	0.001859	7.069	0.2028	0.2028
297	2672.75	14	0.001876	7.063	0.2038	0.2038
298	2683.00	13.98	0.001909	7.074	0.2046	0.2046
299	2693.25	14	0.001909	7.077	0.2054	0.2054
300	2703.50	14	0.001909	7.069	0.2062	0.2062
301	2713.75	14	0.001942	7.074	0.2071	0.2071
302	2724.00	14	0.001975	7.077	0.2077	0.2077
303	2734.25	14.01	0.001975	7.074	0.2089	0.2089
304	2744.50	14	0.002008	7.074	0.2098	0.2098
305	2754.75	14	0.002025	7.066	0.2104	0.2104
306	2765.00	14.01	0.002058	7.061	0.2112	0.2112
307	2775.25	13.99	0.002075	7.072	0.212	0.212
308	2785.50	14.01	0.002091	7.066	0.2128	0.2128
309	2795.75	14.01	0.002125	7.055	0.2136	0.2136
310	2806.00	14	0.002125	7.05	0.2145	0.2145
311	2816.25	14.01	0.002125	7.05	0.2155	0.2155
312	2826.50	13.99	0.002141	7.05	0.2163	0.2163
313	2836.75	14.01	0.002141	7.044	0.2171	0.2171
314	2847.00	13.99	0.002158	7.044	0.2179	0.2179
315	2857.25	13.99	0.002208	7.047	0.2188	0.2188
316	2867.50	13.99	0.002141	7.044	0.2196	0.2196
317	2877.75	13.99	0.002141	7.055	0.2204	0.2204
318	2888.00	14	0.002141	7.066	0.2214	0.2214
319	2898.25	14	0.002125	7.088	0.2221	0.2221
320	2908.50	14	0.002125	7.091	0.2228	0.2228
321	2918.75	14	0.002141	7.061	0.2237	0.2237
322	2929.00	14	0.002158	7.055	0.2245	0.2245
323	2939.25	14	0.002141	7.055	0.2256	0.2256
324	2949.50	14	0.002158	7.052	0.2264	0.2264
325	2959.75	14	0.002174	7.047	0.2272	0.2272
326	2970.00	14	0.002141	7.044	0.2282	0.2282
327	2980.25	13.99	0.002158	7.036	0.229	0.229
328	2990.50	13.99	0.002158	7.006	0.2297	0.2297
329	3000.75	13.98	0.002158	7.006	0.2305	0.2305
330	3011.00	14	0.002174	6.97	0.2313	0.2313
331	3021.25	14	0.002174	6.976	0.2323	0.2323
332	3031.50	14	0.002191	6.962	0.233	0.233
333	3041.75	14	0.002191	6.959	0.2341	0.2341
334	3052.00	14	0.002174	6.946	0.2347	0.2347
335	3062.25	13.98	0.002174	6.94	0.2355	0.2355
336	3072.50	13.98	0.002208	6.935	0.2363	0.2363
337	3082.75	14	0.002191	6.932	0.2374	0.2374
338	3093.00	14	0.002224	6.921	0.2381	0.2381
339	3103.25	14	0.002224	6.915	0.2389	0.2389
340	3113.50	14	0.002208	6.918	0.2398	0.2398
341	3123.75	14.01	0.002208	6.913	0.2404	0.2404
342	3134.00	14	0.002224	6.915	0.2412	0.2412
343	3144.25	14	0.002208	6.902	0.2422	0.2422
344	3154.50	14	0.002224	6.91	0.2431	0.2431
345	3164.75	14	0.002208	6.907	0.2441	0.2441
346	3175.00	14	0.002208	6.883	0.2448	0.2448
347	3185.25	13.98	0.002224	6.891	0.2455	0.2455
348	3195.50	14	0.002224	6.893	0.2463	0.2463
349	3205.75	14	0.002224	6.885	0.2473	0.2473
350	3216.00	14	0.002224	6.874	0.2479	0.2479

353	3246.75	14	0.002241	6.863	0.2505	0.2505
354	3257.00	14	0.002224	6.858	0.2512	0.2512
355	3267.25	14	0.002241	6.844	0.2523	0.2523
356	3277.50	14	0.002257	6.855	0.253	0.253
357	3287.75	14	0.002241	6.85	0.2538	0.2538
358	3298.00	14	0.002241	6.852	0.2549	0.2549
359	3308.25	14	0.002257	6.839	0.2556	0.2556
360	3318.50	13.98	0.002257	6.83	0.2563	0.2563
361	3328.75	14	0.002257	6.836	0.2573	0.2573
362	3339.00	14	0.002291	6.822	0.2582	0.2582
363	3349.25	14	0.002274	6.817	0.2589	0.2589
364	3359.50	14	0.002291	6.825	0.2597	0.2597
365	3369.75	14	0.002291	6.822	0.2606	0.2606
366	3380.00	14	0.002274	6.817	0.2614	0.2614
367	3390.25	13.98	0.002291	6.806	0.2621	0.2621
368	3400.50	14	0.002291	6.806	0.2629	0.2629
369	3410.75	14.01	0.002307	6.792	0.264	0.264
370	3421.00	14	0.002307	6.795	0.2647	0.2647
371	3431.25	14	0.002324	6.784	0.2656	0.2656
372	3441.50	14	0.002324	6.776	0.2666	0.2666
373	3451.75	13.97	0.002324	6.776	0.2674	0.2674
374	3462.00	14	0.002324	6.773	0.2682	0.2682
375	3472.25	14	0.002307	6.765	0.2692	0.2692
376	3482.50	13.99	0.002307	6.77	0.27	0.27
377	3492.75	14	0.002324	6.767	0.2708	0.2708
378	3503.00	14.01	0.00234	6.762	0.2715	0.2715
379	3513.25	14	0.002324	6.77	0.2725	0.2725
380	3523.50	13.97	0.002324	6.778	0.2732	0.2732
381	3533.75	14	0.00234	6.77	0.2741	0.2741
382	3544.00	14	0.00234	6.765	0.2748	0.2748
383	3554.25	14	0.00234	6.77	0.2759	0.2759
384	3564.50	14	0.002324	6.765	0.2766	0.2766
385	3574.75	14	0.00234	6.751	0.2775	0.2775
386	3585.00	14.01	0.002357	6.751	0.2783	0.2783
387	3595.25	13.99	0.00234	6.748	0.2791	0.2791
388	3605.50	14.01	0.00234	6.737	0.2798	0.2798
389	3615.75	14.01	0.00234	6.729	0.2808	0.2808
390	3626.00	14	0.00234	6.743	0.2817	0.2817
391	3636.25	14	0.002357	6.737	0.2826	0.2826
392	3646.50	14	0.00234	6.74	0.2833	0.2833
393	3656.75	14	0.002357	6.735	0.2841	0.2841
394	3667.00	13.99	0.00234	6.735	0.285	0.285
395	3677.25	14	0.00234	6.732	0.2859	0.2859
396	3687.50	14	0.00234	6.732	0.2867	0.2867
397	3697.75	14	0.00234	6.726	0.2874	0.2874
398	3708.00	14	0.00234	6.724	0.2885	0.2885
399	3718.25	14	0.00234	6.71	0.2893	0.2893
400	3728.50	14	0.00234	6.71	0.2901	0.2901
401	3738.75	14	0.00234	6.704	0.291	0.291
402	3749.00	14	0.002357	6.702	0.2919	0.2919
403	3759.25	14	0.00234	6.699	0.2927	0.2927
404	3765.56	14	0.00234	6.699	0.2934	0.2934

DIRECT SHEAR TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-603
Sample No.: 19-300
Test No.: 3

Location: TX
Tested By: SKK
Test Date: 8/5/19
Sample Type: CORE

Project No.: 19-300
Checked By: SKK
Depth: 30-31'
Elevation: N/A

Soil Description:
Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress psi	Vertical Displacement in	Horizontal Stress psi	Horizontal Displacement in	Cumulative Displacement in
1	0.00	28	0.02181	-0.00548	0	0
2	0.01	28	0.02179	-0.00822	-6.711e-005	6.711e-005
3	0.04	28	0.02179	0.00822	-1.678e-005	1.678e-005
4	0.09	28	0.02179	0.02192	3.355e-005	3.355e-005
5	0.16	28	0.02179	0.03836	1.678e-005	1.678e-005
6	0.25	28	0.02179	0.05754	1.678e-005	1.678e-005
7	0.36	28	0.02176	0.07946	5.033e-005	5.033e-005
8	0.49	28	0.02176	0.09589	0	0
9	0.64	28	0.02174	0.126	3.355e-005	3.355e-005
10	0.81	28	0.02173	0.1507	0.0001174	0.0001174
11	1.00	28	0.02171	0.1863	6.711e-005	6.711e-005
12	1.21	28	0.02171	0.2192	0.0001174	0.0001174
13	1.44	28	0.02169	0.2466	8.388e-005	8.388e-005
14	1.69	28.01	0.02166	0.2877	0.000151	0.000151
15	2.00	28	0.02164	0.3397	0.0001174	0.0001174
16	2.25	28	0.02163	0.3781	0.0001174	0.0001174
17	2.56	28	0.02161	0.4247	0.0001845	0.0001845
18	2.89	28.01	0.02161	0.485	0.0001845	0.0001845
19	3.24	28	0.02161	0.5288	0.0002349	0.0002349
20	3.61	28	0.02159	0.5808	0.0002181	0.0002181
21	4.00	28	0.02158	0.6384	0.0002013	0.0002013
22	4.84	28	0.02154	0.7452	0.0002517	0.0002517
23	5.76	28	0.02153	0.8494	0.0002684	0.0002684
24	6.76	28	0.02148	0.9261	0.0003188	0.0003188
25	7.84	28	0.02146	1.011	0.0003691	0.0003691
26	9.00	28	0.02143	1.06	0.0004026	0.0004026
27	10.24	28	0.02138	1.107	0.0004026	0.0004026
28	11.56	28	0.02135	1.167	0.0003691	0.0003691
29	12.96	28	0.02133	1.222	0.0004026	0.0004026
30	14.94	28	0.02131	1.26	0.0004362	0.0004362
31	16.00	28	0.0213	1.263	0.000453	0.000453
32	17.64	28	0.02126	1.252	0.0004362	0.0004362
33	19.36	28	0.02123	1.255	0.0004362	0.0004362
34	21.16	28	0.02121	1.244	0.0004865	0.0004865
35	23.04	28	0.0212	1.238	0.0004194	0.0004194
36	25.00	28	0.02118	1.252	0.0004698	0.0004698
37	30.25	28	0.02118	1.238	0.0005033	0.0005033
38	36.00	28	0.02111	1.23	0.0004698	0.0004698
39	43.56	28	0.02106	1.225	0.0005369	0.0005369
40	49.00	28	0.02103	1.227	0.0005033	0.0005033
41	56.25	27.99	0.021	1.238	0.0005704	0.0005704
42	64.00	28	0.02098	1.326	0.0005369	0.0005369
43	72.25	28	0.02098	1.326	0.0005704	0.0005704
44	81.00	27.99	0.02095	1.326	0.0005369	0.0005369
45	90.25	28	0.0209	1.326	0.0005872	0.0005872
46	100.00	28	0.02086	1.323	0.0006207	0.0006207
47	110.25	28	0.02088	1.323	0.0005704	0.0005704
48	120.50	28	0.02088	2.321	0.0007885	0.0007885
49	130.75	27.99	0.0209	2.948	0.001023	0.001023
50	141.00	28	0.02086	3.112	0.001124	0.001124
51	151.25	28	0.02088	4.458	0.001476	0.001476
52	161.50	28	0.02095	5.789	0.002064	0.002064
53	171.75	27.99	0.02095	6.85	0.002651	0.002651
54	182.00	28	0.02096	7.822	0.003238	0.003238
55	192.25	28	0.02098	8.631	0.003758	0.003758
56	202.50	27.99	0.02098	9.37	0.004345	0.004345
57	212.75	28	0.02096	10.05	0.004865	0.004865
58	223.00	28	0.02093	10.72	0.00552	0.00552
59	233.25	28	0.0209	11.33	0.006056	0.006056
60	243.50	28	0.02086	11.92	0.00666	0.00666
61	253.75	28	0.02086	12.47	0.007281	0.007281
62	264.00	28	0.02085	12.98	0.007885	0.007885
63	274.25	28	0.02083	13.46	0.008607	0.008607
64	284.50	28	0.02083	13.92	0.009328	0.009328
65	294.75	28	0.0208	14.35	0.009965	0.009965
66	305.00	28	0.02078	14.76	0.01067	0.01067
67	315.25	28	0.02076	15.12	0.01143	0.01143
68	325.50	28	0.0207	15.47	0.0122	0.0122
69	335.75	27.99	0.0207	15.8	0.01293	0.01293
70	346.00	28	0.02072	16.06	0.01366	0.01366
71	356.25	28	0.02068	16.34	0.01441	0.01441
72	366.50	28	0.02065	16.58	0.01518	0.01518
73	376.75	28	0.02058	16.78	0.01595	0.01595
74	387.00	28	0.02058	16.95	0.01674	0.01674

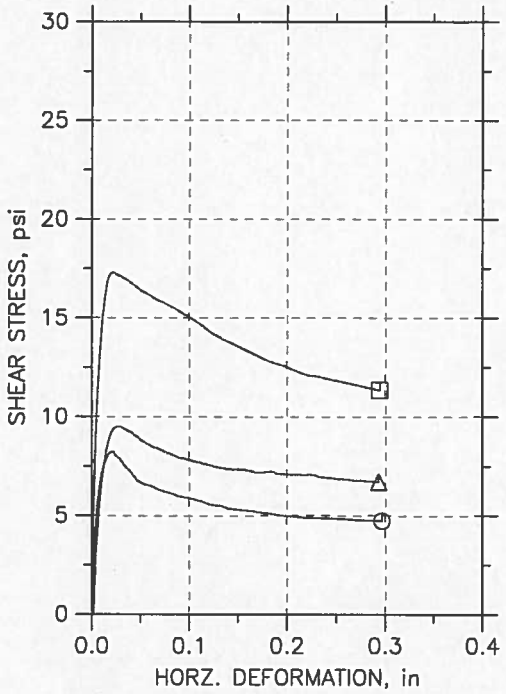
77	417.75	28	0.0206	17.2	0.01901	0.01901
78	428.00	28	0.02055	17.25	0.01981	0.01981
79	438.25	28	0.02058	17.26	0.0206	0.0206
80	448.50	28	0.02057	17.25	0.02134	0.02134
81	458.75	28	0.02052	17.29	0.02215	0.02215
82	469.00	28	0.02048	17.28	0.02293	0.02293
83	479.25	28	0.0205	17.27	0.02376	0.02376
84	489.50	28	0.02052	17.22	0.02454	0.02454
85	499.75	28	0.02048	17.19	0.02532	0.02532
86	510.00	28	0.02047	17.19	0.0261	0.0261
87	520.25	28	0.02048	17.16	0.02691	0.02691
88	530.50	28	0.0205	17.14	0.02772	0.02772
89	540.75	28	0.02047	17.11	0.02849	0.02849
90	551.00	28	0.0204	17.12	0.02931	0.02931
91	561.25	27.99	0.02043	17.1	0.03015	0.03015
92	571.50	27.99	0.02043	17.07	0.03089	0.03089
93	581.75	28	0.02043	17.04	0.03172	0.03172
94	592.00	28	0.02038	17	0.03253	0.03253
95	602.25	28	0.02037	16.99	0.03335	0.03335
96	612.50	28	0.02038	16.97	0.03416	0.03416
97	622.75	28	0.0204	16.93	0.0349	0.0349
98	633.00	27.99	0.02037	16.91	0.03573	0.03573
99	643.25	28	0.02035	16.89	0.03659	0.03659
100	653.50	27.99	0.02035	16.86	0.03741	0.03741
101	663.75	27.99	0.02037	16.83	0.0382	0.0382
102	674.00	28	0.02032	16.81	0.03901	0.03901
103	684.25	28	0.0203	16.77	0.03983	0.03983
104	694.50	28	0.02028	16.74	0.04067	0.04067
105	704.75	28	0.02027	16.72	0.04146	0.04146
106	715.00	28	0.02025	16.67	0.04228	0.04228
107	725.25	28	0.0202	16.65	0.04313	0.04313
108	735.50	27.99	0.02022	16.64	0.04392	0.04392
109	745.75	28	0.02018	16.59	0.04478	0.04478
110	756.00	28	0.02017	16.55	0.04558	0.04558
111	766.25	28	0.02015	16.52	0.04642	0.04642
112	776.50	28	0.02015	16.49	0.04724	0.04724
113	786.75	28	0.02015	16.47	0.04807	0.04807
114	797.00	28	0.02013	16.44	0.0489	0.0489
115	807.25	27.99	0.02013	16.41	0.04973	0.04973
116	817.50	28	0.0201	16.38	0.05051	0.05051
117	827.75	28	0.0201	16.35	0.05135	0.05135
118	838.00	28	0.02008	16.32	0.05218	0.05218
119	848.25	27.99	0.02007	16.29	0.05301	0.05301
120	858.50	28	0.02003	16.29	0.0538	0.0538
121	868.75	28	0.02003	16.24	0.05468	0.05468
122	879.00	28	0.02002	16.23	0.0555	0.0555
123	889.25	28	0.02	16.2	0.05634	0.05634
124	899.50	28	0.01998	16.17	0.05716	0.05716
125	909.75	28	0.01997	16.15	0.05803	0.05803
126	920.00	28	0.01995	16.12	0.05884	0.05884
127	930.25	28	0.01995	16.09	0.05971	0.05971
128	940.50	28	0.01997	16.07	0.0605	0.0605
129	950.75	27.99	0.01993	16.06	0.06134	0.06134
130	961.00	28	0.01993	16.01	0.06221	0.06221
131	971.25	28	0.01992	15.99	0.06303	0.06303
132	981.50	28	0.0199	15.96	0.06387	0.06387
133	991.75	28	0.01989	15.95	0.06467	0.06467
134	1002.00	28	0.01987	15.92	0.06553	0.06553
135	1012.25	28	0.01985	15.9	0.06639	0.06639
136	1022.50	28	0.01985	15.89	0.06721	0.06721
137	1032.75	28	0.01985	15.86	0.06805	0.06805
138	1043.00	28	0.01985	15.87	0.06885	0.06885
139	1053.25	28	0.01984	15.84	0.06969	0.06969
140	1063.50	27.99	0.01982	15.83	0.07055	0.07055
141	1073.75	28	0.0198	15.81	0.07137	0.07137
142	1084.00	28	0.01977	15.8	0.07221	0.07221
143	1094.25	28	0.01979	15.77	0.07301	0.07301
144	1104.50	28	0.01975	15.76	0.07382	0.07382
145	1114.75	27.99	0.01975	15.73	0.07466	0.07466
146	1125.00	28	0.01977	15.7	0.0755	0.0755
147	1135.25	28	0.01972	15.69	0.07627	0.07627
148	1145.50	28	0.01979	15.67	0.07714	0.07714
149	1155.75	28	0.01979	15.64	0.07795	0.07795
150	1166.00	28	0.01974	15.62	0.07875	0.07875
151	1176.25	28	0.01972	15.61	0.07961	0.07961
152	1186.50	28	0.01975	15.58	0.08043	0.08043
153	1196.75	28	0.01975	15.56	0.08123	0.08123
154	1207.00	28	0.01972	15.53	0.08201	0.08201
155	1217.25	28	0.01964	15.53	0.08291	0.08291
156	1227.50	28	0.01964	15.51	0.08372	0.08372
157	1237.75	28	0.01967	15.48	0.08456	0.08456
158	1248.00	28	0.01965	15.46	0.08539	0.08539
159	1258.25	28	0.01955	15.44	0.08625	0.08625
160	1268.50	28	0.01955	15.42	0.08711	0.08711
161	1278.75	28	0.01959	15.39	0.08796	0.08796
162	1289.00	28	0.01959	15.35	0.08873	0.08873
163	1299.25	28	0.0195	15.33	0.08959	0.08959
164	1309.50	28	0.01949	15.32	0.09044	0.09044
165	1319.75	28	0.01952	15.3	0.09127	0.09127
166	1330.00	28	0.01952	15.26	0.09133	0.09133

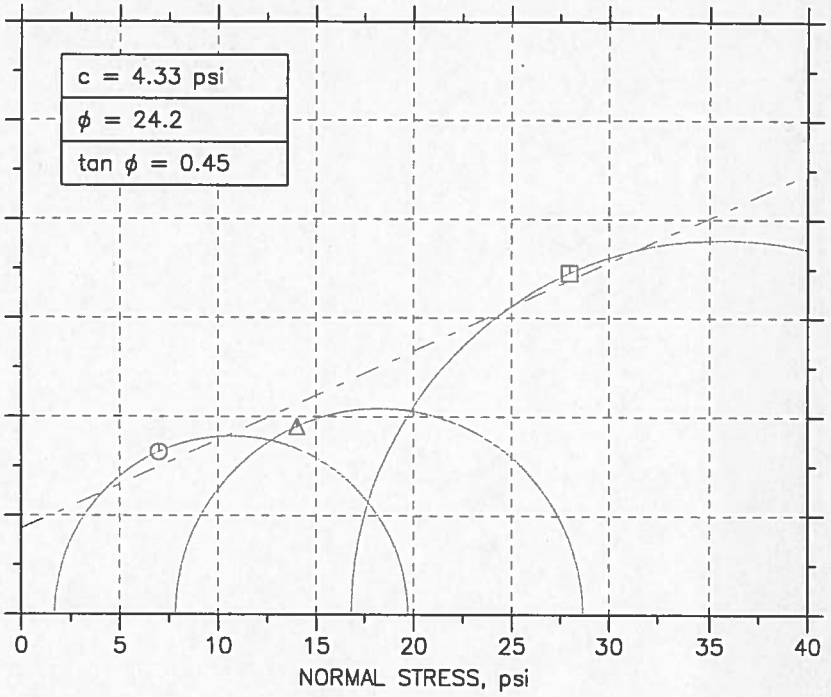
169	1360.75	28	0.01945	15.17	0.09464	0.09464
170	1371.00	28	0.01944	15.15	0.09546	0.09546
171	1381.25	28	0.01937	15.14	0.09635	0.09635
172	1391.50	28	0.01934	15.12	0.09717	0.09717
173	1401.75	28	0.01937	15.1	0.09803	0.09803
174	1412.00	28	0.01937	15.05	0.09883	0.09883
175	1422.25	28	0.0193	15.03	0.09974	0.09974
176	1432.50	27.99	0.01927	15.02	0.1005	0.1005
177	1442.75	28	0.0193	14.99	0.1014	0.1014
178	1453.00	28	0.01932	14.96	0.1024	0.1024
179	1463.25	28	0.01924	14.94	0.1031	0.1031
180	1473.50	28	0.01924	14.92	0.1039	0.1039
181	1483.75	27.99	0.01922	14.89	0.1047	0.1047
182	1494.00	28	0.01919	14.85	0.1055	0.1055
183	1504.25	28	0.0192	14.83	0.1064	0.1064
184	1514.50	28	0.01919	14.8	0.1072	0.1072
185	1524.75	28	0.01919	14.76	0.1081	0.1081
186	1535.00	28	0.01919	14.74	0.1088	0.1088
187	1545.25	28	0.01919	14.72	0.1097	0.1097
188	1555.50	28	0.01917	14.69	0.1104	0.1104
189	1565.75	28	0.01915	14.67	0.1113	0.1113
190	1576.00	28	0.01917	14.61	0.1122	0.1122
191	1586.25	28	0.01917	14.61	0.1129	0.1129
192	1596.50	28	0.01915	14.58	0.1137	0.1137
193	1606.75	28	0.01915	14.55	0.1145	0.1145
194	1617.00	28	0.01915	14.5	0.1154	0.1154
195	1627.25	28	0.01914	14.48	0.1162	0.1162
196	1637.50	28	0.01914	14.45	0.117	0.117
197	1647.75	28	0.01914	14.42	0.1179	0.1179
198	1658.00	28	0.01915	14.38	0.1187	0.1187
199	1668.25	28	0.01912	14.36	0.1195	0.1195
200	1678.50	28	0.0191	14.32	0.1203	0.1203
201	1688.75	28	0.01914	14.3	0.1212	0.1212
202	1699.00	28	0.01912	14.27	0.1221	0.1221
203	1709.25	28	0.01909	14.23	0.1228	0.1228
204	1719.50	28	0.01907	14.22	0.1237	0.1237
205	1729.75	28	0.0191	14.18	0.1245	0.1245
206	1740.00	28	0.01907	14.17	0.1254	0.1254
207	1750.25	27.99	0.01906	14.14	0.1261	0.1261
208	1760.50	28	0.01902	14.13	0.127	0.127
209	1770.75	28	0.01904	14.1	0.1278	0.1278
210	1781.00	28	0.01907	14.08	0.1286	0.1286
211	1791.25	27.99	0.01909	14.06	0.1294	0.1294
212	1801.50	28	0.0191	14.02	0.1303	0.1303
213	1811.75	27.99	0.01909	14.02	0.1311	0.1311
214	1822.00	28	0.01904	13.99	0.1319	0.1319
215	1832.25	28	0.01902	13.97	0.1327	0.1327
216	1842.50	28	0.01904	13.94	0.1335	0.1335
217	1852.75	28	0.01906	13.92	0.1343	0.1343
218	1863.00	28	0.01904	13.89	0.1352	0.1352
219	1873.25	28	0.01902	13.88	0.136	0.136
220	1883.50	28.01	0.01899	13.86	0.1368	0.1368
221	1893.75	28	0.01901	13.84	0.1378	0.1378
222	1904.00	28	0.01897	13.82	0.1385	0.1385
223	1914.25	28.01	0.01897	13.8	0.1393	0.1393
224	1924.50	28	0.01896	13.79	0.1401	0.1401
225	1934.75	28	0.01896	13.77	0.141	0.141
226	1945.00	28	0.01896	13.75	0.1418	0.1418
227	1955.25	28	0.01894	13.73	0.1426	0.1426
228	1965.50	28	0.01896	13.72	0.1434	0.1434
229	1975.75	28	0.01897	13.7	0.1442	0.1442
230	1986.00	28	0.01897	13.69	0.1451	0.1451
231	1996.25	28	0.01896	13.66	0.1459	0.1459
232	2006.50	28	0.01896	13.65	0.1468	0.1468
233	2016.75	28	0.01894	13.63	0.1476	0.1476
234	2027.00	28	0.01899	13.61	0.1484	0.1484
235	2037.25	27.99	0.01894	13.59	0.1492	0.1492
236	2047.50	28	0.01892	13.57	0.1501	0.1501
237	2057.75	28	0.01891	13.55	0.1508	0.1508
238	2068.00	28	0.01889	13.52	0.1517	0.1517
239	2078.25	28	0.01887	13.5	0.1526	0.1526
240	2088.50	28	0.01886	13.48	0.1534	0.1534
241	2098.75	27.99	0.01886	13.44	0.1542	0.1542
242	2109.00	28	0.01886	13.42	0.1551	0.1551
243	2119.25	28	0.01886	13.41	0.1559	0.1559
244	2129.50	28	0.01882	13.39	0.1567	0.1567
245	2139.75	28	0.01882	13.36	0.1576	0.1576
246	2150.00	28	0.01881	13.35	0.1584	0.1584
247	2160.25	28	0.01879	13.33	0.1592	0.1592
248	2170.50	28	0.01879	13.3	0.1601	0.1601
249	2180.75	28	0.01879	13.29	0.1609	0.1609
250	2191.00	28	0.01879	13.27	0.1618	0.1618
251	2201.25	28	0.01876	13.24	0.1626	0.1626
252	2211.50	28	0.01876	13.23	0.1634	0.1634
253	2221.75	28	0.01876	13.21	0.1642	0.1642
254	2232.00	28	0.01876	13.18	0.1651	0.1651
255	2242.25	28	0.01876	13.17	0.1659	0.1659
256	2252.50	28	0.01874	13.14	0.1667	0.1667
257	2262.75	28	0.01874	13.12	0.1676	0.1676
258	2273.00	28	0.01871	13.11	0.1684	0.1684

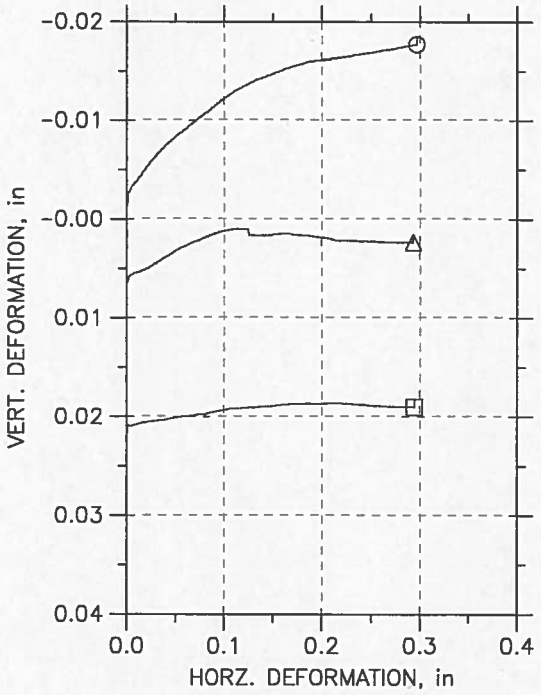
261	2303.75	28	0.01874	13.04	0.1708	0.1708
262	2314.00	28	0.01872	13.02	0.1717	0.1717
263	2324.25	28	0.01872	13	0.1725	0.1725
264	2334.50	27.99	0.01871	12.99	0.1733	0.1733
265	2344.75	28	0.01871	12.98	0.1741	0.1741
266	2355.00	28	0.01872	12.94	0.175	0.175
267	2365.25	28	0.01871	12.92	0.1758	0.1758
268	2375.50	28	0.01871	12.9	0.1767	0.1767
269	2385.75	28	0.01869	12.88	0.1775	0.1775
270	2396.00	28	0.01874	12.87	0.1783	0.1783
271	2406.25	28	0.01872	12.85	0.1792	0.1792
272	2416.50	28	0.01871	12.84	0.18	0.18
273	2426.75	28	0.01871	12.81	0.1808	0.1808
274	2437.00	28	0.01869	12.81	0.1817	0.1817
275	2447.25	28.01	0.01869	12.79	0.1825	0.1825
276	2457.50	28	0.01869	12.78	0.1833	0.1833
277	2467.75	28	0.01867	12.76	0.1842	0.1842
278	2478.00	28	0.01869	12.74	0.185	0.185
279	2488.25	28.01	0.01867	12.73	0.1859	0.1859
280	2498.50	28	0.01869	12.72	0.1867	0.1867
281	2508.75	28	0.01867	12.7	0.1875	0.1875
282	2519.00	28	0.01867	12.7	0.1884	0.1884
283	2529.25	28	0.01866	12.68	0.1892	0.1892
284	2539.50	28	0.01869	12.67	0.19	0.19
285	2549.75	28	0.01869	12.67	0.1909	0.1909
286	2560.00	27.99	0.01869	12.66	0.1917	0.1917
287	2570.25	28	0.01872	12.63	0.1927	0.1927
288	2580.50	28	0.01869	12.63	0.1934	0.1934
289	2590.75	28	0.01869	12.62	0.1942	0.1942
290	2601.00	28	0.01872	12.6	0.1951	0.1951
291	2611.25	28	0.01872	12.6	0.1959	0.1959
292	2621.50	28	0.01869	12.58	0.1967	0.1967
293	2631.75	28	0.01867	12.55	0.1976	0.1976
294	2642.00	28	0.01872	12.54	0.1984	0.1984
295	2652.25	28	0.01872	12.53	0.1993	0.1993
296	2662.50	28	0.01864	12.51	0.2002	0.2002
297	2672.75	28	0.01869	12.49	0.201	0.201
298	2683.00	28	0.01871	12.47	0.2018	0.2018
299	2693.25	28	0.01864	12.43	0.2027	0.2027
300	2703.50	28	0.01864	12.41	0.2035	0.2035
301	2713.75	28	0.01871	12.4	0.2043	0.2043
302	2724.00	28	0.01869	12.39	0.2051	0.2051
303	2734.25	28	0.01862	12.38	0.206	0.206
304	2744.50	28	0.01866	12.35	0.2068	0.2068
305	2754.75	28	0.01867	12.33	0.2077	0.2077
306	2765.00	28	0.01862	12.33	0.2086	0.2086
307	2775.25	27.99	0.01864	12.3	0.2094	0.2094
308	2785.50	28	0.01866	12.28	0.2102	0.2102
309	2795.75	28	0.01862	12.27	0.2111	0.2111
310	2806.00	28	0.01861	12.26	0.2119	0.2119
311	2816.25	27.99	0.01864	12.23	0.2127	0.2127
312	2826.50	28	0.01862	12.21	0.2136	0.2136
313	2836.75	28	0.01861	12.2	0.2145	0.2145
314	2847.00	28	0.01864	12.18	0.2153	0.2153
315	2857.25	28	0.01864	12.16	0.2161	0.2161
316	2867.50	28	0.01864	12.17	0.217	0.217
317	2877.75	28	0.01864	12.15	0.2178	0.2178
318	2888.00	28	0.01866	12.13	0.2186	0.2186
319	2898.25	28	0.01867	12.12	0.2194	0.2194
320	2908.50	28	0.01867	12.11	0.2204	0.2204
321	2918.75	28	0.01866	12.09	0.2212	0.2212
322	2929.00	28	0.01866	12.09	0.2219	0.2219
323	2939.25	28	0.01867	12.06	0.2228	0.2228
324	2949.50	28	0.01871	12.07	0.2237	0.2237
325	2959.75	28	0.01869	12.07	0.2245	0.2245
326	2970.00	28	0.01867	12.06	0.2252	0.2252
327	2980.25	28	0.01869	12.05	0.2261	0.2261
328	2990.50	28	0.01871	12.07	0.227	0.227
329	3000.75	28	0.01871	12.05	0.2279	0.2279
330	3011.00	28	0.01871	12.05	0.2286	0.2286
331	3021.25	28	0.01872	12.04	0.2294	0.2294
332	3031.50	28	0.01872	12.05	0.2304	0.2304
333	3041.75	28	0.01872	12.03	0.2313	0.2313
334	3052.00	28	0.01874	12.03	0.2319	0.2319
335	3062.25	28	0.01876	12.01	0.2329	0.2329
336	3072.50	28	0.01874	12.01	0.2338	0.2338
337	3082.75	28	0.01876	12	0.2346	0.2346
338	3093.00	28	0.01876	11.98	0.2352	0.2352
339	3103.25	28	0.01877	11.98	0.2361	0.2361
340	3113.50	28	0.01876	11.97	0.2371	0.2371
341	3123.75	27.99	0.01879	11.95	0.2378	0.2378
342	3134.00	28	0.01879	11.93	0.2385	0.2385
343	3144.25	28	0.01881	11.93	0.2395	0.2395
344	3154.50	28	0.01876	11.92	0.2405	0.2405
345	3164.75	28	0.01879	11.91	0.2412	0.2412
346	3175.00	28	0.01877	11.89	0.2418	0.2418
347	3185.25	28	0.01879	11.89	0.2428	0.2428
348	3195.50	28	0.01881	11.88	0.2438	0.2438
349	3205.75	27.99	0.01881	11.87	0.2445	0.2445
350	3216.00	28	0.01881	11.86	0.2452	0.2452

353	3246.75	27.99	0.01889	11.83	0.2475	0.2475
354	3257.00	28	0.01887	11.83	0.2485	0.2485
355	3267.25	28	0.01887	11.83	0.2494	0.2494
356	3277.50	28	0.01887	11.82	0.2502	0.2502
357	3287.75	28	0.01886	11.8	0.2511	0.2511
358	3298.00	27.99	0.01889	11.8	0.2519	0.2519
359	3308.25	28	0.01889	11.8	0.2527	0.2527
360	3318.50	28	0.01894	11.79	0.2535	0.2535
361	3328.75	28	0.01892	11.79	0.2544	0.2544
362	3339.00	28	0.01891	11.77	0.255	0.255
363	3349.25	28	0.01889	11.75	0.256	0.256
364	3359.50	28	0.01889	11.75	0.2569	0.2569
365	3369.75	28	0.01887	11.73	0.2577	0.2577
366	3380.00	28	0.01891	11.72	0.2585	0.2585
367	3390.25	28	0.01889	11.73	0.2594	0.2594
368	3400.50	28	0.01892	11.72	0.2601	0.2601
369	3410.75	28	0.01891	11.7	0.2609	0.2609
370	3421.00	28	0.01891	11.69	0.2619	0.2619
371	3431.25	28	0.01894	11.67	0.2626	0.2626
372	3441.50	28	0.01896	11.68	0.2635	0.2635
373	3451.75	28	0.01896	11.66	0.2643	0.2643
374	3462.00	28	0.01894	11.65	0.2652	0.2652
375	3472.25	27.99	0.01894	11.64	0.2662	0.2662
376	3482.50	28	0.01899	11.64	0.2669	0.2669
377	3492.75	28	0.01901	11.63	0.2678	0.2678
378	3503.00	28	0.01897	11.61	0.2684	0.2684
379	3513.25	28	0.01896	11.6	0.2695	0.2695
380	3523.50	28	0.01899	11.6	0.2702	0.2702
381	3533.75	28	0.01901	11.6	0.2712	0.2712
382	3544.00	28	0.01901	11.58	0.272	0.272
383	3554.25	28	0.01899	11.56	0.2726	0.2726
384	3564.50	27.99	0.01894	11.55	0.2737	0.2737
385	3574.75	28	0.01902	11.56	0.2746	0.2746
386	3585.00	28	0.01901	11.55	0.2752	0.2752
387	3595.25	28	0.01901	11.54	0.276	0.276
388	3605.50	28	0.01901	11.52	0.277	0.277
389	3615.75	28	0.01901	11.51	0.2778	0.2778
390	3626.00	28	0.01899	11.5	0.2786	0.2786
391	3636.25	28	0.01899	11.49	0.2795	0.2795
392	3646.50	28	0.01901	11.48	0.2803	0.2803
393	3656.75	28	0.01901	11.47	0.2811	0.2811
394	3667.00	28	0.01899	11.47	0.2821	0.2821
395	3677.25	28	0.01899	11.46	0.2829	0.2829
396	3687.50	28	0.01899	11.46	0.2837	0.2837
397	3697.75	27.99	0.01899	11.44	0.2845	0.2845
398	3708.00	28	0.01897	11.44	0.2854	0.2854
399	3718.25	28	0.01901	11.43	0.2862	0.2862
400	3728.50	28	0.01901	11.42	0.2871	0.2871
401	3738.75	28	0.01901	11.41	0.2881	0.2881
402	3749.00	28	0.01901	11.39	0.2888	0.2888
403	3759.25	28	0.01901	11.39	0.2897	0.2897
404	3769.50	28	0.01902	11.37	0.2904	0.2904
405	3779.75	28	0.01901	11.36	0.2914	0.2914
406	3790.00	28	0.01902	11.36	0.2922	0.2922
407	3800.25	28	0.01902	11.35	0.293	0.293
408	3810.50	28	0.01904	11.35	0.2938	0.2938
409	3817.45	28	0.01902	11.34	0.2944	0.2944

DIRECT SHEAR TEST REPORT



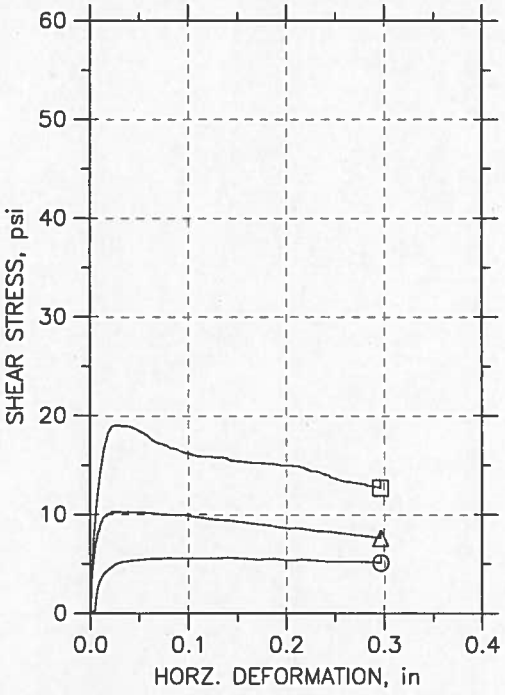


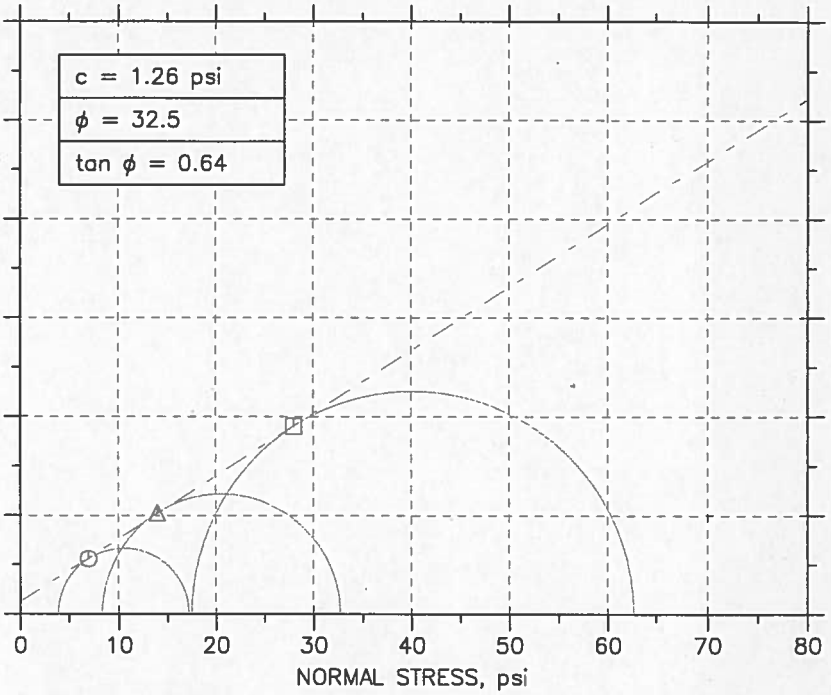


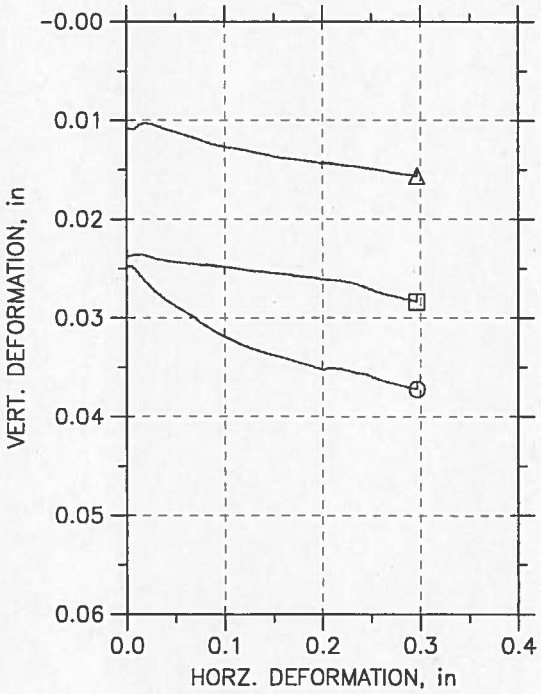
Symbol		⊙	△	⊡	
Test No.		1	2	3	
Sample No.		19-300	19-300	19-300	
Shape		Circular	Circular	Circular	
Initial	Dimension, in	2.5	2.5	2.5	
	Area, in^2	4.9087	4.9087	4.9087	
	Height, in	1	1	1	
	Water Content, %	21.15	21.79	21.59	
	Dry Density, pcf	100.06	99.345	100.21	
	Saturation, %	81.68	82.71	83.68	
	Void Ratio	0.70947	0.72181	0.70698	
Consol. Height, in		0.99902	0.99213	0.97733	
Consol. Void Ratio		0.7078	0.70826	0.66827	
Final	Water Content, %	29.70	30.06	29.49	
	Dry Density, pcf	98.32	99.578	102.15	
	Saturation, %	110.00	114.76	119.80	
	Void Ratio	0.73975	0.71778	0.67451	
Normal Stress, psi		6.995	13.998	27.997	
Max. Shear Stress, psi		8.2196	9.4991	17.286	
Ult. Shear Stress, psi		4.7235	6.699	11.34	
Time to Failure, min		417.75	499.75	458.75	
Disp. Rate, in/min		8e-005	8e-005	8e-005	
Specific Gravity		2.74	2.74	2.74	
Liquid Limit		0	0	0	
Plastic Limit		0	0	0	
Plasticity Index		0	0	0	

Project: PLUM CREEK SITE 21
Location: TX
Project No.: 19-300
Boring No.: B-603
Sample Type: CORE
Description:
Remarks:

DIRECT SHEAR TEST REPORT







Symbol		⊙	△	⊡	
Test No.		1	2	3	
Sample No.		19-307	19-307	19-307	
Shape		Circular	Circular	Circular	
Initial	Dimension, in	2.5	2.5	2.5	
	Area, in^2	4.9087	4.9087	4.9087	
	Height, in	1	1	1	
	Water Content, %	21.62	21.31	21.66	
	Dry Density, pcf	90.807	95.645	98.046	
	Saturation, %	66.75	73.71	79.32	
	Void Ratio	0.89057	0.79495	0.75098	
Consol. Height, in		0.9751	0.98817	0.97562	
Consol. Void Ratio		0.84349	0.7737	0.70829	
Final	Water Content, %	33.97	30.70	29.45	
	Dry Density, pcf	94.32	97.164	100.91	
	Saturation, %	113.89	110.07	115.48	
	Void Ratio	0.82015	0.76688	0.70131	
Normal Stress, psi		6.9977	14.001	27.999	
Max. Shear Stress, psi		5.6331	10.28	19.037	
Ult. Shear Stress, psi		5.0934	7.6086	12.683	
Time to Failure, min		1893.8	499.75	510	
Disp. Rate, in/min		8e-005	8e-005	8e-005	
Specific Gravity		2.75	2.75	2.75	
Liquid Limit		0	0	0	
Plastic Limit		0	0	0	
Plasticity Index		0	0	0	

Project: PLUM CREEK SITE 21	
Location: TX	
Project No.: 19-307	
Boring No.: B-604	
Sample Type: CORE	
Description:	
Remarks:	

DIRECT SHEAR TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-307
Test No.: 1

Location: TX
Tested By: SKK
Test Date: 8/12/19
Sample Type: CORE

Project No.: 19-307
Checked By: SKK
Depth: 30-31'
Elevation: N/A

Soil Description:
Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress psi	Vertical Displacement in	Horizontal Stress psi	Horizontal Displacement in	Cumulative Displacement in
1	0.00	6.992	0.0248	-0.0137	0	0
2	0.01	7.001	0.02478	-0.0137	3.355e-005	3.355e-005
3	0.04	6.995	0.0248	-0.0137	-1.678e-005	1.678e-005
4	0.09	6.998	0.0248	-0.0137	1.678e-005	1.678e-005
5	0.16	6.998	0.0248	-0.00822	0	0
6	0.25	6.995	0.0248	-0.00548	0	0
7	0.36	6.998	0.0248	-0.00274	1.678e-005	1.678e-005
8	0.49	7.001	0.0248	0	3.355e-005	3.355e-005
9	0.64	6.998	0.02481	0.00274	1.678e-005	1.678e-005
10	0.81	7.001	0.02481	0.01096	5.033e-005	5.033e-005
11	1.00	6.998	0.0248	0.0137	6.711e-005	6.711e-005
12	1.21	6.995	0.02481	0.01918	0.0001007	0.0001007
13	1.44	6.998	0.02481	0.01918	8.388e-005	8.388e-005
14	1.69	7.001	0.02481	0.02192	8.388e-005	8.388e-005
15	2.00	7.001	0.02481	0.02192	0.0001174	0.0001174
16	2.25	6.998	0.02481	0.0274	0.0001174	0.0001174
17	2.56	6.998	0.02483	0.03288	0.0001678	0.0001678
18	2.89	7.003	0.02483	0.03836	0.0001845	0.0001845
19	3.24	7.001	0.02483	0.0411	0.0002013	0.0002013
20	3.61	7.001	0.02483	0.04384	0.0002852	0.0002852
21	4.00	7.003	0.02483	0.04658	0.0002517	0.0002517
22	4.84	7.001	0.02486	0.0548	0.000302	0.000302
23	5.76	6.998	0.02485	0.05754	0.0004194	0.0004194
24	6.76	6.998	0.02488	0.06576	0.000453	0.000453
25	7.84	6.998	0.02485	0.07398	0.000453	0.000453
26	9.00	6.998	0.02483	0.07946	0.0005704	0.0005704
27	10.24	7.001	0.02485	0.09042	0.000604	0.000604
28	11.56	7.003	0.02481	0.09589	0.0007046	0.0007046
29	12.96	6.998	0.02481	0.1014	0.0007717	0.0007717
30	14.94	6.992	0.0248	0.1123	0.0008724	0.0008724
31	16.00	7.001	0.02481	0.1151	0.0009563	0.0009563
32	17.64	6.995	0.0248	0.1206	0.001007	0.001007
33	19.36	7.001	0.02481	0.1233	0.001057	0.001057
34	21.16	7.006	0.02478	0.1288	0.001107	0.001107
35	23.04	6.995	0.0248	0.1206	0.001174	0.001174
36	25.00	6.998	0.02483	0.1206	0.001174	0.001174
37	30.25	6.998	0.02481	0.1151	0.001241	0.001241
38	36.00	6.995	0.02486	0.1096	0.001225	0.001225
39	43.56	6.998	0.02486	0.1096	0.001225	0.001225
40	49.00	6.995	0.02481	0.1096	0.001225	0.001225
41	56.25	6.998	0.02475	0.1151	0.001208	0.001208
42	64.00	6.998	0.02475	0.1233	0.001258	0.001258
43	72.25	6.995	0.0248	0.1397	0.001376	0.001376
44	81.00	6.992	0.02483	0.1644	0.001862	0.001862
45	90.25	7.001	0.02481	0.1699	0.00198	0.00198
46	100.00	7.001	0.02475	0.1726	0.002097	0.002097
47	110.25	6.998	0.02478	0.1726	0.002097	0.002097
48	120.50	7.001	0.02483	0.1726	0.002147	0.002147
49	130.75	6.998	0.02483	0.1781	0.002181	0.002181
50	141.00	6.995	0.02475	0.1918	0.002751	0.002751
51	151.25	6.998	0.02475	0.211	0.00354	0.00354
52	161.50	7.001	0.02481	0.2164	0.004328	0.004328
53	171.75	7.003	0.02478	0.4302	0.005016	0.005016
54	182.00	6.998	0.02483	1.06	0.005503	0.005503
55	192.25	7.003	0.02481	1.504	0.006006	0.006006
56	202.50	6.987	0.0249	1.581	0.00614	0.00614
57	212.75	6.998	0.02496	1.858	0.006409	0.006409
58	223.00	7.001	0.025	2.34	0.00708	0.00708
59	233.25	6.998	0.02496	2.674	0.007835	0.007835
60	243.50	6.995	0.02505	2.934	0.00859	0.00859
61	253.75	6.998	0.02515	3.143	0.009311	0.009311
62	264.00	7.001	0.02528	3.315	0.01012	0.01012
63	274.25	6.998	0.02535	3.458	0.01082	0.01082
64	284.50	6.995	0.0254	3.595	0.01156	0.01156
65	294.75	6.998	0.02551	3.723	0.01235	0.01235
66	305.00	7.001	0.02568	3.822	0.01314	0.01314
67	315.25	7.001	0.02578	3.923	0.01366	0.01366
68	325.50	6.998	0.02579	4.017	0.01463	0.01463
69	335.75	6.998	0.02588	4.102	0.01545	0.01545
70	346.00	6.998	0.02599	4.184	0.01626	0.01626
71	356.25	6.995	0.02611	4.258	0.01701	0.01701
72	366.50	6.995	0.02623	4.315	0.01782	0.01782
73	376.75	7.001	0.02624	4.381	0.01854	0.01854
74	387.00	7.001	0.02636	4.45	0.01936	0.01936

77	417.75	6.998	0.02654	4.625	0.02186	0.02186
78	428.00	7.001	0.02664	4.691	0.02255	0.02255
79	438.25	7.006	0.02674	4.737	0.02335	0.02335
80	448.50	7.003	0.02681	4.795	0.02418	0.02418
81	458.75	6.998	0.02687	4.841	0.02491	0.02491
82	469.00	6.998	0.02696	4.907	0.02575	0.02575
83	479.25	6.995	0.02702	4.954	0.02656	0.02656
84	489.50	6.995	0.02711	4.984	0.02735	0.02735
85	499.75	6.992	0.02719	5.028	0.02812	0.02812
86	510.00	6.998	0.0273	5.066	0.02892	0.02892
87	520.25	6.998	0.02732	5.093	0.02973	0.02973
88	530.50	6.998	0.0274	5.11	0.0306	0.0306
89	540.75	6.998	0.02745	5.137	0.03139	0.03139
90	551.00	7.001	0.02755	5.165	0.03218	0.03218
91	561.25	6.995	0.02762	5.184	0.03297	0.03297
92	571.50	6.995	0.02764	5.189	0.03377	0.03377
93	581.75	7.001	0.02772	5.2	0.03458	0.03458
94	592.00	6.995	0.02777	5.206	0.03542	0.03542
95	602.25	6.995	0.02787	5.222	0.03615	0.03615
96	612.50	6.998	0.02792	5.236	0.03703	0.03703
97	622.75	7.001	0.02799	5.247	0.03787	0.03787
98	633.00	7.001	0.02808	5.252	0.03867	0.03867
99	643.25	6.998	0.02817	5.266	0.03943	0.03943
100	653.50	7.001	0.02817	5.271	0.04025	0.04025
101	663.75	6.998	0.02827	5.296	0.0411	0.0411
102	674.00	6.995	0.0283	5.307	0.04191	0.04191
103	684.25	6.998	0.02835	5.321	0.0428	0.0428
104	694.50	7.001	0.02842	5.332	0.04364	0.04364
105	704.75	6.998	0.02845	5.345	0.04446	0.04446
106	715.00	6.995	0.02853	5.354	0.04533	0.04533
107	725.25	6.995	0.02858	5.365	0.04609	0.04609
108	735.50	6.998	0.02863	5.367	0.04686	0.04686
109	745.75	6.995	0.02868	5.37	0.04771	0.04771
110	756.00	7.001	0.0287	5.384	0.04857	0.04857
111	766.25	6.998	0.02878	5.384	0.04937	0.04937
112	776.50	6.998	0.0288	5.392	0.05015	0.05015
113	786.75	7.001	0.02888	5.414	0.051	0.051
114	797.00	6.989	0.02891	5.419	0.05181	0.05181
115	807.25	6.995	0.02893	5.439	0.05265	0.05265
116	817.50	7.001	0.02901	5.43	0.05347	0.05347
117	827.75	6.992	0.02905	5.444	0.05431	0.05431
118	838.00	6.998	0.02915	5.447	0.05515	0.05515
119	848.25	7.001	0.0292	5.461	0.05595	0.05595
120	858.50	6.998	0.0292	5.471	0.05676	0.05676
121	868.75	6.998	0.02931	5.48	0.05758	0.05758
122	879.00	7.001	0.02933	5.48	0.05847	0.05847
123	889.25	6.998	0.02941	5.502	0.05926	0.05926
124	899.50	6.998	0.02943	5.499	0.06014	0.06014
125	909.75	6.995	0.0295	5.504	0.06092	0.06092
126	920.00	6.998	0.02953	5.515	0.06172	0.06172
127	930.25	6.995	0.02958	5.521	0.06259	0.06259
128	940.50	6.995	0.02969	5.515	0.06342	0.06342
129	950.75	6.998	0.02966	5.518	0.06427	0.06427
130	961.00	6.998	0.02973	5.521	0.06508	0.06508
131	971.25	7.003	0.02981	5.521	0.06592	0.06592
132	981.50	6.998	0.02981	5.521	0.06675	0.06675
133	991.75	6.998	0.02993	5.526	0.06763	0.06763
134	1002.00	6.998	0.02993	5.518	0.06847	0.06847
135	1012.25	6.995	0.03001	5.526	0.0693	0.0693
136	1022.50	6.998	0.03009	5.518	0.07011	0.07011
137	1032.75	6.998	0.03014	5.529	0.07088	0.07088
138	1043.00	6.998	0.03021	5.535	0.0717	0.0717
139	1053.25	6.998	0.03024	5.532	0.07246	0.07246
140	1063.50	6.998	0.03034	5.543	0.07318	0.07318
141	1073.75	6.998	0.03041	5.551	0.074	0.074
142	1084.00	6.987	0.03047	5.554	0.07484	0.07484
143	1094.25	6.998	0.03049	5.562	0.0756	0.0756
144	1104.50	7.006	0.03054	5.559	0.07642	0.07642
145	1114.75	6.998	0.03057	5.565	0.07722	0.07722
146	1125.00	6.995	0.03062	5.573	0.07818	0.07818
147	1135.25	7.009	0.03069	5.573	0.07892	0.07892
148	1145.50	6.995	0.03074	5.587	0.07982	0.07982
149	1155.75	6.995	0.03079	5.578	0.08078	0.08078
150	1166.00	6.995	0.03084	5.581	0.08122	0.08122
151	1176.25	6.995	0.03087	5.573	0.08216	0.08216
152	1186.50	7.006	0.03094	5.565	0.08298	0.08298
153	1196.75	6.998	0.03101	5.565	0.08387	0.08387
154	1207.00	6.998	0.03106	5.562	0.08467	0.08467
155	1217.25	6.995	0.03111	5.556	0.08558	0.08558
156	1227.50	6.998	0.03117	5.565	0.08647	0.08647
157	1237.75	6.998	0.03122	5.562	0.08709	0.08709
158	1248.00	6.995	0.03127	5.567	0.08808	0.08808
159	1258.25	6.998	0.0313	5.565	0.08895	0.08895
160	1268.50	7.003	0.03135	5.562	0.08957	0.08957
161	1278.75	6.998	0.03139	5.562	0.09044	0.09044
162	1289.00	6.998	0.03144	5.565	0.09125	0.09125
163	1299.25	7.001	0.03149	5.57	0.09227	0.09227
164	1309.50	7.001	0.03154	5.57	0.09291	0.09291
165	1319.75	6.998	0.03157	5.576	0.09378	0.09378
166	1330.00	6.989	0.03162	5.567	0.09465	0.09465

169	1360.75	7.006	0.03175	5.565	0.09714	0.09714
170	1371.00	6.998	0.03179	5.57	0.09798	0.09798
171	1381.25	6.998	0.03185	5.565	0.0988	0.0988
172	1391.50	6.995	0.03189	5.57	0.09962	0.09962
173	1401.75	6.995	0.03192	5.562	0.1004	0.1004
174	1412.00	7.001	0.03197	5.562	0.1012	0.1012
175	1422.25	6.998	0.03202	5.556	0.1021	0.1021
176	1432.50	6.998	0.03205	5.562	0.1029	0.1029
177	1442.75	6.995	0.03209	5.548	0.1037	0.1037
178	1453.00	7.003	0.03212	5.543	0.1045	0.1045
179	1463.25	6.995	0.03215	5.551	0.1053	0.1053
180	1473.50	6.995	0.03218	5.545	0.1062	0.1062
181	1483.75	6.992	0.03225	5.545	0.107	0.107
182	1494.00	6.992	0.03227	5.545	0.1078	0.1078
183	1504.25	6.998	0.03232	5.548	0.1086	0.1086
184	1514.50	7.001	0.03235	5.535	0.1095	0.1095
185	1524.75	7.003	0.03238	5.529	0.1103	0.1103
186	1535.00	6.995	0.03243	5.54	0.1111	0.1111
187	1545.25	7.003	0.03247	5.54	0.1119	0.1119
188	1555.50	6.995	0.03253	5.554	0.1127	0.1127
189	1565.75	6.998	0.03257	5.543	0.1137	0.1137
190	1576.00	6.992	0.0326	5.545	0.1144	0.1144
191	1586.25	7.001	0.03263	5.545	0.1152	0.1152
192	1596.50	6.995	0.03267	5.54	0.1161	0.1161
193	1606.75	6.995	0.0327	5.545	0.1168	0.1168
194	1617.00	6.995	0.03272	5.548	0.1177	0.1177
195	1627.25	6.995	0.0328	5.537	0.1185	0.1185
196	1637.50	7.001	0.03283	5.543	0.1195	0.1195
197	1647.75	6.998	0.03285	5.548	0.1202	0.1202
198	1658.00	7.001	0.03288	5.54	0.121	0.121
199	1668.25	6.998	0.0329	5.551	0.1219	0.1219
200	1678.50	7.001	0.03293	5.554	0.1227	0.1227
201	1688.75	6.998	0.03296	5.554	0.1235	0.1235
202	1699.00	7.003	0.03303	5.554	0.1244	0.1244
203	1709.25	6.998	0.03305	5.556	0.1251	0.1251
204	1719.50	6.998	0.03306	5.554	0.126	0.126
205	1729.75	6.998	0.0331	5.562	0.1269	0.1269
206	1740.00	6.995	0.03311	5.57	0.1276	0.1276
207	1750.25	6.995	0.03315	5.573	0.1285	0.1285
208	1760.50	7.003	0.03316	5.567	0.1293	0.1293
209	1770.75	6.995	0.0332	5.559	0.1301	0.1301
210	1781.00	6.995	0.03321	5.565	0.1309	0.1309
211	1791.25	6.995	0.03325	5.567	0.1318	0.1318
212	1801.50	6.995	0.03326	5.567	0.1326	0.1326
213	1811.75	6.998	0.0333	5.578	0.1334	0.1334
214	1822.00	7.003	0.03331	5.576	0.1342	0.1342
215	1832.25	6.998	0.03336	5.584	0.1351	0.1351
216	1842.50	6.998	0.03338	5.595	0.1359	0.1359
217	1852.75	6.992	0.03341	5.592	0.1367	0.1367
218	1863.00	6.989	0.03343	5.608	0.1375	0.1375
219	1873.25	7.001	0.03346	5.608	0.1383	0.1383
220	1883.50	6.998	0.03348	5.614	0.1392	0.1392
221	1893.75	6.998	0.03351	5.633	0.14	0.14
222	1904.00	7.003	0.03353	5.625	0.1409	0.1409
223	1914.25	7.006	0.03358	5.628	0.1417	0.1417
224	1924.50	6.995	0.03361	5.622	0.1425	0.1425
225	1934.75	6.998	0.0336	5.625	0.1434	0.1434
226	1945.00	6.998	0.03361	5.608	0.1442	0.1442
227	1955.25	6.992	0.03365	5.598	0.1451	0.1451
228	1965.50	7.003	0.0337	5.589	0.1458	0.1458
229	1975.75	6.998	0.03373	5.587	0.1467	0.1467
230	1986.00	7.003	0.03371	5.578	0.1476	0.1476
231	1996.25	6.998	0.03374	5.576	0.1484	0.1484
232	2006.50	6.998	0.03378	5.565	0.1492	0.1492
233	2016.75	6.995	0.03378	5.562	0.15	0.15
234	2027.00	7.001	0.03381	5.551	0.1509	0.1509
235	2037.25	7.001	0.03384	5.554	0.1517	0.1517
236	2047.50	7.001	0.03386	5.551	0.1526	0.1526
237	2057.75	7.001	0.03388	5.537	0.1534	0.1534
238	2068.00	6.998	0.03391	5.545	0.1542	0.1542
239	2078.25	7.001	0.03393	5.545	0.1551	0.1551
240	2088.50	6.995	0.03393	5.54	0.1559	0.1559
241	2098.75	7.006	0.03398	5.532	0.1567	0.1567
242	2109.00	6.998	0.03399	5.521	0.1576	0.1576
243	2119.25	6.992	0.03399	5.518	0.1584	0.1584
244	2129.50	7.006	0.03399	5.515	0.1592	0.1592
245	2139.75	6.998	0.03408	5.513	0.16	0.16
246	2150.00	7.001	0.03406	5.504	0.1609	0.1609
247	2160.25	6.995	0.03413	5.493	0.1617	0.1617
248	2170.50	6.998	0.03418	5.496	0.1626	0.1626
249	2180.75	7.001	0.03414	5.493	0.1634	0.1634
250	2191.00	6.992	0.03421	5.48	0.1642	0.1642
251	2201.25	7.003	0.03419	5.469	0.1651	0.1651
252	2211.50	7.006	0.03426	5.463	0.1659	0.1659
253	2221.75	7.003	0.03426	5.452	0.1668	0.1668
254	2232.00	7.001	0.03429	5.444	0.1676	0.1676
255	2242.25	6.998	0.03429	5.436	0.1684	0.1684
256	2252.50	7.001	0.03434	5.433	0.1692	0.1692
257	2262.75	6.995	0.03436	5.43	0.1701	0.1701
258	2273.00	6.992	0.03441	5.43	0.171	0.171

261	2303.75	7.001	0.03444	5.447	0.1734	0.1734
262	2314.00	6.998	0.03451	5.439	0.1742	0.1742
263	2324.25	6.998	0.03453	5.452	0.1751	0.1751
264	2334.50	6.992	0.03454	5.45	0.176	0.176
265	2344.75	7.001	0.03459	5.461	0.1767	0.1767
266	2355.00	7.001	0.03457	5.471	0.1776	0.1776
267	2365.25	7.001	0.03461	5.477	0.1785	0.1785
268	2375.50	7.001	0.03462	5.488	0.1792	0.1792
269	2385.75	7.001	0.03466	5.493	0.1801	0.1801
270	2396.00	6.998	0.03466	5.499	0.1809	0.1809
271	2406.25	6.998	0.03466	5.502	0.1818	0.1818
272	2416.50	7.001	0.03471	5.507	0.1826	0.1826
273	2426.75	7.001	0.03474	5.513	0.1834	0.1834
274	2437.00	6.995	0.03472	5.51	0.1843	0.1843
275	2447.25	7.001	0.03479	5.51	0.1852	0.1852
276	2457.50	7.001	0.03479	5.507	0.1859	0.1859
277	2467.75	7.001	0.03484	5.51	0.1867	0.1867
278	2478.00	6.998	0.03486	5.507	0.1875	0.1875
279	2488.25	6.998	0.03487	5.507	0.1884	0.1884
280	2498.50	6.995	0.03491	5.499	0.1892	0.1892
281	2508.75	7.001	0.03492	5.482	0.19	0.19
282	2519.00	6.992	0.03492	5.482	0.1909	0.1909
283	2529.25	7.001	0.03504	5.461	0.1917	0.1917
284	2539.50	6.995	0.03504	5.463	0.1925	0.1925
285	2549.75	7.003	0.03507	5.441	0.1933	0.1933
286	2560.00	6.998	0.03507	5.441	0.1942	0.1942
287	2570.25	7.003	0.03511	5.414	0.1951	0.1951
288	2580.50	7.003	0.03511	5.403	0.1959	0.1959
289	2590.75	6.998	0.03514	5.392	0.1967	0.1967
290	2601.00	6.998	0.03517	5.378	0.1975	0.1975
291	2611.25	6.992	0.03521	5.367	0.1984	0.1984
292	2621.50	7.003	0.03524	5.348	0.1992	0.1992
293	2631.75	6.998	0.03527	5.343	0.2	0.2
294	2642.00	7.003	0.03531	5.337	0.2009	0.2009
295	2652.25	7.003	0.03527	5.337	0.2018	0.2018
296	2662.50	6.998	0.03521	5.34	0.2029	0.2029
297	2672.75	6.998	0.03517	5.335	0.2038	0.2038
298	2683.00	6.992	0.03512	5.34	0.2047	0.2047
299	2693.25	7.003	0.03511	5.343	0.2057	0.2057
300	2703.50	6.995	0.03506	5.343	0.2066	0.2066
301	2713.75	7.001	0.03509	5.343	0.2074	0.2074
302	2724.00	7.001	0.03514	5.335	0.2082	0.2082
303	2734.25	7.003	0.03517	5.359	0.2091	0.2091
304	2744.50	6.998	0.03506	5.376	0.21	0.21
305	2754.75	7.001	0.03507	5.376	0.2109	0.2109
306	2765.00	6.995	0.03511	5.395	0.2117	0.2117
307	2775.25	6.995	0.03516	5.411	0.2125	0.2125
308	2785.50	6.998	0.03511	5.428	0.2135	0.2135
309	2795.75	6.992	0.03512	5.425	0.2143	0.2143
310	2806.00	6.998	0.03517	5.422	0.215	0.215
311	2816.25	7.001	0.03519	5.43	0.2159	0.2159
312	2826.50	6.998	0.03512	5.433	0.2168	0.2168
313	2836.75	6.998	0.03514	5.433	0.2176	0.2176
314	2847.00	6.998	0.03527	5.425	0.2184	0.2184
315	2857.25	6.984	0.03521	5.433	0.2193	0.2193
316	2867.50	6.995	0.03514	5.422	0.2202	0.2202
317	2877.75	6.998	0.03524	5.411	0.2209	0.2209
318	2888.00	6.992	0.03532	5.406	0.2217	0.2217
319	2898.25	7.003	0.03529	5.411	0.2227	0.2227
320	2908.50	6.998	0.03526	5.387	0.2235	0.2235
321	2918.75	7.001	0.03531	5.378	0.2242	0.2242
322	2929.00	7.003	0.03535	5.367	0.2251	0.2251
323	2939.25	6.998	0.03531	5.367	0.226	0.226
324	2949.50	7.001	0.03539	5.354	0.2268	0.2268
325	2959.75	7.003	0.03544	5.34	0.2275	0.2275
326	2970.00	6.998	0.03542	5.343	0.2285	0.2285
327	2980.25	6.995	0.03544	5.34	0.2294	0.2294
328	2990.50	6.998	0.03549	5.318	0.2301	0.2301
329	3000.75	7.001	0.03555	5.307	0.2309	0.2309
330	3011.00	7.003	0.03549	5.313	0.2319	0.2319
331	3021.25	6.995	0.03552	5.299	0.2327	0.2327
332	3031.50	7.003	0.03559	5.285	0.2334	0.2334
333	3041.75	7.001	0.03565	5.288	0.2342	0.2342
334	3052.00	7.001	0.03559	5.285	0.2352	0.2352
335	3062.25	6.998	0.03555	5.277	0.2361	0.2361
336	3072.50	6.998	0.0356	5.274	0.2369	0.2369
337	3082.75	7.001	0.03565	5.263	0.2376	0.2376
338	3093.00	7.001	0.0357	5.263	0.2384	0.2384
339	3103.25	6.998	0.03565	5.25	0.2395	0.2395
340	3113.50	6.998	0.03559	5.241	0.2404	0.2404
341	3123.75	6.998	0.03569	5.225	0.2411	0.2411
342	3134.00	7.001	0.03574	5.219	0.2418	0.2418
343	3144.25	6.998	0.03575	5.239	0.2427	0.2427
344	3154.50	7.001	0.0357	5.239	0.2436	0.2436
345	3164.75	6.998	0.03574	5.23	0.2446	0.2446
346	3175.00	7.001	0.03577	5.236	0.2454	0.2454
347	3185.25	7.001	0.0358	5.239	0.2461	0.2461
348	3195.50	6.995	0.03584	5.25	0.2468	0.2468
349	3205.75	6.998	0.0359	5.244	0.2476	0.2476
350	3216.00	6.998	0.03587	5.241	0.2486	0.2486

353	3246.75	6.998	0.03604	5.241	0.2509	0.2509
354	3257.00	6.995	0.03607	5.241	0.2517	0.2517
355	3267.25	6.995	0.03605	5.247	0.2527	0.2527
356	3277.50	6.995	0.03605	5.244	0.2535	0.2535
357	3287.75	7.001	0.03612	5.225	0.2542	0.2542
358	3298.00	6.998	0.03617	5.228	0.255	0.255
359	3308.25	7.003	0.0362	5.23	0.2559	0.2559
360	3318.50	6.998	0.03617	5.236	0.2568	0.2568
361	3328.75	7.003	0.03623	5.228	0.2575	0.2575
362	3339.00	6.998	0.0363	5.211	0.2582	0.2582
363	3349.25	7.001	0.0363	5.222	0.2592	0.2592
364	3359.50	6.998	0.0363	5.222	0.2601	0.2601
365	3369.75	6.995	0.03635	5.222	0.2608	0.2608
366	3380.00	6.998	0.03642	5.225	0.2616	0.2616
367	3390.25	6.998	0.03642	5.225	0.2625	0.2625
368	3400.50	6.998	0.0364	5.219	0.2634	0.2634
369	3410.75	6.995	0.03645	5.219	0.2641	0.2641
370	3421.00	7.001	0.0365	5.23	0.2649	0.2649
371	3431.25	6.995	0.03653	5.233	0.2657	0.2657
372	3441.50	6.992	0.03648	5.236	0.2668	0.2668
373	3451.75	6.995	0.03652	5.233	0.2675	0.2675
374	3462.00	6.995	0.03658	5.241	0.2682	0.2682
375	3472.25	6.998	0.03663	5.225	0.269	0.269
376	3482.50	6.998	0.0366	5.244	0.27	0.27
377	3492.75	6.998	0.0366	5.236	0.271	0.271
378	3503.00	7.006	0.03662	5.222	0.2717	0.2717
379	3513.25	6.995	0.03667	5.219	0.2725	0.2725
380	3523.50	6.998	0.03672	5.225	0.2732	0.2732
381	3533.75	6.998	0.0367	5.225	0.2741	0.2741
382	3544.00	7.001	0.03672	5.217	0.275	0.275
383	3554.25	6.998	0.03677	5.219	0.2758	0.2758
384	3564.50	6.998	0.03678	5.222	0.2767	0.2767
385	3574.75	6.998	0.03678	5.219	0.2775	0.2775
386	3585.00	6.989	0.03683	5.206	0.2783	0.2783
387	3595.25	7.001	0.03687	5.206	0.2792	0.2792
388	3605.50	6.989	0.03688	5.208	0.28	0.28
389	3615.75	6.998	0.03688	5.195	0.2809	0.2809
390	3626.00	6.995	0.03687	5.187	0.2817	0.2817
391	3636.25	6.998	0.03693	5.198	0.2826	0.2826
392	3646.50	6.987	0.03697	5.189	0.2834	0.2834
393	3656.75	6.995	0.03693	5.178	0.2842	0.2842
394	3667.00	6.992	0.03698	5.178	0.2851	0.2851
395	3677.25	6.998	0.037	5.167	0.2859	0.2859
396	3687.50	6.998	0.03706	5.173	0.2868	0.2868
397	3697.75	6.992	0.03703	5.17	0.2876	0.2876
398	3708.00	6.998	0.03706	5.167	0.2885	0.2885
399	3718.25	7.001	0.03708	5.159	0.2893	0.2893
400	3728.50	6.998	0.03711	5.159	0.2902	0.2902
401	3738.75	6.998	0.03713	5.162	0.291	0.291
402	3749.00	6.992	0.03715	5.143	0.2919	0.2919
403	3759.25	7.006	0.03716	5.134	0.2928	0.2928
404	3769.50	6.998	0.0372	5.129	0.2936	0.2936
405	3779.75	6.998	0.03716	5.126	0.2944	0.2944
406	3790.00	6.998	0.03716	5.11	0.2953	0.2953
407	3800.25	6.995	0.03721	5.102	0.2961	0.2961
408	3806.07	7.001	0.03725	5.093	0.2966	0.2966

DIRECT SHEAR TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-307
Test No.: 2

Location: TX
Tested By: SKK
Test Date: 8/19/19
Sample Type: CORE

Project No.: 19-307
Checked By: SKK
Depth: 30-31'
Elevation: N/A

Soil Description:
Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress psi	Vertical Displacement in	Horizontal Stress psi	Horizontal Displacement in	Cumulative Displacement in
1	0.00	14	0.01109	-0.00548	0	0
2	0.01	14	0.01109	-0.00822	3.355e-005	3.355e-005
3	0.04	14	0.01109	0.00274	0	0
4	0.09	14	0.01109	0.00822	0	0
5	0.16	14	0.01109	0.00822	1.678e-005	1.678e-005
6	0.25	14	0.01107	0.01644	5.033e-005	5.033e-005
7	0.36	14	0.01109	0.03562	3.355e-005	3.355e-005
8	0.49	14	0.01107	0.05754	1.678e-005	1.678e-005
9	0.64	14	0.01107	0.07672	5.033e-005	5.033e-005
10	0.81	14	0.01105	0.1041	5.033e-005	5.033e-005
11	1.00	13.99	0.01105	0.1534	5.033e-005	5.033e-005
12	1.21	14	0.01105	0.1836	6.711e-005	6.711e-005
13	1.44	14	0.01105	0.1918	8.388e-005	8.388e-005
14	1.69	14	0.01105	0.2438	8.388e-005	8.388e-005
15	2.00	14	0.01104	0.2493	0.0001174	0.0001174
16	2.25	14	0.01104	0.2767	0.0001007	0.0001007
17	2.56	13.99	0.01104	0.3343	0.0001342	0.0001342
18	2.89	13.99	0.01102	0.348	0.0001678	0.0001678
19	3.24	14	0.01102	0.3973	0.0001342	0.0001342
20	3.61	14	0.01102	0.4274	0.0001678	0.0001678
21	4.00	14	0.01102	0.4521	0.0001845	0.0001845
22	4.84	14	0.01102	0.4959	0.0002013	0.0002013
23	5.76	14	0.011	0.5288	0.0002349	0.0002349
24	6.76	14	0.01102	0.5398	0.0002181	0.0002181
25	7.84	14	0.01102	0.5891	0.0002181	0.0002181
26	9.00	14	0.01102	0.5808	0.0002349	0.0002349
27	10.24	14	0.01102	0.5808	0.0002517	0.0002517
28	11.56	14	0.01105	0.5781	0.0002517	0.0002517
29	12.96	14	0.01104	0.5589	0.0002349	0.0002349
30	14.94	14	0.01104	0.5507	0.0002517	0.0002517
31	16.00	14	0.01102	0.5589	0.0002517	0.0002517
32	17.64	14	0.01099	0.5507	0.0002684	0.0002684
33	19.36	14	0.01097	0.5507	0.0002517	0.0002517
34	21.16	14	0.01097	0.5452	0.0002517	0.0002517
35	23.04	13.99	0.01096	0.5151	0.0002349	0.0002349
36	25.00	14	0.01099	0.5041	0.0002517	0.0002517
37	30.25	14	0.01094	0.5425	0.0002181	0.0002181
38	36.00	13.99	0.01087	0.5562	0.0002181	0.0002181
39	43.56	14	0.01087	0.6082	0.0002349	0.0002349
40	49.00	14	0.01091	0.6877	0.0002517	0.0002517
41	56.25	14	0.01091	0.7398	0.0003188	0.0003188
42	64.00	14	0.01094	0.6548	0.000302	0.000302
43	72.25	14	0.01081	0.6356	0.0002852	0.0002852
44	81.00	14	0.01081	0.674	0.0002852	0.0002852
45	90.25	14	0.01086	0.7452	0.0002684	0.0002684
46	100.00	14	0.01084	0.6932	0.000302	0.000302
47	110.25	14	0.01079	1.206	0.0004194	0.0004194
48	120.50	14	0.01081	2.28	0.0008388	0.0008388
49	130.75	14	0.01087	2.521	0.001023	0.001023
50	141.00	14	0.01089	2.775	0.001141	0.001141
51	151.25	14	0.01079	3.83	0.001711	0.001711
52	161.50	14	0.01082	4.685	0.002399	0.002399
53	171.75	14	0.01089	5.266	0.003053	0.003053
54	182.00	14	0.01089	5.641	0.003674	0.003674
55	192.25	14.01	0.01084	6.219	0.004345	0.004345
56	202.50	14	0.01087	6.767	0.005067	0.005067
57	212.75	14	0.01094	7.14	0.005771	0.005771
58	223.00	14	0.01087	7.395	0.006442	0.006442
59	233.25	14	0.01086	7.759	0.00713	0.00713
60	243.50	14	0.01087	8.151	0.007852	0.007852
61	253.75	14	0.01084	8.307	0.00859	0.00859
62	264.00	14	0.01072	8.576	0.009294	0.009294
63	274.25	14	0.01066	8.833	0.01002	0.01002
64	284.50	14	0.01066	9.072	0.01079	0.01079
65	294.75	14	0.01059	9.266	0.01153	0.01153
66	305.00	14	0.01051	9.398	0.01223	0.01223
67	315.25	14.01	0.01044	9.584	0.01297	0.01297
68	325.50	14	0.01039	9.705	0.01372	0.01372
69	335.75	14	0.01039	9.757	0.01446	0.01446
70	346.00	14	0.01039	9.798	0.01527	0.01527
71	356.25	14	0.01029	9.877	0.01602	0.01602
72	366.50	14	0.01032	9.833	0.01678	0.01678
73	376.75	13.98	0.01027	9.896	0.01751	0.01751
74	387.00	14	0.01027	9.992	0.01825	0.01825

77	417.75	14	0.01027	10.06	0.02064	0.02064
78	428.00	14	0.01027	10.12	0.02136	0.02136
79	438.25	13.99	0.01036	10.22	0.02211	0.02211
80	448.50	14	0.01034	10.26	0.02292	0.02292
81	458.75	14	0.01034	10.27	0.02372	0.02372
82	469.00	14	0.01036	10.2	0.02451	0.02451
83	479.25	14	0.01036	10.22	0.02523	0.02523
84	489.50	14	0.01036	10.27	0.02609	0.02609
85	499.75	14	0.01039	10.28	0.02684	0.02684
86	510.00	13.99	0.01047	10.27	0.0277	0.0277
87	520.25	13.99	0.01051	10.26	0.02852	0.02852
88	530.50	14	0.01052	10.27	0.02926	0.02926
89	540.75	14.01	0.01054	10.18	0.03005	0.03005
90	551.00	14	0.01059	10.24	0.03087	0.03087
91	561.25	14	0.01057	10.25	0.03171	0.03171
92	571.50	13.99	0.01061	10.24	0.0325	0.0325
93	581.75	14	0.01067	10.24	0.03327	0.03327
94	592.00	14	0.01064	10.16	0.03407	0.03407
95	602.25	14	0.01067	10.23	0.03493	0.03493
96	612.50	14	0.01076	10.21	0.03575	0.03575
97	622.75	14	0.01081	10.22	0.03652	0.03652
98	633.00	14	0.01081	10.19	0.03728	0.03728
99	643.25	14	0.01082	10.18	0.03805	0.03805
100	653.50	14	0.01086	10.25	0.03894	0.03894
101	663.75	14	0.01087	10.23	0.03974	0.03974
102	674.00	14	0.01091	10.23	0.04055	0.04055
103	684.25	14	0.01094	10.23	0.04134	0.04134
104	694.50	14	0.01094	10.17	0.04209	0.04209
105	704.75	14	0.01097	10.24	0.04297	0.04297
106	715.00	14	0.01097	10.24	0.04377	0.04377
107	725.25	14	0.01102	10.23	0.04461	0.04461
108	735.50	14	0.01105	10.2	0.04543	0.04543
109	745.75	14	0.01107	10.22	0.04625	0.04625
110	756.00	14	0.0111	10.21	0.04708	0.04708
111	766.25	14	0.01112	10.21	0.0479	0.0479
112	776.50	14	0.01115	10.22	0.04872	0.04872
113	786.75	14	0.01115	10.2	0.04954	0.04954
114	797.00	13.99	0.0112	10.21	0.05033	0.05033
115	807.25	14	0.01122	10.23	0.05117	0.05117
116	817.50	14	0.01124	10.24	0.05194	0.05194
117	827.75	14	0.01129	10.24	0.05283	0.05283
118	838.00	14	0.0113	10.23	0.0536	0.0536
119	848.25	14	0.01132	10.21	0.05446	0.05446
120	858.50	14	0.01134	10.19	0.0553	0.0553
121	868.75	14	0.01139	10.19	0.05607	0.05607
122	879.00	13.99	0.01142	10.15	0.05687	0.05687
123	889.25	14	0.01144	10.16	0.05771	0.05771
124	899.50	14	0.01149	10.17	0.05848	0.05848
125	909.75	14	0.01149	10.17	0.05932	0.05932
126	920.00	14	0.0115	10.15	0.06018	0.06018
127	930.25	14	0.01152	10.15	0.061	0.061
128	940.50	14	0.01159	10.14	0.06184	0.06184
129	950.75	14	0.01159	10.12	0.06263	0.06263
130	961.00	14	0.0116	10.13	0.06343	0.06343
131	971.25	14	0.01164	10.11	0.06429	0.06429
132	981.50	14	0.01167	10.09	0.06504	0.06504
133	991.75	14	0.01167	10.04	0.06595	0.06595
134	1002.00	13.99	0.0117	10.08	0.06672	0.06672
135	1012.25	14	0.01175	10.07	0.06759	0.06759
136	1022.50	14	0.01177	10.06	0.06842	0.06842
137	1032.75	14	0.0118	10.02	0.06899	0.06899
138	1043.00	14	0.0118	10.04	0.07004	0.07004
139	1053.25	14	0.01182	10.03	0.07087	0.07087
140	1063.50	14	0.01185	10.02	0.07169	0.07169
141	1073.75	14	0.01193	9.998	0.07254	0.07254
142	1084.00	14	0.01192	10.01	0.07335	0.07335
143	1094.25	14	0.01193	9.995	0.07415	0.07415
144	1104.50	14	0.01195	9.984	0.07504	0.07504
145	1114.75	14	0.01203	9.968	0.07586	0.07586
146	1125.00	14	0.01203	9.99	0.07672	0.07672
147	1135.25	14	0.01208	9.979	0.07754	0.07754
148	1145.50	14	0.0121	9.979	0.07836	0.07836
149	1155.75	14	0.01213	9.987	0.07915	0.07915
150	1166.00	14	0.0122	9.973	0.07996	0.07996
151	1176.25	14	0.01217	9.946	0.08083	0.08083
152	1186.50	13.99	0.01225	9.968	0.08167	0.08167
153	1196.75	13.99	0.01228	9.962	0.08249	0.08249
154	1207.00	14	0.0123	9.94	0.08328	0.08328
155	1217.25	14	0.01223	9.948	0.08414	0.08414
156	1227.50	14	0.01232	9.97	0.08502	0.08502
157	1237.75	13.99	0.0124	9.973	0.08581	0.08581
158	1248.00	14	0.0124	9.927	0.08664	0.08664
159	1258.25	14.01	0.01238	9.943	0.08747	0.08747
160	1268.50	14	0.0124	9.979	0.0883	0.0883
161	1278.75	14	0.01247	9.979	0.0891	0.0891
162	1289.00	14	0.01242	9.946	0.09001	0.09001
163	1299.25	14	0.01243	9.968	0.09085	0.09085
164	1309.50	14	0.01252	9.965	0.09172	0.09172
165	1319.75	14	0.01257	9.935	0.09244	0.09244
166	1330.00	14	0.0125	9.943	0.0933	0.0933

169	1360.75	14	0.01261	9.91	0.09593	0.09593
170	1371.00	14	0.01255	9.913	0.09672	0.09672
171	1381.25	14	0.01261	9.899	0.09759	0.09759
172	1391.50	14	0.01268	9.91	0.09845	0.09845
173	1401.75	14	0.01263	9.869	0.09925	0.09925
174	1412.00	14	0.01261	9.853	0.1	0.1
175	1422.25	14	0.01268	9.869	0.1009	0.1009
176	1432.50	14	0.01273	9.85	0.1018	0.1018
177	1442.75	14	0.01275	9.814	0.1025	0.1025
178	1453.00	14	0.0127	9.809	0.1033	0.1033
179	1463.25	14	0.01276	9.811	0.1043	0.1043
180	1473.50	14	0.0128	9.776	0.1051	0.1051
181	1483.75	14.01	0.01271	9.759	0.1058	0.1058
182	1494.00	14	0.01273	9.751	0.1067	0.1067
183	1504.25	14	0.01278	9.751	0.1076	0.1076
184	1514.50	14	0.01283	9.743	0.1085	0.1085
185	1524.75	14	0.01278	9.688	0.1092	0.1092
186	1535.00	14	0.0128	9.721	0.1101	0.1101
187	1545.25	14	0.01286	9.702	0.111	0.111
188	1555.50	14	0.01288	9.661	0.1118	0.1118
189	1565.75	14	0.01285	9.658	0.1125	0.1125
190	1576.00	14	0.0129	9.663	0.1134	0.1134
191	1586.25	14	0.01291	9.672	0.1144	0.1144
192	1596.50	14	0.01293	9.625	0.1151	0.1151
193	1606.75	14	0.0129	9.625	0.1158	0.1158
194	1617.00	14	0.013	9.622	0.1167	0.1167
195	1627.25	14	0.01298	9.6	0.1176	0.1176
196	1637.50	14.01	0.01295	9.581	0.1183	0.1183
197	1647.75	14	0.01301	9.598	0.1191	0.1191
198	1658.00	14	0.01301	9.581	0.12	0.12
199	1668.25	14	0.01303	9.554	0.1209	0.1209
200	1678.50	14	0.013	9.529	0.1216	0.1216
201	1688.75	14	0.01305	9.543	0.1224	0.1224
202	1699.00	14	0.0131	9.54	0.1233	0.1233
203	1709.25	14	0.0131	9.499	0.1242	0.1242
204	1719.50	14	0.0131	9.488	0.125	0.125
205	1729.75	14	0.01316	9.502	0.1257	0.1257
206	1740.00	14	0.01316	9.48	0.1266	0.1266
207	1750.25	14	0.01316	9.461	0.1275	0.1275
208	1760.50	13.99	0.01316	9.447	0.1283	0.1283
209	1770.75	14	0.01323	9.472	0.129	0.129
210	1781.00	14	0.01321	9.458	0.13	0.13
211	1791.25	14	0.01325	9.472	0.1308	0.1308
212	1801.50	14	0.01326	9.436	0.1315	0.1315
213	1811.75	14	0.01328	9.458	0.1324	0.1324
214	1822.00	14	0.0133	9.455	0.1333	0.1333
215	1832.25	14	0.01331	9.447	0.1342	0.1342
216	1842.50	14	0.01331	9.45	0.135	0.135
217	1852.75	14	0.01335	9.417	0.1358	0.1358
218	1863.00	13.99	0.01338	9.411	0.1364	0.1364
219	1873.25	14	0.01336	9.406	0.1374	0.1374
220	1883.50	14	0.01336	9.422	0.1383	0.1383
221	1893.75	14	0.0134	9.414	0.1391	0.1391
222	1904.00	14	0.01343	9.389	0.1399	0.1399
223	1914.25	14	0.01343	9.37	0.1407	0.1407
224	1924.50	14	0.01349	9.403	0.1416	0.1416
225	1934.75	14	0.01346	9.379	0.1424	0.1424
226	1945.00	14	0.01346	9.376	0.1433	0.1433
227	1955.25	14	0.01344	9.359	0.144	0.144
228	1965.50	14	0.01349	9.348	0.1448	0.1448
229	1975.75	14	0.01353	9.34	0.1457	0.1457
230	1986.00	14	0.01354	9.316	0.1465	0.1465
231	1996.25	13.99	0.01359	9.294	0.1474	0.1474
232	2006.50	14	0.01363	9.313	0.1482	0.1482
233	2016.75	13.99	0.01364	9.296	0.149	0.149
234	2027.00	14	0.01364	9.274	0.1498	0.1498
235	2037.25	14	0.01366	9.272	0.1506	0.1506
236	2047.50	13.99	0.01369	9.244	0.1515	0.1515
237	2057.75	14	0.01368	9.236	0.1523	0.1523
238	2068.00	14	0.01371	9.25	0.1532	0.1532
239	2078.25	14	0.01368	9.244	0.154	0.154
240	2088.50	14	0.01374	9.222	0.1548	0.1548
241	2098.75	13.99	0.01378	9.195	0.1557	0.1557
242	2109.00	13.99	0.01378	9.192	0.1565	0.1565
243	2119.25	14	0.01381	9.203	0.1574	0.1574
244	2129.50	14	0.01383	9.181	0.1582	0.1582
245	2139.75	14	0.01383	9.176	0.159	0.159
246	2150.00	14	0.01379	9.129	0.1598	0.1598
247	2160.25	14	0.01386	9.129	0.1607	0.1607
248	2170.50	14	0.01386	9.124	0.1615	0.1615
249	2180.75	14	0.01383	9.11	0.1623	0.1623
250	2191.00	14	0.01384	9.107	0.1632	0.1632
251	2201.25	14	0.01388	9.099	0.164	0.164
252	2211.50	14	0.01388	9.099	0.1649	0.1649
253	2221.75	14	0.01388	9.077	0.1657	0.1657
254	2232.00	14	0.01388	9.058	0.1665	0.1665
255	2242.25	14	0.01389	9.055	0.1674	0.1674
256	2252.50	14	0.01391	9.033	0.1682	0.1682
257	2262.75	14	0.01393	9.022	0.1691	0.1691
258	2273.00	14	0.01391	9.006	0.1699	0.1699

261	2303.75	14	0.01396	8.973	0.1724	0.1724
262	2314.00	14	0.01396	8.995	0.1733	0.1733
263	2324.25	14	0.01398	8.984	0.1741	0.1741
264	2334.50	14	0.01399	8.954	0.175	0.175
265	2344.75	14	0.01399	8.976	0.1757	0.1757
266	2355.00	14	0.01401	8.937	0.1766	0.1766
267	2365.25	14	0.01403	8.943	0.1775	0.1775
268	2375.50	14	0.01404	8.94	0.1783	0.1783
269	2385.75	14	0.01406	8.948	0.1792	0.1792
270	2396.00	14	0.01406	8.924	0.1799	0.1799
271	2406.25	14	0.01408	8.894	0.1808	0.1808
272	2416.50	14	0.01408	8.896	0.1817	0.1817
273	2426.75	13.99	0.01406	8.866	0.1825	0.1825
274	2437.00	14	0.01409	8.877	0.1833	0.1833
275	2447.25	14	0.01414	8.866	0.1842	0.1842
276	2457.50	14	0.01414	8.847	0.1849	0.1849
277	2467.75	14	0.01414	8.836	0.1858	0.1858
278	2478.00	13.99	0.01413	8.8	0.1867	0.1867
279	2488.25	14	0.01413	8.784	0.1875	0.1875
280	2498.50	14	0.01414	8.751	0.1884	0.1884
281	2508.75	14	0.01416	8.773	0.1891	0.1891
282	2519.00	14	0.01422	8.748	0.19	0.19
283	2529.25	14	0.01422	8.713	0.1909	0.1909
284	2539.50	14	0.01421	8.694	0.1917	0.1917
285	2549.75	14	0.01419	8.68	0.1925	0.1925
286	2560.00	14	0.01421	8.677	0.1933	0.1933
287	2570.25	14	0.01426	8.677	0.1942	0.1942
288	2580.50	14	0.01427	8.669	0.195	0.195
289	2590.75	14	0.01429	8.655	0.1959	0.1959
290	2601.00	14	0.01432	8.622	0.1967	0.1967
291	2611.25	14	0.01429	8.617	0.1976	0.1976
292	2621.50	14	0.01436	8.625	0.1984	0.1984
293	2631.75	13.99	0.01437	8.614	0.1991	0.1991
294	2642.00	14.01	0.01422	8.592	0.2	0.2
295	2652.25	14	0.01424	8.578	0.2009	0.2009
296	2662.50	14	0.01436	8.578	0.2017	0.2017
297	2672.75	14.01	0.01439	8.576	0.2026	0.2026
298	2683.00	14	0.01426	8.573	0.2034	0.2034
299	2693.25	14	0.01436	8.573	0.2042	0.2042
300	2703.50	14	0.01441	8.581	0.2051	0.2051
301	2713.75	13.99	0.01426	8.581	0.2059	0.2059
302	2724.00	14	0.01431	8.589	0.2067	0.2067
303	2734.25	14	0.01444	8.606	0.2076	0.2076
304	2744.50	14	0.01446	8.598	0.2084	0.2084
305	2754.75	14	0.01429	8.622	0.2092	0.2092
306	2765.00	14	0.01434	8.595	0.2101	0.2101
307	2775.25	14	0.01447	8.592	0.2111	0.2111
308	2785.50	14	0.01446	8.584	0.2119	0.2119
309	2795.75	14	0.01436	8.587	0.2126	0.2126
310	2806.00	14.01	0.01446	8.573	0.2136	0.2136
311	2816.25	14	0.01451	8.587	0.2144	0.2144
312	2826.50	14	0.01447	8.554	0.2153	0.2153
313	2836.75	14	0.01444	8.554	0.216	0.216
314	2847.00	14	0.01446	8.54	0.217	0.217
315	2857.25	14	0.01454	8.515	0.2178	0.2178
316	2867.50	14	0.01446	8.526	0.2185	0.2185
317	2877.75	14	0.01451	8.488	0.2194	0.2194
318	2888.00	14	0.01456	8.469	0.2203	0.2203
319	2898.25	13.99	0.01459	8.461	0.2211	0.2211
320	2908.50	14	0.01454	8.455	0.222	0.222
321	2918.75	14	0.01459	8.428	0.2228	0.2228
322	2929.00	14	0.01462	8.425	0.2239	0.2239
323	2939.25	13.99	0.01462	8.425	0.2244	0.2244
324	2949.50	14	0.01457	8.398	0.2253	0.2253
325	2959.75	14	0.01462	8.378	0.2262	0.2262
326	2970.00	14	0.01462	8.354	0.2269	0.2269
327	2980.25	13.99	0.01456	8.357	0.2277	0.2277
328	2990.50	13.99	0.01462	8.332	0.2287	0.2287
329	3000.75	14	0.01467	8.324	0.2295	0.2295
330	3011.00	14	0.01462	8.313	0.2303	0.2303
331	3021.25	14	0.01461	8.318	0.2312	0.2312
332	3031.50	14.01	0.01464	8.315	0.232	0.232
333	3041.75	13.99	0.01469	8.294	0.2328	0.2328
334	3052.00	13.98	0.01464	8.296	0.2336	0.2336
335	3062.25	14	0.01467	8.285	0.2346	0.2346
336	3072.50	14	0.01474	8.277	0.2354	0.2354
337	3082.75	14.01	0.01471	8.28	0.2362	0.2362
338	3093.00	14	0.01474	8.285	0.237	0.237
339	3103.25	14	0.01474	8.269	0.2379	0.2379
340	3113.50	14.01	0.01477	8.263	0.2387	0.2387
341	3123.75	14.01	0.01476	8.266	0.2396	0.2396
342	3134.00	14	0.01477	8.28	0.2404	0.2404
343	3144.25	14	0.01482	8.252	0.2412	0.2412
344	3154.50	14	0.01481	8.247	0.242	0.242
345	3164.75	13.99	0.01479	8.244	0.2429	0.2429
346	3175.00	14	0.01486	8.263	0.2437	0.2437
347	3185.25	13.99	0.01486	8.236	0.2446	0.2446
348	3195.50	14.02	0.01482	8.228	0.2453	0.2453
349	3205.75	14	0.01484	8.214	0.2462	0.2462
350	3216.00	14	0.01491	8.209	0.247	0.247

353	3246.75	14	0.01494	8.178	0.2496	0.2496
354	3257.00	14	0.01496	8.173	0.2503	0.2503
355	3267.25	14.01	0.01491	8.165	0.2513	0.2513
356	3277.50	14	0.01491	8.148	0.2521	0.2521
357	3287.75	14	0.01496	8.132	0.2529	0.2529
358	3298.00	14.01	0.01499	8.118	0.2537	0.2537
359	3308.25	14	0.01497	8.121	0.2546	0.2546
360	3318.50	14	0.01505	8.137	0.2554	0.2554
361	3328.75	13.99	0.01504	8.104	0.2563	0.2563
362	3339.00	14.01	0.01501	8.104	0.2571	0.2571
363	3349.25	14.01	0.01501	8.096	0.2579	0.2579
364	3359.50	13.99	0.01502	8.083	0.2588	0.2588
365	3369.75	14	0.01509	8.072	0.2596	0.2596
366	3380.00	14	0.01505	8.058	0.2604	0.2604
367	3390.25	13.99	0.01505	8.05	0.2612	0.2612
368	3400.50	14	0.01514	8.028	0.2621	0.2621
369	3410.75	13.99	0.01519	8.022	0.2628	0.2628
370	3421.00	14	0.01514	8.006	0.2637	0.2637
371	3431.25	13.99	0.01512	7.995	0.2646	0.2646
372	3441.50	14.01	0.01517	7.992	0.2655	0.2655
373	3451.75	14	0.01522	7.965	0.2662	0.2662
374	3462.00	14	0.01524	7.94	0.267	0.267
375	3472.25	13.98	0.0152	7.937	0.2679	0.2679
376	3482.50	14	0.01525	7.932	0.2687	0.2687
377	3492.75	14	0.01527	7.91	0.2696	0.2696
378	3503.00	14	0.01532	7.918	0.2703	0.2703
379	3513.25	14.01	0.01532	7.904	0.2711	0.2711
380	3523.50	14	0.01527	7.91	0.2721	0.2721
381	3533.75	14	0.01529	7.883	0.2729	0.2729
382	3544.00	13.99	0.01532	7.869	0.2737	0.2737
383	3554.25	14	0.01535	7.869	0.2745	0.2745
384	3564.50	14	0.01537	7.866	0.2754	0.2754
385	3574.75	14	0.01529	7.839	0.2763	0.2763
386	3585.00	14	0.01535	7.841	0.2772	0.2772
387	3595.25	13.99	0.01537	7.839	0.278	0.278
388	3605.50	14	0.0154	7.833	0.2789	0.2789
389	3615.75	14	0.01542	7.803	0.2797	0.2797
390	3626.00	13.99	0.01544	7.806	0.2805	0.2805
391	3636.25	14	0.01544	7.795	0.2813	0.2813
392	3646.50	14	0.01544	7.792	0.2822	0.2822
393	3656.75	13.99	0.01547	7.781	0.2831	0.2831
394	3667.00	14	0.01545	7.789	0.2839	0.2839
395	3677.25	14	0.01545	7.748	0.2847	0.2847
396	3687.50	13.99	0.01552	7.74	0.2856	0.2856
397	3697.75	14	0.01552	7.735	0.2864	0.2864
398	3708.00	14	0.01554	7.737	0.2872	0.2872
399	3718.25	14	0.01549	7.71	0.2881	0.2881
400	3728.50	14	0.01555	7.707	0.289	0.289
401	3738.75	14	0.01554	7.71	0.2898	0.2898
402	3749.00	14	0.01552	7.691	0.2906	0.2906
403	3759.25	14	0.01554	7.685	0.2914	0.2914
404	3769.50	14	0.0156	7.68	0.2924	0.2924
405	3779.75	14	0.01562	7.677	0.2932	0.2932
406	3790.00	14	0.0156	7.65	0.294	0.294
407	3800.25	14	0.01564	7.625	0.2949	0.2949
408	3810.50	14	0.01565	7.611	0.2957	0.2957
409	3818.74	14	0.01564	7.609	0.2965	0.2965

DIRECT SHEAR TEST DATA

Project: PLUM CREEK SITE 21
Boring No.: B-604
Sample No.: 19-307
Test No.: 3

Location: TX
Tested By: SKK
Test Date: 8/22/19
Sample Type: CORE

Project No.: 19-307
Checked By: SKK
Depth: 30-31'
Elevation: N/A

Soil Description:
Remarks:

Step: 1 of 1

	Elapsed Time min	Vertical Stress psi	Vertical Displacement in	Horizontal Stress psi	Horizontal Displacement in	Cumulative Displacement in
1	0.00	28	0.02392	0.00274	0	0
2	0.01	28	0.02392	0.00274	-1.678e-005	1.678e-005
3	0.04	28	0.02392	0	1.678e-005	1.678e-005
4	0.09	28	0.02392	0.00274	1.678e-005	1.678e-005
5	0.16	28	0.02392	0.00274	-3.355e-005	3.355e-005
6	0.25	28	0.0239	0.00274	0	0
7	0.36	28	0.02392	0.0137	1.678e-005	1.678e-005
8	0.49	28	0.0239	0.01918	-1.678e-005	1.678e-005
9	0.64	28	0.0239	0.02466	-1.678e-005	1.678e-005
10	0.81	28	0.0239	0.03014	0	0
11	1.00	28	0.0239	0.03288	-3.355e-005	3.355e-005
12	1.21	28	0.0239	0.0411	-1.678e-005	1.678e-005
13	1.44	28	0.02387	0.04658	5.033e-005	5.033e-005
14	1.69	28	0.02387	0.06302	5.033e-005	5.033e-005
15	2.00	28	0.02387	0.1151	6.711e-005	6.711e-005
16	2.25	28	0.02387	0.1671	8.388e-005	8.388e-005
17	2.56	28	0.02387	0.2274	0.0001007	0.0001007
18	2.89	28	0.02385	0.2877	0.0001342	0.0001342
19	3.24	28	0.02384	0.3507	0.000151	0.000151
20	3.61	28	0.02384	0.4165	0.0002013	0.0002013
21	4.00	28	0.02384	0.4795	0.0002181	0.0002181
22	4.84	28	0.02382	0.6165	0.0002684	0.0002684
23	5.76	28	0.0238	0.7507	0.0003188	0.0003188
24	6.76	28	0.02384	0.8932	0.0003523	0.0003523
25	7.84	28	0.02384	1.03	0.0004026	0.0004026
26	9.00	28	0.02384	1.145	0.0004865	0.0004865
27	10.24	28	0.02384	1.252	0.0005201	0.0005201
28	11.56	28	0.02385	1.351	0.0005536	0.0005536
29	12.96	27.99	0.02385	1.43	0.0005872	0.0005872
30	14.94	28	0.0238	1.438	0.0006375	0.0006375
31	16.00	28	0.0238	1.43	0.0006207	0.0006207
32	17.64	28	0.02382	1.43	0.0006207	0.0006207
33	19.36	28	0.02382	1.436	0.000604	0.000604
34	21.16	28	0.02384	1.438	0.0006207	0.0006207
35	23.04	28	0.02384	1.433	0.0006543	0.0006543
36	25.00	28	0.02382	1.447	0.0006207	0.0006207
37	30.25	28	0.0238	1.436	0.0006711	0.0006711
38	36.00	27.99	0.02382	1.463	0.0006711	0.0006711
39	43.56	28	0.02377	1.49	0.0006543	0.0006543
40	49.00	28.01	0.02377	1.504	0.0006711	0.0006711
41	56.25	28	0.02377	1.51	0.0006543	0.0006543
42	64.00	28	0.02377	1.529	0.0006207	0.0006207
43	72.25	28	0.02379	1.578	0.0006543	0.0006543
44	81.00	28	0.02375	1.586	0.0006878	0.0006878
45	90.25	27.98	0.02375	1.559	0.0007046	0.0007046
46	100.00	28	0.02377	1.553	0.0007382	0.0007382
47	110.25	28	0.02375	1.584	0.0006878	0.0006878
48	120.50	28	0.02372	1.57	0.0007214	0.0007214
49	130.75	28	0.02377	2.31	0.0009563	0.0009563
50	141.00	27.99	0.02375	2.934	0.001292	0.001292
51	151.25	28	0.0237	3.26	0.001409	0.001409
52	161.50	28	0.02374	3.896	0.001644	0.001644
53	171.75	28	0.02374	5.165	0.002265	0.002265
54	182.00	28	0.02374	6.318	0.002852	0.002852
55	192.25	28	0.02369	7.365	0.00349	0.00349
56	202.50	28.01	0.02369	8.189	0.004127	0.004127
57	212.75	28	0.02369	8.992	0.004798	0.004798
58	223.00	28	0.02367	9.831	0.005436	0.005436
59	233.25	27.99	0.02362	10.62	0.00614	0.00614
60	243.50	28	0.02365	11.31	0.006828	0.006828
61	253.75	28	0.02367	11.99	0.007516	0.007516
62	264.00	28	0.0236	12.64	0.008204	0.008204
63	274.25	28	0.0236	13.21	0.008942	0.008942
64	284.50	28	0.02364	13.76	0.009663	0.009663
65	294.75	28	0.02365	14.26	0.01038	0.01038
66	305.00	28	0.0236	14.8	0.01111	0.01111
67	315.25	28	0.02355	15.25	0.01186	0.01186
68	325.50	28	0.0236	15.69	0.01262	0.01262
69	335.75	27.99	0.02364	16.12	0.01337	0.01337
70	346.00	28	0.0236	16.5	0.01404	0.01404
71	356.25	28	0.02355	16.88	0.01476	0.01476
72	366.50	28	0.02357	17.18	0.01554	0.01554
73	376.75	28	0.0236	17.47	0.01636	0.01636
74	387.00	28	0.02364	17.72	0.01705	0.01705

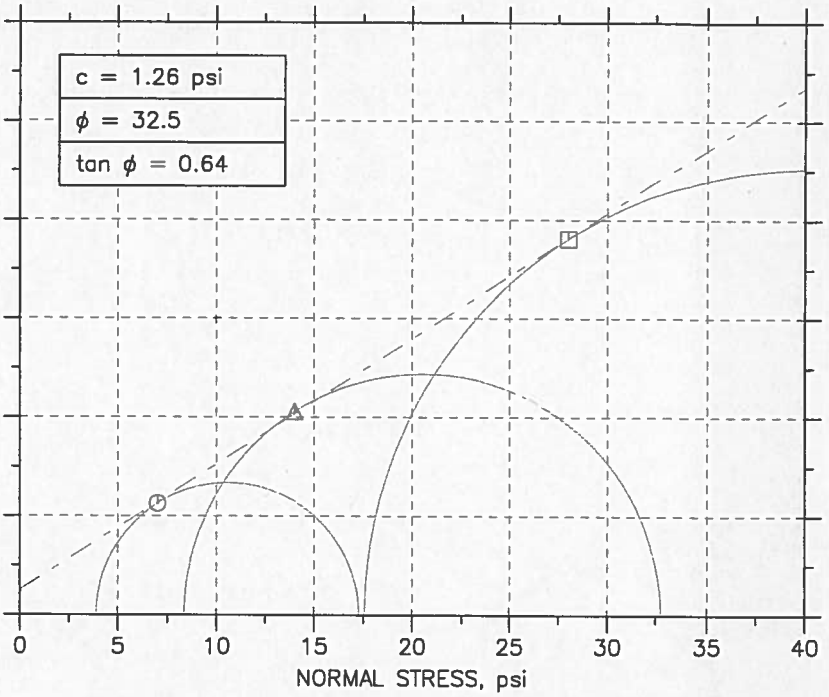
77	417.75	28	0.02364	18.36	0.01936	0.01936
78	428.00	28	0.02369	18.5	0.02013	0.02013
79	438.25	28	0.02375	18.64	0.021	0.021
80	448.50	28	0.02377	18.73	0.02174	0.02174
81	458.75	28	0.02377	18.86	0.0225	0.0225
82	469.00	28.01	0.02377	18.92	0.02327	0.02327
83	479.25	28	0.02384	18.94	0.02411	0.02411
84	489.50	27.99	0.02387	18.97	0.02498	0.02498
85	499.75	28	0.0239	18.99	0.02572	0.02572
86	510.00	28	0.02389	19.04	0.02647	0.02647
87	520.25	27.99	0.0239	19.03	0.02728	0.02728
88	530.50	27.99	0.02395	19.01	0.02808	0.02808
89	540.75	27.99	0.024	19	0.02891	0.02891
90	551.00	28	0.02403	18.98	0.02973	0.02973
91	561.25	28	0.02407	19.02	0.0305	0.0305
92	571.50	28	0.02402	19	0.03131	0.03131
93	581.75	27.99	0.02405	18.94	0.03218	0.03218
94	592.00	28	0.0241	18.95	0.03297	0.03297
95	602.25	28	0.02408	18.93	0.03375	0.03375
96	612.50	28	0.02413	18.94	0.03456	0.03456
97	622.75	28	0.02413	18.95	0.0354	0.0354
98	633.00	28	0.0241	18.91	0.03619	0.03619
99	643.25	28	0.02413	18.93	0.03694	0.03694
100	653.50	28	0.02415	18.92	0.0378	0.0378
101	663.75	28	0.02417	18.92	0.03864	0.03864
102	674.00	28	0.02418	18.9	0.03941	0.03941
103	684.25	27.99	0.0242	18.9	0.04021	0.04021
104	694.50	28	0.02422	18.86	0.04104	0.04104
105	704.75	28	0.02425	18.86	0.04187	0.04187
106	715.00	27.99	0.02427	18.8	0.04265	0.04265
107	725.25	28	0.02427	18.77	0.04347	0.04347
108	735.50	28	0.02423	18.73	0.04427	0.04427
109	745.75	28	0.02432	18.69	0.04508	0.04508
110	756.00	28	0.02432	18.67	0.04593	0.04593
111	766.25	28	0.02428	18.63	0.04674	0.04674
112	776.50	28	0.0243	18.59	0.04753	0.04753
113	786.75	28.01	0.02435	18.54	0.04838	0.04838
114	797.00	28	0.02432	18.52	0.04924	0.04924
115	807.25	28	0.02432	18.47	0.05006	0.05006
116	817.50	28	0.02435	18.4	0.05087	0.05087
117	827.75	28	0.02437	18.36	0.05171	0.05171
118	838.00	28	0.02438	18.36	0.05249	0.05249
119	848.25	27.99	0.02437	18.28	0.05332	0.05332
120	858.50	28	0.02438	18.26	0.05417	0.05417
121	868.75	28	0.02438	18.2	0.05498	0.05498
122	879.00	28	0.0244	18.12	0.05578	0.05578
123	889.25	28	0.0244	18.08	0.05669	0.05669
124	899.50	28	0.0244	18.03	0.05748	0.05748
125	909.75	28	0.02442	17.95	0.05825	0.05825
126	920.00	28	0.02445	17.87	0.05912	0.05912
127	930.25	28	0.02445	17.82	0.05994	0.05994
128	940.50	28	0.02443	17.69	0.06078	0.06078
129	950.75	28	0.02443	17.65	0.06162	0.06162
130	961.00	28	0.02447	17.57	0.06243	0.06243
131	971.25	28	0.02455	17.54	0.06325	0.06325
132	981.50	28	0.02447	17.44	0.06412	0.06412
133	991.75	28	0.02447	17.4	0.06493	0.06493
134	1002.00	28	0.02447	17.34	0.06573	0.06573
135	1012.25	28	0.02453	17.3	0.06652	0.06652
136	1022.50	28	0.0245	17.29	0.06739	0.06739
137	1032.75	28	0.02452	17.25	0.06821	0.06821
138	1043.00	28	0.02453	17.2	0.06904	0.06904
139	1053.25	28	0.02457	17.18	0.06986	0.06986
140	1063.50	28	0.02453	17.18	0.07068	0.07068
141	1073.75	28	0.02455	17.14	0.07155	0.07155
142	1084.00	28	0.02458	17.13	0.07234	0.07234
143	1094.25	28	0.02465	17.09	0.07313	0.07313
144	1104.50	28	0.02463	17.09	0.07397	0.07397
145	1114.75	28	0.02455	17.07	0.07481	0.07481
146	1125.00	28	0.02463	17.03	0.07565	0.07565
147	1135.25	28	0.02465	16.99	0.07647	0.07647
148	1145.50	28	0.02467	17.01	0.07726	0.07726
149	1155.75	28	0.02457	16.97	0.07808	0.07808
150	1166.00	28	0.02465	16.87	0.07893	0.07893
151	1176.25	28	0.02468	16.84	0.07976	0.07976
152	1186.50	28	0.0247	16.82	0.08058	0.08058
153	1196.75	28	0.02455	16.79	0.08138	0.08138
154	1207.00	28	0.02465	16.69	0.08229	0.08229
155	1217.25	28	0.0247	16.68	0.08311	0.08311
156	1227.50	28	0.02473	16.68	0.08398	0.08398
157	1237.75	28	0.02458	16.7	0.08479	0.08479
158	1248.00	28	0.02468	16.63	0.08566	0.08566
159	1258.25	28	0.02473	16.61	0.08652	0.08652
160	1268.50	28	0.02473	16.61	0.08732	0.08732
161	1278.75	28	0.0246	16.57	0.08815	0.08815
162	1289.00	28	0.02468	16.52	0.08905	0.08905
163	1299.25	28	0.02475	16.48	0.08986	0.08986
164	1309.50	28	0.0248	16.47	0.09071	0.09071
165	1319.75	28	0.02467	16.41	0.09153	0.09153
166	1330.00	28	0.02478	16.37	0.09247	0.09247

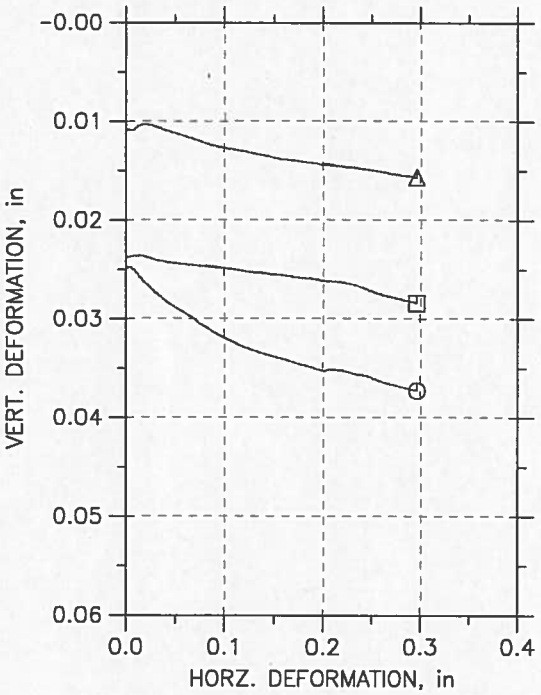
169	1360.75	28	0.02475	16.26	0.09497	0.09497
170	1371.00	28	0.0248	16.22	0.09573	0.09573
171	1381.25	28.01	0.02483	16.21	0.09657	0.09657
172	1391.50	28	0.0248	16.23	0.09746	0.09746
173	1401.75	28	0.02481	16.18	0.09824	0.09824
174	1412.00	28	0.02486	16.16	0.0991	0.0991
175	1422.25	28	0.0248	16.19	0.09996	0.09996
176	1432.50	28	0.02485	16.12	0.1008	0.1008
177	1442.75	28	0.02485	16.09	0.1016	0.1016
178	1453.00	28	0.02483	16.11	0.1025	0.1025
179	1463.25	28	0.02485	16.06	0.1033	0.1033
180	1473.50	28	0.0249	16	0.104	0.104
181	1483.75	28	0.02486	15.99	0.1049	0.1049
182	1494.00	28	0.0249	16	0.1057	0.1057
183	1504.25	28	0.02491	15.92	0.1065	0.1065
184	1514.50	28	0.02491	15.89	0.1074	0.1074
185	1524.75	28	0.02495	15.91	0.1083	0.1083
186	1535.00	28.01	0.02493	15.87	0.109	0.109
187	1545.25	28	0.02498	15.89	0.1099	0.1099
188	1555.50	28	0.02496	15.9	0.1107	0.1107
189	1565.75	28	0.02501	15.87	0.1116	0.1116
190	1576.00	28	0.02498	15.84	0.1124	0.1124
191	1586.25	28	0.02498	15.87	0.1132	0.1132
192	1596.50	28	0.0251	15.87	0.114	0.114
193	1606.75	28	0.02506	15.86	0.1148	0.1148
194	1617.00	28	0.02505	15.85	0.1156	0.1156
195	1627.25	28	0.02508	15.87	0.1165	0.1165
196	1637.50	28	0.0251	15.85	0.1173	0.1173
197	1647.75	28	0.02513	15.84	0.1181	0.1181
198	1658.00	28	0.0251	15.87	0.119	0.119
199	1668.25	28	0.02511	15.86	0.1198	0.1198
200	1678.50	28	0.02513	15.85	0.1206	0.1206
201	1688.75	28	0.02518	15.85	0.1214	0.1214
202	1699.00	28	0.02516	15.86	0.1223	0.1223
203	1709.25	28	0.0252	15.82	0.1231	0.1231
204	1719.50	28	0.02518	15.78	0.1239	0.1239
205	1729.75	28	0.0252	15.8	0.1248	0.1248
206	1740.00	28	0.02521	15.77	0.1255	0.1255
207	1750.25	28	0.02523	15.74	0.1264	0.1264
208	1760.50	28	0.02525	15.78	0.1272	0.1272
209	1770.75	28	0.0252	15.79	0.1281	0.1281
210	1781.00	28	0.02521	15.76	0.1289	0.1289
211	1791.25	28	0.02528	15.78	0.1298	0.1298
212	1801.50	27.99	0.02528	15.81	0.1306	0.1306
213	1811.75	28	0.02525	15.78	0.1315	0.1315
214	1822.00	28	0.02525	15.77	0.1322	0.1322
215	1832.25	28	0.02525	15.76	0.1331	0.1331
216	1842.50	28	0.0253	15.79	0.1339	0.1339
217	1852.75	28	0.02533	15.78	0.1348	0.1348
218	1863.00	28	0.0253	15.77	0.1355	0.1355
219	1873.25	27.99	0.02523	15.75	0.1364	0.1364
220	1883.50	28	0.0253	15.72	0.1372	0.1372
221	1893.75	28.01	0.02535	15.73	0.1381	0.1381
222	1904.00	28	0.02536	15.67	0.1388	0.1388
223	1914.25	28	0.02528	15.61	0.1396	0.1396
224	1924.50	28	0.02528	15.52	0.1405	0.1405
225	1934.75	28	0.02535	15.52	0.1413	0.1413
226	1945.00	28	0.02538	15.51	0.1421	0.1421
227	1955.25	28	0.02538	15.46	0.143	0.143
228	1965.50	28	0.0254	15.44	0.1437	0.1437
229	1975.75	28	0.02536	15.43	0.1446	0.1446
230	1986.00	28	0.02545	15.44	0.1455	0.1455
231	1996.25	28	0.02545	15.4	0.1463	0.1463
232	2006.50	28	0.02545	15.4	0.1472	0.1472
233	2016.75	28	0.0255	15.39	0.1479	0.1479
234	2027.00	28	0.0255	15.37	0.1487	0.1487
235	2037.25	28	0.02546	15.38	0.1497	0.1497
236	2047.50	28	0.02546	15.35	0.1505	0.1505
237	2057.75	28	0.02546	15.35	0.1513	0.1513
238	2068.00	28	0.02548	15.38	0.1523	0.1523
239	2078.25	28	0.0255	15.36	0.153	0.153
240	2088.50	28	0.02548	15.34	0.1539	0.1539
241	2098.75	28	0.02548	15.33	0.1547	0.1547
242	2109.00	28	0.0255	15.35	0.1556	0.1556
243	2119.25	28	0.02551	15.32	0.1563	0.1563
244	2129.50	28	0.02553	15.31	0.1572	0.1572
245	2139.75	28	0.02553	15.28	0.158	0.158
246	2150.00	28	0.02555	15.29	0.1589	0.1589
247	2160.25	28	0.02553	15.27	0.1597	0.1597
248	2170.50	28	0.02556	15.26	0.1605	0.1605
249	2180.75	27.99	0.02556	15.24	0.1613	0.1613
250	2191.00	28	0.02558	15.25	0.1622	0.1622
251	2201.25	28	0.02559	15.24	0.163	0.163
252	2211.50	28	0.02561	15.2	0.1638	0.1638
253	2221.75	28	0.02561	15.21	0.1648	0.1648
254	2232.00	28	0.02563	15.22	0.1655	0.1655
255	2242.25	28	0.02563	15.23	0.1663	0.1663
256	2252.50	28	0.02563	15.2	0.1672	0.1672
257	2262.75	28	0.02564	15.21	0.1686	0.1686
258	2273.00	28	0.02574	15.22	0.1688	0.1688

261	2303.75	28	0.02574	15.2	0.1714	0.1714
262	2314.00	28	0.02578	15.21	0.1722	0.1722
263	2324.25	28	0.02573	15.21	0.1731	0.1731
264	2334.50	28	0.02576	15.19	0.1738	0.1738
265	2344.75	28	0.02576	15.19	0.1747	0.1747
266	2355.00	28	0.02579	15.19	0.1756	0.1756
267	2365.25	28	0.02583	15.17	0.1763	0.1763
268	2375.50	28	0.02581	15.18	0.1772	0.1772
269	2385.75	28	0.02578	15.16	0.178	0.178
270	2396.00	28	0.02579	15.15	0.1788	0.1788
271	2406.25	28	0.02584	15.16	0.1796	0.1796
272	2416.50	28	0.02579	15.15	0.1805	0.1805
273	2426.75	28	0.02584	15.12	0.1813	0.1813
274	2437.00	28	0.02583	15.12	0.1822	0.1822
275	2447.25	28	0.02584	15.12	0.183	0.183
276	2457.50	28	0.02588	15.13	0.1838	0.1838
277	2467.75	28	0.02584	15.13	0.1846	0.1846
278	2478.00	28	0.02588	15.13	0.1855	0.1855
279	2488.25	28	0.02588	15.13	0.1863	0.1863
280	2498.50	28	0.02583	15.1	0.1872	0.1872
281	2508.75	28	0.02591	15.09	0.1881	0.1881
282	2519.00	27.99	0.02591	15.06	0.189	0.189
283	2529.25	28	0.02589	15.05	0.1897	0.1897
284	2539.50	28	0.02593	15.04	0.1906	0.1906
285	2549.75	28	0.02593	15.02	0.1914	0.1914
286	2560.00	28	0.02596	15.01	0.1923	0.1923
287	2570.25	28	0.02601	14.98	0.1931	0.1931
288	2580.50	28	0.02604	14.96	0.1937	0.1937
289	2590.75	28	0.02594	14.96	0.1947	0.1947
290	2601.00	28	0.02599	14.93	0.1956	0.1956
291	2611.25	28	0.02604	14.93	0.1965	0.1965
292	2621.50	28	0.02608	14.94	0.1972	0.1972
293	2631.75	28	0.02611	14.94	0.1981	0.1981
294	2642.00	28	0.02613	14.95	0.1989	0.1989
295	2652.25	27.99	0.02606	14.93	0.1997	0.1997
296	2662.50	28	0.02609	14.95	0.2006	0.2006
297	2672.75	28	0.02608	14.95	0.2015	0.2015
298	2683.00	28	0.02609	14.95	0.2023	0.2023
299	2693.25	28	0.02609	14.95	0.2031	0.2031
300	2703.50	28	0.02611	14.94	0.204	0.204
301	2713.75	28	0.02616	14.94	0.2047	0.2047
302	2724.00	28	0.02619	14.92	0.2056	0.2056
303	2734.25	27.99	0.02618	14.91	0.2064	0.2064
304	2744.50	27.99	0.02611	14.9	0.2074	0.2074
305	2754.75	28	0.02613	14.88	0.2082	0.2082
306	2765.00	28	0.02618	14.87	0.2091	0.2091
307	2775.25	28	0.02619	14.87	0.2099	0.2099
308	2785.50	28	0.02619	14.87	0.2107	0.2107
309	2795.75	28	0.02621	14.86	0.2115	0.2115
310	2806.00	28	0.02621	14.87	0.2124	0.2124
311	2816.25	28	0.02613	14.86	0.2134	0.2134
312	2826.50	28	0.02619	14.81	0.2142	0.2142
313	2836.75	28	0.02623	14.77	0.215	0.215
314	2847.00	28	0.02624	14.74	0.2158	0.2158
315	2857.25	28	0.02629	14.73	0.2167	0.2167
316	2867.50	28	0.02618	14.72	0.2175	0.2175
317	2877.75	28	0.02624	14.66	0.2184	0.2184
318	2888.00	28	0.02628	14.64	0.2192	0.2192
319	2898.25	27.99	0.02631	14.61	0.22	0.22
320	2908.50	28	0.02634	14.58	0.2208	0.2208
321	2918.75	28	0.02626	14.56	0.2218	0.2218
322	2929.00	28	0.02631	14.49	0.2226	0.2226
323	2939.25	28	0.02636	14.45	0.2235	0.2235
324	2949.50	28	0.02641	14.41	0.2242	0.2242
325	2959.75	27.99	0.02641	14.4	0.2251	0.2251
326	2970.00	28	0.02634	14.39	0.226	0.226
327	2980.25	28	0.02641	14.35	0.2268	0.2268
328	2990.50	28	0.02646	14.35	0.2276	0.2276
329	3000.75	28	0.02647	14.35	0.2285	0.2285
330	3011.00	28	0.02644	14.38	0.2294	0.2294
331	3021.25	28	0.02646	14.37	0.2302	0.2302
332	3031.50	28	0.02651	14.35	0.231	0.231
333	3041.75	28	0.02654	14.33	0.2319	0.2319
334	3052.00	28	0.02657	14.3	0.2327	0.2327
335	3062.25	28	0.02657	14.25	0.2334	0.2334
336	3072.50	28	0.02657	14.24	0.2344	0.2344
337	3082.75	28	0.02659	14.17	0.2352	0.2352
338	3093.00	28	0.02664	14.13	0.2361	0.2361
339	3103.25	28	0.02666	14.12	0.2369	0.2369
340	3113.50	28	0.02672	14.1	0.2376	0.2376
341	3123.75	28	0.02674	14.08	0.2385	0.2385
342	3134.00	28	0.02676	14.01	0.2394	0.2394
343	3144.25	28	0.02676	14.01	0.2402	0.2402
344	3154.50	28	0.02681	13.98	0.2411	0.2411
345	3164.75	28	0.02686	13.98	0.2419	0.2419
346	3175.00	28	0.02689	13.97	0.2427	0.2427
347	3185.25	28	0.02692	13.93	0.2435	0.2435
348	3195.50	27.99	0.02694	13.83	0.2444	0.2444
349	3205.75	28	0.02694	13.79	0.2453	0.2453
350	3216.00	28	0.02702	13.75	0.2461	0.2461

353	3246.75	28	0.02714	13.65	0.2485	0.2485
354	3257.00	28	0.02711	13.66	0.2495	0.2495
355	3267.25	28	0.02712	13.62	0.2503	0.2503
356	3277.50	28	0.02721	13.59	0.2513	0.2513
357	3287.75	28	0.02724	13.56	0.2519	0.2519
358	3298.00	28	0.0273	13.53	0.2527	0.2527
359	3308.25	28	0.02729	13.51	0.2535	0.2535
360	3318.50	28	0.02732	13.48	0.2544	0.2544
361	3328.75	28	0.02739	13.45	0.2553	0.2553
362	3339.00	28	0.02739	13.41	0.2561	0.2561
363	3349.25	28	0.02745	13.4	0.257	0.257
364	3359.50	28	0.0274	13.39	0.2578	0.2578
365	3369.75	28	0.02742	13.37	0.2587	0.2587
366	3380.00	28	0.02745	13.35	0.2596	0.2596
367	3390.25	28	0.0275	13.33	0.2603	0.2603
368	3400.50	28	0.02754	13.32	0.2612	0.2612
369	3410.75	27.99	0.02757	13.31	0.2619	0.2619
370	3421.00	28	0.02759	13.28	0.2626	0.2626
371	3431.25	27.99	0.02759	13.28	0.2636	0.2636
372	3441.50	27.99	0.02764	13.27	0.2644	0.2644
373	3451.75	28	0.02764	13.29	0.2654	0.2654
374	3462.00	28	0.02767	13.26	0.2662	0.2662
375	3472.25	28	0.02772	13.24	0.267	0.267
376	3482.50	28	0.02767	13.23	0.2679	0.2679
377	3492.75	28	0.02772	13.23	0.2686	0.2686
378	3503.00	28	0.02772	13.23	0.2696	0.2696
379	3513.25	28	0.02775	13.2	0.2703	0.2703
380	3523.50	28	0.02777	13.19	0.2712	0.2712
381	3533.75	28	0.02782	13.18	0.272	0.272
382	3544.00	28	0.0278	13.17	0.2729	0.2729
383	3554.25	28	0.02784	13.14	0.2737	0.2737
384	3564.50	28	0.02785	13.13	0.2746	0.2746
385	3574.75	28	0.02789	13.12	0.2755	0.2755
386	3585.00	28	0.02789	13.11	0.2764	0.2764
387	3595.25	28.01	0.0279	13.09	0.2771	0.2771
388	3605.50	27.99	0.02792	13.08	0.2779	0.2779
389	3615.75	28	0.02792	13.07	0.2787	0.2787
390	3626.00	27.99	0.02797	13.04	0.2796	0.2796
391	3636.25	28	0.02799	13.03	0.2804	0.2804
392	3646.50	28	0.028	13	0.2812	0.2812
393	3656.75	28	0.02799	12.95	0.2821	0.2821
394	3667.00	28	0.02808	12.94	0.283	0.283
395	3677.25	28	0.02808	12.92	0.2838	0.2838
396	3687.50	28	0.0281	12.89	0.2846	0.2846
397	3697.75	28	0.02808	12.89	0.2854	0.2854
398	3708.00	28	0.02812	12.87	0.2863	0.2863
399	3718.25	28	0.02813	12.86	0.2872	0.2872
400	3728.50	28	0.02815	12.84	0.288	0.288
401	3738.75	28	0.02815	12.84	0.2888	0.2888
402	3749.00	27.99	0.02817	12.81	0.2896	0.2896
403	3759.25	27.99	0.02823	12.81	0.2903	0.2903
404	3769.50	27.99	0.02823	12.8	0.2913	0.2913
405	3779.75	28	0.02822	12.78	0.2921	0.2921
406	3790.00	28	0.02825	12.76	0.293	0.293
407	3800.25	27.99	0.02828	12.75	0.2938	0.2938
408	3810.50	28	0.02833	12.73	0.2948	0.2948
409	3820.75	28	0.02835	12.7	0.2957	0.2957
410	3827.58	28	0.02837	12.68	0.2962	0.2962

DIRECT SHEAR TEST REPORT





Symbol		⏲	△	⊡	
Test No.		1	2	3	
Sample No.		19-307	19-307	19-307	
Shape		Circular	Circular	Circular	
Initial	Dimension, in	2.5	2.5	2.5	
	Area, in^2	4.9087	4.9087	4.9087	
	Height, in	1	1	1	
	Water Content, %	21.62	21.31	21.66	
	Dry Density, pcf	90.807	95.645	98.046	
	Saturation, %	66.75	73.71	79.32	
	Void Ratio	0.89057	0.79495	0.75098	
Consol. Height, in		0.9751	0.98817	0.97562	
Consol. Void Ratio		0.84349	0.7737	0.70829	
Final	Water Content, %	33.97	30.70	29.45	
	Dry Density, pcf	94.32	97.164	100.91	
	Saturation, %	113.89	110.07	115.48	
	Void Ratio	0.82015	0.76688	0.70131	
Normal Stress, psi		6.9977	14.001	27.999	
Max. Shear Stress, psi		5.6331	10.28	19.037	
Ult. Shear Stress, psi		5.0934	7.6086	12.683	
Time to Failure, min		1893.8	499.75	510	
Disp. Rate, in/min		8e-005	8e-005	8e-005	
Specific Gravity		2.75	2.75	2.75	
Liquid Limit		0	0	0	
Plastic Limit		0	0	0	
Plasticity Index		0	0	0	

Project: PLUM CREEK SITE 21	
Location: TX	
Project No.: 19-307	
Boring No.: B-604	
Sample Type: CORE	
Description:	
Remarks:	

ATTACHMENT 8

UNDISTURBED SAMPLE CHARACTERISTICS (NRCS-ENG-129)

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-247

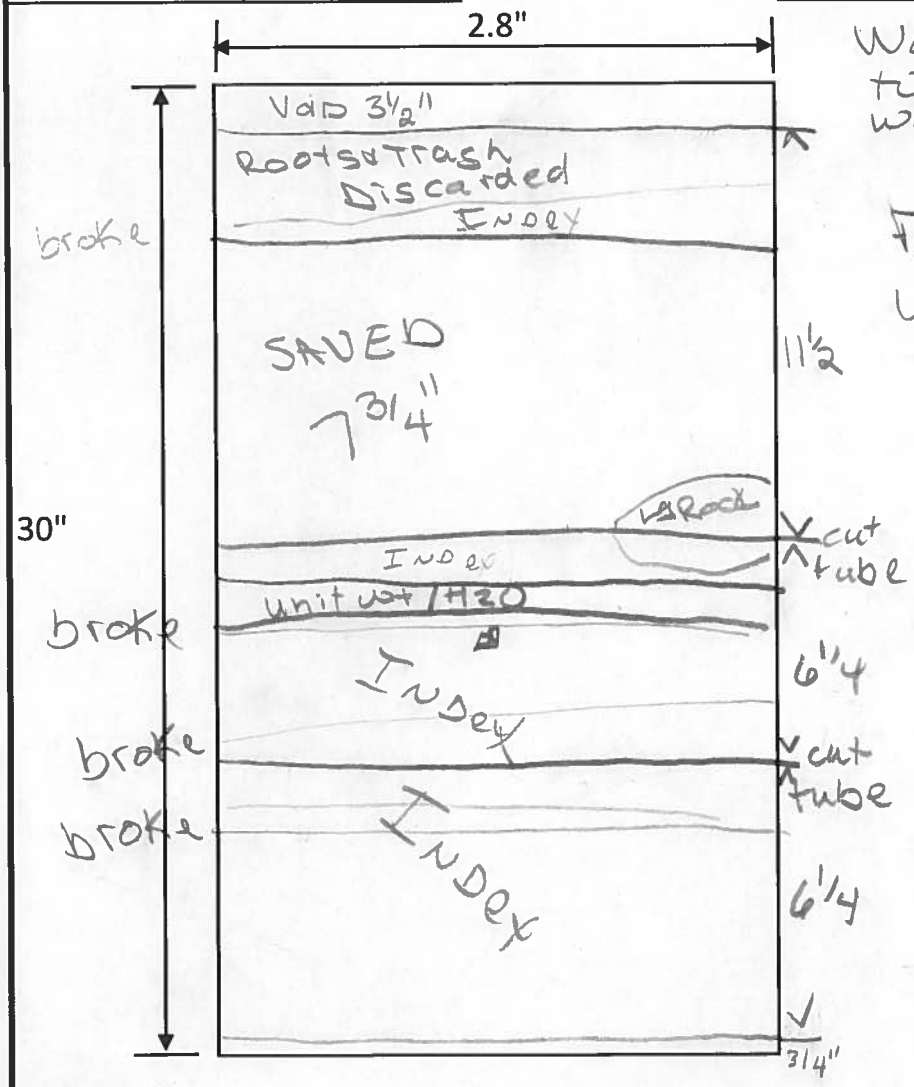
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-247

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-04P	6'	8.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tan	Dry	V Stiff	—	Smooth	2.0	CL

ω 21.2 % γ_d 1.52 g/cc DESCRIBED BY SKK 1/28/19



Would not push, cut tube to extrude, bottom half would not push

Fragile material. Low CL.

Unit weight & H_2O taken

No testing assigned at this time

PHOTOS: 2

S:\NRCS\INDEX NEW\Work Sheets\Shear Core Opening Works

NRCS-ENG-129 (REVISED)

WO #: 19-43WB

Lab #: 19-248

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

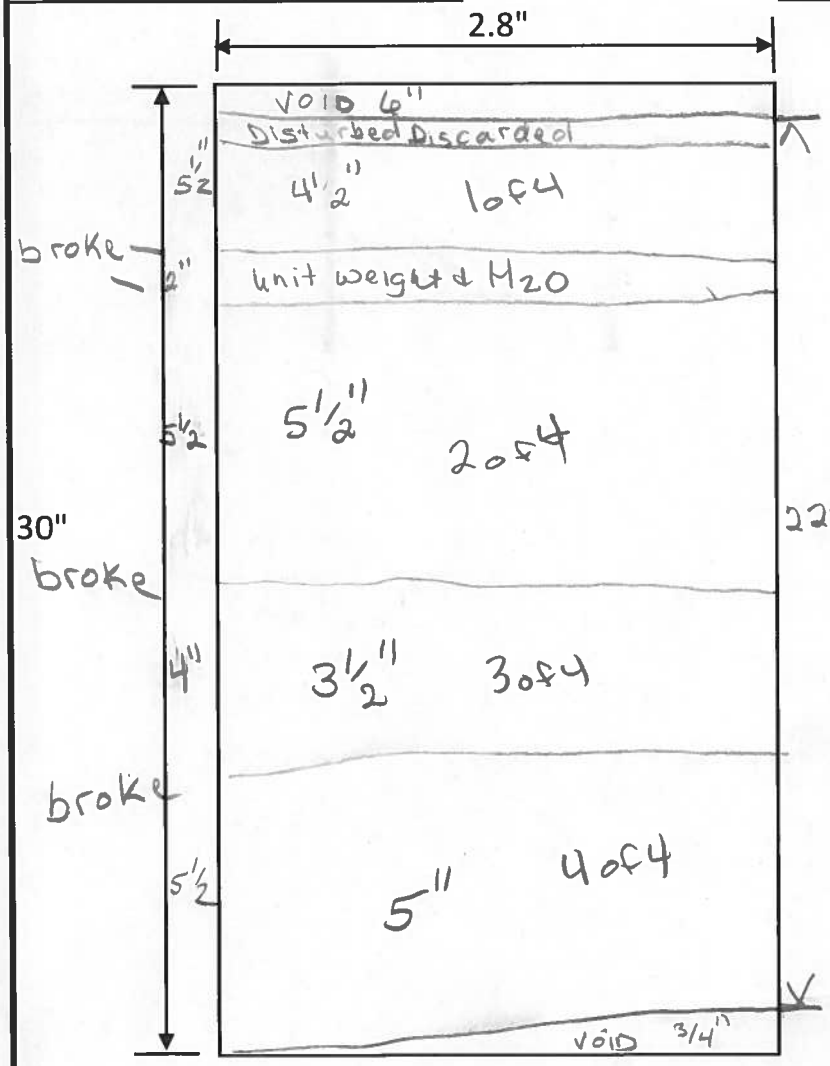
PLUM CREEK SITE 21, TX — 19-248

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-04P	10'	12.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish/Gray	Moist	V.Stiff	—	Smooth	—	CL

ω 22.9 % γ_d 1.51 g/cc

DESCRIBED BY SKK 1/28/19



Sample moist but some silty layers in it, mostly CL material.

Unit weight & H_2O taken.

Broke in several places when extruded.

Recommend 2.8" QU on 2 of 4.

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-249

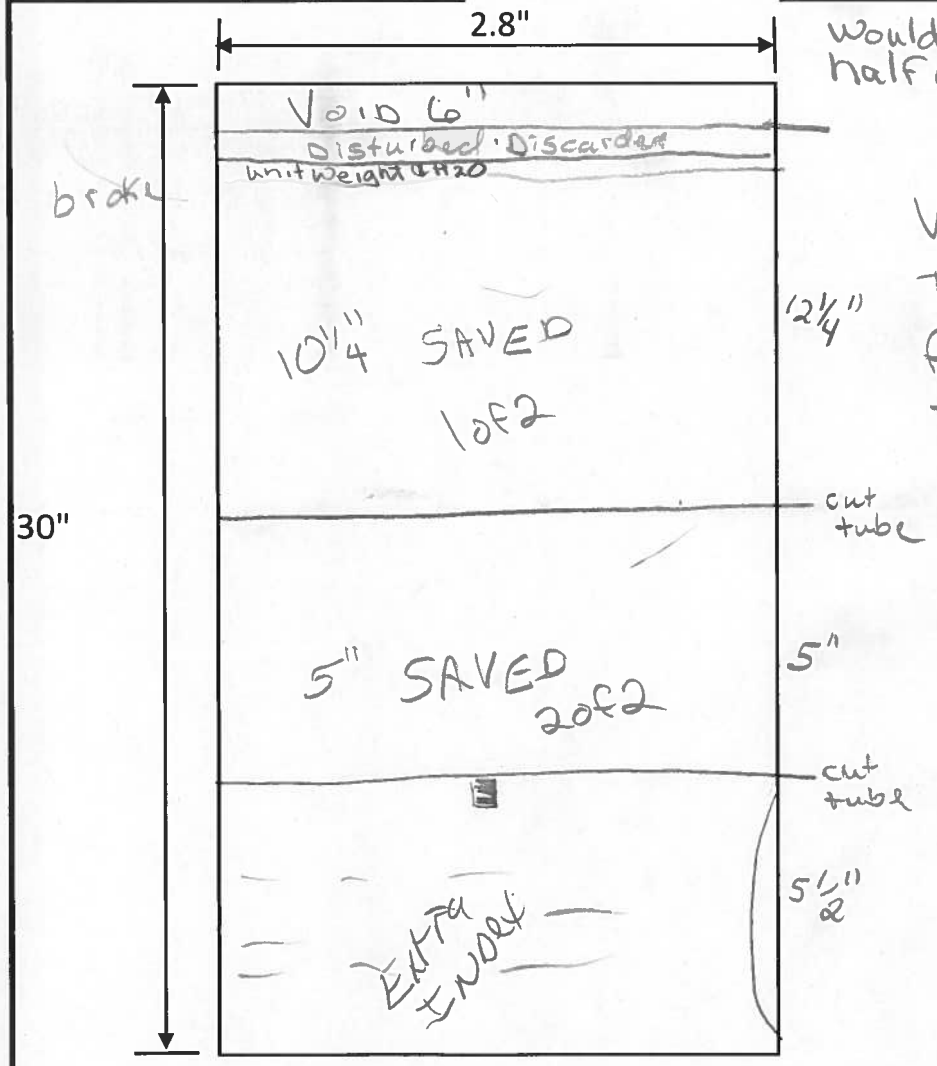
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-249

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-04P	20'	22.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish\Brown	Moist	V.Stiff	—	Smooth	4.5+	CH

ω 16.5% γ_d 1.64 g/cc DESCRIBED BY SKK 1/28/19



Would not push, cut tube, bottom half would not push, cut tube again

Very stiff material Top half appears fairly uniform, Tannish color, Bottom half is darker but appears to be the same material. Bottom section accordianed when extruded, use for extra index if needed. Unit weight @ H_2O taken from top of top section. Use 1 of 2 for high & low PSI and 2 of 2 for middle PSI on UU Test (1.4")

PHOTOS: 3

UU

S:\NRCS\INDEX NEW\Work Sheets\Shear Core Opening Works

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-250

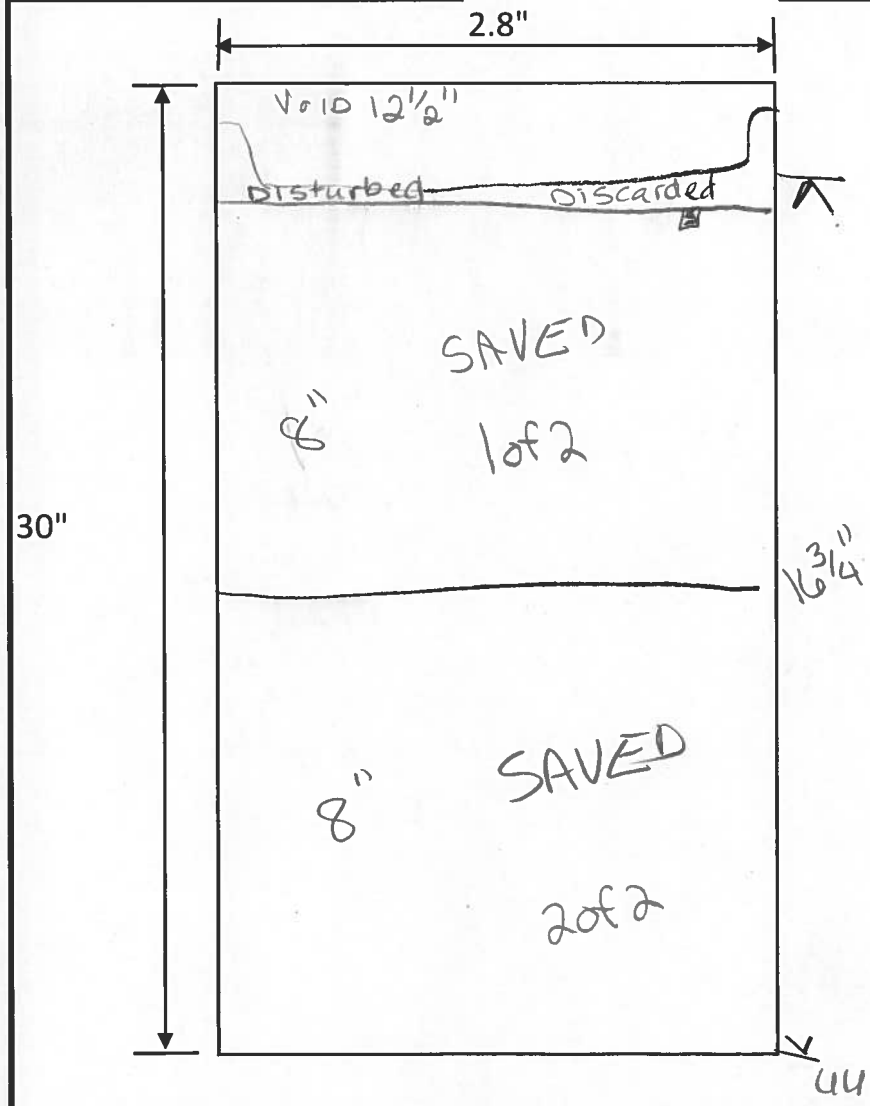
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-250

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-04P	35'	37.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Dark Brownish	Moist	V Stiff	—	Smooth	2.25	CH

ω 19.91 % γ_d 1.74 g/cc (From uu) DESCRIBED BY SKK 1/28/19



Appears to be a fairly uniform CH type sample.
Trim 1.4" uu from both 1 of 2 and 2 of 2

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-251

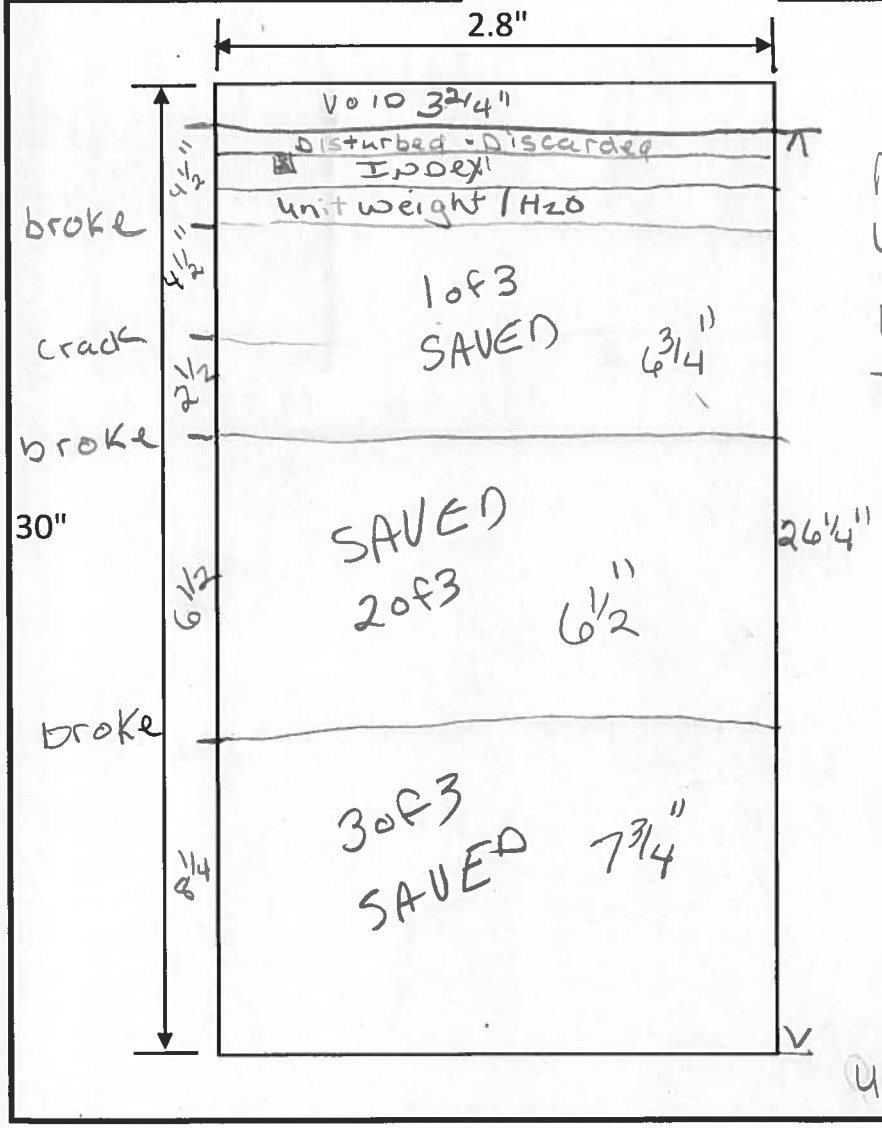
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-251

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-04P	43'	45.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish/Gray Marbled	Moist	V.Stiff	—	Smooth	2.0	CL

ω 24.0% γ_d 1.63 g/cc DESCRIBED BY SKK 1/30/19



Appears to be a fairly uniform CL material.

Use 1 of 3, then 2 of 3 and if needed 3 of 3 for UU Test - 1.4"

unit weight & H_2O taken

44

PHOTOS: 2+1

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-252

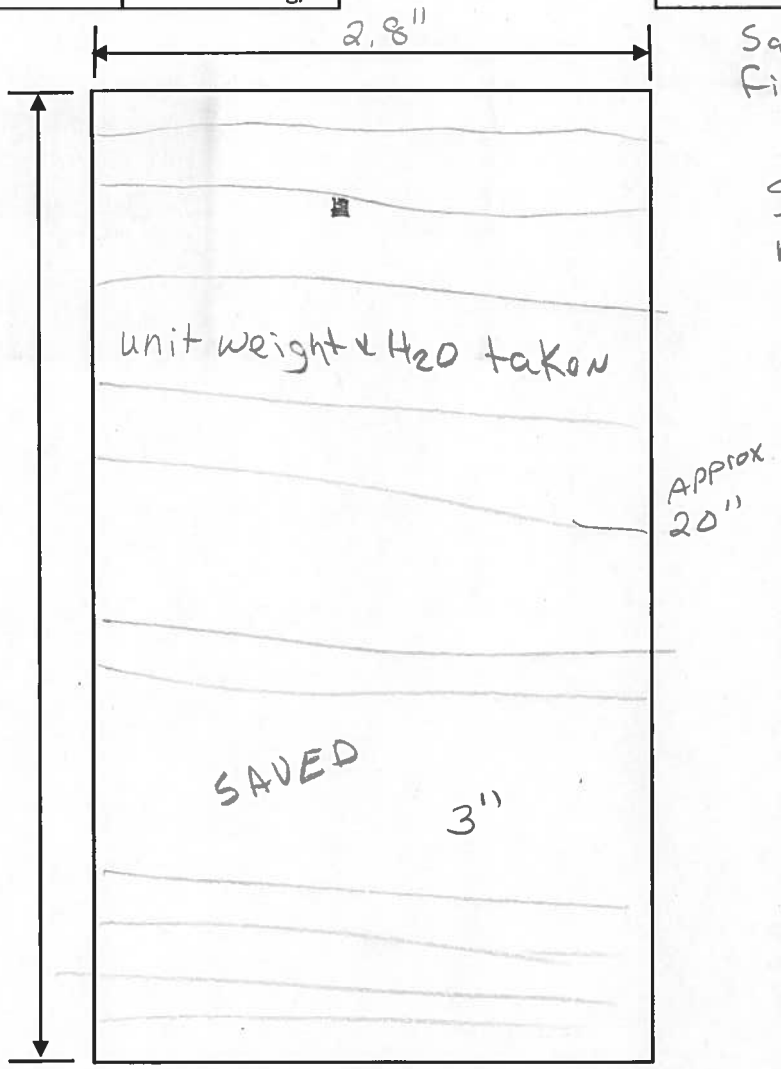
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-252

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-04P	53'	55'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Blackish	DAMP	V.Stiff	—	Smooth	4.5+	CH

ω 21.9 % γ_d 1.52 g/cc DESCRIBED BY SKK 1/29/19



Sample was extruded in the field.

Sample was broke into many short sections. Only 1 section just over 3" - Attempt to trim 1.4" QU

Shale type material with horizontal layers.

1 section SAVED for QU the rest index.

PHOTOS: 3

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-253

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

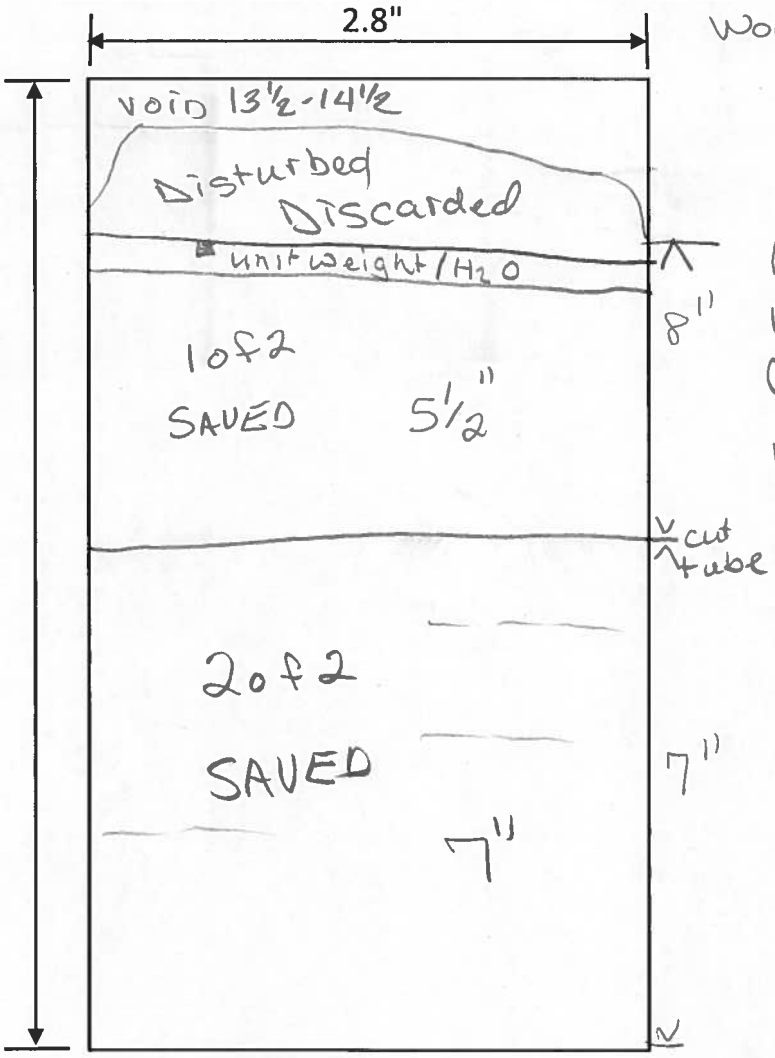
PLUM CREEK SITE 21, TX — 19-253

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-05	7.5'	10'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Dark Tannish	Moist	V.Stiff	—	Smooth	4.5+	CH

ω 20.0 % γ_d 1.64 g/cc DESCRIBED BY SKK 1/30/19

Would not push cut tube



Appears to be a fairly uniform, very stiff CH material.

Use 1 of 2 for swell/collapse test

unit weight & H_2O taken.

A few horizontal cracks in 2 of 2.

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-254

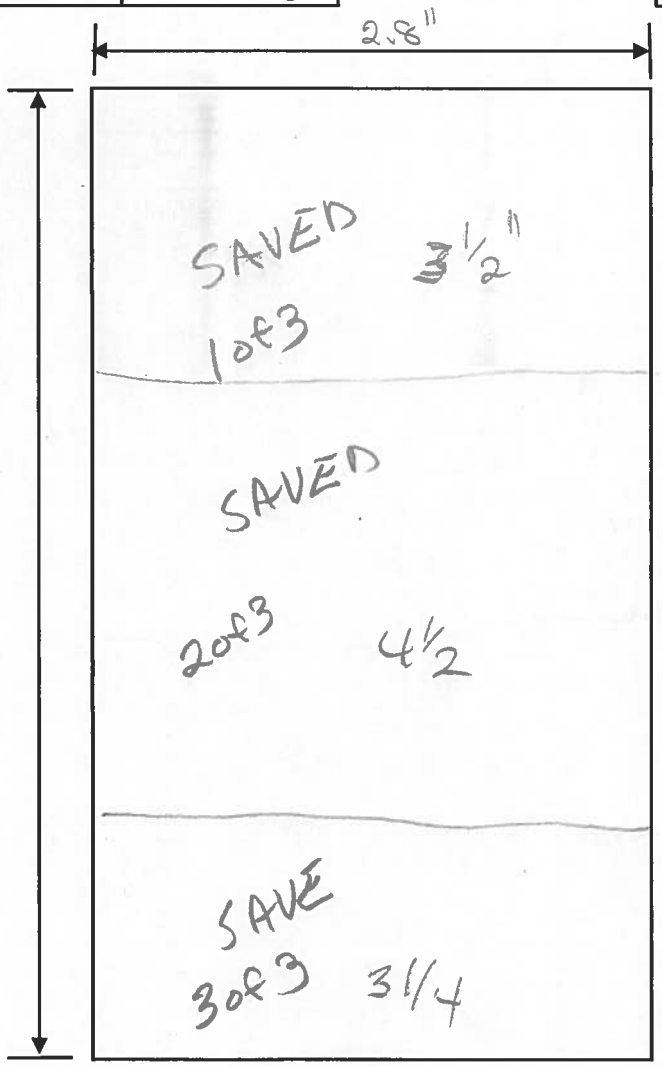
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-254

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-05	12'	14'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	Moist	—	—	SMBOXM	—	CH

ω 19.75% γ_d 1.64 g/cc (From UU) DESCRIBED BY SKK 1/29/19



Extruded in the field.

Sample is in 3 broke in 3 sections.

CH type material, moist.

Attempt to trim UU tests - 1.4"

11 1/4"

UU

PHOTOS: 3

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-255

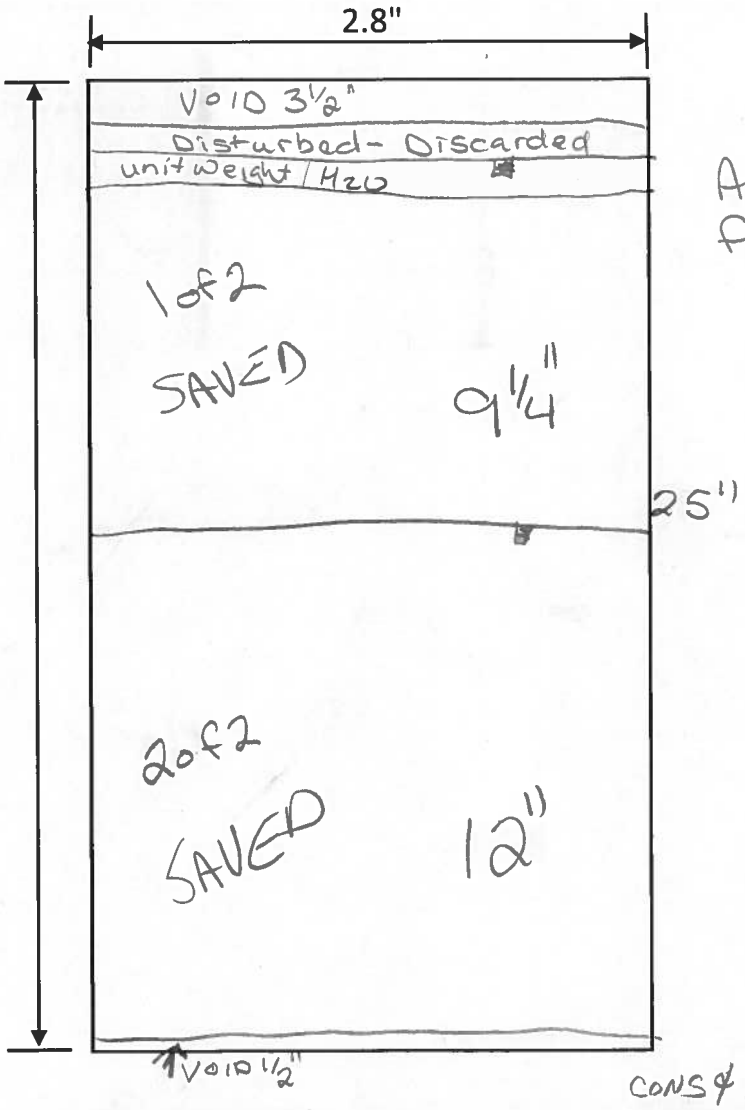
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-255

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-05	15'	17.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish/Tan marbled	Moist	V.Stiff	—	Smooth	2.75 Top	CL
					2.50 middle	

ω 29.9% γ_d 1.46 g/cc DESCRIBED BY SKK 1/30/19



Appears to be a good fairly uniform material

Use 1 of 2 for consolidat and swell/collapse tests

Unit weight & H_2O taken

PHOTOS: 2

CONS & swell/collapse

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-256

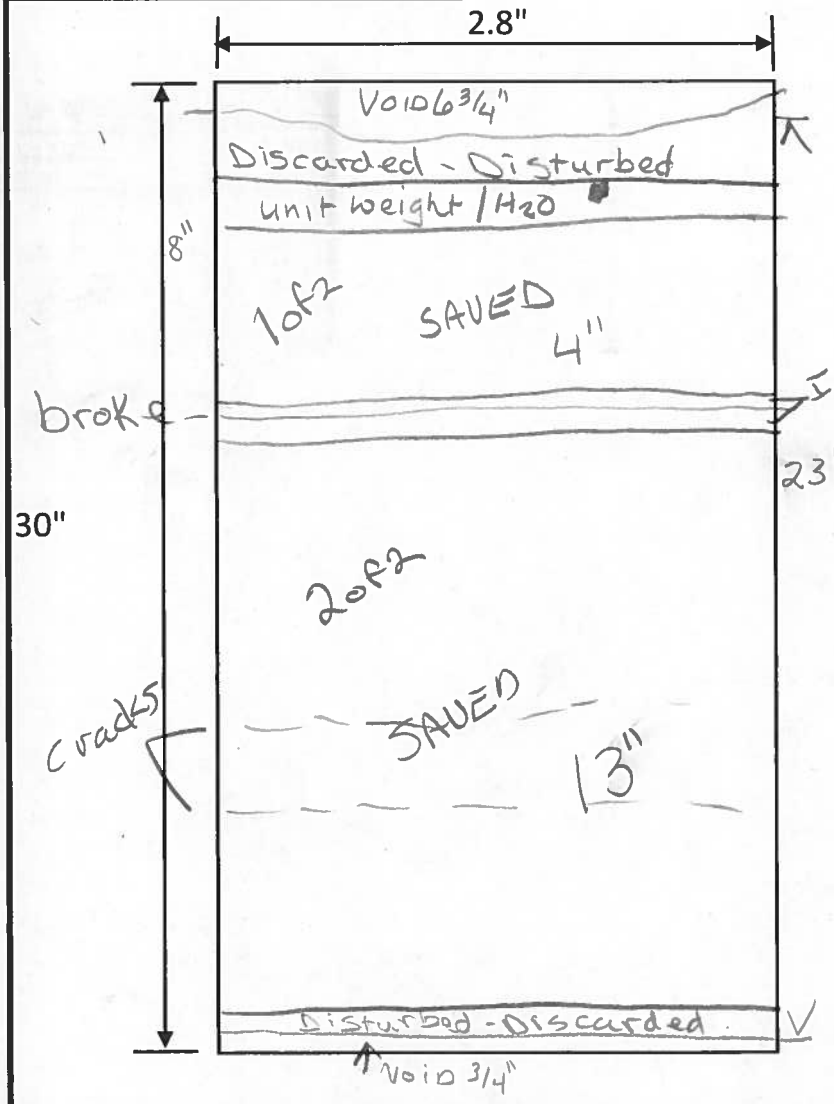
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-256

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-05	20'	22'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Med. Tan Marbled	Moist	V. Stiff	Trace #10 Rock	Smooth	2.5	CL

ω 21.5 % γ_d 1.68 g/cc DESCRIBED BY SKK 1/30/19



Appears to be a good fairly uniform material.

Unit weight & H_2O taken

No testing assigned at this time

PHOTOS: 2

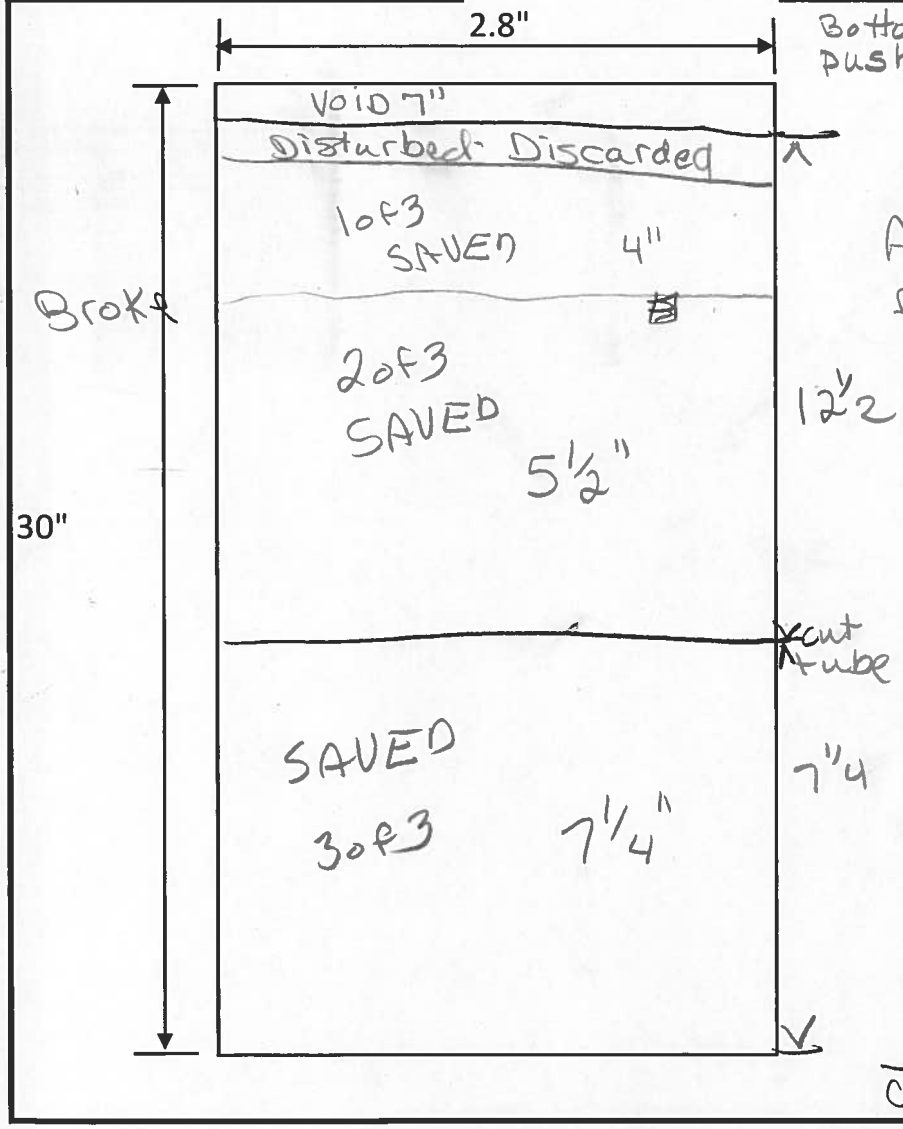
NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-257

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX						19-257	
FIELD SAMPLE NUMBER	DEPTH (FT) FROM	TO	SAMPLE LOCATION			TYPE OF SAMPLE	
B-05	30'	32.5'				2.8" SHELBY	
COLOR		RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish		Moist	V. Stiff	–	Smooth	3.0	CH

ω 21.55 % γ_d 104.7 pcf ~~g/cc~~ (Ave from $\overline{cu}$) DESCRIBED BY SKK 1/30/19

Bottom consolidated 2¼" then would not push, cut tube



Appears to be a fairly uniform, very stiff material. Bottom section (3 of 3) darker in color but appears to be the same type material. Use all 3 sections for $\overline{cu}$ (1.4")

$\overline{cu}$

PHOTOS: 2

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-258

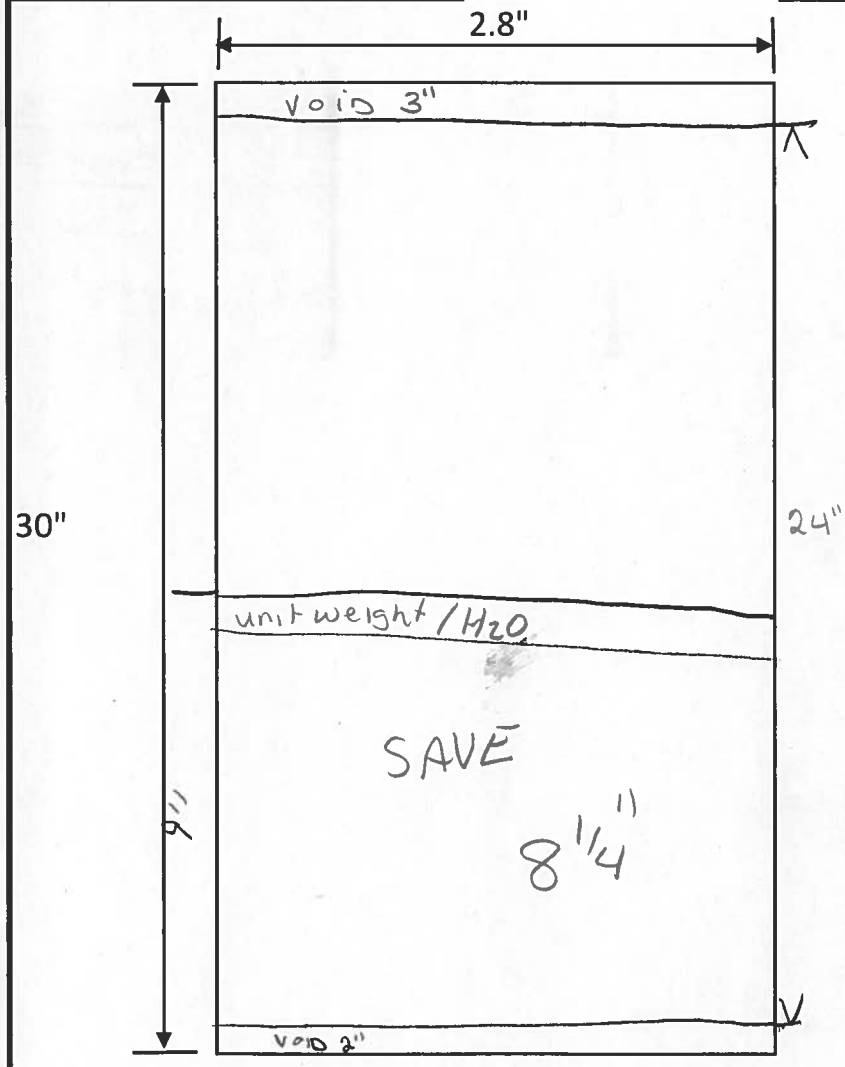
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-258

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-05	45'	47.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish	Moist	VStiff	—	Smooth	2.0	CL

ω 32.4 % γ_d 1.43 g/cc DESCRIBED BY SKK 1/30/19



Appears as though there was a water lense in the middle of the sample the top 13" - fell apart. (See pictures) - Discarded per Randy*
* may have been something in tube to cause this.
Saved bottom portion.
Unit weight & H_2O taken on top of bottom section
this section appears fairly uniform
No testing assigned at this time.

PHOTOS: 2+5

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-259

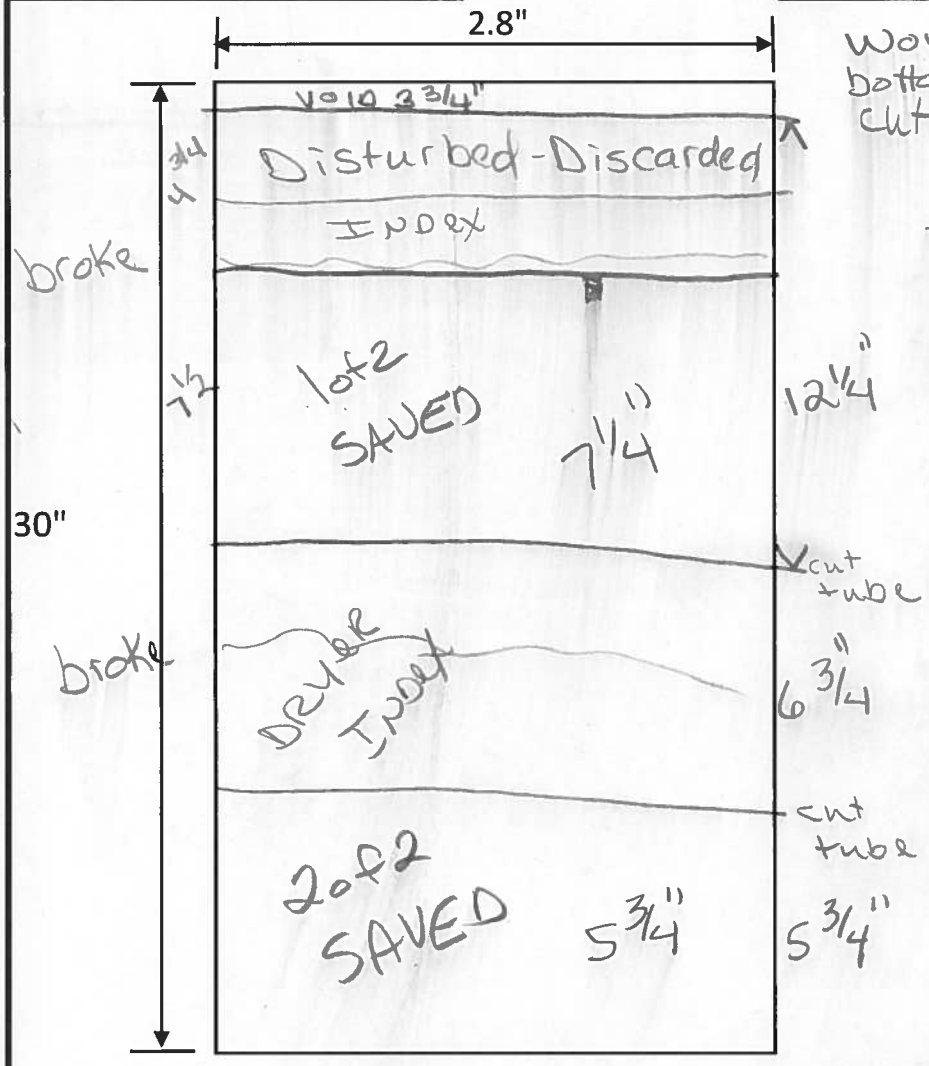
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-259

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-06P	7.5'	10'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	Moist	V.Stiff	—	Smooth	4.5+	CH

ω 19.81 % | γ_d 104.9 pcf ~~g/cc~~ (From cons.) | DESCRIBED BY SKK 1/30/19



Consolidation

would not push, cut tube. bottom half would not push, cut tube again.

Top 3 1/2" Disturbed Discarded.

1 of 2 appears to be fairly good Uniform material. Use 1 of 2 for consolidation

Bottom half appears to be the same material but somewhat dryer.

PHOTOS: 2+2+2

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-260

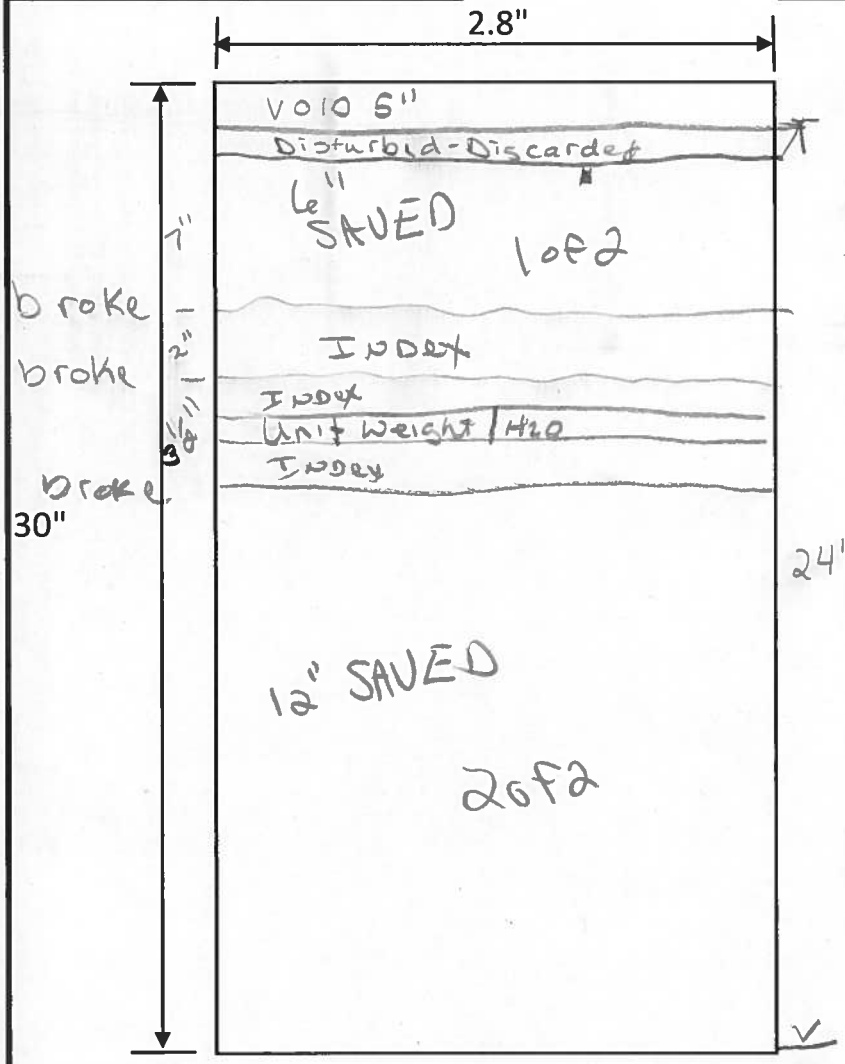
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-260

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-06P	15'	17.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	Moist	V Stiff	—	Smooth	1.75	CL

ω 24.4 % γ_d 1.48 g/cc DESCRIBED BY SKK 1/31/19



Appears to be a fairly uniform stiff but slightly crumbly material. Middle sections that broke appear slightly dryer. Unit weight & H_2O taken. Use 1 of 2 for consolidation and swell/collapse tests

PHOTOS: 2

Cons. & Swell/Collapse Tests

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-261

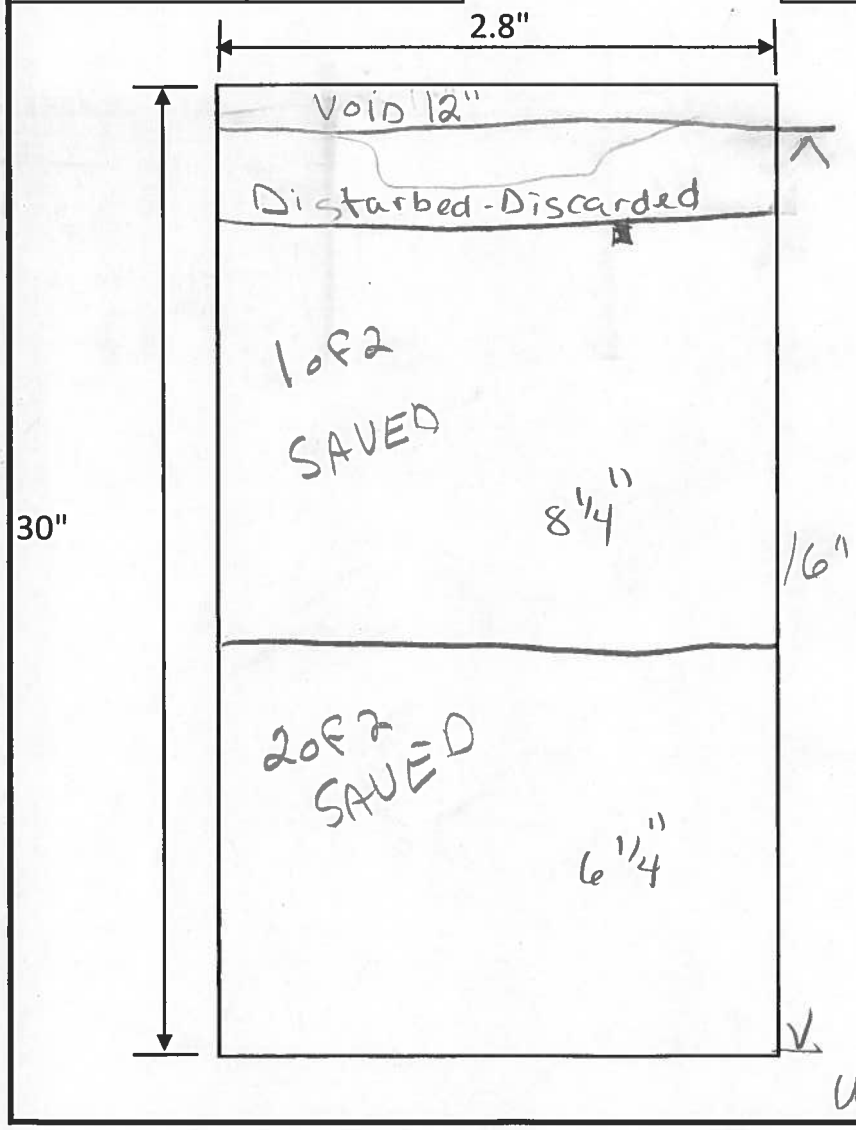
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-261

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-06P	20'	22.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish/Gray Marbled	Moist	V.Stiff	Trace #4 Rock	Smooth	1.75	CL

ω 26.35 % γ_d 1.53 g/cc (From uu) DESCRIBED BY SKK 1/31/19



Appears to be a good fairly uniform sample. Use both sections for uu Test (1.4")

PHOTOS: 2

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-262

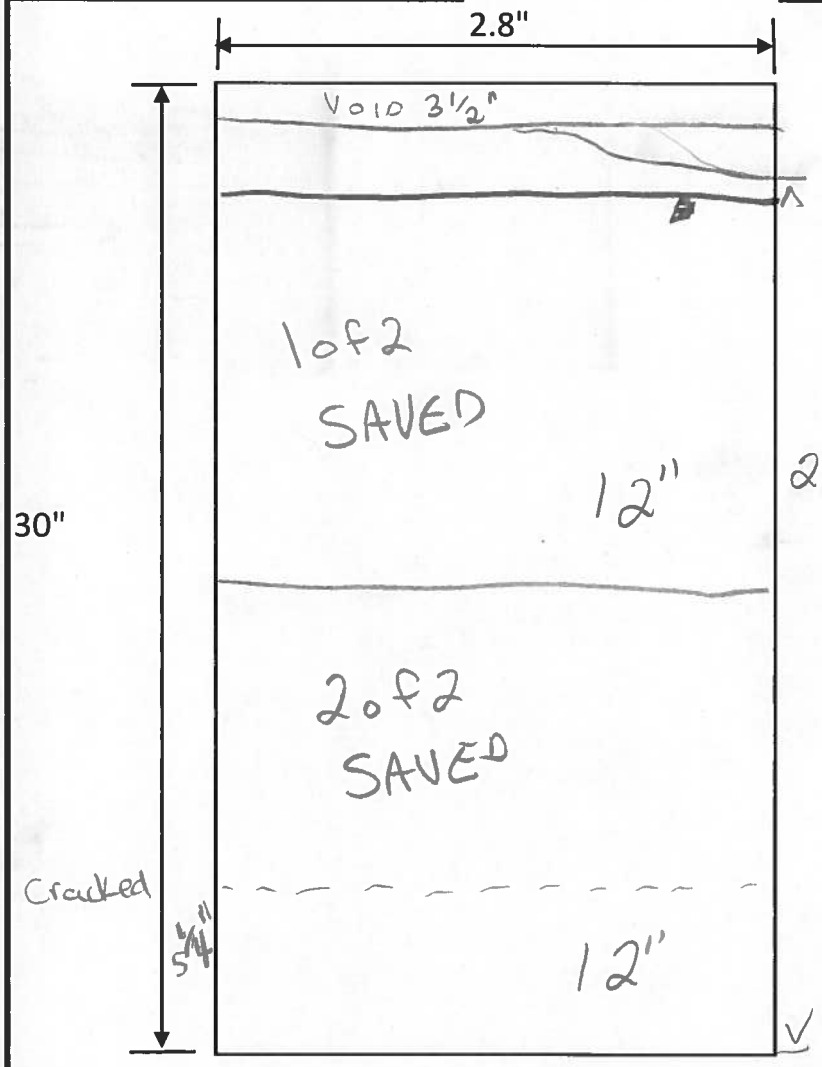
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-262

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-06P	40'	42.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish/Tan Marbled	Moist	V.Stiff	Trace #4 Rock	Smooth	2.0	CL

ω 20.61 % γ_d 1.68 g/cc (From uu) DESCRIBED BY SKK 1/31/19



Appears to be a good fairly uniform material.
Use 1 of 2 for uu
25" Test (1.4")

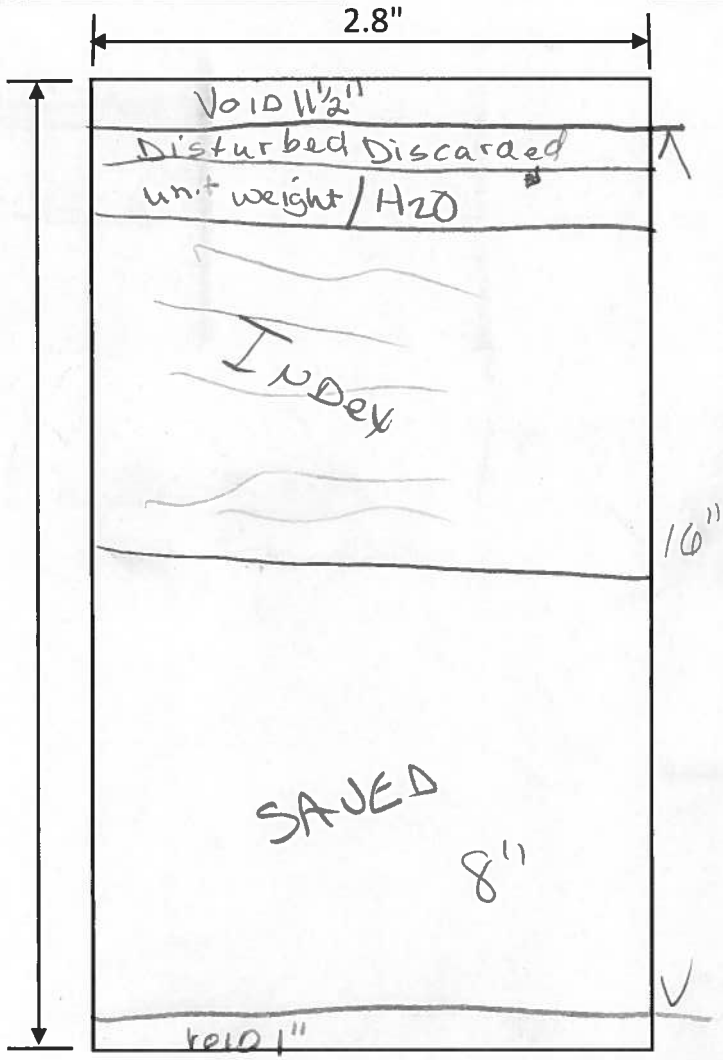
uu

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-263

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX							19-263
FIELD SAMPLE NUMBER	DEPTH (FT) FROM	TO	SAMPLE LOCATION				TYPE OF SAMPLE
B-06P	45'	47'					2.8" SHELBY
COLOR		RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish/Tan Marbled		Moist	V.Stiff	—	Smooth	2.75	CL
ω 28.8 %	γ_d 1.44 g/cc		DESCRIBED BY SKK			1/31/19	



Horizontal voids in sample on top half otherwise appears rest to be a fairly uniform material.

Top half has enough voids would not use for testing - Index only

Unit weight & H2O take more like bottom that is saved

No Testing assigned at this time

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-264

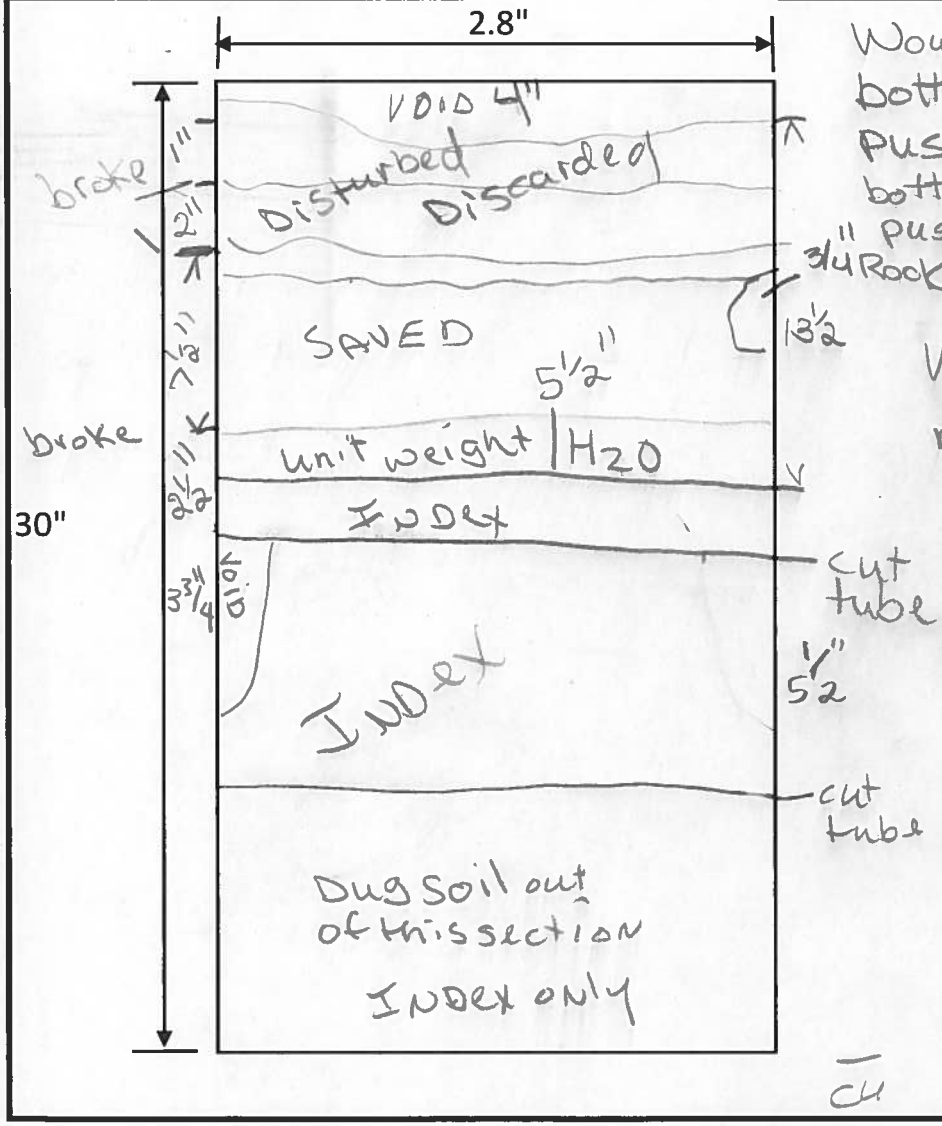
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-264

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-07	7.5'	10'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	Dry	V. Stiff	3/4" Rock	Smooth	—	CH

ω 18.7 % γ_d 1.69 g/cc DESCRIBED BY SKK 1/31/19



Would not push cut tube. bottom half would not push. cut tube again. bottom section would not push (5 3/4")

Found void in bottom half and vertical crack in top half after cutting tube - see pictures

Very fragile dry material. crumbly.

Only SAVED 5 1/2" but will not be able to trim CU.

Rest index.

Unit weight & H_2O tak

PHOTOS: 2+2+2

CH

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-265

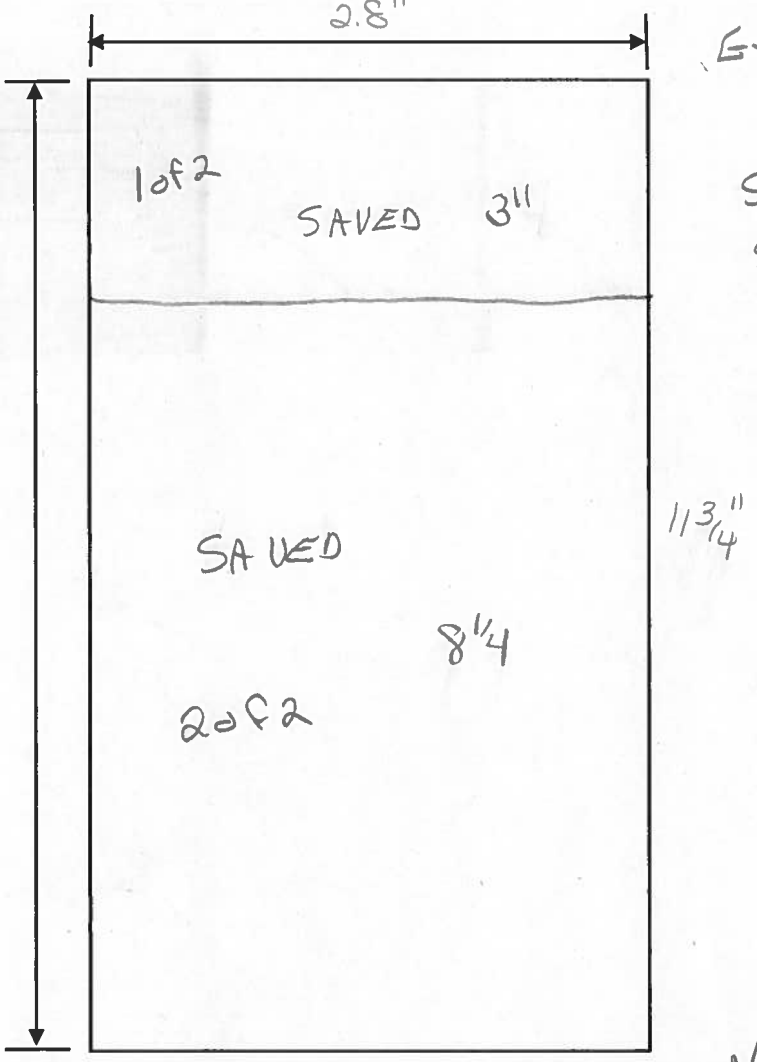
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-265

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-07	10'	12'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	Damp	V. Stiff	—	Smooth	—	CH

ω 13.63 % γ_d 98.9 pcf ~~g/cc~~ (From swell test) DESCRIBED BY SKK 1/29/19



Extruded in the field.

Sample in broke in 2 Sections.

Use 1 of 2 for swell/collapse test & Index

swell/collapse

PHOTOS: 3

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-266

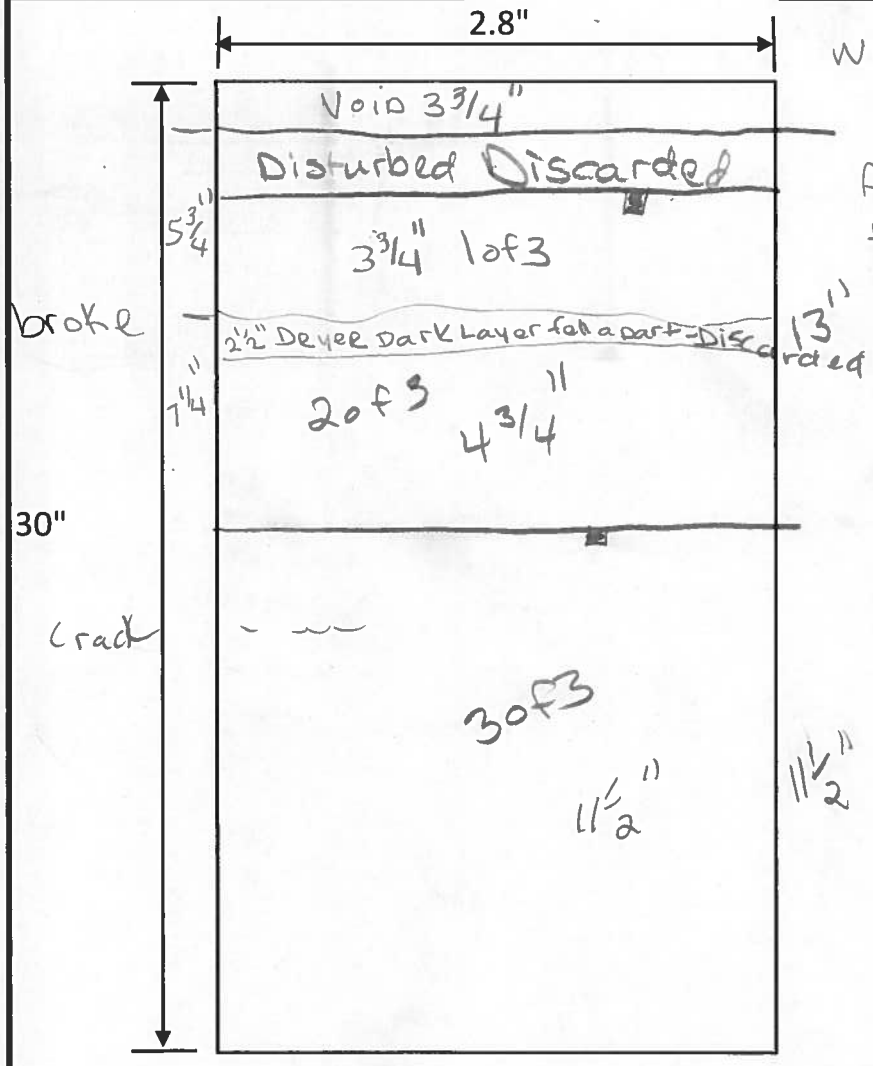
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-266

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-07	15'	17.5'		2.8"SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
TANNISH BROWN	Moist	V.Stiff	—	Smooth	Top 2.75	CH
		V.Stiff			4.25 middle	

ω 19.18 % γ_d 109.3 pcf (From cons) DESCRIBED BY SKK 11/31/19



Would not push cut tube

Appears to be same type of material in sample except middle 7" was darker material. Saved 4 3/4" of darker material as 2 of 3

Use 3 of 3 for consolidation and swell/collapse tests, take from middle of this section per Randy.

PHOTOS: 2+2+2

Const. Swell Collapse Tests

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-267

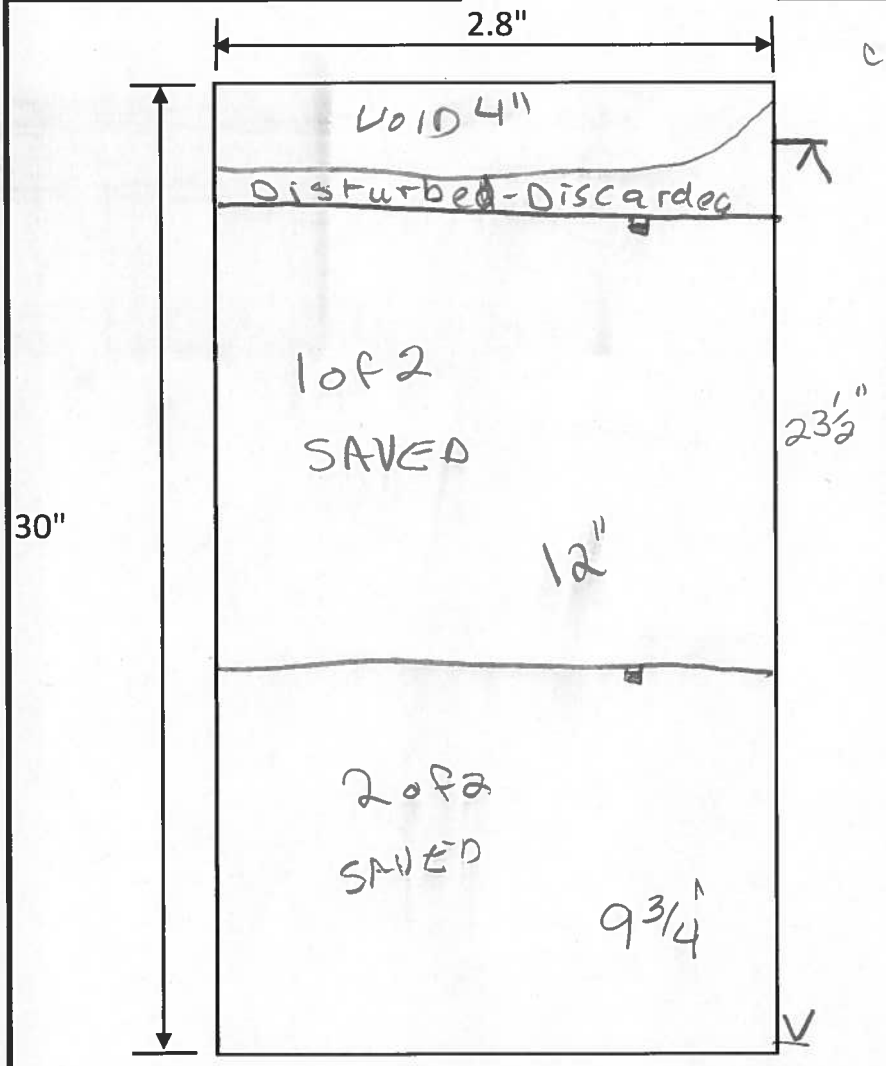
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-267

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-07	20'	22.5'		2.8"SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
DK Brown Marbled	Moist	V.Stiff	Trace #4 Rock	Smooth	Top 3.75	CH
					2.5 Middle	

ω 20.75% γ_d 1.64 g/cc (From UU) DESCRIBED BY SKK 2/4/19



consolidated 3+" when extruded

Appears to be a fairly good uniform material.

Use 1 of 2 for UU Test (1.4")

PHOTOS: 2

UU

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-268

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

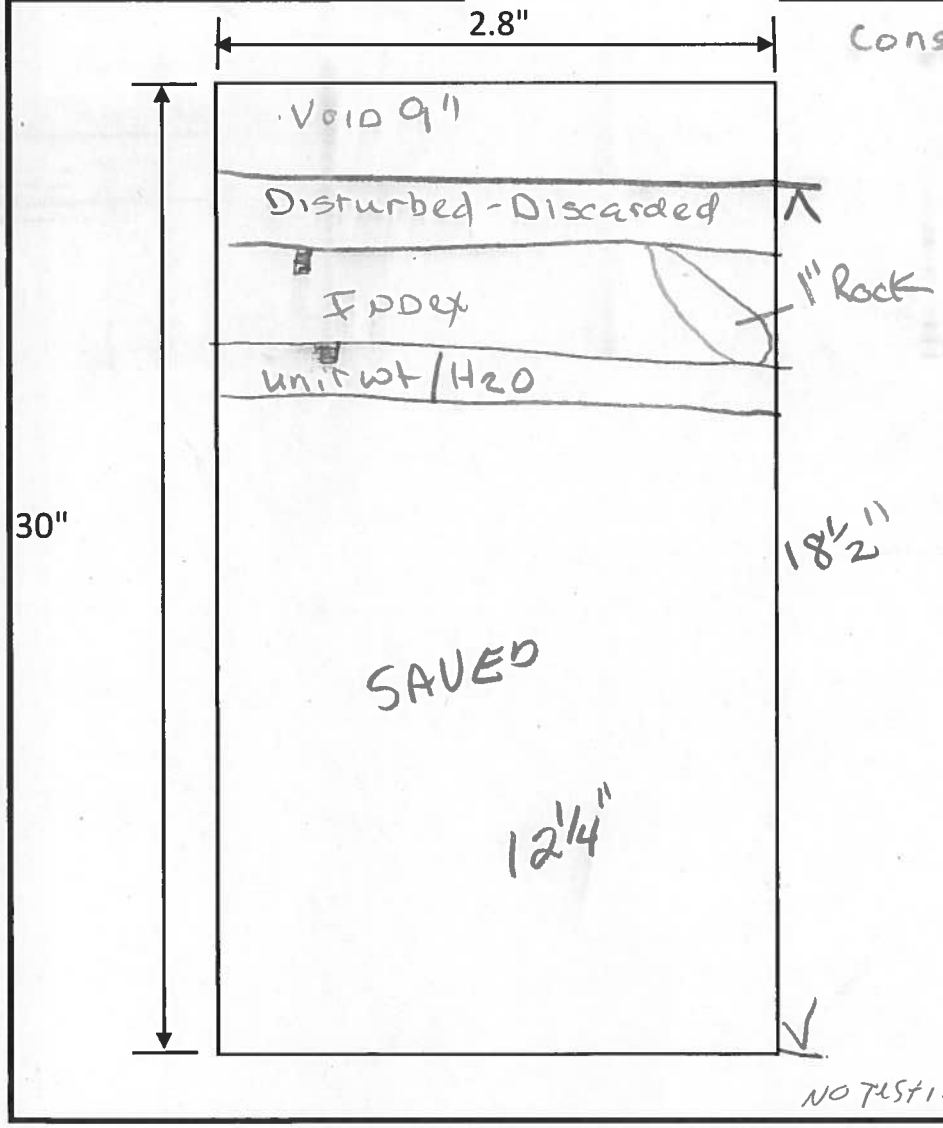
PLUM CREEK SITE 21, TX — 19-268

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-07	30'	32.5'		2.8"SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish Marbled	Moisx	V.Stiff	Trace 1" Rock	Smooth	3.0	CH

ω 27.2 % γ_d 1.54 g/cc DESCRIBED BY SKK 2/4/19

Consolidated 2+" when extruded



Appears to be a fairly good uniform material, unit weight + H_2O taken. No testing assigned at this time.

PHOTOS: 2

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-269

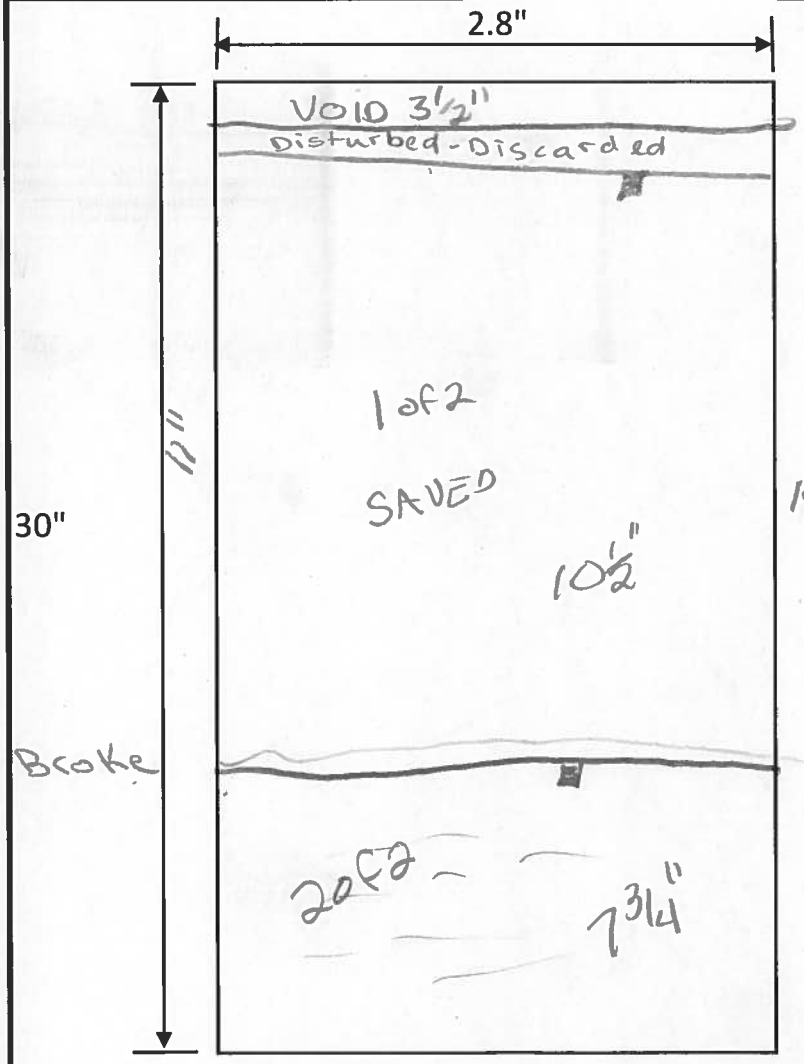
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-269

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-07	35'	37.5'		2.8"SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish/Gray	Moist	V.Stiff	—	Smooth	2.5 Top	CH
					4.25+ middle	

ω 25.69 % γ_d 1.54 g/cc (From UU) DESCRIBED BY SKK 2/4/19



Consolidated several inches (6" when extruded.

Sample extruded very hard.

(2 of 2) Bottom 8" is much stiffer than top. and there are some horizontal cracks in bottom section

19½" Use 1 of 2 first for UU Test (1.4"), then if needed 2 of 2 (use as middle psi)

PHOTOS: 2

44

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-270

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

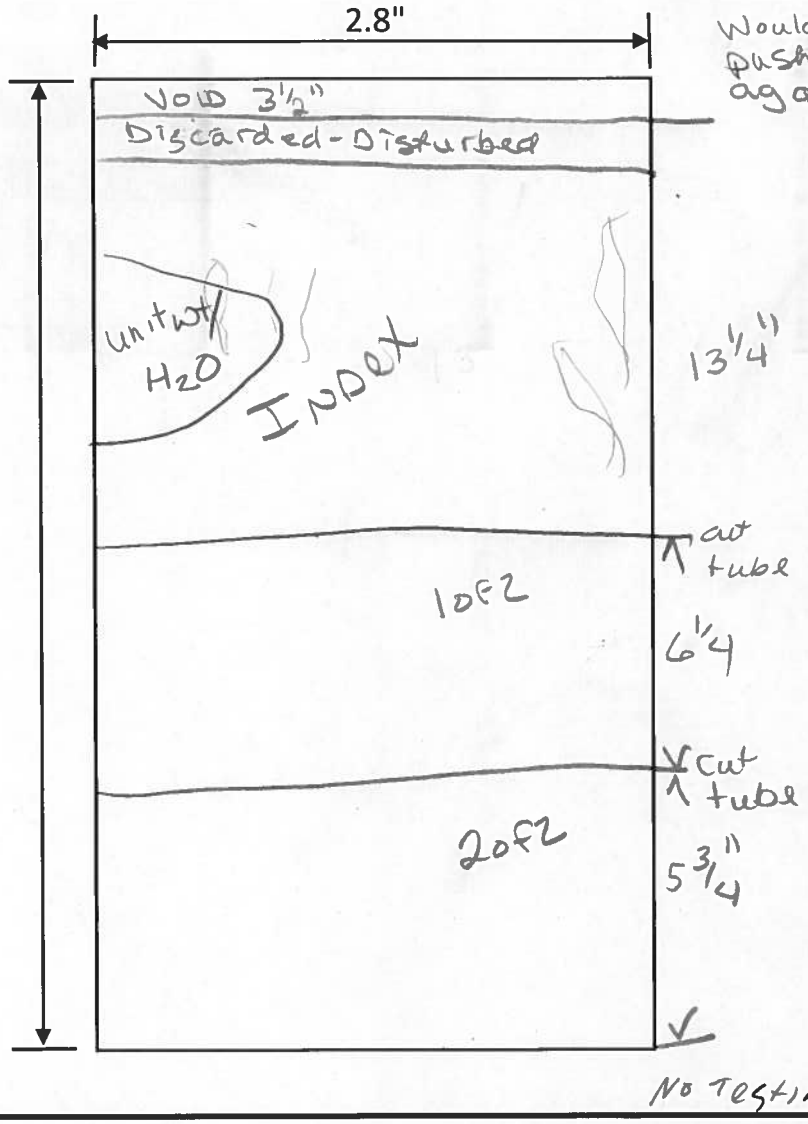
PLUM CREEK SITE 21, TX — 19-270

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-08	5'	7.5'		2.8"SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
tannish	DRY	V.Stiff	fine Roots		4.5+	CH

ω 15.3 % γ_d 1.84 g/cc DESCRIBED BY SKK, PS 2/4/19

Would not push, cut tube. Top half pushed, bottom did not, cut tube again.



Very stiff, crumbly material, Several voids in top section, broke apart - INDEX only unit weight & H2O taken

A few voids in 1 of 2

Dry very stiff, crumbly

Sections SAVED

No testing assigned at this time

PHOTOS: 2+ 2+2

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-271

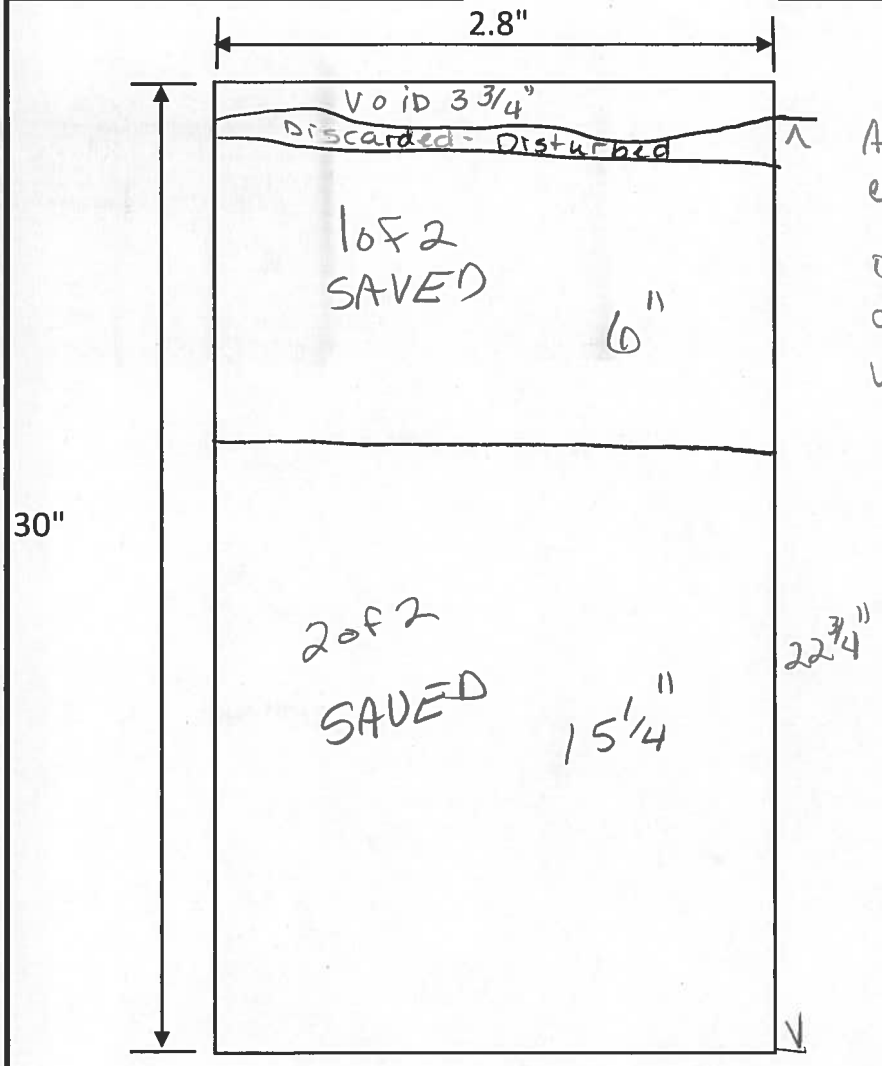
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-271

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-08	15'	17.5'		2.8"SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
DK Brownish	Moist				4.25 Top	CH
					4.25 middle	

ω 19.41 % γ_d 1.73 g/cc (From UU) DESCRIBED BY SKK 2/4/19



A Few voids on outside edge of sample in top 6".

Otherwise the sample appears to be a fairly uniform good material.

Use 2 of 2 for UU Test First (1.4"), if need then 1 of 2.

PHOTOS: 2

UU

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-272

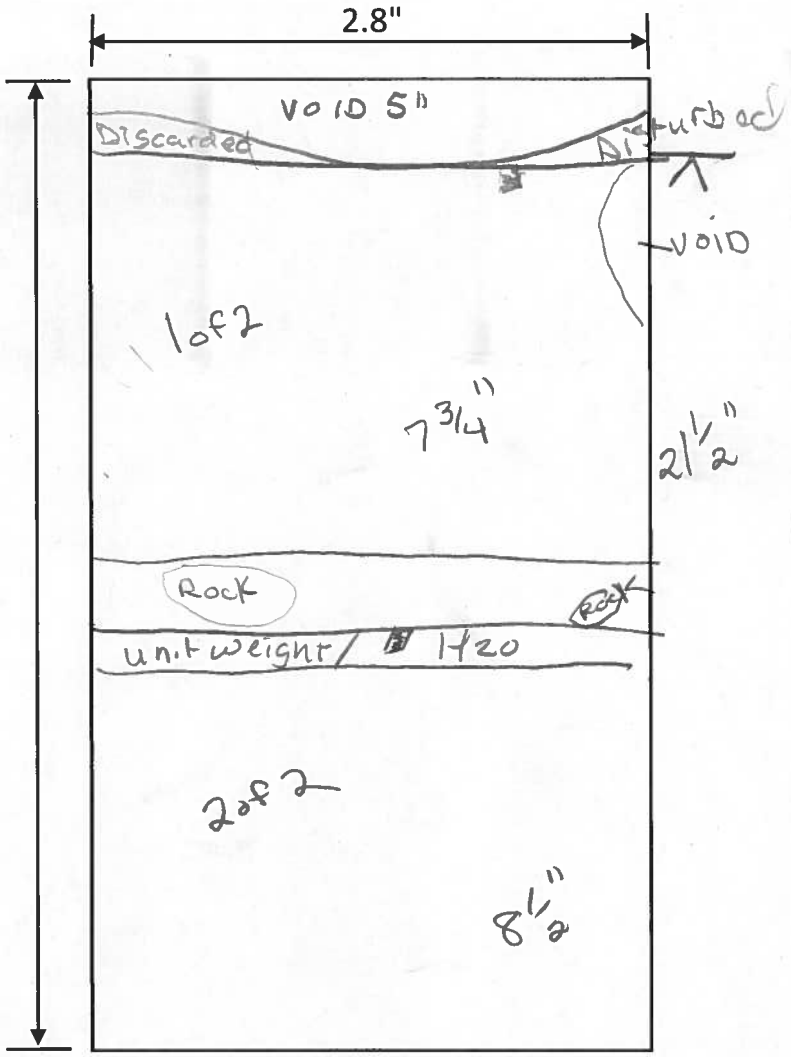
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-272

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-08	20'	22.5'		2.8"SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish Marbled	Moist	V.Stiff	A few 3/4" Rock	Smooth	2.25 Top	CH
					3.75 middle	

ω 28.9 % γ_d 1.52 g/cc DESCRIBED BY SKK PS 2/4/19



A few larger (3/4") Rock in sample. Created a void near top.

Otherwise, appears to be a fairly uniform good sample.

Unit weight & H_2O taken

No testing assigned at this time.

PHOTOS: 3

No Testing

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-273

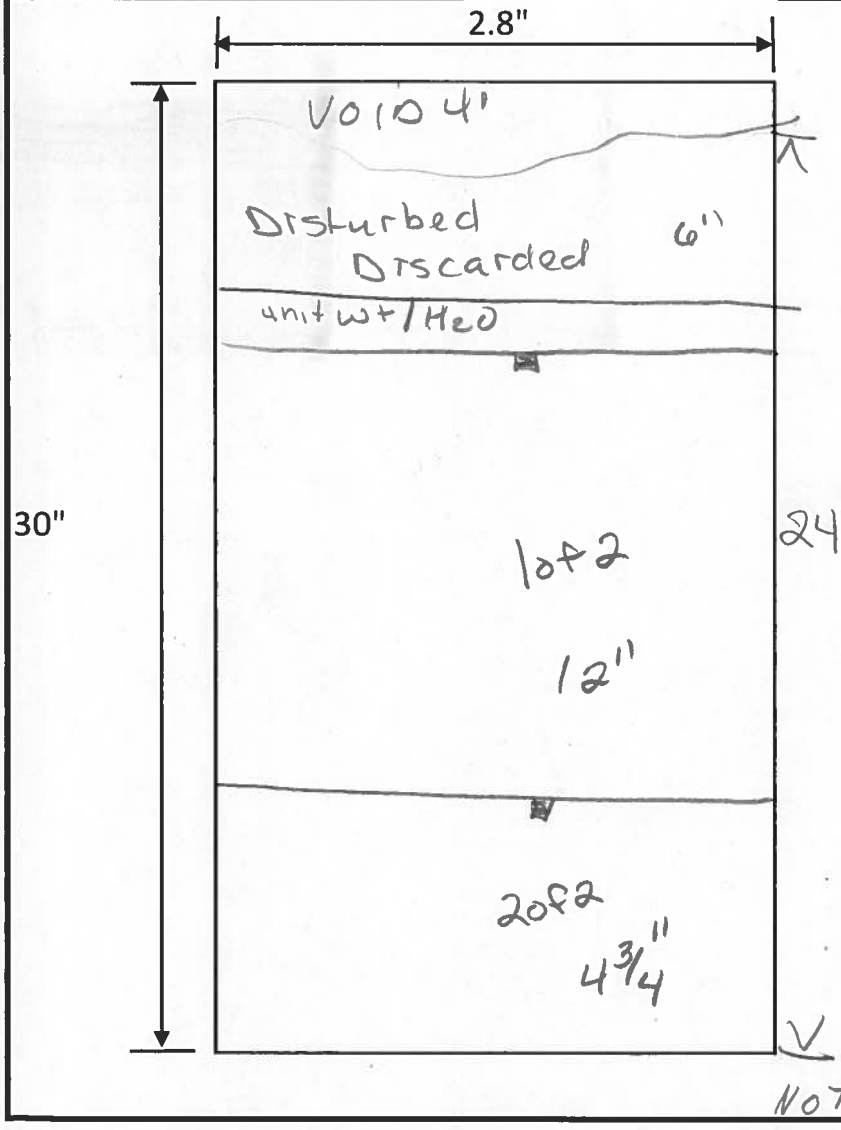
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-273

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-08	30'	32.5'		2.8"SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
DK Brown	Moist	V. Stiff	Trace #4 Rock	Smooth	Top 2.75	CH
					2.5 Middle	

ω 20.9 % γ_d 1.72 g/cc DESCRIBED BY SKK 2/4/19



Appears to be a fairly uniform good sample.

Unit weight + H_2O taken

No testing assigned at this time

PHOTOS: 2

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-274

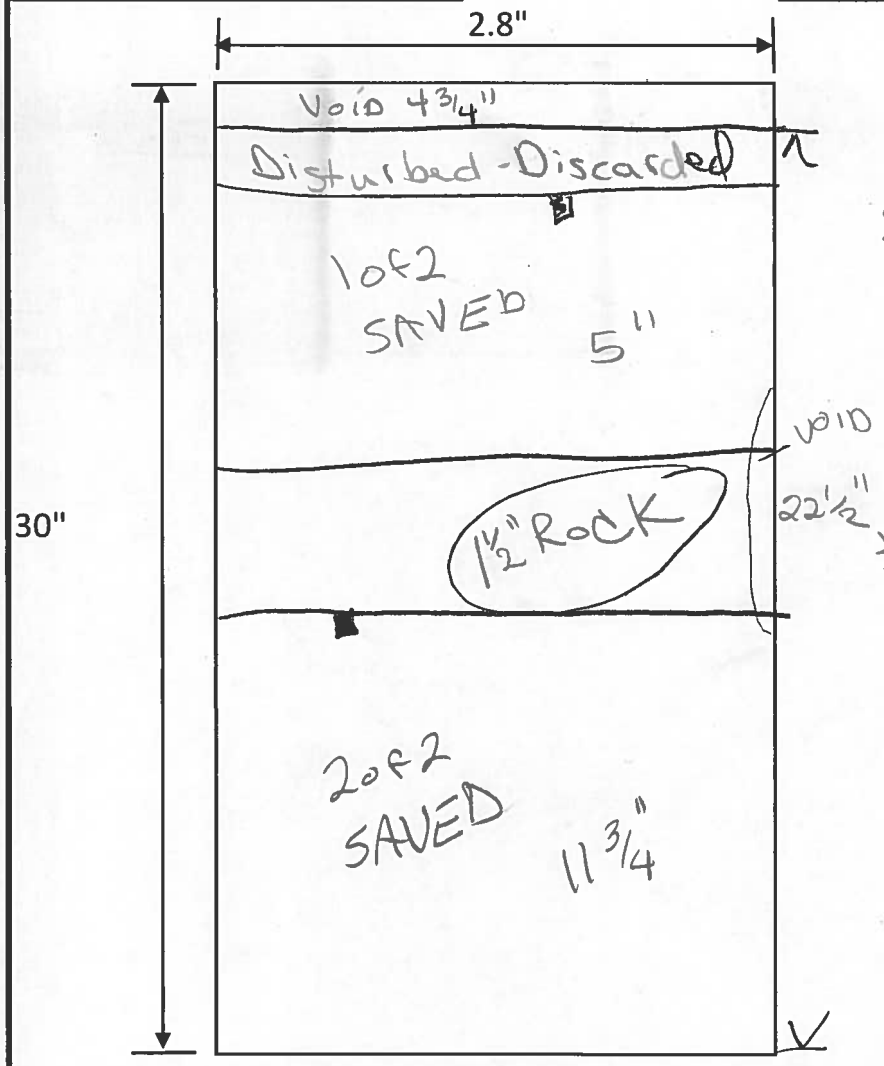
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-274

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-08	35'	37.5'		2.8"SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish Marbled	Moist	V.Stiff	1-1½" Rock - Few 3/8" Rock	Smooth	2.0 Top	CL
					2.0 Middle	

ω 29.8 % γ_d 90.56 pcf ~~g/cc~~ (Ave from $\bar{cu}$) DESCRIBED BY SKK, PS 2/4/19



Appears to be a fairly good uniform material except a 1½" Rock in middle of sample caused some voids.

Consolidated Drained *Direct Shear Requested sample appears to be a good CL type material could run $\bar{cu}$ instead (?)

Direct Shear?

PHOTOS: 3

NRCS-ENG-129 (REVISED)

WO #: 19-43WB

Lab #: 19-275

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

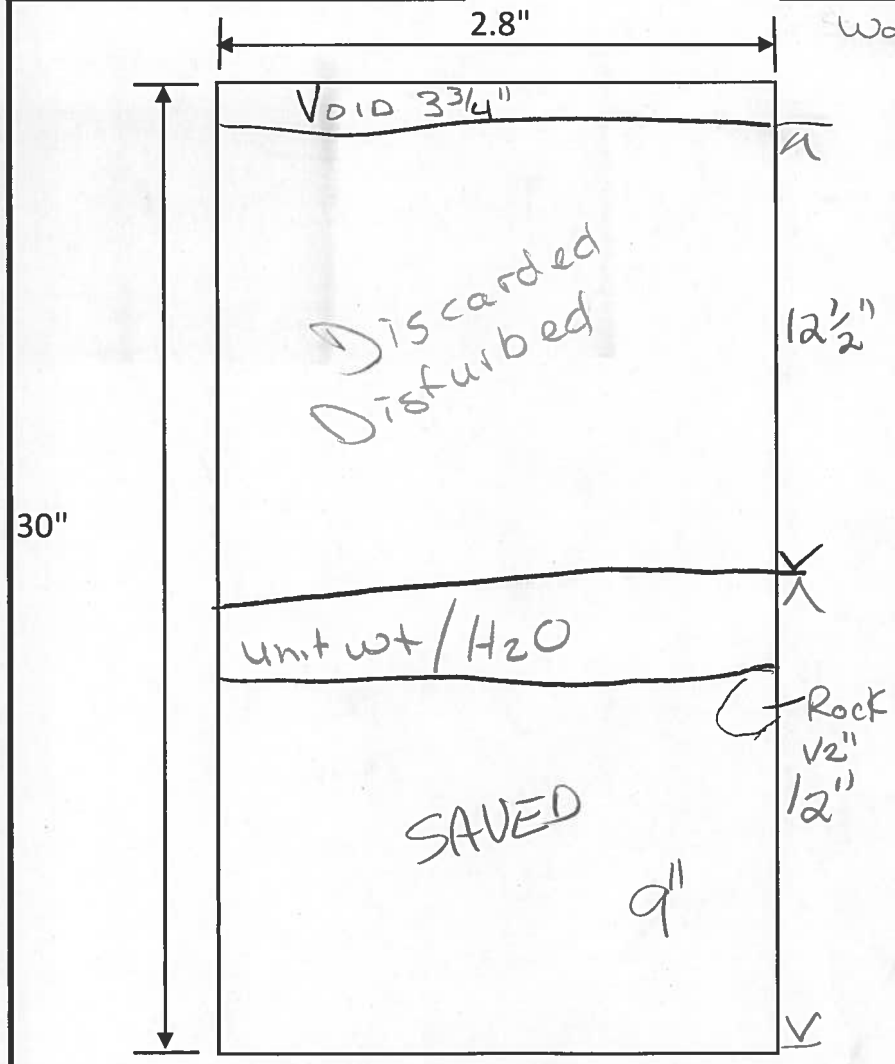
PLUM CREEK SITE 21, TX — 19-275

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-09	5'	7.5'		2.8"SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	Dry	V. Stiff	Trace 1/2" Rock Fine Roots	Smooth	—	CH

ω 11.9 % | γ_d 1.75 g/cc | DESCRIBED BY SKK PS 2/4/19

Would not push, cut tube.



Top half Disturbed, vertical & horizontal cracks. Discarded per RANDY.
Bottom half very Stiff, crumbly material
Unit weight & H_2O taken

No testing assigned at this time

PHOTOS: 2+2+2

NO TESTING

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-276

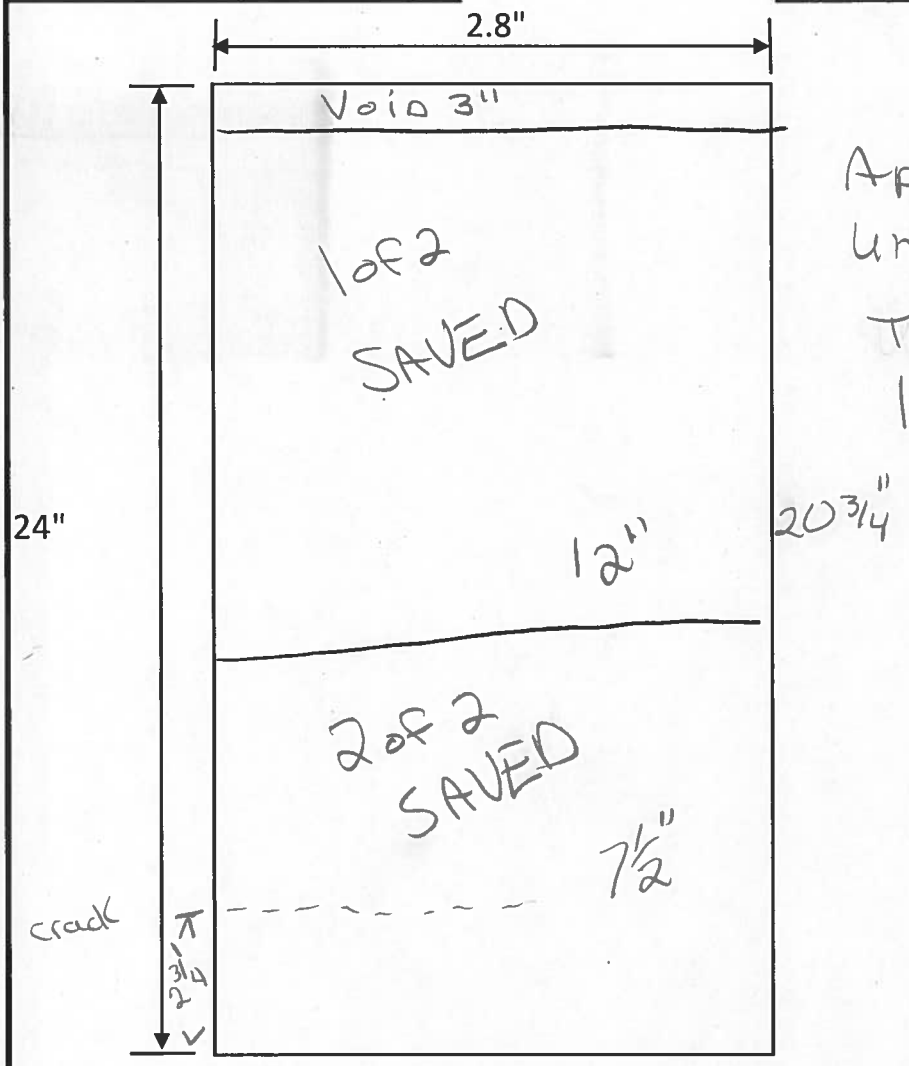
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-276

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-09	18'	20'		2.8"SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish Marbled	Moist	V.Stiff	—	Smooth	3.25	CH

ω 27.82 % γ_d 1.48 g/cc (From uu) DESCRIBED BY SKK, PS 2/4/19



Appears to be a good fairly uniform material, V. Stiff
Trim uu Test from 1 of 2 (1.4")

PHOTOS: 2

UU

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-277

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

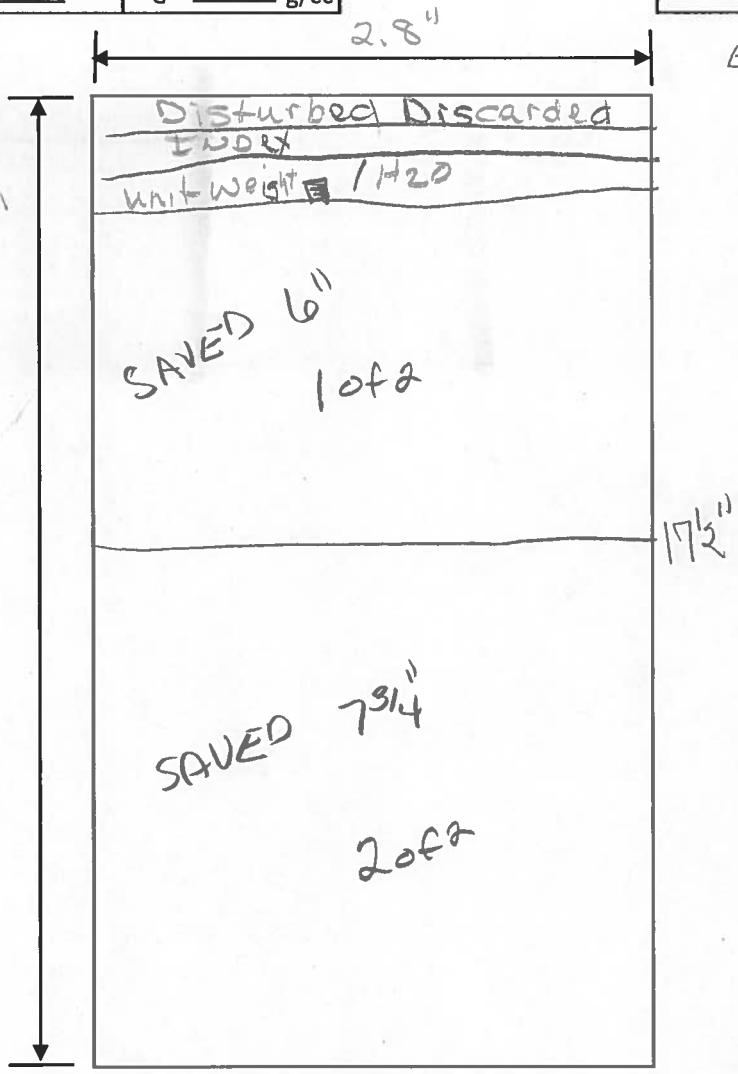
PLUM CREEK SITE 21, TX — 19-277

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-301	2'	4'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Black/sonetan	Moist	Stiff	Trace Roots/ Trash	Smooth	1.25	CL

ω 18.5 % γ_d 1.67 g/cc DESCRIBED BY SKK 1/29/19

Extruded in the field



Appears to be a good fairly uniform CL material

Unit weight & H_2O taken

Use 1 of 2 for 1.4" QU

QU

PHOTOS: 3

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-278

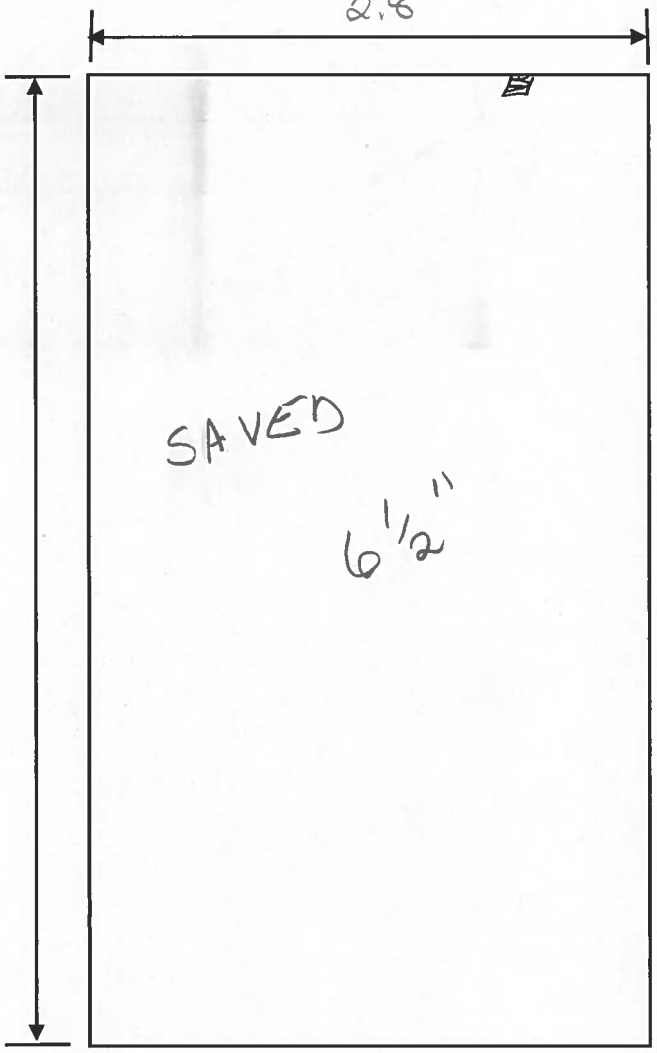
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-278

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-301	4'	6'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brown	Damp	V. Stiff	Trace fine Roots	Smooth	4.5+	CH
			Trace #4 Rock			

ω 14.1 % γ_d 1.85 g/cc (From CU) 2.8" DESCRIBED BY SKK 1/29/19



Extruded in the field

Appears to be a fairly uniform, Very stiff material

Saved all of sample for 1 pt of a CU, with 19-279 & 19-280.

6 1/2" Recommend 2.8"

this sample is Dryer than other 2 samples that are to be tested toget

PHOTOS: 2

CU - 1 pt (w/19-279 & 19-280)

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-279

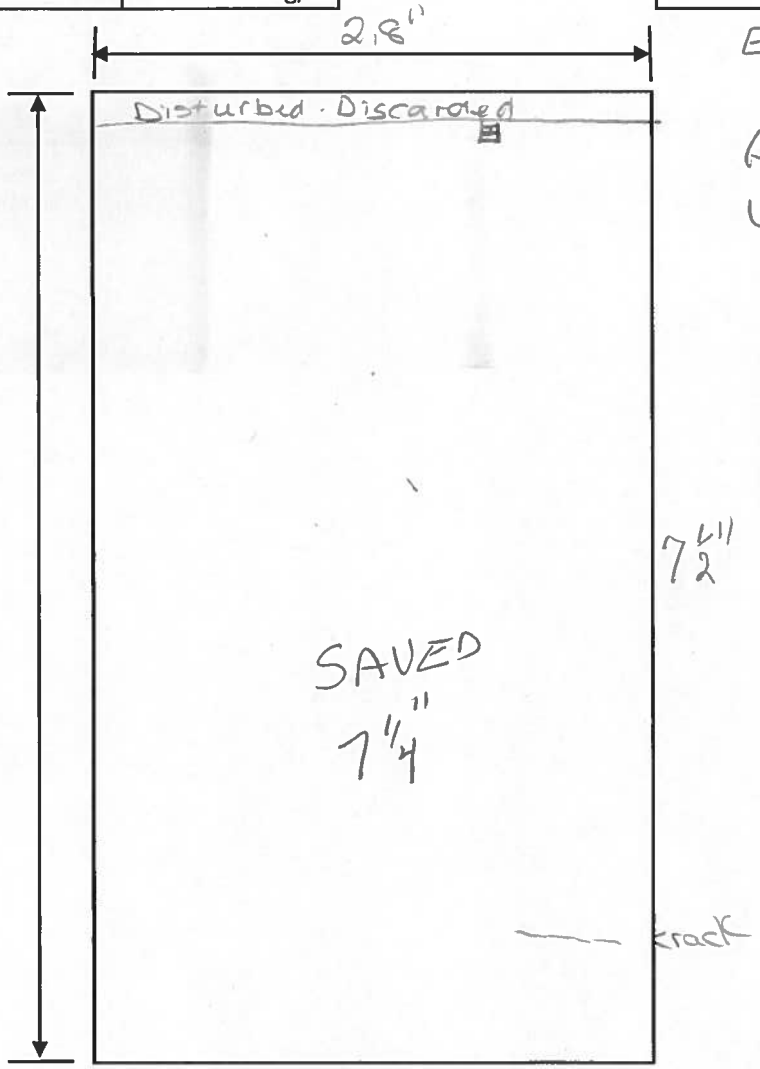
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-279

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-301	6'	8'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish/w some brown	Moist		Trace fine Roots	Smooth	4.5+	CH

ω 16.7 % γ_d 1.73 g/cc (From cu) DESCRIBED BY SKK 1/29/19



Extruded in the field.

Appears to be a fairly uniform very stiff sample

SAVED all of sample for 1 pt of a cu with 19-278 & 19-280.

Recommend 2.8"

PHOTOS: 2

cu - 1 pt (w/19-278 & 280)

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-280

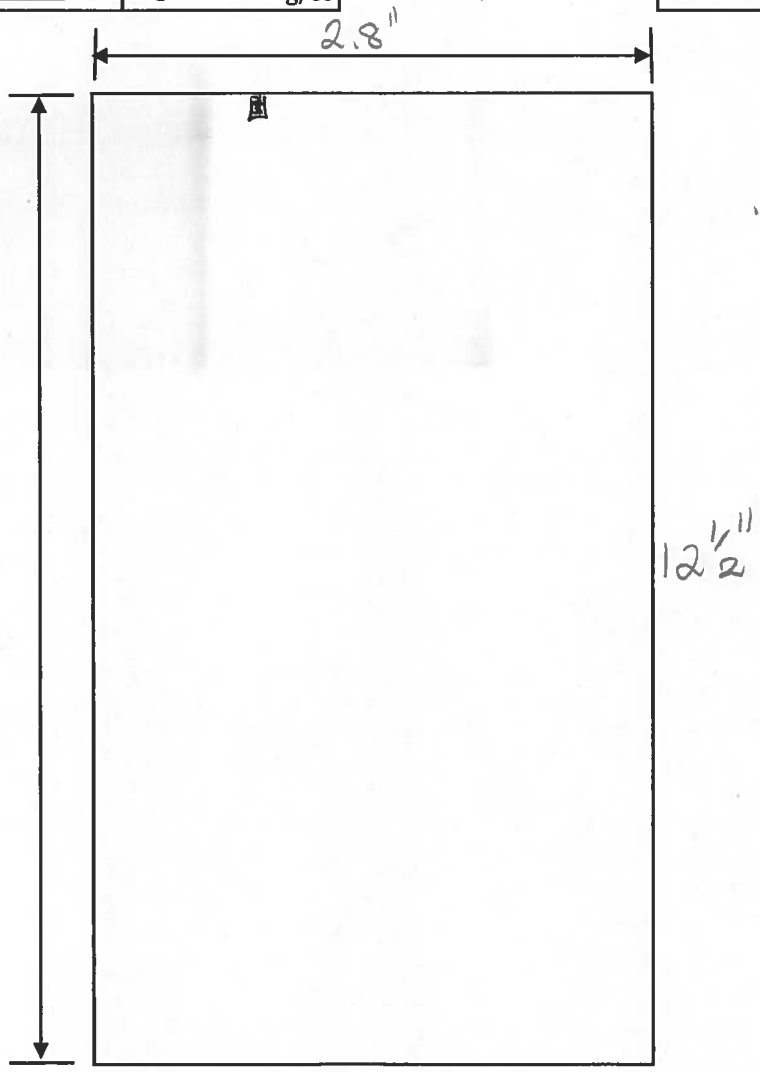
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-280

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-301	8'	10'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish/Gray	Moist	V.Stiff	Trace #4 Rock Trace trash & fine Roots		3.25	CH

ω 22.6 % γ_d 1.63 g/cc (From $\overline{cu}$) DESCRIBED BY SKK 1/29/19



Extruded in the field

Appears to be a fairly uniform v.Stiff sample.

SAVED all of sample for 1 pt of a $\overline{cu}$ with 19-278 & 19-279.

Recommend 2.8"

* If needed possible 2 slugs could be trimmed from this sample (2.8")

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-281

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

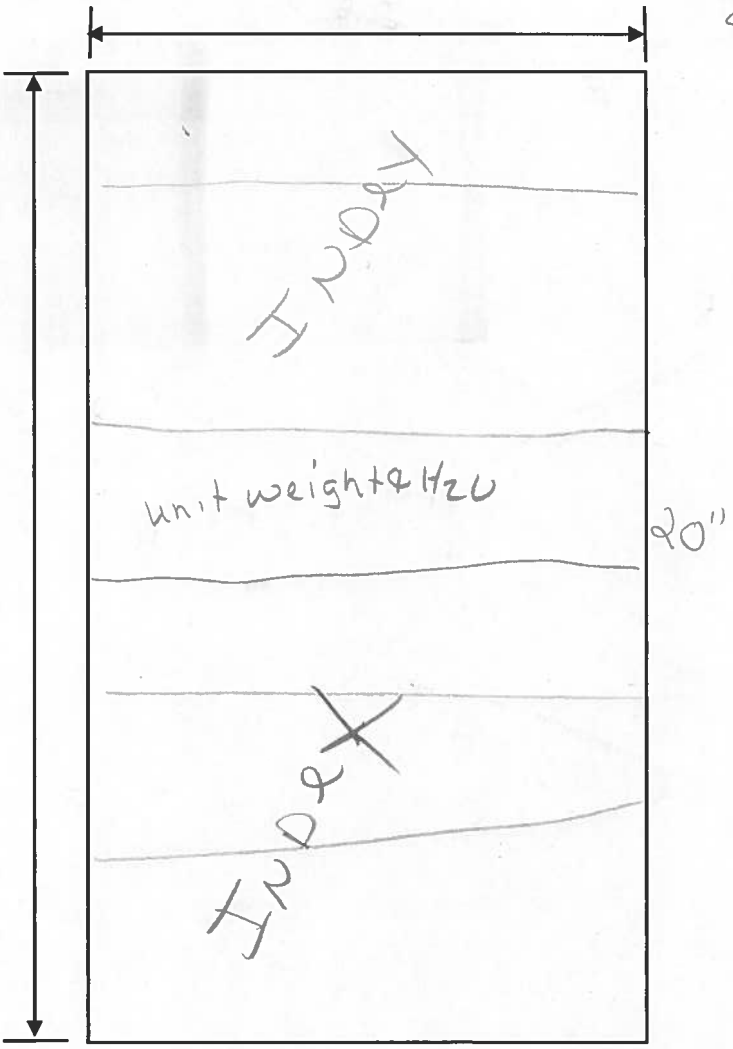
PLUM CREEK SITE 21, TX — 19-281

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-301	13.5'	15'		SPT

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish/Brown	Moist	—	—	Smooth	—	CH

ω 27.3 % γ_d 1.55 g/cc DESCRIBED BY SKK 1/29/19

Split Spoon Sample



Unit weight & H_2O taken as requested.

INDEX only.

No testing assigned at this time.

PHOTOS: 3

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-282

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

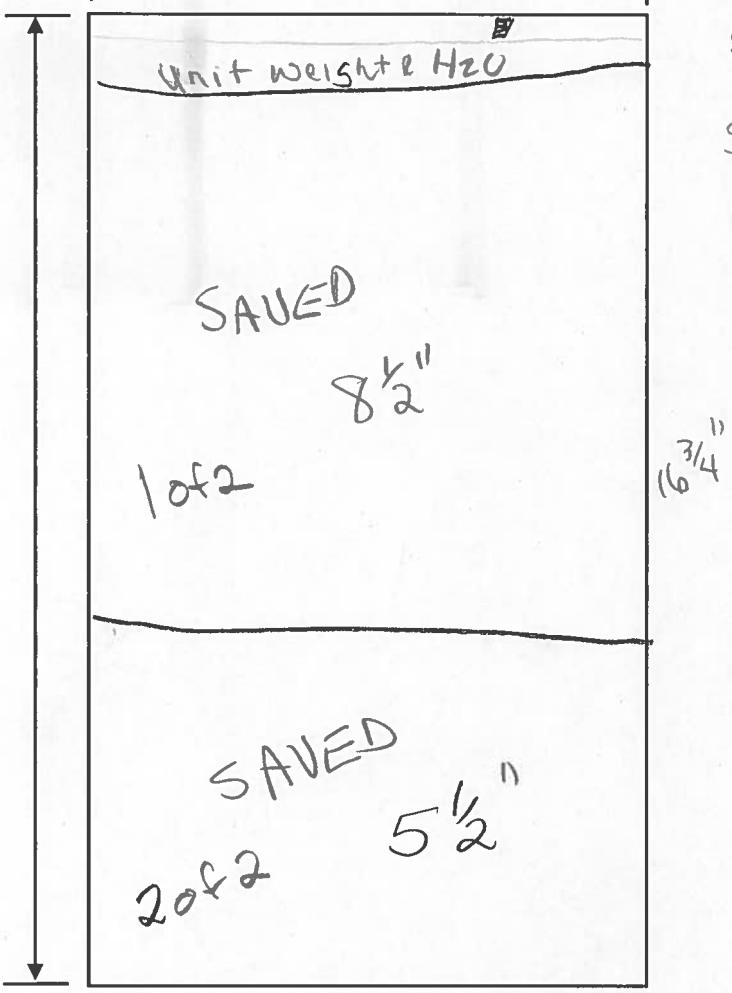
PLUM CREEK SITE 21, TX — 19-282

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-301	18'	20'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish	Moist	V. Stiff	—	Smooth	2.5	CH

ω 25.9 % (γ_d 1.52 g/cc) DESCRIBED BY SKK 1/29/19

20.84% 102.3 pcf (From Cons) 2.8"



Extruded in the field
sample is broke into 3 sections

Some shale in sample, otherwise appears to be a v. stiff uniform sample
Unit weight & H_2O taken

Use 2 of 2 for consolidation and swell/collapse tests.

PHOTOS: 3
Cons & swell/collapse tests

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-283

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-283

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-302	4'	5.5'		SPT

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	Dry	—	½" Rocks	—	—	GC

ω 8.3 % γ_d — g/cc DESCRIBED BY SKK 1/29/19

Split-spoon sample

GC - mainly Rock sample moisture taken

16¾"

Index only.

PHOTOS: 2

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-284

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-284

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-302	5.5'	7'		SPT

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	DRY	—	Rocks 1½"	—	—	GC

ω 8.4 % γ_d — g/cc

DESCRIBED BY SKK 1/29/19

Split spoon sample

Rocky sample
Moisture taken
Index only

PHOTOS: 2

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NRCS-ENG-129 (REVISED)

WO #: 19-43WB

Lab #: 19-285

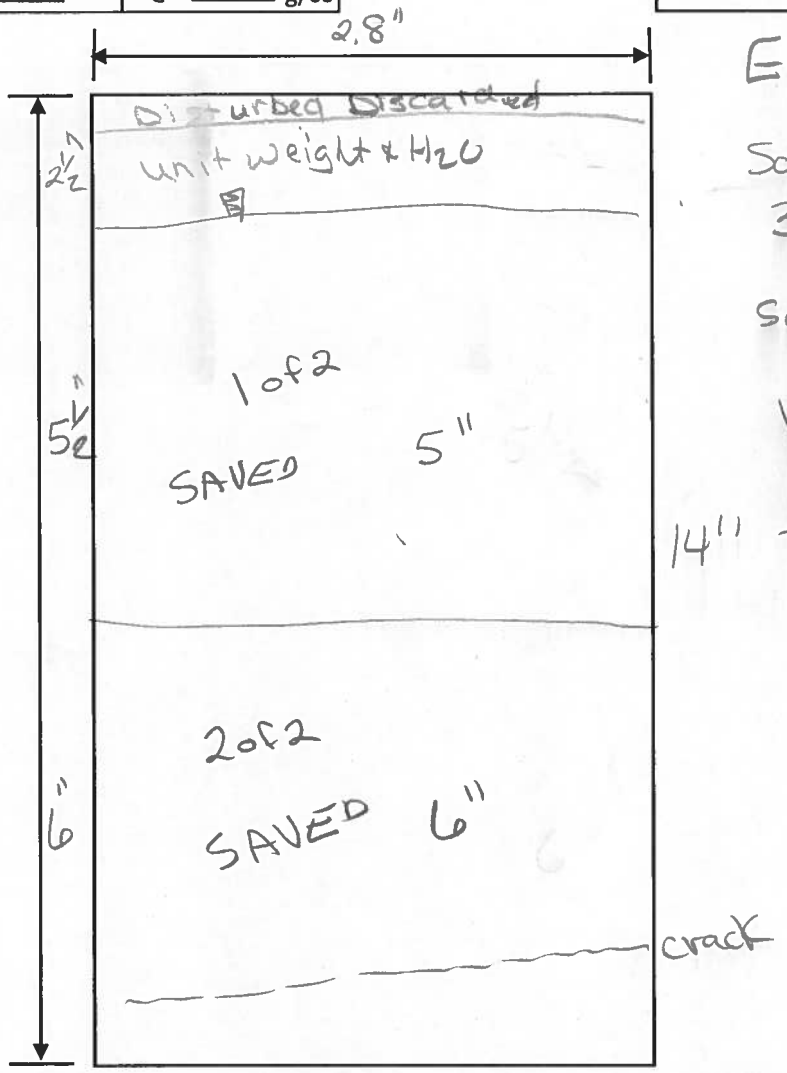
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-285

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-302	13'	15'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brown/Gray	Moist	V.Stiff	—	Smooth	4.5	CH

ω 25.3 % | γ_d 1.58 g/cc | DESCRIBED BY SKK 1/29/19



Extruded in the field.

Sample is broke into 3 pieces

Some shale in sample

Very stiff but fragile layered material.

14" Trim 2.8" High-Low psi for UU test.

UU

PHOTOS: 2

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-286

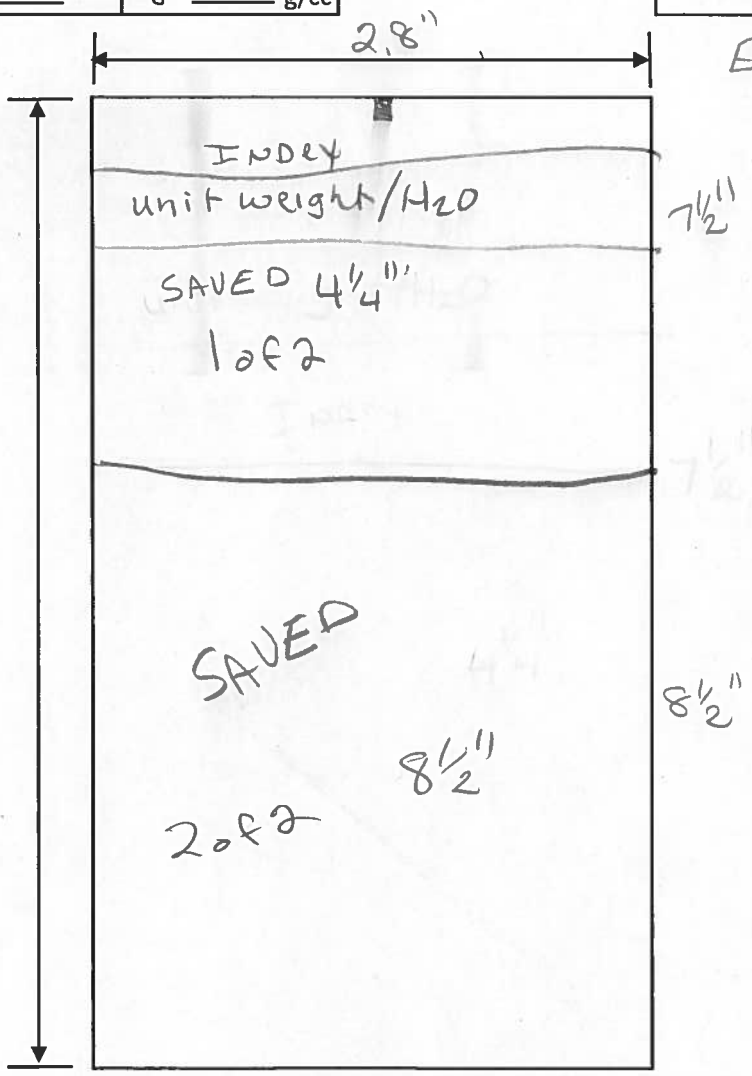
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-286

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-302	18'	20'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
tannish/Gray	Moist	V. Stiff	—	Smooth	4.5+	CH

ω 25.1 % γ_d 1.57 g/cc DESCRIBED BY SKK 1/29/19



Extruded in the field.

Very stiff, fragile, blocky CH material.

Unit weight & H_2O taken

No testing assigned at this time.

PHOTOS: 2+2

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-287

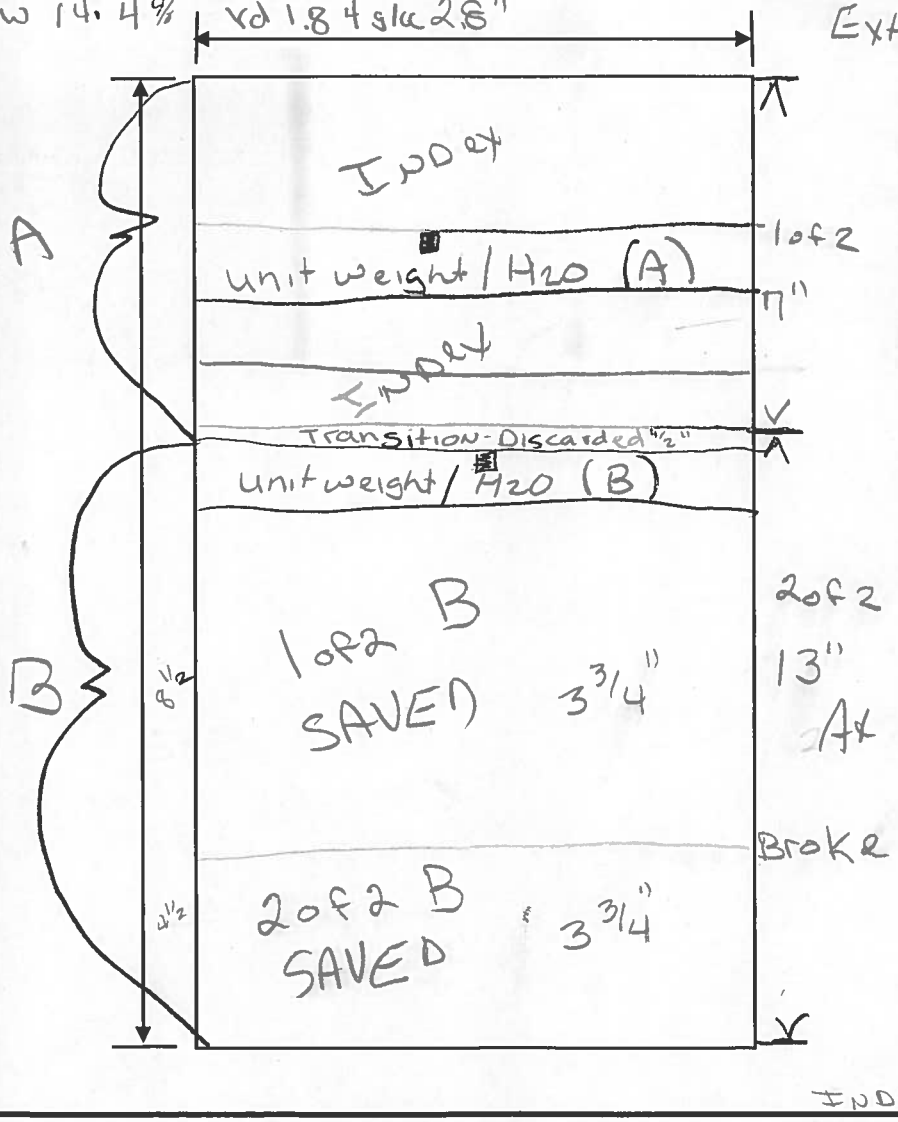
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX							19-287
FIELD SAMPLE NUMBER	DEPTH (FT) FROM	TO	SAMPLE LOCATION				TYPE OF SAMPLE
							FIELD PUSHED
B-601	2.5'	5'					SHELBY
	COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
A	Tan	Moist	Stiff	Trace fine Roots	Smooth	1.25	CL
B	Brown	Moist	V. Stiff		Smooth	3.0	CL

A = ω 25.0 % γ_d 1.55 g/cc DESCRIBED BY SKK 1/29/19

B = ω 14.4% γ_d 1.84 g/cc 2.8"

Extruded in the field



1 of 2 and top 2" of 2 of 2 are tan and more grit. - 'A' - looser material

Bottom 11" is CL material with less grit - B

A - Index only.

A & B - unit weights & H_2O's taken.

PHOTOS: 2

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-288

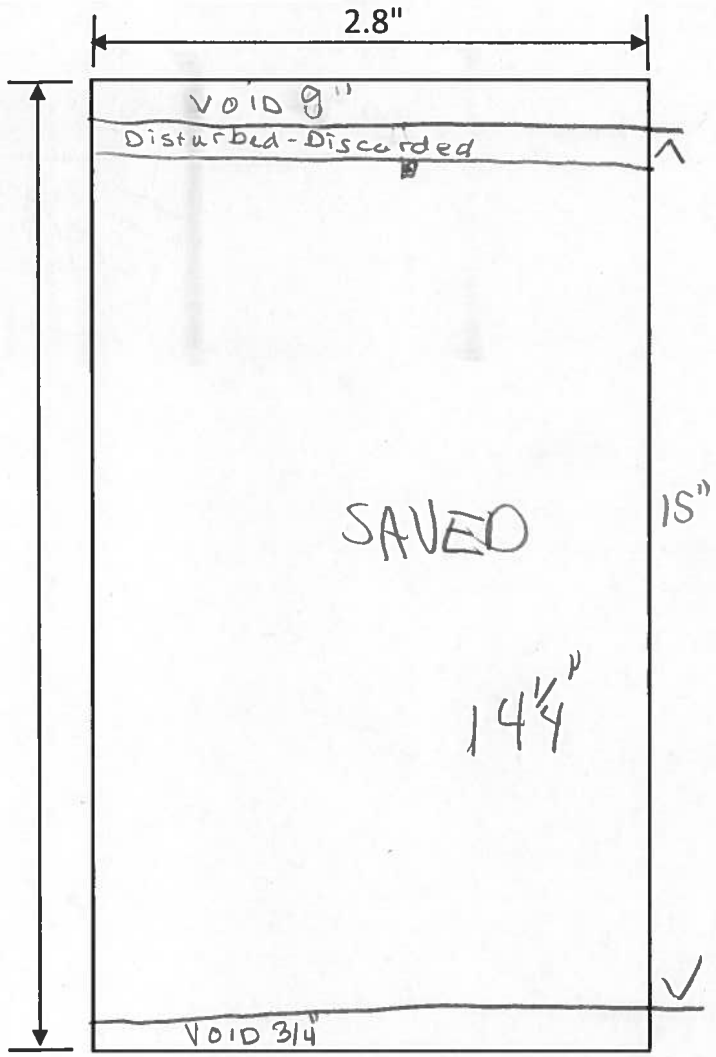
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-288

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-601	5'	6.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish	Moist	V. Stiff	Roots	Smooth	2.25	CL

ω 19.67 % γ_d 1.71 g/cc (From UU) DESCRIBED BY SKK 2/5/19



Roots visible.
Otherwise appears to be a fairly good uniform material.
Trim 1.4" UU from sample.

PHOTOS: 2

UU

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-289

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

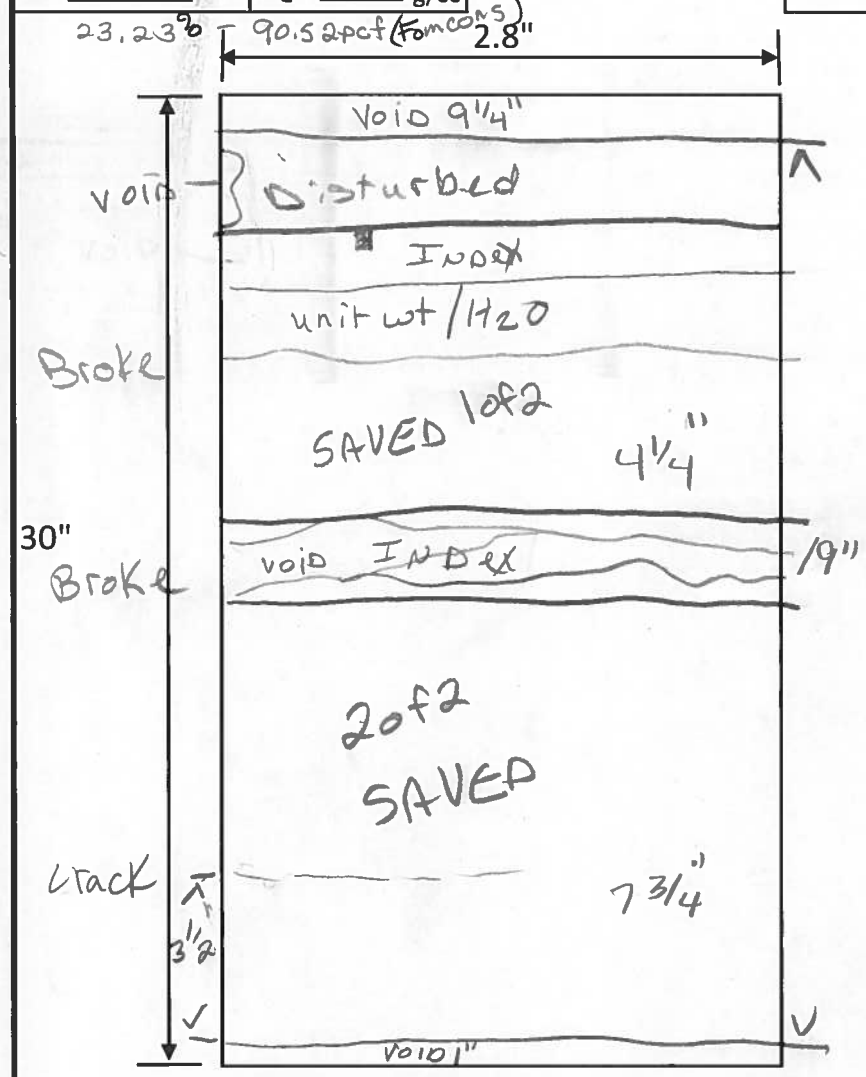
PLUM CREEK SITE 21, TX — 19-289

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-601	10'	12.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	Moist	V. Stiff	Trace fine Roots	Smooth	2.75	CL

ω 22.6 % γ_d 1.53 g/cc DESCRIBED BY SKK 2/5/19

23.23% 90.52pcf (from cons)



Stiff but somewhat crumbly material appears fairly uniform unit weight & H2O Taken. Use 2of2 for consolidation & swell collapse tests

PHOTOS: 2

cons & swell/collapse

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-290

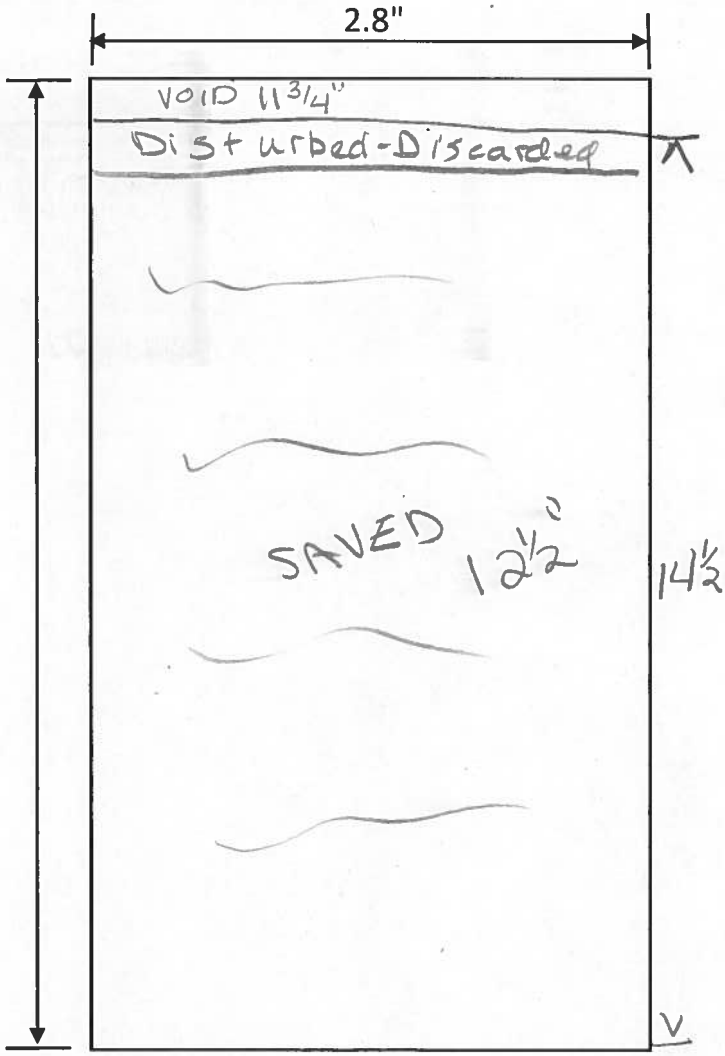
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-290

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-601	19'	20.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish/TAN	Moist	—	shale	Smooth	—	CH

ω 24.35% γ_d 1.48 g/cc (From uu) DESCRIBED BY SKK 2/5/19



Shale. flaky material horizontal breaks and cracks.

Limited material, Will not have enough material to do both uu and swell/collapse as requested. If trimming uu would need to be 2.8" and would only be able to get high & low psi if sample doesn't flake and crumble too much. Very fragile.

PHOTOS: 2

uu & swell/collapse

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-291

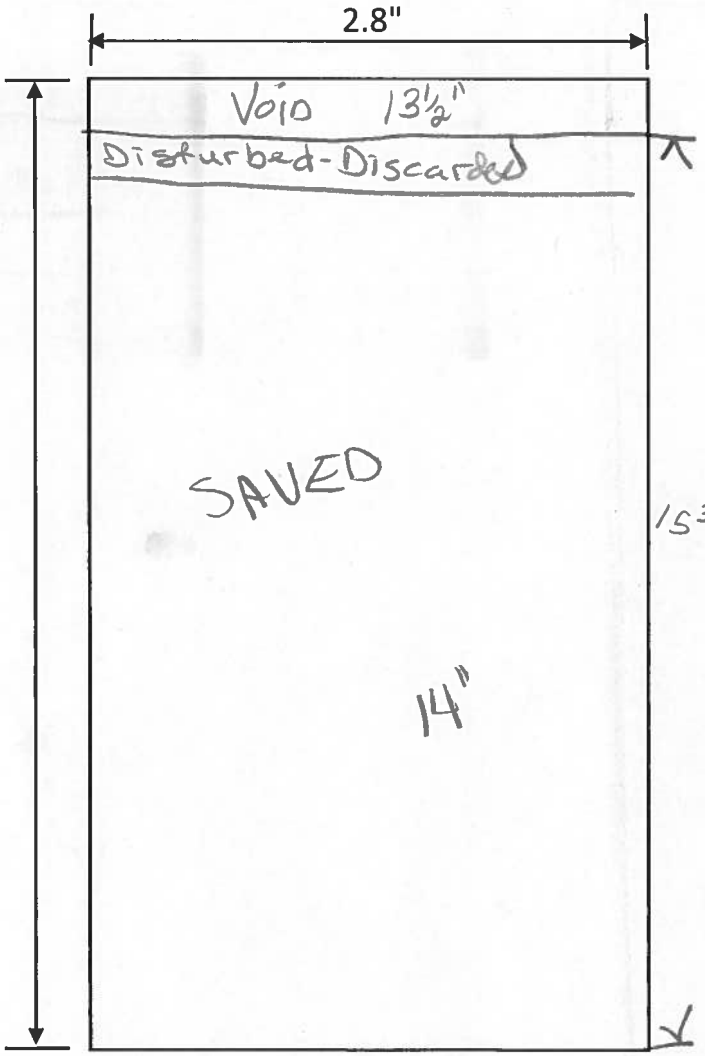
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-291

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-602	5'	7'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish Brown	Moist	V. Stiff	Trace #4 Rock	Smooth	3.25	CL

ω 16.35% γ_d 1.81 g/cc (From uu) DESCRIBED BY SKK 2/5/19



Appears fairly uniform may be some rock toward bottom, otherwise good material.

Trim 1.4" uu.

PHOTOS: 2

uu

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-292

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

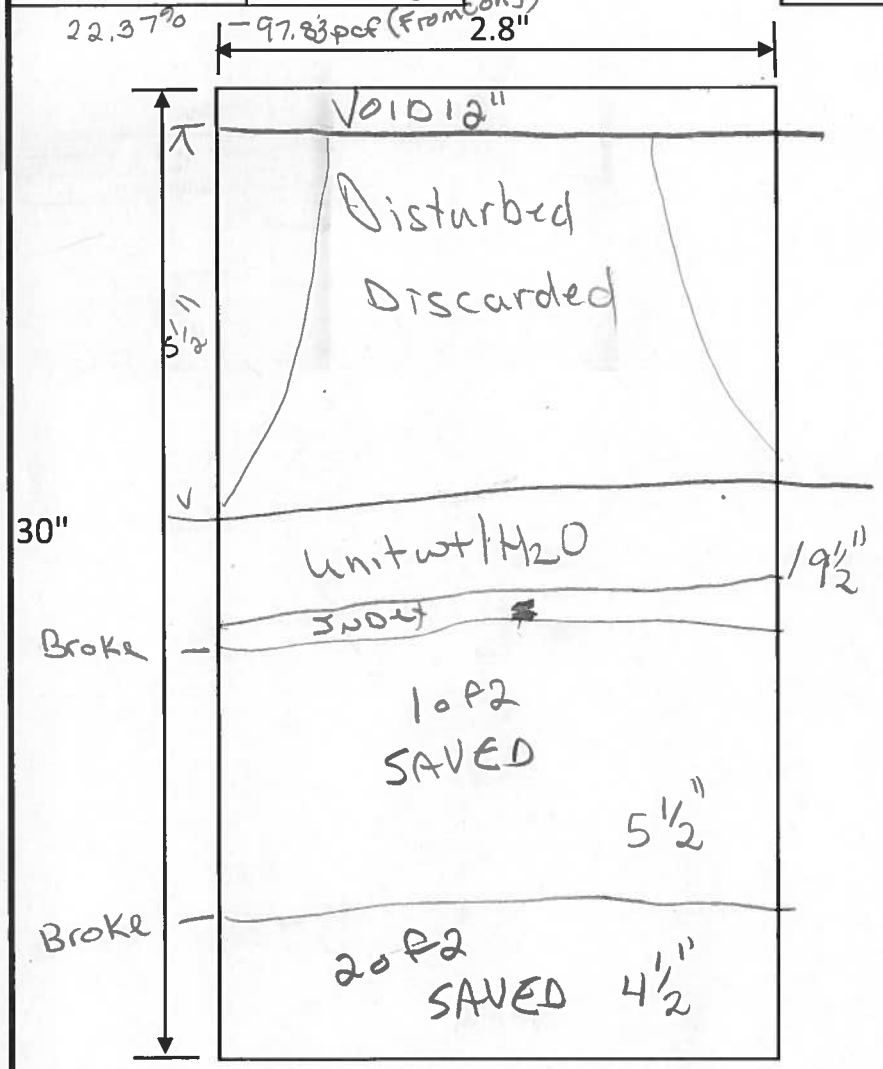
PLUM CREEK SITE 21, TX — 19-292

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-602	15'	17'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish tan	Moist	V. Stiff	Shale	Smooth	4.0	CH

ω 26.2 % γ_d 1.54 g/cc DESCRIBED BY SKK PS 2/5/19

22.37% — 97.83 pcf (From cons)



Shale material, layered and flaky.

Use 1 of 2 for consolidation and swell/collapse tests

* used 1 of 2 for 2.8" UU 4-15-19
So use 2 of 2 for consolidation

PHOTOS: 3

CONS & Swell/Collapse

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-293

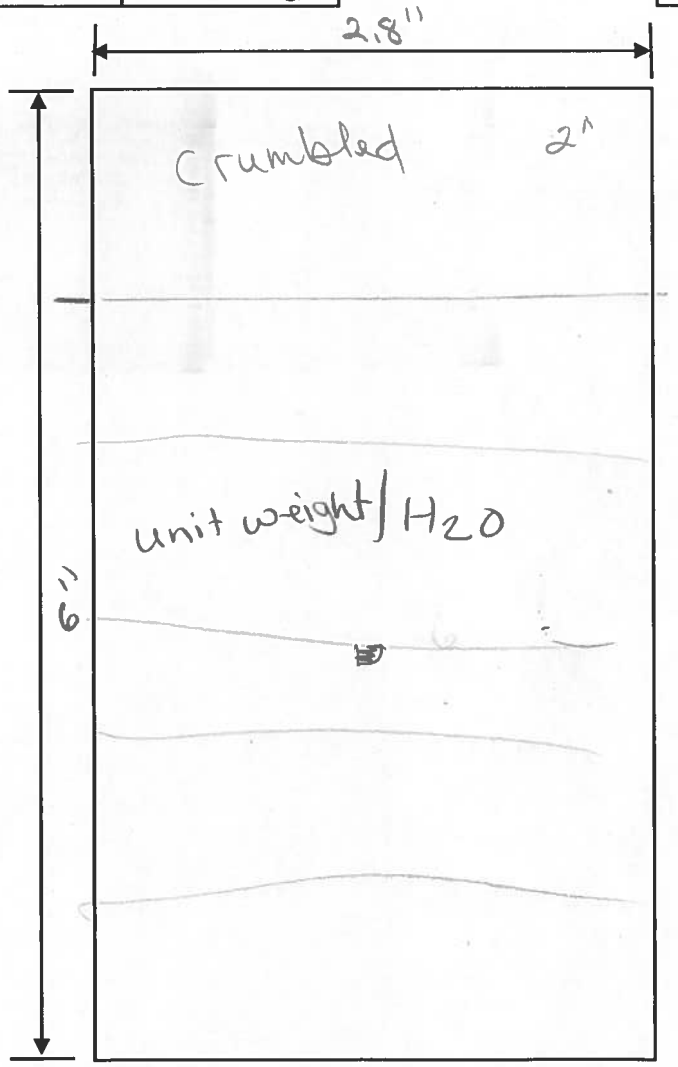
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-293

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-602	23'	24'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Black	Dry	V Stiff	Shale	Smooth	4.5+	CH

ω 20.1 % γ_d 1.54 g/cc DESCRIBED BY SKK



Extruded in the field.

Top approximately 2" was crumbled when still in plastic wrap.

Shale, lots of breaks in sample

Will not be able to run QU.

Unit weight & H_2O taken

Index only

8

QU

PHOTOS: 3

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-294

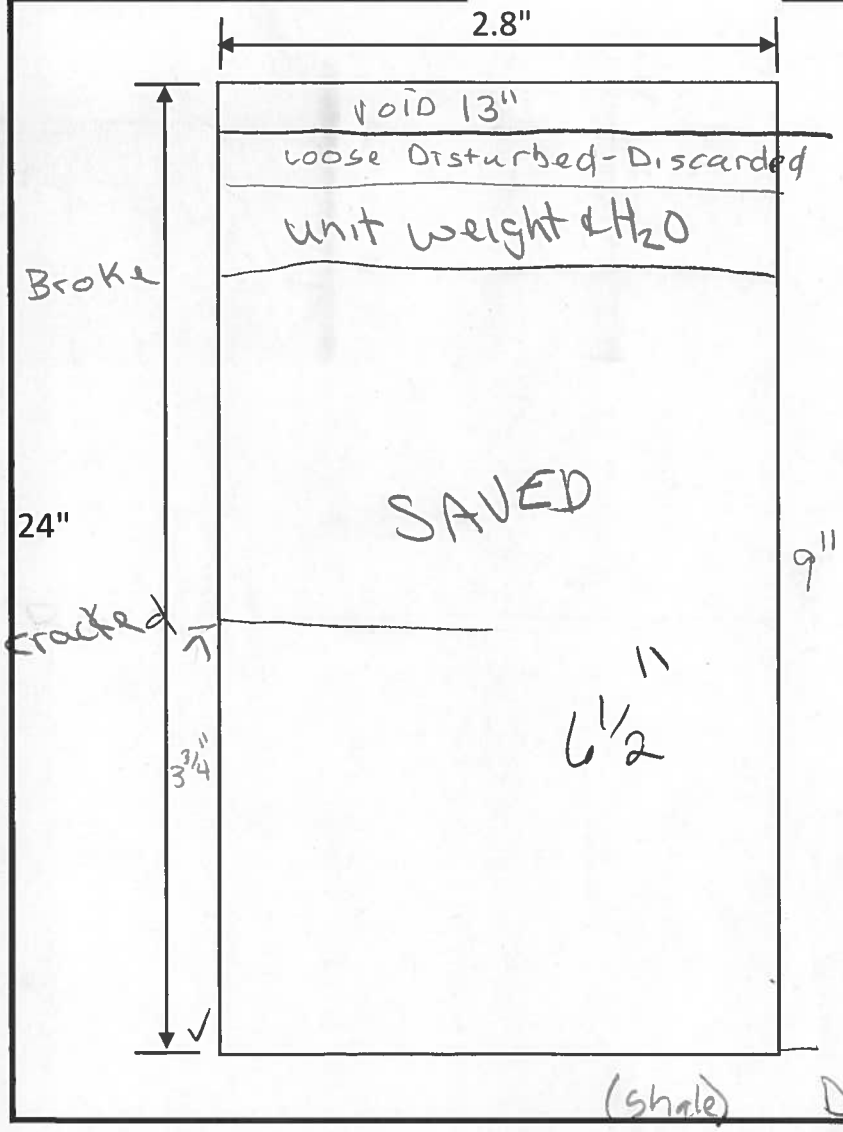
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-294

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-602	25'	26'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Dk. Gray	Moist	V Stiff	Shale	Smooth	–	CH

ω 21.9 % γ_d 1.60 g/cc DESCRIBED BY SKK, PS 2/5/19



Shale, flaky material, fragile

Direct shear requested(?)

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-295

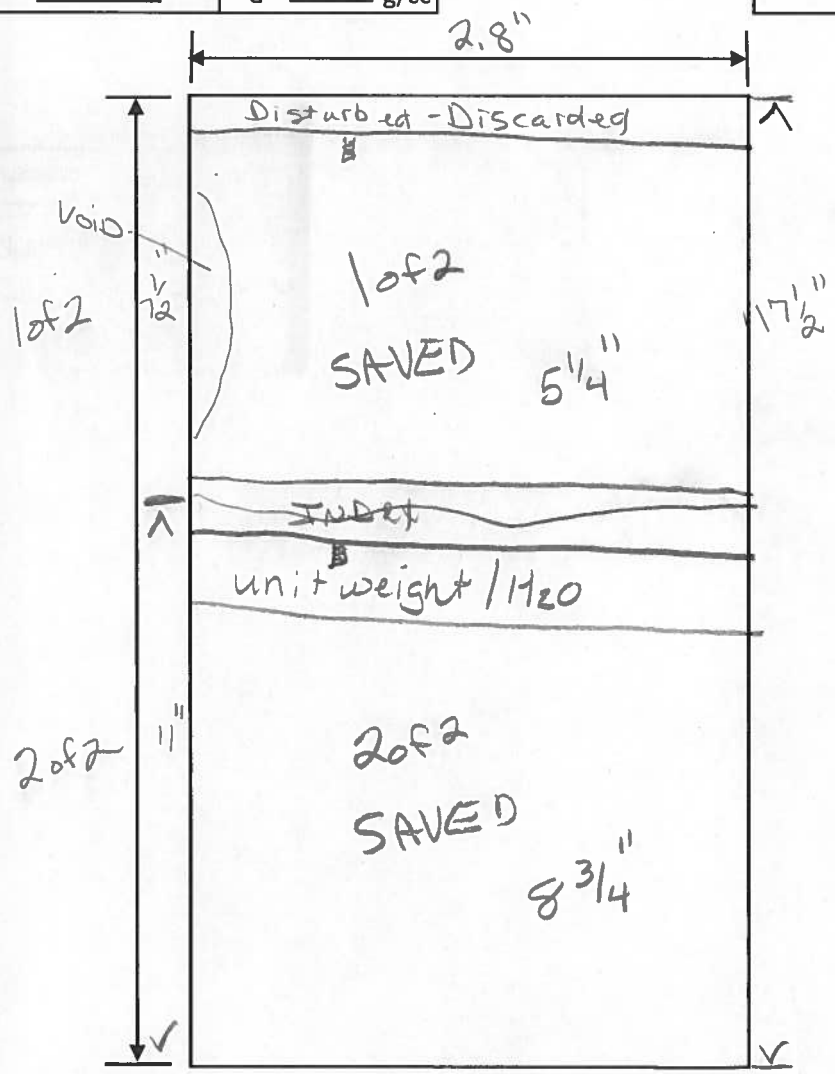
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-295

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-603	2.5'	5'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish/Gray	Moist	V.Stiff	Trace Fine Roots	Smooth	Top 2.25	CH
					4.5+ Middle	CH

ω 19.8 % γ_d 1.72 g/cc DESCRIBED BY SKK 2/6/19



Extruded in the field

1 of 2 Appears to be less stiff than 2 of 2 also more brownish.

2 of 2 Darker in color and Very Stiff.

Unit weight & H_2O Taken

No testing assigned at this time

PHOTOS: 2

No Testing

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-296

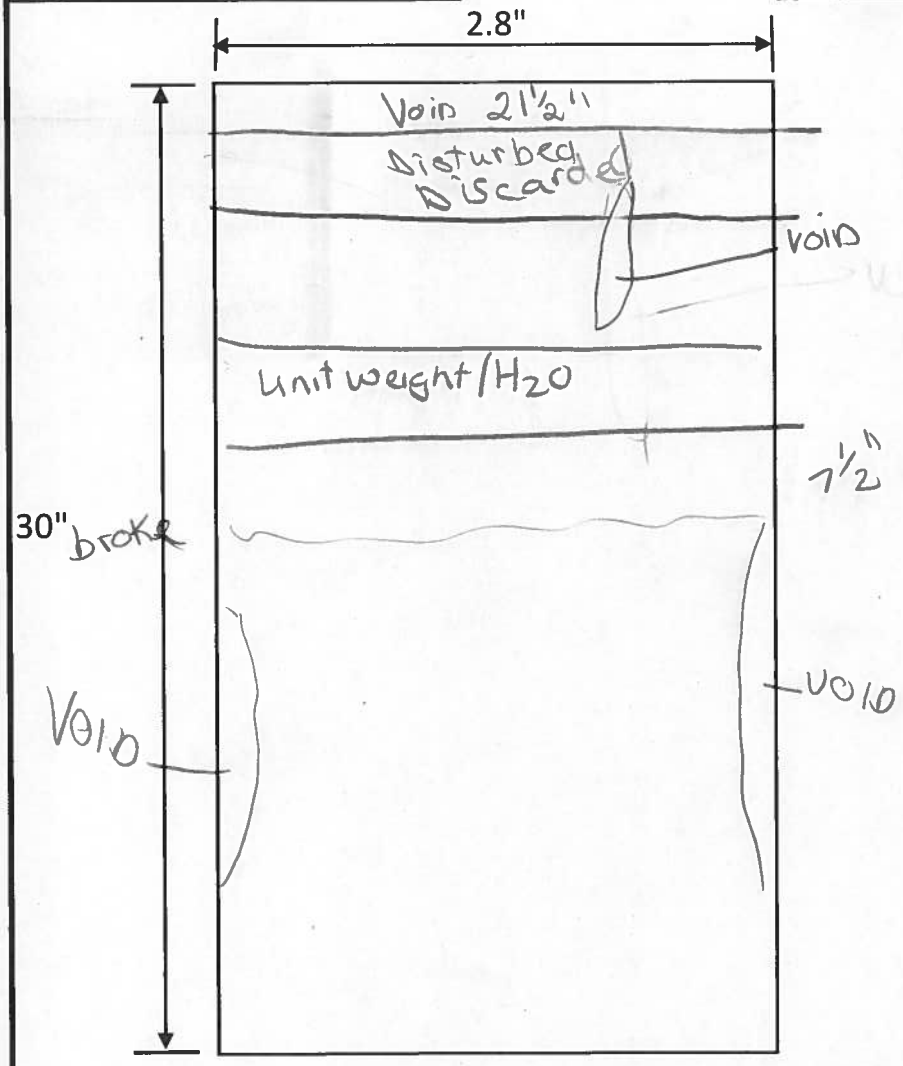
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-296

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-603	7.5'	8.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish	Dry	V. Stiff	Rock 1/2"	Smooth	4.5	CH

ω 13.1 % γ_d 1.88 g/cc DESCRIBED BY SKK, PS 2/5/19



Lots of voids in sample, Rock throughout
Too many voids to trim consolidation or swell/collapse Tests
Unit weight & H_2O taken
Index only

PHOTOS: 3

Cons & swell collapse

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-297

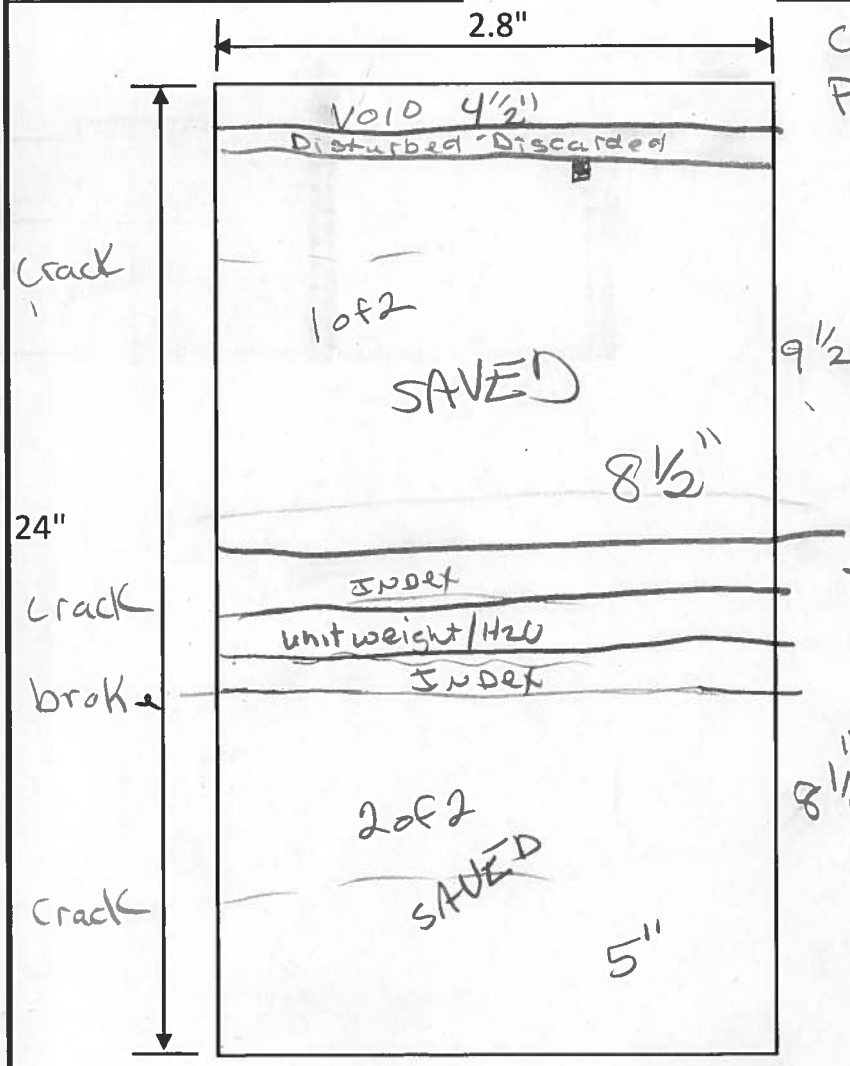
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-297

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-603	15.5'	17.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish / TAN Marbled	MOIST	V Stiff	Shale	SMOOTH	2.25	CH

ω 27.8 % γ_d 1.52 g/cc DESCRIBED BY SKK 2/5/19



Consolidated 2½", then would not push, cut tube.

Shale, flaky, blocky. Fragile Material.

1 of 2 Saved top 8½", possible trim 1.4" CU - May not stay together (?) - not long enough for 2.8"

2 of 2 bottom couple inches pushed and consolidated when extruded.

May use top of this section for consolidation or swell/collapse.

Unit weight & H_2O taken

PHOTOS: 2

CU, cons & swell collapse

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-298

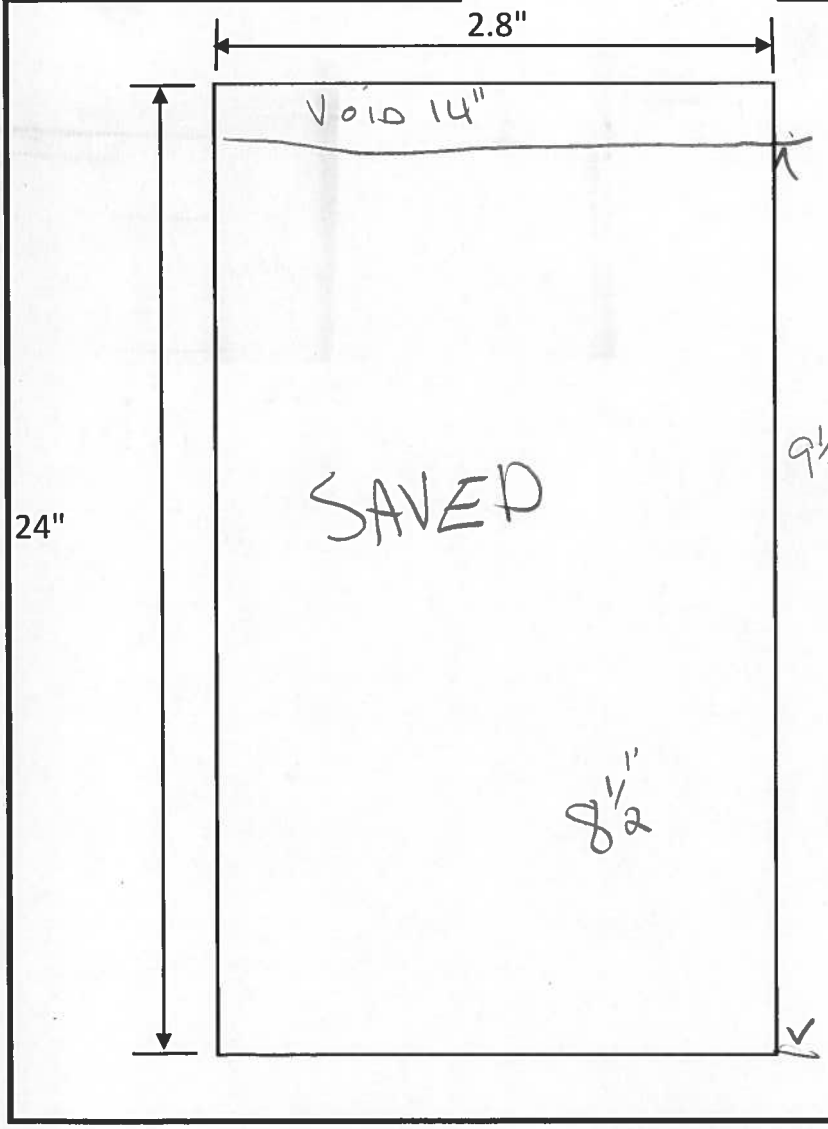
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-298

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-603	20'	21'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
DK Brown	Moist	V. Stiff	Shale	Smooth	4.5+	CH

ω 24.75 % γ_d 1.57 g/cc (From uu) DESCRIBED BY SKK PS 2/5/19



Shale, flaky, somewhat fragile.
Attempt to trim 1.4" uu - high & low psi, limited amount of material.

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-299

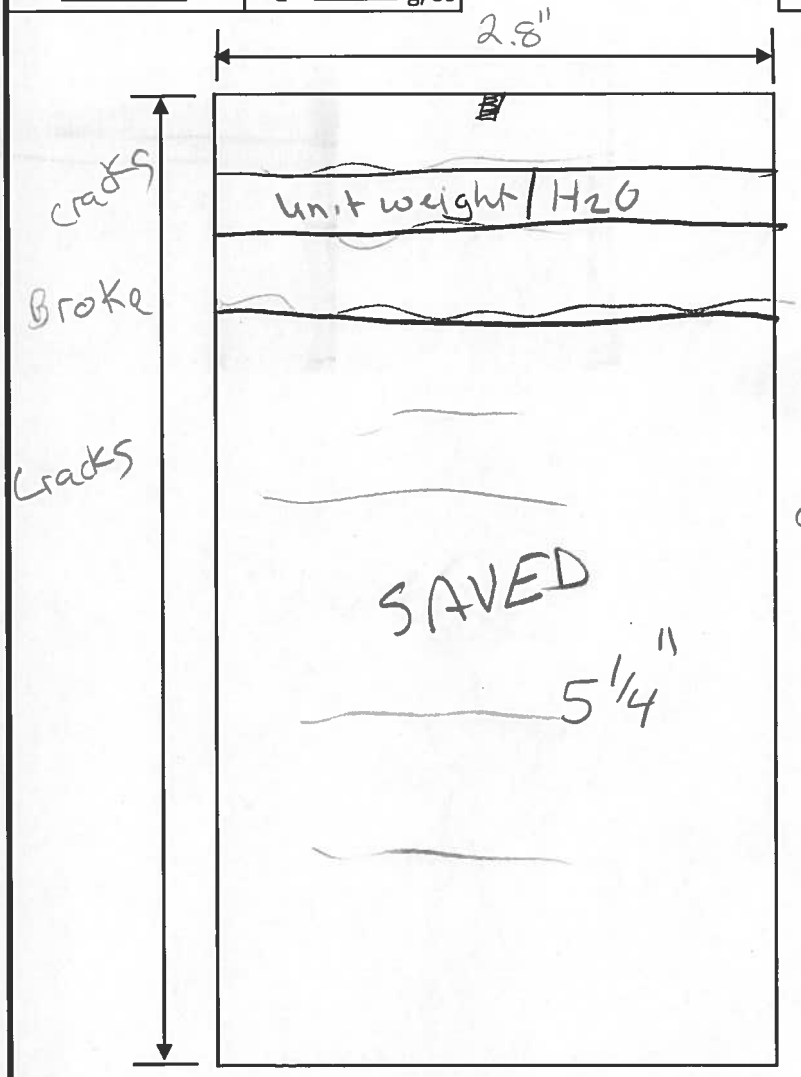
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-299

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-603	23'	24'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish	DRY	V. Stiff	Shale	SMOOTH	4.5+	CH

ω 20.7 % | γ_d 1.65 g/cc | DESCRIBED BY SKK 2/6/19



Extruded in the field

Very stiff, dry material. Shale, flaky, crumbly. Unit weight & H_2O taken. Horizontal cracks Attempt 2.8" QU ON SAVED Section, May be slightly short.

PHOTOS: 2

QU (Shale)

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-300

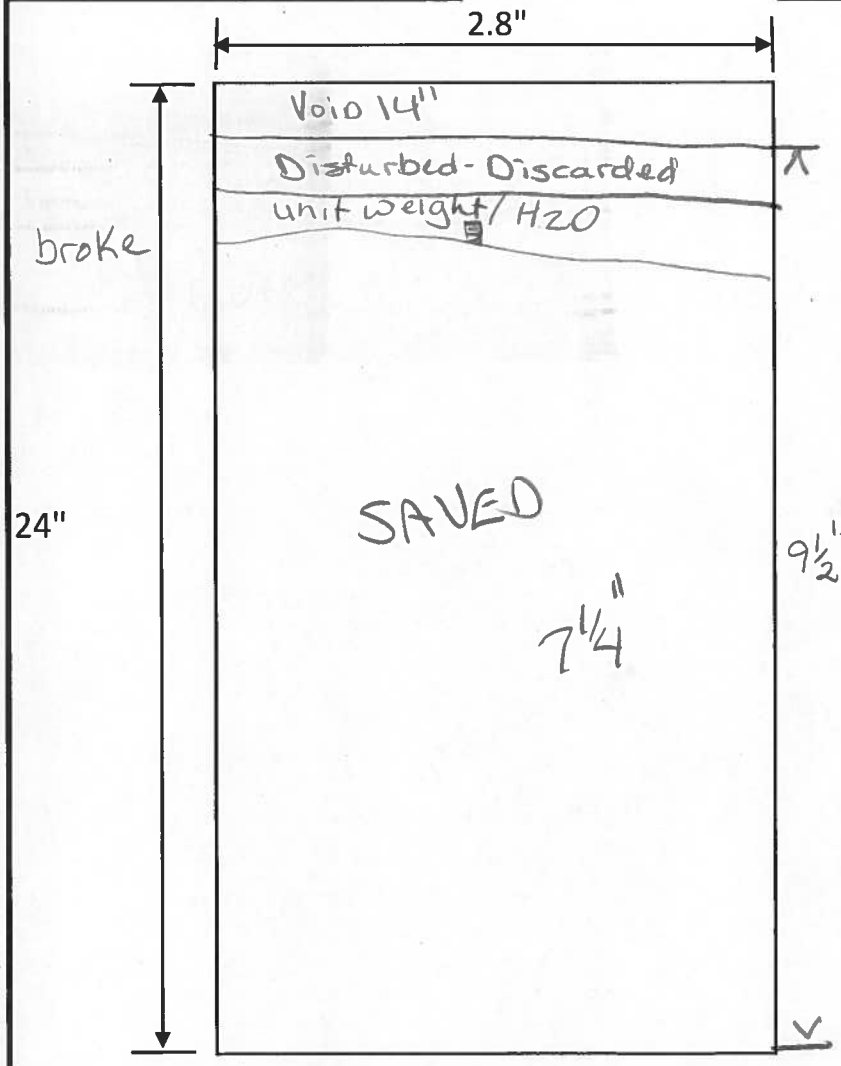
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-300

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-603	30'	31'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish	Moist	VStiff	Shale	Smooth	4.5+	CH

ω 22.7 % γ_d 1.54 g/cc DESCRIBED BY SKK PS 2/5/19



Shale, flaky, fragile material
unit weight & H_2O taken
Direct shear requested (?)

PHOTOS: 2

(shale) Direct Shear

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-301

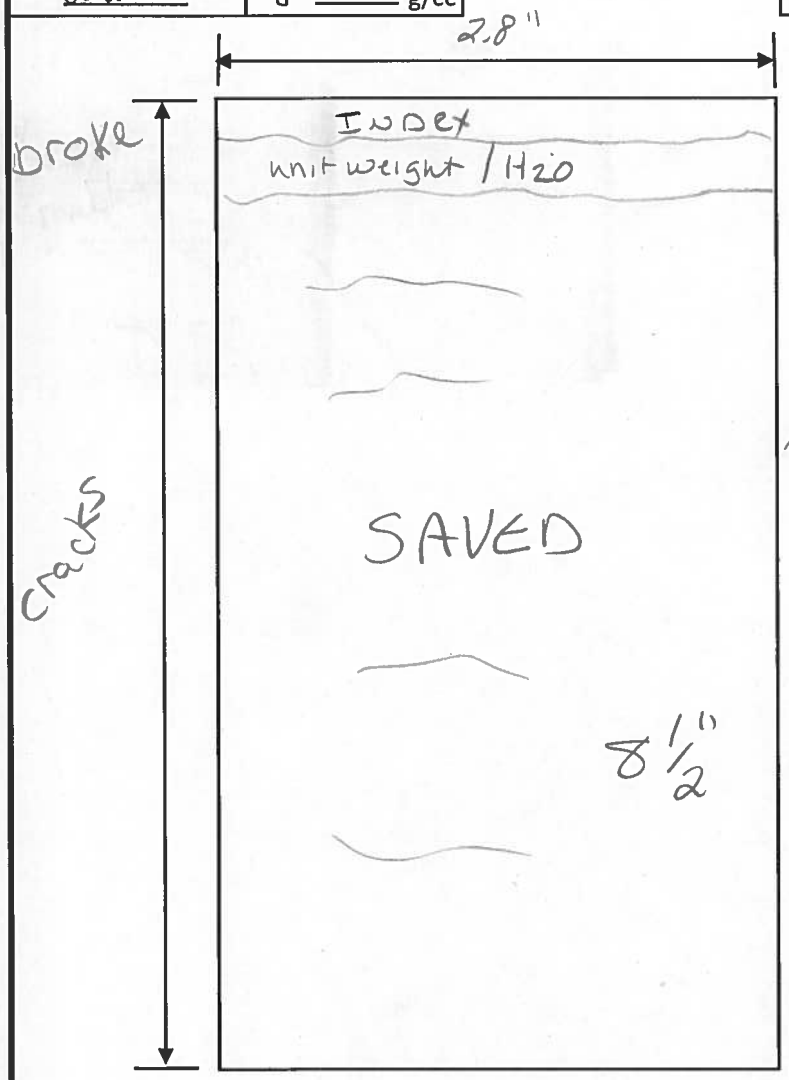
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-301

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-603	38'	39'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish	Dry	V. Stiff	Shale	Smooth		CH

ω 22.0% γ_d 1.60 g/cc DESCRIBED BY SKK 2/6/19



Extruded in the field

Very stiff Dry material.

Shale, flaky, crumbly

Horizontal cracks

Attempt 2.8" Qu on SAVED Section.

Unit weight & H_2O taken

PHOTOS: 2

Qu (Shale)

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NRCS-ENG-129 (REVISED)

WO #: 19-43WB

Lab #: 19-302

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX

19-302

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-604	2.5'	4'		SPT

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brown	Moist	—	—	Gritty	—	GC

ω 9.5 % γ_d — g/cc

DESCRIBED BY SKK 2/6/19

Split spoon

Rocky - Moisture & Sieve Requested

PHOTOS: 2

Index (Gradation)

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-303

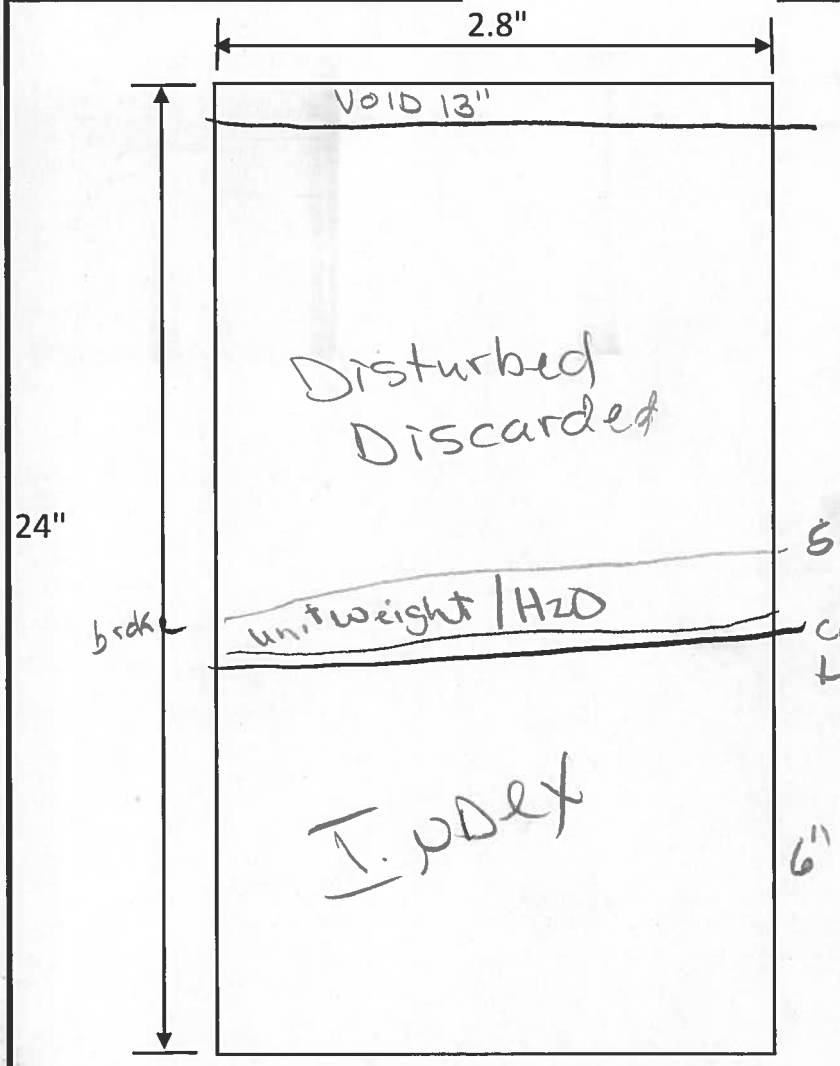
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-303

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-604	7.5'	9'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	Moist	V. Stiff	—	Smooth	—	CH

ω 23.7 % γ_d 1.60 g/cc DESCRIBED BY SKK 2/6/19



would not push, cut tube. bottom half would not push dug out bottom from tube

Very stiff material Took unit weight & H_2O on what little there was that appeared to not be disturbed from top half.

INDEX only.

PHOTOS: 2 + 2

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-304

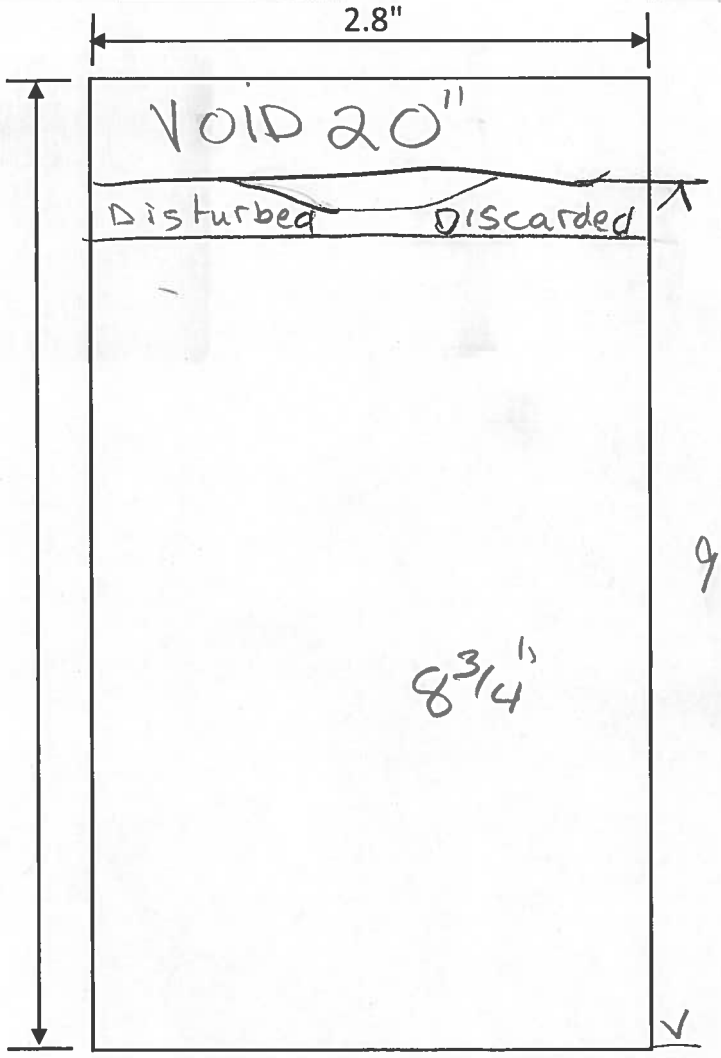
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-304

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-604	15'	16'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
TANNISH Marbled	MOIST	V.Stiff	—	Smooth	—	CH

ω 21.81 % γ_d 1.58 g/cc (From uu) DESCRIBED BY SKK PS 2/6/19



Appears to be a fairly uniform good material. Limited amount of material. Attempt to trim 1.4" uu. High & Low psi.

uu

PHOTOS: 2

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-305

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

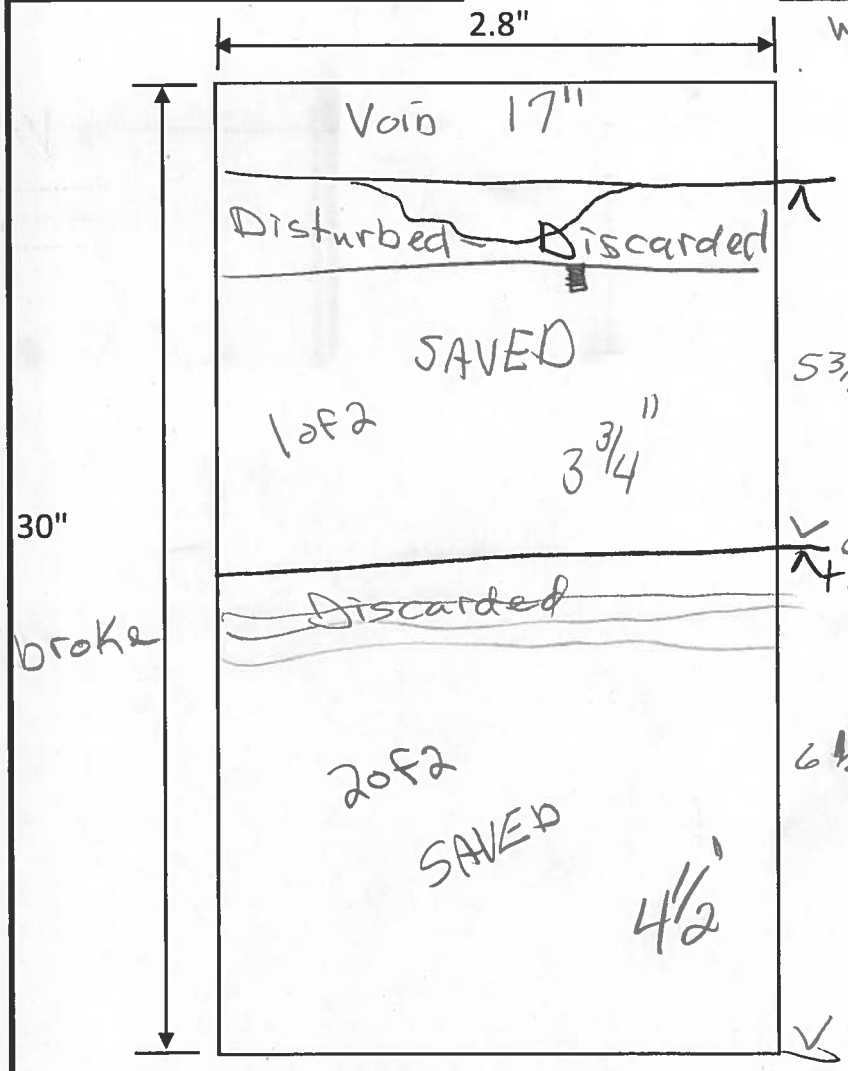
PLUM CREEK SITE 21, TX — 19-305

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-604	20'	21'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
brownish/Tan Marbled	Moist	V.Stiff	Shale	Smooth	4.5+	CH

ω 21.99 % | γ_d 98.02 pcf (From cons | DESCRIBED BY SKK RS 2/6/19

Would not push, cut tube.



Appears to be a Very Stiff uniform material. Somewhat flaky, blocky.

Trim consolidation & swell/collapse tests from 1 of 2, first.

PHOTOS: 2

cons & swell/collapse

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-306

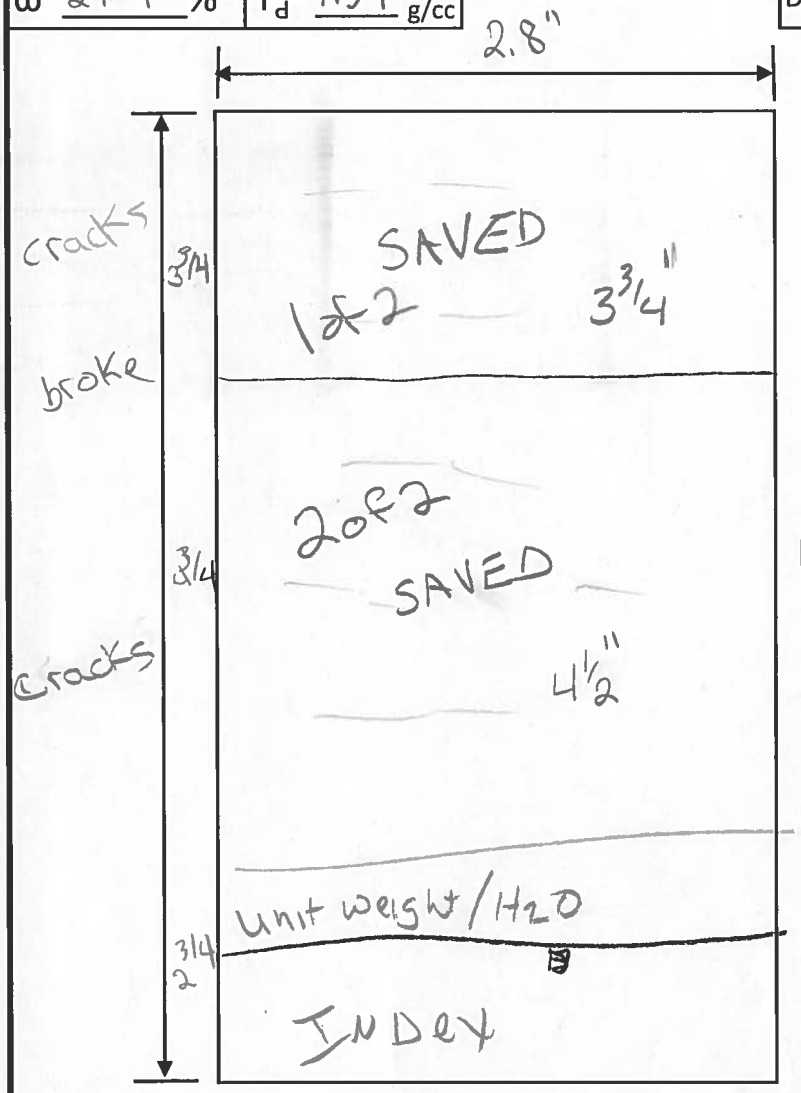
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-306

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-604	23'	24.5'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish	DRY	V Stiff	Shale	Smooth	4.5+	CH

ω 21.9 % γd 1.51 g/cc DESCRIBED BY SKK 2/7/19



Extruded in the field

Very fragile, Shale, horizontal cracks, flaky.

Attempt 2.8" QU from 2 of 2, will be short, otherwise will not be able to do shear test.

Unit weight & H_2O taken

PHOTOS: 2

QU

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-307

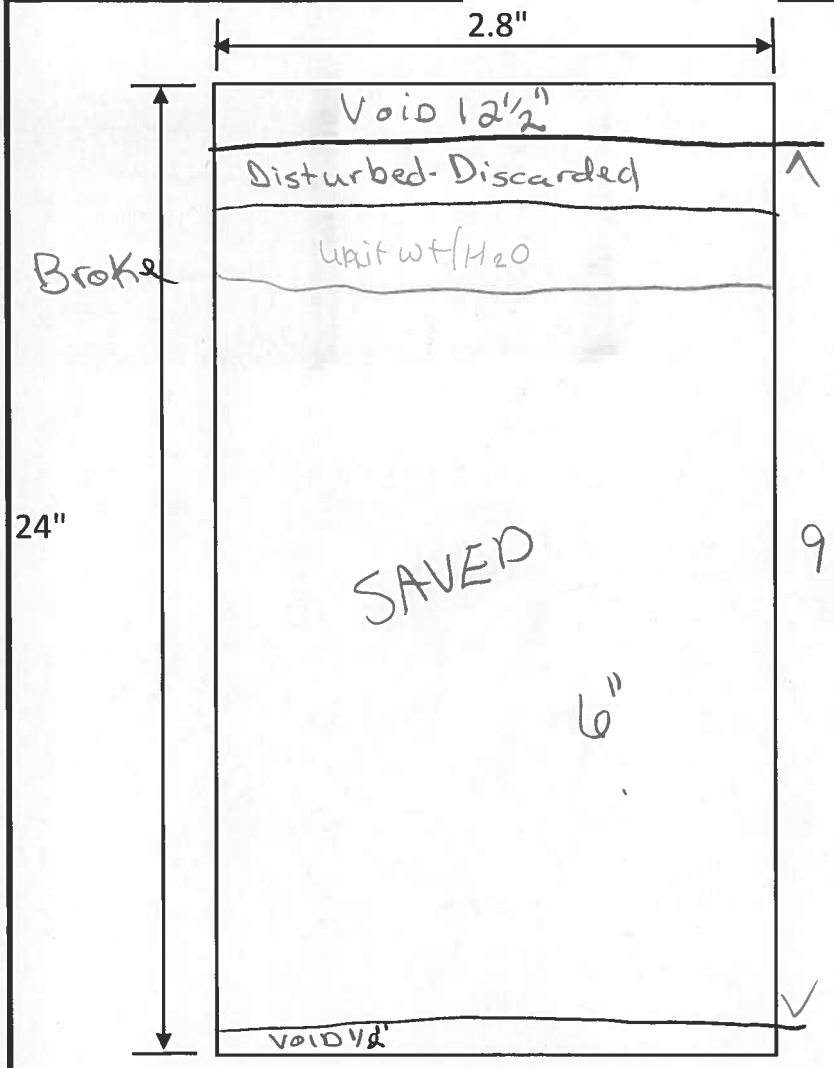
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-307

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-604	30'	31'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Blackish Gray	Moist to DAMP	—	—	Smooth	—	CH

ω 23.0 % γ_d 1.54 g/cc DESCRIBED BY SKK PS 2/6/19



Appears to be a fairly uniform material. Somewhat dry and flaky & crumbly. Fragile.

Direct shear requested (?)

Limited amount of material.

PHOTOS: 2

Direct Shear

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-308

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

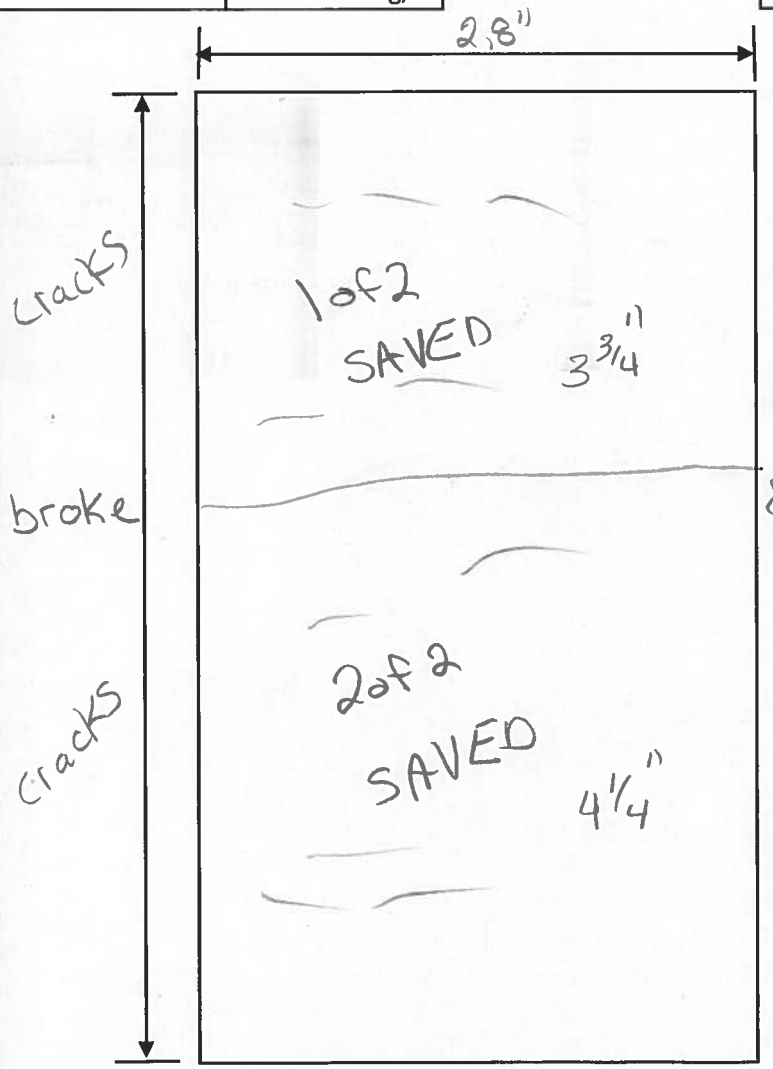
PLUM CREEK SITE 21, TX — 19-308

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-604	39'	40'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish	DRY	V.Sf.ff	Shale	Smooth	—	CH

ω 22.08% γ_d 1.64 g/cc (From QU) DESCRIBED BY SKK 2/7/19

Extruded in the field



Very fragile, shale, horizontal cracks, flaky.

Attempt 2.8" QU from 2 of 2, will be short, otherwise will not be able to do shear test

PHOTOS: 2

QU

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-309

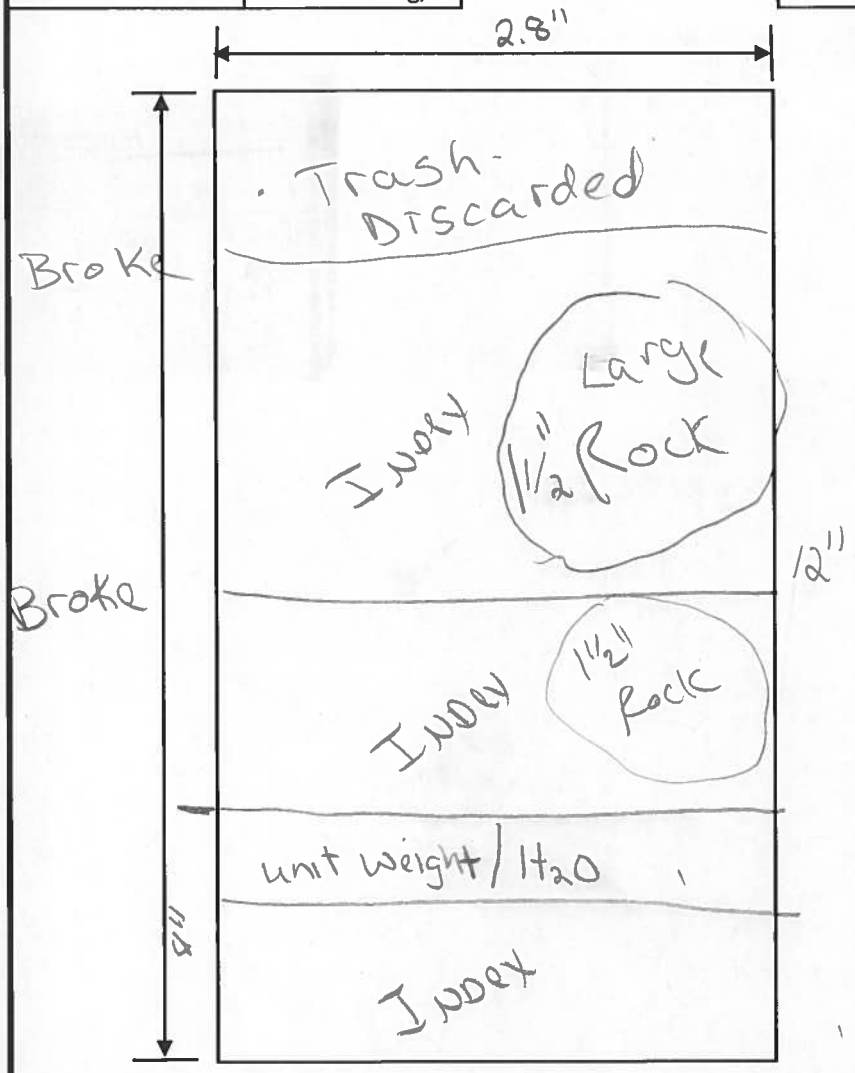
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-309

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-605	0	2.5'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
DkGray/Black/Brown	Moist	—	Trash, Roots Rocks 1½"	smooth to Gritty	—	CH/GC

ω 10.0 % γ_d 2.0 g/cc DESCRIBED BY SKK 2/7/19



Extruded in the field

Lots of rock in most of sample, Roots, Trash

Bottom 4" has somewhat less rock & more soil.

Unit weight & H_2O taken - fair amount of rock in unit wt.

INDEX only

PHOTOS: 2+1

INDEX

NRCS-ENG-129 (REVISED)

WO #: 19-43WB

Lab #: 19-310

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX

19-310

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-605	5'	6.5'		SPT

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
TAN	DRY	—	Rocks 1"	Gritty	—	GC

ω 7.6 % γ_d — g/cc

DESCRIBED BY SKK 2/7/19

Split spoon

Rocks 1", not much soil

Nothing large enough to do a unit weight-

moisture taken (small amount used)

INDEX

PHOTOS: 2

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NRCS-ENG-129 (REVISED)

WO #: 19-43WB

Lab #: 19-311

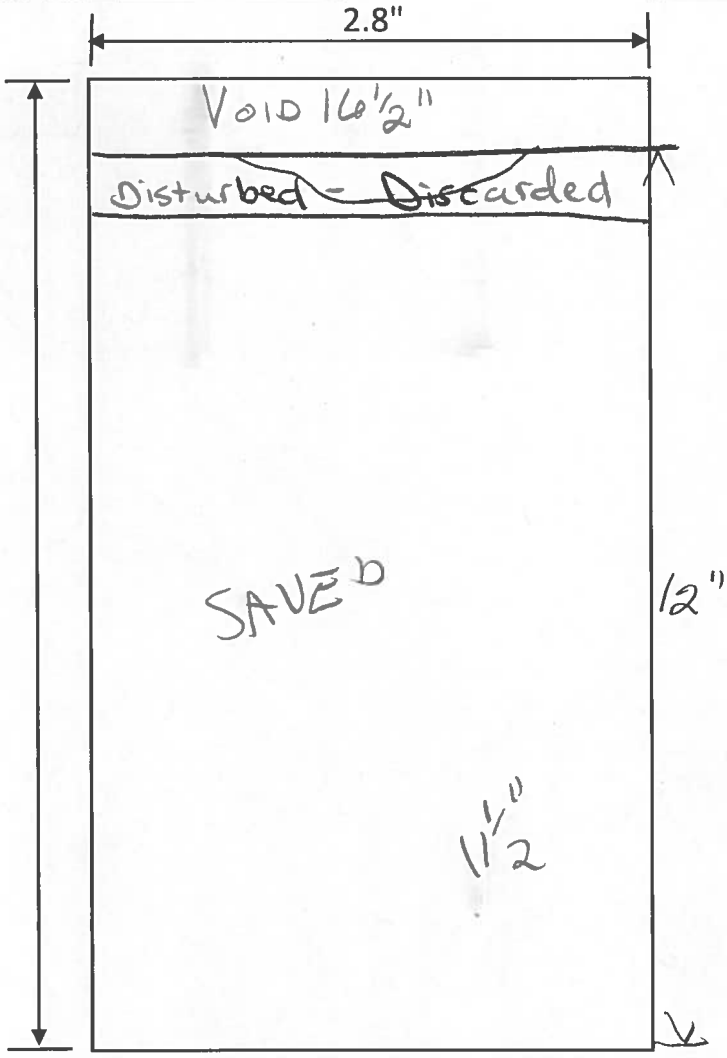
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-311

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-605	10'	11.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish/Gray	Moist to Damp	V Stiff	crumbly	Smooth	—	CH

ω 24.18 % γ_d 1.57 g/cc (From UU) DESCRIBED BY SKK PS 2/6/19



Appears to be a fairly uniform but flaky, shale, crumbly material.

Attempt to trim 2.8"
UU - High-Low PSI.

PHOTOS: 2

UU

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-312

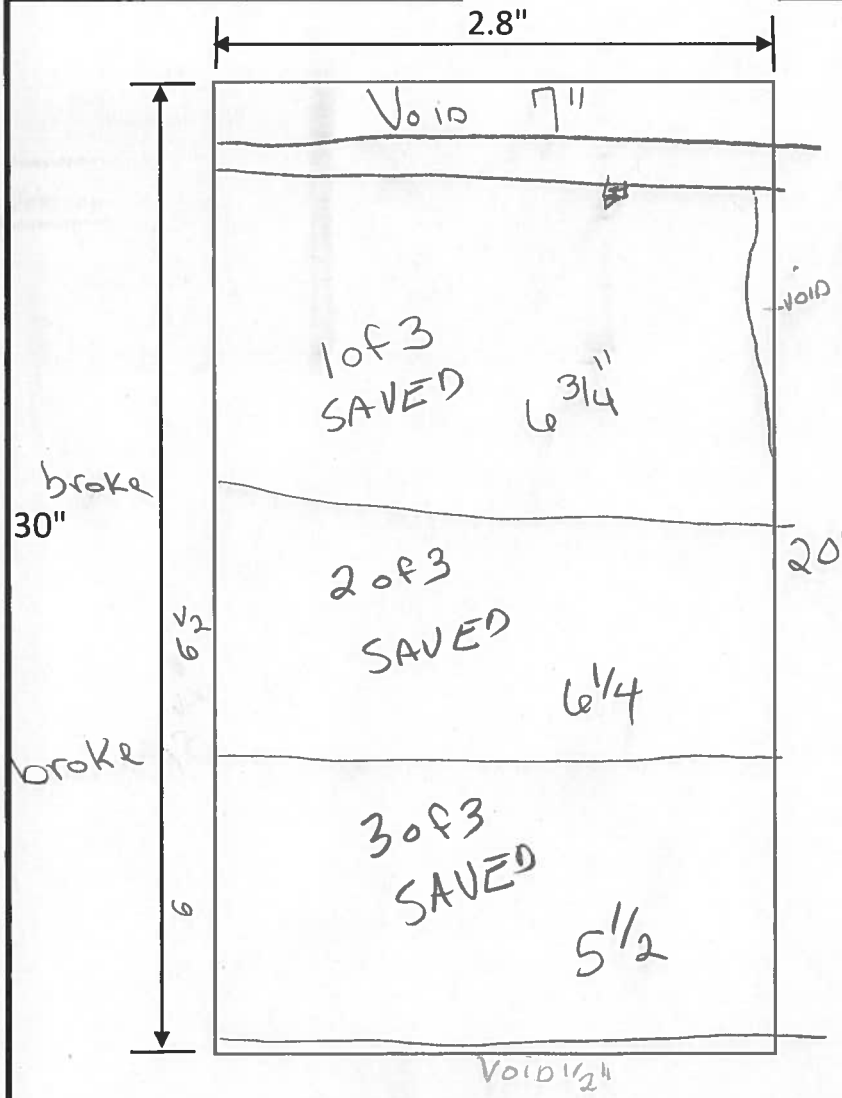
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-312

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-605	20'	22'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish/Gray	Moist	V.Stiff	—	Smooth	3.25	CH

ω 30.08 % γ_d 1.46 g/cc (From uu) DESCRIBED BY SKK PS 2/6/19



Appears to be a fairly uniform material. except top of 1 of 3. more clay and rest of sample more shale. very stiff.

Recommend trimming 2.8" UU Tests.

1 of 3 a bit out of round as it appears it stuck to the tube.

PHOTOS: 2

UU

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NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-313

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

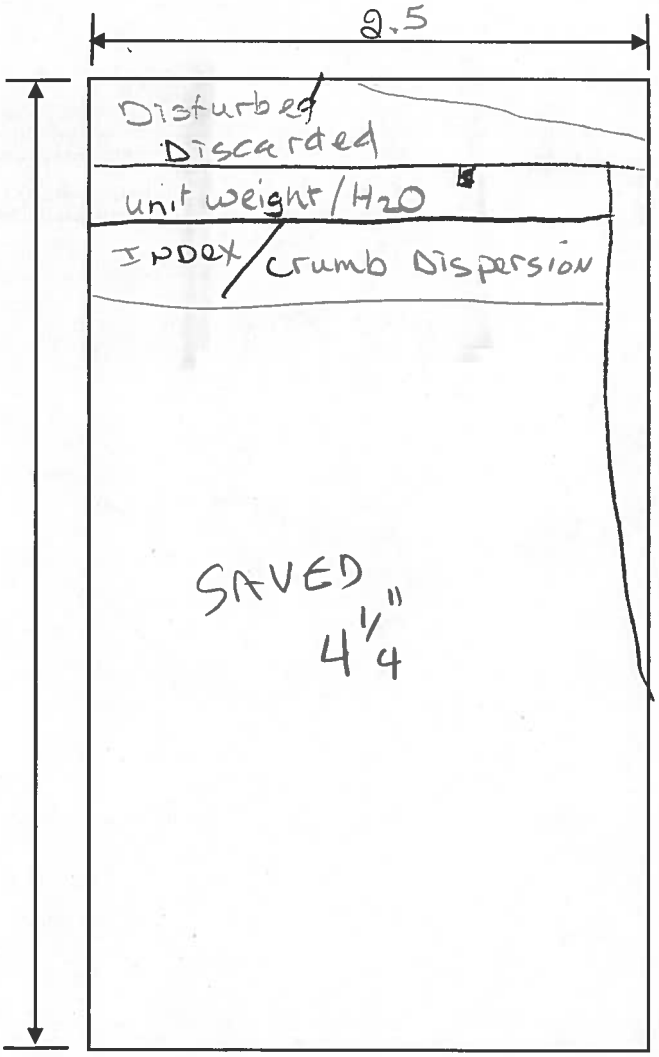
PLUM CREEK SITE 21, TX — 19-313

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-606	2'	4'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
DK Brownish	Moist	V Stiff	Trace #4 Rock Trace Fine Roots	Smooth	2.75	CH

ω 19.3 % γ_d 1.74 g/cc DESCRIBED BY SKK 2/7/19

Extruded in the field



Appears to be a fairly uniform good material. Unit weight & H2O taken.

9 1/2" Crumb & dispersion material taken.

Crumb

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-314

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-314

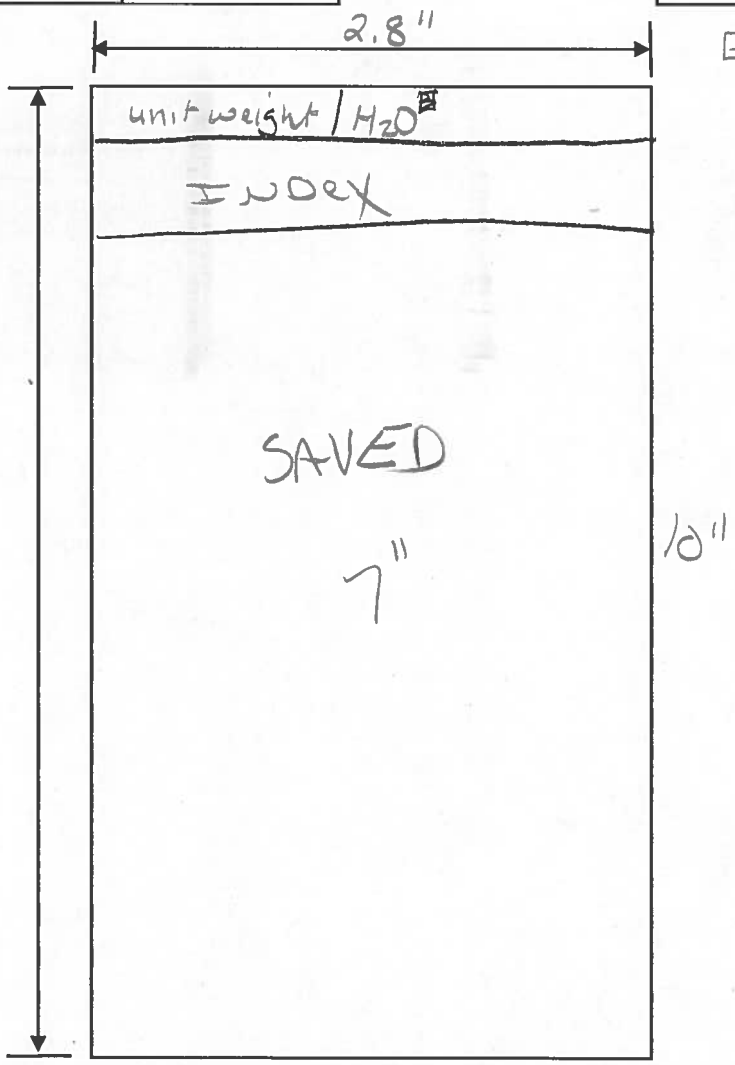
FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-606	4'	6'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	Moist	V.Stiff	Trace Trash, Roots, Trace #4 Rock	Smooth	4.0	CH

ω 17.1 % γ_d 1.83 g/cc

DESCRIBED BY SKK 2/7/19

Extruded in the field



Appears to be a good uniform material
unit weight & H_2O taken
INDEX material taken.

PHOTOS: 2

INDEX

NRCS-ENG-129 (REVISED) WO #: 19-43WB Lab #: 19-315

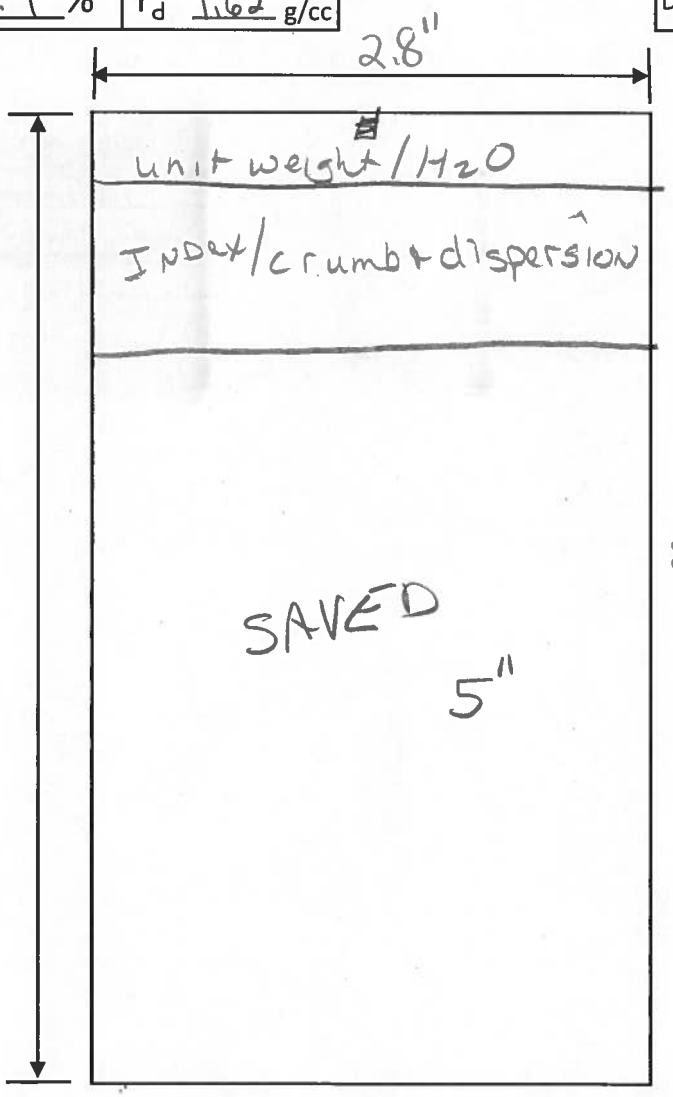
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-315

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-606	8'	10'		SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish Tan marbled	DAMP	V. Stiff	—	Smooth	4.5+	CH

ω 22.1 % γ_d 1.62 g/cc DESCRIBED BY SKK 2/7/19



Appears to be a fairly uniform, flaky, crumbly
unit weight & H_2O taken
INDEX, crumb & dispersion material taken.

PHOTOS: 2
INDEX / crumb + dispersion

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-696

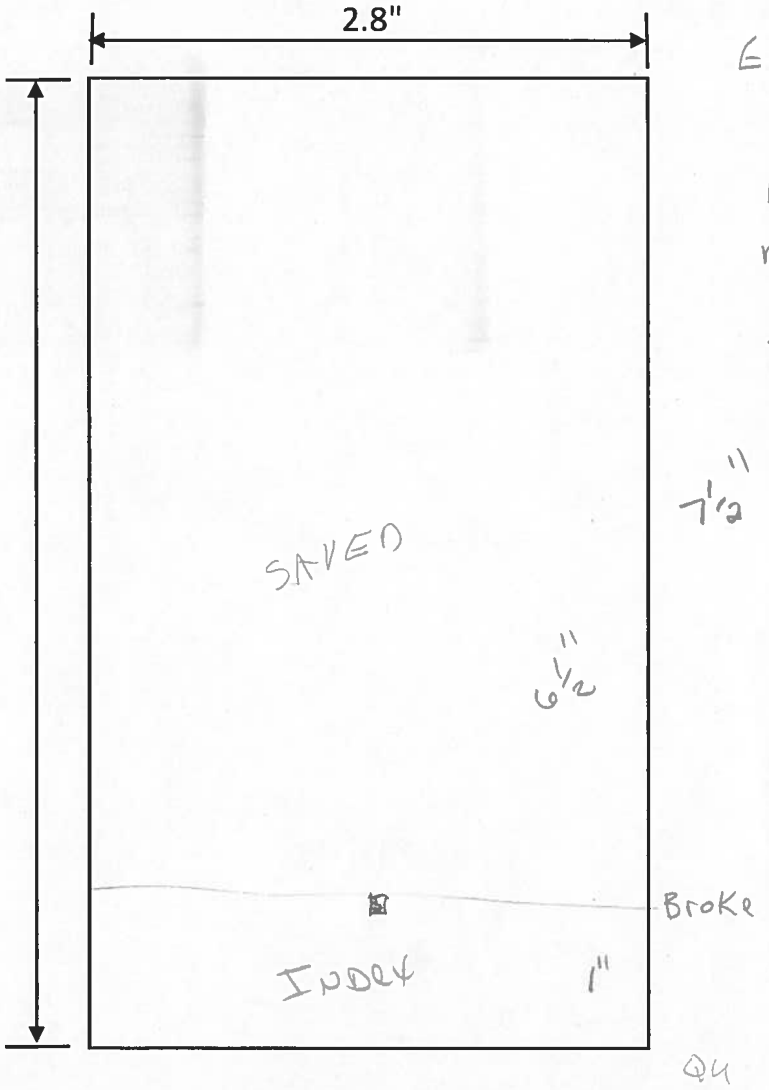
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-696

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-1	2'	4'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish \ Gray	Moist	V. Stiff	Trace fine Roots	Floury	3.5	ML

ω 26.07 % γ_d 95.88 pcf (From QU) DESCRIBED BY SKK 6/27/19



Extruded in the field

Appears to be a silty material.

Recommend 2.8" QU.

PHOTOS: 2

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NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-697

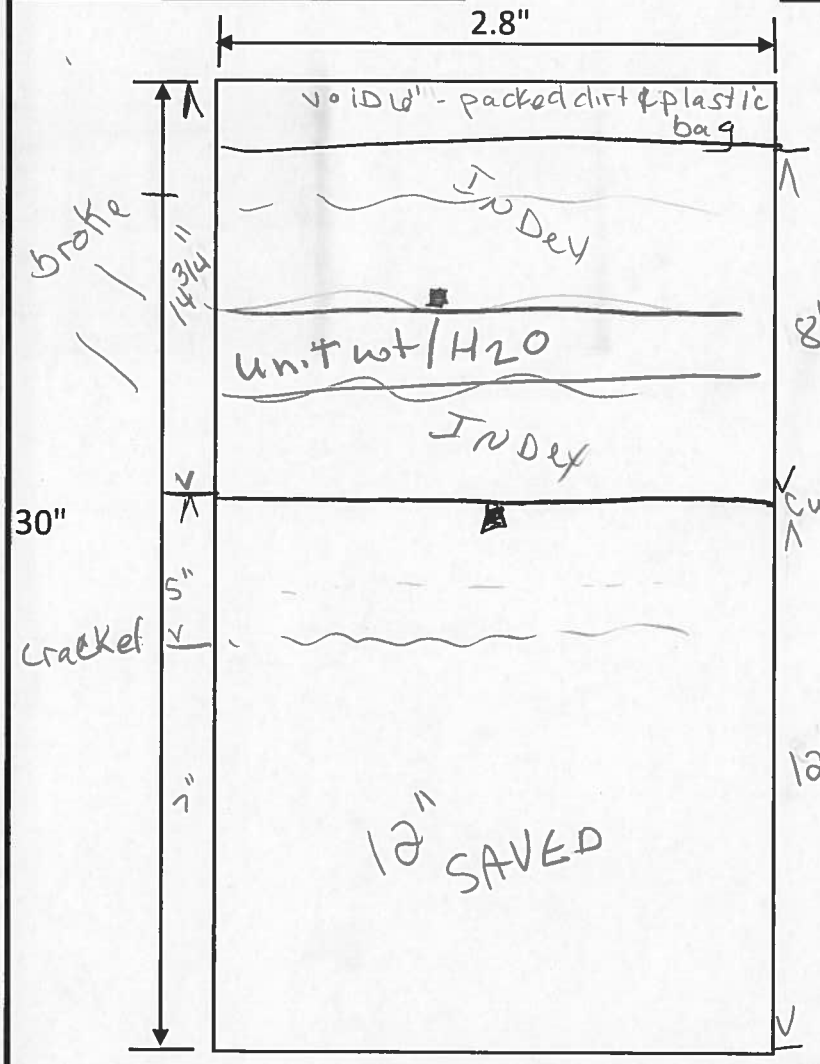
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-697

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-1	5'	7.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish/Grayish	Moist	Vs Stiff	—	Floury	2.0 Top half	ML
					2.5 Bottom half	

ω 23.7 % γ_d 91.33 pcf DESCRIBED BY SKK, PS 6/26/9



Would not push, bottom consolidated 2 3/4", then stopped cut tube.

Tube filled to top but top 6" was just packed in then plastic bag in tube.

Top half of sample broke in several spots - Index & unit weight/H_2

SAVED bottom half for possible complex tests.

Silty type, somewhat fragile, crumbly material

Unitwt/Index PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-698

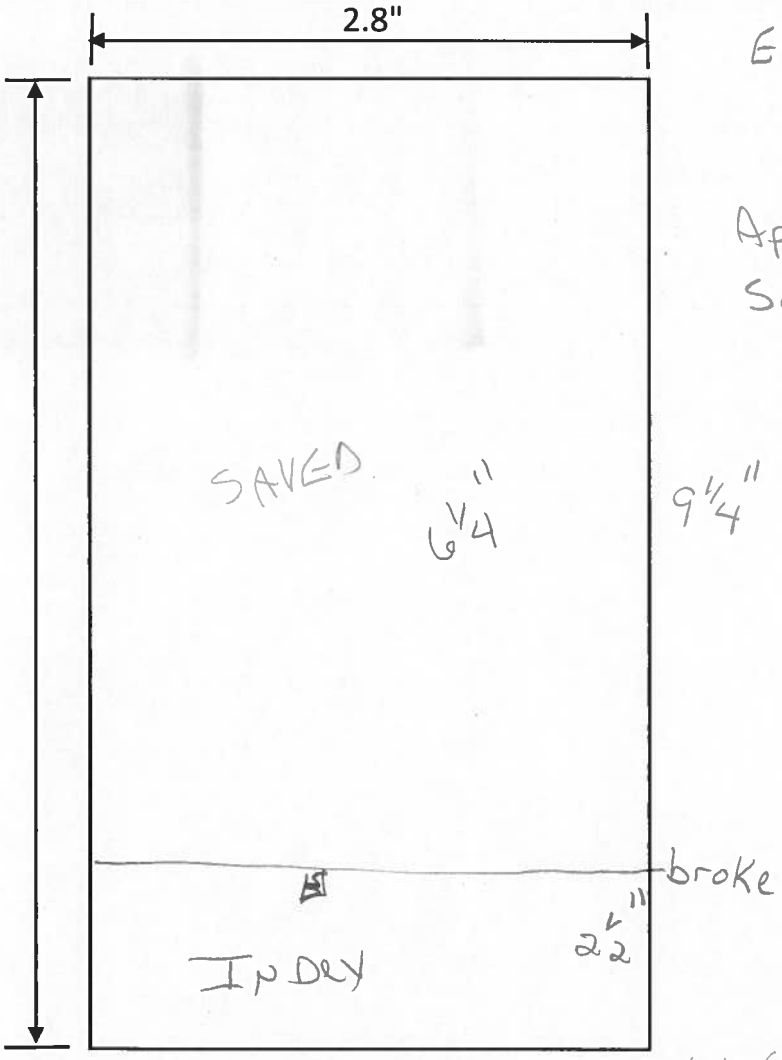
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-698

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-1	15'	17'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	Moist	V.Stiff	—	Floury to Gritty	3.75	ML

ω 22.4 % γ_d 99.9 pcf (From uu) DESCRIBED BY SKK 6/27/19



Extruded in the field

Appears to be a silty material, Some grit.

Recommend 2.8" uu

uu (5psi)

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-699

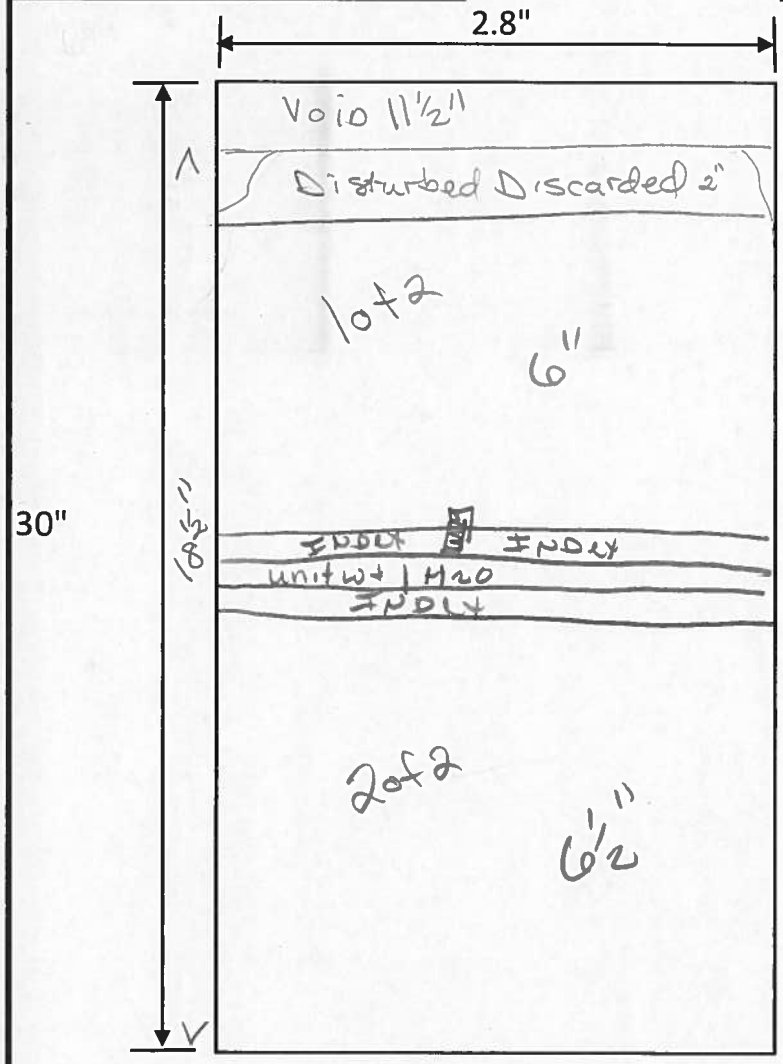
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-699

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-1	17.5'	20'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish Tan	Moist	V.Stiff	—	Floury	3.5	ML

ω 27.4 % γ_d 95.11 pcf DESCRIBED BY SKK PS 6/26/19



Appears to be a fairly uniform material.

Unit weight & H_2O taken
INDEX taken

Saved 2 sections for possible complex tests

Unit wt/INDEX PHOTOS: 2

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NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-700

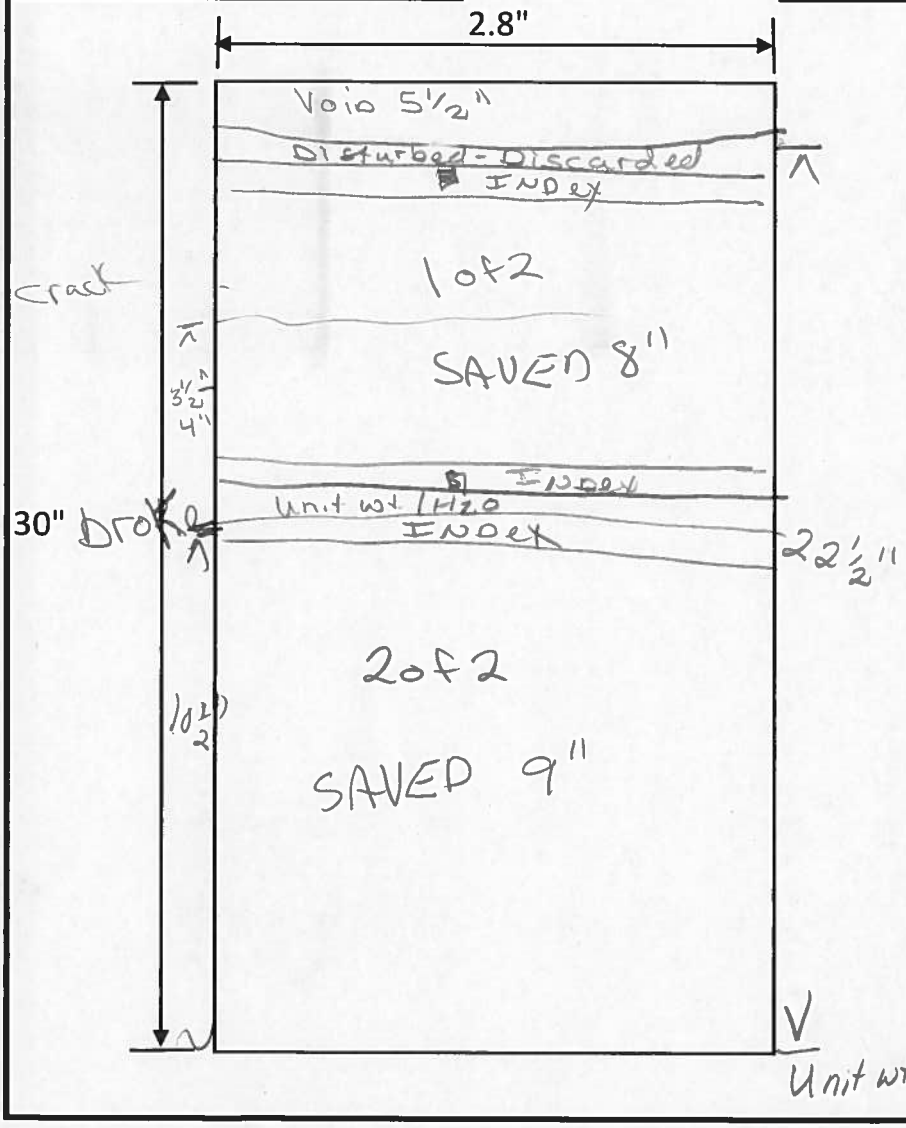
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-700

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-1	20'	22.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish/Tan	Moist	V.Stiff	—	Smooth to Flaky	2.5 Top	CL-ML
					4.5+ Middle	

ω 24.8 % γ_d 97.0 pcf DESCRIBED BY SKK 6/26/19



Appears be a fairly uniform somewhat fragile sample. Unit weight & H_2O taken INDEX taken

SAVED 2 sections for possible complex test.

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-701

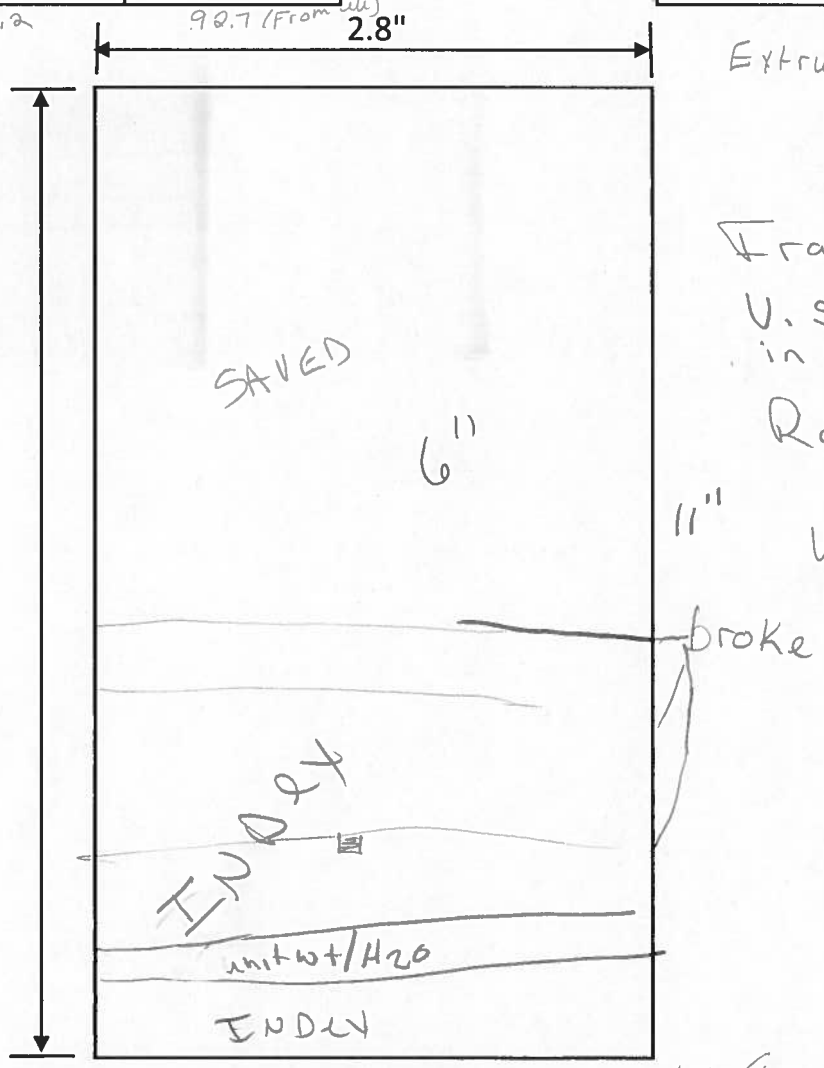
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-701

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-1	23'	25'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Dark Gray	DAMP	V Stiff	—	Smooth	3.75	CH

ω 21.8 % (20.2) γ_d 91.99 pcf (92.7 (From uu)) DESCRIBED BY SKK 6/27/19



Extruded in the field

Fragile flaky material, V. Stiff, horizontal cracks in SAVED section.

Recommend 2.8" uu

Unit weight & H_2O taken

uu(10psi)

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-702

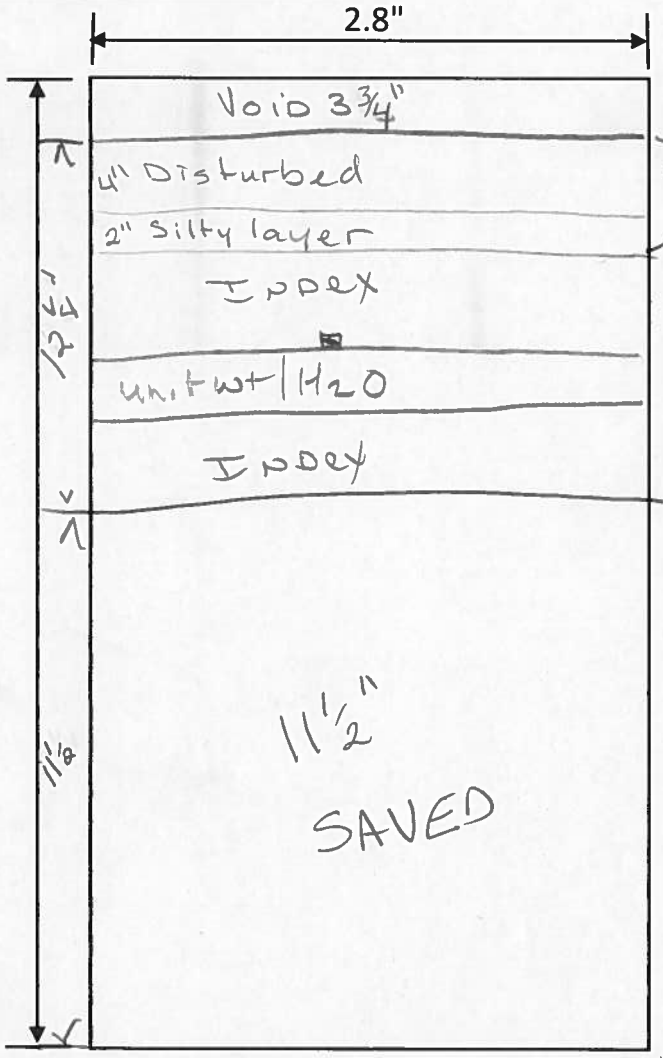
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-702

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-2	5'	7.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish Light to Dark	Moist	V Stiff	Trace #4 Rock	Smooth	4.5+	CH

ω 20.0 % γ_d 108.03 pcf DESCRIBED BY SKK, PS 6/26/9



Consolidated 1½" then would not push, cut tube

Discarded

Very stiff material, Top half lighter brown Bottom half darker but appears to be the same material. Unit weight & H_2O taken Index taken.

SAVED Bottom half for possible compler tests.

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-703

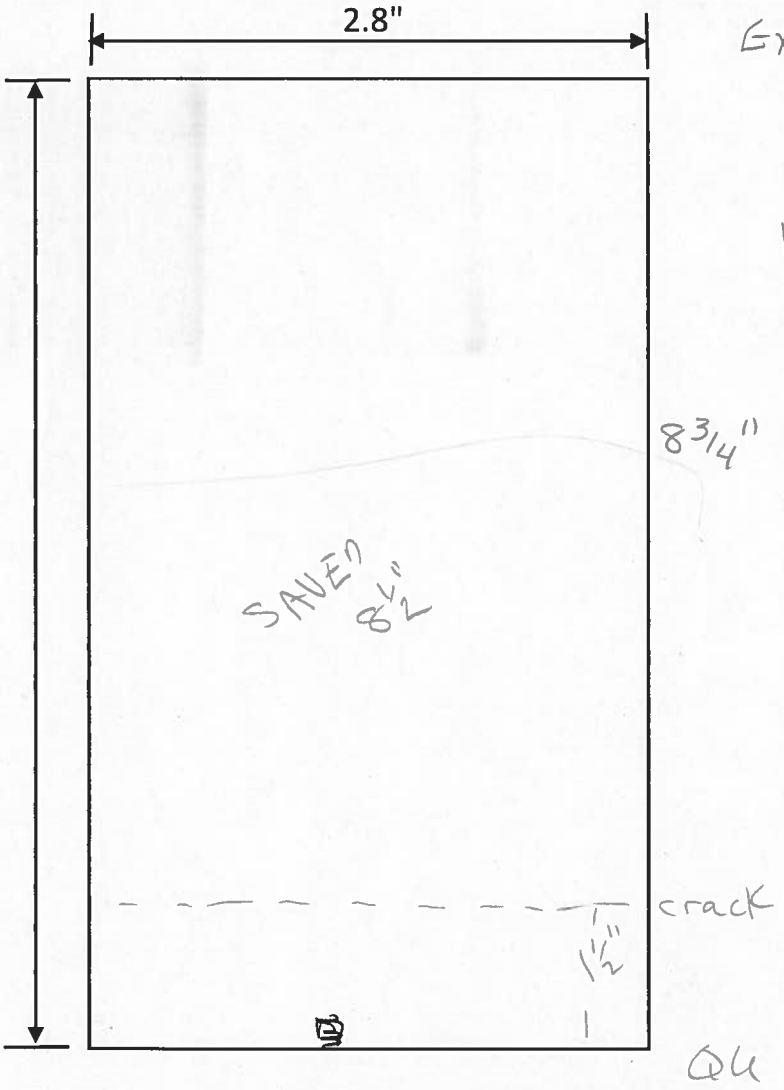
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-703

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-2	8'	10'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish	Moist	V.Stiff	Trace #4 Rock	Smooth	3.5	CL

ω 18.48 % γ_d 107.9 pcf (From Q4) DESCRIBED BY SKK 6/27/19



Extruded in the field

Appears to be a fairly uniform CL material. Recommend 2.8" Q4

PHOTOS: _____

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-704

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

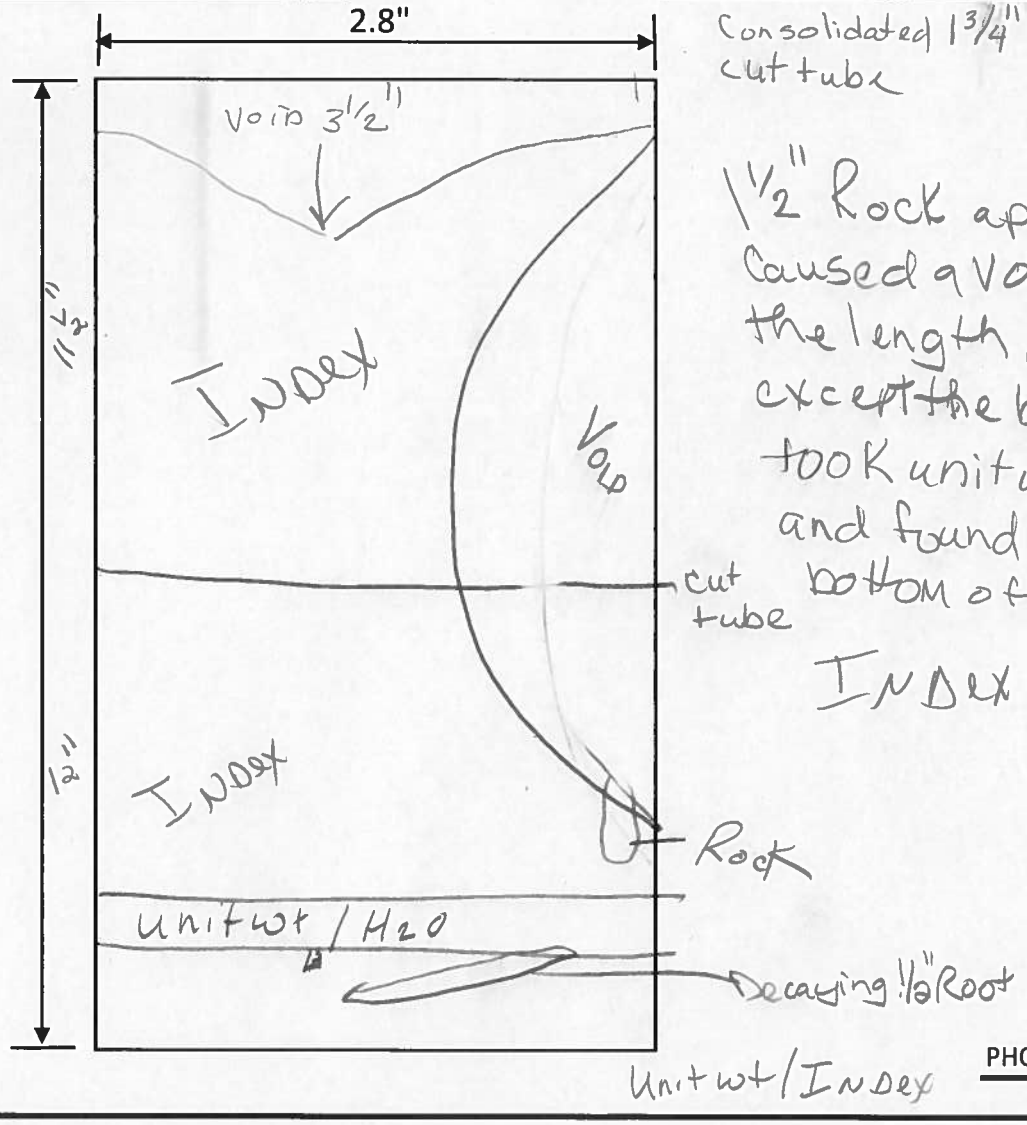
PLUM CREEK SITE 21, TX — 19-704

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-2	15'	17.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish/Tan	Moist	V.Stiff	one 1½" Rock	Smooth	4.25	CH

ω 19.3 % γ_d 109.54 pcf DESCRIBED BY SKK , PS 6/26/19

Consolidated 1¾" then would not push, cut tube



1½" Rock appears to have caused a void almost the length of the sample except the bottom 4", took unit weight & H_2O and found a ½" Root in bottom of sample

INDEX only

PHOTOS: 2+1

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-705

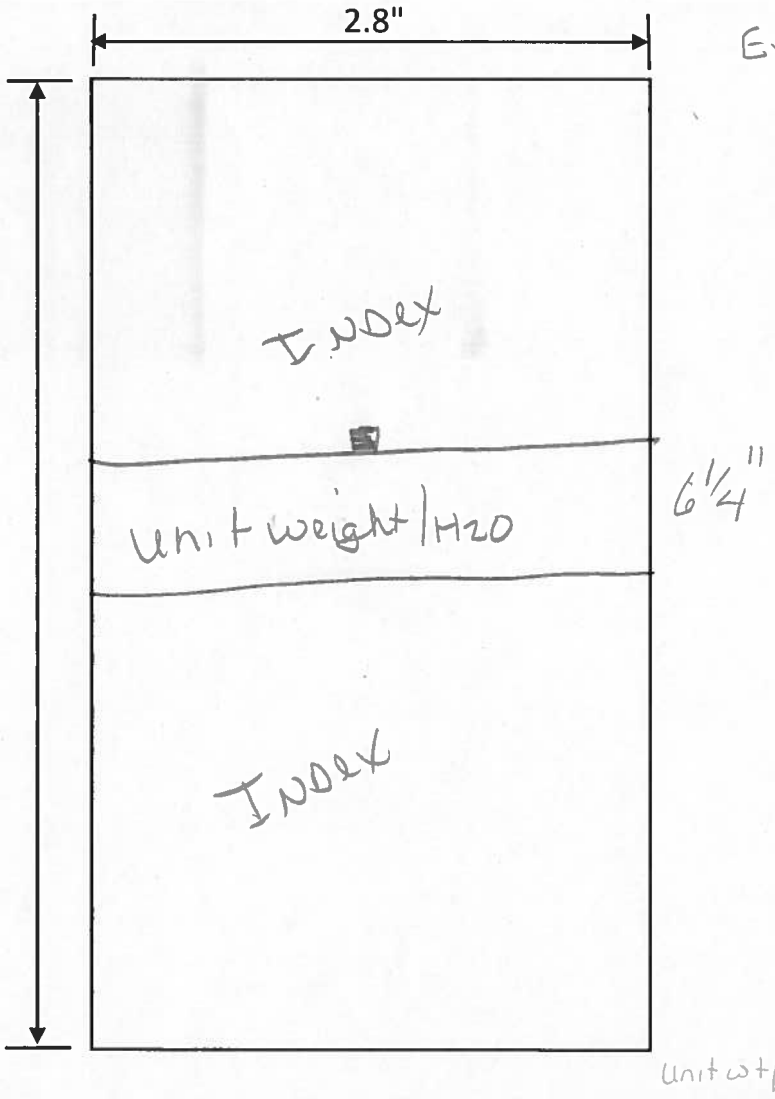
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-705

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE FIELD PUSHED
B-2	18'	20'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Dark Brownish	Moist	V. Stiff	Trace #4 Rock	Smooth	4.5	CH

ω 18.0 % γ_d 109.78 pcf DESCRIBED BY SKK 6/27/19



Extruded in the field

Very stiff CH type material.

Unit weight & H_2O take

INDEX only

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-706

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

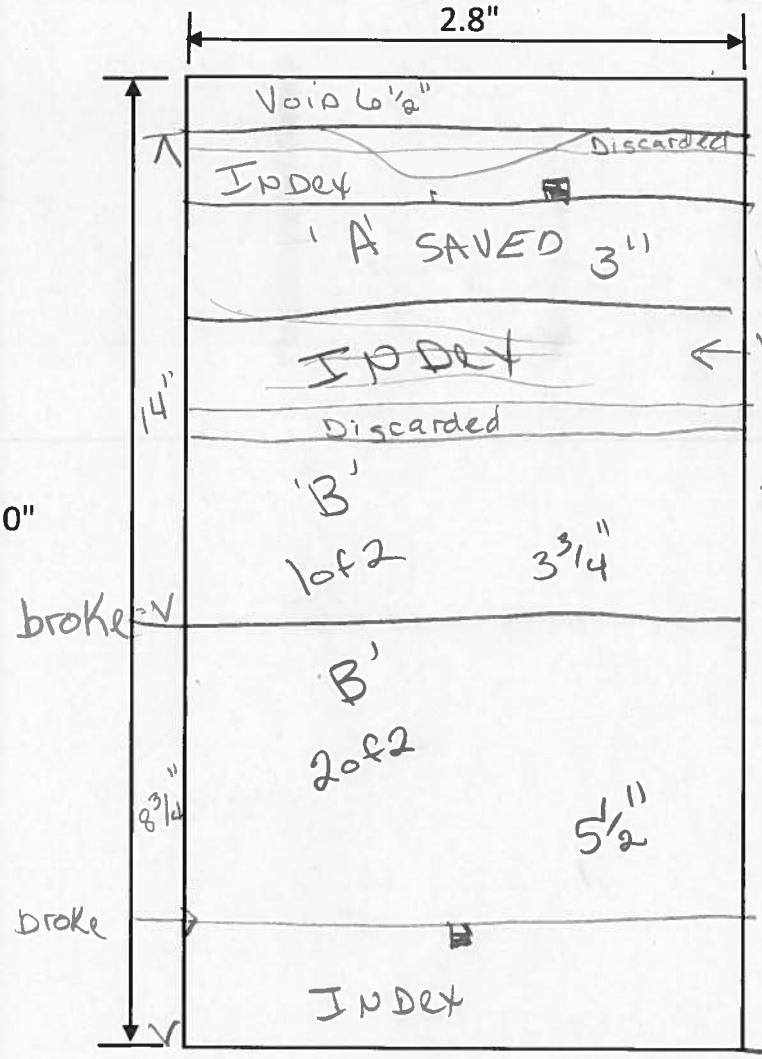
PLUM CREEK SITE 21, TX — 19-706

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-2	20'	22.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Dark Brown	Moist	VStiff	—	Smooth	4.0	CH
Tannish	Moist	V.Stiff		Floury	4.0	ML

ω _____% γ_d _____ pcf

DESCRIBED BY SKK, PS 6/26/19



'A' Top 10" dark brown clay material - SAVED small section for possible complex test.

No unit weight or H_2O taken ONLY INDEX

'B' - Bottom 12½" tan silty material.

Top of 1of2 may have some clay in it otherwise appears to be the same silty material

Saved 2 sections of 'B' NO unit weight or H_2O taken saved for possible complex tests

PHOTOS: 2

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NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-707

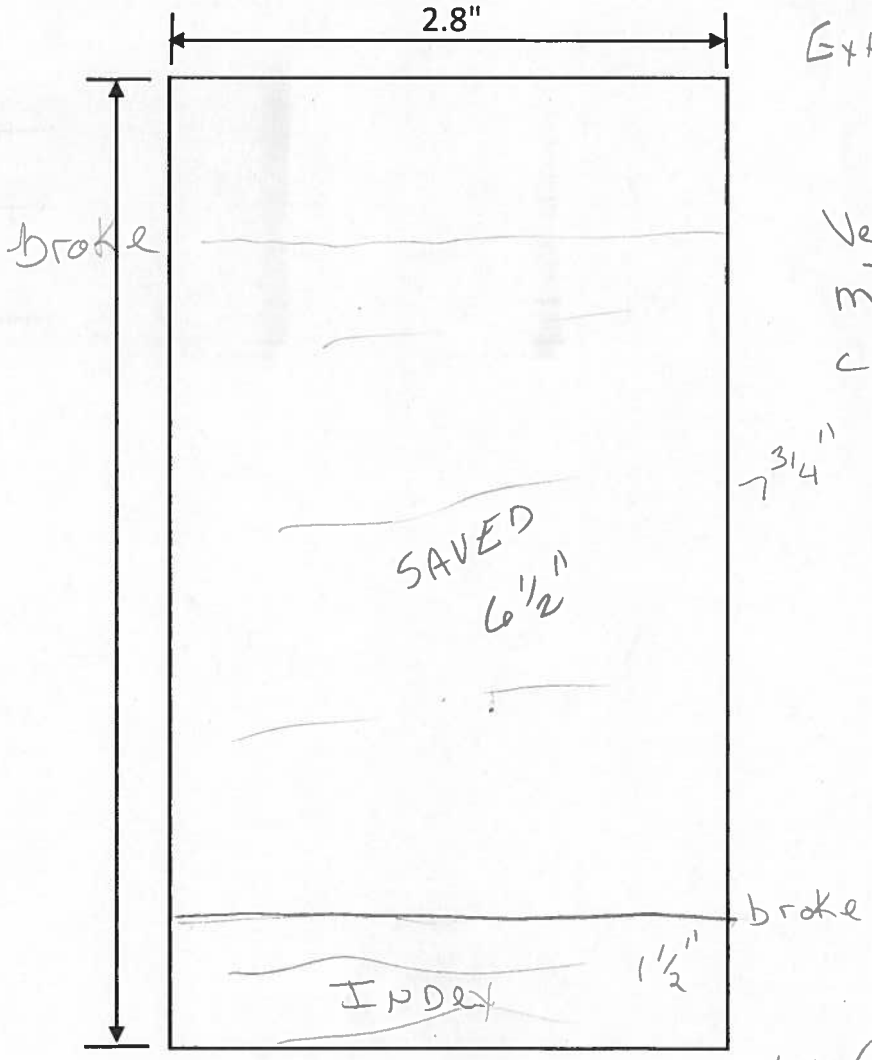
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-707

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE FIELD PUSHED
B-2	23'	25'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
tannish	DAMP	—	—	Floury	—	ML

ω 20.0 % γ_d 93.2 pcf (From UU) DESCRIBED BY SKK 4/27/19



Extruded in the field

Very fragile, flaky material, horizontal cracks

7 3/4" Recommend 2.8" UU

UU (10psi)

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-708

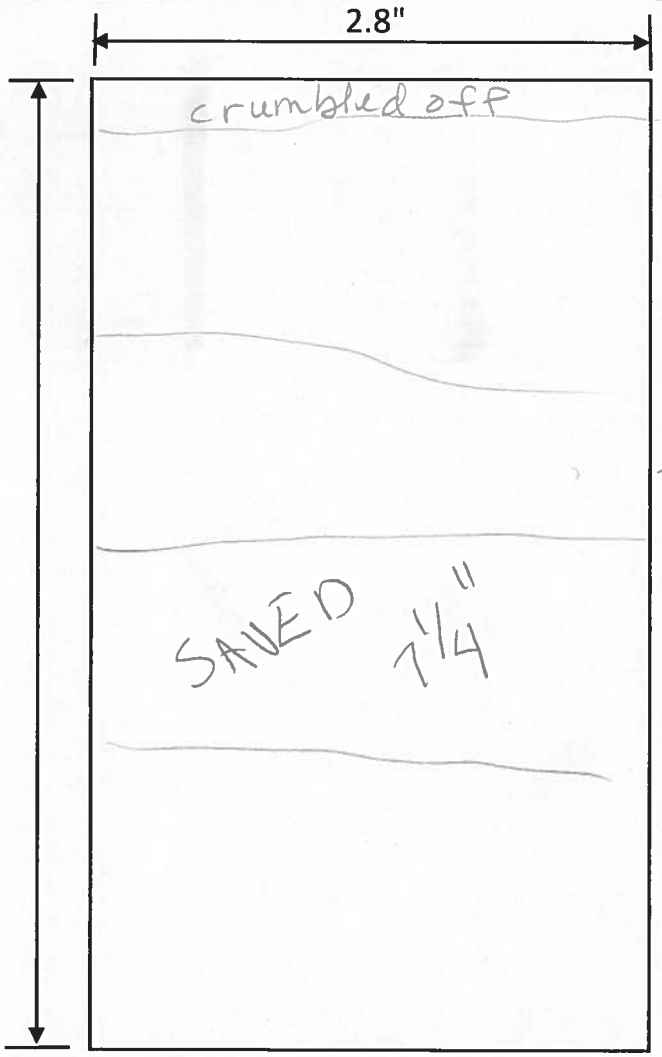
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-708

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-2	28'	30'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish/Tan	DAMP	—	—	Floury	—	ML

ω 19.4 % γ_d 95.1 pcf (From UU) DESCRIBED BY SKK 6/27/19



Extruded in the field

Several horizontal breaks in sample.

Very fragile, flaky material.

1 1/2"

Recommend 2.8" (may not be able to trim)

UU (15psi)

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-709

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

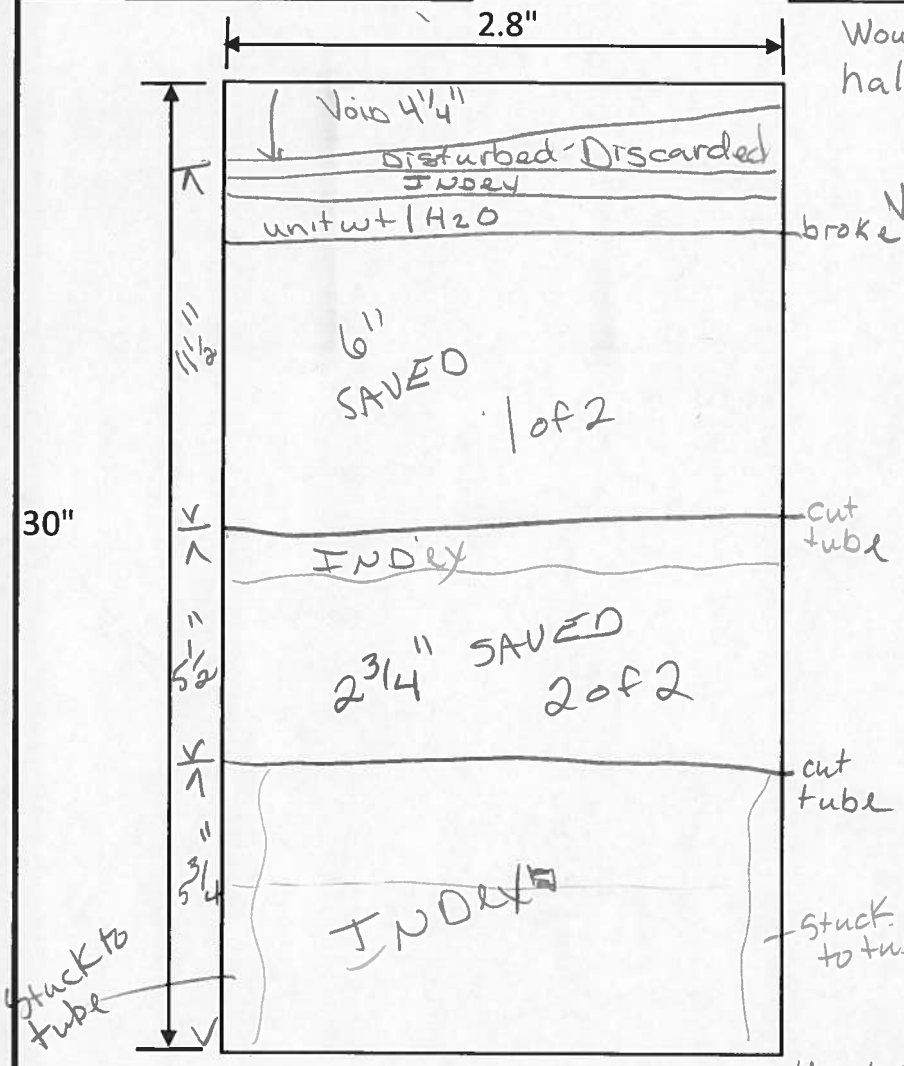
PLUM CREEK SITE 21, TX — 19-709

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-2	30'	32.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish Gray	Moist	V.Stiff	—	Floury	4.5+	ML

ω 19.7 % γ_d 90.40 pcf DESCRIBED BY SKK, PS 6/26/19

Would not push, cut tube, bottom half would not push, cut tube again



Very Fragile flaky material
Unit weight & H_2O taken
Index taken.

SAVED 2 sections for possible complex tests.

Unit wt / INDEX PHOTOS: 2

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NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-710

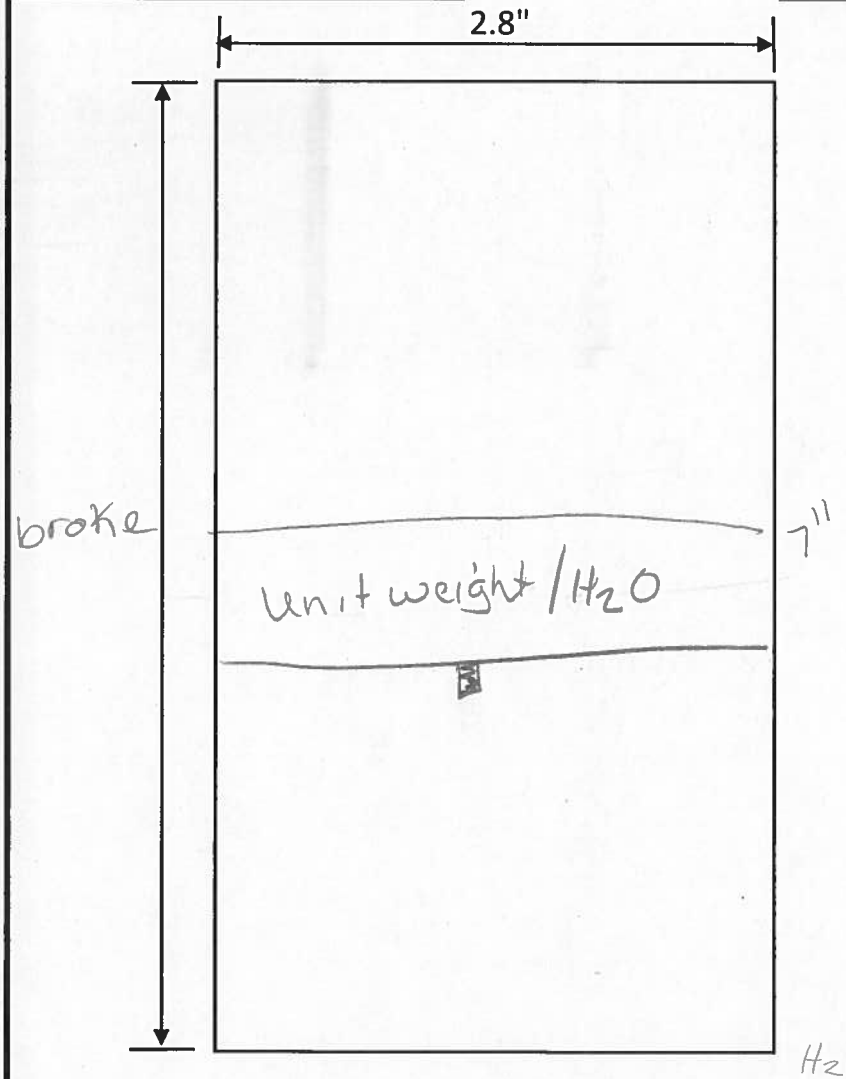
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-710

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-3	2'	4'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	Moist	V. Stiff	Trace fine Roots	Flury	3.0	ML

ω 18.7 % γ_d 9685 pcf DESCRIBED BY SKK 6/27/19



Extruded in the field

Unit weight & H_2O taken
Silty type material
Index only requested.

H_2O (Index) PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-711

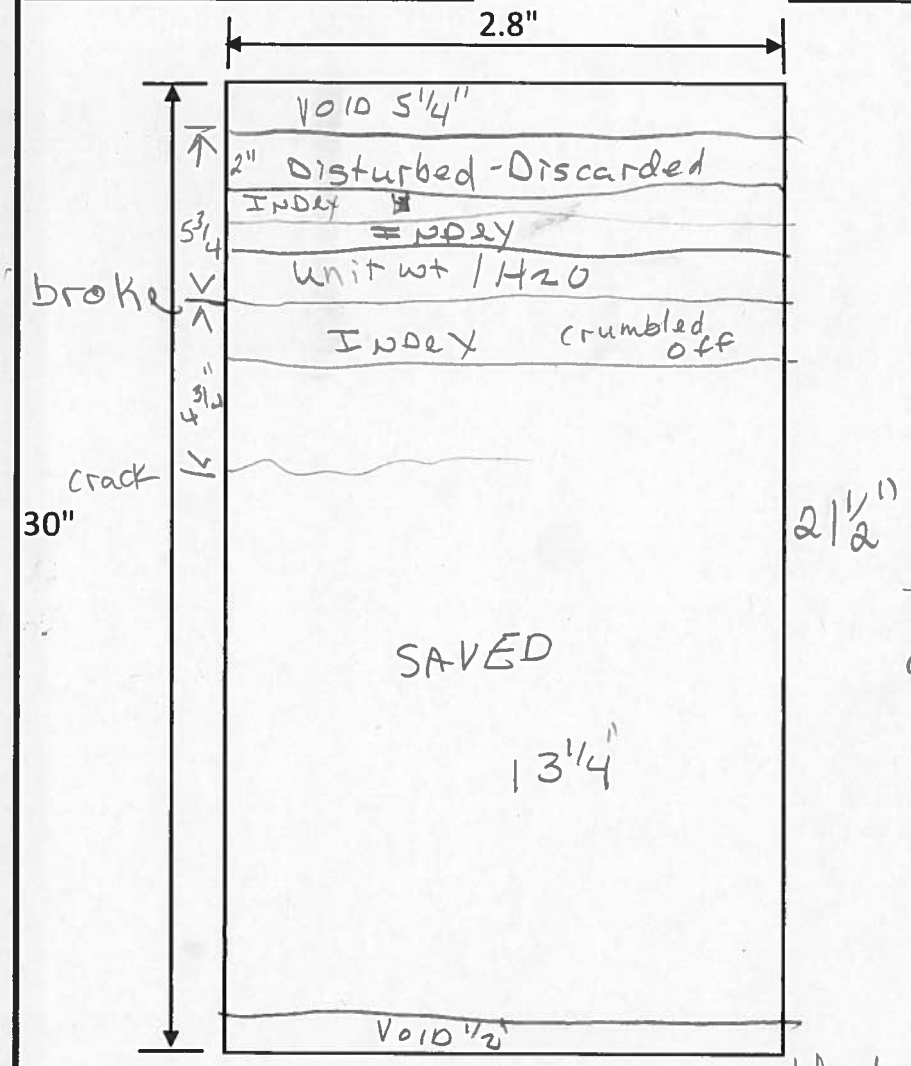
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-711

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-3	5'	7.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	moist	V.Stiff	—	Floury	4.5+ Top	ML

ω 18.9 % | γ_d 99.69 pcf | DESCRIBED BY SKK 6/28/19



Appears to be a fairly uniform sample Silty material, fragile & crumbly.

If any complex tests are assigned recommend 2.8"

Unit wt/Index PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-712

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

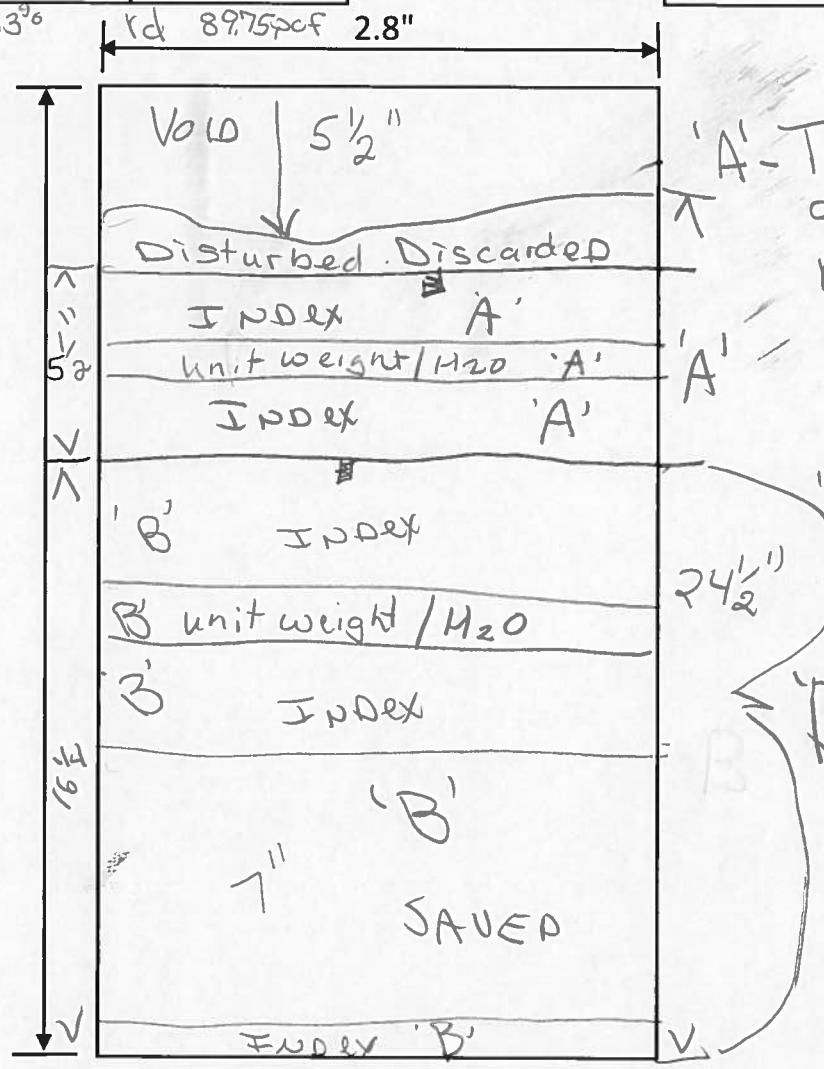
PLUM CREEK SITE 21, TX — 19-712

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-3	10'	12.5'		2.8" SHELBY

	COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
A	Black	Moist	V.Siff	Trace # 4 Rock	Smooth	4.5 Top	CH
B	Tannish	Moist	V.Stiff			4.5 Top of 'B'	CL (low)

A ω 20.3 % γ_d 10256 pcf DESCRIBED BY SKK 6/28/19

B ω 19.3% γ_d 89.75 pcf 2.8"



'A' - Top 5" appears to be a heavy dark clay material, unit weight and H_2O taken - Index only on 'A'

'B' - Bottom 16" appears to be a low clay material, dryer and crumbly. Unit weight and H_2O taken.

If any complex tests requested - recommend 2.8"

PHOTOS: 2

S:\NRCS\INDEX NEW\Work Sheets\Shear Core Opening Worksl

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-713

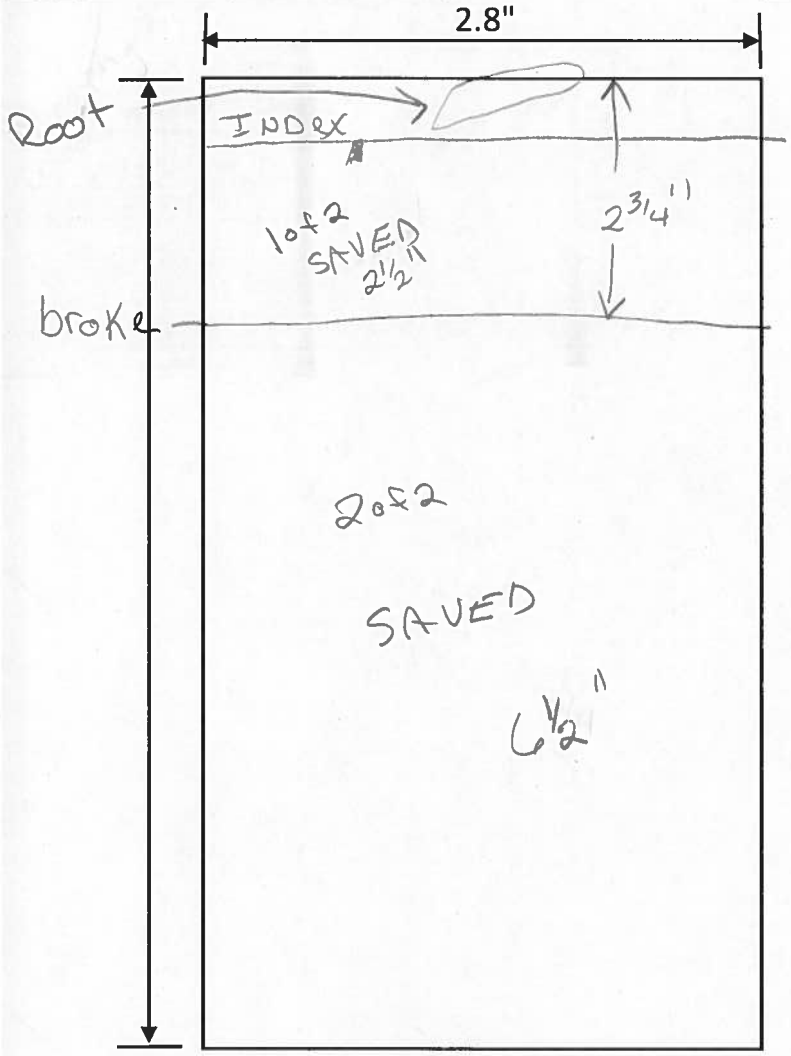
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-713

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-3	15'	17'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Dark Brownish	Moist	V. Stiff	Trace Fine Roots & 1 larger Root on top	Smooth	4.5+	CH
			Trace #4 Rock			

ω 18.0 % γ_d 107.0 pcf (From uu) DESCRIBED BY SKK 6/27/19



Extruded in the field.

Very stiff Clay material

1 of 2 too short for shears
Recommend 2 of 2 for
UU test 2.8" - Also 2 of 2
10" has a slight curve to it.

uu (5psi)

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-714

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-714

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-3	20'	22'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish	Moist	VStiff	—	Smooth	4.5+	CH

ω 17.0 % γ_d 112.0 pcf (From uu) DESCRIBED BY SKK 6/27/19

2.8"

Extruded in the field

Very stiff clay material
Recommend 2.8" UU

SAVED
8½"

8½"

UU (10 psi)

PHOTOS: 2

S:\NRCS\INDEX NEW\Work Sheets\Shear Core Opening Worksl

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-715

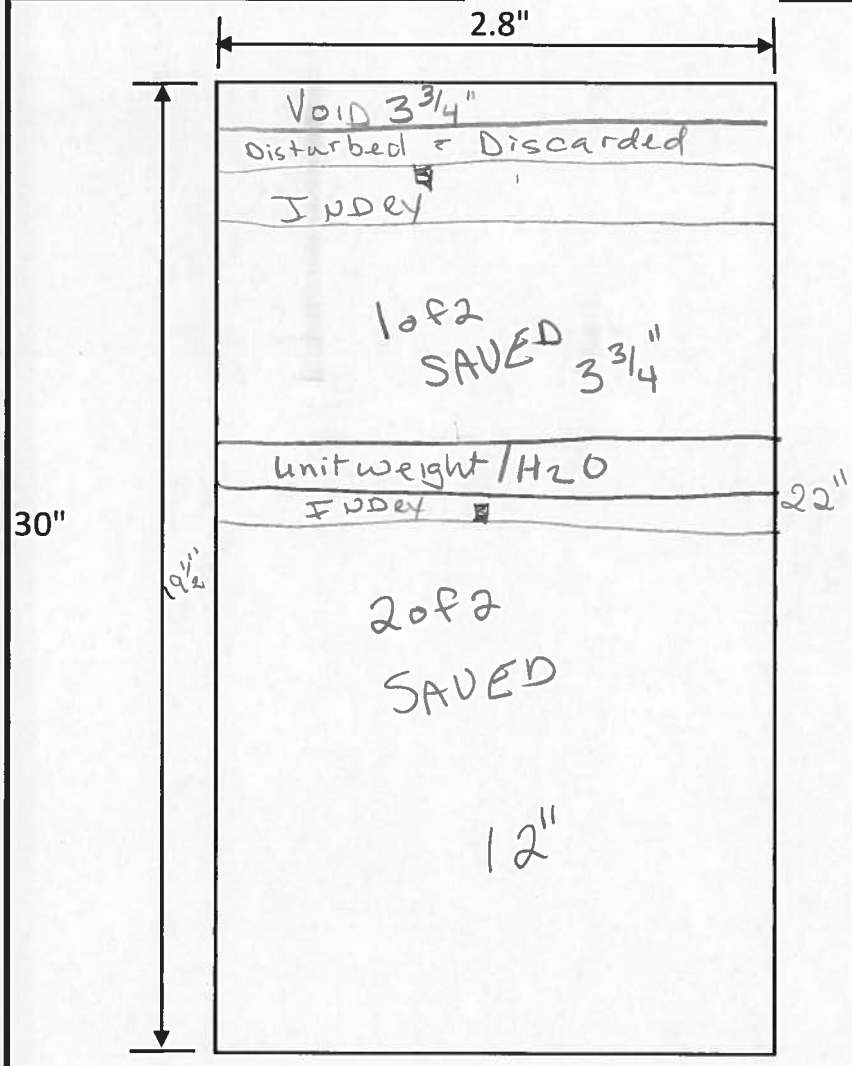
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-715

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-3	22.5'	25'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	Moist	V.Stiff		Smooth	4.25 Top	CL
					4.25 Middle	

ω 21.6 % γ_d 97.4 pcf DESCRIBED BY SKK, PS 6/28/19



Appears to be a fairly Uniform clay material. A little crumbly. Unit weight & H2O taken Index taken.

If any complex tests are assigned maybe possible to trim 1.4"

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-716

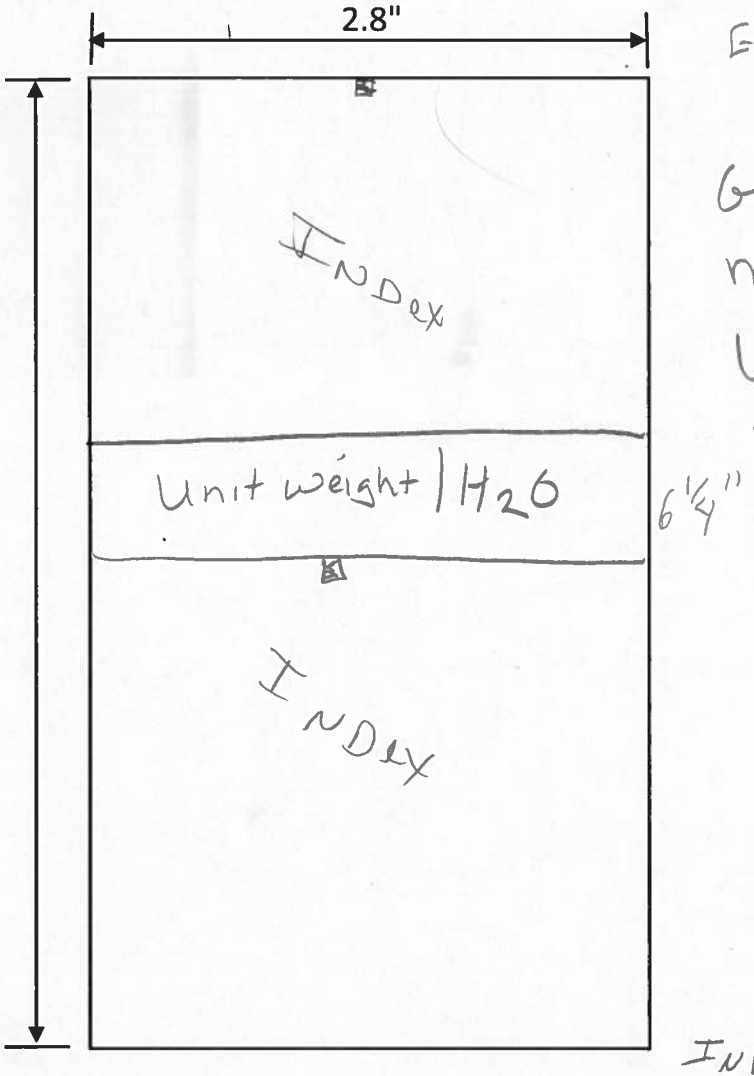
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-716

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-3	28'	30'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish	Moist	V.Stiff	—	Smooth	4.5+ Top & middle	CH

ω 19.4 % γ_d 108.5 pcf DESCRIBED BY SKK 6/27/19



Extruded in the field

Good uniform Clay material.
Unit weight & H_2O taken.
Index only requested.

Index | H_2O PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-717

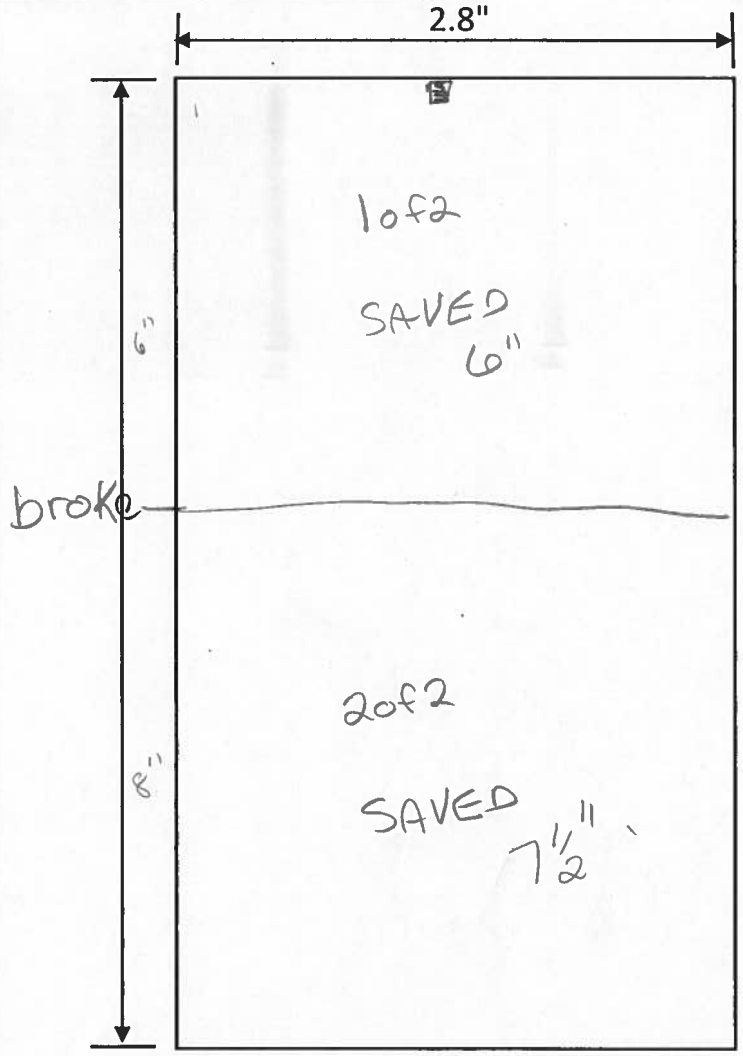
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-717

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-3	33'	35'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish/Gray	Moist	V. Stiff	—	Smooth	4.5+ Top	CH
					4.5 Middle	

ω 22.3 % γ_d 101.0 pcf (From UU) DESCRIBED BY SKK 6/27/19



Extruded in the field

Appears to be a fairly uniform good clay material.

14" Use 1of 2 for UU Test, 2.8"

UU (15 psi) PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-718

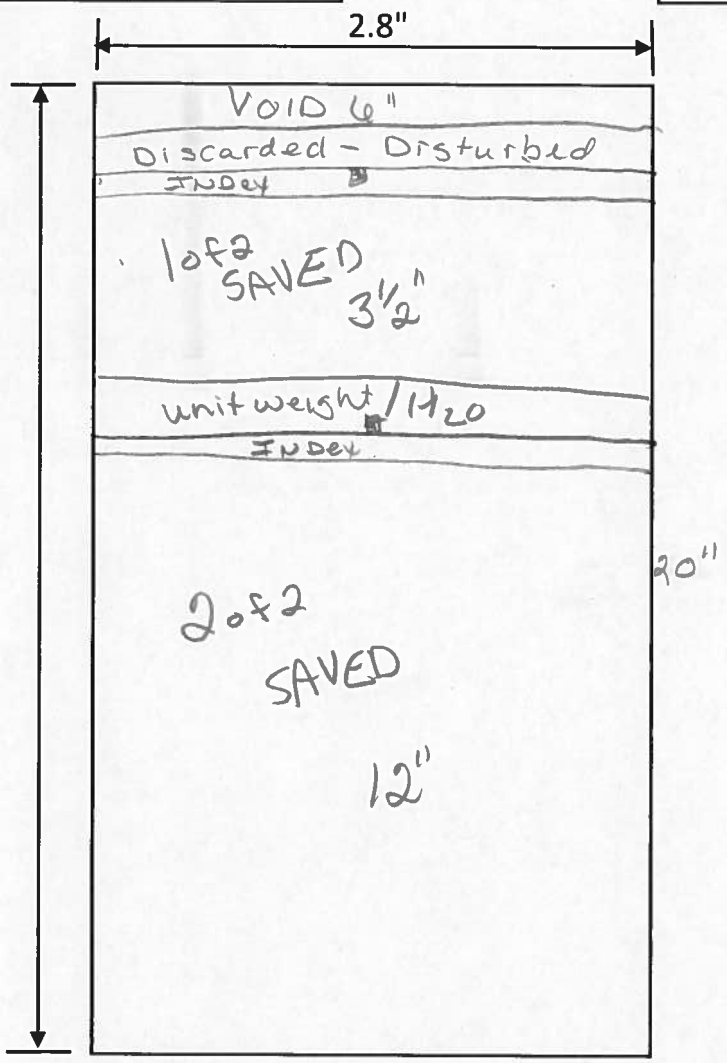
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-718

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
B-3	35'	37.5'		2.8" SHELBY

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish\Gray	Moist	V.Stiff.	—	Smooth	1.5 Top	CL
					4.0 Middle	

ω 24.7 % γ_d 98.63 pcf DESCRIBED BY SKK 6/28/19



Appears to be a fairly uniform clay material. Unit weight & H_2O taken Index taken

If any complex tests are assigned it should be possible to trim 1.4"

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-719

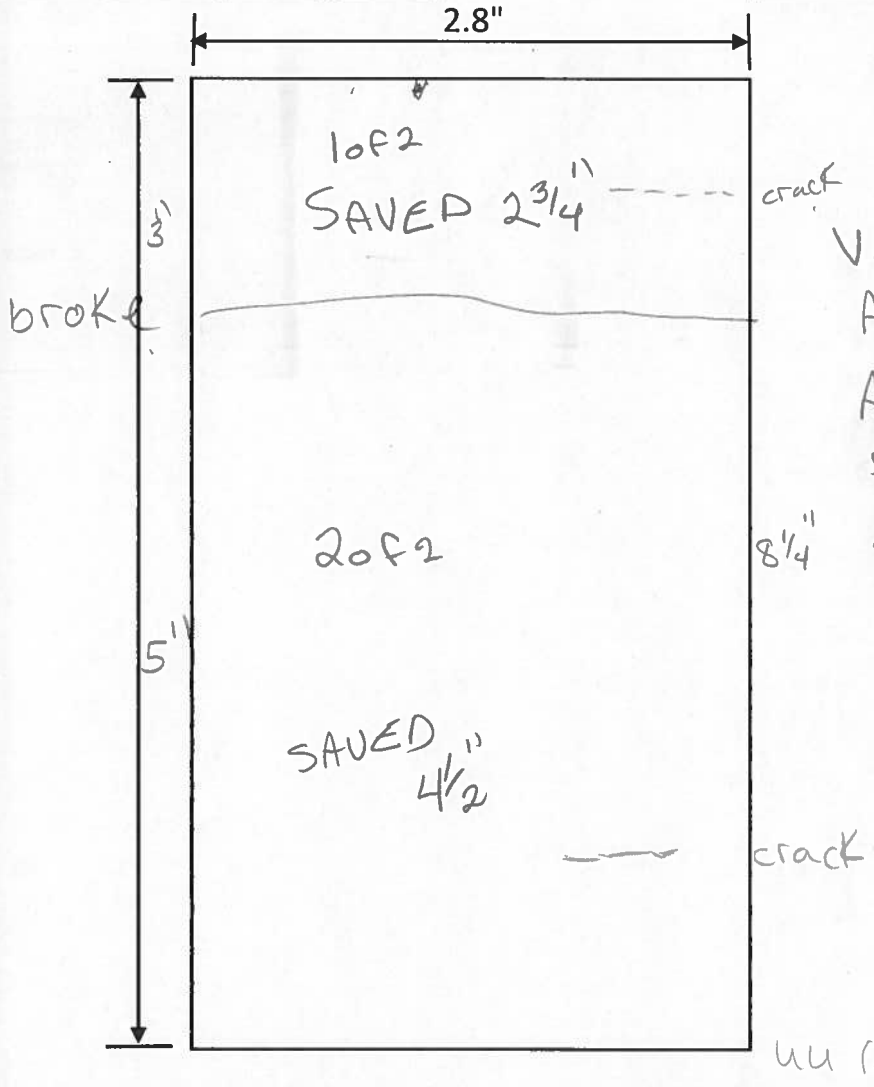
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-719

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-3	43'	45'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Grayish\Tan	Moist	V Stiff	—	Smooth	4.5+ Top	CH

ω 22.9 % γ_d 99.6 pcf (From UU) DESCRIBED BY SKK 6/27/19



Extruded in the field.

Very stiff clay material. Appears fairly uniform. Attempt to trim 1.4" UU from 2of2 as it is too short for 2.8" UU.

UU (20psi) PHOTOS: 2

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NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-720

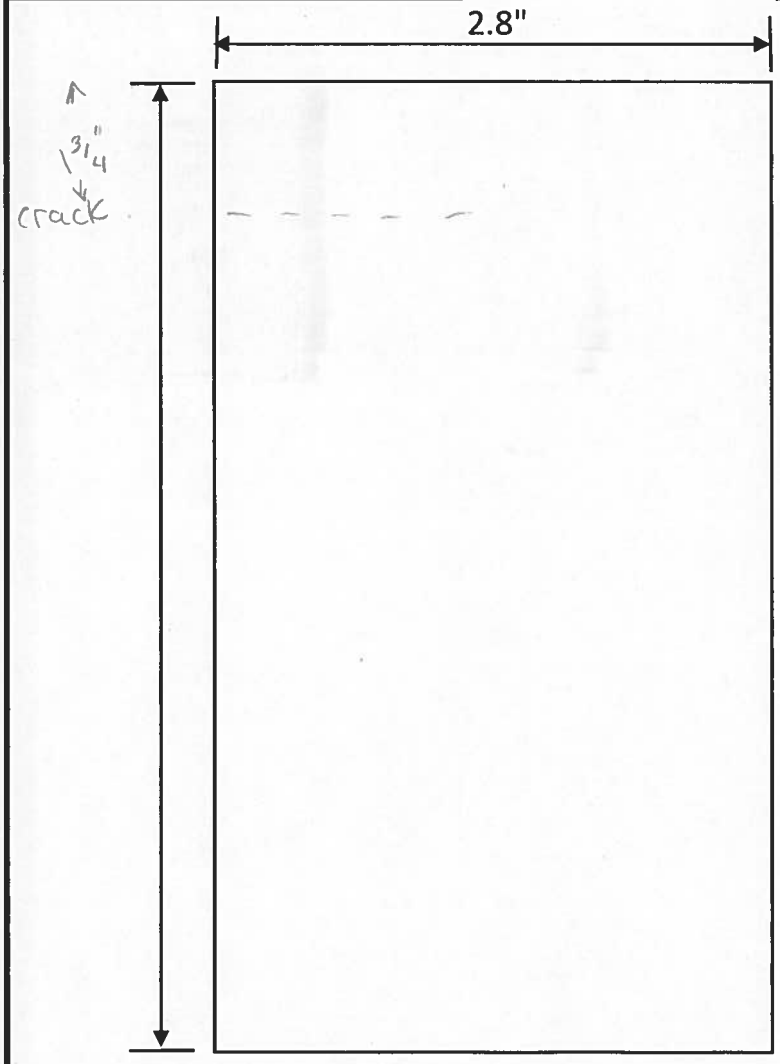
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-720

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE FIELD PUSHED
B-7	17.9'	19.5'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Brownish	Moist	V Stiff	—	Smooth	4.5+ Top	CH

ω 20.25 % γ_d 102.7 pcf (Ave from $\overline{cu}$) DESCRIBED BY SKK 6/27/19



Extruded in the field.

Appears to be a fairly uniform clay material.
$\overline{cu}$ requested - attempt to trim 1.4" - Hi-Low psi's.

$\overline{cu}$

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-721

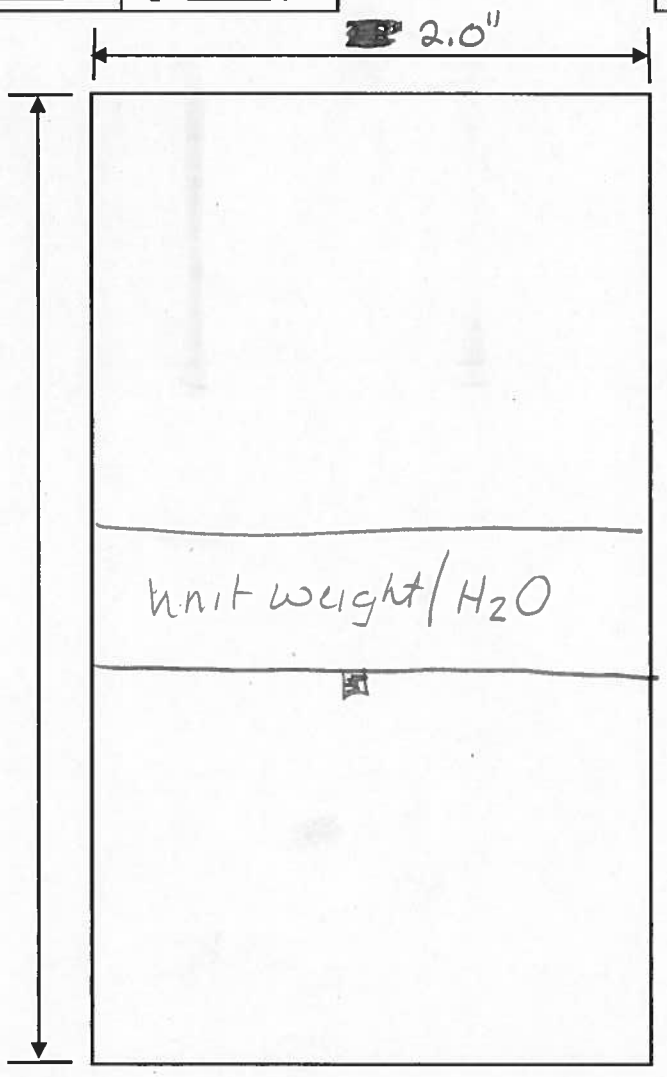
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-721

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-8	32.5'	34.5'		2[redacted]" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Dark Tannish	Moist	V. Stiff	Trace 3/4" Rock	Smooth	4.5+ Top	CH
					4.5+ Middle	

ω 16.2 % γ_d 113.10 pcf DESCRIBED BY SKK 6/27/19



Extruded in the field

* Actual diameter of sample is 2 3/8" (at best)

Appears to be a fairly uniform clay material.

Diameter is to small for complex test requested, per ASTM standards

Unit weight & H_2O taken

INDEX ONLY.

Direct

PHOTOS: 3

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-722

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

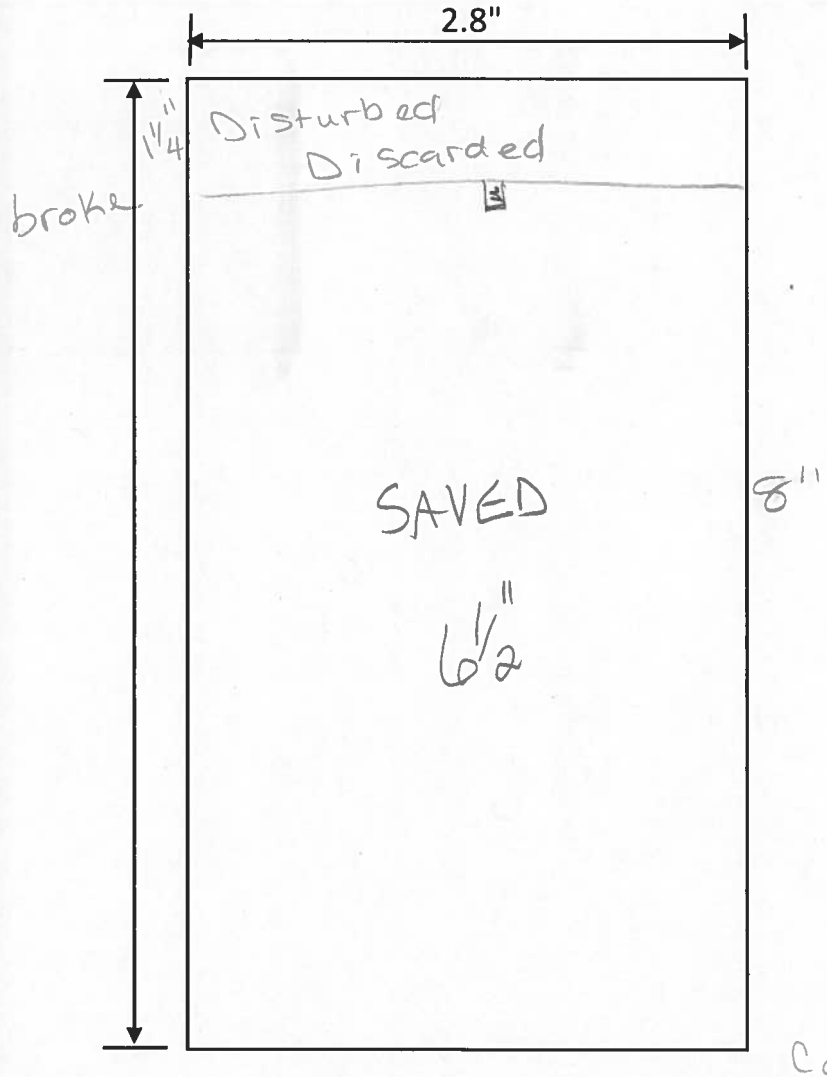
PLUM CREEK SITE 21, TX — 19-722

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-601	18'	19'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish \ Gray	Moist	V. Stiff	—	Smooth	4.5+ Top	CH

ω 19.80 % γ_d 99.82 pcf (From cons.) DESCRIBED BY SKK 6/27/19

Extruded in the field



Appears to be a fairly uniform clay material.

Consolidation requested

Cons.

PHOTOS: 2

NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-723

MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

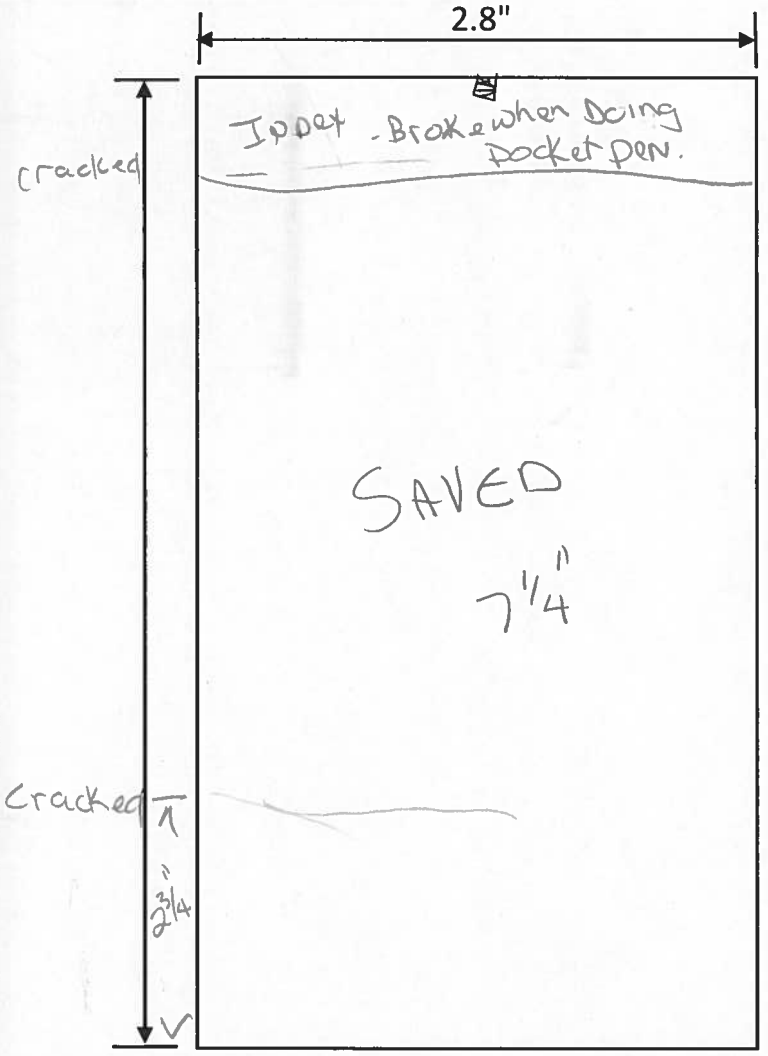
PLUM CREEK SITE 21, TX — 19-723

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-602	17.5'	19'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
Tannish	DAMP	V. Stiff	—	Smooth	4.0+ Top	CH

ω 19.3 % γ_d 101.0 pcf (From uu) DESCRIBED BY SKK 6/27/19

Extruded in the field



8"

Appears to be a fairly uniform clay material, flaky & horizontal cracks - Somewhat fragile.

Recommend 2.8" uu

uu (10 psi) PHOTOS: 2

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NRCS-ENG-129 (REVISED) WO #: 19-086WB Lab #: 19-724

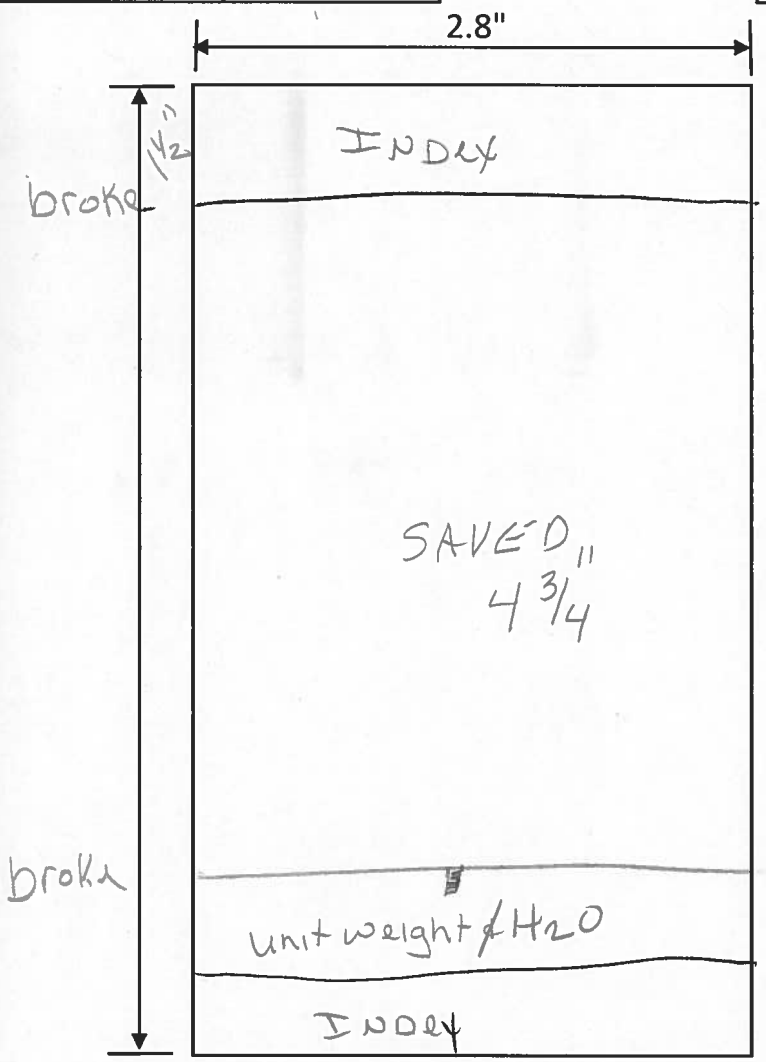
MATERIALS TESTING REPORT	U.S. DEPARTMENT of AGRICULTURE NATURAL RESOURCES ONSERVATION SERVICE	UNDISTURBED SAMPLE CHARACTERISTICS

PLUM CREEK SITE 21, TX — 19-724

FIELD SAMPLE NUMBER	DEPTH (FT) FROM	DEPTH (FT) TO	SAMPLE LOCATION	TYPE OF SAMPLE
				FIELD PUSHED
B-603	13.5'	15.5'		2.8" Shelby

COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PEN (T.S.F)	USCS
TANNISH \ Gray	DAMP	V. Stiff	–	Smooth	4.5+ Bottom	CH

ω 23.2 % γ_d 96.35 pcf DESCRIBED BY SKK 6/27/19



Extruded in the field

Sample appears to be a fairly uniform clay material. Somewhat dry & crumbly Fragile

9 1/2"

SAVED Section too short for 2.8" UU so Attempt to trim 1.4" UU. (may fall apart)

UU (5 psi) PHOTOS: 3

ATTACHMENT 9

UNDISTURBED SAMPLE PHOTOGRAPHS

Plum Creek Site 21,
19-247 TX
SML
LINCOLN
NORTHERN NATURAL GAS.
SOUTH OMAHA, NEBRASKA
CALL BEFORE YOU DIG

Plum Creek Site 21,
19-248 TX
SML
LINCOLN
NORTHERN NATURAL GAS.
SOUTH OMAHA, NEBRASKA

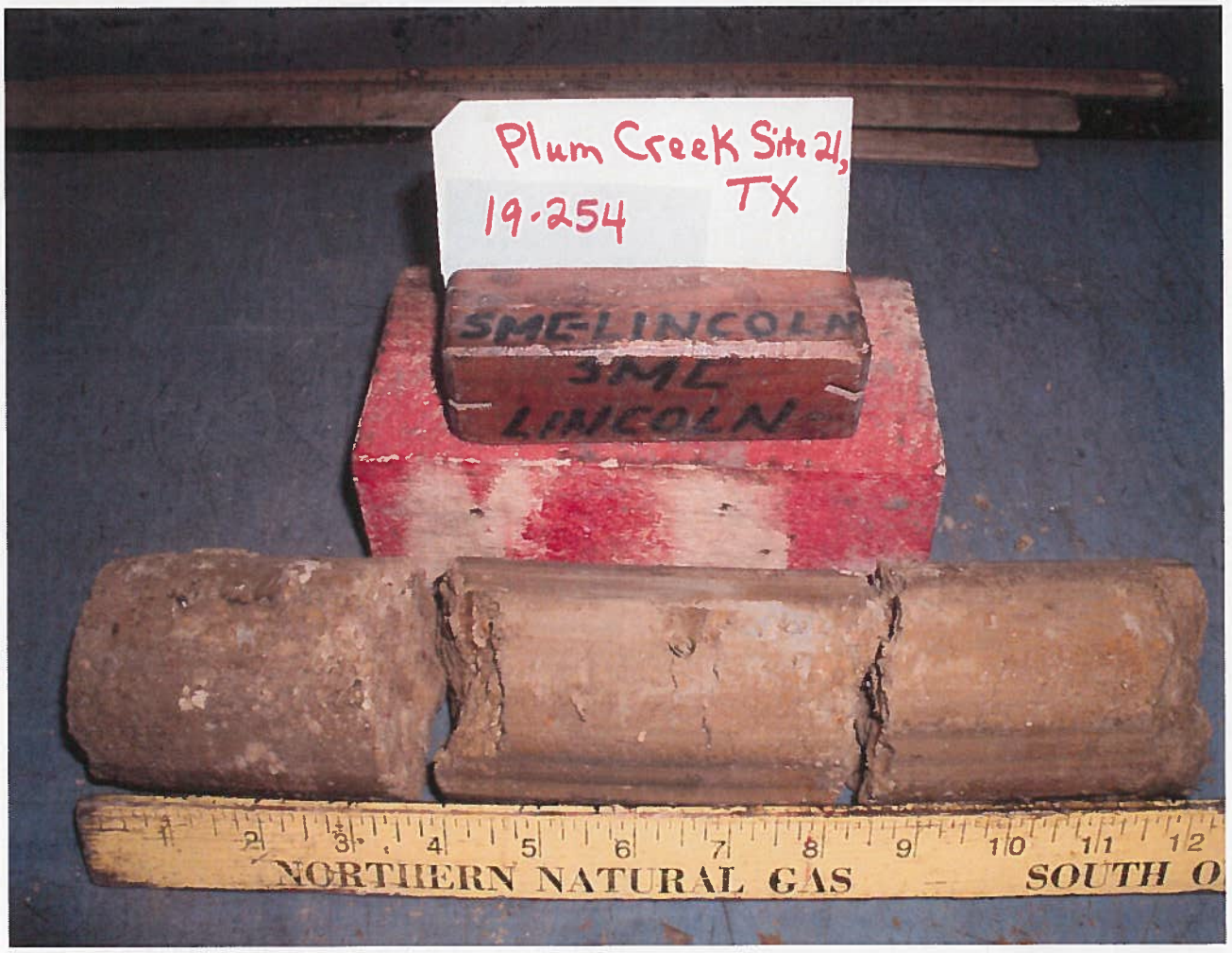
Plum Creek Site 21,
19-249 TX
SMC LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

Plum Creek Site 21,
19-250 TX
SMC LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

Plum Creek Site 21,
19-251 TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA
CALL BEFORE YOU DIG OR BLAST

Plum Creek Site 21,
19-252 TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

Plum Creek Site 21,
19-253 TX
SMC-LINCOLN
SMC
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA


Plum Creek Site 21,
19-254 TX
SMC-LINCOLN
SMC
LINCOLN
NORTHERN NATURAL GAS
SOUTH O

Plum Creek Site 21,
19-255 TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA
CALL BEFORE YOU DIG

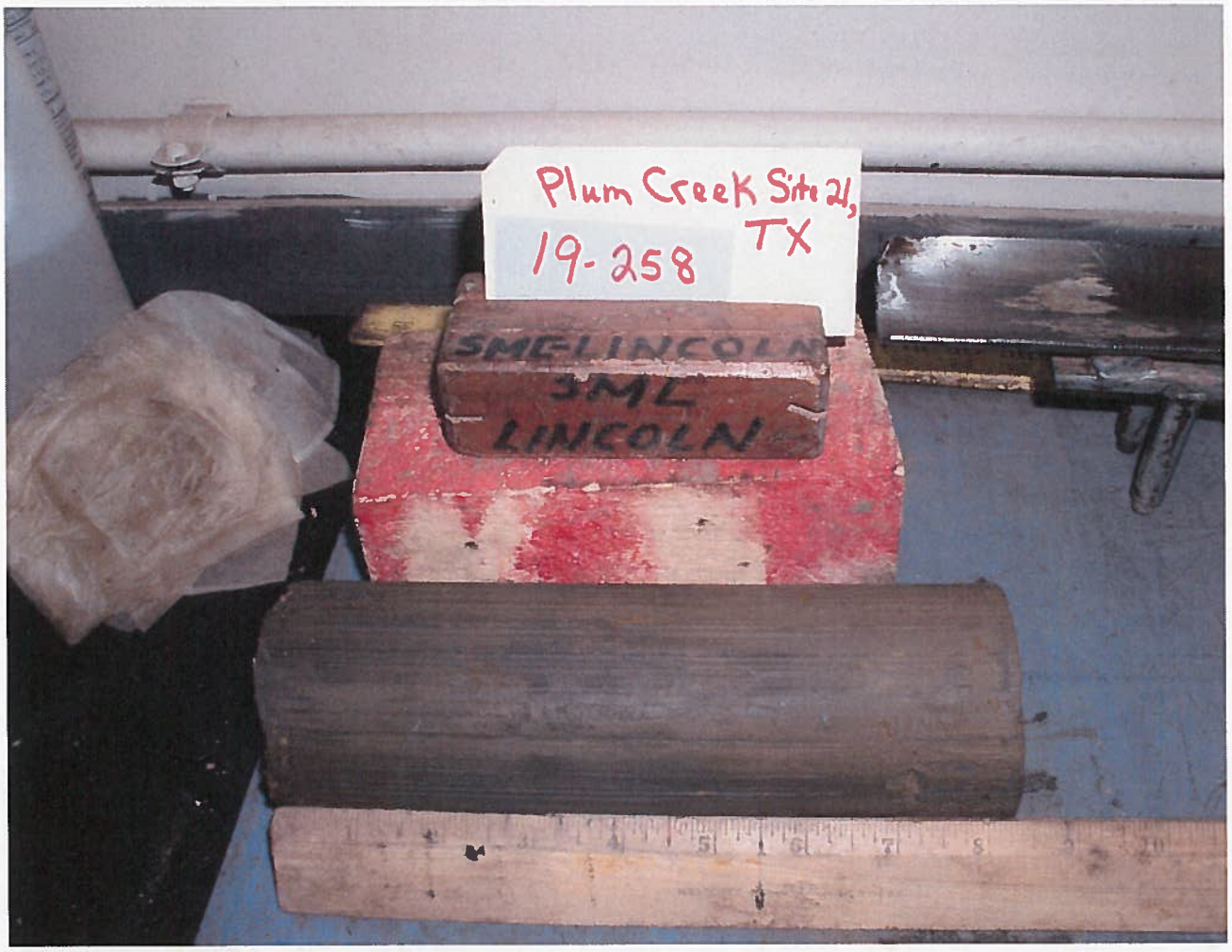
Plum Creek Site 21,
19-256 TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA
CALL BEFORE YOU

Plum Creek Site 21,
19-257 TX
SMELINCOLN
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA
CALL

Plum Creek Site 21,
19-258 TX
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA
CALL BEFORE YOU DI

Plum Creek Site 21,
19-258 TX
SMELINCOLN
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA
CALL BEFORE

Plum Creek Site 21,
19-258 TX
SMELINCOLN
SML
LINCOLN

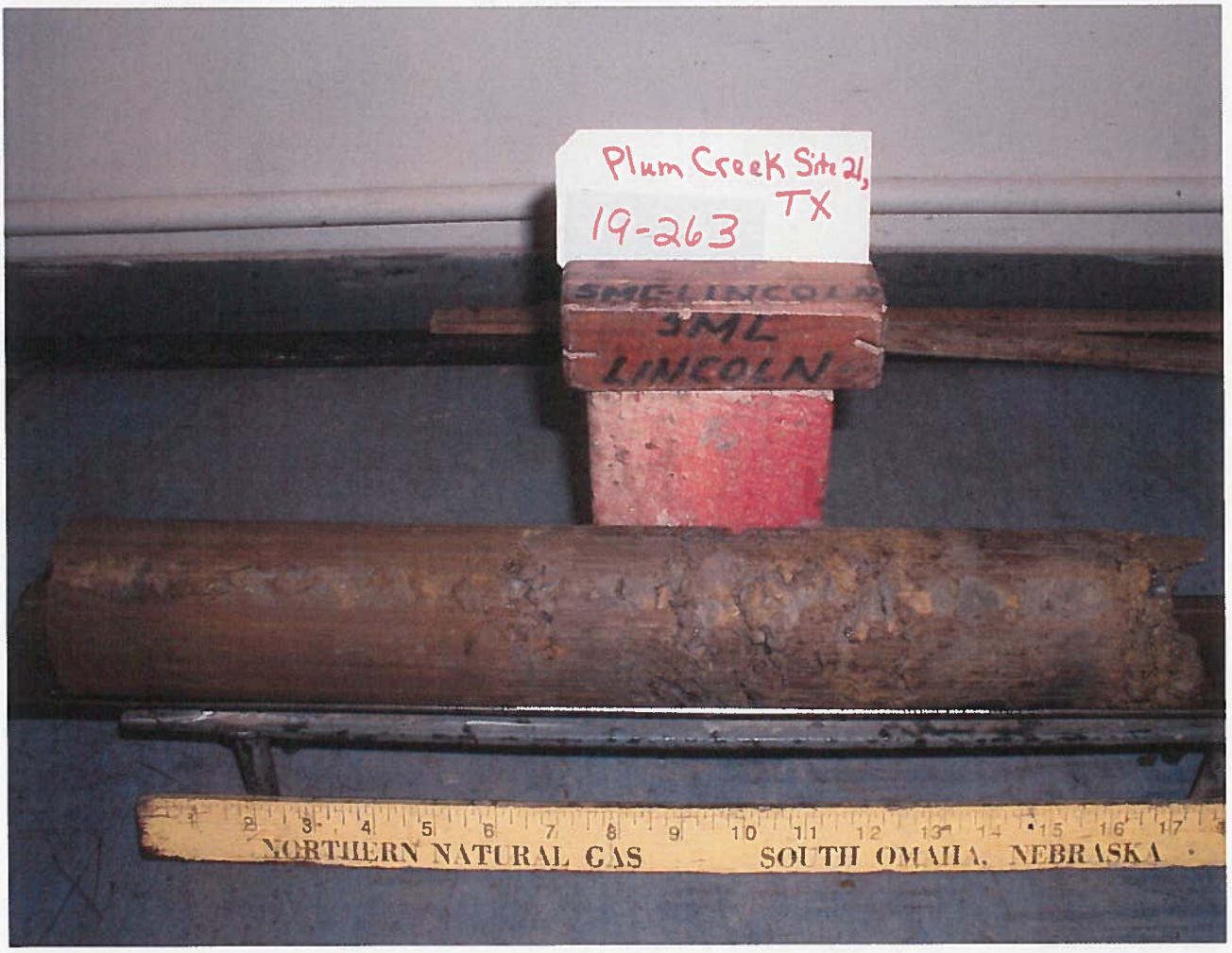

Plum Creek Site 21,
19-258
TX
SMELINCOLN
3ML
LINCOLN

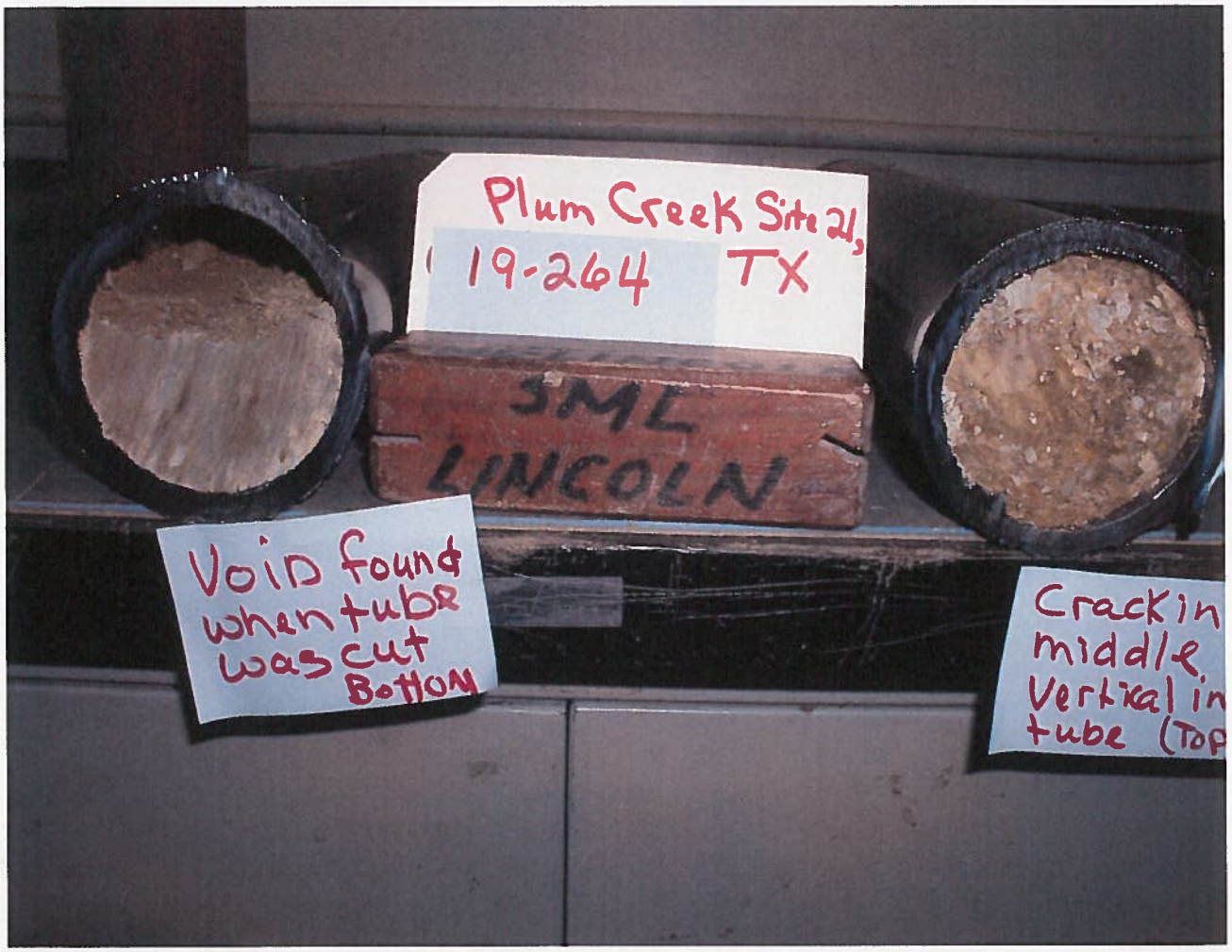
Plum Creek Site 21,
19-259
TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA
CALL BEFORE YOU

Plum Creek Site 21,
19-260 TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA
CALL BEFORE YOU DIG

Plum Creek Site 21,
19-261 TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

PAM
ORIGINAL
Plum Creek Site 21,
19-262 TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA
CALL BEFORE YOU DIG


Plum Creek Site 21,
19-263 TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA


Plum Creek Site 21,
19-264 TX
3ML
LINCOLN
Void found
when tube
was cut
Bottom
Crack in
middle
Vertical in
tube (Top

Plum Creek Site 21,
19-264 TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA
CALL BEFORE YOU DIG OR BL

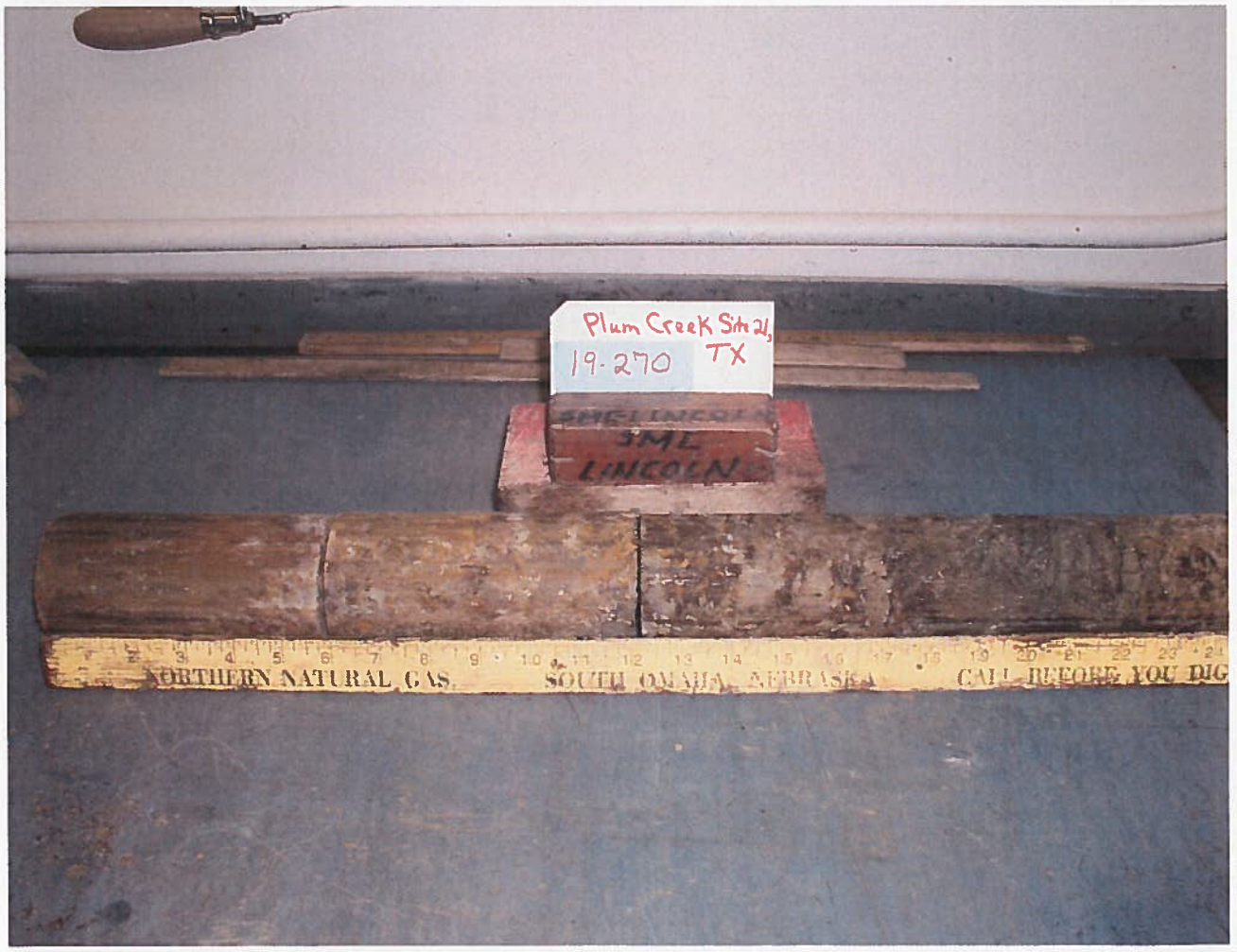
Plum Creek Site 21,
19-265 TX
SMC-LINCOLN
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH

Plum Creek Site 21,
19-266 TX
SMC-LINCOLN
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

Plum Creek Site 21,
19-267 TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

Plum Creek Site 21,
19-268 TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

Plum Creek Site 21,
19-269 TX
SML
LINCOLN
NORTHERN NATURAL GAS. SOUTH OMAHA, NEBRASKA CALL


Plum Creek Site 21,
19-270 TX
SML
LINCOLN
NORTHERN NATURAL GAS. SOUTH OMAHA, NEBRASKA CALL BEFORE YOU DIG

Plum Creek Site 21,
19-271 TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA NEBRASKA

Plum Creek Site 21,
19-272 TX
3ML
LINCOLN
Rock ↑
NORTHERN NATURAL GAS

Plum Creek Site 21,
19-273 TX
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA
CALL BEFORE YOU DIG

Plum Creek Site 21,
19-274 TX
SML
LINCOLN
Rock ↑
NORTHERN NATURAL GAS
CALL BEFORE YOU

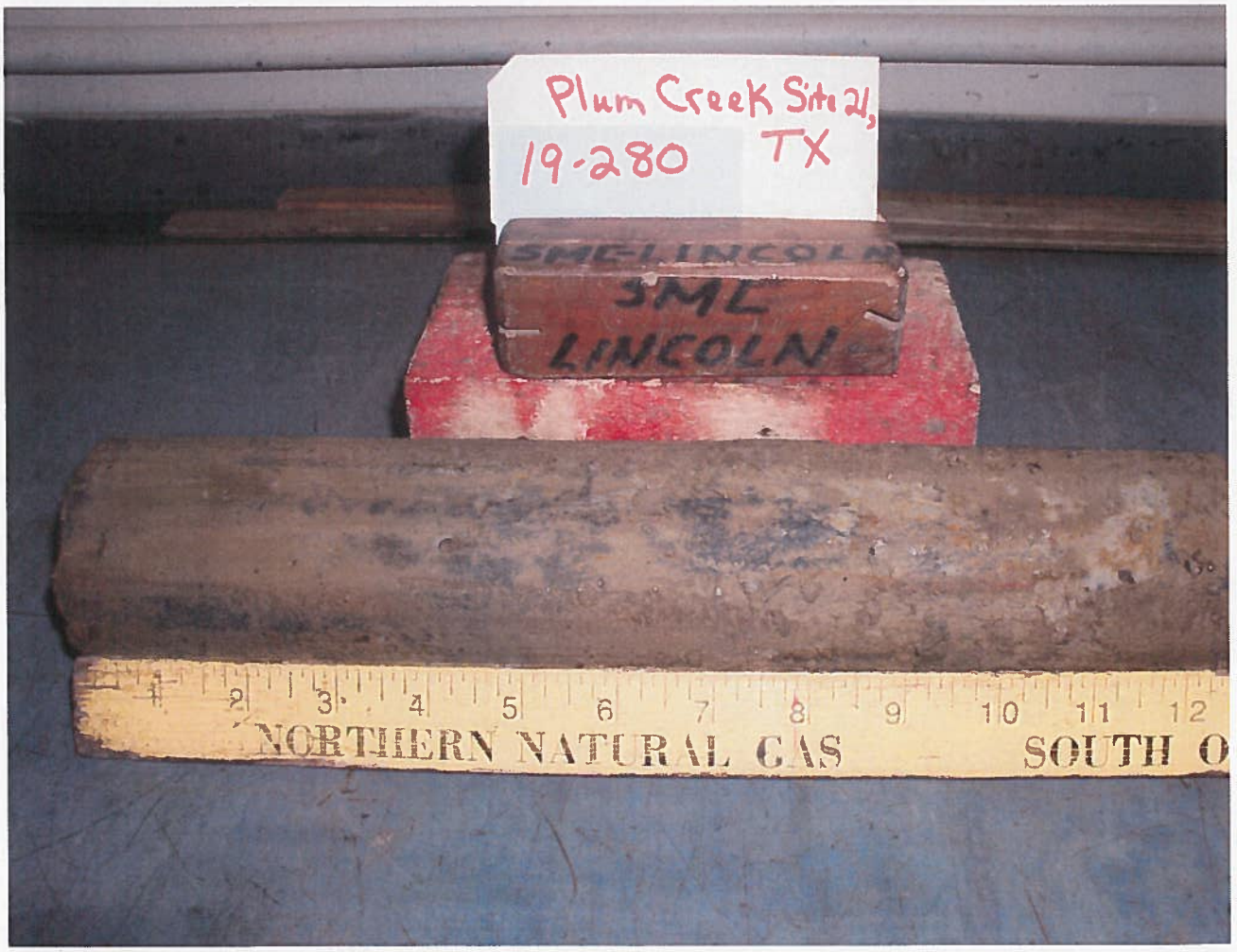
Plum Creek Site 21,
19-275
TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA
CALL BEFORE YOU DIG

Plum Creek Site 21,
19-276
TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

Plum Creek Site 21,
19-277 TX
SME-LINCOLN
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

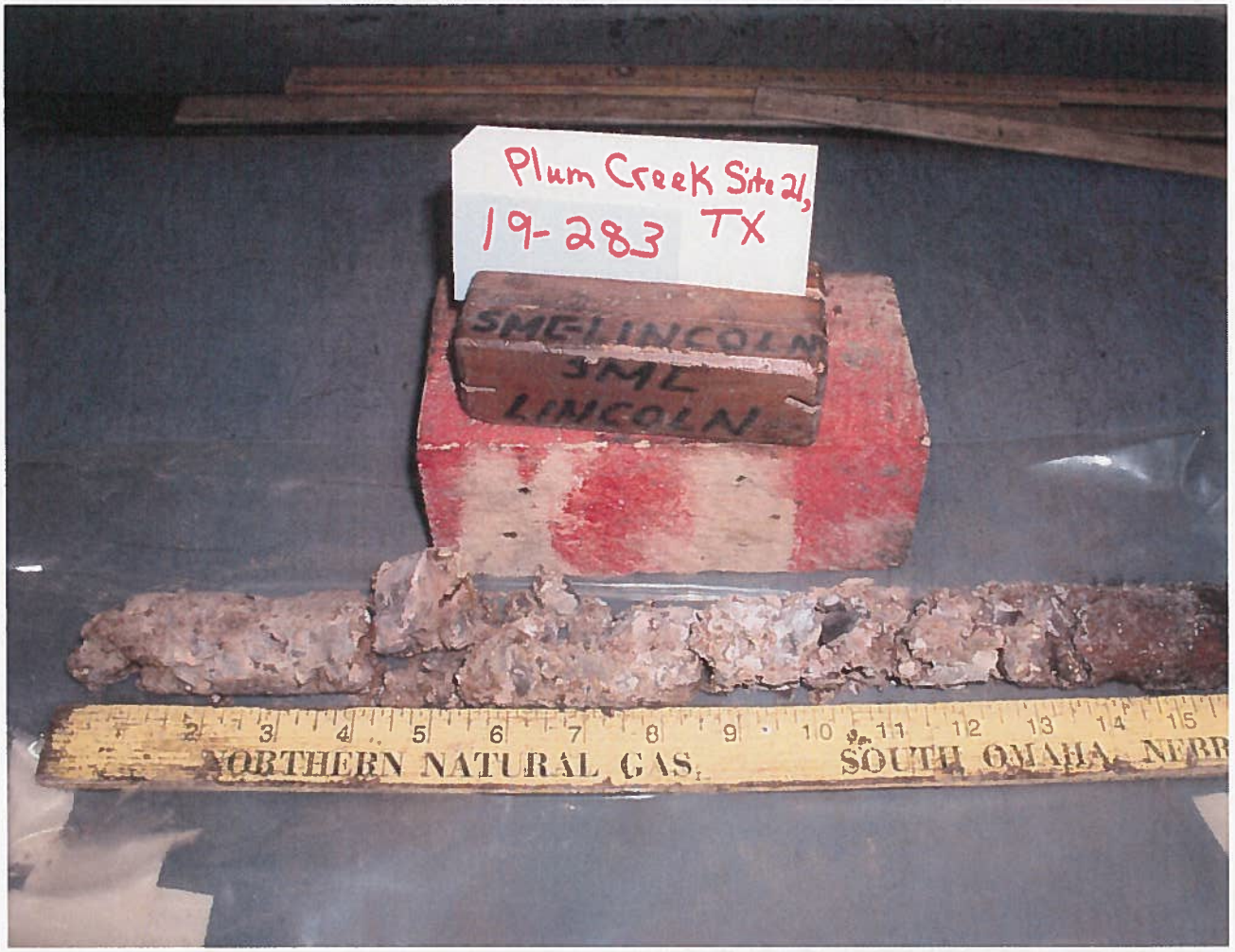
Plum Creek Site 21,
19-278 TX
SME-LINCOLN
SML
LINCOLN

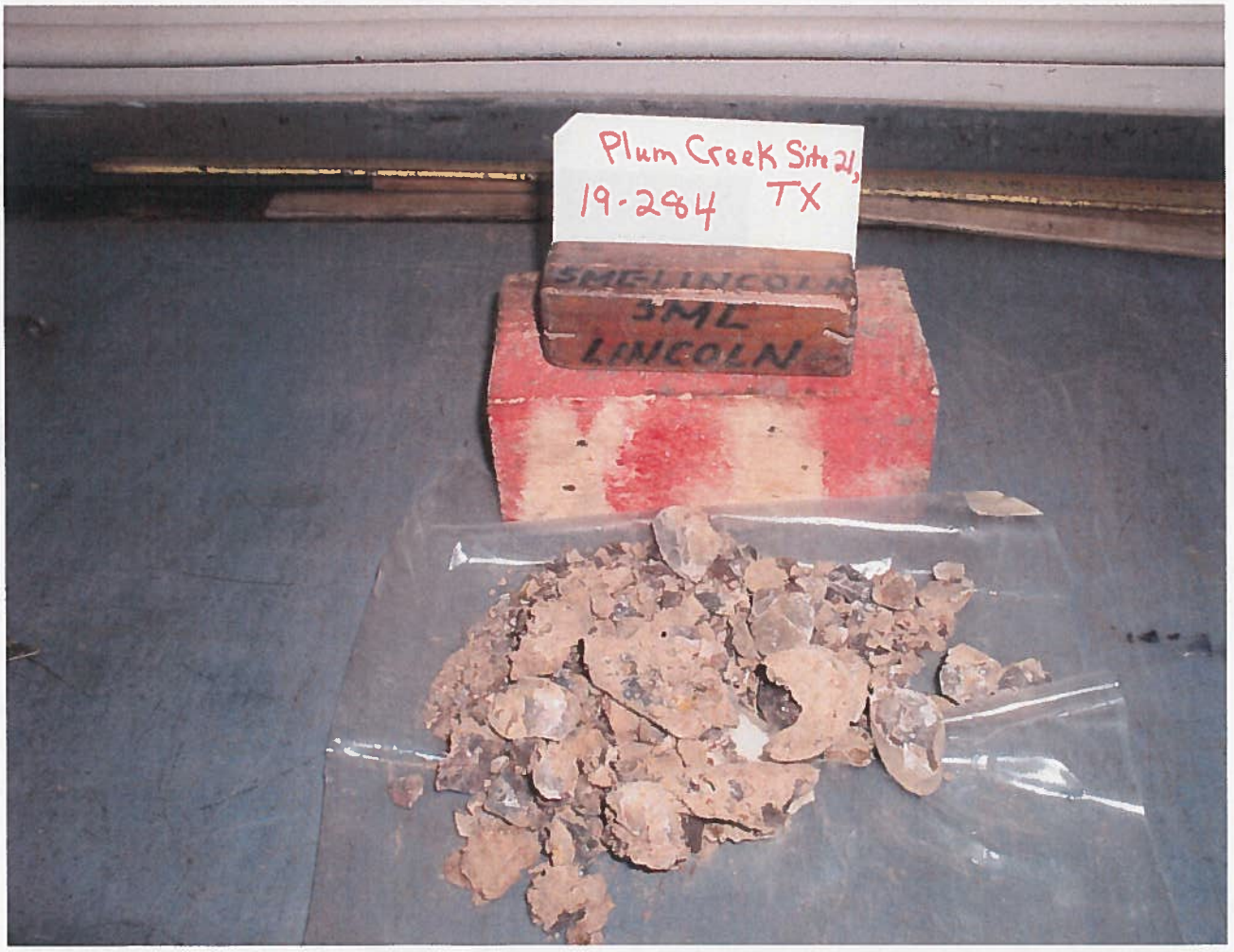
Plum Creek Site 21,
19-279 TX
SMC-LINCOLN
SML
LINCOLN


Plum Creek Site 21,
19-280 TX
SMC-LINCOLN
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH O

Plum Creek Site 21,
19-281 TX
SMELINCOLN
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

Plum Creek Site 21,
19-282 TX
SMELINCOLN
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASK


Plum Creek Site 21,
19-283 TX
SMEL INCOLN
3ML
LINCOLN
NORTHERN NATURAL GAS.
SOUTH OMAHA NEBR


Plum Creek Site 21,
19-284 TX
SMEL INCOLN
3ML
LINCOLN

Plum Creek Site 21,
19-285 TX
SMC-LINCOLN
SMC
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA.

Plum Creek Site 21,
TX
19-286
2 of 2
SME-LINCOLN
3ML
LINCOLN

Plum Creek Site 21,
TX
19-286
1 of 2
SME-LINCOLN
3ML
LINCOLN

Plum Creek Site 21,
19-287 TX
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

Plum Creek Site 21,
19-288 TX
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

Plum Creek Site 21,
19-289 TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

Plum Creek Site 21,
19-290 TX
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASK

Plum Creek Site 21,
19-291 TX
SMF-LINCOLN
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

PAM
Plum Creek Site 21,
19-292 TX
SMF-LINCOLN
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

Plum Creek Site 21,
19-292 TX
SMC-LINCOLN
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMA

Plum Creek Site 21,
19-293 TX
SMC-LINCOLN
3ML
LINCOLN

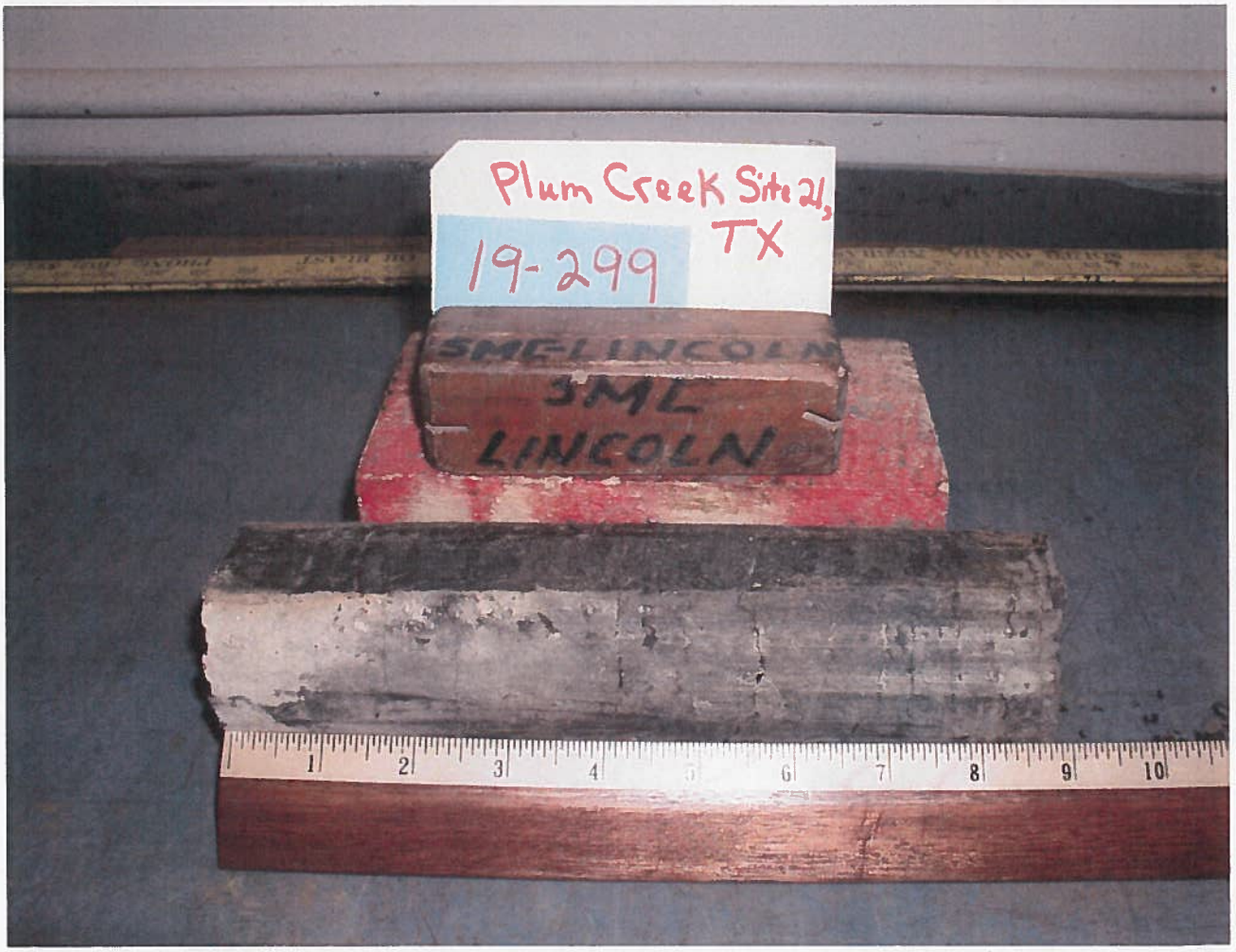
Plum Creek Site 21,
19-294
TX
SMC-LINCOLN
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA,

Plum Creek Site 21,
19-295
TX
SMC-LINCOLN
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

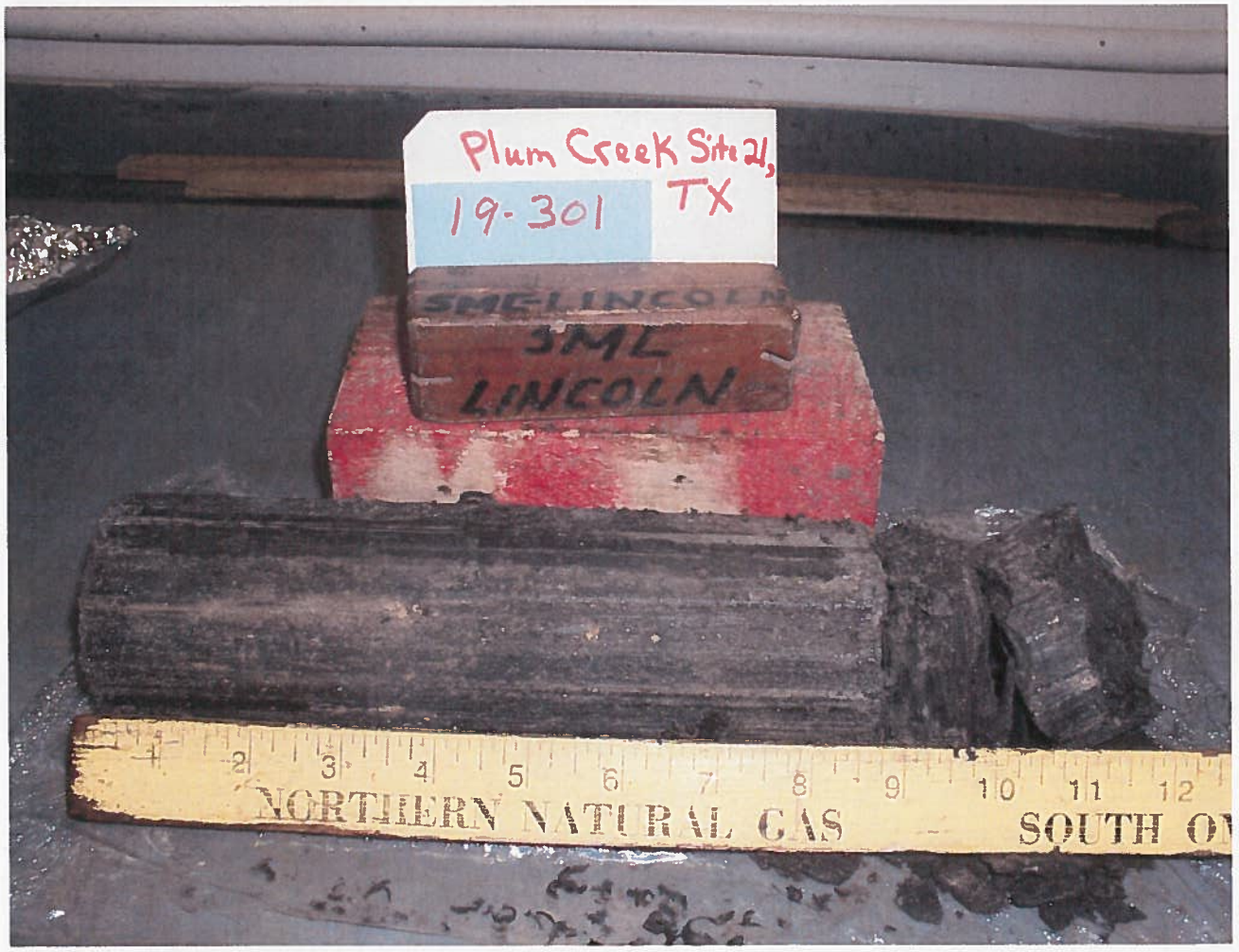
Plum Creek Site 21,
19-296 TX
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMA

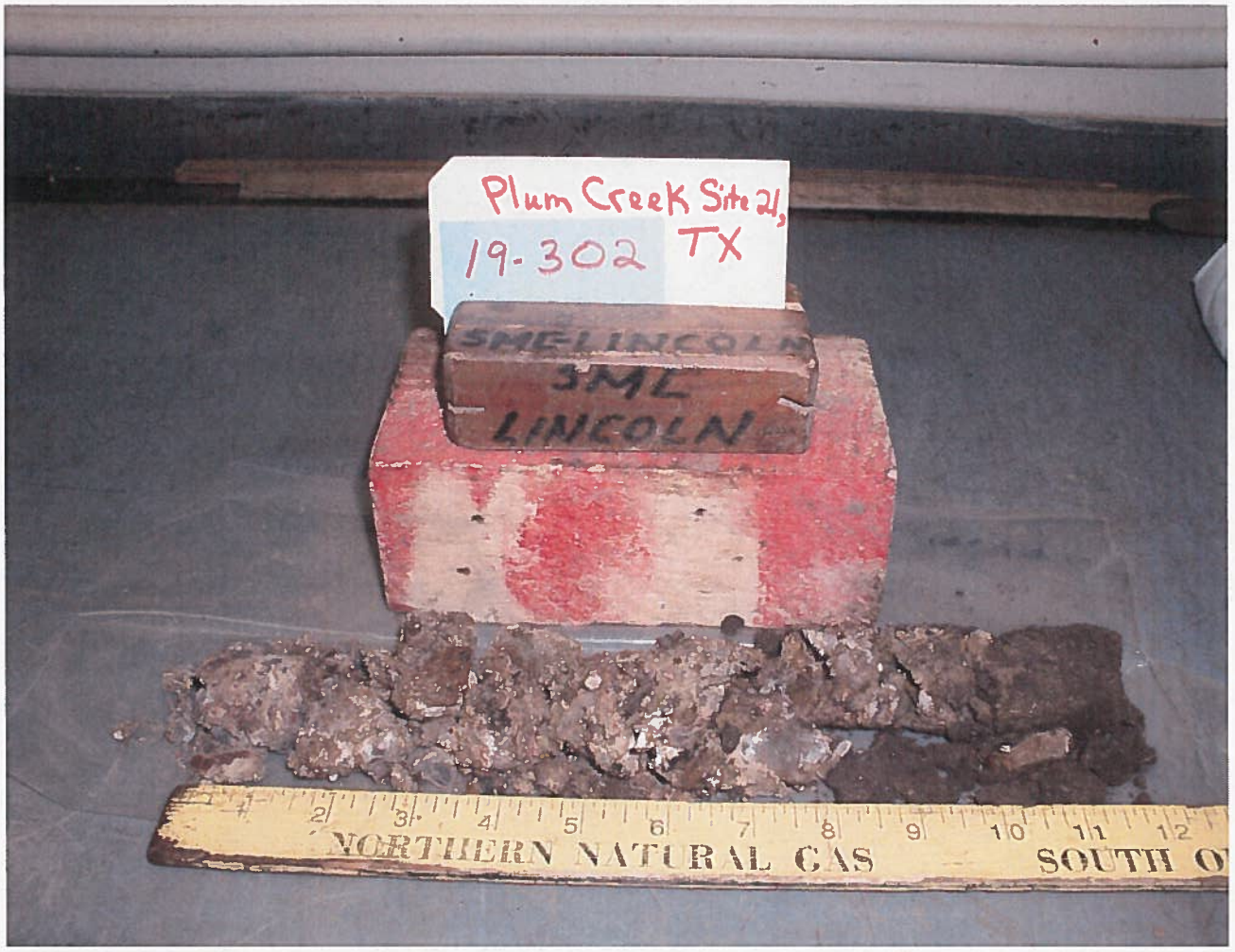
Plum Creek Site 21,
19-297 TX
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

Plum Creek Site 21,
19-298
TX
SMC-LINCOLN
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAH


Plum Creek Site 21,
19-299
TX
SMC-LINCOLN
3ML
LINCOLN

Plum Creek Site 21,
300
TX
SMC LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA


Plum Creek Site 21,
19-301
TX
SMC LINCOLN
NORTHERN NATURAL GAS
SOUTH O

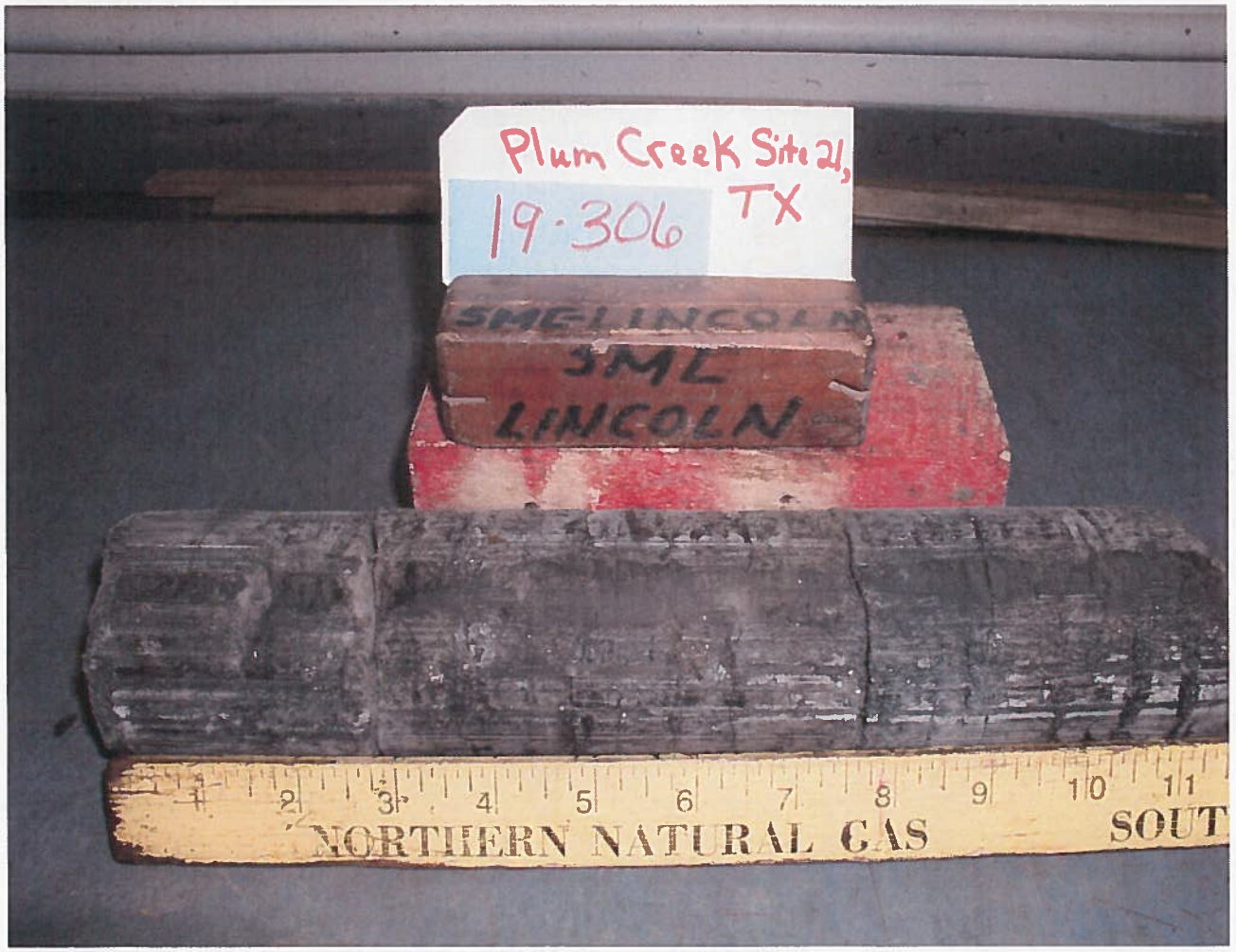

Plum Creek Site 21,
19-302 TX
SMELINCOLN
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH O

Plum Creek Site 21,
19-303 TX
SMELINCOLN
3ML
LINCOLN
Top Half
RN NATURAL GAS

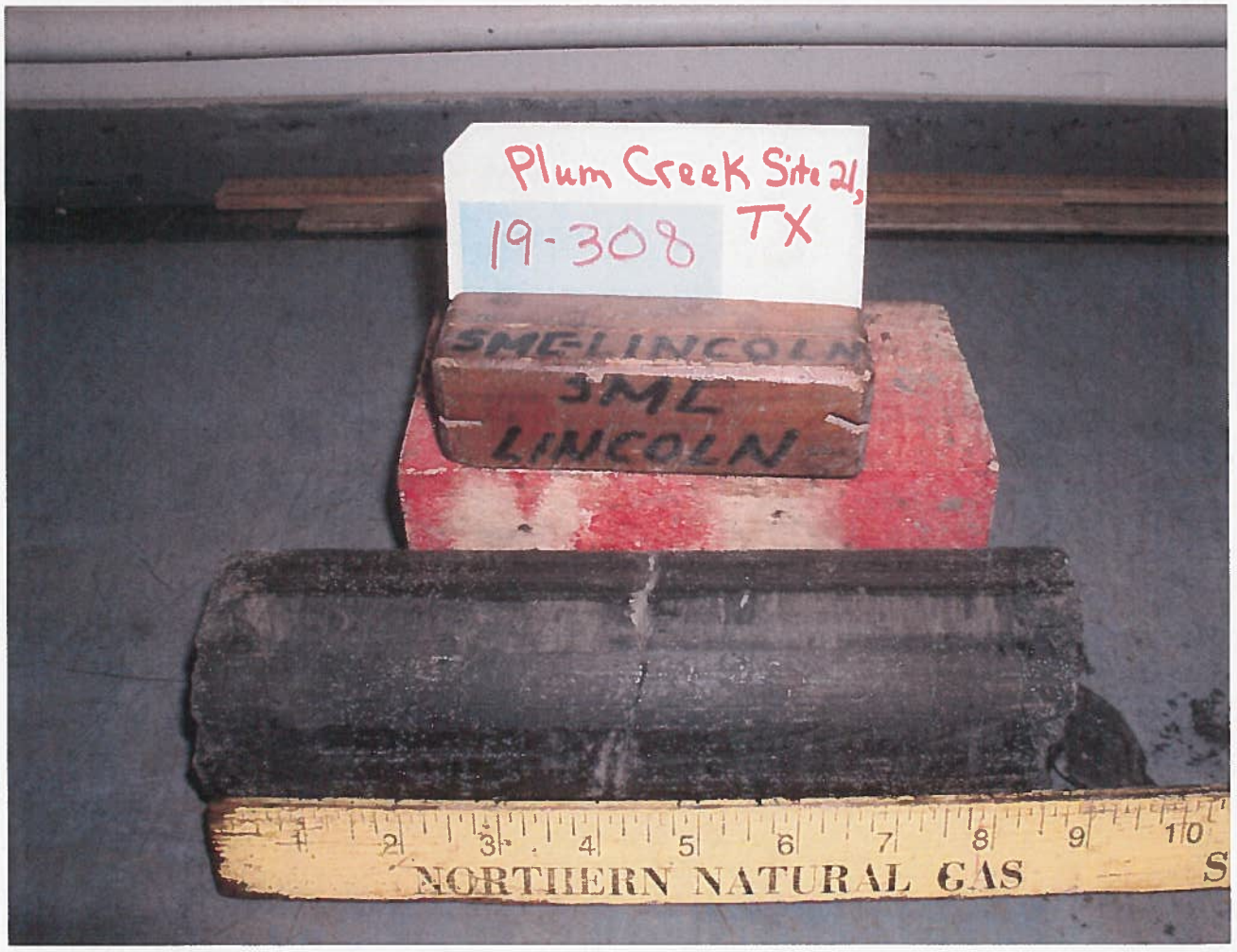
Plum Creek Site 21,
19-303 TX
SMELINCOLN
SML
LINCOLN

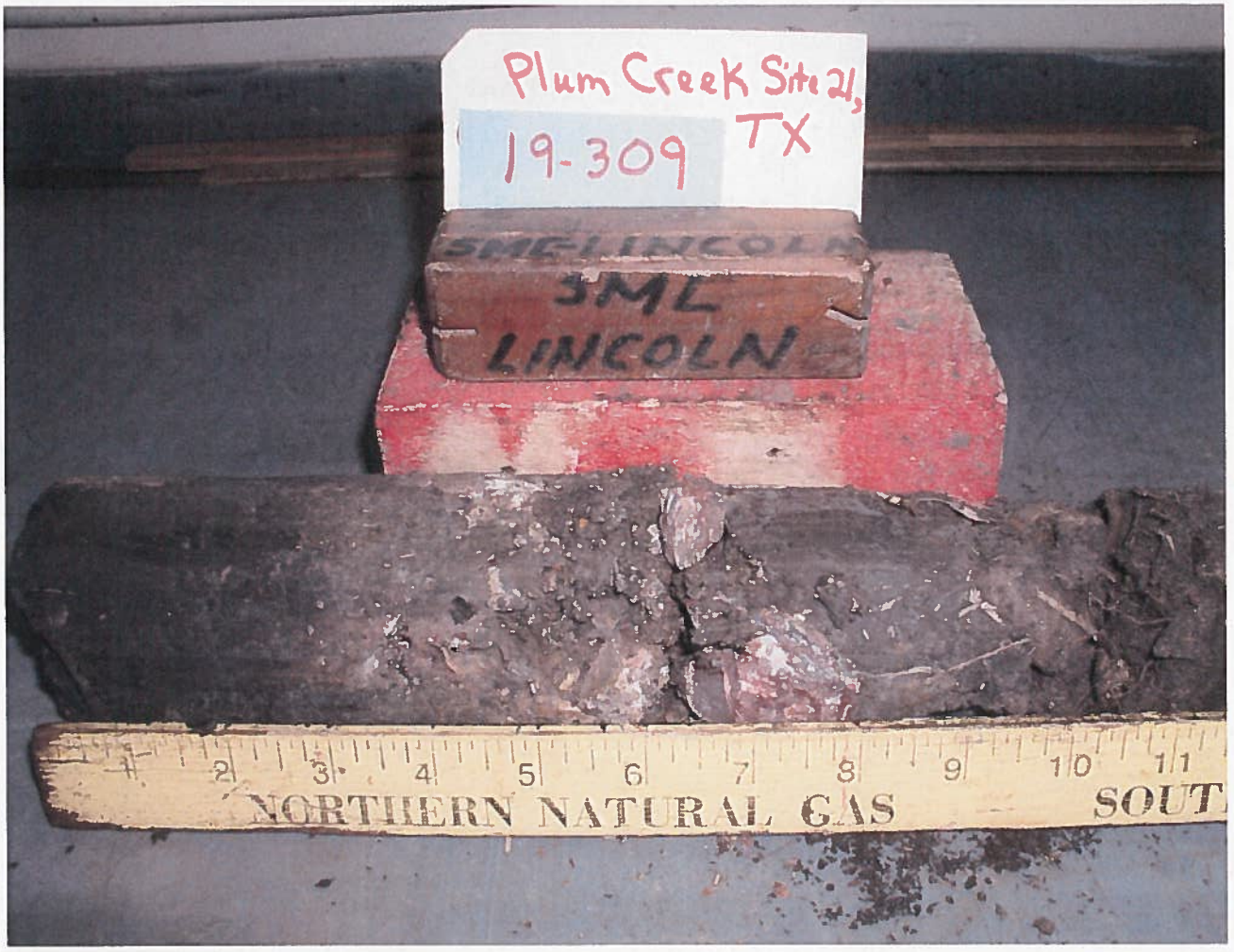
Plum Creek Site 21,
19-304 TX
SMELINCOLN
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA

Plum Creek Site 21,
19-305
TX
SMELINCOLN
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA. NE

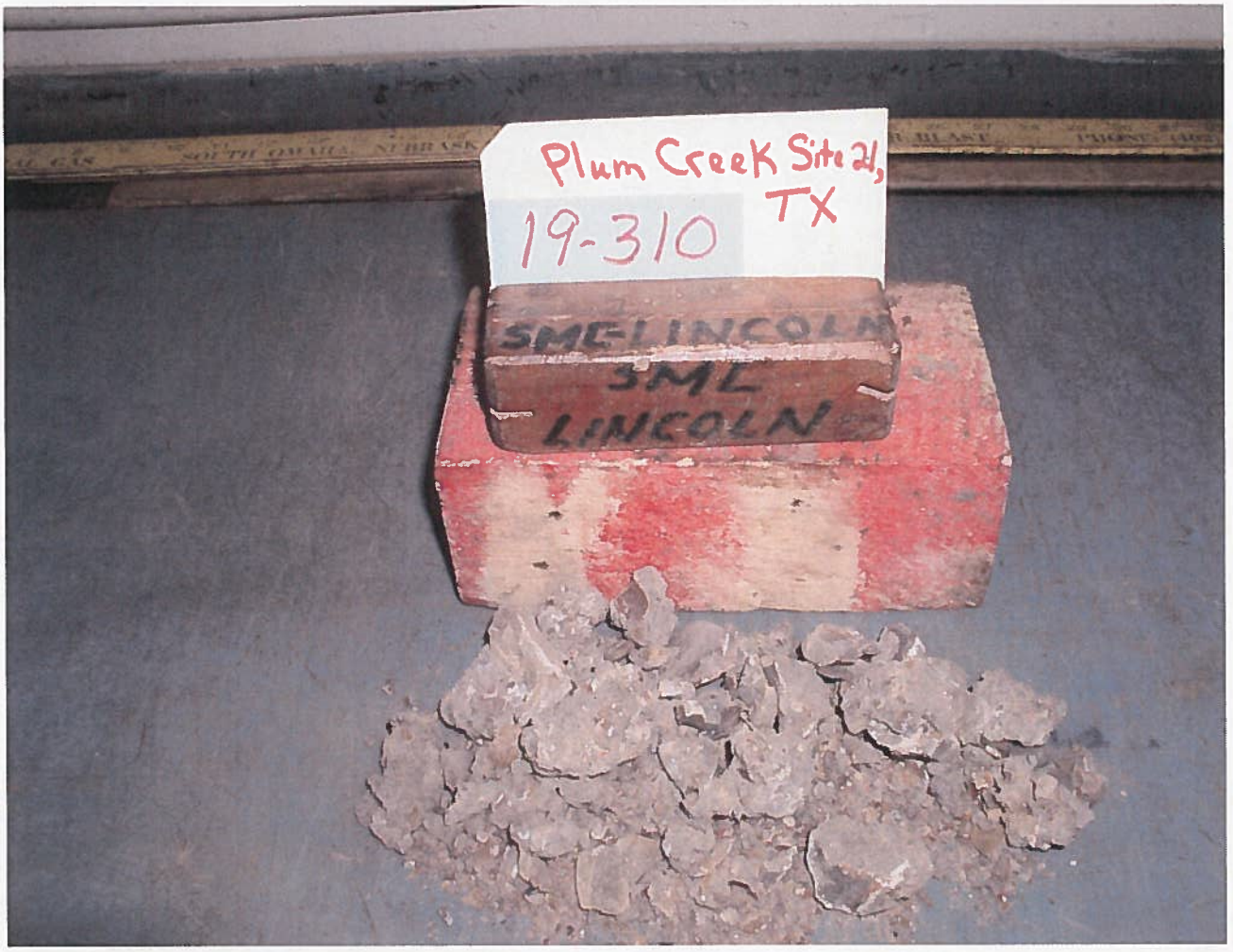

Plum Creek Site 21,
19-306
TX
SMELINCOLN
SML
LINCOLN
NORTHERN NATURAL GAS
SOUT

Plum Creek Site 21,
TX
19-307
SMELINCOLN
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAH


Plum Creek Site 21,
TX
19-308
SMELINCOLN
SML
LINCOLN
NORTHERN NATURAL GAS


Plum Creek Site 21,
19-309
TX
3ML
LINCOLN
NORTHERN NATURAL GAS

Plum Creek Site 21,
19-309
TX
3ML
LINCOLN

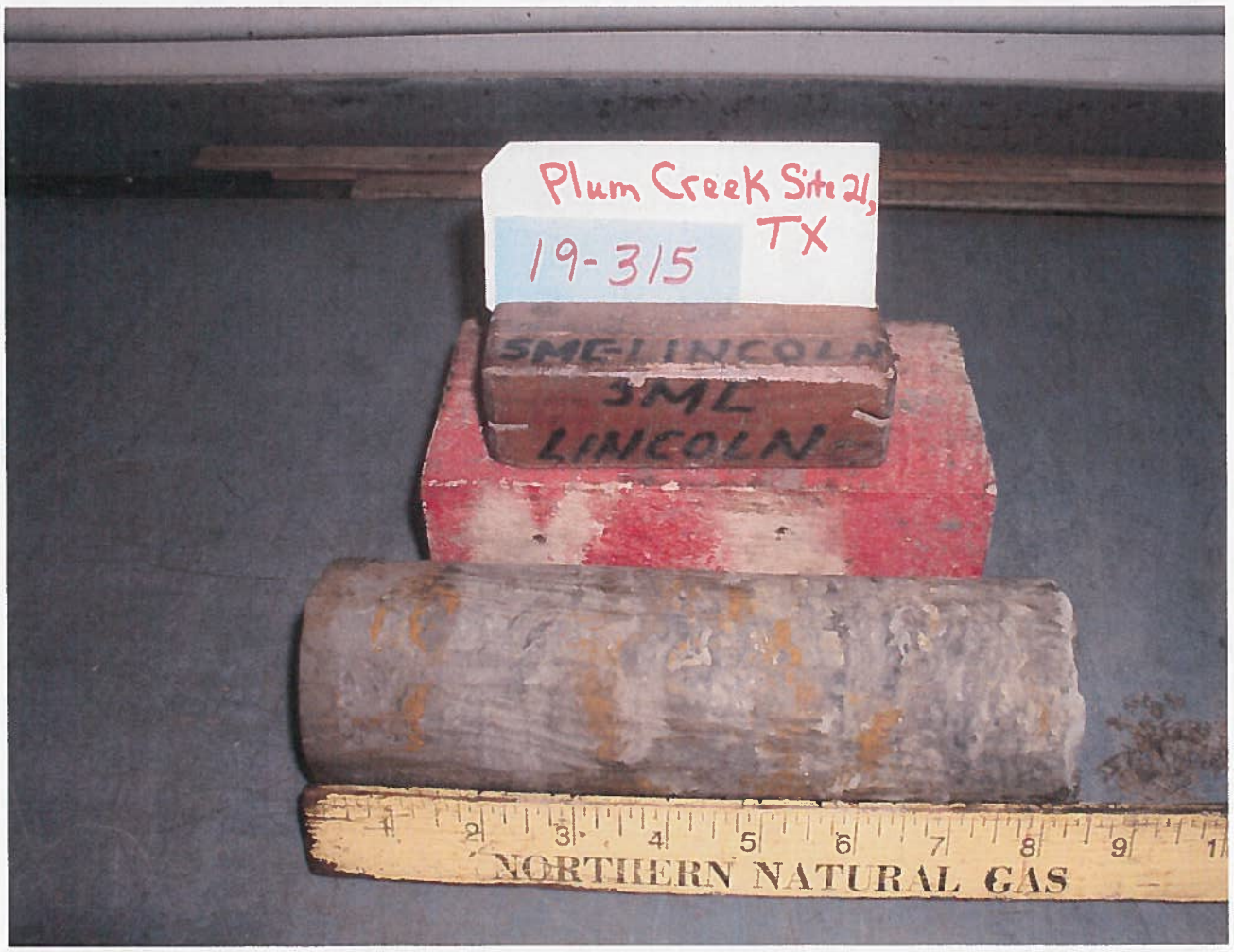

Plum Creek Site 21,
TX
19-310
SMELINCOLN
3ML
LINCOLN

Plum Creek Site 21,
TX
19-311
SMELINCOLN
3ML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBR

Plum Creek Site 21,
19-312 TX
SMELINCOLN
SML
LINCOLN
NORTHERN NATURAL GAS
SOUTH OMAHA, NEBRASKA

Plum Creek Site 21,
19-313 TX
SMELINCOLN
SML
LINCOLN
NORTHERN NATURAL GAS

Plum Creek Site 21,
19-314
TX
SML LINCOLN
NORTHERN NATURAL GAS


Plum Creek Site 21,
19-315
TX
SML LINCOLN
NORTHERN NATURAL GAS

Plum Creek Site 21,
19-696
TX
SML
LINCOLN

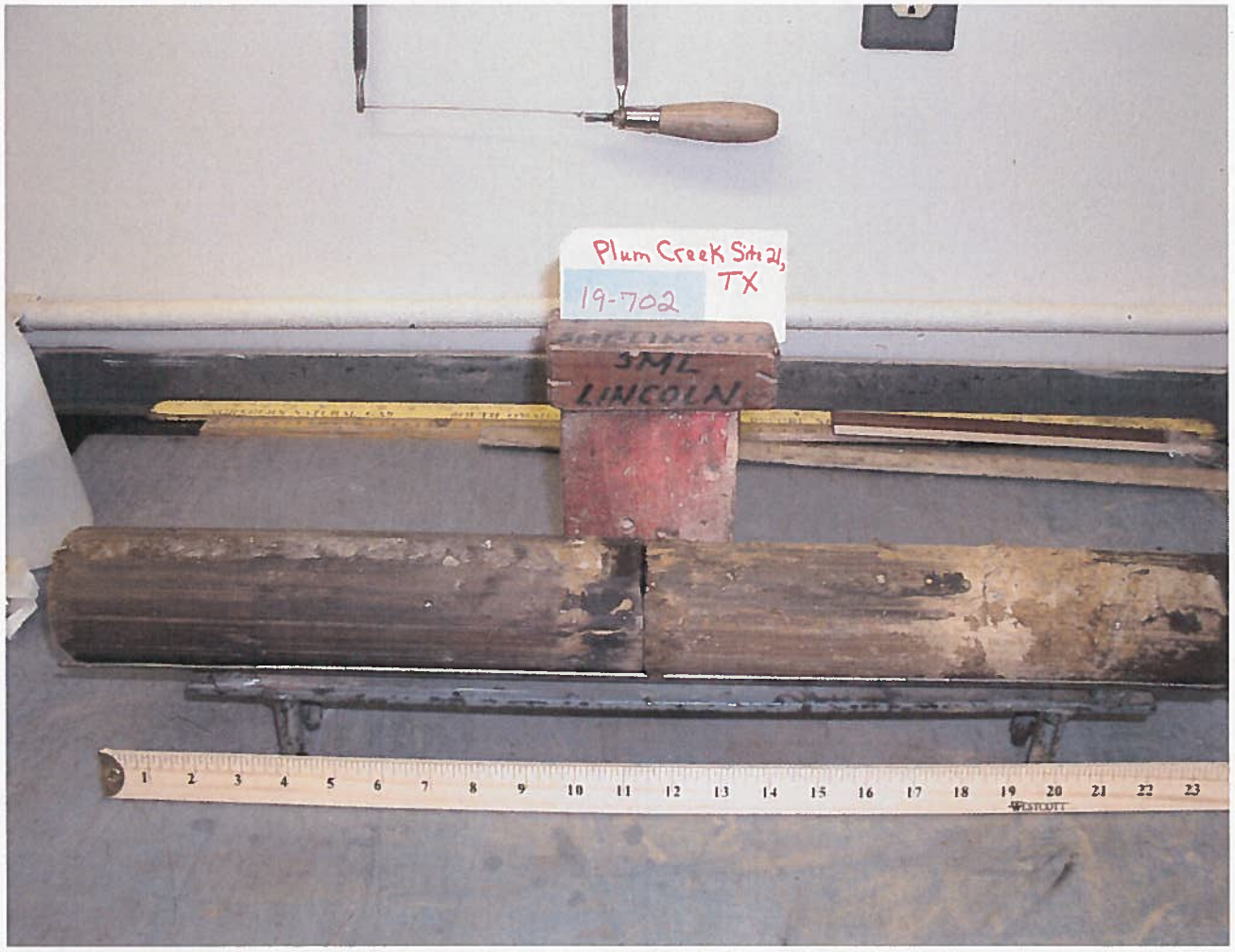
Plum Creek Site 21,
19-697
TX
SML
LINCOLN

Plum Creek Site 21, TX
19-698
SMC-LINCOLN
SML
LINCOLN

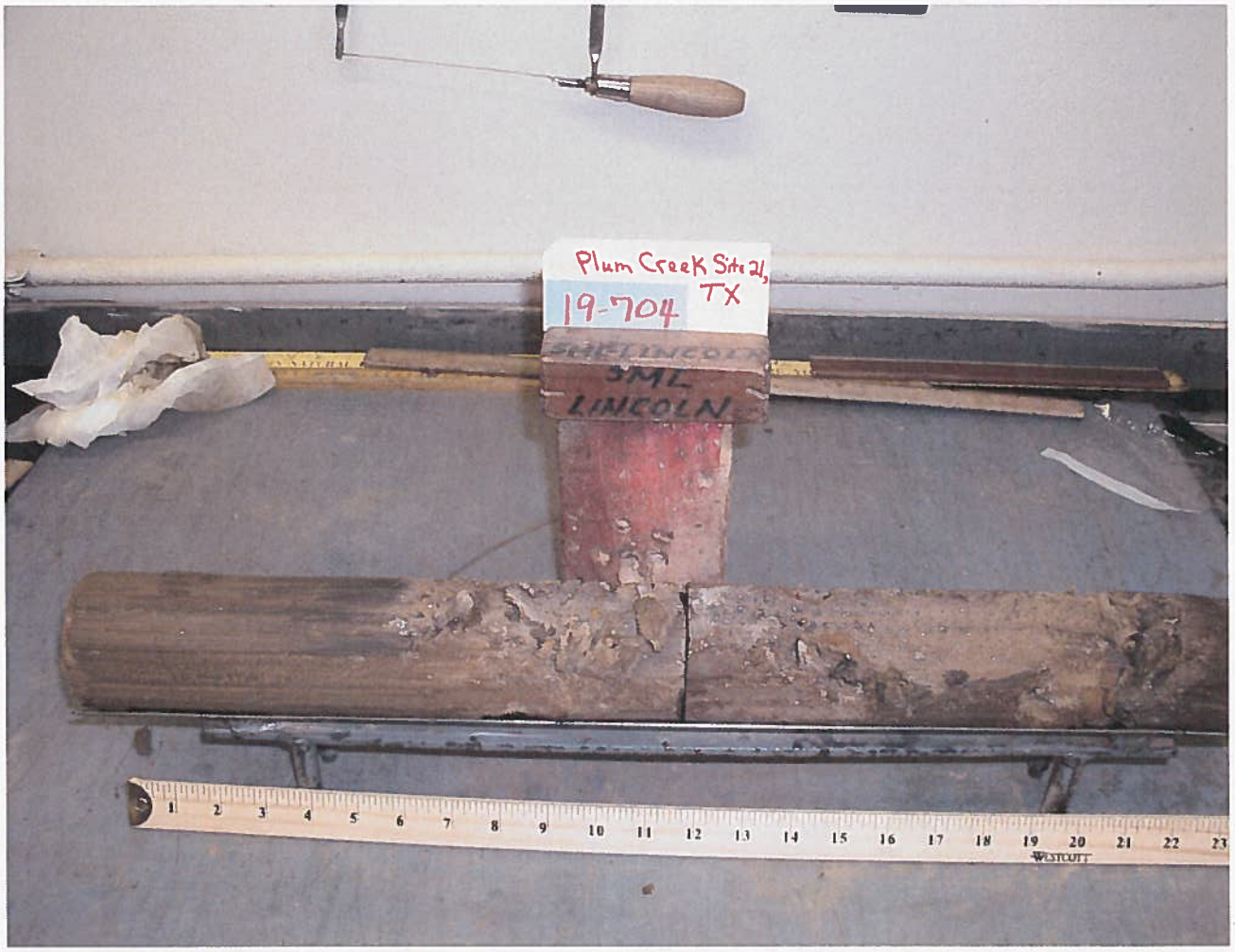
Plum Creek Site 21, TX
19-699
SML
LINCOLN

Plum Creek Site 21, TX
19-700
3ML
LINCOLN

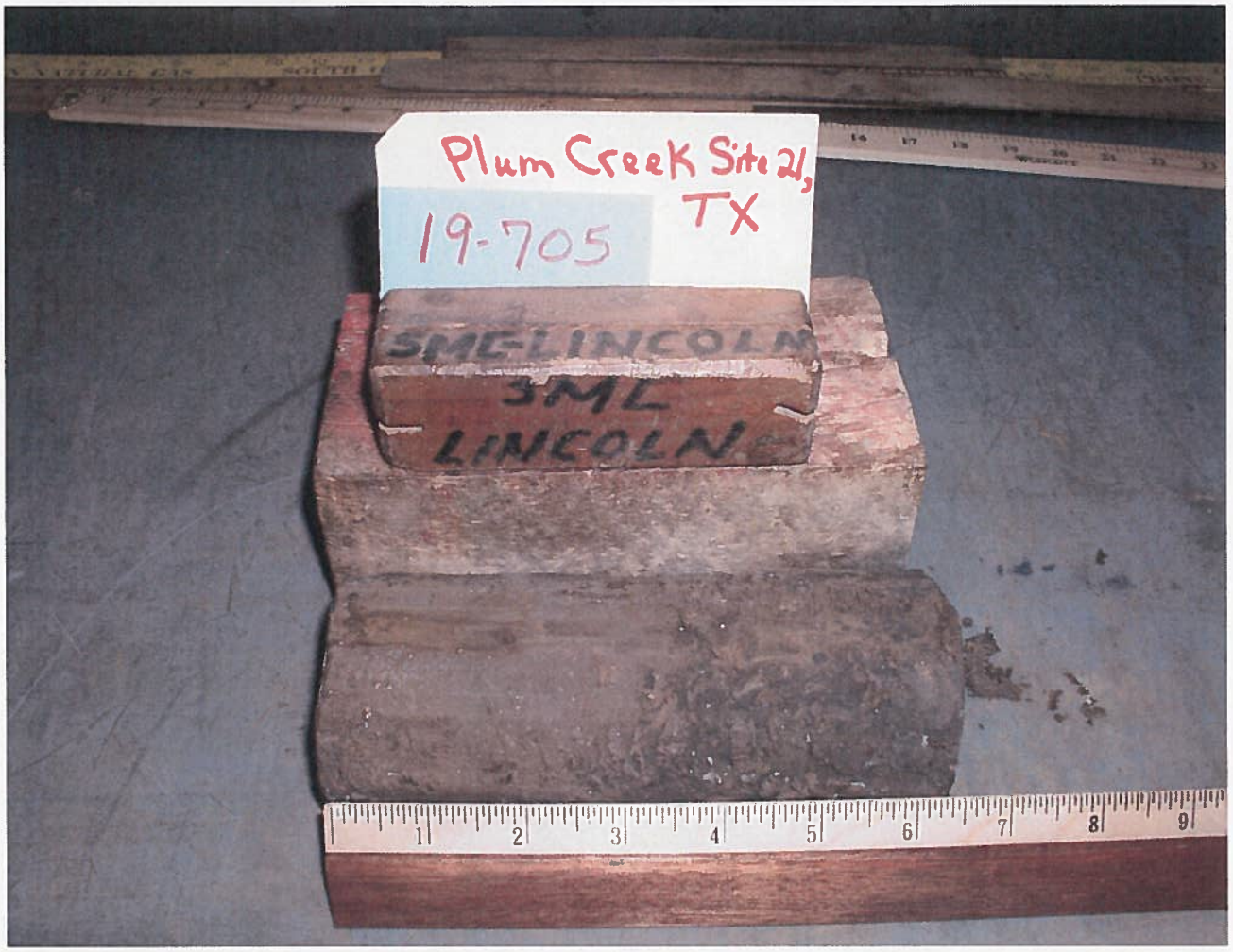
Plum Creek Site 21, TX
19-701
SME-LINCOLN
3ML
LINCOLN


Plum Creek Site 21,
TX
19-702
SME-LINCOLN
SML
LINCOLN

Plum Creek Site 21,
TX
19-703
SME-LINCOLN
SML
LINCOLN


Plum Creek Site 21,
TX
19-704
SME-LINCOLN
SML
LINCOLN

Plum Creek Site 21,
TX
19-704
SME-LINCOLN
SML
LINCOLN


Plum Creek Site 21, TX
19-705
SMC-LINCOLN
SML
LINCOLN

Plum Creek Site 21, TX
19-706
SML
LINCOLN

Plum Creek Site 21,
19-707
TX
SMELINCOLN
SML
LINCOLN

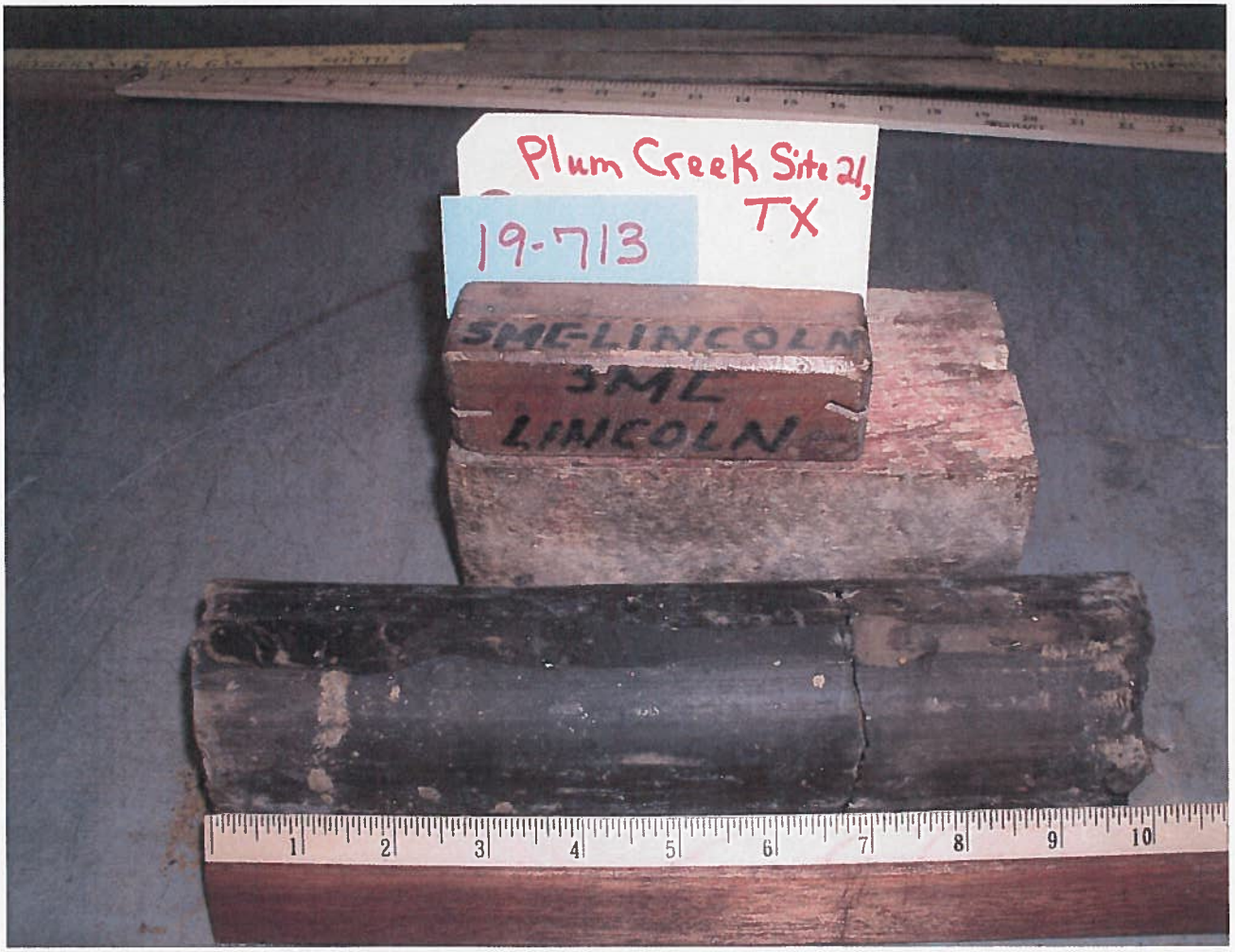
Plum Creek Site 21,
19-708
TX
SMELINCOLN
SML
LINCOLN

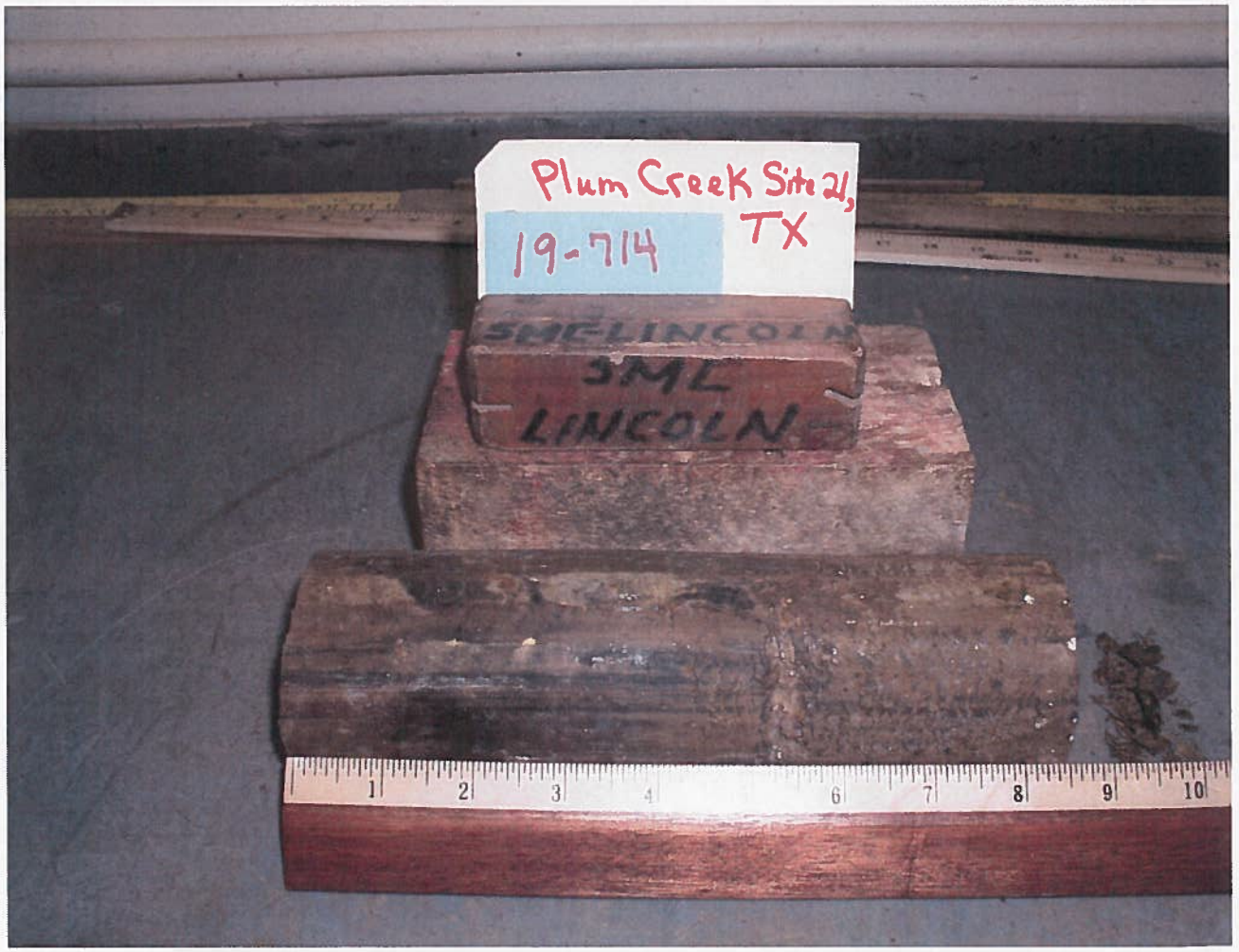
Plum Creek Site 21, TX
19-709
SME-LINCOLN
SML
LINCOLN

Plum Creek Site 21, TX
19-710
SME-LINCOLN
SML
LINCOLN

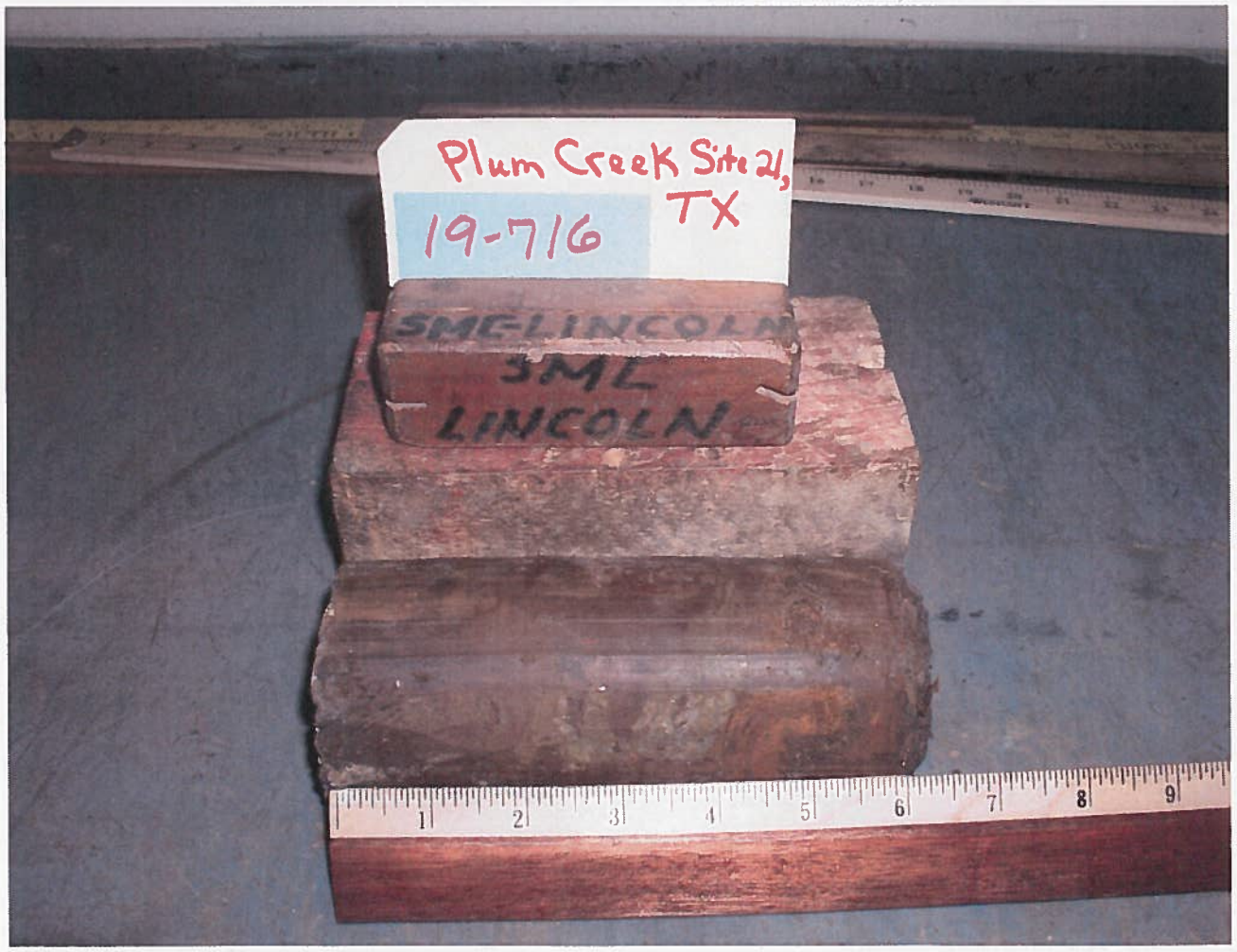
Plum Creek Site 21,
19-711 TX
3ML
LINCOLN

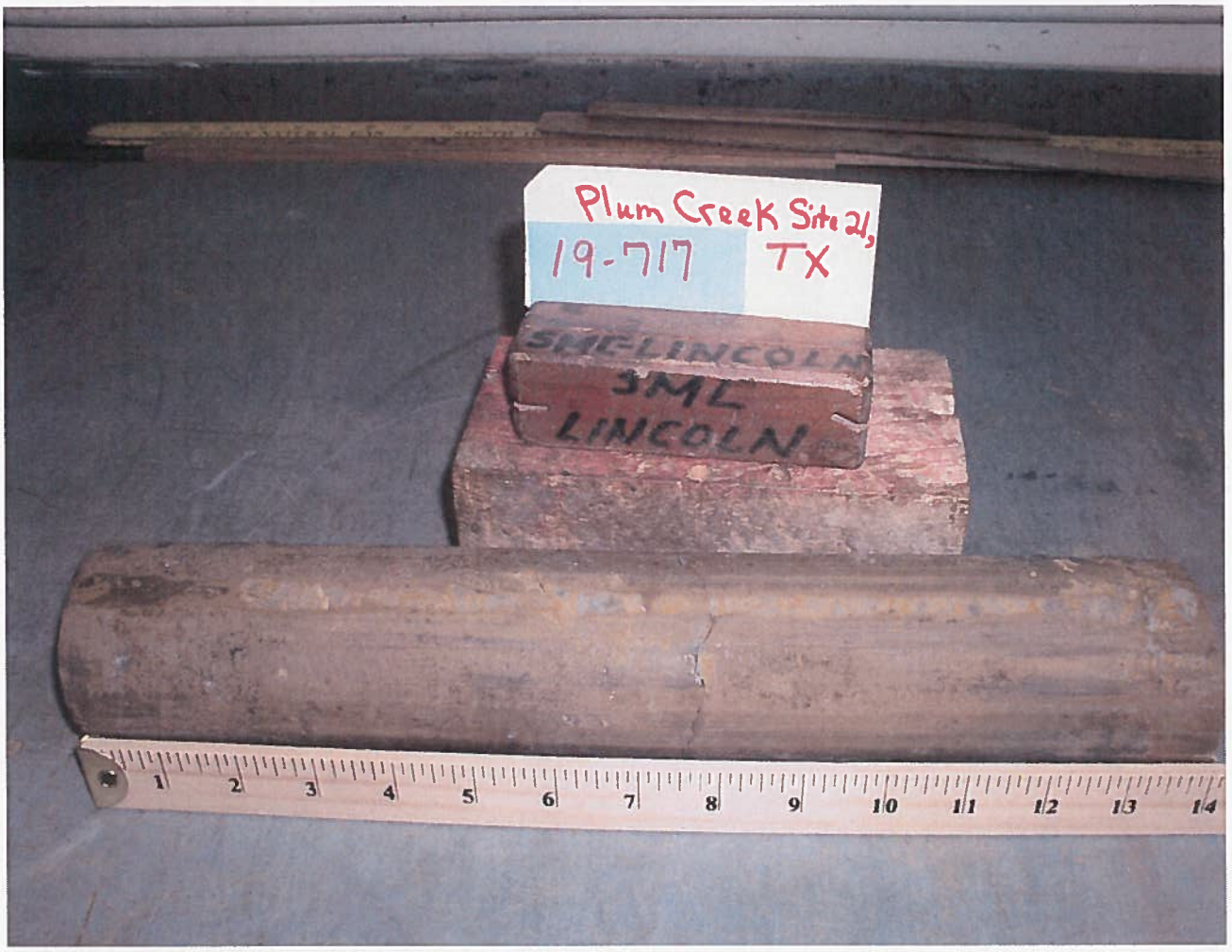
Plum Creek Site 21,
19-712 TX
3ML
LINCOLN

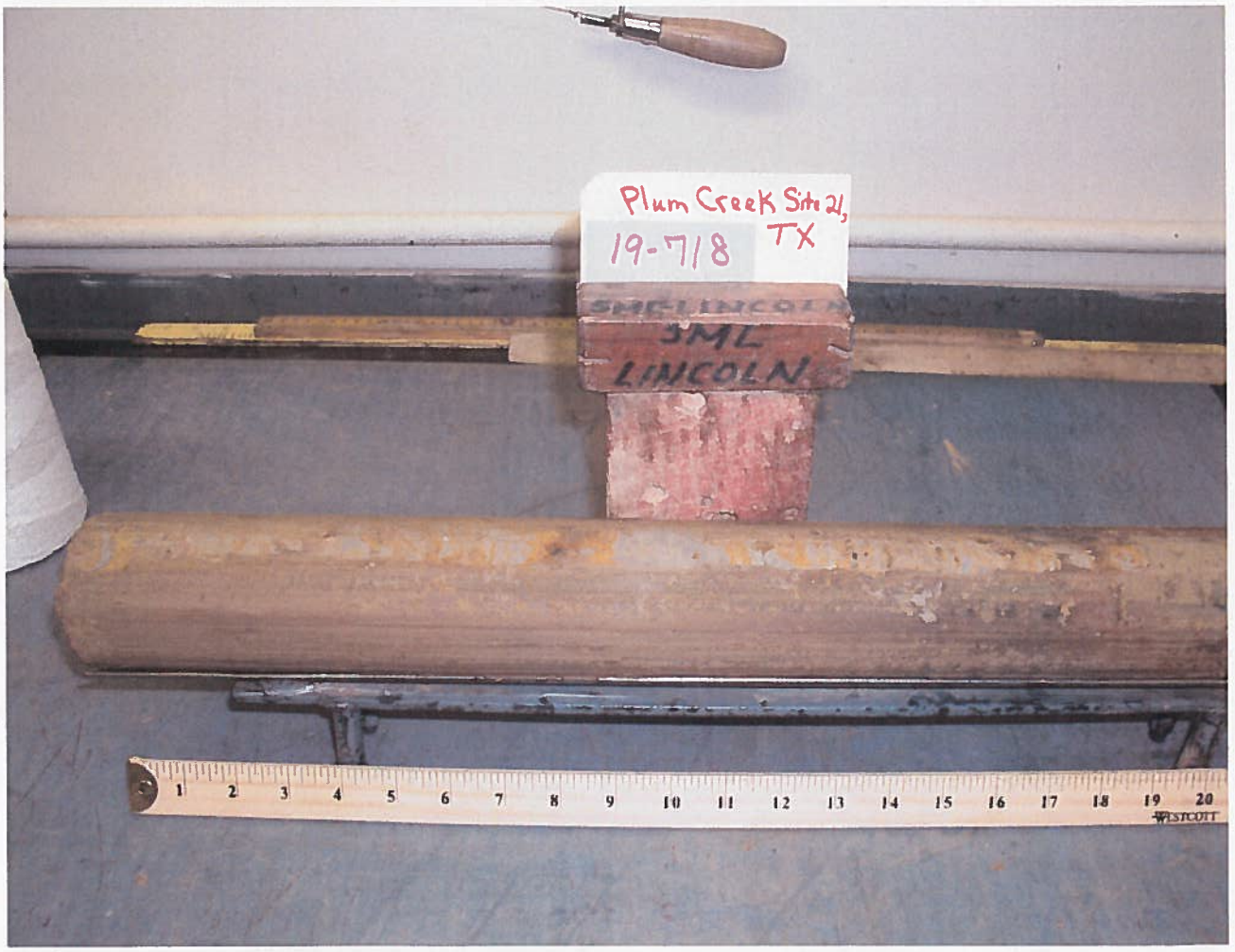

Plum Creek Site 21,
TX
19-713
SMELINCOLN
SML
LINCOLN


Plum Creek Site 21,
TX
19-714
SMELINCOLN
SML
LINCOLN

Plum Creek Site 21,
TX
19-715
SMELINCOLN
3ML
LINCOLN

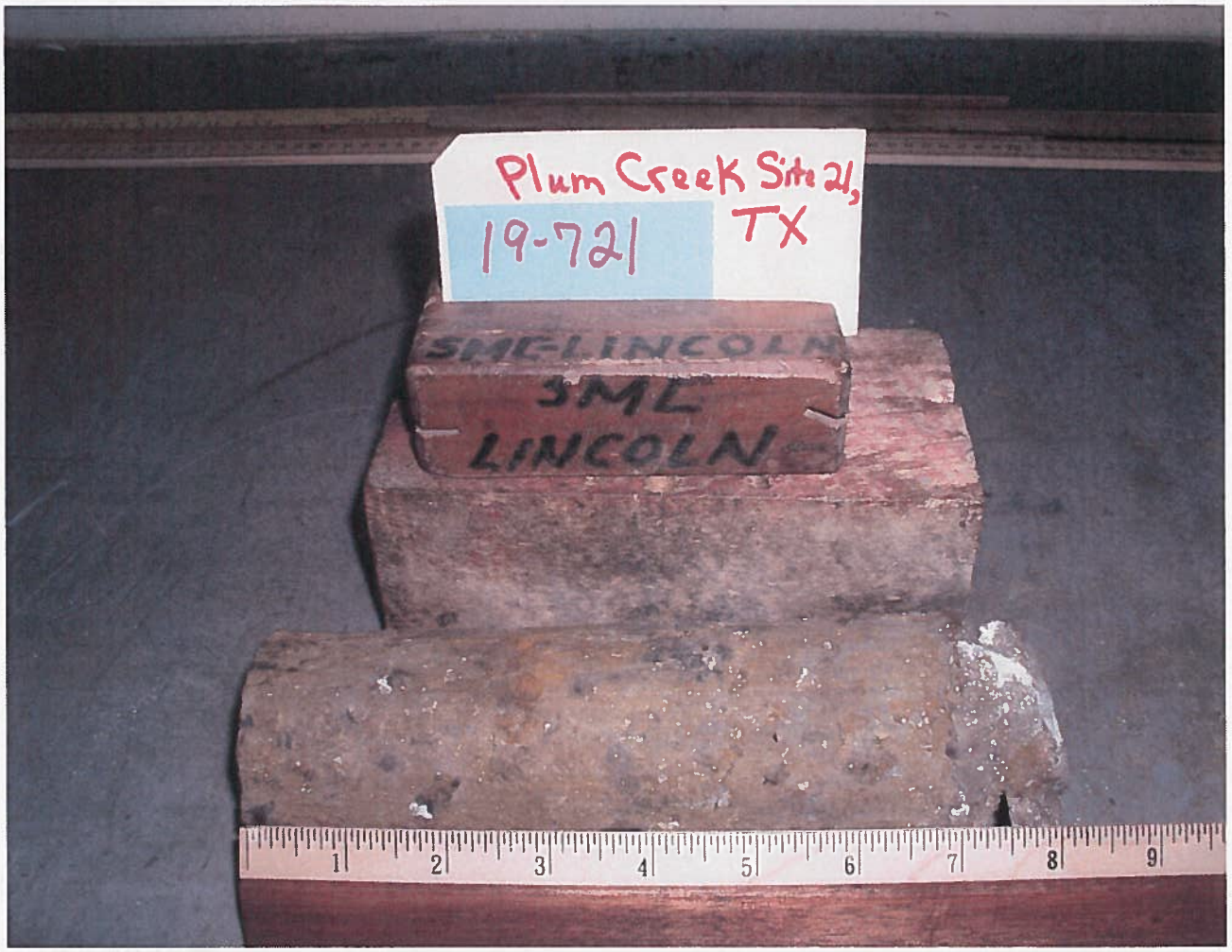

Plum Creek Site 21,
TX
19-716
SMELINCOLN
3ML
LINCOLN


Plum Creek Site 21,
19-717
TX
SMC-LINCOLN
SML
LINCOLN


Plum Creek Site 21,
19-718
TX
SMC-LINCOLN
SML
LINCOLN

Plum Creek Site 21,
TX
17-719
SMC-LINCOLN
SML
LINCOLN

Plum Creek Site 21,
TX
19-720
SMC-LINCOLN
SML
LINCOLN


Plum Creek Site 21,
19-721
TX
SMC-LINCOLN
3ML
LINCOLN

Plum Creek Site 21,
19-721
TX
SMC-LINCOLN
3ML
LINCOLN

Plum Creek Site 21,
19-722
TX
SMC-LINCOLN
SMC
LINCOLN

Plum Creek Site 21,
19-723
TX
SMC-LINCOLN
SMC
LINCOLN

Plum Creek Site 21,
19-724
TX
SMELINCOLN
3ML
LINCOLN

B.4 Sulfate Testing Report (TRI, 2020)

Client: Balcones Geotechnical

TRI Log #: 55065

Project: Plum Creek 21

Jeffrey A. Kuhn, Ph.D., P.E., 4/21/2020

Quality Review/Date

Analytical

COC Line #	Sample Identification	Sulfate Content (mg SO_4/kg)
-	Test Method	ASTM D516
-	Method Detection Limit (MDL)	[5 mg/l]*
1	B-05 (10.0-12.0)	700
2	B-06 (12.0-14.0)	800
3	B-07 (12.0-14.0)	900
4	HA-01 (3.0-4.0)	600
5	HA-06 (3.0-4.0)	300
6	B-602 (13.0-15.0)	3,500
7	B-603 (18.0-19.0)	5,600
8	B-604 (24.5-26.0)	4,900

(1) ND No Detection - Below Method Detection Limit (MDL)

(2) MDL The sulfate MDL is volumetric. Results are mass per mass of dry soil.

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

B.5 Supplemental Sulfate Testing Report (Balcones, 2021)

Balcones Geotechnical
5926 Balcones Drive, Suite 230 Austin, Texas 78731 Phone: 512-380-9969
TBPE Firm Registration F-15624

Mr. Lance Finnefrock, PE, GE
AECOM
9400 Amberglen Blvd
Austin, TX 78729

Project No. 0118-039
July 27, 2021

Soluble Sulfate Test Results
Plum Creek FRS No. 21
Caldwell County, Texas

Eight (8) soluble sulfate content tests were conducted on soil samples provided to Balcones from the NRCS Lincoln, Nebraska Laboratory for the above-referenced project. The results are presented in the following table, using the Lincoln Lab sample designation and boring ID.

Soluble Sulfate Content Test Results			
Lincoln Lab Number	**Boring ID**	**Depth (ft)**	**Soluble Sulfate Content**
Comp-1	-	0-4	2,542 mg/kg
Comp-2	-	4-10	1,300 mg/kg
Comp-3	-	0-3	2,268 mg/kg
Comp-4	-	3-8	3,396 mg/kg
19-237	105	0-4	88 mg/kg
19-238	105	4-10	806 mg/kg
19-245	110	0-3	146 mg/kg
19-246	110	3-8	148 mg/kg

Sincerely,

BALCONES GEOTECHNICAL, LLC
TBPE Firm Registration No. F-15624

Rebecca A. Russo, P.E.
Senior Geotechnical Engineer

TEXAS DEPARTMENT OF TRANSPORTATION

Soil and Base Material

Tex-145-E Part II

Refresh Workbook

File Version: 08/26/09 23:39:39

SAMPLE ID:	Comp-1	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:		SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

Colorimetric Laboratory Test, Tex-145-E, PII

Initial Dilution Ratio, 1:20				
Bottle	**Readings**			
	1.	**2.**	**3.**	**Average**
No. 1	105.0	105.0	105.0	**105.0**
No. 2	136.0	135.0	135.0	**135.3**
No. 3	141.0	141.0	141.0	**141.0**
			Final Average:	**127.1**

Error Messages:

Sulfate Content, PPM: **2542**

Remarks:

Test Method:	Tested By:	Tested Date:
TX145P2		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

TEXAS DEPARTMENT OF TRANSPORTATION

Soil and Base Material

Tex-145-E Part II

Refresh Workbook

File Version: 08/26/09 23:39:39

SAMPLE ID:	Comp-2	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:		SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

Colorimetric Laboratory Test, Tex-145-E, PII

Initial Dilution Ratio, 1:20				
Bottle	**Readings**			
	1.	**2.**	**3.**	**Average**
No. 1	63.0	63.0	63.0	**63.0**
No. 2	63.0	63.0	63.0	**63.0**
No. 3	69.0	69.0	69.0	**69.0**
			Final Average:	**65.0**

Error Messages:

Sulfate Content, PPM: **1300**

Remarks:

Test Method:	Tested By:	Tested Date:
TX145P2		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

TEXAS DEPARTMENT OF TRANSPORTATION

Soil and Base Material

Tex-145-E Part II

Refresh Workbook

File Version: 08/26/09 23:39:39

SAMPLE ID:		SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:		SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

Colorimetric Laboratory Test, Tex-145-E, PII

Initial Dilution Ratio, 1:20				
Bottle	**Readings**			
	1.	**2.**	**3.**	**Average**
No. 1	114.0	114.0	114.0	**114.0**
No. 2	108.0	108.0	108.0	**108.0**
No. 3	119.0	118.0	118.0	**118.3**
			Final Average:	**113.4**

Error Messages:

Sulfate Content, PPM: **2268**

Remarks:

Test Method:	Tested By:	Tested Date:
TX145P2		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

TEXAS DEPARTMENT OF TRANSPORTATION

Soil and Base Material

Tex-145-E Part II

Refresh Workbook

File Version: 08/26/09 23:39:39

SAMPLE ID:		SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:		SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

Colorimetric Laboratory Test, Tex-145-E, PII

Initial Dilution Ratio, 1:20				
Bottle	**Readings**			
	1.	**2.**	**3.**	**Average**
No. 1	196.0	196.0	195.0	**195.7**
No. 2	123.0	122.0	122.0	**122.3**
No. 3	192.0	191.0	191.0	**191.3**
			Final Average:	**169.8**

Error Messages:

Sulfate Content, PPM: **3396**

Remarks:

Test Method:	Tested By:	Tested Date:
TX145P2		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

TEXAS DEPARTMENT OF TRANSPORTATION

Soil and Base Material

Tex-145-E Part II

Refresh Workbook

File Version: 08/26/09 23:39:39

SAMPLE ID:	105 0-3	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:		SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

Colorimetric Laboratory Test, Tex-145-E, PII

Initial Dilution Ratio, 1:20				
Bottle	**Readings**			
	1.	**2.**	**3.**	**Average**
No. 1	6.0	5.0	5.0	**5.3**
No. 2				
No. 3	8.0	8.0	8.0	**8.0**
			Final Average:	**4.4**

Error Messages: -

Sulfate Content, PPM: 88

Remarks:

Test Method:	Tested By:	Tested Date:
TX145P2		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

TEXAS DEPARTMENT OF TRANSPORTATION

Soil and Base Material

Tex-145-E Part II

Refresh Workbook

File Version: 08/26/09 23:39:39

SAMPLE ID:	105 4-10	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:		SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

Colorimetric Laboratory Test, Tex-145-E, PII

Initial Dilution Ratio, 1:20				
Bottle	**Readings**			
	1.	**2.**	**3.**	**Average**
No. 1	21.0	21.0	21.0	**21.0**
No. 2	52.0	52.0	52.0	**52.0**
No. 3	48.0	48.0	48.0	**48.0**
			Final Average:	**40.3**

Error Messages:

Sulfate Content, PPM: **806**

Remarks:

Test Method:	Tested By:	Tested Date:
TX145P2		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

TEXAS DEPARTMENT OF TRANSPORTATION

Soil and Base Material

Tex-145-E Part II

Refresh Workbook

File Version: 08/26/09 23:39:39

SAMPLE ID:	110 0-3	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:		SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

Colorimetric Laboratory Test, Tex-145-E, PII

Initial Dilution Ratio, 1:20				
Bottle	**Readings**			
	1.	**2.**	**3.**	**Average**
No. 1	8.0	8.0	8.0	**8.0**
No. 2	8.0	7.0	8.0	**7.7**
No. 3	6.0	6.0	7.0	**6.3**
			Final Average:	**7.3**

Error Messages:

Sulfate Content, PPM: **146**

Remarks:

Test Method:	Tested By:	Tested Date:
TX145P2		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

TEXAS DEPARTMENT OF TRANSPORTATION

Soil and Base Material

Tex-145-E Part II

Refresh Workbook

File Version: 08/26/09 23:39:39

SAMPLE ID:	110 3-8	SAMPLED DATE:	
TEST NUMBER:		LETTING DATE:	
SAMPLE STATUS:		CONTROLLING CSJ:	
COUNTY:		SPEC YEAR:	
SAMPLED BY:		SPEC ITEM:	
SAMPLE LOCATION:		SPECIAL PROVISION:	
MATERIAL CODE:		GRADE:	
MATERIAL NAME:			
PRODUCER:			
AREA ENGINEER:		PROJECT MANAGER:	

COURSE\LIFT:		STATION:		DIST. FROM CL:	

Colorimetric Laboratory Test, Tex-145-E, PII

Initial Dilution Ratio, 1:20				
Bottle	**Readings**			
	1.	**2.**	**3.**	**Average**
No. 1	7.0	6.0	6.0	**6.3**
No. 2	8.0	8.0	8.0	**8.0**
No. 3	8.0	8.0	8.0	**8.0**
			Final Average:	**7.4**

Error Messages:

Sulfate Content, PPM: **148**

Remarks:

Test Method:	Tested By:	Tested Date:
TX145P2		

Test Stamp Code:	Omit Test:	Completed Date:	Reviewed By:

Locked By:	TxDOT:	District:	Area:

Authorized By:	Authorized Date:

B.6 NRCS Supplemental Laboratory Results (July 2021)

NRCS-ENG-354
Rev. June 2004
File Code ENG-210-22

U.S. Department of Agriculture
Natural Resources Conservation Service

Soil Mechanics Laboratory Data

01/18/19		TEXAS (WHRB) (REGULATED)			Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight																	Atterberg Limits					Moisture-Density Relationships □ Standard □ Modified			Undisturbed Sample Data			Special Tests				
Lab. Sample No.	Field Number	Location and Description	Sample Type	Depth	Fines					Sand						Gravel								Unified Classification	Crumb	Dispersion %								G_S <#4				
19-		**Plum Creek Site 21** Caldwell County		ft.	0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	#140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	L.L.	P.I.				Curve No.	Max γ_d p.c.f.	w_0 %	γ_d p.c.f.	w_C %		pH				
Comp		Foundation B-4		10-12.5																		45	26														
5		Foundation B-5		7.5-14																																	
		w/ 3% Lime																				45	9														
		w/ 6% Lime																				45	8														
Comp		Downstream Toe, B-603		13.5-15.5																		62	40														
6		Downstream Toe, B-604		20-21																																	
		w/ 2% Lime																				60	17														
		w/ 4% Lime																				58	14														
		w/ 6% Lime																				57	12														
Comp		Downstream Toe, B-602		15-19																		54	34														
7																																					
		w/ 2% Lime																				54	15														
		w/ 4% Lime																				54	12														
		w/ 6% Lime																				52	7														
01/18/19		TEXAS (WHRB)			Mechanical Analysis Grain Size Distribution Expressed as Percent Finer by Dry Weight																	Atterberg Limits					Moisture-Density Relationships □ Standard			Undisturbed Sample Data			Special Tests				

Date Reported: _____ Initials: _____

NRCS-ENG-354
Rev. June 2004
File Code ENG-210-22

U.S. Department of Agriculture
Natural Resources Conservation Service

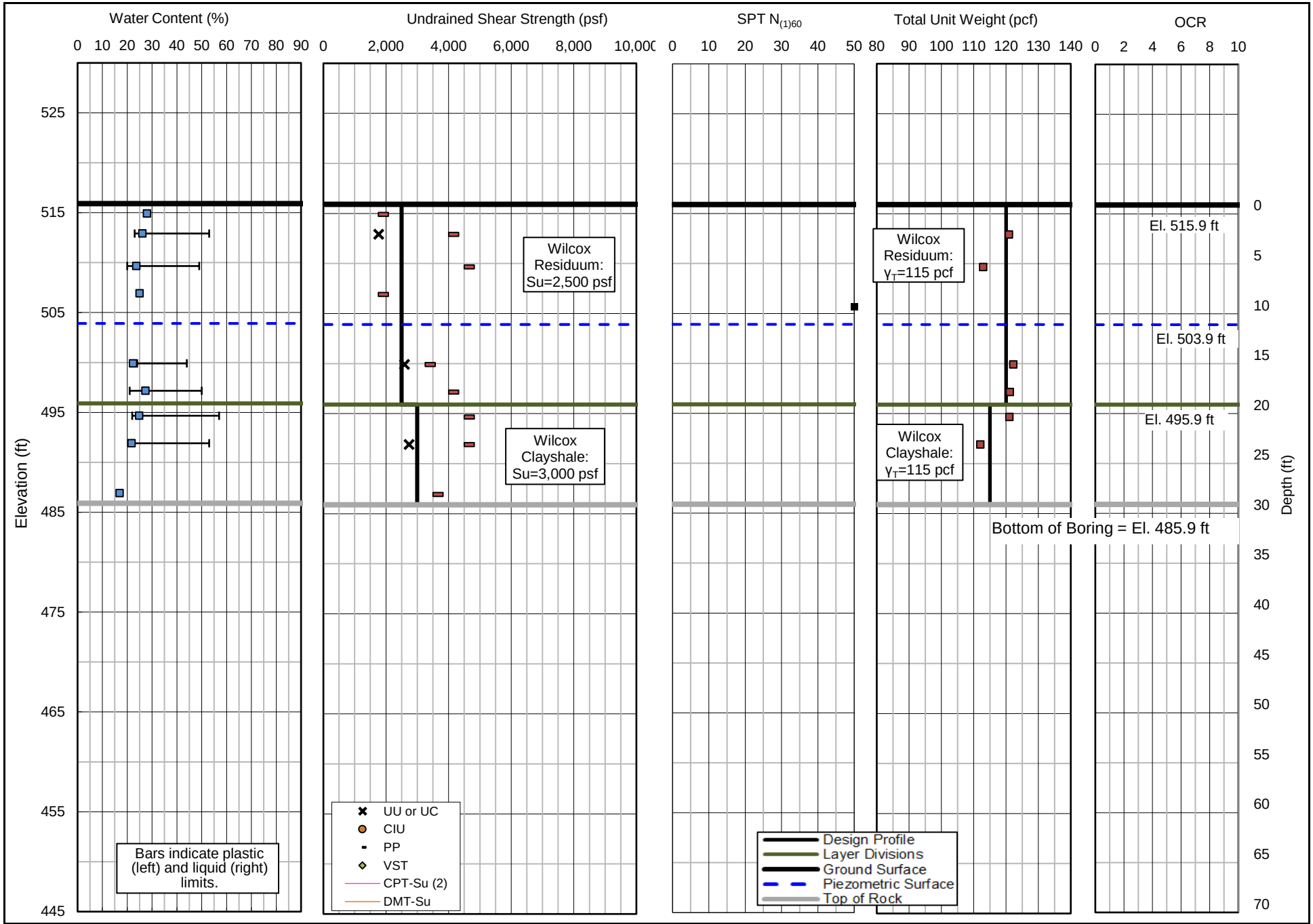
Soil Mechanics Laboratory Data

Sheet _15__ of _15__

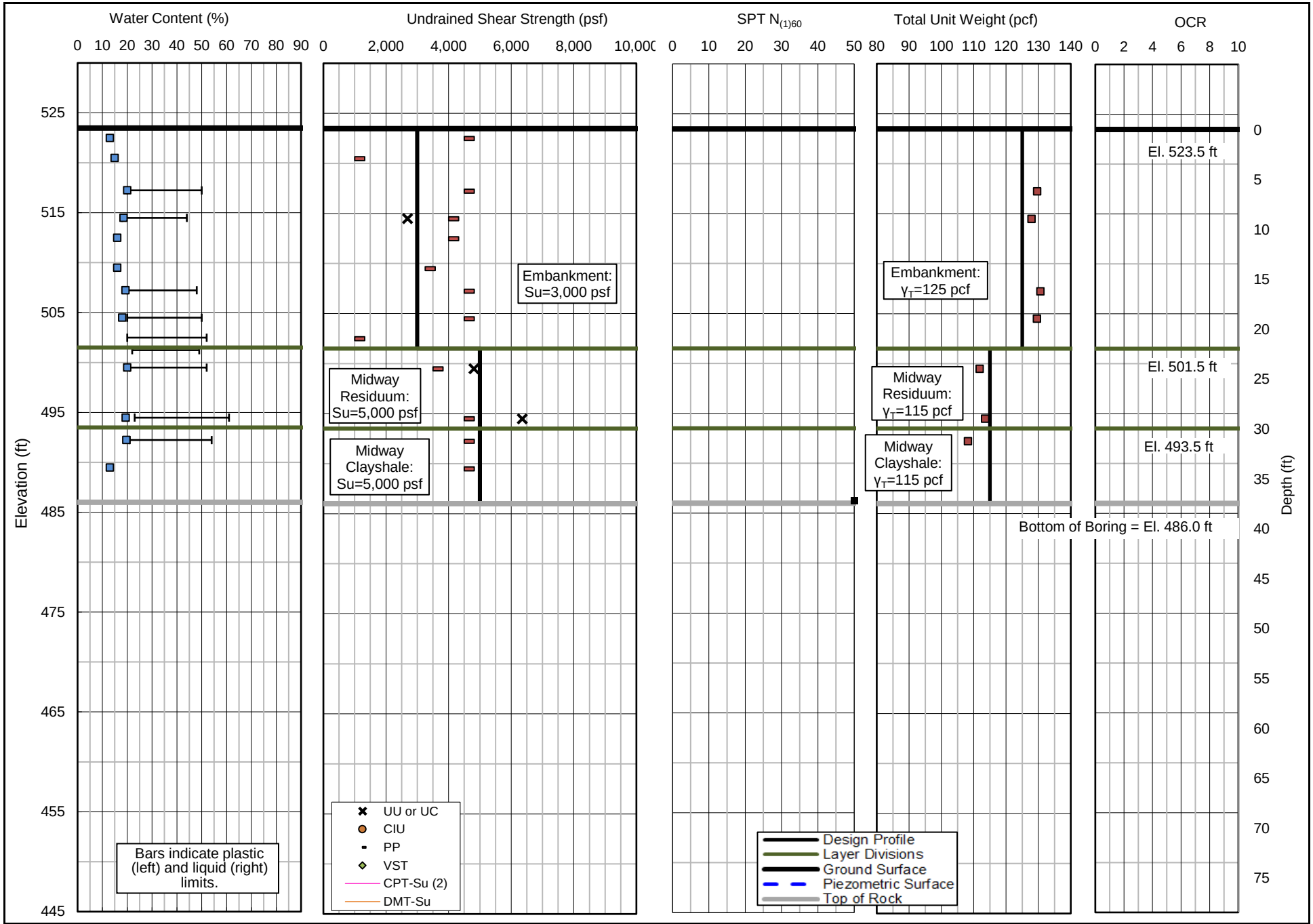
Lab. Sample No. 19-	Field Number	(REGULATED) Location and Description **Plum Creek Site 21** Caldwell County	Sample Type	Depth ft.	Fines 0.002 mm	0.005 mm	0.02 mm	0.05 mm	#200 0.074 mm	Sand #140 0.105 mm	#60 0.250 mm	#40 0.42 mm	#20 0.84 mm	#10 2.0 mm	#4 4.76 mm	Gravel 3/8" 9.525 mm	1/2" 12.7 mm	3/4" 19.05 mm	1" 25.4 mm	1 1/2" 38.1 mm	3" 76.2 mm	Limits L.L.	P.I.	Unified Classific	Crumb	Dispersion	□ Standard □ Modified Curve No.	Max γ_d p.c.f.	w_0 %	Sample Data γ_d p.c.f.	w_C %	G_S <#4	pH				
233		Borrow, B-102		0-4																		44	27	CL													
234		Borrow, B-102		4-10																		35	21	CL													
235		Borrow, B-104		0-4																		45	28	CL													
236		Borrow, B-104		4-10																		42	27	CL													
239		Borrow, B-107		0-3																		60	38	CH													
240		Borrow, B-107		3-8																		69	46	CH													
243		Borrow, B-109		0-3																		51	33	CH													
244		Borrow, B-109		3-8																		68	46	CH													

Date Reported: _____ Initials: _____

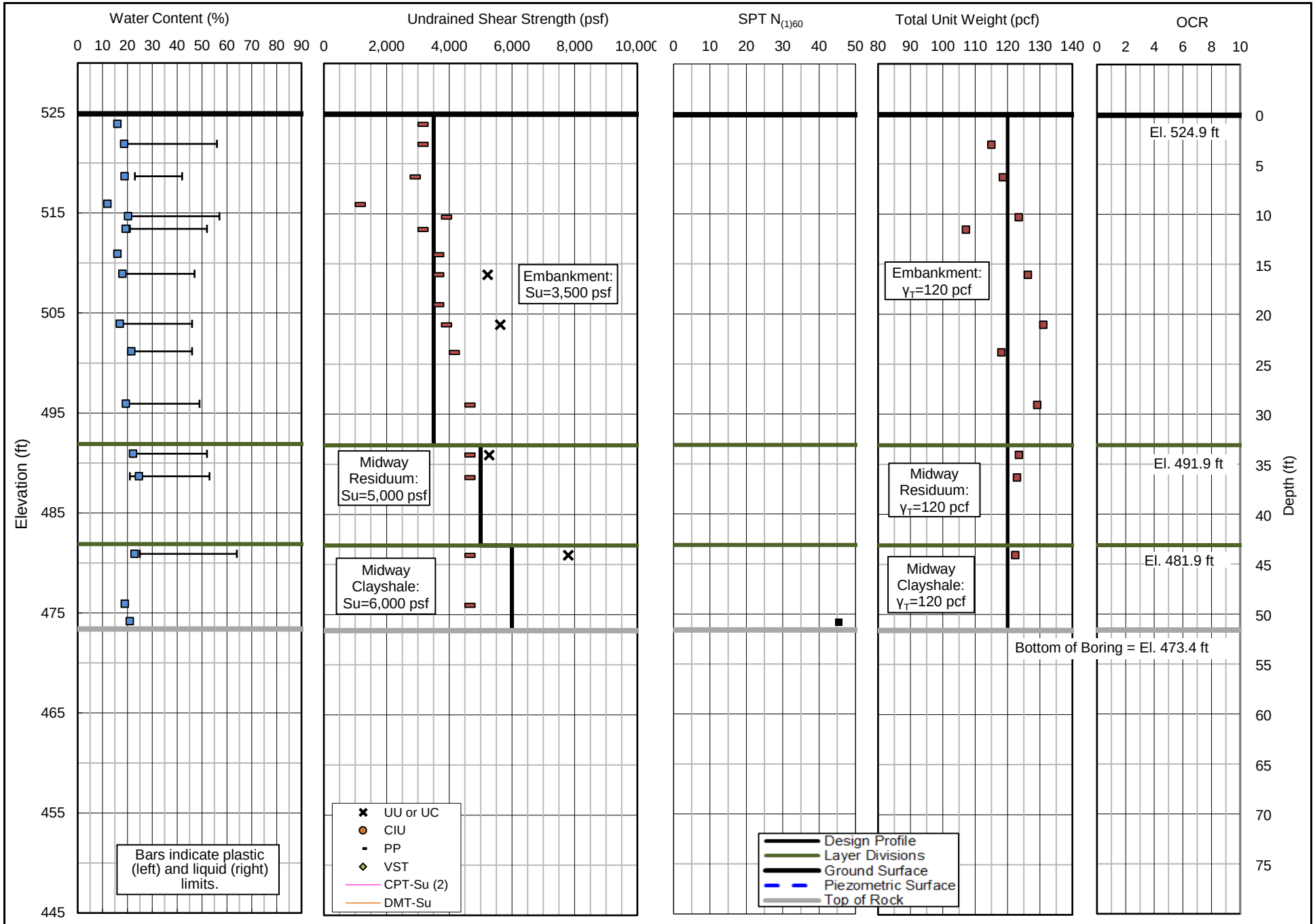
Appendix C Laboratory Data Plots for Borings



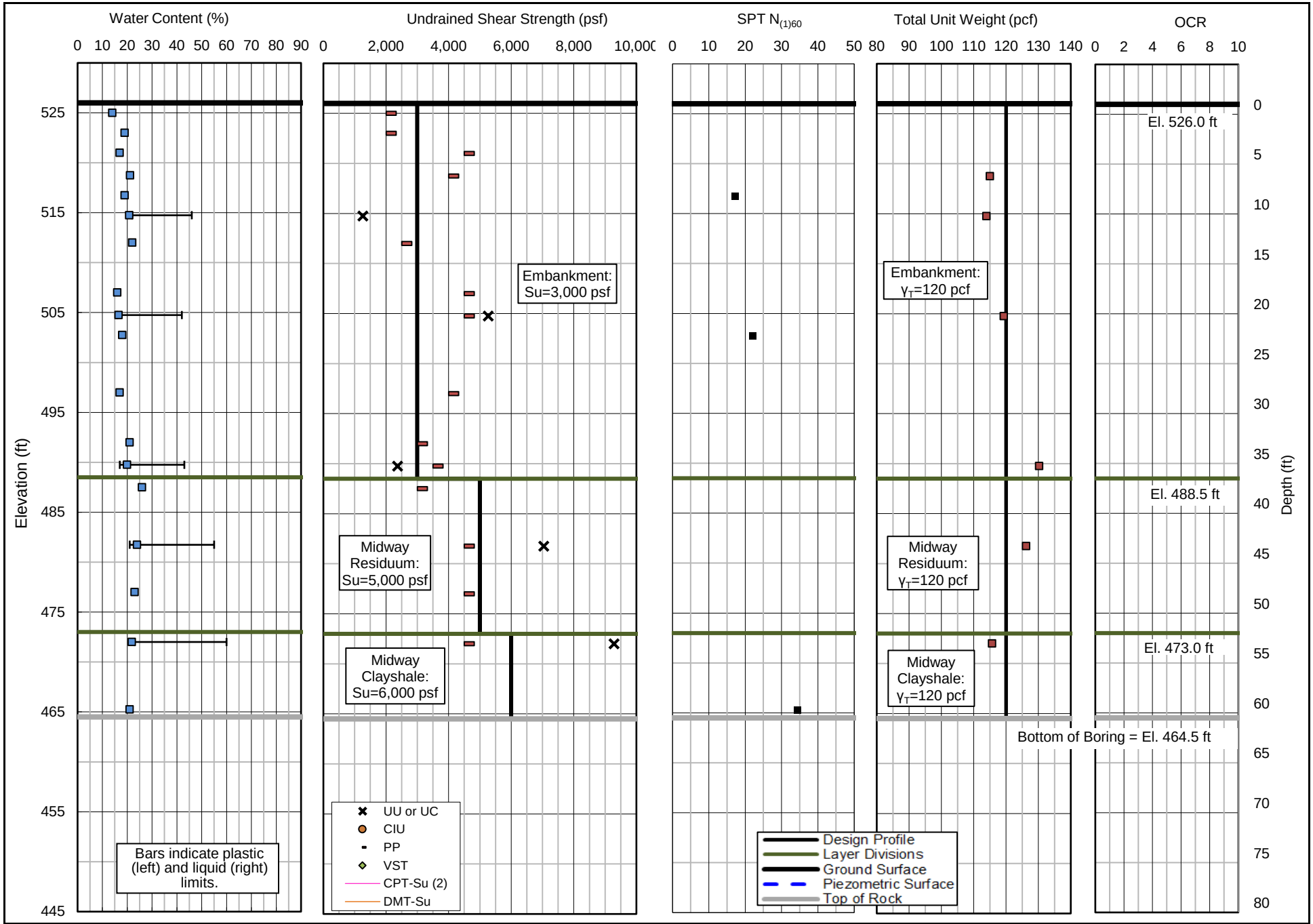
Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**B-01**		**1**
60586838	**Embankment Crest**		



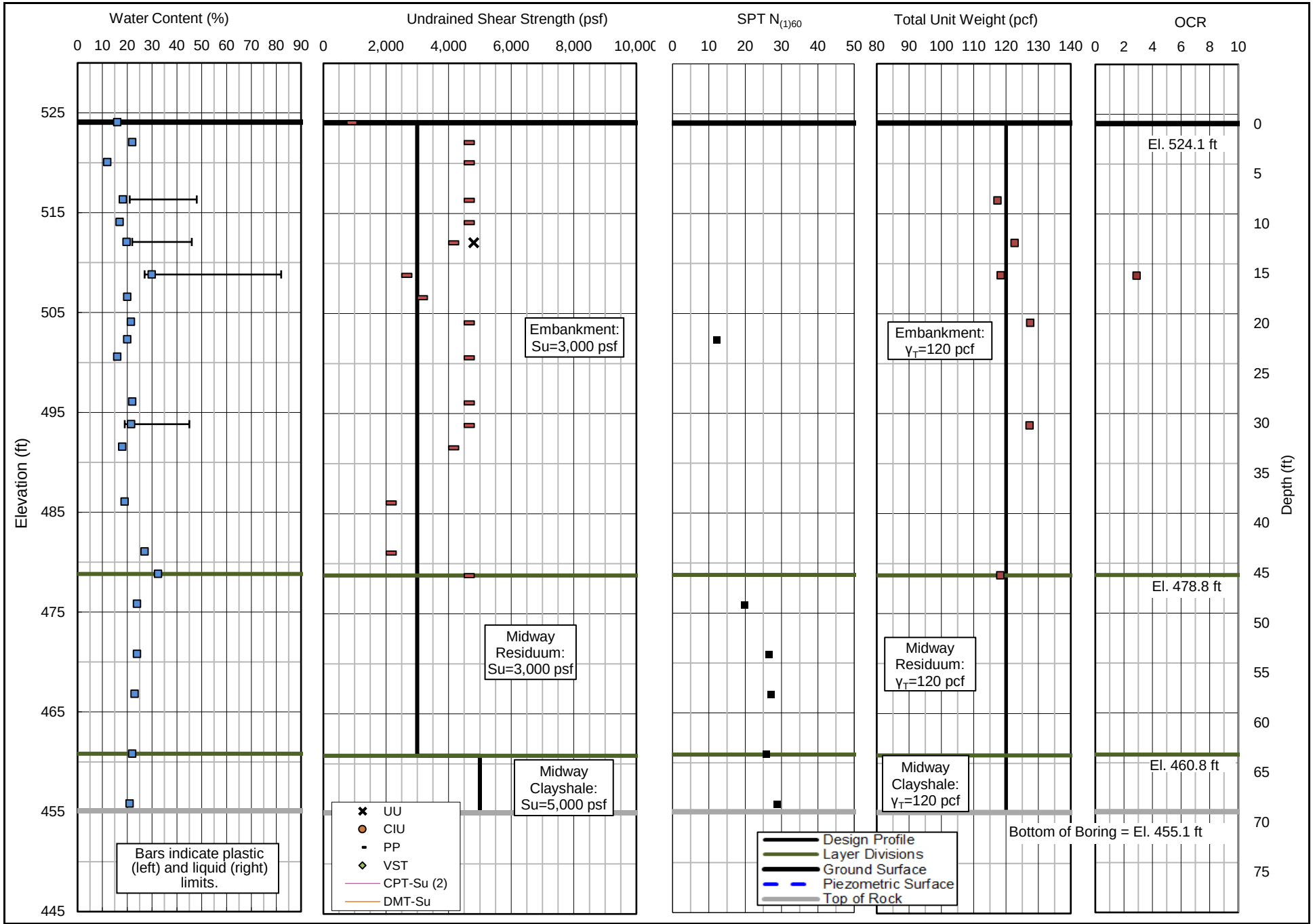
Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**B-02**		**2**
60586838	**Embankment Crest**		



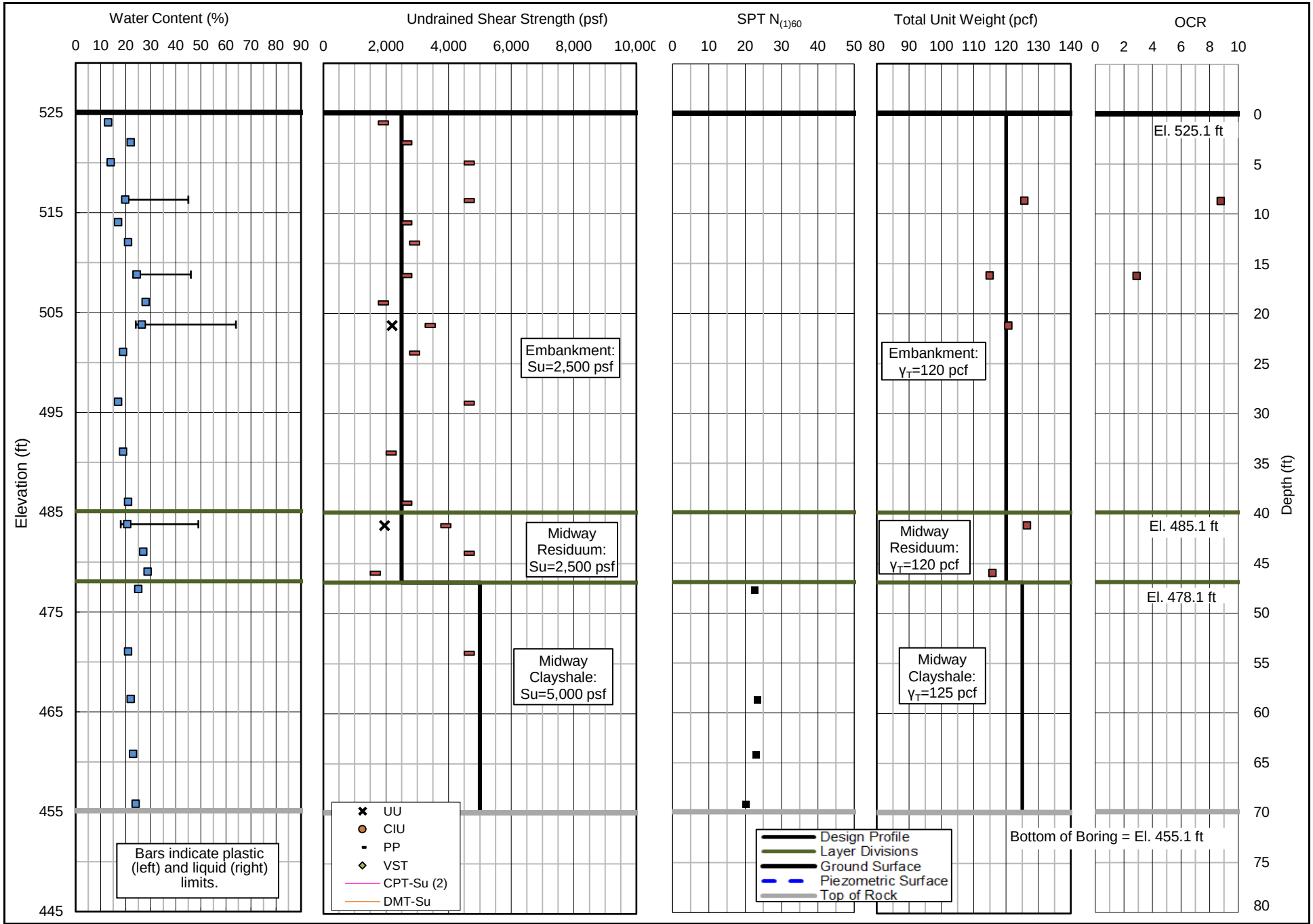
Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**B-03**		**3**
60586838	**Embankment Crest**		



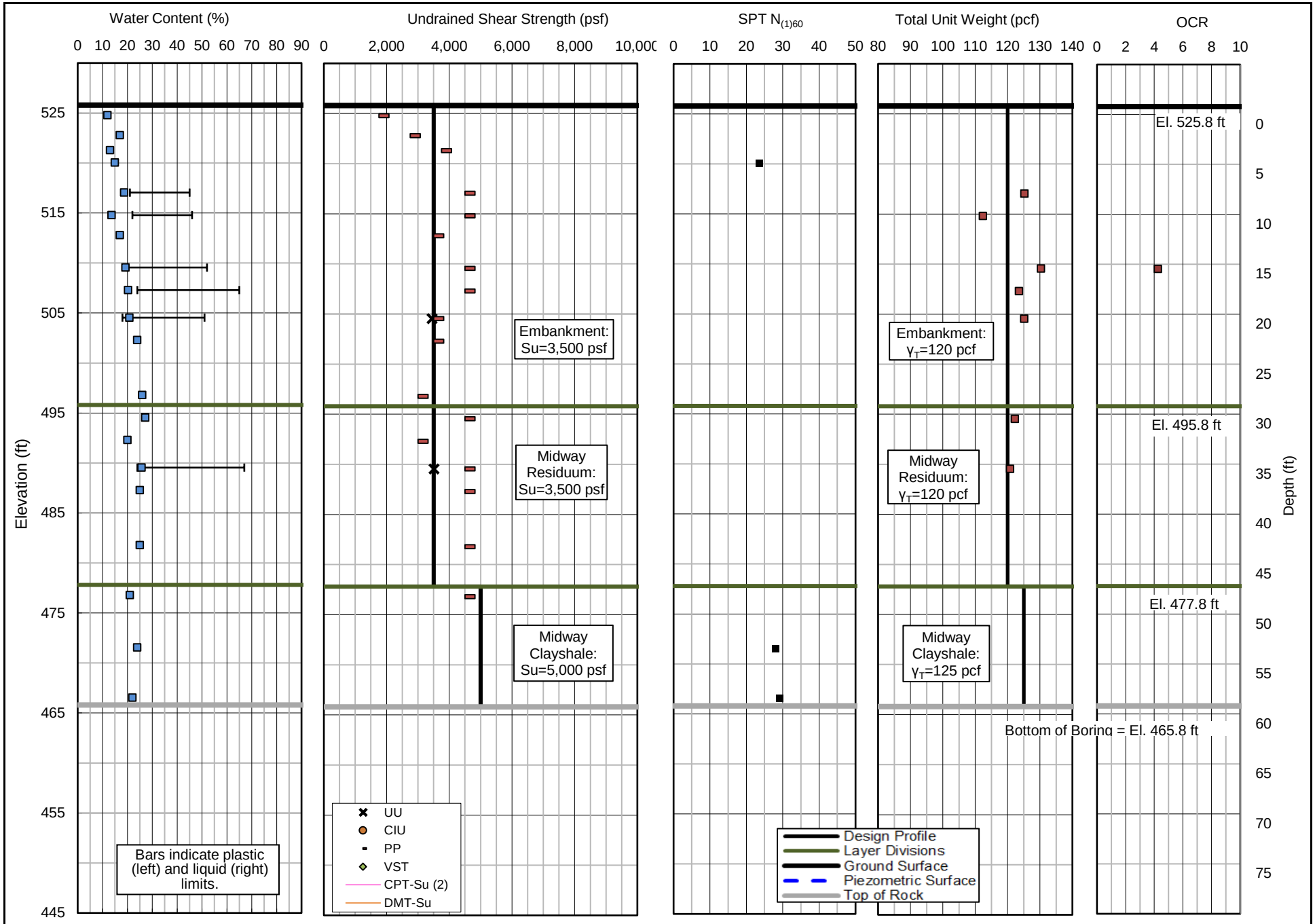
Plum Creek FRS No. 21	**Summary of Engineering Properties for PSW Replacement**	AECOM	**Figure**
Lockhart, Texas	**B-04P**		**4**
60586838	**Embankment Crest**		



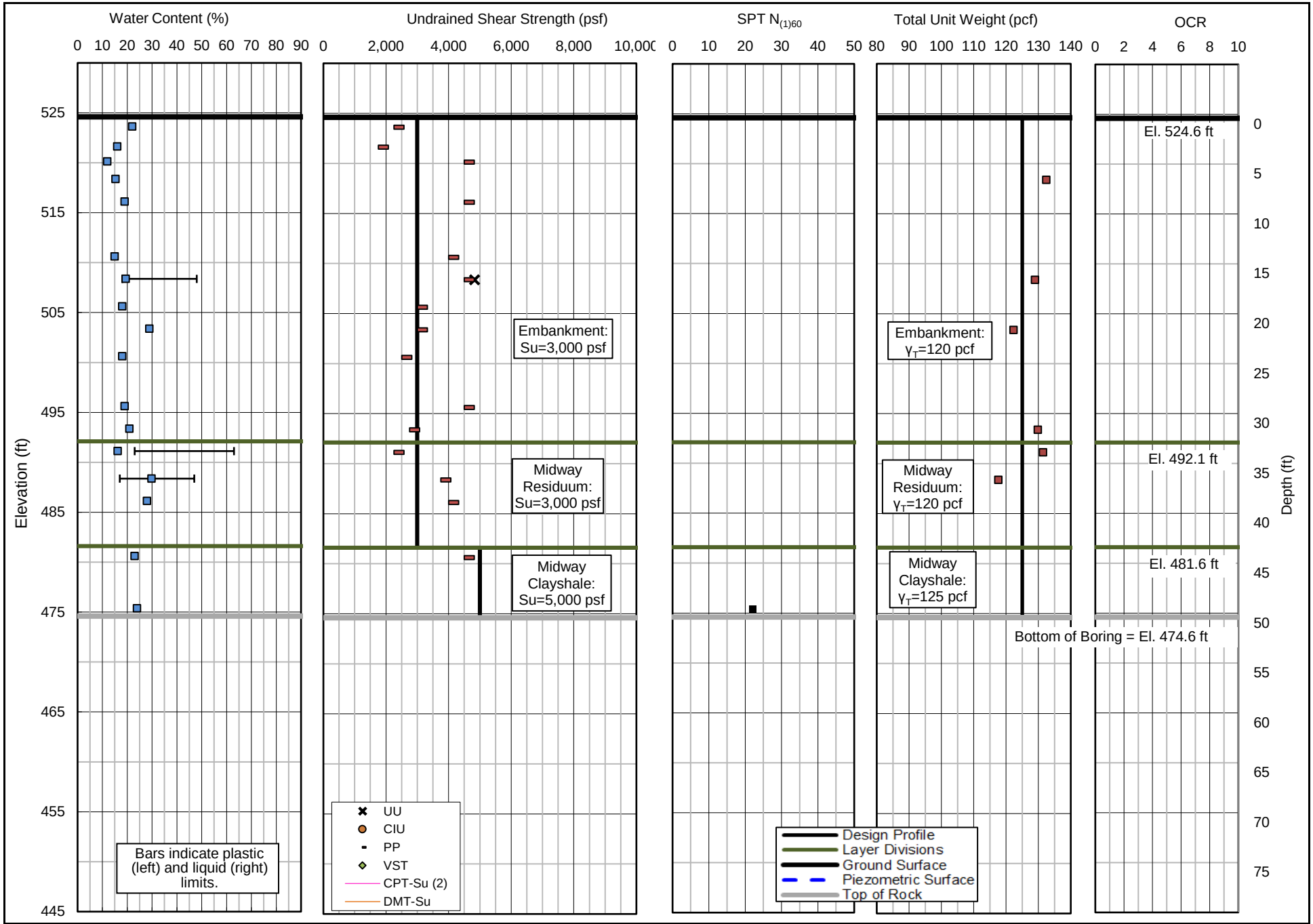
Plum Creek FRS No. 21	**Summary of Engineering Properties for RCC Spillway (Left Side)**	AECOM	**Figure**
Lockhart, Texas	**B-05**		**5**
60586838	**Embankment Crest**		



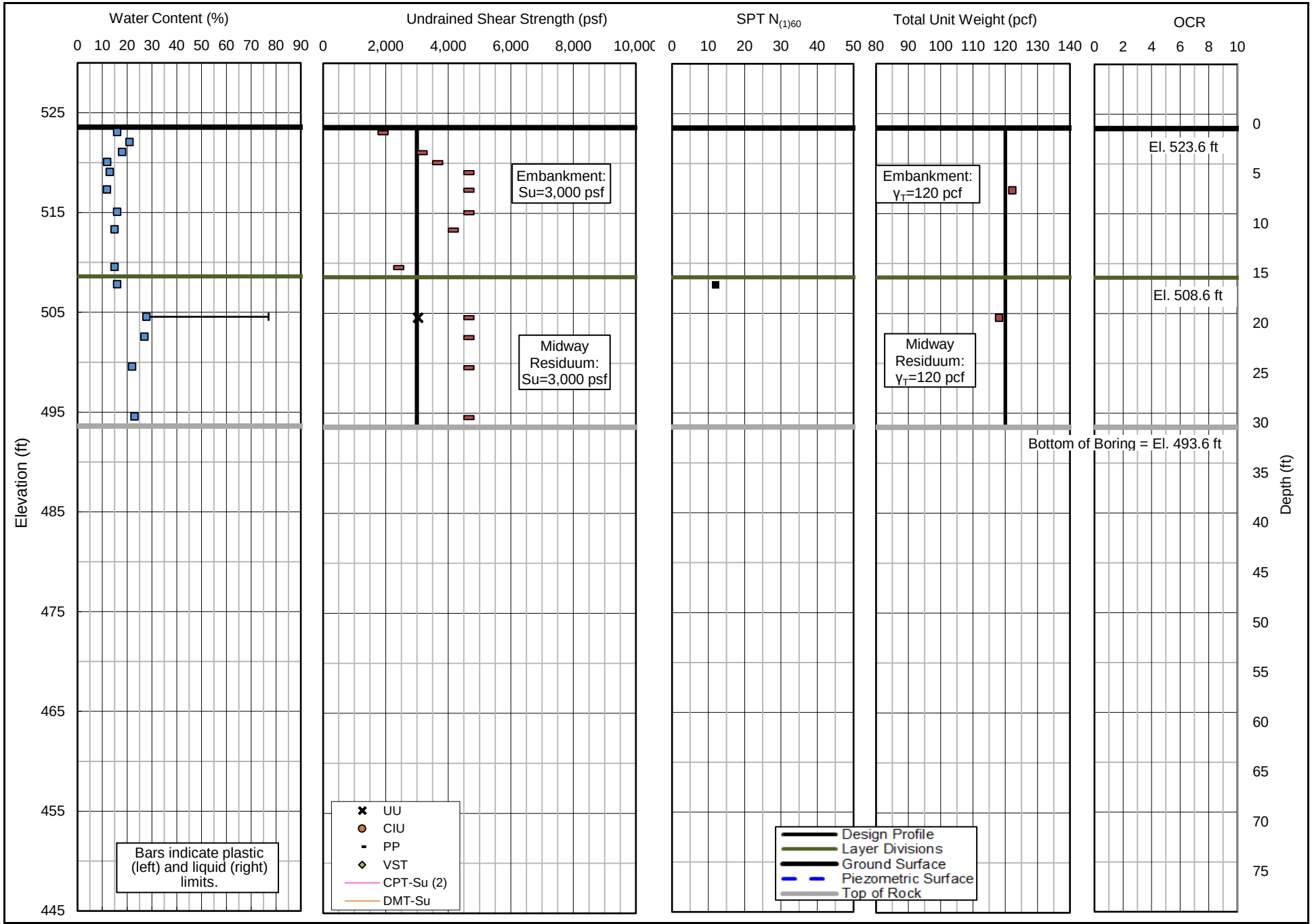
Plum Creek FRS No. 21	**Summary of Engineering Properties for RCC Spillway (Middle)**	AECOM	**Figure**
Lockhart, Texas	**B-06P**		**6**
60586838	**Embankment Crest**		



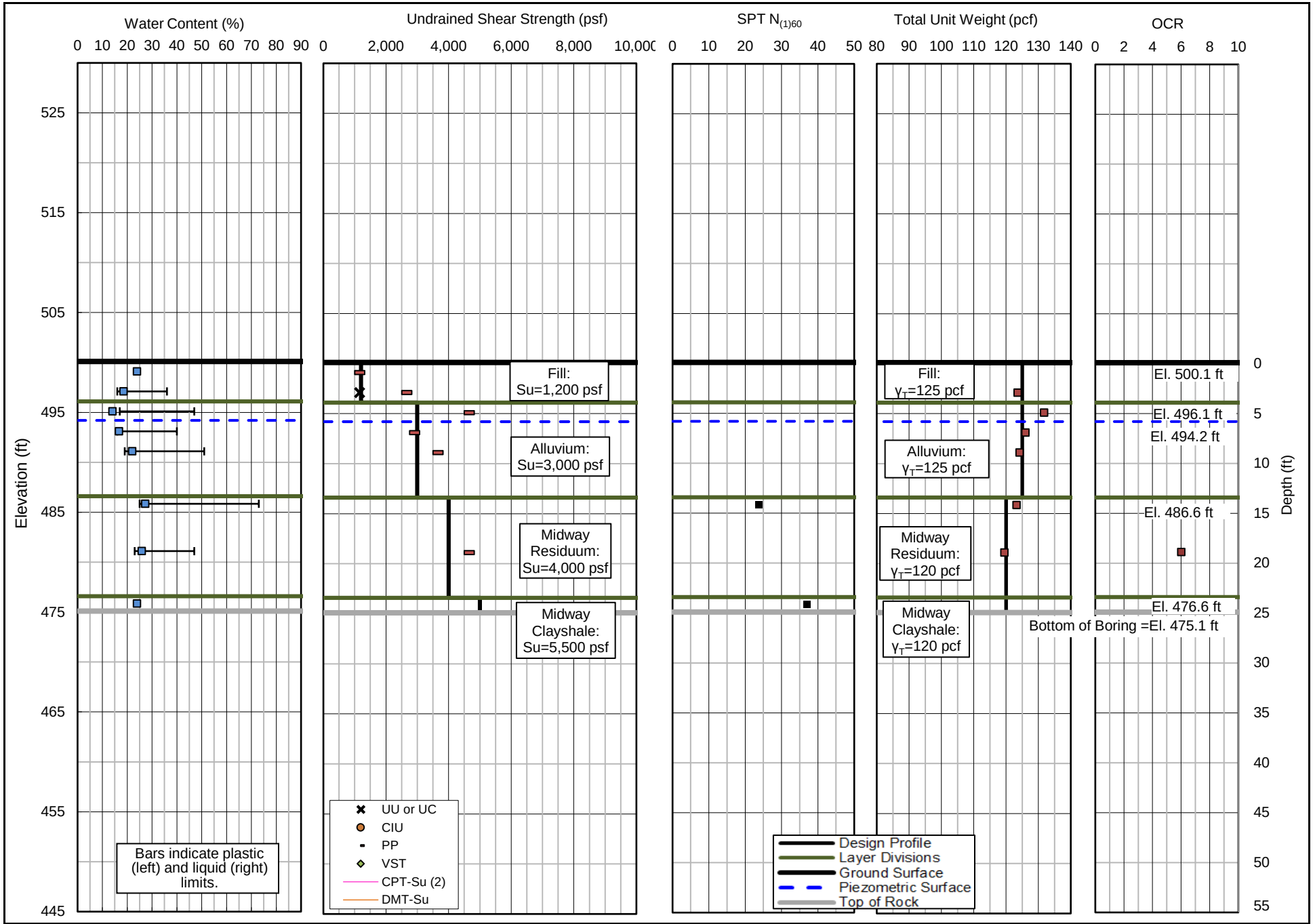
Plum Creek FRS No. 21	**Summary of Engineering Properties for RCC Spillway (Right Side)**	AECOM	**Figure**
Lockhart, Texas	**B-07**		**7**
60586838	**Embankment Crest**		



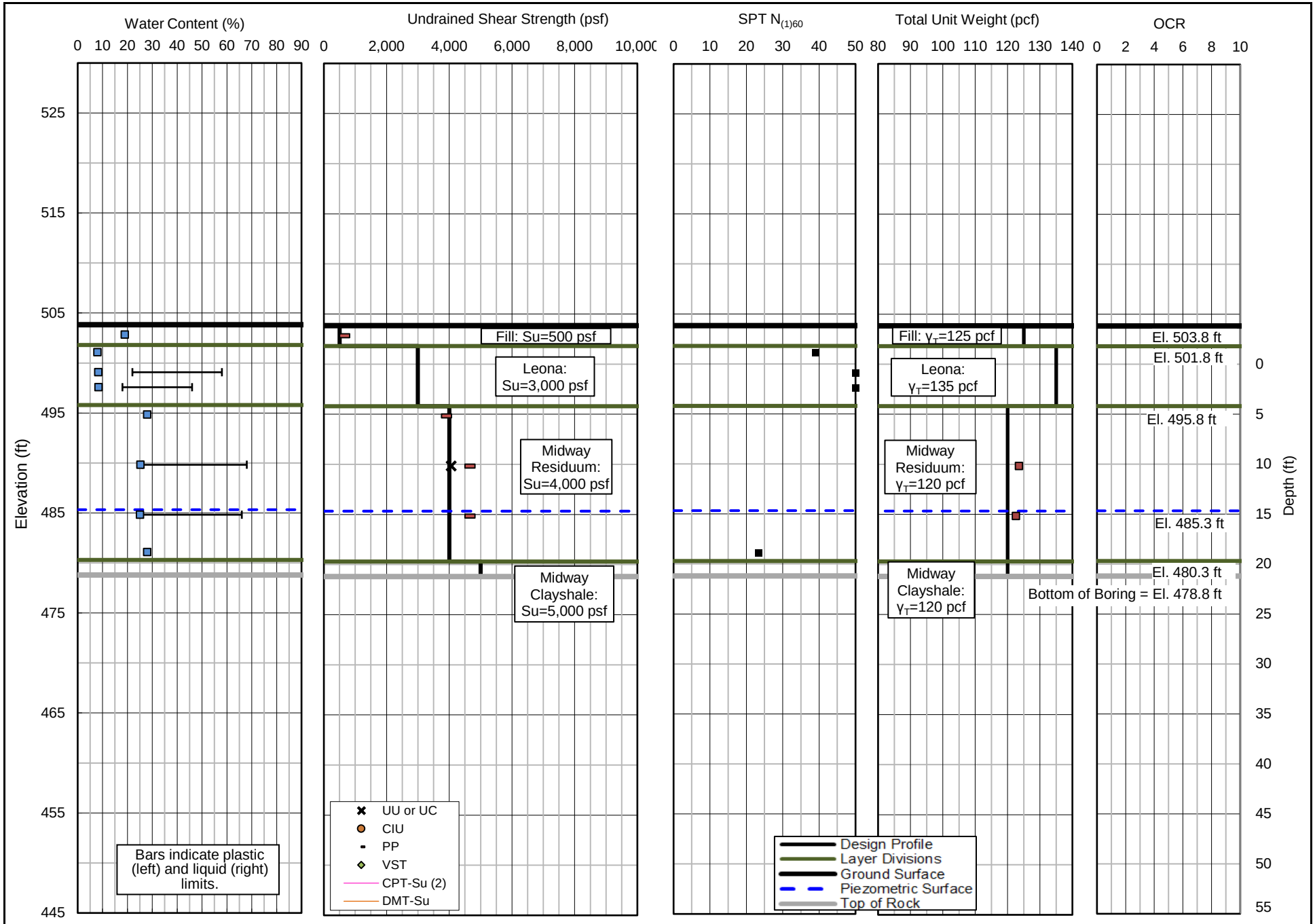
Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**B-08**		**8**
60586838	**Embankment Crest**		



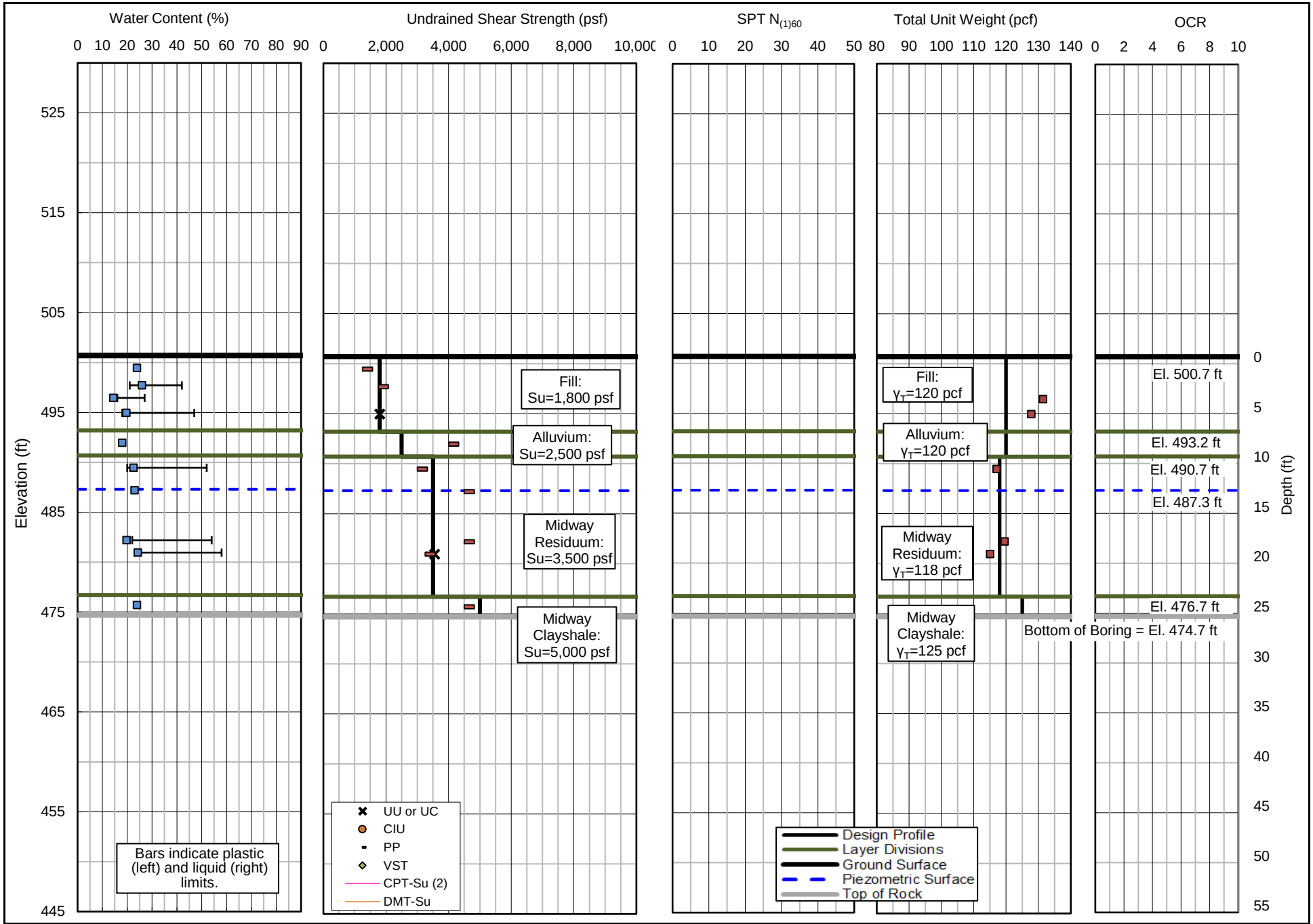
Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**B-09**		**9**
60586838	**Embankment Crest**		



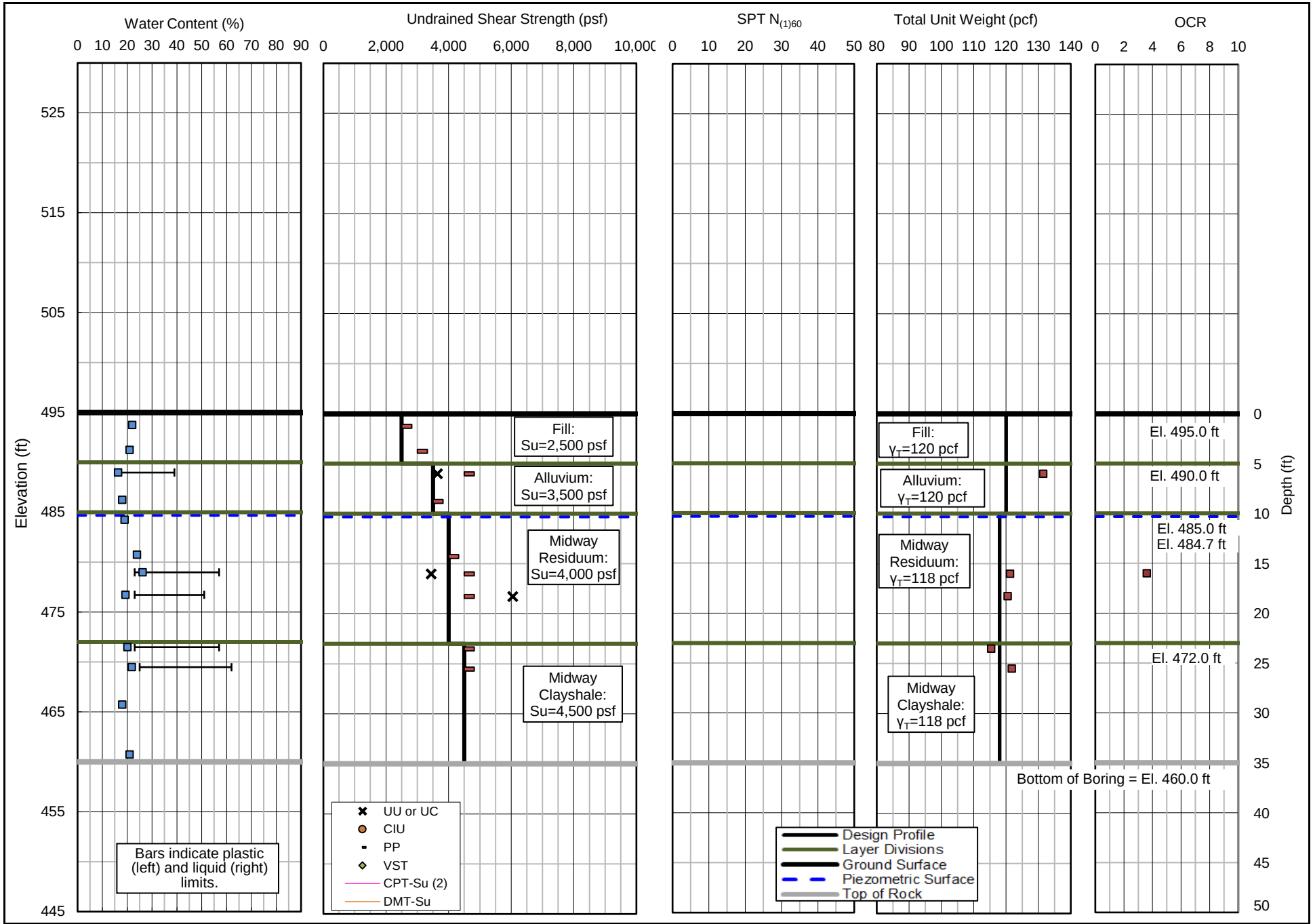
Plum Creek FRS No. 21	**Summary of Engineering Properties for New RCC ASW (Right Side)**	AECOM	**Figure**
Lockhart, Texas	**B-301**		**10**
60586838	**Upstream Toe**		



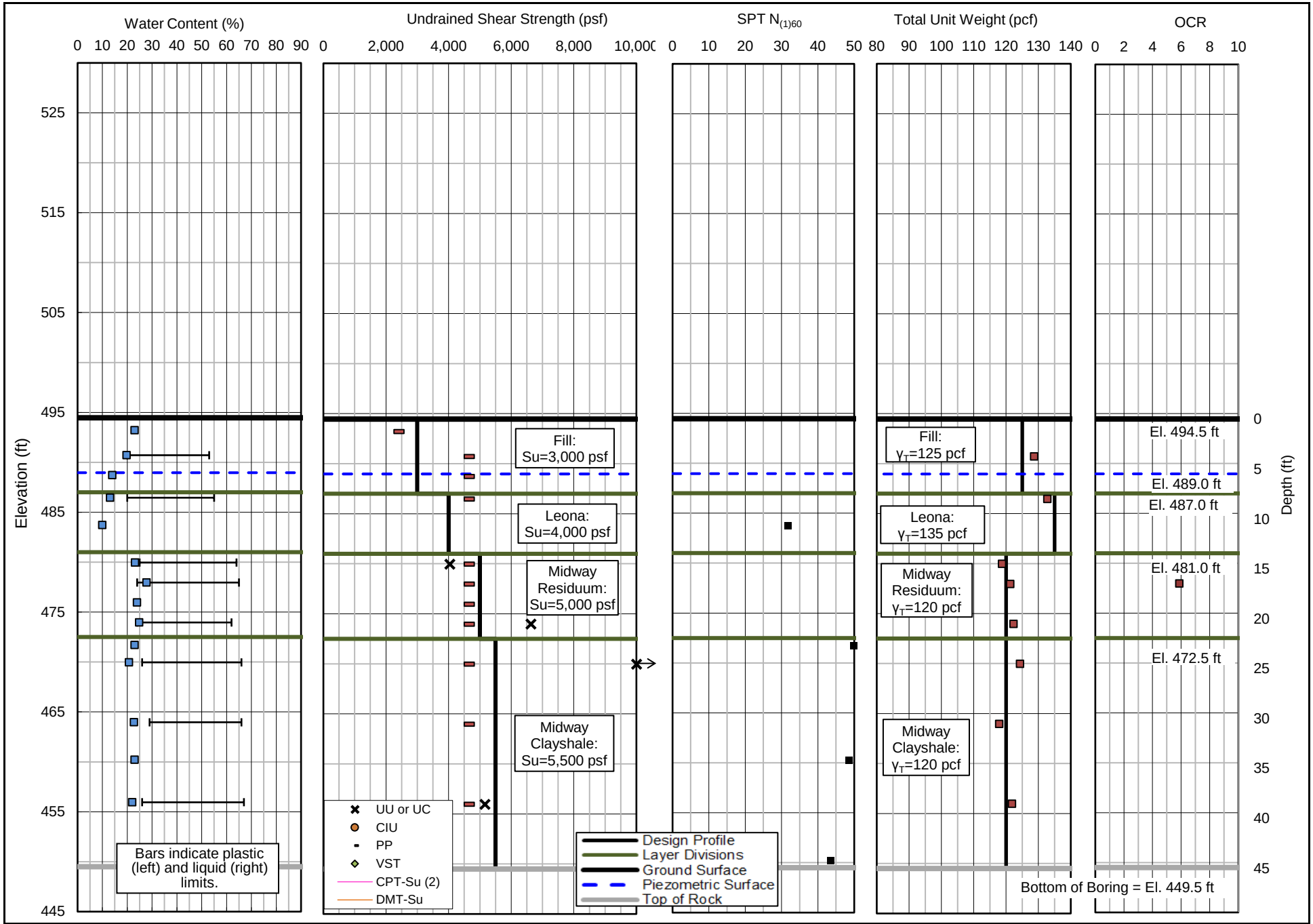
Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**B-302**		**10**
60586838	**Upstream Toe**		



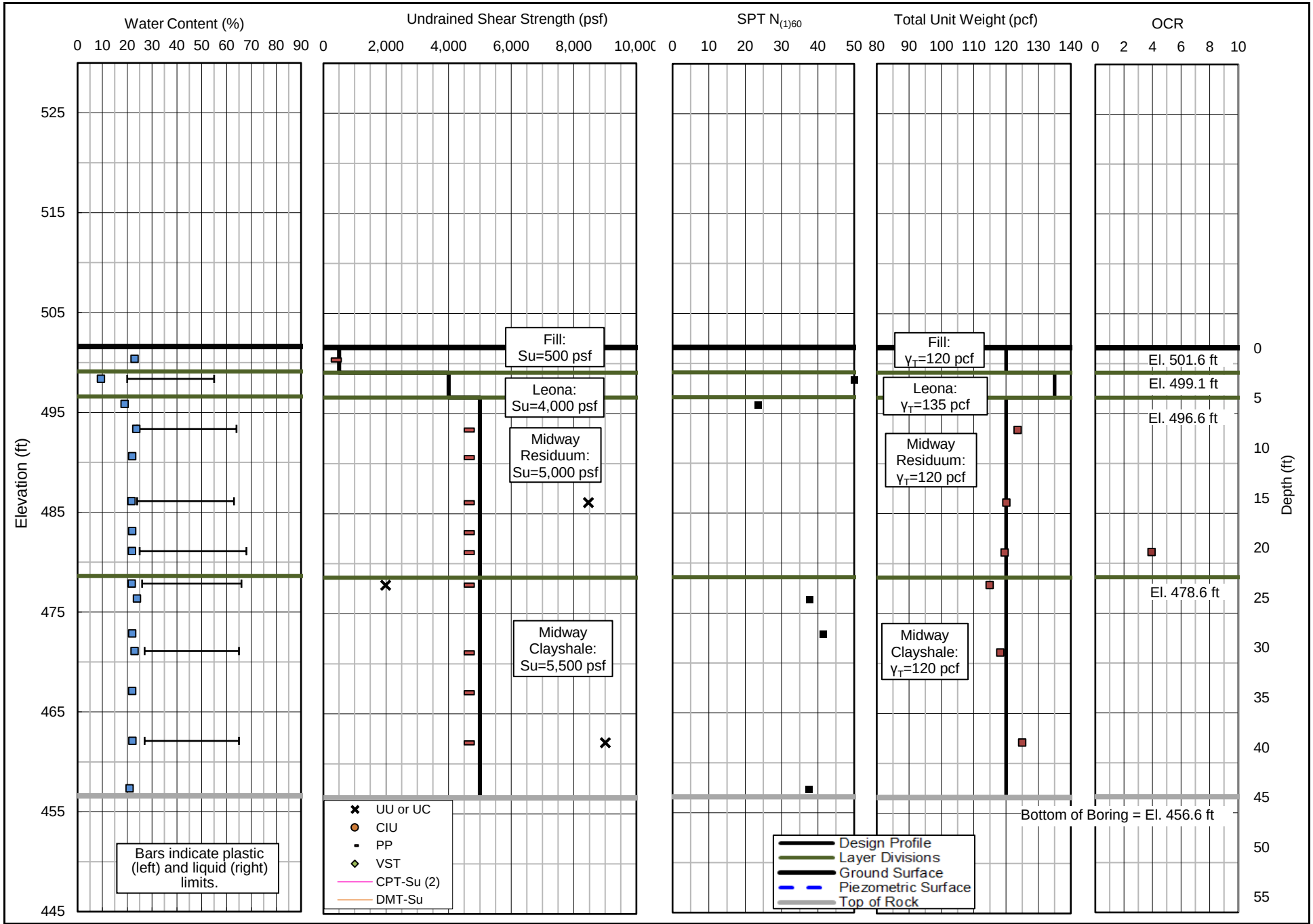
Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**B-601**		**13**
60586838	**Downstream Toe**		



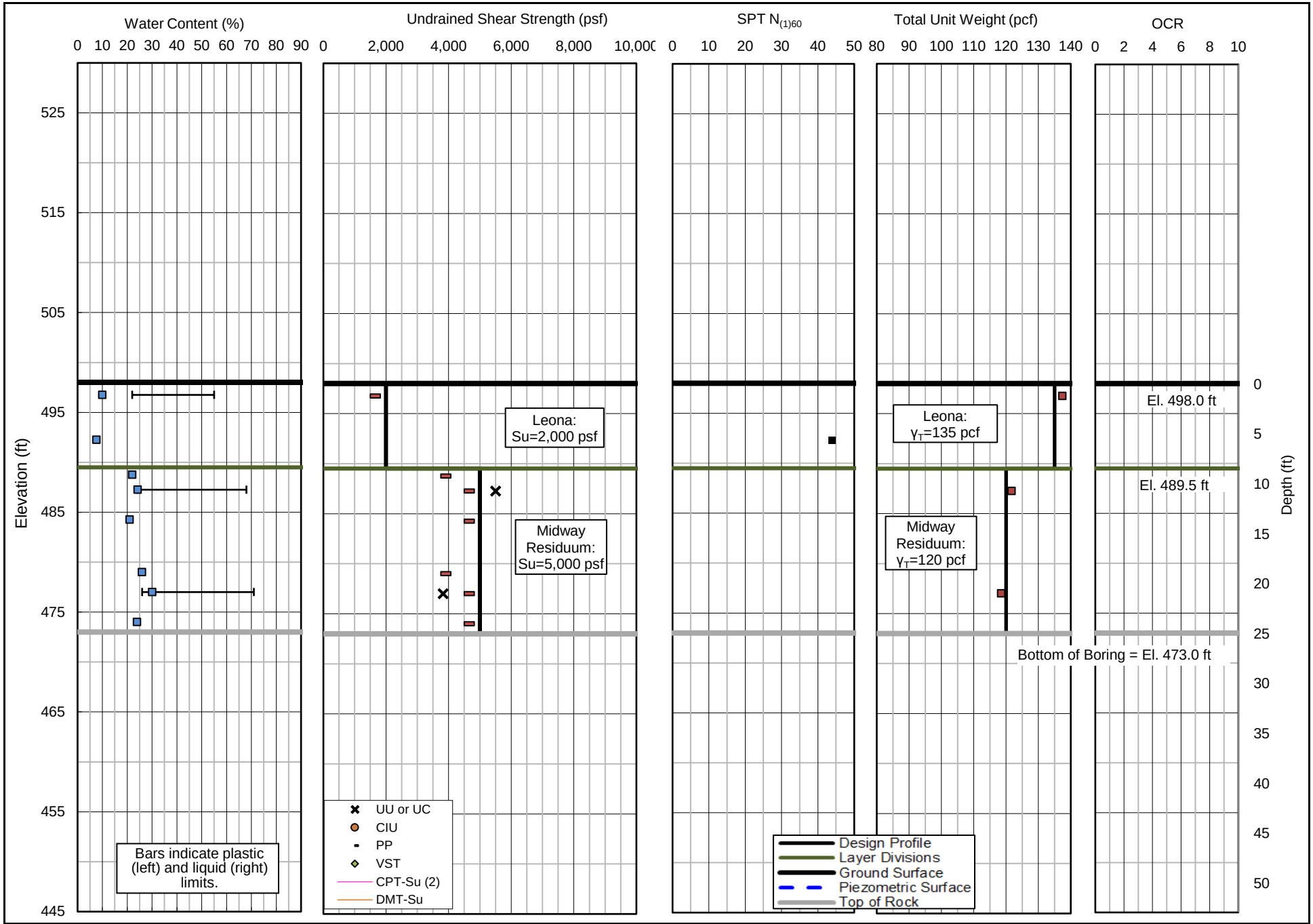
Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**B-602**		**14**
60586838	**Downstream Toe**		



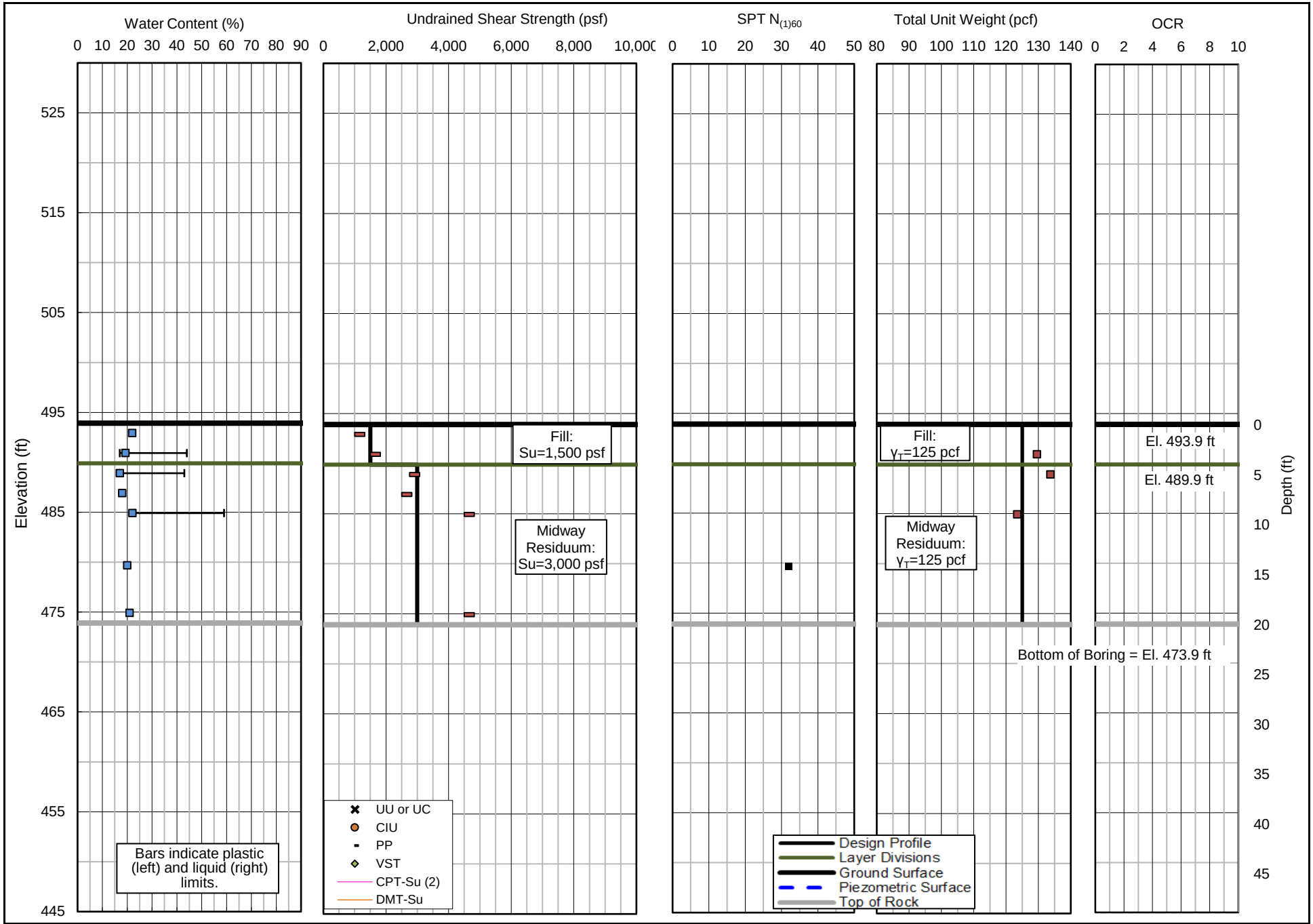
Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**B-603**		**15**
60586838	**Downstream Toe**		



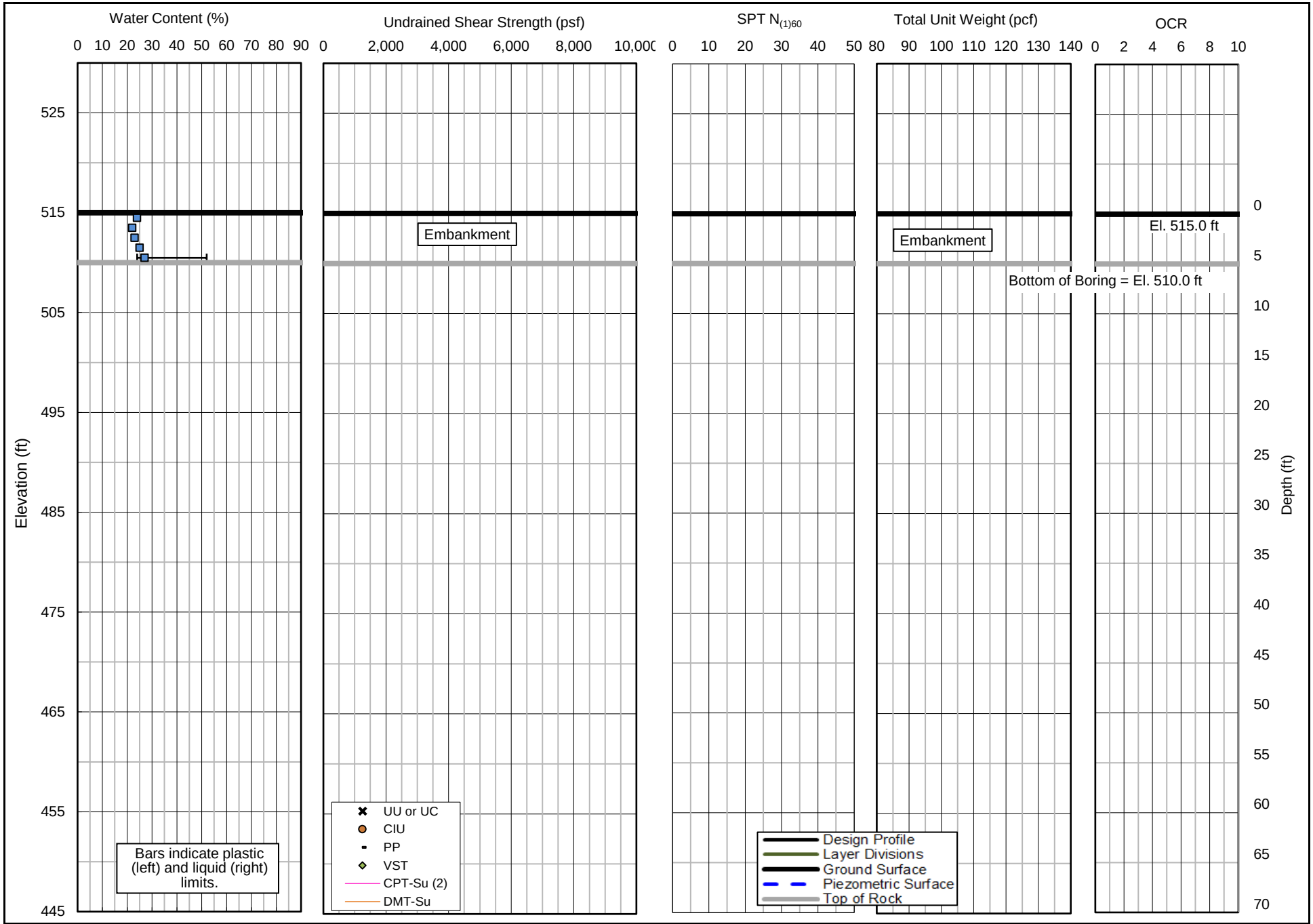
Plum Creek FRS No. 21	**Summary of Engineering Properties for New RCC ASW (Right Side)**	AECOM	**Figure**
Lockhart, Texas	**B-604**		**16**
60586838	**Downstream Toe**		



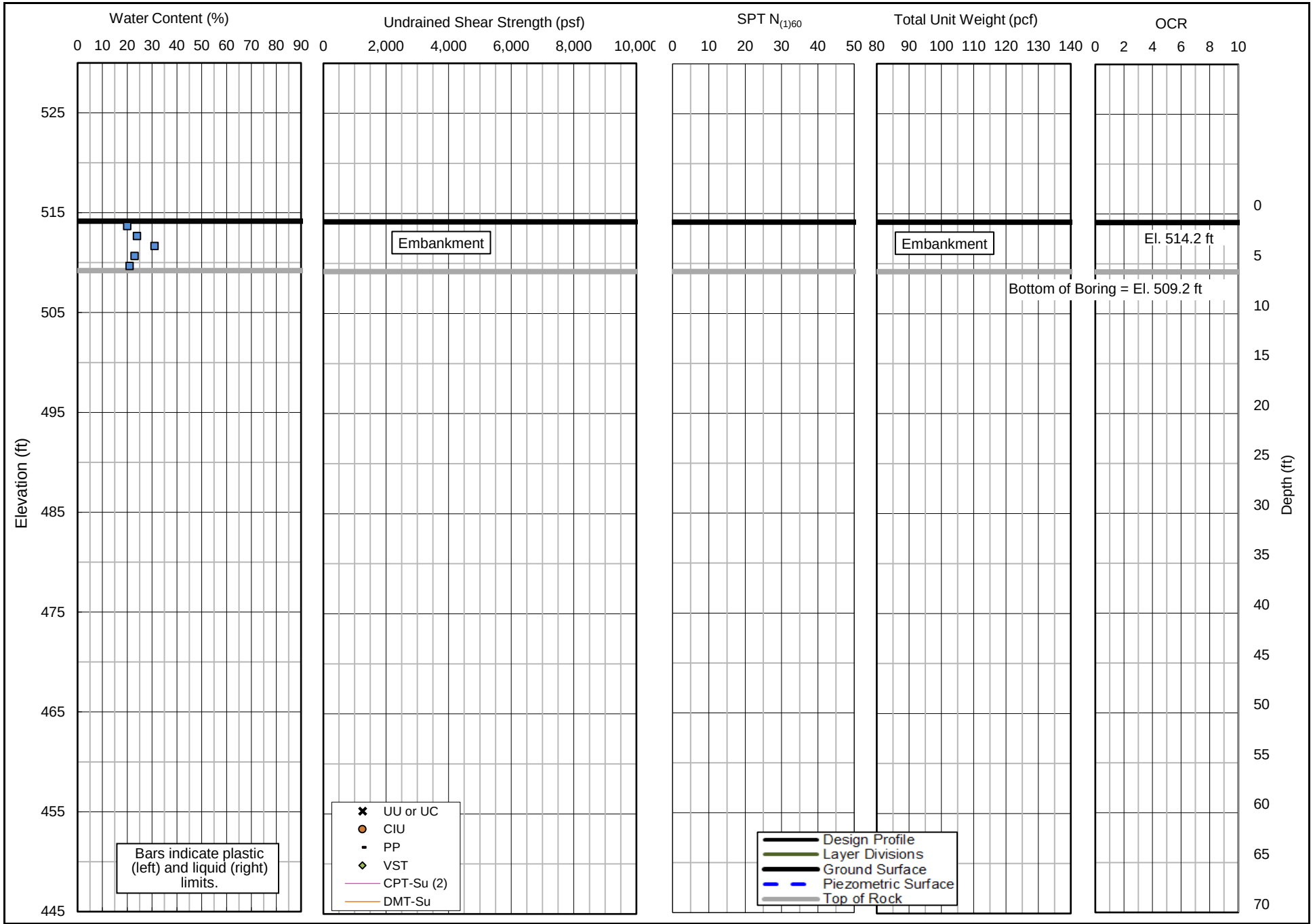
Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**B-605**		**17**
60586838	**Downstream Toe**		



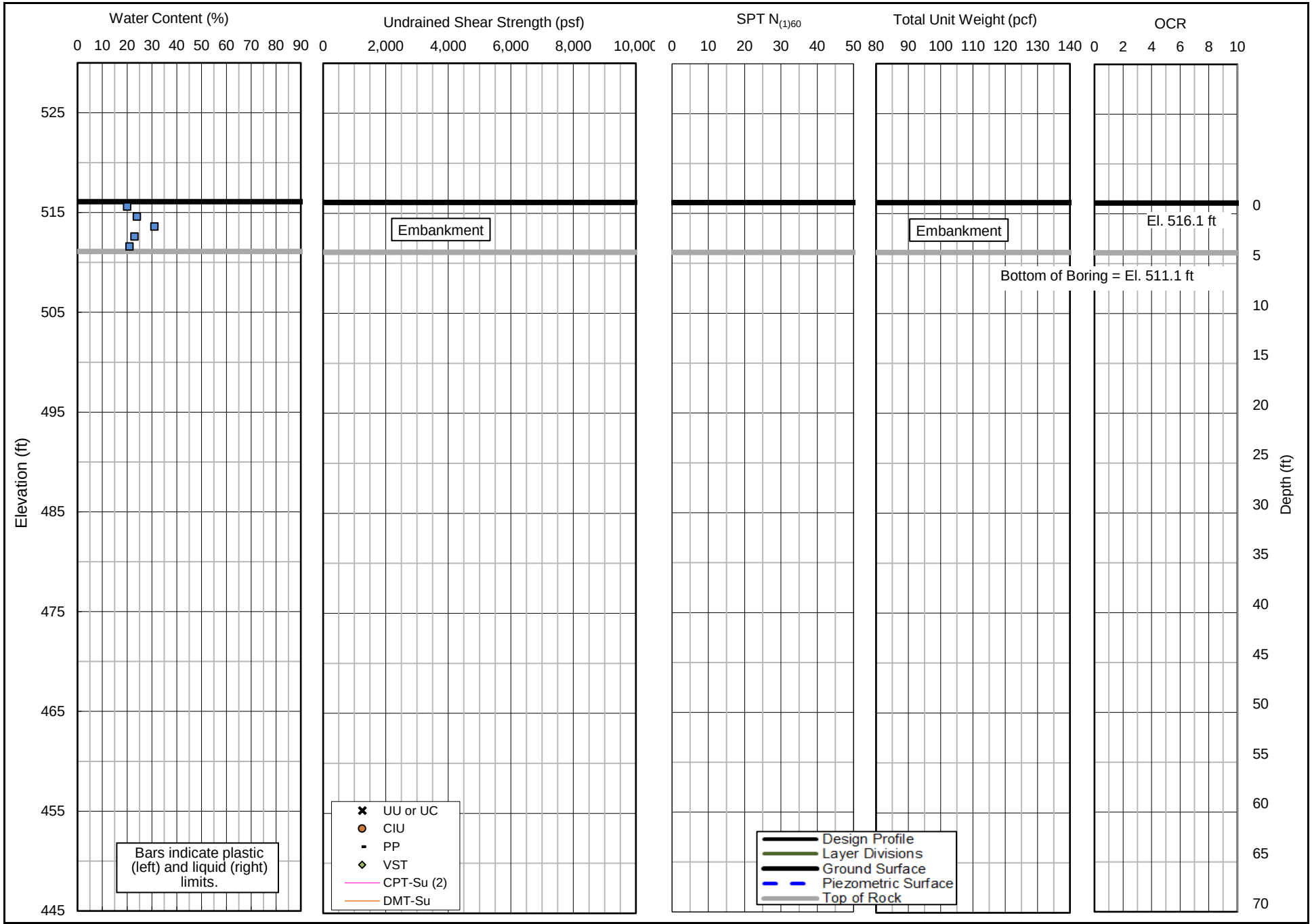
Plum Creek FRS No. 21	**Summary of Engineering Properties for New RCC ASW Outlet**	AECOM	**Figure**
Lockhart, Texas	**B-606**		**18**
60586838	**Downstream Channel**		



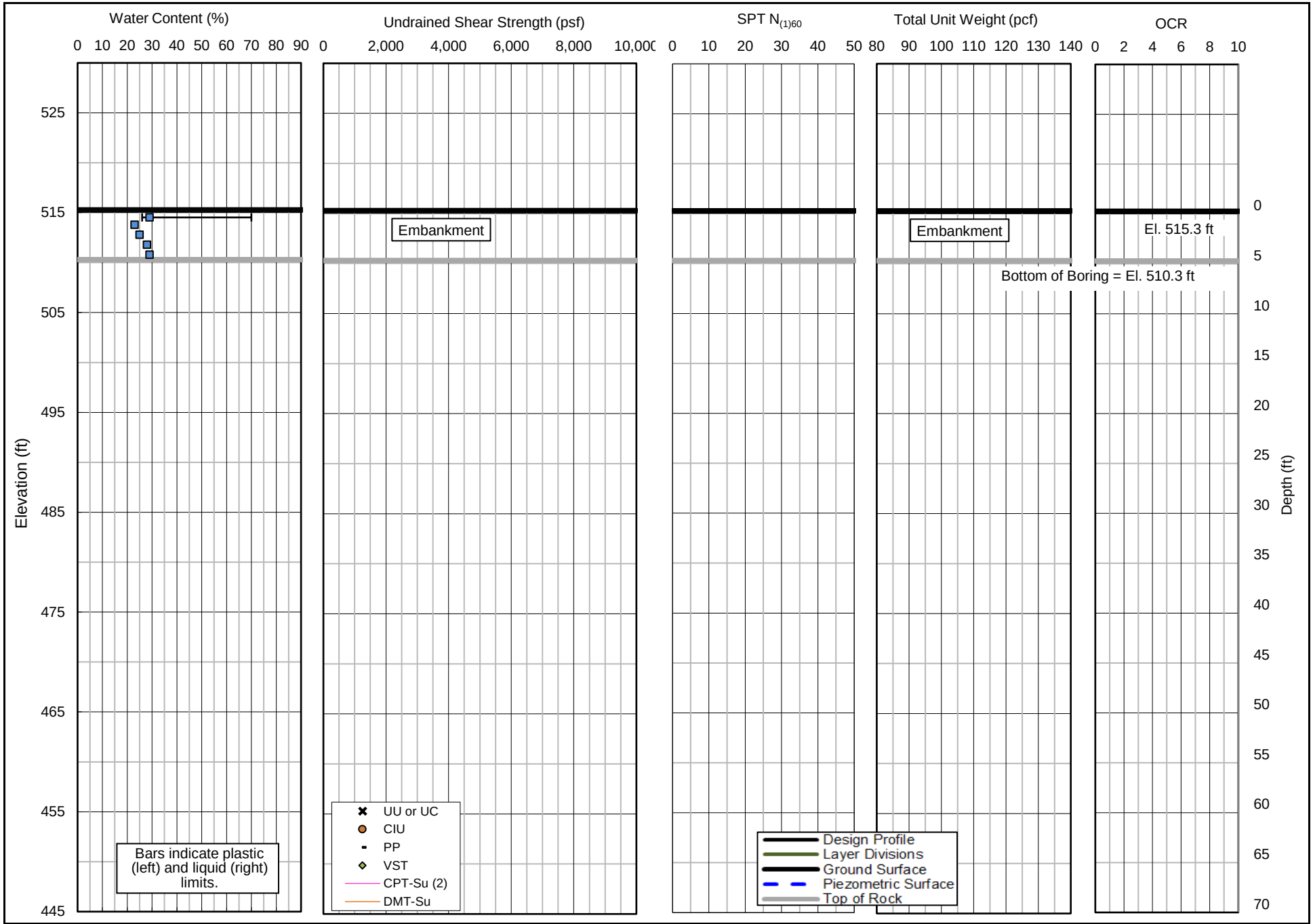
Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**HA-01**		**18**
60586838	**Downstream Embankment Slope**		



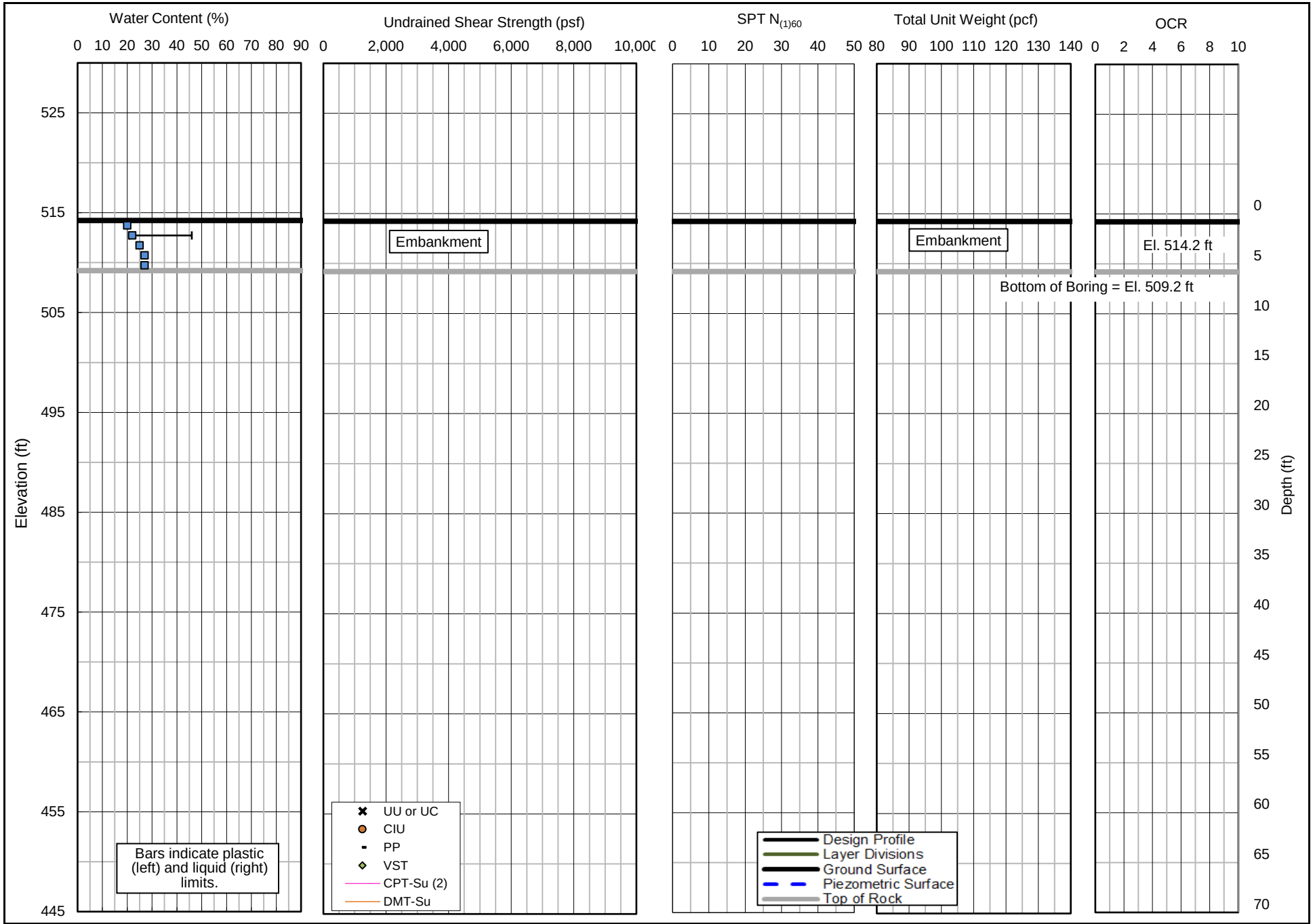
Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**HA-02**		**19**
60586838	**Downstream Embankment Slope**		



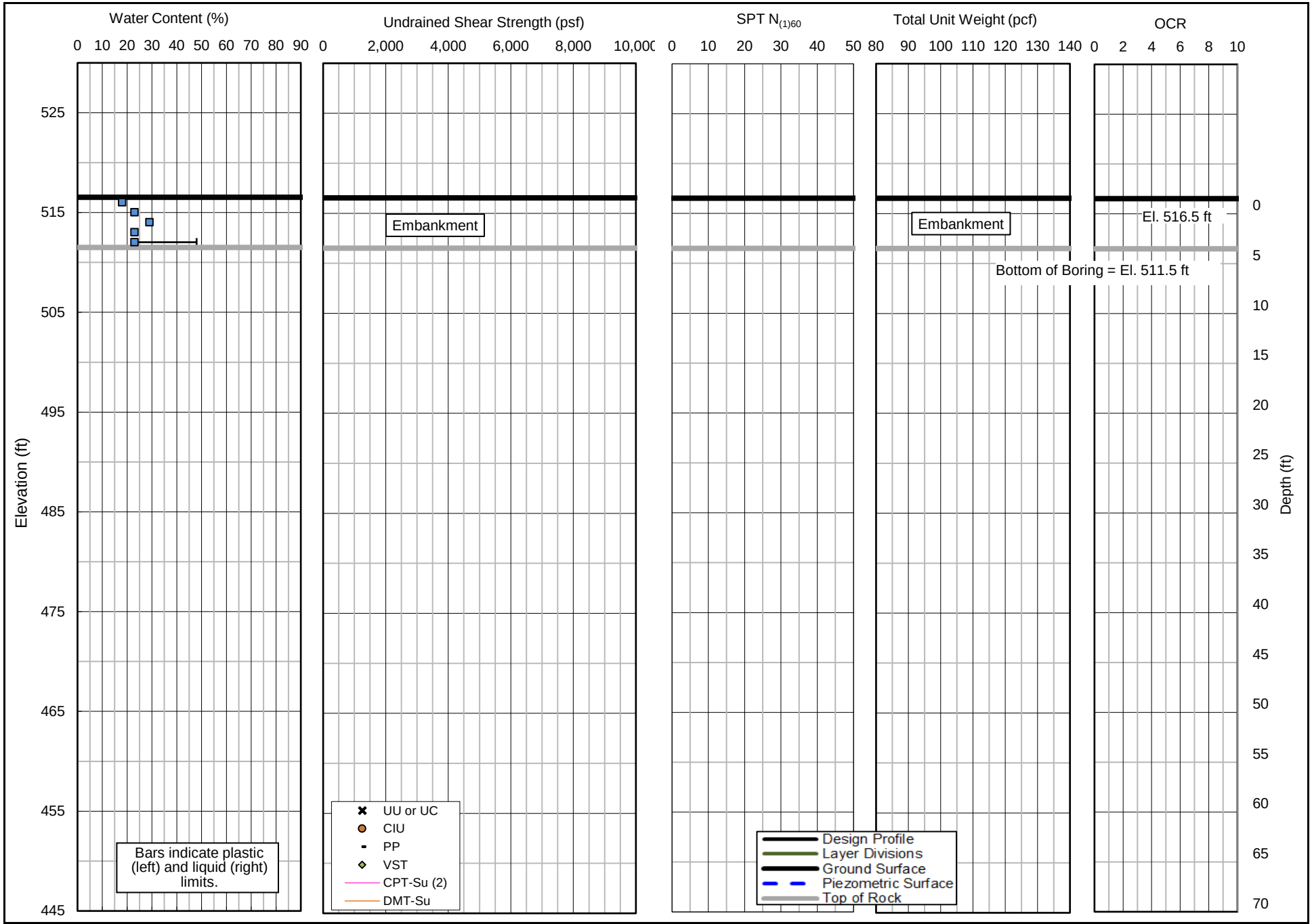
Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**HA-03**		**20**
60586838	**Downstream Embankment Slope**		



Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**HA-04**		**21**
60586838	**Upstream Embankment Slope**		



Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**HA-05**		**22**
60586838	**Upstream Embankment Slope**		



Plum Creek FRS No. 21	**Summary of Engineering Properties for Embankment Raise**	AECOM	**Figure**
Lockhart, Texas	**HA-06**		**23**
60586838	**Upstream Embankment Slope**		

Appendix D Seismic Evaluation

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition
Dynamic: Conterminous U.S. 2014 (v4.1.4)

Spectral Period
Peak Ground Acceleration

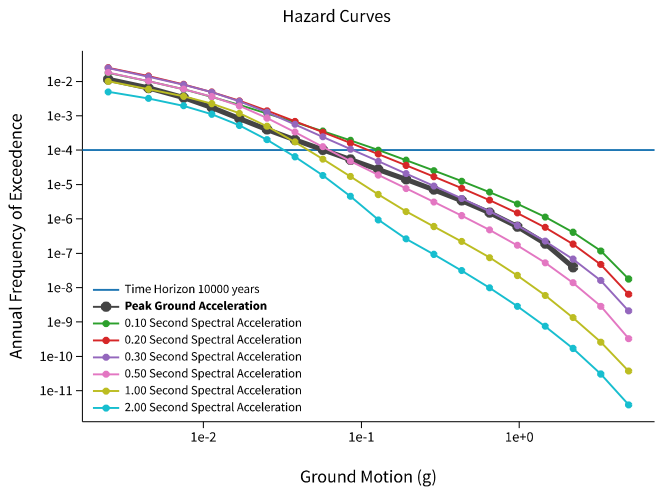
Latitude
Decimal degrees
29.95852

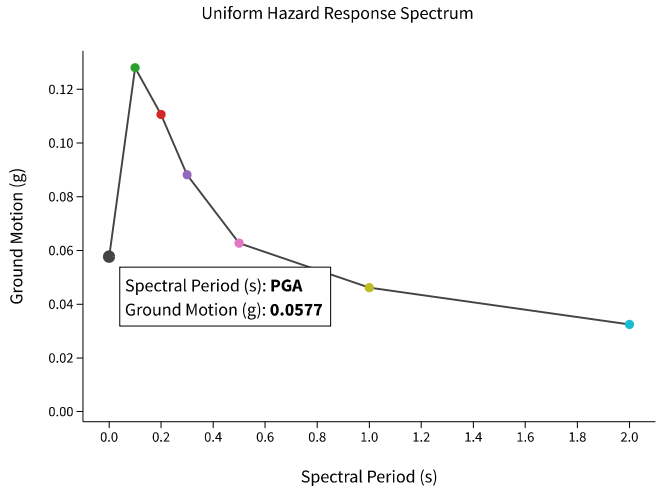
Time Horizon
Return period in years
10000

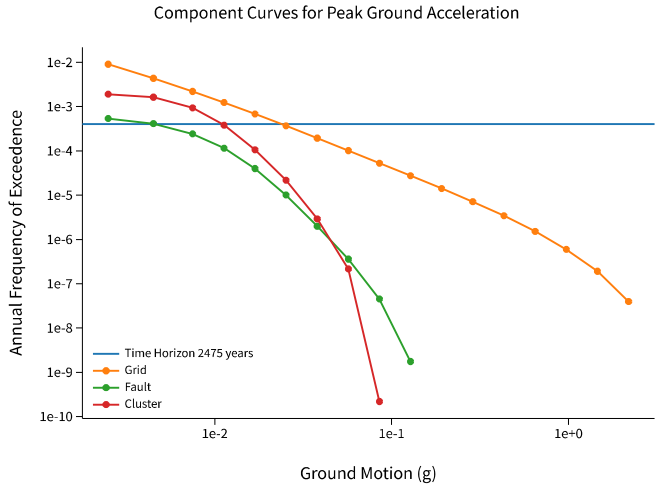
Longitude
Decimal degrees, negative values for western longitudes
-97.654123

Site Class
760 m/s (B/C boundary)

Hazard Curve







View Raw Data

Deaggregation

Component

Please select “Edition”, “Location” “Site Class”, “Spectral Period” & “Time Horizon“ above to compute a deaggregation.

Compute Deaggregation

U.S. Geological Survey - Earthquake Hazards Program

Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

Gulf-margin normal faults, Texas (Class B) No. 924

Last Review Date: 1999-07-28

Compiled in cooperation with the Texas Bureau of Economic Geology

citation for this record: **Wheeler, R.L., compiler, 1999, Fault number 924, Gulf-margin normal faults, Texas, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 09/04/2019 08:49 AM.**

Synopsis	A belt of mostly seaward-facing normal faults borders the northern Gulf of Mexico in westernmost Florida, southwestern Alabama, southern Mississippi, all of Louisiana and southernmost Arkansas, and eastern and southern Texas (Ewing and Lopez, 1991 #2032). For the purposes of his compilation, the Gulf Coast faults are divided in four large groups because they number in the hundreds. To reflect regional differences in the characteristics of the faults, those in Florida and Alabama are evaluated together in a single group, as are those in Mississippi, those in Louisiana and Arkansas, and those in Texas (described here). Because numerous individual faults are combined into a single group for this compilation, it is not possible to provide to provide digital information about the azimuth, length, and dip of each individual fault. The gulf-margin normal faults in Texas are assigned as Class B structures because their low seismicity and because they may be decoupled from underlying crust, making it unclear if they can generate significant seismic ruptures that could cause damaging ground motion.
Name comments	
County(s) and State(s)	ANDERSON COUNTY, TEXAS ARANSAS COUNTY, TEXAS

ATASCOSA COUNTY, TEXAS
AUSTIN COUNTY, TEXAS
BASTROP COUNTY, TEXAS
BEE COUNTY, TEXAS
BOWIE COUNTY, TEXAS
BRAZORIA COUNTY, TEXAS
BRAZOS COUNTY, TEXAS
BROOKS COUNTY, TEXAS
BURLESON COUNTY, TEXAS
CALHOUN COUNTY, TEXAS
CAMERON COUNTY, TEXAS
CAMP COUNTY, TEXAS
CASS COUNTY, TEXAS
CHAMBERS COUNTY, TEXAS
CHEROKEE COUNTY, TEXAS
COLORADO COUNTY, TEXAS
DE WITT COUNTY, TEXAS
DELTA COUNTY, TEXAS
DUVAL COUNTY, TEXAS
FALLS COUNTY, TEXAS
FAYETTE COUNTY, TEXAS
FORT BEND COUNTY, TEXAS
FRANKLIN COUNTY, TEXAS
FREESTONE COUNTY, TEXAS
FRIO COUNTY, TEXAS
GALVESTON COUNTY, TEXAS
GOLIAD COUNTY, TEXAS
GONZALES COUNTY, TEXAS
GREGG COUNTY, TEXAS
GRIMES COUNTY, TEXAS
HARDIN COUNTY, TEXAS
HARRIS COUNTY, TEXAS
HARRISON COUNTY, TEXAS
HENDERSON COUNTY, TEXAS
HILDAGO COUNTY, TEXAS
HOPKINS COUNTY, TEXAS
HOUSTON COUNTY, TEXAS
HUNT COUNTY, TEXAS
JACKSON COUNTY, TEXAS
JACKSON COUNTY, TEXAS
JEFFERSON COUNTY, TEXAS
JIM HOGG COUNTY, TEXAS
JIM WELLS COUNTY, TEXAS
KARNES COUNTY, TEXAS

KAUFMAN COUNTY, TEXAS
KENEDY COUNTY, TEXAS
KLEBERG COUNTY, TEXAS
LA SALLE COUNTY, TEXAS
LAVACA COUNTY, TEXAS
LEE COUNTY, TEXAS
LEON COUNTY, TEXAS
LIBERTY COUNTY, TEXAS
LIMESTONE COUNTY, TEXAS
LIVE OAK COUNTY, TEXAS
MADISON COUNTY, TEXAS
MARION COUNTY, TEXAS
MATAGORDA COUNTY, TEXAS
MCMULLEN COUNTY, TEXAS
MILAM COUNTY, TEXAS
MONTOMERY COUNTY, TEXAS
MORRIS COUNTY, TEXAS
NACAGDOCHES COUNTY, TEXAS
NAVARRO COUNTY, TEXAS
NEWTON COUNTY, TEXAS
NUECES COUNTY, TEXAS
ORANGE COUNTY, TEXAS
PANOLLA COUNTY, TEXAS
POLK COUNTY, TEXAS
RAINS COUNTY, TEXAS
REFUGIO COUNTY, TEXAS
ROBERTSON COUNTY, TEXAS
RUSK COUNTY, TEXAS
SABINE COUNTY, TEXAS
SAN AUGUSTINE COUNTY, TEXAS
SAN JACINTO COUNTY, TEXAS
SAN PATRICIO COUNTY, TEXAS
SHELBY COUNTY, TEXAS
SMITH COUNTY, TEXAS
STARR COUNTY, TEXAS
TITUS COUNTY, TEXAS
TRINITY COUNTY, TEXAS
TYLER COUNTY, TEXAS
UPSHUR COUNTY, TEXAS
VAN ZANDT COUNTY, TEXAS
VICTORIA COUNTY, TEXAS
WALKER COUNTY, TEXAS
WALLER COUNTY, TEXAS
WASHINGTON COUNTY, TEXAS

	WEBB COUNTY, TEXAS WHARTON COUNTY, TEXAS WILLACY COUNTY, TEXAS WILSON COUNTY, TEXAS WOOD COUNTY, TEXAS ZAPATA COUNTY, TEXAS
Physiographic province(s)	COASTAL PLAIN
Reliability of location	Poor Compiled at 1:2,500,000 scale. *Comments:* Most of the area was evaluated with regional maps at scales smaller than 1:250,000 because no individual fault has sufficient evidence of seismic slip to justify singling it out for attention here at a larger map scale. Faults in some areas, particularly the Houston metropolitan area, are mapped at scales as large as 1:24,000. Faults in areas having abundant drill-hole data may be better located in the subsurface than at the surface.
Geologic setting	A belt of mostly seaward-facing normal faults borders the northern Gulf of Mexico. These gulf-margin faults face southwest in westernmost Florida, southwestern Alabama, and southern Mississippi; south in Louisiana and southernmost Arkansas; and southeast in eastern and southern Texas (Ewing and Lopez, 1991 #2032). In early to middle Mesozoic time, the opening of the Gulf of Mexico formed a south-facing, rifted, passive margin at the southern edge of North America (DuBar and others, 1991 #2010; Salvador, 1991 #2019; Salvador, 1991 #2020). Subsequently, the rifted margin was buried beneath the thick, Middle Jurassic, Louann Salt and an overlying, carbonate and clastic, marine sequence that continues to accumulate today. This post-rift sequence thickens seaward (Salvador, 1991 #2020). It is at least 2 km thick everywhere in the belt of gulf-margin normal faults. At the coastline, the sequence is at least 10 km thick west of the Mississippi River and at least 5 km thick farther to the east. Thicknesses exceed 12 km under coastal Texas and southern Louisiana and perhaps 16 km offshore Louisiana. Rapid deposition and the resulting enormous thickness of the post-rift sediments caused them to collapse and spread seaward. Salt flowed southward and pierced upward, and the overlying sediments extended on listric, normal, growth faults that flatten downward into detachments in the salt and in overpressured shales (Ewing, 1991 #1994; Nelson, 1991 #1995). These listric normal faults, their splays, and their antithetic and transfer faults make up the belt of gulf-margin normal faults described here.

Regional fluctuations in the overall deposition rate divide the belt of gulf-margin faults into two parts with different main ages of faulting and different degrees of Quaternary faulting. (1) The Interior zone of Ewing (1991 #1994) includes the entire belt except southern Louisiana, coastal Texas, and their offshore extensions. Triassic-Jurassic rifting and sedimentation, including deposition of the Louann Salt, led to Mesozoic growth faulting and salt tectonism. A line of large grabens approximates the landward limit of Jurassic salt, and Cenozoic faulting is sparse in the Interior zone (Ewing, 1991 #1994; Salvador, 1991 #2019; Ewing and Lopez, 1991 #2032). The San Marcos arch plunges southeastward from the Llano uplift of central Texas toward the coast. On the arch, the landward limit of the Louann Salt is embayed southeastward to within 60 km of the coast (Ewing, 1990 #3659; Ewing and Lopez, 1991 #2032). Accordingly, on the arch the landward edge of the Interior zone extends southeastward from the line of large grabens just mentioned to the Karnes fault zone (Ewing, 1991 #1994, his Figure 1 and p. 35). Approximately 100 km west of the Karnes fault zone at the western end of the Charlotte-Jourdantown fault zone, the landward limit of the belt of normal faults steps gulfward approximately 40 km to exclude most of the Rio Grande embayment (Ewing, 1990 #3659; Ewing and Lopez, 1991 #2032). The embayment contains some thin salt but lacks the large, southeast-facing, normal faults that indicate gulfward gravitational collapse (Ewing, 1991 #1994, p. 33). (2) The Coastal zone of Ewing (1991 #1994) covers southern Louisiana, coastal Texas, and their offshore extensions, and is separated from the Interior zone by the Early Cretaceous shelf edge (Ewing, 1991 #1994; Ewing and Lopez, 1991 #2032). Sawyer and others (1991 #3685) summarized total tectonic subsidence (TTS) analyses to infer that the Early Cretaceous shelf edge formed above a crustal boundary that was inherited from the crustal thinning accompanying Triassic-Jurassic rifting. The boundary separates less thinned continental crust on the north from more thinned continental crust on the south. The TTS results indicate that the boundary approximately overlies crust that was thinned to half its original thickness before deposition of the post-rift sequence (Sawyer and others, 1991 #3685, figures 5 and 6). After formation of the Early Cretaceous shelf edge, Late Cretaceous and especially Cenozoic clastic sediments prograded southward, and their load led to abundant Cenozoic and continuing growth faulting and salt tectonism (for example DuBar and others, 1991 #2010, p. 584-585; Salvador, 1991 #2019). The post-rift sequence as a whole is at least 9-11 km thick throughout the Coastal zone (Salvador, 1991 #2020). In addition to causing seaward gravitational collapse of the thick post-rift sequence, the crustal load from rapid Quaternary sedimentation may also aid Quaternary normal faulting and reactivate Tertiary faults of the Coastal zone by imposing extensional bending stresses on the post-rift sequence; older extensional stresses imposed by the Mesozoic sediment load have had time to relax (Nunn, 1985 #2215).

Epicenter maps show only sparse, low-magnitude seismicity within the fault belt (Engdahl, 1988 #1959; Stover and Coffman, 1993 #1986). The only damaging

	earthquakes reported through 1989 in this huge tract of land are four MMI VI earthquakes in westernmost Florida (1780), southern Louisiana (1930), and eastern Texas (1891, 1932) (Stover and Coffman, 1993 #1986). This level of seismicity is even less than that of sparsely seismic North and South Dakota, which together cover approximately the same area as the belt of gulf-margin faults and which had seven earthquakes of MMI VI since 1909 (Stover and Coffman, 1993 #1986). Furthermore, some of the sparse seismicity in the normal-fault belt may be artificially induced. Earthquakes of m bLg 3.4 and 3.9 and M of 4.0 and 4.7 in southeastern Texas and M 4.9 in southwestern Alabama may have been induced by extraction of oil and gas or injection of fluids for secondary recovery (Pennington and others, 1986 #1876; Chang and others, 1998 #1806; Gomberg and others, 1998 #1828; Gomberg and Wolf, 1999 #3440). Therefore, the natural seismicity rate in the normal-fault belt might be even less than the recent historical record would indicate. The post-rift sequence and its belt of gulf-margin normal faults may be mechanically decoupled from the underlying crust. The stress field is extensional throughout the post-rift sequence in both the Interior and Coastal zones of the normal-fault belt, as determined mostly from drill-hole data that demonstrate fault slips and well-bore breakouts (Zoback and Zoback, 1991 #2006). The orientations of Shmin are radial to the Gulf of Mexico, in contrast to the east-northeast trends of SHmax that characterize most of North America east of the Rocky Mountains; the stress field in the crust beneath the thick post-rift sequence is unknown (Zoback and Zoback, 1991 #2006). Consistent with the stress field in the post-rift sequence, the normal-faulting focal mechanism of the 1997, M 4.9 earthquake in southwestern Alabama indicated south-southwest extension (Chang and others, 1998 #1806). The presence of the normal faults throughout the post-rift sequence from westernmost Florida to southern Texas (Ewing and Lopez, 1991 #2032) demonstrates that the sequence is sliding and extending seaward on detachments in weak salt and overpressured shales. In summary, the belt of gulf-margin normal faults from Florida through Texas has strikingly low historical seismicity; the stress field and seismogenic potential of the underlying crust are unknown; and, therefore, the ability of the fault belt to generate significant seismic ruptures that could cause damaging ground motion is unclear. Accordingly, the fault belt is assigned to class B.
Length (km)	km.
Average strike	
Sense of movement	Normal *Comments:* In addition to the normal faults, a few strike-slip faults might form trantensional links between the normal faults.

Dip	0° - 90°, SE, NW *Comments:* Dips vary, but faults are generally steeper in their upper parts and flatten downward. Dips are dominantly southeastward in the Coastal zone, seaward of the early Cretaceous shelf edge. However, in the Interior zone northwest of the shelf edge, southeastward and northwestward dips are locally paired in grabens (Ewing and Lopez, 1991 #2032).
Paleoseismology studies	
Geomorphic expression	Scarps and drainage, topographic, and tonal lineaments (DuBar and others, 1991 #2010), particularly near the coast.
Age of faulted surficial deposits	Cretaceous to Holocene (Winker, 1990 #3698; Barnes, 1992 #3703).
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* A belt of mostly seaward-facing normal faults borders the northern Gulf of Mexico (Ewing and Lopez, 1991 #2032). Ewing (1991 #1994) and Ewing and Lopez (1991 #2032) divided the faults into an Interior Zone and a Coastal Zone, which are separated by a boundary that begins in southeastern Louisiana and runs westward across Louisiana and Texas, approximately 100 km inland from the coast in eastern Texas and more than 200 km inland in southwestern Texas. In the Interior Zone, Quaternary slip is rarely reported (figure 3, DuBar and others (1991 #2010)). In contrast, the Coastal zone contains more abundant evidence of Quaternary slip. Widespread Quaternary and historical normal faulting has long been recognized at the surface from Louisiana to Mexico (Groat, 1973 #3665; Verbeek, 1979 #3691; 1979 #3692; Berryhill and Trippet, 1980 #3648; O'Neil and Van Siclen, 1984 #3681; Ewing, 1990 #3659; Ruhl and Norman, 1992 #3684; White and Morton, 1997 #3697). The faulting is generally attributed to regional, late Cenozoic, gravitational collapse of the thick, unlithified to partly lithified, water-saturated sediments of the Coastal zone, locally greatly accelerated by subsidence that is induced by pumping of oil, gas, and water. Historical subsidence and surface normal faulting are particularly pronounced in and around Houston (Pratt and Johnson, 1926 #3682; Verbeek and Clanton, 1978 #3693; Clanton, 1979 #3650; Sheets, 1979 #3686; 1979 #3694; Verbeek and others, 1979 #3695; Holzer and Verbeek, 1980 #3675; Mastroianni and Norman, 1992 #3680). The subsidence, faulting, and occasional small earthquakes resemble the

	effects of withdrawal of subsurface fluids in other urban areas worldwide (Yerkes and Castle, 1976 #3700; Holzer, 1980 #3672). At Houston, reduction in pumping to allow ground water levels to recover was followed by slower subsidence and faulting (Holzer and Gabrysch, 1982 #3673; Holzer and others, 1983 #3674).
Recurrence interval	*Comments:* Estimates of recurrence interval are premature because it is not yet clear whether these faults can generate significant tectonic earthquakes, as explained under "Geologic setting".
Slip-rate category	Less than 0.2 mm/yr *Comments:* The slip rate is unknown. However, a slip rate of 0.2 mm/yr would produce 320 m of slip during the 1,600,000 years of the Quaternary. It is unlikely that any single fault in the gulf-margin belt of normal faults has such a large Quaternary offset. Therefore, probably the long-term rate is less than 0.2 mm/yr.
Date and Compiler(s)	1999 Russell L. Wheeler, U.S. Geological Survey, Emeritus
References	#3703 Barnes, V.E., supervisor, 1992, Geologic map of Texas: Bureau of Economic Geology, The University of Texas at Austin, 4 sheets, scale 1:500,000. #3648 Berryhill, H.L., and Trippet, A.R., 1980, Map showing post-Wisconsin sedimentation patterns and faulting in the Port Isabel 1 x 2 quadrangle, Texas: U.S. Geological Survey Miscellaneous Investigations Map I-1254-D, 1 sheet, scale 1:250,000. #1806 Chang, T.M., Ammon, C.J., and Herrmann, R.B., 1998, Faulting parameters of the October 24, 1997 southern Alabama earthquake [abs.]: Seismological Research Letters, v. 69, p. 175-176. #3650 Clanton, U.S., 1979, Faults offsetting land surfaces in southeastern Houston metropolitan area, Texas: Bulletin of the American Association of Petroleum Geologists, v. 63, no. 3, p. 432. #2010 DuBar, J.R., Ewing, T.E., Lundelius, E.L., Jr., Otvos, E.G., and Winker, C.D., 1991, Quaternary geology of the Gulf of Mexico Coastal Plain, *in* Morrison, R.B., ed., Quaternary nonglacial geology; conterminous U.S.: Boulder, Colorado, Geological Society of America, The Geology of North America, v. K-2, p. 583-610. #1959 Engdahl, E.R., compiler, 1988, Seismicity map of North America: Boulder, Colorado, Geological Society of America Continent-Scale Map 004, 4 sheets, scale

1:5,000,000.

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#3674 Holzer, T., Gabrysch, R.K., and Verbeek, E.R., 1983, Faulting arrested by control of ground-water withdrawal in Houston, Texas: Earthquake Information Bulletin, v. 15, no. 6, p. 204-209.

#3672 Holzer, T.L., 1980, Land subsidence and ground failure induced by fluid withdrawal in urban areas: Geological Society of America Abstracts with Programs, v. 12, no. 7, p. 449.

#3673 Holzer, T.L., and Gabrysch, R.K., 1982, Historical surface faulting in part of the Houston-Galveston, Texas, subsidence bowl arrested by partial water-level recoveries: Geological Society of America Abstracts with Programs, v. 14, no. 7, p. 517.

#3675 Holzer, T.L., and Verbeek, E.R., 1980, Modern surface faulting in the Goose Creek Oil Field (Baytown, Texas)—A reexamination: Geological Society of America Abstracts with Programs, v. 12, no. 7, p. 449.

#3680 Mastroianni, J.J., and Norman, C.E., 1992, A study of active fault movement, Houston, Texas and vicinity: Geological Society of America Abstracts

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#2215 Nunn, J.A., 1985, State of stress in the northern Gulf Coast: Geology, v. 13, p. 429-432.

#3681 O'Neil, M.W., and Van Siclen, D.C., 1984, Activation of Gulf Coast faults by depressuring of aquifers and an engineering approach to siting structures along their traces: Bulletin of the Association of Engineering Geologists, v. 21, no. 1, p. 73-87.

#1876 Pennington, W.D., Davis, S.D., Carlson, S.M., DuPree, J., and Ewing, T.E., 1986, The evolution of seismic barriers and asperities caused by the depressuring of fault planes in oil and gas fields of south Texas: Bulletin of the Seismological Society of America, v. 76, p. 939-948.

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Design and Construction Guidelines for Dams in Texas

Dam Safety Program
Texas Commission on Environmental Quality

RG-473
August 2009

A history free of indication of slope movement provides firm evidence that a slope has been stable under the conditions it has experienced to date. Conversely, signs of significant movement indicate marginally stable or unstable conditions.

In either case, the degree of uncertainty regarding shear strength and piezometric levels can be reduced through back analysis. Therefore, factor-of-safety values that are lower than those required for new slopes can often be justified for existing slopes.

For existing dams, the TCEQ Dam Safety Program will consider factors of safety that are lower than those for new slopes and structures if it is adequately justified through analysis.

Dam Anchors

When *post-tensioned dam anchors* (rock anchors) are proposed for a dam improvement project to achieve required factors of safety for stability, you should adhere to all current construction practices and applications regarding their use, design, and associated testing in accordance with the Post-Tensioning Institute's *Post-Tensioning Manual,* 6th Edition (or most current version).

Seismic Stability Analyses

For dam improvement projects of high- and significant-hazard dams near seismically active fault zones, seismic stability analyses must be conducted. A seismically active fault is one that is recognized by and included in the United States Geological Survey's Quaternary Fault and Fold Database. A seismic stability analysis must include:

- a summary of the faults and fault history in the immediate vicinity and regionally that may affect the dam, including the slide potential around the reservoir's perimeter under earthquake conditions
- overall stability requirements
- a justification and tabulation of all the model input parameters used in analysis (including the rationalization for the selection of an appropriate seismic event)
- a foundation liquefaction potential analysis
- the relative site condition(s) necessitating either dynamic or pseudo-static analysis
  - pseudo-static load coefficient ≥ 0.05
  - acceptable factor of safety ≥ 1.0

Seepage Analysis

For proposed high- and significant-hazard dams that will permanently impound water, a seepage analysis must be performed to demonstrate adequate control of seepage, including:

- a justification and tabulation of all the model input parameters used in analysis
- flow nets of appropriate size and scale
- the acceptable exit seepage gradient

Laboratory Testing and Analyses

Any laboratory tests or analyses that you conduct for the proposed dam improvements must be documented in the geotechnical report, including any of the following for foundation (soils and/or rock) and borrow soils:

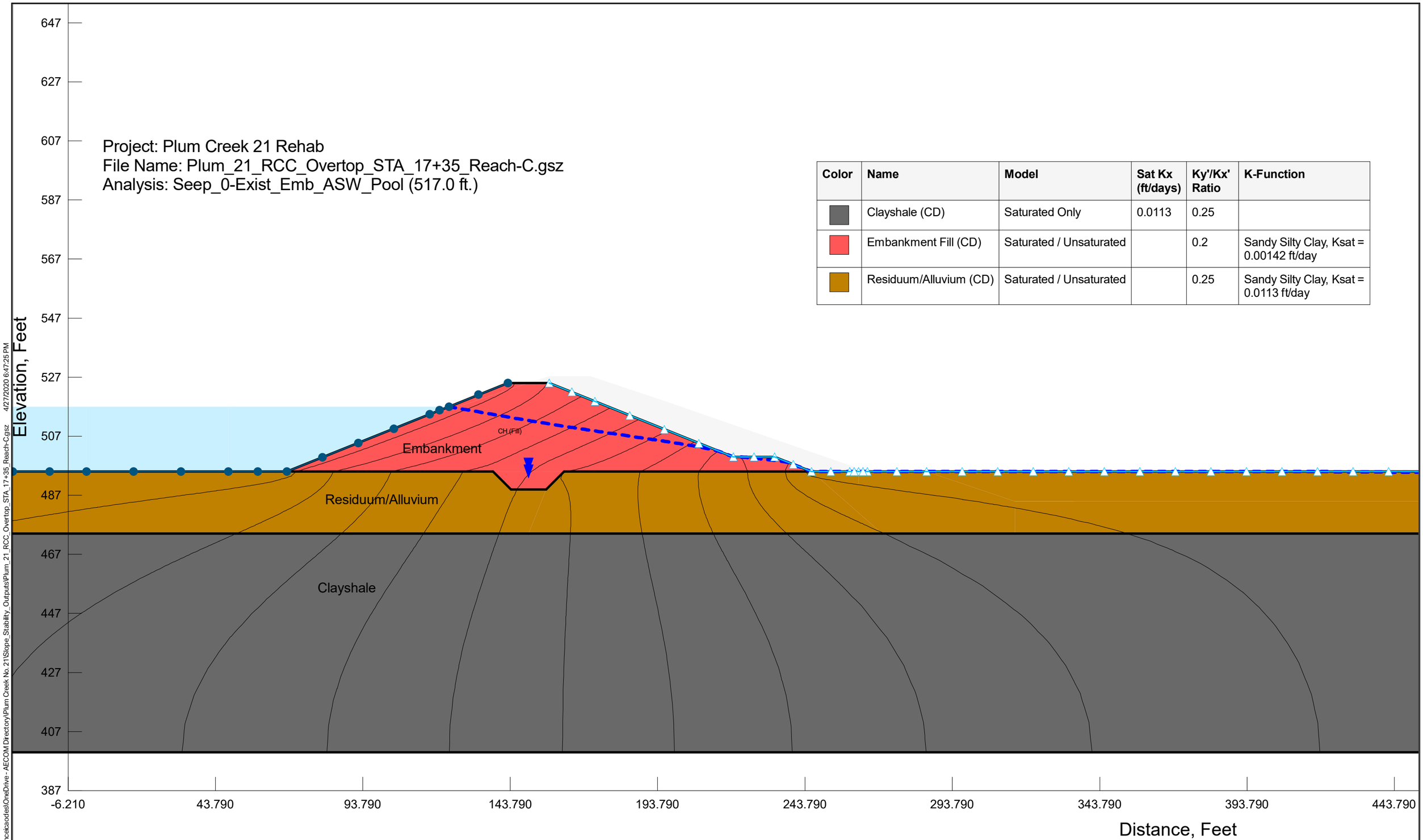
- classification
- gradation (particle-size distribution)
- Atterberg limits (liquid limit, plastic limit, plasticity index)
- moisture content
- dry unit weight
- permeability and infiltration
- shear strength (and failure strain)
- unconfined compression
- consolidation (volume change characteristics)
- liquefaction potential
- presence of dispersive soils (crumb tests)
- chemical tests (pH, specific conductance, chloride content, sulfate content, sulfide content, calculation of resistivity, etc.)

Appendix E Seepage Analysis

E.1 Seepage Analysis – Reach C (STA 17+35)

Project: Plum Creek 21 Rehab
File Name: Plum_21_RCC_Overtop_STA_17+35_Reach-C.gsz
Analysis: Seep_0-Exist_Emb_ASW_Pool (517.0 ft.)

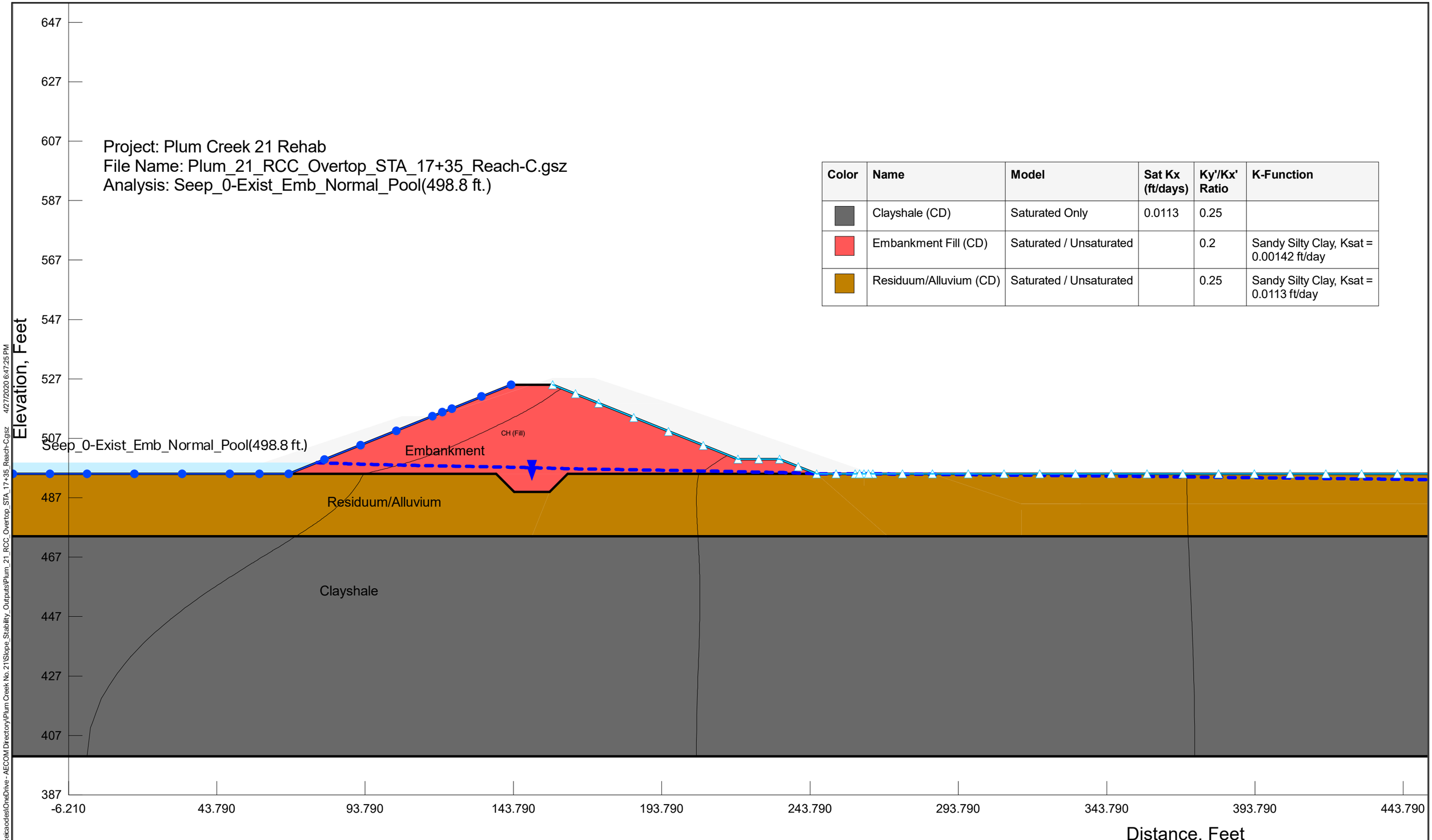
Color	Name	Model	Sat Kx (ft/days)	Ky'/Kx' Ratio	K-Function
	Clayshale (CD)	Saturated Only	0.0113	0.25	
	Embankment Fill (CD)	Saturated / Unsaturated		0.2	Sandy Silty Clay, Ksat = 0.00142 ft/day
	Residuum/Alluvium (CD)	Saturated / Unsaturated		0.25	Sandy Silty Clay, Ksat = 0.0113 ft/day



C:\Users\mariana.concekaodes\OneDrive - AECOM Directory\Plum Creek No. 21\Slope_Stability_Outputs\Plum_21_RCC_Overtop_STA_17+35_Reach-C.gsz 4/27/2020 6:47:25 PM

SOFTWARE VERSION: SEEP/W v. 8.16.5.15361
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Existing Conditions	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach C (STA 17+35)	Reservoir Level: Flood Pool (Existing ASW)	E. 1



Color	Name	Model	Sat Kx (ft/days)	Ky'/Kx' Ratio	K-Function
	Clayshale (CD)	Saturated Only	0.0113	0.25	
	Embankment Fill (CD)	Saturated / Unsaturated		0.2	Sandy Silty Clay, Ksat = 0.00142 ft/day
	Residuum/Alluvium (CD)	Saturated / Unsaturated		0.25	Sandy Silty Clay, Ksat = 0.0113 ft/day

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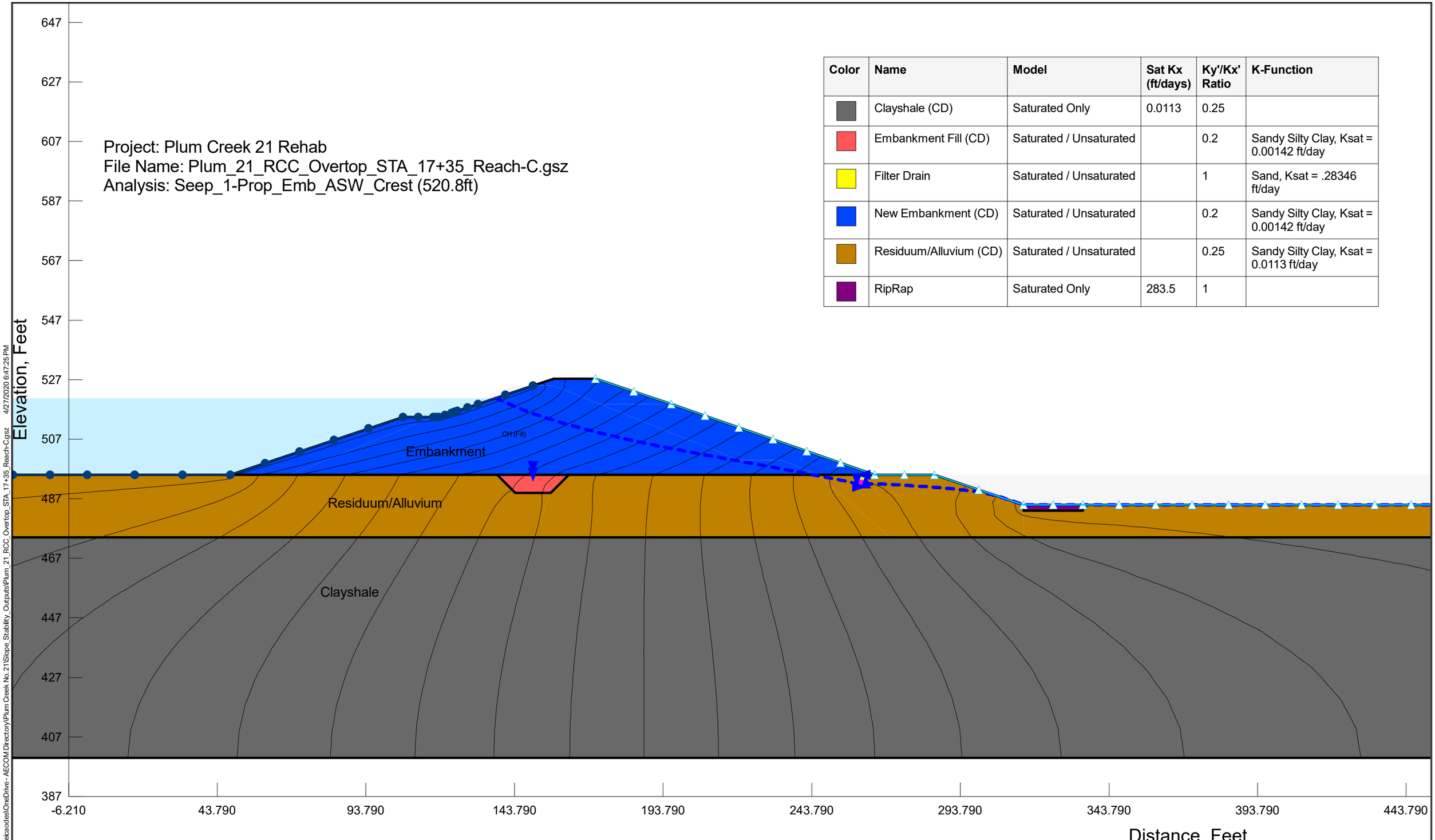
SOFTWARE VERSION: SEEP/W v. 8.16.5.15361
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Existing Conditions	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach C (STA 17+35)	Reservoir Level: Normal Pool (Existing PSW)	E. 2



Color	Name	Model	Sat Kx (ft/days)	Ky'/Kx' Ratio	K-Function
	Clayshale (CD)	Saturated Only	0.0113	0.25	
	Embankment Fill (CD)	Saturated / Unsaturated		0.2	Sandy Silty Clay, Ksat = 0.00142 ft/day
	Filter Drain	Saturated / Unsaturated		1	Sand, Ksat = .28346 ft/day
	New Embankment (CD)	Saturated / Unsaturated		0.2	Sandy Silty Clay, Ksat = 0.00142 ft/day
	Residuum/Alluvium (CD)	Saturated / Unsaturated		0.25	Sandy Silty Clay, Ksat = 0.0113 ft/day
	RipRap	Saturated Only	283.5	1	

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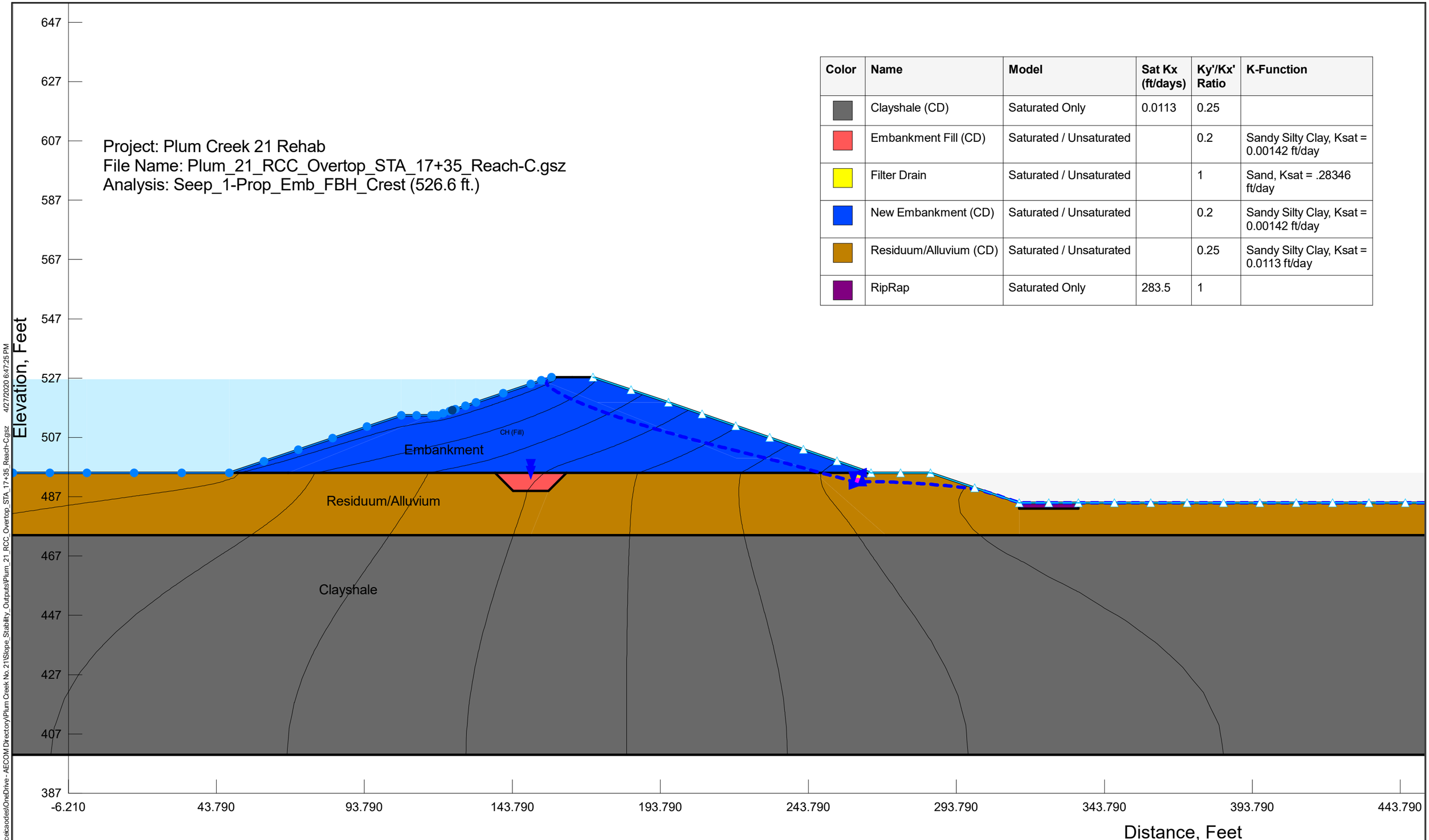
SOFTWARE VERSION: SEEP/W v. 8.16.5.15361
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach C (STA 17+35)	Reservoir Level: Flood Pool (Proposed PSW)	E. 3



Color	Name	Model	Sat Kx (ft/days)	Ky'/Kx' Ratio	K-Function
	Clayshale (CD)	Saturated Only	0.0113	0.25	
	Embankment Fill (CD)	Saturated / Unsaturated		0.2	Sandy Silty Clay, Ksat = 0.00142 ft/day
	Filter Drain	Saturated / Unsaturated		1	Sand, Ksat = .28346 ft/day
	New Embankment (CD)	Saturated / Unsaturated		0.2	Sandy Silty Clay, Ksat = 0.00142 ft/day
	Residuum/Alluvium (CD)	Saturated / Unsaturated		0.25	Sandy Silty Clay, Ksat = 0.0113 ft/day
	RipRap	Saturated Only	283.5	1	

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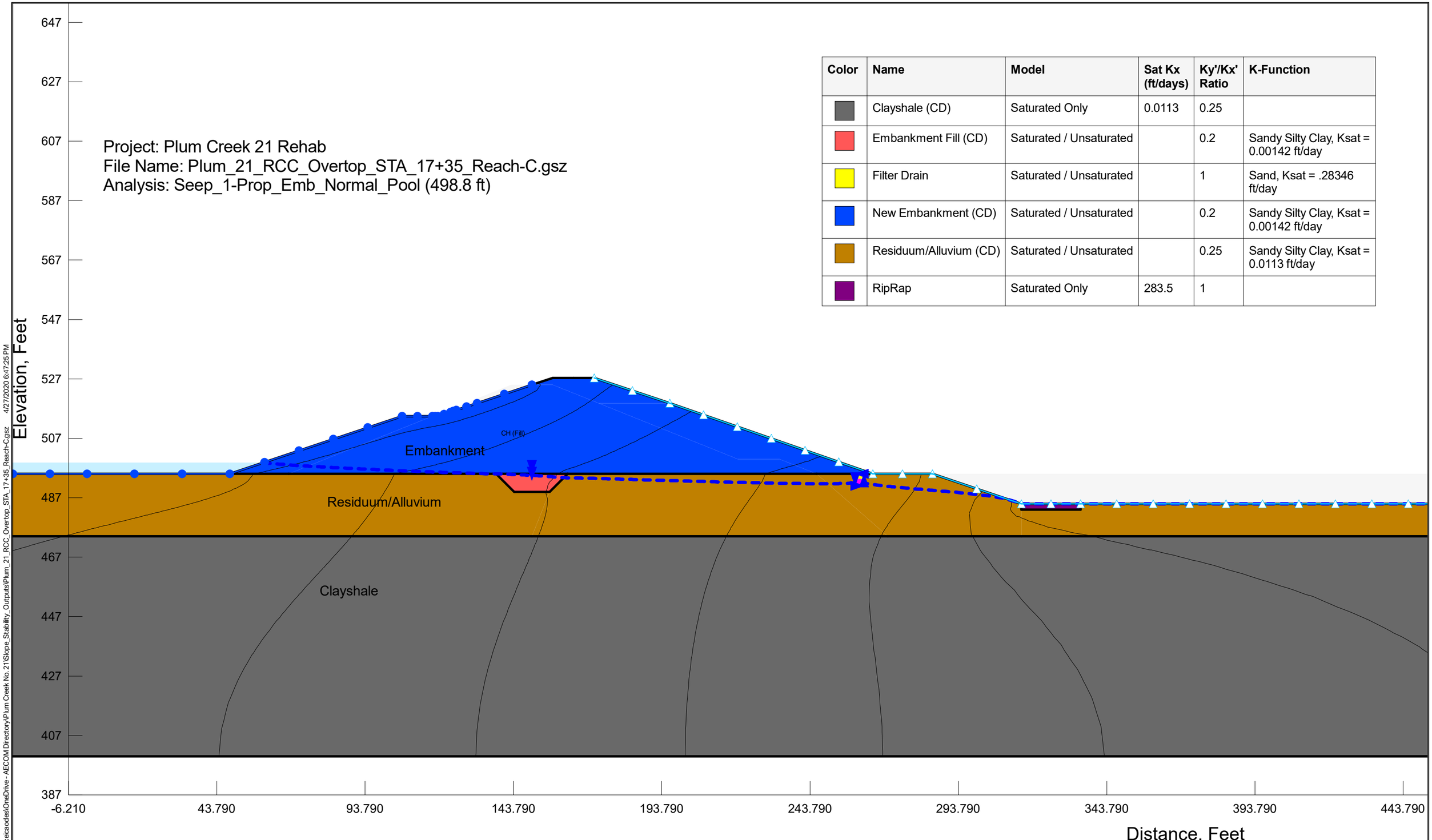
SOFTWARE VERSION: SEEP/W v. 8.16.5.15361
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach C (STA 17+35)	Reservoir Level: FBH	E. 4

Project: Plum Creek 21 Rehab
File Name: Plum_21_RCC_Overtop_STA_17+35_Reach-C.gsz
Analysis: Seep_1-Prop_Emb_Normal_Pool (498.8 ft)

Color	Name	Model	Sat Kx (ft/days)	Ky'/Kx' Ratio	K-Function
	Clayshale (CD)	Saturated Only	0.0113	0.25	
	Embankment Fill (CD)	Saturated / Unsaturated		0.2	Sandy Silty Clay, Ksat = 0.00142 ft/day
	Filter Drain	Saturated / Unsaturated		1	Sand, Ksat = .28346 ft/day
	New Embankment (CD)	Saturated / Unsaturated		0.2	Sandy Silty Clay, Ksat = 0.00142 ft/day
	Residuum/Alluvium (CD)	Saturated / Unsaturated		0.25	Sandy Silty Clay, Ksat = 0.0113 ft/day
	RipRap	Saturated Only	283.5	1	



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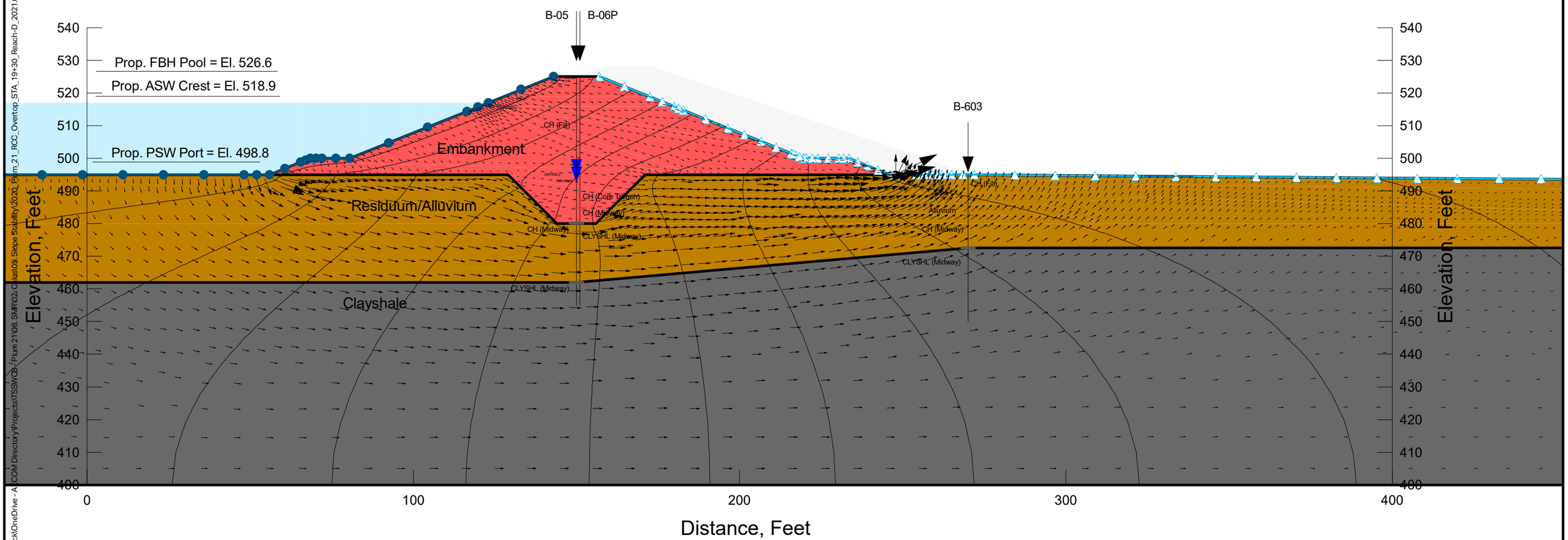
SOFTWARE VERSION: SEEP/W v. 8.16.5.15361
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach C (STA 17+35)	Reservoir Level: Normal Pool (Proposed PSW)	E. 5

E.2 Seepage Analysis – Reach D (STA 19+30)

Color	Name	Model	K-Function	Sat Kx (ft/d)	Ky'/Kx' Ratio	Compressibility (/psf)
	Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
	Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	



SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Existing Conditions	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Reservoir Level: Flood Pool (Existing ASW)	

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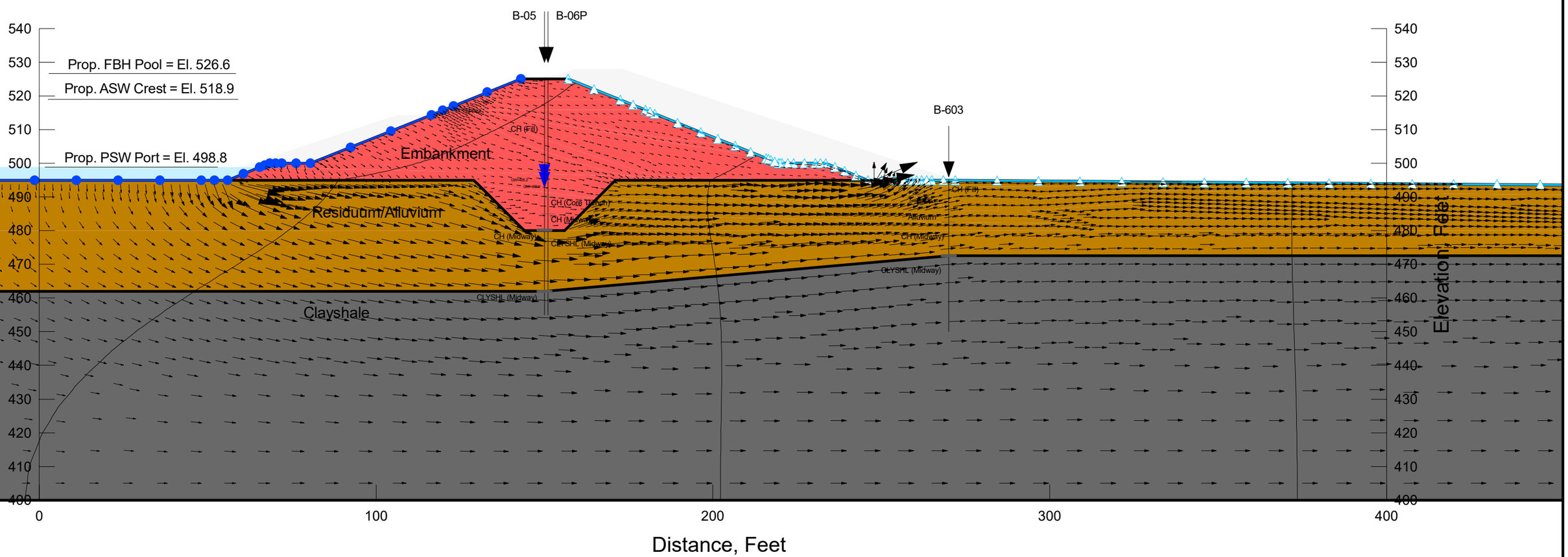
Color	Name	Model	K-Function	Sat Kx (ft/d)	Ky'/Kx' Ratio	Compressibility (/psf)
	Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
	Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	



SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Existing Conditions	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Reservoir Level: Normal Pool (PSW Port)	

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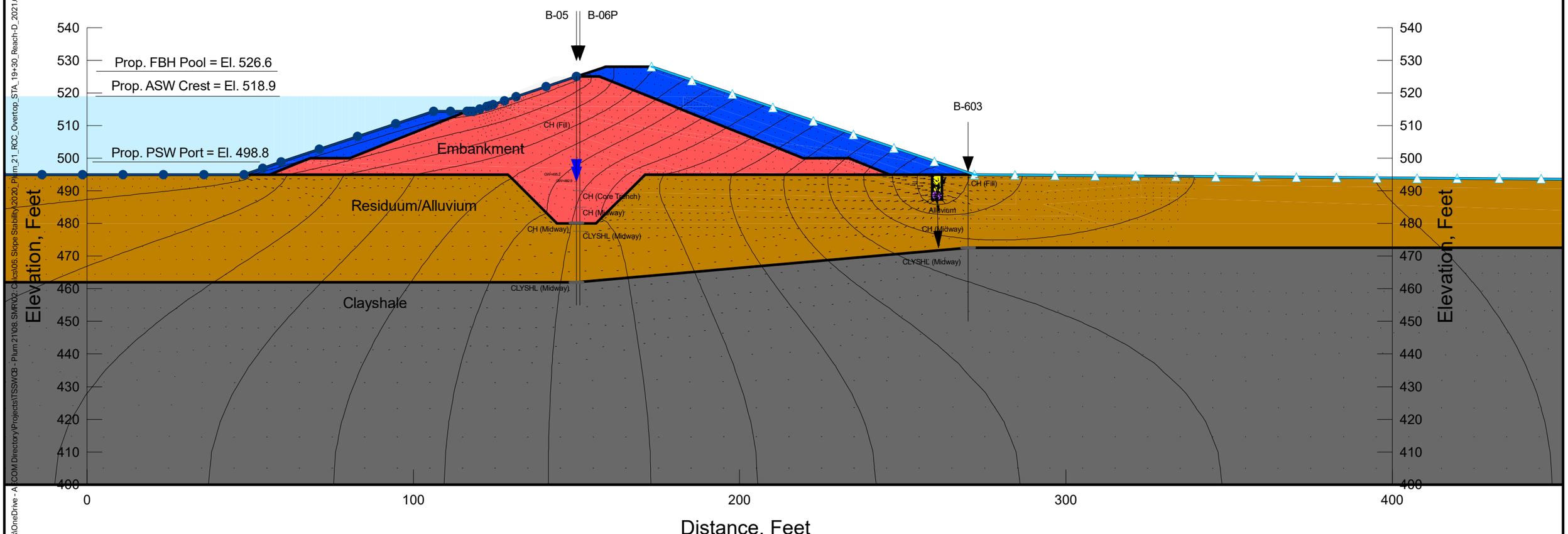
Color	Name	Model	K-Function	Sat Kx (ft/d)	Ky'/Kx' Ratio	Compressibility (/psf)
	Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
	Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Filter Drain (CD)	Saturated / Unsaturated	Sand, Ksat = 2.8346 ft/day		1	
	New Embankment (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	



SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Reservoir Level: Flood Pool (Proposed ASW)	

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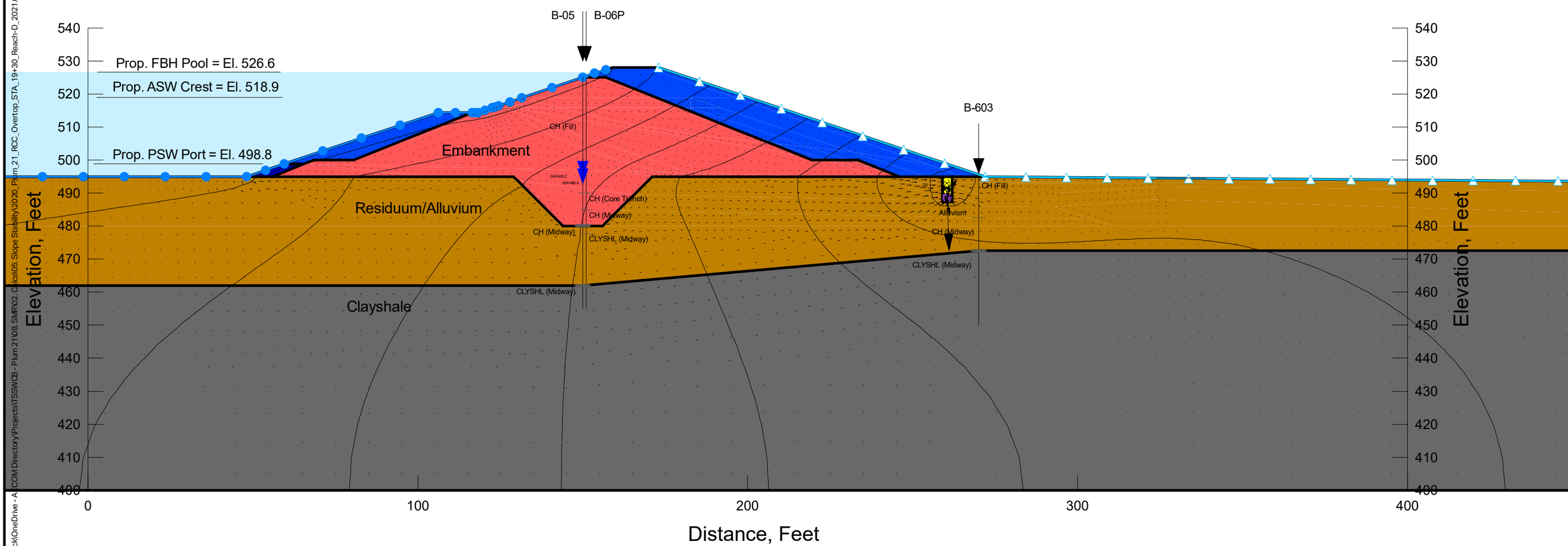
Color	Name	Model	K-Function	Sat Kx (ft/d)	Ky'/Kx' Ratio	Compressibility (/psf)
	Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
	Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Filter Drain (CD)	Saturated / Unsaturated	Sand, Ksat = 2.8346 ft/day		1	
	New Embankment (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	New Embankment (RDD-NRCS)	Saturated / Unsaturated	Clay, Ksat = 0.000283 ft/day		0.25	
	Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	



SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Reservoir Level: FBH	

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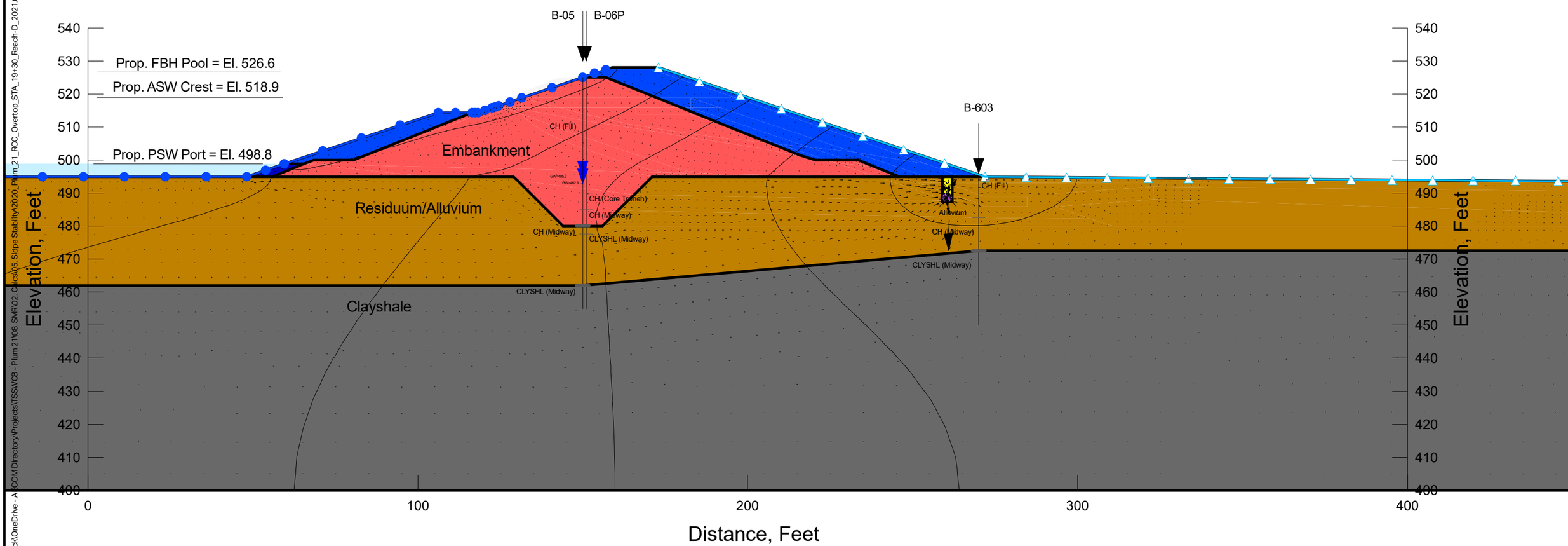
Color	Name	Model	K-Function	Sat Kx (ft/d)	Ky'/Kx' Ratio	Compressibility (/psf)
	Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
	Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Filter Drain (CD)	Saturated / Unsaturated	Sand, Ksat = 2.8346 ft/day		1	
	New Embankment (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	New Embankment (RDD-NRCS)	Saturated / Unsaturated	Clay, Ksat = 0.000283 ft/day		0.25	
	Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	



SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Reservoir Level: Normal Pool (PSW Port)	

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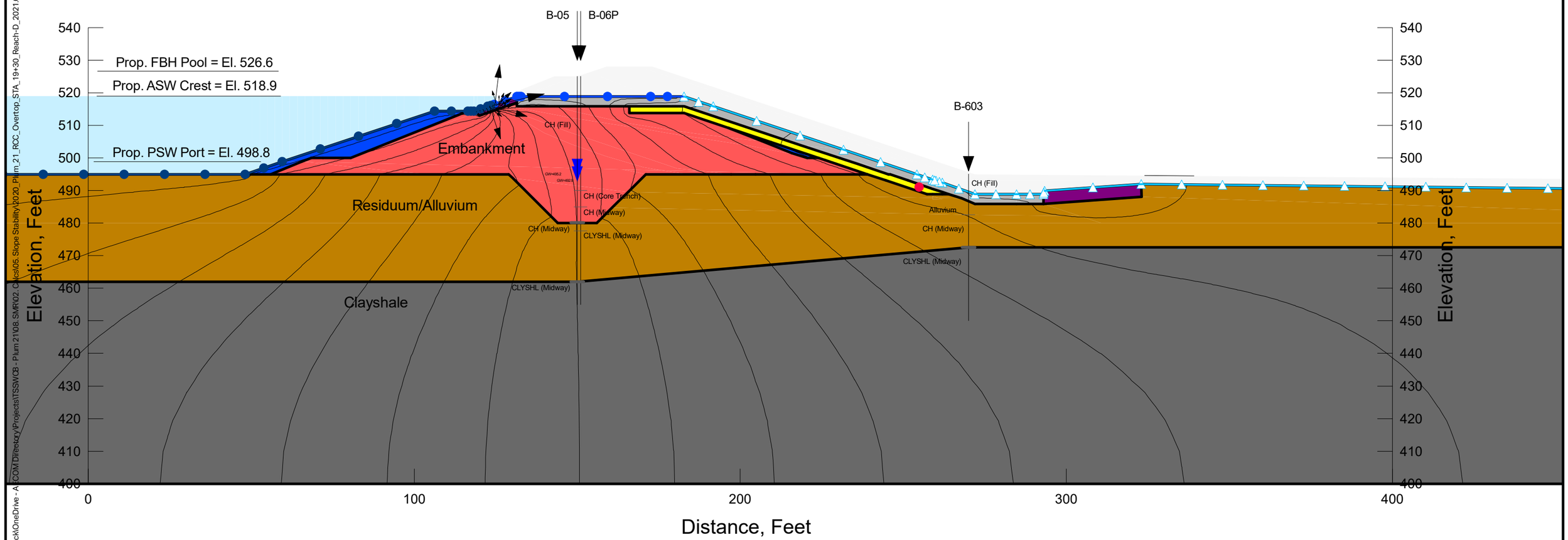
			Kx (ft/d)	Ratio	(/psf)
Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
Filter Drain (CD)	Saturated / Unsaturated	Sand, Ksat = 2.8346 ft/day		1	
New Embankment (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
RCC	Saturated / Unsaturated	Clay, Ksat = 0.000283 ft/day		0.25	
Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	
RipRap	Saturated Only		283.5	1	5e-06



SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Proposed Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Reservoir Level: Flood Pool (Proposed ASW)	

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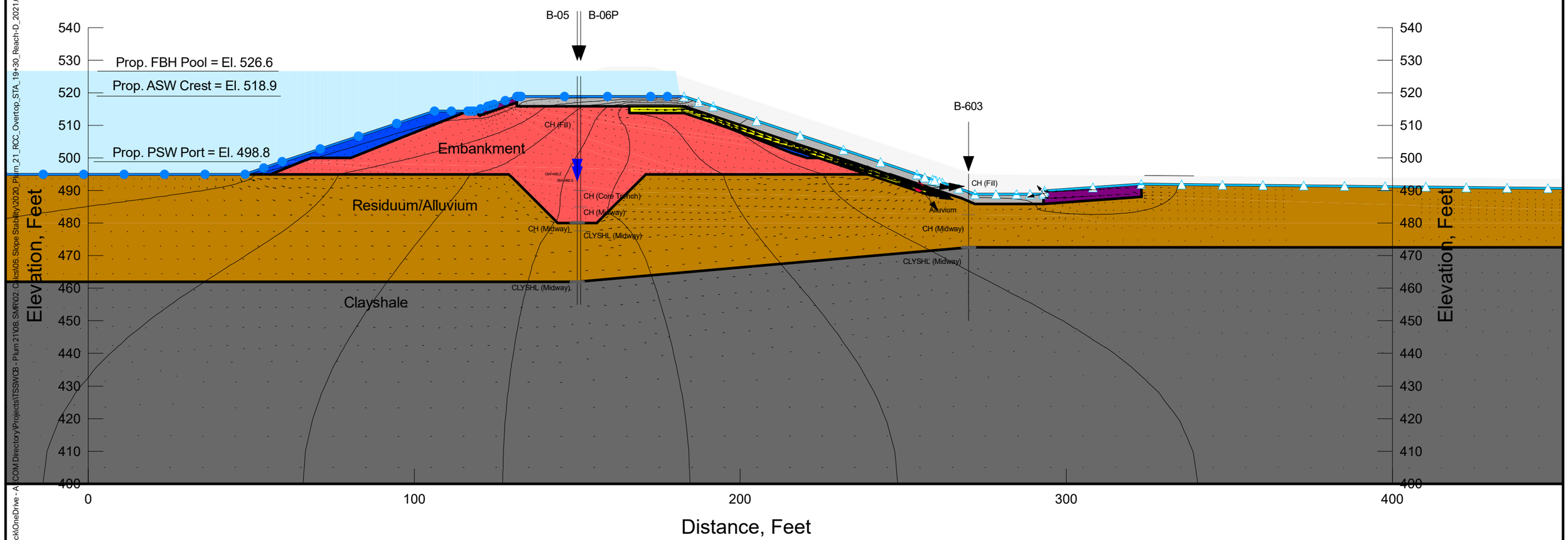
			Kx (ft/d)	Ratio	(/psf)
Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
Filter Drain (CD)	Saturated / Unsaturated	Sand, Ksat = 2.8346 ft/day		1	
New Embankment (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
RCC	Saturated / Unsaturated	Clay, Ksat = 0.000283 ft/day		0.25	
Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	
RipRap	Saturated Only		283.5	1	5e-06



SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Proposed Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Reservoir Level: FBH	

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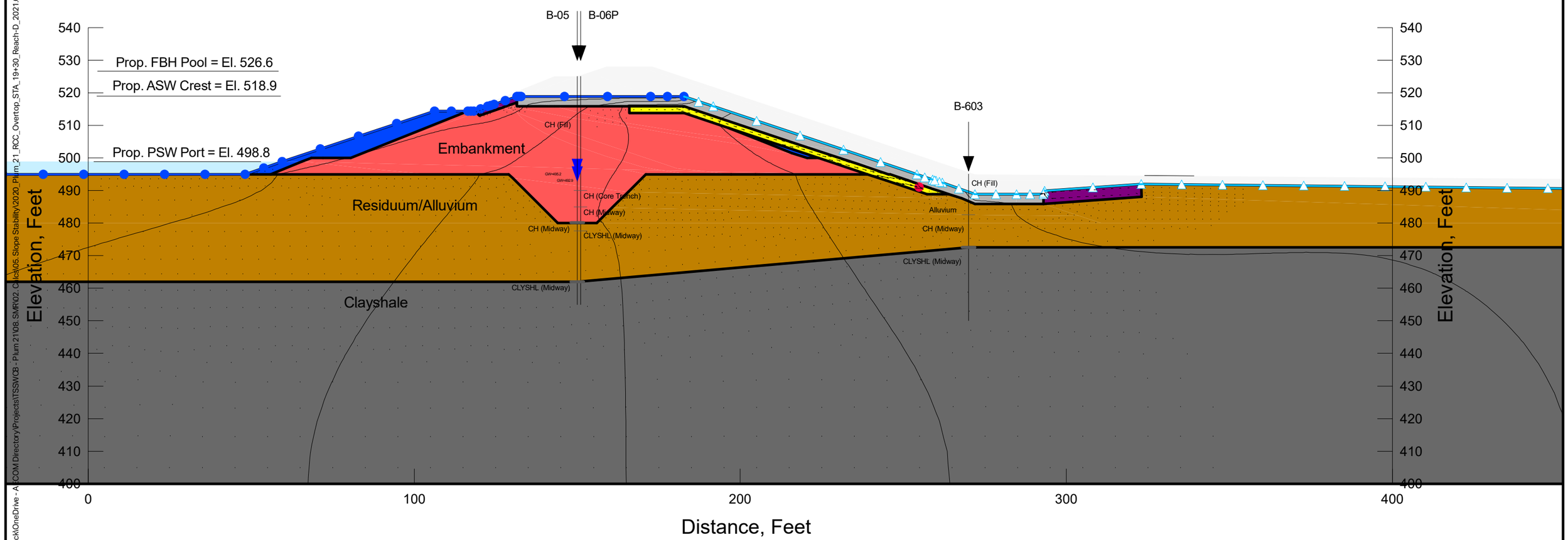
			Kx (ft/d)	Ratio	(/psf)
Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
Filter Drain (CD)	Saturated / Unsaturated	Sand, Ksat = 2.8346 ft/day		1	
New Embankment (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
RCC	Saturated / Unsaturated	Clay, Ksat = 0.000283 ft/day		0.25	
Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	
RipRap	Saturated Only		283.5	1	5e-06



SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Proposed Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Reservoir Level: Normal Pool (PSW Port)	

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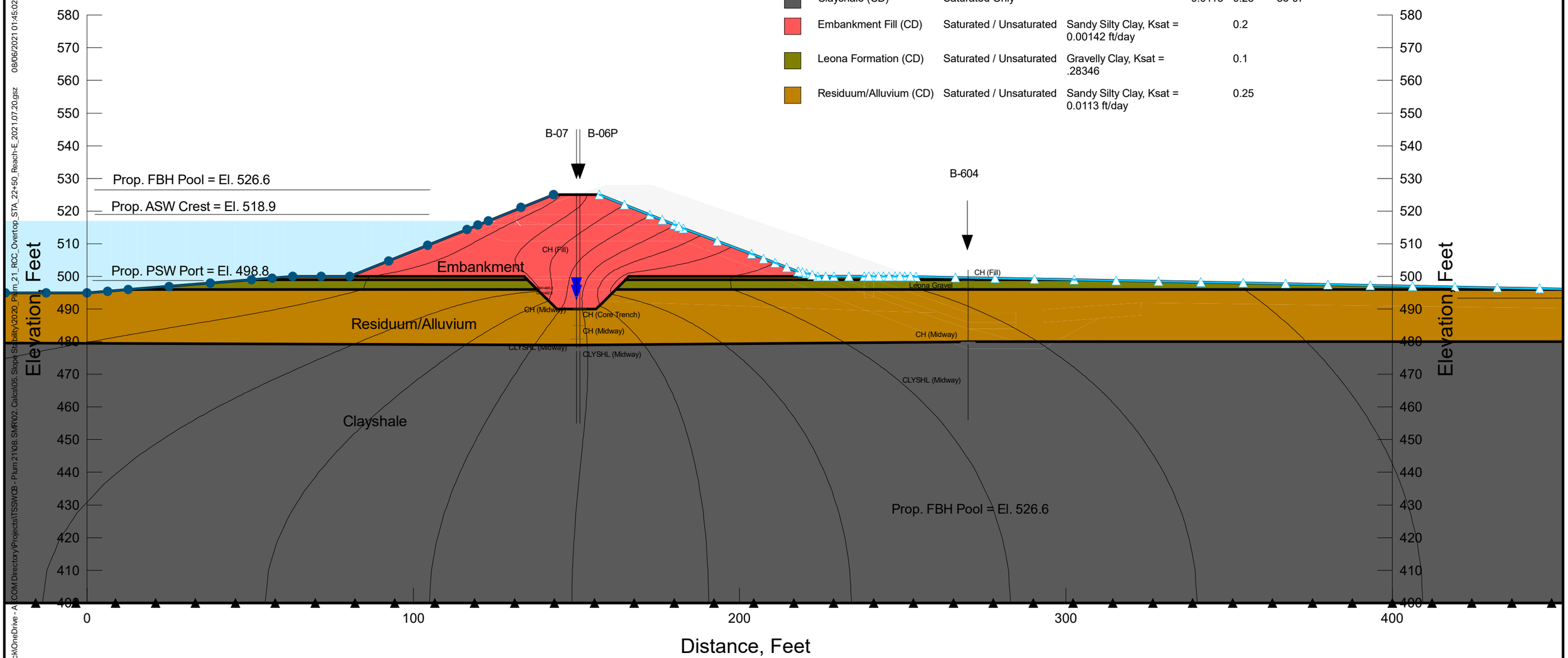
E.3 Seepage Analysis – Reach E (STA 22+50)

Color	Name	Model	K-Function	Sat Kx (ft/d)	Ky'/Kx' Ratio	Compressibility (/psf)
	Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
	Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Leona Formation (CD)	Saturated / Unsaturated	Gravelly Clay, Ksat = .28346		0.1	
	Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	



SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Existing Conditions	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Reservoir Level: Flood Pool (Existing ASW)	

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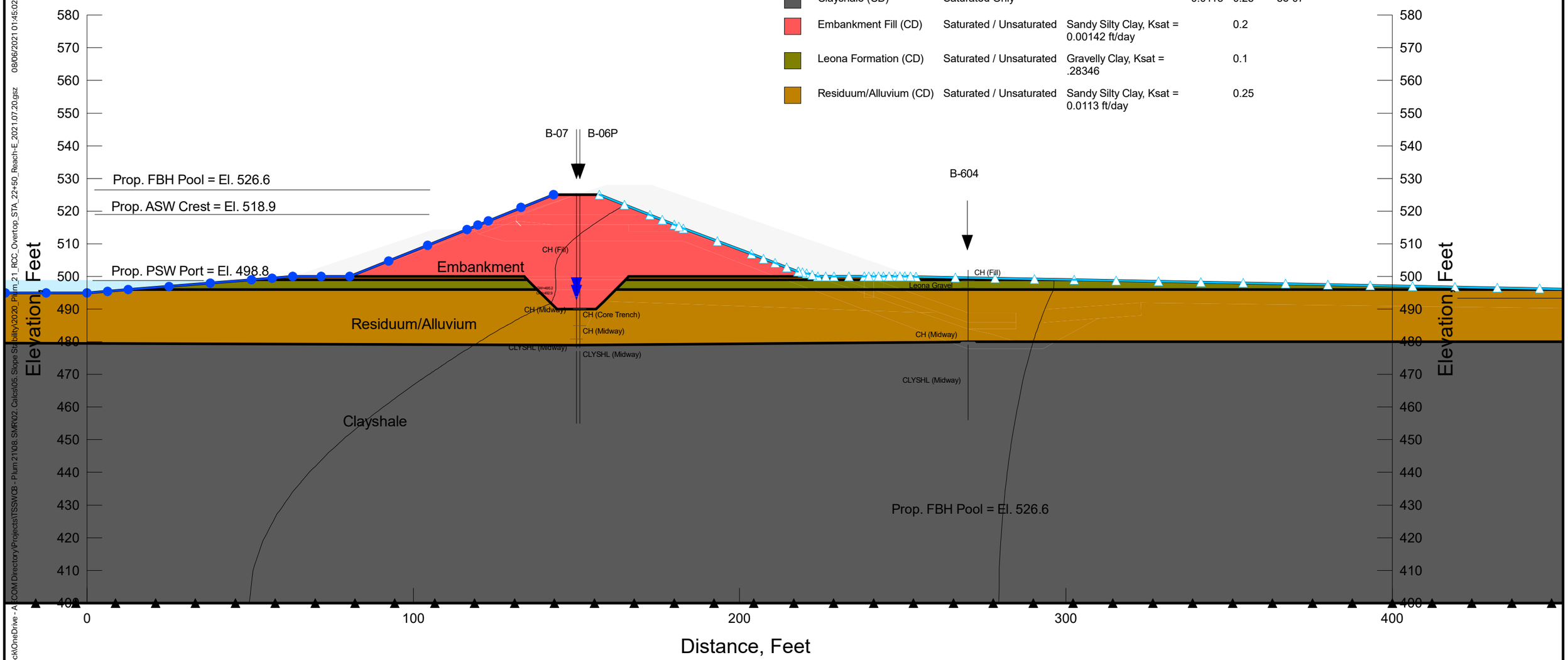
Color	Name	Model	K-Function	Sat Kx (ft/d)	Ky'/Kx' Ratio	Compressibility (/psf)
	Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
	Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Leona Formation (CD)	Saturated / Unsaturated	Gravelly Clay, Ksat = .28346		0.1	
	Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	



SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Existing Conditions	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Reservoir Level: Normal Pool (PSW Port)	

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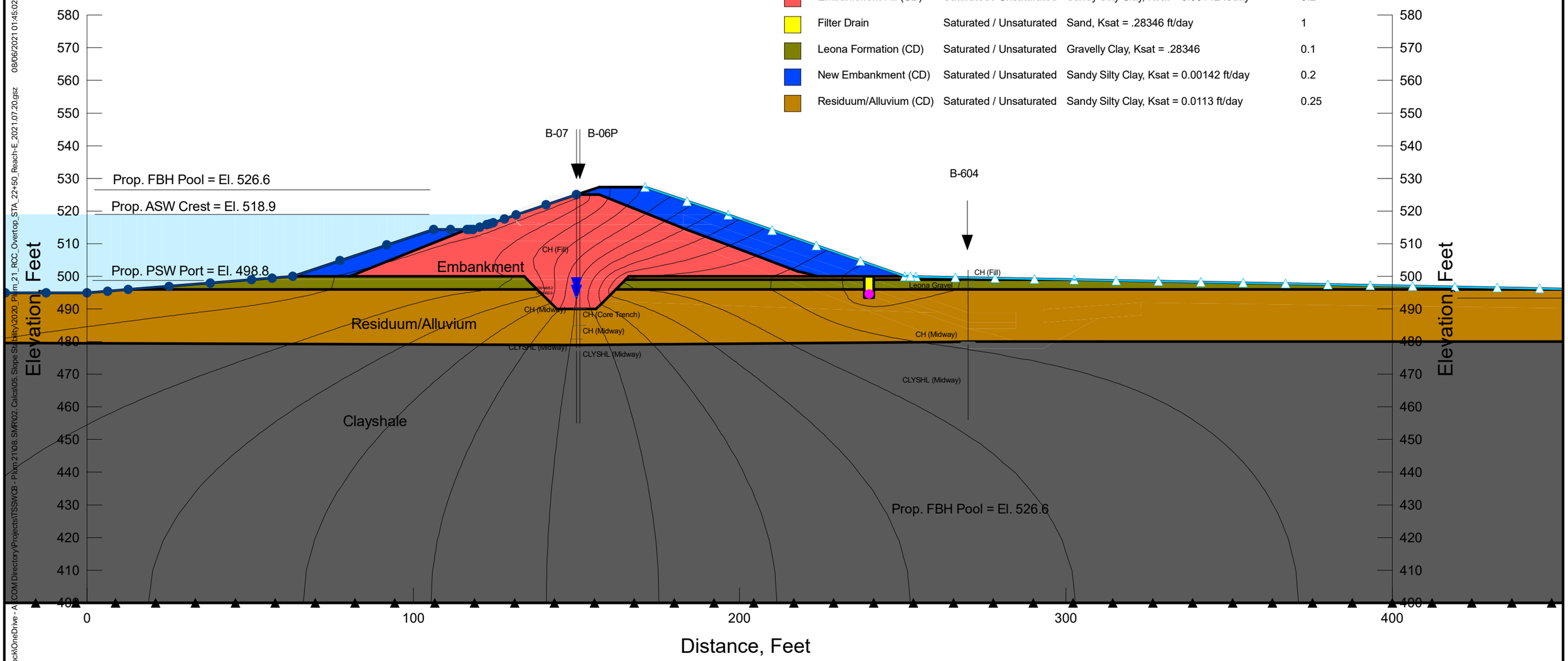
Color	Name	Model	K-Function	Sat Kx (ft/d)	Ky'/Kx' Ratio	Compressibility (/psf)
	Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
	Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Filter Drain	Saturated / Unsaturated	Sand, Ksat = .28346 ft/day		1	
	Leona Formation (CD)	Saturated / Unsaturated	Gravelly Clay, Ksat = .28346		0.1	
	New Embankment (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	

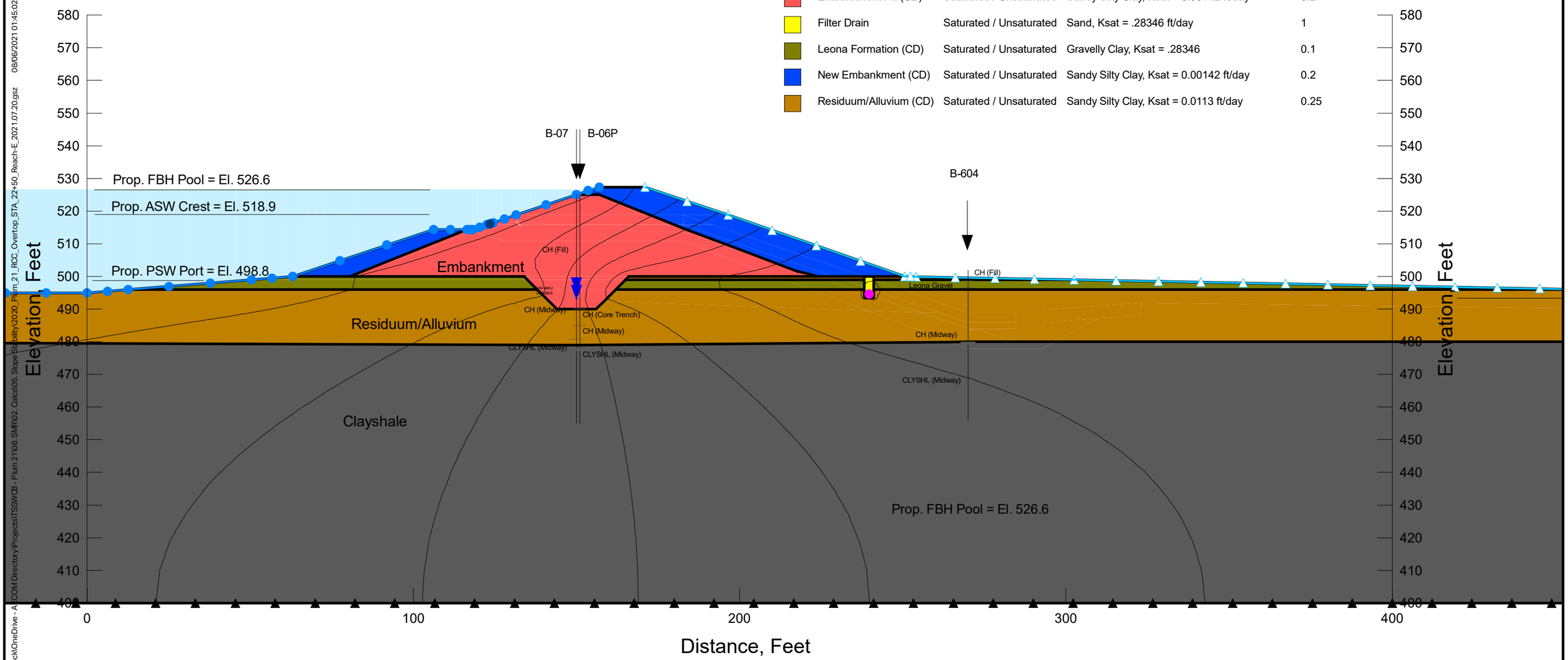


SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Reservoir Level: Flood Pool (Proposed ASW)	

C:\Users\alance.finnefrock\OneDrive - AECOM Directory\Projects\TSSWCB - Plum 21\08.SMR\02.Calcs\05.Slope Stability\2020_Plum_21_RCC_Overtop_STA_22+50_Reach-E_2021.07.20.gsz 08/06/2021 01:45:02 PM

Color	Name	Model	K-Function	Sat Kx (ft/d)	Ky'/Kx' Ratio	Compressibility (/psf)
	Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
	Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Filter Drain	Saturated / Unsaturated	Sand, Ksat = .28346 ft/day		1	
	Leona Formation (CD)	Saturated / Unsaturated	Gravelly Clay, Ksat = .28346		0.1	
	New Embankment (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	



SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Reservoir Level: FBH	

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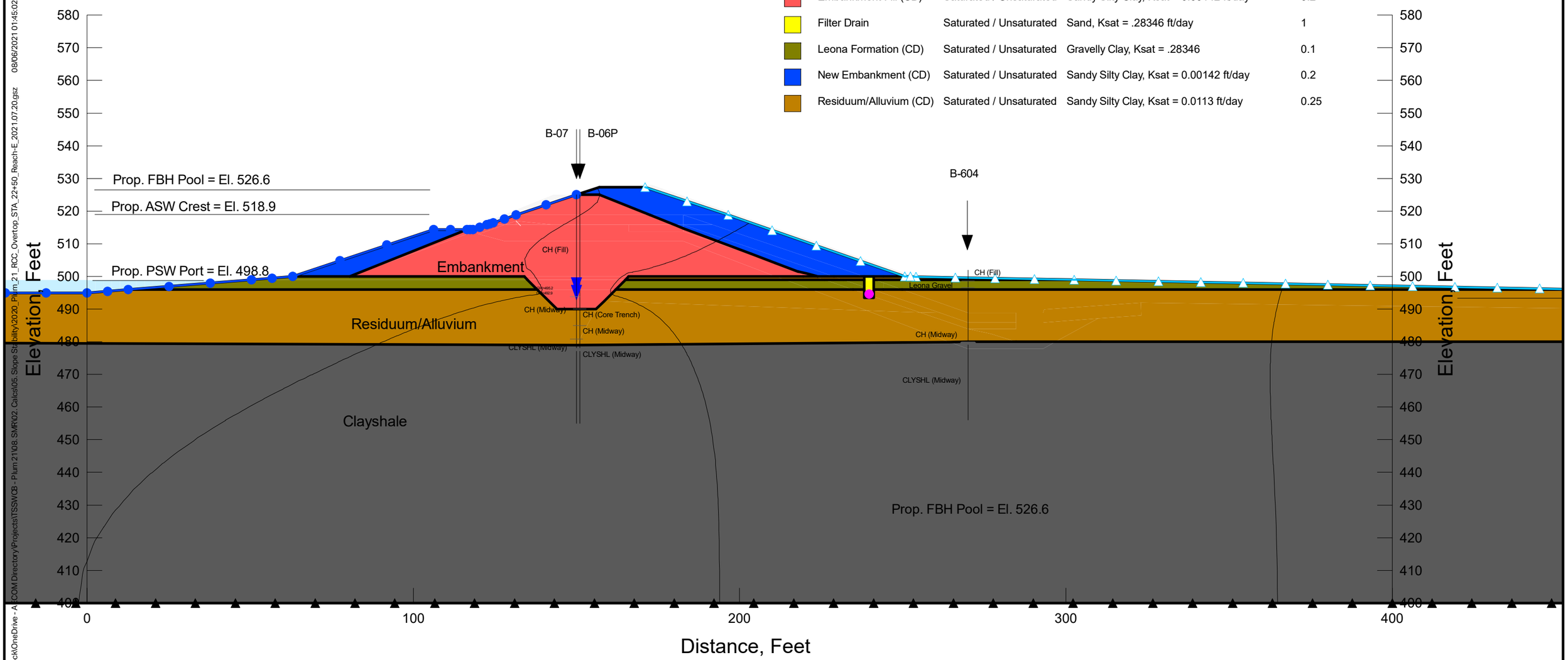
Color	Name	Model	K-Function	Sat Kx (ft/d)	Ky'/Kx' Ratio	Compressibility (/psf)
	Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
	Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Filter Drain	Saturated / Unsaturated	Sand, Ksat = .28346 ft/day		1	
	Leona Formation (CD)	Saturated / Unsaturated	Gravelly Clay, Ksat = .28346		0.1	
	New Embankment (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	



SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Reservoir Level: Normal Pool (PSW Port)	

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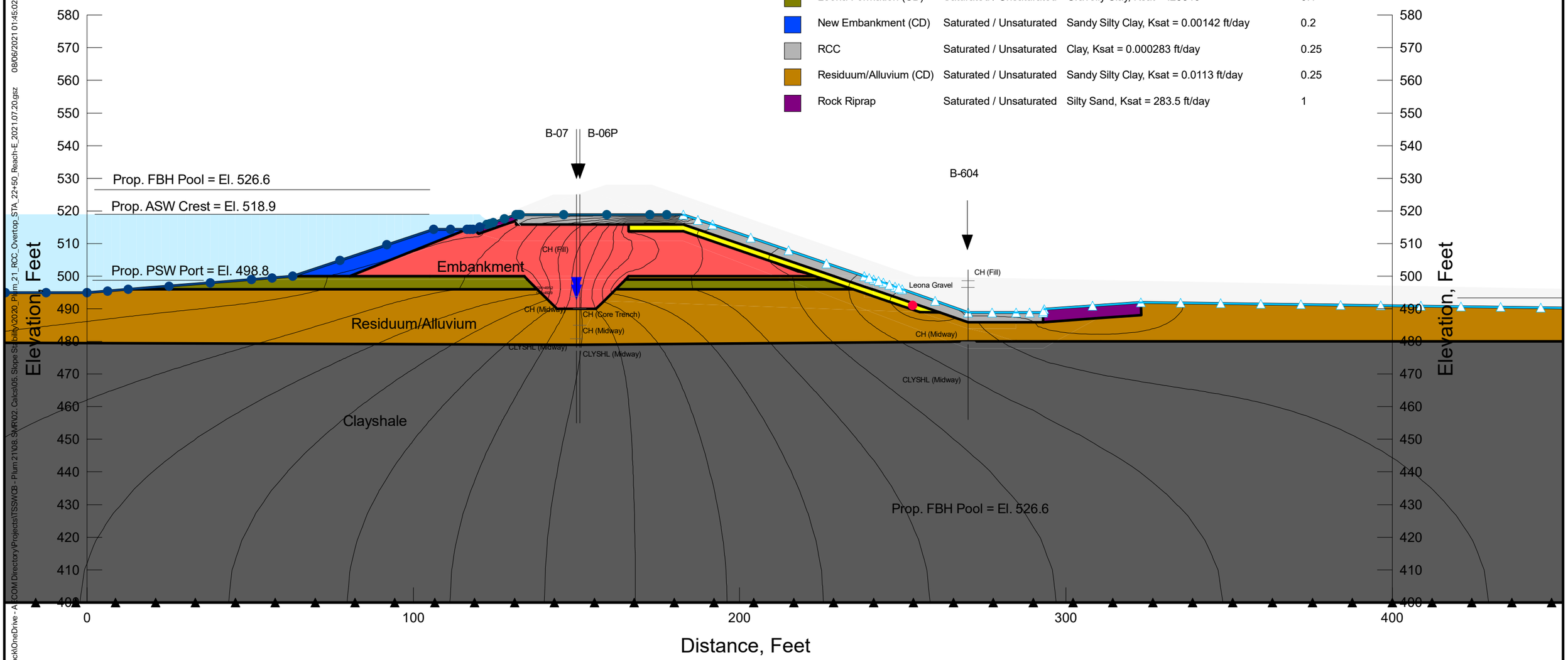
Color	Name	Model	K-Function	Sat Kx (ft/d)	Ky'/Kx' Ratio	Compressibility (/psf)
	Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
	Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Filter Drain	Saturated / Unsaturated	Sand, Ksat = .28346 ft/day		1	
	Leona Formation (CD)	Saturated / Unsaturated	Gravelly Clay, Ksat = .28346		0.1	
	New Embankment (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	RCC	Saturated / Unsaturated	Clay, Ksat = 0.000283 ft/day		0.25	
	Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	
	Rock Riprap	Saturated / Unsaturated	Silty Sand, Ksat = 283.5 ft/day		1	



SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Proposed Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Reservoir Level: Flood Pool (Proposed ASW)	

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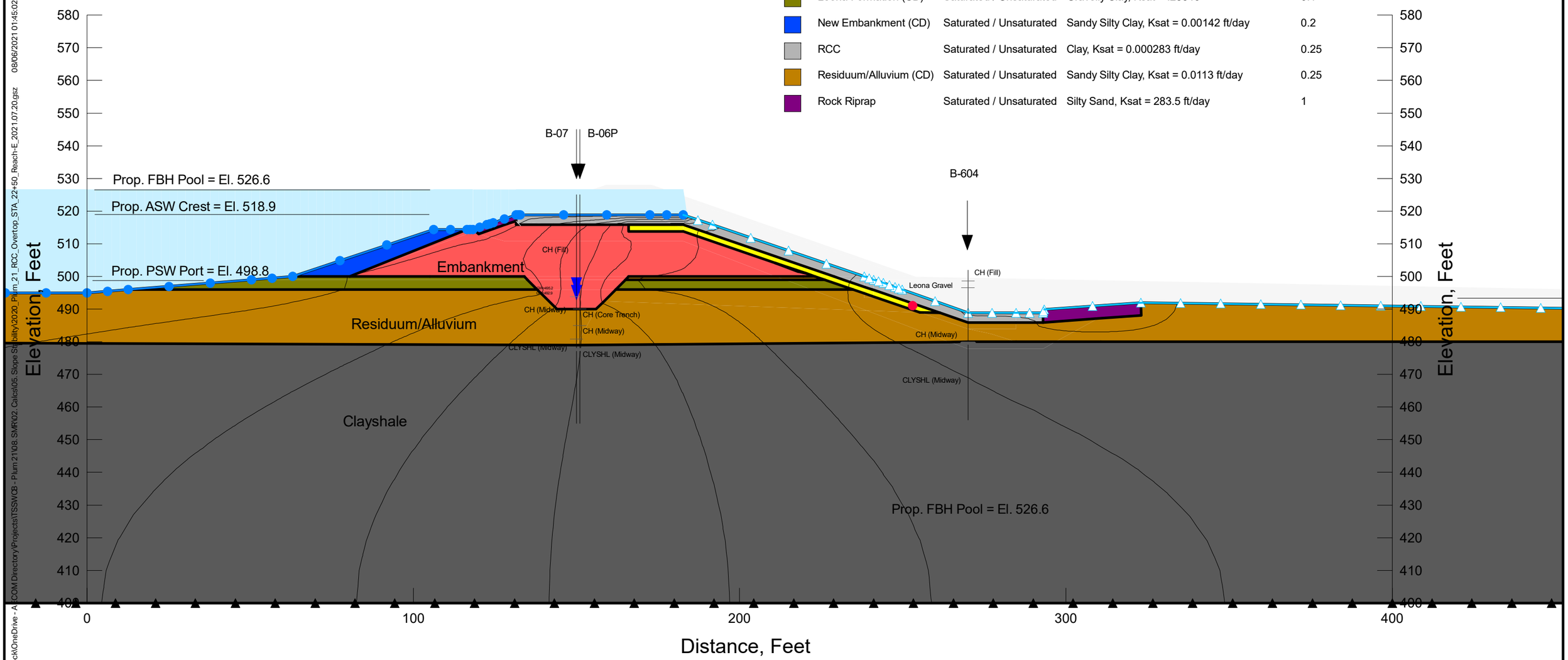
Color	Name	Model	K-Function	Sat Kx (ft/d)	Ky'/Kx' Ratio	Compressibility (/psf)
	Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
	Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Filter Drain	Saturated / Unsaturated	Sand, Ksat = .28346 ft/day		1	
	Leona Formation (CD)	Saturated / Unsaturated	Gravelly Clay, Ksat = .28346		0.1	
	New Embankment (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	RCC	Saturated / Unsaturated	Clay, Ksat = 0.000283 ft/day		0.25	
	Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	
	Rock Riprap	Saturated / Unsaturated	Silty Sand, Ksat = 283.5 ft/day		1	



SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Proposed Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Reservoir Level: FBH	

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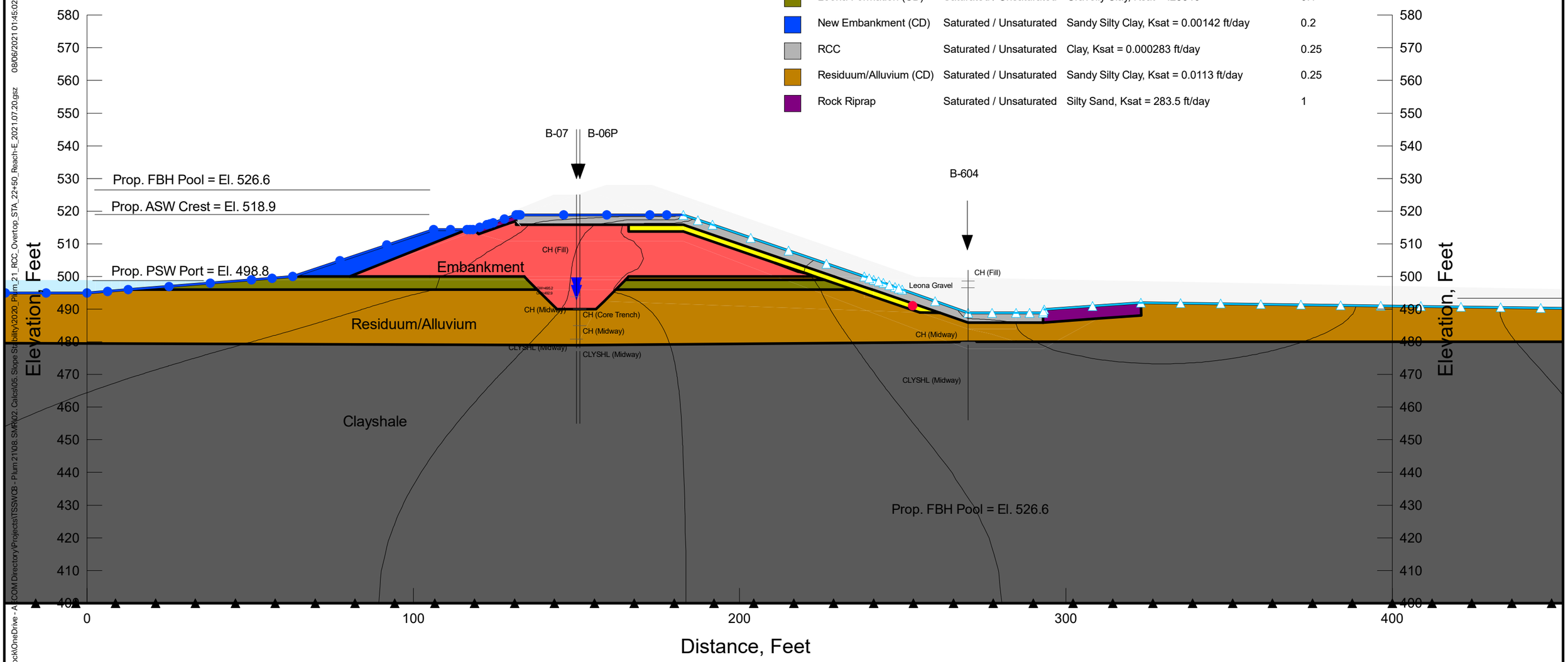
Color	Name	Model	K-Function	Sat Kx (ft/d)	Ky'/Kx' Ratio	Compressibility (/psf)
	Clayshale (CD)	Saturated Only		0.0113	0.25	5e-07
	Embankment Fill (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	Filter Drain	Saturated / Unsaturated	Sand, Ksat = .28346 ft/day		1	
	Leona Formation (CD)	Saturated / Unsaturated	Gravelly Clay, Ksat = .28346		0.1	
	New Embankment (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.00142 ft/day		0.2	
	RCC	Saturated / Unsaturated	Clay, Ksat = 0.000283 ft/day		0.25	
	Residuum/Alluvium (CD)	Saturated / Unsaturated	Sandy Silty Clay, Ksat = 0.0113 ft/day		0.25	
	Rock Riprap	Saturated / Unsaturated	Silty Sand, Ksat = 283.5 ft/day		1	



SOFTWARE VERSION: SEEP/W v. 10.2.2.20559
METHOD: Steady-State
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Seepage Analysis	Case: Proposed Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Reservoir Level: Normal Pool (PSW Port)	

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Project: Plum #21 RCC Underdrain Pipe Sizing (Reach E)
Project No.: 60583858
Date: 7/30/2021
Engineer: LTF

SIZING OF TOE DRAIN PIPE

Manning's Equation: $Q = \frac{1.49}{n} r^{2/3} s^{1/2} A$

Q = Design Discharge through Pipe (ft^3/sec)
n = Manning's Roughness Coefficient
r = Hydraulic Radius (ft)
s = Slope of Channel Bottom (ft/ft)
A = Area of Flow (ft^2)

****Restrictions: Limit flow depth to 50% of pipe's diameter.*

Length of Pipe, L =	300	ft	(approximate length of embankment dam)
Seepage Flow at Max Embankment Section, q =	1.5E-06	ft^3/sec/ft	(refer to Seepage Analysis results; q=0.20054 CF/day/LF)
Apply Factor of Safety, FS =	10		(accounts for variability and uncertainity in hydraulic conductivities)
Design Discharge through Pipe, Q = FS(qL) =	0.0044	ft^3/sec	(required pipe capacity)
Manning's Roughness Coefficient, n =	0.012		(for perforated PVC pipe with smooth interior)
Slope of Channel Bottom, s =	0.01	ft/ft	(slope of toe drain outlet pipe; assume 1%)
For a pipe flowing 50% full: A/D^2 =	0.3927		(from Table B-3 in USBR, 1987)
r/D =	0.2500		(from Table B-3 in USBR, 1987)
D = Diameter of Pipe			
Area of Flow, A =	$0.3927D^2$	ft^2	
Hydraulic Radius, r =	0.2500D	ft	

Manning's Equation Becomes: $Q = \frac{1.49}{n}(0.2500D)^{2/3} s^{1/2} (0.3927D^2)$ **--- Solve for D**

Trial Diameter of Pipe, D >=	0.50	ft	(consider minimum 6-inch pipe)
	6.00	in	
Q_{Design} =	0.305	**ft^3/sec**	(adjust pipe diameter until Qdesign >= Q from above)
Check capacity =	OK		

Selected drain pipe diameter (inches): 6

Maximum Discharge for Selected Pipe Flowing 50% Full, Q_{max} = 0.305 **ft^3/sec**

Project: Plum #21 RCC Underdrain Pipe Sizing (Reach E)
Project No.: 60583858
Date: 7/30/2021
Engineer: LTF

SIZING OF TOE DRAIN PIPE

Manning's Equation: $Q = \frac{1.49}{n} r^{2/3} s^{1/2} A$

Q = Design Discharge through Pipe (ft^3/sec)
n = Manning's Roughness Coefficient
r = Hydraulic Radius (ft)
s = Slope of Channel Bottom (ft/ft)
A = Area of Flow (ft^2)

****Restrictions: Limit flow depth to 25% of pipe's diameter.*

Length of Pipe, L =	300	ft	(approximate length of embankment dam)
Seepage Flow at Max Embankment Section, q =	1.5E-06	ft^3/sec/ft	(refer to Seepage Analysis results; q=0.20054 CF/day/LF)
Apply Factor of Safety, FS =	10		(accounts for variability and uncertainity in hydraulic conductivities)
Design Discharge through Pipe, Q = FS(qL) =	0.0044	ft^3/sec	(required pipe capacity)
Manning's Roughness Coefficient, n =	0.012		(for perforated PVC pipe with smooth interior)
Slope of Channel Bottom, s =	0.01	ft/ft	(slope of toe drain outlet pipe; assume 1%)
For a pipe flowing 25% full: A/D^2 =	0.1535		(from Table B-3 in USBR, 1987)
r/D =	0.1466		(from Table B-3 in USBR, 1987)
D = Diameter of Pipe			
Area of Flow, A =	$0.1535D^2$	ft^2	
Hydraulic Radius, r =	0.1466D	ft	

Manning's Equation Becomes: $Q = \frac{1.49}{n}(0.1466D)^{2/3} s^{1/2} (0.1535D^2)$ **--- Solve for D**

Trial Diameter of Pipe, D >=	0.50	ft	(consider minimum 6-inch pipe)
	6.00	in	
Q_{Design} =	**0.083**	**ft^3/sec**	(adjust pipe diameter until Qdesign >= Q from above)
Check capacity =	**OK**		

Selected drain pipe diameter (inches): 6

Maximum Discharge for Selected Pipe Flowing 25% Full, Q_{max} = **0.083** **ft^3/sec**

Project: Plum #21 Toe Drain Pipe Sizing (Reach E)
Project No.: 60583858
Date: 7/30/2021
Engineer: LTF

SIZING OF TOE DRAIN PIPE

Manning's Equation: $Q = \frac{1.49}{n} r^{2/3} s^{1/2} A$

Q = Design Discharge through Pipe (ft^3/sec)
n = Manning's Roughness Coefficient
r = Hydraulic Radius (ft)
s = Slope of Channel Bottom (ft/ft)
A = Area of Flow (ft^2)

****Restrictions: Limit flow depth to 50% of pipe's diameter.*

Length of Pipe, L =	738	ft	(approximate length of embankment dam)
Seepage Flow at Max Embankment Section, q =	1.6E-06	ft^3/sec/ft	(refer to Seepage Analysis results; q=0.20054 CF/day/LF)
Apply Factor of Safety, FS =	10		(accounts for variability and uncertainity in hydraulic conductivities)
Design Discharge through Pipe, Q = FS(qL) =	0.0120	ft^3/sec	(required pipe capacity)
Manning's Roughness Coefficient, n =	0.012		(for perforated PVC pipe with smooth interior)
Slope of Channel Bottom, s =	0.01	ft/ft	(slope of toe drain outlet pipe; assume 1%)

For a pipe flowing 50% full:

A/D^2 =	0.3927	(from Table B-3 in USBR, 1987)
r/D =	0.2500	(from Table B-3 in USBR, 1987)

D = Diameter of Pipe

Area of Flow, A = $0.3927D^2$ ft^2

Hydraulic Radius, r = 0.2500D ft

Manning's Equation Becomes: $Q = \frac{1.49}{n}(0.2500D)^{2/3} s^{1/2} (0.3927D^2)$ **--- Solve for D**

Trial Diameter of Pipe, D >= 0.50 ft (consider minimum 6-inch pipe)
6.00 in

Q_{Design} = 0.305 **ft^3/sec** (adjust pipe diameter until Qdesign >= Q from above)

Check capacity = OK

Selected drain pipe diameter (inches): 6

Maximum Discharge for Selected Pipe Flowing 50% Full, Q_{max} = 0.305 **ft^3/sec**

Project: Plum #21 Toe Drain Pipe Sizing (Reach E)
Project No.: 60583858
Date: 7/30/2021
Engineer: LTF

SIZING OF TOE DRAIN PIPE

Manning's Equation: $Q = \frac{1.49}{n} r^{2/3} s^{1/2} A$

Q = Design Discharge through Pipe (ft^3/sec)
n = Manning's Roughness Coefficient
r = Hydraulic Radius (ft)
s = Slope of Channel Bottom (ft/ft)
A = Area of Flow (ft^2)

****Restrictions: Limit flow depth to 25% of pipe's diameter.*

Length of Pipe, L =	738	ft	(approximate length of embankment dam)
Seepage Flow at Max Embankment Section, q =	1.6E-06	ft^3/sec/ft	(refer to Seepage Analysis results; q=0.20054 CF/day/LF)
Apply Factor of Safety, FS =	10		(accounts for variability and uncertainity in hydraulic conductivities)
Design Discharge through Pipe, Q = FS(qL) =	0.0120	ft^3/sec	(required pipe capacity)
Manning's Roughness Coefficient, n =	0.012		(for perforated PVC pipe with smooth interior)
Slope of Channel Bottom, s =	0.01	ft/ft	(slope of toe drain outlet pipe; assume 1%)
For a pipe flowing 25% full: A/D^2 =	0.1535		(from Table B-3 in USBR, 1987)
r/D =	0.1466		(from Table B-3 in USBR, 1987)
D =	Diameter of Pipe		
Area of Flow, A =	$0.1535D^2$	ft^2	
Hydraulic Radius, r =	0.1466D	ft	

Manning's Equation Becomes: $Q = \frac{1.49}{n}(0.1466D)^{2/3} s^{1/2} (0.1535D^2)$ **--- Solve for D**

Trial Diameter of Pipe, D >=	0.50	ft	(consider minimum 6-inch pipe)
	6.00	in	
Q_{Design} =	**0.083**	**ft^3/sec**	(adjust pipe diameter until Qdesign >= Q from above)
Check capacity =	**OK**		

Selected drain pipe diameter (inches): 6

Maximum Discharge for Selected Pipe Flowing 25% Full, Q_{max} = **0.083** **ft^3/sec**

Appendix F Slope Stability Analysis

F.1 Shear Strength Plots

CIU' and CDDS Shear Envelopes

Sample Information						Field Tests			Index						Grain Size				Shear Test Results								R-Envelope (Total Stress)									S-Envelope (Effective Stress)								
						PP	SPT N-value	Interpreted Stratum	USCS - Lab	Wn	γd	γt	LL	PI	PL	Gravel	Sand	Fines	Clay	Test Type	Test Notes	Interpret. Method	No. Norm. Stress Pts	Total		Effective		Normal Stress (psf)									Normal Stress (psf)								
Boring ID	Top Depth (ft)	Bottom Depth (ft)	Sample ID	Plot Label	Field Classify	(tsf)	(bpf)			(%)	(pcf)	(pcf)				(%)	(%)	(%)	(%)					Cu (psf)	φu (deg)	C' (psf)	φ' (deg)	0	100	250	500	1,000	2,000	4,000	6,000	8,000	0	100	250	500	1,000	2,000	4,000	6,000	8,000
																												Shear Stress									Shear Stress								
B-05	30	32.5	257	B-05 (30'-32.5')	CH	4.5+	-	Embankment Fill	CL	21.6	104.7	127.3	45	26	19	10	23	67	27	CIU'	C, Undist.	$(\sigma1-\sigma3)_{max}$	3 pts	631	19	485	27.1	631	664	715	798	966	1,300	1,969	2,639	3,308	485	536	613	741	997	1,508	2,532	3,555	4,579
B-07	17.5	19.5	720	B-07 (17.5'-19.5')	CH	4.5+	-	Embankment Fill	CH	20.3	102.7	123.5	65	41	24	0	6	94	43	CIU'	C, Undist.	$(\sigma1-\sigma3)_{max}$	2 pts	171	22.7	132	29.2	171	213	276	380	589	1,008	1,844	2,681	3,517	132	188	272	411	691	1,250	2,368	3,485	4,603
B-08	35	37.5	274	B-08 (35'-37.5')	CL	3.75	-	Residuum	CL	29.8	90.6	117.6	47	30	17	14	4	82	39	CIU'	C, Undist.	$(\sigma1-\sigma3)_{max}$	3 pts	84	20.4	36	30.3	84	121	177	270	456	828	1,572	2,315	3,059	36	94	182	328	620	1,205	2,373	3,542	4,711
B-301	4	10	278,279,280	B-301 (4'-10')	CL-CH	2.75-4.5	-	Alluvium	CL-CH	14-22	102-116	124-132	40-51	24-32	16-19	0	19-27	76	30-36	CIU'	C, Undist.	$(\sigma1-\sigma3)_{max}$	3 pts	908	10.3	763	19.5	908	926	953	999	1,090	1,271	1,635	1,998	2,362	763	798	852	940	1,117	1,471	2,179	2,888	3,596
B-603	15.5	17.5	297	B-603 (15.5'-17.5')	CL	4.5+	-	Residuum	CH	27.8	94.9	121.3	65	41	24	0	6	94	41	CIU'	C, Undist.	$(\sigma1-\sigma3)_{max}$	2 pts	201	28.4	88	35.3	201	255	336	471	742	1,282	2,364	3,445	4,527	88	159	265	442	796	1,504	2,920	4,336	5,752
B-602	25	26	294	B-602 (25'-26')	CH	4.5+	-	Clayshale	CH	21.9	99.9	121.8	62	37	25	0	3	97	39	CDDS	C, Undist.	Post-Peak	3 pts	#N/A	#N/A	346	35	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	346	417	524	701	1,057	1,767	3,189	4,610	6,031
B-603	30	31	300	B-603 (30'-31')	CH	4.5+	-	Clayshale	CH	22.7	96.1	117.9	66	37	29	0	2	98	41	CDDS	C, Undist.	Post-Peak	3 pts	#N/A	#N/A	624	24	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	624	669	736	849	1,073	1,523	2,422	3,321	4,219
B-604	30	31	307	B-604 (30'-31')	CH	4.5+	-	Clayshale	CH	23	96.1	118.2	65	38	27	0	7	93	39	CDDS	C, Undist.	Post-Peak	3 pts	#N/A	#N/A	181	33	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	181	245	340	500	818	1,455	2,729	4,003	5,278
COMP-1	0	4	COMP-1	COMP-1 (0' - 4')	CH	-	-	Borrow #1	CL	18.6	101.4	120.2	43	25	18	0	20	80	35	CIU'	C, Remold	$(\sigma1-\sigma3)_{max}$	3 pts	275	14.7	140	27.5	275	301	341	406	537	800	1,324	1,849	2,374	140	192	270	400	661	1,181	2,222	3,263	4,305
COMP-2	0	4	COMP-2	COMP-2 (0' - 4')	CH	-	-	Borrow #1	CL	20.2	106	127.4	39	23	16	0	33	67	30	CIU'	C, Remold	$(\sigma1-\sigma3)_{max}$	3 pts	288	13.8	202	24.2	288	313	349	411	534	779	1,270	1,762	2,253	202	247	314	427	651	1,101	2,000	2,899	3,797

AECOM

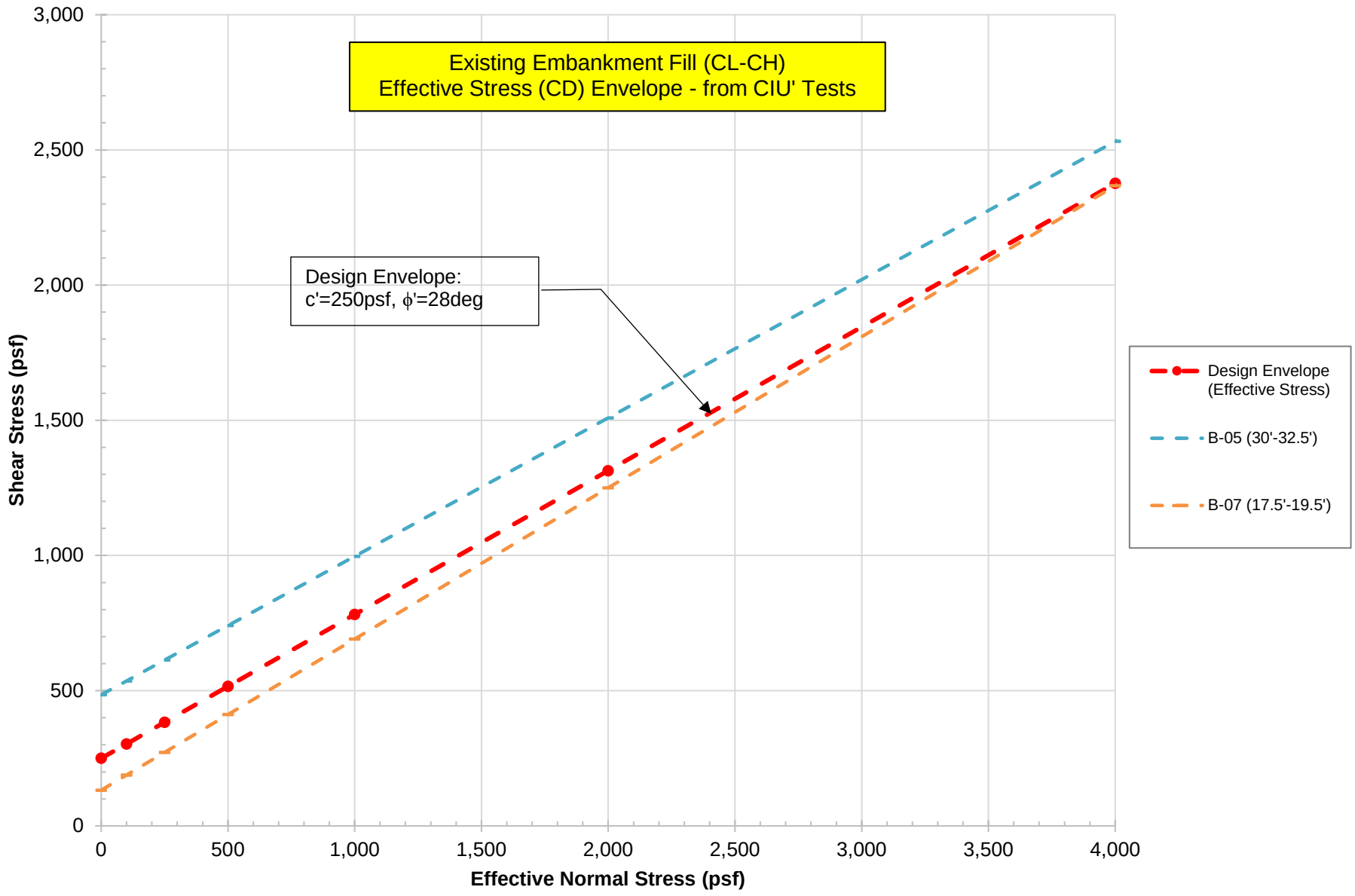
Embankment Fill	450	20	250	28	450	486	541	632	814	1,178	1,906	2,634	3,362	250	303	383	516	782	1,313	2,377	3,440	4,504
Residuum/Alluvium	300	20	200	26	300	336	391	482	664	1,028	1,756	2,484	3,212	200	249	322	444	688	1,175	2,151	3,126	4,102
Clayshale			500	26	0	0	0	0	0	0	0	0	0	500	549	622	744	988	1,475	2,451	3,426	4,402
Borrow	350	16	250	26	350	379	422	493	637	923	1,497	2,070	2,644	250	299	372	494	738	1,225	2,201	3,176	4,152

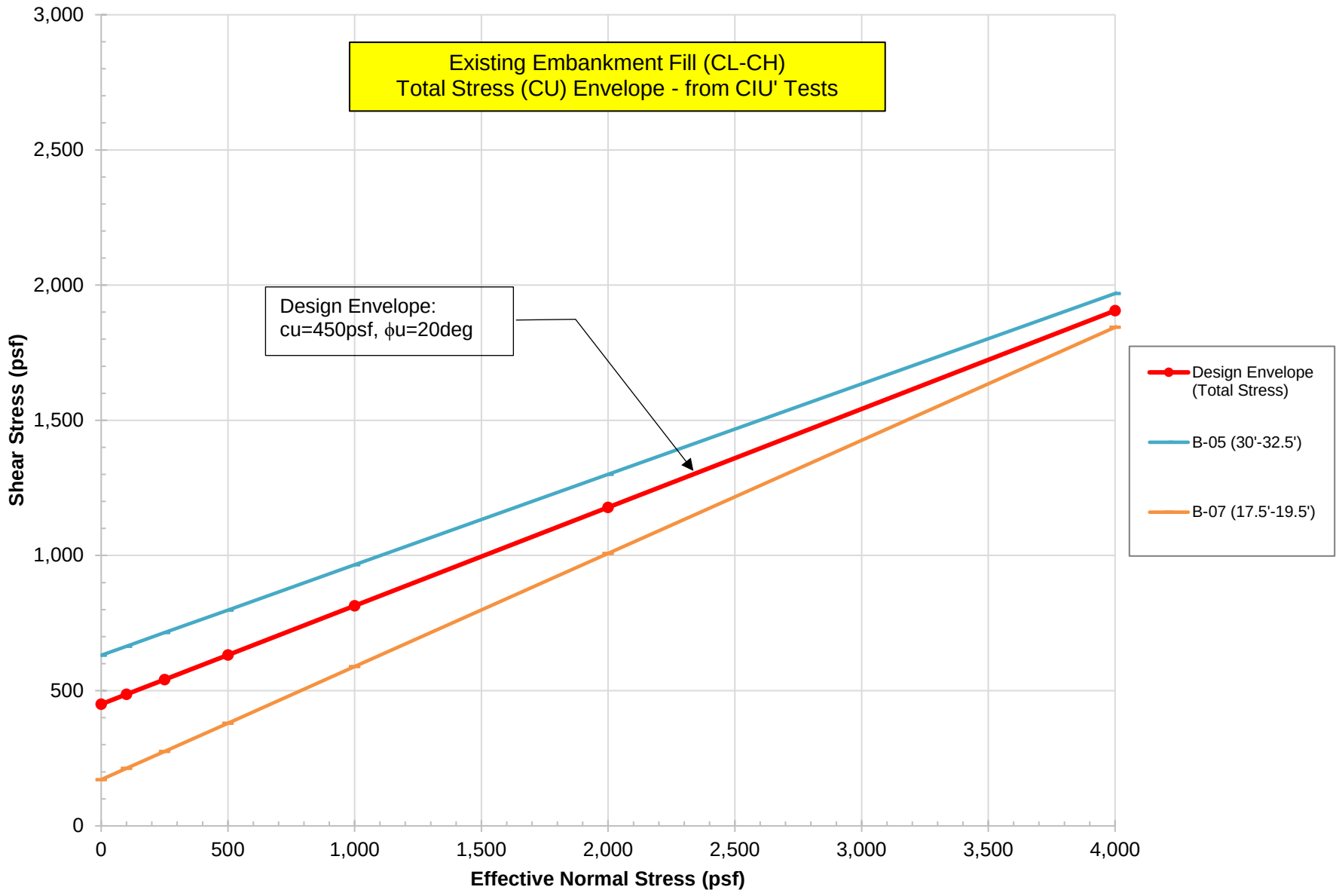
Non-Linear Envelope Calculation for SLOPE/W:
Input for Upstream Rapid Drawdown (RDD) and Flood Surcharge (FBH) Conditions

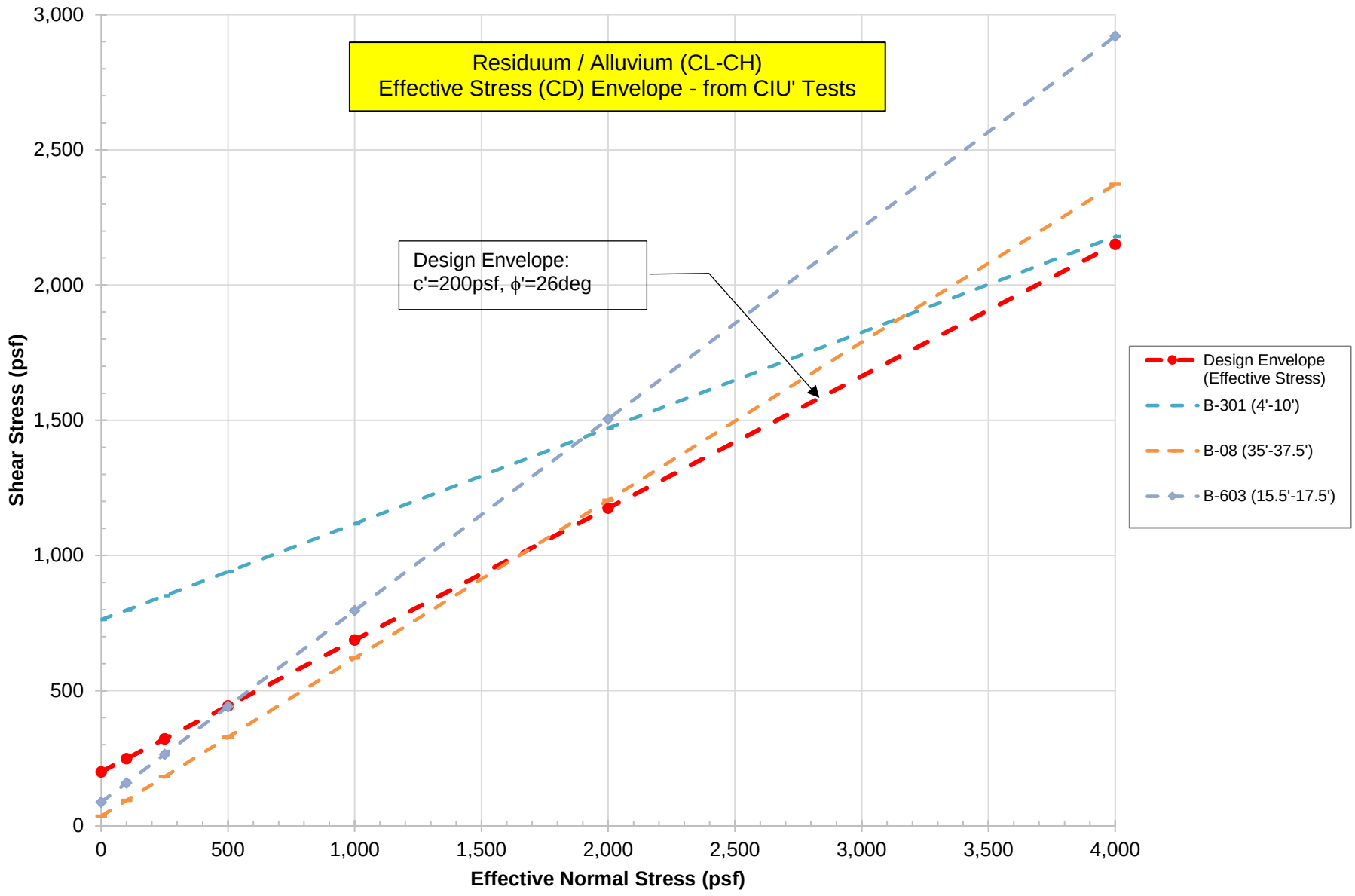
Embankment			
Effective Stress ϕ'	28.0	deg	
Effective Stress c'	250	psf	
Total Stress ϕ	20.0	deg	
Total Stress c	450	psf	
		Bilinear for RDD/FBH	
		Cohesion (psf)	250
		ϕ-1 (deg)	28.0
		ϕ-2 (deg)	20.0
		σn @ intersect (psf)	1192

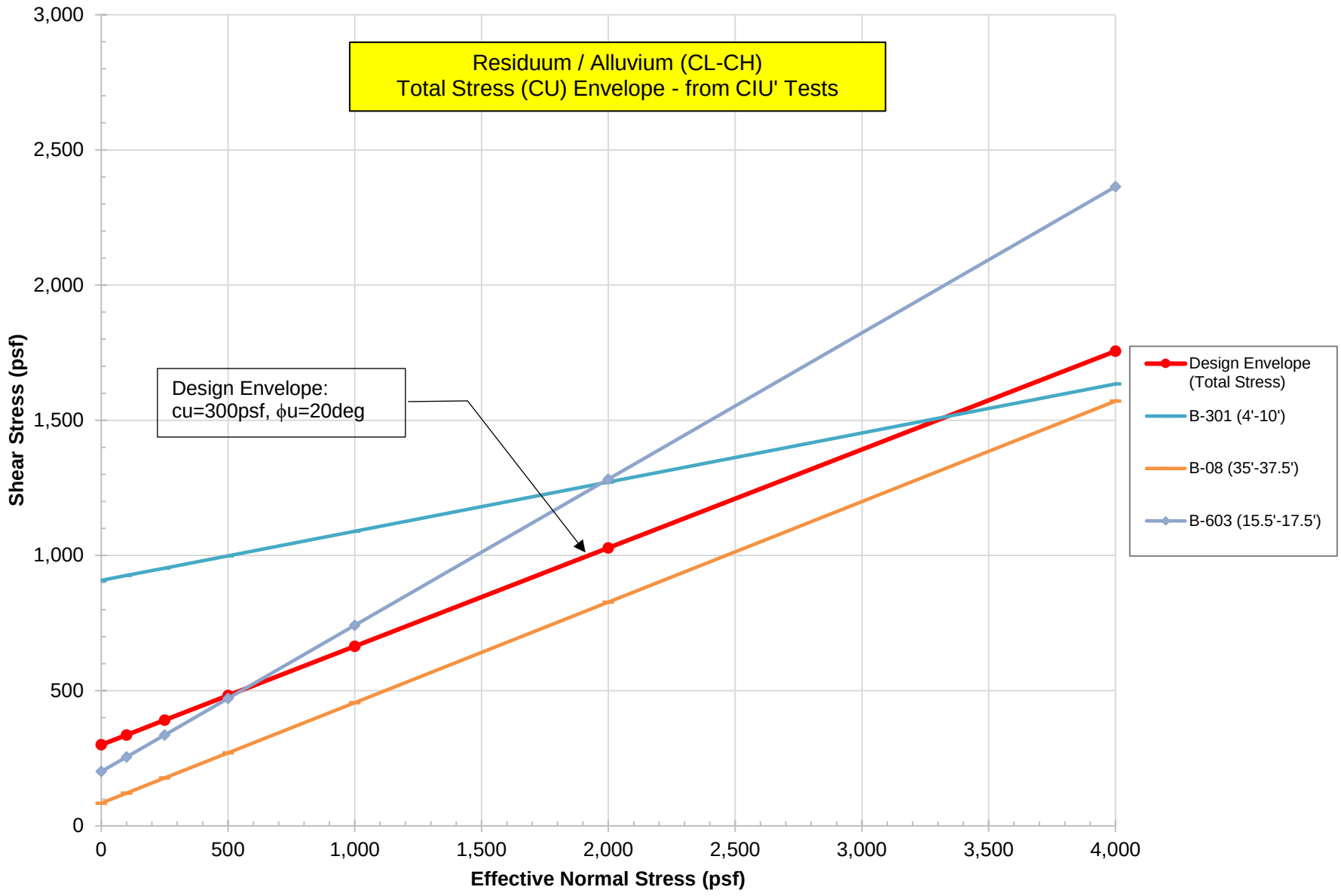
Alluvium/Residuum			
Effective Stress ϕ'	26.0	deg	
Effective Stress c'	200	psf	
Total Stress ϕ	20.0	deg	
Total Stress c	300	psf	
		Bilinear for RDD/FBH	
		Cohesion (psf)	200
		ϕ-1 (deg)	26.0
		ϕ-2 (deg)	20.0
		σn @ intersect (psf)	808

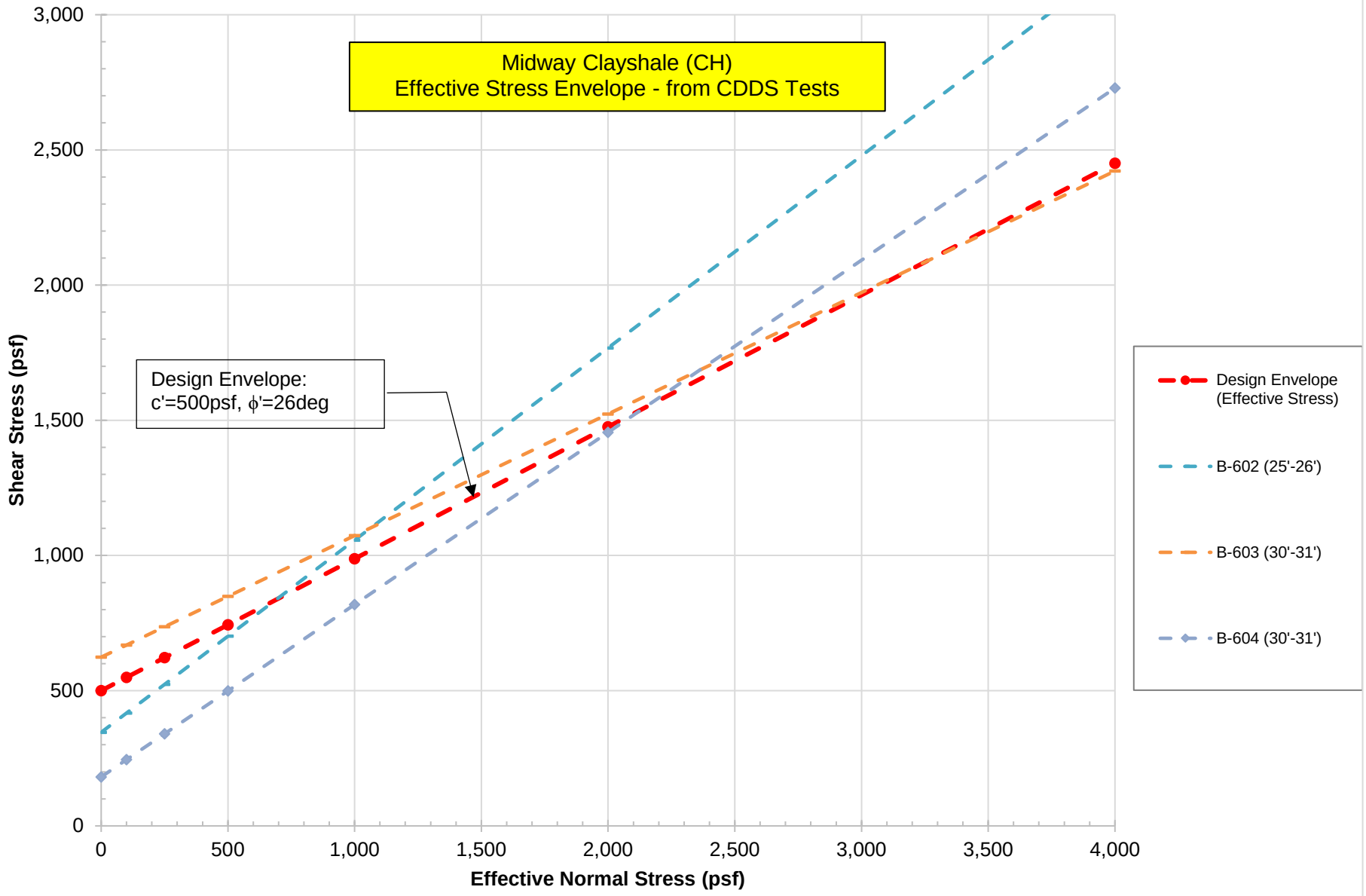
On-Site Borrow			
Effective Stress ϕ'	26.0	deg	
Effective Stress c'	250	psf	
Total Stress ϕ	16.0	deg	
Total Stress c	350	psf	
		Bilinear for RDD/FBH	
		Cohesion (psf)	250
		ϕ-1 (deg)	26.0
		ϕ-2 (deg)	16.0
		σn @ intersect (psf)	498

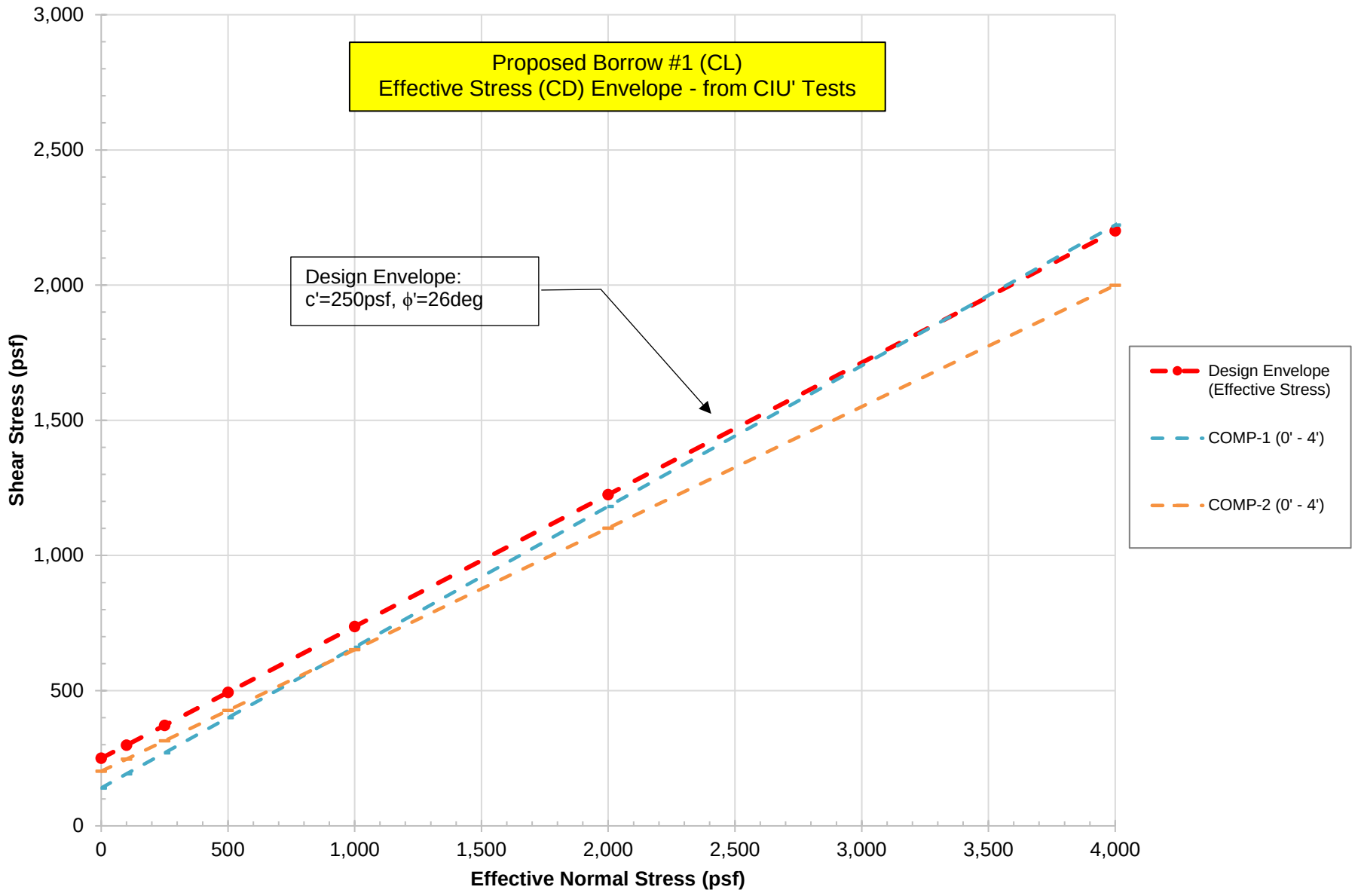

Existing Embankment Fill (CL-CH)
Effective Stress (CD) Envelope - from CIU' Tests
Design Envelope:
c'=250psf, ϕ'=28deg
Shear Stress (psf)
Effective Normal Stress (psf)
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
Design Envelope (Effective Stress)
B-05 (30'-32.5')
B-07 (17.5'-19.5')

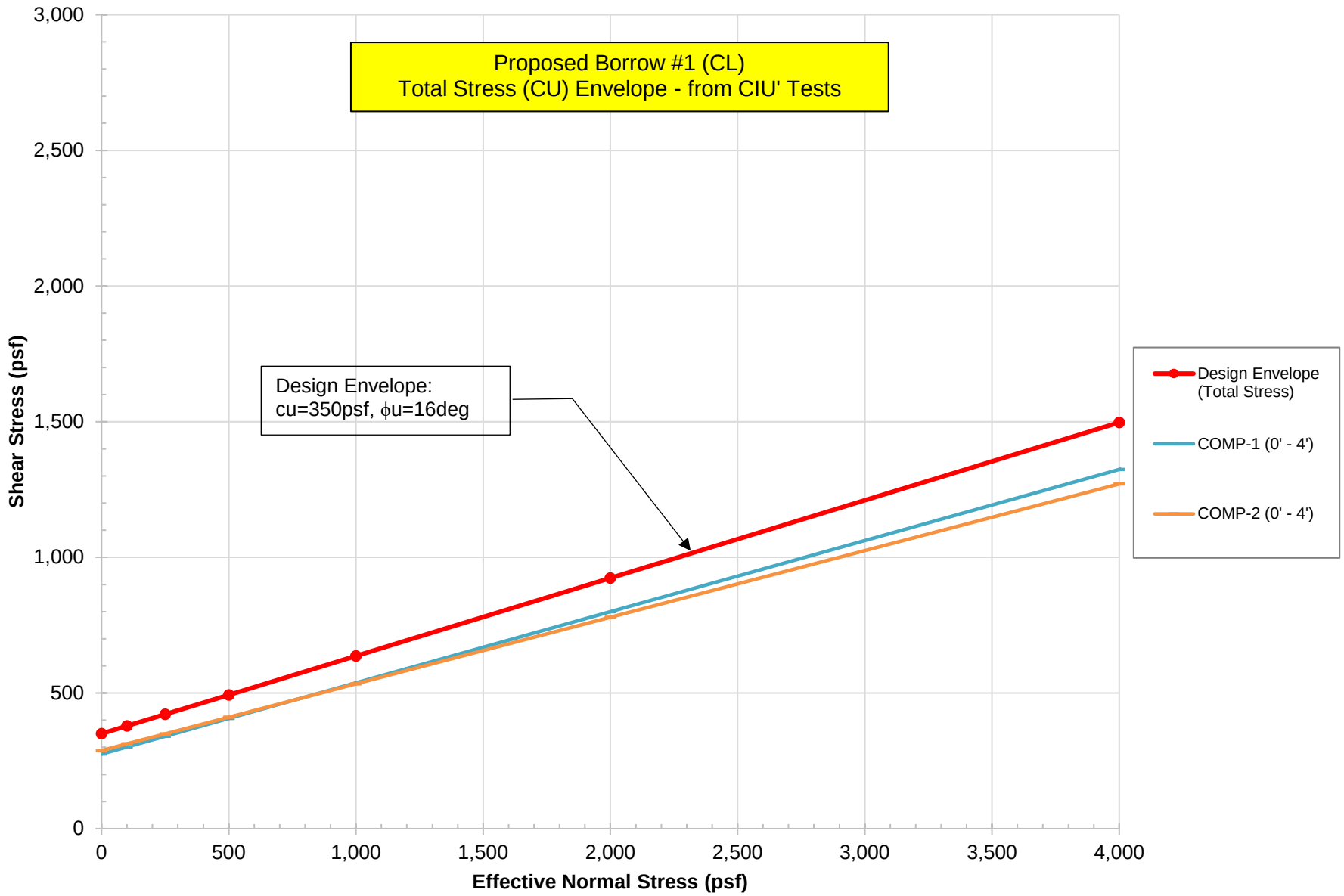

Existing Embankment Fill (CL-CH)
Total Stress (CU) Envelope - from CIU' Tests
Design Envelope:
cu=450psf, ϕu=20deg
Shear Stress (psf)
Effective Normal Stress (psf)
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
Design Envelope (Total Stress)
B-05 (30'-32.5')
B-07 (17.5'-19.5')


Residuum / Alluvium (CL-CH)
Effective Stress (CD) Envelope - from CIU' Tests
Design Envelope:
c'=200psf, ϕ'=26deg
Shear Stress (psf)
Effective Normal Stress (psf)
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
Design Envelope (Effective Stress)
B-301 (4'-10')
B-08 (35'-37.5')
B-603 (15.5'-17.5')

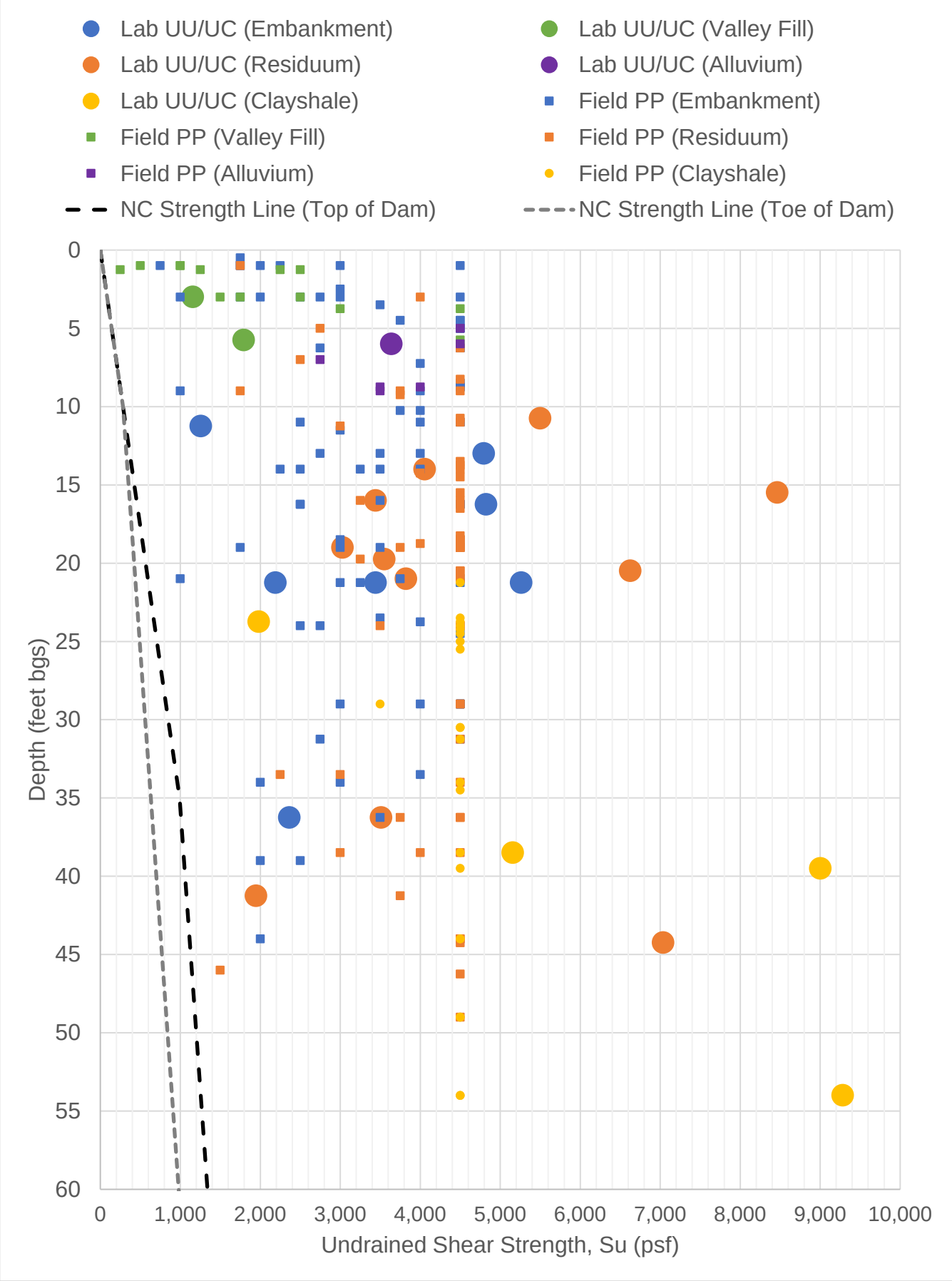

Residuum / Alluvium (CL-CH)
Total Stress (CU) Envelope - from CIU' Tests
Design Envelope:
cu=300psf, ϕu=20deg
Shear Stress (psf)
Effective Normal Stress (psf)
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
Design Envelope (Total Stress)
B-301 (4'-10')
B-08 (35'-37.5')
B-603 (15.5'-17.5')

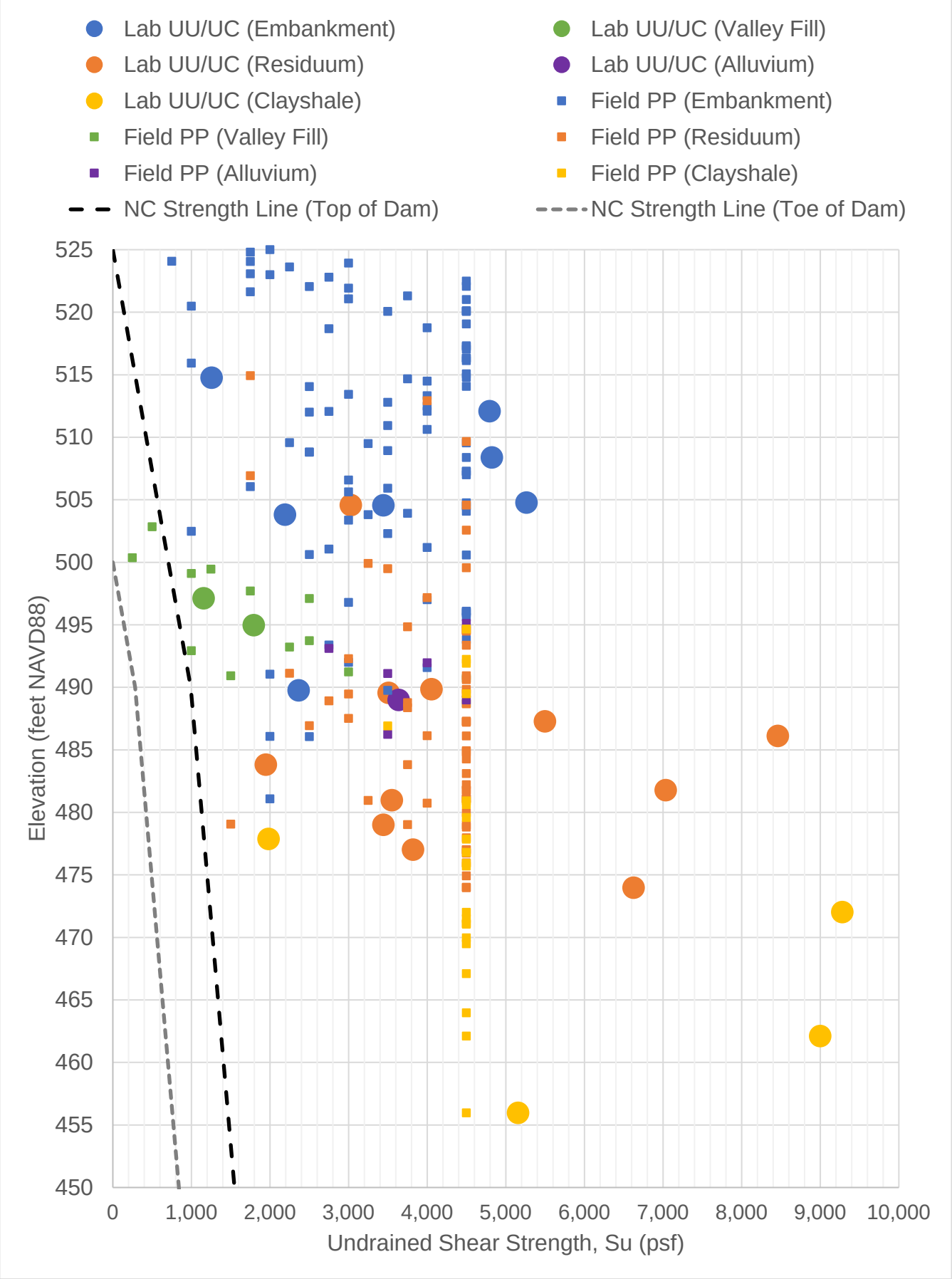

Midway Clayshale (CH)
Effective Stress Envelope - from CDDS Tests
Design Envelope:
c'=500psf, ϕ'=26deg
Shear Stress (psf)
Effective Normal Stress (psf)
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
Design Envelope (Effective Stress)
B-602 (25'-26')
B-603 (30'-31')
B-604 (30'-31')


Proposed Borrow #1 (CL)
Effective Stress (CD) Envelope - from CIU' Tests
Design Envelope:
c'=250psf, ϕ'=26deg
Shear Stress (psf)
Effective Normal Stress (psf)
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
Design Envelope (Effective Stress)
COMP-1 (0' - 4')
COMP-2 (0' - 4')

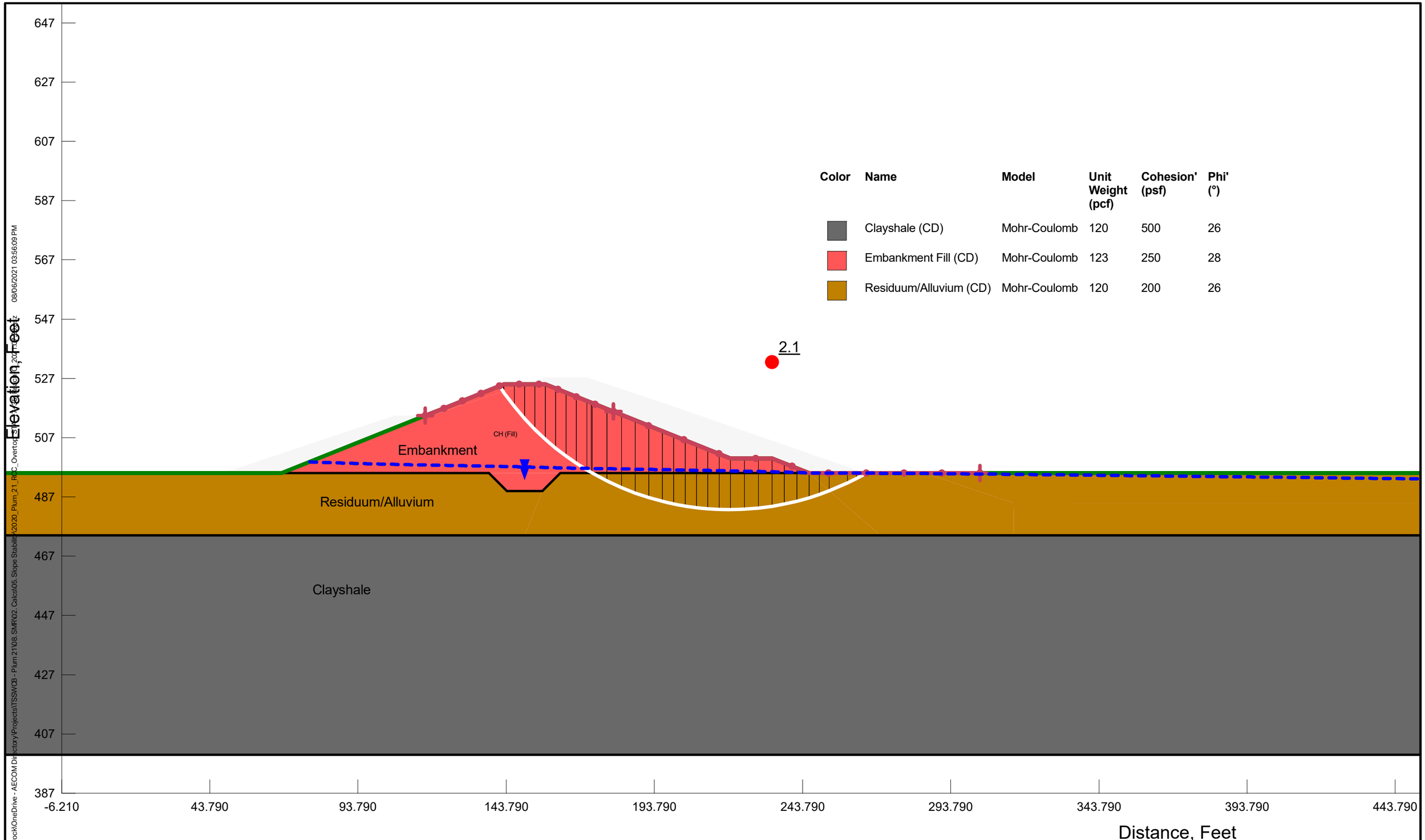

Proposed Borrow #1 (CL)
Total Stress (CU) Envelope - from CIU' Tests
Design Envelope:
cu=350psf, ϕu=16deg
Design Envelope (Total Stress)
COMP-1 (0' - 4')
COMP-2 (0' - 4')
Shear Stress (psf)
Effective Normal Stress (psf)
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000

Undrained Shear Strength Test and Correlation Plots


Lab UU/UC (Embankment)
Lab UU/UC (Valley Fill)
Lab UU/UC (Residuum)
Lab UU/UC (Alluvium)
Lab UU/UC (Clayshale)
Field PP (Embankment)
Field PP (Valley Fill)
Field PP (Residuum)
Field PP (Alluvium)
Field PP (Clayshale)
NC Strength Line (Top of Dam)
NC Strength Line (Toe of Dam)
Depth (feet bgs)
0
5
10
15
20
25
30
35
40
45
50
55
60
0
1,000
2,000
3,000
4,000
5,000
6,000
7,000
8,000
9,000
10,000
Undrained Shear Strength, Su (psf)


Lab UU/UC (Embankment)
Lab UU/UC (Valley Fill)
Lab UU/UC (Residuum)
Lab UU/UC (Alluvium)
Lab UU/UC (Clayshale)
Field PP (Embankment)
Field PP (Valley Fill)
Field PP (Residuum)
Field PP (Alluvium)
Field PP (Clayshale)
NC Strength Line (Top of Dam)
NC Strength Line (Toe of Dam)
Elevation (feet NAVD88)
525
520
515
510
505
500
495
490
485
480
475
470
465
460
455
450
0
1,000
2,000
3,000
4,000
5,000
6,000
7,000
8,000
9,000
10,000
Undrained Shear Strength, Su (psf)

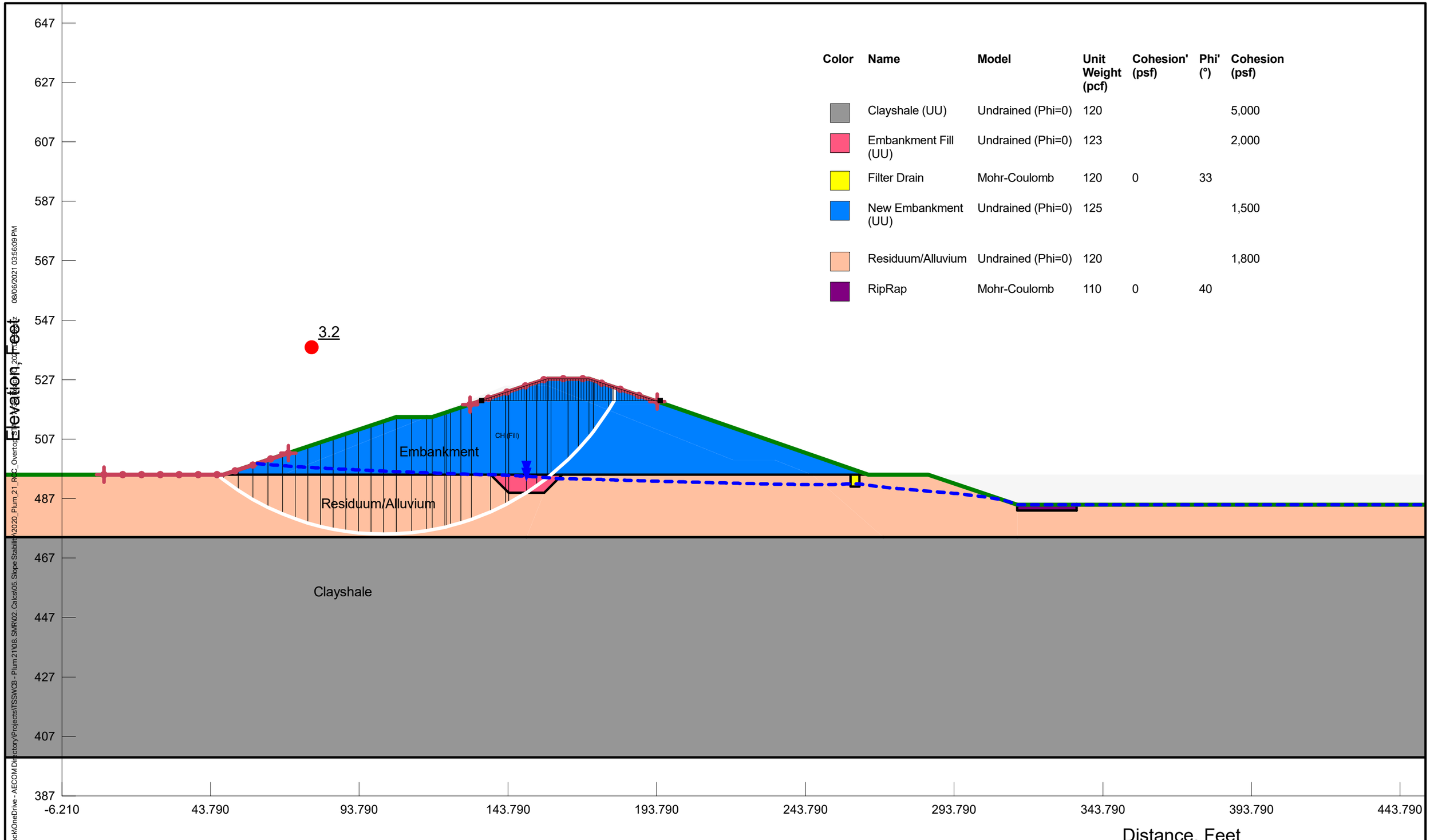
F.2 Slope Stability Analysis – Reach C (STA 17+35)



Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	Clayshale (CD)	Mohr-Coulomb	120	500	26
	Embankment Fill (CD)	Mohr-Coulomb	123	250	28
	Residuum/Alluvium (CD)	Mohr-Coulomb	120	200	26

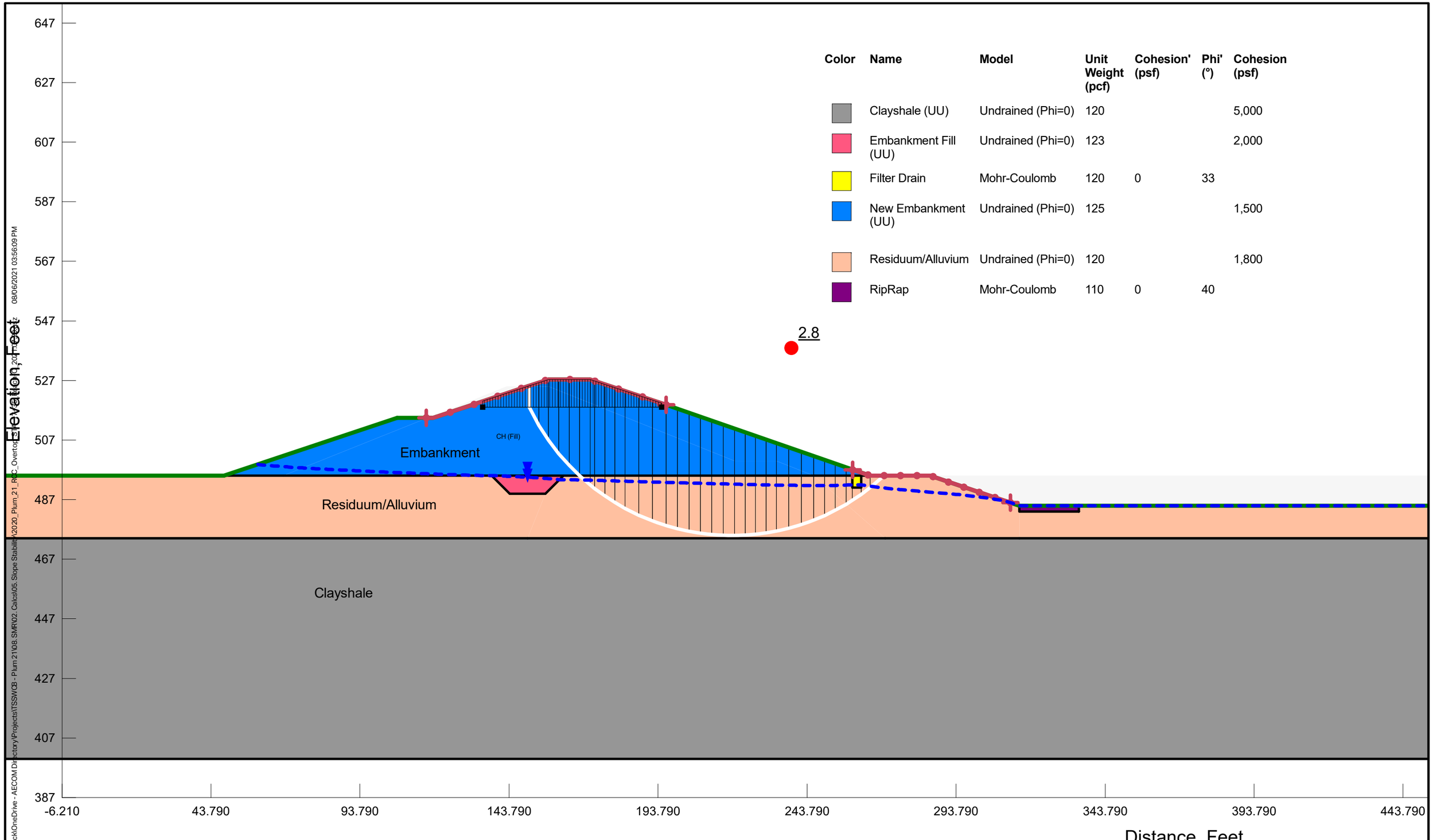
SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Existing Conditions	FIGURE
	CALDWELL COUNTY, TEXAS	Section: Reach C (STA 17+35)	Loading Condition: Steady-State Seepage	F.1



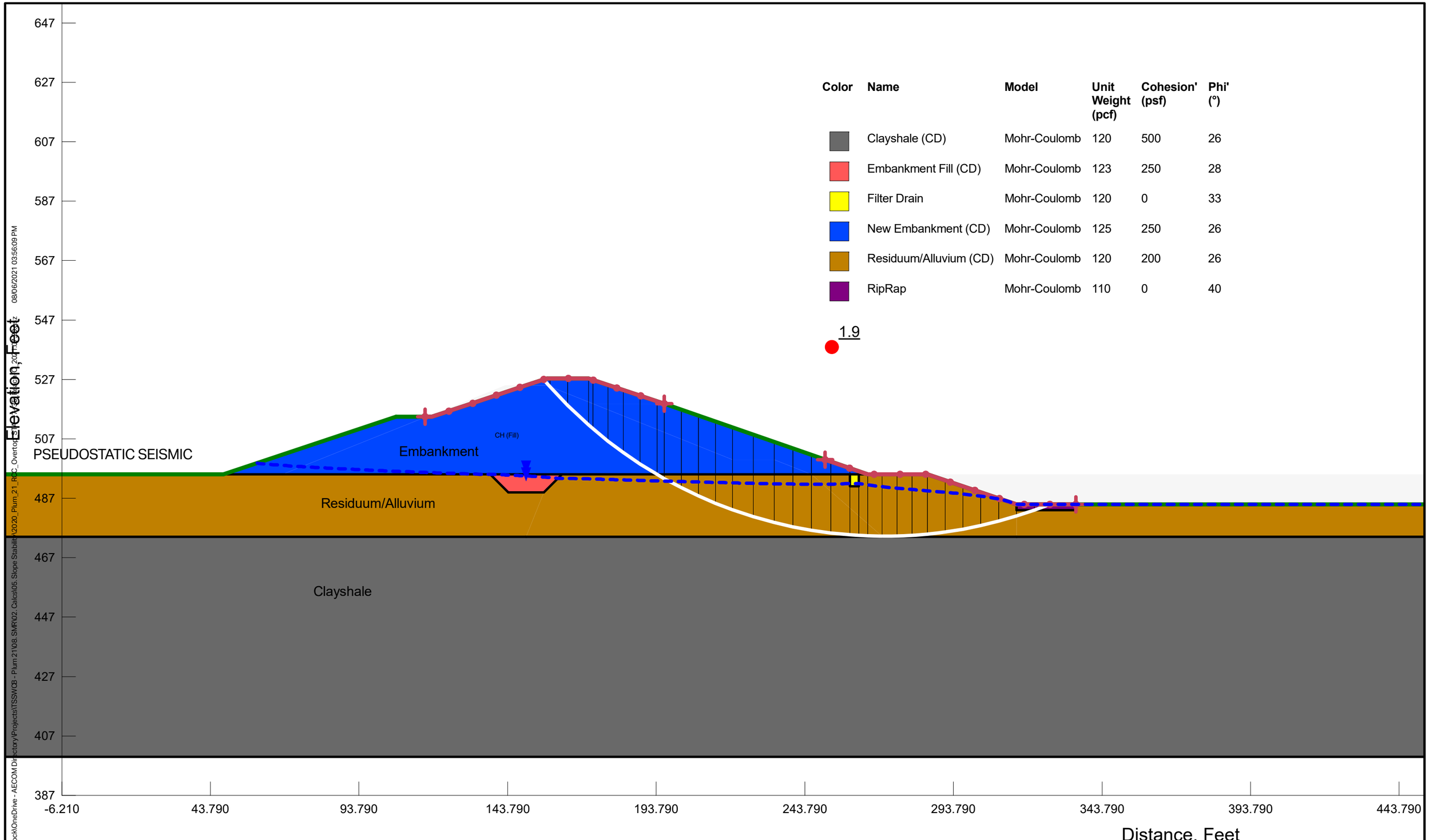
SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
	CALDWELL COUNTY, TEXAS	Section: Reach C (STA 17+35)	Loading Condition: End of Construction	F.2



SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

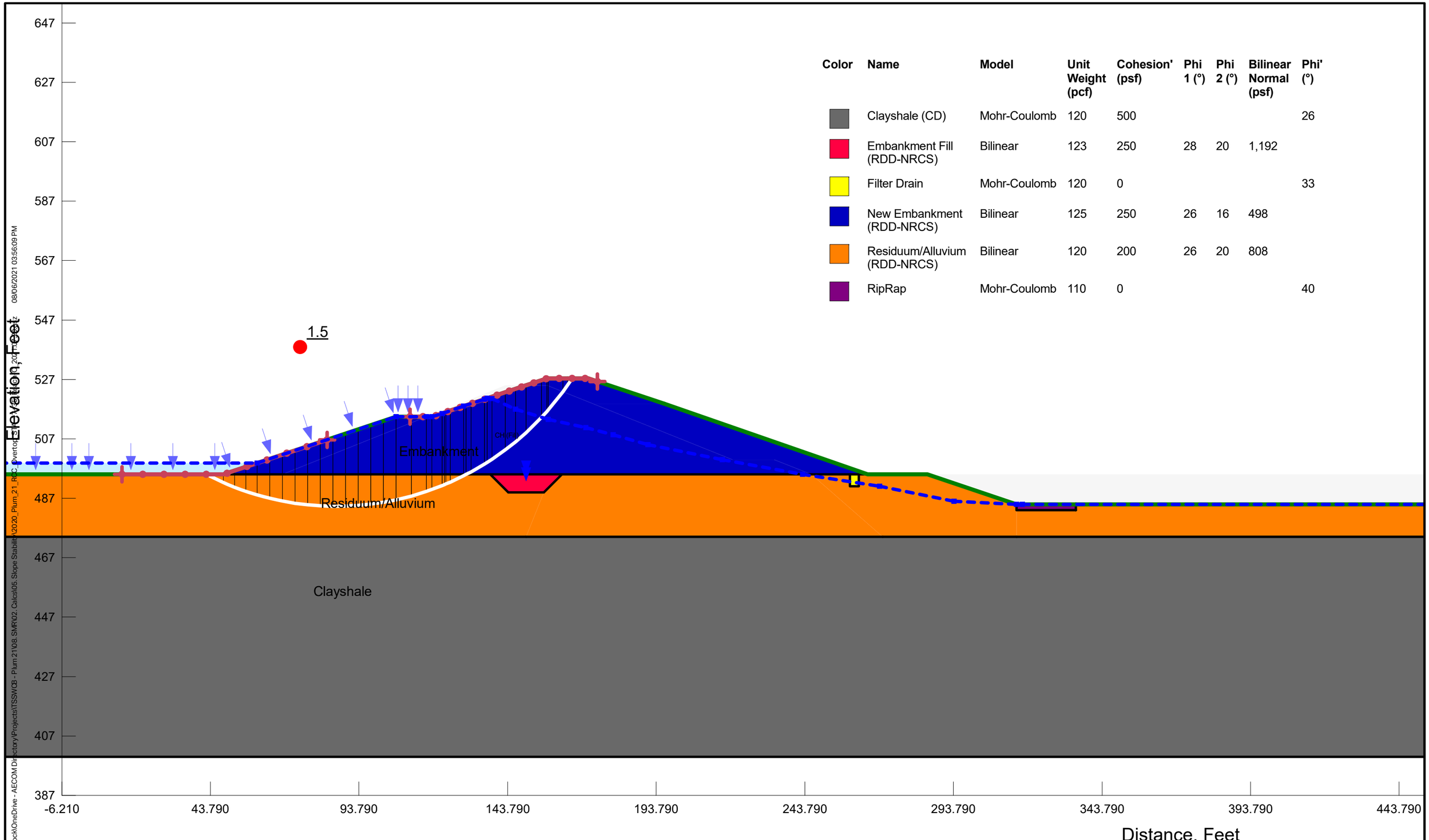
PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
	CALDWELL COUNTY, TEXAS	Section: Reach C (STA 17+35)	Loading Condition: End of Construction	F.3



Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	Clayshale (CD)	Mohr-Coulomb	120	500	26
	Embankment Fill (CD)	Mohr-Coulomb	123	250	28
	Filter Drain	Mohr-Coulomb	120	0	33
	New Embankment (CD)	Mohr-Coulomb	125	250	26
	Residuum/Alluvium (CD)	Mohr-Coulomb	120	200	26
	RipRap	Mohr-Coulomb	110	0	40

SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

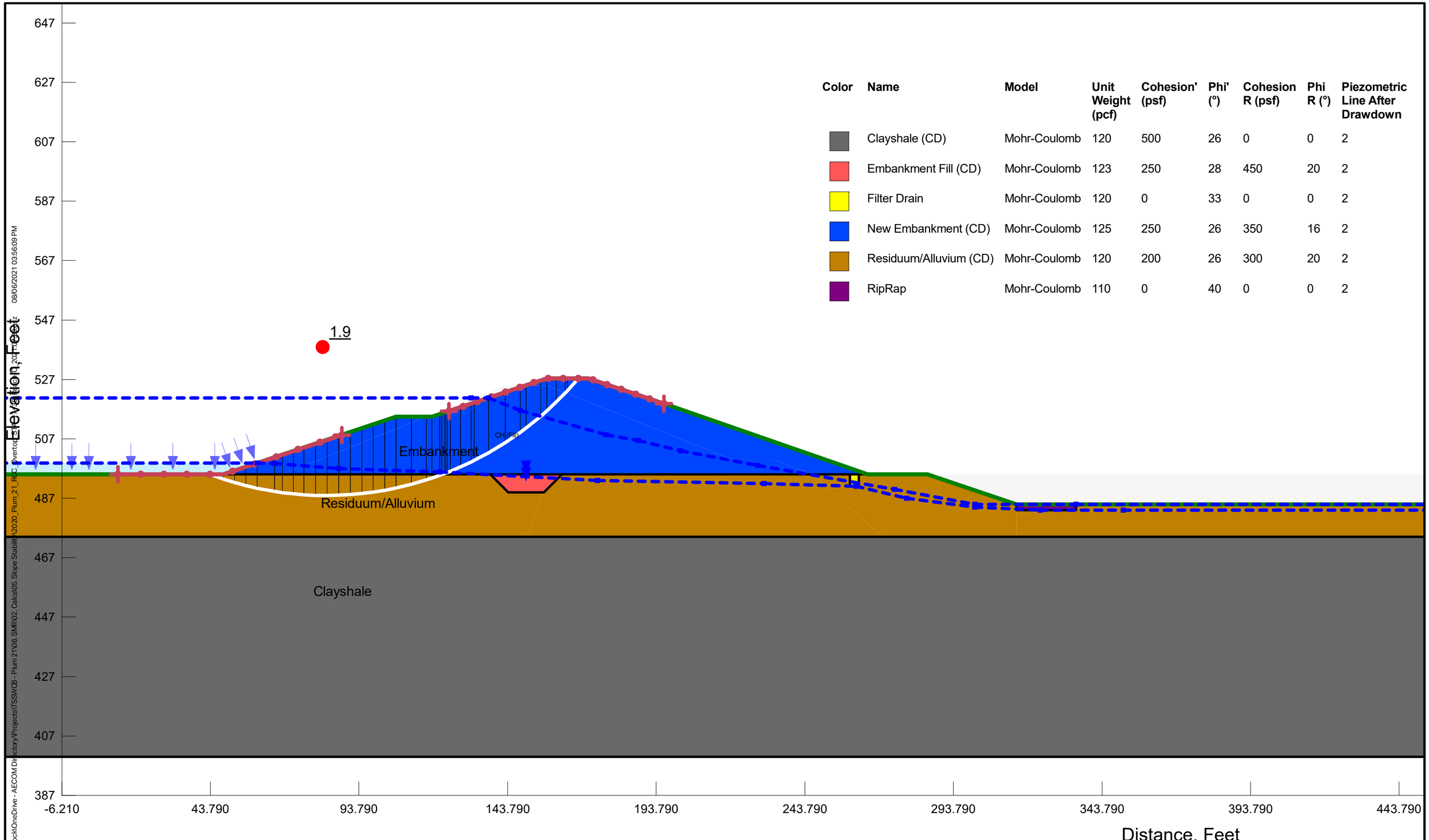
PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
	CALDWELL COUNTY, TEXAS	Section: Reach C (STA 17+35)	Loading Condition: Steady-State Seepage	F.4



Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi 1 (°)	Phi 2 (°)	Bilinear Normal (psf)	Phi' (°)
	Clayshale (CD)	Mohr-Coulomb	120	500				26
	Embankment Fill (RDD-NRCS)	Bilinear	123	250	28	20	1,192	
	Filter Drain	Mohr-Coulomb	120	0				33
	New Embankment (RDD-NRCS)	Bilinear	125	250	26	16	498	
	Residuum/Alluvium (RDD-NRCS)	Bilinear	120	200	26	20	808	
	RipRap	Mohr-Coulomb	110	0				40

SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

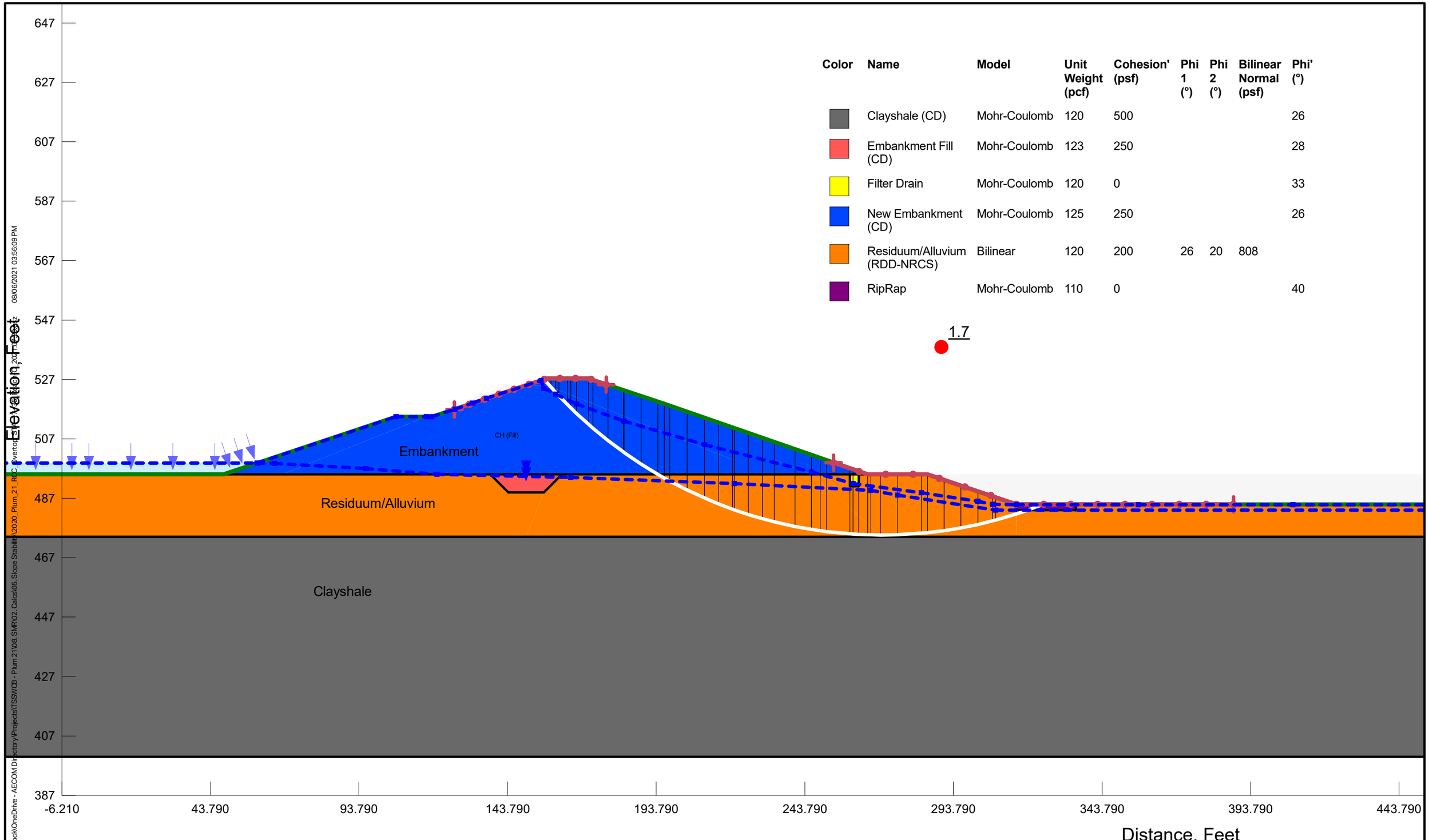
PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
	CALDWELL COUNTY, TEXAS	Section: Reach C (STA 17+35)	Loading Condition: Rapid Drawdown (NRCS)	F.5



Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)	Cohesion R (psf)	Phi R (°)	Piezometric Line After Drawdown
	Clayshale (CD)	Mohr-Coulomb	120	500	26	0	0	2
	Embankment Fill (CD)	Mohr-Coulomb	123	250	28	450	20	2
	Filter Drain	Mohr-Coulomb	120	0	33	0	0	2
	New Embankment (CD)	Mohr-Coulomb	125	250	26	350	16	2
	Residuum/Alluvium (CD)	Mohr-Coulomb	120	200	26	300	20	2
	RipRap	Mohr-Coulomb	110	0	40	0	0	2

SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
	CALDWELL COUNTY, TEXAS	Section: Reach C (STA 17+35)	Loading Condition: Rapid Drawdown (3-Stage)	F.6



Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi 1 (°)	Phi 2 (°)	Bilinear Normal (psf)	Phi' (°)
	Clayshale (CD)	Mohr-Coulomb	120	500				26
	Embankment Fill (CD)	Mohr-Coulomb	123	250				28
	Filter Drain	Mohr-Coulomb	120	0				33
	New Embankment (CD)	Mohr-Coulomb	125	250				26
	Residuum/Alluvium (RDD-NRCS)	Bilinear	120	200	26	20	808	
	RipRap	Mohr-Coulomb	110	0				40

SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
	CALDWELL COUNTY, TEXAS	Section: Reach C (STA 17+35)	Loading Condition: Flood Surcharge	F.7

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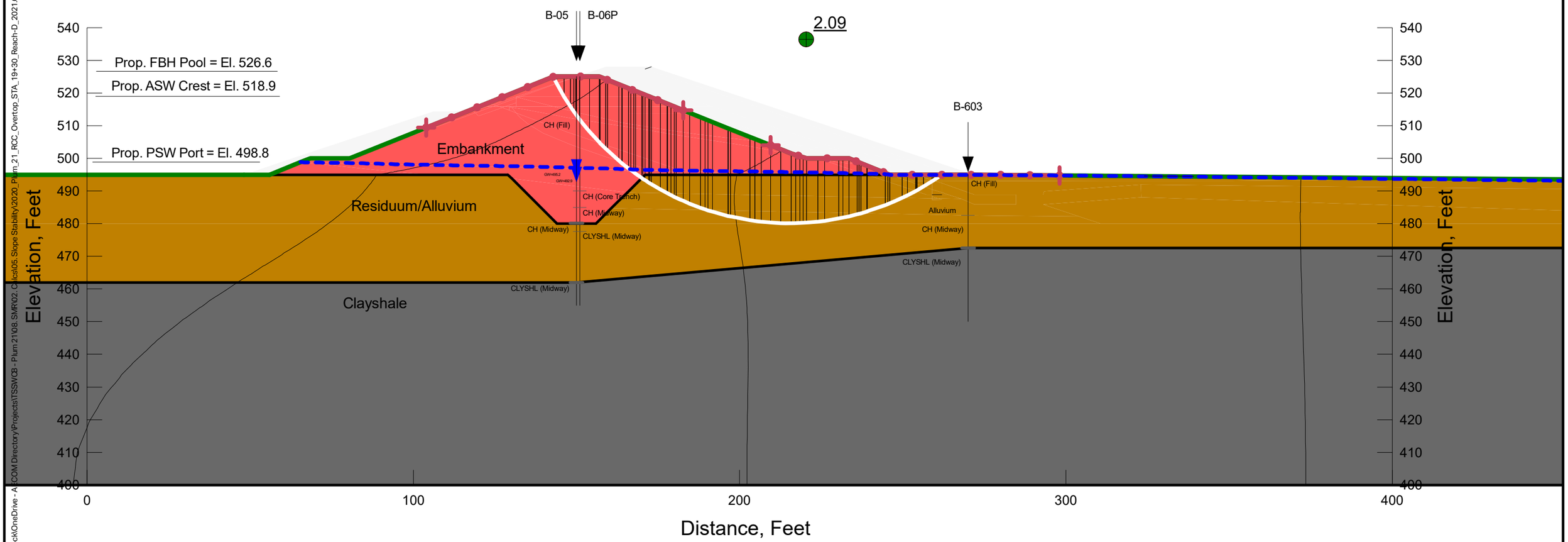
F.3 Slope Stability Analysis – Reach D (STA 19+30)

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	Clayshale (CD)	Mohr-Coulomb	120	500	26
	Embankment Fill (CD)	Mohr-Coulomb	123	250	28
	Residuum/Alluvium (CD)	Mohr-Coulomb	120	200	26



SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Existing Conditions	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Loading Condition: Steady-State Seepage	

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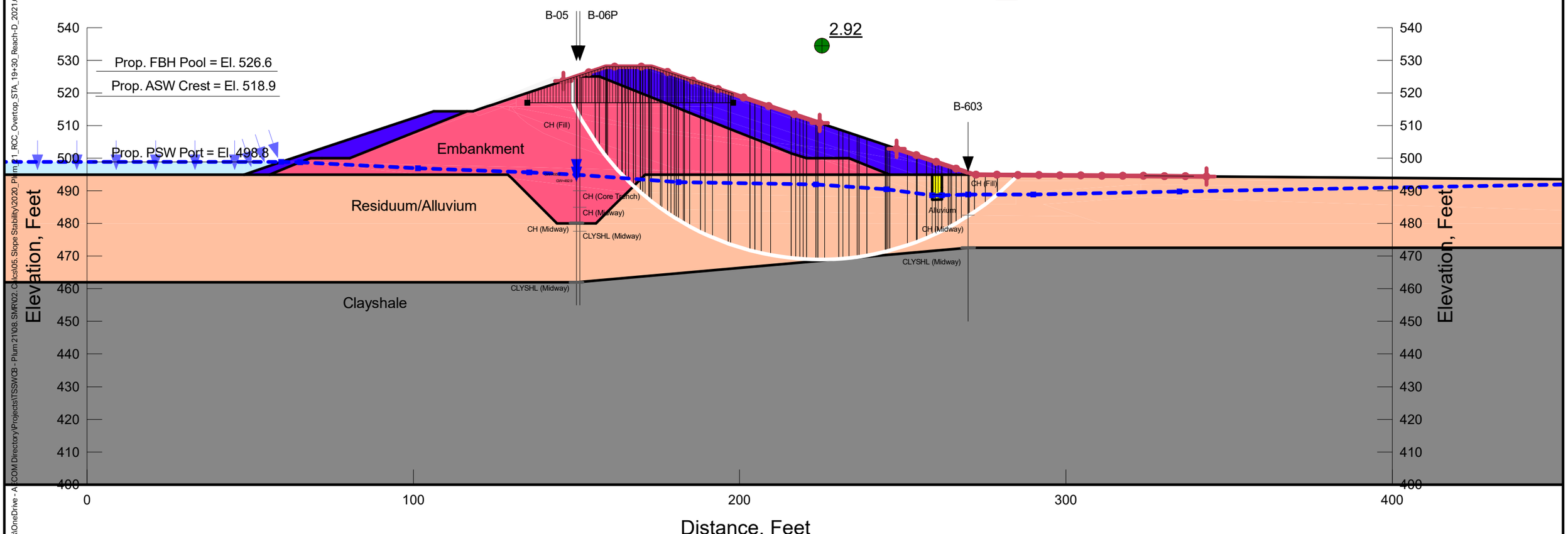
Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)	Cohesion (psf)
	Clayshale (UU)	Undrained (Phi=0)	120			5,000
	Embankment Fill (UU)	Undrained (Phi=0)	123			2,000
	Filter Drain (CD)	Mohr-Coulomb	120	0	33	
	New Embankment (UU)	Undrained (Phi=0)	125			1,500
	Residuum/Alluvium (UU)	Undrained (Phi=0)	120			1,800



SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Loading Condition: End of Construction	

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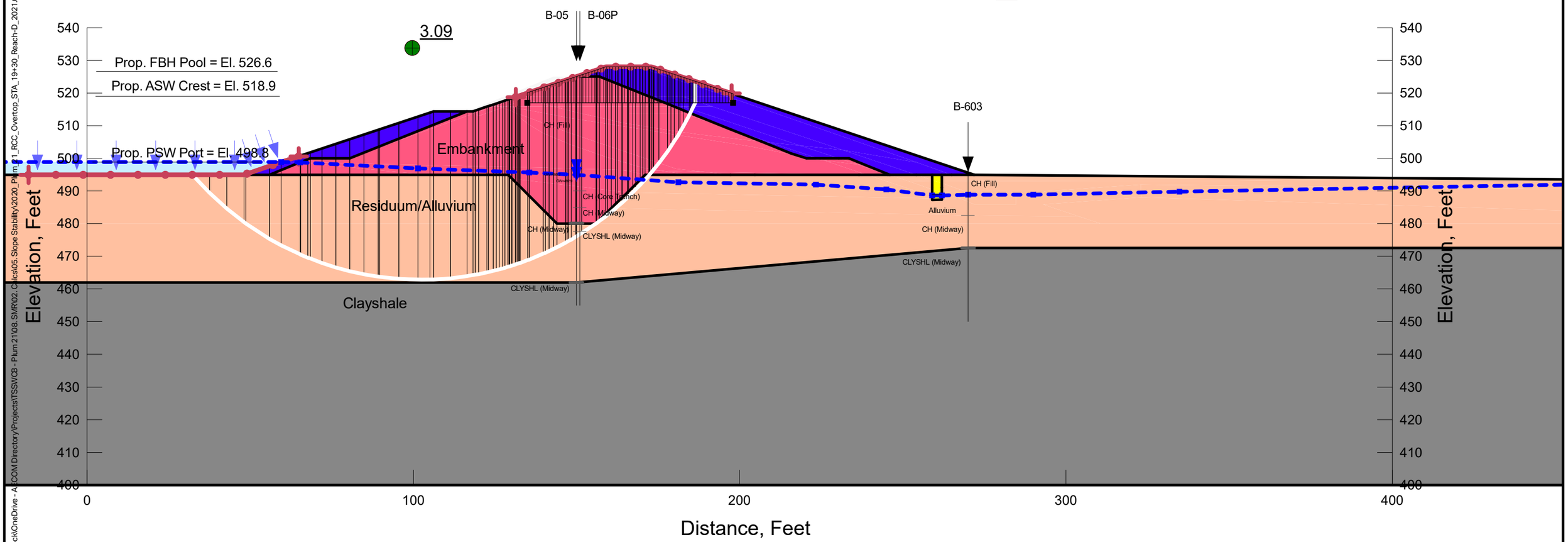
Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)	Cohesion (psf)
	Clayshale (UU)	Undrained (Phi=0)	120			5,000
	Embankment Fill (UU)	Undrained (Phi=0)	123			2,000
	Filter Drain (CD)	Mohr-Coulomb	120	0	33	
	New Embankment (UU)	Undrained (Phi=0)	125			1,500
	Residuum/Alluvium (UU)	Undrained (Phi=0)	120			1,800

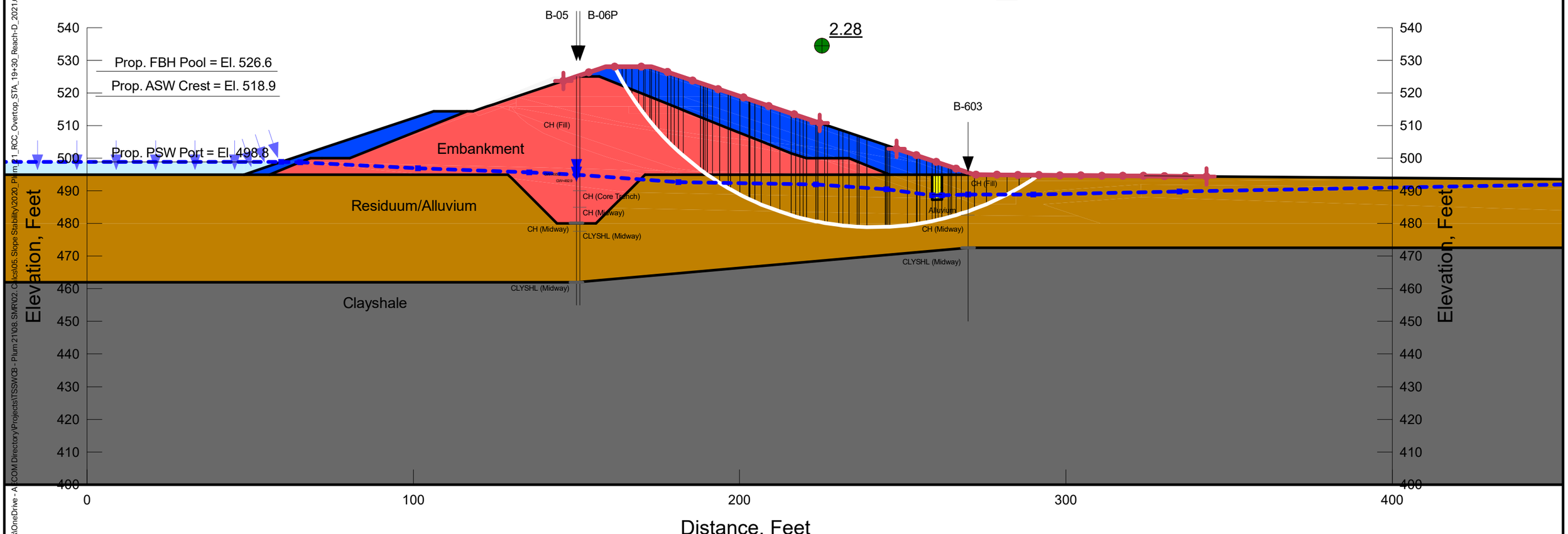


SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Loading Condition: End of Construction	

C:\Users\alance.finnefrock\OneDrive - AECOM Directory\Projects\TSSWCB - Plum 21\08.SMR\02.Calcs\05.Slope Stability\2020_Plum 1_RCC_Overtop_STA_19+30_Reach-D_2021.07.21.gsz 08/06/2021 01:43:45 PM

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	Clayshale (CD)	Mohr-Coulomb	120	500	26
	Embankment Fill (CD)	Mohr-Coulomb	123	250	28
	Filter Drain (CD)	Mohr-Coulomb	120	0	33
	New Embankment (CD)	Mohr-Coulomb	125	250	26
	Residuum/Alluvium (CD)	Mohr-Coulomb	120	200	26

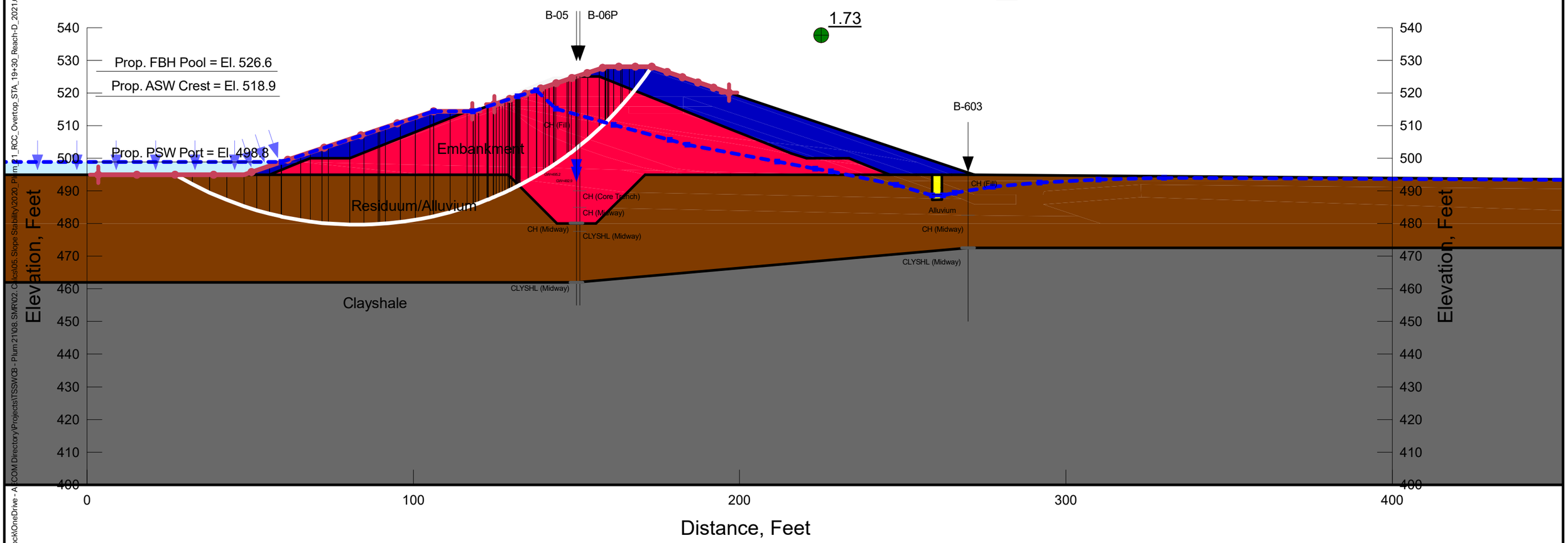


SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Loading Condition: Steady State Seepage	

C:\Users\Alance.finnefrock\OneDrive - AECOM Directory\Projects\TSSWCB - Plum 21108.SMR\02. Calcs\05. Slope Stability\2020_Plum 1_RCC_Overtop_STA_19+30_Reach-D_2021.07.21.gsz 08/06/2021 01:43:45 PM

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi 1 (°)	Phi 2 (°)	Bilinear Normal (psf)
	Clayshale (CD)	Mohr-Coulomb	120	500			
	Embankment Fill (RDD-NRCS)	Bilinear	123	250	28	20	1,192
	Filter Drain (CD)	Mohr-Coulomb	120	0			
	New Embankment (RDD-NRCS)	Bilinear	125	250	26	16	498
	Residuum/Alluvium (FBH)	Bilinear	120	200	26	23	1,581
	Residuum/Alluvium (RDD-NRCS)	Bilinear	120	200	26	20	808



SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Loading Condition: Rapid Drawdown (NRCS)	

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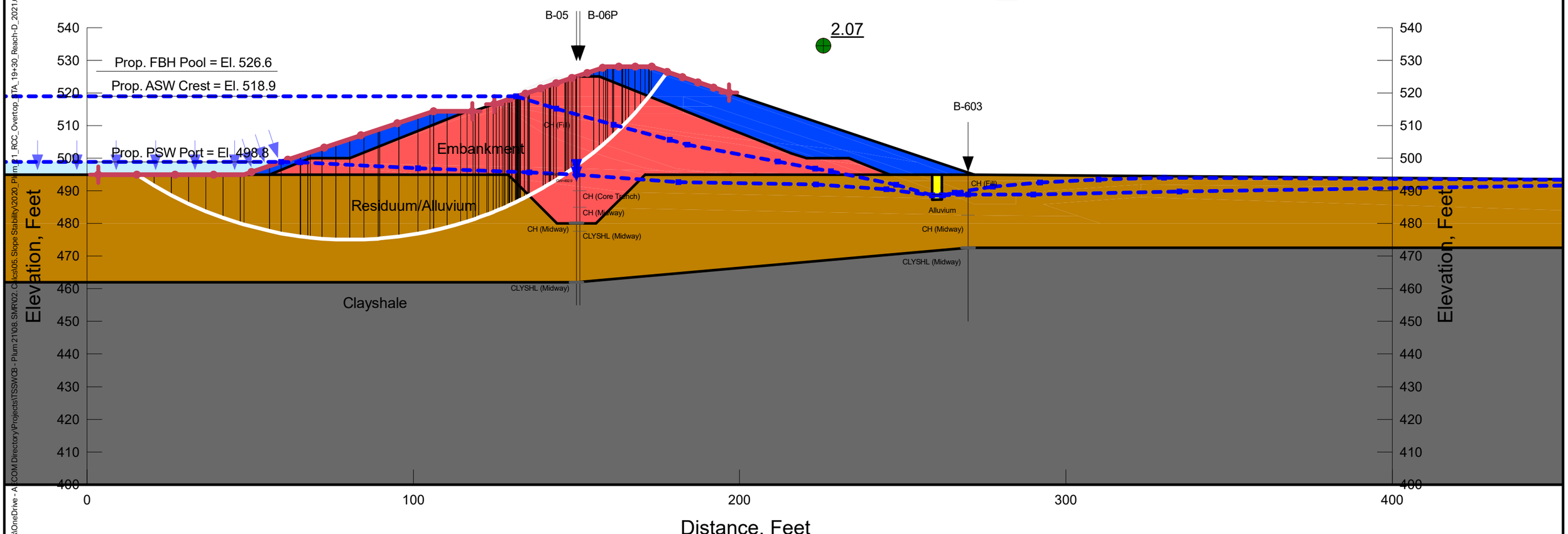
Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)	Cohesion R (psf)	Phi R (°)	Piez Line Draw
	Clayshale (CD)	Mohr-Coulomb	120	500	26	0	0	2
	Embankment Fill (CD)	Mohr-Coulomb	123	250	28	450	20	2
	Filter Drain (CD)	Mohr-Coulomb	120	0	33	0	0	2
	New Embankment (CD)	Mohr-Coulomb	125	250	26	350	16	2
	Residuum/Alluvium (CD)	Mohr-Coulomb	120	200	26	300	20	2



SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Loading Condition: Rapid Drawdown (3-stage)	

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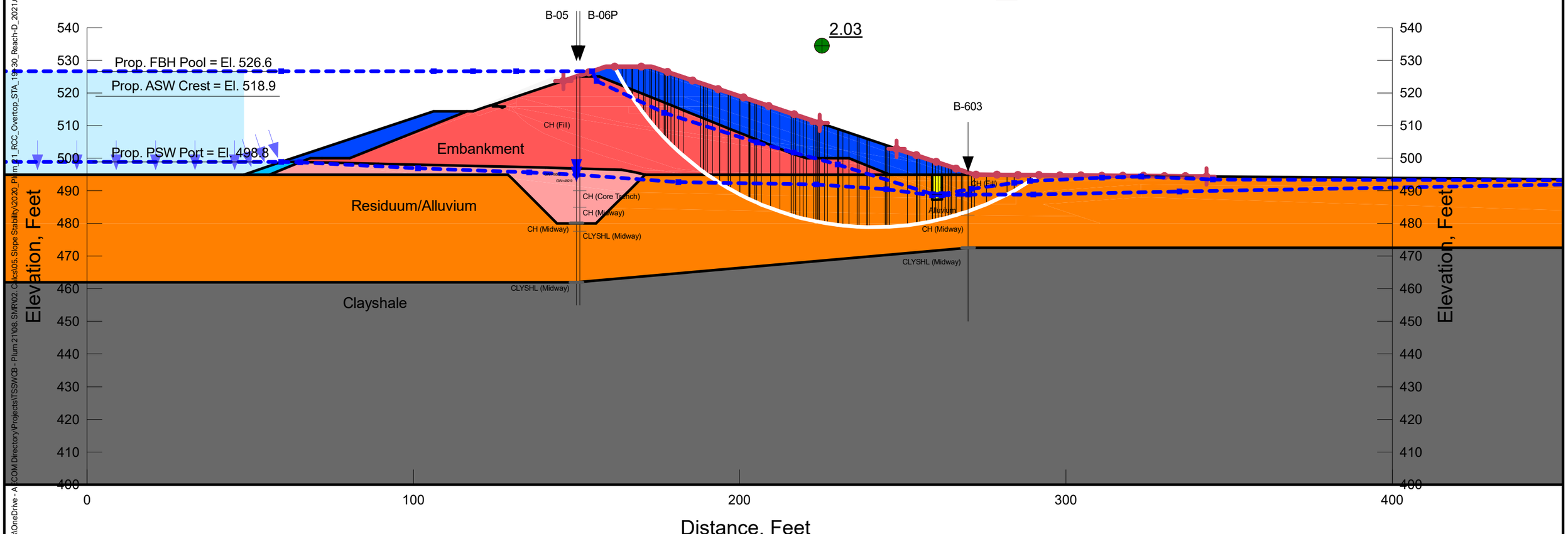
Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi 1 (°)	Phi 2 (°)	Bilinear Normal (psf)	Phi (°)
	Clayshale (CD)	Mohr-Coulomb	120	500				26
	Embankment Fill (CD)	Mohr-Coulomb	123	250				28
	Embankment Fill (FBH)	Bilinear	123	250	28	24	2,313	
	Filter Drain (CD)	Mohr-Coulomb	120	0				33
	New Embankment (CD)	Mohr-Coulomb	125	250				26
	New Embankment (FBH)	Bilinear	125	250	26	21	963	
	Residuum/Alluvium (FBH)	Bilinear	120	200	26	23	1,581	



SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Loading Condition: Flood Surcharge	

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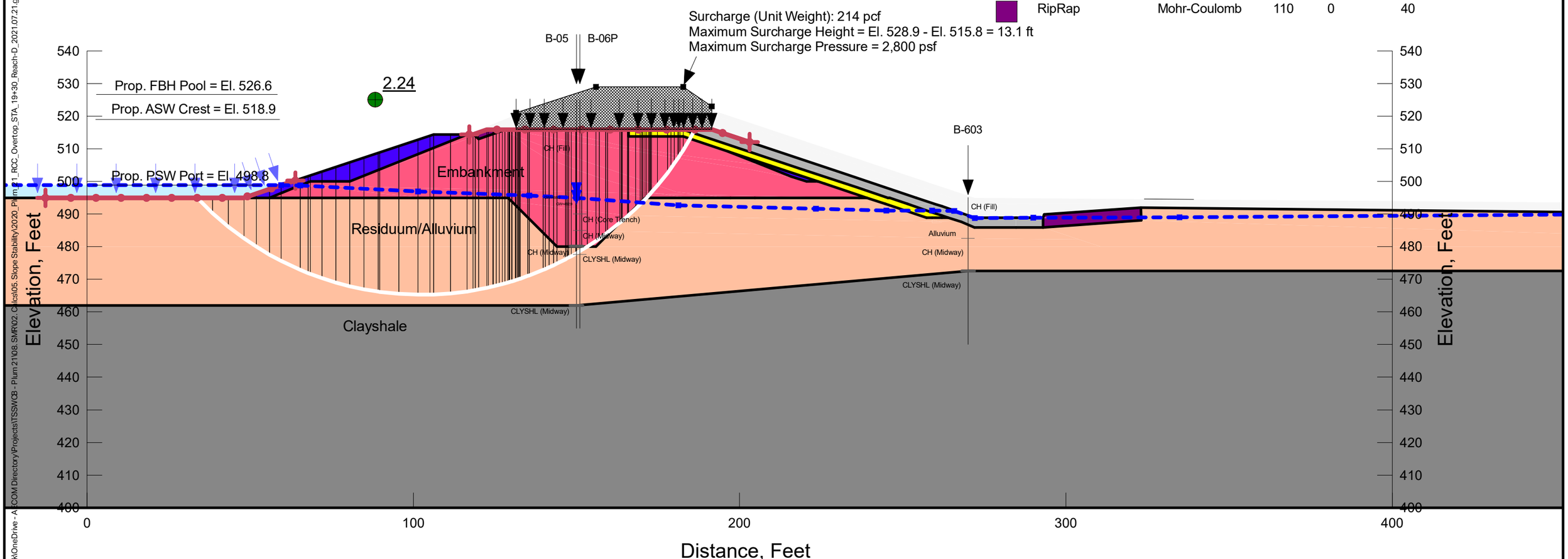
Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)	Cohesion (psf)
	Clayshale (UU)	Undrained (Phi=0)	120			5,000
	Embankment Fill (UU)	Undrained (Phi=0)	123			2,000
	Filter Drain (CD)	Mohr-Coulomb	120	0	33	
	New Embankment (UU)	Undrained (Phi=0)	125			1,500
	RCC	Mohr-Coulomb	145	200	45	
	Residuum/Alluvium (UU)	Undrained (Phi=0)	120			1,800
	RipRap	Mohr-Coulomb	110	0	40	

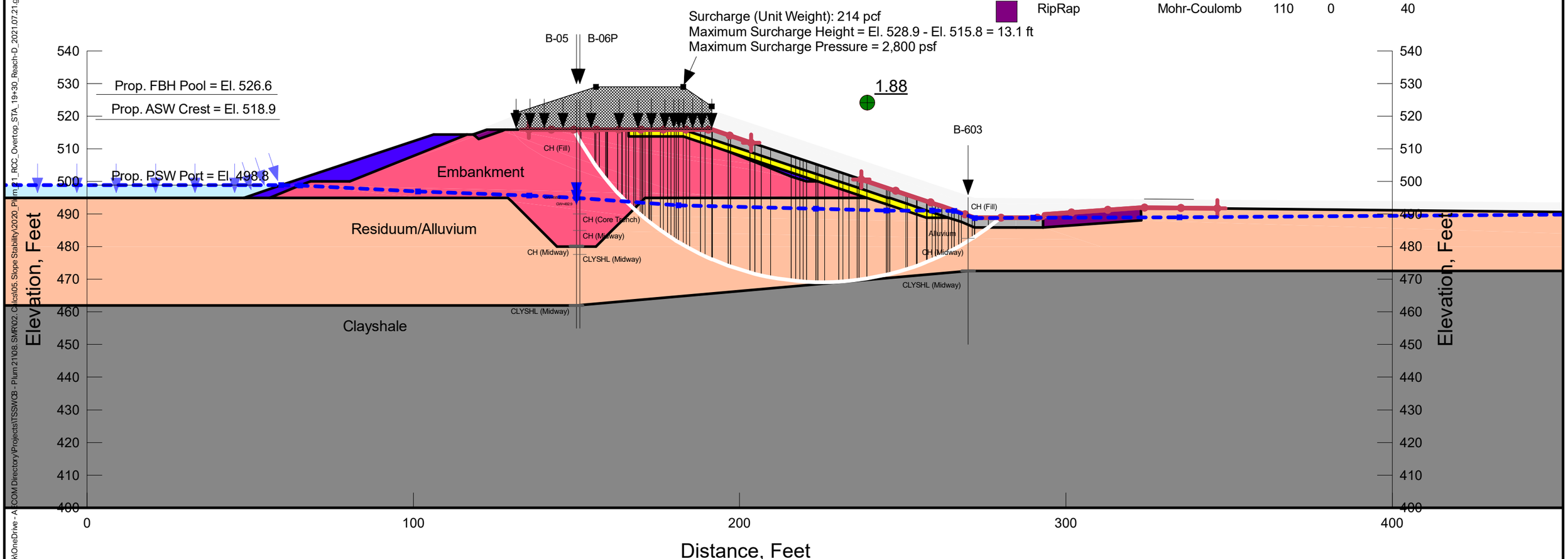


SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Loading Condition: End of Construction	

C:\Users\alance.finnefrock\OneDrive - AECOM Directory\Projects\TSSWCB - Plum 21\08.SMR\02.Calcs\05.Slope Stability\2020_Plum 21_RCC_Overtop_STA_19+30_Reach-D_2021.07.21.gsz 08/06/2021 01:43:45 PM

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)	Cohesion (psf)
	Clayshale (UU)	Undrained (Phi=0)	120			5,000
	Embankment Fill (UU)	Undrained (Phi=0)	123			2,000
	Filter Drain (CD)	Mohr-Coulomb	120	0	33	
	New Embankment (UU)	Undrained (Phi=0)	125			1,500
	RCC	Mohr-Coulomb	145	200	45	
	Residuum/Alluvium (UU)	Undrained (Phi=0)	120			1,800
	RipRap	Mohr-Coulomb	110	0	40	

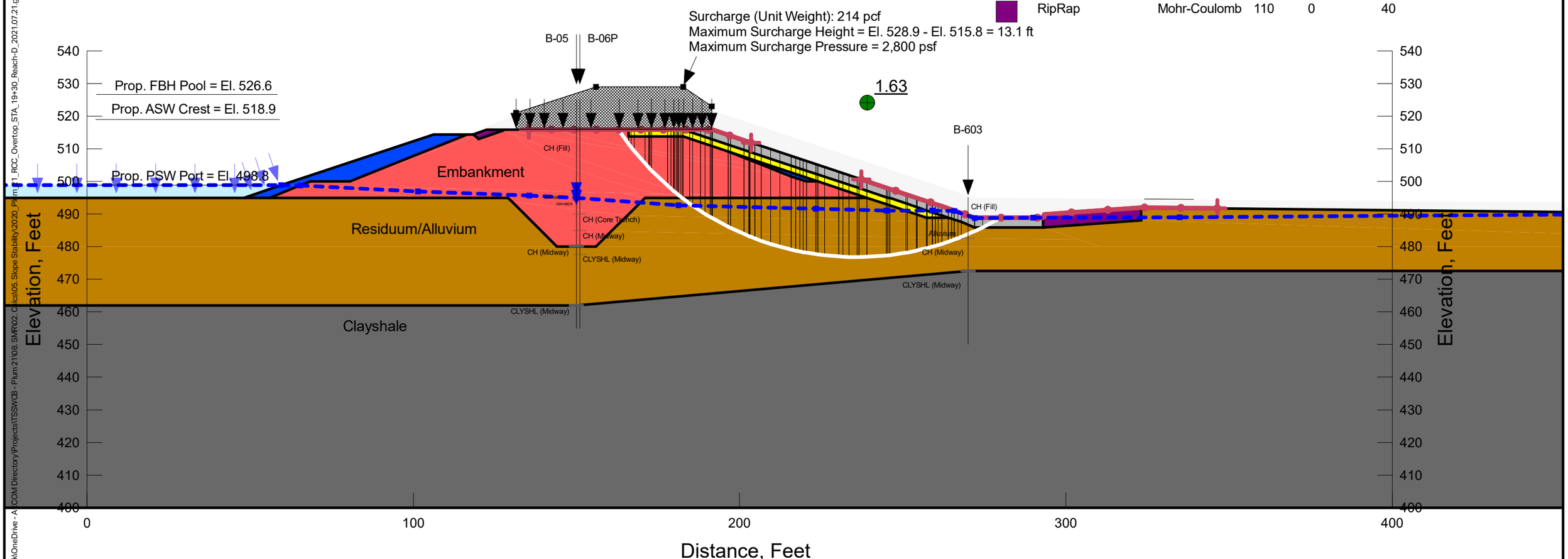


SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Loading Condition: End of Construction	

C:\Users\alance.finnefrock\OneDrive - AECOM Directory\Projects\TSSWCB - Plum 21\08.SMR\02.Calcs\05.Slope Stability\2020_Plum 21_RCC_Overtop_STA_19+30_Reach-D_2021.07.21.gsz 08/06/2021 01:43:45 PM

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	Clayshale (CD)	Mohr-Coulomb	120	500	26
	Embankment Fill (CD)	Mohr-Coulomb	123	250	28
	Filter Drain (CD)	Mohr-Coulomb	120	0	33
	New Embankment (CD)	Mohr-Coulomb	125	250	26
	RCC	Mohr-Coulomb	145	200	45
	Residuum/Alluvium (CD)	Mohr-Coulomb	120	200	26
	RipRap	Mohr-Coulomb	110	0	40



SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Loading Condition: Steady State Seepage	

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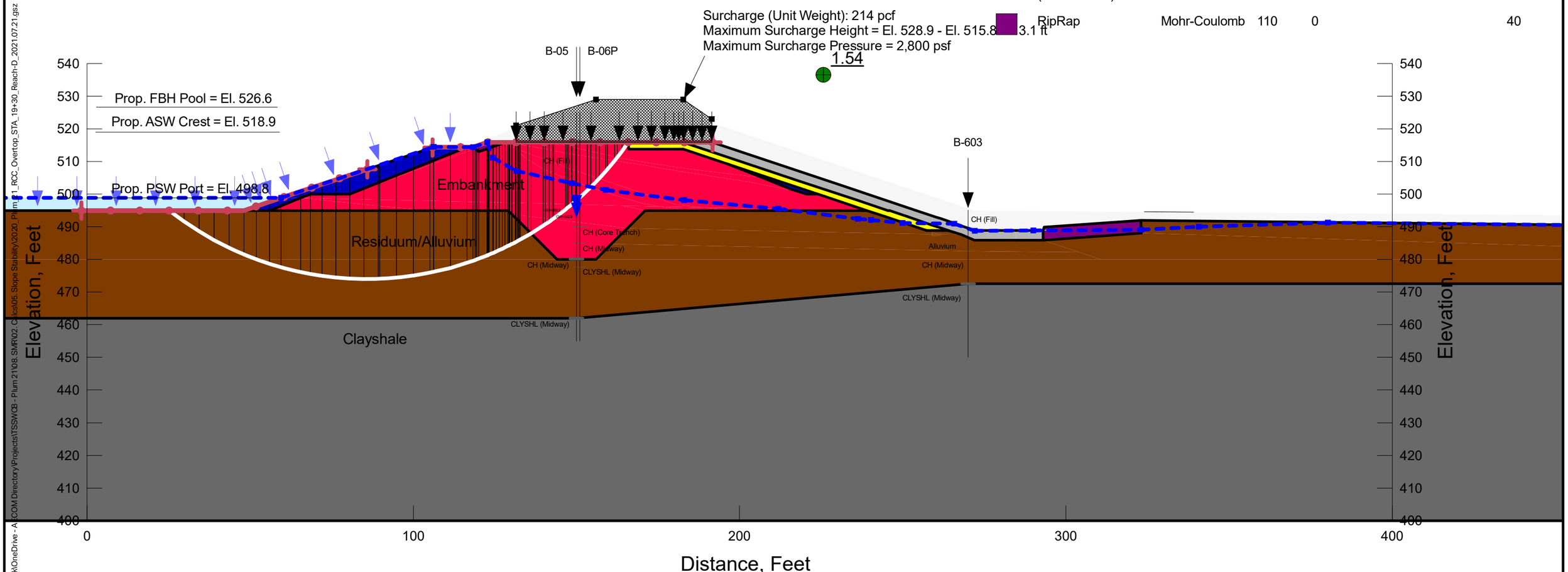
Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi 1 (°)	Phi 2 (°)	Bilinear Normal (psf)	Phi' (°)
	Clayshale (CD)	Mohr-Coulomb	120	500				26
	Embankment Fill (RDD-NRCS)	Bilinear	123	250	28	20	1,192	
	Filter Drain (CD)	Mohr-Coulomb	120	0				33
	New Embankment (RDD-NRCS)	Bilinear	125	250	26	16	498	
	RCC	Mohr-Coulomb	145	200				45
	Residuum/Alluvium (RDD-NRCS)	Bilinear	120	200	26	20	808	
	RipRap	Mohr-Coulomb	110	0				40

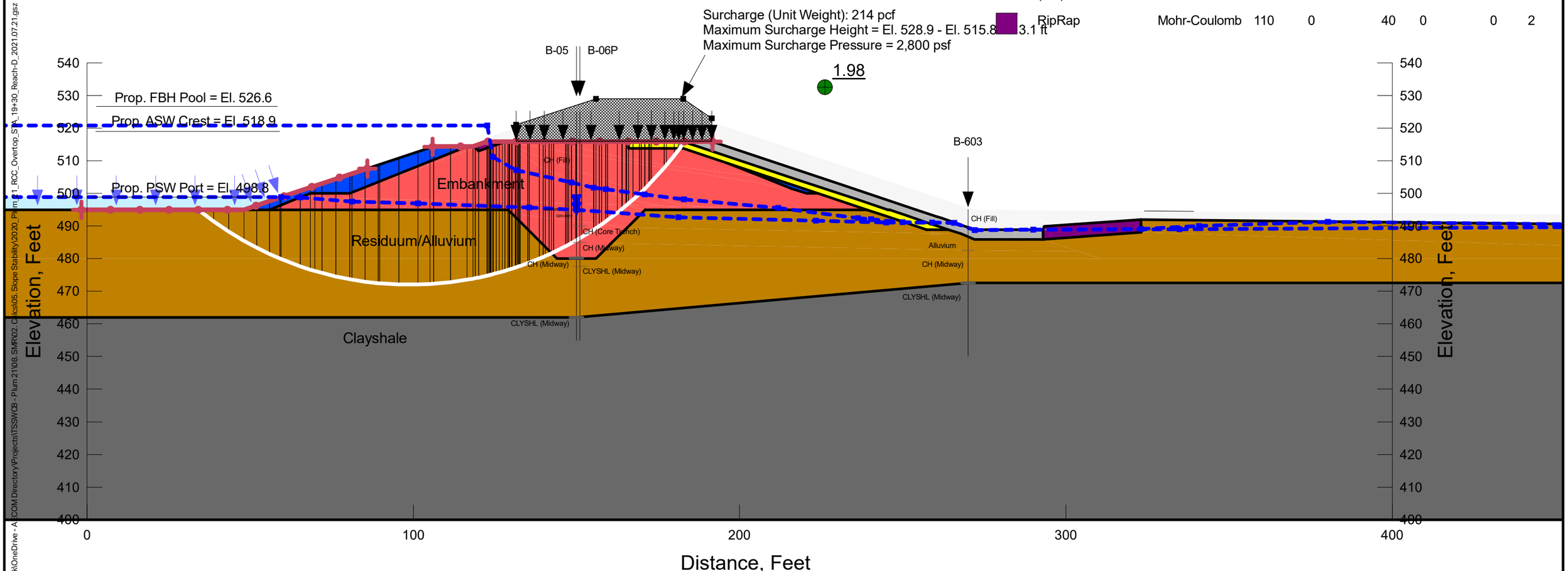


SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Loading Condition: Rapid Drawdown (NRCS)	

C:\Users\alance.finnefrock\OneDrive - AECOM Directory\Projects\TSSWCB - Plum 21\08.SMR\02. Calcs\05. Slope Stability\2020_Plum_21_RCC_Overtop_STA_19+30_Reach-D_2021.07.21.gsz 08/06/2021 01:43:45 PM

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)	Cohesion R (psf)	Phi R (°)	Piezometric Line After Drawdow
	Clayshale (CD)	Mohr-Coulomb	120	500	26	0	0	2
	Embankment Fill (CD)	Mohr-Coulomb	123	250	28	450	20	2
	Filter Drain (CD)	Mohr-Coulomb	120	0	33	0	0	2
	New Embankment (CD)	Mohr-Coulomb	125	250	26	350	16	2
	RCC	Mohr-Coulomb	145	200	45	0	0	2
	Residuum/Alluvium (CD)	Mohr-Coulomb	120	200	26	300	20	2
	RipRap	Mohr-Coulomb	110	0	40	0	0	2



SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Loading Condition: Rapid Drawdown (3-stage)	

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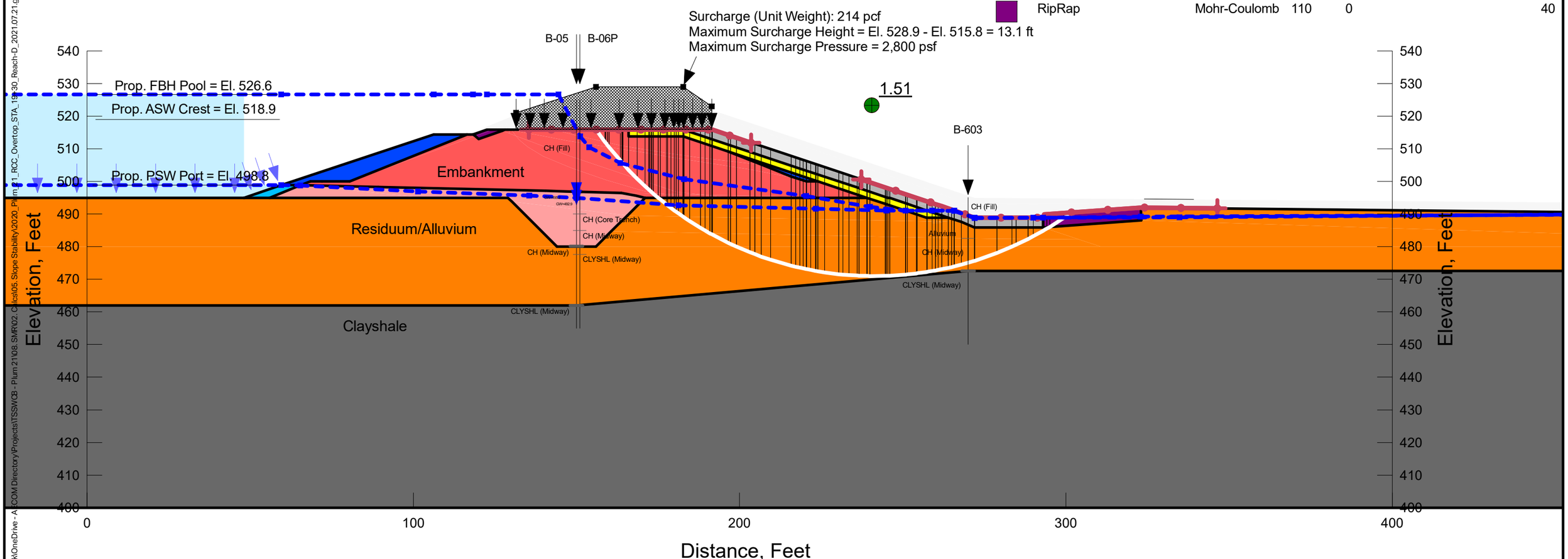
Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi 1 (°)	Phi 2 (°)	Bilinear Normal (psf)	Phi (°)
	Clayshale (CD)	Mohr-Coulomb	120	500				26
	Embankment Fill (CD)	Mohr-Coulomb	123	250				28
	Embankment Fill (FBH)	Bilinear	123	250	28	24	2,313	
	Filter Drain (CD)	Mohr-Coulomb	120	0				33
	New Embankment (CD)	Mohr-Coulomb	125	250				26
	New Embankment (FBH)	Bilinear	125	250	26	21	963	
	RCC	Mohr-Coulomb	145	200				45
	Residuum/Alluvium (FBH)	Bilinear	120	200	26	23	1,581	
	RipRap	Mohr-Coulomb	110	0				40



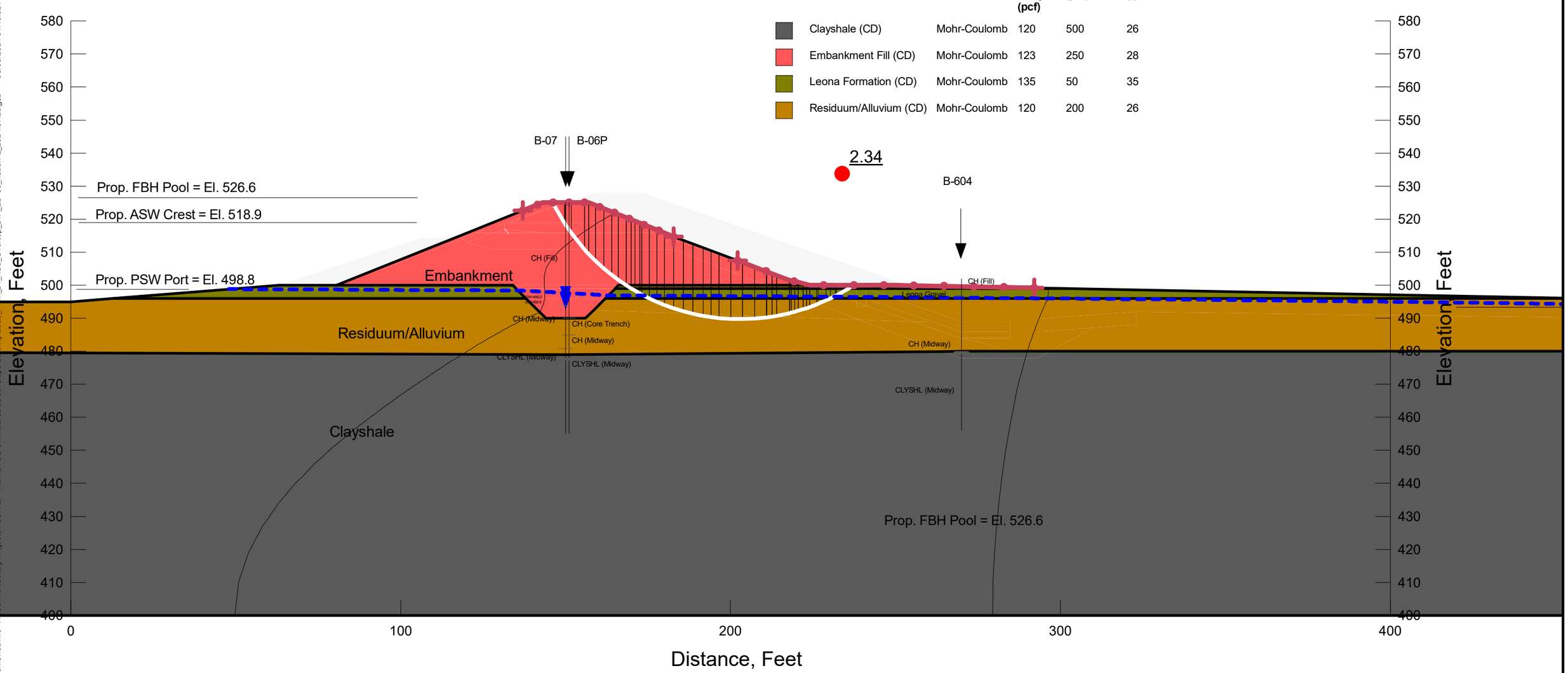
SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach D (STA 19+30)	Loading Condition: Flood Surcharge	

C:\Users\alance.finnefrock\OneDrive - AECOM Directory\Projects\TSSWCB - Plum 21\08.SMR\02.Calcs\05.Slope Stability\2020_Plum 21_RCC_Overtop_STA_19+30_Reach-D_2021.07.21.gsz 08/06/2021 01:43:45 PM

F.4 Slope Stability Analysis – Reach E (STA 22+50)

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	Clayshale (CD)	Mohr-Coulomb	120	500	26
	Embankment Fill (CD)	Mohr-Coulomb	123	250	28
	Leona Formation (CD)	Mohr-Coulomb	135	50	35
	Residuum/Alluvium (CD)	Mohr-Coulomb	120	200	26

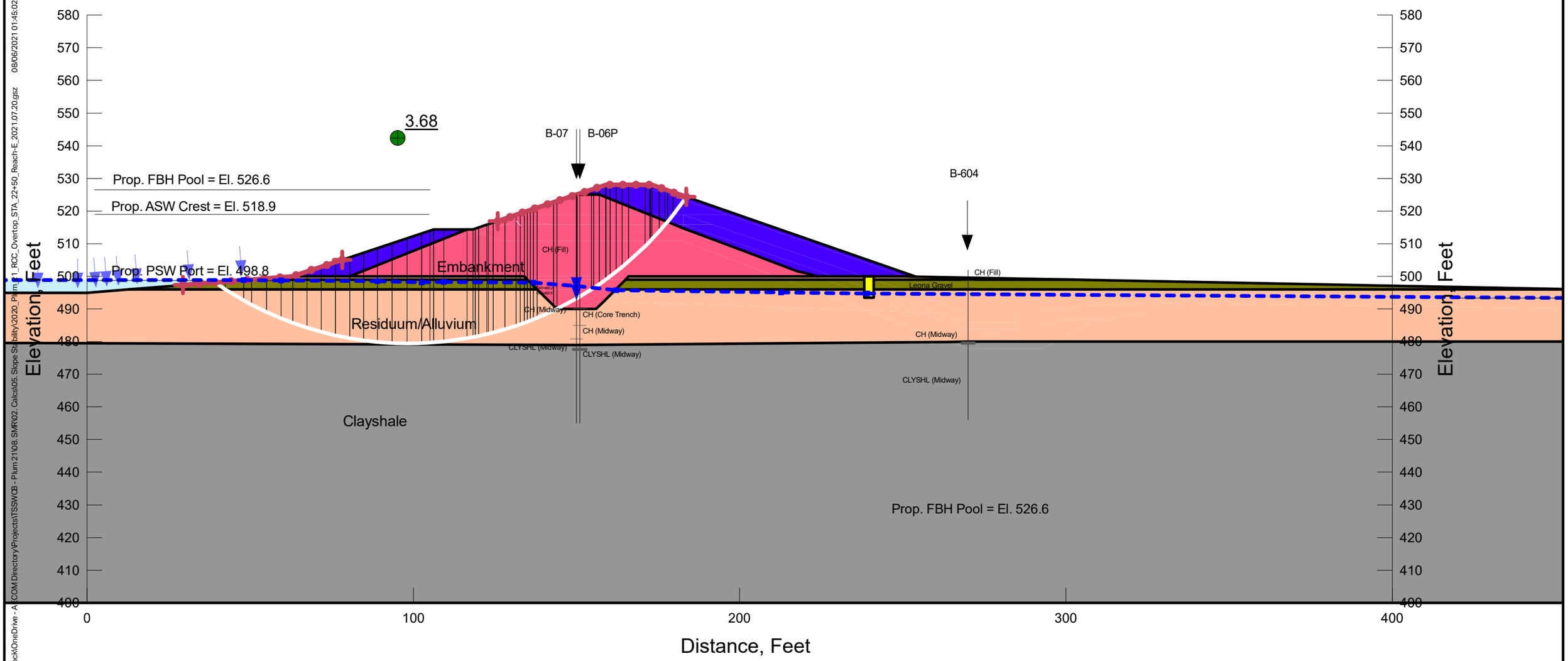


SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Existing Conditions	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Loading Condition: Steady-State Seepage	

C:\Users\Alance.finnefrock\OneDrive - AECOM Directory\Projects\TSSWCB - Plum 21\08.SMR\02.Calcs\05.Slope Stability\2020_Plum_21_RCC_Overtop_STA_22+50_Reach-E_2021.07.20.gsz 08/06/2021 01:45:02 PM

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)	Cohesion (psf)
	Clayshale (UU)	Undrained (Phi=0)	120			5,000
	Embankment Fill (UU)	Undrained (Phi=0)	123			2,000
	Filter Drain	Mohr-Coulomb	120	0	33	
	Leona Formation (CD)	Mohr-Coulomb	135	50	35	
	New Embankment (UU)	Undrained (Phi=0)	125			1,500
	Residuum/Alluvium (UU)	Undrained (Phi=0)	120			1,800

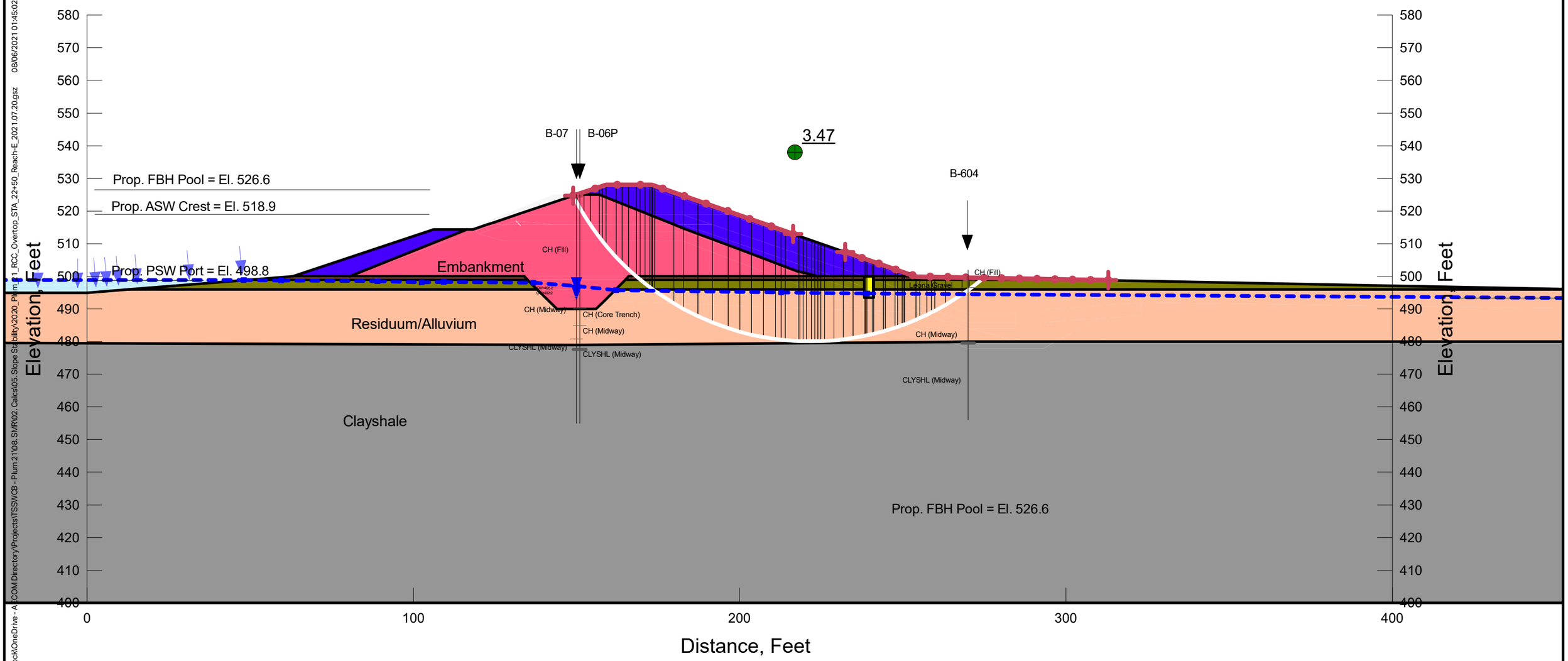


SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Loading Condition: End of Contruction	

C:\Users\alance.finnefrock\OneDrive - AECOM Directory\Projects\TSSWCB - Plum 21\08.SMR\02.Calcs\05.Slope Stability\2020_Plum 21_RCC_Overtop_STA_22+50_Reach-E_2021.07.20.gsz 08/06/2021 01:45:02 PM

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)	Cohesion (psf)
	Clayshale (UU)	Undrained (Phi=0)	120			5,000
	Embankment Fill (UU)	Undrained (Phi=0)	123			2,000
	Filter Drain	Mohr-Coulomb	120	0	33	
	Leona Formation (CD)	Mohr-Coulomb	135	50	35	
	New Embankment (UU)	Undrained (Phi=0)	125			1,500
	Residuum/Alluvium (UU)	Undrained (Phi=0)	120			1,800

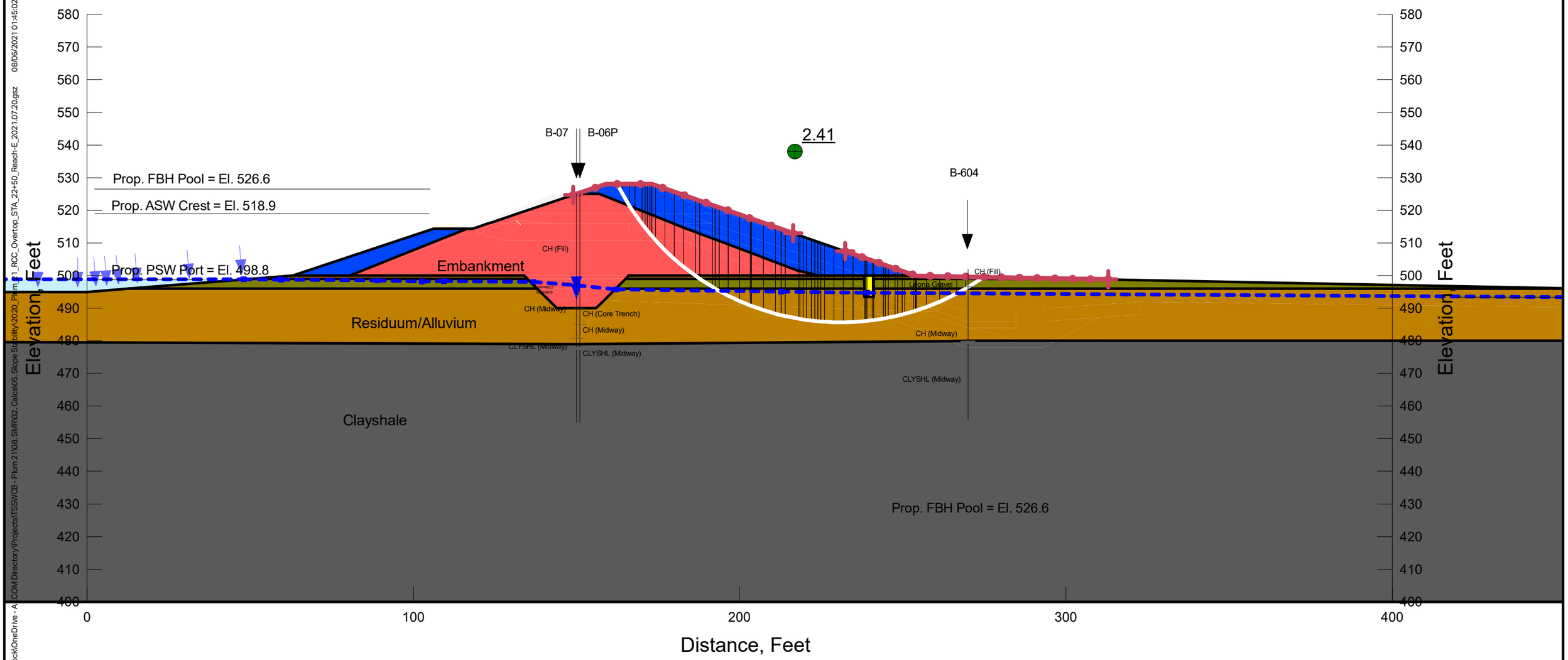


SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Loading Condition: End of Contruction	

C:\Users\alance.finnefrock\OneDrive - AECOM Directory\Projects\TSSWCB - Plum 21\08.SMR\02. Calcs\05. Slope Stability\2020_Plum 21_RCC_Overtop_STA_22+50_Reach-E_2021.07.20.gsz 08/06/2021 01:45:02 PM

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	Clayshale (CD)	Mohr-Coulomb	120	500	26
	Embankment Fill (CD)	Mohr-Coulomb	123	250	28
	Filter Drain	Mohr-Coulomb	120	0	33
	Leona Formation (CD)	Mohr-Coulomb	135	50	35
	New Embankment (CD)	Mohr-Coulomb	125	250	26
	Residuum/Alluvium (CD)	Mohr-Coulomb	120	200	26

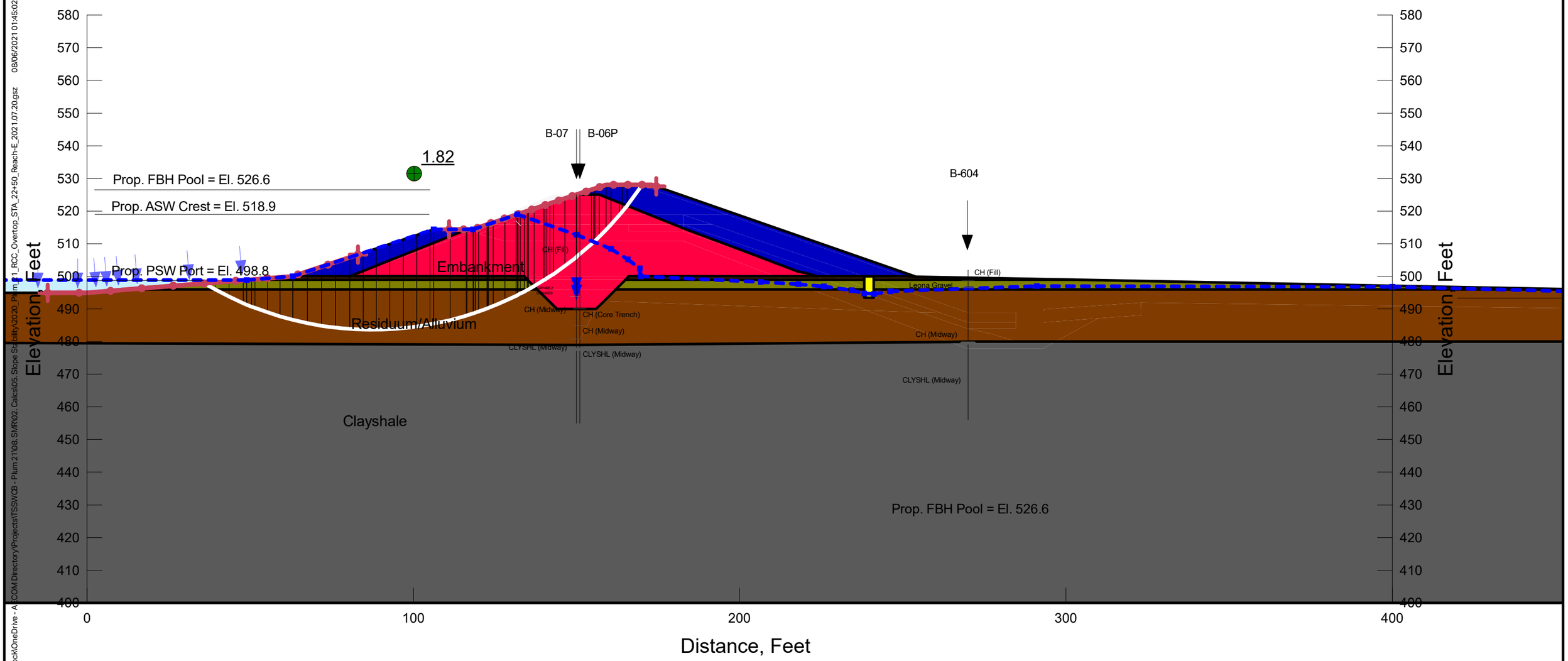


SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Loading Condition: Steady State Seepage	

C:\Users\alance.finnefrock\OneDrive - AECOM Directory\Projects\TSSWCB - Plum 21108.SMR\02. Calcs\05. Slope Stability\2020_Plum 21_RCC_Overtop_STA_22+50_Reach-E_2021.07.20.gsz 08/06/2021 01:45:02 PM

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi 1 (°)	Phi 2 (°)	Bilinear Normal (psf)	Phi' (°)
	Clayshale (CD)	Mohr-Coulomb	120	500				26
	Embankment Fill (RDD-NRCS)	Bilinear	123	250	28	20	1,192	
	Filter Drain	Mohr-Coulomb	120	0				33
	Leona Formation (CD)	Mohr-Coulomb	135	50				35
	New Embankment (RDD-NRCS)	Bilinear	125	250	26	16	498	
	Residuum/Alluvium (RDD-NRCS)	Bilinear	120	200	26	20	808	

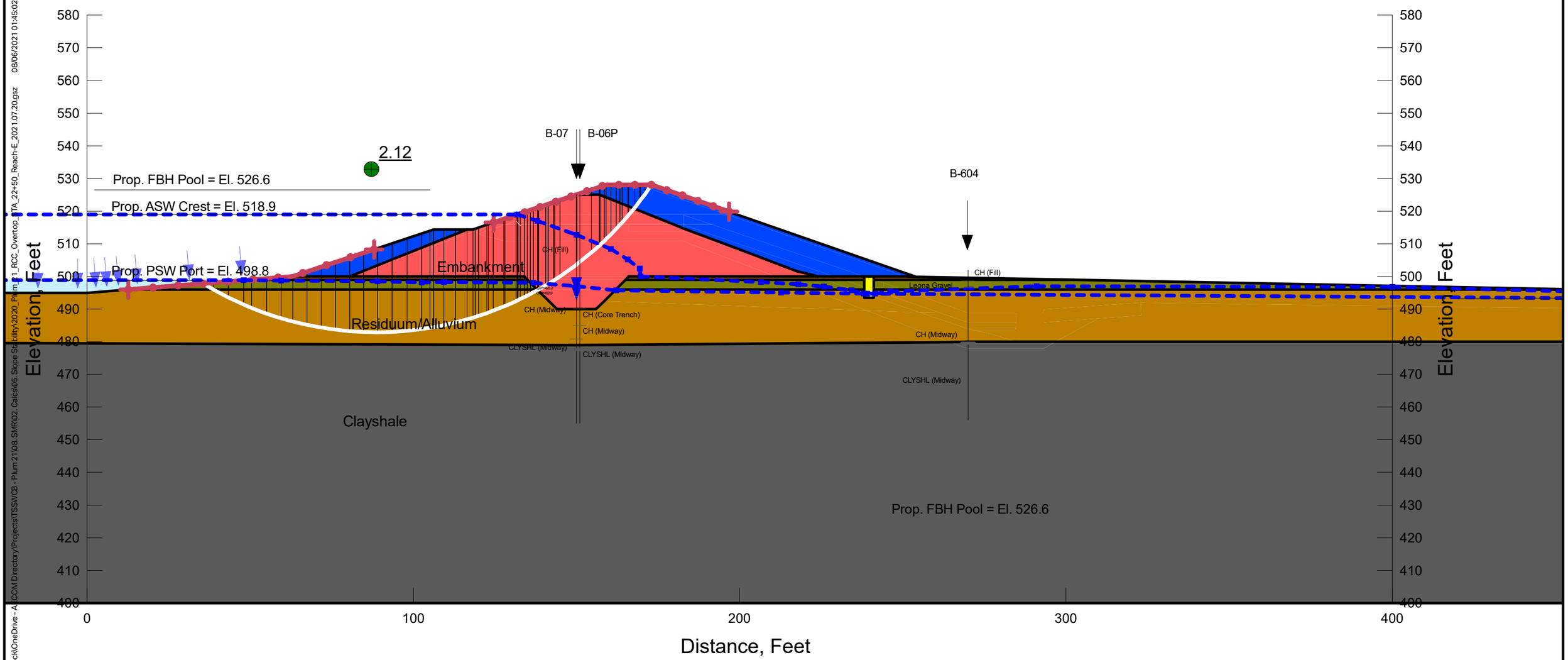


SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Loading Condition: Rapid Drawdown (NRCS)	

C:\Users\alance.finnefrock\OneDrive - AECOM Directory\Projects\TSSWCB - Plum 21108.SMR\02. Calcs\05. Slope Stability\2020_Plum 1_RCC_Overtop_STA_22+50_Reach-E_2021.07.20.gsz 08/06/2021 01:45:02 PM

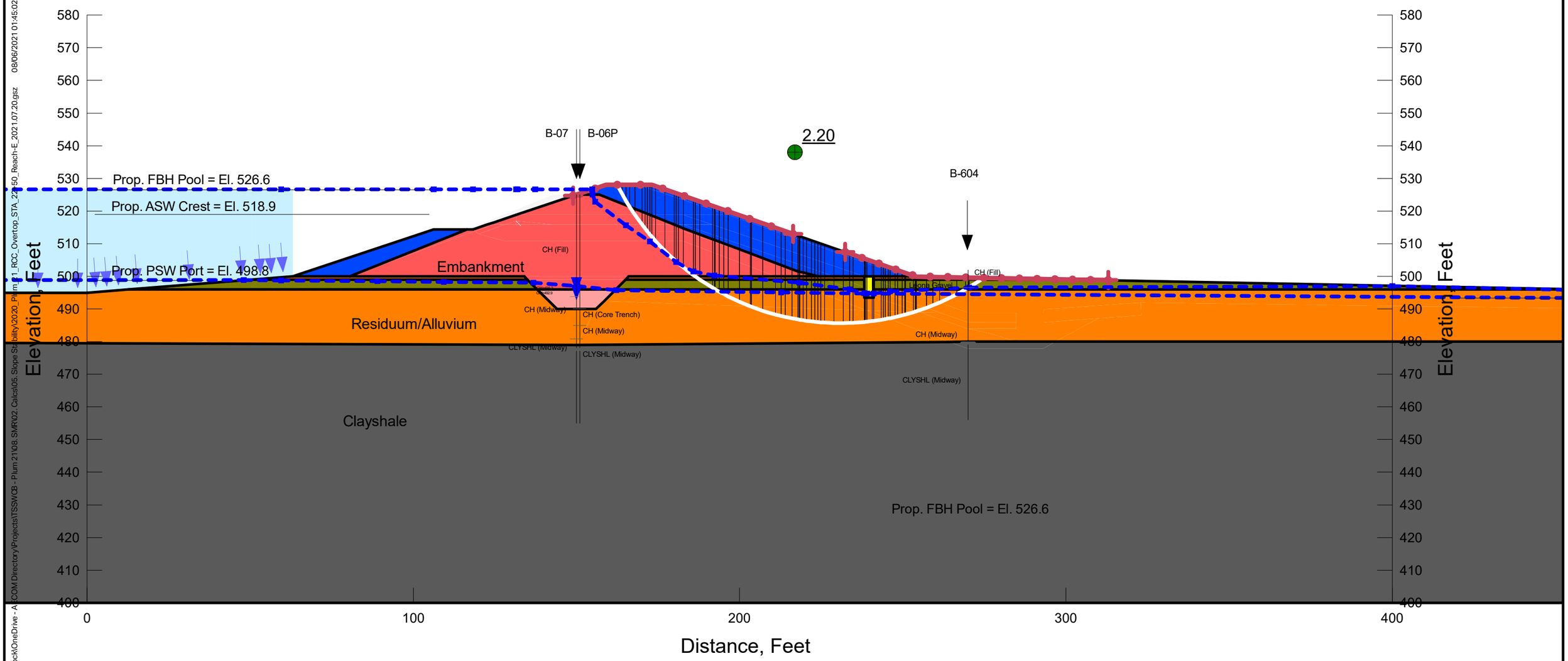
Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)	Cohesion R (psf)	Phi R (°)	Piezometric Line After Drawdown
	Clayshale (CD)	Mohr-Coulomb	120	500	26	0	0	2
	Embankment Fill (CD)	Mohr-Coulomb	123	250	28	450	20	2
	Filter Drain	Mohr-Coulomb	120	0	33	0	0	2
	Leona Formation (CD)	Mohr-Coulomb	135	50	35	0	0	2
	New Embankment (CD)	Mohr-Coulomb	125	250	26	350	16	2
	Residuum/Alluvium (CD)	Mohr-Coulomb	120	200	26	300	20	2



SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Loading Condition: Rapid Drawdown (3-stage)	

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi 1 (°)	Phi 2 (°)	Bilinear Normal (psf)	Phi' (°)
	Clayshale (CD)	Mohr-Coulomb	120	500				26
	Embankment Fill (CD)	Mohr-Coulomb	123	250				28
	Embankment Fill (FBH)	Bilinear	123	250	28	24	1,192	
	Filter Drain	Mohr-Coulomb	120	0				33
	Leona Formation (CD)	Mohr-Coulomb	135	50				35
	New Embankment (CD)	Mohr-Coulomb	125	250				26
	Residuum/Alluvium (FBH)	Bilinear	120	200	26	23	808	

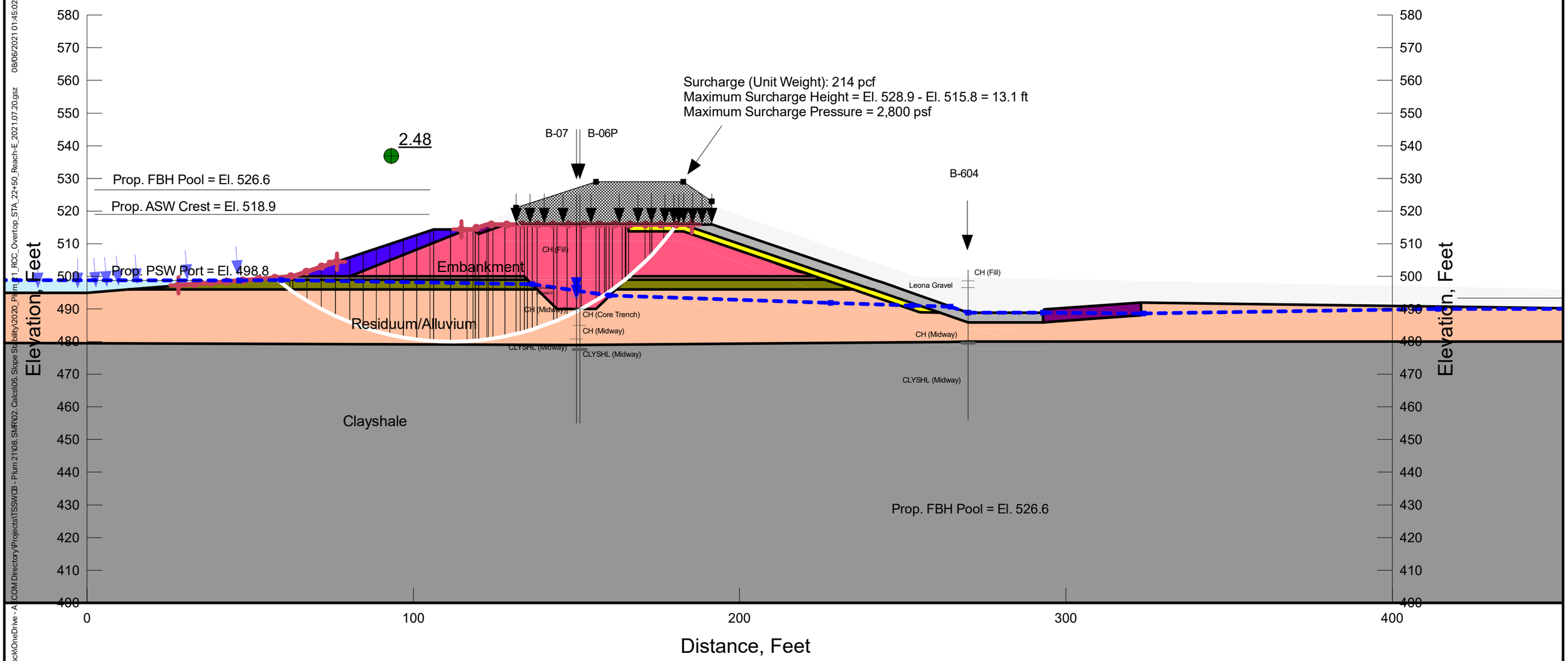


SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Loading Condition: Flood Surcharge	

C:\Users\alance.finnefrock\OneDrive - AECOM Directory\Projects\TSSWCB - Plum 21108.SMR\02. Calcs\05. Slope Stability\2020_Plum 21_RCC_Overtop_STA_22+50_Reach-E_2021.07.20.gsz 08/06/2021 01:45:02 PM

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)	Cohesion (psf)
	Clayshale (UU)	Undrained (Phi=0)	120			5,000
	Embankment Fill (UU)	Undrained (Phi=0)	123			2,000
	Filter Drain	Mohr-Coulomb	120	0	33	
	Leona Formation (CD)	Mohr-Coulomb	135	50	35	
	New Embankment (UU)	Undrained (Phi=0)	125			1,500
	RCC	Mohr-Coulomb	145	200	45	
	Residuum/Alluvium (UU)	Undrained (Phi=0)	120			1,800
	Rock Riprap	Mohr-Coulomb	110	0	40	



SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Loading Condition: End of Construction	

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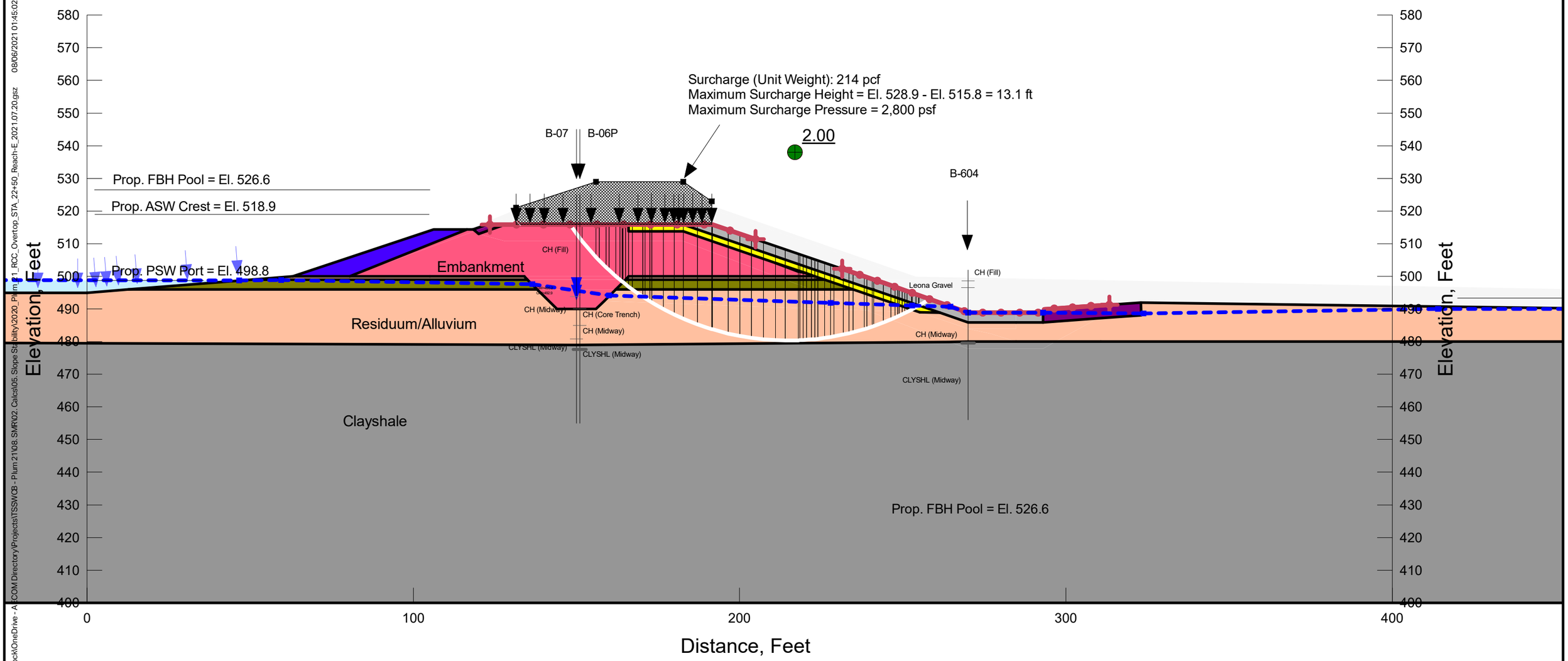
Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)	Cohesion (psf)
	Clayshale (UU)	Undrained (Phi=0)	120			5,000
	Embankment Fill (UU)	Undrained (Phi=0)	123			2,000
	Filter Drain	Mohr-Coulomb	120	0	33	
	Leona Formation (CD)	Mohr-Coulomb	135	50	35	
	New Embankment (UU)	Undrained (Phi=0)	125			1,500
	RCC	Mohr-Coulomb	145	200	45	
	Residuum/Alluvium (UU)	Undrained (Phi=0)	120			1,800
	Rock Riprap	Mohr-Coulomb	110	0	40	



SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Loading Condition: End of Construction	

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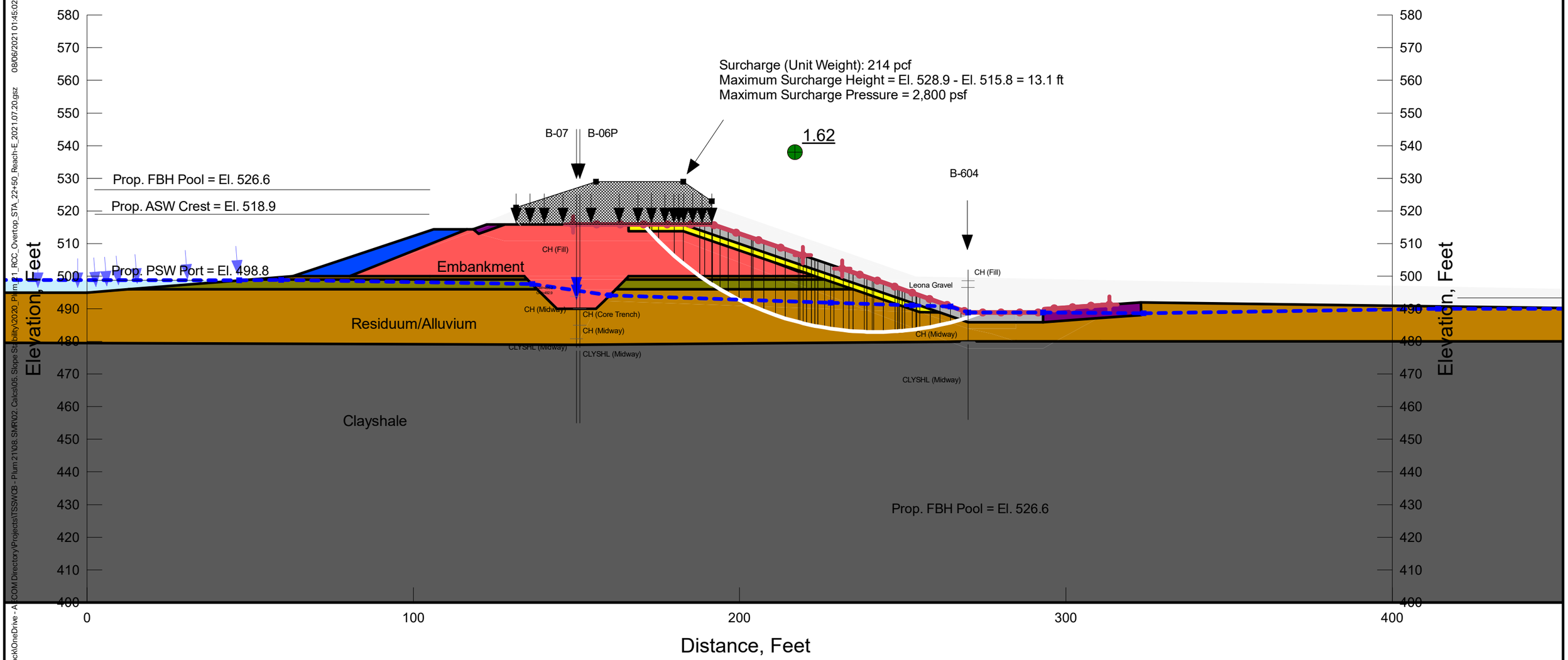
Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	Clayshale (CD)	Mohr-Coulomb	120	500	26
	Embankment Fill (CD)	Mohr-Coulomb	123	250	28
	Filter Drain	Mohr-Coulomb	120	0	33
	Leona Formation (CD)	Mohr-Coulomb	135	50	35
	New Embankment (CD)	Mohr-Coulomb	125	250	26
	RCC	Mohr-Coulomb	145	200	45
	Residuum/Alluvium (CD)	Mohr-Coulomb	120	200	26
	Rock Riprap	Mohr-Coulomb	110	0	40



SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Loading Condition: Steady State Seepage	

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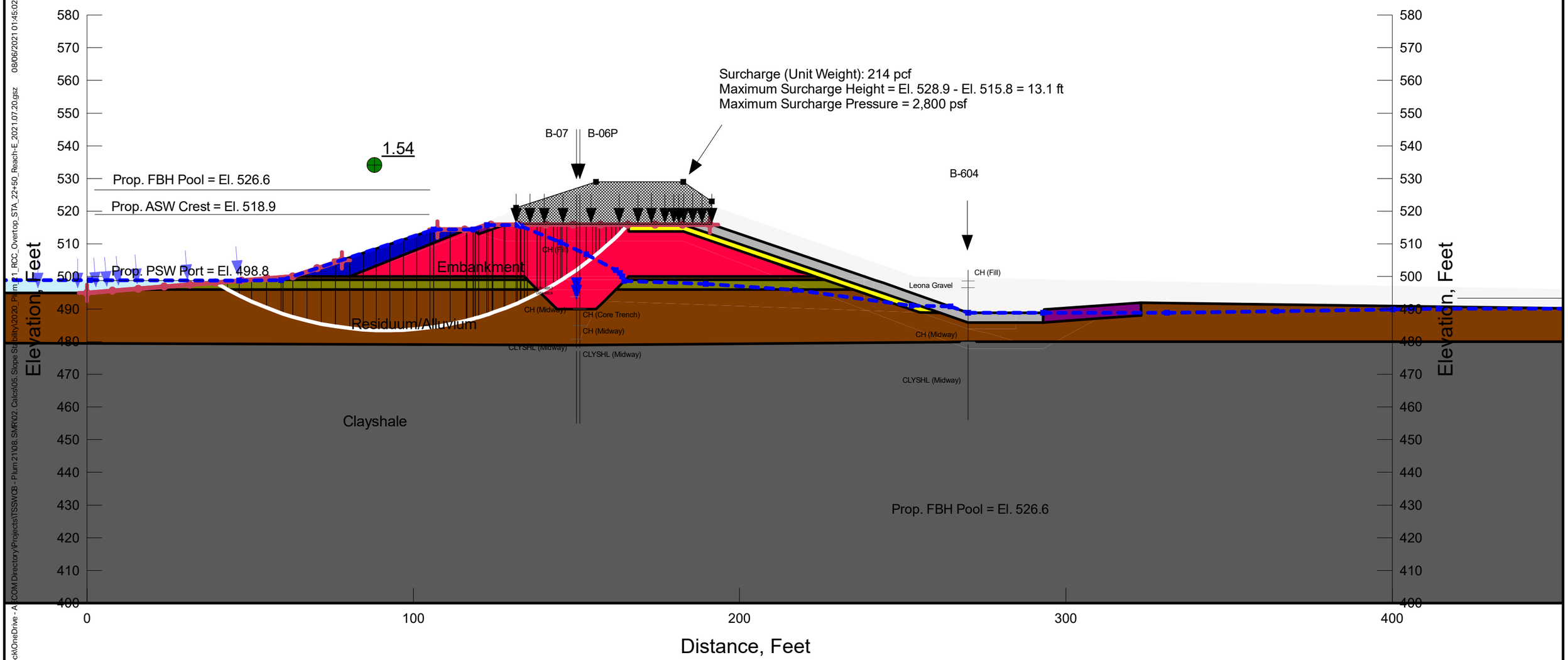
		Weight (pcf)	(psf)	1 (°)	2 (°)	Normal (psf)	(°)
Clayshale (CD)	Mohr-Coulomb	120	500				26
Embankment Fill (RDD-NRCS)	Bilinear	123	250	28	20	1,192	
Filter Drain	Mohr-Coulomb	120	0				33
Leona Formation (CD)	Mohr-Coulomb	135	50				35
New Embankment (RDD-NRCS)	Bilinear	125	250	26	16	498	
RCC	Mohr-Coulomb	145	200				45
Residuum/Alluvium (RDD-NRCS)	Bilinear	120	200	26	20	808	
Rock Riprap	Mohr-Coulomb	110	0				40



SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Loading Condition: Rapid Drawdown (NRCS)	

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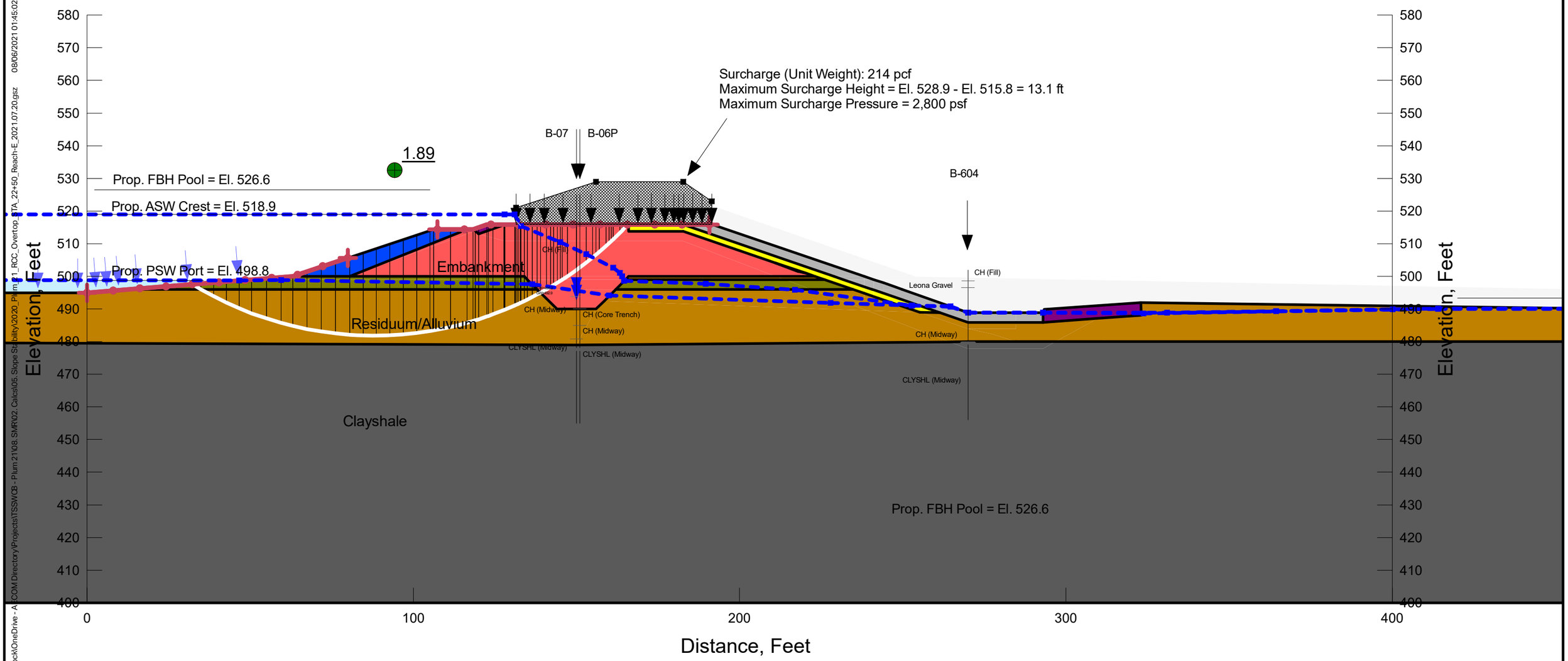
Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)	Cohesion R (psf)	Phi R (°)	Piezometric Line After Drawdown
	Clayshale (CD)	Mohr-Coulomb	120	500	26	0	0	2
	Embankment Fill (CD)	Mohr-Coulomb	123	250	28	450	20	2
	Filter Drain	Mohr-Coulomb	120	0	33	0	0	2
	Leona Formation (CD)	Mohr-Coulomb	135	50	35	0	0	2
	New Embankment (CD)	Mohr-Coulomb	125	250	26	350	16	2
	RCC	Mohr-Coulomb	145	200	45	0	0	2
	Residuum/Alluvium (CD)	Mohr-Coulomb	120	200	26	300	20	2
	Rock Riprap	Mohr-Coulomb	110	0	40	0	0	2



SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Overtopping Spillway	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Loading Condition: Rapid Drawdown (3-stage)	

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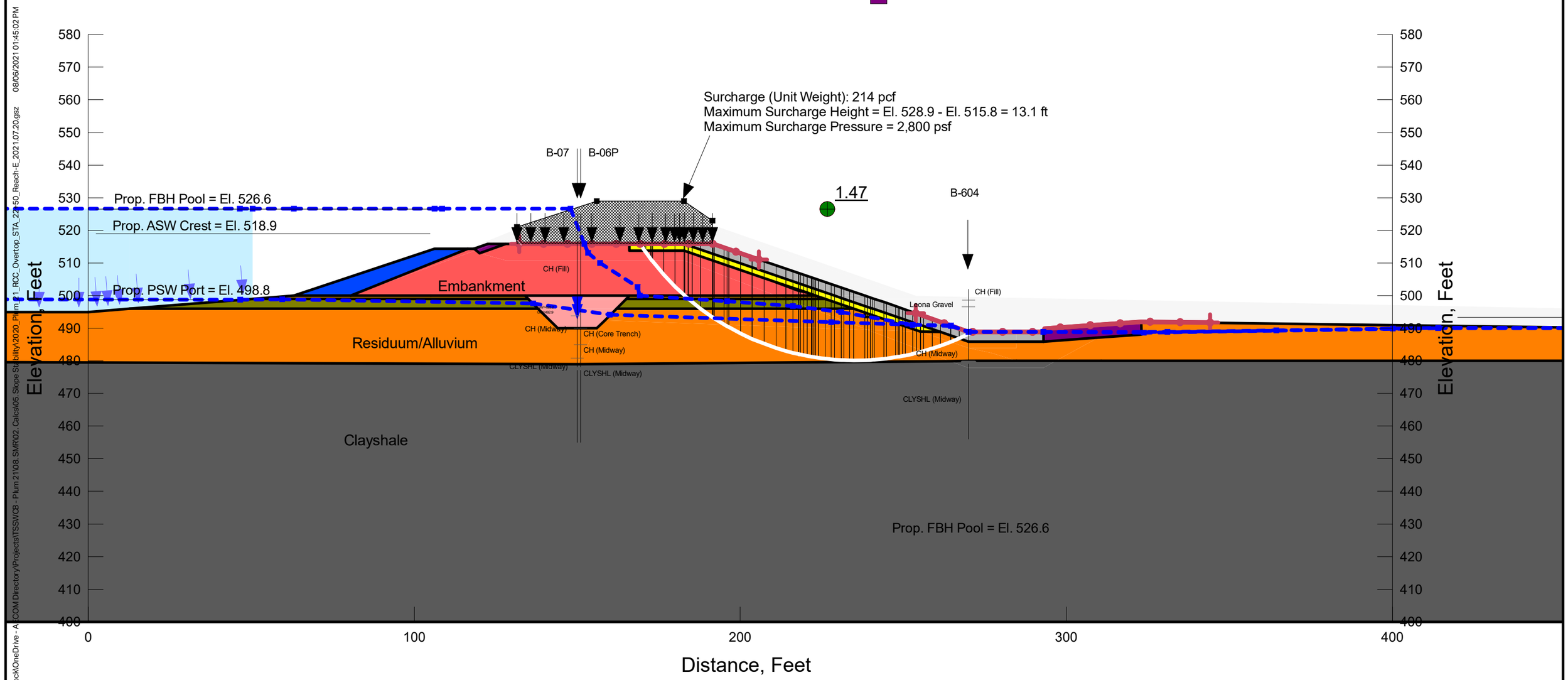
		(pcf)		(°)	(°)	(psf)	
Clayshale (CD)	Mohr-Coulomb	120	500				26
Embankment Fill (CD)	Mohr-Coulomb	123	250				28
Embankment Fill (FBH)	Bilinear	123	250	28	24	1,192	
Filter Drain	Mohr-Coulomb	120	0				33
Leona Formation (CD)	Mohr-Coulomb	135	50				35
New Embankment (CD)	Mohr-Coulomb	125	250				26
RCC	Mohr-Coulomb	145	200				45
Residuum/Alluvium (CD)	Mohr-Coulomb	120	200				26
Residuum/Alluvium (FBH)	Bilinear	120	200	26	23	808	
Rock Riprap	Mohr-Coulomb	110	0				40



SOFTWARE VERSION: SLOPE/W v. 10.2.2.20559
METHOD: Spencer
Scale: 1:350

PROJECT NO. 60589687	TSSWCB PLUM CREEK	Slope Stability Analysis	Case: Proposed Embankment Raise	FIGURE
AECOM	CALDWELL COUNTY, TEXAS	Section: Reach E (STA 22+50)	Loading Condition: Flood Surcharge	

C:\Users\alance.finnefrock\OneDrive - AECOM Directory\Projects\TSSWCB - Plum 21108.SMR\02. Calcs\05. Slope Stability\2020_Plum 21_RCC_Overtop_STA_22+50_Reach-E_2021.07.20.gsz 08/06/2021 01:45:02 PM

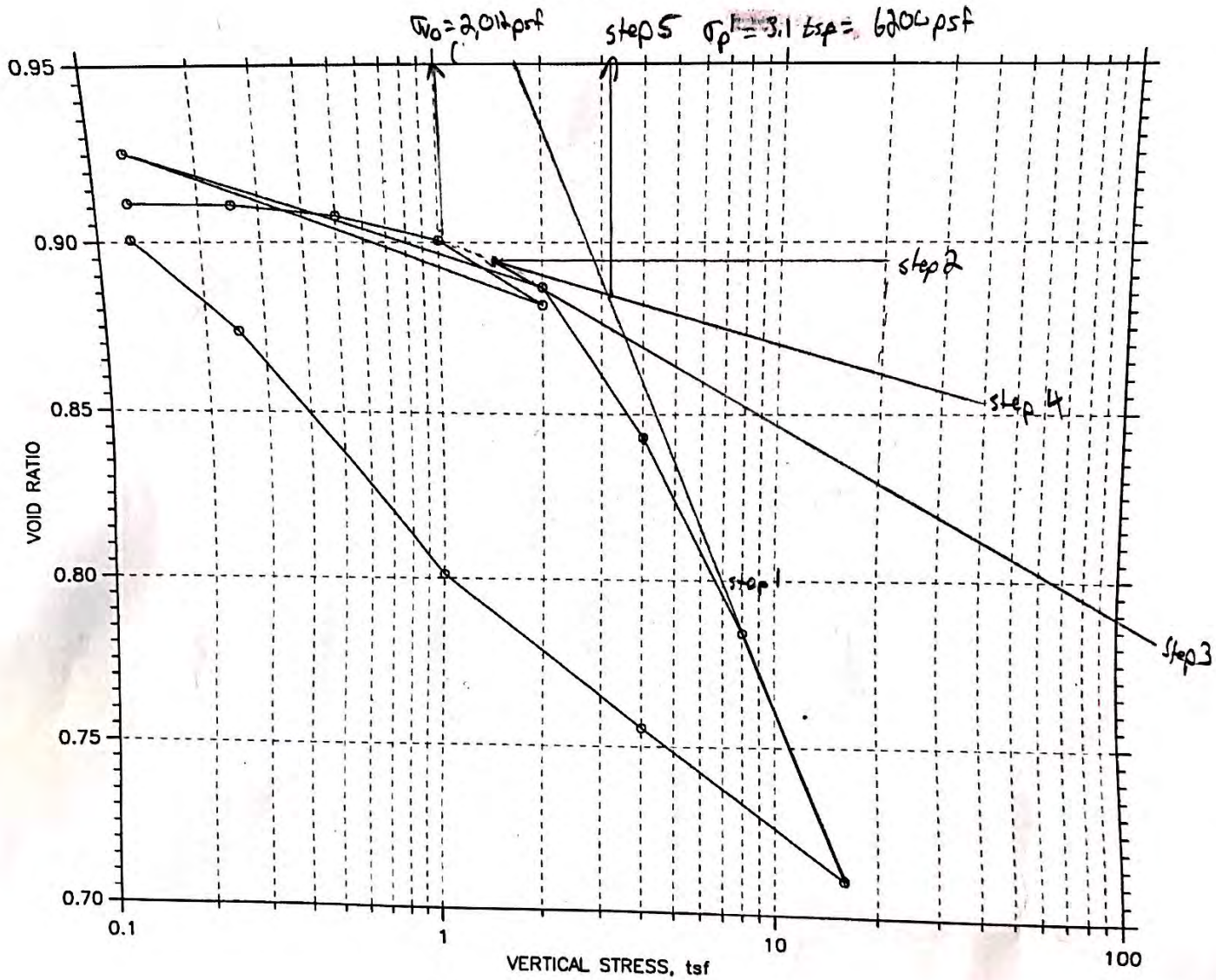
Appendix G Embankment Settlement

G.1 Consolidation Test Analysis

Casagrande Method

CONSOLIDATION TEST DATA

SUMMARY REPORT



Casagrande Method

				Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	31.33	33.51
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	88.69	89.15
Compression Index: 3.81959e-313				Saturation, %	93.18	100.76
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.91	0.90
LL: ---	PL: ---	PI: ---	GS: 2.72			

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-255
Boring No.: B-05	Tested By: SKK	Checked By: SKK
Sample No.: 19-255	Test Date: 5/20/19	Test No.: 1
Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
Description:		
Remarks: SATURATE @ START, LOAD TO 2 KSF, UNLOAD , LOAD TO 2 KSF, CONTINUE LOADING TO 32 KSF, RE		

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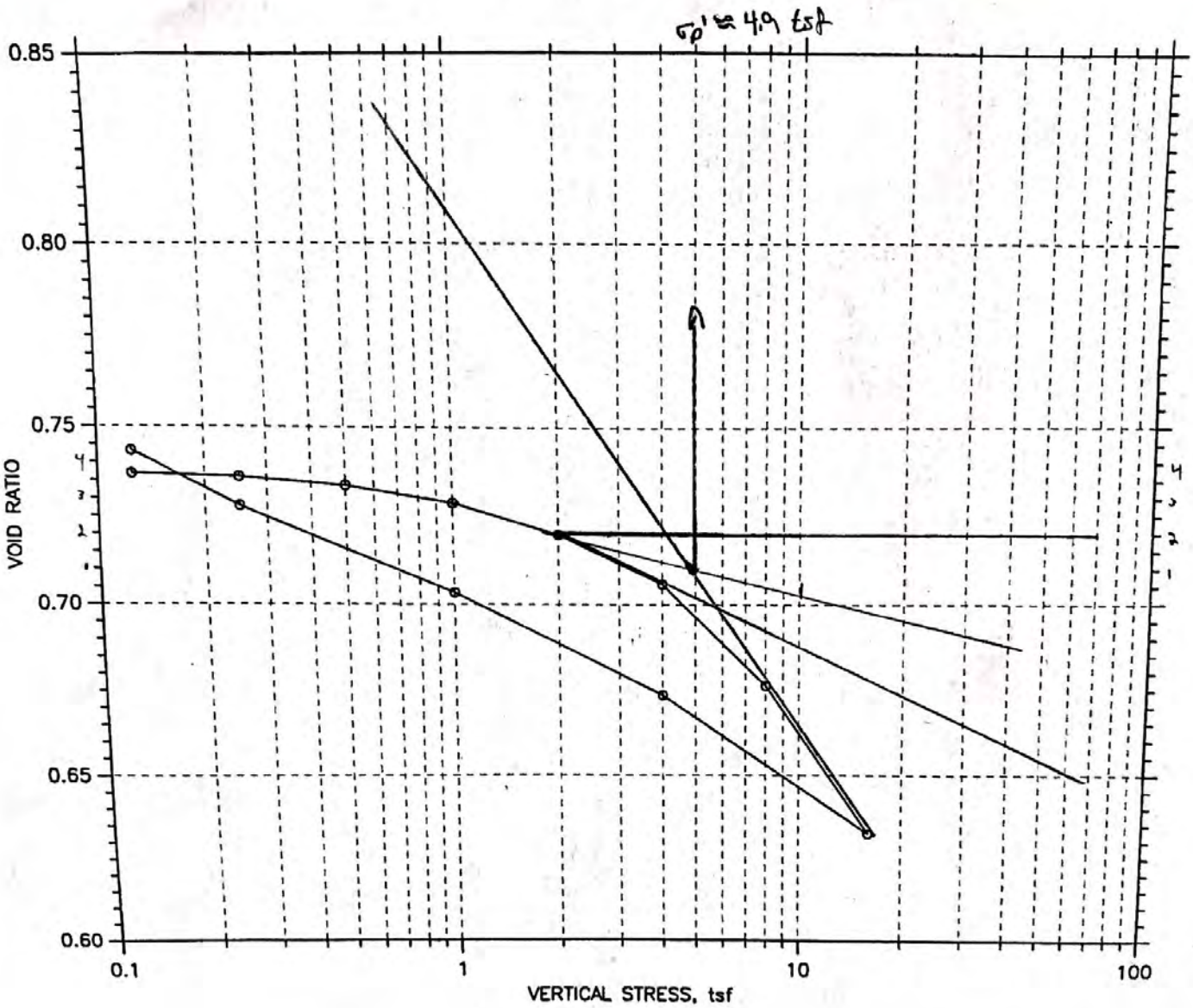
CONSOLIDATION TEST DATA

SUMMARY REPORT



Casagrade method

				Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	21.99	26.95
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	98.02	97.56
Compression Index: 3.81959e-313				Saturation, %	81.26	98.49
Diameter: 2.5 in		Height: 1.005 in		Void Ratio	0.74	0.75
LL: ---	PL: ---	PI: ---	GS: 2.73			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-305
	Boring No.: B-604	Tested By: SKK	Checked By: SKK
	Sample No.: 19-305	Test Date: 5/16/19	Test No.: 1
	Depth: 20-21'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Fri, 31-MAY-2019 07:38:57

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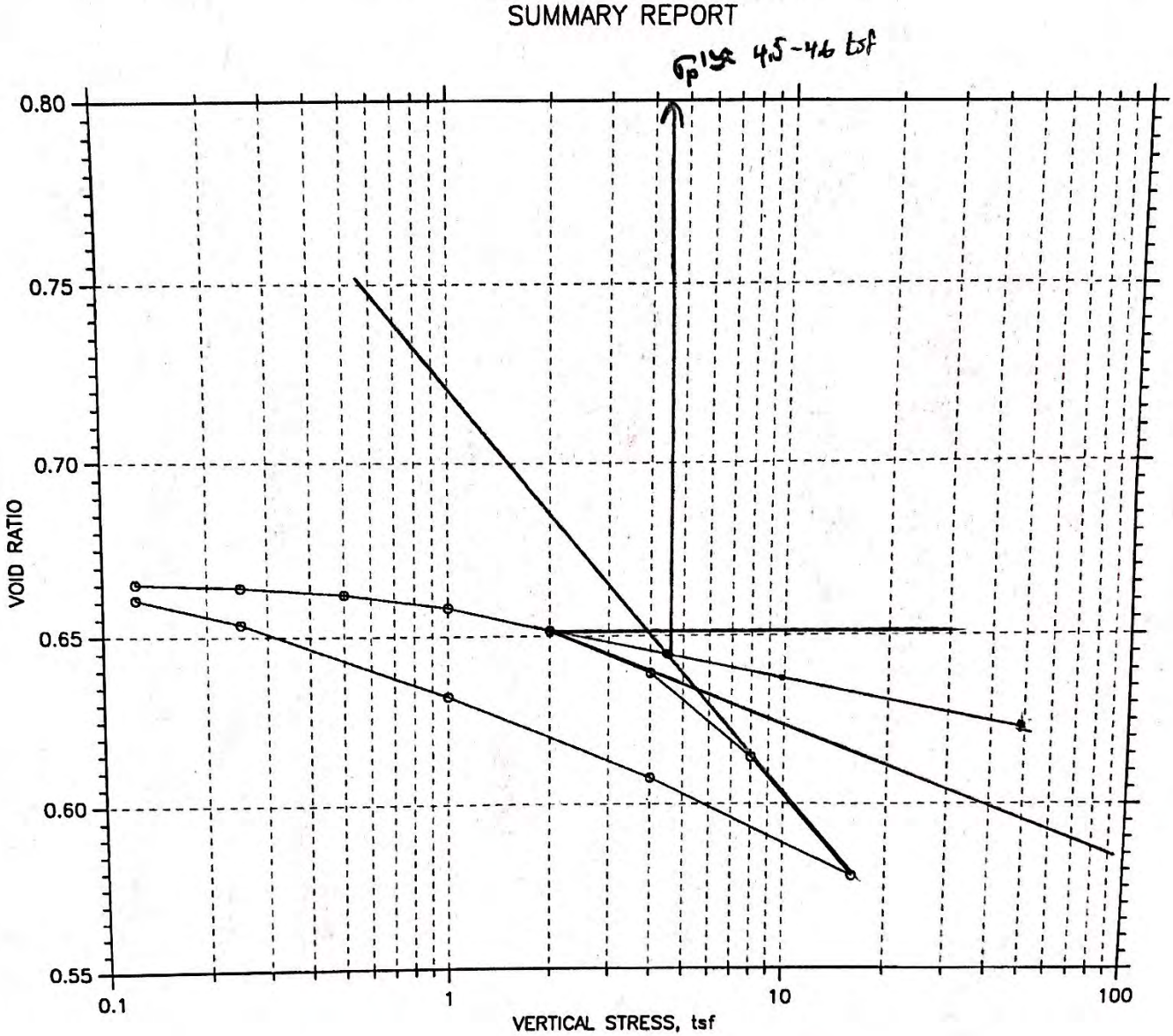
CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	20.84	23.44
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	102.3	102.4
Compression Index: 3.81959e-313				Saturation, %	85.40	96.33
Diameter: 2.5 in		Height: 1.002 in		Void Ratio	0.67	0.66
LL: ---	PL: ---	PI: ---	GS: 2.73			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-282
	Boring No.: B-301	Tested By: SKK	Checked By: SKK
	Sample No.: 19-282	Test Date: 5/13/19	Test No.: 1
	Depth: 18-20'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Thu, 23-MAY-2019 07:18:36

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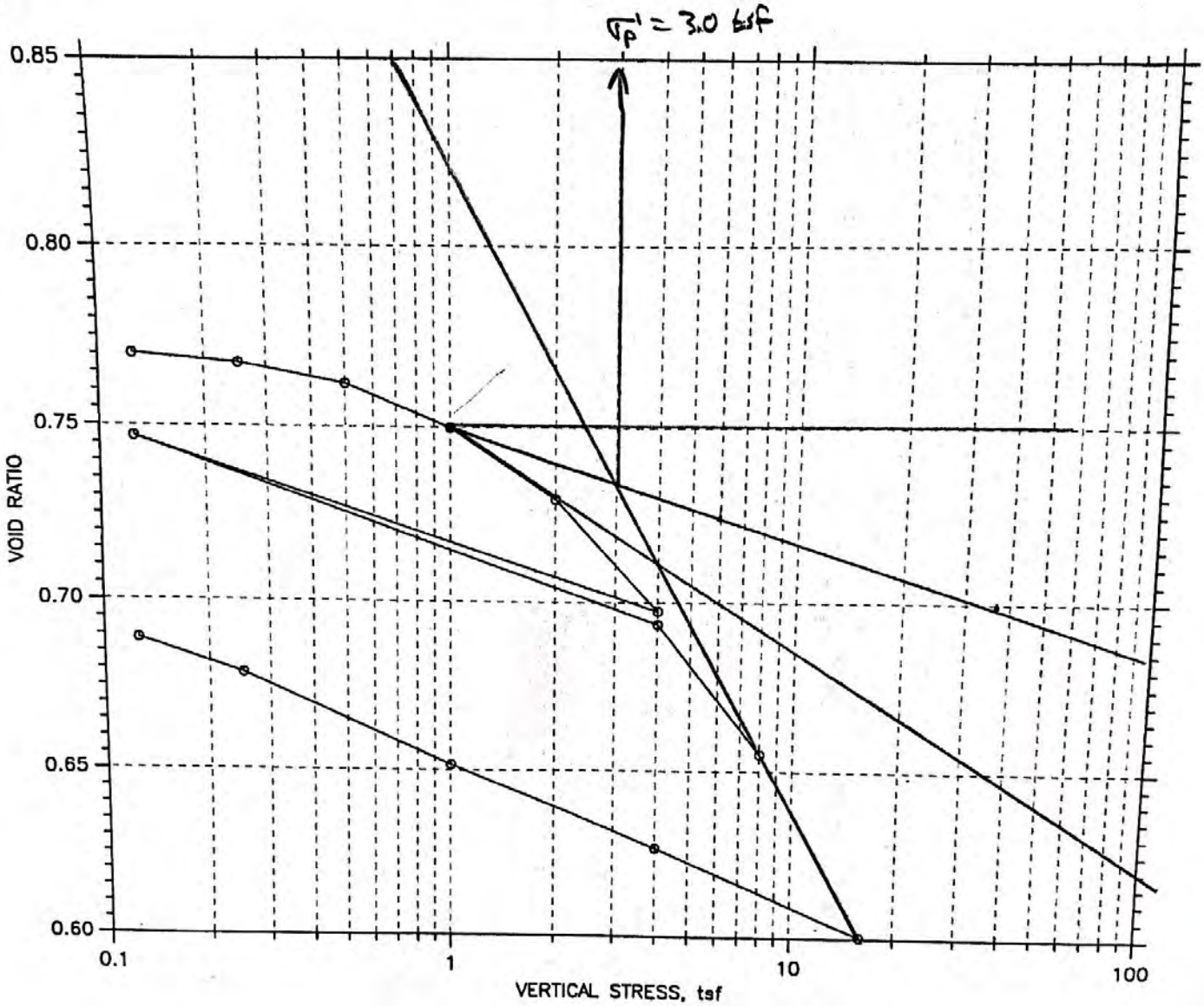
CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	23.02	23.84
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	96.86	101.4
Compression Index: 3.81959e-313				Saturation, %	81.95	94.70
Diameter: 2.5 in		Height: 1.001 in		Void Ratio	0.77	0.69
LL: ---	PL: ---	PI: ---	GS: 2.75			

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-260
Boring No.: B-06P	Tested By: SKK	Checked By: SKK
Sample No.: 19-260	Test Date: 6/4/19	Test No.: 1
Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
Description:		
Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, REE		

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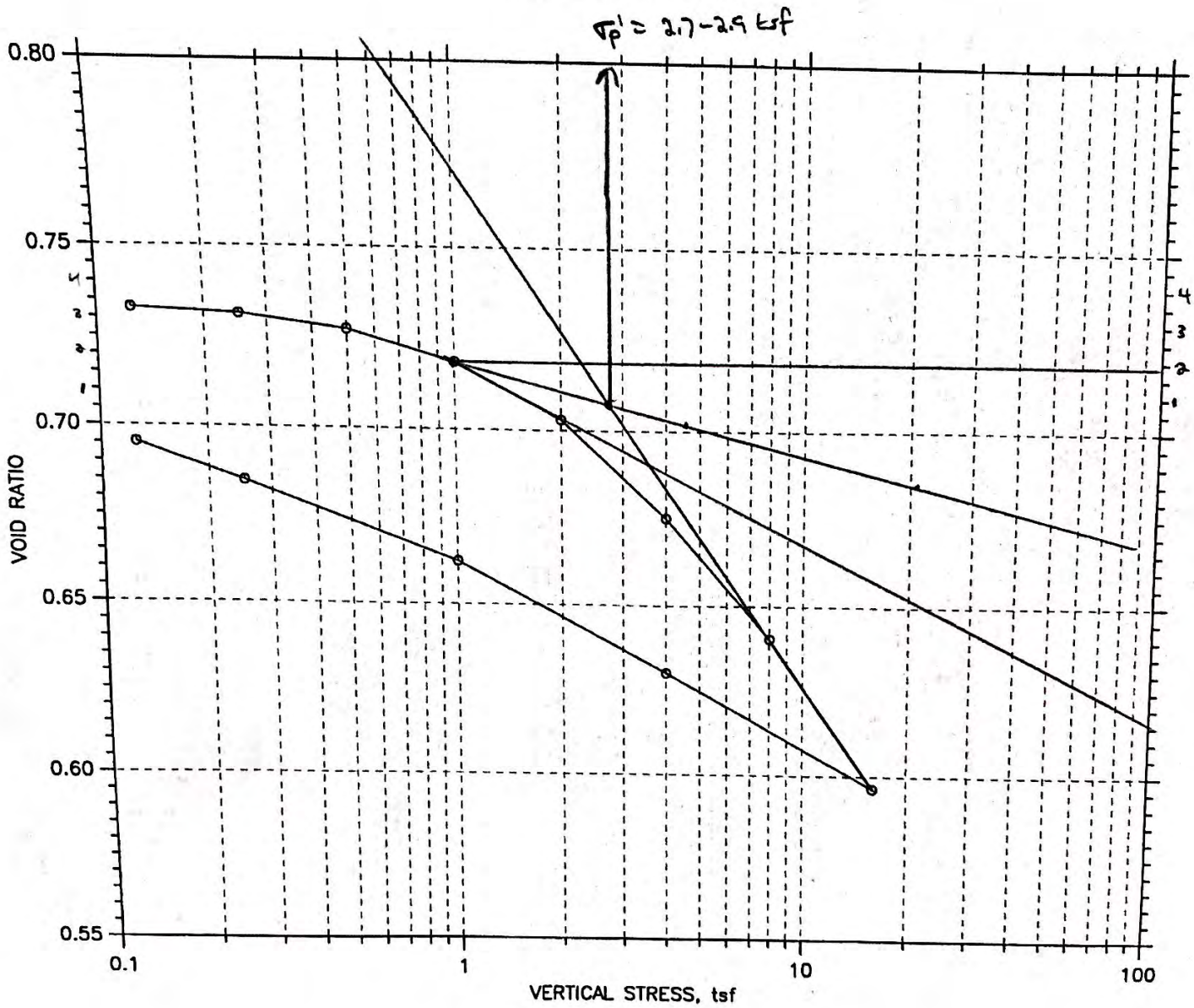
CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	22.37	24.78
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	97.83	99.95
Compression Index: 3.81959e-313				Saturation, %	82.72	96.45
Diameter: 2.5 in		Height: 1.005 in		Void Ratio	0.74	0.70
LL: ---	PL: ---	PI: ---	GS: 2.72			

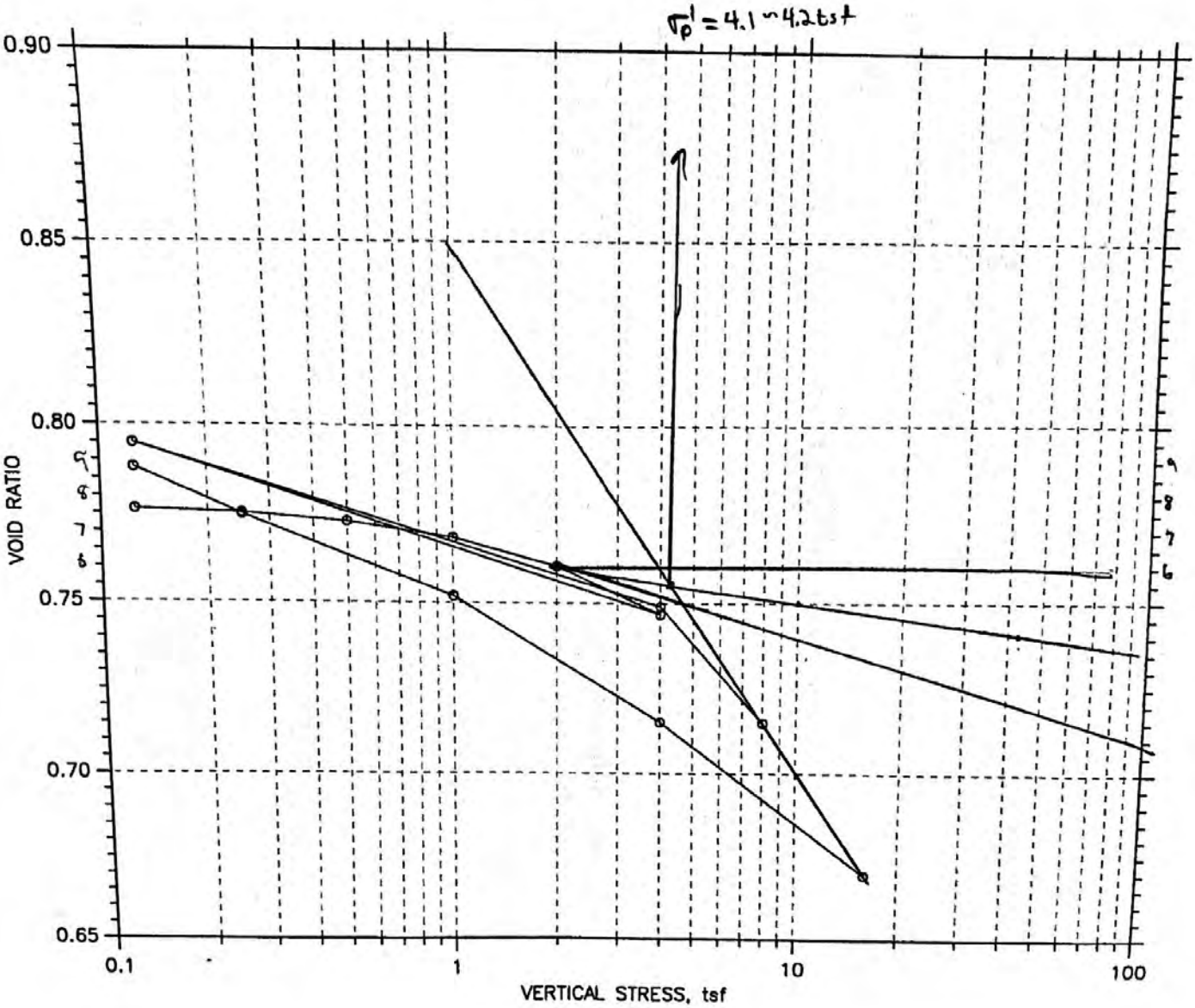
Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-292
Boring No.: B-602	Tested By: SKK	Checked By: SKK
Sample No.: 19-292	Test Date: 5/15/19	Test No.: 1
Depth: 15-17'	Sample Type: CORE	Elevation: N/A
Description:		
Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Thu, 23-MAY-2019 08:01:17

Scanned with CamScanner

CONSOLIDATION TEST DATA

SUMMARY REPORT



				Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	26.68	28.66
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	96.21	95.47
Compression Index: 3.81959e-313				Saturation, %	93.97	99.19
Diameter: 2.5 in		Height: 1.006 in		Void Ratio	0.78	0.79
LL: ---	PL: ---	PI: ---	GS: 2.74			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-297
	Boring No.: B-603	Tested By: SKK	Checked By: SKK
	Sample No.: 19-297	Test Date: 6/5/19	Test No.: 1
	Depth: 15.5-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 4 TSF, UNLOAD , LOAD TO 4 TSF, CONTINUE LOADING TO 32 KSF, RE		

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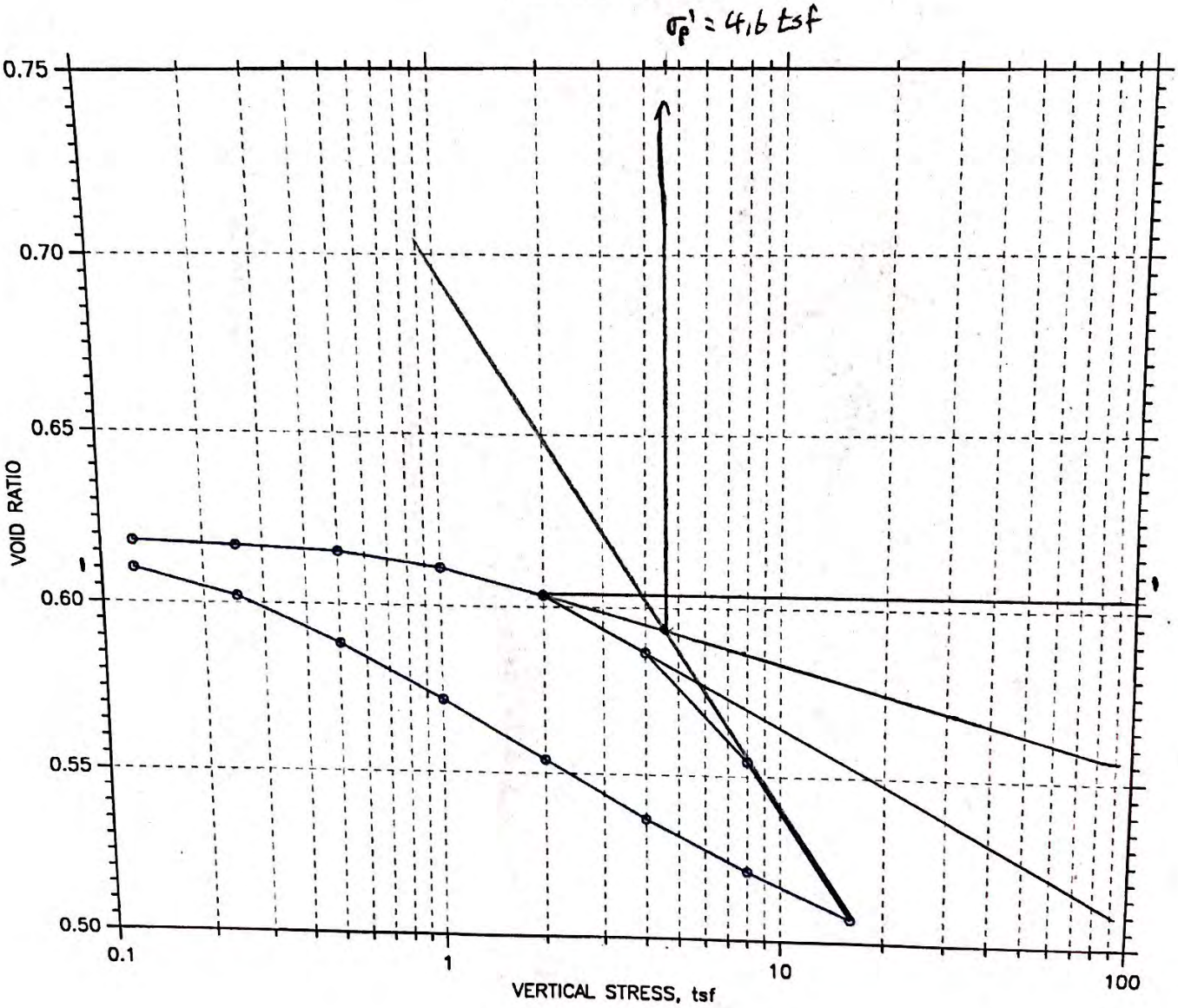
CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	19.81	22.13
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	104.9	105.2
Compression Index: 3.81959e-313				Saturation, %	87.01	98.12
Diameter: 2.5 in		Height: 1.004 in		Void Ratio	0.62	0.61
LL: ---	PL: ---	PI: ---	GS: 2.72			

Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-259
Boring No.: B-06P	Tested By: SKK	Checked By: SKK
Sample No.: 19-259	Test Date: 3/25/19	Test No.: 2
Depth: 7.5-10'	Sample Type:	Elevation: N/A
Description:		
Remarks:		

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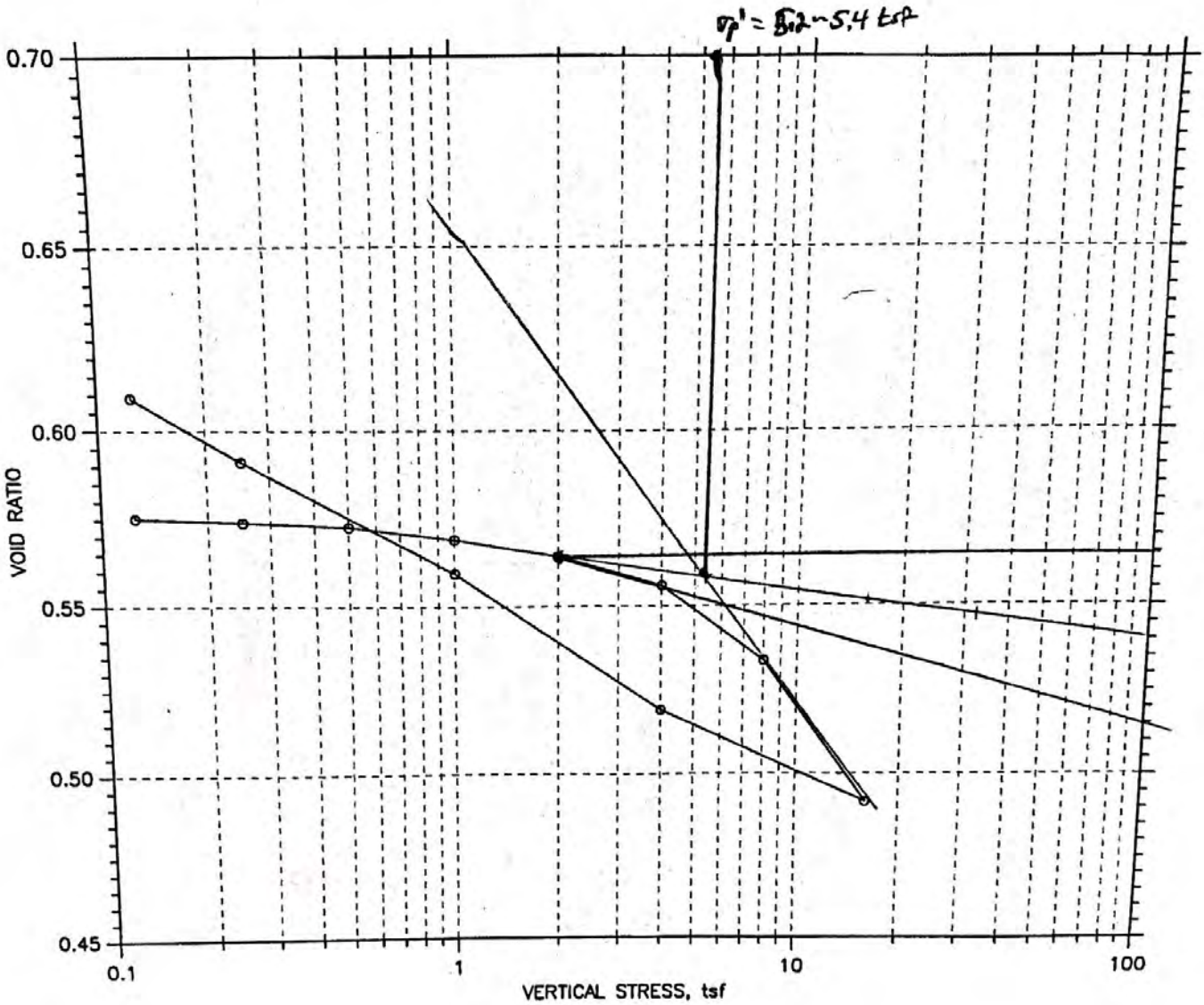
CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: 0 tsf				Water Content, %	19.18	21.99
Preconsolidation Pressure: 0 tsf				Dry Unit Weight, pcf	109.3	106.9
Compression Index: 3.81959e-313				Saturation, %	91.86	99.12
Diameter: 2.5 in		Height: 1.005 in		Void Ratio	0.58	0.61
LL: ---	PL: ---	PI: ---	GS: 2.76			

	Project: PLUM CREEK SITE 21	Location: TX	Project No.: 19-266
	Boring No.: B-07	Tested By: SKK	Checked By: SKK
	Sample No.: 19-266	Test Date: 4/15/19	Test No.: 1
	Depth: 15-17.5'	Sample Type: CORE	Elevation: N/A
	Description:		
	Remarks: SATURATE @ START, LOAD TO 32 KSF, REBOUND		

Wed, 22-MAY-2019 14:05:34

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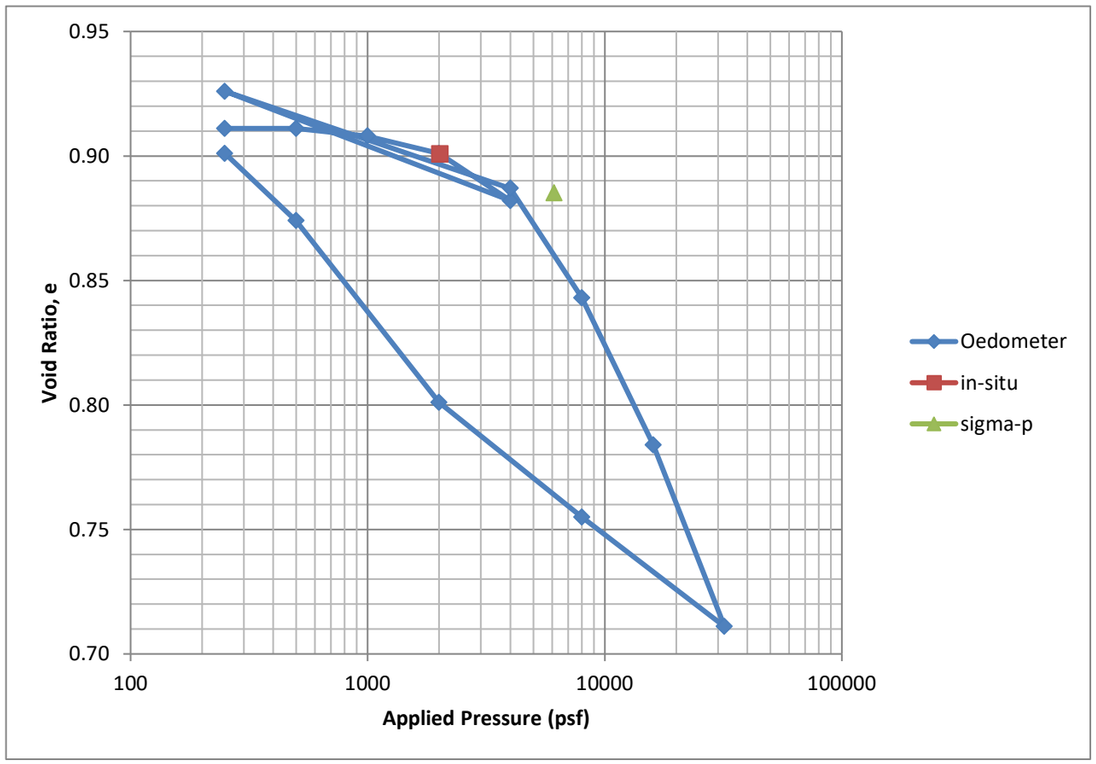
Boone Method

Estimation of Preconsolidation Pressure (Boone 2010 Method)

Elapsed Time (min)	Sq.Rt. of Time (min)	Stress (tsf)	Void Ratio -	Stress (psf)	Curve Slope
		0.125	0.911	250	0.000
		0.25	0.911	500	0.010
		0.5	0.908	1000	0.023
		1	0.901	2000	0.063
		2	0.882	4000	0.037
		0.125	0.926	250	0.032
		2	0.887	4000	0.146
		4	0.843	8000	0.196
		8	0.784	16000	0.243
		16	0.711	32000	0.073
		4	0.755	8000	0.076
		1	0.801	2000	0.121
		0.25	0.874	500	0.090
		0.125	0.901	250	



Boring:	B-05
Top Depth (ft):	15
Bottom Depth (ft):	17.5
NRCS ID #:	19-255
GS Elev (ft):	525
Water elevation (ft):	495.2
Water depth (ft):	29.8

γ (pcf)	115	
σ_{vo}' (psf):	2,013	
C_r:	0.032	
C_{cmax}:	0.24	
e_{v0}:	0.90	(interpolation)
σ_{vmax}' (psf):	32,000	
e_{min}:	0.71	
e_c:	1.80	
e_r:	1.01	
e_p:	0.89	
σ_p' (psf):	6,118	
OCR:	3.0	

Sample disturbance

Δe/e0:	0.011
Rating:	very good to excellent

Table 6-2 Characterization of sample quality from $\Delta e/e_0$ to reach the in situ vertical effective stress (from Lunne, et al., 1997).

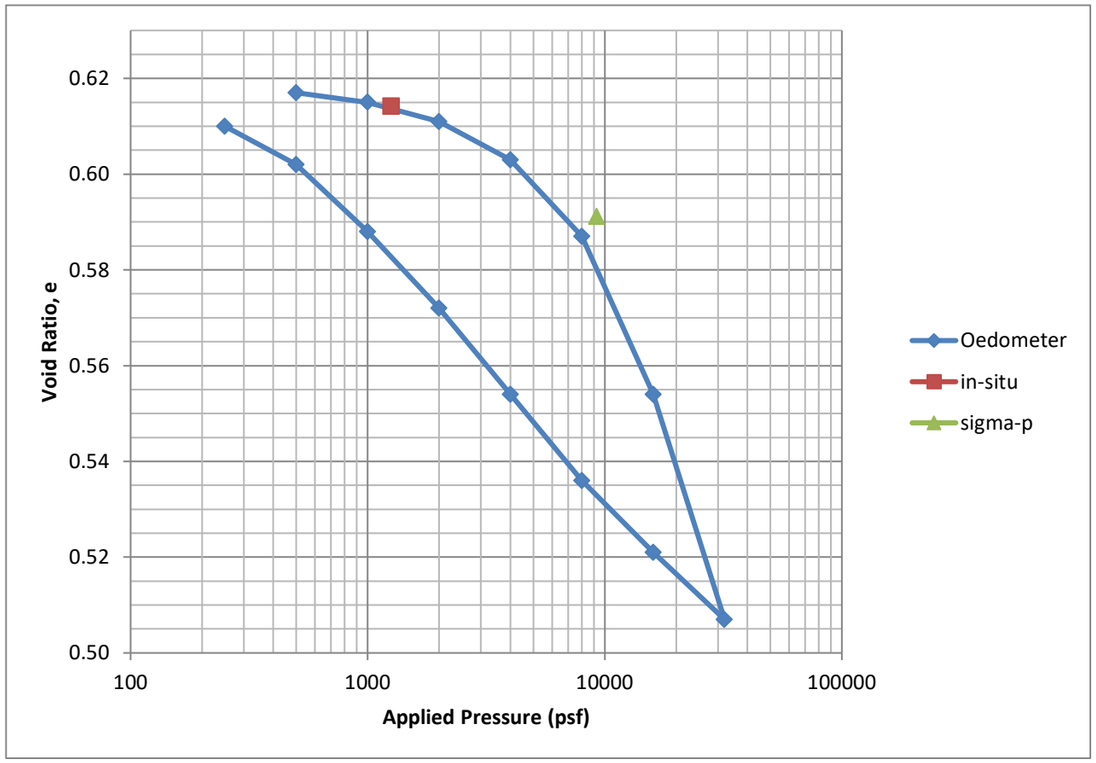
$\Delta e/e_0$		Rating
$OCR = 1\ to\ 2$	$OCR = 2\ to\ 4$	
< 0.04	<0.03	Very Good to Excellent
0.04 to 0.07	0.03 to 0.05	Good to Fair
0.07 to 0.14	0.05 to 0.10	Poor
>0.14	>0.10	Very Poor

Estimation of Preconsolidation Pressure (Boone 2010 Method)

Elapsed Time (min)	Sq.Rt. of Time (min)	Stress (tsf)	Void Ratio -	Stress (psf)	Curve Slope
		0.125	0.618	250	0.003
		0.25	0.617	500	0.007
		0.5	0.615	1000	0.013
		1	0.611	2000	0.027
		2	0.603	4000	0.053
		4	0.587	8000	0.110
		8	0.554	16000	0.156
		16	0.507	32000	0.047
		8	0.521	16000	0.050
		4	0.536	8000	0.060
		2	0.554	4000	0.060
		1	0.572	2000	0.053
		0.5	0.588	1000	0.047
		0.25	0.602	500	0.027
		0.125	0.61	250	

Boring:	B-06P
Top Depth (ft):	7.5
Bottom Depth (ft):	10
NRCS ID #:	19-259
GS Elev (ft):	525
Water elevation (ft):	492.9
Water depth (ft):	32.1

γ (pcf)	125.7
σ_{vo}' (psf):	1,257
C_r:	0.027
C_{cmax}:	0.16
e_{v0}:	0.61 (interpolation)
σ_{vmax}' (psf):	32,000
e_{min}:	0.51
e_c:	1.21
e_r:	0.70
e_p:	0.59
σ_p' (psf):	9,245
OCR:	7.4



Sample disturbance

Δe/e0:	0.006
Rating:	very good to excellent

Table 6-2 Characterization of sample quality from $\Delta e/e_0$ to reach the in situ vertical effective stress (from Lunne, et al., 1997).

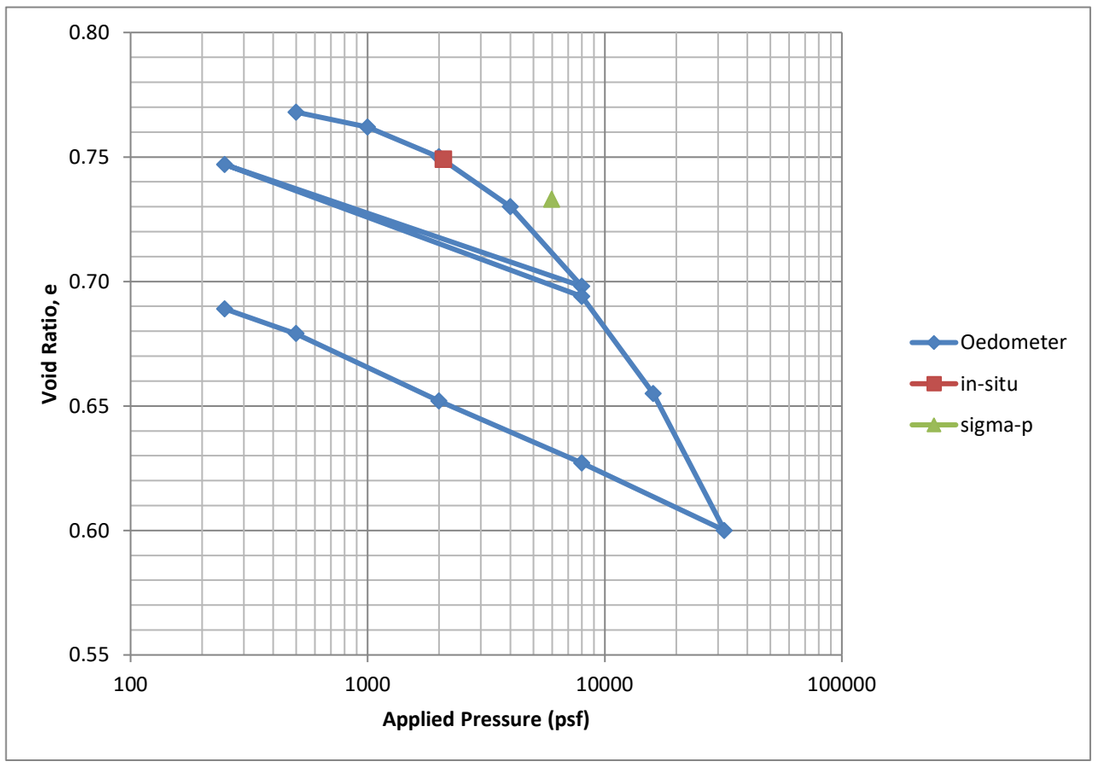
$\Delta e/e_0$		Rating
$OCR = 1\ to\ 2$	$OCR = 2\ to\ 4$	
< 0.04	<0.03	Very Good to Excellent
0.04 to 0.07	0.03 to 0.05	Good to Fair
0.07 to 0.14	0.05 to 0.10	Poor
>0.14	>0.10	Very Poor

Estimation of Preconsolidation Pressure (Boone 2010 Method)

Elapsed Time (min)	Sq.Rt. of Time (min)	Stress (tsf)	Void Ratio -	Stress (psf)	Curve Slope
		0.125	0.77	250	0.007
		0.25	0.768	500	0.020
		0.5	0.762	1000	0.040
		1	0.75	2000	0.066
		2	0.73	4000	0.106
		4	0.698	8000	0.033
		0.125	0.747	250	0.035
		4	0.694	8000	0.130
		8	0.655	16000	0.183
		16	0.6	32000	0.045
		4	0.627	8000	0.042
		1	0.652	2000	0.045
		0.25	0.679	500	0.033
		0.125	0.689	250	

Boring:	B-06P
Top Depth (ft):	15
Bottom Depth (ft):	17.5
NRCS ID #:	19-260
GS Elev (ft):	525
Water elevation (ft):	492.9
Water depth (ft):	32.1

γ (pcf)	119.2	
σ_{vo}' (psf):	2,086	
C_r:	0.035	
C_{cmax}:	0.18	
e_{v0}:	0.75	(interpolation)
σ_{vmax}' (psf):	32,000	
e_{min}:	0.60	
e_c:	1.42	
e_r:	0.87	
e_p:	0.73	
σ_p' (psf):	5,986	
OCR:	2.9	



Sample disturbance

Δe/e0:	0.028
Rating:	very good to excellent

Table 6-2 Characterization of sample quality from $\Delta e/e_0$ to reach the in situ vertical effective stress (from Lunne, et al., 1997).

$\Delta e/e_0$		Rating
$OCR = 1\ to\ 2$	$OCR = 2\ to\ 4$	
< 0.04	<0.03	Very Good to Excellent
0.04 to 0.07	0.03 to 0.05	Good to Fair
0.07 to 0.14	0.05 to 0.10	Poor
>0.14	>0.10	Very Poor

Estimation of Preconsolidation Pressure (Boone 2010 Method)

Elapsed Time (min)	Sq.Rt. of Time (min)	Stress (tsf)	Void Ratio -	Stress (psf)	Curve Slope
		0.125	0.618	250	0.003
		0.25	0.617	500	0.007
		0.5	0.615	1000	0.013
		1	0.611	2000	0.027
		2	0.603	4000	0.053
		4	0.587	8000	0.110
		8	0.554	16000	0.156
		16	0.507	32000	0.023
		4	0.521	8000	0.025
		1	0.536	2000	0.030
		0.25	0.554	500	0.060
		0.125	0.572	250	

Boring:	B-07
Top Depth (ft):	15
Bottom Depth (ft):	17.5
NRCS ID #:	19-266
GS Elev (ft):	526
Water elevation (ft):	492.9
Water depth (ft):	33.1

γ (pcf)	130.3	
σ_{vo}' (psf):	2,280	
C_r:	0.027	
C_{cmax}:	0.16	
e_{v0}:	0.61	(interpolation)
σ_{vmax}' (psf):	32,000	
e_{min}:	0.51	
e_c:	1.21	
e_r:	0.70	
e_p:	0.59	
σ_p' (psf):	8,839	
OCR:	3.9	

Sample disturbance

Δe/e0:	0.013
Rating:	very good to excellent

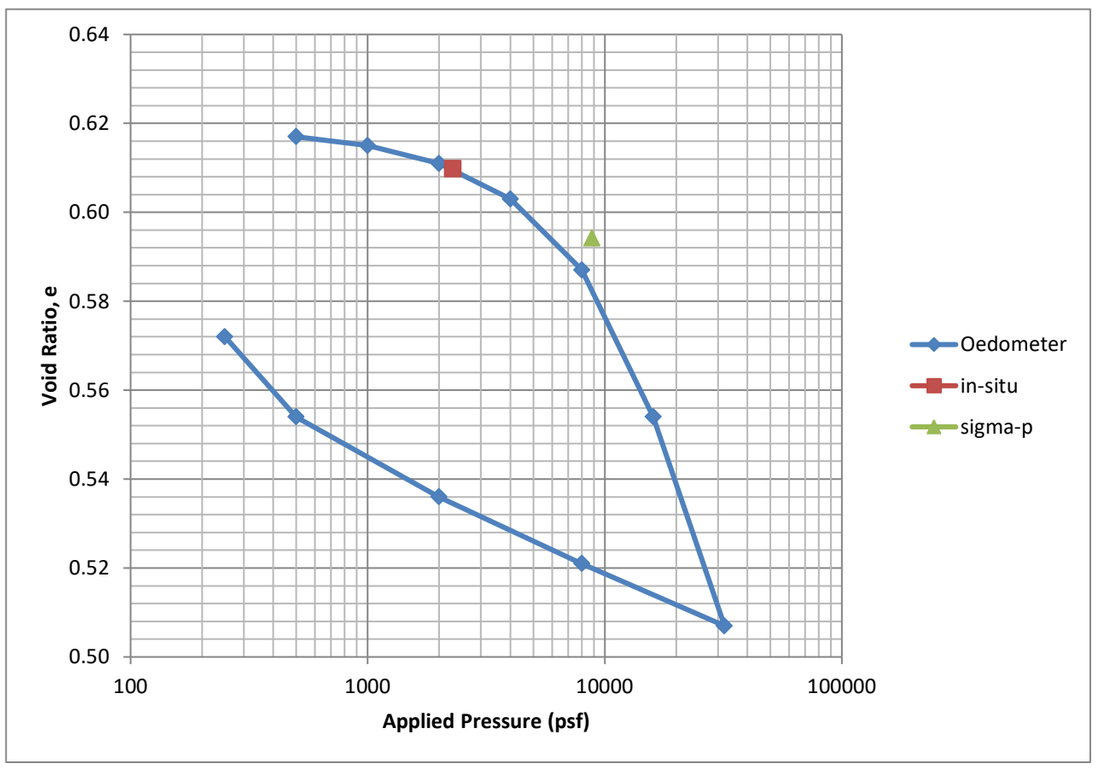


Table 6-2 Characterization of sample quality from $\Delta e/e_0$ to reach the in situ vertical effective stress (from Lunne, et al., 1997).

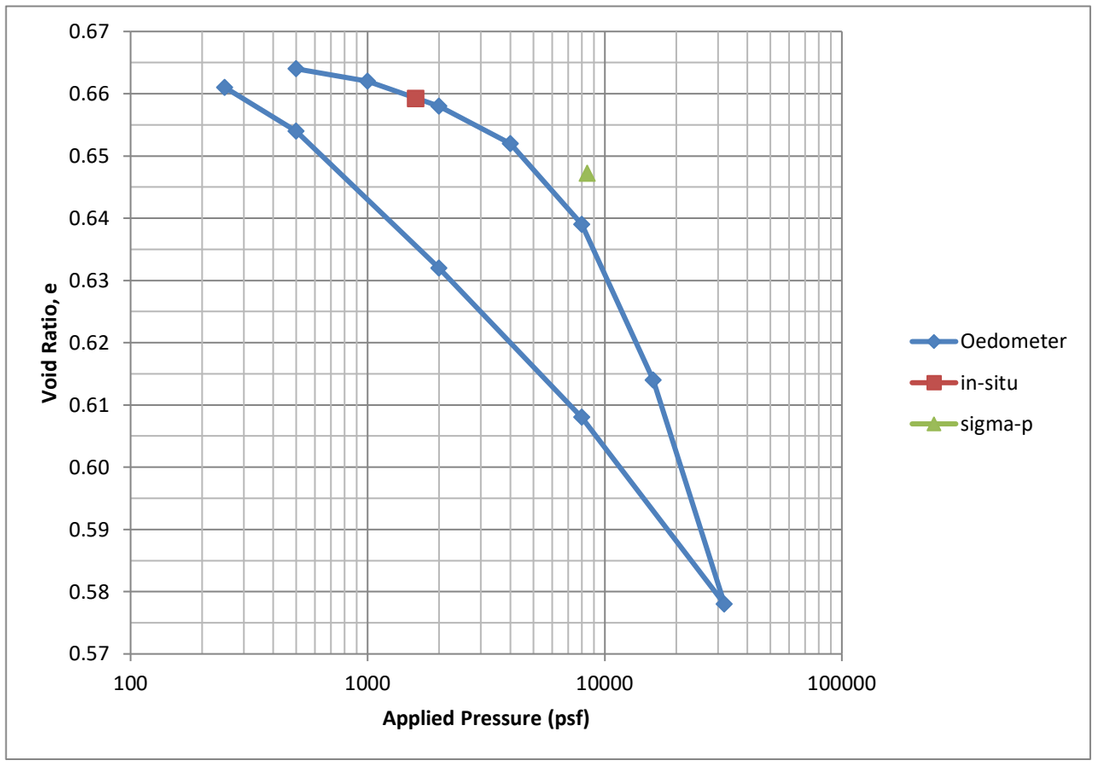
$\Delta e/e_0$		Rating
$OCR = 1$ *to* 2	$OCR = 2$ *to* 4	
< 0.04	<0.03	Very Good to Excellent
0.04 to 0.07	0.03 to 0.05	Good to Fair
0.07 to 0.14	0.05 to 0.10	Poor
>0.14	>0.10	Very Poor

Estimation of Preconsolidation Pressure (Boone 2010 Method)

Elapsed Time (min)	Sq.Rt. of Time (min)	Stress (tsf)	Void Ratio -	Stress (psf)	Curve Slope
		0.125	0.665	250	0.003
		0.25	0.664	500	0.007
		0.5	0.662	1000	0.013
		1	0.658	2000	0.020
		2	0.652	4000	0.043
		4	0.639	8000	0.083
		8	0.614	16000	0.120
		16	0.578	32000	0.050
		4	0.608	8000	0.040
		1	0.632	2000	0.037
		0.25	0.654	500	0.023
		0.125	0.661	250	

Boring:	B-301
Top Depth (ft):	18
Bottom Depth (ft):	20
NRCS ID #:	19-282
GS Elev (ft):	500
Water elevation (ft):	494.1
Water depth (ft):	5.9

γ (pcf)	123.6
σ_{vo}' (psf):	1,592
C_r:	0.017
C_{cmax}:	0.12
e_{v0}:	0.66 (interpolation)
σ_{vmax}' (psf):	32,000
e_{min}:	0.58
e_c:	1.12
e_r:	0.71
e_p:	0.65
σ_p' (psf):	8,444
OCR:	5.3



Sample disturbance

Δe/e0:	0.009
Rating:	very good to excellent

Table 6-2 Characterization of sample quality from $\Delta e/e_0$ to reach the in situ vertical effective stress (from Lunne, et al., 1997).

$\Delta e/e_0$		Rating
$OCR = 1\ to\ 2$	$OCR = 2\ to\ 4$	
< 0.04	<0.03	Very Good to Excellent
0.04 to 0.07	0.03 to 0.05	Good to Fair
0.07 to 0.14	0.05 to 0.10	Poor
>0.14	>0.10	Very Poor

Estimation of Preconsolidation Pressure (Boone 2010 Method)

Elapsed Time (min)	Sq.Rt. of Time (min)	Stress (tsf)	Void Ratio -	Stress (psf)	Curve Slope
		0.125	0.878	250	0.013
		0.25	0.874	500	0.037
		0.5	0.863	1000	0.130
		1	0.824	2000	0.193
		2	0.766	4000	0.223
		4	0.699	8000	0.223
		8	0.632	16000	0.249
		16	0.557	32000	0.050
		4	0.587	8000	0.055
		1	0.62	2000	0.051
		0.25	0.651	500	0.063
		0.125	0.67	250	

Boring:	B-601
Top Depth (ft):	10
Bottom Depth (ft):	12.5
NRCS ID #:	19-289
GS Elev (ft):	501
Water elevation (ft):	488.5
Water depth (ft):	12.5

γ (pcf)	111.5	
σ_{vo}' (psf):	1,394	
C_r:	0.025	
C_{cmax}:	0.25	
e_{v0}:	0.85	(interpolation)
σ_{vmax}' (psf):	32,000	
e_{min}:	0.56	
e_c:	1.68	
e_r:	0.93	
e_p:	0.84	
σ_p' (psf):	2,297	
OCR:	1.6	

Sample disturbance

Δe/e0:	0.036
Rating:	very good to excellent

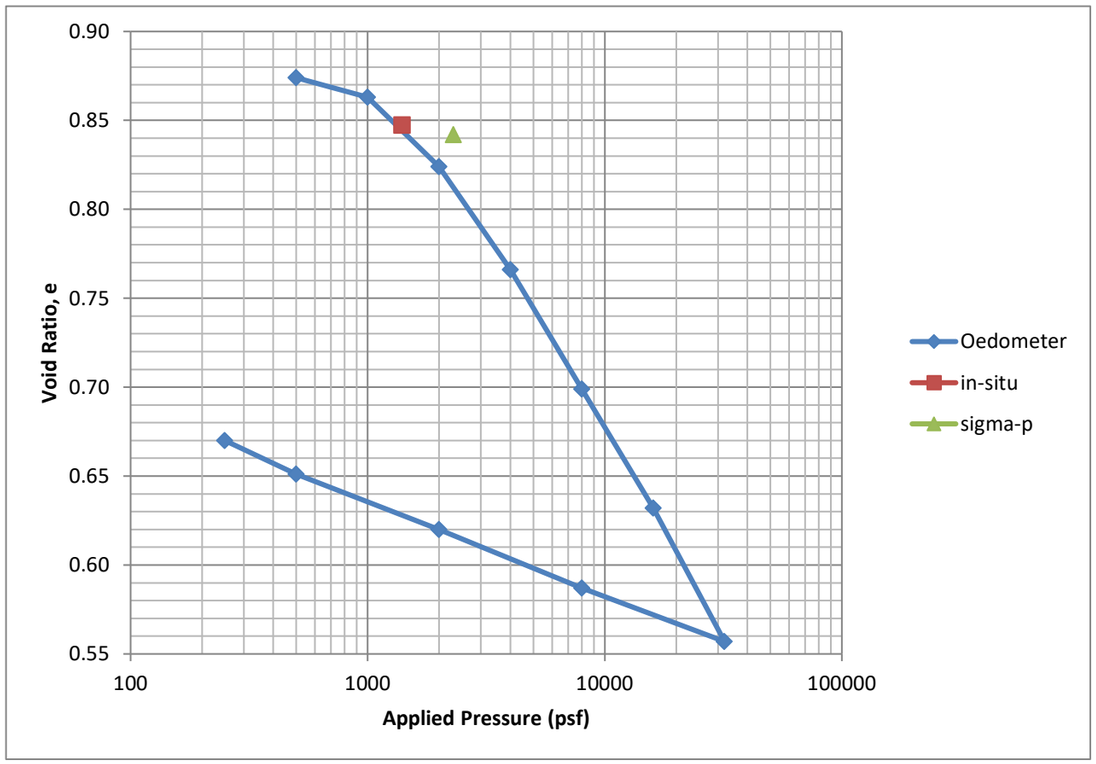


Table 6-2 Characterization of sample quality from $\Delta e/e_0$ to reach the in situ vertical effective stress (from Lunne, et al., 1997).

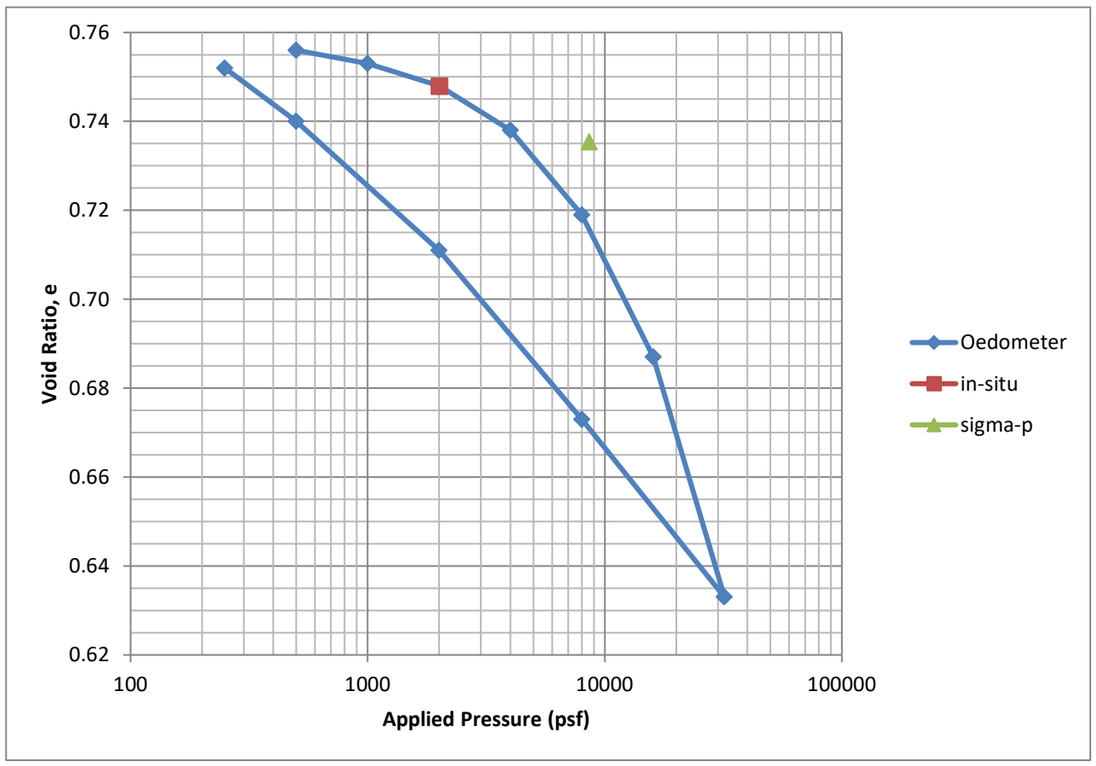
$\Delta e/e_0$		Rating
$OCR = 1\ to\ 2$	$OCR = 2\ to\ 4$	
< 0.04	<0.03	Very Good to Excellent
0.04 to 0.07	0.03 to 0.05	Good to Fair
0.07 to 0.14	0.05 to 0.10	Poor
>0.14	>0.10	Very Poor

Estimation of Preconsolidation Pressure (Boone 2010 Method)

Elapsed Time (min)	Sq.Rt. of Time (min)	Stress (tsf)	Void Ratio -	Stress (psf)	Curve Slope
		0.125	0.758	250	0.007
		0.25	0.756	500	0.010
		0.5	0.753	1000	0.017
		1	0.748	2000	0.033
		2	0.738	4000	0.063
		4	0.719	8000	0.106
		8	0.687	16000	0.179
		16	0.633	32000	0.066
		4	0.673	8000	0.063
		1	0.711	2000	0.048
		0.25	0.74	500	0.040
		0.125	0.752	250	

Boring:	B-601
Top Depth (ft):	19
Bottom Depth (ft):	20.5
NRCS ID #:	19-290
GS Elev (ft):	500.7
Water elevation (ft):	487.3
Water depth (ft):	13.4

γ (pcf)	119.6	
σ_{vo}' (psf):	2,009	
C_r:	0.020	
C_{cmax}:	0.18	
e_{v0}:	0.75	(interpolation)
σ_{vmax}' (psf):	32,000	
e_{min}:	0.63	
e_c:	1.44	
e_r:	0.81	
e_p:	0.74	
σ_p' (psf):	8,600	
OCR:	4.3	



Sample disturbance

Δe/e0:	0.013
Rating:	very good to excellent

Table 6-2 Characterization of sample quality from $\Delta e/e_0$ to reach the in situ vertical effective stress (from Lunne, et al., 1997).

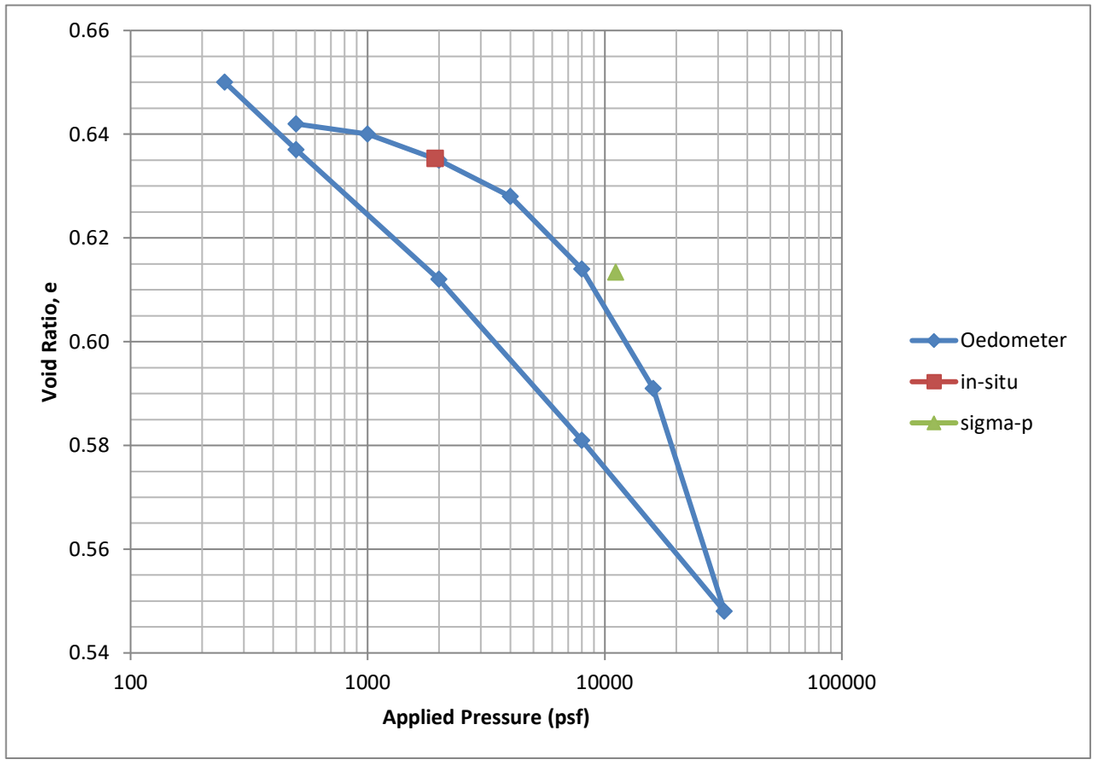
$\Delta e/e_0$		Rating
$OCR = 1\ to\ 2$	$OCR = 2\ to\ 4$	
< 0.04	<0.03	Very Good to Excellent
0.04 to 0.07	0.03 to 0.05	Good to Fair
0.07 to 0.14	0.05 to 0.10	Poor
>0.14	>0.10	Very Poor

Estimation of Preconsolidation Pressure (Boone 2010 Method)

Elapsed Time (min)	Sq.Rt. of Time (min)	Stress (tsf)	Void Ratio -	Stress (psf)	Curve Slope
		0.125	0.643	250	0.003
		0.25	0.642	500	0.007
		0.5	0.64	1000	0.017
		1	0.635	2000	0.023
		2	0.628	4000	0.047
		4	0.614	8000	0.076
		8	0.591	16000	0.143
		16	0.548	32000	0.055
		4	0.581	8000	0.051
		1	0.612	2000	0.042
		0.25	0.637	500	0.043
		0.125	0.65	250	

Boring:	B-601
Top Depth (ft):	18
Bottom Depth (ft):	19
NRCS ID #:	19-722
GS Elev (ft):	500.7
Water elevation (ft):	487.3
Water depth (ft):	13.4

γ (pcf)	119.6	
σ_{vo}' (psf):	1,923	
C_r:	0.029	
C_{cmax}:	0.14	
e_{v0}:	0.64	(interpolation)
σ_{vmax}' (psf):	32,000	
e_{min}:	0.55	
e_c:	1.19	
e_r:	0.73	
e_p:	0.61	
σ_p' (psf):	11,149	
OCR:	5.8	



Sample disturbance

Δe/e0:	0.012
Rating:	very good to excellent

Table 6-2 Characterization of sample quality from $\Delta e/e_0$ to reach the in situ vertical effective stress (from Lunne, et al., 1997).

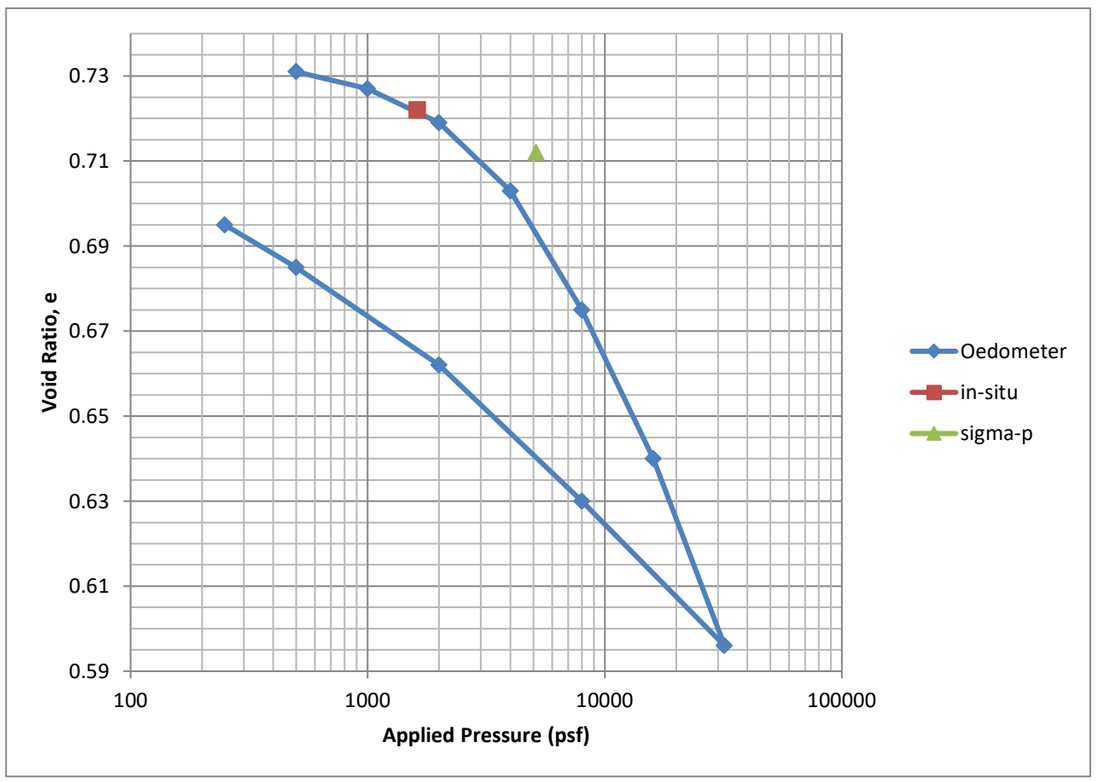
$\Delta e/e_0$		Rating
$OCR = 1\ to\ 2$	$OCR = 2\ to\ 4$	
< 0.04	<0.03	Very Good to Excellent
0.04 to 0.07	0.03 to 0.05	Good to Fair
0.07 to 0.14	0.05 to 0.10	Poor
>0.14	>0.10	Very Poor

Estimation of Preconsolidation Pressure (Boone 2010 Method)

Elapsed Time (min)	Sq.Rt. of Time (min)	Stress (tsf)	Void Ratio -	Stress (psf)	Curve Slope
		0.125	0.733	250	0.007
		0.25	0.731	500	0.013
		0.5	0.727	1000	0.027
		1	0.719	2000	0.053
		2	0.703	4000	0.093
		4	0.675	8000	0.116
		8	0.64	16000	0.146
		16	0.596	32000	0.056
		4	0.63	8000	0.053
		1	0.662	2000	0.038
		0.25	0.685	500	0.033
		0.125	0.695	250	

Boring:	B-602
Top Depth (ft):	15
Bottom Depth (ft):	17
NRCS ID #:	19-292
GS Elev (ft):	495
Water elevation (ft):	484.7
Water depth (ft):	10.3

γ (pcf)	119.7	
σ_{vo}' (psf):	1,617	
C_r:	0.020	
C_{cmax}:	0.15	
e_{v0}:	0.72	(interpolation)
σ_{vmax}' (psf):	32,000	
e_{min}:	0.60	
e_c:	1.25	
e_r:	0.79	
e_p:	0.71	
σ_p' (psf):	5,144	
OCR:	3.2	



Sample disturbance

Δe/e0:	0.015
Rating:	very good to excellent

Table 6-2 Characterization of sample quality from $\Delta e/e_0$ to reach the in situ vertical effective stress (from Lunne, et al., 1997).

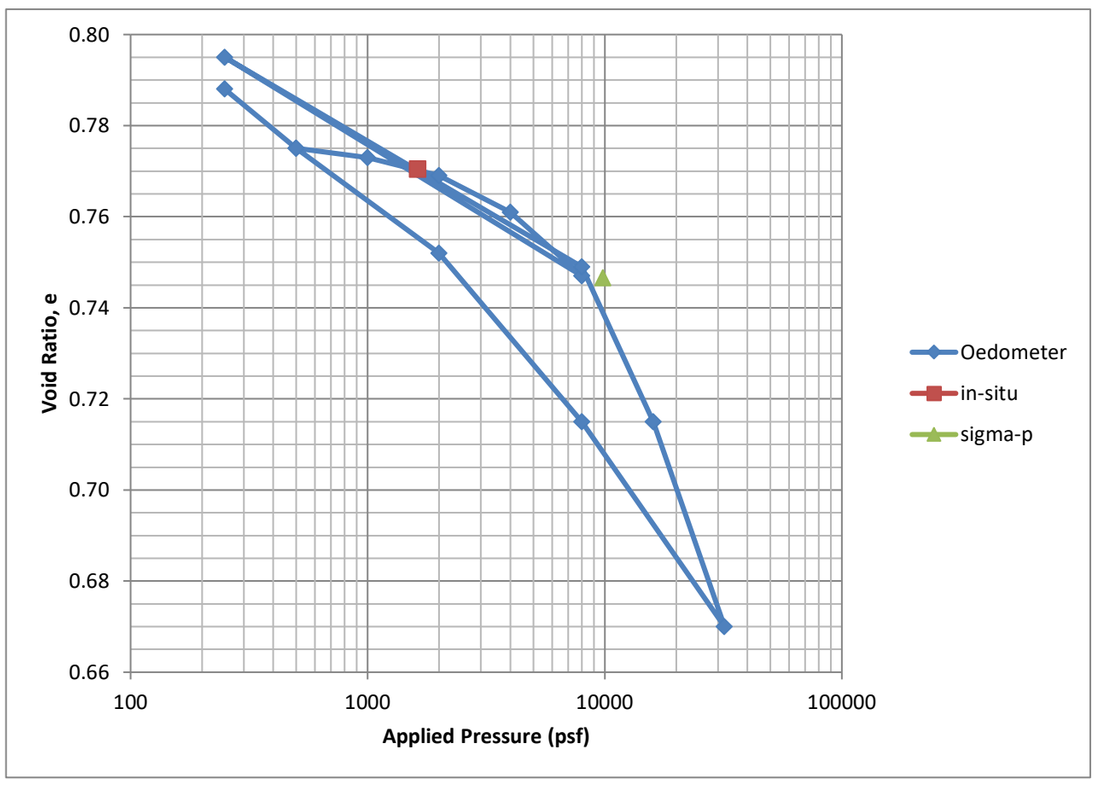
$\Delta e/e_0$		Rating
$OCR = 1$ *to* 2	$OCR = 2$ *to* 4	
< 0.04	<0.03	Very Good to Excellent
0.04 to 0.07	0.03 to 0.05	Good to Fair
0.07 to 0.14	0.05 to 0.10	Poor
>0.14	>0.10	Very Poor

Estimation of Preconsolidation Pressure (Boone 2010 Method)

Elapsed Time (min)	Sq.Rt. of Time (min)	Stress (tsf)	Void Ratio -	Stress (psf)	Curve Slope
		0.125	0.776	250	0.003
		0.25	0.775	500	0.007
		0.5	0.773	1000	0.013
		1	0.769	2000	0.027
		2	0.761	4000	0.047
		4	0.747	8000	0.032
		0.125	0.795	250	0.031
		4	0.749	8000	0.113
		8	0.715	16000	0.149
		16	0.67	32000	0.075
		4	0.715	8000	0.061
		1	0.752	2000	0.038
		0.25	0.775	500	0.043
		0.125	0.788	250	

Boring:	B-603
Top Depth (ft):	15.5
Bottom Depth (ft):	17.5
NRCS ID #:	19-297
GS Elev (ft):	494
Water elevation (ft):	484.7
Water depth (ft):	9.3

γ (pcf)	121.9	
σ_{vo}' (psf):	1,622	
C_r:	0.031	
C_{cmax}:	0.15	
e_{v0}:	0.77	(interpolation)
σ_{vmax}' (psf):	32,000	
e_{min}:	0.67	
e_c:	1.34	
e_r:	0.87	
e_p:	0.75	
σ_p' (psf):	9,836	
OCR:	6.1	



Sample disturbance

Δe/e0:	0.007
Rating:	very good to excellent

Table 6-2 Characterization of sample quality from $\Delta e/e_0$ to reach the in situ vertical effective stress (from Lunne, et al., 1997).

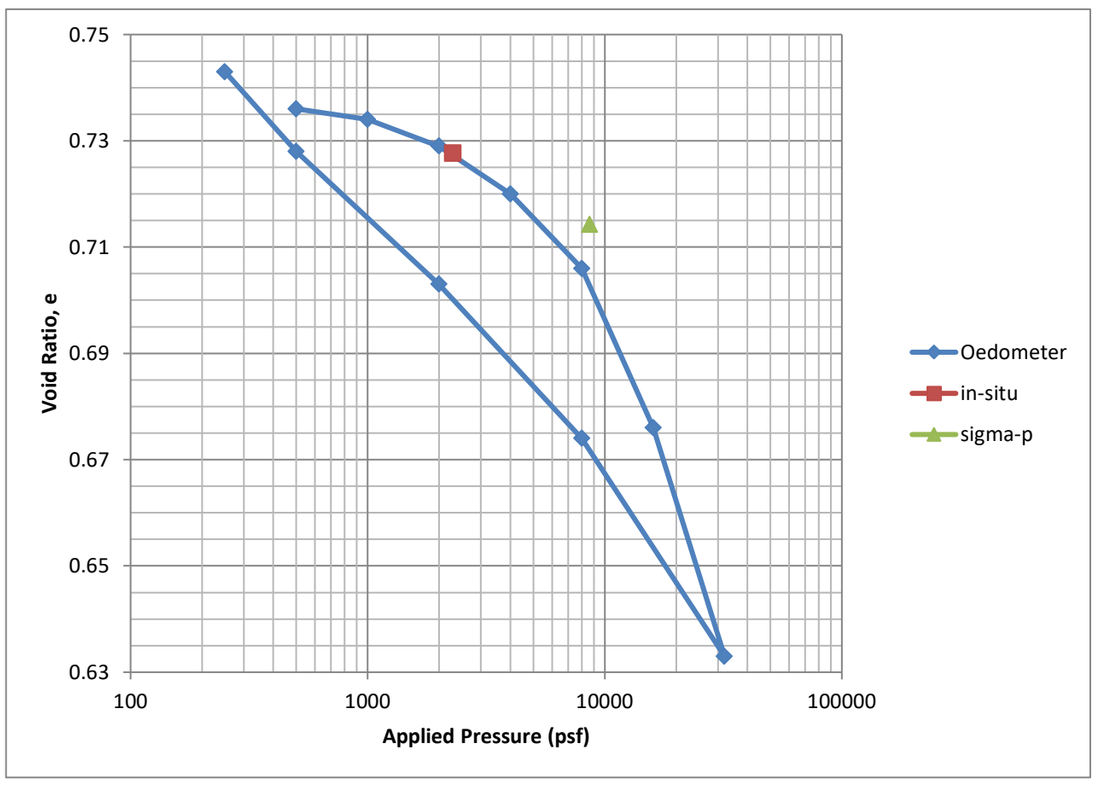
$\Delta e/e_0$		Rating
$OCR = 1\ to\ 2$	$OCR = 2\ to\ 4$	
< 0.04	<0.03	Very Good to Excellent
0.04 to 0.07	0.03 to 0.05	Good to Fair
0.07 to 0.14	0.05 to 0.10	Poor
>0.14	>0.10	Very Poor

Estimation of Preconsolidation Pressure (Boone 2010 Method)

Elapsed Time (min)	Sq.Rt. of Time (min)	Stress (tsf)	Void Ratio -	Stress (psf)	Curve Slope
		0.125	0.737	250	0.003
		0.25	0.736	500	0.007
		0.5	0.734	1000	0.017
		1	0.729	2000	0.030
		2	0.72	4000	0.047
		4	0.706	8000	0.100
		8	0.676	16000	0.143
		16	0.633	32000	0.068
		4	0.674	8000	0.048
		1	0.703	2000	0.042
		0.25	0.728	500	0.050
		0.125	0.743	250	

Boring:	B-604
Top Depth (ft):	20
Bottom Depth (ft):	21
NRCS ID #:	19-305
GS Elev (ft):	502
Water elevation (ft):	484.7
Water depth (ft):	17.3

γ (pcf)	119.6	
σ_{vo}' (psf):	2,281	
C_r:	0.023	
C_{cmax}:	0.14	
e_{v0}:	0.73	(interpolation)
σ_{vmax}' (psf):	32,000	
e_{min}:	0.63	
e_c:	1.28	
e_r:	0.81	
e_p:	0.71	
σ_p' (psf):	8,631	
OCR:	3.8	



Sample disturbance

Δe/e0:	0.013
Rating:	very good to excellent

Table 6-2 Characterization of sample quality from $\Delta e/e_0$ to reach the in situ vertical effective stress (from Lunne, et al., 1997).

$\Delta e/e_0$		Rating
$OCR = 1$ *to* 2	$OCR = 2$ *to* 4	
< 0.04	<0.03	Very Good to Excellent
0.04 to 0.07	0.03 to 0.05	Good to Fair
0.07 to 0.14	0.05 to 0.10	Poor
>0.14	>0.10	Very Poor

Reference Procedure

Based on these principles, the value of σ'_p can be estimated by the following steps, also illustrated in Fig. 9:

(1) If the oedometer test does not include a load increment equal to σ'_{v0}, to allow direct determination of the value of the voids ratio at this stress, e_{v0}, determine the slope of the line between load increments that passes through σ'_{v0}, noted as C_{cv0}, so that the value of e_{v0} can be mathematically interpolated (see insets, Fig. 9).

(2) Determine the load increment at which C_c is a maximum, C_{cmax}, where the ordinates of the corresponding ending stress and voids ratio are thus noted σ'_{vmax} and e_{min}, respectively.

(3) Determine the recompression index, C_r, defined as the average slope of an unload–reload cycle (e.g., Leonards 1976; Vipulanandan et al. 2008), preferably conducted at stresses above and below σ'_{v0} and less than σ'_p (Fig. 9*a*).

(4) Calculate the intercept values along the voids ratio axis for the compression and recompression index lines (e_c and e_r, respectively) using

$$[2] \qquad e_c = C_{cmax} \log\sigma'_{vmax} + e_{min}$$

$$[3] \qquad e_r = C_r \log\sigma'_{v0} + e_{v0}$$

(5) Calculate the intersection of these two lines, the first defined by the C_{cmax} line and the second defined by a line parallel to the C_r line passing through the in situ vertical effective stress, solving for the voids ratio at the preconsolidation pressure, e_p, by

$$[4] \qquad e_p = (e_c/C_{cmax} - e_r/C_r)/(1/C_{cmax} - 1/C_r)$$

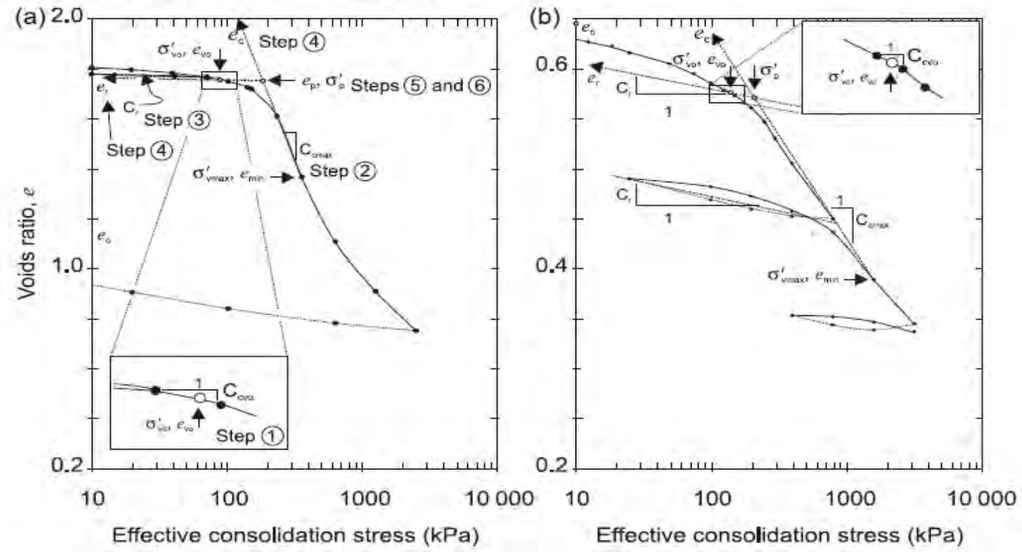
(6) The "preconsolidation pressure" may then be found by

$$[5] \qquad \sigma'_p = 10^{[(e_c - e_p)/C_{cmax}]}$$

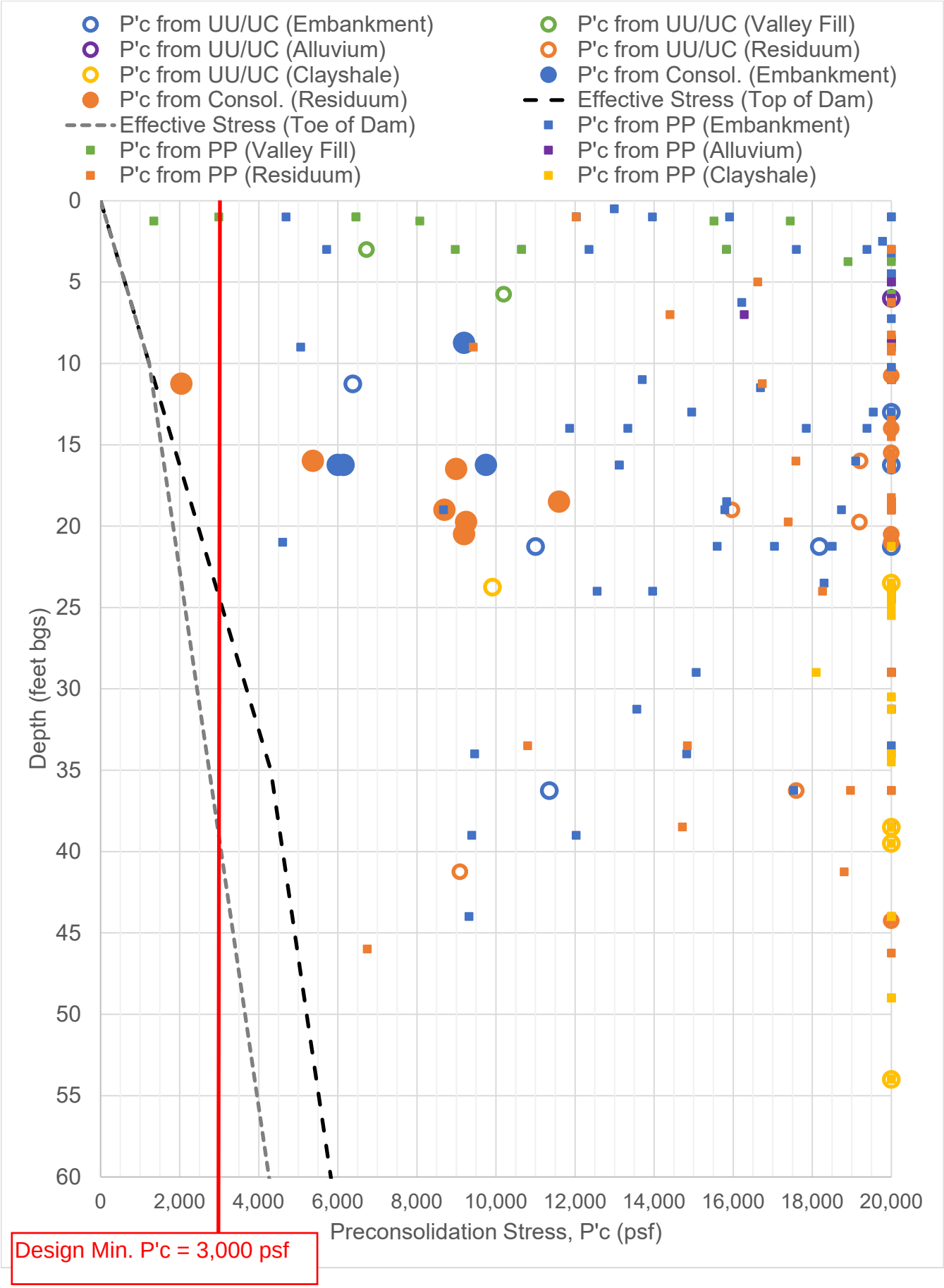
A critical reappraisal of "preconsolidation pressure" interpretations using the oedometer test

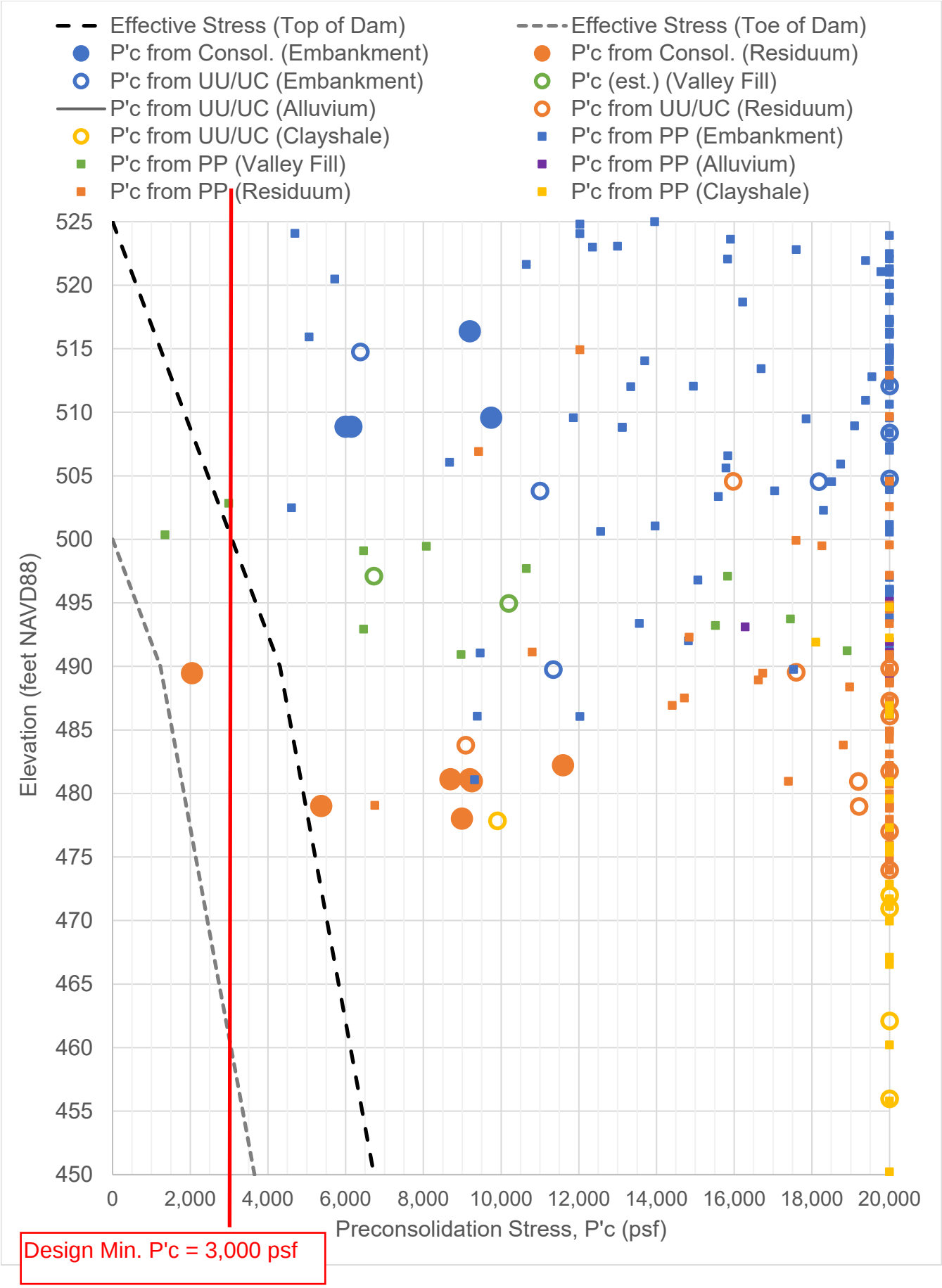
Storer J. Boone

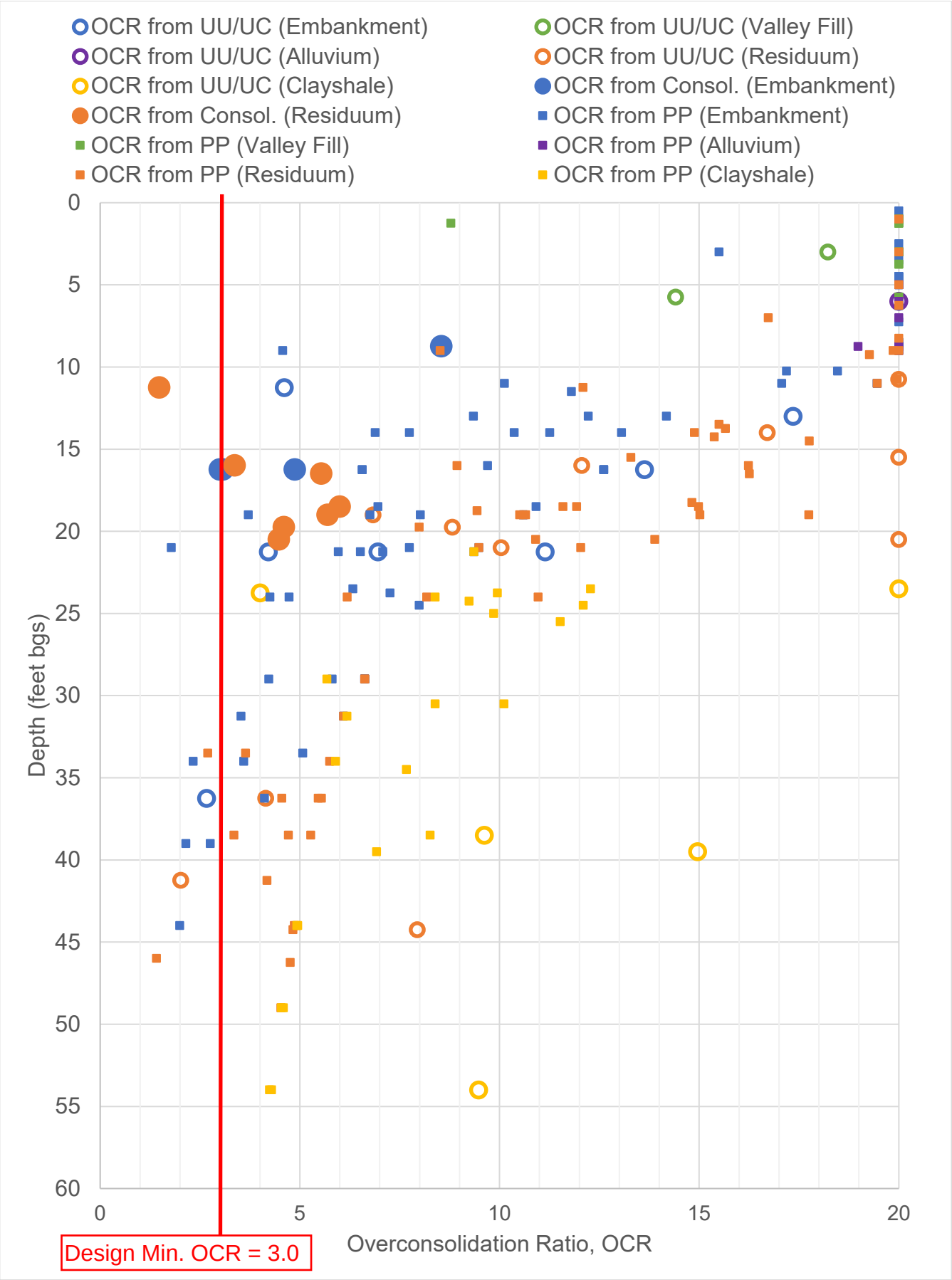
Fig. 9. Example application to determine σ'_p using proposed method on (*a*) Leda clay from Ottawa, Ont. and (*b*) Chicago clay also shown in curve e, Fig. 2, with expanded *e* scale for illustration purposes.

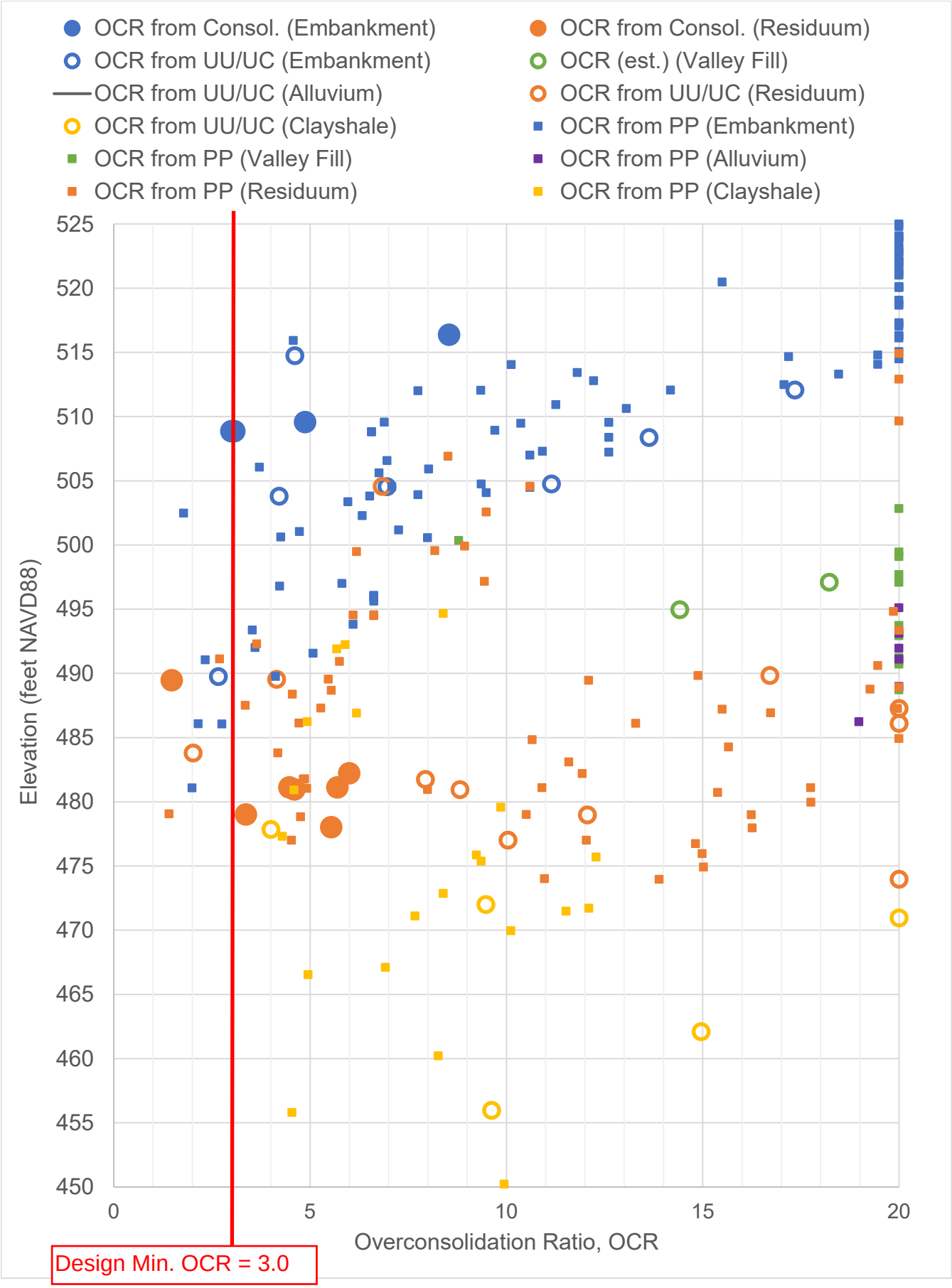


G.2 Consolidation Test and Correlation Summary Plots


P'c from UU/UC (Embankment)
P'c from UU/UC (Valley Fill)
P'c from UU/UC (Alluvium)
P'c from UU/UC (Residuum)
P'c from UU/UC (Clayshale)
P'c from Consol. (Embankment)
P'c from Consol. (Residuum)
Effective Stress (Top of Dam)
Effective Stress (Toe of Dam)
P'c from PP (Embankment)
P'c from PP (Valley Fill)
P'c from PP (Alluvium)
P'c from PP (Residuum)
P'c from PP (Clayshale)
Depth (feet bgs)
0
5
10
15
20
25
30
35
40
45
50
55
60
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
16,000
18,000
20,000
Preconsolidation Stress, P'c (psf)
Design Min. P'c = 3,000 psf


Effective Stress (Top of Dam)
Effective Stress (Toe of Dam)
P'c from Consol. (Embankment)
P'c from Consol. (Residuum)
P'c from UU/UC (Embankment)
P'c (est.) (Valley Fill)
P'c from UU/UC (Alluvium)
P'c from UU/UC (Residuum)
P'c from UU/UC (Clayshale)
P'c from PP (Embankment)
P'c from PP (Valley Fill)
P'c from PP (Alluvium)
P'c from PP (Residuum)
P'c from PP (Clayshale)
Elevation (feet NAVD88)
525
520
515
510
505
500
495
490
485
480
475
470
465
460
455
450
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
16,000
18,000
20,000
Preconsolidation Stress, P'c (psf)
Design Min. P'c = 3,000 psf


OCR from UU/UC (Embankment)
OCR from UU/UC (Valley Fill)
OCR from UU/UC (Alluvium)
OCR from UU/UC (Residuum)
OCR from UU/UC (Clayshale)
OCR from Consol. (Embankment)
OCR from Consol. (Residuum)
OCR from PP (Embankment)
OCR from PP (Valley Fill)
OCR from PP (Alluvium)
OCR from PP (Residuum)
OCR from PP (Clayshale)
Depth (feet bgs)
0
5
10
15
20
25
30
35
40
45
50
55
60
0
5
10
15
20
Overconsolidation Ratio, OCR
Design Min. OCR = 3.0


OCR from Consol. (Embankment)
OCR from Consol. (Residuum)
OCR from UU/UC (Embankment)
OCR (est.) (Valley Fill)
OCR from UU/UC (Alluvium)
OCR from UU/UC (Residuum)
OCR from UU/UC (Clayshale)
OCR from PP (Embankment)
OCR from PP (Valley Fill)
OCR from PP (Alluvium)
OCR from PP (Residuum)
OCR from PP (Clayshale)
Elevation (feet NAVD88)
525
520
515
510
505
500
495
490
485
480
475
470
465
460
455
450
0
5
10
15
20
Overconsolidation Ratio, OCR
Design Min. OCR = 3.0

From FHWA GEC #5 (2017): Correlation between Su and OCR, and SPT N-value and Su

As shown in Figure 7-14, s_u/σ'_{vc} is strongly dependent on OCR. The relationship between s_u/σ'_{vc} and OCR is generally expressed as

$$\frac{s_u}{\sigma'_{vc}} = S \cdot OCR^m \tag{7.6}$$

where S and m are fitting parameters. Fortunately, values for S and m generally fall within relatively small ranges, depending upon the method of loading (Jamiolkowski, et al. 1985; Koutsoftas and Ladd, 1985; Kulhawy and Mayne, 1990; Ladd, 1991; Ladd and DeGroot, 2003). As such, values for S and m can often be estimated with varying degrees of reliability as described in more detail in Section 7.4.8.

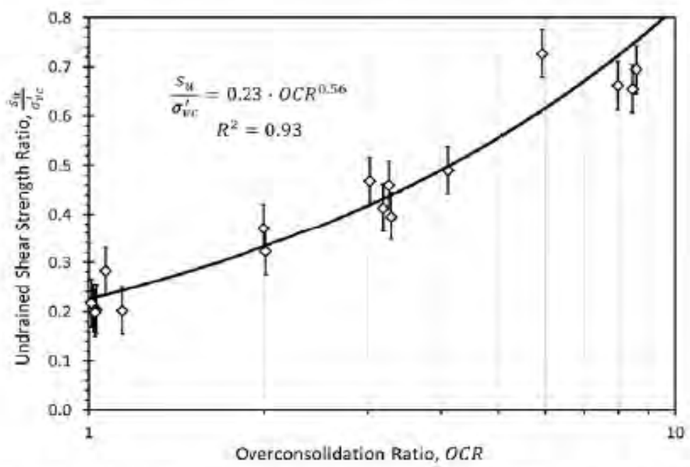


Figure 7-14 Measured s_u/σ'_{vc} for kaolinite specimens at different OCR.

*Assume s=0.23 and m=0.9 for this project

Figure 7-33 shows the relationship between normalized undrained shear strength ($\tau_f/\sigma'_{vo} = s_u/\sigma'_{vo}$) and OCR from DSS tests for six different clays. While the relationships vary for soils with different characteristics, the range of variation is relatively small. Values for the parameter S, which represents the value of s_u/σ'_{vo} for $OCR = 1$, broadly vary from slightly less than 0.2 to less than 0.3. Values for the parameter m, which describes the growth in s_u/σ'_{vo} with increasing OCR, broadly vary from about 0.6 to 1.0. Figure 7-15 provides additional guidance for estimating S for triaxial compression, DSS, and triaxial extension, showing a general trend of decreasing values of S with decreasing PI for triaxial extension and DSS. Additionally, Ladd (1991) and Ladd and DeGroot (2003) provide recommendations for estimating values for S and m for different soil types, as summarized in Table 7-3 "Local" experience with different types of materials can also be used for estimating S and m, often with substantial reductions in variability and uncertainty compared to that shown in Figure 7-33 and 7-15.

Table 7-3 Estimates for normalized undrained strength parameters, S and m (adapted from Ladd and DeGroot, 2003).

Soil Description	S	$m^{\dagger}$	Remarks
1. Sensitive cemented marine clays ($PI < 30, LI > 1.5$)	$S = 0.20$ ($\sigma \approx 0.015$)[‡]	$m = 1.00$	Champlain clays of Canada
2. Homogeneous CL and CH sedimentary clays of low to moderate sensitivity ($20 \le PI \le 80$)	$S = 0.20 + 0.05\left(\frac{PI}{100}\right)$ or $S \approx 0.22$	$m = 0.88\left(1 - \frac{C_s}{C_c}\right)$ ($\sigma \approx \pm 0.06$) or $m \approx 0.8$	No shells or sand lenses/layers
3. Northeastern US varved clays	$S = 0.16$	$m = 0.75$	Assumes DSS mode of failure
4. Sedimentary deposits of silts and organic soils (Atterberg limits plot below A-line) or clays with shells	$S = 0.25$ ($\sigma \approx 0.05$)	$m = 0.88\left(1 - \frac{C_s}{C_c}\right)$ ($\sigma \approx \pm 0.06$) or $m \approx 0.8$	Excludes peat

[†] $m = 0.88(1 - C_s/C_c)$ based on CK_oUDSS tests for 13 soils with max OCR of 5 to 10
[‡] σ denotes standard deviation

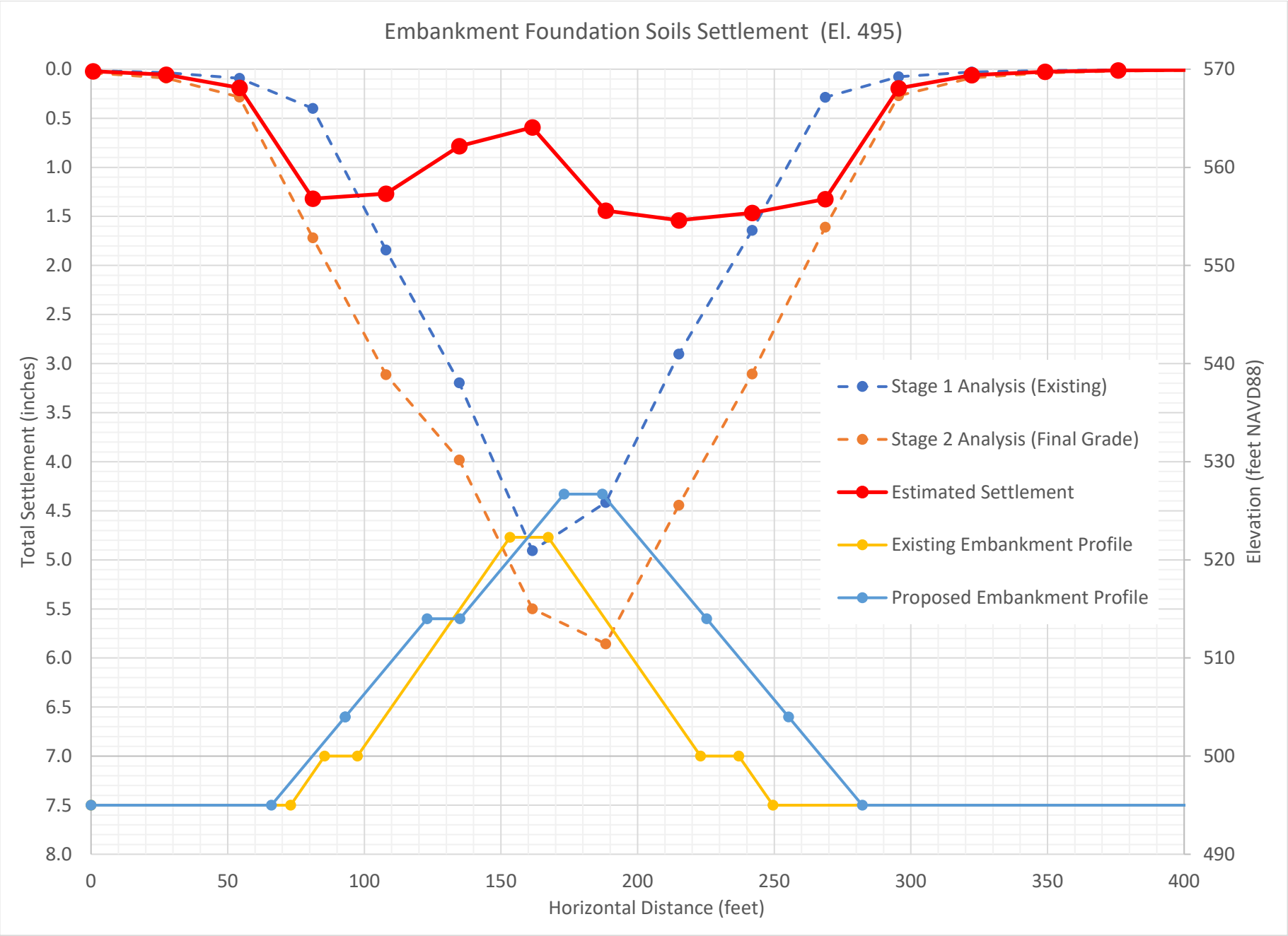
Standard Penetration Test (SPT)

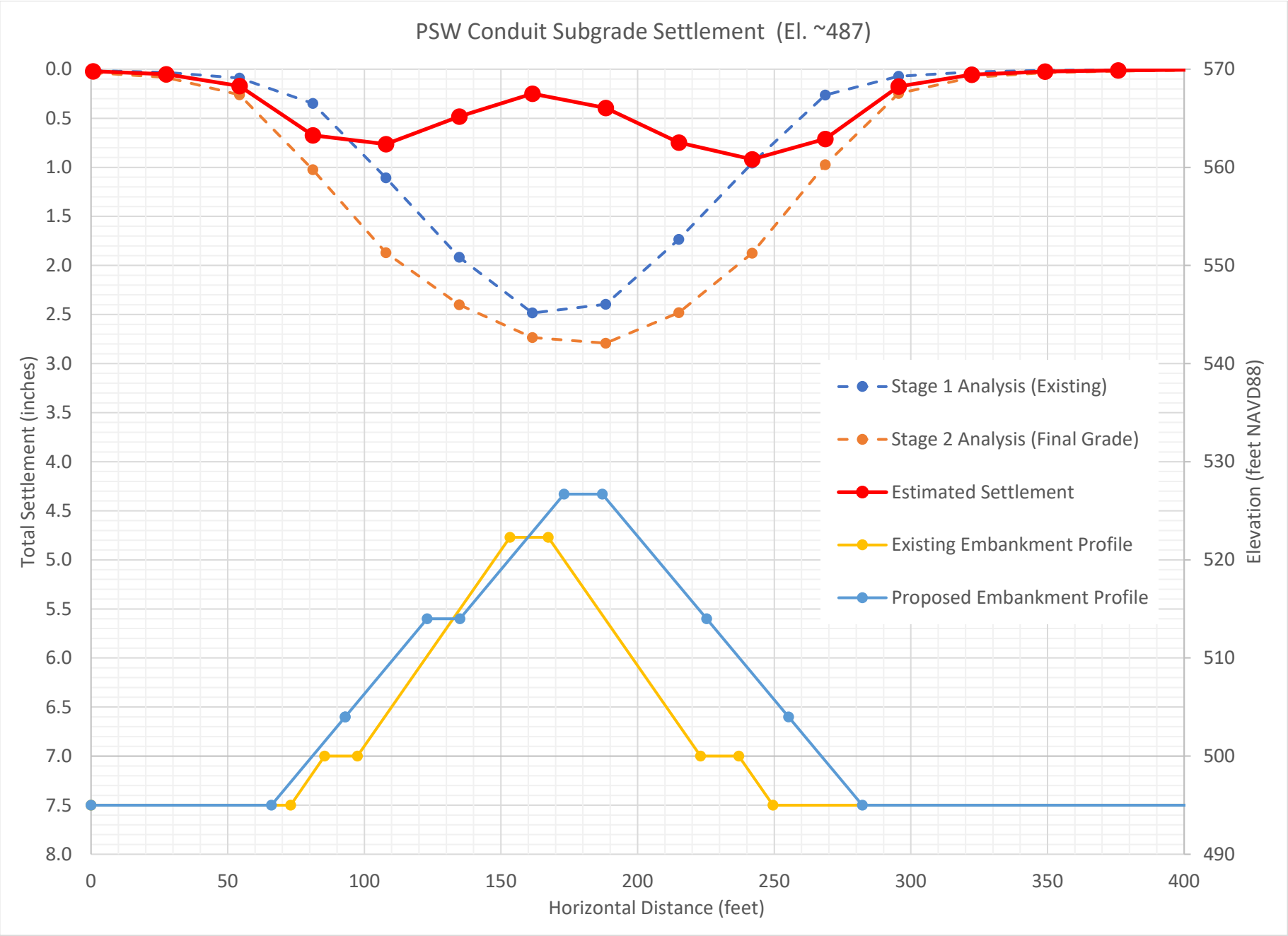
SPT N-values are generally a poor predictor of undrained shear strength. Nevertheless, there are times when crude estimates of s_u based on SPT measurements can be useful. Stroud (1974, 1989) recommended that s_u be estimated as

$$s_u = f_1 N_{60} \frac{p_a}{100} \tag{7.19}$$

where N_{60} is the SPT blow count corrected for hammer energy, p_a is atmospheric pressure in the desired units, and f_1 is an empirical coefficient that is taken to be equal to 4.5 for $PI \gtrsim 30$ and equal to 5.5 for $PI \cong 15$. The relationship between N_{60} and s_u is subject to considerable scatter, but the values of f_1 proposed by Stroud generally represent somewhat lower bound values. Schnaid (2009) also describes a more rigorous relationship for estimating s_u from SPT measurements, although it is unclear whether the additional rigor produces substantially improved estimates of s_u.

G.3 Settlement Calculations – Embankment Raise and PSW Conduit


Embankment Foundation Soils Settlement (El. 495)
Total Settlement (inches)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
Elevation (feet NAVD88)
570
560
550
540
530
520
510
500
490
0
50
100
150
200
250
300
350
400
Horizontal Distance (feet)
Stage 1 Analysis (Existing)
Stage 2 Analysis (Final Grade)
Estimated Settlement
Existing Embankment Profile
Proposed Embankment Profile


PSW Conduit Subgrade Settlement (El. ~487)
Total Settlement (inches)
Elevation (feet NAVD88)
Horizontal Distance (feet)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
570
560
550
540
530
520
510
500
490
0
50
100
150
200
250
300
350
400
Stage 1 Analysis (Existing)
Stage 2 Analysis (Final Grade)
Estimated Settlement
Existing Embankment Profile
Proposed Embankment Profile

Embankment Foundation Settlement (El. 495)

Query Line 1				Stage 1	Stage 2	
Point	X	Y	Depth	Total Settlement	Total Settlement	Difference (inches)
1	0.732	503.585	-495	0.016	0.038	0.022
2	27.5269	503.634	-495	0.034	0.089	0.055
3	54.3218	503.682	-495	0.094	0.283	0.190
4	81.1167	503.731	-495	0.400	1.718	1.318
5	107.912	503.779	-495	1.843	3.112	1.269
6	134.706	503.828	-495	3.197	3.982	0.785
7	161.501	503.876	-495	4.906	5.498	0.592
8	188.296	503.925	-495	4.415	5.857	1.442
9	215.091	503.973	-495	2.903	4.443	1.539
10	241.886	504.022	-495	1.641	3.105	1.464
11	268.681	504.07	-495	0.288	1.610	1.323
12	295.476	504.119	-495	0.076	0.270	0.194
13	322.271	504.168	-495	0.029	0.089	0.060
14	349.066	504.216	-495	0.013	0.038	0.025
15	375.861	504.265	-495	0.007	0.020	0.012
16	402.655	504.313	-495	0.004	0.011	0.007
17	429.45	504.362	-495	0.003	0.007	0.004
18	456.245	504.41	-495	0.002	0.004	0.003
19	483.04	504.459	-495	0.001	0.003	0.002
20	509.835	504.507	-495	0.001	0.002	0.001
21	536.63	504.556	-495	0.001	0.001	0.001

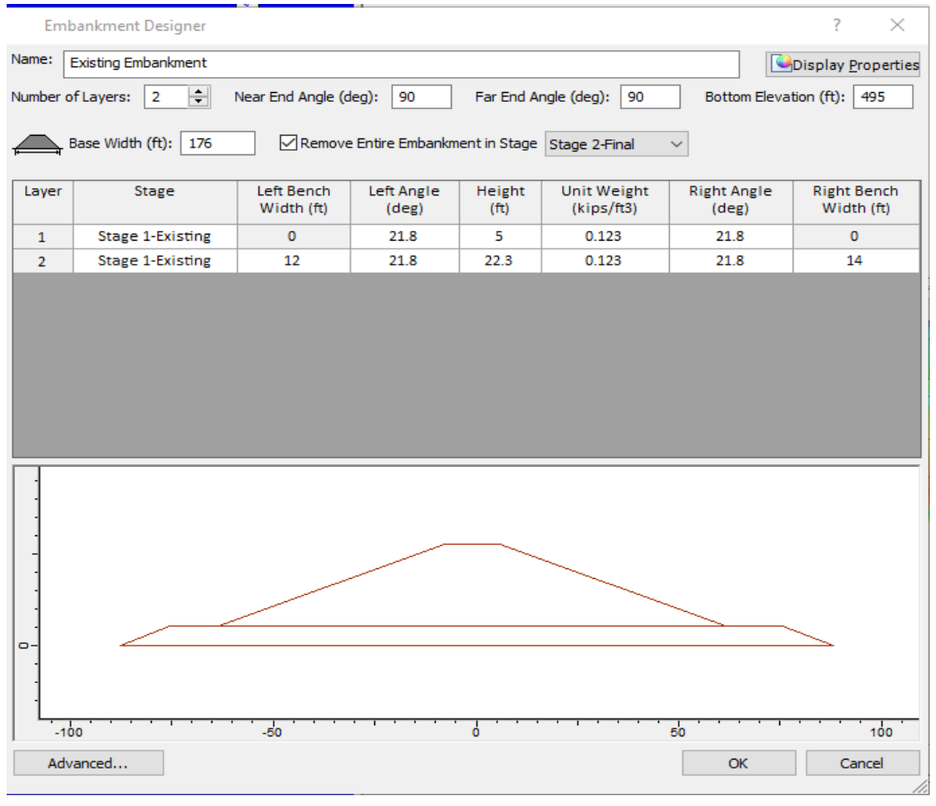
PSW Conduit Settlement (El. 487)

Query Line 1				Stage 1	Stage 2	
Point	X	Y	Depth	Total Settlement	Total Settlement	Difference (inches)
1	0.732	503.585	-487	0.015	0.036	0.021
2	27.5269	503.634	-487	0.033	0.084	0.051
3	54.3218	503.682	-487	0.090	0.261	0.171
4	81.1167	503.731	-487	0.349	1.024	0.675
5	107.912	503.779	-487	1.106	1.869	0.763
6	134.706	503.828	-487	1.917	2.400	0.482
7	161.501	503.876	-487	2.484	2.734	0.250
8	188.296	503.925	-487	2.396	2.792	0.396
9	215.091	503.973	-487	1.735	2.482	0.747
10	241.886	504.022	-487	0.956	1.875	0.918
11	268.681	504.07	-487	0.264	0.974	0.710
12	295.476	504.119	-487	0.073	0.248	0.175
13	322.271	504.168	-487	0.028	0.083	0.055
14	349.066	504.216	-487	0.013	0.036	0.023
15	375.861	504.265	-487	0.007	0.018	0.011
16	402.655	504.313	-487	0.004	0.010	0.006
17	429.45	504.362	-487	0.003	0.006	0.004
18	456.245	504.41	-487	0.002	0.004	0.002
19	483.04	504.459	-487	0.001	0.003	0.002
20	509.835	504.507	-487	0.001	0.002	0.001
21	536.63	504.556	-487	0.001	0.001	0.001

Embankment Geometry

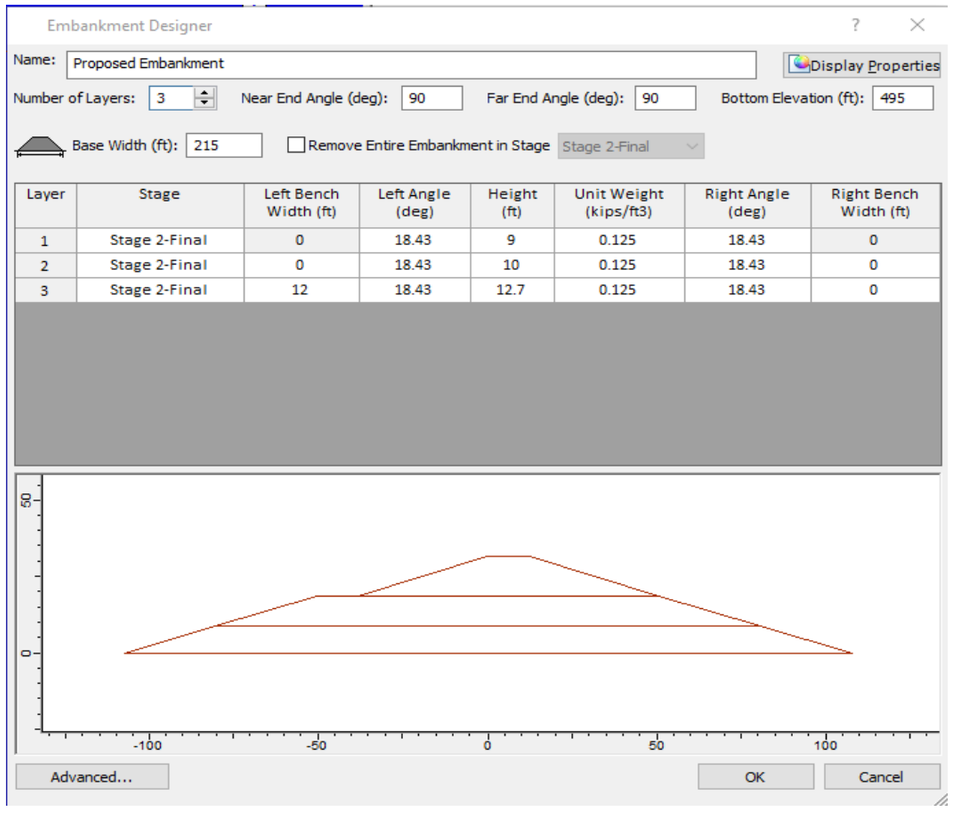
Subgrade Elev. (ft NAVD88): 495

Stage 1 Embankment Fill Geometry							
X Coord	Increm. Horiz. Distance (ft)	Lift No.	Bench width (ft)	Slope angle (deg)	Slope Height (ft)	Cumulative Height (ft)	Elev (ft)
0	0.00	0	0	0	0	0	495
73	0.00	0	0	0	0	0	495
85.50	12.50	1	0	21.8	5	5	500
97.50	12.00	1	12	0	0	5	500
153.25	55.75	2	0	21.8	22.3	27.3	522.3
167.25	14.00	2	14	0	0	27.3	522.3
223.01	55.75	2	0	21.8	-22.3	5	500
237.01	14.00	1	14	0	0	5	500
249.51	12.50	1	0	21.8	-5	0	495
449.51	200					0	495
						0	495
						0	495
Length=	176.51						

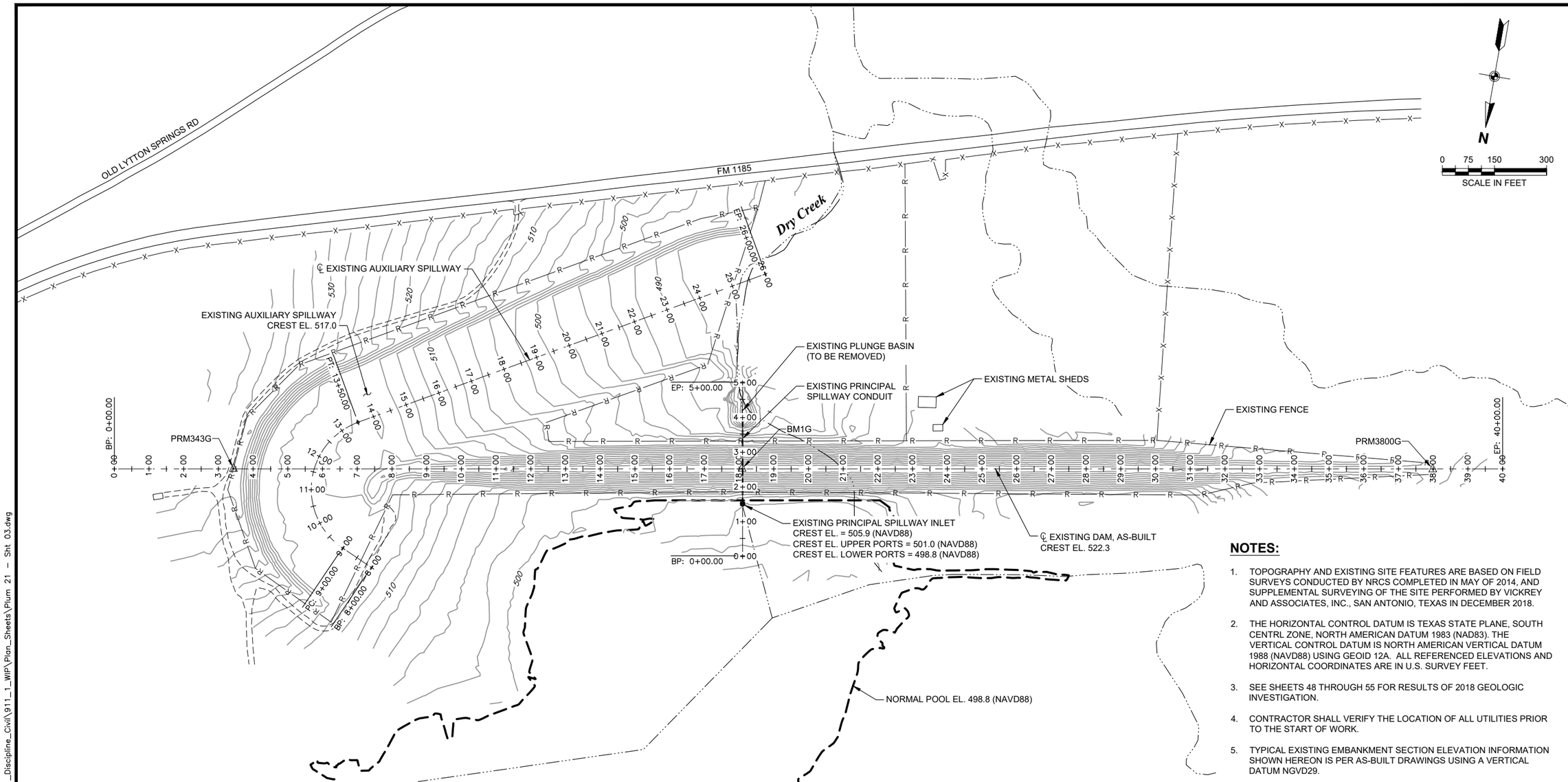


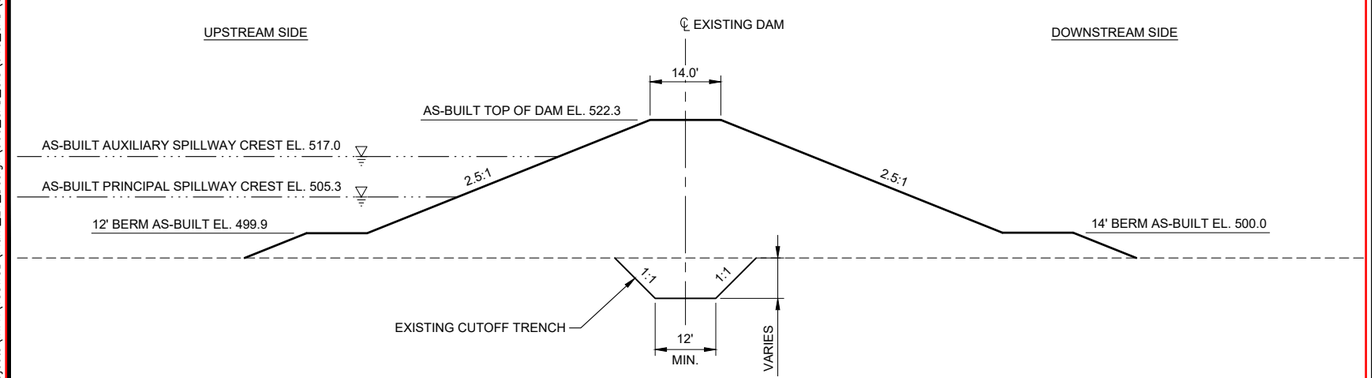
Subgrade Elev. (ft NAVD88): 495

Stage 2 Embankment Fill Geometry							
X Coord	Increm. Horiz. Distance (ft)	Lift No.	Bench width (ft)	Slope angle (deg)	Slope Height (ft)	Cumulative Height (ft)	Elev (ft)
0	0.00	0	0	0	0	0	495
66	0.00	0	0	0	0	0	495
93.01	27.01	1	0	18.43	9	9	504
93.01	0.00	1	0	0	0	9	504
123.02	30.01	2	0	18.43	10	19	514
135.02	12.00	2	12	0	0	19	514
173.13	38.11	3	0	18.43	12.7	31.7	526.7
187.13	14.00	3	14	0	0	31.7	526.7
225.24	38.11	3	0	18.43	-12.7	19	514
255.25	30.01	2	0	18.43	-10	9	504
282.25	27.01	1	0	18.43	-9	0	495
482.25	200					0	495
Length=	216.25						



CROSS SECTIONS





TYPICAL EXISTING EMBANKMENT SECTION

N.T.S.

NOTES:

1. TOPOGRAPHY AND EXISTING SITE FEATURES ARE BASED ON FIELD SURVEYS CONDUCTED BY NRCS COMPLETED IN MAY OF 2014, AND SUPPLEMENTAL SURVEYING OF THE SITE PERFORMED BY VICKREY AND ASSOCIATES, INC., SAN ANTONIO, TEXAS IN DECEMBER 2018.
2. THE HORIZONTAL CONTROL DATUM IS TEXAS STATE PLANE, SOUTH CENTRL ZONE, NORTH AMERICAN DATUM 1983 (NAD83). THE VERTICAL CONTROL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88) USING GEOID 12A. ALL REFERENCED ELEVATIONS AND HORIZONTAL COORDINATES ARE IN U.S. SURVEY FEET.
3. SEE SHEETS 48 THROUGH 55 FOR RESULTS OF 2018 GEOLOGIC INVESTIGATION.
4. CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE START OF WORK.
5. TYPICAL EXISTING EMBANKMENT SECTION ELEVATION INFORMATION SHOWN HEREON IS PER AS-BUILT DRAWINGS USING A VERTICAL DATUM NGVD29.
5. THE AS-BUILT DRAWINGS WILL BE AVAILABLE FOR REVIEW IN THE NRCS CONSTRUCTION OFFICE.
6. LOCATION OF EXISTING STRUCTURES AND FENCES SHOWN ARE APPROXIMATE, AND MAY NOT INCLUDE ALL STRUCTURES AND FENCES IN THE AREA. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL STRUCTURES AND FENCES IN THE VICINITY OF THE WORK.

BENCHMARKS

BM ID	NORTHING	EASTING	ELEVATION	DESCRIPTION
PRM343G	13,898,301.57	2,396,084.04	534.539	PERMANENT REFERENCE MARKER STA. 3+43
BM1G	13,898,047.34	2,394,640.91	525.635	5/8" IRON ROD ON TOP OF DAM (APPROX. STA. 18+10)
PRM3800G	13,897,704.85	2,392,680.38	522.873	PERMANENT REFERENCE MARKER STA. 38+00

LEGEND:

——X—— EXISTING FENCE TO REMAIN
——R—— EXISTING FENCE TO BE REMOVED

REVISIONS		
DATE	APPROVED	TITLE

THIS DRAWING IS ISSUED FOR REVIEW ONLY UNDER THE AUTHORITY OF MICHAEL J. LENHERR TEXAS P.E. #100021 ON September 16, 2019.

DESIGNED BY: MJL
DRAWN BY: CAD
CHECKED BY: FCW
FILE NAME: Plum 21 – Sht 03.dwg
DATE CHECKED: 9/16/2019

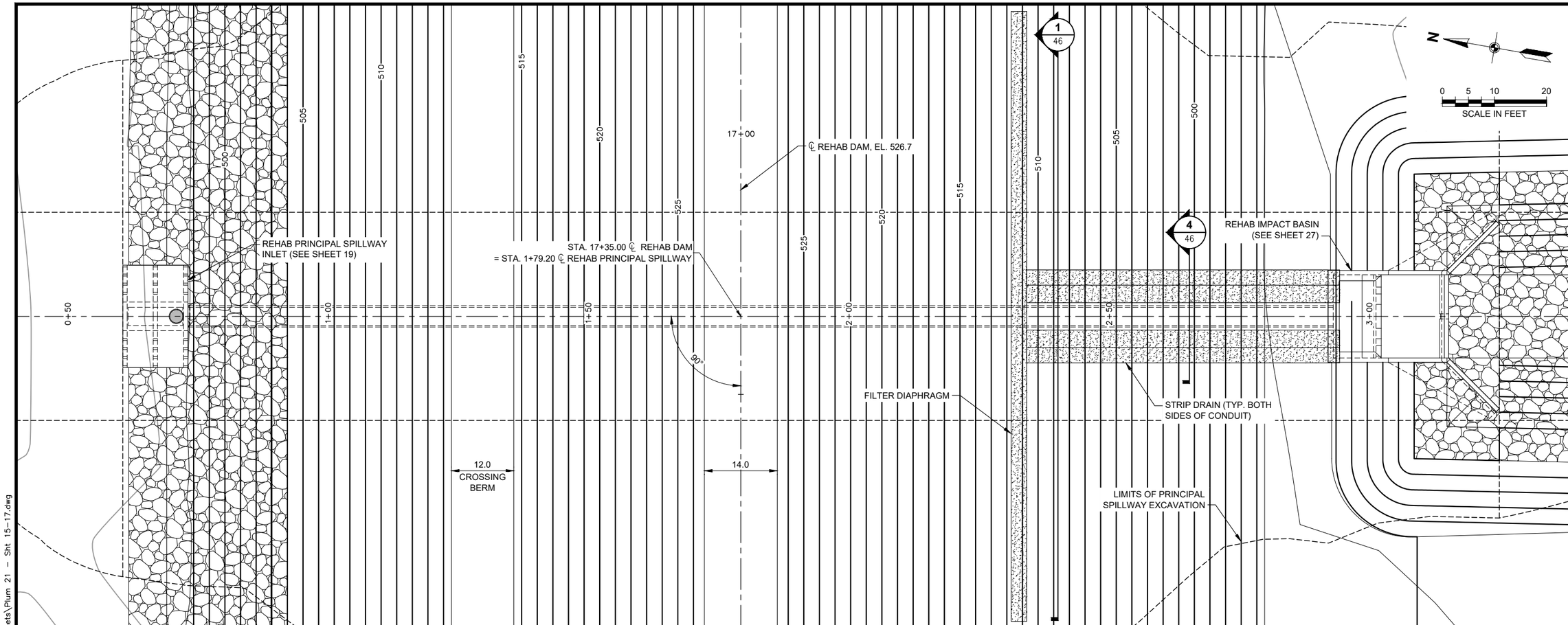
EXISTING SITE PLAN

FLOODWATER RETARDING STRUCTURE SITE NO. 21 REHABILITATION
PLUM CREEK WATERSHED
IN
CALDWELL COUNTY, TEXAS

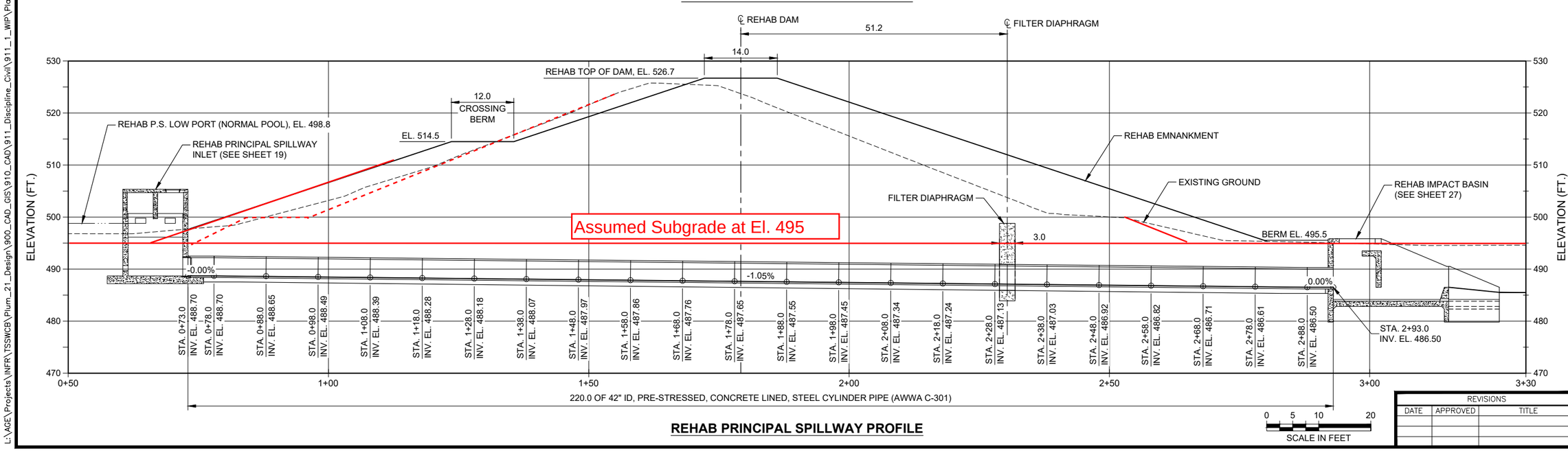
United States Department of Agriculture
Natural Resources Conservation Service

DRAWING NO. TX–EN–0754
SHEET NO. 3
OF 52

L:\AGE\Projects\INFR\TSSWCB\Plum_21_Design\900_CAD_GIS\910_CAD\911_Discipline_Civil\911_1_WIP\Plan_Sheets\Plum 21 – Sht 03.dwg



REHAB PRINCIPAL SPILLWAY PLAN



REHAB PRINCIPAL SPILLWAY PROFILE

THIS DRAWING IS ISSUED FOR REVIEW ONLY UNDER THE AUTHORITY OF MICHAEL J. LENHERR TEXAS P.E. #100021 ON September 16, 2019.

DESIGNED BY: MJL
DRAWN BY: CAD
CHECKED BY: FCW
FILE NAME: Plum 21 – Sht 15–17.dwg
DATE CHECKED: 9/16/2019

PRINCIPAL SPILLWAY PLAN & PROFILE

FLOODWATER RETARDING STRUCTURE SITE NO. 21 REHABILITATION
PLUM CREEK WATERSHED
IN
CALDWELL COUNTY, TEXAS

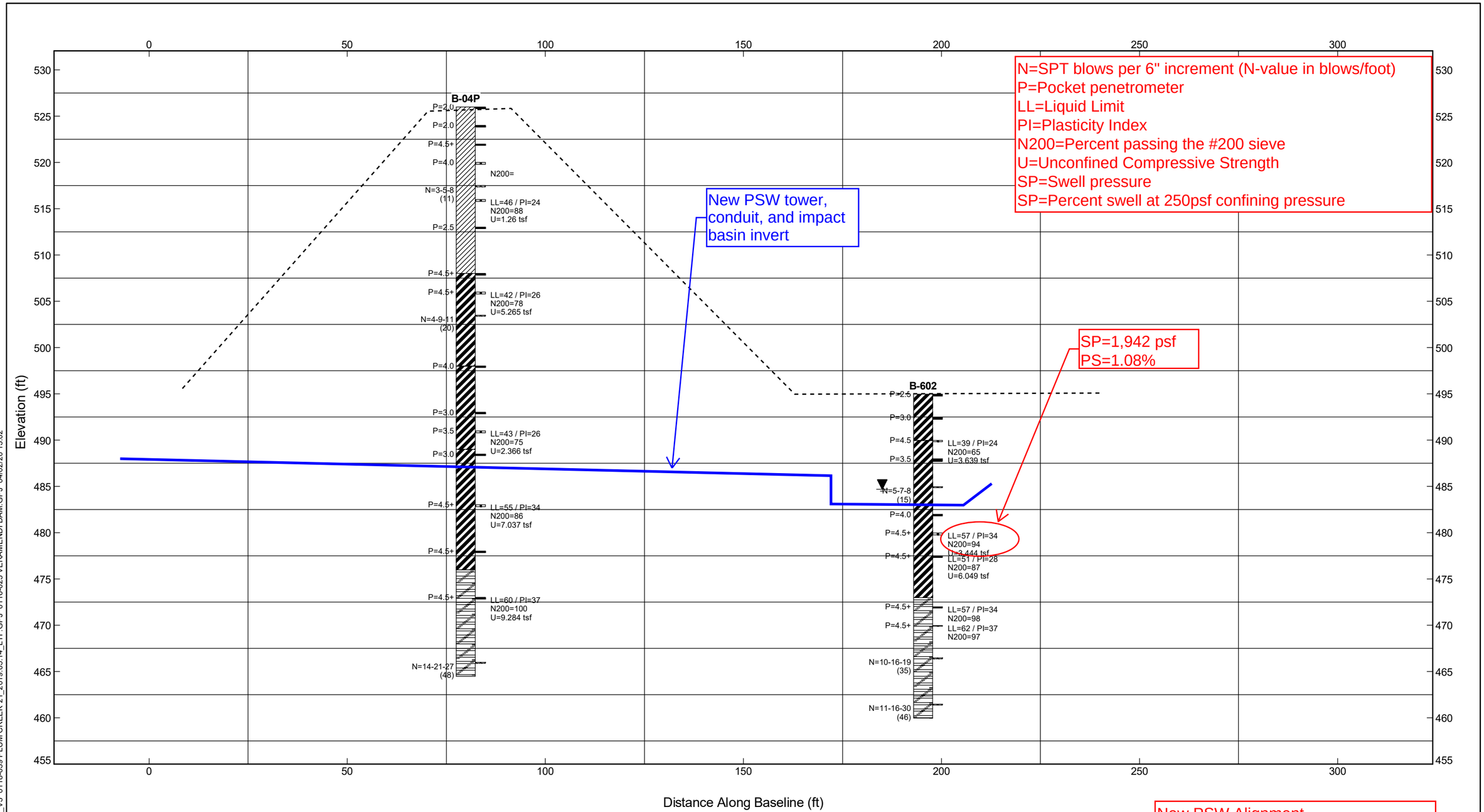
United States Department of Agriculture
Natural Resources Conservation Service

DRAWING NO. TX–EN–0754

SHEET NO. 14 OF 52

REVISIONS		
DATE	APPROVED	TITLE

L:\AGE\Projects\INFR\TSSWCB\Plum_21_Design\900_CAD_GIS\910_CAD\911_Discipline_Civil\911_1_WIP\Plan_Sheets\Plum 21 – Sht 15–17.dwg



New PSW Alignment

Balcones Geotechnical

Vertical Scale 1" = 10.3'
Horizontal Scale 1" = 24.0'

LITHOLOGY GRAPHICS

- USCS Low Plasticity Clay
- USCS High Plasticity Clay
- Weathered Shale

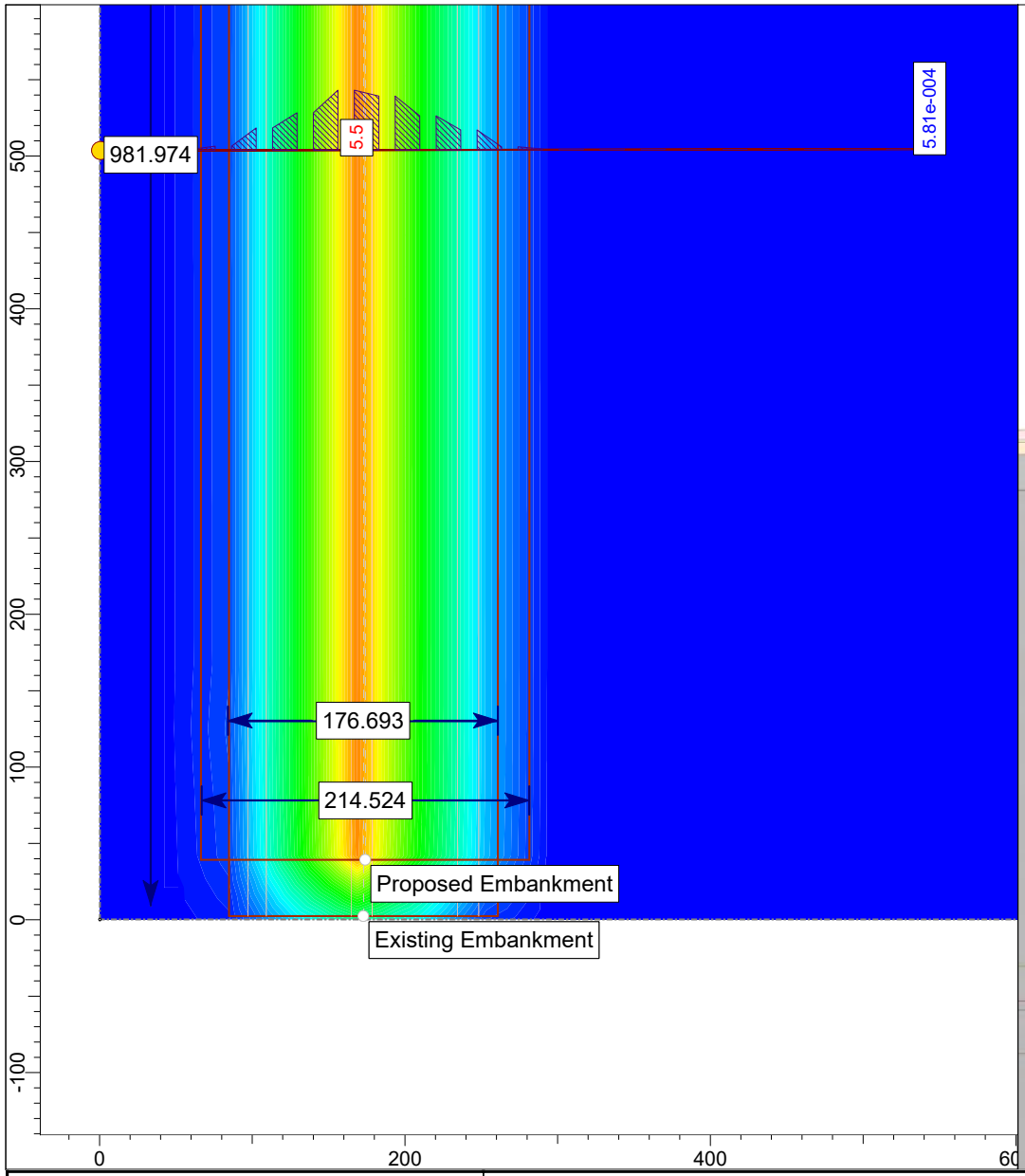
Symbols are field classifications and may not agree with laboratory classifications.

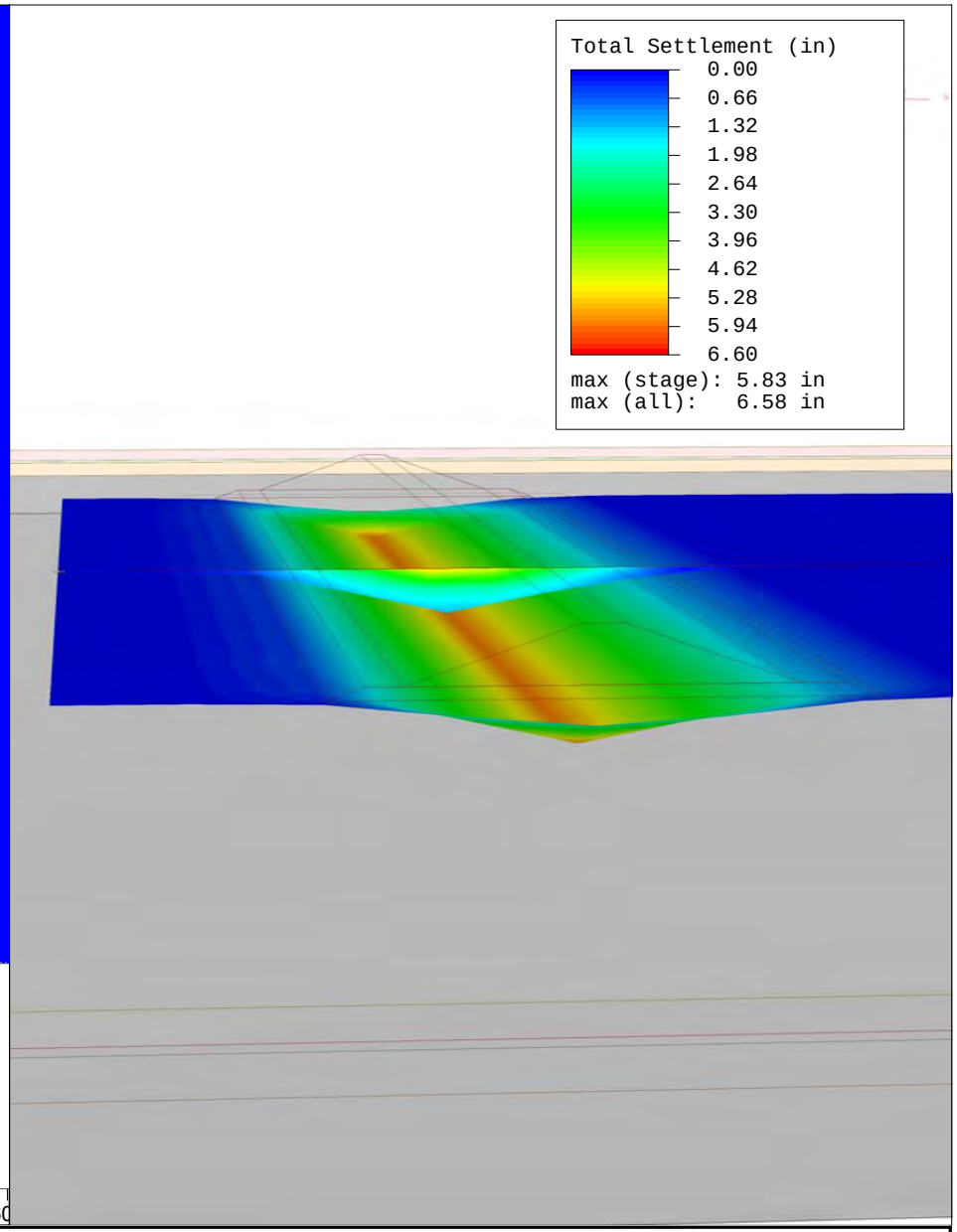
GENERALIZED SUBSURFACE PROFILE CROSS-SECTION

Project: Plum Creek 21 FRS
Location: Caldwell County, TX
Number: 0118-039

SIMPLE FENCE - 11X17 BG - PLUM 21_V3 0118-039 PLUM CREEK 21_2019.05.14_LTF.GPJ 0116-025 VERAMENDI DAM.GPJ 04/02/20 13:02

SETTLE 3D OUTPUT

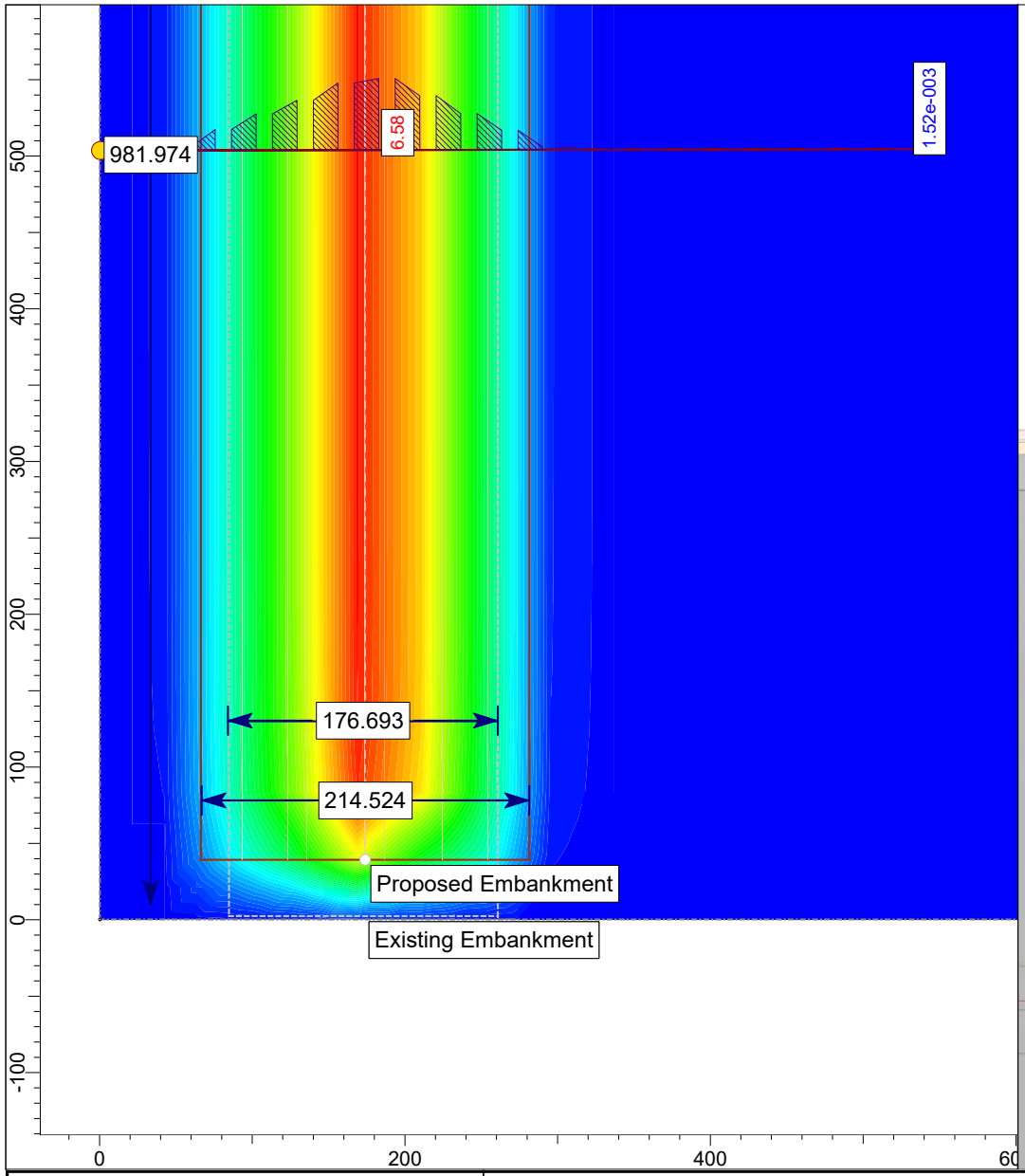


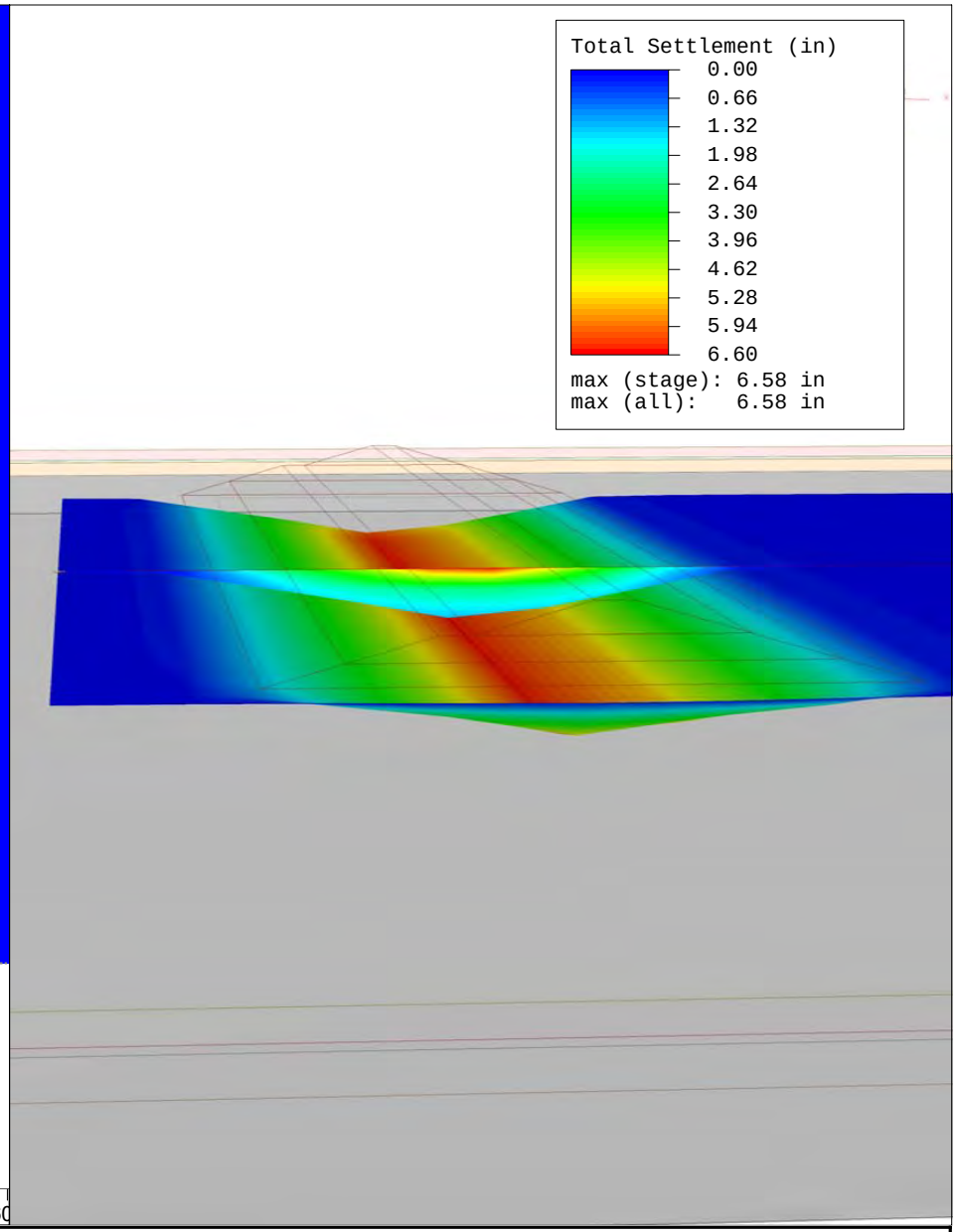


rocscience

SETTLE3D 4.023

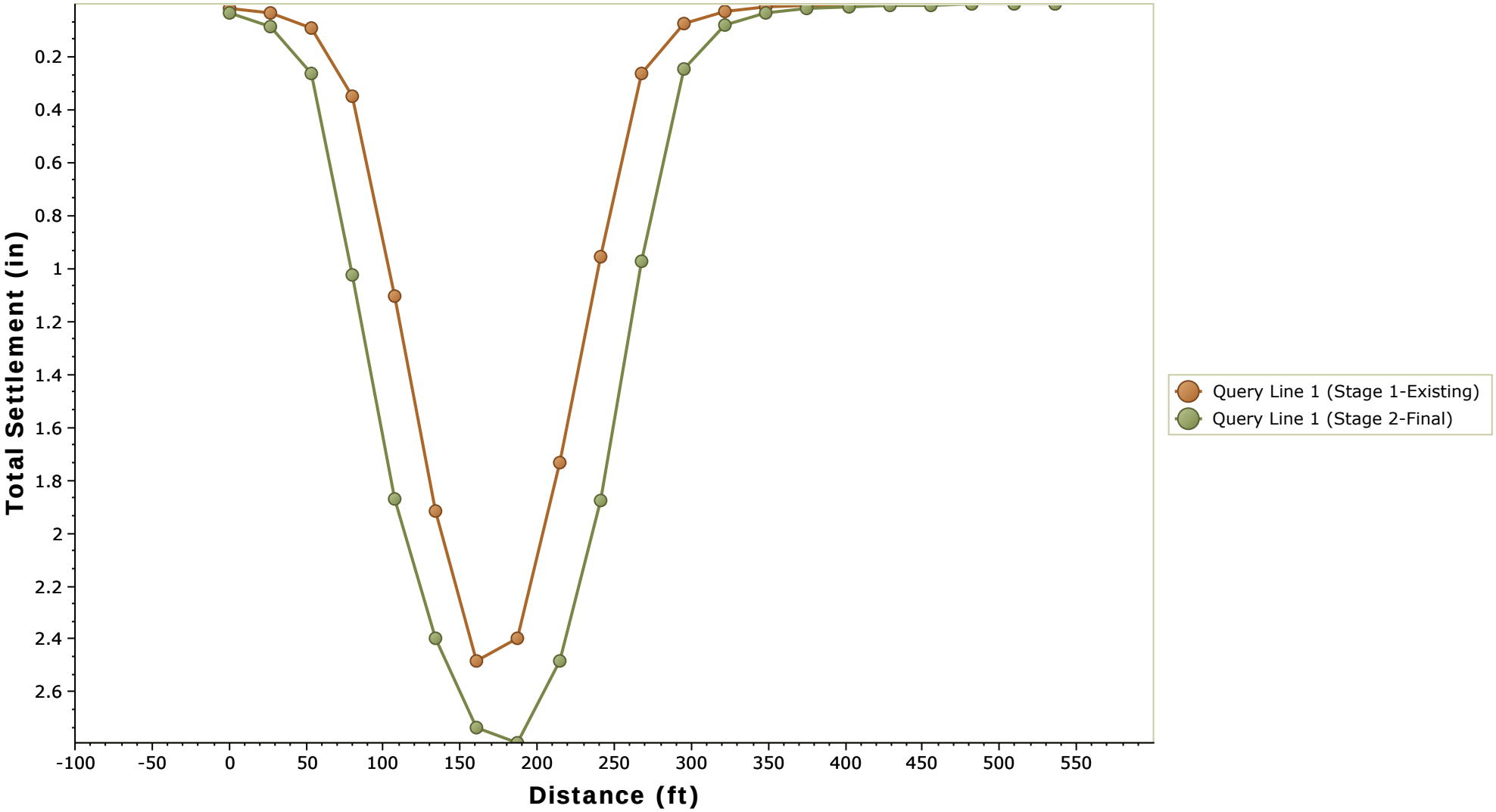
Project	Plum Creek No. 21 Rehabilitation		
Analysis Description	Embankment Fndn Settle - Reach C, STA 17+35 Stage 1		
Drawn By	LTF	Company	AECOM
Date	5/26/2020, 7:54:55 AM	File Name	Plum21_ReachC_2020.05.22r1.s3z





rocscience	Project	Plum Creek No. 21 Rehabilitation	
	Analysis Description	Embankment Fndn Settle - Reach C, STA 17+35 Stage 2	
	Drawn By	LTF	Company AECOM
SETTLE3D 4.023	Date	5/26/2020, 7:54:55 AM	File Name Plum21_ReachC_2020.05.22r1.s3z

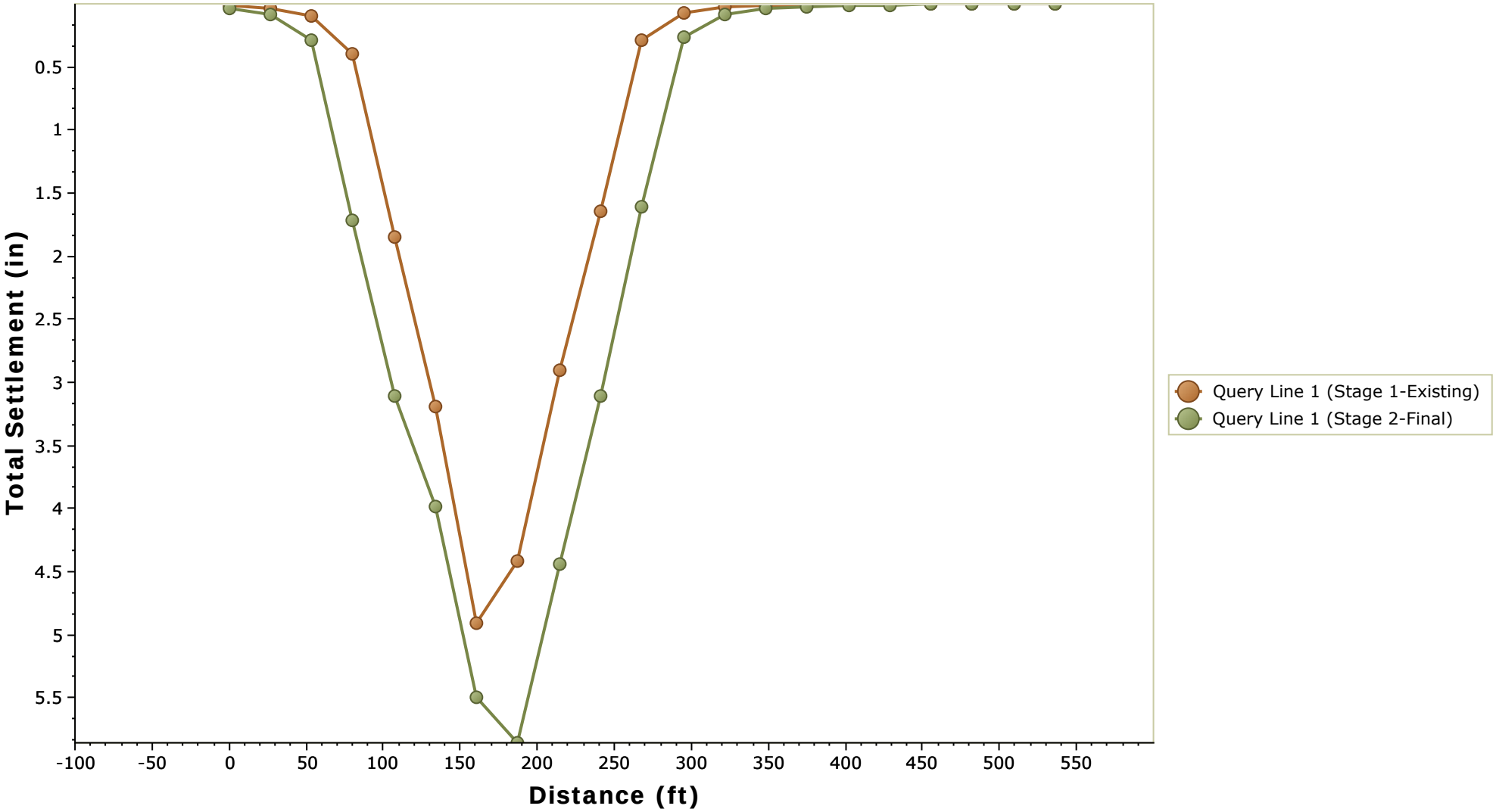
Distance vs. Total Settlement



Reference Stage: None
Total Settlement at Depth = -487 ft

rocscience	*Project*	Plum Creek No. 21 Rehabilitation	
	Analysis Description	Embankment Fndn Settle - Reach C, STA 17+35	
	Drawn By LTF	*Company*	AECOM
SETTLE3D 4.023	*Date* 5/26/2020, 7:54:55 AM	*File Name*	Plum21_ReachC_2020.05.22r1.s3z

Distance vs. Total Settlement



Reference Stage: None
Total Settlement at Depth = -495 ft

rocscience	Project	Plum Creek No. 21 Rehabilitation	
	Analysis Description	Embankment Fndn Settle - Reach C, STA 17+35	
	Drawn By	LTF	Company: AECOM
SETTLE3D 4.023	Date	5/26/2020, 7:54:55 AM	File Name: Plum21_ReachC_2020.05.22r1.s3z

Settle3D Analysis Information
Plum 21

Project Settings

Document Name	Plum21_ReachC_2020.05.22.s3z
Project Title	Plum 21
Analysis	Reach C, STA 17+35 - Subgrade Settlement
Author	LTF
Company	AECOM
Date Created	5/26/2020, 7:54:55 AM

Comments

Stage 1 = Existing Conditions
Stage 2 = Proposed Conditions
Horizontal subsurface

Stress Computation Method	Boussinesq
Minimum settlement ratio for subgrade modulus	0.9

Use average properties to calculate layered stresses

Improve consolidation accuracy

Ignore negative effective stresses in settlement calculations

Stage Settings

Stage #	Name
1	Stage 1-Existing
2	Stage 2-Final

Results

Time taken to compute: 4.51025 seconds

Stage: Stage 1-Existing

Data Type	Minimum	Maximum
Total Settlement [in]	0	6.52936
Total Consolidation Settlement [in]	0	6.52936
Virgin Consolidation Settlement [in]	0	2.15764
Recompression Consolidation Settlement [in]	0	4.37172
Immediate Settlement [in]	0	0
Loading Stress ZZ [ksf]	0	3.64756
Loading Stress XX [ksf]	-0.508555	3.82915
Loading Stress YY [ksf]	-0.892136	5.9491
Effective Stress ZZ [ksf]	0	5.86881
Effective Stress XX [ksf]	-0.310973	5.73136
Effective Stress YY [ksf]	-0.308223	7.84917
Total Stress ZZ [ksf]	0	8.55201
Total Stress XX [ksf]	-0.310973	8.41456
Total Stress YY [ksf]	-0.308223	10.5324
Modulus of Subgrade Reaction (Total) [ksf/ft]	0	0
Modulus of Subgrade Reaction (Immediate) [ksf/ft]	0	0
Modulus of Subgrade Reaction (Consolidation) [ksf/ft]	0	0
Total Strain	0	0.0599388
Pore Water Pressure [ksf]	0	2.6832
Degree of Consolidation [%]	0	100
Pre-consolidation Stress [ksf]	2.92416	20.3704
Over-consolidation Ratio	1	334.821
Void Ratio	0.457095	0.78
Hydroconsolidation Settlement [in]	0	0
Undrained Shear Strength	0	0.500048

Stage: Stage 2-Final

Data Type	Minimum	Maximum
Total Settlement [in]	0	6.60271
Total Consolidation Settlement [in]	0	6.60271
Virgin Consolidation Settlement [in]	0	2.15825
Recompression Consolidation Settlement [in]	0	4.44446
Immediate Settlement [in]	0	0
Loading Stress ZZ [ksf]	6.05985e-006	3.61117
Loading Stress XX [ksf]	-0.624536	3.8183
Loading Stress YY [ksf]	-1.085	6.07774
Effective Stress ZZ [ksf]	6.05985e-006	6.14181
Effective Stress XX [ksf]	-0.443799	5.72051
Effective Stress YY [ksf]	-0.464067	7.97995
Total Stress ZZ [ksf]	6.05985e-006	8.82501
Total Stress XX [ksf]	-0.443799	8.40371
Total Stress YY [ksf]	-0.464067	10.6631
Modulus of Subgrade Reaction (Total) [ksf/ft]	0	0
Modulus of Subgrade Reaction (Immediate) [ksf/ft]	0	0
Modulus of Subgrade Reaction (Consolidation) [ksf/ft]	0	0
Total Strain	1.62917e-007	0.0598548
Pore Water Pressure [ksf]	0	2.6832
Degree of Consolidation [%]	0	100
Pre-consolidation Stress [ksf]	2.92416	20.3704
Over-consolidation Ratio	1	334.592
Void Ratio	0.457225	0.779999
Hydroconsolidation Settlement [in]	0	0
Undrained Shear Strength	0	0.500048

Embankments

1. Embankment: "Existing Embankment"

Label	Existing Embankment
Center Line	(363.367, 2.391) to (363.367, 998.601)
Number of Layers	2
Near End Angle	90 degrees
Far End Angle	90 degrees
Base Width	178

Layer	Stage	Left Bench Width (ft)	Left Angle (deg)	Height (ft)	Unit Weight (kips/ft^3)	Right Angle (deg)	Right Bench Width (ft)
1	Stage 1-Existing	0	21.8	5	0.123	21.8	0
2	Stage 1-Existing	0	21.8	25	0.123	21.8	15.75

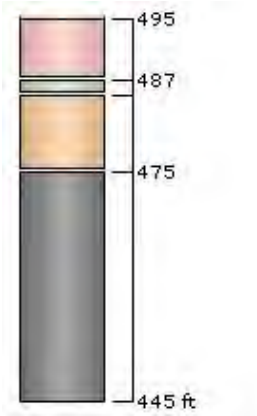
2. Embankment: "Proposed Embankment"

Label	Proposed Embankment
Center Line	(367.301, 2.067) to (367.301, 988.624)
Number of Layers	3
Near End Angle	90 degrees
Far End Angle	90 degrees
Base Width	207.25

Layer	Stage	Left Bench Width (ft)	Left Angle (deg)	Height (ft)	Unit Weight (kips/ft^3)	Right Angle (deg)	Right Bench Width (ft)
1	Stage 2-Final	0	21.8	9	0.125	18.3	0
2	Stage 2-Final	6.25	21.8	10	0.125	18.3	0
3	Stage 2-Final	6.25	18.3	13	0.125	18.3	0

Soil Layers

Layer #	Type	Thickness [ft]	Depth [ft]
1	Embankment Fill	0	-495
2	Surface (Valley Fill/Alluvium)	8	-495
3	Valley Fill / Alluvium	2	-487
4	Residuum	10	-485
5	Clayshale	30	-475



Soil Properties

Property	Embankment Fill	Valley Fill / Alluvium	Residuum	Clayshale
Color				
Unit Weight [kips/ft^3]	0.123	0.128	0.12	0.12
Saturated Unit Weight [kips/ft^3]	0.123	0.128	0.12	0.12
K0	0.53	0.56	0.56	0.56
Primary Consolidation	Enabled	Enabled	Enabled	Enabled
Material Type	Non-Linear	Non-Linear	Non-Linear	Non-Linear
Cc	0.2	0.2	0.15	0.15
Cr	0.03	0.03	0.024	0.024
e0	0.65	0.55	0.75	0.78
OCR	3	3	4	6
Undrained Su A [kips/ft2]	0	0	0	0
Undrained Su S	0.2	0.2	0.2	0.2
Undrained Su m	0.8	0.8	0.8	0.8
Piezo Line ID	1	1	1	1

Property	Surface (Valley Fill/Alluvium)
Color	
Unit Weight [kips/ft^3]	0.128
Saturated Unit Weight [kips/ft^3]	0.128
K0	1
Primary Consolidation	Enabled
Material Type	Non-Linear
Cc	0.2
Cr	0.03
e0	0.55
Pc [ksf]	3
Undrained Su A [kips/ft2]	0
Undrained Su S	0.2
Undrained Su m	0.8
Piezo Line ID	1

Groundwater

Groundwater method	Piezometric Lines
Water Unit Weight	0.0624 kips/ft^3

Piezometric Line Entities

ID	Depth (ft)
1	-488 ft

Query Lines

Line #	Query Line Name	Start Location	End Location	Horizontal Divisions	Vertical Divisions
1	Query Line 1	117.019, 504.556	654.46, 504.556	20	Auto: 51

Field Point Grid

Number of points 500
Expansion Factor 2

Grid Coordinates

X [ft]	Y [ft]
969.031	1496.71
969.031	-496.038
-234.429	-496.038
-234.429	1496.71

G.4 Settlement Calculations – Embankment Closure Section

One-Dimensional Settlement Analysis

Project Name and #: Plum #21 Rehab
Date: 7/22/2021
Description: Embankment Extension - ASW Closure (STA 5+00)
Boring B-01
Computed By: LTF

INPUT DATA

Soil Profile Input

Water Table Depth: 12 ft

Enter up to 20 layers

GS Elev= 515.91 ft

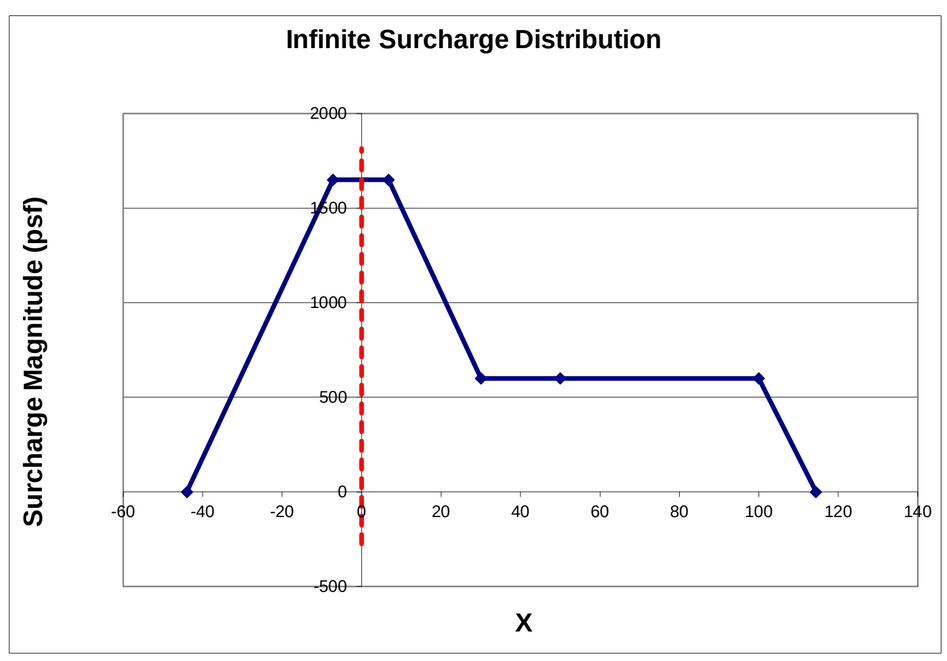
Layer Number	Layer Description	Layer Thickness (ft)	unit wt (pcf)	e_0 at layer	P_c* (psf)	C_r	C_c	Bottom Elev.	Bottom Depth
1	Residuum	1	120	0.74	3,000	0.020	0.15	514.91	1
2	Residuum	1	120	0.74	3,000	0.020	0.15	513.91	2
3	Residuum	1	120	0.74	3,000	0.020	0.15	512.91	3
4	Residuum	1	120	0.74	3,000	0.020	0.15	511.91	4
5	Residuum	1	120	0.74	3,000	0.020	0.15	510.91	5
6	Residuum	2	120	0.74	3,000	0.020	0.15	508.91	7
7	Residuum	2	120	0.74	3,000	0.020	0.15	506.91	9
8	Residuum	2	120	0.74	3,000	0.020	0.15	504.91	11
9	Residuum	2	120	0.74	4,000	0.020	0.15	502.91	13
10	Residuum	2	120	0.74	4,000	0.020	0.15	500.91	15
11	Residuum	2	120	0.74	4,000	0.020	0.15	498.91	17
12	Residuum	3	120	0.74	4,000	0.020	0.15	495.91	20
13	Clayshale	5	120	0.50	8,000	0.020	0.15	490.91	25
14	Clayshale	5	120	0.50	8,000	0.020	0.15	485.91	30
15	Clayshale	5	120	0.50	8,000	0.020	0.15	480.91	35
16	Clayshale	5	120	0.50	8,000	0.020	0.15	475.91	40
17	Clayshale	5	120	0.50	8,000	0.020	0.15	470.91	45
18	Clayshale	5	120	0.50	8,000	0.020	0.15	465.91	50
19									
20									

Surcharge Input

Infinite Surcharge Geometry (Up to 10 Points)

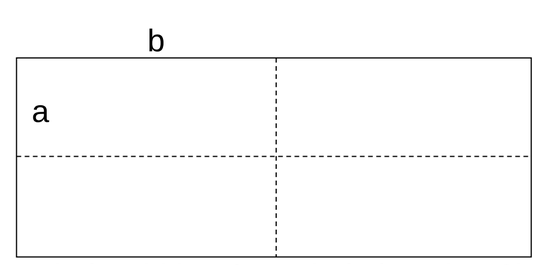
x-Coordinate of Settlement Point: 0

Point Number	x coordinate	surcharge value (psf)
1	-44	0
2	-7.2	1650
3	6.8	1650
4	30	600
5	50	600
6	100	600
7	114.4	0
8		
9		
10		



Rectangular Loading

	Load 1	Load 2	Load 3
Include Rectangular Load?	n		
Enter Corner or Center (CO or CE) - Defaults to CE	co	CE	CO
Enter magnitude, q (psf)	0		
Enter Width, a (ft)	10		
Enter Length, b (ft)	10		



Whole width = 2a; Whole length = 2b (for both CE and CO)

One-Dimensional Settlement Analysis

Project Name and #: **Plum #21 Rehab**
Date: **7/22/2021**
Description: **Embankment Extension - ASW Closure (STA 5+00)**
Computed By: **LTF**

Settlement Anaysis Summary

Water Table Depth: 12 ft

Enter up to 20 layers

Layer Number	Layer Description	Layer Thickness (ft)	unit wt (pcf)	e_0 at layer	Overcons? (Y or N)	P_c* (psf)	C_r	C_c	Layer Center Depth (ft)	P_0 at layer Center (psf)	Layer* Surcharge (psf)	P_f at layer center (psf)	Layer Settlement (in)
1	Residuum	1	120	0.74	Y	3000	0.02	0.15	0.5	60	1650.0	1710.0	0.201
2	Residuum	1	120	0.74	Y	3000	0.02	0.15	1.5	180	1649.4	1829.4	0.139
3	Residuum	1	120	0.74	Y	3000	0.02	0.15	2.5	300	1647.3	1947.3	0.112
4	Residuum	1	120	0.74	Y	3000	0.02	0.15	3.5	420	1643.0	2063.0	0.095
5	Residuum	1	120	0.74	Y	3000	0.02	0.15	4.5	540	1636.3	2176.3	0.083
6	Residuum	2	120	0.74	Y	3000	0.02	0.15	6	720	1621.8	2341.8	0.141
7	Residuum	2	120	0.74	Y	3000	0.02	0.15	8	960	1595.4	2555.4	0.117
8	Residuum	2	120	0.74	Y	3000	0.02	0.15	10	1200	1563.2	2763.2	0.100
9	Residuum	2	120	0.74	Y	4000	0.02	0.15	12	1440	1527.4	2967.4	0.087
10	Residuum	2	120	0.74	Y	4000	0.02	0.15	14	1555.2	1489.8	3045.0	0.080
11	Residuum	2	120	0.74	Y	4000	0.02	0.15	16	1670.4	1451.3	3121.7	0.075
12	Residuum	3	120	0.74	Y	4000	0.02	0.15	18.5	1814.4	1403.2	3217.6	0.103
13	Clayshale	5	120	0.5	Y	8000	0.02	0.15	22.5	2044.8	1328.6	3373.4	0.174
14	Clayshale	5	120	0.5	Y	8000	0.02	0.15	27.5	2332.8	1241.8	3574.6	0.148
15	Clayshale	5	120	0.5	Y	8000	0.02	0.15	32.5	2620.8	1163.2	3784.0	0.128
16	Clayshale	5	120	0.5	Y	8000	0.02	0.15	37.5	2908.8	1093.0	4001.8	0.111
17	Clayshale	5	120	0.5	Y	8000	0.02	0.15	42.5	3196.8	1030.3	4227.1	0.097
18	Clayshale	5	120	0.5	Y	8000	0.02	0.15	47.5	3484.8	974.3	4459.1	0.086

TOTAL COMPUTED SETTLEMENT: 2.08 in

0.173 ft

One-Dimensional Settlement Analysis

Project Name and #: **7/22/2021**
Date: **Embankment Extension - ASW Closure (STA 5+00)**
Description: **LTF**

Surcharge Load Summary

All Loadings in pounds per square foot

Layer Number	Layer Description	Center Depth	Rectangular Loading (psf) *Load 1*	*Load 2*	*Load 3*	Infinite Surcharge (psf)	TOTAL SURCHARGE (psf)
1	Residuum	0.5				1650	1650
2	Residuum	1.5				1649	1649
3	Residuum	2.5				1647	1647
4	Residuum	3.5				1643	1643
5	Residuum	4.5				1636	1636
6	Residuum	6				1622	1622
7	Residuum	8				1595	1595
8	Residuum	10				1563	1563
9	Residuum	12				1527	1527
10	Residuum	14				1490	1490
11	Residuum	16				1451	1451
12	Residuum	18.5				1403	1403
13	Clayshale	22.5				1329	1329
14	Clayshale	27.5				1242	1242
15	Clayshale	32.5				1163	1163
16	Clayshale	37.5				1093	1093
17	Clayshale	42.5				1030	1030
18	Clayshale	47.5				974	974

Appendix H Lateral Earth Pressures Analysis

AECOM

				Calc No.	Appendix H
Job:	Plum Creek FRS No. 21 Rehabilitation	Project No.	6583858	Page No:	1
Description:	Lateral Earth Pressure Coefficients	Computed By:	L. Finnefrock	Date:	7/22/2021
		Checked By:		Date:	

OBJECTIVE:

1. To estimate design shear strengths for soils to be placed in contact with proposed structures
2. To estimate lateral earth pressure coefficients and sliding friction coefficient for foundation and backfill soils associated the proposed new PSW impact basin, PSW intake riser, and RCC spillway retaining walls.

REFERENCES:

Coduto, D.P. "Foundation Design: Principles and Practices." 2nd Edition. 2001.

Duncan, Horz, and Yang. "Shear Strength Correlations for Geotechnical Engineering." Virginia Polytechnic Institute and State University. August, 1989.

Stark and Hussain. "Empirical Correlations – Drained Shear Strength for Slope Stability Analyses." Journal of Geotechnical and Geoenvironmental Engineering. August 14, 2012.

USACE. *EM 1110-2-2502, Retaining Walls and Flood Walls*. September 29, 1989.

USDA Soil Conservation Service (USDA-SCS). "Lateral Earth Pressures." 210-VI, TR-74. July, 1989.

ANALYSIS:

Structures will be backfilled with clayey embankment fill materials. Lateral earth pressures were estimated considering the long term condition (drained shear strengths) using the range of laboratory testing results for the project. Various literature based correlations between different index properties and the friction angle, ϕ', were employed, refer to the discussion below and Attachment 1.

- Stark & Hussain (2012) correlation for fully-softened friction angle:
  - Liquid Limit = 40 to 70 (for majority of test samples; but backfill likely will be limited to LL<60)
  - Percent Fines = 40 to 100% (ignoring Leona Fm)
  - Clay Fraction = 24 to 54% (most below 40%, ignoring Leona Fm)
  - Normal Stress Range considering estimated average total unit weight of 125 pcf:
    - Minimum (5-feet embedment for PSW inlet @ 125 pcf): 625 psf (30 kPa)
    - Maximum (18-foot RCC walls in stilling basin @ 150 pcf): 2,700 psf (129 kPa)
    - Therefore, conservatively consider 100 kPa normal stress curve for correlation
  - Estimated $\phi'_{fully\text{-}softened}$ (conservatively assuming >50% clay fraction)
    - Low (LL=40): $\phi' = 23.5°$
    - High (LL=70): $\phi' = 24.5$
    - Spec limit (LL=60): $\phi' = 24°$

- Duncan correlation for peak friction angle:
  - Plasticity Index = 19 to 55 (majority of samples; but backfill will likely be limited to PI<35)
  - Estimated ϕ'_{peak} :
    - Low (PI=55): $\phi' = 25.0° \pm 2.5°$ (22.5° – 27.5°)

- High (PI=23): ϕ' = 31.0° ± 2.5° (28.5° – 33.5°)
- Spec Limit (PI=35): ϕ' = 28.0° ± 2.5° (25.5° – 30.5°)

- USBR Design of Small Dams (1960)
  - CH soil: ϕ' = 17 ± 7° (10° – 24°)
  - CL soil: ϕ' = 25 ± 7° (18° – 32°)

Based on the correlations above, it is recommended that lateral earth pressures and sliding friction values be calculated based on a design **ϕ' = 25°** and the cohesion should be neglected (c' = 0 psf) in analyses.

LATERAL EARTH PRESSURES RECOMMENDATIONS

Lateral earth pressures were computed based on drained shear strengths assuming friction angle, ϕ' = 25° and Coulomb's equations (1776) as presented in Coduto (2001) for active and passive pressures, and Jaky's equation (1944) as presented in USACE (1989). In addition, lateral earth pressures were computed according to the methods presented in TR-74 (USDA-SCS, 1989) for comparison purposes. Results of both methods are presented herein.

Active Earth Pressure

Active earth pressure coefficients were calculated according to the Coulomb equations as follows:

- Active earth pressure coefficient, K_a, for level backfill:

$$K_a = tan\left(45° - \frac{\phi'}{2}\right)^2$$

$$K_a = tan\left(45° - \frac{25°}{2}\right)^2$$

$$K_a = 0.41$$

- Active earth pressure coefficient, K_a, for sloping backfill at 3H:1V grade (α = 18.4°) with no wall batter from vertical (β=90°) and conservatively neglecting wall/backfill interface friction (δ = 0°):

$$K_a = \frac{sin^2(\beta + \phi')}{sin^2(\beta)sin(\beta - \delta)\left[1 + \sqrt{\frac{sin(\phi' + \delta)sin(\phi' - \alpha)}{sin(\beta - \delta)sin(\alpha + \beta)}}\right]^2}$$

$$K_a = \frac{sin^2(90° + 25°)}{sin^2(90°)sin(90° - 0°)\left[1 + \sqrt{\frac{sin(25° + 0°)sin(25° - 18.4°)}{sin(90° - 0°)sin(18.4° + 90°)}}\right]^2}$$

$$K_a = 0.55$$

The active earth pressure coefficient was also estimated graphically per NRCS TR-74 Figure 43. This methodology suggests K_a of approximately 0.41 for soils with ϕ' = 25° and level backfill, and K_a of approximately 0.55 for soils with sloping backfill at 3H:1V.

At-Rest Earth Pressure

At-rest earth pressure coefficients were calculated for level ground according to Jaky's equation (1944) and for sloping ground according to the Danish Code (Danish Geotechnical Institute) as presented in USACE (1989) as follows:

- At-rest earth pressure coefficient, K_0, for level backfill:

$$K_0 = [1 - sin(\phi')]$$

$$K_0 = [1 - sin(25°)]$$

$$K_0 = 0.57$$

- At-rest earth pressure coefficient, K_0, for sloping backfill at 3H:1V grade (α = 18.4°):

$$K_0 = [1 - sin(\phi')] \cdot [1 + sin(\alpha)]$$

$$K_0 = [1 - sin(25°)] \cdot [1 + sin(18.4°)]$$

$$K_0 = 0.76$$

The at-rest earth pressure coefficient was also estimated graphically per NRCS TR-74, Figure 44. This methodology suggests K_0 = 0.65 for level backfill consisting soils with ϕ' < 27° and more than 5% fines, which is the case for the samples investigated. Using NRCS TR-74, Figure 47 to correct for sloping retained ground, the value of the resulting K_0 = 0.88 (=K_0F = 0.65*1.35) for 3H:1V backslope.

It should be noted that TR-74 further recommends that, in addition to at-rest earth pressures, an additional two feet of soil surcharge pressure be considered in slope stability analyses to account for operation and maintenance loads.

Passive Earth Pressure

Passive earth pressure coefficients were calculated according to the Coulomb equations as follows:

- Passive Earth Pressure Coefficient, K_p, for level ground surface (α = 0°):

$$k_p = \left[\frac{cos(\phi')}{1 - \sqrt{sin(\phi') \cdot [sin(\phi') + cos(\phi') \cdot tan(\alpha)]}}\right]^2$$

$$k_p = \left[\frac{cos(25°)}{1 - \sqrt{sin(25°) \cdot [sin(25°) + cos(25°) \cdot tan(0°)]}}\right]^2$$

$$k_p = 2.46$$

- While downward-sloping ground in front of walls/foundations is not planned for this project, the Passive Earth Pressure Coefficient, K_p, for sloping ground surface away from the wall at -3H:1V grade (α = -18.4°) is shown for comparison purposes to illustrate the detrimental effects:

$$k_p = \left[\frac{cos(\phi')}{1 - \sqrt{sin(\phi') \cdot [sin(\phi') + cos(\phi') \cdot tan(\alpha)]}}\right]^2$$

$$k_p = \left[\frac{cos(25°)}{1 - \sqrt{sin(25°) \cdot [sin(25°) + cos(25°) \cdot tan(-18.4°)]}}\right]^2$$

$$k_p = 1.37$$

The passive earth pressure coefficient was also estimated graphically per NRCS TR-74 Figure 45. This methodology obtains similar results, with K_p = 2.45 for level backfills and K_p = 1.35 for downward-sloping ground surface at -3H:1V.

TR-74 also recommends that a large factor of safety be applied to passive resistance to account for the large displacements required to engage passive resistance. Moreover, it should be noted that calculations of passive earth pressures should neglect upper 2 ft of embedment.

SLIDING STABILITY PARAMETERS:

The ultimate coefficient of sliding friction (μ) between the base of the concrete foundation and natural subgrade is used to evaluate sliding stability of structures, and is defined as follows for effective stress (drained) conditions:

$$\mu = \tan(\phi_f')$$

Standard practice is to consider the interface friction angle (ϕ_f') between the concrete and the subgrade soil as 2/3 to 3/4 of the soil friction angle, ϕ' . Since the footings for this project will be cast-in-place concrete cast directly on subgrade, the recommended value for design is as follows:

$$\mu = 0.75*\tan(25') = 0.35$$

The recommended parameter is valid only for smooth bottom footings where a shear key is not provided. Should shear keys be included in design, the interface friction angle may be considered as the full friction angle of the native soil based on which a coefficient of friction of μ = 0.47 may be considered along the base.

Typical friction coefficients between concrete and soil were estimated in accordance with TR-74 Figure 51 and were checked as a comparison. Both the intake tower and impact basin will be founded on compacted clayey soils with moisture contents ranging from below the optimum moisture content (OMC) to slightly above OMC that, for the purposes of analyses, were considered dry to wet, medium dense to dense. For these conditions, TR-74 provides a typical range of sliding stability parameters of 0.25 to 0.5, which bracket the values recommended herein and thus are judged to be resasonable.

TR-74 further highlights that soil cohesion may be neglected in long-term stability analyses; thus, recommended sliding stability parameters neglect any contribution of cohesion.

ATTACHMENT 1

Shear Strength Characterization References

Journal of Geotechnical and Geoenvironmental Engineering. Submitted October 23, 2011; accepted August 27, 2012; posted ahead of print August 30, 2012. doi:10.1061/(ASCE)GT.1943-5606.0000824

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EMPIRICAL CORRELATIONS - DRAINED SHEAR STRENGTH FOR SLOPE STABILITY ANALYSES

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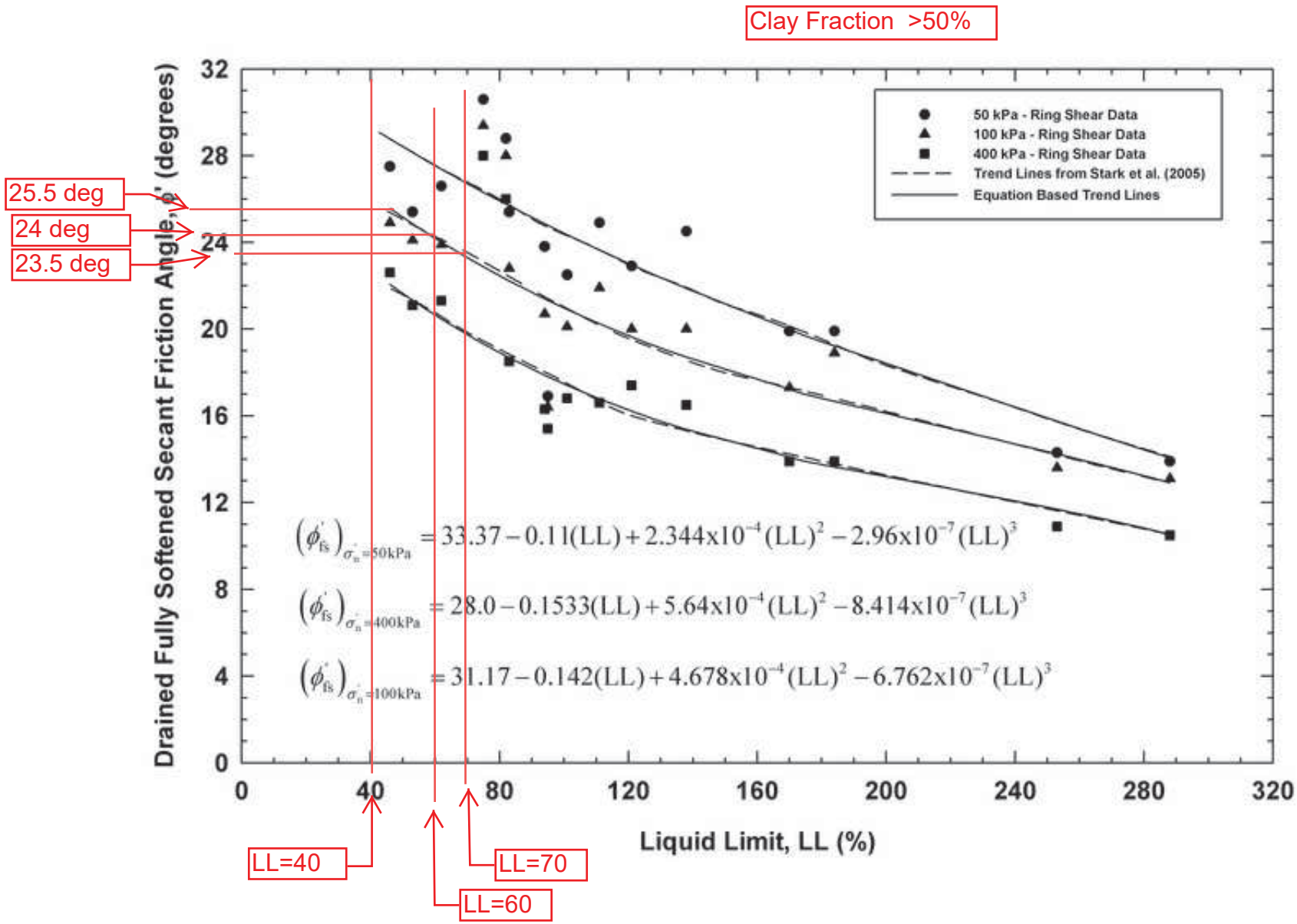

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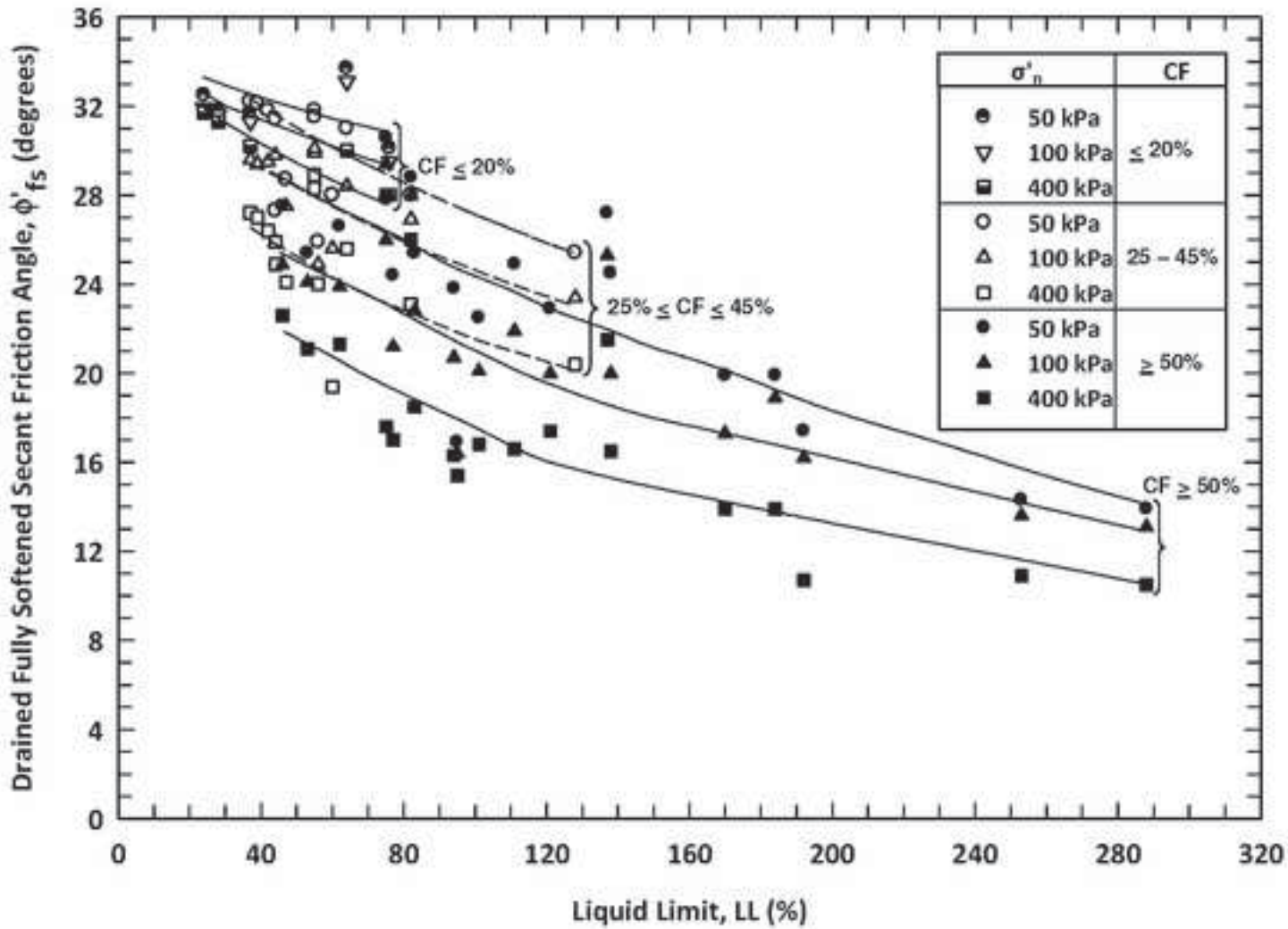

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GEOTECHNICAL ENGINEERING

SHEAR STRENGTH CORRELATIONS FOR GEOTECHNICAL ENGINEERING

by

J. M. Duncan
R. C. Horz
T. L. Yang

August, 1989

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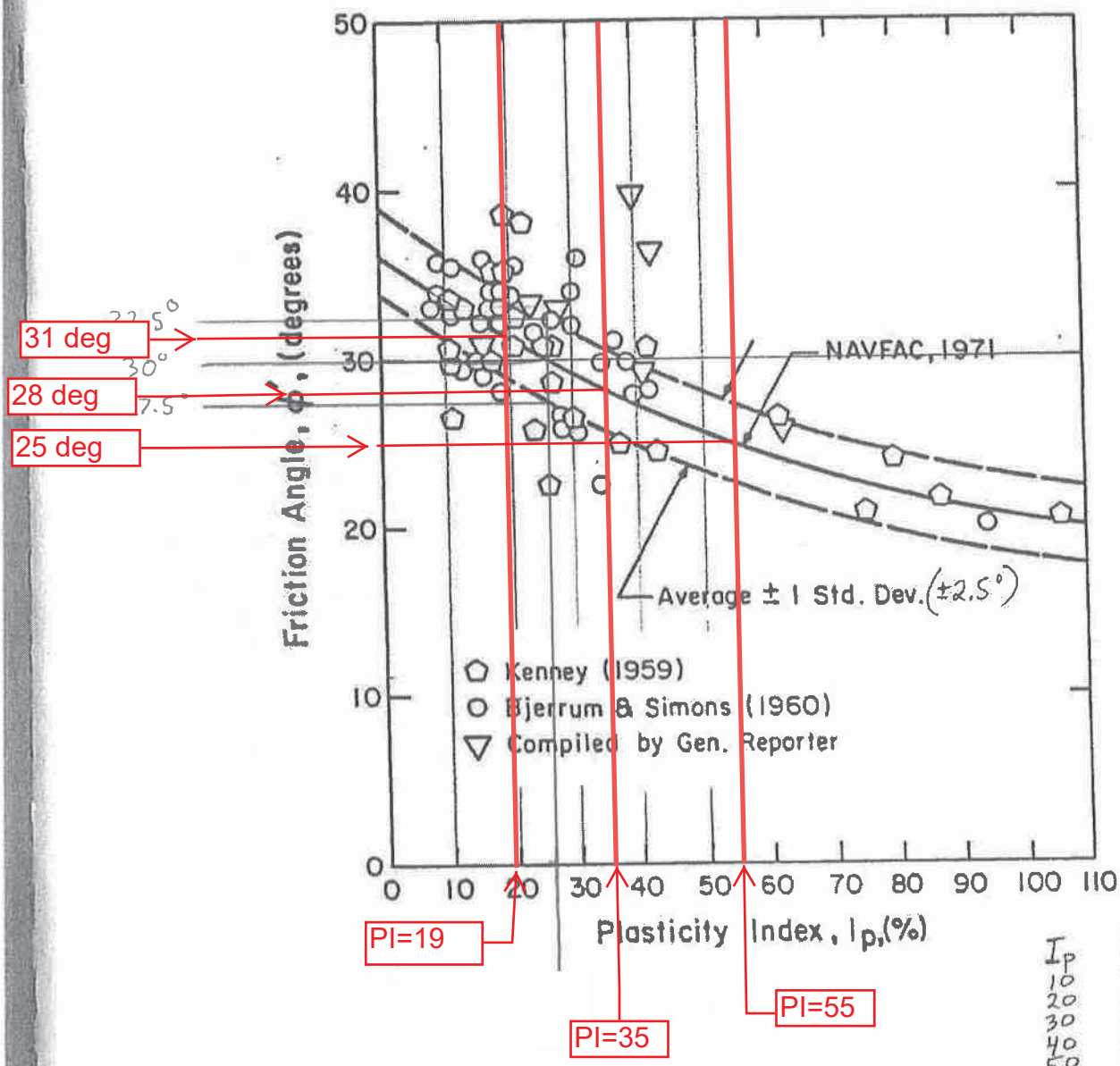


I_p	ϕ
10	33.6
20	31.05
30	29.15
40	27.3
50	25.55

Fig. 42 Correlation between ϕ' at $(\sigma_1/\sigma_3)_{max}$ and I_p from Triaxial Tests on Normally Consolidated Clays, (After Ladd et al, 1977).

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

DESIGN OF SMALL DAMS

A Water Resources Technical Publication

First Edition, 1960
Second Edition, 1973
Revised Reprint, 1977
Third Edition, 1987

5.18. *Engineering Characteristics of Soil Groups.*—(a) *General.*—Although there is no substitute for thorough testing to determine the important engineering properties of a particular soil, approximate values for typical soils of each USCS group can be given as a result of statistical analysis of available data (table 5-1). The attempt to put soils data into quantitative form involves the risk of (1) the data not being representative, and (2) using the values in design without adequate safety factors. In the early stages of planning, when different borrow areas and design sections are being studied, these averaged values of soil properties can be taken as useful qualitative guides. Because the values pertain to the soil groups, proper soil classification becomes of vital importance. Verification of field identification by laboratory gradation and Atterberg limits tests for design must be made on representative samples of each soil group encountered.

Table 5-1 is a summary of values obtained from more than 1,500 soil tests performed between 1960 and 1982 in the engineering laboratories of the Bureau of Reclamation in Denver, Colorado. The data, which were obtained from reports for which laboratory soil classifications were available, are arranged according to the USCS groups. The soils are from the 17 Western States in which the Bureau operates. Although the sampling area of the soils tested is limited, it is believed that the USCS is relatively insensitive to geographical distribution. The procedure for determining which of the many submitted samples should be tested was conducive to obtaining a representative range of values because samples were selected from the coarsest, the finest, and the average soil from each source.

For each soil property listed, the average, the standard deviation, the number of tests performed, the minimum test value, and the maximum test value are listed in table 5-1. Because all laboratory tests, except large-sized permeability tests, were made on compacted specimens of the minus No. 4 fraction of the soil, data on average values for the gravels were not available for most properties. The averages shown are subject to uncertainties that may arise from sampling fluctuations, and tend to vary widely from the true averages when the number of tests is small.

The values for laboratory maximum dry unit weight, optimum moisture content, specific gravity, and maximum and minimum index unit weight were obtained by tests described in section 5.49. The MH and CH soil groups have no upper boundary of liquid limits in the classification; therefore, it is necessary to give the range of those soils included in the table. The maximum liquid limits for the MH and the CH soils tested were 82 and 86 percent, respectively. Soils with higher liquid limits than these have inferior engineering properties.

(b) *Shear Strength.*—Two shear strength parameters are given for the soil groups under the headings c' and ϕ'. The values of c' and ϕ' are the vertical intercept and the angle of the envelope, respectively, of the Mohr strength envelope on an effective stress basis. (The Mohr plot is shown on fig. 5-13). The Mohr strength envelope is obtained by testing several specimens of compacted soil in a triaxial shear apparatus in which pore-fluid pressures developed during the test are measured.

The effective stresses are obtained by subtracting the measured pore-fluid pressures in the specimen from the stresses applied by the apparatus. The data used in compiling the values in table 5-1 are taken from UU (unconsolidated-undrained) and CU (consolidated-undrained) triaxial shear tests with pore-fluid pressure measurements and from CD (consolidated-drained) triaxial shear tests.

These values for shear strength are applicable for use in Coulomb's equation:

$$s = c' + (\sigma - \mu) \tan \phi' \qquad (1)$$

where:

s = shear strength,
u = pore-fluid pressure,
σ = applied normal stress,
ϕ' = effective angle of internal friction, and
c' = effective cohesion.

A discussion of the significance of pore-fluid pressure in the laboratory tests is beyond the scope of this text. The application of pore-pressure measurements to the shear strength of cohesive soils is discussed in [7]. The effective-stress principle, which takes the pore-fluid pressures into account, was used in arriving at recommended slopes given in chapter 6.

(c) *Permeability.*—The voids in the soil mass provide passages through which water can move. Such passages vary in size, and the paths of flow are tortuous and interconnected. If, however, a sufficiently large number of paths of flow are considered as acting together, an average rate of flow for

Table 5-1.—Average engineering properties of compacted soils. From the Western United States. Last updated October 6, 1982.

USCS soil type	Specific gravity		Compaction				Shear strength				
			Laboratory		Index unit weight		Avg. placement		Effective stress		
	No. 4 minus	No. 4 plus	Maximum unit weight, lb/ft³	Optimum moisture content, %	Max., lb/ft³	Min., lb/ft³	Unit weight, lb/ft³	Moisture, content, %	c′ lb/in²	φ′, degrees	Values listed
	2.69	2.58	124.2	11.4	133.6	108.8	—	—	—	—	Average of all values
	0.02	0.08	3.2	1.2	10.4	10.2	—	—	—	—	Standard deviation
GW	2.65	2.39	119.1	9.9	113.0	88.5	—	—	—	—	Minimum value
	2.75	2.67	127.5	13.3	145.6	132.9	—	—	—	—	Maximum value
	16	9	5		16				0		Total number of tests
	2.68	2.57	121.7	11.2	137.2	112.5	127.5	6.5	5.9	41.4	Average of all values
	0.03	0.07	5.9	2.2	6.3	8.3	7.2	1.2	—	2.5	Standard deviation
GP	2.61	2.42	104.9	9.1	118.3	85.9	117.4	5.3	5.9	38.0	Minimum value
	2.76	2.65	127.7	17.7	148.8	123.7	133.9	8.0	5.9	43.7	Maximum value
	35	12	15		34				3		Total number of tests
	2.73	2.43	113.3	15.8	132.0	108.0	125.9	10.3	13.4	34.0	Average of all values
	0.07	0.18	11.5	5.8	3.1	0.2	0.9	1.2	3.7	2.6	Standard deviation
GM	2.65	2.19	87.0	5.8	128.9	107.8	125.0	9.1	9.7	31.4	Minimum value
	2.92	2.92	133.0	29.5	135.1	108.1	126.9	11.5	17.0	36.5	Maximum value
	34	17	36		2				2		Total number of tests
	2.73	2.57	116.6	13.9	—	—	111.1	15.9	10.2	27.5	Average of all values
	0.08	0.21	7.8	3.8	—	—	10.4	1.6	1.5	7.2	Standard deviation
GC	2.67	2.38	96.0	6.0	—	—	96.8	11.2	5.0	17.7	Minimum value
	3.11	2.94	129.0	23.6	—	—	120.9	22.2	16.0	35.0	Maximum value
	34	6	37		0				3		Total number of tests
	2.67	2.57	126.1	9.1	125.0	99.5	—	—	—	—	Average of all values
	0.03	0.03	6.0	1.7	6.0	7.1	—	—	—	—	Standard deviation
SW	2.61	2.51	118.1	7.4	116.7	87.4	—	—	—	—	Minimum value
	2.72	2.59	135.0	11.2	137.8	109.8	—	—	—	—	Maximum value
	13	2	1		12				0		Total number of tests
	2.65	2.62	115.6	10.8	115.1	93.4	103.4	5.4	5.5	37.4	Average of all values
	0.03	0.10	9.7	2.0	7.2	8.8	14.6	—	3.0	2.0	Standard deviation
SP	2.60	2.52	106.5	7.8	105.9	78.2	88.8	5.4	2.5	35.4	Minimum value
	2.77	2.75	134.8	13.4	137.3	122.4	118.1	5.4	8.4	39.4	Maximum value
	36	3	7		39				2		Total number of tests
	2.68	2.18	116.6	12.5	110.1	84.9	112.0	12.7	6.6	33.6	Average of all values
	0.06	0.11	8.9	3.4	8.7	7.9	11.1	5.4	5.6	5.7	Standard deviation
SM	2.51	2.24	92.9	6.8	88.5	61.6	91.1	1.6	0.2	23.3	Minimum value
	3.11	2.63	132.6	25.5	122.9	97.1	132.5	25.0	21.2	45.0	Maximum value
	149	9	123		21				17		Total number of tests
	2.69	2.17	118.9	12.4	—	—	115.6	14.2	5.0	33.9	Average of all values
	0.04	0.18	5.9	2.3	—	—	14.1	5.7	2.5	2.9	Standard deviation
SC	2.56	2.17	104.3	6.7	—	—	91.1	7.5	0.7	28.4	Minimum value
	2.81	2.59	131.7	18.2	—	—	131.8	22.7	8.5	38.3	Maximum value
	88	4	73		0				10		Total number of tests
	2.69	—	103.3	19.7	—	—	98.9	22.1	3.6	34.0	Average of all values
	0.09	—	10.4	5.7	—	—	11.5	8.9	4.3	3.1	Standard deviation
ML	2.52	—	81.6	10.6	—	—	80.7	11.1	0.1	25.2	Minimum value
	3.10	—	126.0	34.6	—	—	119.3	40.3	11.9	37.7	Maximum value
	65	0	39		0				14		Total number of tests
	2.71	2.59	109.3	16.7	—	—	106.5	17.7	10.3	25.1	Average of all values
	0.05	0.13	5.5	2.9	—	—	7.8	5.1	7.6	7.0	Standard deviation
CL	2.56	2.42	90.0	6.4	—	—	85.6	11.6	0.9	8.0	Minimum value
	2.87	2.75	121.4	29.2	—	—	118.7	35.0	23.8	33.8	Maximum value
	270	3	221		0				31		Total number of tests
	2.79	—	85.1	33.6	—	—	—	—	—	—	Average of all values
	0.25	—	2.3	1.6	—	—	—	—	—	—	Standard deviation
MH	2.47	—	82.9	31.5	—	—	—	—	—	—	Minimum value
	3.50	—	89.0	35.5	—	—	—	—	—	—	Maximum value
	10	0	5		0				0		Total number of tests

Table 5-1.—Average engineering properties of compacted soils. From the Western United States. Last updated October 6, 1982. —Continued.

USCS soil type	Specific gravity		Compaction				Shear strength				Values listed
			Laboratory		Index unit weight		Avg. placement		Effective stress		
	No. 4 minus	No. 4 plus	Maximum unit weight, lb/ft³	Optimum moisture content, %	Max., lb/ft³	Min., lb/ft³	Unit weight, lb/ft³	Moisture, content, %	c′ lb/in²	φ′, degrees	
	2.73	—	95.3	25.0	—	—	93.6	25.7	11.5	16.8	Average of all values
	0.06	—	6.6	5.4	—	—	8.1	5.7	7.4	7.2	Standard deviation
CH	2.51	—	82.3	16.6	—	—	79.3	17.9	1.5	4.0	Minimum value
	2.89	—	107.3	41.8	—	—	104.9	35.3	21.5	27.5	Maximum value
	74	0	36		0			12			Total number of tests

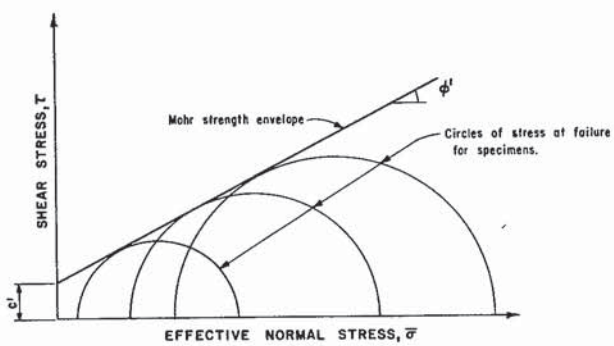


Figure 5-13.—Shear strength of compacted soils. 288–D–2474.

the soil mass can be determined under controlled conditions that will represent a property of the soil.

In 1856, H. Darcy showed experimentally that the rate of flow of water, q, through a soil specimen of cross-sectional area A was directly proportional to the imposed hydraulic gradient ($i = \Delta h/L$) or $q = kiA$. The coefficient of proportionality, k, has been called "Darcy's coefficient of permeability," "coefficient of permeability" (also referred to as hydraulic conductivity) or "permeability." Permeability is the soil property that indicates the ease with which water will flow through the soil. The use of k in estimating flow through soils is discussed in section 6.9(b). Many units of measurement are commonly used for expressing the coefficient of permeability. The units used on figure 5-14 are feet per year (or cubic feet per square foot per year at unit gradient). One foot per year is virtually equal to 10^{-6} cm/s.

Permeability in some soils is very sensitive to small changes in unit weight, water content, or gradation. Because of the possible wide variation in permeability, the numerical value of k should be considered only as an order of magnitude. It is customary in the Bureau of Reclamation to describe soils with permeabilities less than 1 ft/yr as impervious; those with permeabilities between 1 and 100 ft/yr as semipervious; and soils with permeabilities greater than 100 ft/yr as pervious. These values, however, are not absolute for the design of dams. Successful structures have been built whose various zones were constructed of soils with permeabilities not within these respective ranges.

ATTACHMENT 2
Earth Pressure References

TECHNICAL RELEASE

NUMBER 74

LATERAL EARTH PRESSURES

JULY 1989

U.S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

ENGINEERING

MINIMUM LATERAL EARTH PRESSURE COEFFICIENTS AND EQUIVALENT FLUID PRESSURES (E.F.P.)

BACKFILL MATERIALS*	TYPE OF WALL DEFLECTION		
	YIELDING AWAY FROM FILL	NON-YIELDING	YIELDING INTO FILL
Clean, coarse sands and gravels with less than 5% fines (SW,SP,GW,GP) and $\bar{\phi} \geq 27^0$	Active earth pressure coefficient, K_a, from Figure 43	At Rest earth pressure coefficient, K_o, from the $K_o = 1 - \sin \bar{\phi}$ curve shown on Figure 44.	Passive earth pressure coefficient, K_p, from Figure 45
All other soils with more than 5% fines or $\bar{\phi} < 27^0$ **	Active equivalent fluid pressures, EFP, from Figure 46	At Rest earth pressure coefficient, K_o, from the K_o = at rest curve shown on Figure 44.	Not recommended for design of walls. May use dashed curves on Fig. 45 for K_p to evaluate existing situations or design of anchor blocks only.

* Within a prism defined by a 0.5:1 sloping line projecting upward from a point 2 feet out from the base of the wall to within 2 feet of the backfill surface.

**Swelling soils, soils with LL > 50, and organic soils (OL,OH,Pt), cannot be used for backfill and must be removed from the prism area defined above.

Yielding walls are defined as having a thickness-to-height ratio less than 0.085 ($t/H \leq 0.085$). Non-yielding walls are defined as having a thickness-to-height ratio greater than 0.085 ($t/H > 0.085$) or otherwise restrained.

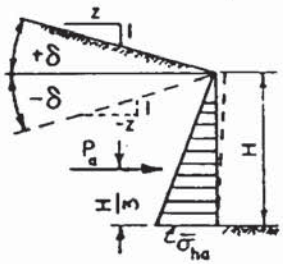
FIGURE 42

MATERIAL	ϕ_f range
Clean, hard rock	0.6 - 0.7
Clean gravels, angular, well-graded	0.5 - 0.6
Sandy gravels, angular, well-graded	0.4 - 0.5
Sandy gravels, rounded, poorly-graded	0.3 - 0.4
Silty, sandy gravels	0.3 - 0.5
Silty sands	0.3 - 0.35
Fine sandy silts	0.27 - 0.35
Dry clays, medium to dense	0.4 - 0.5
Wet clays, medium to dense	0.25 - 0.35
Stiff clays, clayey silts	C (cohesion)
Soft clays, clayey silts, organic soils	Not recommended

Interpolations must be made giving consideration to moisture conditions, gradations, angularity of particles, density, cementation, etc.

FIGURE 51 - TYPICAL COEFFICIENTS OF FRICTION BETWEEN CONCRETE AND SOIL

ACTIVE CONDITION: $t/h \leq 0.085$; Wall deflects away from fill; clean coarse sands and gravels with less than 5% fines (SW, SP, GW, GP) and $\bar{\phi} \geq 27°$



$$K_a = \left[\frac{\cos \bar{\phi}}{1 + \sqrt{\sin \bar{\phi} (\sin \bar{\phi} - \cos \bar{\phi} \tan \delta)}} \right]^2$$

$$P_a = K_a \frac{\gamma_m H^2}{2}$$

$$\bar{\sigma}_{ha} = K_a \gamma_m H$$

K_p = Coefficient of passive pressure

γ_m = Moist unit weight of soil

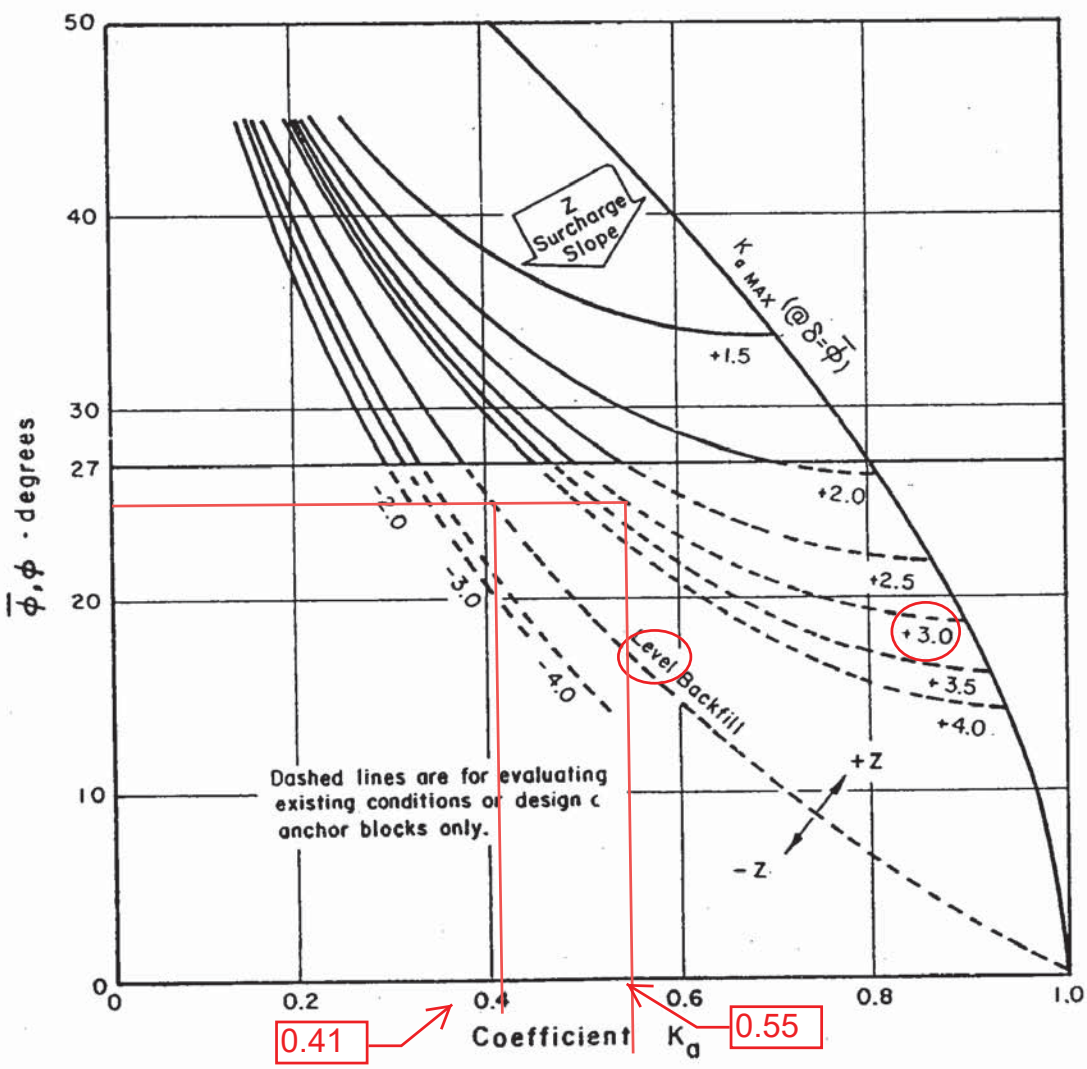
γ_{sub} = Bouyant unit weight of soil to be used in place of γ_m if soil is saturated.

ϕ = Consolidated undrained shear strength angle for all other backfill where water is present and soil will not drain upon loading.

$\bar{\phi}$ = Consolidated drained shear strength angle for clean coarse grained backfill.

δ = Surcharge slope

Z = Surcharge slope (cotangent of δ), See narrative for appropriatness of ϕ vs $\bar{\phi}$.

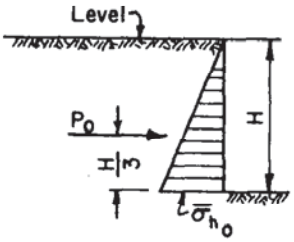


COEFFICIENT OF ACTIVE LATERAL EARTH PRESSURE

FIGURE 43

(210-VI, TR-74, July 1989)

NON-YIELDING CONDITION:
t/h > 0.085 or otherwise restrained; use "1 - sin $\bar{\phi}$" if < 5% fines and ϕ > 27°
use "At Rest" if > 5% fines or ϕ < 27°



$$P_o = K_o \frac{\gamma_m H^2}{2}$$

$$\bar{\sigma}_{h_o} = K_o \gamma_m H$$

γ_{sub} = Bouyant unit weight of soil - to be used in place of γ_m if soil is saturated.

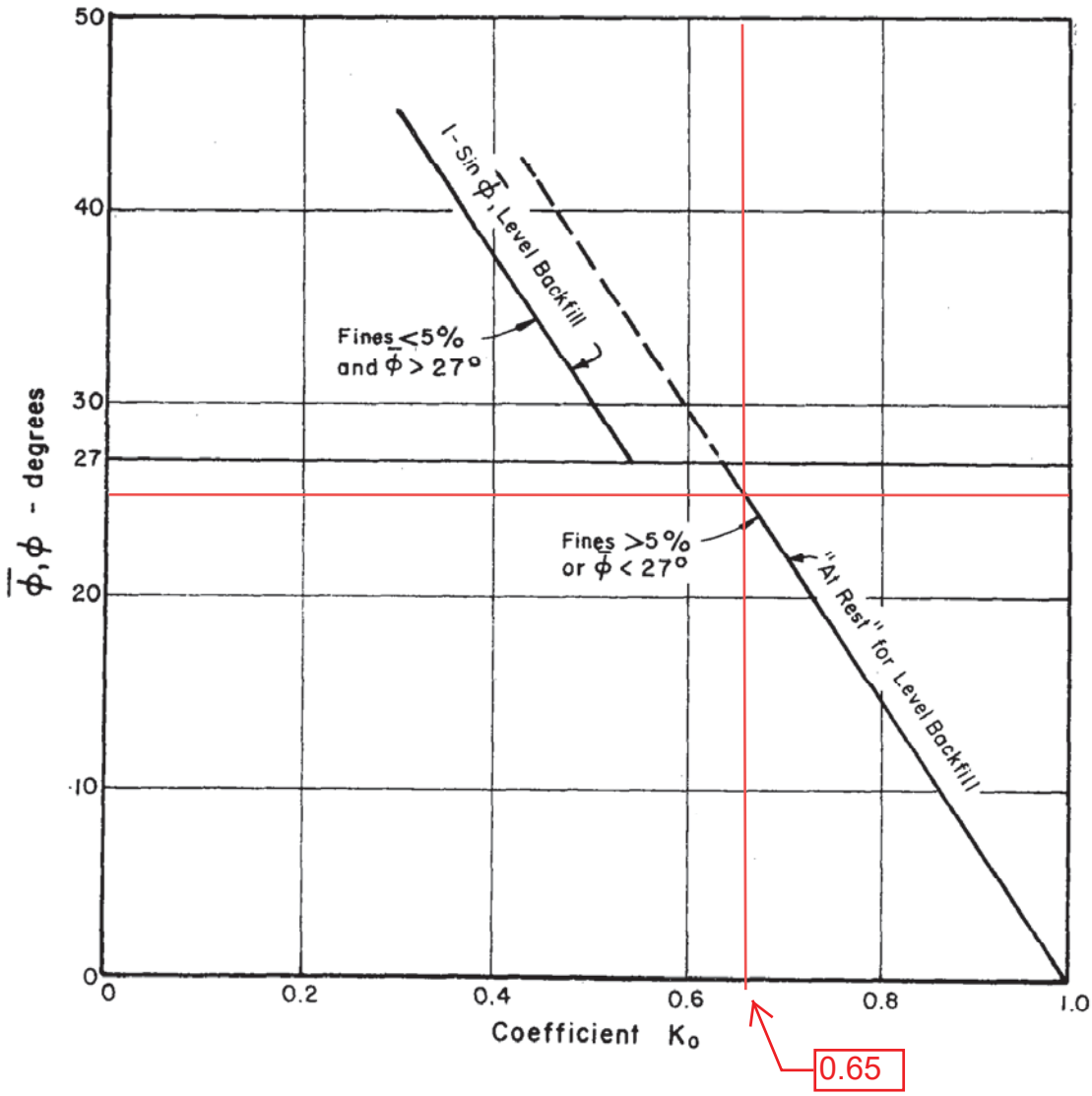
γ_m = Moist unit weight of soil.

$\bar{\phi}$ = Consolidated drained shear strength angle for clean coarse grained backfill.

ϕ = Consolidated undained shear strength angle for all other backfill where water is present and soil will not readily drain upon loading.

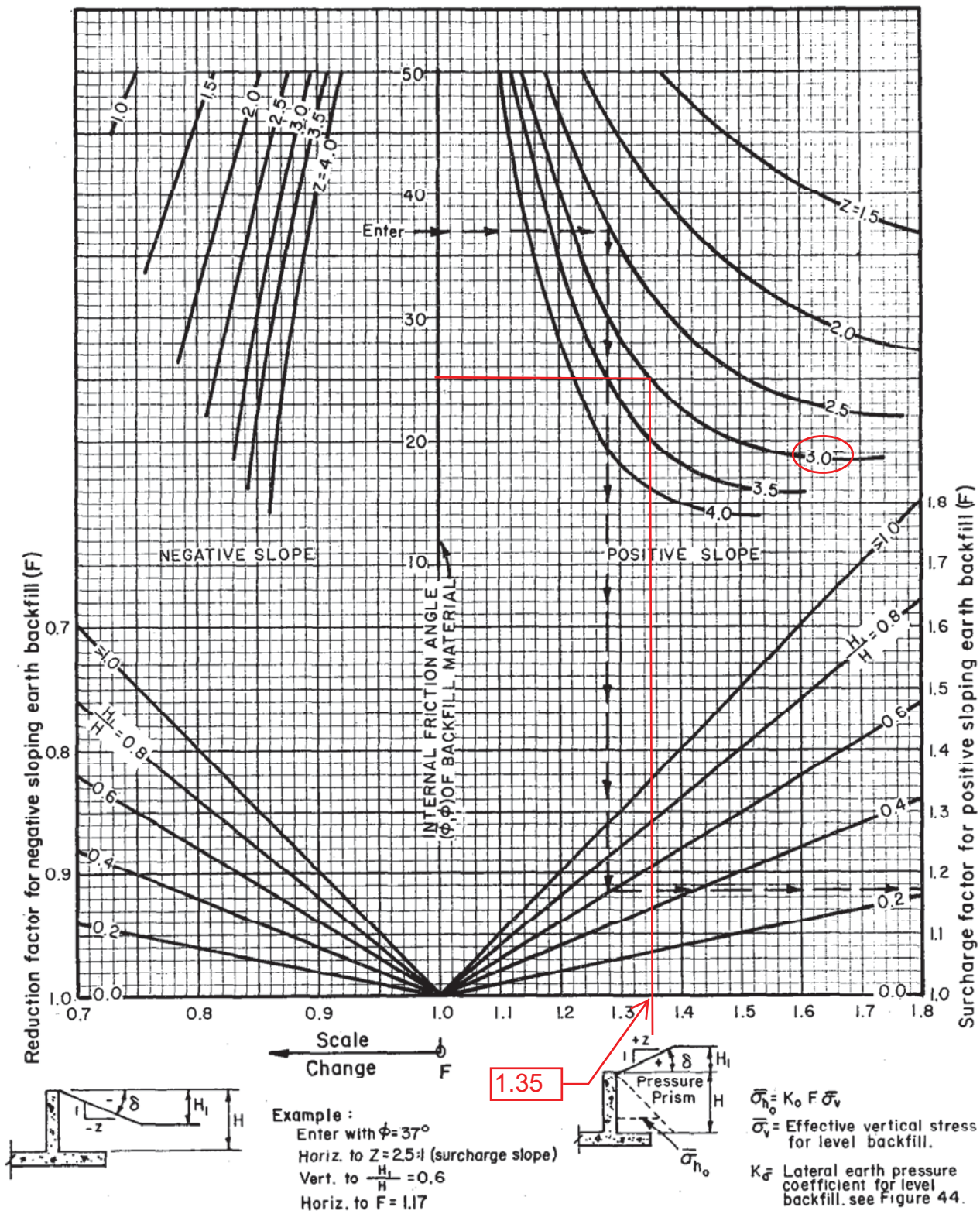
See Figure 47 to correct for sloping backfill surcharge.

See narrative for appropriatness of ϕ vs $\bar{\phi}$.



COEFFICIENT OF AT REST LATERAL EARTH PRESSURE

FIGURE 44

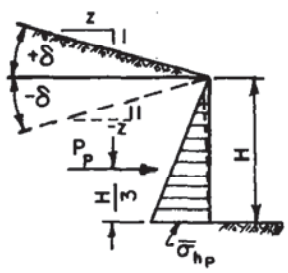


PRESSURE FACTORS FOR COMPUTING AT-REST LATERAL EARTH PRESSURE INCREASE DUE TO SLOPING SURCHARGE LOAD

FIGURE 47

(210-VI, TR-74, July 1989)

PASSIVE CONDITION : Wall deflects into fill



$$K_p = \left[\frac{\cos \bar{\phi}}{1 - \sqrt{\sin \bar{\phi} (\sin \bar{\phi} + \cos \bar{\phi} \tan \delta)}} \right]^2$$

$$P_p = K_p \frac{\gamma_m H^2}{2}$$

$$\bar{\sigma}_{hp} = K_p \gamma_m H$$

K_p = Coefficient of passive pressure

γ_m = Moist unit weight of soil

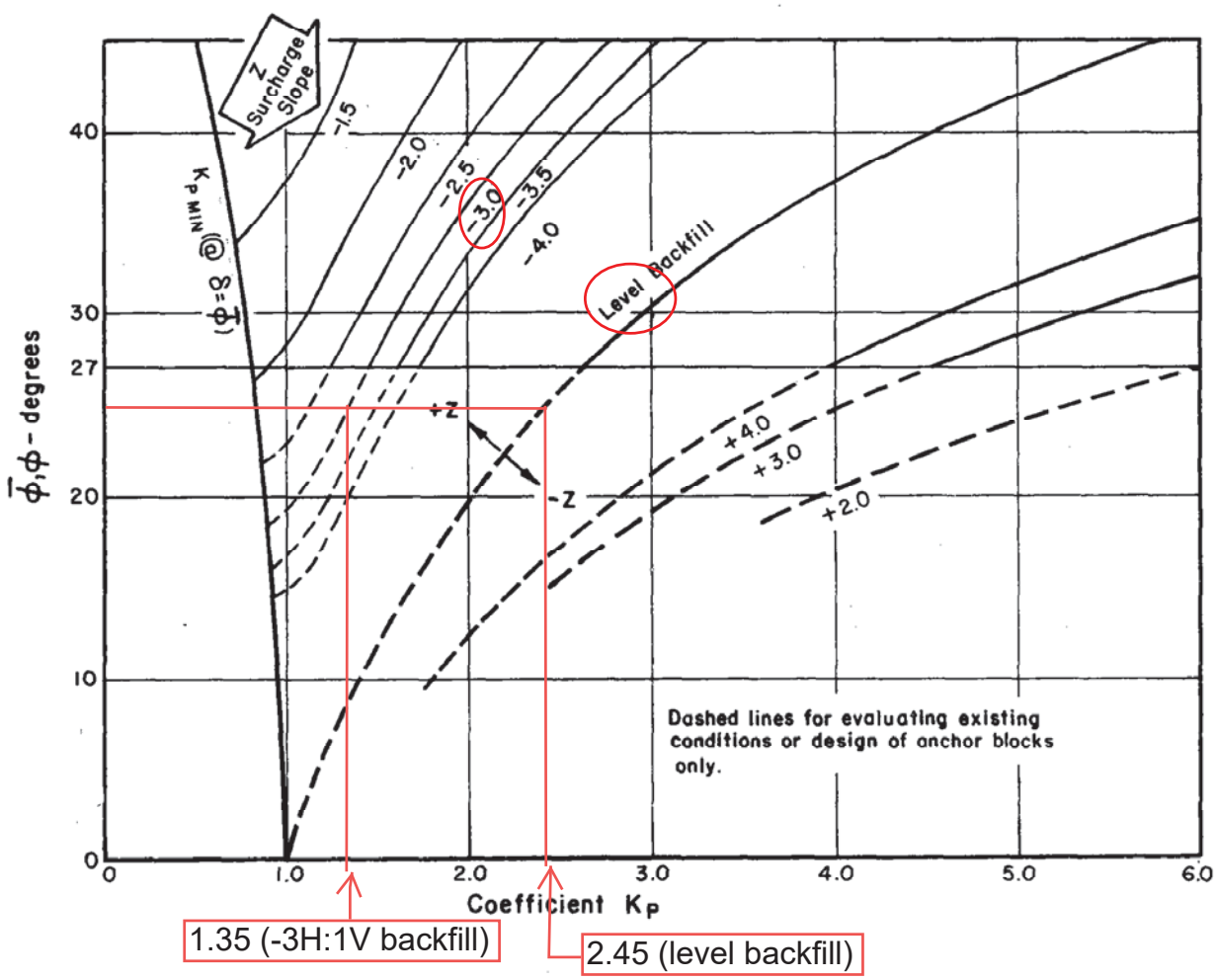
γ_{sub} = Bouyant unit weight of soil to be used in place of γ_m if soil is saturated.

ϕ = Consolidated undrained shear strength angle for all other backfill where water is present and soil will not drain upon loading.

$\bar{\phi}$ = Consolidated drained shear strength angle for clean coarse grained backfill.

δ = Surcharge slope

Z = Surcharge slope (cotangent of δ), See narrative for appropriatness of ϕ vs $\bar{\phi}$.



COEFFICIENT OF PASSIVE LATERAL EARTH PRESSURE

FIGURE 45

(210-VI, TR-74, July 1989)

Appendix I Foundation Bearing Capacity Analysis

I.1 Bearing Capacity Calculations – PSW Impact Basin

Analysis Description

Structure:	PSW - Impact Basin Structure	Calc By:	LTF
Analysis Section:	Downstream Toe	Date:	7/22/2021
Subgrade Material:	Residuum		

Undrained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕu =	0	deg	B =	17.67	ft	Nc =	5.14
cu =	1,800	psf	L =	23.17	ft	Nq =	1.00
γ'a =	120	pcf	Df_{toe}=	3	ft	Nγ =	0.00
γ'f =	120	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	9,252	psf	sc =	1.153	c term:	10,663	
γ'a*D*Nq =	360	psf	sq =	1.000	q term:	180	
0.5*γ'f*B*Nγ =	0	psf	sγ =	1.000	γ term:	0	
qult =	9,612	psf	Cwq =	0.50	qult =	10,843	psf
qallow =	3,204	psf	Cwγ =	0.50	**qallow =**	**3,614**	**psf**

Drained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕ' =	26	deg	B =	17.7	ft	Nc =	22.25
c' =	100	psf	L =	23.2	ft	Nq =	11.85
γ'a =	120	pcf	Df_{toe}=	3	ft	Nγ =	12.54
γ'f =	120	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	2,225	psf	sc =	1.406	c term:	3,130	
γ'a*D*Nq =	4,268	psf	sq =	1.372	q term:	2,928	
0.5*γ'f*B*Nγ =	13,316	psf	sγ =	0.695	γ term:	4,626	
qult =	19,809	psf	Cwq =	0.50	qult =	10,684	psf
qallow =	6,603	psf	Cwγ =	0.50	**qallow =**	**3,561**	**psf**

Structure Loading

Minimum qult =	10,684	psf
Actual qmax (gross) =	2,000	psf
Actual FOS =	**5.34**	

I.2 Bearing Capacity Calculations – PSW Inlet Tower

Analysis Description

Structure:	PSW - Inlet Tower Structure	Calc By:	LTF
Analysis Section:	Upstream Toe	Date:	7/22/2021
Subgrade Material:	Residuum		

Undrained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕu =	0	deg	B =	12.5	ft	Nc =	5.14
cu =	1,800	psf	L =	18.5	ft	Nq =	1.00
γ'a =	120	pcf	Df_{toe}=	5.6	ft	Nγ =	0.00
γ'f =	120	pcf	Df_{heel} =	5.6	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	9,252	psf	sc =	1.135	c term:	10,502	
γ'a*D*Nq =	672	psf	sq =	1.000	q term:	336	
0.5*γ'f*B*Nγ =	0	psf	sγ =	1.000	γ term:	0	
qult =	9,924	psf	Cwq =	0.50	qult =	10,838	psf
qallow =	3,308	psf	Cwγ =	0.50	**qallow =**	**3,613**	**psf**

Drained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕ' =	26	deg	B =	12.5	ft	Nc =	22.25
c' =	100	psf	L =	18.5	ft	Nq =	11.85
γ'a =	120	pcf	Df_{toe}=	5.6	ft	Nγ =	12.54
γ'f =	120	pcf	Df_{heel} =	5.6	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	2,225	psf	sc =	1.360	c term:	3,026	
γ'a*D*Nq =	7,966	psf	sq =	1.330	q term:	5,296	
0.5*γ'f*B*Nγ =	9,404	psf	sγ =	0.730	γ term:	3,431	
qult =	19,596	psf	Cwq =	0.50	qult =	11,753	psf
qallow =	6,532	psf	Cwγ =	0.50	**qallow =**	**3,918**	**psf**

Structure Loading

Minimum qult =	10,838	psf
Actual qmax (gross) =	1,530	psf
Actual FOS =	**7.08**	

Analysis Description

Structure:	PSW - Inlet Tower Structure	Calc By:	LTF
Analysis Section:	Upstream Toe	Date:	7/22/2021
Subgrade Material:	Flexbase Overex/Replacement		

Undrained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕu =	35	deg	B =	12.5	ft	Nc =	46.12
cu =	0	psf	L =	18.5	ft	Nq =	33.30
γ'a =	120	pcf	Df_{toe}=	5.6	ft	Nγ =	48.03
γ'f =	135	pcf	Df_{heel} =	5.6	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	0	psf	sc =	1.488	c term:	0	
γ'a*D*Nq =	22,375	psf	sq =	1.473	q term:	16,480	
0.5*γ'f*B*Nγ =	40,524	psf	sγ =	0.730	γ term:	14,786	
qult =	62,899	psf	Cwq =	0.50	qult =	31,266	psf
qallow =	20,966	psf	Cwγ =	0.50	**qallow =**	**10,422**	**psf**

Drained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕ' =	35	deg	B =	12.5	ft	Nc =	46.12
c' =	0	psf	L =	18.5	ft	Nq =	33.30
γ'a =	120	pcf	Df_{toe}=	5.6	ft	Nγ =	48.03
γ'f =	135	pcf	Df_{heel} =	5.6	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	0	psf	sc =	1.488	c term:	0	
γ'a*D*Nq =	22,375	psf	sq =	1.473	q term:	16,480	
0.5*γ'f*B*Nγ =	40,524	psf	sγ =	0.730	γ term:	14,786	
qult =	62,899	psf	Cwq =	0.50	qult =	31,266	psf
qallow =	20,966	psf	Cwγ =	0.50	**qallow =**	**10,422**	**psf**

Structure Loading

Minimum qult =	31,266	psf
Actual qmax (gross) =	1,530	psf
Actual FOS =	**20.44**	

I.3 Bearing Capacity Calculations – RCC Crest Structure Walls

Analysis Description

Structure:	RCC ASW - Crest Structure - Walls	Calc By:	LTF
Analysis Section:	Proposed Dam Crest Centerline	Date:	7/22/2021
Subgrade Material:	Existing Embankment		

Undrained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕu =	0	deg	B =	12	ft	Nc =	5.14
cu =	2,000	psf	L =	51.2	ft	Nq =	1.00
γ'a =	123	pcf	Df_{toe}=	3	ft	Nγ =	0.00
γ'f =	123	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	10,280	psf	sc =	1.047	c term:	10,762	
γ'a*D*Nq =	369	psf	sq =	1.000	q term:	185	
0.5*γ'f*B*Nγ =	0	psf	sγ =	1.000	γ term:	0	
qult =	10,649	psf	Cwq =	0.50	qult =	10,946	psf
qallow =	3,550	psf	Cwγ =	0.50	**qallow =**	**3,649**	**psf**

Drained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕ' =	28	deg	B =	12	ft	Nc =	25.80
c' =	100	psf	L =	51.2	ft	Nq =	14.72
γ'a =	123	pcf	Df_{toe}=	3	ft	Nγ =	16.72
γ'f =	123	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	2,580	psf	sc =	1.134	c term:	2,925	
γ'a*D*Nq =	5,432	psf	sq =	1.125	q term:	3,054	
0.5*γ'f*B*Nγ =	12,337	psf	sγ =	0.906	γ term:	5,590	
qult =	20,349	psf	Cwq =	0.50	qult =	11,570	psf
qallow =	6,783	psf	Cwγ =	0.50	**qallow =**	**3,857**	**psf**

Structure Loading

Minimum qult =	10,946	psf
Actual qmax (gross) =	2,858	psf
Actual FOS =	**3.83**	

Analysis Description

Structure:	RCC ASW - Crest Structure - Walls	Calc By:	LTF
Analysis Section:	Proposed Dam Crest Centerline	Date:	7/22/2021
Subgrade Material:	New Fill (Natural CL/SC) in Overex./Replace		

Undrained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕu =	0	deg	B =	12	ft	Nc =	5.14
cu =	1,500	psf	L =	51.2	ft	Nq =	1.00
γ'a =	125	pcf	Df_{toe}=	3	ft	Nγ =	0.00
γ'f =	125	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	7,710	psf	sc =	1.047	c term:	8,071	
γ'a*D*Nq =	375	psf	sq =	1.000	q term:	188	
0.5*γ'f*B*Nγ =	0	psf	sγ =	1.000	γ term:	0	
qult =	8,085	psf	Cwq =	0.50	qult =	8,259	psf
qallow =	2,695	psf	Cwγ =	0.50	**qallow =**	**2,753**	**psf**

Drained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕ' =	26	deg	B =	12	ft	Nc =	22.25
c' =	100	psf	L =	51.2	ft	Nq =	11.85
γ'a =	125	pcf	Df_{toe}=	3	ft	Nγ =	12.54
γ'f =	125	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	2,225	psf	sc =	1.125	c term:	2,503	
γ'a*D*Nq =	4,445	psf	sq =	1.114	q term:	2,477	
0.5*γ'f*B*Nγ =	9,404	psf	sγ =	0.906	γ term:	4,261	
qult =	16,075	psf	Cwq =	0.50	qult =	9,241	psf
qallow =	5,358	psf	Cwγ =	0.50	**qallow =**	**3,080**	**psf**

Structure Loading

Minimum qult =	8,259	psf
Actual qmax (gross) =	2,858	psf
Actual FOS =	**2.89**	

Analysis Description

Structure:	RCC ASW - Crest Structure - Walls	Calc By:	LTF
Analysis Section:	Proposed Dam Crest Centerline	Date:	7/22/2021
Subgrade Material:	New Fill (Lime-Treat Clay) in Overex./Replace		

Undrained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕu =	0	deg	B =	12	ft	Nc =	5.14
cu =	3,600	psf	L =	51.2	ft	Nq =	1.00
γ'a =	120	pcf	Df_{toe}=	3	ft	Nγ =	0.00
γ'f =	120	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	18,504	psf	sc =	1.047	c term:	19,371	
γ'a*D*Nq =	360	psf	sq =	1.000	q term:	180	
0.5*γ'f*B*Nγ =	0	psf	sγ =	1.000	γ term:	0	
qult =	18,864	psf	Cwq =	0.50	qult =	19,551	psf
qallow =	6,288	psf	Cwγ =	0.50	**qallow =**	**6,517**	**psf**

Drained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕ' =	25	deg	B =	12	ft	Nc =	20.72
c' =	360	psf	L =	51.2	ft	Nq =	10.66
γ'a =	120	pcf	Df_{toe}=	3	ft	Nγ =	10.88
γ'f =	120	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	7,459	psf	sc =	1.121	c term:	8,359	
γ'a*D*Nq =	3,838	psf	sq =	1.109	q term:	2,129	
0.5*γ'f*B*Nγ =	7,831	psf	sγ =	0.906	γ term:	3,548	
qult =	19,129	psf	Cwq =	0.50	qult =	14,036	psf
qallow =	6,376	psf	Cwγ =	0.50	**qallow =**	**4,679**	**psf**

Structure Loading

Minimum qult =	14,036	psf
Actual qmax (gross) =	2,858	psf
Actual FOS =	**4.91**	

Analysis Description

Structure:	RCC ASW - Crest Structure - Walls	Calc By:	LTF
Analysis Section:	Proposed Dam Crest Centerline	Date:	7/22/2021
Subgrade Material:	New Drainfill in Overex./Replace		

Undrained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕu =	33	deg	B =	12	ft	Nc =	38.64
cu =	0	psf	L =	51.2	ft	Nq =	26.09
γ'a =	120	pcf	Df_{toe}=	3	ft	Nγ =	35.19
γ'f =	120	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	0	psf	sc =	1.158	c term:	0	
γ'a*D*Nq =	9,393	psf	sq =	1.152	q term:	5,411	
0.5*γ'f*B*Nγ =	25,335	psf	sγ =	0.906	γ term:	11,480	
qult =	34,728	psf	Cwq =	0.50	qult =	16,891	psf
qallow =	11,576	psf	Cwγ =	0.50	**qallow =**	**5,630**	**psf**

Drained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕ' =	33	deg	B =	12	ft	Nc =	38.64
c' =	0	psf	L =	51.2	ft	Nq =	26.09
γ'a =	120	pcf	Df_{toe}=	3	ft	Nγ =	35.19
γ'f =	120	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	0	psf	sc =	1.158	c term:	0	
γ'a*D*Nq =	9,393	psf	sq =	1.152	q term:	5,411	
0.5*γ'f*B*Nγ =	25,335	psf	sγ =	0.906	γ term:	11,480	
qult =	34,728	psf	Cwq =	0.50	qult =	16,891	psf
qallow =	11,576	psf	Cwγ =	0.50	**qallow =**	**5,630**	**psf**

Structure Loading

Minimum qult =	16,891	psf
Actual qmax (gross) =	2,858	psf
Actual FOS =	**5.91**	

I.4 Bearing Capacity Calculations – RCC Chute Structure Walls

Analysis Description

Structure:	RCC ASW - Chute Structure - Walls	Calc By:	LTF
Analysis Section:	Proposed Downstream Slope (midpoint)	Date:	7/22/2021
Subgrade Material:	Existing Embankment		

Undrained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕu =	0	deg	B =	12	ft	Nc =	5.14
cu =	2,000	psf	L =	87	ft	Nq =	1.00
γ'a =	123	pcf	Df_{toe}=	3	ft	Nγ =	0.00
γ'f =	123	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	10,280	psf	sc =	1.028	c term:	10,564	
γ'a*D*Nq =	369	psf	sq =	1.000	q term:	185	
0.5*γ'f*B*Nγ =	0	psf	sγ =	1.000	γ term:	0	
qult =	10,649	psf	Cwq =	0.50	qult =	10,748	psf
qallow =	3,550	psf	Cwγ =	0.50	**qallow =**	**3,583**	**psf**

Drained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕ' =	28	deg	B =	12	ft	Nc =	25.80
c' =	0	psf	L =	87	ft	Nq =	14.72
γ'a =	123	pcf	Df_{toe}=	3	ft	Nγ =	16.72
γ'f =	123	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	0	psf	sc =	1.079	c term:	0	
γ'a*D*Nq =	5,432	psf	sq =	1.073	q term:	2,915	
0.5*γ'f*B*Nγ =	12,337	psf	sγ =	0.945	γ term:	5,828	
qult =	17,769	psf	Cwq =	0.50	qult =	8,743	psf
qallow =	5,923	psf	Cwγ =	0.50	**qallow =**	**2,914**	**psf**

Structure Loading

Minimum qult =	8,743	psf
Actual qmax (gross) =	1,429	psf
Actual FOS =	**6.12**	

Analysis Description

Structure:	RCC ASW - Chute Structure - Walls	Calc By:	LTF
Analysis Section:	Proposed Downstream Slope (midpoint)	Date:	7/22/2021
Subgrade Material:	New Drainfill in Overex./Replace		

Undrained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕu =	33	deg	B =	12	ft	Nc =	38.64
cu =	0	psf	L =	87	ft	Nq =	26.09
γ'a =	120	pcf	Df_{toe}=	3	ft	Nγ =	35.19
γ'f =	120	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	0	psf	sc =	1.093	c term:	0	
γ'a*D*Nq =	9,393	psf	sq =	1.090	q term:	5,117	
0.5*γ'f*B*Nγ =	25,335	psf	sγ =	0.945	γ term:	11,969	
qult =	34,728	psf	Cwq =	0.50	qult =	17,086	psf
qallow =	11,576	psf	Cwγ =	0.50	**qallow =**	**5,695**	**psf**

Drained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕ' =	33	deg	B =	12	ft	Nc =	38.64
c' =	0	psf	L =	87	ft	Nq =	26.09
γ'a =	120	pcf	Df_{toe}=	3	ft	Nγ =	35.19
γ'f =	120	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	0	psf	sc =	1.093	c term:	0	
γ'a*D*Nq =	9,393	psf	sq =	1.090	q term:	5,117	
0.5*γ'f*B*Nγ =	25,335	psf	sγ =	0.945	γ term:	11,969	
qult =	34,728	psf	Cwq =	0.50	qult =	17,086	psf
qallow =	11,576	psf	Cwγ =	0.50	**qallow =**	**5,695**	**psf**

Structure Loading

Minimum qult =	17,086	psf
Actual qmax (gross) =	1,429	psf
Actual FOS =	**11.96**	

I.5 Bearing Capacity Calculations – RCC Stilling Basin Walls

Analysis Description

Structure:	RCC ASW - Stilling Basin Structure - Walls	Calc By:	LTF
Analysis Section:	Middle of Stilling Basin	Date:	7/22/2021
Subgrade Material:	Residuum		

Undrained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕu =	0	deg	B =	12	ft	Nc =	5.14
cu =	1,800	psf	L =	24	ft	Nq =	1.00
γ'a =	120	pcf	Df_{toe}=	3	ft	Nγ =	0.00
γ'f =	120	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	9,252	psf	sc =	1.100	c term:	10,177	
γ'a*D*Nq =	360	psf	sq =	1.000	q term:	180	
0.5*γ'f*B*Nγ =	0	psf	sγ =	1.000	γ term:	0	
qult =	9,612	psf	Cwq =	0.50	qult =	10,357	psf
qallow =	3,204	psf	Cwγ =	0.50	**qallow =**	**3,452**	**psf**

Drained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕ' =	26	deg	B =	12	ft	Nc =	22.25
c' =	100	psf	L =	24	ft	Nq =	11.85
γ'a =	120	pcf	Df_{toe}=	3	ft	Nγ =	12.54
γ'f =	120	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	2,225	psf	sc =	1.266	c term:	2,818	
γ'a*D*Nq =	4,268	psf	sq =	1.244	q term:	2,654	
0.5*γ'f*B*Nγ =	9,028	psf	sγ =	0.800	γ term:	3,611	
qult =	15,521	psf	Cwq =	0.50	qult =	9,083	psf
qallow =	5,174	psf	Cwγ =	0.50	**qallow =**	**3,028**	**psf**

Structure Loading

Minimum qult =	9,083	psf
Actual qmax (gross) =	3,658	psf
Actual FOS =	**2.48**	

Analysis Description

Structure:	RCC ASW - Stilling Basin Structure - Walls	Calc By:	LTF
Analysis Section:	Middle of Stilling Basin	Date:	7/22/2021
Subgrade Material:	New Fill (Lime-Treat Clay) in Overex/Replace		

Undrained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients		
ϕu =	0	deg	B =	12	ft	Nc =	5.14	
cu =	3,600	psf	L =	24	ft	Nq =	1.00	
γ'a =	120	pcf	Df_{toe}=	3	ft	Nγ =	0.00	
γ'f =	120	pcf	Df_{heel} =	3	ft			
			Dw =	0	ft			

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	18,504	psf	sc =	1.100	c term:	20,354	
γ'a*D*Nq =	360	psf	sq =	1.000	q term:	180	
0.5*γ'f*B*Nγ =	0	psf	sγ =	1.000	γ term:	0	
qult =	18,864	psf	Cwq =	0.50	qult =	20,534	psf
qallow =	6,288	psf	Cwγ =	0.50	**qallow =**	**6,845**	**psf**

Drained Bearing Capacity

Soil Parameters			Foundation Size			Coefficients	
ϕ' =	25	deg	B =	12	ft	Nc =	20.72
c' =	360	psf	L =	24	ft	Nq =	10.66
γ'a =	120	pcf	Df_{toe}=	3	ft	Nγ =	10.88
γ'f =	120	pcf	Df_{heel} =	3	ft		
			Dw =	0	ft		

Uncorrected Bearing Capacity			Corrections		Corrected Bearing Capacity		
c*Nc =	7,459	psf	sc =	1.257	c term:	9,379	
γ'a*D*Nq =	3,838	psf	sq =	1.233	q term:	2,367	
0.5*γ'f*B*Nγ =	7,831	psf	sγ =	0.800	γ term:	3,132	
qult =	19,129	psf	Cwq =	0.50	qult =	14,878	psf
qallow =	6,376	psf	Cwγ =	0.50	**qallow =**	**4,959**	**psf**

Structure Loading

Minimum qult =	14,878	psf
Actual qmax (gross) =	3,658	psf
Actual FOS =	**4.07**	

Stress Dissipation with Depth

Footing Width, B:	12	ft
Footing Length, L:	24	ft
Max Allowable Bearing Pressure on Native Subgrade:	3,000	psf
Max Allowable Pressure on Lime-Treated Fill:	4,500	psf
Max Allowable Pressure on Structural Fill:	5,000	psf
Max Design Bearing Pressure:	3,658	psf

		Allowable Bearing Pressure for Footing (psf)			
Remove / Replace Depth (ft)	**Bearing Stress on Native Subgrade (psf) (1)**	**No Improve**	**Lime Treated Fill (1)**	**Structural Fill (1)**	**Structural Fill w/ Geogrid (2)**
0	3,658		3,000	3,000	3,000
1	3,377	-	3,250	3,250	3,500
2	3,135	-	3,500	3,500	4,000
3	2,926	-	3,750	3,750	4,500
4	2,744	-	4,000	4,000	5,000
5	2,582	-	4,250	4,250	5,000
6	2,439	-	4,500	4,500	5,000
7	2,310	-	4,500	4,750	5,000
8	2,195	-	4,500	5,000	5,000
9	2,090	-	4,500	5,000	5,000
10	1,995	-	4,500	5,000	5,000

Notes:

(1) Calculated assuming stress dissipation of 2V:1H with depth onto subgrade.

(2) Calculated assuming stress dissipation of 1V:1H with depth onto subgrade.

$$q_{ult} = c(N_c) + q(N_q) + 0.5(\gamma)(B_f)(N_\gamma) \quad (5\text{-}7)$$

where: c = cohesion of the soil
N_c = bearing capacity factor for the cohesion term
q = surcharge at the base of the footing
N_q = bearing capacity factor for the surcharge term
B_f = footing width
γ = unit weight of soil beneath the footing
N_γ = bearing capacity factor for soil unit weight

$$N_\gamma = 2(N_q + 1)\tan(\phi) \quad (5\text{-}8)$$

N_c = bearing capacity factor for the cohesion term:

$$= (N_q - 1)\cot\phi \qquad \text{for } \phi > 0° \quad (5\text{-}3)$$

$$= 2 + \pi = 5.14 \qquad \text{for } \phi = 0° \quad (5\text{-}4)$$

$$q_{ult\ net} = q_{ult\ gross} - q \quad (5\text{-}5)$$

$$q_{ult\ net} = c\,N_c + q(N_q - 1) \quad (5\text{-}6)$$

TABLE 5-1: BEARING CAPACITY FACTORS (AASHTO, 1996)

ϕ	N_c	N_q	N_γ	ϕ	N_c	N_q	N_γ
0	5.14	1.0	0.0	23	18.1	8.7	8.2
1	5.4	1.1	0.1	24	19.3	9.6	9.4
2	5.6	1.2	0.2	25	20.7	10.7	10.9
3	5.9	1.3	0.2	26	22.3	11.9	12.5
4	6.2	1.4	0.3	27	23.9	13.2	14.5
5	6.5	1.6	0.5	28	25.8	14.7	16.7
6	6.8	1.7	0.6	29	27.9	16.4	19.3
7	7.2	1.9	0.7	30	30.1	18.4	22.4
8	7.5	2.1	0.9	31	32.7	20.6	26.0
9	7.9	2.3	1.0	32	35.5	23.2	30.2
10	8.4	2.5	1.2	33	38.6	26.1	35.2
11	8.8	2.7	1.4	34	42.2	29.4	41.1
12	9.3	3.0	1.7	35	46.1	33.3	48.0
13	9.8	3.3	2.0	36	50.6	37.8	56.3
14	10.4	3.6	2.3	37	55.6	42.9	66.2
15	11.0	3.9	2.7	38	61.4	48.9	78.0
16	11.6	4.3	3.1	39	67.9	56.0	92.3
17	12.3	4.8	3.5	40	75.3	64.2	109.4
18	13.1	5.3	4.1	41	83.9	73.9	130.2
19	13.9	5.8	4.7	42	93.7	85.4	155.6
20	14.8	6.4	5.4	43	105.1	99.0	186.5
21	15.8	7.1	6.2	44	118.4	115.3	224.6
22	16.9	7.8	7.1	45	133.9	134.9	271.8

TABLE 5-2: SHAPE CORRECTION FACTORS (AASHTO 1996)

Factor	Friction Angle	Cohesion Term (s_c)	Unit Weight Term (s_γ)	Surcharge Term (s_q)
Shape Factors, s_c, s_γ, s_q	$\phi = 0$	$1 + \left(\frac{B_f}{5L_f}\right)$	1.0	1.0
	$\phi > 0$	$1 + \left(\frac{B_f}{L_f}\right)\left(\frac{N_q}{N_c}\right)$	$1 - 0.4\left(\frac{B_f}{L_f}\right)$	$1 + \left(\frac{B_f}{L_f}\tan\phi\right)$

Note: Shape (eccentricity) factors, s, should not be applied simultaneously with inclined loading factors, i. See Section 5.2.3.7.

TABLE 5-3: CORRECTION FACTOR FOR LOCATION OF GROUND WATER TABLE (AASHTO, 1998)

Depth of Ground Water Table, D_W	$C_{W\gamma}$	C_{Wq}
0	0.5	0.5
D_f	0.5	1.0
$> 1.5B_f + D_f$	1.0	1.0

Note: For intermediate positions of the ground water table, interpolate between the values shown above or use Equations 5-9 and 5-10.

Note: input total unit weights (not buoyant unit weights) because the Table 5-3 corrections are applied to the γ-term and q-term

5.2.3.4 Sloping Ground Surface

Placement of footings on or adjacent to slopes requires that the designer perform calculations to ensure that both the bearing capacity and the overall slope stability are acceptable. The bearing capacity equation should include corrections recommended by AASHTO as adapted from NAVFAC (1986b) to design the footings. Calculation of overall, or global, stability is discussed in Section 5.5.

The ultimate bearing capacity equation (Equation 5-7) is therefore modified to include terms N_{cq} and $N_{\gamma q}$ that replace the N_c and N_γ terms (Equation 5-11).

$$q_{ult} = c(N_{cq}) + 0.5(\gamma)(B_f)(N_{\gamma q}) \quad (5\text{-}11)$$

Charts are provided (Figure 5-7) to determine these terms for cohesive ($\phi = 0°$) and cohesionless ($c = 0$) soils. Note in Figure 5-7d that beyond a distance, 'b,' of two to six times the foundation width, the bearing capacity is independent of the slope angle (identical to the horizontal ground surface). Also note that the depth of embedment term goes to zero because the surcharge effect on the slope side of the footing should be ignored.

Appendix K Swell and Heave Analysis

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JOB TITLE Plum 21 Rehab
PROJECT/JOB NO. _____ CALCULATION NO. Swell Analysis
COMPUTED BY LTF DATE 4/3/2020
VERIFIED BY _____ DATE _____
SCALE _____ SHEET NO. 1 OF 4

Objectives

- Analyze laboratory swell test data
- Develop estimates of potential expansive soil heave for proposed structures

Given

- Swell test results from NRCS Lab performed as follows:
  - Step 1) apply 250 psf seating load
  - Step 2) inundate w/ water + perform as constant volume (CV) test to prevent swelling + obtain swell pressure value
  - Step 3) increase load to next regular interval and perform constant-load (CL) consolidation
  - Step 4) incrementally unload in halving increments as CL consolidation and measure % swell at each step
- Unfactored foundation pressures (q_{max}) and base width (B) from structures team:

ASW RCC Chute = 3' × 150 pcf =	450 psf	(B = 250')
ASW Training Walls (embankment crest) =	2463 psf	(B = 12')
" " " (embankment slopes) =	2463 psf	(B = 12')
" " " (stilling basin) =	4750 psf	(B = 12')
PSW impact basin =	2900 psf	(B = 17.8')
PSW inlet tower =	1530 psf	(B = 12.5')

- Proposed geometry from 60% drawings
- Geologic Investigation (GI) Report – Balcones, 2019
- Lab Testing SMR – NRCS, 2019

4x4 = 1 in

AECOM Imagine it. Delivered.

JOB TITLE: Plum 21 Rehab
PROJECT/JOB NO.:
CALCULATION NO.: Swell Analysis
COMPUTED BY: LTF
DATE: 4/3/2020
VERIFIED BY:
DATE:
SCALE:
SHEET NO. 2 OF 4

Analysis

- Step 1: Analyze Test Data ("Swell Analysis_2020.04.02_rev3.xlsx")
  - For each test, tabulate applied pressure, initial + final strain at each load step, calculate strain at each increment, and cumulative strain at end of each load
  - Plot strain (ε) versus log(pressure) for all tests, color grouping by material type
  - Calculate Swelling Strain Index, $C_{S\varepsilon} = \dfrac{\varepsilon_{max\,load} - \varepsilon_{min\,unload}}{\log(P_{max\,load}) - \log(P_{min\,unload})}$
  - Obtain Swell pressure (SP) as the maximum pressure from raw data during CV phase of test
  - Estimate the "free swell" (i.e., swell strain at 20 psf confining pressure) based on Swell pressure + $C_{S\varepsilon}$:

$$\%Swell_{20psf} = \left[\frac{(\%Swell_{250psf})}{100} + C_{S\varepsilon}\left(\log(250psf) - \log(20psf)\right)\right] \times 100$$

  - Plot SP against LL, PI, and Clay fraction (CF) to identify potential trends. Do the same with $\%Swell_{250psf}$.

4x4 = 1 in

AECOM Imagine it. Delivered.

JOB TITLE Plum 21 Rehab
PROJECT/JOB NO. CALCULATION NO. Swell Analysis
COMPUTED BY LTF DATE 4/3/2020
VERIFIED BY DATE
SCALE SHEET NO. 3 OF 4

Analysis Cont'd

- Step 2: Estimate potential vertical heave on proposed structures ("Plum 21 - Heave Calculations - 2020.04.03.xlsx")
  - Develop estimates of design groundwater level for each structure
  - Adjust thickness and unit weight of non-expansive fill below proposed footing to limit amount of calculated heave to tolerable value
  - Perform reverse-consolidation analyses to calculate estimated heave:
    1) Divide subgrade into ~2" thick layers. Consider heave only in layers below the non-expansive fill below footing.
    2) Use 2-1 stress distribution method to estimate foundation stress distribution to midpoint of layer:

$$\Delta\sigma_m = (q_{max})\left(\frac{B}{B + z_{midpoint}}\right)$$

; where $z_{midpoint}$ = depth below footing to midpoint of layer

    3) Calculate total stress at midpoint of layer:

$$\sigma_t = \Delta\sigma_m + \gamma_F H_F + \sum \gamma_i H_i$$

where γ_F = unit weight of non-expansive fill
H_F = thickness of non-expansive fill
γ_i = unit weight of subgrade layer
H_i = thickness of subgrade layer

    4) Calculate effective stress

$$\sigma' = \sigma_t - (62.4\,pcf)(h_w)$$

where h_w = height of water above layer midpoint

4x4 = 1 in

AECOM Imagine it. Delivered.

JOB TITLE: Plum 21 Rehab
PROJECT/JOB NO.:
CALCULATION NO.: Swell Analysis
COMPUTED BY: LTF
DATE: 4/3/2020
VERIFIED BY:
DATE:
SCALE:
SHEET NO. 4 OF 4

Analysis Cont'd

- Step 2 cont'd

5) Calculate % Swell in each sub-layer:

$$\%\,Swell = \begin{cases} C_{s\varepsilon} \times \left(\log(SP) - \log(\sigma')\right) \times 100 & \text{if } \sigma' \leq SP \\ 0 \text{ if } \sigma' > SP \end{cases}$$

6) Calculate heave of individual sublayers:

$$Heave_i = (\text{Layer Thickness})\frac{(\%\,Swell)}{100}$$

7) Calculate total heave on foundation

Unlimited Active Zone $= \sum Heave_i$

Active Zone limited to 15' below base of footing $= \sum Heave_i$ for $z \leq 15'$

- Consider 15' limited active zone as representative of actual heave
- Adjust one or more of the following to reduce Heave to tolerable value:

A) increase thickness of RCC/footing to increase stress on subgrade to counteract swell pressure;

B) increase thickness of non-expansive fill below RCC/footing to reduce thickness of expansive material within the active zone

4x4 = 1 in

Attachment 1. Analysis of Swell Test Data

SUMMARY OF SWELL TEST DATA

						Natural Index Props.									Post-Swell Test Index Props.				Swell Results		
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Ground-water Depth (ft bgs)	Ground-water Elev. (ft)	Stratum	Natural Moisture Content (%)	Dry Unit Weight (pcf)	Gs	Total Unit Weight (pcf)	USCS	LL	PI	Calc'd Void Ratio	Calc'd Degree of Saturation (%)	Post-Test Moisture Content (%)	Post-Test Dry Unit Weight (pcf)	Calc'd Void Ratio	Calc'd Degree of Saturation	Swell Pressure (psf)	Swell Strain Index, Cs_{ε}	Swell (%) at σ= 250psf
B-05	253	7.5-10	---	---	Embankment	18.3	99.2	2.70	117.4	CL	48	27	0.698	70.6	24.9	98.4	0.713	94.2	1,538	0.011	0.68
B-05	255	15-17.5	---	---	Embankment	30.6	89.2	2.72	116.5	CH	82	55	0.889	93.0	33.8	88.0	0.929	99.1	1,716	0.016	1.12
B-06P	260	15-17.5	32.7	493.5	Embankment	23.8	95.0	2.75	117.5	CL	46	23	0.774	82.9	27.4	95.0	0.807	93.2	472	0.005	No swell
B-07	265	10.0-12.0	---	---	Embankment	13.6	98.9	2.72	112.4	CL	46	24	0.704	52.3	25.3	98.3	0.726	94.9	1,074	0.013	0.37
B-07	266	15-17.5	---	---	Embankment	16.5	112.1	2.76	130.6	CH	52	32	0.503	88.4	19.7	108.6	0.586	92.8	5,760	0.023	3.02
B-301	282	18-20	5.9	494.1	Residuum	19.7	101.8	2.73	121.8	CL	47	24	0.655	81.0	24.4	100.9	0.688	96.7	1,850	0.011	0.74
B-601	289	10-12.5	13.4	487.3	Residuum	21.5	95.2	2.73	115.6	CH	52	32	0.770	75.4	26.3	95.0	0.793	90.3	802	0.006	No swell
B-601	290	19-20.5	13.4	487.3	Residuum	20.6	96.0	2.73	115.7	CH	58	35	0.755	73.5	27.9	95.4	0.785	96.9	1,250	0.011	0.40
B-602	292	15-17	10.3	484.7	Residuum	22.3	98.7	2.72	120.7	CH	57	34	0.708	85.1	26.1	97.4	0.742	95.4	1,942	0.014	1.08
B-603	297	15.5-17.5	---	---	Residuum	26.0	95.3	2.74	120.0	CH	65	41	0.769	91.2	29.6	94.0	0.818	99.1	2,440	0.015	1.06
B-604	305	20-21	---	---	Residuum	23.2	100.3	2.73	123.6	CH	68	43	0.680	92.3	27.7	97.1	0.754	100.3	5,540	0.024	3.10
19-COMP-1		0-4	n/a	n/a	Borrow	18.0	101.7	2.70	120.0	CL	43	25	0.657	73.8	22.6	100.6	0.675	90.6	1,828	0.014	0.94
19-COMP-3		0-3	n/a	n/a	Borrow	19.8	97.2	2.70	116.4	CH	50	31	0.734	72.9	24.8	97.0	0.737	90.6	2,020	0.019	No swell

Boring	B-05						B-05						B-06P					
Depth (ft)	7.5-9.5						15-17.5						15-17.5					
NRCS ID	253						255						260					
Material	Embankment						Embankment						Embankment					
Liquid Limit	48						82						46					
Plasticity Index	27						55						23					
CF (%)	27						53						22					
Load Step	Pressure (tsf)	Pressure (psf)	Initial Strain (%)	Final Strain (%)	Incr. Strain (%)	Cum. Strain (%)	Pressure (tsf)	Pressure (psf)	Initial Strain (%)	Final Strain (%)	Incr. Strain (%)	Cum. Strain (%)	Pressure (tsf)	Pressure (psf)	Initial Strain (%)	Final Strain (%)	Incr. Strain (%)	Cum. Strain (%)
seating/constant load	0.125	250	-0.13	0.05	0.18	0.18	0.125	250	-0.13	0.09	0.22	0.22	0.125	250	-0.13	0.19	0.32	0.32
inundation/constant volume (peak)	0.769	1,538	0.05	0.05	0.00	0.18	0.858	1,716	0.09	0.09	0.00	0.22	0.236	472	0.19	0.19	0.00	0.32
loading/constant load	1	2,000	-0.53	-0.36	0.17	0.35	1	2,000	-0.49	-0.39	0.10	0.32	0.25	500	-0.03	-0.01	0.02	0.34
unloading/constant load	0.5	1,000	0.14	-0.11	-0.25	0.10	0.5	1,000	0.11	-0.22	-0.33	-0.01	0.125	250	0.13	-0.02	-0.15	0.19
unloading/constant load	0.25	500	-0.11	-0.47	-0.36	-0.26	0.25	500	-0.22	-0.84	-0.62	-0.63						
unloading/constant load	0.125	250	-0.47	-0.89	-0.42	-0.68	0.125	250	-0.84	-1.33	-0.49	-1.12						
unloading/constant load																		
unloading/constant load																		
	Swelling Strain Index, Csε			0.011			**Swelling Strain Index, Csε**			0.016			**Swelling Strain Index, Csε**			0.005		
	Swell (%) at σ=250psf			0.68			**Swell (%) at σ=250psf**			1.12			**Swell (%) at σ=250psf**			-0.19		
	Est. Swell (%) at σ=20psf			1.93			**Est. Swell (%) at σ=20psf**			2.87			**Est. Swell (%) at σ=20psf**			0.36		
	Swell Pressure (tsf)			0.769			**Swell Pressure (tsf)**			0.858			**Swell Pressure (tsf)**			0.236		
	Swell Pressure (psf)			1,538			**Swell Pressure (psf)**			1,716			**Swell Pressure (psf)**			472		

Notes:

1. Initial strain is not related to final strain on prior step (test apparatus artifact)
2. Negative (-) strain = Swell
3. Positive (+) strain = Settlement
4. $Cs\varepsilon=(\varepsilon 2-\varepsilon 1) / (\log[p1]-\log[p2])$

Boring	B-07						B-07						B-301					
Depth (ft)	10-12						15-17.5						18-20					
NRCS ID	265						266						282					
Material	Embankment						Embankment						Midway Residuum					
Liquid Limit	46						52						47					
Plasticity Index	24						32						24					
CF (%)	23						32						27					
Load Step	Pressure (tsf)	Pressure (psf)	Initial Strain (%)	Final Strain (%)	Incr. Strain (%)	Cum. Strain (%)	Pressure (tsf)	Pressure (psf)	Initial Strain (%)	Final Strain (%)	Incr. Strain (%)	Cum. Strain (%)	Pressure (tsf)	Pressure (psf)	Initial Strain (%)	Final Strain (%)	Incr. Strain (%)	Cum. Strain (%)
seating/constant load	0.125	250	-0.13	0.17	0.30	0.30	0.125	250	-0.13	-0.04	0.09	0.09	0.125	250	-0.13	0.03	0.16	0.16
inundation/constant volume (peak)	0.537	1,074	0.17	0.17	0.00	0.30	2.88	5,760	-0.04	-0.04	0.00	0.09	0.925	1,850	0.03	0.04	0.01	0.17
loading/constant load	1	2,000	-0.41	0.11	0.52	0.82	4	8,000	-1.09	-0.76	0.33	0.42	1	2,000	-0.55	-0.46	0.09	0.26
unloading/constant load	0.5	1,000	0.62	0.35	-0.27	0.55	2	4,000	0.22	-0.22	-0.44	-0.02	0.5	1,000	0.04	-0.23	-0.27	-0.01
unloading/constant load	0.25	500	0.35	-0.06	-0.41	0.14	1	2,000	-0.22	-0.97	-0.75	-0.77	0.25	500	-0.23	-0.60	-0.37	-0.38
unloading/constant load	0.125	250	-0.06	-0.57	-0.51	-0.37	0.5	1,000	-0.97	-1.44	-0.47	-1.24	0.125	250	-0.60	-0.96	-0.36	-0.74
unloading/constant load							0.25	500	-1.44	-2.63	-1.19	-2.43						
unloading/constant load							0.125	250	-2.63	-3.22	-0.59	-3.02						
	Swelling Strain Index, Csε			**0.013**			**Swelling Strain Index, Csε**			**0.023**			**Swelling Strain Index, Csε**			**0.011**		
	Swell (%) at σ=250psf			**0.37**			**Swell (%) at σ=250psf**			**3.02**			**Swell (%) at σ=250psf**			**0.74**		
	Est. Swell (%) at σ=20psf			**1.82**			**Est. Swell (%) at σ=20psf**			**5.53**			**Est. Swell (%) at σ=20psf**			**1.95**		
	Swell Pressure (tsf)			**0.537**			**Swell Pressure (tsf)**			**2.880**			**Swell Pressure (tsf)**			**0.925**		
	Swell Pressure (psf)			**1,074**			**Swell Pressure (psf)**			**5,760**			**Swell Pressure (psf)**			**1,850**		

Notes:

1. Initial strain is not related to final s
2. Negative (-) strain = Swell
3. Positive (+) strain = Settlement
4. $Cs\varepsilon=(\varepsilon 2-\varepsilon 1) / (\log[p1]-\log[p2])$

Boring	B-601						B-601						B-602					
Depth (ft)	10-12.5						19-20.5						15-17					
NRCS ID	289						290						292					
Material	Midway Residuum						Midway Residuum						Midway Residuum					
Liquid Limit	52						58						57					
Plasticity Index	32						35						34					
CF (%)	35						33						31					
Load Step	Pressure (tsf)	Pressure (psf)	Initial Strain (%)	Final Strain (%)	Incr. Strain (%)	Cum. Strain (%)	Pressure (tsf)	Pressure (psf)	Initial Strain (%)	Final Strain (%)	Incr. Strain (%)	Cum. Strain (%)	Pressure (tsf)	Pressure (psf)	Initial Strain (%)	Final Strain (%)	Incr. Strain (%)	Cum. Strain (%)
seating/constant load	0.125	250	-0.13	0.18	0.31	0.31	0.125	250	-0.13	0.18	0.31	0.31	0.125	250	-0.13	0.03	0.16	0.16
inundation/constant volume (peak)	0.401	802	0.18	0.18	0.00	0.31	0.625	1,250	0.18	0.18	0.00	0.31	0.971	1,942	0.03	0.03	0.00	0.16
loading/constant load	0.5	1,000	-0.26	-0.15	0.11	0.42	1	2,000	-0.40	-0.12	0.28	0.59	1	2,000	-0.55	-0.54	0.01	0.17
unloading/constant load	0.25	500	0.22	0.08	-0.14	0.28	0.5	1,000	0.38	0.10	-0.28	0.31	0.5	1,000	-0.03	-0.41	-0.38	-0.21
unloading/constant load	0.125	250	0.08	-0.17	-0.25	0.03	0.25	500	0.10	-0.23	-0.33	-0.02	0.25	500	-0.41	-0.84	-0.43	-0.64
unloading/constant load							0.125	250	-0.23	-0.61	-0.38	-0.40	0.125	250	-0.84	-1.28	-0.44	-1.08
unloading/constant load																		
unloading/constant load																		
	Swelling Strain Index, Csε			**0.006**			**Swelling Strain Index, Csε**			**0.011**			**Swelling Strain Index, Csε**			**0.014**		
	Swell (%) at σ=250psf			**-0.03**			**Swell (%) at σ=250psf**			**0.40**			**Swell (%) at σ=250psf**			**1.08**		
	Est. Swell (%) at σ=20psf			**0.68**			**Est. Swell (%) at σ=20psf**			**1.60**			**Est. Swell (%) at σ=20psf**			**2.60**		
	Swell Pressure (tsf)			**0.401**			**Swell Pressure (tsf)**			**0.625**			**Swell Pressure (tsf)**			**0.971**		
	Swell Pressure (psf)			**802**			**Swell Pressure (psf)**			**1,250**			**Swell Pressure (psf)**			**1,942**		

Notes:

1. Initial strain is not related to final s
2. Negative (-) strain = Swell
3. Positive (+) strain = Settlement
4. Csε=(ε2-ε1) / (log[p1]-log[p2])

Boring	B-603						B-604						COMP-1					
Depth (ft)	15.5-17.5						20-21						0-4					
NRCS ID	297						305						19-COMP1					
Material	Midway Residuum						Midway Residuum						Borrow #1					
Liquid Limit	65						68						43					
Plasticity Index	41						43						25					
CF (%)	41						40						35					
Load Step	Pressure (tsf)	Pressure (psf)	Initial Strain (%)	Final Strain (%)	Incr. Strain (%)	Cum. Strain (%)	Pressure (tsf)	Pressure (psf)	Initial Strain (%)	Final Strain (%)	Incr. Strain (%)	Cum. Strain (%)	Pressure (tsf)	Pressure (psf)	Initial Strain (%)	Final Strain (%)	Incr. Strain (%)	Cum. Strain (%)
seating/constant load	0.125	250	-0.13	0.10	0.23	0.23	0.125	250	-0.13	0.02	0.15	0.15	0.125	250	-0.13	0.14	0.27	0.27
inundation/constant volume (peak)	1.22	2,440	0.10	0.11	0.01	0.24	2.77	5,540	0.02	0.03	0.01	0.16	0.914	1,828	0.14	0.15	0.01	0.28
loading/constant load	2	4,000	-0.69	-0.29	0.40	0.64	4	8,000	-1.03	-0.68	0.35	0.51	1	2,000	-0.44	-0.40	0.04	0.32
unloading/constant load	1	2,000	0.42	0.01	-0.41	0.23	2	4,000	0.29	-0.21	-0.50	0.01	0.5	1,000	0.11	-0.17	-0.28	0.04
unloading/constant load	0.5	1,000	0.01	-0.51	-0.52	-0.29	1	2,000	-0.21	-0.93	-0.72	-0.71	0.25	500	-0.17	-0.61	-0.44	-0.40
unloading/constant load	0.25	500	-0.51	-0.89	-0.38	-0.67	0.5	1,000	-0.93	-1.53	-0.60	-1.31	0.125	250	-0.61	-1.15	-0.54	-0.94
unloading/constant load	0.125	250	-0.89	-1.28	-0.39	-1.06	0.25	500	-1.53	-2.12	-0.59	-1.90						
unloading/constant load							0.125	250	-2.12	-3.32	-1.20	-3.10						
	Swelling Strain Index, Csε			**0.015**			**Swelling Strain Index, Csε**			**0.024**			**Swelling Strain Index, Csε**			**0.014**		
	Swell (%) at σ=250psf			**1.06**			**Swell (%) at σ=250psf**			**3.10**			**Swell (%) at σ=250psf**			**0.94**		
	Est. Swell (%) at σ=20psf			**2.65**			**Est. Swell (%) at σ=20psf**			**5.73**			**Est. Swell (%) at σ=20psf**			**2.47**		
	Swell Pressure (tsf)			**1.220**			**Swell Pressure (tsf)**			**2.770**			**Swell Pressure (tsf)**			**0.914**		
	Swell Pressure (psf)			**2,440**			**Swell Pressure (psf)**			**5,540**			**Swell Pressure (psf)**			**1,828**		

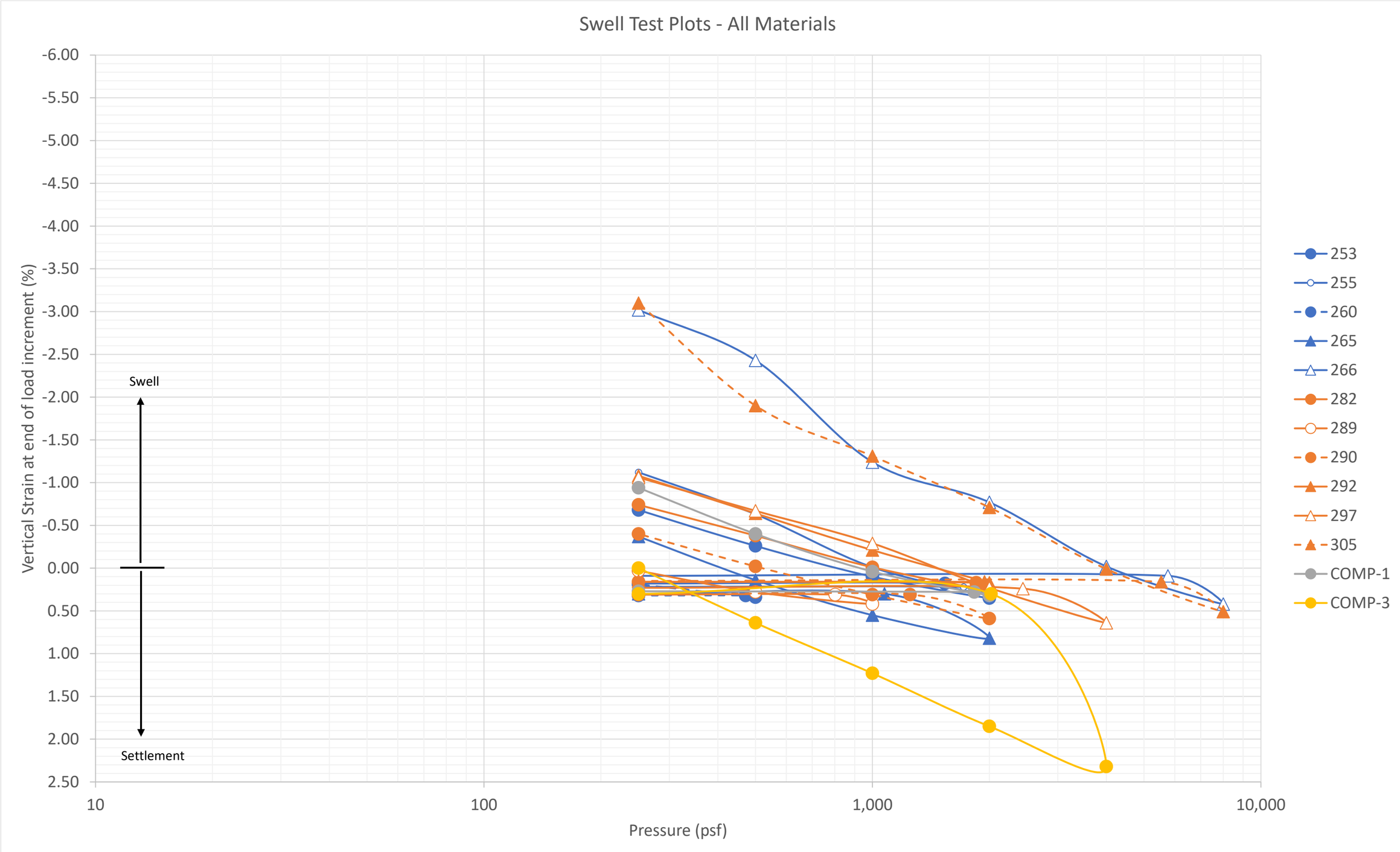
Notes:

1. Initial strain is not related to final s
2. Negative (-) strain = Swell
3. Positive (+) strain = Settlement
4. Csε=(ε2-ε1) / (log[p1]-log[p2])

Boring	COMP-3					
Depth (ft)	0-3					
NRCS ID	19-COMP3					
Material	Borrow #2					
Liquid Limit	50					
Plasticity Index	31					
CF (%)	41					
Load Step	Pressure (tsf)	Pressure (psf)	Initial Strain (%)	Final Strain (%)	Incr. Strain (%)	Cum. Strain (%)
seating/constant load	0.125	250	-0.13	0.17	0.30	0.30
inundation/constant volume (peak)	1.01	2,020	0.17	0.17	0.00	0.30
loading/constant load	2	4,000	-0.63	1.39	2.02	2.32
unloading/constant load	1	2,000	2.11	1.64	-0.47	1.85
unloading/constant load	0.5	1,000	1.64	1.02	-0.62	1.23
unloading/constant load	0.25	500	1.02	0.43	-0.59	0.64
unloading/constant load	0.125	250	0.43	-0.21	-0.64	0.00
unloading/constant load						
	Swelling Strain Index, Csε			**0.019**		
	Swell (%) at σ=250psf			**0.00**		
	Est. Swell (%) at σ=20psf			**2.11**		
	Swell Pressure (tsf)			**1.010**		
	Swell Pressure (psf)			**2,020**		

Notes:

1. Initial strain is not related to final s
2. Negative (-) strain = Swell
3. Positive (+) strain = Settlement
4. Csε=(ε2-ε1) / (log[p1]-log[p2])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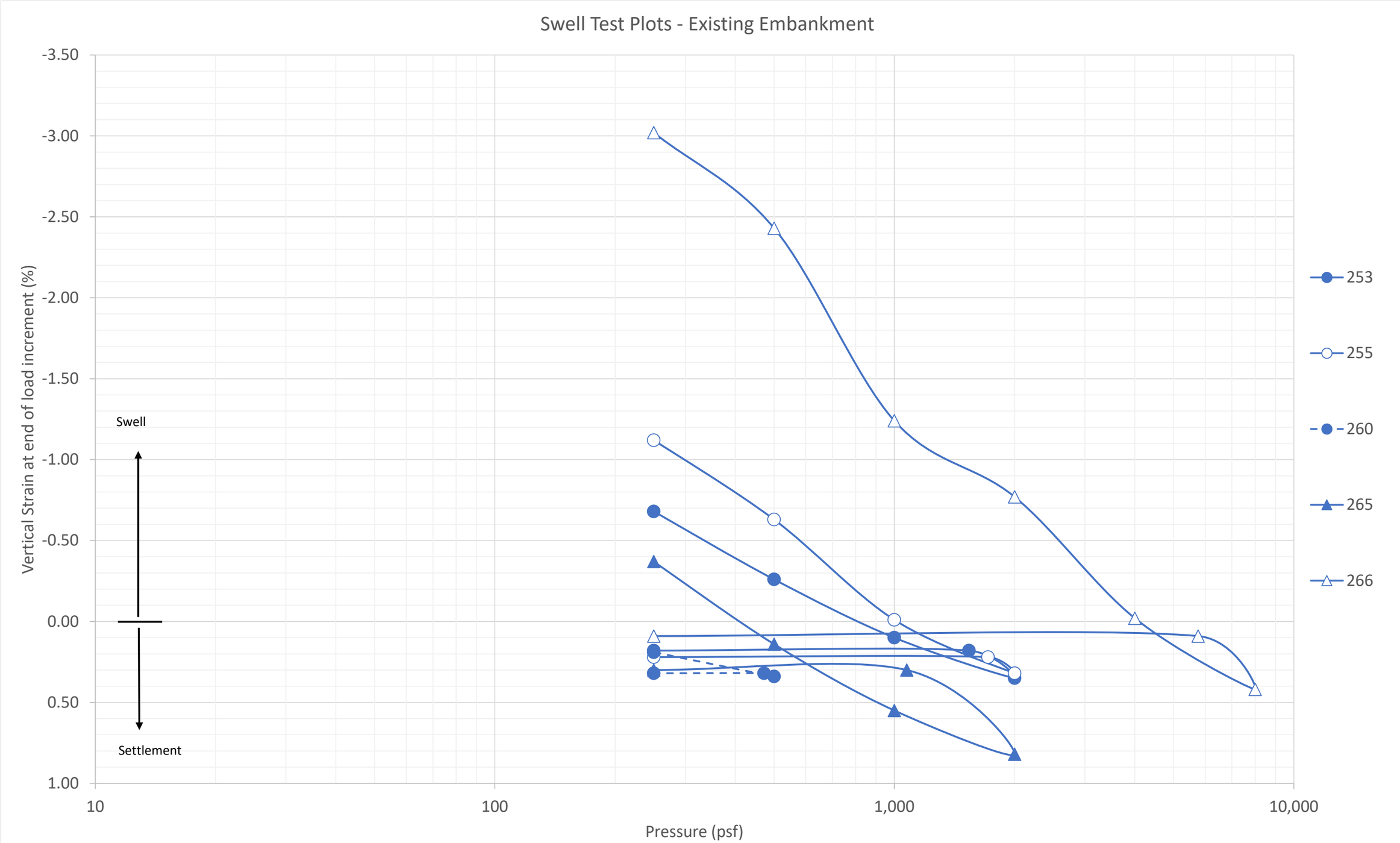
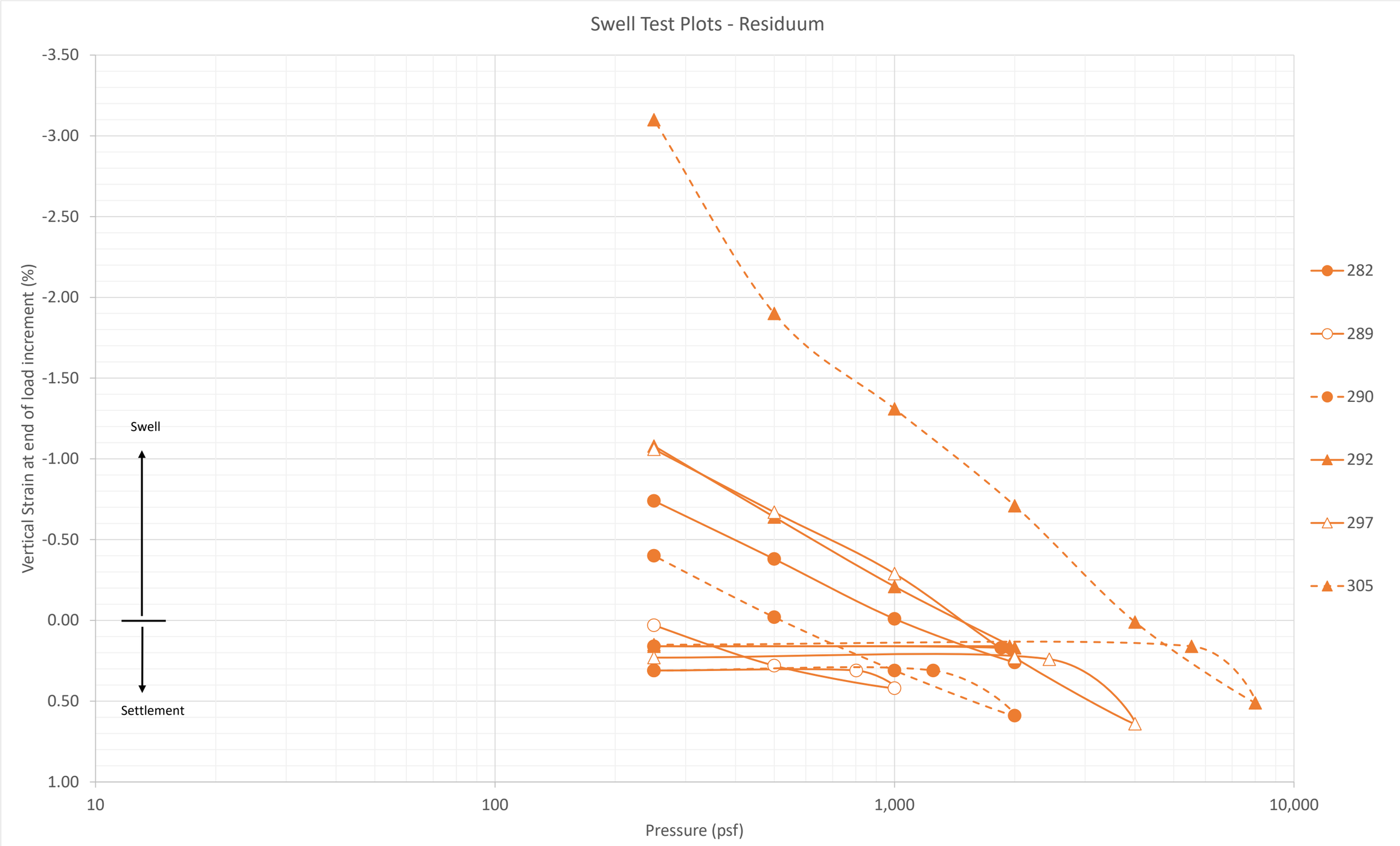
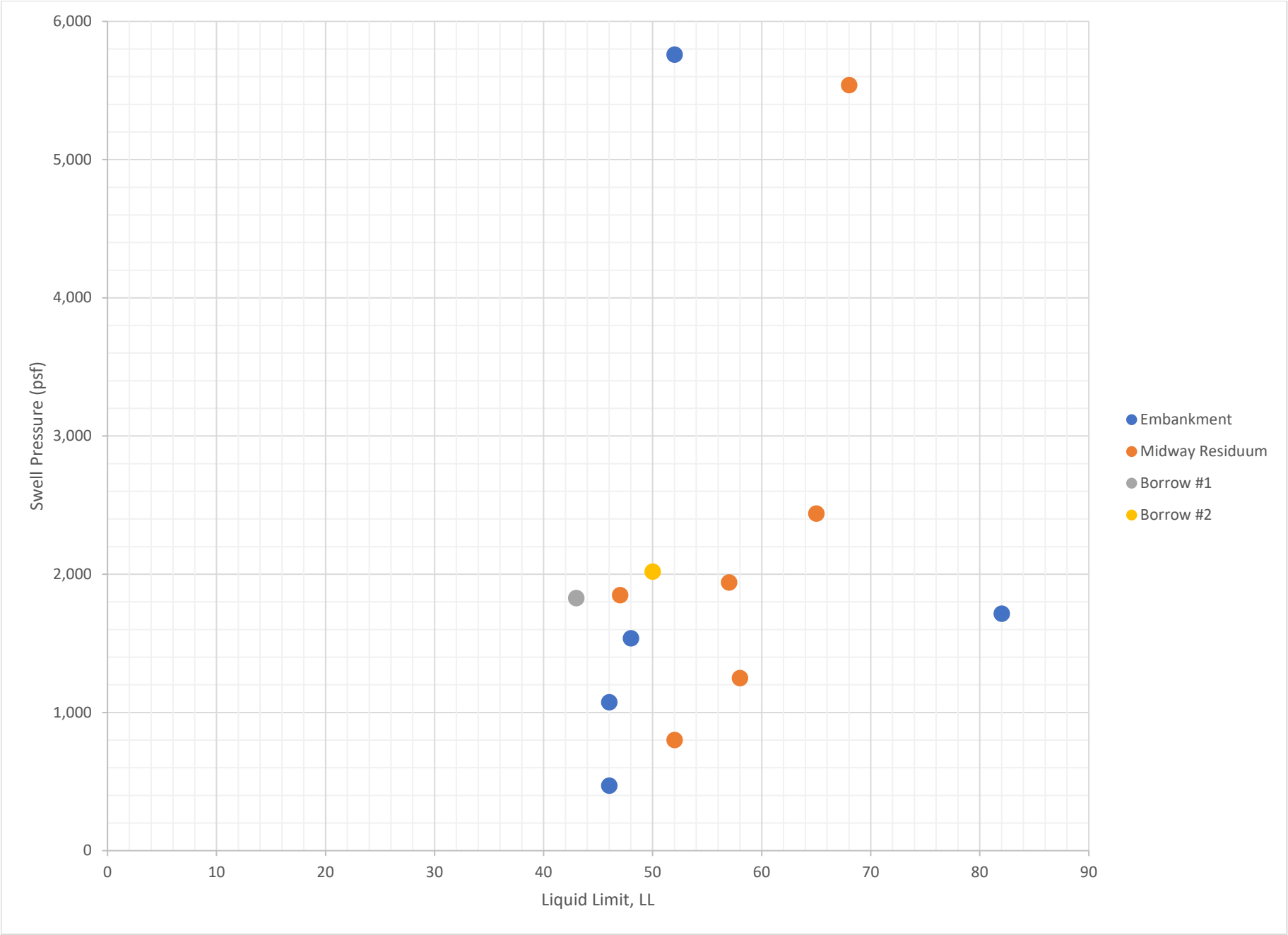
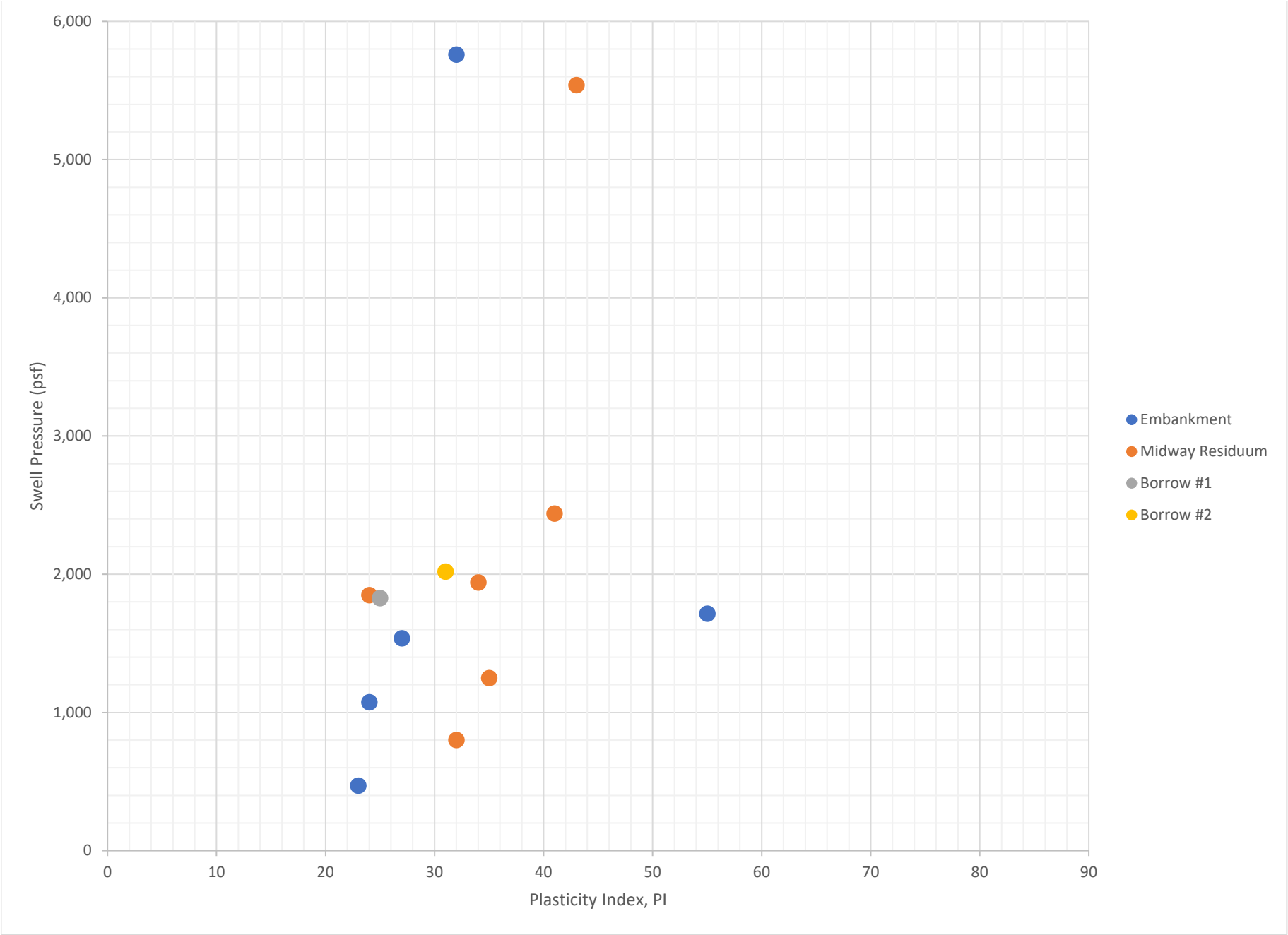
-6.00
-5.50
-5.00
-4.50
-4.00
-3.50
-3.00
-2.50
-2.00
-1.50
-1.00
-0.50
0.00
0.50
1.00
1.50
2.00
2.50
Swell
Settlement
10
100
1,000
10,000
Pressure (psf)
253
255
260
265
266
282
289
290
292
297
305
COMP-1
COMP-3


Swell Test Plots - Existing Embankment
Vertical Strain at end of load increment (%)
-3.50
-3.00
-2.50
-2.00
-1.50
-1.00
-0.50
0.00
0.50
1.00
Swell
Settlement
10
100
1,000
10,000
Pressure (psf)
253
255
260
265
266


Swell Test Plots - Residuum
-3.50
-3.00
-2.50
-2.00
-1.50
-1.00
-0.50
0.00
0.50
1.00
Vertical Strain at end of load increment (%)
Swell
Settlement
10
100
1,000
10,000
Pressure (psf)
282
289
290
292
297
305

Swell Test Plots - Borrow Materials
-3.50
-3.00
-2.50
-2.00
-1.50
-1.00
-0.50
0.00
0.50
1.00
1.50
2.00
2.50
Vertical Strain at end of load increment (%)
Swell
Settlement
10
100
1,000
10,000
Pressure (psf)
COMP-1
COMP-3


6,000
5,000
4,000
3,000
2,000
1,000
0
Swell Pressure (psf)
0
10
20
30
40
50
60
70
80
90
Liquid Limit, LL
Embankment
Midway Residuum
Borrow #1
Borrow #2


6,000
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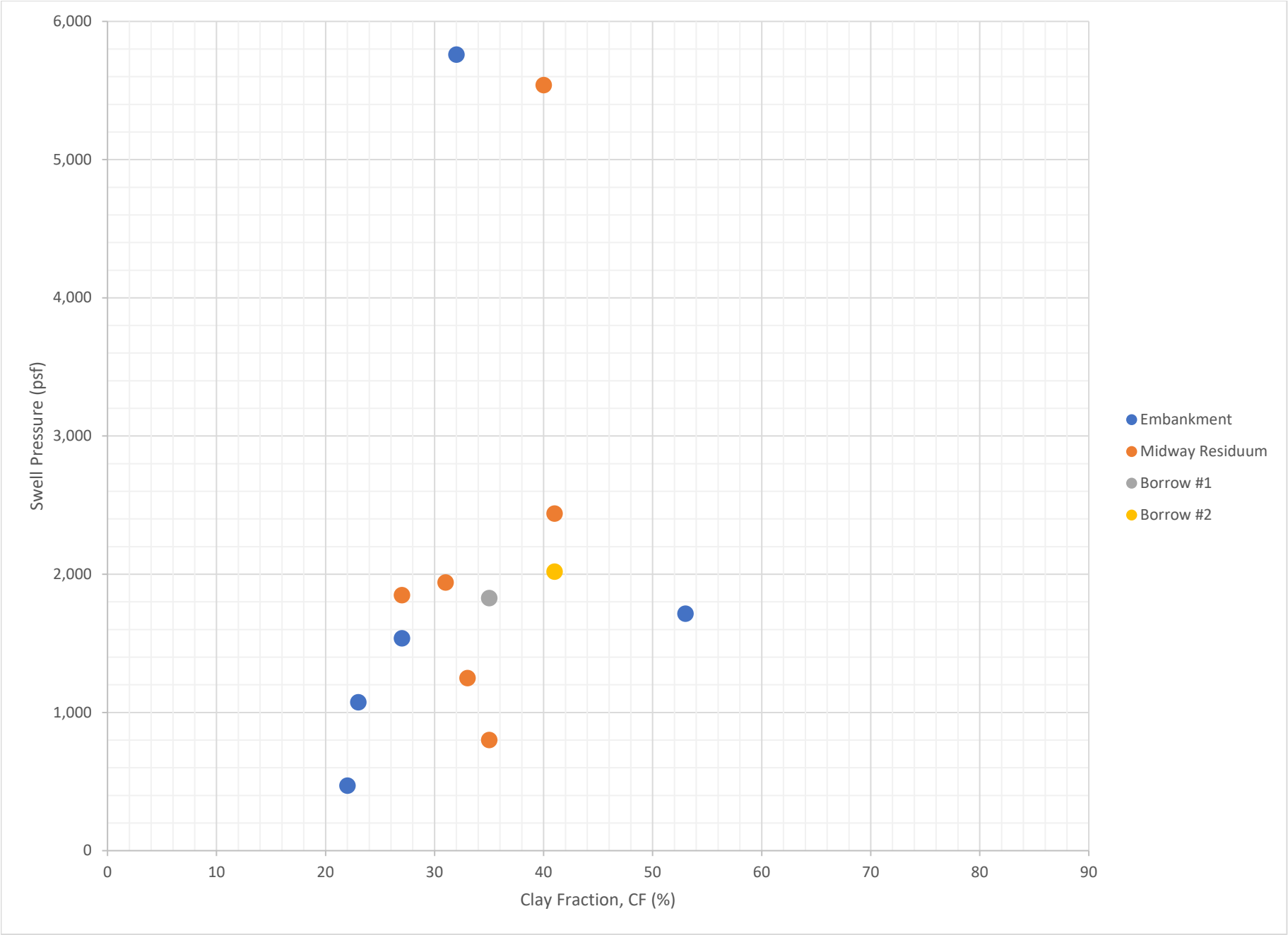
4,000
3,000
2,000
1,000
0
Swell Pressure (psf)
0
10
20
30
40
50
60
70
80
90
Plasticity Index, PI
Embankment
Midway Residuum
Borrow #1
Borrow #2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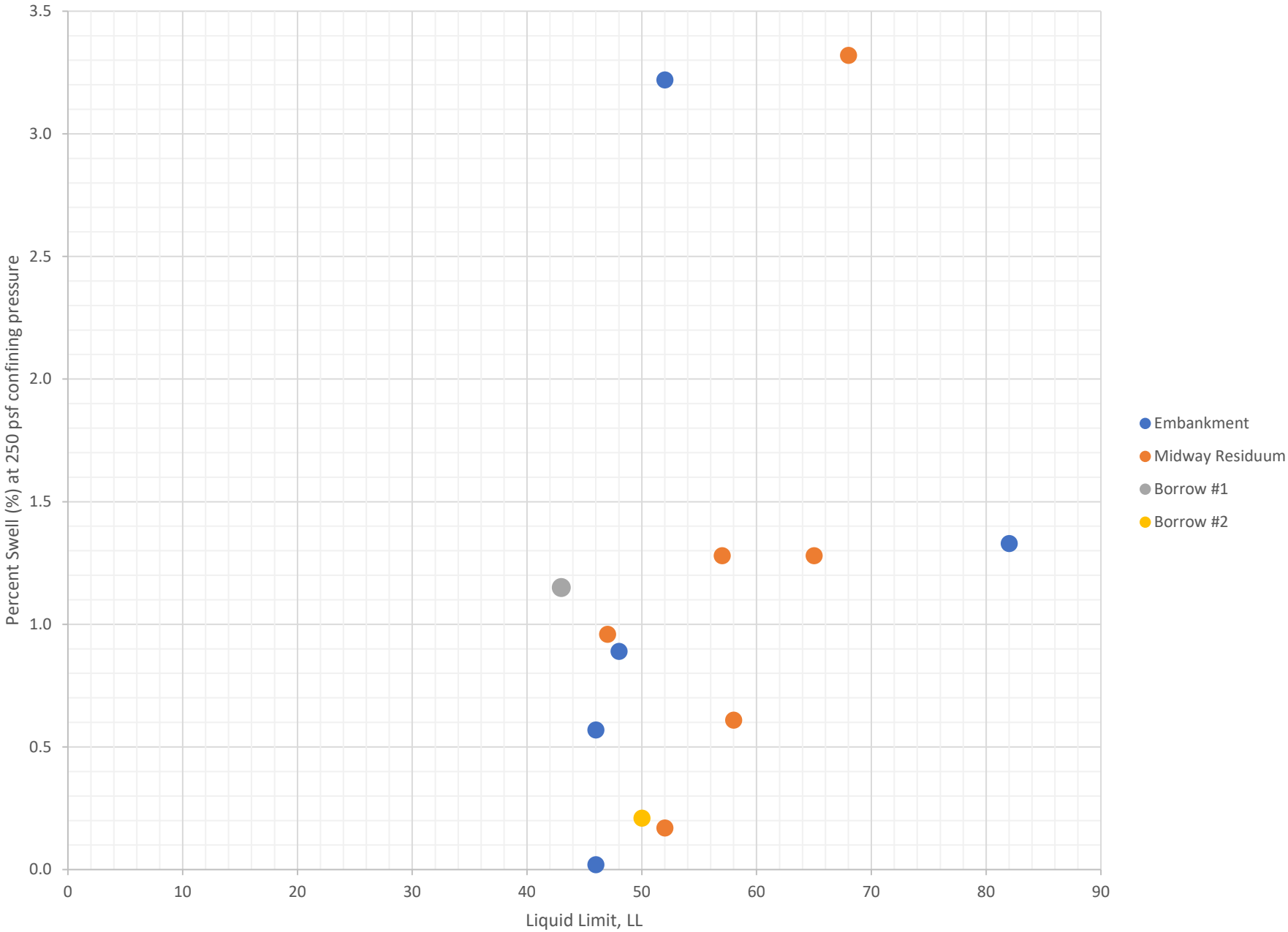
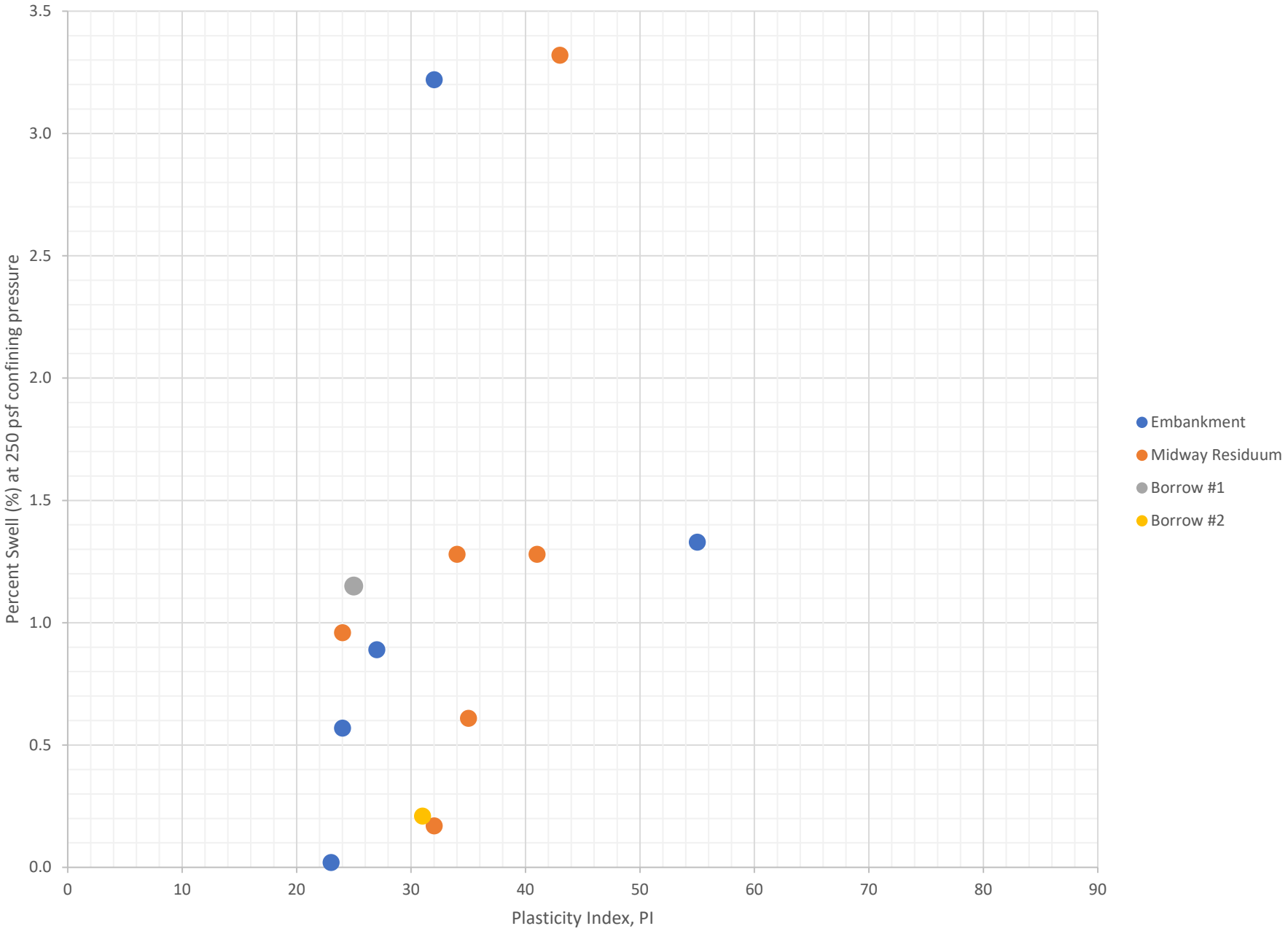
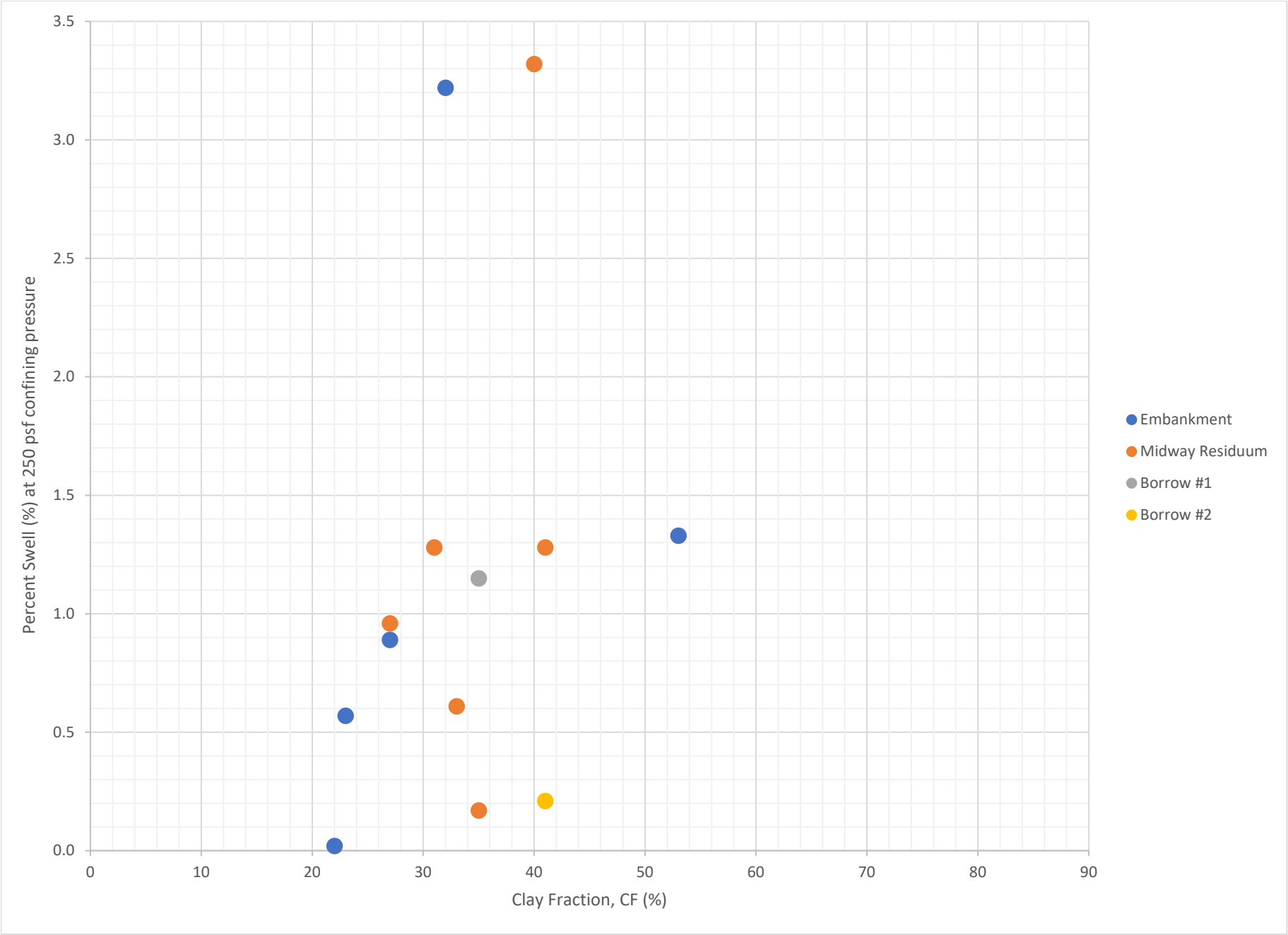
5,000
4,000
3,000
2,000
1,000
0
Swell Pressure (psf)
0
10
20
30
40
50
60
70
80
90
Clay Fraction, CF (%)
Embankment
Midway Residuum
Borrow #1
Borrow #2


3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Percent Swell (%) at 250 psf confining pressure
0
10
20
30
40
50
60
70
80
90
Liquid Limit, LL
Embankment
Midway Residuum
Borrow #1
Borrow #2


3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Percent Swell (%) at 250 psf confining pressure
0
10
20
30
40
50
60
70
80
90
Plasticity Index, PI
Embankment
Midway Residuum
Borrow #1
Borrow #2


3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Percent Swell (%) at 250 psf confining pressure
0
10
20
30
40
50
60
70
80
90
Clay Fraction, CF (%)
Embankment
Midway Residuum
Borrow #1
Borrow #2

Attachment 2a. Heave Calculations

Removal/Replacement Depth = None

SUMMARY OF SWELL CALCULATIONS FOR PROPOSED STRUCTURES

				ASW RCC Chute (Embankment Slope/Crest)					ASW RCC Chute (Stilling Basin)				
				Sustained Foundation Pressure:			450	psf	Sustained Foundation Pressure:			450	psf
				Foundation Base Width:			250	feet	Foundation Base Width:			250	feet
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Stratum	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Underdrain Thickness (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*
B-05	253	7.5-10	Embankment	30.0	0.0	0.0	0.0	0.26	-	-	-	-	-
B-05	255	15-17.5	Embankment	30.0	0.0	0.0	0.0	0.47	-	-	-	-	-
B-06P	260	15-17.5	Embankment	30.0	0.0	0.0	0.0	0.00	-	-	-	-	-
B-07	265	10.0-12.0	Embankment	30.0	0.0	0.0	0.0	0.13	-	-	-	-	-
B-07	266	15-17.5	Embankment	30.0	0.0	0.0	0.0	2.77	-	-	-	-	-
B-301	282	18-20	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.69
B-601	289	10-12.5	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.05
B-601	290	19-20.5	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.37
B-602	292	15-17	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.94
B-603	297	15.5-17.5	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	1.31
B-604	305	20-21	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	3.67
Borrow #1	19-COMP-1	0-4	Borrow	30.0	0.0	0.0	0.0	0.45	-	-	-	-	-
Borrow #3	19-COMP-3	0-3	Borrow	30.0	0.0	0.0	0.0	0.77	-	-	-	-	-
Minimum				---	---	---	---	0.00	---	---	---	---	0.05
Maximum				---	---	---	---	2.77	---	---	---	---	3.67

SUMMARY OF SWELL CA

				ASW RCC Training Walls (Embankment Slope/Crest)					ASW RCC Training Walls (Stilling Basin)				
				Sustained Foundation Pressure:			2,463	psf	Sustained Foundation Pressure:			4,750	psf
				Foundation Base Width:			12.0	feet	Foundation Base Width:			12.0	feet
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Stratum	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*
B-05	253	7.5-10	Embankment	30.0	0.0	0.0	0.0	0.00	-	-	-	-	-
B-05	255	15-17.5	Embankment	30.0	0.0	0.0	0.0	0.00	-	-	-	-	-
B-06P	260	15-17.5	Embankment	30.0	0.0	0.0	0.0	0.00	-	-	-	-	-
B-07	265	10.0-12.0	Embankment	30.0	0.0	0.0	0.0	0.00	-	-	-	-	-
B-07	266	15-17.5	Embankment	30.0	0.0	0.0	0.0	1.59	-	-	-	-	-
B-301	282	18-20	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.00
B-601	289	10-12.5	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.00
B-601	290	19-20.5	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.00
B-602	292	15-17	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.00
B-603	297	15.5-17.5	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.00
B-604	305	20-21	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.93
Borrow #1	19-COMP-1	0-4	Borrow	30.0	0.0	2.0	-2.0	0.00	-	-	-	-	-
Borrow #3	19-COMP-3	0-3	Borrow	30.0	0.0	2.0	-2.0	0.00	-	-	-	-	-
Minimum				---	---	---	---	0.00	---	---	---	---	0.00
Maximum				---	---	---	---	1.59	---	---	---	---	0.93

SUMMARY OF SWELL CA

				PSW Impact Basin					PSW Impact Basin				
				Sustained Foundation Pressure:			2,900	psf	Sustained Foundation Pressure:			1,530	psf
				Foundation Base Width:			17.8	feet	Foundation Base Width:			12.5	feet
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Stratum	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*
B-05	253	7.5-10	Embankment	-	-	-	-	-	-	-	-	-	-
B-05	255	15-17.5	Embankment	-	-	-	-	-	-	-	-	-	-
B-06P	260	15-17.5	Embankment	-	-	-	-	-	-	-	-	-	-
B-07	265	10.0-12.0	Embankment	-	-	-	-	-	-	-	-	-	-
B-07	266	15-17.5	Embankment	-	-	-	-	-	-	-	-	-	-
B-301	282	18-20	Residuum	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.12
B-601	289	10-12.5	Residuum	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.00
B-601	290	19-20.5	Residuum	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.00
B-602	292	15-17	Residuum	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.18
B-603	297	15.5-17.5	Residuum	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.34
B-604	305	20-21	Residuum	0.0	0.0	0.0	0.0	1.55	0.0	0.0	0.0	0.0	1.36
Borrow #1	19-COMP-1	0-4	Borrow	-	-	-	-	-	-	-	-	-	-
Borrow #3	19-COMP-3	0-3	Borrow	-	-	-	-	-	-	-	-	-	-
Minimum				---	---	---	---	0.00	---	---	---	---	0.00
Maximum				---	---	---	---	1.55	---	---	---	---	1.36

SWELL CALCULATIONS
PROPOSED ASW RCC CHUTE
ON EMBANKMENT

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Chute (on embankment)	31	1	30	450	250	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **253**

Boring ID: B-05 Material: Existing Embankment Swelling Strain Index, Csε: 0.011

Depth (ft): 7.5-10 Total Unit Weight (pcf): 117.0 Swell Pressure (psf): 1,538

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	448	565	0	565	0.48	0.11	0.11
2	4	2	445	796	0	796	0.31	0.08	0.08
4	6	2	441	1,026	0	1,026	0.19	0.05	0.05
6	8	2	438	1,257	0	1,257	0.10	0.02	0.02
8	10	2	434	1,487	0	1,487	0.02	0.00	0.00
10	15	5	429	1,891	0	1,891	0.00	0.00	0.00
15	20	5	421	2,468	0	2,468	0.00	0.00	0.00
20	25	5	413	3,045	0	3,045	0.00	0.00	0.00
25	30	5	405	3,623	0	3,623	0.00	0.00	0.00
30	35	5	398	4,201	156	4,045	0.00	0.00	0.00
							SUM	**0.26**	**0.26**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Chute (on embankment)	31	1	30	450	250	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **255**

Boring ID: B-05 Material: Embank. Swelling Strain Index, Csε: 0.016

Depth (ft): 15 Total Unit Weight (pcf): 117.0 Swell Pressure (psf): 1,716

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	448	565	0	565	0.77	0.19	0.19
2	4	2	445	796	0	796	0.53	0.13	0.13
4	6	2	441	1,026	0	1,026	0.36	0.09	0.09
6	8	2	438	1,257	0	1,257	0.22	0.05	0.05
8	10	2	434	1,487	0	1,487	0.10	0.02	0.02
10	15	5	429	1,891	0	1,891	0.00	0.00	0.00
15	20	5	421	2,468	0	2,468	0.00	0.00	0.00
20	25	5	413	3,045	0	3,045	0.00	0.00	0.00
25	30	5	405	3,623	0	3,623	0.00	0.00	0.00
30	35	5	398	4,201	156	4,045	0.00	0.00	0.00
							SUM	**0.47**	**0.47**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Chute (on embankment)	31	1	30	450	250	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **260**

Boring ID: B-06P Material: Embankment Swelling Strain Index, Csε: 0.005

Depth (ft): 15-17.5 Total Unit Weight (pcf): 118.0 Swell Pressure (psf): 472

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	448	566	0	566	0.00	0.00	0.00
2	4	2	445	799	0	799	0.00	0.00	0.00
4	6	2	441	1,031	0	1,031	0.00	0.00	0.00
6	8	2	438	1,264	0	1,264	0.00	0.00	0.00
8	10	2	434	1,496	0	1,496	0.00	0.00	0.00
10	15	5	429	1,904	0	1,904	0.00	0.00	0.00
15	20	5	421	2,486	0	2,486	0.00	0.00	0.00
20	25	5	413	3,068	0	3,068	0.00	0.00	0.00
25	30	5	405	3,650	0	3,650	0.00	0.00	0.00
30	35	5	398	4,233	156	4,077	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Chute (on embankment)	31	1	30	450	250	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **265**

Boring ID: B-07 Material: Embankment Swelling Strain Index, Csε: 0.013

Depth (ft): 10-12 Total Unit Weight (pcf): 120.0 Swell Pressure (psf): 1,074

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	448	568	0	568	0.36	0.09	0.09
2	4	2	445	805	0	805	0.16	0.04	0.04
4	6	2	441	1,041	0	1,041	0.02	0.00	0.00
6	8	2	438	1,278	0	1,278	0.00	0.00	0.00
8	10	2	434	1,514	0	1,514	0.00	0.00	0.00
10	15	5	429	1,929	0	1,929	0.00	0.00	0.00
15	20	5	421	2,521	0	2,521	0.00	0.00	0.00
20	25	5	413	3,113	0	3,113	0.00	0.00	0.00
25	30	5	405	3,705	0	3,705	0.00	0.00	0.00
30	35	5	398	4,298	156	4,142	0.00	0.00	0.00
							SUM	**0.13**	**0.13**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Chute (on embankment)	31	1	30	450	250	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **266**

Boring ID: B-07 Material: Embankment Swelling Strain Index, Csε: 0.023

Depth (ft): 15-17.5 Total Unit Weight (pcf): 120.0 Swell Pressure (psf): 5,760

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	448	568	0	568	2.31	0.56	0.56
2	4	2	445	805	0	805	1.97	0.47	0.47
4	6	2	441	1,041	0	1,041	1.71	0.41	0.41
6	8	2	438	1,278	0	1,278	1.50	0.36	0.36
8	10	2	434	1,514	0	1,514	1.33	0.32	0.32
10	15	5	429	1,929	0	1,929	1.09	0.66	0.66
15	20	5	421	2,521	0	2,521	0.83	0.50	0.00
20	25	5	413	3,113	0	3,113	0.61	0.37	0.00
25	30	5	405	3,705	0	3,705	0.44	0.26	0.00
30	35	5	398	4,298	156	4,142	0.33	0.20	0.00
							SUM	**4.10**	**2.77**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Chute (on embankment)	31	1	30	450	250	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **COMP-1**

Boring ID: N/A Material: Borrow Swelling Strain Index, Csε: 0.014

Depth (ft): N/A Total Unit Weight (pcf): 120.0 Swell Pressure (psf): 1,828

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	448	568	0	568	0.71	0.17	0.17
2	4	2	445	805	0	805	0.50	0.12	0.12
4	6	2	441	1,041	0	1,041	0.34	0.08	0.08
6	8	2	438	1,277	0	1,277	0.22	0.05	0.05
8	10	2	434	1,514	0	1,514	0.11	0.03	0.03
10	15	5	429	1,928	0	1,928	0.00	0.00	0.00
15	20	5	421	2,520	0	2,520	0.00	0.00	0.00
20	25	5	413	3,112	0	3,112	0.00	0.00	0.00
25	30	5	405	3,704	0	3,704	0.00	0.00	0.00
30	35	5	398	4,297	156	4,141	0.00	0.00	0.00
							SUM	**0.45**	**0.45**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Chute (on embankment)	31	1	30	450	250	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **COMP-3**

Boring ID: N/A Material: Borrow Swelling Strain Index, Csε: 0.019

Depth (ft): N/A Total Unit Weight (pcf): 116.0 Swell Pressure (psf): 2,020

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	448	564	0	564	1.05	0.25	0.25
2	4	2	445	793	0	793	0.77	0.19	0.19
4	6	2	441	1,021	0	1,021	0.56	0.14	0.14
6	8	2	438	1,250	0	1,250	0.40	0.10	0.10
8	10	2	434	1,478	0	1,478	0.26	0.06	0.06
10	15	5	429	1,879	0	1,879	0.06	0.04	0.04
15	20	5	421	2,451	0	2,451	0.00	0.00	0.00
20	25	5	413	3,023	0	3,023	0.00	0.00	0.00
25	30	5	405	3,595	0	3,595	0.00	0.00	0.00
30	35	5	398	4,168	156	4,012	0.00	0.00	0.00
							SUM	**0.77**	**0.77**

SWELL CALCULATIONS
PROPOSED ASW RCC CHUTE
IN STILLING BASIN

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Chute (in stilling basin)	5.9	15.5	0	450	250	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **282**

Boring ID: B-301 Material: Residuum Swelling Strain Index, Csε: 0.011

Depth (ft): 18-20 Total Unit Weight (pcf): 122.0 Swell Pressure (psf): 1,850

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	448	570	62	508	0.62	0.15	0.15
2	4	2	445	811	187	623	0.52	0.12	0.12
4	6	2	441	1,051	312	739	0.44	0.11	0.11
6	8	2	438	1,292	437	855	0.37	0.09	0.09
8	10	2	434	1,532	562	971	0.31	0.07	0.07
10	12	2	431	1,773	686	1,087	0.25	0.06	0.06
12	14	2	428	2,014	811	1,203	0.21	0.05	0.05
14	16	2	425	2,255	936	1,319	0.16	0.04	0.04
16	18	2	421	2,495	1,061	1,435	0.12	0.03	0.00
18	35	17	407	3,640	1,654	1,986	0.00	0.00	0.00
							SUM	**0.72**	**0.69**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Chute (in stilling basin)	13.4	15.5	0	450	250	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **289**

Boring ID: B-601 Material: Residuum Swelling Strain Index, Csε: 0.006

Depth (ft): 10-12.5 Total Unit Weight (pcf): 116.0 Swell Pressure (psf): 802

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	448	564	62	502	0.12	0.03	0.03
2	4	2	445	793	187	605	0.07	0.02	0.02
4	6	2	441	1,021	312	709	0.03	0.01	0.01
6	8	2	438	1,250	437	813	0.00	0.00	0.00
8	10	2	434	1,478	562	917	0.00	0.00	0.00
10	12	2	431	1,707	686	1,021	0.00	0.00	0.00
12	14	2	428	1,936	811	1,125	0.00	0.00	0.00
14	16	2	425	2,165	936	1,229	0.00	0.00	0.00
16	18	2	421	2,393	1,061	1,333	0.00	0.00	0.00
18	35	17	407	3,481	1,654	1,827	0.00	0.00	0.00
							SUM	**0.05**	**0.05**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Chute (in stilling basin)	13.4	15.5	0	450	250	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **290**

Boring ID: B-601 Material: Residuum Swelling Strain Index, Csε: 0.011

Depth (ft): 19-20.5 Total Unit Weight (pcf): 116.0 Swell Pressure (psf): 1,250

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	448	564	62	502	0.44	0.10	0.10
2	4	2	445	793	187	605	0.35	0.08	0.08
4	6	2	441	1,021	312	709	0.27	0.06	0.06
6	8	2	438	1,250	437	813	0.21	0.05	0.05
8	10	2	434	1,478	562	917	0.15	0.04	0.04
10	12	2	431	1,707	686	1,021	0.10	0.02	0.02
12	14	2	428	1,936	811	1,125	0.05	0.01	0.01
14	16	2	425	2,165	936	1,229	0.01	0.00	0.00
16	18	2	421	2,393	1,061	1,333	0.00	0.00	0.00
18	35	17	407	3,481	1,654	1,827	0.00	0.00	0.00
							SUM	**0.37**	**0.37**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Chute (in stilling basin)	10.3	15.5	0	450	250	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **292**

Boring ID: B-602 Material: Residuum Swelling Strain Index, Csε: 0.014

Depth (ft): 15-17 Total Unit Weight (pcf): 121.0 Swell Pressure (psf): 1,942

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	448	569	62	507	0.82	0.20	0.20
2	4	2	445	808	187	620	0.69	0.17	0.17
4	6	2	441	1,046	312	734	0.59	0.14	0.14
6	8	2	438	1,285	437	848	0.50	0.12	0.12
8	10	2	434	1,523	562	962	0.43	0.10	0.10
10	12	2	431	1,762	686	1,076	0.36	0.09	0.09
12	14	2	428	2,001	811	1,190	0.30	0.07	0.07
14	16	2	425	2,240	936	1,304	0.24	0.06	0.06
16	18	2	421	2,478	1,061	1,418	0.19	0.05	0.00
18	35	17	407	3,613	1,654	1,960	0.00	0.00	0.00
							SUM	**0.99**	**0.94**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)*	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill Below Footing (ft)
RCC Chute (in stilling basin)	10.3	15.5	0	450	250	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **297**

Boring ID: B-603 Material: Residuum Swelling Strain Index, Csε: 0.015

Depth (ft): 15.5-17.5 Total Unit Weight (pcf): 120.0 Swell Pressure (psf): 2,440

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	448	568	62	506	1.03	0.25	0.25
2	4	2	445	805	187	617	0.90	0.21	0.21
4	6	2	441	1,041	312	729	0.79	0.19	0.19
6	8	2	438	1,278	437	841	0.69	0.17	0.17
8	10	2	434	1,514	562	953	0.61	0.15	0.15
10	12	2	431	1,751	686	1,064	0.54	0.13	0.13
12	14	2	428	1,987	811	1,176	0.48	0.11	0.11
14	16	2	425	2,224	936	1,288	0.42	0.10	0.10
16	18	2	421	2,461	1,061	1,400	0.36	0.09	0.00
18	35	17	407	3,586	1,654	1,933	0.15	0.31	0.00
							SUM	**1.70**	**1.31**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)*	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill Below Footing (ft)
RCC Chute (in stilling basin)	14	15.5	0	450	250	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **305**

Boring ID: B-604 Material: Residuum Swelling Strain Index, Csε: 0.024

Depth (ft): 20-21 Total Unit Weight (pcf): 124.0 Swell Pressure (psf): 5,540

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	448	572	62	510	2.49	0.60	0.60
2	4	2	445	817	187	629	2.27	0.54	0.54
4	6	2	441	1,061	312	749	2.09	0.50	0.50
6	8	2	438	1,306	437	869	1.93	0.46	0.46
8	10	2	434	1,550	562	989	1.80	0.43	0.43
10	12	2	431	1,795	686	1,109	1.68	0.40	0.40
12	14	2	428	2,040	811	1,229	1.57	0.38	0.38
14	16	2	425	2,285	936	1,349	1.47	0.35	0.35
16	18	2	421	2,529	1,061	1,469	1.38	0.33	0.00
18	35	17	407	3,693	1,654	2,039	1.04	2.13	0.00
							SUM	**6.13**	**3.67**

SWELL CALCULATIONS
PROPOSED ASW RCC WALLS
ON EMBANKMENT

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Walls (On Embankment)	31	1	30	2463	12	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **253**

Boring ID: B-05 Material: Existing Embankment Swelling Strain Index, Csε: 0.011

Depth (ft): 7.5-10 Total Unit Weight (pcf): 117.0 Swell Pressure (psf): 1,538

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	2,274	2,391	0	2,391	0.00	0.00	0.00
2	4	2	1,970	2,321	0	2,321	0.00	0.00	0.00
4	6	2	1,739	2,324	0	2,324	0.00	0.00	0.00
6	8	2	1,556	2,375	0	2,375	0.00	0.00	0.00
8	10	2	1,407	2,460	0	2,460	0.00	0.00	0.00
10	12	2	1,285	2,572	0	2,572	0.00	0.00	0.00
12	14	2	1,182	2,703	0	2,703	0.00	0.00	0.00
14	16	2	1,095	2,850	0	2,850	0.00	0.00	0.00
16	18	2	1,019	3,008	0	3,008	0.00	0.00	0.00
18	35	17	768	3,868	0	3,868	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Walls (On Embankment)	31	1	30	2463	12	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **255**

Boring ID: B-05 Material: Embank. Swelling Strain Index, Csε: 0.016

Depth (ft): 15 Total Unit Weight (pcf): 117.0 Swell Pressure (psf): 1,716

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	2,274	2,391	0	2,391	0.00	0.00	0.00
2	4	2	1,970	2,321	0	2,321	0.00	0.00	0.00
4	6	2	1,739	2,324	0	2,324	0.00	0.00	0.00
6	8	2	1,556	2,375	0	2,375	0.00	0.00	0.00
8	10	2	1,407	2,460	0	2,460	0.00	0.00	0.00
10	12	2	1,285	2,572	0	2,572	0.00	0.00	0.00
12	14	2	1,182	2,703	0	2,703	0.00	0.00	0.00
14	16	2	1,095	2,850	0	2,850	0.00	0.00	0.00
16	18	2	1,019	3,008	0	3,008	0.00	0.00	0.00
18	35	17	768	3,868	0	3,868	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Walls (On Embankment)	31	1	30	2463	12	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **260**

Boring ID: B-06P Material: Embankment Swelling Strain Index, Csε: 0.005

Depth (ft): 15-17.5 Total Unit Weight (pcf): 118.0 Swell Pressure (psf): 472

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	2,274	2,392	0	2,392	0.00	0.00	0.00
2	4	2	1,970	2,324	0	2,324	0.00	0.00	0.00
4	6	2	1,739	2,329	0	2,329	0.00	0.00	0.00
6	8	2	1,556	2,382	0	2,382	0.00	0.00	0.00
8	10	2	1,407	2,469	0	2,469	0.00	0.00	0.00
10	12	2	1,285	2,583	0	2,583	0.00	0.00	0.00
12	14	2	1,182	2,716	0	2,716	0.00	0.00	0.00
14	16	2	1,095	2,865	0	2,865	0.00	0.00	0.00
16	18	2	1,019	3,025	0	3,025	0.00	0.00	0.00
18	35	17	768	3,895	0	3,895	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Walls (On Embankment)	31	1	30	2463	12	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **265**

Boring ID: B-07 Material: Embankment Swelling Strain Index, Csε: 0.013

Depth (ft): 10-12 Total Unit Weight (pcf): 120.0 Swell Pressure (psf): 1,074

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	2,274	2,394	0	2,394	0.00	0.00	0.00
2	4	2	1,970	2,330	0	2,330	0.00	0.00	0.00
4	6	2	1,739	2,339	0	2,339	0.00	0.00	0.00
6	8	2	1,556	2,396	0	2,396	0.00	0.00	0.00
8	10	2	1,407	2,487	0	2,487	0.00	0.00	0.00
10	12	2	1,285	2,605	0	2,605	0.00	0.00	0.00
12	14	2	1,182	2,742	0	2,742	0.00	0.00	0.00
14	16	2	1,095	2,895	0	2,895	0.00	0.00	0.00
16	18	2	1,019	3,059	0	3,059	0.00	0.00	0.00
18	35	17	768	3,948	0	3,948	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Walls (On Embankment)	31	1	30	2463	12	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **266**

Boring ID: B-07 Material: Embankment Swelling Strain Index, Csε: 0.023

Depth (ft): 15-17.5 Total Unit Weight (pcf): 120.0 Swell Pressure (psf): 5,760

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	2,274	2,394	0	2,394	0.88	0.21	0.21
2	4	2	1,970	2,330	0	2,330	0.90	0.22	0.22
4	6	2	1,739	2,339	0	2,339	0.90	0.22	0.22
6	8	2	1,556	2,396	0	2,396	0.88	0.21	0.21
8	10	2	1,407	2,487	0	2,487	0.84	0.20	0.20
10	12	2	1,285	2,605	0	2,605	0.79	0.19	0.19
12	14	2	1,182	2,742	0	2,742	0.74	0.18	0.18
14	16	2	1,095	2,895	0	2,895	0.69	0.16	0.16
16	18	2	1,019	3,059	0	3,059	0.63	0.15	0.00
18	35	17	768	3,948	0	3,948	0.38	0.77	0.00
							SUM	**2.51**	**1.59**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Walls (On Embankment)	31	1	30	2463	12	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **COMP-1**

Boring ID: N/A Material: Borrow Swelling Strain Index, Csε: 0.014

Depth (ft): N/A Total Unit Weight (pcf): 120.0 Swell Pressure (psf): 1,828

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	2,274	2,393	0	2,393	0.00	0.00	0.00
2	4	2	1,970	2,330	0	2,330	0.00	0.00	0.00
4	6	2	1,739	2,338	0	2,338	0.00	0.00	0.00
6	8	2	1,556	2,395	0	2,395	0.00	0.00	0.00
8	10	2	1,407	2,487	0	2,487	0.00	0.00	0.00
10	12	2	1,285	2,605	0	2,605	0.00	0.00	0.00
12	14	2	1,182	2,742	0	2,742	0.00	0.00	0.00
14	16	2	1,095	2,894	0	2,894	0.00	0.00	0.00
16	18	2	1,019	3,058	0	3,058	0.00	0.00	0.00
18	35	17	768	3,946	0	3,946	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Walls (On Embankment)	31	1	30	2463	12	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **COMP-3**

Boring ID: N/A Material: Borrow Swelling Strain Index, Csε: 0.019

Depth (ft): N/A Total Unit Weight (pcf): 116.0 Swell Pressure (psf): 2,020

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	2,274	2,390	0	2,390	0.00	0.00	0.00
2	4	2	1,970	2,318	0	2,318	0.00	0.00	0.00
4	6	2	1,739	2,319	0	2,319	0.00	0.00	0.00
6	8	2	1,556	2,368	0	2,368	0.00	0.00	0.00
8	10	2	1,407	2,451	0	2,451	0.00	0.00	0.00
10	12	2	1,285	2,561	0	2,561	0.00	0.00	0.00
12	14	2	1,182	2,690	0	2,690	0.00	0.00	0.00
14	16	2	1,095	2,835	0	2,835	0.00	0.00	0.00
16	18	2	1,019	2,991	0	2,991	0.00	0.00	0.00
18	35	17	768	3,842	0	3,842	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

SWELL CALCULATIONS
PROPOSED ASW RCC WALLS
IN STILLING BASIN

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Walls (in stilling basin)	5.9	15.5	0	4750	12	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **282**

Boring ID: B-301 Material: Residuum Swelling Strain Index, Csε: 0.011

Depth (ft): 18-20 Total Unit Weight (pcf): 122.0 Swell Pressure (psf): 1,850

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	4,385	4,507	62	4,444	0.00	0.00	0.00
2	4	2	3,800	4,166	187	3,979	0.00	0.00	0.00
4	6	2	3,353	3,963	312	3,651	0.00	0.00	0.00
6	8	2	3,000	3,854	437	3,417	0.00	0.00	0.00
8	10	2	2,714	3,812	562	3,251	0.00	0.00	0.00
10	12	2	2,478	3,820	686	3,134	0.00	0.00	0.00
12	14	2	2,280	3,866	811	3,055	0.00	0.00	0.00
14	16	2	2,111	3,941	936	3,005	0.00	0.00	0.00
16	18	2	1,966	4,040	1,061	2,979	0.00	0.00	0.00
18	35	17	1,481	4,714	1,654	3,060	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Walls (in stilling basin)	13.4	15.5	0	4750	12	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **289**

Boring ID: B-601 Material: Residuum Swelling Strain Index, Csε: 0.006

Depth (ft): 10-12.5 Total Unit Weight (pcf): 116.0 Swell Pressure (psf): 802

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	4,385	4,501	62	4,438	0.00	0.00	0.00
2	4	2	3,800	4,148	187	3,961	0.00	0.00	0.00
4	6	2	3,353	3,933	312	3,621	0.00	0.00	0.00
6	8	2	3,000	3,812	437	3,375	0.00	0.00	0.00
8	10	2	2,714	3,758	562	3,197	0.00	0.00	0.00
10	12	2	2,478	3,754	686	3,068	0.00	0.00	0.00
12	14	2	2,280	3,788	811	2,977	0.00	0.00	0.00
14	16	2	2,111	3,851	936	2,915	0.00	0.00	0.00
16	18	2	1,966	3,938	1,061	2,877	0.00	0.00	0.00
18	35	17	1,481	4,555	1,654	2,901	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Walls (in stilling basin)	13.4	15.5	0	4750	12	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **290**

Boring ID: B-601 Material: Residuum Swelling Strain Index, Csε: 0.011

Depth (ft): 19-20.5 Total Unit Weight (pcf): 116.0 Swell Pressure (psf): 1,250

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	4,385	4,501	62	4,438	0.00	0.00	0.00
2	4	2	3,800	4,148	187	3,961	0.00	0.00	0.00
4	6	2	3,353	3,933	312	3,621	0.00	0.00	0.00
6	8	2	3,000	3,812	437	3,375	0.00	0.00	0.00
8	10	2	2,714	3,758	562	3,197	0.00	0.00	0.00
10	12	2	2,478	3,754	686	3,068	0.00	0.00	0.00
12	14	2	2,280	3,788	811	2,977	0.00	0.00	0.00
14	16	2	2,111	3,851	936	2,915	0.00	0.00	0.00
16	18	2	1,966	3,938	1,061	2,877	0.00	0.00	0.00
18	35	17	1,481	4,555	1,654	2,901	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
RCC Walls (in stilling basin)	10.3	15.5	0	4750	12	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **292**

Boring ID: B-602 Material: Residuum Swelling Strain Index, Csε: 0.014

Depth (ft): 15-17 Total Unit Weight (pcf): 121.0 Swell Pressure (psf): 1,942

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	4,385	4,506	62	4,443	0.00	0.00	0.00
2	4	2	3,800	4,163	187	3,976	0.00	0.00	0.00
4	6	2	3,353	3,958	312	3,646	0.00	0.00	0.00
6	8	2	3,000	3,847	437	3,410	0.00	0.00	0.00
8	10	2	2,714	3,803	562	3,242	0.00	0.00	0.00
10	12	2	2,478	3,809	686	3,123	0.00	0.00	0.00
12	14	2	2,280	3,853	811	3,042	0.00	0.00	0.00
14	16	2	2,111	3,926	936	2,990	0.00	0.00	0.00
16	18	2	1,966	4,023	1,061	2,962	0.00	0.00	0.00
18	35	17	1,481	4,687	1,654	3,033	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)*	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill Below Footing (ft)
RCC Walls (in stilling basin)	10.3	15.5	0	4750	12	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **297**

Boring ID: B-603 Material: Residuum Swelling Strain Index, Csε: 0.015

Depth (ft): 15.5-17.5 Total Unit Weight (pcf): 120.0 Swell Pressure (psf): 2,440

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	4,385	4,505	62	4,442	0.00	0.00	0.00
2	4	2	3,800	4,160	187	3,973	0.00	0.00	0.00
4	6	2	3,353	3,953	312	3,641	0.00	0.00	0.00
6	8	2	3,000	3,840	437	3,403	0.00	0.00	0.00
8	10	2	2,714	3,794	562	3,232	0.00	0.00	0.00
10	12	2	2,478	3,798	686	3,112	0.00	0.00	0.00
12	14	2	2,280	3,840	811	3,028	0.00	0.00	0.00
14	16	2	2,111	3,911	936	2,975	0.00	0.00	0.00
16	18	2	1,966	4,005	1,061	2,944	0.00	0.00	0.00
18	35	17	1,481	4,660	1,654	3,006	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)*	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill Below Footing (ft)
RCC Walls (in stilling basin)	14	15.5	0	4750	12	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **305**

Boring ID: B-604 Material: Residuum Swelling Strain Index, Csε: 0.024

Depth (ft): 20-21 Total Unit Weight (pcf): 124.0 Swell Pressure (psf): 5,540

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	4,385	4,509	62	4,446	0.23	0.06	0.06
2	4	2	3,800	4,172	187	3,985	0.34	0.08	0.08
4	6	2	3,353	3,973	312	3,661	0.43	0.10	0.10
6	8	2	3,000	3,868	437	3,431	0.50	0.12	0.12
8	10	2	2,714	3,830	562	3,269	0.55	0.13	0.13
10	12	2	2,478	3,842	686	3,156	0.59	0.14	0.14
12	14	2	2,280	3,892	811	3,081	0.61	0.15	0.15
14	16	2	2,111	3,971	936	3,035	0.63	0.15	0.15
16	18	2	1,966	4,074	1,061	3,013	0.63	0.15	0.00
18	35	17	1,481	4,767	1,654	3,113	0.60	1.23	0.00
							SUM	**2.31**	**0.93**

SWELL CALCULATIONS
PROPOSED PSW IMPACT BASIN

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
PSW Impact Basin	10	12.5	0	2900	17.8	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **282**

Boring ID: B-301 Material: Residuum Swelling Strain Index, Csε: 0.011

Depth (ft): 18-20 Total Unit Weight (pcf): 122.0 Swell Pressure (psf): 1,850

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	2,746	2,868	62	2,805	0.00	0.00	0.00
2	4	2	2,482	2,848	187	2,661	0.00	0.00	0.00
4	6	2	2,264	2,874	312	2,562	0.00	0.00	0.00
6	8	2	2,081	2,935	437	2,499	0.00	0.00	0.00
8	10	2	1,926	3,024	562	2,463	0.00	0.00	0.00
10	12	2	1,792	3,134	686	2,448	0.00	0.00	0.00
12	14	2	1,676	3,262	811	2,451	0.00	0.00	0.00
14	16	2	1,574	3,404	936	2,468	0.00	0.00	0.00
16	18	2	1,483	3,557	1,061	2,497	0.00	0.00	0.00
18	35	17	1,165	4,398	1,654	2,745	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
PSW Impact Basin	10	12.5	0	2900	17.8	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **289**

Boring ID: B-601 Material: Residuum Swelling Strain Index, Csε: 0.006

Depth (ft): 10-12.5 Total Unit Weight (pcf): 116.0 Swell Pressure (psf): 802

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	2,746	2,862	62	2,799	0.00	0.00	0.00
2	4	2	2,482	2,830	187	2,643	0.00	0.00	0.00
4	6	2	2,264	2,844	312	2,532	0.00	0.00	0.00
6	8	2	2,081	2,893	437	2,457	0.00	0.00	0.00
8	10	2	1,926	2,970	562	2,409	0.00	0.00	0.00
10	12	2	1,792	3,068	686	2,382	0.00	0.00	0.00
12	14	2	1,676	3,184	811	2,373	0.00	0.00	0.00
14	16	2	1,574	3,314	936	2,378	0.00	0.00	0.00
16	18	2	1,483	3,455	1,061	2,395	0.00	0.00	0.00
18	35	17	1,165	4,239	1,654	2,586	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
PSW Impact Basin	10	12.5	0	2900	17.8	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **290**

Boring ID: B-601 Material: Residuum Swelling Strain Index, Csε: 0.011

Depth (ft): 19-20.5 Total Unit Weight (pcf): 116.0 Swell Pressure (psf): 1,250

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	2,746	2,862	62	2,799	0.00	0.00	0.00
2	4	2	2,482	2,830	187	2,643	0.00	0.00	0.00
4	6	2	2,264	2,844	312	2,532	0.00	0.00	0.00
6	8	2	2,081	2,893	437	2,457	0.00	0.00	0.00
8	10	2	1,926	2,970	562	2,409	0.00	0.00	0.00
10	12	2	1,792	3,068	686	2,382	0.00	0.00	0.00
12	14	2	1,676	3,184	811	2,373	0.00	0.00	0.00
14	16	2	1,574	3,314	936	2,378	0.00	0.00	0.00
16	18	2	1,483	3,455	1,061	2,395	0.00	0.00	0.00
18	35	17	1,165	4,239	1,654	2,586	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
PSW Impact Basin	10	12.5	0	2900	17.8	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **292**

Boring ID: B-602 Material: Residuum Swelling Strain Index, Csε: 0.014

Depth (ft): 15-17 Total Unit Weight (pcf): 121.0 Swell Pressure (psf): 1,942

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	2,746	2,867	62	2,804	0.00	0.00	0.00
2	4	2	2,482	2,845	187	2,658	0.00	0.00	0.00
4	6	2	2,264	2,869	312	2,557	0.00	0.00	0.00
6	8	2	2,081	2,928	437	2,492	0.00	0.00	0.00
8	10	2	1,926	3,015	562	2,454	0.00	0.00	0.00
10	12	2	1,792	3,123	686	2,437	0.00	0.00	0.00
12	14	2	1,676	3,249	811	2,438	0.00	0.00	0.00
14	16	2	1,574	3,389	936	2,453	0.00	0.00	0.00
16	18	2	1,483	3,540	1,061	2,480	0.00	0.00	0.00
18	35	17	1,165	4,372	1,654	2,718	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)*	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill Below Footing (ft)
PSW Impact Basin	10	12.5	0	2900	17.8	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **297**

Boring ID: B-603 Material: Residuum Swelling Strain Index, Csε: 0.015

Depth (ft): 15.5-17.5 Total Unit Weight (pcf): 120.0 Swell Pressure (psf): 2,440

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	2,746	2,866	62	2,803	0.00	0.00	0.00
2	4	2	2,482	2,842	187	2,654	0.00	0.00	0.00
4	6	2	2,264	2,864	312	2,552	0.00	0.00	0.00
6	8	2	2,081	2,921	437	2,484	0.00	0.00	0.00
8	10	2	1,926	3,006	562	2,444	0.00	0.00	0.00
10	12	2	1,792	3,112	686	2,426	0.00	0.00	0.00
12	14	2	1,676	3,236	811	2,424	0.00	0.00	0.00
14	16	2	1,574	3,373	936	2,437	0.00	0.00	0.00
16	18	2	1,483	3,523	1,061	2,462	0.00	0.00	0.00
18	35	17	1,165	4,345	1,654	2,691	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)*	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill Below Footing (ft)
PSW Impact Basin	10	12.5	0	2900	17.8	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **305**

Boring ID: B-604 Material: Residuum Swelling Strain Index, Csε: 0.024

Depth (ft): 20-21 Total Unit Weight (pcf): 124.0 Swell Pressure (psf): 5,540

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to 15' active zone (inch)
0	2	2	2,746	2,870	62	2,807	0.71	0.17	0.17
2	4	2	2,482	2,854	187	2,667	0.76	0.18	0.18
4	6	2	2,264	2,884	312	2,572	0.80	0.19	0.19
6	8	2	2,081	2,949	437	2,513	0.82	0.20	0.20
8	10	2	1,926	3,042	562	2,481	0.84	0.20	0.20
10	12	2	1,792	3,156	686	2,470	0.84	0.20	0.20
12	14	2	1,676	3,288	811	2,477	0.84	0.20	0.20
14	16	2	1,574	3,434	936	2,498	0.83	0.20	0.20
16	18	2	1,483	3,591	1,061	2,531	0.82	0.20	0.00
18	35	17	1,165	4,451	1,654	2,798	0.71	1.45	0.00
							SUM	**3.20**	**1.55**

SWELL CALCULATIONS
PROPOSED PSW INLET TOWER

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
PSW Inlet Tower	0	12.5	0	1530	12.5	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **282**

Boring ID: B-301 Material: Residuum Swelling Strain Index, Csε: 0.011

Depth (ft): 18-20 Total Unit Weight (pcf): 122.0 Swell Pressure (psf): 1,850

Active Zone Depth (ft below footing): 8 (accounts for reservoir submerge)

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to Active zone (inch)
0	2	2	1,417	1,539	62	1,476	0.11	0.03	0.03
2	4	2	1,234	1,600	187	1,413	0.13	0.03	0.03
4	6	2	1,093	1,703	312	1,391	0.14	0.03	0.03
6	8	2	981	1,835	437	1,398	0.13	0.03	0.03
8	10	2	890	1,988	562	1,426	0.12	0.03	0.00
10	12	2	814	2,156	686	1,469	0.11	0.03	0.00
12	14	2	750	2,336	811	1,525	0.09	0.02	0.00
14	16	2	695	2,525	936	1,589	0.07	0.02	0.00
16	18	2	648	2,722	1,061	1,662	0.05	0.01	0.00
18	35	17	490	3,723	1,654	2,070	0.00	0.00	0.00
							SUM	**0.23**	**0.12**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
PSW Inlet Tower	0	12.5	0	1530	12.5	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **289**

Boring ID: B-601 Material: Residuum Swelling Strain Index, Csε: 0.006

Depth (ft): 10-12.5 Total Unit Weight (pcf): 116.0 Swell Pressure (psf): 802

Active Zone Depth (ft below footing): 8 (accounts for reservoir submerge)

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to active zone (inch)
0	2	2	1,417	1,533	62	1,470	0.00	0.00	0.00
2	4	2	1,234	1,582	187	1,395	0.00	0.00	0.00
4	6	2	1,093	1,673	312	1,361	0.00	0.00	0.00
6	8	2	981	1,793	437	1,356	0.00	0.00	0.00
8	10	2	890	1,934	562	1,372	0.00	0.00	0.00
10	12	2	814	2,090	686	1,403	0.00	0.00	0.00
12	14	2	750	2,258	811	1,447	0.00	0.00	0.00
14	16	2	695	2,435	936	1,499	0.00	0.00	0.00
16	18	2	648	2,620	1,061	1,560	0.00	0.00	0.00
18	35	17	490	3,564	1,654	1,911	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
PSW Inlet Tower	0	12.5	0	1530	12.5	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **290**

Boring ID: B-601 Material: Residuum Swelling Strain Index, Csε: 0.011

Depth (ft): 19-20.5 Total Unit Weight (pcf): 116.0 Swell Pressure (psf): 1,250

Active Zone Depth (ft below footing): 8 (accounts for reservoir submerge)

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to active zone (inch)
0	2	2	1,417	1,533	62	1,470	0.00	0.00	0.00
2	4	2	1,234	1,582	187	1,395	0.00	0.00	0.00
4	6	2	1,093	1,673	312	1,361	0.00	0.00	0.00
6	8	2	981	1,793	437	1,356	0.00	0.00	0.00
8	10	2	890	1,934	562	1,372	0.00	0.00	0.00
10	12	2	814	2,090	686	1,403	0.00	0.00	0.00
12	14	2	750	2,258	811	1,447	0.00	0.00	0.00
14	16	2	695	2,435	936	1,499	0.00	0.00	0.00
16	18	2	648	2,620	1,061	1,560	0.00	0.00	0.00
18	35	17	490	3,564	1,654	1,911	0.00	0.00	0.00
							SUM	**0.00**	**0.00**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill (pcf)
PSW Inlet Tower	0	12.5	0	1530	12.5	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **292**

Boring ID: B-602 Material: Residuum Swelling Strain Index, Csε: 0.014

Depth (ft): 15-17 Total Unit Weight (pcf): 121.0 Swell Pressure (psf): 1,942

Active Zone Depth (ft below footing): 8 (accounts for reservoir submerge)

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to active zone (inch)
0	2	2	1,417	1,538	62	1,475	0.17	0.04	0.04
2	4	2	1,234	1,597	187	1,410	0.19	0.05	0.05
4	6	2	1,093	1,698	312	1,386	0.21	0.05	0.05
6	8	2	981	1,828	437	1,391	0.20	0.05	0.05
8	10	2	890	1,979	562	1,417	0.19	0.05	0.00
10	12	2	814	2,145	686	1,458	0.17	0.04	0.00
12	14	2	750	2,323	811	1,512	0.15	0.04	0.00
14	16	2	695	2,510	936	1,574	0.13	0.03	0.00
16	18	2	648	2,705	1,061	1,645	0.10	0.02	0.00
18	35	17	490	3,697	1,654	2,043	0.00	0.00	0.00
							SUM	**0.36**	**0.18**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)*	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill Below Footing (ft)
PSW Inlet Tower	0	12.5	0	1530	12.5	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **297**

Boring ID: B-603 Material: Residuum Swelling Strain Index, Csε: 0.015

Depth (ft): 15.5-17.5 Total Unit Weight (pcf): 120.0 Swell Pressure (psf): 2,440

Active Zone Depth (ft below footing): 8 (accounts for reservoir submerge)

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to active zone (inch)
0	2	2	1,417	1,537	62	1,474	0.33	0.08	0.08
2	4	2	1,234	1,594	187	1,407	0.36	0.09	0.09
4	6	2	1,093	1,693	312	1,381	0.37	0.09	0.09
6	8	2	981	1,821	437	1,384	0.37	0.09	0.09
8	10	2	890	1,969	562	1,408	0.36	0.09	0.00
10	12	2	814	2,134	686	1,447	0.34	0.08	0.00
12	14	2	750	2,310	811	1,498	0.32	0.08	0.00
14	16	2	695	2,495	936	1,559	0.29	0.07	0.00
16	18	2	648	2,688	1,061	1,627	0.26	0.06	0.00
18	35	17	490	3,670	1,654	2,016	0.12	0.25	0.00
							SUM	**0.97**	**0.34**

Heave Calculations on Foundation using Constant-Volume Swell Tests

Structure	GWT Depth Below Existing (ft)	Footing Depth Below Existing (ft)	GWT Depth Below Footing (ft)*	Sustained Fndtn Load (psf)*	Fndtn Width (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Unit Weight of Non-Expansive Fill Below Footing (ft)
PSW Inlet Tower	0	12.5	0	1530	12.5	0	120

**Considers 3-ft thick RCC chute slab. Does not account for perched groundwater above foundation*

Sample ID: **305**

Boring ID: B-604 Material: Residuum Swelling Strain Index, Csε: 0.024

Depth (ft): 20-21 Total Unit Weight (pcf): 124.0 Swell Pressure (psf): 5,540

Active Zone Depth (ft below footing): 8 (accounts for reservoir submerge)

Depth Below Fndtn									
Top (ft)	Bottom (ft)	Layer Thickness (ft)	Fndtn Stress at Mid (psf) - 2V:1H Mtd	Total Stress at Mid (psf)	u at Mid (psf)	Eff. Stress at Mid (psf)*	Swell at Eff. Stress (%)	Layer Heave (inch)	Heave limited to active zone (inch)
0	2	2	1,417	1,541	62	1,478	1.38	0.33	0.33
2	4	2	1,234	1,606	187	1,419	1.42	0.34	0.34
4	6	2	1,093	1,713	312	1,401	1.43	0.34	0.34
6	8	2	981	1,849	437	1,412	1.42	0.34	0.34
8	10	2	890	2,006	562	1,444	1.40	0.34	0.00
10	12	2	814	2,178	686	1,491	1.37	0.33	0.00
12	14	2	750	2,362	811	1,551	1.33	0.32	0.00
14	16	2	695	2,555	936	1,619	1.28	0.31	0.00
16	18	2	648	2,756	1,061	1,696	1.23	0.30	0.00
18	35	17	490	3,776	1,654	2,123	1.00	2.04	0.00
							SUM	**4.98**	**1.36**

Attachment 2b. Heave Calculations

Removal/Replacement Depth = 2 ft

SUMMARY OF SWELL CALCULATIONS FOR PROPOSED STRUCTURES

				ASW RCC Chute (Embankment Slope/Crest)					ASW RCC Chute (Stilling Basin)				
				Sustained Foundation Pressure:			450	psf	Sustained Foundation Pressure:			450	psf
				Foundation Base Width:			250	feet	Foundation Base Width:			250	feet
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Stratum	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Underdrain Thickness (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*
B-05	253	7.5-10	Embankment	30.0	2.0	2.0	0.0	0.15	-	-	-	-	-
B-05	255	15-17.5	Embankment	30.0	2.0	2.0	0.0	0.29	-	-	-	-	-
B-06P	260	15-17.5	Embankment	30.0	2.0	2.0	0.0	0.00	-	-	-	-	-
B-07	265	10.0-12.0	Embankment	30.0	2.0	2.0	0.0	0.04	-	-	-	-	-
B-07	266	15-17.5	Embankment	30.0	2.0	2.0	0.0	2.22	-	-	-	-	-
B-301	282	18-20	Residuum	-	-	-	-	-	0.0	2.0	2.0	0.0	0.55
B-601	289	10-12.5	Residuum	-	-	-	-	-	0.0	2.0	2.0	0.0	0.02
B-601	290	19-20.5	Residuum	-	-	-	-	-	0.0	2.0	2.0	0.0	0.26
B-602	292	15-17	Residuum	-	-	-	-	-	0.0	2.0	2.0	0.0	0.75
B-603	297	15.5-17.5	Residuum	-	-	-	-	-	0.0	2.0	2.0	0.0	1.06
B-604	305	20-21	Residuum	-	-	-	-	-	0.0	2.0	2.0	0.0	3.09
Borrow #1	19-COMP-1	0-4	Borrow	30.0	2.0	2.0	0.0	0.29	-	-	-	-	-
Borrow #3	19-COMP-3	0-3	Borrow	30.0	2.0	2.0	0.0	0.51	-	-	-	-	-
Minimum				---	---	---	---	0.00	---	---	---	---	0.02
Maximum				---	---	---	---	2.22	---	---	---	---	3.09

SUMMARY OF SWELL CA

				ASW RCC Training Walls (Embankment Slope/Crest)					ASW RCC Training Walls (Stilling Basin)				
				Sustained Foundation Pressure:			2,463	psf	Sustained Foundation Pressure:			4,750	psf
				Foundation Base Width:			12.0	feet	Foundation Base Width:			12.0	feet
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Stratum	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*
B-05	253	7.5-10	Embankment	30.0	2.0	2.0	0.0	0.00	-	-	-	-	-
B-05	255	15-17.5	Embankment	30.0	2.0	2.0	0.0	0.00	-	-	-	-	-
B-06P	260	15-17.5	Embankment	30.0	2.0	2.0	0.0	0.00	-	-	-	-	-
B-07	265	10.0-12.0	Embankment	30.0	2.0	2.0	0.0	0.00	-	-	-	-	-
B-07	266	15-17.5	Embankment	30.0	2.0	2.0	0.0	1.38	-	-	-	-	-
B-301	282	18-20	Residuum	-	-	-	-	-	0.0	2.0	2.0	0.0	0.00
B-601	289	10-12.5	Residuum	-	-	-	-	-	0.0	2.0	2.0	0.0	0.00
B-601	290	19-20.5	Residuum	-	-	-	-	-	0.0	2.0	2.0	0.0	0.00
B-602	292	15-17	Residuum	-	-	-	-	-	0.0	2.0	2.0	0.0	0.00
B-603	297	15.5-17.5	Residuum	-	-	-	-	-	0.0	2.0	2.0	0.0	0.00
B-604	305	20-21	Residuum	-	-	-	-	-	0.0	2.0	2.0	0.0	0.88
Borrow #1	19-COMP-1	0-4	Borrow	30.0	2.0	2.0	0.0	0.00	-	-	-	-	-
Borrow #3	19-COMP-3	0-3	Borrow	30.0	2.0	2.0	0.0	0.00	-	-	-	-	-
Minimum				---	---	---	---	0.00	---	---	---	---	0.00
Maximum				---	---	---	---	1.38	---	---	---	---	0.88

SUMMARY OF SWELL CA

				PSW Impact Basin					PSW Impact Basin				
				Sustained Foundation Pressure:			2,900	psf	Sustained Foundation Pressure:			1,530	psf
				Foundation Base Width:			17.8	feet	Foundation Base Width:			12.5	feet
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Stratum	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*
B-05	253	7.5-10	Embankment	-	-	-	-	-	-	-	-	-	-
B-05	255	15-17.5	Embankment	-	-	-	-	-	-	-	-	-	-
B-06P	260	15-17.5	Embankment	-	-	-	-	-	-	-	-	-	-
B-07	265	10.0-12.0	Embankment	-	-	-	-	-	-	-	-	-	-
B-07	266	15-17.5	Embankment	-	-	-	-	-	-	-	-	-	-
B-301	282	18-20	Residuum	0.0	0.0	0.0	0.0	0.00	0.0	2.0	0.0	2.0	0.10
B-601	289	10-12.5	Residuum	0.0	0.0	0.0	0.0	0.00	0.0	2.0	0.0	2.0	0.00
B-601	290	19-20.5	Residuum	0.0	0.0	0.0	0.0	0.00	0.0	2.0	0.0	2.0	0.00
B-602	292	15-17	Residuum	0.0	0.0	0.0	0.0	0.00	0.0	2.0	0.0	2.0	0.15
B-603	297	15.5-17.5	Residuum	0.0	0.0	0.0	0.0	0.00	0.0	2.0	0.0	2.0	0.26
B-604	305	20-21	Residuum	0.0	0.0	0.0	0.0	1.55	0.0	2.0	0.0	2.0	1.03
Borrow #1	19-COMP-1	0-4	Borrow	-	-	-	-	-	-	-	-	-	-
Borrow #3	19-COMP-3	0-3	Borrow	-	-	-	-	-	-	-	-	-	-
Minimum				---	---	---	---	0.00	---	---	---	---	0.00
Maximum				---	---	---	---	1.55	---	---	---	---	1.03

Attachment 2c. Heave Calculations

Removal/Replacement Depth = Limit Heave to 2.0" for worst-case tests

SUMMARY OF SWELL CALCULATIONS FOR PROPOSED STRUCTURES

				ASW RCC Chute (Embankment Slope/Crest)					ASW RCC Chute (Stilling Basin)				
				Sustained Foundation Pressure:			450	psf	Sustained Foundation Pressure:			450	psf
				Foundation Base Width:			250	feet	Foundation Base Width:			250	feet
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Stratum	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Underdrain Thickness (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*
B-05	253	7.5-10	Embankment	30.0	3.0	2.0	1.0	0.10	-	-	-	-	-
B-05	255	15-17.5	Embankment	30.0	3.0	2.0	1.0	0.22	-	-	-	-	-
B-06P	260	15-17.5	Embankment	30.0	3.0	2.0	1.0	0.00	-	-	-	-	-
B-07	265	10.0-12.0	Embankment	30.0	3.0	2.0	1.0	0.02	-	-	-	-	-
B-07	266	15-17.5	Embankment	30.0	3.0	2.0	1.0	1.98	-	-	-	-	-
B-301	282	18-20	Residuum	-	-	-	-	-	0.0	6.0	0.0	6.0	0.32
B-601	289	10-12.5	Residuum	-	-	-	-	-	0.0	6.0	0.0	6.0	0.00
B-601	290	19-20.5	Residuum	-	-	-	-	-	0.0	6.0	0.0	6.0	0.11
B-602	292	15-17	Residuum	-	-	-	-	-	0.0	6.0	0.0	6.0	0.44
B-603	297	15.5-17.5	Residuum	-	-	-	-	-	0.0	6.0	0.0	6.0	0.66
B-604	305	20-21	Residuum	-	-	-	-	-	0.0	6.0	0.0	6.0	2.06
Borrow #1	19-COMP-1	0-4	Borrow	30.0	3.0	2.0	1.0	0.22	-	-	-	-	-
Borrow #3	19-COMP-3	0-3	Borrow	30.0	3.0	2.0	1.0	0.41	-	-	-	-	-
Minimum				---	---	---	---	0.00	---	---	---	---	0.00
Maximum				---	---	---	---	1.98	---	---	---	---	2.06

SUMMARY OF SWELL CA

				ASW RCC Training Walls (Embankment Slope/Crest)					ASW RCC Training Walls (Stilling Basin)				
				Sustained Foundation Pressure:			2,463	psf	Sustained Foundation Pressure:			4,750	psf
				Foundation Base Width:			12.0	feet	Foundation Base Width:			12.0	feet
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Stratum	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*
B-05	253	7.5-10	Embankment	30.0	0.0	2.0	-2.0	0.00	-	-	-	-	-
B-05	255	15-17.5	Embankment	30.0	0.0	2.0	-2.0	0.00	-	-	-	-	-
B-06P	260	15-17.5	Embankment	30.0	0.0	2.0	-2.0	0.00	-	-	-	-	-
B-07	265	10.0-12.0	Embankment	30.0	0.0	2.0	-2.0	0.00	-	-	-	-	-
B-07	266	15-17.5	Embankment	30.0	0.0	2.0	-2.0	1.59	-	-	-	-	-
B-301	282	18-20	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.00
B-601	289	10-12.5	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.00
B-601	290	19-20.5	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.00
B-602	292	15-17	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.00
B-603	297	15.5-17.5	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.00
B-604	305	20-21	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.93
Borrow #1	19-COMP-1	0-4	Borrow	30.0	0.0	2.0	-2.0	0.00	-	-	-	-	-
Borrow #3	19-COMP-3	0-3	Borrow	30.0	0.0	2.0	-2.0	0.00	-	-	-	-	-
Minimum				---	---	---	---	0.00	---	---	---	---	0.00
Maximum				---	---	---	---	1.59	---	---	---	---	0.93

SUMMARY OF SWELL CA

				PSW Impact Basin					PSW Impact Basin				
				Sustained Foundation Pressure:			2,900	psf	Sustained Foundation Pressure:			1,530	psf
				Foundation Base Width:			17.8	feet	Foundation Base Width:			12.5	feet
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Stratum	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*
B-05	253	7.5-10	Embankment	-	-	-	-	-	-	-	-	-	-
B-05	255	15-17.5	Embankment	-	-	-	-	-	-	-	-	-	-
B-06P	260	15-17.5	Embankment	-	-	-	-	-	-	-	-	-	-
B-07	265	10.0-12.0	Embankment	-	-	-	-	-	-	-	-	-	-
B-07	266	15-17.5	Embankment	-	-	-	-	-	-	-	-	-	-
B-301	282	18-20	Residuum	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.12
B-601	289	10-12.5	Residuum	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.00
B-601	290	19-20.5	Residuum	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.00
B-602	292	15-17	Residuum	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.18
B-603	297	15.5-17.5	Residuum	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.34
B-604	305	20-21	Residuum	0.0	0.0	0.0	0.0	1.55	0.0	0.0	0.0	0.0	1.36
Borrow #1	19-COMP-1	0-4	Borrow	-	-	-	-	-	-	-	-	-	-
Borrow #3	19-COMP-3	0-3	Borrow	-	-	-	-	-	-	-	-	-	-
Minimum				---	---	---	---	0.00	---	---	---	---	0.00
Maximum				---	---	---	---	1.55	---	---	---	---	1.36

Attachment 2d. Heave Calculations

Removal/Replacement Depth = Limit Heave to 1.5" for worst-case tests

SUMMARY OF SWELL CALCULATIONS FOR PROPOSED STRUCTURES

				ASW RCC Chute (Embankment Slope/Crest)					ASW RCC Chute (Stilling Basin)				
				Sustained Foundation Pressure:			450	psf	Sustained Foundation Pressure:			450	psf
				Foundation Base Width:			250	feet	Foundation Base Width:			250	feet
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Stratum	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Underdrain Thickness (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*
B-05	253	7.5-10	Embankment	30.0	5.0	2.0	3.0	0.04	-	-	-	-	-
B-05	255	15-17.5	Embankment	30.0	5.0	2.0	3.0	0.11	-	-	-	-	-
B-06P	260	15-17.5	Embankment	30.0	5.0	2.0	3.0	0.00	-	-	-	-	-
B-07	265	10.0-12.0	Embankment	30.0	5.0	2.0	3.0	0.00	-	-	-	-	-
B-07	266	15-17.5	Embankment	30.0	5.0	2.0	3.0	1.54	-	-	-	-	-
B-301	282	18-20	Residuum	-	-	-	-	-	0.0	8.5	0.0	8.5	0.22
B-601	289	10-12.5	Residuum	-	-	-	-	-	0.0	8.5	0.0	8.5	0.00
B-601	290	19-20.5	Residuum	-	-	-	-	-	0.0	8.5	0.0	8.5	0.05
B-602	292	15-17	Residuum	-	-	-	-	-	0.0	8.5	0.0	8.5	0.31
B-603	297	15.5-17.5	Residuum	-	-	-	-	-	0.0	8.5	0.0	8.5	0.47
B-604	305	20-21	Residuum	-	-	-	-	-	0.0	8.5	0.0	8.5	1.57
Borrow #1	19-COMP-1	0-4	Borrow	30.0	5.0	2.0	3.0	0.12	-	-	-	-	-
Borrow #3	19-COMP-3	0-3	Borrow	30.0	5.0	2.0	3.0	0.25	-	-	-	-	-
Minimum				---	---	---	---	0.00	---	---	---	---	0.00
Maximum				---	---	---	---	1.54	---	---	---	---	1.57

SUMMARY OF SWELL CA

				ASW RCC Training Walls (Embankment Slope/Crest)					ASW RCC Training Walls (Stilling Basin)				
				Sustained Foundation Pressure:			2,463	psf	Sustained Foundation Pressure:			4,750	psf
				Foundation Base Width:			12.0	feet	Foundation Base Width:			12.0	feet
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Stratum	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*
B-05	253	7.5-10	Embankment	30.0	1.0	2.0	-1.0	0.00	-	-	-	-	-
B-05	255	15-17.5	Embankment	30.0	1.0	2.0	-1.0	0.00	-	-	-	-	-
B-06P	260	15-17.5	Embankment	30.0	1.0	2.0	-1.0	0.00	-	-	-	-	-
B-07	265	10.0-12.0	Embankment	30.0	1.0	2.0	-1.0	0.00	-	-	-	-	-
B-07	266	15-17.5	Embankment	30.0	1.0	2.0	-1.0	1.40	-	-	-	-	-
B-301	282	18-20	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.00
B-601	289	10-12.5	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.00
B-601	290	19-20.5	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.00
B-602	292	15-17	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.00
B-603	297	15.5-17.5	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.00
B-604	305	20-21	Residuum	-	-	-	-	-	0.0	0.0	0.0	0.0	0.93
Borrow #1	19-COMP-1	0-4	Borrow	30.0	1.0	2.0	-1.0	0.00	-	-	-	-	-
Borrow #3	19-COMP-3	0-3	Borrow	30.0	1.0	2.0	-1.0	0.00	-	-	-	-	-
Minimum				---	---	---	---	0.00	---	---	---	---	0.00
Maximum				---	---	---	---	1.40	---	---	---	---	0.93

SUMMARY OF SWELL CA

				PSW Impact Basin					PSW Impact Basin				
				Sustained Foundation Pressure:			2,900	psf	Sustained Foundation Pressure:			1,530	psf
				Foundation Base Width:			17.8	feet	Foundation Base Width:			12.5	feet
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Stratum	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*
B-05	253	7.5-10	Embankment	-	-	-	-	-	-	-	-	-	-
B-05	255	15-17.5	Embankment	-	-	-	-	-	-	-	-	-	-
B-06P	260	15-17.5	Embankment	-	-	-	-	-	-	-	-	-	-
B-07	265	10.0-12.0	Embankment	-	-	-	-	-	-	-	-	-	-
B-07	266	15-17.5	Embankment	-	-	-	-	-	-	-	-	-	-
B-301	282	18-20	Residuum	0.0	1.0	0.0	1.0	0.00	0.0	1.0	0.0	1.0	0.13
B-601	289	10-12.5	Residuum	0.0	1.0	0.0	1.0	0.00	0.0	1.0	0.0	1.0	0.00
B-601	290	19-20.5	Residuum	0.0	1.0	0.0	1.0	0.00	0.0	1.0	0.0	1.0	0.00
B-602	292	15-17	Residuum	0.0	1.0	0.0	1.0	0.00	0.0	1.0	0.0	1.0	0.19
B-603	297	15.5-17.5	Residuum	0.0	1.0	0.0	1.0	0.00	0.0	1.0	0.0	1.0	0.35
B-604	305	20-21	Residuum	0.0	1.0	0.0	1.0	1.37	0.0	1.0	0.0	1.0	1.37
Borrow #1	19-COMP-1	0-4	Borrow	-	-	-	-	-	-	-	-	-	-
Borrow #3	19-COMP-3	0-3	Borrow	-	-	-	-	-	-	-	-	-	-
Minimum				---	---	---	---	0.00	---	---	---	---	0.00
Maximum				---	---	---	---	1.37	---	---	---	---	1.37

Attachment 2e. Heave Calculations

Removal/Replacement Depth = Limit Heave to 1.0" for worst-case tests

SUMMARY OF SWELL CALCULATIONS FOR PROPOSED STRUCTURES

				ASW RCC Chute (Embankment Slope/Crest)					ASW RCC Chute (Stilling Basin)				
				Sustained Foundation Pressure:			450	psf	Sustained Foundation Pressure:			450	psf
				Foundation Base Width:			250	feet	Foundation Base Width:			250	feet
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Stratum	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Underdrain Thickness (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*
B-05	253	7.5-10	Embankment	30.0	8.0	2.0	6.0	0.00	-	-	-	-	-
B-05	255	15-17.5	Embankment	30.0	8.0	2.0	6.0	0.02	-	-	-	-	-
B-06P	260	15-17.5	Embankment	30.0	8.0	2.0	6.0	0.00	-	-	-	-	-
B-07	265	10.0-12.0	Embankment	30.0	8.0	2.0	6.0	0.00	-	-	-	-	-
B-07	266	15-17.5	Embankment	30.0	8.0	2.0	6.0	1.09	-	-	-	-	-
B-301	282	18-20	Residuum	-	-	-	-	-	0.0	10.0	0.0	10.0	0.16
B-601	289	10-12.5	Residuum	-	-	-	-	-	0.0	10.0	0.0	10.0	0.00
B-601	290	19-20.5	Residuum	-	-	-	-	-	0.0	10.0	0.0	10.0	0.03
B-602	292	15-17	Residuum	-	-	-	-	-	0.0	10.0	0.0	10.0	0.22
B-603	297	15.5-17.5	Residuum	-	-	-	-	-	0.0	10.0	0.0	10.0	0.34
B-604	305	20-21	Residuum	-	-	-	-	-	0.0	10.0	0.0	10.0	1.16
Borrow #1	19-COMP-1	0-4	Borrow	30.0	8.0	2.0	6.0	0.03	-	-	-	-	-
Borrow #3	19-COMP-3	0-3	Borrow	30.0	8.0	2.0	6.0	0.09	-	-	-	-	-
Minimum				---	---	---	---	0.00	---	---	---	---	0.00
Maximum				---	---	---	---	1.09	---	---	---	---	1.16

SUMMARY OF SWELL CA

				ASW RCC Training Walls (Embankment Slope/Crest)					ASW RCC Training Walls (Stilling Basin)				
				Sustained Foundation Pressure:			2,463	psf	Sustained Foundation Pressure:			4,750	psf
				Foundation Base Width:			12.0	feet	Foundation Base Width:			12.0	feet
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Stratum	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*
B-05	253	7.5-10	Embankment	30.0	5.0	2.0	3.0	0.00	-	-	-	-	-
B-05	255	15-17.5	Embankment	30.0	5.0	2.0	3.0	0.00	-	-	-	-	-
B-06P	260	15-17.5	Embankment	30.0	5.0	2.0	3.0	0.00	-	-	-	-	-
B-07	265	10.0-12.0	Embankment	30.0	5.0	2.0	3.0	0.00	-	-	-	-	-
B-07	266	15-17.5	Embankment	30.0	5.0	2.0	3.0	0.97	-	-	-	-	-
B-301	282	18-20	Residuum	-	-	-	-	-	0.0	2.0	0.0	2.0	0.00
B-601	289	10-12.5	Residuum	-	-	-	-	-	0.0	2.0	0.0	2.0	0.00
B-601	290	19-20.5	Residuum	-	-	-	-	-	0.0	2.0	0.0	2.0	0.00
B-602	292	15-17	Residuum	-	-	-	-	-	0.0	2.0	0.0	2.0	0.00
B-603	297	15.5-17.5	Residuum	-	-	-	-	-	0.0	2.0	0.0	2.0	0.00
B-604	305	20-21	Residuum	-	-	-	-	-	0.0	2.0	0.0	2.0	0.88
Borrow #1	19-COMP-1	0-4	Borrow	30.0	5.0	2.0	3.0	0.00	-	-	-	-	-
Borrow #3	19-COMP-3	0-3	Borrow	30.0	5.0	2.0	3.0	0.00	-	-	-	-	-
Minimum				---	---	---	---	0.00	---	---	---	---	0.00
Maximum				---	---	---	---	0.97	---	---	---	---	0.88

SUMMARY OF SWELL CA

				PSW Impact Basin					PSW Impact Basin				
				Sustained Foundation Pressure:			2,900	psf	Sustained Foundation Pressure:			1,530	psf
				Foundation Base Width:			17.8	feet	Foundation Base Width:			12.5	feet
Boring ID	Sample ID	Sample Depth Interval (ft bgs)	Stratum	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*	Design GW Depth Below Footing (ft)	Thickness of Non-Expansive Fill Below Footing (ft)	Thickness of Underdrain (ft)	Select Fill Replacement Below Underdrain (ft)	Potential Vertical Heave (inch)*
B-05	253	7.5-10	Embankment	-	-	-	-	-	-	-	-	-	-
B-05	255	15-17.5	Embankment	-	-	-	-	-	-	-	-	-	-
B-06P	260	15-17.5	Embankment	-	-	-	-	-	-	-	-	-	-
B-07	265	10.0-12.0	Embankment	-	-	-	-	-	-	-	-	-	-
B-07	266	15-17.5	Embankment	-	-	-	-	-	-	-	-	-	-
B-301	282	18-20	Residuum	0.0	6.0	0.0	6.0	0.00	0.0	2.0	0.0	2.0	0.10
B-601	289	10-12.5	Residuum	0.0	6.0	0.0	6.0	0.00	0.0	2.0	0.0	2.0	0.00
B-601	290	19-20.5	Residuum	0.0	6.0	0.0	6.0	0.00	0.0	2.0	0.0	2.0	0.00
B-602	292	15-17	Residuum	0.0	6.0	0.0	6.0	0.00	0.0	2.0	0.0	2.0	0.15
B-603	297	15.5-17.5	Residuum	0.0	6.0	0.0	6.0	0.00	0.0	2.0	0.0	2.0	0.26
B-604	305	20-21	Residuum	0.0	6.0	0.0	6.0	1.01	0.0	2.0	0.0	2.0	1.03
Borrow #1	19-COMP-1	0-4	Borrow	-	-	-	-	-	-	-	-	-	-
Borrow #3	19-COMP-3	0-3	Borrow	-	-	-	-	-	-	-	-	-	-
Minimum				---	---	---	---	0.00	---	---	---	---	0.00
Maximum				---	---	---	---	1.01	---	---	---	---	1.03

Appendix L Filter Compatibility Analysis

L.1 Filter Calculations – Embankment Fill

Figure 1 - Plum Creek 21 - Embankment (Raw)

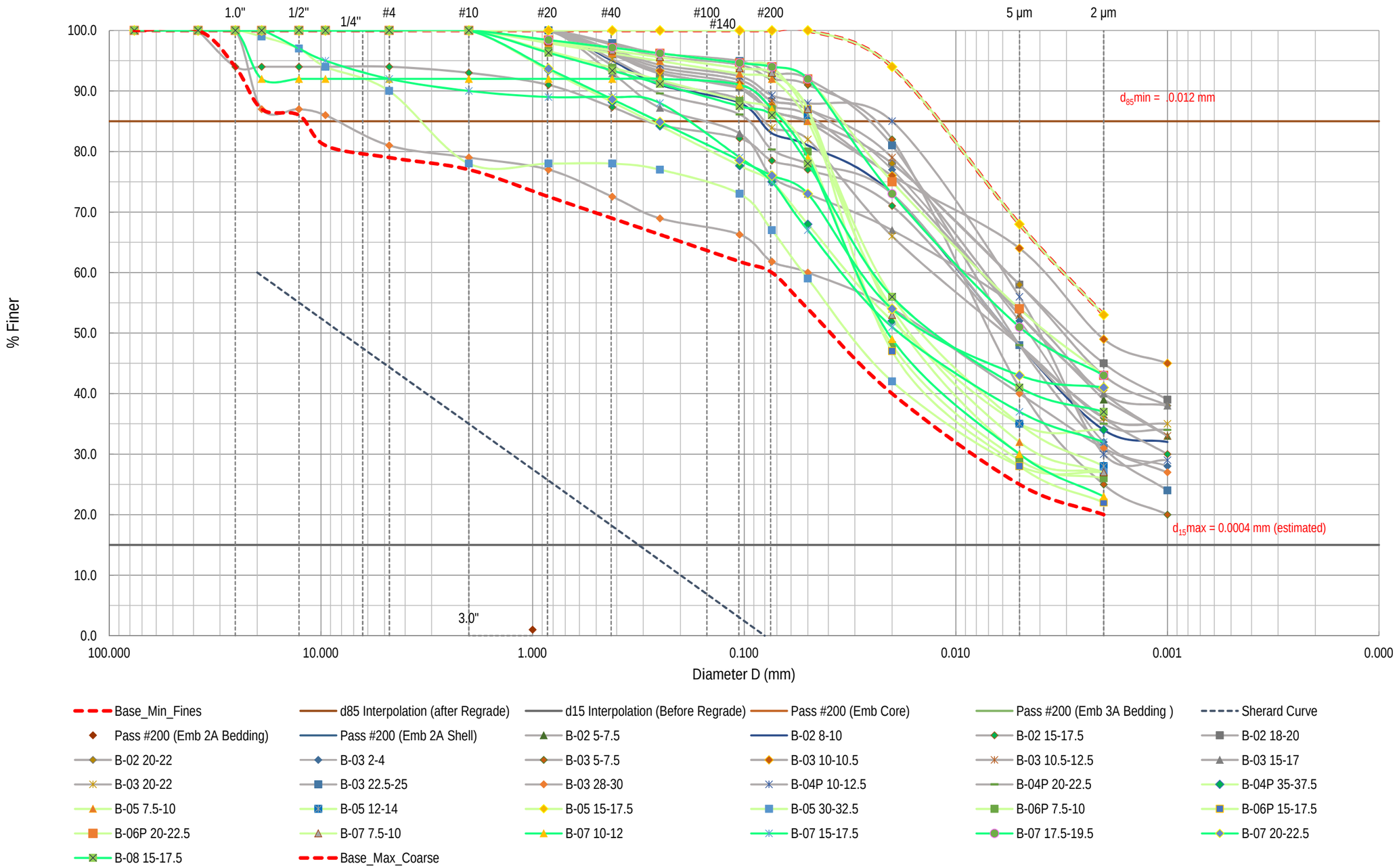
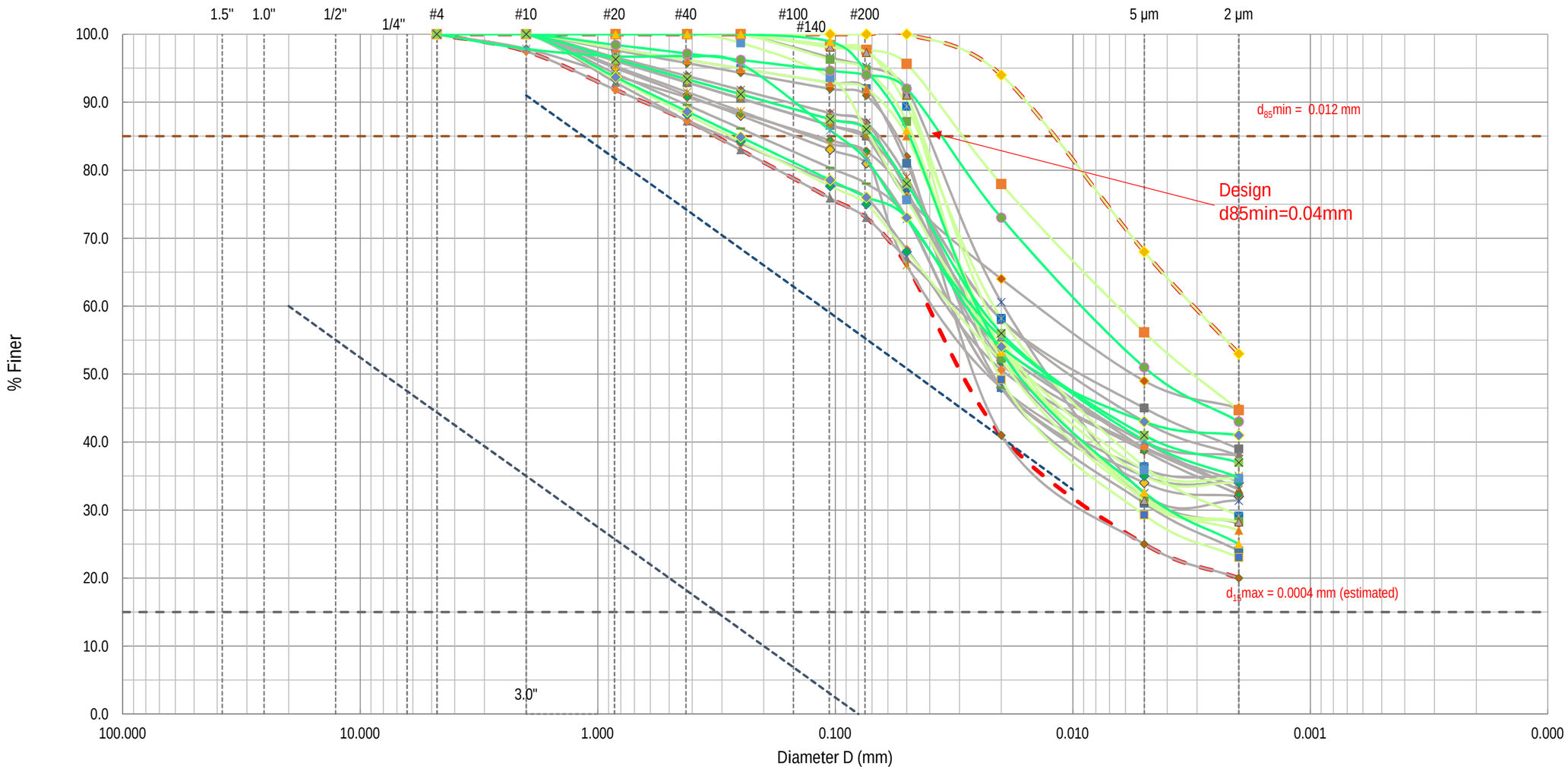


Figure 2 - Plum Creek 21 - Embankment (Regrade)



Base_Min_Fines	Max_Coarse	d85 Interpolation (After Regrade)	d15 Interpolation (Before Regrade)	Sherard Curve	Sherard Curve
	B-02 5-7.5	B-02 8-10	B-02 15-17.5	B-02 18-20	B-02 20-22
B-03 2-4	B-03 5-7.5	B-03 10-10.5	B-03 10.5-12.5	B-03 15-17	B-03 20-22
B-03 22.5-25	B-03 28-30	B-04P 10-12.5	B-04P 20-22.5	B-04P 35-37.5	B-05 7.5-10
B-05 12-14	B-05 15-17.5	B-05 30-32.5	B-06P 7.5-10	B-06P 15-17.5	B-06P 20-22.5
B-07 7.5-10	B-07 10-12	B-07 15-17.5	B-07 17.5-19.5	B-07 20-22.5	B-08 15-17.5

Figure 3 - Filter Gradation Curves
Embankment - Re-graded Base Soil Category 1 (> 85% fines)

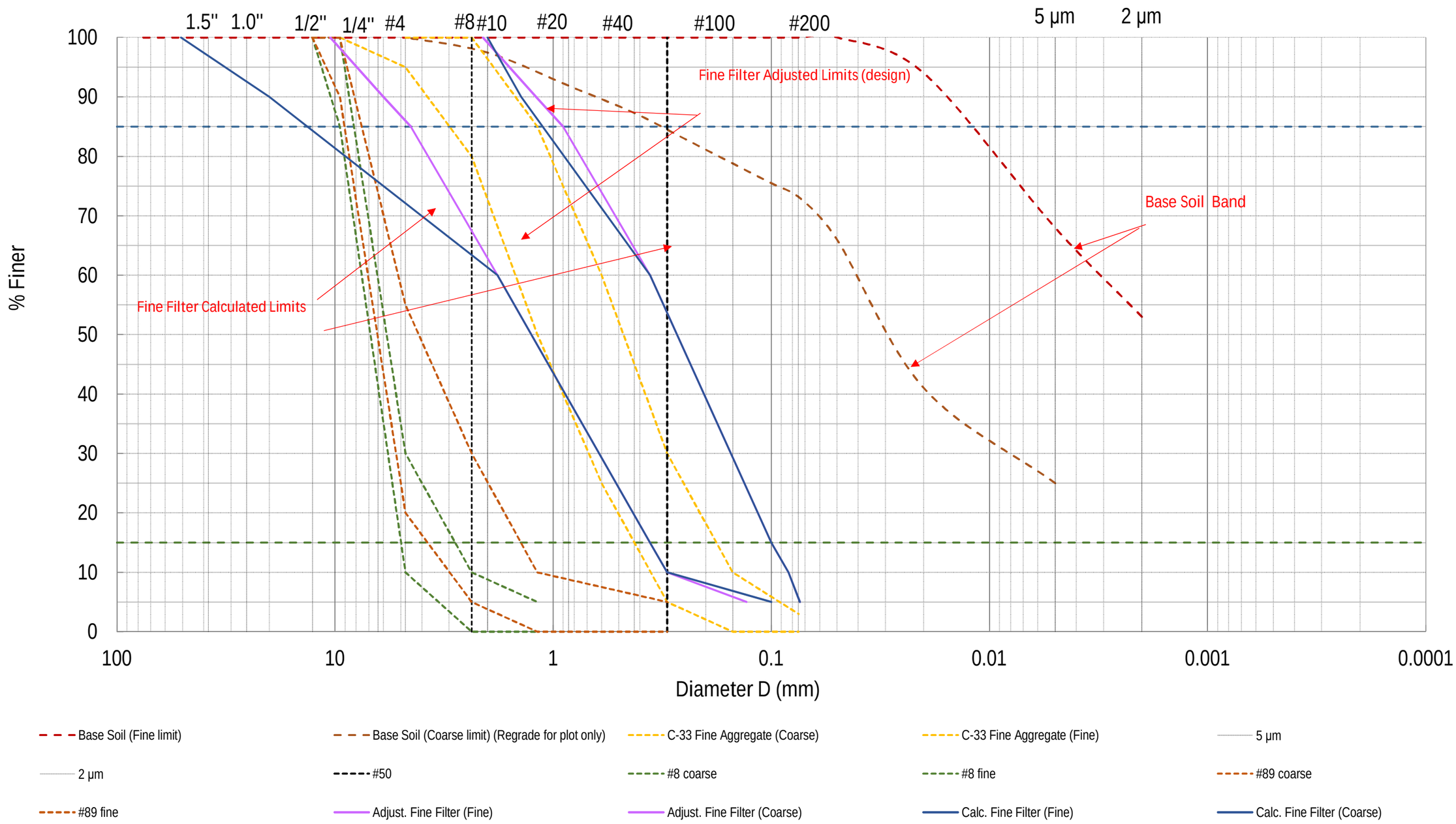


Figure 4 - Filter Gradation Curves
Embankment - Re-graded Base Soil Category 1 (> 85% fines)

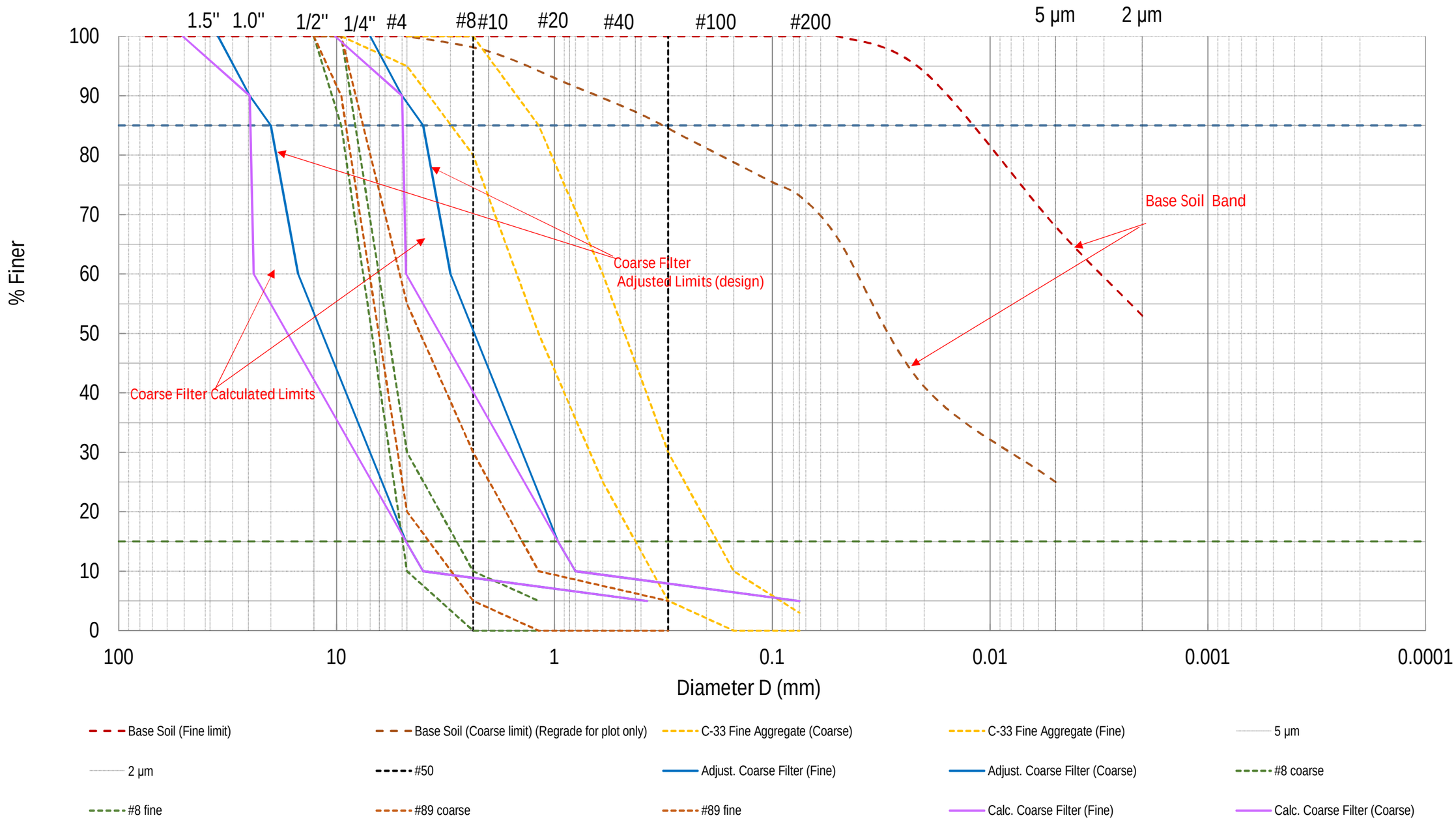
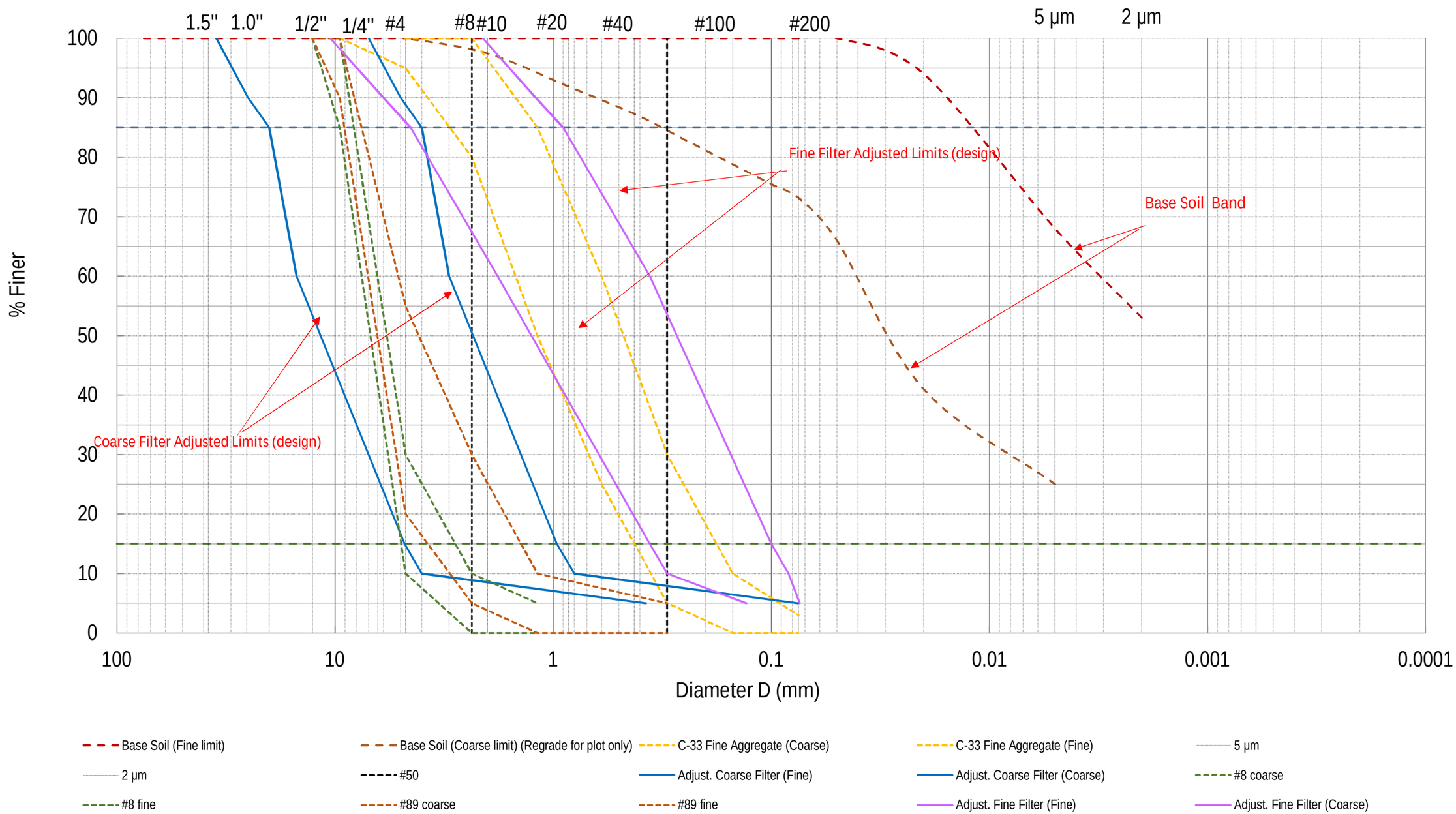


Figure 5 - Coarse and Fine Filter Design Gradation Curves
Embankment - Re-graded Base Soil Category 1 (> 85% fines)



L.2 Filter Calculations – Borrow Areas #1 and #2

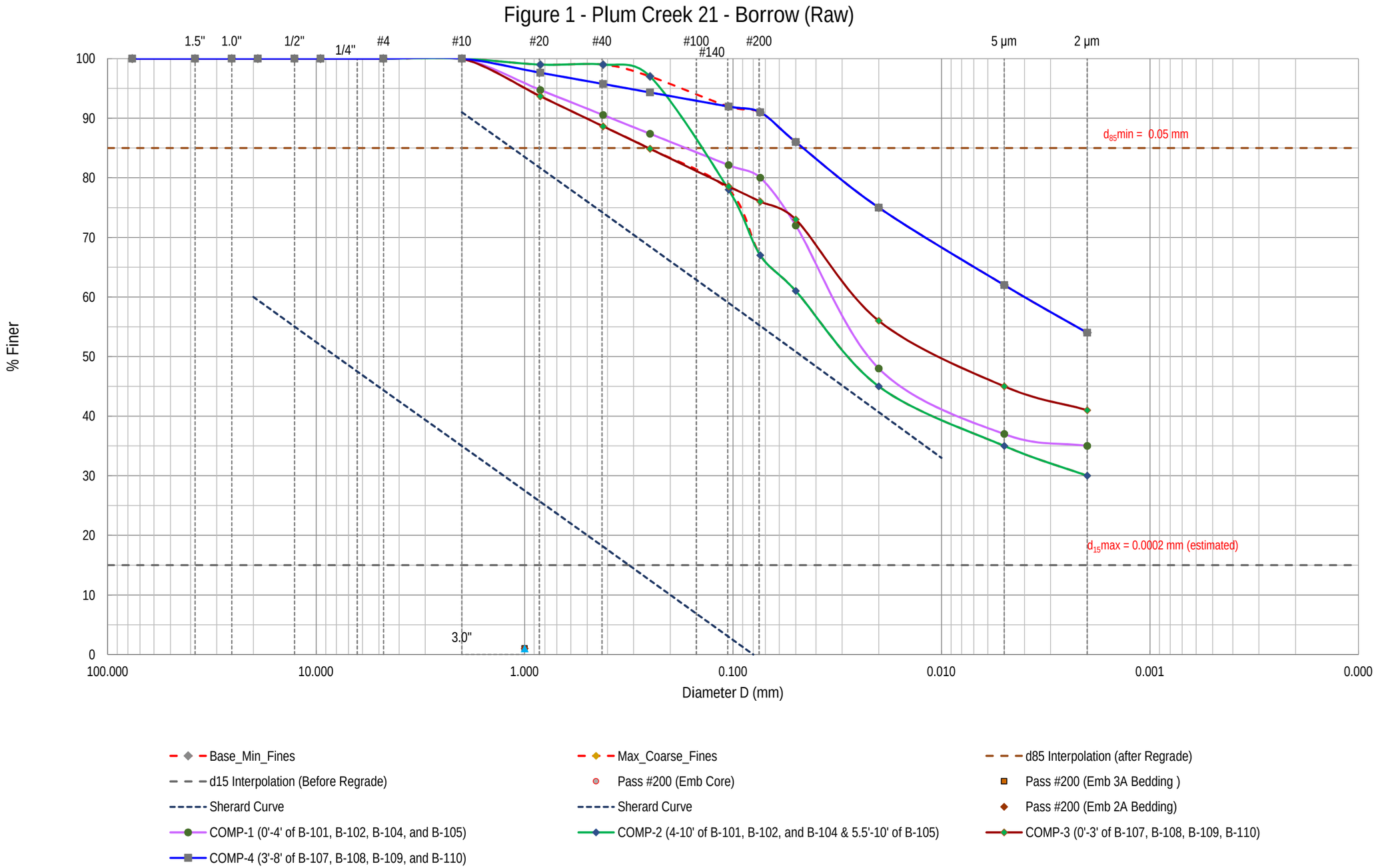


Figure 1 - Plum Creek 21 - Borrow (Raw)
1.5"
1.0"
1/2"
1/4"
#4
#10
#20
#40
#100
#140
#200
5 µm
2 µm
3.0"
d_{85}min = 0.05 mm
d_{15}max = 0.0002 mm (estimated)
% Finer
100
90
80
70
60
50
40
30
20
10
0
100.000
10.000
1.000
0.100
0.010
0.001
0.000
Diameter D (mm)
Base_Min_Fines
Max_Coarse_Fines
d85 Interpolation (after Regrade)
d15 Interpolation (Before Regrade)
Pass #200 (Emb Core)
Pass #200 (Emb 3A Bedding)
Sherard Curve
Sherard Curve
Pass #200 (Emb 2A Bedding)
COMP-1 (0'-4' of B-101, B-102, B-104, and B-105)
COMP-2 (4-10' of B-101, B-102, and B-104 & 5.5'-10' of B-105)
COMP-3 (0'-3' of B-107, B-108, B-109, B-110)
COMP-4 (3'-8' of B-107, B-108, B-109, and B-110)

Figure 2 - Fine Filter Gradation Curves
Borrow - Raw Base Soil Category 2 (40- 85% fines)

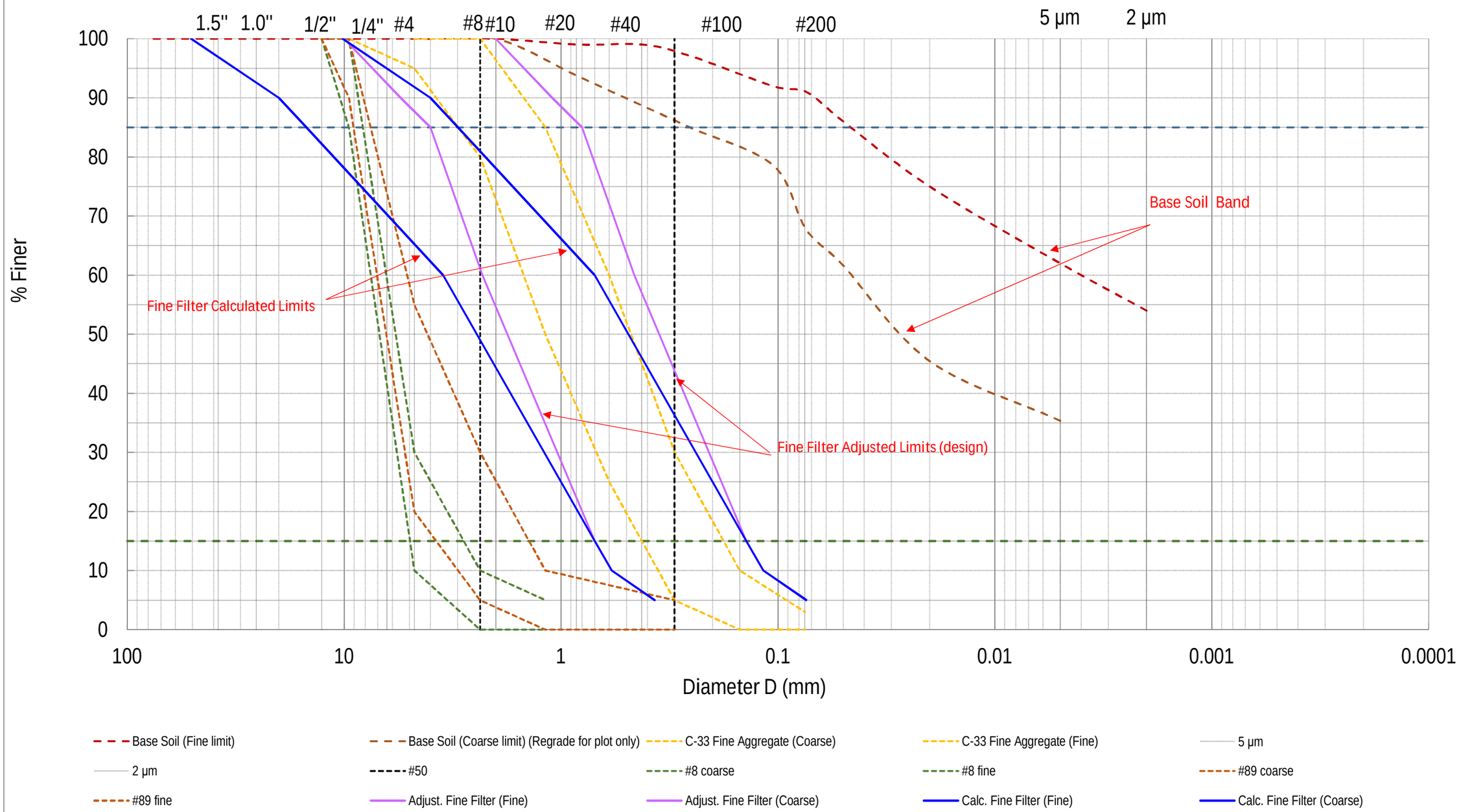


Figure 3 - Coarse Filter Gradation Curves
Borrow - Raw Base Soil Category 2 (40- 85% fines)

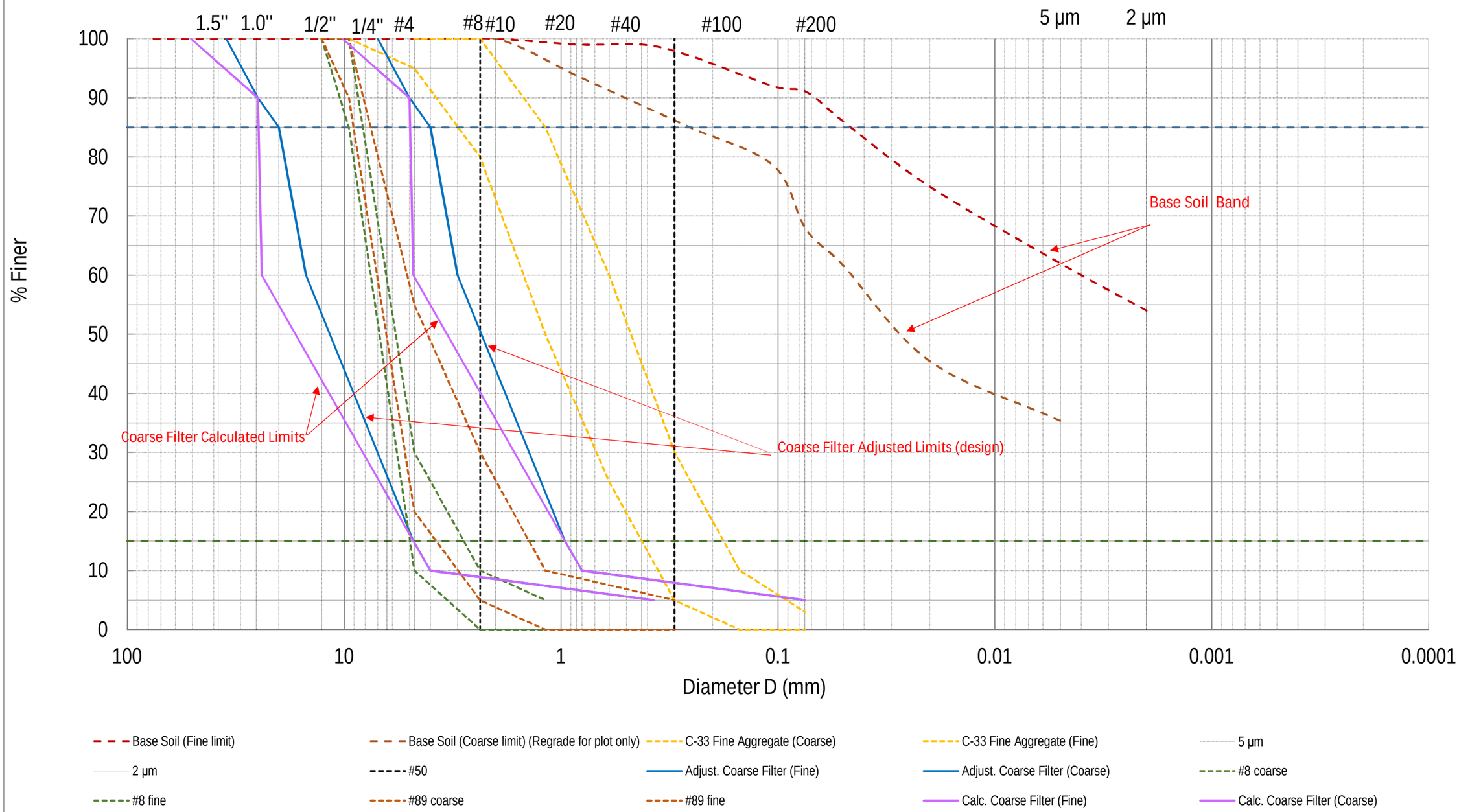
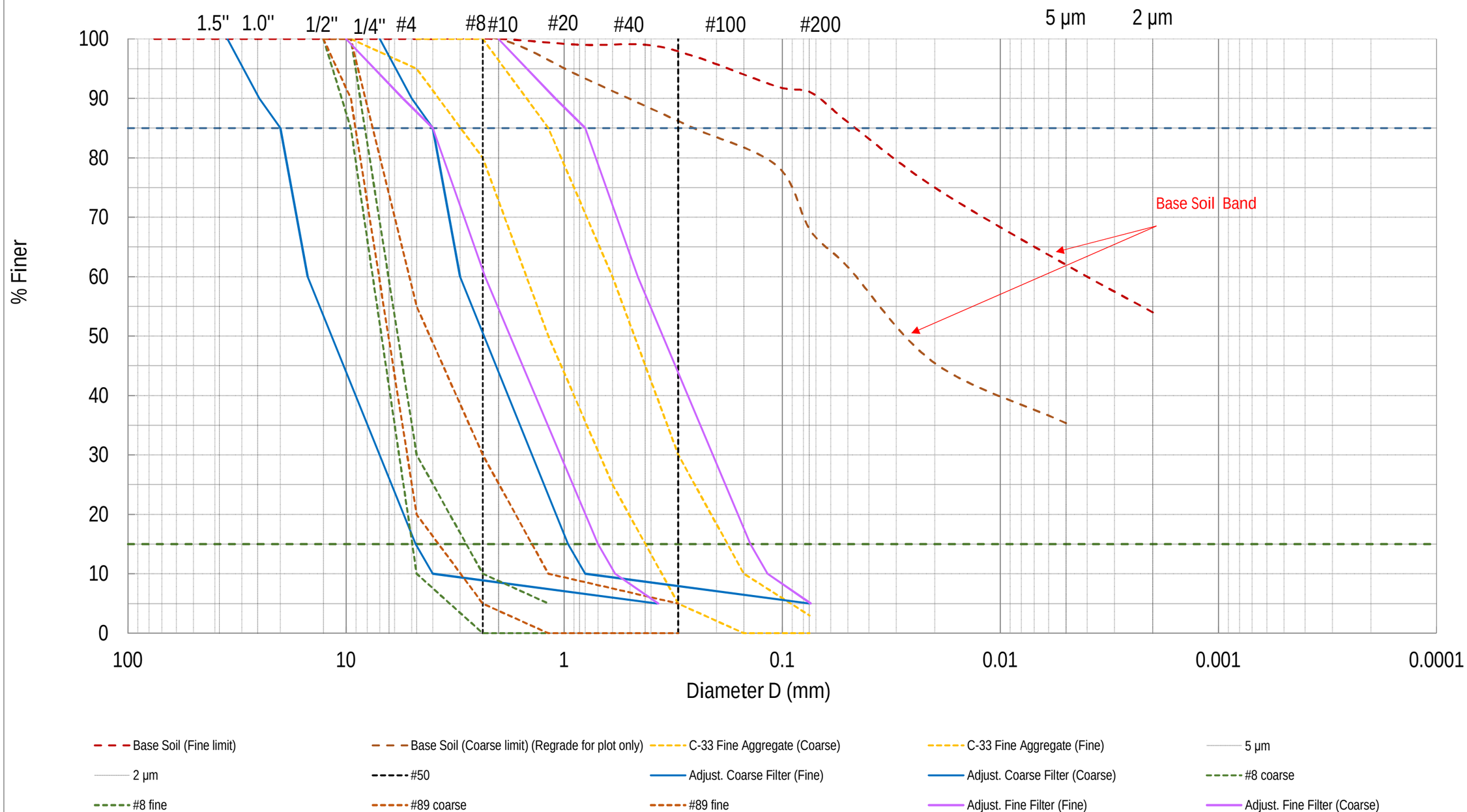


Figure 4 - Fine and Coarse Filter Gradation Curves
Borrow - Raw Base Soil Category 2 (40- 85% fines)



L.3 Filter Calculations – Valley Fill and Alluvium

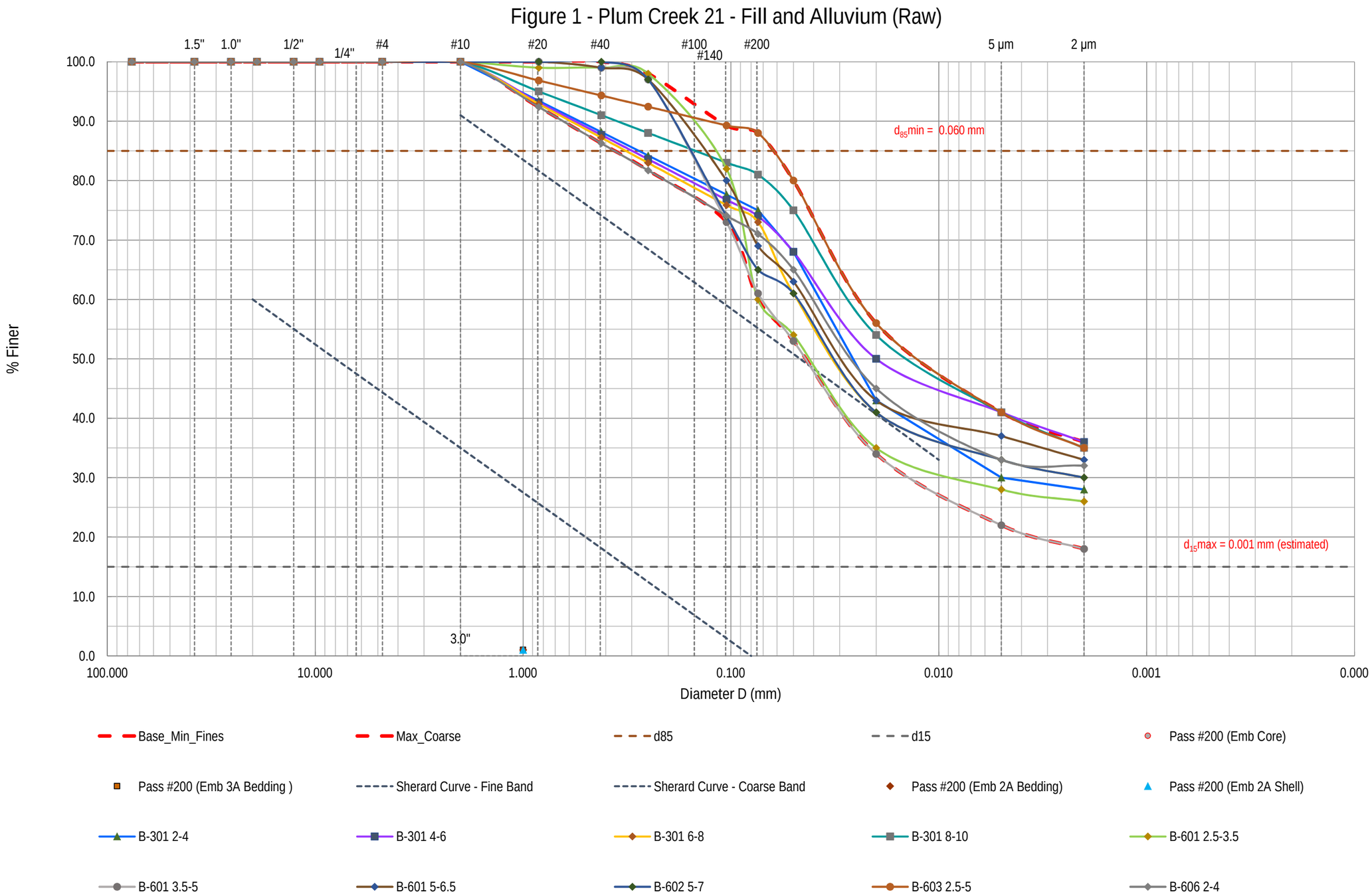


Figure 1 - Plum Creek 21 - Fill and Alluvium (Raw)
1.5"
1.0"
1/2"
1/4"
#4
#10
#20
#40
#100
#140
#200
5 µm
2 µm
3.0"
d_{85}min = 0.060 mm
d_{15}max = 0.001 mm (estimated)
% Finer
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
100.000
10.000
1.000
0.100
0.010
0.001
0.000
Diameter D (mm)
Base_Min_Fines
Max_Coarse
d85
d15
Pass #200 (Emb Core)
Pass #200 (Emb 3A Bedding)
Sherard Curve - Fine Band
Sherard Curve - Coarse Band
Pass #200 (Emb 2A Bedding)
Pass #200 (Emb 2A Shell)
B-301 2-4
B-301 4-6
B-301 6-8
B-301 8-10
B-601 2.5-3.5
B-601 3.5-5
B-601 5-6.5
B-602 5-7
B-603 2.5-5
B-606 2-4

Figure 2 - Fine Filter Gradation Curves
Fill & Alluvium - Raw Base Soil Category 2 (40-85% fines)

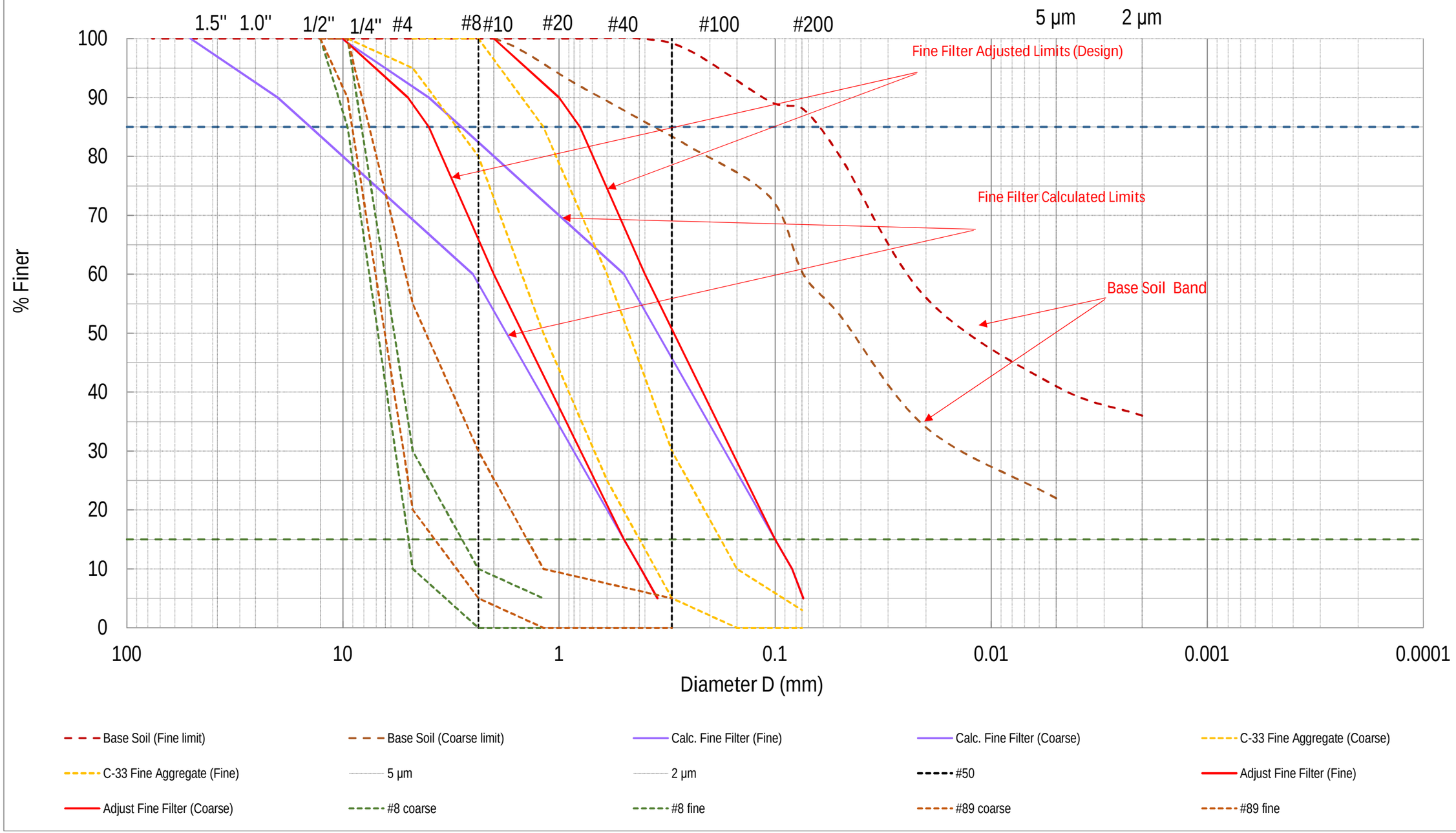


Figure 3 - Coarse Gradation Curves
Fill & Alluvium- Raw Base Soil Category 2 (40-85% fines)

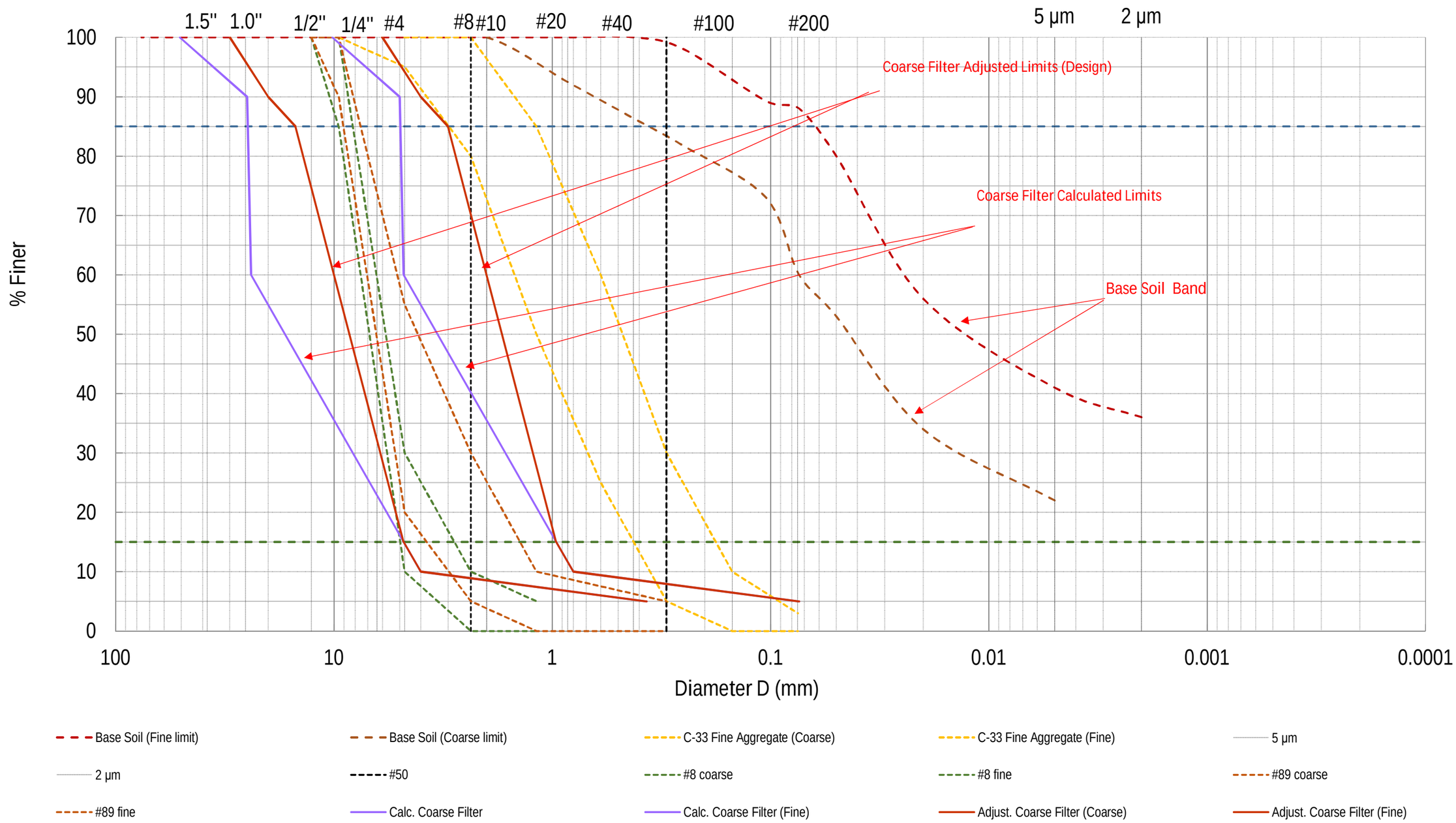
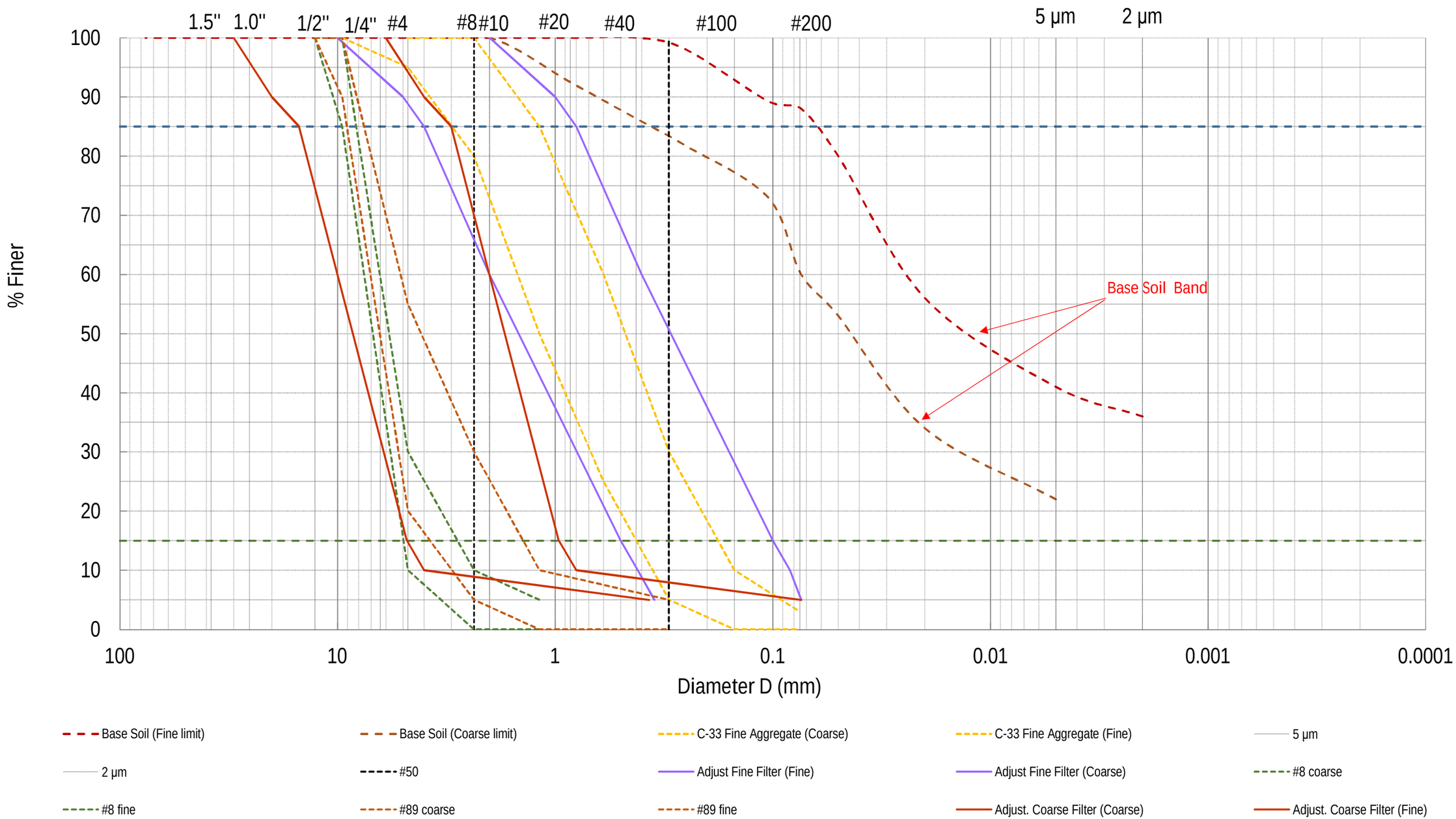
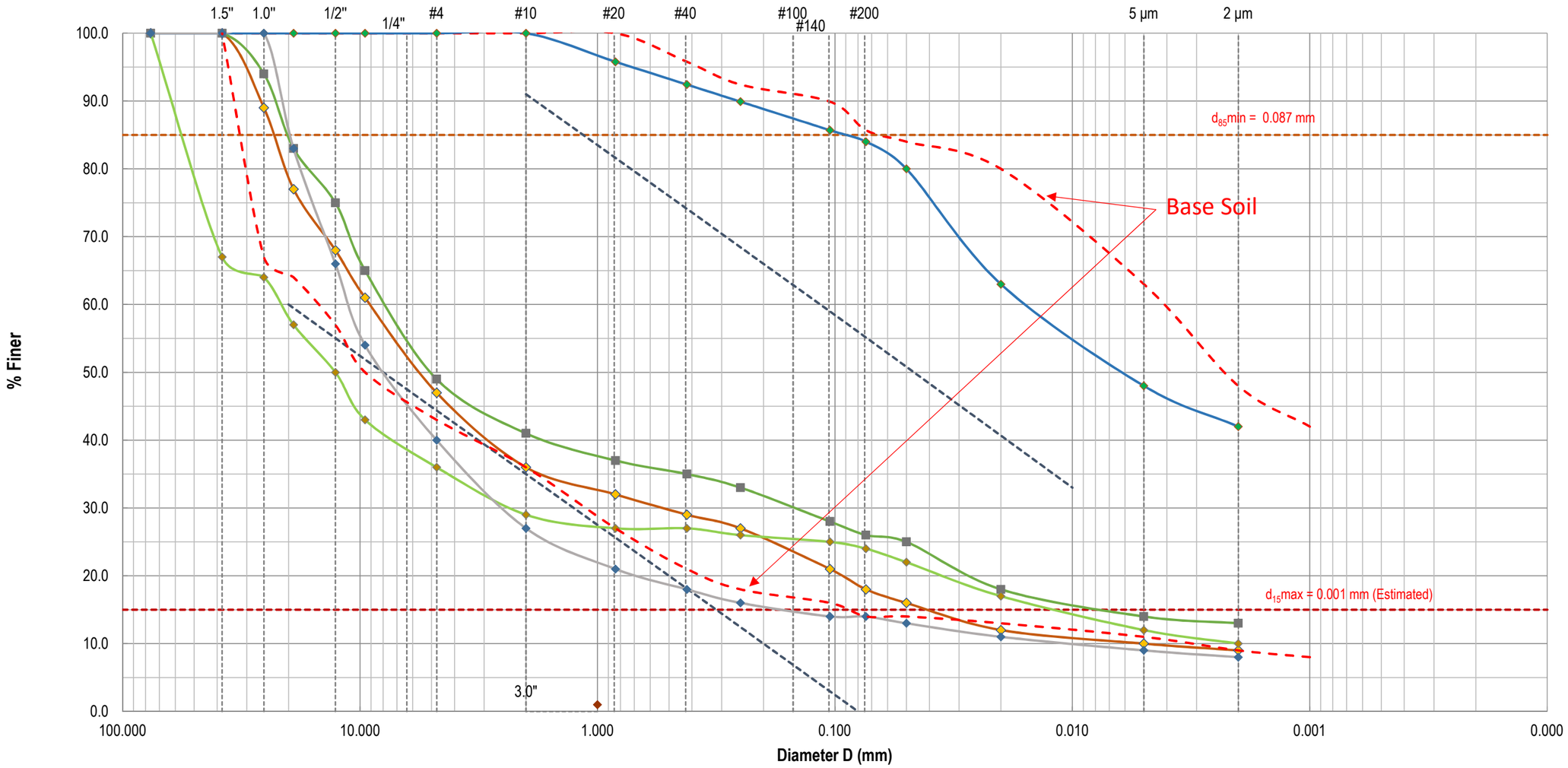


Figure 4 - Fine and Coarse Filter Design Gradation Curves
Fill & Alluvium- Raw Base Soil Category 2 (40-85% fines)



L.4 Filter Calculations – Leona Formation

Figure 1 - Plum Creek 21 - Native Material - Leona (Raw)

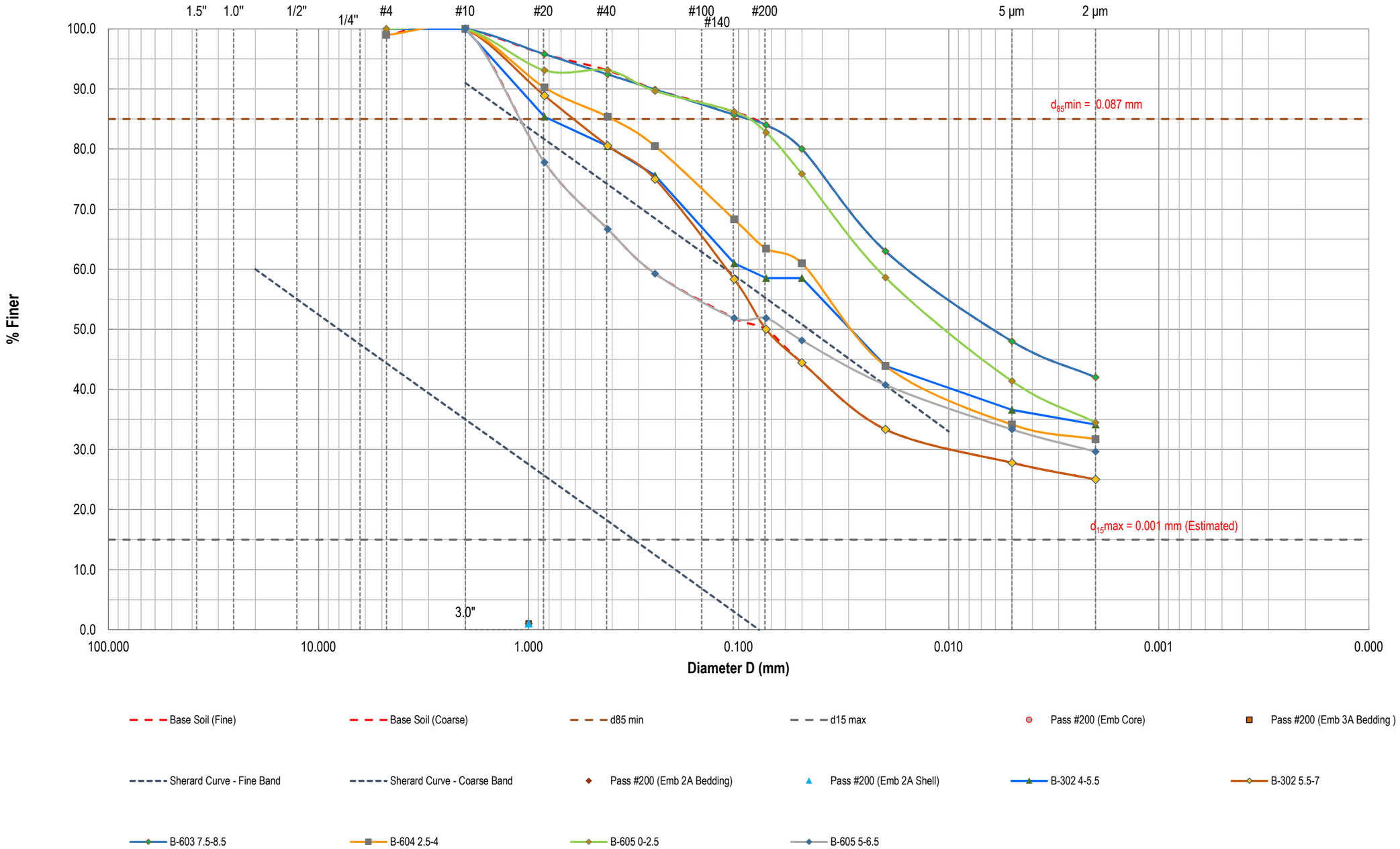


Base Soil (Fine) | d85 min | d15 max | Pass #200 (Emb Core) | Pass #200 (Emb 3A Bedding) | Sherard Curve - Fine Band

Sherard Curve - Coarse Band | Pass #200 (Emb 2A Bedding) | Pass #200 (Emb 2A Shell) | | B-302 5.5-7 | B-603 7.5-8.5

B-604 2.5-4 | B-605 0-2.5 | B-605 5-6.5 | Base Soil (Coarse)

Figure 2 - Plum Creek 21 - Native Material - Leona (Regrade)



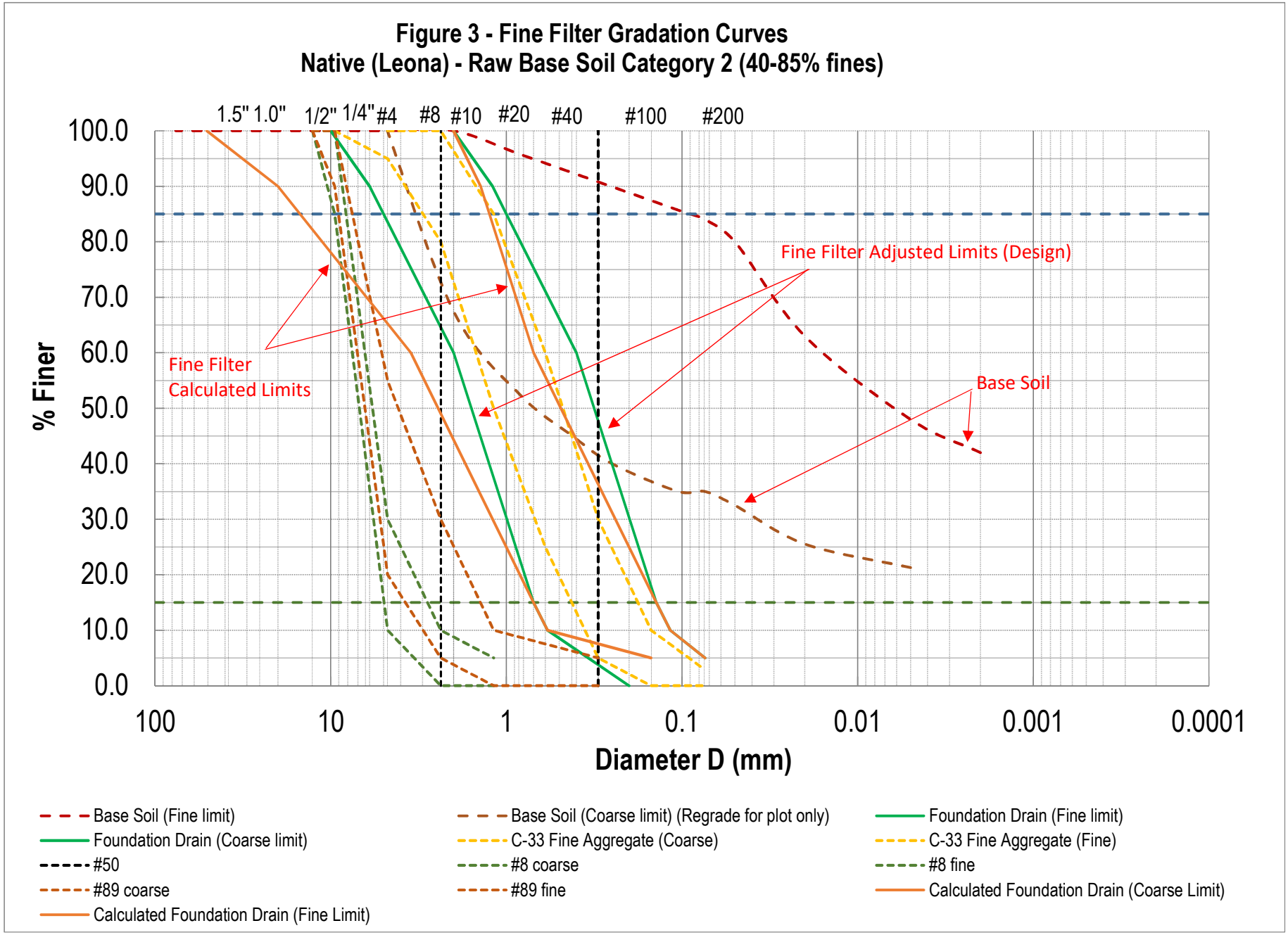
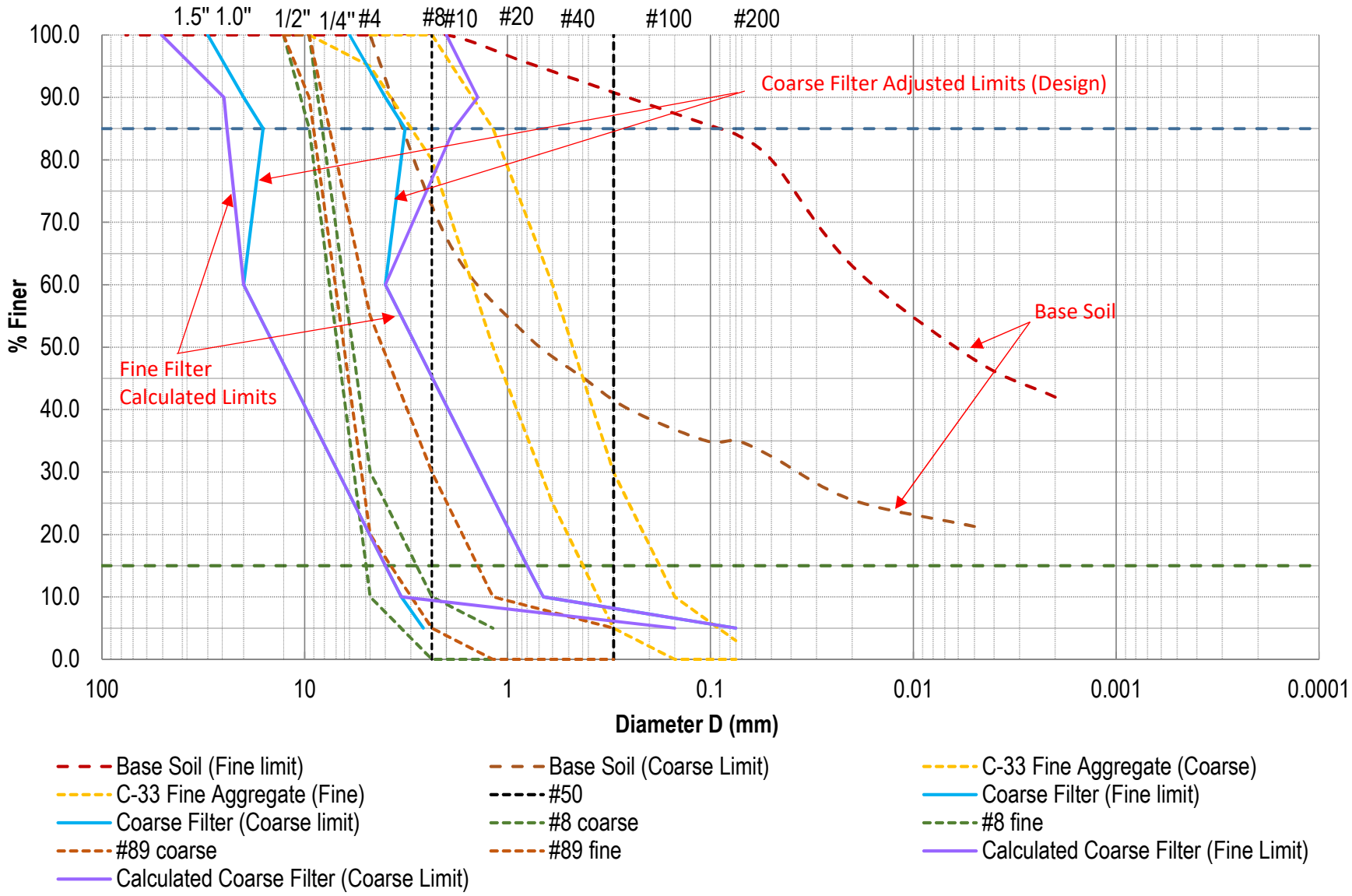


Figure 3 - Fine Filter Gradation Curves
Native (Leona) - Raw Base Soil Category 2 (40-85% fines)
1.5" 1.0" 1/2" 1/4" #4 #8 #10 #20 #40 #100 #200
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
% Finer
100
10
1
0.1
0.01
0.001
0.0001
Diameter D (mm)
Fine Filter Adjusted Limits (Design)
Fine Filter
Calculated Limits
Base Soil
Base Soil (Fine limit)
Base Soil (Coarse limit) (Regrade for plot only)
Foundation Drain (Fine limit)
Foundation Drain (Coarse limit)
C-33 Fine Aggregate (Coarse)
C-33 Fine Aggregate (Fine)
#50
#8 coarse
#8 fine
#89 coarse
#89 fine
Calculated Foundation Drain (Coarse Limit)
Calculated Foundation Drain (Fine Limit)

Figure 4 - Coarse Filter Gradation Curves
Native (Leona) - Raw Base Soil Category 2 (40-85% fines)



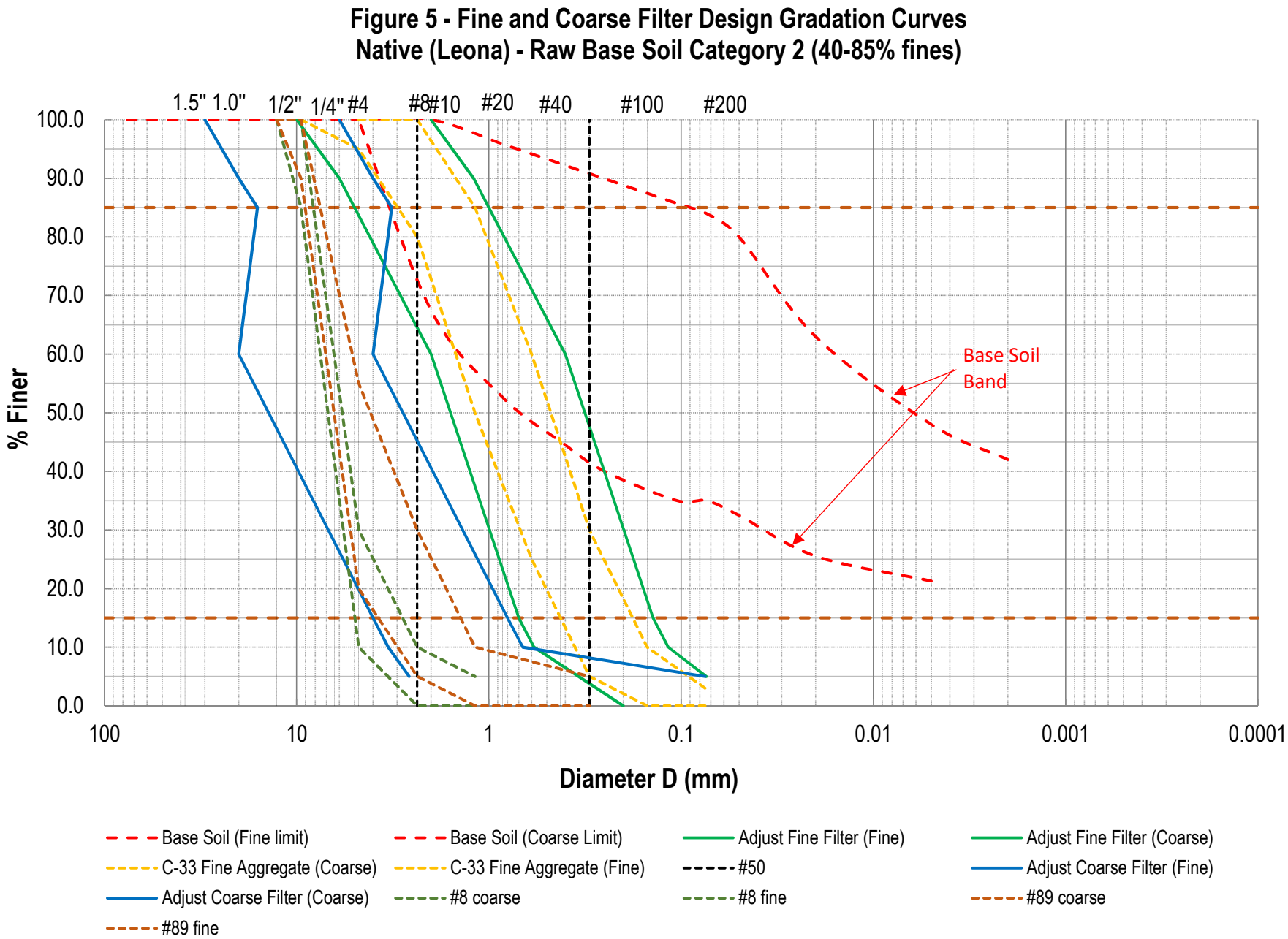
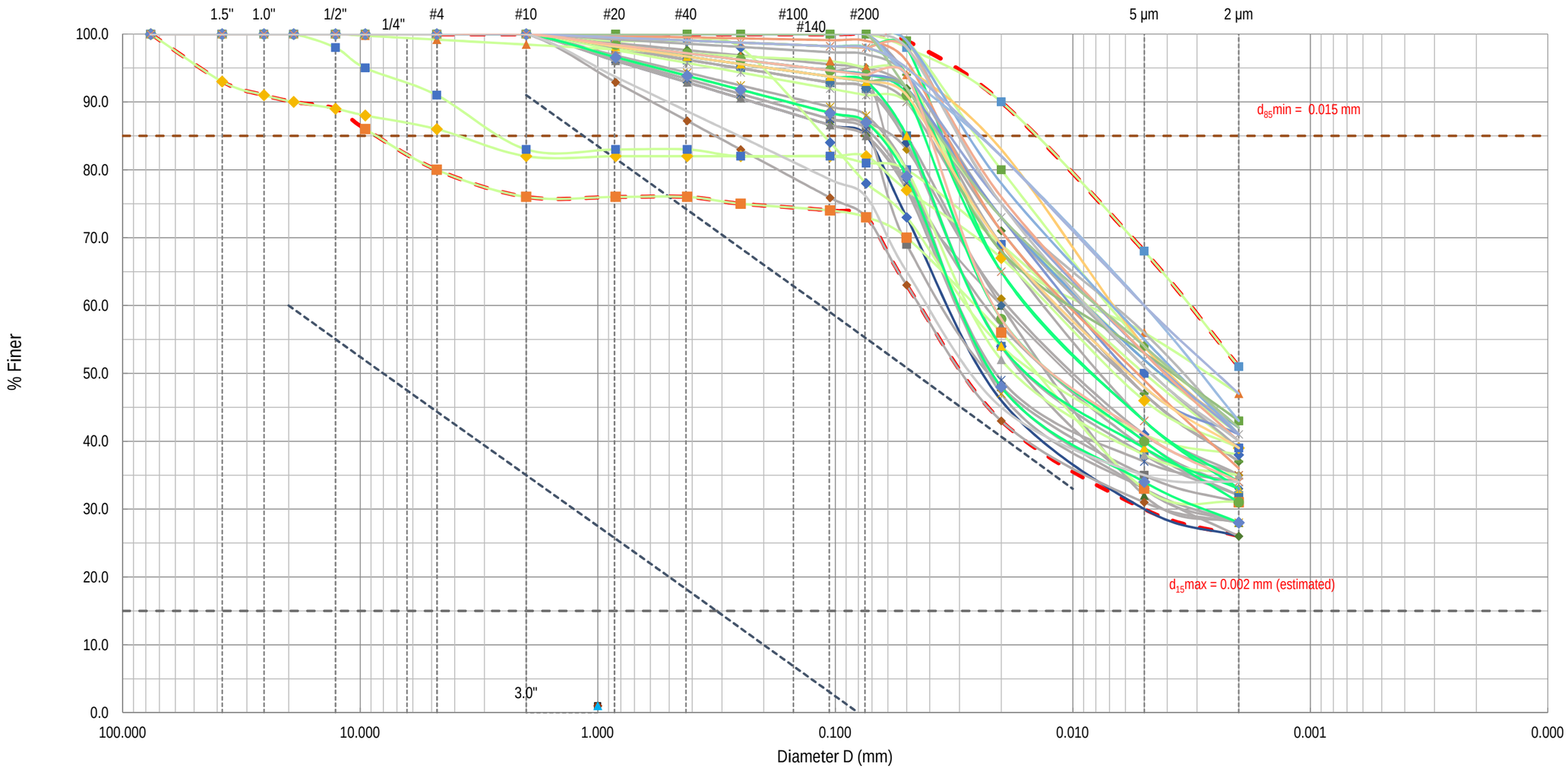


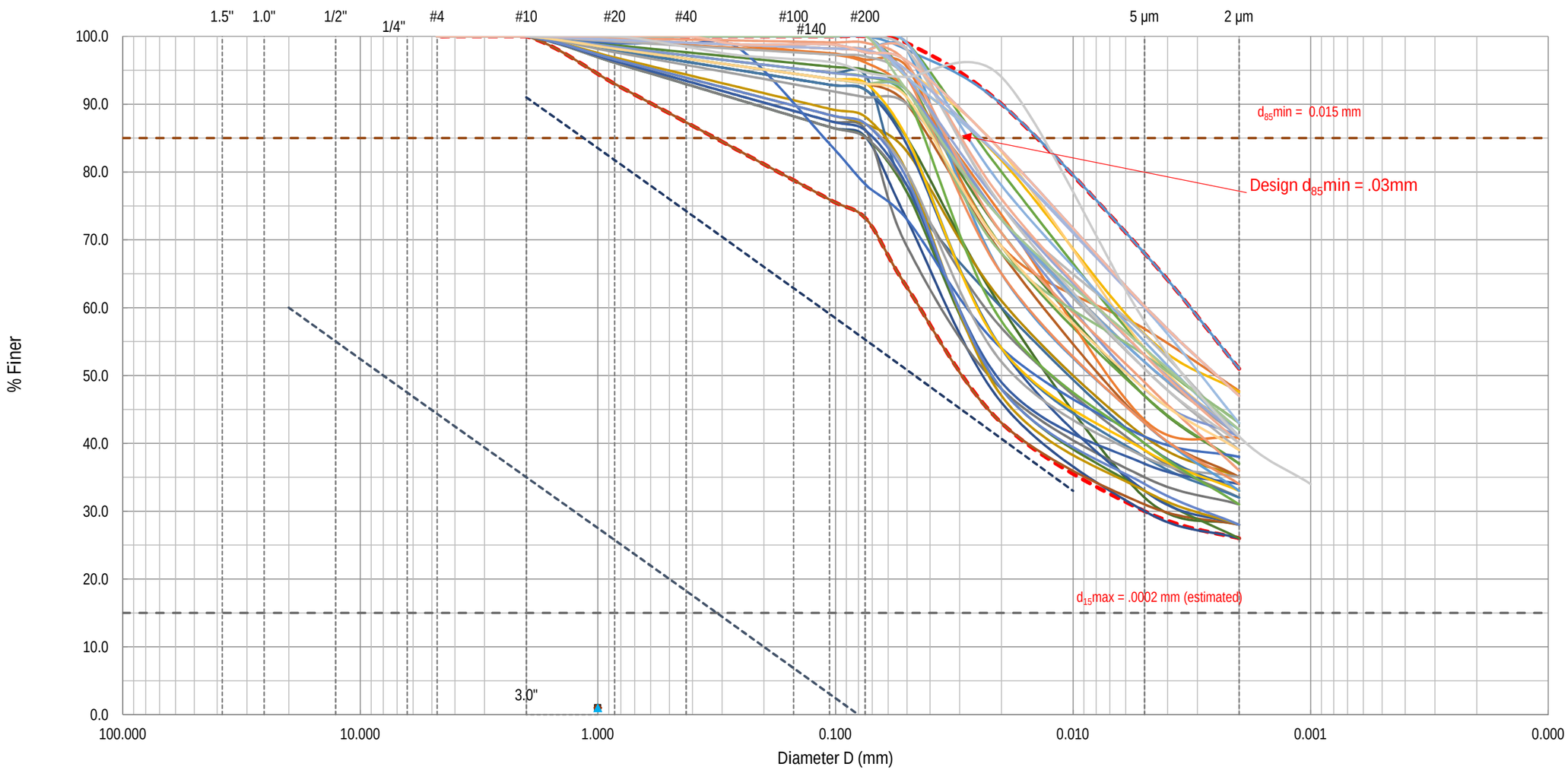
Figure 5 - Fine and Coarse Filter Design Gradation Curves
Native (Leona) - Raw Base Soil Category 2 (40-85% fines)
1.5" 1.0" 1/2" 1/4" #4 #8 #10 #20 #40 #100 #200
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
% Finer
100
10
1
0.1
0.01
0.001
0.0001
Diameter D (mm)
Base Soil Band
Base Soil (Fine limit)
Base Soil (Coarse Limit)
Adjust Fine Filter (Fine)
Adjust Fine Filter (Coarse)
C-33 Fine Aggregate (Coarse)
C-33 Fine Aggregate (Fine)
#50
Adjust Coarse Filter (Fine)
Adjust Coarse Filter (Coarse)
#8 coarse
#8 fine
#89 coarse
#89 fine

L.5 Filter Calculations – Residuum and Clayshale

Figure 1 - Plum Creek 21 - Residuum (Raw)



Base_Min_Fines
Max_Coarse_Fines
d85 Interpolation (after Regrade)
d15 Interpolation (Before Regrade)
Pass #200 (Emb Core)
Pass #200 (Emb 3A Bedding)
Sherard Curve
Sherard Curve
Pass #200 (Emb 2A Bedding)
Pass #200 (Emb 2A Shell)
B-01 2-4
B-01 5-7.5
B-01 15-17
B-01 17.5-20
B-01 20-22.5
B-01 23-25
B-02 22-22.5
B-02 23-25
B-02 28-30
B-02 30-32.5
B-03 33-35
B-03 35-37.5
B-03 43-45
B-04P 43-45.5
B-04P 53-55
B-06P 40-42.5
B-07 35-37.5
B-08 32.5-34.5
B-08 35-37.5
B-09 18-20
B-301 13.5-15
B-302 13-15
B-302 18-20
B-601 10-12.5
B-601 18-19
B-601 19-20.5
B-602 15-17
B-602 17.5-19
B-602 23-24
B-602 25-26
B-603 13.5-15.5
B-603 15.5-17.5
B-603 20-21
B-603 24-25
B-603 30-31
B-603 38-39
B-604 7.5-9
B-604 15-16
B-604 20-21
B-604 23-24.5
B-604 30-31
B-604 39-40
B-605 10-11.5
B-606 20-22



Base_Min_Fines
Max_Coarse_Fines
d85 Interpolation (after Regrade)
d15 Interpolation (Before Regrade)
Pass #200 (Emb Core)
Pass #200 (Emb 3A Bedding)
Sherard Curve
Sherard Curve
Pass #200 (Emb 2A Bedding)
Pass #200 (Emb 2A Shell)
B-01 2-4
B-01 5-7.5
B-01 15-17
B-01 17.5-20
B-01 20-22.5
B-01 23-25
B-02 22-22.5
B-02 23-25
B-02 28-30
B-02 30-32.5
B-03 33-35
B-03 35-37.5
B-03 43-45
B-04P 43-45.5
B-04P 53-55
B-06P 40-42.5
B-07 35-37.5
B-08 32.5-34.5
B-08 35-37.5
B-09 18-20
B-301 13.5-15
B-302 13-15
B-302 18-20
B-601 10-12.5
B-601 18-19
B-601 19-20.5
B-602 15-17
B-602 17.5-19
B-602 23-24
B-602 25-26
B-603 13.5-15.5
B-603 15.5-17.5
B-603 20-21
B-603 24-25
B-603 30-31
B-603 38-39
B-604 7.5-9
B-604 15-16
B-604 20-21
B-604 23-24.5
B-604 30-31
B-604 39-40
B-605 10-11.5
B-606 20-22

Figure 3 - Fine Filter Gradation Curves
Residuum - Re-graded Base Soil Category 1 (> 85% fines)

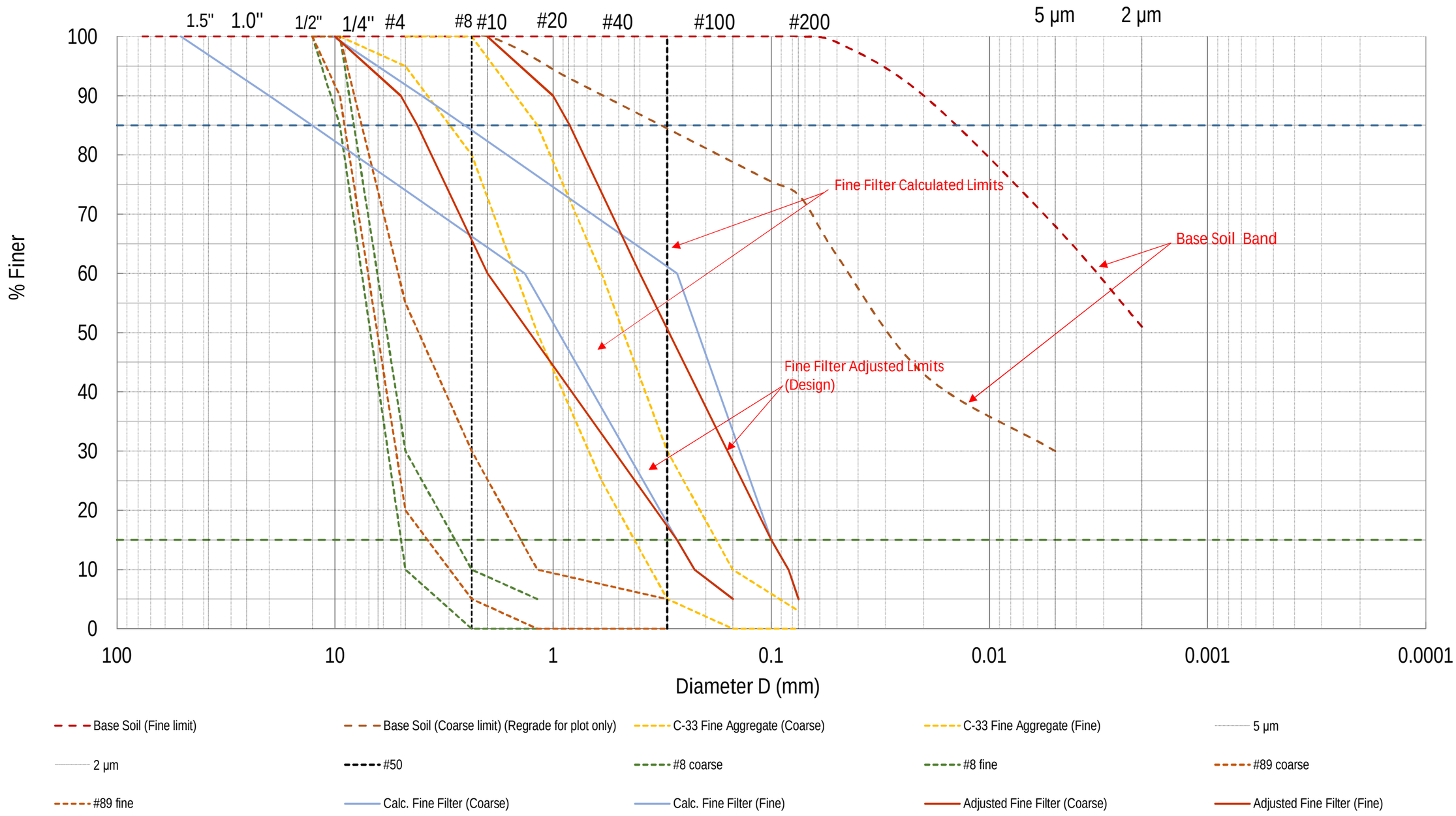


Figure 4 - Coarse Filter Gradation Curves
Residuum - Re-graded Base Soil Category 1 (> 85% fines)

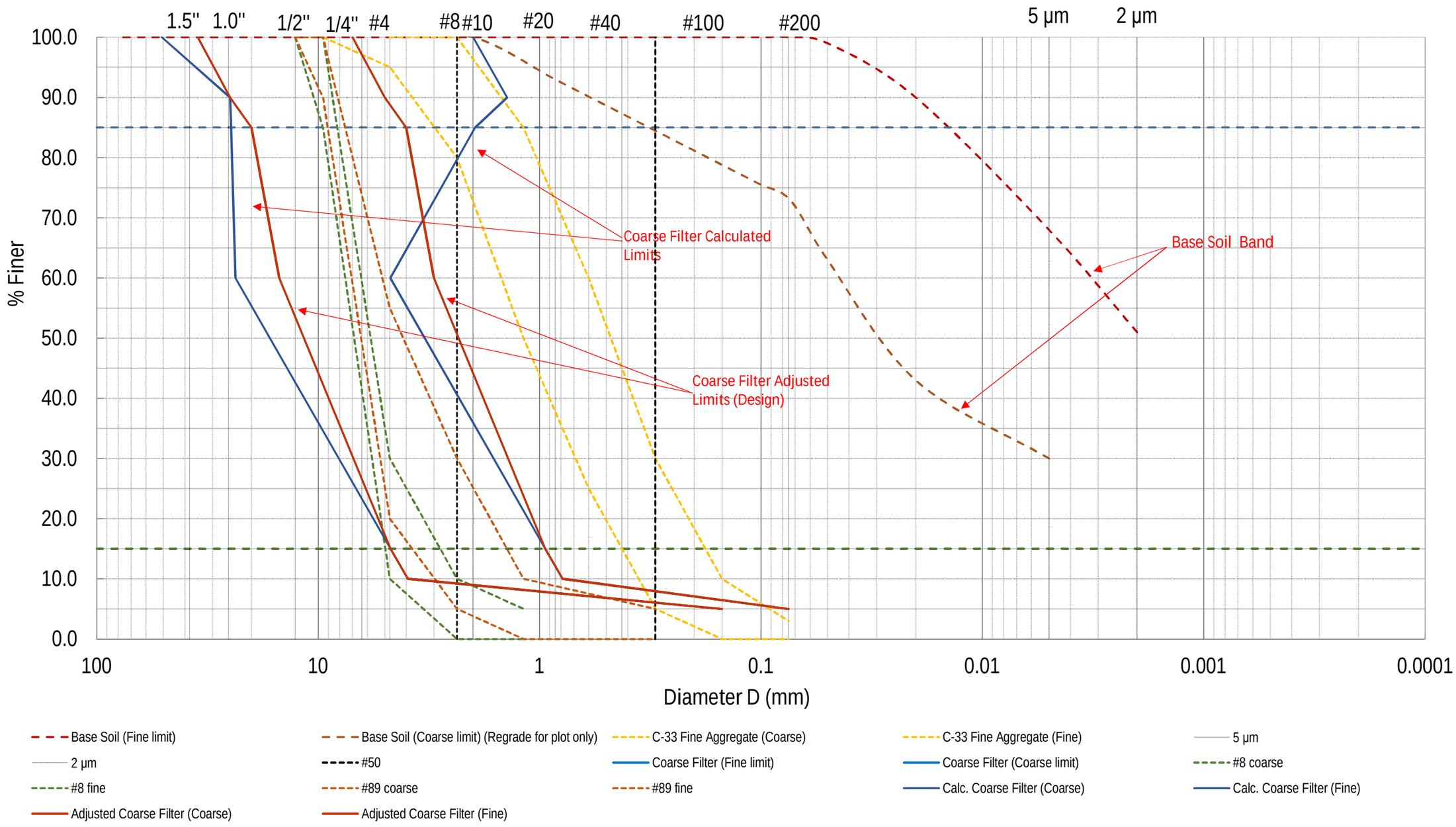
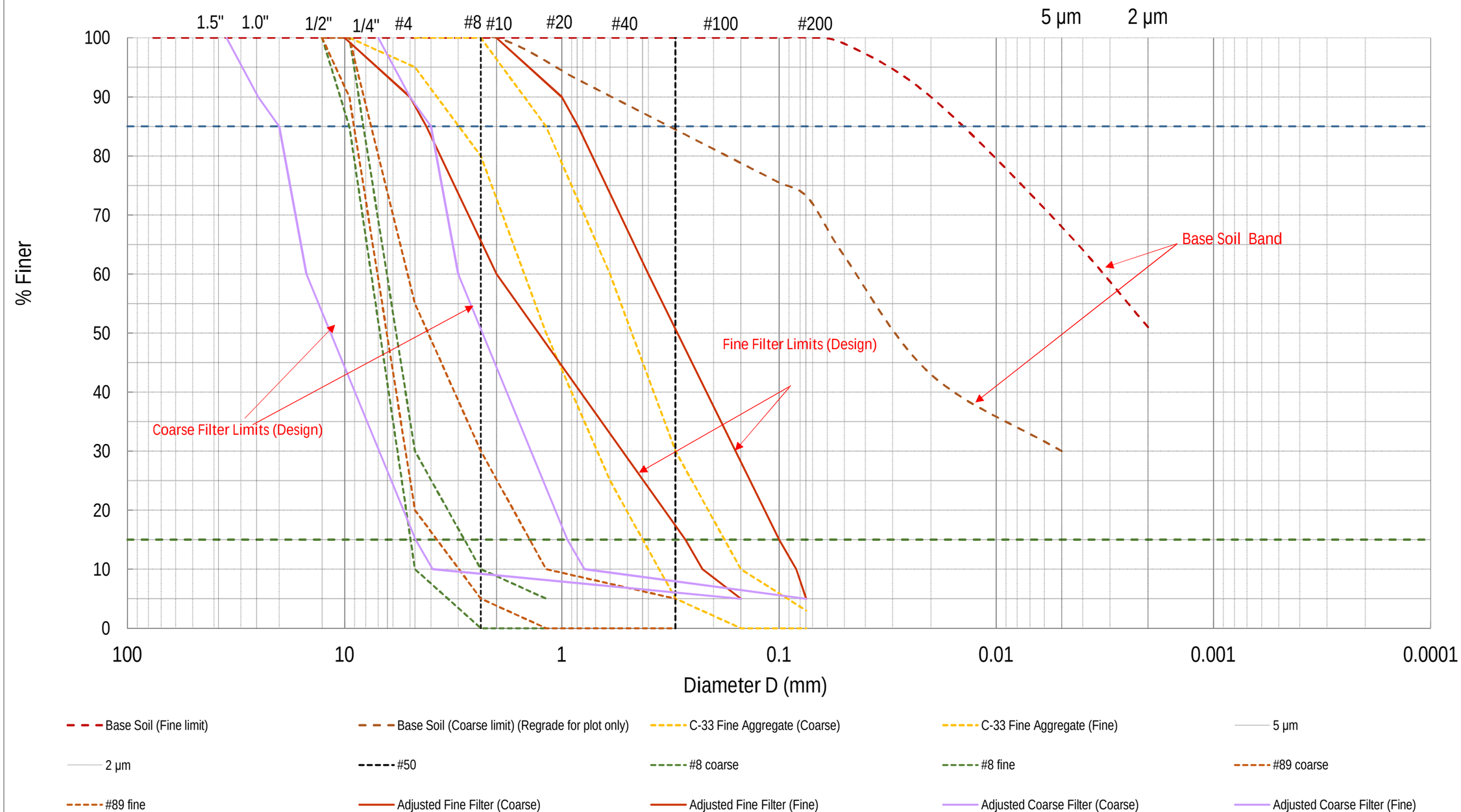



Figure 5 - Design Fine and Coarse Filter Gradation Curves
Residuum - Re-graded Base Soil Category 1 (> 85% fines)