



LOWER PLUM CREEK WATERSHED PROJECT

FLOODWATER RETARDING DAM NO. 23

DRAINAGE AREA	2,163	ACRES
TOTAL STORAGE	1,135	AC. FT.
WATER SURFACE AREA	21	ACRES
HEIGHT OF DAM	42	FEET
VOLUME OF FILL	155,563	CUYDS.

BUILT UNDER THE WATERSHED PROTECTION
AND FLOOD PREVENTION ACT

BY

HAYS-CALDWELL-TRAVIS SOIL AND WATER CONSERVATION DISTRICT

AND

PLUM CREEK CONSERVATION DISTRICT

WITH THE ASSISTANCE OF

SOIL CONSERVATION SERVICE

OF THE

U. S. DEPARTMENT OF AGRICULTURE

1971

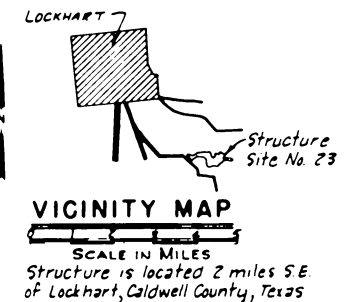
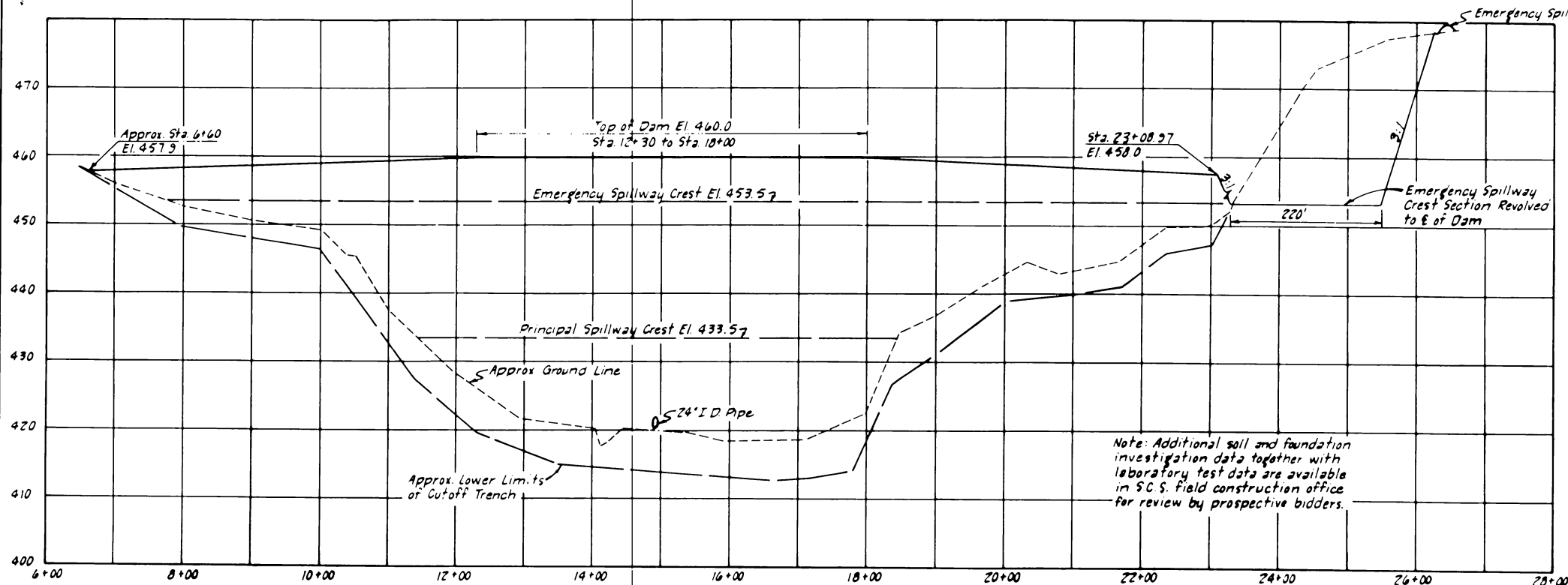
INDEX OF DRAWINGS

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CONSTRUCTION DRAWINGS APPROVED

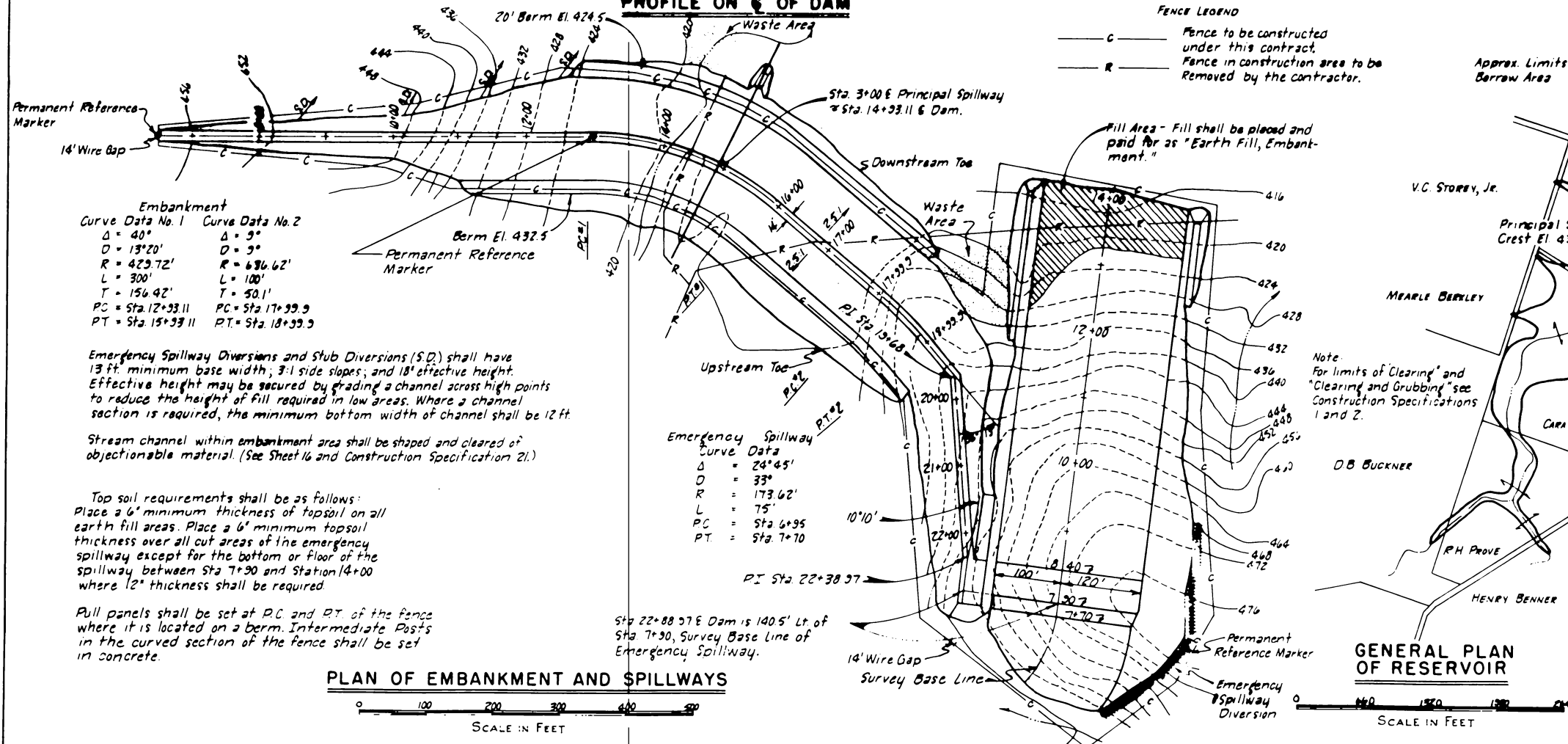
Gene C. Vittore (Hys) 6-23-71
STATE CONSERVATION ENGINEER'S C. S. DATE
TEMPLE, TEXAS

Sheet No. 4 of 17
Drawing No. 4-E-30,337

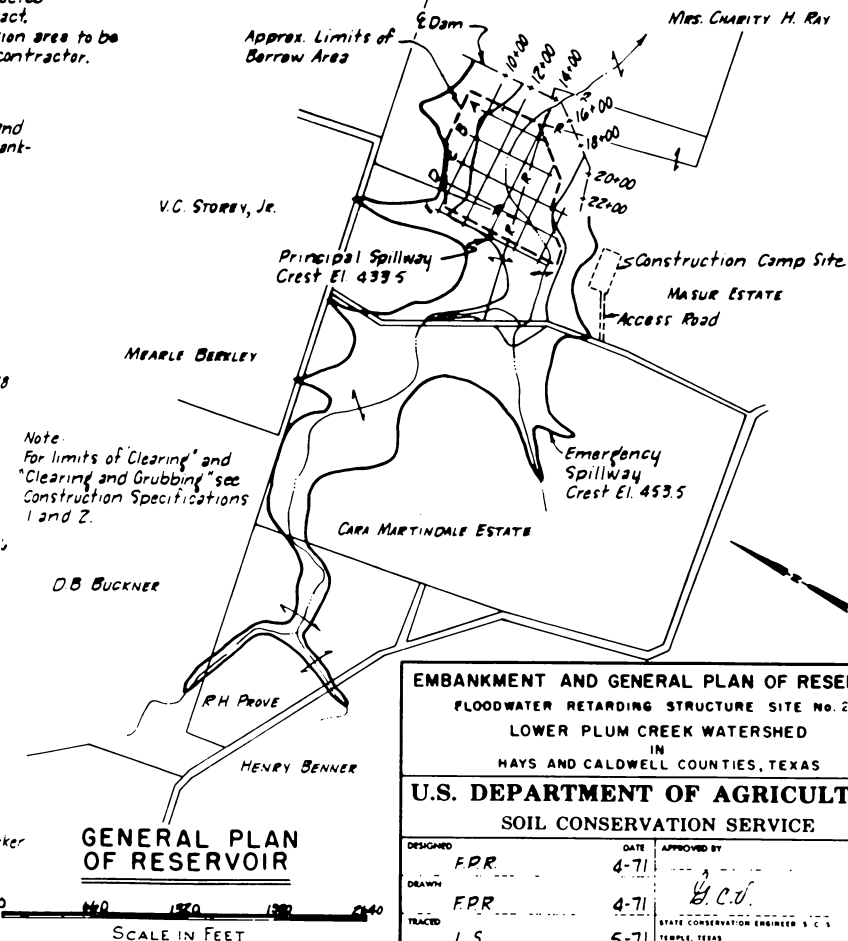


ELEVATION	SURFACE ACRES	STORAGE	
		ACRE FEET	INCHES
416	0	0	0
420	3.7	7.4	0.04
424	7.0	28.8	0.16
428	11.1	65.0	0.36
432	16.8	120.8	0.67
433.5	21.0	144.0	0.80
436	27.1	208.6	1.16
440	41.2	345.2	1.92
444	52.2	532.0	2.95
448	60.8	758.0	4.21
452	73.5	1026.6	5.70
453.5	79.0	1135.0	6.30
456	87.3	1348.2	7.48
460	101.3	1725.4	9.57
Top of Dam (Effective) Elev.		457.9	
Emergency Spillway Crest El.		453.5	
Principal Spillway Crest El.		433.5	
Sediment Pool Elev.		433.5	
Drainage Area, Acres		216.3	
Sediment Storage, Acre Feet		162	
Floodwater Storage Acre Feet		373	
Max. Emergency Spillway Cap. C.F.S.		4971	
Prim. Spillway Discharge @ El. 433.5 C.F.S.		63	

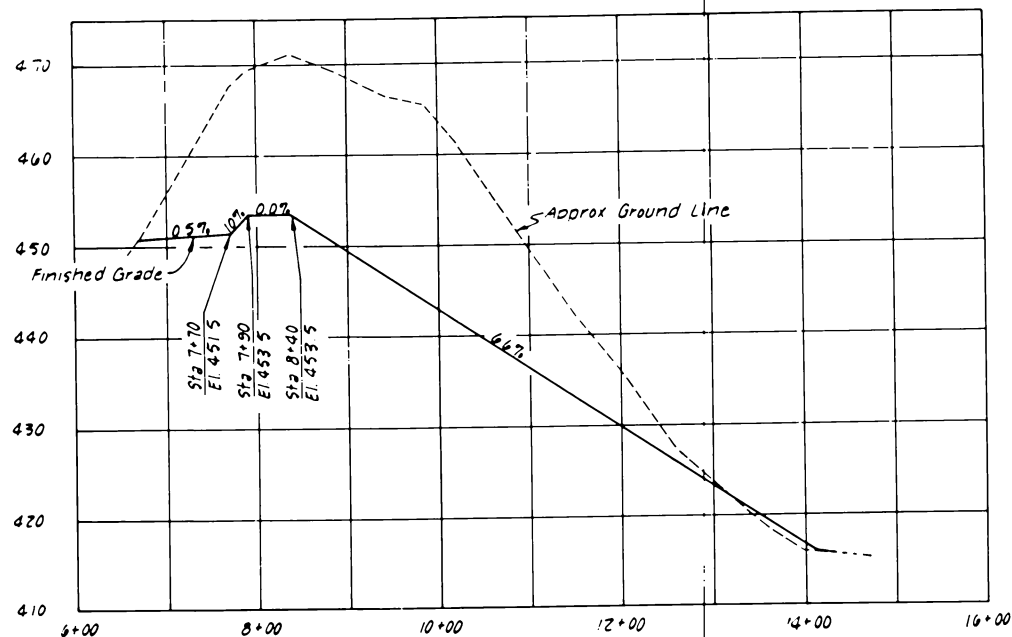
PROFILE ON E OF DAM



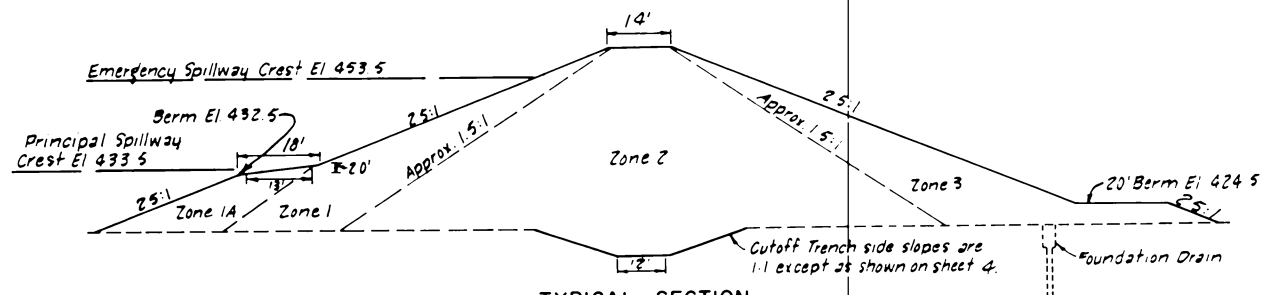
FENCE LEGEND
 — C — Fence to be constructed under this contract.
 — R — Fence in construction area to be removed by the contractor.



EMBANKMENT AND GENERAL PLAN OF RESERVOIR			
FLOODWATER RETARDING STRUCTURE SITE NO. 23			
LOWER PLUM CREEK WATERSHED			
IN HAYS AND CALDWELL COUNTIES, TEXAS			
U.S. DEPARTMENT OF AGRICULTURE			
SOIL CONSERVATION SERVICE			
DESIGNED	F.P.R.	DATE	4-71
DRAWN	F.P.R.	DATE	4-71
TRACED	L.S.	DATE	5-71
CHECKED	W.L.B. & W.M.J.	DATE	5-71
APPROVED BY		STATE CONSERVATION ENGINEER & C.S.	
TEMPLE, TEXAS		SHEET 2	
DRAWING NO.		4-E-30, 337	



PROFILE ON SURVEY BASE LINE OF EMERGENCY SPILLWAY



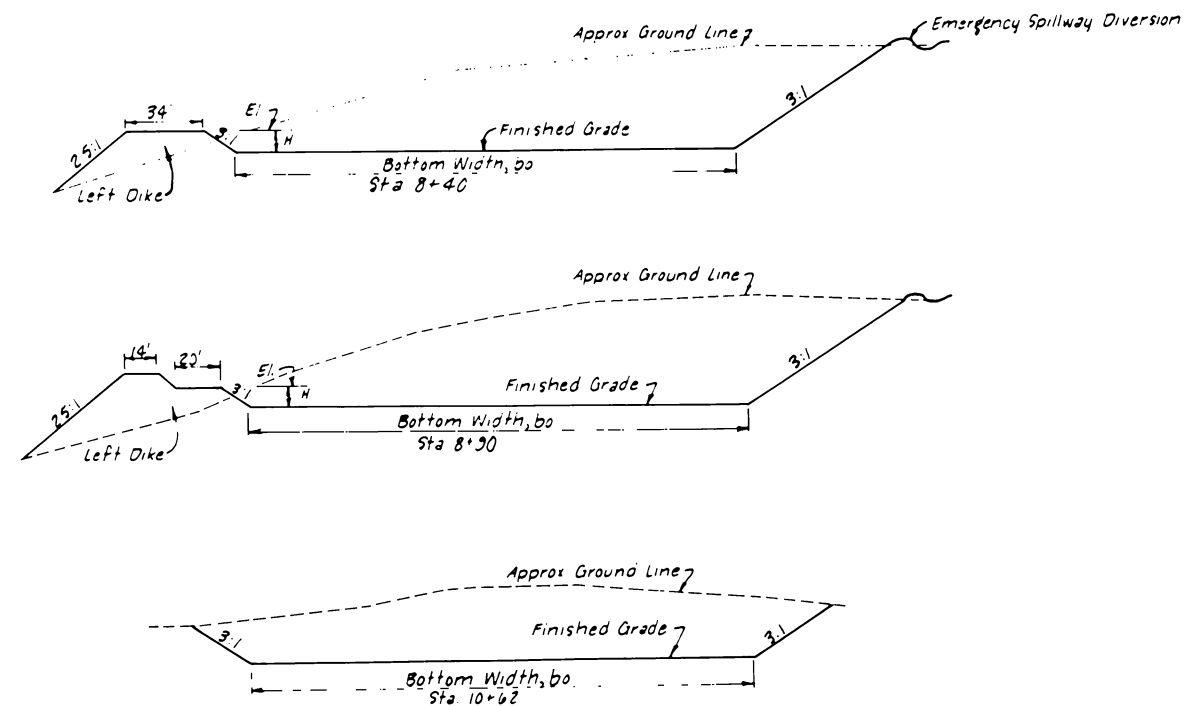
TYPICAL SECTION

MATERIALS PLACEMENT DATA									
Embankment Zone No. 1/	Type or Unified Classification	Field Control Test		Placement and Compaction Requirements					
		ASTM Test		Max. Allowable Particle Size	Max. Uncompacted Layer Thickness	Specified Compaction Class	Min. Dry Density, Percent of Field Test Max. Dry Density	Moisture Limits, Relative to Field Test Optimum %	
		Number	Method					From	To
2	CL; Moderately Plastic, very sandy clay	D-698	A or B	6"	9"	A	95	Opt.	Up
1, 1A, 3	GC; Clayey, sandy gravel	D-698 Moiss. Only	A or B	6"	9"	C 2	-	Opt.	Up
1A, 3	Silty Sandstone	D-698	A or B	6"	9"	A	95	Opt.	Up
1, 1A, 3	SC; Gravelly, clayey sand	D-698 Moiss. Only	A or B	6"	9"	C 2	-	Opt.	Up
2	Claystone	D-698	A or B	6"	9"	A	95	Opt.	Up

1/ The zone boundaries shown in the typical section are approximate. They may be varied as permitted by the Engineer, to allow the use of all suitable and needed materials from the required excavations.

2/ Class C compaction shall be accomplished by a minimum of 6 complete passes per layer of tamping roller weighing not less than 1200 pounds per foot of roller width at a towing or traveling speed of 2 mph or greater.

ZONED EMBANKMENT DATA



Left Dike: From sta 7+70 to Sta 8+40, Dike forms part of the Embankment. El 458.0.

From sta 8+40 to approx. sta 9+40, H = 4.5'

From approx. sta. 11+70 to sta. 14+00, H = 3.0'

Right Dike: From Approx. sta. 12+50 to sta 14+00, H = 3.0'

Bottom Width: Approx. sta 6+70 to sta 7+70, bo = 208'

Sta 7+70 to sta. 7+90 is a transition section.

Sta 7+90 to approx. sta. 14+10, bo = 220'

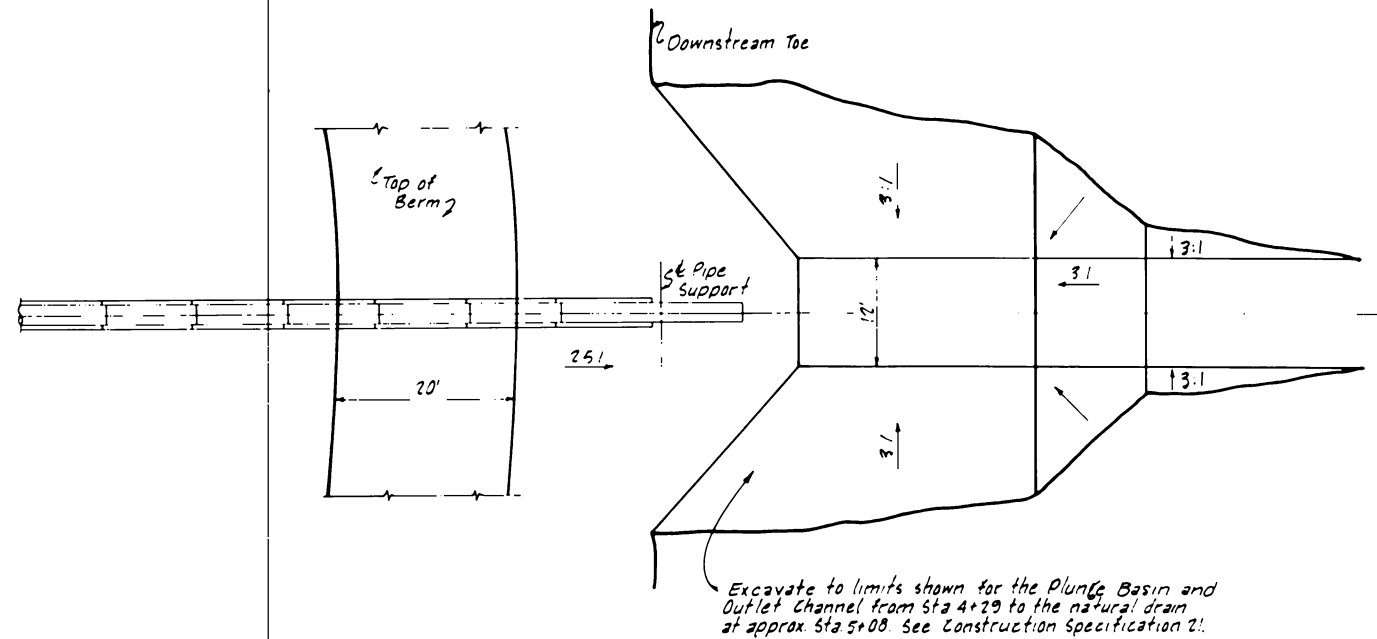
Material forming dikes shall be placed and paid for as 'Earth Fill, Embankment' See Materials Placement Data and Construction Specification 23.

TYPICAL SECTIONS - EMERGENCY SPILLWAY

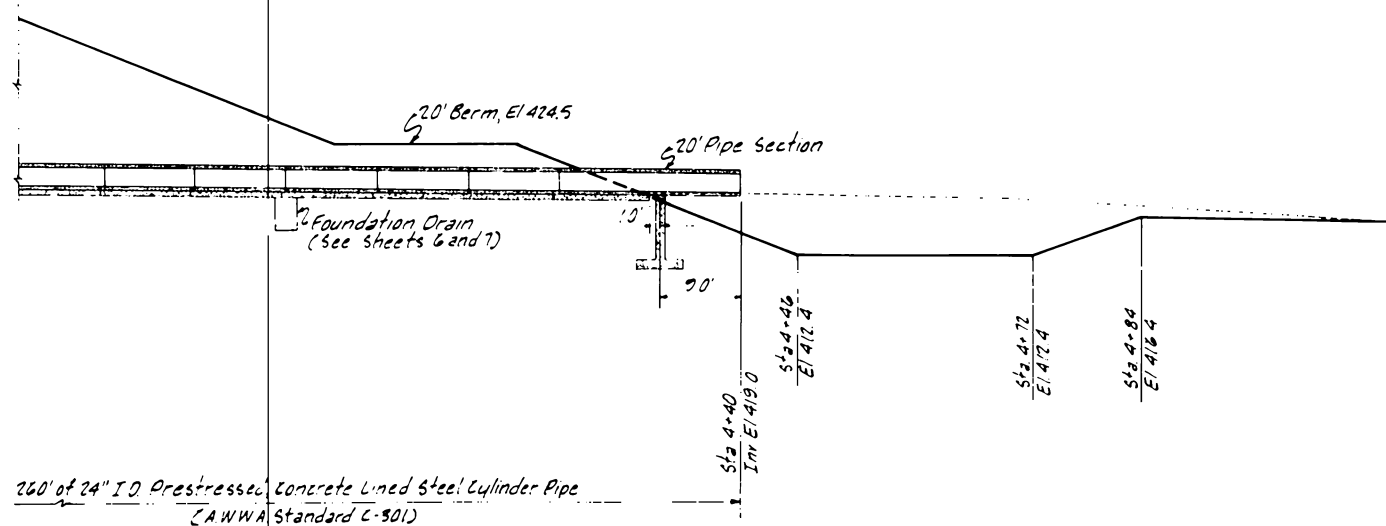
TYPICAL SECTIONS - EMERGENCY SPILLWAY
FLOODWATER RETARDING STRUCTURE SITE No 23
LOWER PLUM CREEK WATERSHED
IN
HAYS AND CALDWELL COUNTIES, TEXAS

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

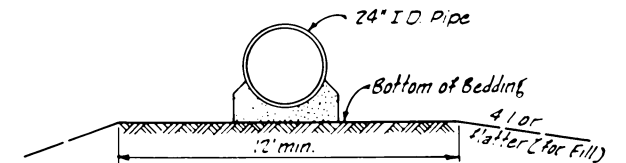
FRP 4-71
FRP 4-71
L.S. 5-71
WLB (WMJ) 5-71
STATE CONSERVATION ENGINEER S.C.S.
TEMPLE, TEXAS
SHEET NO. 3
DRAWING NO. 4-E-30,337



PLAN



**SECTION
PRINCIPAL SPILLWAY**



Fill to bottom of bedding, see Construction Specification 23. Prior to placing fill material around the completed conduit, the exposed earth surface shall be reworked as necessary and to the depth necessary to remove all cracks caused by weathering and to establish or restore the density and moisture requirement specified for that type of material.

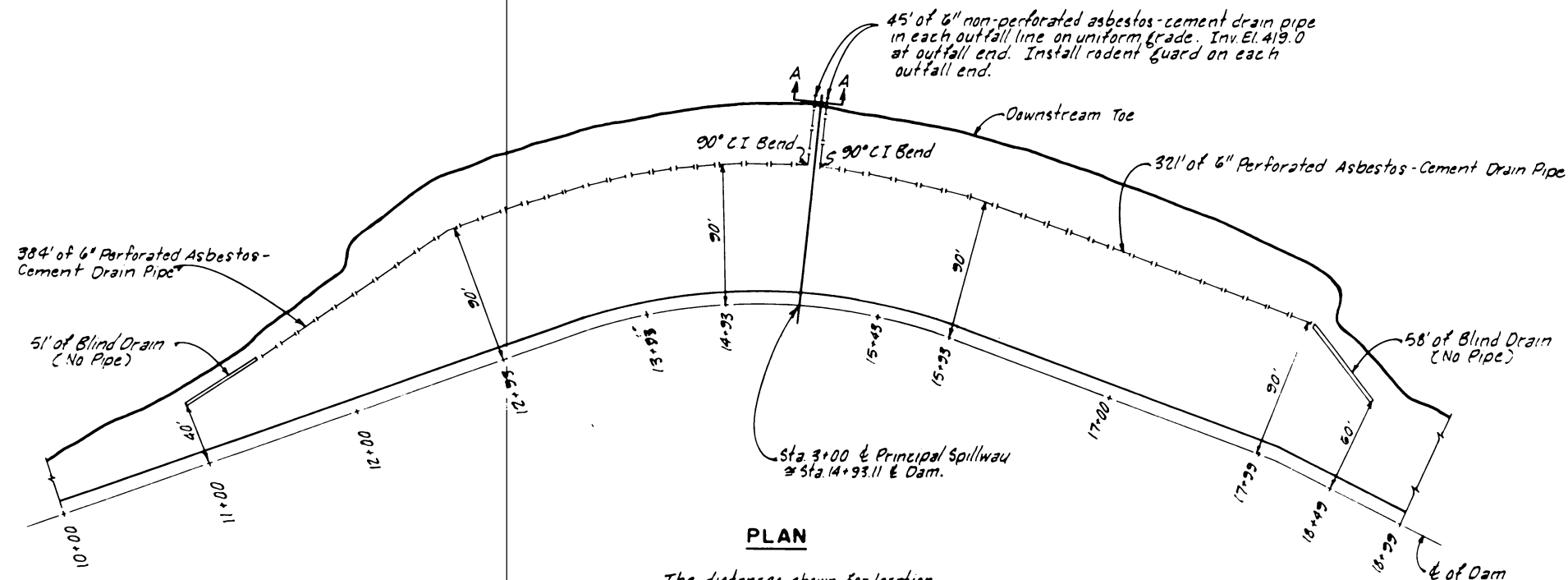
TYPICAL CONDUIT FOUNDATION

PRINCIPAL SPILLWAY—PLAN AND SECTION
FLOODWATER RETARDING STRUCTURE SITE NO. 23
LOWER PLUM CREEK WATERSHED
IN
HAYS AND CALDWELL COUNTIES, TEXAS

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

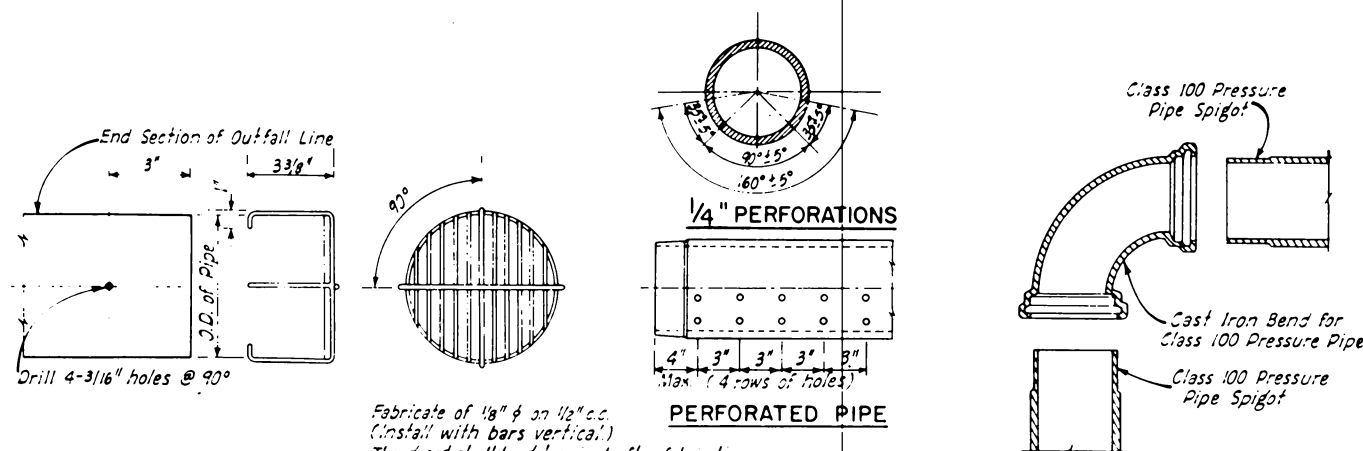
DESIGNED BY	FPR	4-71
DRAWN BY	FPR	4-71
CHECKED BY	RLE	5-71
APPROVED BY	WLB & W.M.J.	5-71

STATE CONSERVATION ENGINEER S. C. S.
TEMPLE, TEXAS
SHEET 5 OF 5
4-E-30,337



PLAN

The distances shown for location of the drain are from $\frac{1}{2}$ of Dam to $\frac{1}{2}$ of Drain Trench.



NOTE: Bends shall be 90°, 45°, 22½°, or 11¼° as designated on the PLAN and shall comply with the requirements of Material Specification 545.

For changes in horizontal or vertical alignment which are less than 10° or which differ from the standard bends mentioned above, the alignment change not taken up by the standard bend, shall be made by deflection of an equal number of pipe sections on either side of the point of intersection of the alignment shown. No angle of deflection for a single pipe joint shall exceed 4° or 7°.

Tees, Crosses, Wyes, and Reducers, if required, shall be the same as specified for Bends. Deflection of pipe sections, if required to complete alignment changes, shall be the same as specified for Bends.

NOTE: All Asbestos-Cement Pipe and Couplings shall be Class 100, Pressure Pipe and shall conform to the requirements of Materials Specification 545.

The bedding of perforated pipe installed in filter material shall be ordinary bedding providing uniform and continuous bedding contact throughout the entire line. Joining shall be in accordance with the manufacturer's recommendations. Tamping of the filter material under and on the sides and top of the pipe will be required only to the extent necessary to eliminate voids or empty pockets.

The installation of the non-perforated pipe shall be with ordinary bedding that provides uniform and continuous bedding contact throughout the entire line. Joining shall be in accordance with the manufacturer's recommendations. Backfill and compaction shall be as specified in Construction Specification 23.

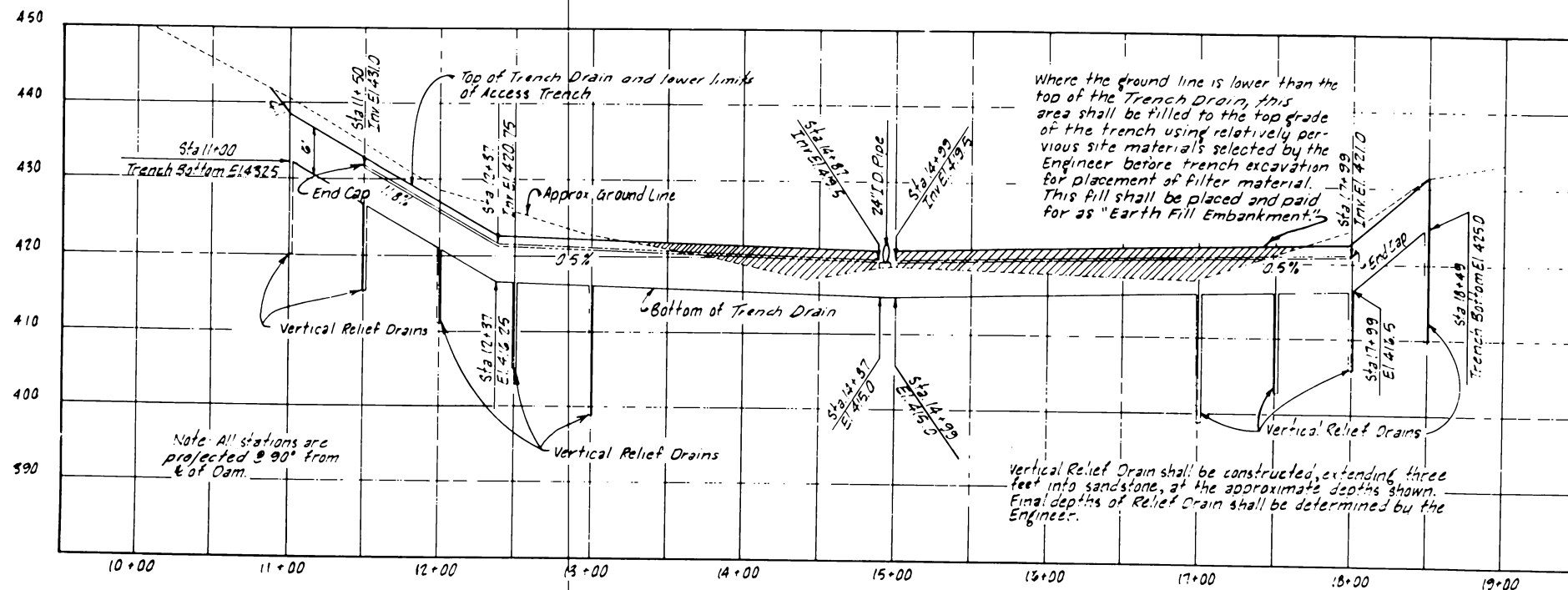
EMBANKMENT FOUNDATION DRAIN
FLOODWATER RETARDING STRUCTURE SITE No. 23
LOWER PLUM CREEK WATERSHED
IN
HAYS AND CALDWELL COUNTIES, TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

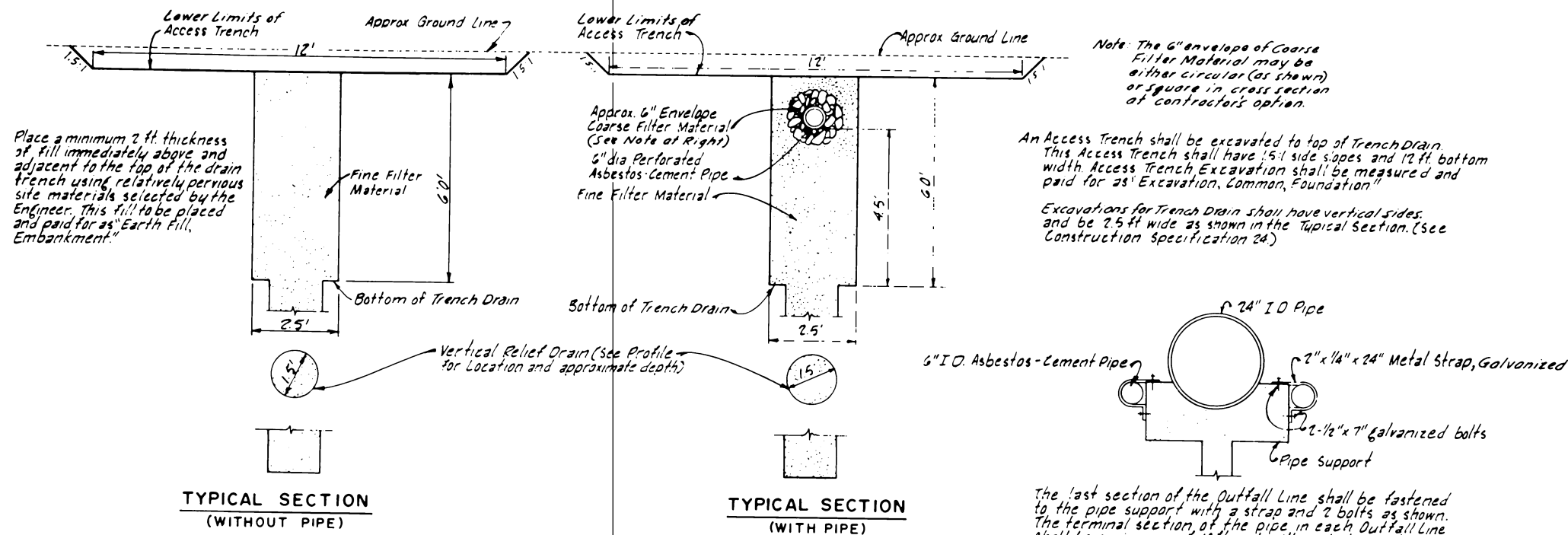
Designed	FPR	4-71	Approved by	W. B. & W. M. J.
Drawn	FPR	4-71	State Engineer	W. B. & W. M. J.
Traced	RLE	5-71	State Conservation District	W. B. & W. M. J.
Checked	W. B. & W. M. J.	5-71	Sheet	No. 6
			Drawing No.	4-E-30,337

DETAILS-PIPE FITTINGS
(Other than Straight Couplings)

TEXAS ONLY



PROFILE



TYPICAL SECTION
(WITHOUT PIPE)

TYPICAL SECTION
(WITH PIPE)

TRENCH DRAIN AND VERTICAL RELIEF DRAIN

SECTION A-A

DRAIN FILL REQUIREMENTS

Installation and materials quality shall comply with the requirements of Construction Specification 24 and Materials Specification 521.

The fine filter shall comply with the gradation requirements for ASTM, C-33, Fine Concrete Aggregates.

The coarse filter shall comply with the gradation requirements for one of the following:

ASTM, C-33, Coarse Concrete Aggregate, Size No. 7

ASTM, C-33, Coarse Concrete Aggregate, Size No. 67

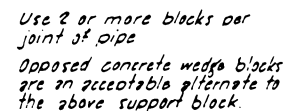
ASTM, D-448, Coarse Aggregate For Highway Construction, Size No. 20

ASTM, D-448, Coarse Aggregate For Highway Construction, Size No. 30

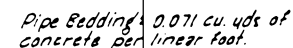
Or any other aggregate that will grade within the following limits:

FILTER GRADATION	
Sieve Size	% Passing by weight
1 1/2"	100
1"	90-100
3/4"	60-100
1/2"	35-100
3/8"	20-60
#4	0-30
#8	0-15
#16	0-5

EMBANKMENT FOUNDATION DRAIN FLOODWATER RETARDING STRUCTURE SITE No. 23 LOWER PLUM CREEK WATERSHED IN HAYS AND CALDWELL COUNTIES, TEXAS			
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
DESIGNED	FPR	DATE	4-71
DRAWN	FPR	DATE	4-71
TRACED	RLE	DATE	5-71
CHECKED	WLB/WMJ	DATE	5-71
		STATE CONSERVATION ENGINEER	4-E-30,337

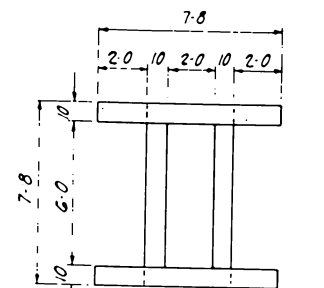


Vertical construction joint of $\frac{1}{2}$ " bituminous preformed expansion joint filler at each pipe joint (See detail). Vertical sides of bedding shall be formed with wood or metal forms.



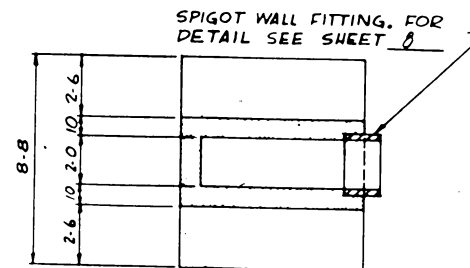
Note: Pipe supplied shall have a minimum permissible deflection angle of 1°-18'. The minimum value for J (as shown above) shall be 2.6 inches after placement of concrete bedding.

Note:
Pipe supplied will be manufactured in accordance with AWWA Standard C-301 and be prestressed concrete lined steel cylinder pipe, having a D-load capacity of not less than 3,300 lbs. at the 0.001 inch crack and an internal pressure head capacity equal to or greater than 50 feet.

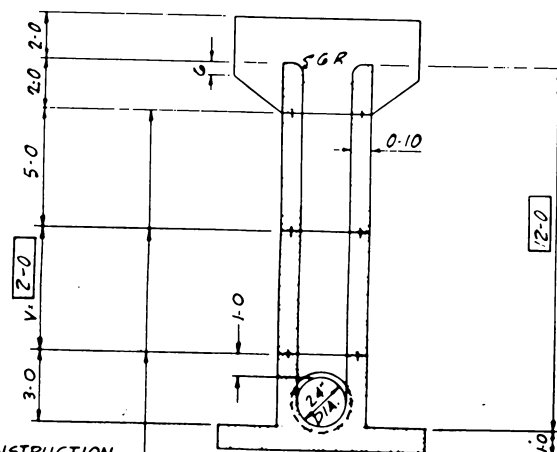


For detail of Trash Guard Angles and Grating See Sheet 13

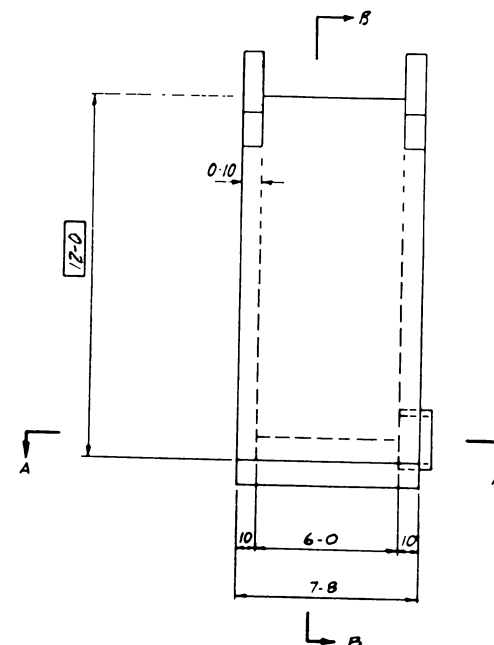
TOP PLAN



SECTION A-A



SECTION B-B



SIDEWALL ELEVATION

STEEL SCHEDULE																			
MARK	SIZE	QUANTITY	LENGTH	TYPE	B	C	TOTAL LENGTH			MARK	SIZE	QUANTITY	LENGTH	TYPE	B	C	TOTAL LENGTH		
B1	6	11	8-2	1	—	—	89-10			71	5	8	7-0	21	2-6	4-6	56-0		
B2	5	9	7-2	1	—	—	64-6			72	5	4	6-8	1	—	—	26-8		
B3	6	18	7-9	21	2-7	5-2	139-6			73	5	8	3-10	1	—	—	30-8		
B4	5	9	7-2	1	—	—	64-6			74	5	4	3-0	1	—	—	12-0		
B5	5	8	8-2	1	—	—	65-4			75	5	8	4-8	19	2-5	2-3	37-4		
B6	5	2	3-4	1	—	—	6-8			76	5	8	3-10	1	—	—	30-8		
B7	5	3	6-1	21	1-0	5-1	18-3			77	5	4	3-0	1	—	—	12-0		
B8	5	2	6-1	21	1-0	5-1	12-2			78	5	12	7-4	1	—	—	88-0		
B9	5	12	6-1	21	1-0	5-1	73-0			79	5	4	4-6	1	—	—	18-0		
B10	5	2	6-1	21	1-0	5-1	12-2												
B11	5	8	6-8	1	—	—	53-4												
B12	5	4	2-8	1	—	—	10-8												
B13	5	14	7-0	21	2-6	4-6	98-0												
B14	5	4	4-11	21	0-5	4-6	19-8												
B15	5	4	4-9	21	0-3	4-6	19-0												
B16	5	2	5-7	21	1-1	4-6	11-2												
B17	5	2	2-3	1	—	—	4-6												
B18	5	2	2-3	1	—	—	4-6												
R1	5	10	8-8	1	—	—	86-8												
R2	5	4	8-7	1	—	—	34-4												
R3	5	12	8-10	1	—	—	126-0												
R4	5	6	8-7	1	—	—	51-6												
R5	5	6	6-8	1	—	—	40-0												
R6	5	4	2-8	1	—	—	10-8												
R7	6	12	7-4	21	2-8	4-8	88-0												
R8	5	8	6-8	1	—	—	53-4												
R9	5	8	2-8	1	—	—	21-4												
R10	5	24	7-0	21	2-6	4-6	168-0												

QUANTITIES

STEEL

* 5 BARS 1420-7 1482 LBS
* 6 BARS 317-4 677 LBS
1252 LBS

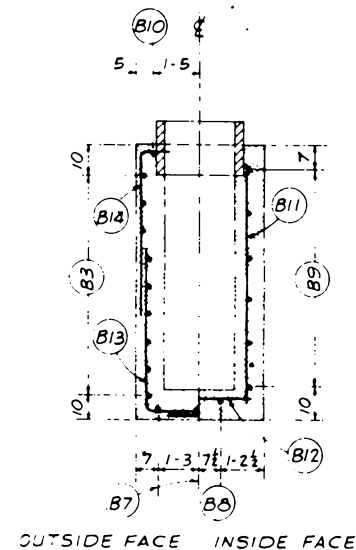
CONCRETE = 9.70 + 0.60V = 10.30 CU. YDS.

LENGTH OF * 5 BARS = (1091-5) * (LENGTH OF BARS R1 THROUGH R6)
LENGTH OF * 6 BARS = (229-4) * (LENGTH OF BARS R7)

STANDARD OPEN RISER	
STANDARD DWG. NO.	ES-3124-1515 R
DATE	5-67 SHEET 1 OF 4
ADAPTED FROM	
STANDARD COVERED RISER	
DESIGN CONSTANTS	$f'_c = 4000$ psi $f_c = 1600$ psi $n = 8$ $f_s = 20,000$ psi
STANDARD DWG. NO.	ES-3024-2015 R
DATE	4-66 SHEET 1 OF 4

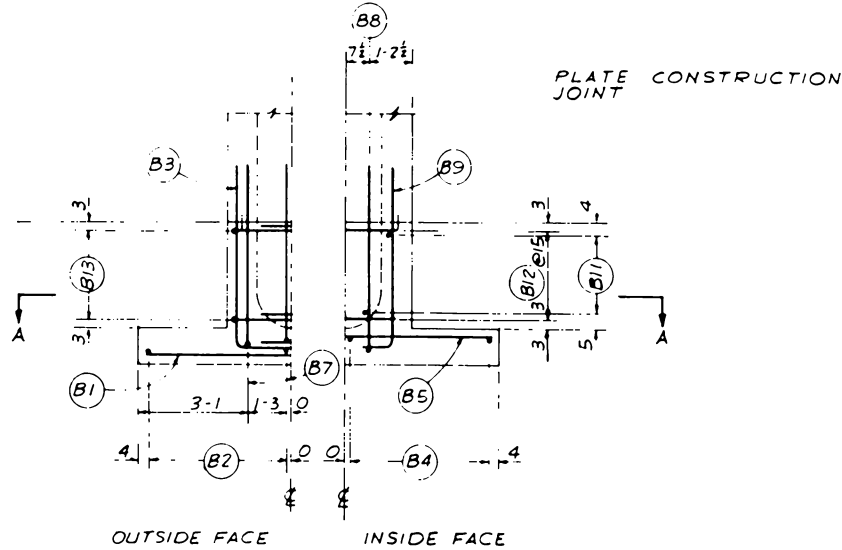
0 2 4 6
SCALE IN FEET

PRINCIPAL SPILLWAY INLET FLOODWATER RETARDING STRUCTURE SITE No. 23 LOWER PLUM CREEK WATERSHED IN HAYS AND CALDWELL COUNTIES, TEXAS			
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
Designed	F.P.R.	Date	4-71
Drawn	F.P.R.	Date	4-71
Traced	L.S.	Date	5-71
Checked	W.L.B. & W.M.I.	Date	5-71
Approved by		[Signature]	
Sheet		9	
Drawing No.		4-E-30,337	



OUTSIDE FACE INSIDE FACE

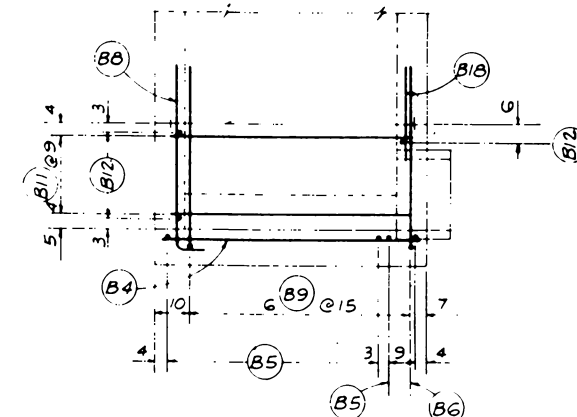
SECTION A-A



OUTSIDE FACE INSIDE FACE

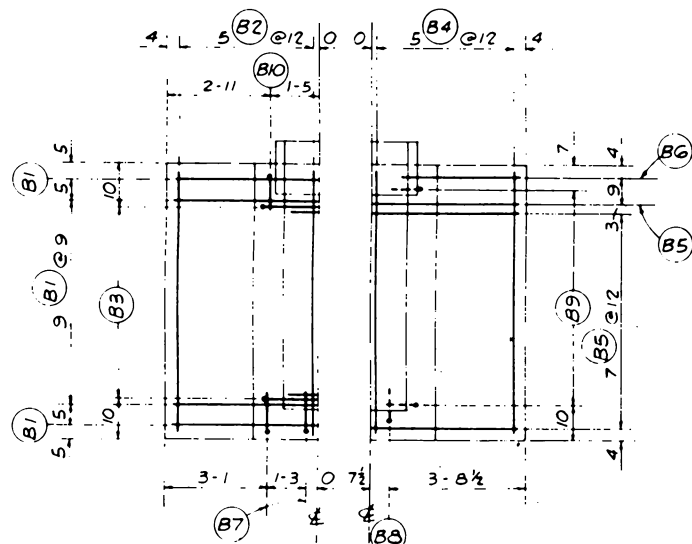
UPSTREAM ELEVATION

Note: Cut or deflect steel in upstream wall as required for installation of the slide gate.



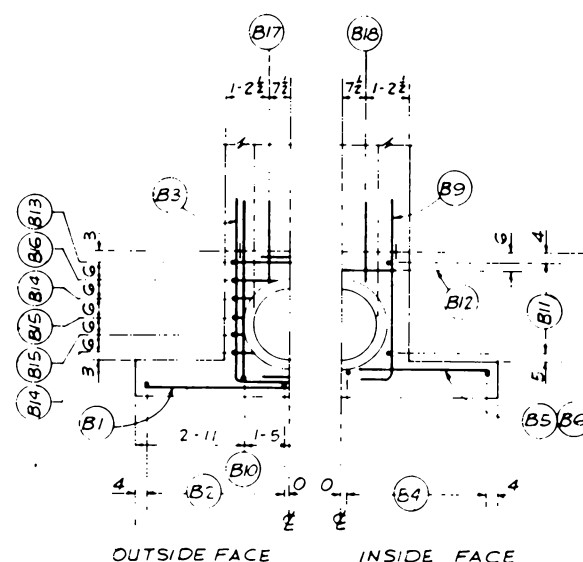
STEEL 2" FROM INSIDE FACE OF RISER AND 2" FROM TOP OF FOOTING

SIDEWALL ELEVATION



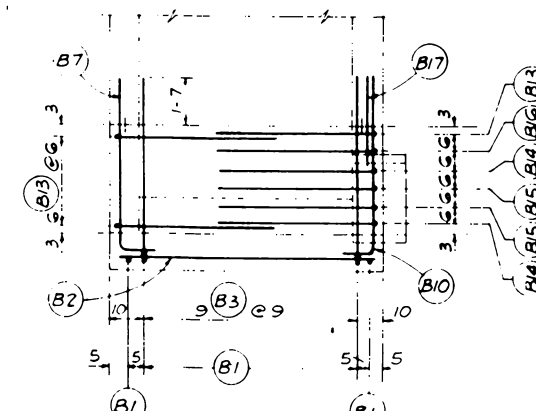
STEEL 3" FROM BOTTOM OF FOOTING STEEL 2" FROM TOP OF FOOTING

FOOTING PLAN



OUTSIDE FACE INSIDE FACE

DOWNSTREAM ELEVATION



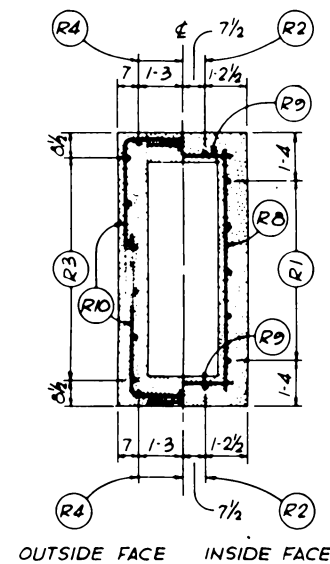
STEEL 2" FROM OUTSIDE FACE OF RISER AND 3" FROM BOTTOM OF FOOTING

SIDEWALL ELEVATION

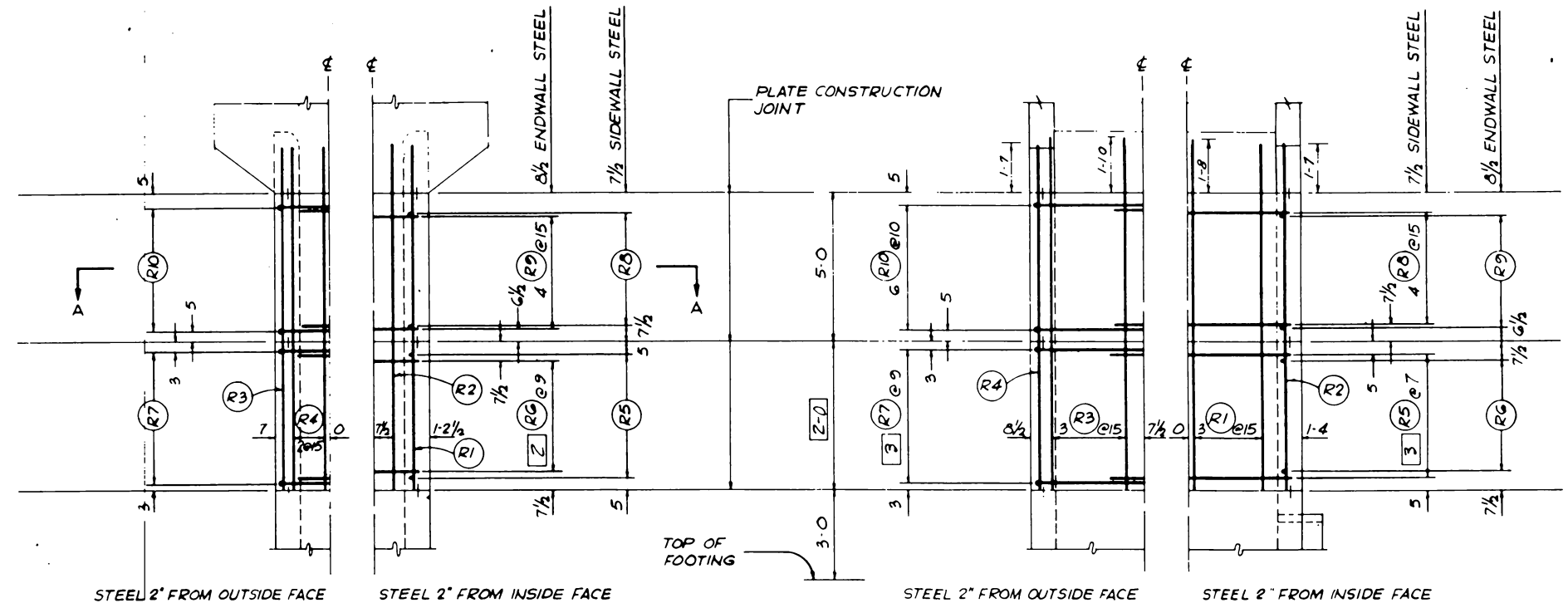
STANDARD OPEN RISER	
STANDARD DWG. NO.	ES-3124-1515 R
DATE	5-67
SHEET	2 OF 4
ADAPTED FROM	
STANDARD COVERED RISER	
DESIGN CONSTANTS	$f'_c = 4000 \text{ psi}$ $f'_c = 1600 \text{ psi}$ $n = 8$ $f_s = 20,000 \text{ psi}$
STANDARD DWG. NO.	ES-3024-2015 R
DATE	4-66
SHEET	2 OF 4

0 2 4 6
SCALE IN FEET

STEEL PLACEMENT - PRINCIPAL SPILLWAY INLET			
FLOODWATER RETARDING STRUCTURE SITE NO. 23			
LOWER PLUM CREEK WATERSHED			
IN			
HAYS AND CALDWELL COUNTIES, TEXAS			
U. S. DEPARTMENT OF AGRICULTURE			
SOIL CONSERVATION SERVICE			
Designed	F.P.R.	Date	4-71
Drawn	F.P.R.	Approved by	[Signature]
Traced	L.S.	STATE CONSERVATION ENGINEER'S OFFICE	
Checked	W.L.B. & W.M.J.	Sheet	10 of 17
		Drawing No.	4-E-30,337



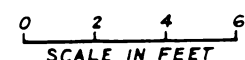
SECTION A-A
OTHER SECTIONS SIMILAR



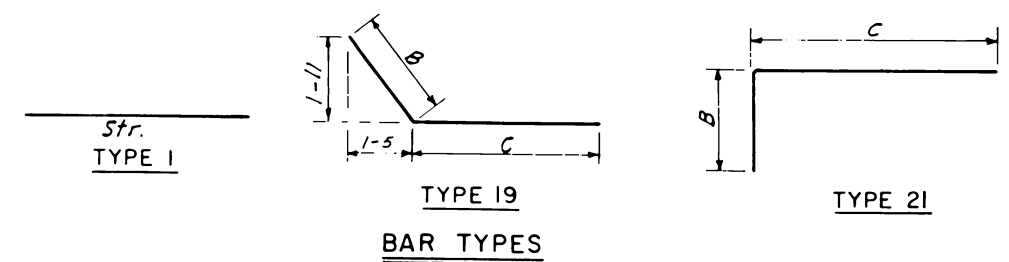
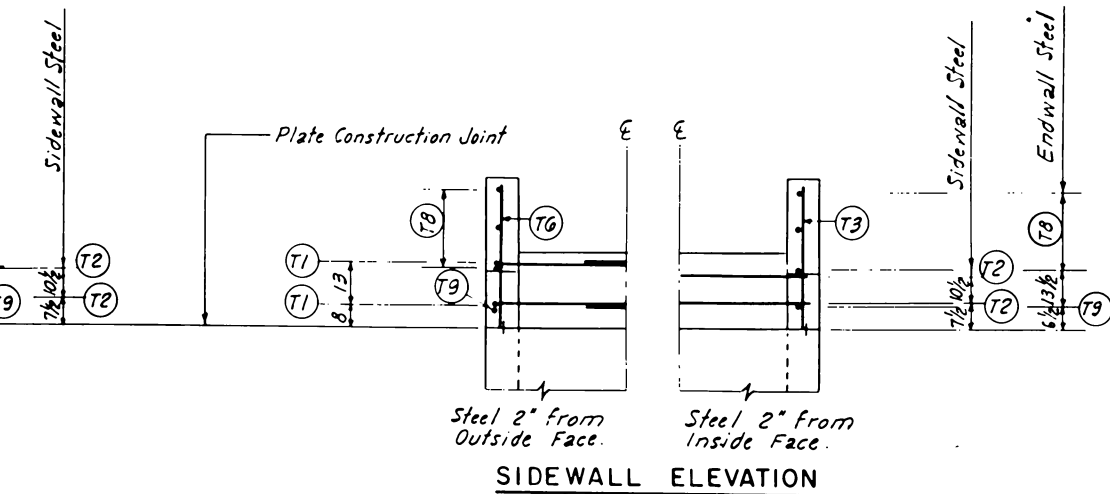
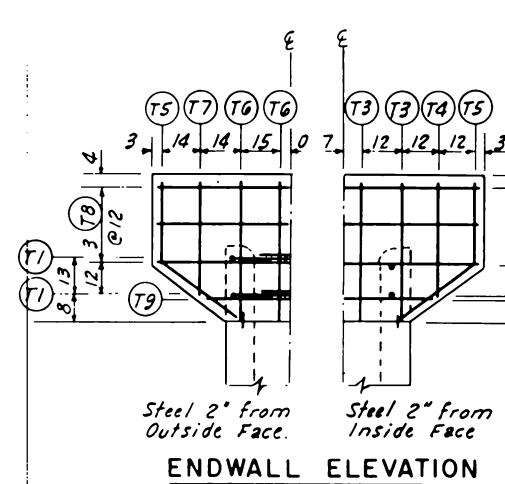
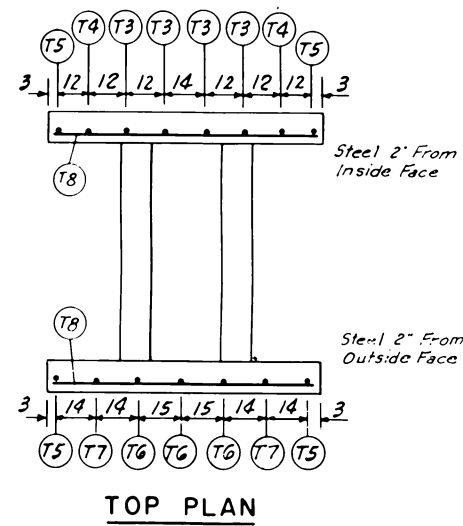
ENDWALL ELEVATION

SIDEWALL ELEVATION

STANDARD OPEN RISER	
STANDARD DWG. NO. ES-3124-1515 R	
DATE 5-67	SHEET 3 OF 4
ADAPTED FROM	
STANDARD COVERED RISER	
DESIGN CONSTANTS $f'_c = 4000 \text{ psi}$ $f_c = 1600 \text{ psi}$ $n = 8$ $f_s = 20,000 \text{ psi}$	
STANDARD DWG. NO. ES-3024-2015R	
DATE 4-66	SHEET 3 OF 4



STEEL PLACEMENT - PRINCIPAL SPILLWAY INLET FLOODWATER RETARDING STRUCTURE SITE NO. 23 LOWER PLUM CREEK WATERSHED IN HAYS AND CALDWELL COUNTIES, TEXAS			
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
Designed	F.P.R.	Date	4-71
Drawn	F.P.R.	Approved by	4-71
Traced	L.S.	Sheet	5-71
Checked	W.L.B. & W.M.J.	Sheet	5-71
Drawing No.			4-E-30,337



NOTE

1. BAR DIMENSIONS ARE OUT TO OUT OF BAR
2. RADIUS OF BENDS
= 3 BAR DIAMETERS FOR SIZES #7
= 4 BAR DIAMETERS FOR #8
3. THE 2" AND 3" DISTANCES FROM SPECIFIED CONCRETE SURFACES ARE CLEAR DISTANCES

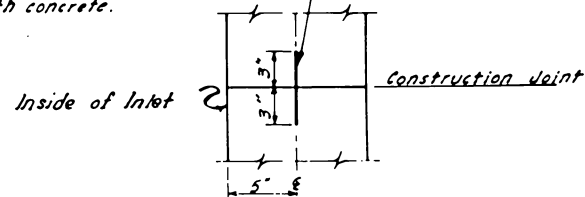
STANDARD OPEN RISER	
DESIGN CONSTANTS	$f'_c = 4000 \text{ psi}$ $f_c = 1600 \text{ psi}$ $n = 8$ $f_s = 20,000 \text{ psi}$
STANDARD DWG. NO.	ES-3124-1515 R
DATE	3-67
SHEET	4 OF 4



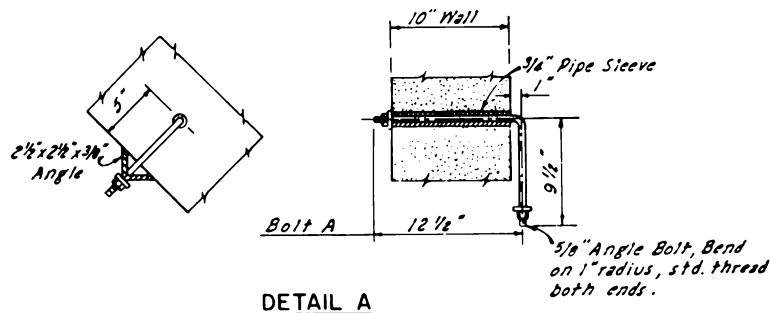
STEEL PLACEMENT - PRINCIPAL SPILLWAY INLET			
FLOODWATER RETARDING STRUCTURE SITE NO 23			
LOWER PLUM CREEK WATERSHED			
IN HAYS AND CALDWELL COUNTIES, TEXAS			
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
Designed <i>F.P.R.</i>	Date <i>4-71</i>	Approved by <i>[Signature]</i>	
Drawn <i>F.P.R.</i>	Date <i>4-71</i>	Checked <i>[Signature]</i>	
Traced <i>L.S.</i>	Date <i>5-71</i>	Sheet <i>12</i>	Drawing No. <i>4-E-30,337</i>
Checked <i>W.L.B. & W.M.J.</i>	Date <i>5-71</i>	Sheet <i>17</i>	

Note: Shear Plate shall be free from dirt, oil, grease, paint, mill scale, loose or thick rust, or other coating which might destroy or reduce its bond with concrete.

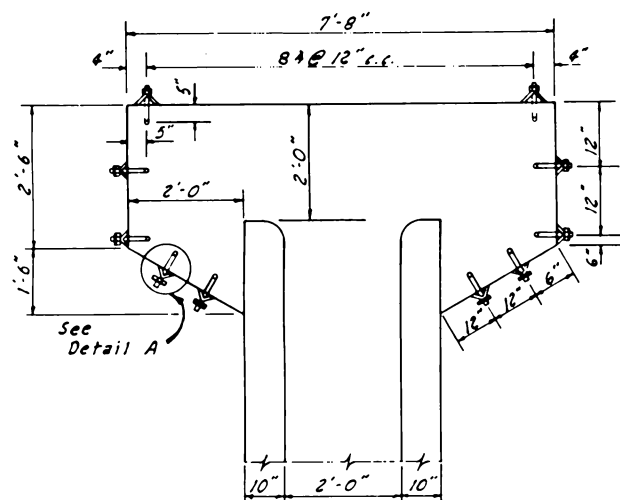
1/4" min. x 6" Steel Plate to be continuous throughout construction joint. Where a splice is necessary, the ends shall be butt welded; lapped 3" and fillet welded; or lapped 3" and bolted.



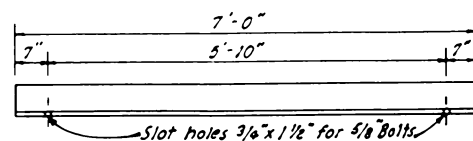
DETAIL OF SHEAR PLATE CONSTRUCTION JOINT



DETAIL A

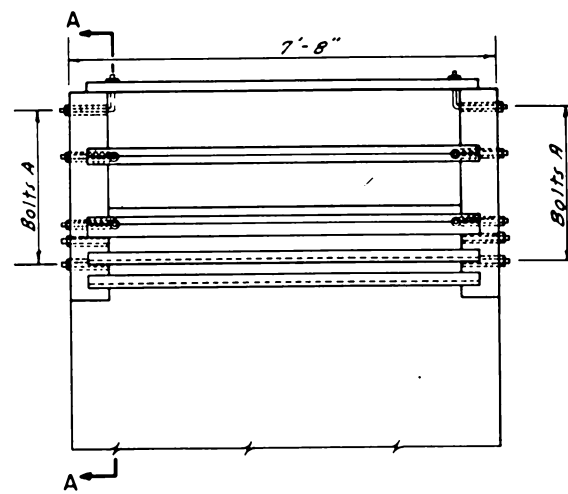


SECTION A-A



DETAIL OF ANGLES FOR TRASH GUARD

TRASH GUARD



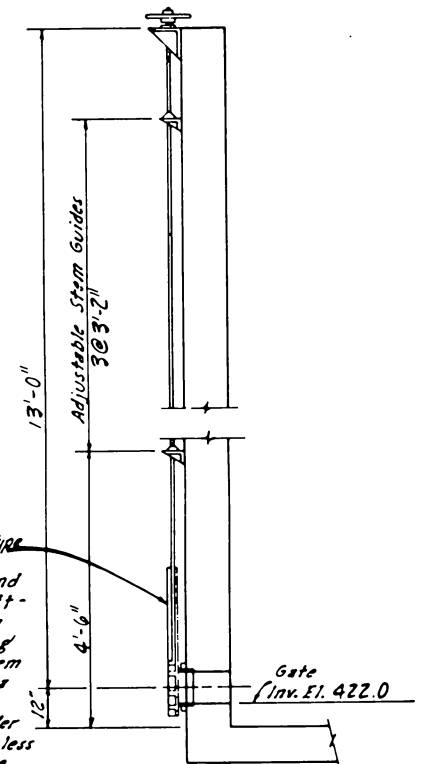
SIDE ELEVATION

Schedule of Materials for Trash Guard			
Item	Quan.	Length	Total Feet
2 1/2 x 2 1/2 x 3/8 Angles	16	7'-0"	112'-0"
5/8 Angle Bolts A, w/washers	32	22"	
3/8 I.D. Pipe Sleeve	32	0'-10"	

All parts of the Trash Guard shall be galvanized. See Construction Specification 81 and Material Specification 582.

12" Moderate Duty Slide Gate (Type MMS-2), Class 50-10, square opening, spigot back frame and bronze seating surface. Lifting mechanism shall include a 1 1/2" dia. stainless steel rising type gate stem, adjustable stem guides and wall bracket, and a 14" dia. handwheel lift with bronze lift nut (ball or roller bearings not required). Stainless steel for gate stem shall be Type 302, 303 or 304. (See Construction Specification 71 and Material Specification 572).

The Slide Gate shall be centered in the upstream wall of the riser. Set anchor bolts to fit gate, stem guides and wall bracket.



SLIDE GATE

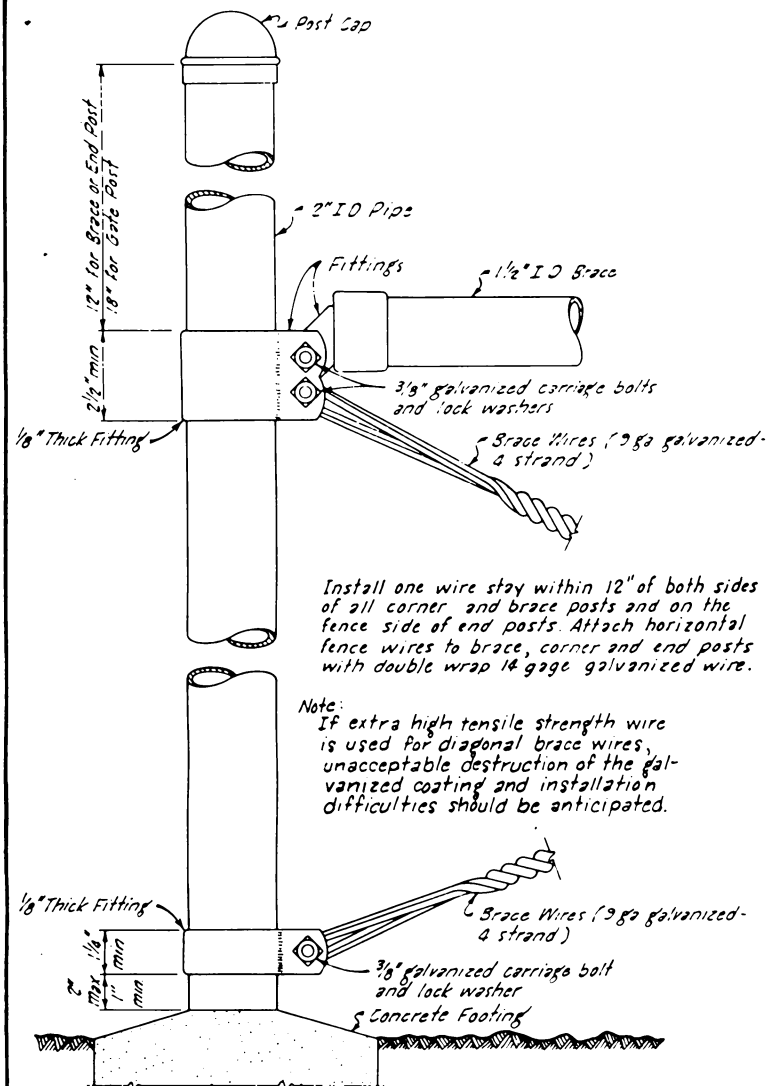
TRASH GUARD AND SLIDE GATE DETAILS
FLOODWATER RETARDING STRUCTURE SITE No 23
LOWER PLUM CREEK WATERSHED
IN
HAYS AND CALDWELL COUNTIES, TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed	Date	Approved by
F.P.R.	4-71	W.L.B. & W.M.J.
Drawn	Date	Checked
F.P.R.	4-71	W.L.B. & W.M.J.
Traced	Date	Sheet
L.S.	5-71	13
Checked	Date	Drawing No.
W.L.B. & W.M.J.	5-71	4-E-30,337

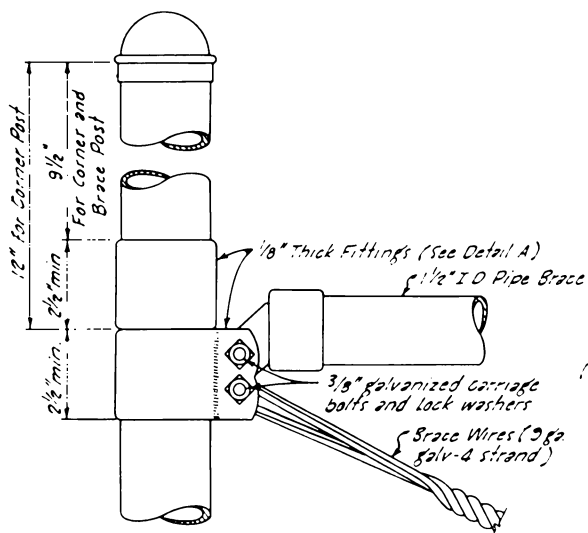
Revised 3/1/68

(Revised) Trash Guard for 24" Open Top, Full Flow, Reservoir Inlet (Slide Gate) Texas



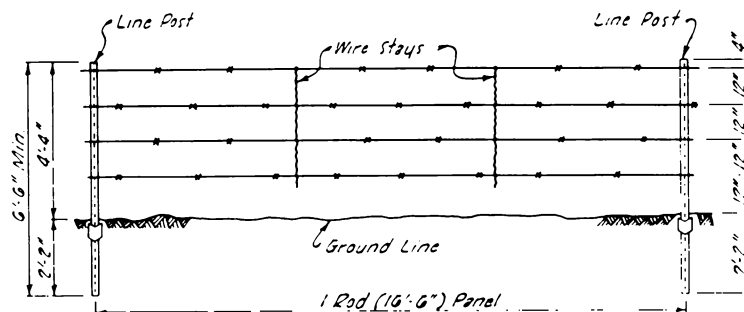
POST DETAIL

(For End, Brace, and Gate Post)



POST DETAIL

(For Corner Post)

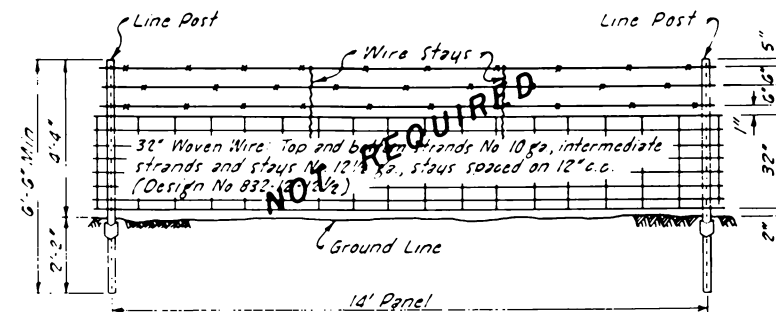


BARBED WIRE

Barbed wire to be 12 1/2 ga galv. double strand barbed wire with 14 ga 2 point barbs at 4" c.c. See Construction Spec 92 for fasteners required.

Barbed wire and woven wire shall conform to Federal Spec. RR-F-221 and shall have Class 1 or 2 zinc coating.

Wire stays to be 10 ga (min. size), galv. two strand spiral, twist-on type, spaced equally, two stays per line post panel. Stays to be twisted firmly against top strand. The minimum length for barbed wire fences shall be 42', and for woven wire fences shall be 24'.



WOVEN WIRE

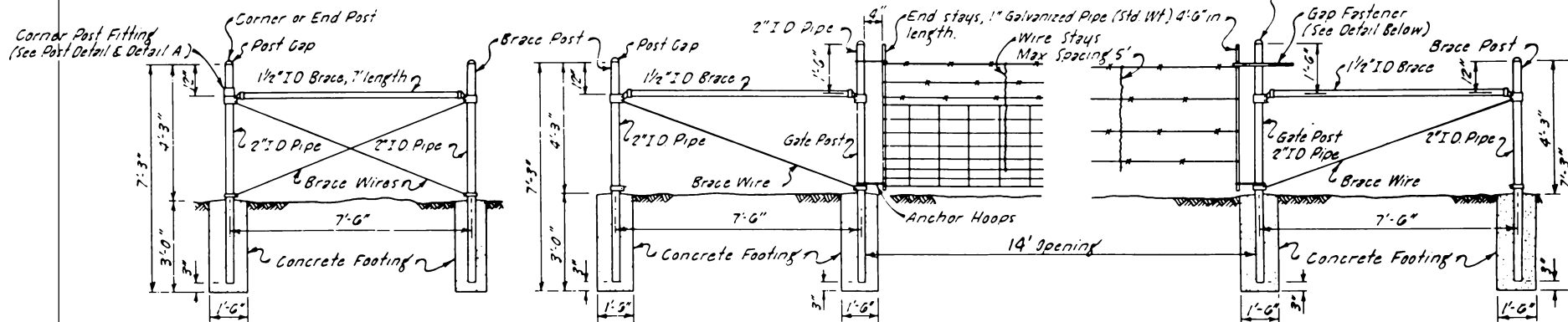
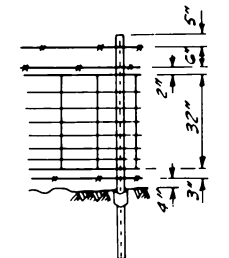
Steel line post will meet Federal Specification RR-F-221, for Style 12, T-Section painted.

End, pull, brace, and gate post will be 2" I.D. standard weight galvanized pipe. (ASTM-120)

Pipe braces will be 1 1/2" I.D. standard weight galvanized pipe. (ASTM-120)

Post caps, braces, and post fittings shall meet the requirements of Federal Specification RR-F-183.

When woven wire fence is constructed along upstream wave berm, wire spacing shall be as shown at right; pull panel shall be required at terminal end of berm.



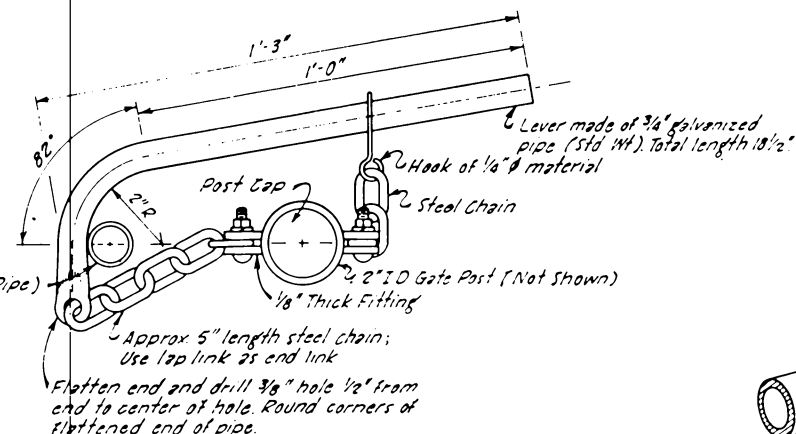
CORNER, PULL PANEL, OR END

At changes in vertical alignment, such as crossing of stub diversions, line posts or pull panel posts, that restrain upward pull of the fence strands, shall be anchored by setting such post in 18" of concrete. The engineer will designate the locations where this anchorage treatment is required. In addition, anchorage of fence wires to posts where there is a change in vertical alignment that produces upward or downward pull, shall be accomplished with double tie wires to each successive fence wire. The engineer will designate the posts where this special fastening of the fence wires is required.

WIRE GAP PANEL

Wire forming gap(s) to be of the same type and spacing as the regular fence. Wire to be double wrapped around end stays and secured in place by drilling 1/4" holes at bottom and top strands of woven wire and at each strand of barbed wire, tying these strands with 14 gauge galvanized wire through the holes. Anchor hoops to be two strands of 9 gauge wire tied to gate post with 9 gauge wire. 2 Gap(s) required.

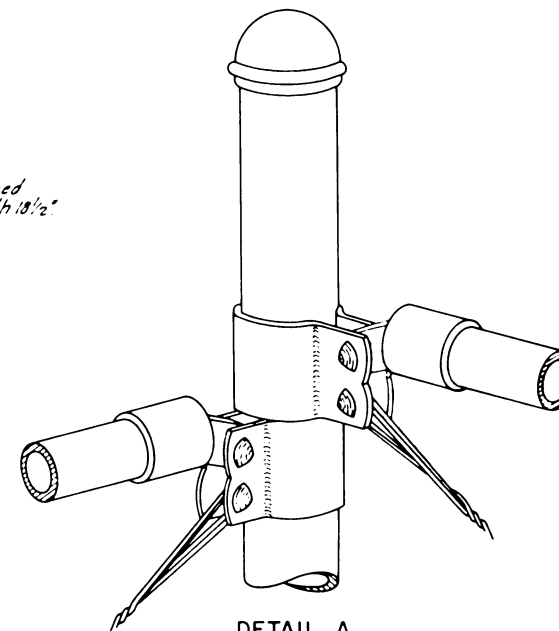
POST LENGTHS	
Line Posts	6'-6"
Corner and Brace Posts	7'-0"
Gate Posts	7'-6"



Note: Chain used will be straight link; material size from 1/8" to 3/32", links per foot from 10 to 18, wt per foot from 0.1 to 0.5 lb. Weldless wire-twist chain will not be permitted.

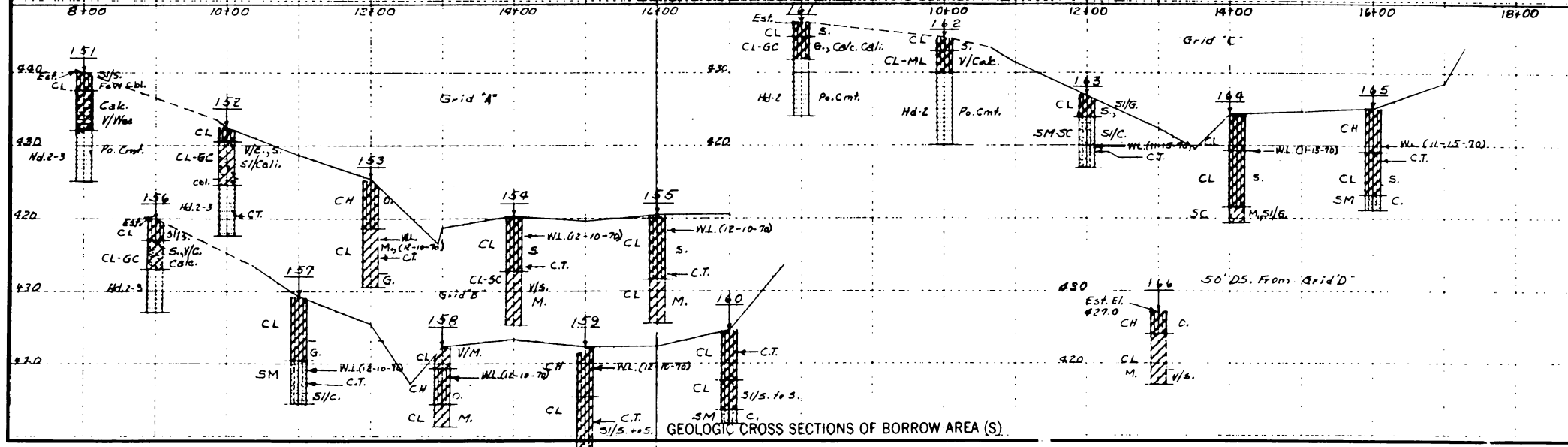
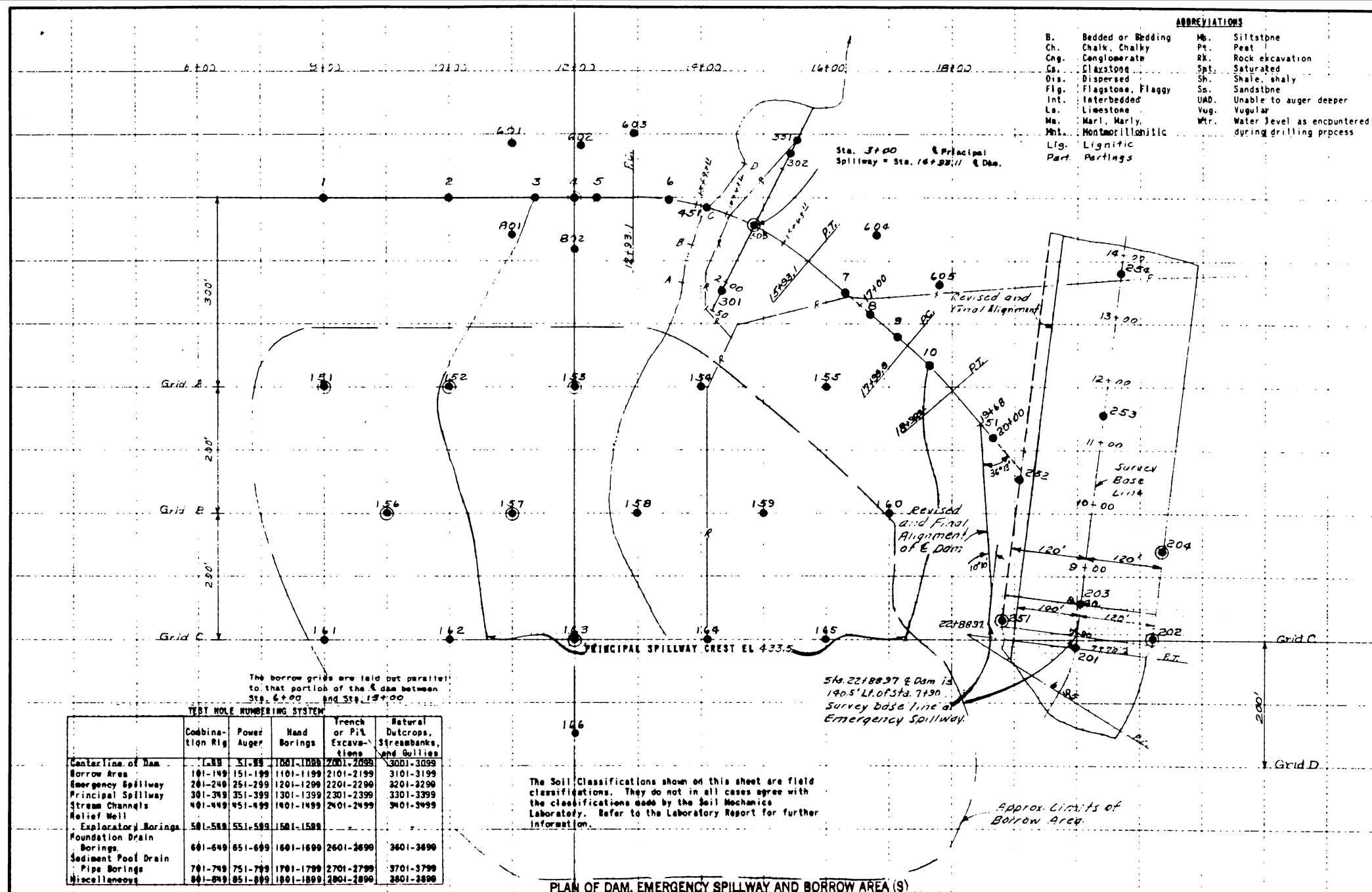
All metal parts of the wire gap fastener shall be galv. by the hot dip process. Regalvanizing not required.

WIRE GAP FASTENER DETAIL



DETAIL A

FENCE DETAILS			
FLOODWATER RETARDING STRUCTURE SITE NO. 23			
LOWER PLUM CREEK WATERSHED			
IN			
HAYS AND CALDWELL COUNTIES, TEXAS			
U. S. DEPARTMENT OF AGRICULTURE			
SOIL CONSERVATION SERVICE			
Designed: E.P.R.	Date: 4-71	Approved by: HEAD, ENGINEERING & WATER RESOURCES UNIT, FORT WORTH, TEXAS	
Drawn: E.P.R.	Date: 4-71	STATE CONSERVATION ENGINEER, S.C.S. TEMPLE, TEXAS	
Traced: L.S.	Date: 5-71	Sheet No. 14	Drawing No. 4-E-30,337
Checked: W.L.B. & W.M.J.	Date: 5-71	of 17	



LEGEND

SYMBOLS

UNCONSOLIDATED MATERIAL

	gravel		sand		silt		clay		cobbles, boulders
	gravel, sandy		sand, gravelly		silt, gravelly		clay, gravelly		peat or muck
	gravel, silty		sand, silty		silt, sandy		clay, sandy		clay-stone
	gravel, clayey		sand, clayey		silt, clayey		clay, silty		

CONSOLIDATED MATERIAL

Sedimentary Rocks

	Conglomerate Cng.		shale sh.		limestone Ls		coal
	breccia brc.		siltstone M.s.		dolomite dol.		gypsum gyp.
	sandstone ss.		marl		chalk Ch.		chert cht.

Metamorphic Rocks

	gneiss		schist
	quartzite		slate
	marble		soapstone talc serpentine

Igneous Rocks

	intrusive		extrusive
	pyroclastic		

Undifferentiated

Other Symbols

● hole logged only		strike and dip
⊙ hole sampled		pit or trench

ABBREVIATIONS

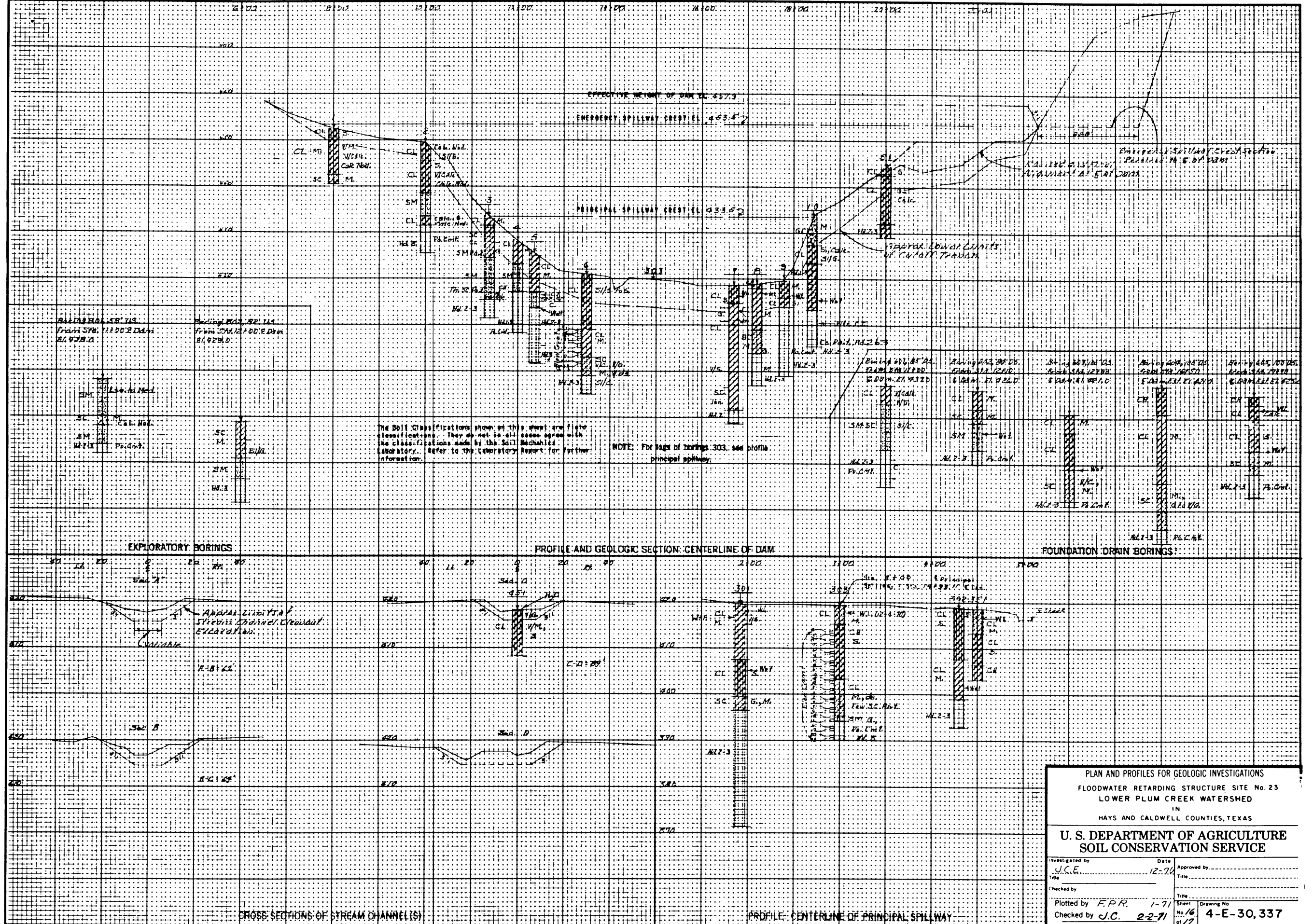
ang. angular bld. boulders (> 12") calc. calcareous cali. caliche cav. cavities cmt. cemented cse. coarse cbl. cobbles (3"-12") cpt. Compact con. concretions xln. crystalline ds. dense dip. dipping d.s. downstream fn. fine frm. firm frac. fractured frg. fragments fri. friable grn. grain gyp. gypsaceous hd. hard h. highly	lam. laminated lse. loose mas. massive med. medium mic. micaceous mod. moderately n. r. no recovery per. permeable po. poorly rdd. rounded sl/. slightly stf. soft s/. some slo. slowly stf. stiff t.b. thin-bedded tuff. tuffaceous u.s. upstream var. variable v/. very w/. with wea. weathered w.l. (date) static water level	G gravel, gravelly S sand, sandy M silt, silty C clay, clayey O organic W well graded P poorly graded
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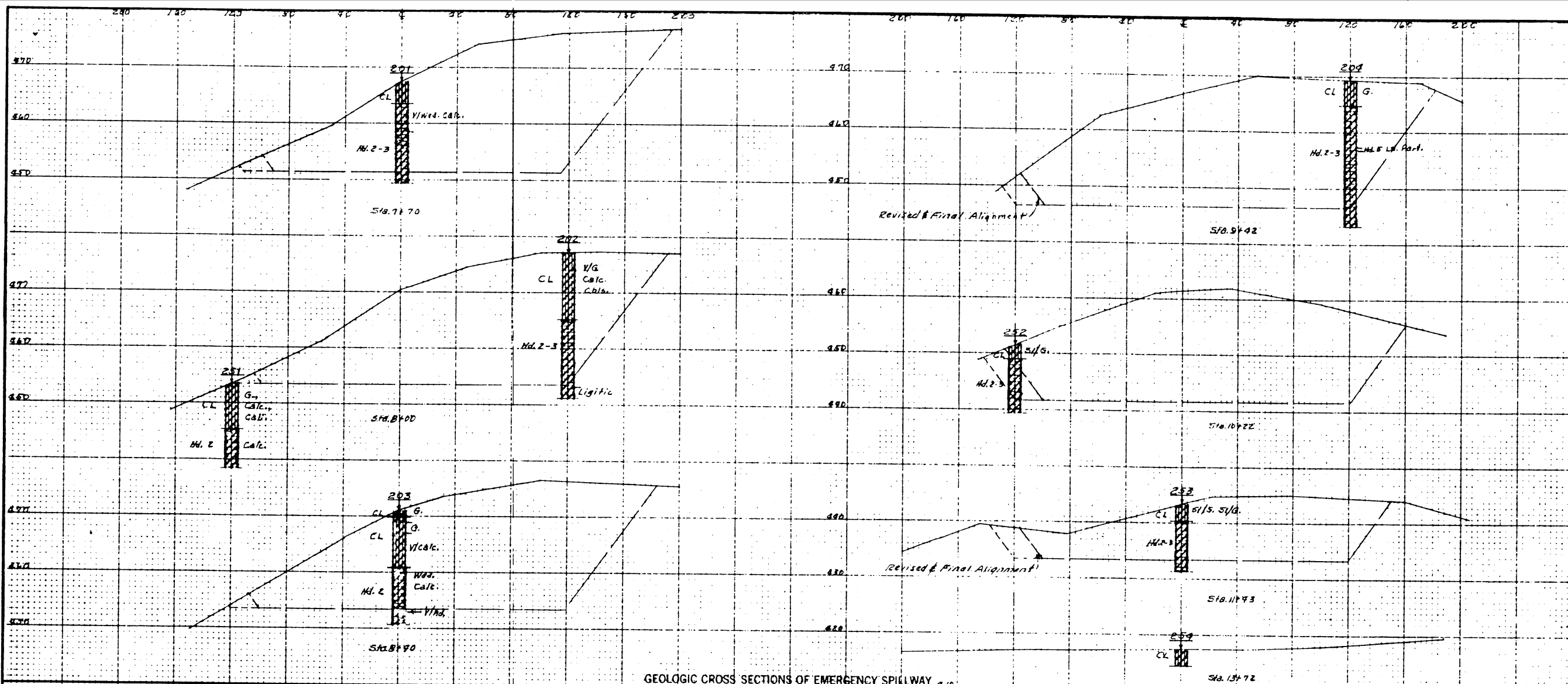
~~TEST HOLE NUMBERING SYSTEM~~

Centerline of main	1-58	Stream channel	401-439
Bottom area	701-419	Outlet weir	501-599
Emergency spillway	201-299		608-699
Centerline of outlet structure	301-399		701-799

UNIFIED SOIL CLASSIFICATION SYSTEM SYMBOLS	
GW	Well graded gravels; gravel-sand mixtures
GP	Poorly graded gravels
GM	Silty gravels; gravel-sand-silt mixtures
GC	Clayey gravels; gravel-sand-clay mixtures
SW	Well graded sands; sand-gravel mixtures
SP	Poorly graded sands
SM	Silty sand
SC	Clayey sands; sand-clay mixtures
ML	Silts with liquid limit of 50 or less
MH	Silts with liquid limit above 50
CL	Clays with liquid limit of 50 or less
CH	Clays with liquid limit above 50
OL	Organic silts and clays with liquid limit of 50 or less
OH	Organic silts and clays with liquid limit above 50

Revised February 1963	
PLAN AND PROFILES FOR GEOLOGIC INVESTIGATIONS FLOODWATER RETARDING STRUCTURE SITE No. 23 LOWER PLUM CREEK WATERSHED IN HAYS AND CALDWELL COUNTIES, TEXAS	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Investigated by J. C. E.	Date 12-12
Title _____	Approved by _____ Title _____
Checked by _____	Title _____
Plotted by FPR 1-71	Sheet No. 15
Checked by J.C. 2-2-71	Drawing No. 4-E-30, 337 of 17





GEOLOGIC CROSS SECTIONS OF EMERGENCY SPILLWAY 4-10

The Soil Classifications shown on this sheet are field classifications. They do not in all cases agree with the classifications made by the Soil Mechanics Laboratory. Refer to the Laboratory Report for further information.

PROFILE SURVEY BASE LINE OF EMERGENCY SPILLWAY

PLAN AND PROFILES FOR GEOLOGIC INVESTIGATIONS			
FLOODWATER RETARDING STRUCTURE SITE No. 23			
LOWER PLUM CREEK WATERSHED			
IN			
HAYS AND CALDWELL COUNTIES, TEXAS.			
U. S. DEPARTMENT OF AGRICULTURE			
SOIL CONSERVATION SERVICE			
Investigated by J. C. E.	Date 12-70	Approved by Title	
Checked by		Title	
Plotted by F. P. R.	1-71	Sheet No. 17	Drawing No. 4-E-30,337
Checked by J. C.	2-2-71	of 17	