OPTIONAL FORM NO. 10
5010-104
UNITED STATES GOVERNMENT

Memorandum

ENGINEERING FILE COPY

TO : P. M. Price, State Conservation Engineer, SCS, Temple, Texas

DATE: January 25, 1962

FROM : Howard Matson, Head, E&WP Unit, SCS, Fort Worth, Texas

SUBJECT: OPERATIONS - Materials Testing Section Report, Texas, WP-08, Guadalupe River, Plum Creek, Site 12

ATTACHMENTS

1. Form SCS-35, Plan and Profiles for Geologic Investigations — 3 sheets
2. Form SCS-352, Compaction Curves — 4 sheets
3. Form SCS-354, Soil Mechanics Laboratory Data — 3 sheets
4. Form SCS-372, Recommended Use of Excavated Materials — 1 sheet

INTERPRETATION OF DATA & RECOMMENDATIONS

Foundation

The underlying foundation material consists of shale at depths of 10' to 24'. The shale is overlain by CH and GC soils with low salt contents and low to moderate dispersion.

Based on the 20% size the foundation materials should have very low to moderate permeabilities.

At station 21 + 30 settlement due to consolidation of the foundation should not exceed 0.9' of which 20% may occur during a construction period of four months.

Centerline Cutoff

The depths of excavation shown in the following tabulation should provide an effective cutoff in slowly permeable materials.

RECOMMENDED CUTOFF DEPTHS

Station	Depth	Elevation	Bottom Materials
11 + 00	6.0	607.2	Silty Clay
17 + 00	7.0	600.2	Silty Clay
19 + 00	6.0	596.8	Silty Clay
21 + 30	10.0	587.4	Shale
22 + 00	9.0	587.5	Silty Clay
26 + 00	8.0	589.7	Silty Clay
30 + 00	8.0	595.9	Silty Clay
32 + 00	5.0	606.7	Silty Clay

Principal Spillway (Station 21 + 30 ℄ Dam)
Excavation for the foundation under the outlet structure should extend to a depth of approximately 10' at the intersection with the centerline of the dam.

At this depth settlement under the conduit foundation should be negligible. Settlement in 10' of materials surrounding the conduit foundation is estimated to be 0.9'.

Borrow and Excavation
AASHO compaction tests were performed on two composite samples from the emergency spillway and two from the borrow area. Densities obtained are recorded on Form SCS-354. The samples tested classify as CH and GC soils. The CH materials represented by Curves 1 and 3 should be used in the interior of the embankment. The GC materials represented by Curves 2, 4 and composite number 7 should be used in the outer sections. A compaction test was not performed on composite sample number 7 from the new emergency spillway since this sample contained 83% gravel. It is suggested that this material be compared with Curve 4 or that it be placed with a minimum of 6 passes of the roller. Recommended placement densities and moisture contents are shown on Form SCS-372.

Embankment Design
A standard embankment design of 2-1/2:1 slopes should be stable.

Residual settlement within the embankment should not exceed 2-1/2% of the height of fill.

Considering foundation consolidation during construction, a total allowance of 1.2' should be added to the fill height for settlement of the foundation and embankment.

Drainage
No drainage measures are recommended.

CC: M. P. Frank, Fort Worth, Texas
Gene Vittetoe, Fort Worth, Texas
P. M. Browning, Temple, Texas
D. L. Bidwell, Seguin, Texas
H. H. Swope, Waco, Texas
Rey S. Decker, Lincoln, Nebraska

SCS-352 (10/57)

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SOIL MECHANICS LABORATORY

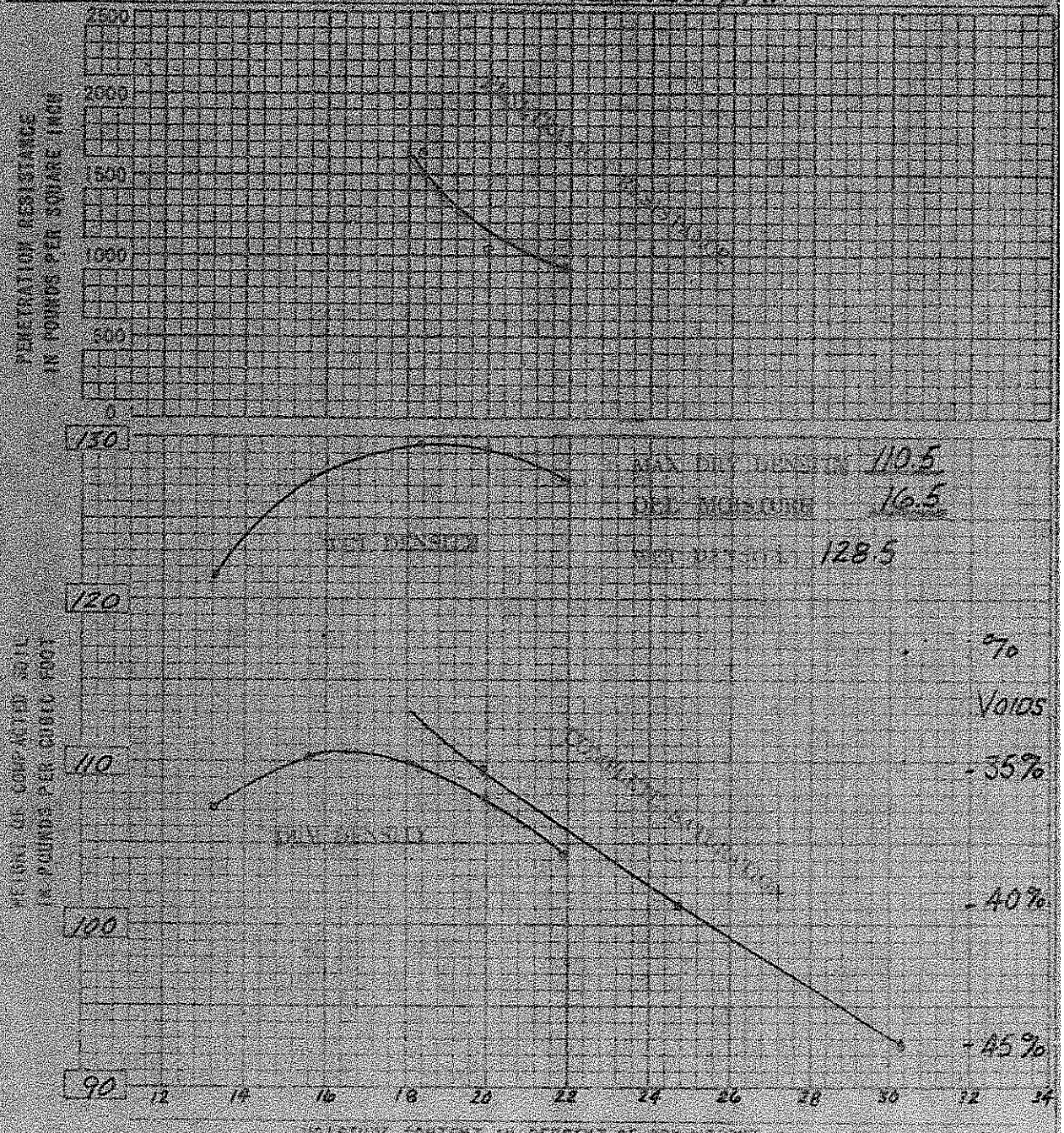
COMPACTION AND PENETRATION RESISTANCE REPORT

Date 12-20-61 Sample No.: Field Comp. #1 Lab T62-1196

Project Plum Creek Site 12 Location Texas

Sample Location and Depth Borrow 1' - 5'

Signature: JPW



TYPE OF TEST
- [ ] Standard Proctor
- [x] Modified AASHO
- [ ] Other

TEST PROCEDURE
Weight of Hammer 10 Lbs.
Drop 18 Inches
Blows 5
Vol. of Cylinder 1/30 Cu. Ft.

Classification CH
Passing # 4 Sieve
Specific Gravity 2.70
Curve 1 of 4 Curves

SCS-352 (10-57)

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SOIL MECHANICS LABORATORY

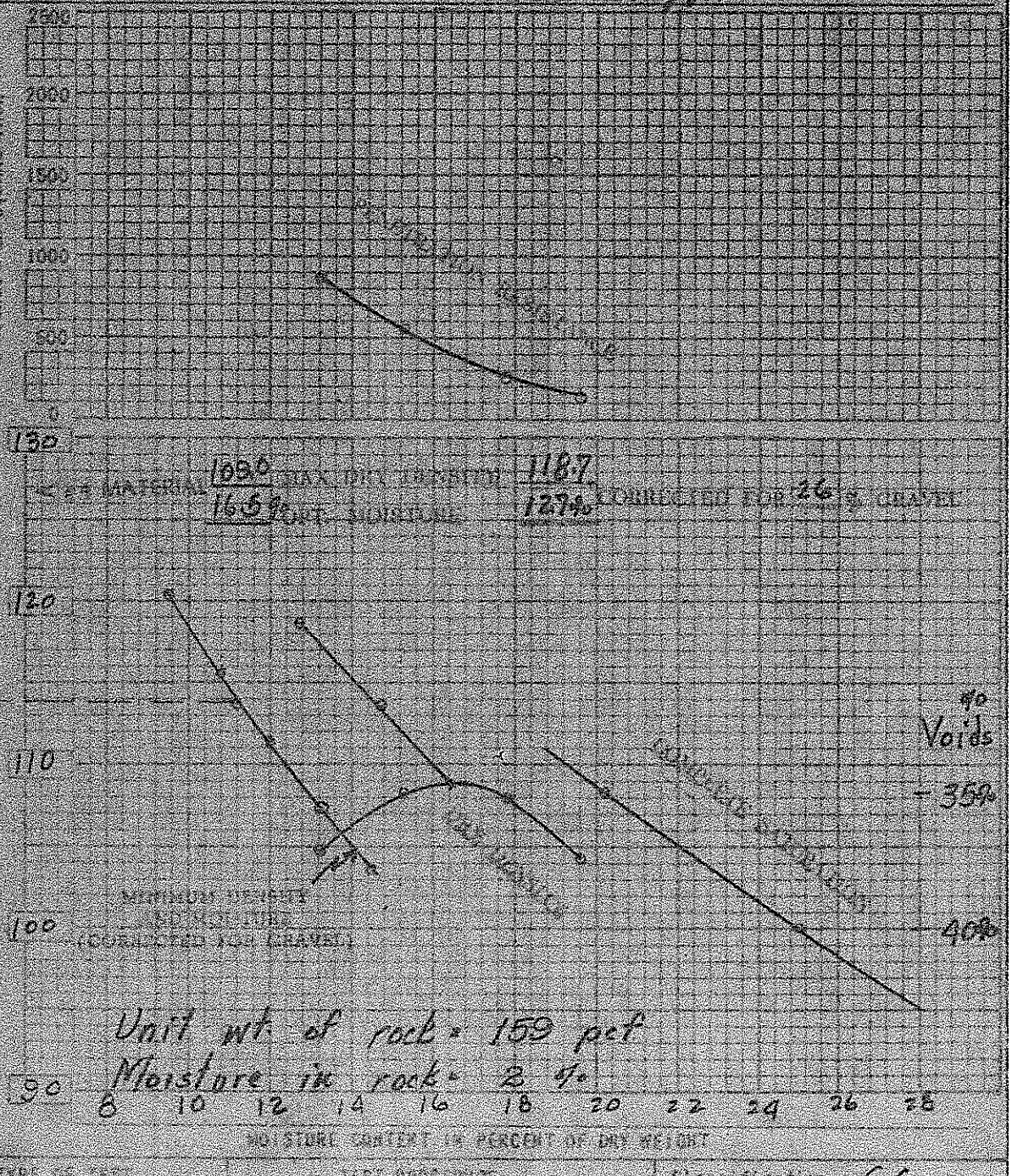
COMPACTION AND PENETRATION RESISTANCE REPORT

Date 12-28-61 Sample No.: Field Comp. #2 Lab P62-1197

Project Plum Creek Site 12 Location Texas

Sample location and Depth Borrow 3' - 8'

Signature [illegible]



1080 MAX. DRY DENSITY 118.7
1658 OPT. MOISTURE 12.7%
CORRECTED FOR 26% GRAVEL

Unit wt of rock = 159 pcf
Moisture in rock = 2 %

TYPE OF TEST	TEST PROCEDURE		CLASSIFICATION
✓ Standard Proctor	Weight of Hammer	5.5 lbs.	Classification GC
Modified AASHO	Drop	12 inches	100 % Material Compacted
Other	Layers	3	Passed #4 Sieve
	Vol. of Cylinder	1/30 Cu. Ft.	(Sp. Gr.) Assumed 2.67 g/cc
			Curve 2 of 4

SCS-352 (10/57)

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SOIL MECHANICS LABORATORY

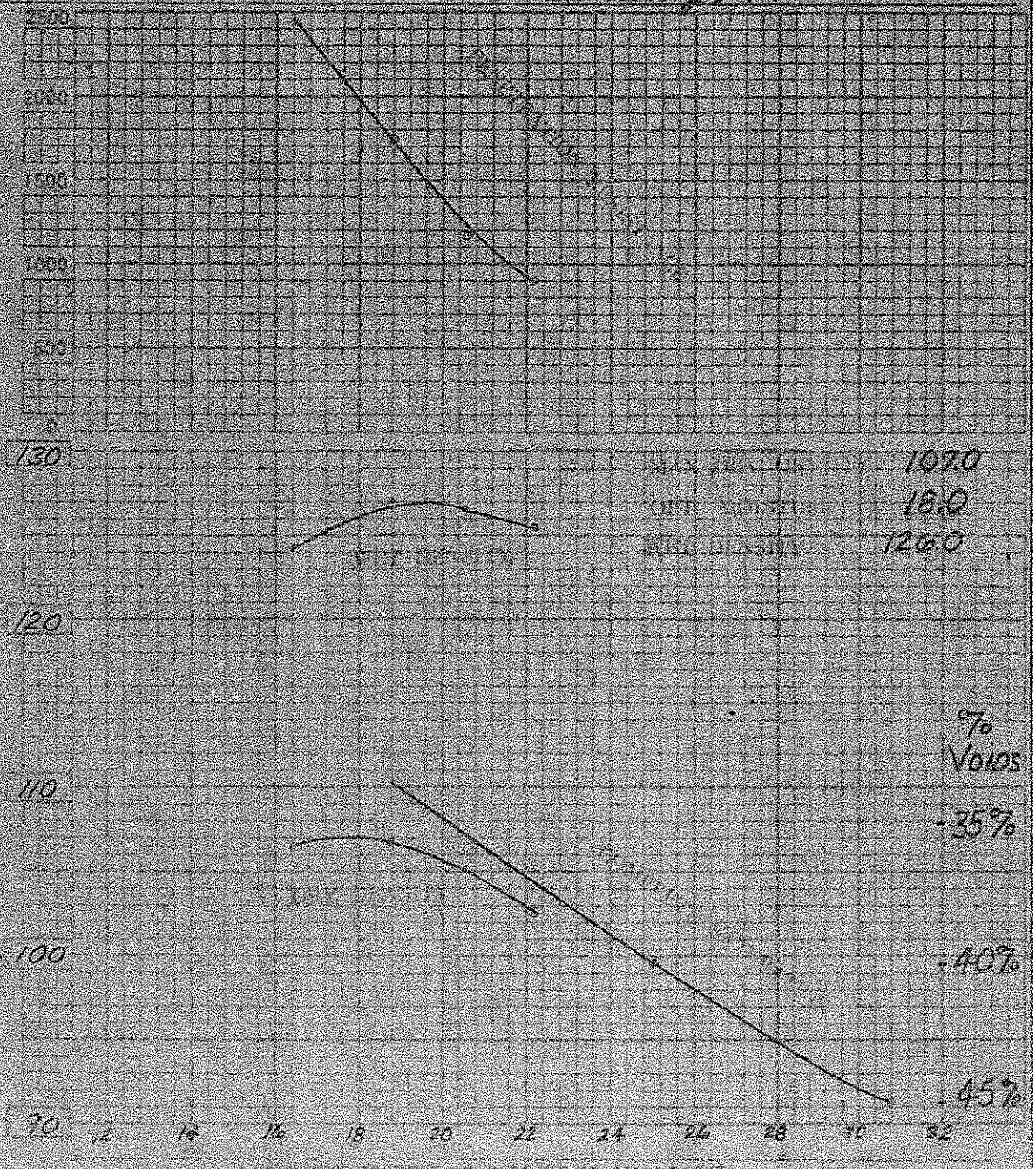
COMPACTION AND PENETRATION RESISTANCE REPORT

Date 12-28-61 Sample No.: Field Comp. #4 Lab F62-1199

Project Plum Creek Site 12 Location Texas

Sample Location and Depth ℄ Spillway 0' - 6'

Signature: LPM



Type of Test	Test Procedure	Classification	CH
Standard Proctor	Rammer Weight 10 lbs.	100 % Retained on	#4 Sieve
✓ Modified AASHO	Drop 18 Inches	Specific Gravity	2.66 Assumed
Other	Layers 5	Remarks	
	Blows per Layer 1/30		

3 of 4

SCS-382 (10-71)

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SOIL MECHANICS LABORATORY

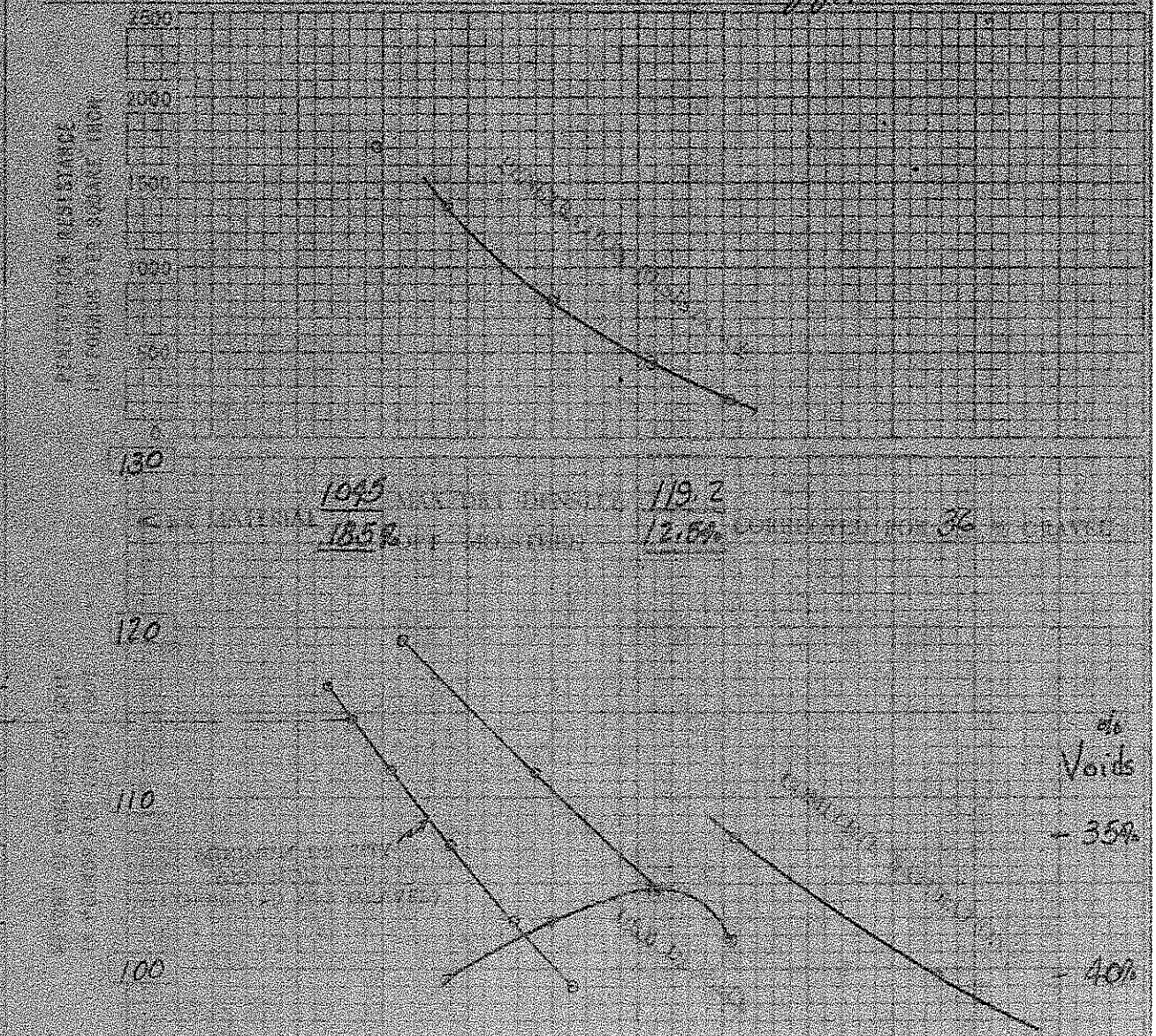
COMPACTION AND PENETRATION RESISTANCE REPORT

Date 12-28-71 Sample No.: Field Comp. #5 Lab 162-1200

Project Plum Creek Site 12 Location Texas

Sample Location and Depth ℄ Spillway 1' - 9'

Signature [illegible]



1049
18.5%

119.2
12.6%

Unit wt of rock = 159 pcf

Moisture in rock = 2.0%

GC

55
12
3
1/30

100

#4

2.66

4 4

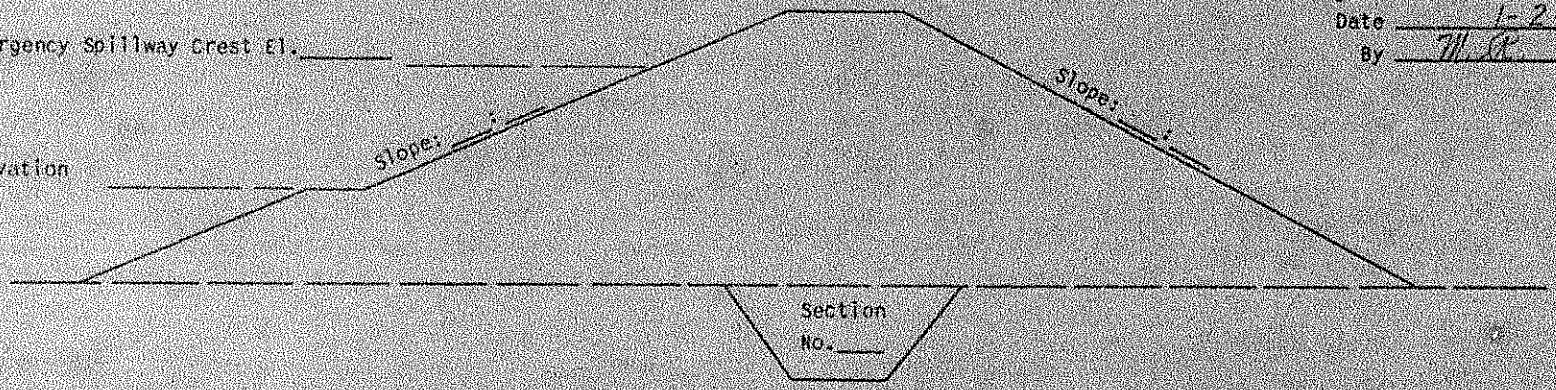
SCS-372
(3/59)

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

RECOMMENDED USE OF EXCAVATED MATERIAL

☐ Formal Zoning Plan ☑ Selective Placement Plan

State Texas
Project Plum Cr. Site 12
Date 1-2-62
By W. C.



TYPICAL EMBANKMENT SECTION

Embankment Section		Source of Fill Material			Lab. Sample No.	Lab Test		Lab. Curve No.	Compaction Requirements Class of Fill		
			Ave. Depth			Std. or Mod.			Minimum Density	Moisture Range	
Sec. No.	Description	Location	From	To	F62-	Max. Den.	Optm. Moist.		Lbs. per Cu. Ft.	Percent From	To
	Interior	Borrow	1'	4'	1196-mod.	110.5	16.5	(1)	99.5	16.0	>
		Emer. Spwy.	0'	3'	1199-mod.	107.0	18.0	(3)	96.5	18.0	>
	Outer Sections	Borrow	9'	6'	1197-std.	109.0	16.5	(2)	103.5	16.0	>
		Emer. Spwy.	3'	6'	1200-std.	104.5	18.5	(4)	99.5	18.0	>