

USDA - SCS - FORT WORTH, TEXAS



FLOODWATER RETARDING DAM NO. 1
SANDERSON CANYON WATERSHED PROJECT
BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS

DRAINAGE AREA 12,533 ACRES
TOTAL STORAGE 2,757 AC.FT.
HEIGHT OF DAM 50 FEET
VOLUME OF FILL 1,185,160 CU. YDS.

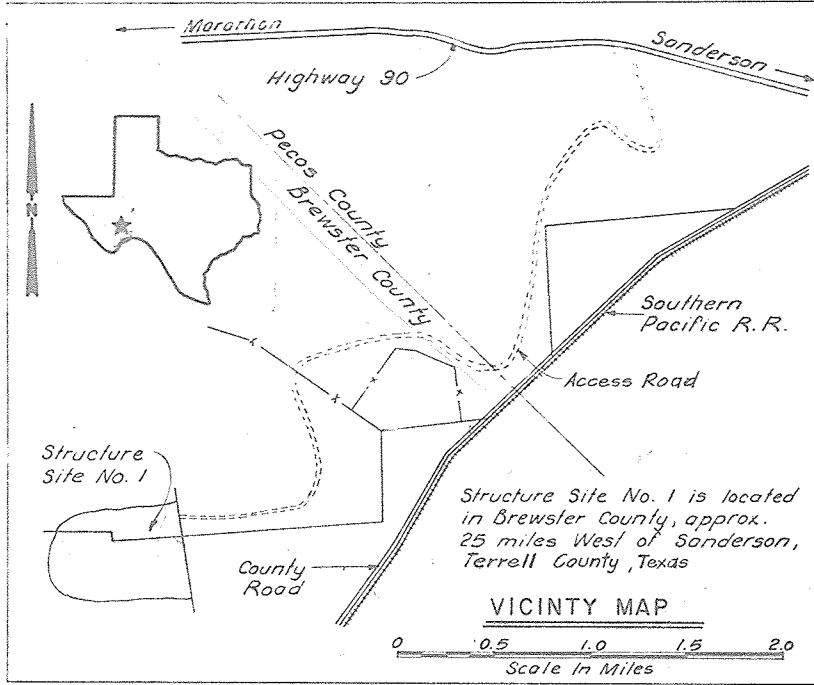
SPONSORED BY
RIO GRANDE-PECOS RIVER, BIG BEND AND TRANS-PECOS SOIL AND WATER CONSERVATION DISTRICTS
TERRELL, PECOS AND BREWSTER COUNTY COMMISSIONERS COURTS
COOPERATING WITH
SOIL CONSERVATION SERVICE
OF THE
U.S. DEPARTMENT OF AGRICULTURE

1980
CONSTRUCTION DRAWINGS APPROVED
Gene C. Wittet 6/23/80
STATE CONSERVATION ENGR. S.C.S. DATE
TEMPLE, TEXAS

John L. Olmstead, P.E.
BENHAM-BLAIR & AFFILIATES, INC.
SAN ANTONIO, TEXAS



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AS BUILT PLANS
CONTRACT NO. 50-7442-4-3022
CONTRACTOR J. D. Abrams, Inc.
CONSTRUCTION COMMENCED 10/23/84
GOV. REPRESENTATIVE Billy J. Gunter
GOV. INSPECTOR Floyd A. Taylor & Cyril W. Hamilton
BID PRICE \$3,460,670.00
FINAL PRICE \$3,634,385.31
CONSTRUCTION COMPLETED 10/3/86

SITE 1 SANDERSON

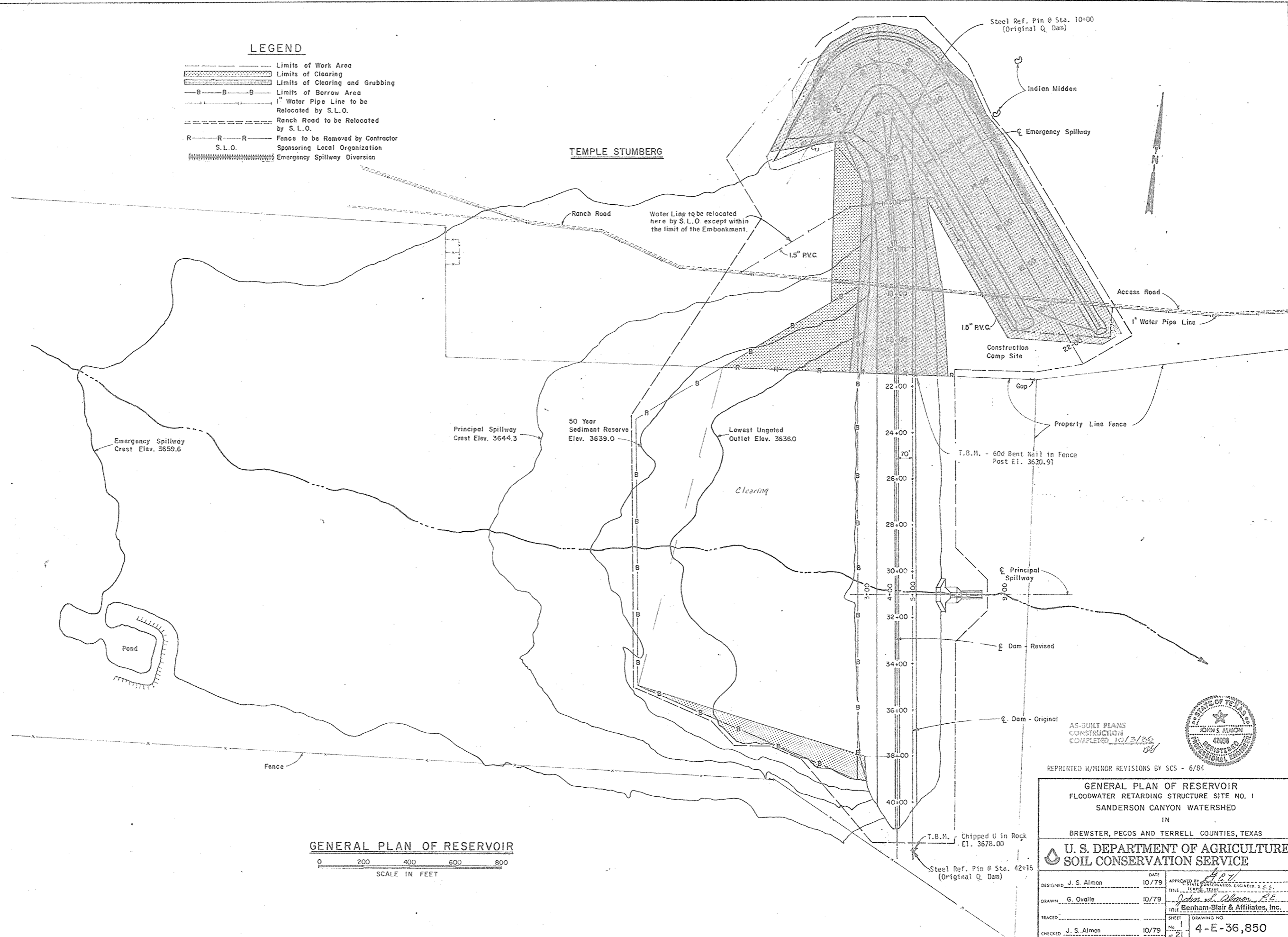
BENHAM - BLAIR & AFFILIATES, INC.
ARCHITECTS ENGINEERS PLANNERS CONSULTANTS
SUITE 470 SOUTH TOWER G.P.M. LIFE BUILDING SAN ANTONIO, TEXAS

REPRINTED W/MINOR REVISIONS BY SCS - 6/84

Drawing No.
4-E-36,850

LEGEND

- Limits of Work Area
- Limits of Clearing
- Limits of Clearing and Grubbing
- B-B-B- Limits of Borrow Area
- - - 1" Water Pipe Line to be Relocated by S.L.O.
- - - Ranch Road to be Relocated by S.L.O.
- R-R-R- Fence to be Removed by Contractor
- S.L.O. Sponsoring Local Organization
- Emergency Spillway Diversion



GENERAL PLAN OF RESERVOIR
0 200 400 600 800
SCALE IN FEET

AS-BUILT PLANS
CONSTRUCTION
COMPLETED 10/3/86

REPRINTED W/MINOR REVISIONS BY SCS - 6/84

GENERAL PLAN OF RESERVOIR
FLOODWATER RETARDING STRUCTURE SITE NO. 1
SANDERSON CANYON WATERSHED
IN
BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

DESIGNED J. S. Almon	DATE 10/79	APPROVED BY [Signature]
DRAWN G. Ovalle	10/79	TITLE TEMPLE, TEXAS
TRACED		DRAWING NO. Benham-Blair & Affiliates, Inc.
CHECKED J. S. Almon	10/79	SHEET No. 1 of 21

4-E-36,850

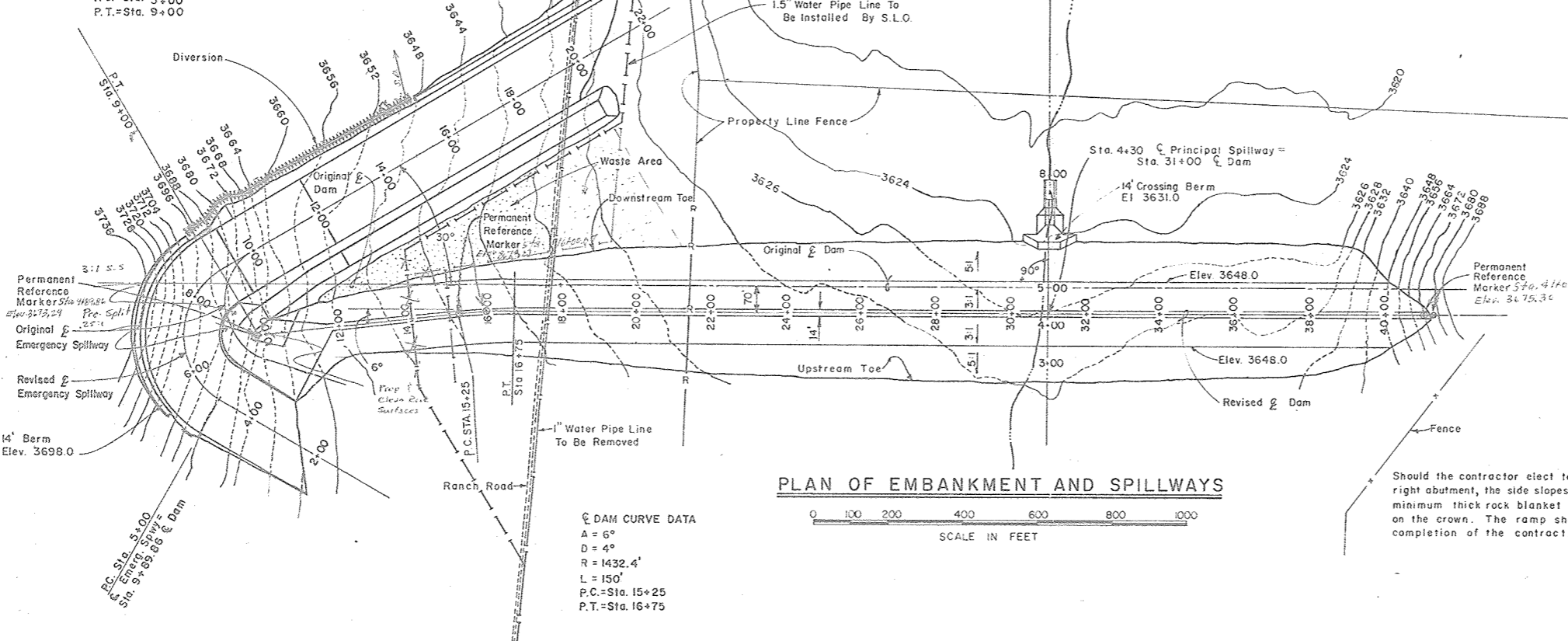
EMERGENCY SPILLWAY
CURVE DATA
A = 120°
D = 30°
R = 190.99'
L = 400.0'
P.C. = Sta. 5+00
P.T. = Sta. 9+00

LEGEND
R-R Fence to be removed
Water line to be relocated by S.L.O.
Ranch road to be relocated by S.L.O.
S.L.O. Sponsoring Local Organization
Emergency Spillway Diversion
Stub Diversion

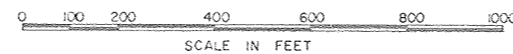
STORAGE-CAPACITY TABLE

ELEVATION	SURFACE ACRES	CAPACITY	
		ACRE FEET	INCHES
3628	6.0	12	0.01
3632	22.0	63	0.07
3636	41.0	198	0.19
3639	54.0	354	0.34
3640	59.0	394	0.38
3644	81.0	674	0.65
3644.3	83.0	720	0.69
3648	105.0	1046	1.00
3652	132.0	1520	1.46
3656	162.5	2109	2.02
3659.6	192.0	2757	2.64
3660	196.5	2827	2.71
3664	237.5	3695	3.54
3668	271.0	4712	4.51
3672	305.5	5865	5.62
3672.9	315.0	6109	5.85

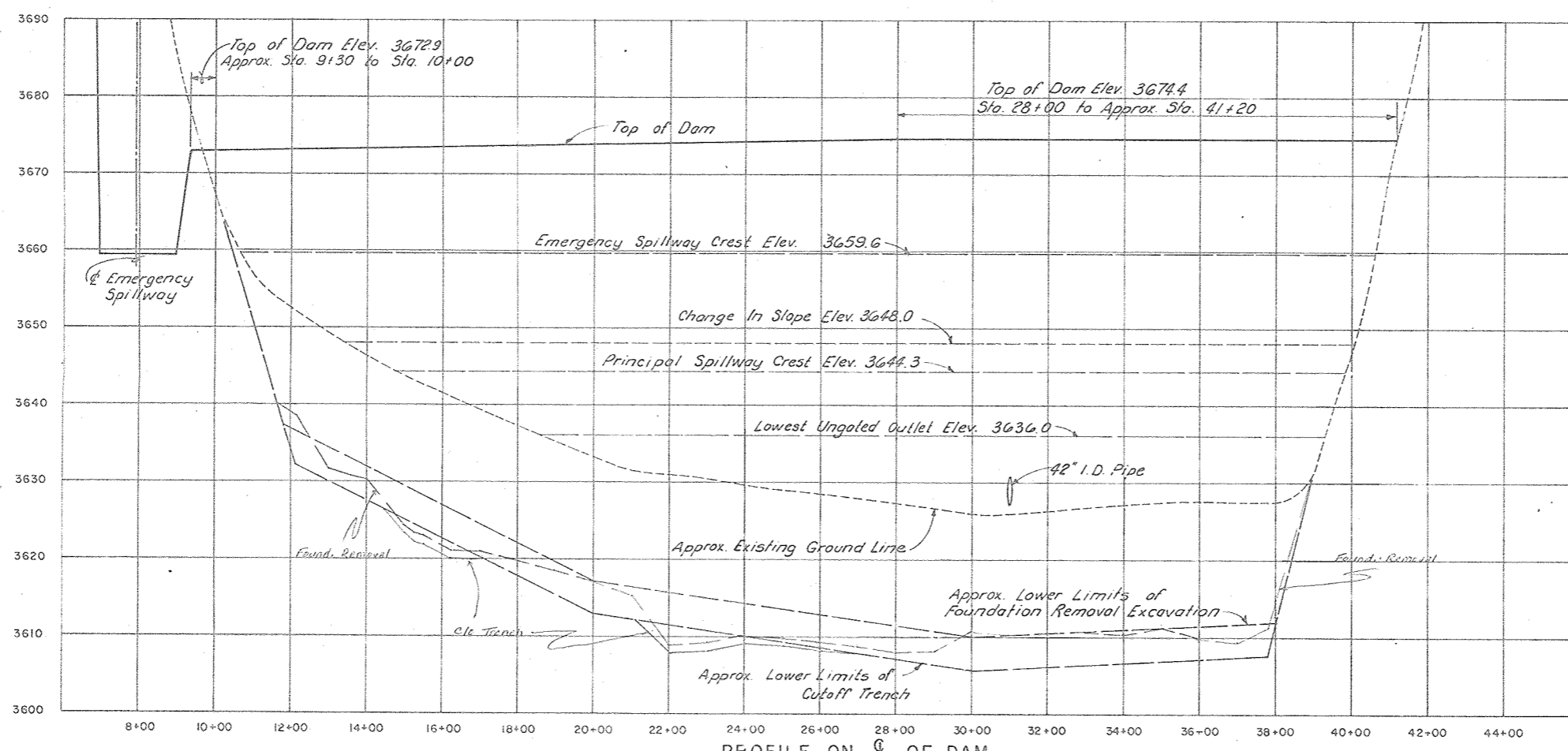
Drainage Area, Acres	12,533
Top of Dam (effective) El.	3672.9
Emergency Spillway Crest El.	3659.6
Principal Spillway Crest El.	3644.3
Lowest Ungated Outlet El.	3636.0
Sediment Capacity, Acre Feet	793
Floodwater Capacity, Acre Feet	1,964
Maximum Emergency Spillway Capacity, cubic feet/second	21,541
Principal Spillway Capacity, 0 El. 3659.6, cubic feet/second	2108
1/ 50 yr. Submerged Sediment	
2/ 100 yr. Submerged Sediment	



PLAN OF EMBANKMENT AND SPILLWAYS



Should the contractor elect to construct a ramp on the right abutment, the side slopes will have a one foot minimum thick rock blanket and gravel shall be placed on the crown. The ramp shall remain in place after completion of the contract.



PROFILE ON C OF DAM

Note:
Emergency Spillway Diversions shall have a 13 ft. minimum base width, 3:1 side slopes, and 18" effective height. Effective height may be secured by grading a channel across high points to reduce the height of fill required in low areas. Where a channel section is required, the minimum bottom width of the channel shall be 12 ft. (See Construction Specification 203.)

AS-BUILT PLANS
CONSTRUCTION
COMPLETED 10/3/86

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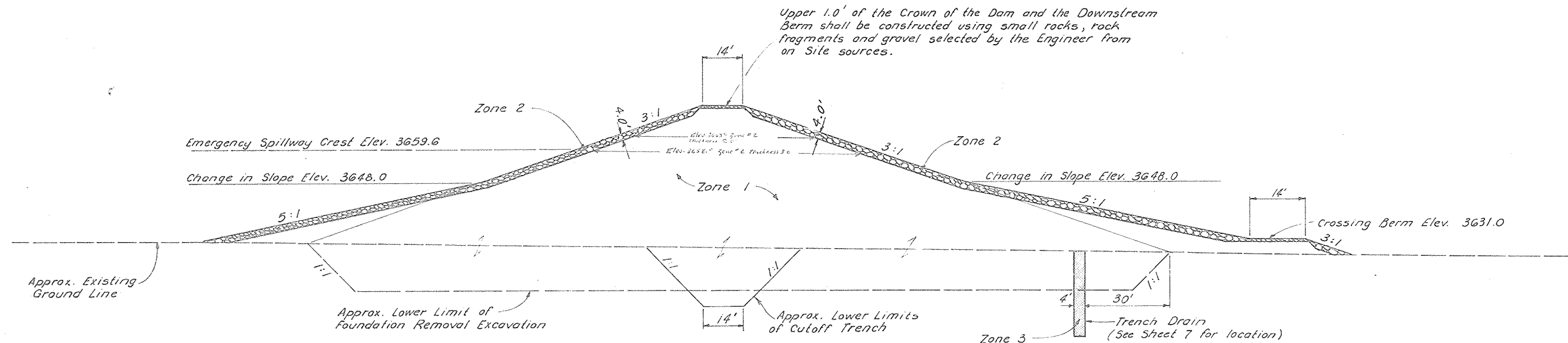


EMBANKMENT PLAN AND PROFILE FLOODWATER RETARDING STRUCTURE SITE NO. 1 SANDERSON CANYON WATERSHED

IN
BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

DESIGNED BY	J. S. Almon	DATE	10/79	APPROVED BY	J. S. Almon
DRAWN BY	G. Ovalle	DATE	10/79	TITLE	STATE CONSERVATION ENGINEER'S OFFICE
TRACED BY				TITLE	Benham-Blair & Associates, Inc.
CHECKED BY	J. S. Almon	DATE	10/79	SHEET	No. 2 of 21
				DRAWING NO.	4-E-36,850



TYPICAL SECTION

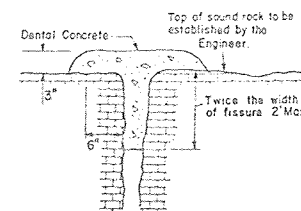
MATERIALS PLACEMENT DATA									
Embankment Zone No. 1	Type or Unified Classification	Field Control Test		Placement and Compaction Requirements					
		ASTM Test		Max. Allowable Particle Size	Max. Uncompacted Layer Thickness	Specified Compaction Class	Min. Dry Density, Percent of Field Test Max. Dry Density	Moisture Limits, Relative to Field Test Optimum	
		Number	Method					From	To
1	CL; Silty Clay with Sand & Gravel	D-698	A or B	6"	9"	A	95	Opt.	Up
2	Rockfill - Ls., Md. 5-6	-	-	24"	36"	-	-	-	-
3	Trench Drain Fill - Sand & Gravel	-	-	-	-	II	-	-	-
4	Chimney & Horizontal Drain Fill - Sand	-	-	-	-	II	-	-	-
1	GC & SC; Gravelly and Sandy Clay	D-698	A or B	6"	9"	A	95	Opt.	Up

ZONED EMBANKMENT DATA

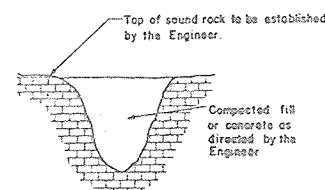
NOTE:

The finer grained, more plastic materials (CL) shall be routed to the inner portion of Zone 1 and the coarser grained, less plastic (GC, SC) shall be routed to the outer portion of Zone 1.

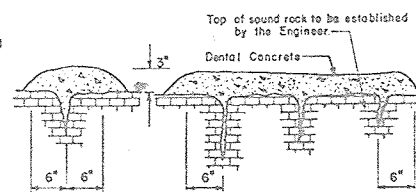
- The zone boundaries shown in the typical section are approximate. They may be varied as permitted by the Engineer, to allow the use of all suitable and needed materials from the required excavations.
- Rock shall be reasonably well graded from a maximum particle size of 24" down to the 4" size with not less than 50% by weight larger than 9". Sizing of oversized rock materials from the required excavations to meet the specified gradations will be required. No special compaction or moisture control will be required. Up to 5% of materials finer than the 4" size will be permitted. (See Construction Specification 25A)
- Gradation Requirements shown on sheet 7.
- Refer to Construction Specification 24 for drain fill compaction requirements.



FISSURES

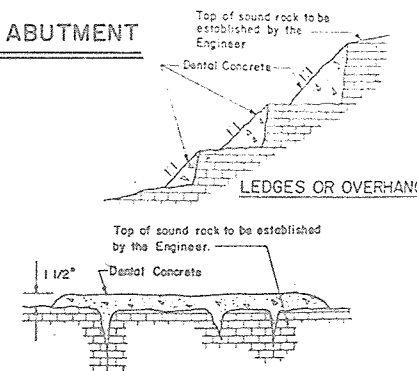


HOLES OR SOLUTION CHANNELS



CRACKS

TYPICAL TREATMENT OF ROCK SURFACE
(See Construction Specification 63 for Limits of Area to be Treated)



LEDGES OR OVERHANGS

TYPICAL SURFACE FRACTURES

CHIMNEY AND HORIZONTAL DRAIN FILL REQUIREMENTS

The drain fill for the chimney drain and horizontal drain shall comply with the gradation requirements for ASTM C-33 Fine Concrete Aggregate and shall consist of the following:

SIEVE NO.	% PASSING BY WT.
No. 4	100
No. 10	80-100
No. 20	35-75
No. 40	15-45
No. 100	0-10
No. 200	0-5

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

TYPICAL SECTION
DAM STA. 37+00 TO THE RIGHT ABUTMENT

AS-BUILT PLANS
CONSTRUCTION
COMPLETED 10/31/89

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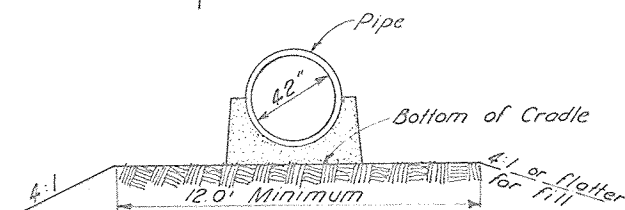
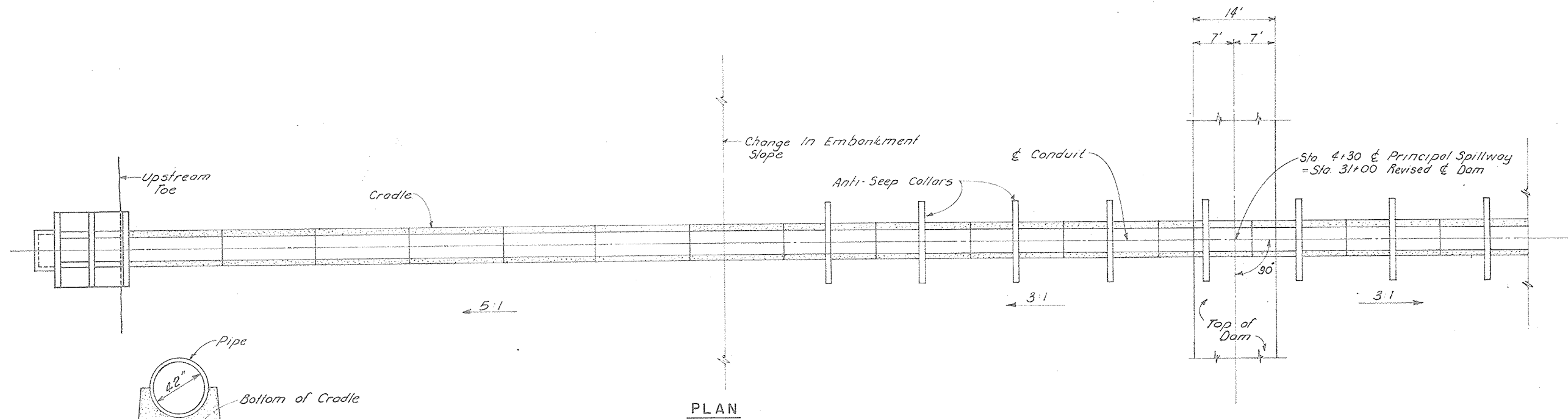


MATERIAL PLACEMENT
FLOODWATER RETARDING STRUCTURE SITE NO. 1
SANDERSON CANYON WATERSHED

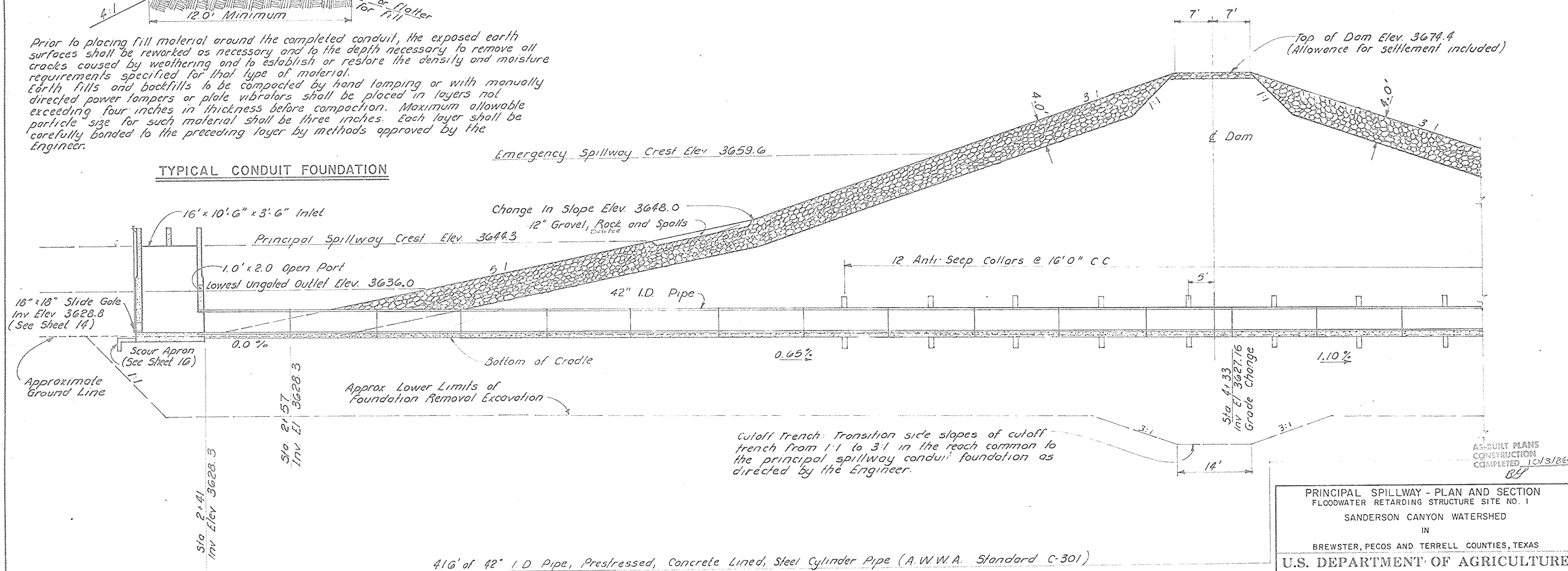
IN
BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

DESIGNED	J. S. Almon	DATE	10/79	APPROVED	J. S. Almon
DRAWN	G. Ovalle	DATE	10/79	TITLE	Benham-Blair & Affiliates, Inc.
TRACED		SHEET	No. 3 of 21	DRAWING NO.	4-E-36,850
CHECKED	J. S. Almon	DATE	10/79		



Prior to placing fill material around the completed conduit, the exposed earth surfaces 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 requirements specified for that type of material. Earth fills and backfills to be compacted by hand tamping or with manually directed power tampers or plate vibrators shall be placed in layers not exceeding four inches in thickness before compaction. Maximum allowable particle size for such material shall be three inches. Each layer shall be carefully bonded to the preceding layer by methods approved by the Engineer.



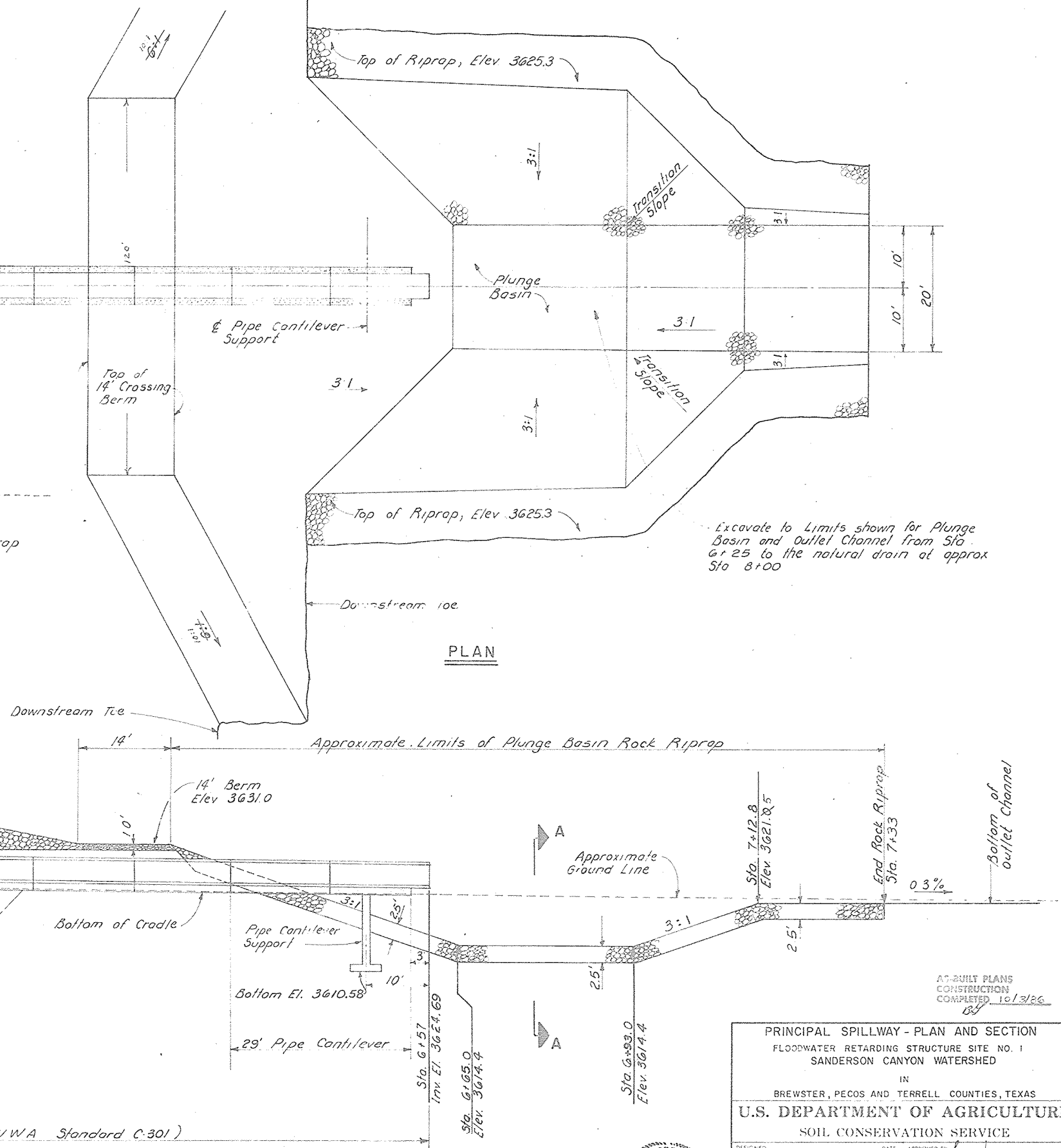
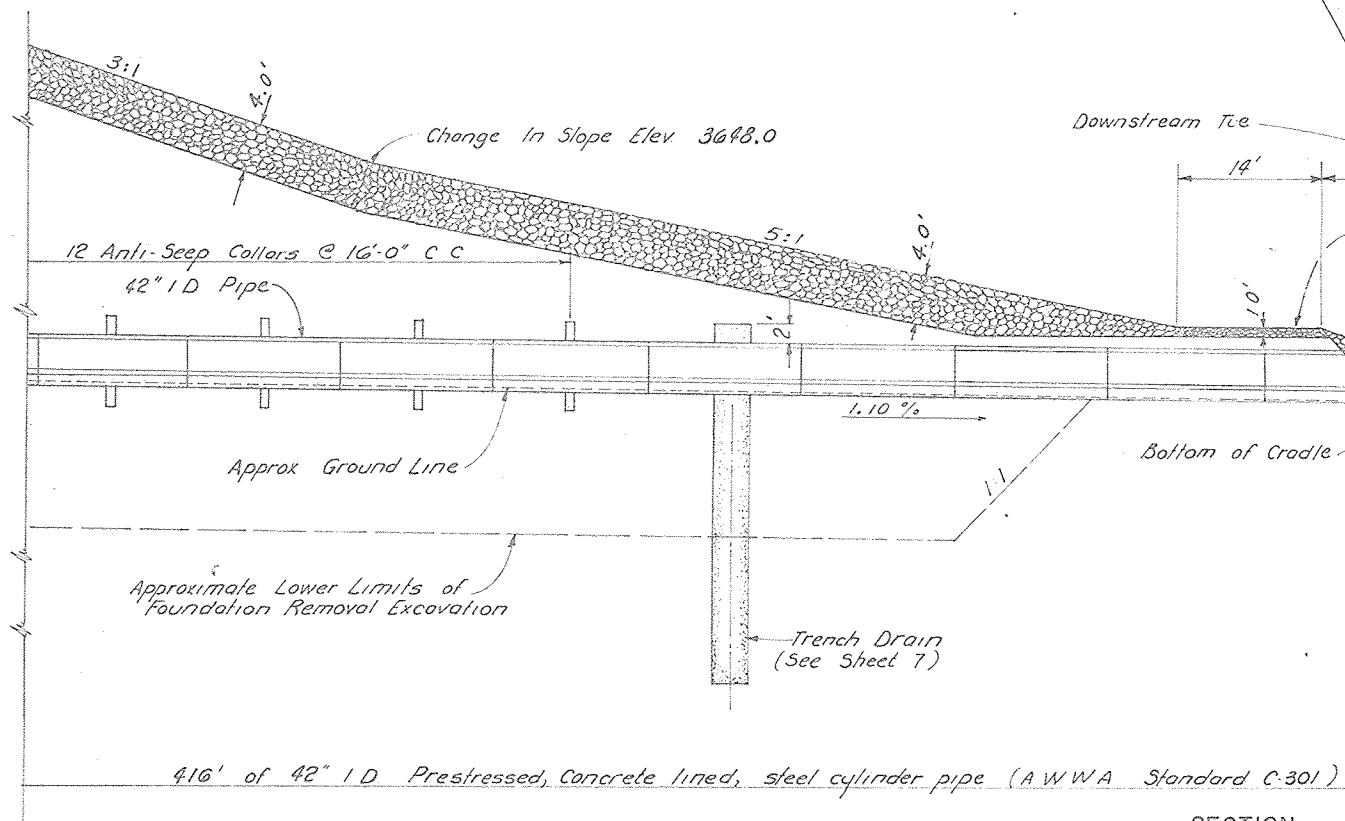
SECTION PRINCIPAL SPILLWAY



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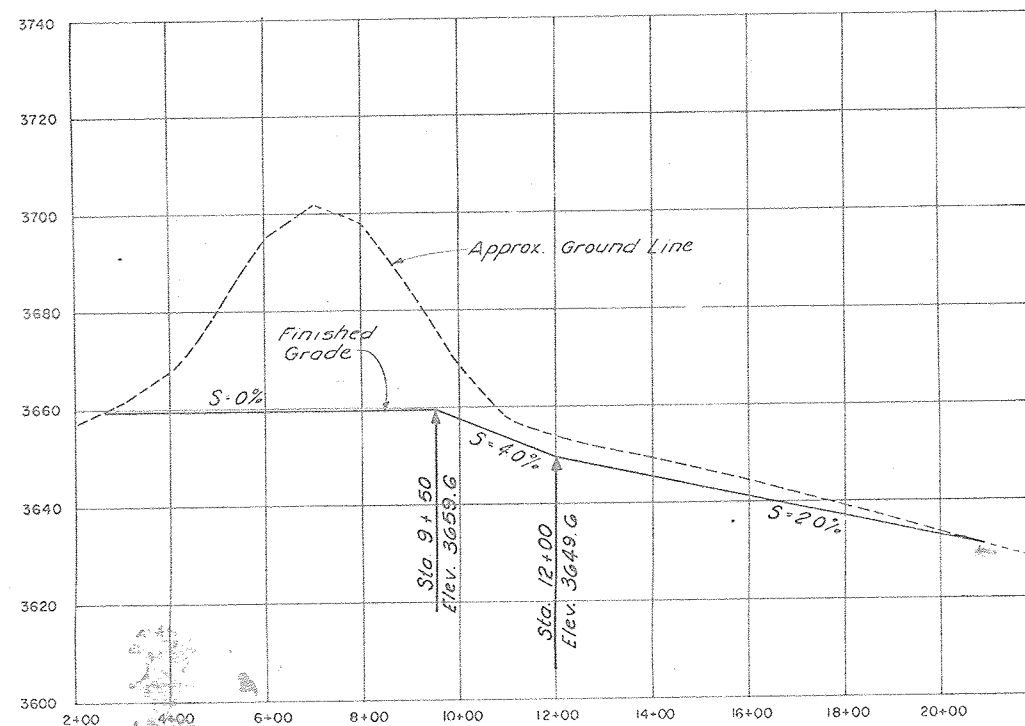
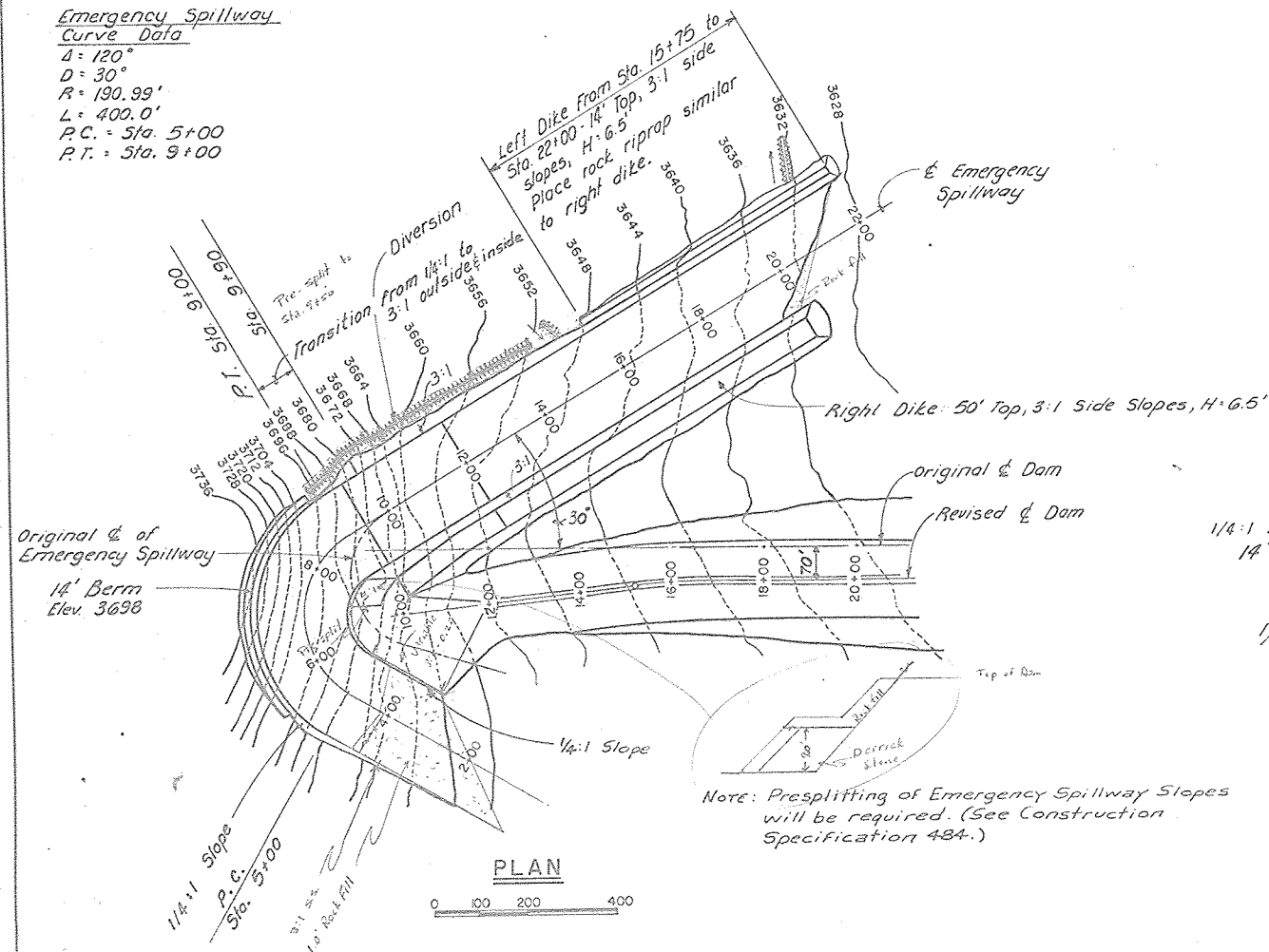
PRINCIPAL SPILLWAY - PLAN AND SECTION FLOODWATER RETARDING STRUCTURE SITE NO. 1 SANDERSON CANYON WATERSHED IN BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
DESIGNED BY	J. S. Almon	DATE	10/79
DRAWN BY	G. Ovalle	DATE	10/79
CHECKED BY	J. S. Almon	DATE	10/79
APPROVED BY		John S. Almon, P.E. Benham-Blair & Associates, Inc.	
SHEET NO. 4		DRAWING NO. 4-E-36,850	
OF 21			

The least dimension of an individual rock fragment shall not be less than one-third of the greatest dimension of the fragment. (See Construction Specification 61.)
Approximately 1,123 cubic yards Plunge Basin Rock Riprap required.

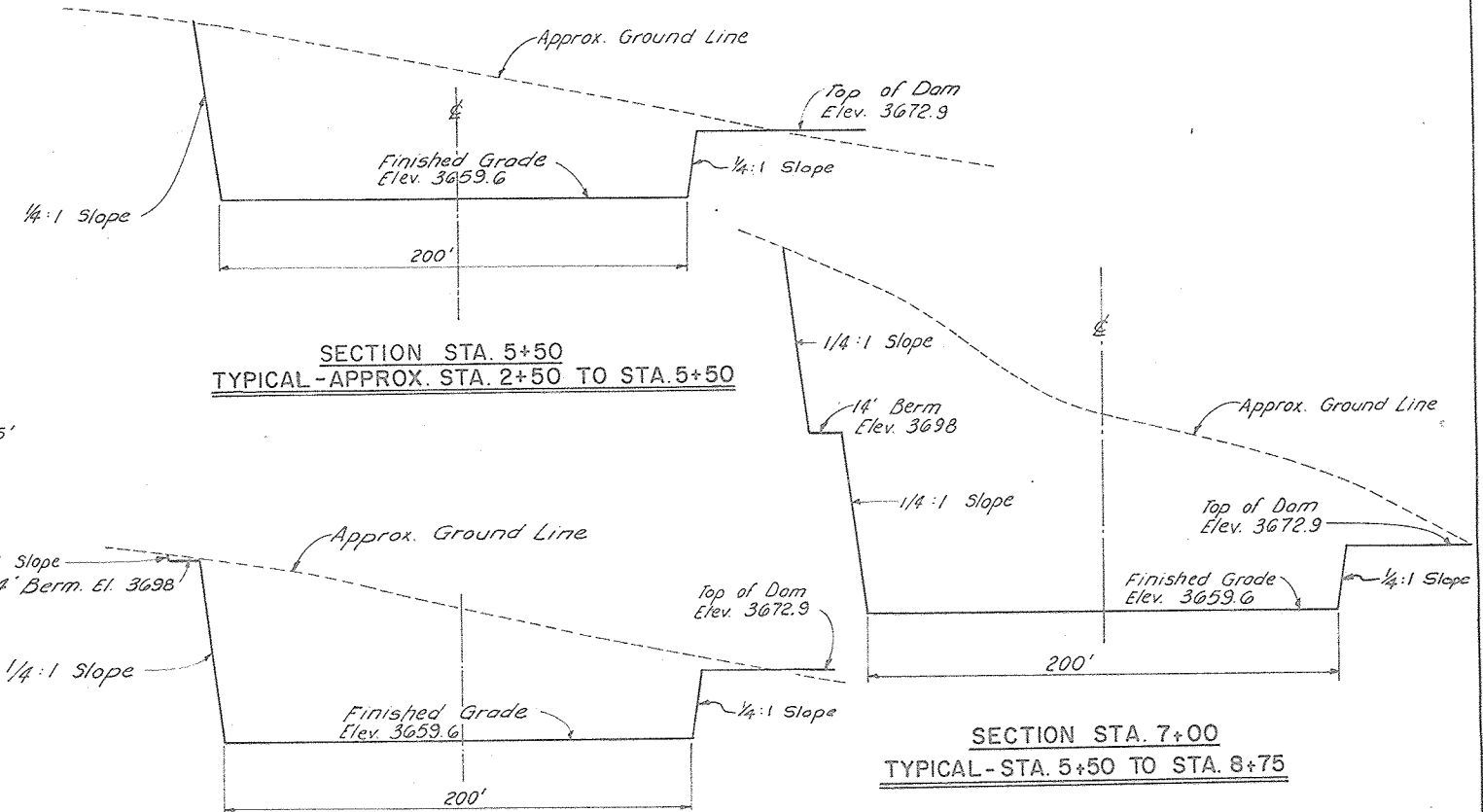


PRINCIPAL SPILLWAY - PLAN AND SECTION FLOODWATER RETARDING STRUCTURE SITE NO. 1 SANDERSON CANYON WATERSHED IN BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS			
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
DESIGNED	J. S. Almon	DATE	APPROVED BY <i>G.C.V.</i>
DRAWN		10/79	TITLE
	G. Ovalle	10/79	<i>John S. Almon, P.E.</i>
TRACED			BY Benham-Blair & Affiliates, Inc.
CHECKED	J. S. Almon	10/79	SHEET No. 5 OF 21 DRAWING NO. 4-E-36,850

Emergency Spillway
Curve Data
Δ = 120°
D = 30°
R = 190.99'
L = 400.0'
P.C. = Sta. 5+00
P.T. = Sta. 9+00



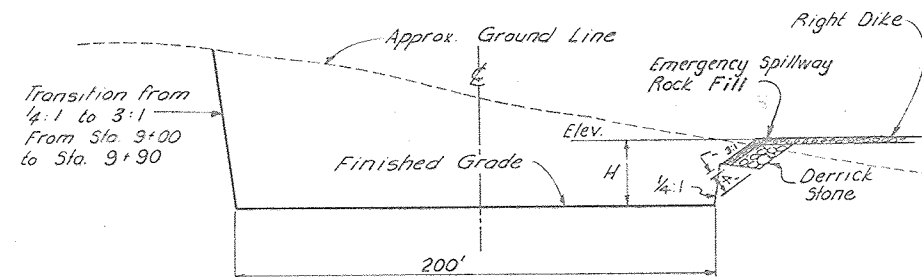
PROFILE ON C OF EMERGENCY SPILLWAY



SECTION STA. 8+75
TYPICAL - STA. 5+50 TO STA. 8+75

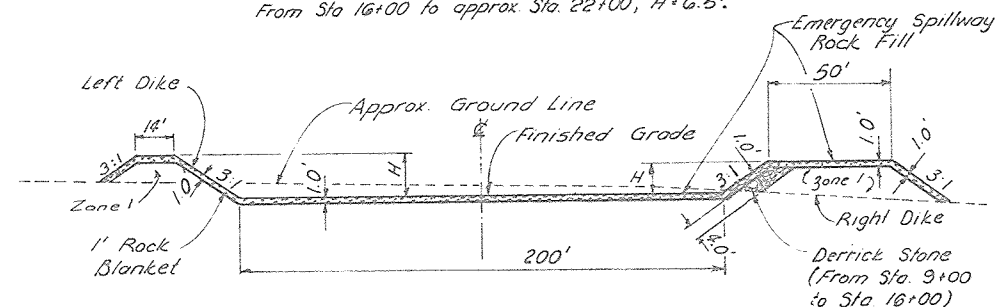
SECTION STA. 7+00
TYPICAL - STA. 5+50 TO STA. 8+75

- Notes:**
- DERRICK STONE**
- 1) The rock used for the derrick stone shall be harvested or produced stone that shall have individual or stone weights ranging from 1400 to 4000 pounds. The derrick stone shall be placed so as to produce a reasonably dense fill with a minimum of voids (See Construction Specification 61.) Approximately 1,995 cubic yards required.
- EMERGENCY SPILLWAY ROCK FILL**
- 2) Areas of Emergency Spillway floor where durable rock is not exposed at grade shall be overexcavated a minimum of 1.0' and brought back to grade with rock fill material. Emergency Spillway rock fill shall be reasonably well graded from a maximum rock size of 12 inches down to the 4 inch size with not more than 50% by weight smaller than 8 inches.
- Sizing of oversized rock materials from the required excavations to meet the specified gradation will be required. No special compaction or moisture control will be required. (See Construction Specification 25A.) Approximately 12,303 cubic yards Emergency Spillway rock fill required.



SECTION STA. 9+00
TYPICAL - APPROX. STA. 9+00 TO STA. 10+30

Right Dike: From Embankment to Sta. 12+00, Dike is transitional from El. 3672.9 to H=6.5 ft. From Sta. 12+00 to Approx. Sta. 20+00, H=6.5 ft.
Left Dike: From approx. Sta. 15+75 to Sta. 16+00, diversion transitions to dike. From Sta. 16+00 to approx. Sta. 22+00, H=6.5'.



TYPICAL - STA. 10+30 TO STA. 20+00

AS BUILT PLANS
CONSTRUCTION
COMPLETED 10/3/86

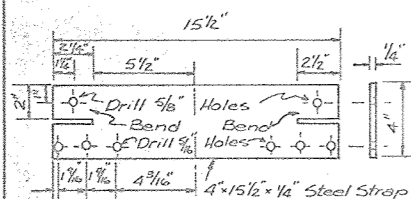
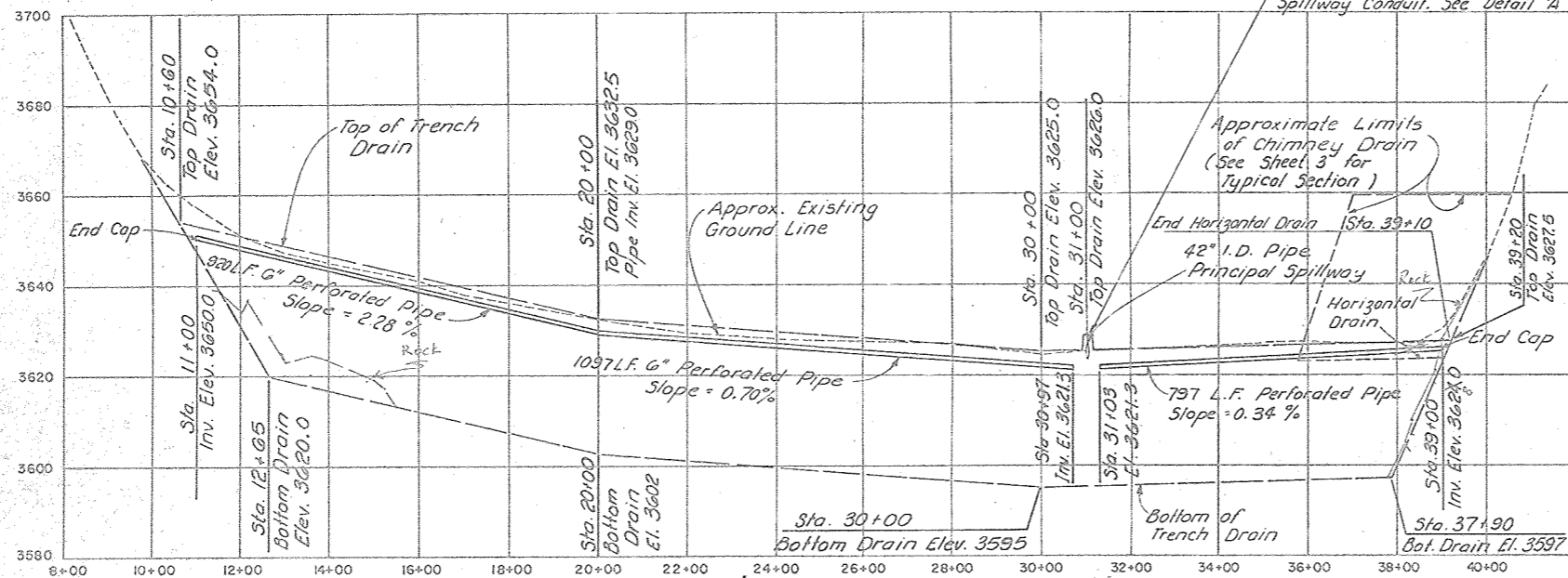
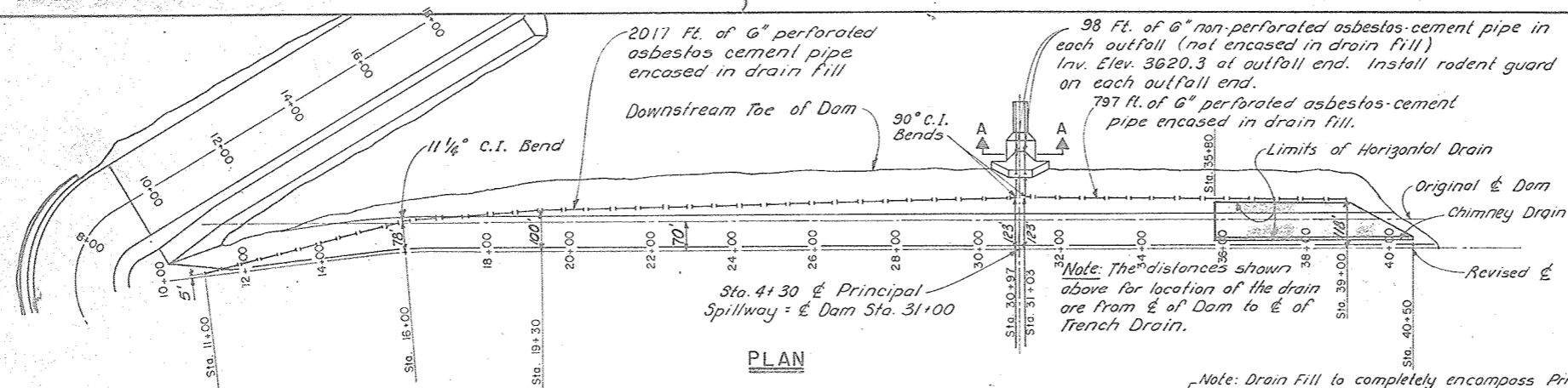
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EMERGENCY SPILLWAY - PLAN AND PROFILE
FLOODWATER RETARDING STRUCTURE SITE NO. 1
SANDERSON CANYON WATERSHED

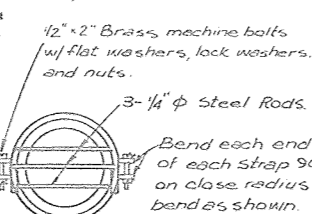
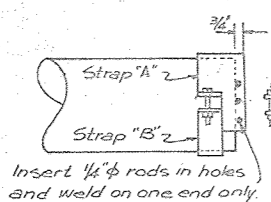
IN
BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

DESIGNED	J. S. Almon	DATE	10/79	APPROVED BY	ECV
DRAWN	G. Ovalle	DATE	10/79	TITLE	Emergency Spillway, P.E.
TRACED		SHEET	No. 6	DRAWING NO.	4-E-36,850
CHECKED	J. S. Almon	DATE	10/79	of 21	

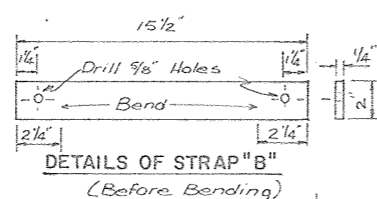


DETAILS OF STRAP "A" (Before Bending)

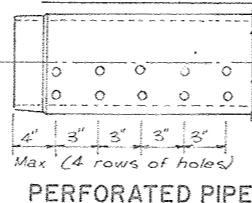
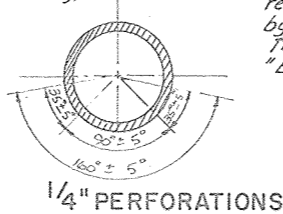


Note: Bend Straps A and B on a radius 1/16" larger than the outside diameter of the asbestos-cement pipe. Cut off tapered end of the asbestos-cement pipe and install the rodent guard so that the asbestos-cement pipe has full wall thickness at point of installation. Install with rods horizontal. All materials (except brass) shall be galvanized after fabrication.

RODENT GUARD DETAILS



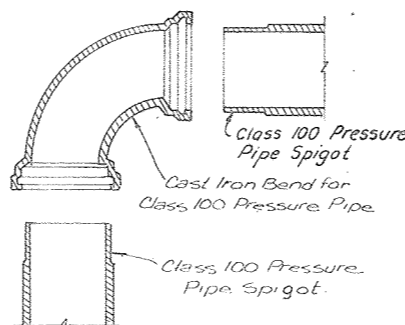
DETAILS OF STRAP "B" (Before Bending)



Notes: Excavations for the Trench Drain shall have vertical sides and be 4.0' wide as shown in the Typical Section. (See Construction Specification 24.)

Place a minimum 2.0 ft. thickness of fill immediately above and adjacent to the top of the trench drain using relatively pervious site materials selected by the Engineer. This fill to be placed and paid for as "Earth Fill, Embankment."

Note: Bends shall be 90°, 45°, 22 1/2° or 11 1/4° as designated on the Plan and shall comply with the requirements of Material Specification 545.



DETAILS - PIPE FITTINGS (Other than Straight Couplings)

TRENCH DRAIN FILL REQUIREMENTS

Installation and materials quality shall comply with the requirements of Construction Specification 24 and Material Specification 521. The drain fill for the trench drain shall consist of a mixture of 1 part of ASTM-D448 Coarse Aggregate, Size No. 57 and 1 part of ASTM-D448 Coarse Aggregate Size No. 9 or any other aggregate that will grade within the following limits.

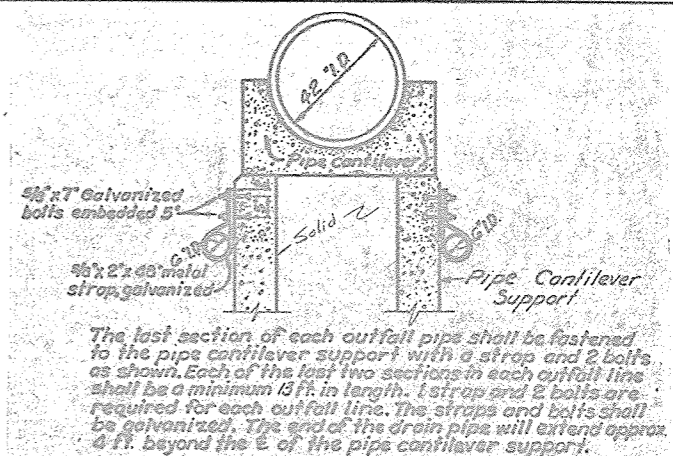
SIEVE SIZE	% PASSING BY WT.
3"	100
1 1/2"	82-100
3/4"	60-100
3/8"	50-85
No. 4	20-70
No. 10	4-30
No. 20	0-20
No. 40	0-13
No. 200	0-5

Note: See Sheet 3 for Chimney and Horizontal drain fill requirements.

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 1/2°.

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.

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NOTE: THE BOTTOM OF THE ACCESS TRENCH SHALL NOT BE EXCAVATED CLOSER THAN 15' TO THE BOTTOM OF THE TRENCH DRAIN UNLESS OTHERWISE APPROVED BY THE ENGINEER.

Note: Drain fill shall not be dropped more than 5 feet vertically unless a frame or other equivalent means is used to prevent segregation.

TYPICAL SECTION - TRENCH DRAIN

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 specified in Construction Specification 23 A.

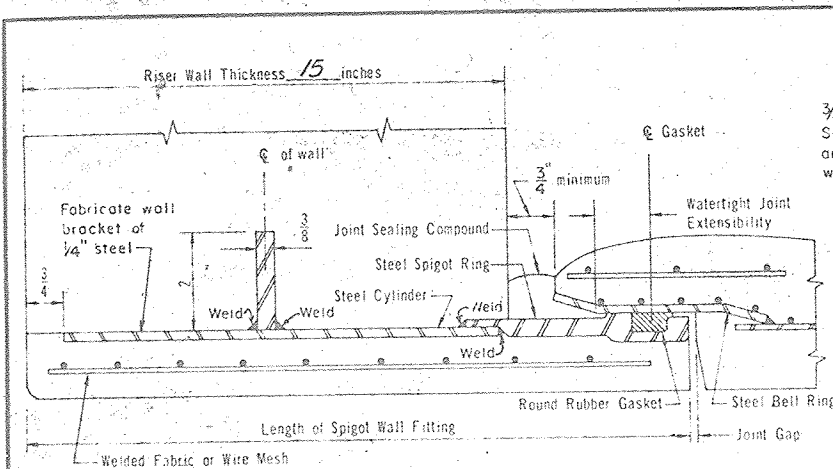
AS-BUILT PLANS
CONSTRUCTION
COMPLETED 10/31/86

EMBANKMENT FOUNDATION DRAIN
FLOODWATER RETARDING STRUCTURE SITE NO. 1
SANDERSON CANYON WATERSHED

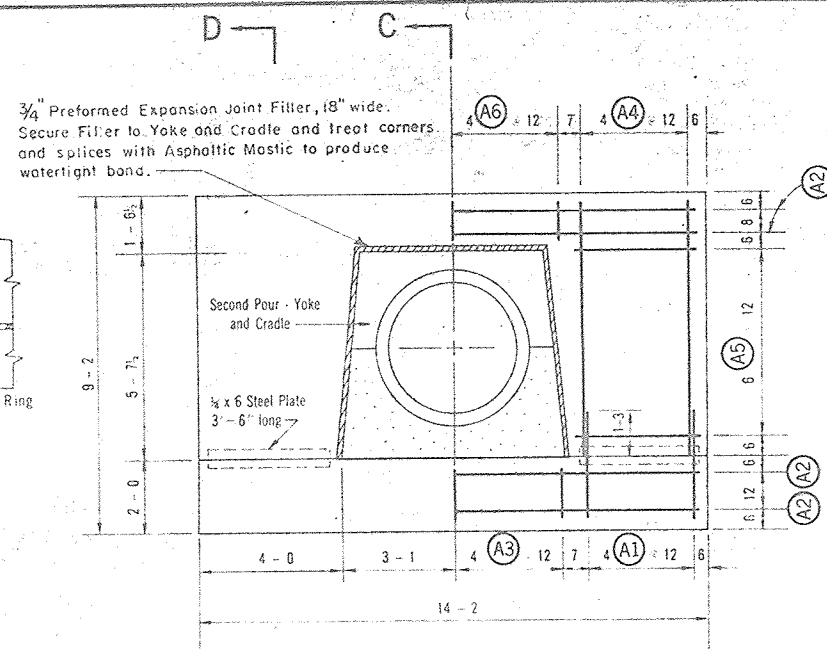
IN
BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

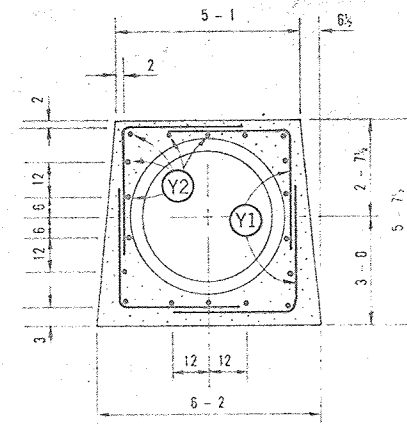
DESIGNED	J. S. Almon	DATE	10/79	APPROVED BY	ECJ
DRAWN	G. Ovalle	DATE	10/79	TITLE	STATE CONSULTING ENGINEER'S E.T.
TRACED				BY	John A. Almon, P.E.
CHECKED	J. S. Almon	DATE	10/79	FIRM	Benham Blair & Associates, Inc.
				SHEET	7
				OF	21
				DRAWING NO.	4-E-36,850



DETAIL A



DETAIL OF ANTI-SEEP COLLAR

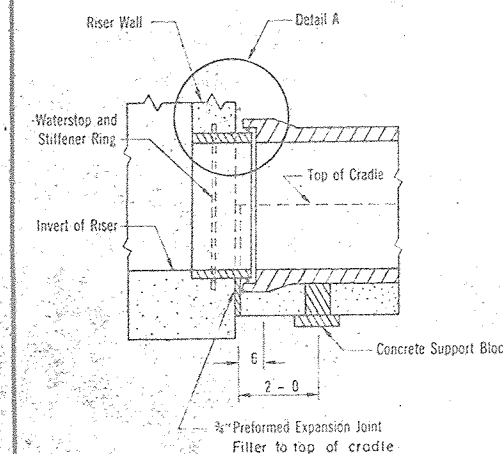


DETAIL OF ANTI-SEEP COLLAR YOKE

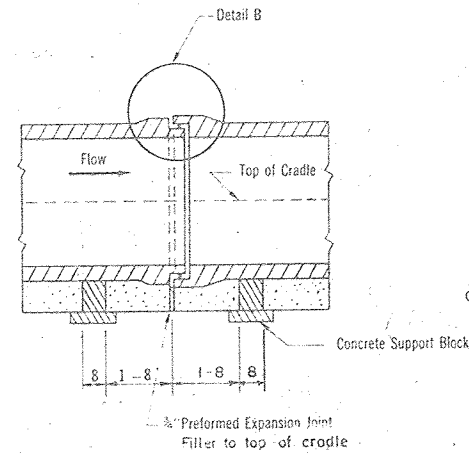
STEEL SCHEDULE						
Anti-seep Collar and Yoke 12 Required.						
Mark	Size	Quantity per Collar	Length	Type	Total Quantity	Total Length
A1	4	8	3 - 0	1	96	288'-0"
A2	4	4	13 - 8	1	48	656'-0"
A3	4	7	1 - 6	1	84	126'-0"
A4	4	8	6 - 11	1	96	604'-0"
A5	4	12	3 - 6	1	144	504'-0"
A6	4	7	1 - 0	1	84	84'-0"
Y1	4	12	6 - 6	21	144	936'-0"
Y2	4	18	1 - 2	1	216	252'-0"
Total						3510'

QUANTITIES		Cu. Yds.
Concrete		
Anti-seep Collar including Yoke		3.514
• Each		
Total 12 Collars		42.168
Cradle		
• Per Linear Foot of Cradle		0.4078
Total (384 lin. ft. less 1/8 lin. ft. in yokes)		149.2548
Steel		Pounds
Anti-seep Collar including Yoke, 1 Collar		195.39
Total, 12 Collars		2344.68

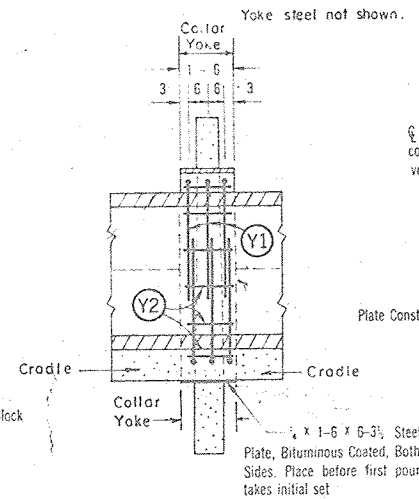
Concrete quantities are based on an outside diameter of pipe of 49 1/4 inches. Steel quantities do not change with outside diameter of pipe.
 * This quantity is given by $4.249 - 0.00303(D_f)^2$ cu. yds.
 ** This quantity is given by $0.6528 - 0.000101(D_f)^2$ cu. yds.
 D_f = outside diameter of pipe furnished, inches.



DETAIL OF SPIGOT WALL FITTING

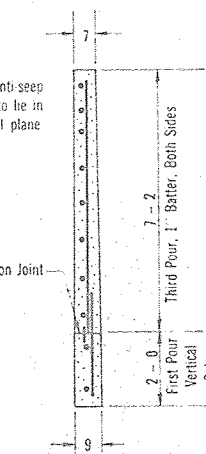


DETAIL OF PIPE JOINT

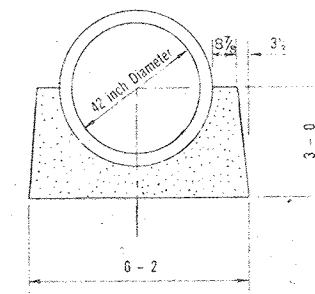


SECTION C-C

Anti-Seep Collar steel not shown.

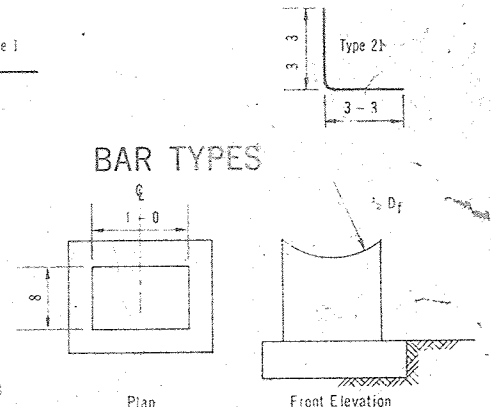


SECTION D-D



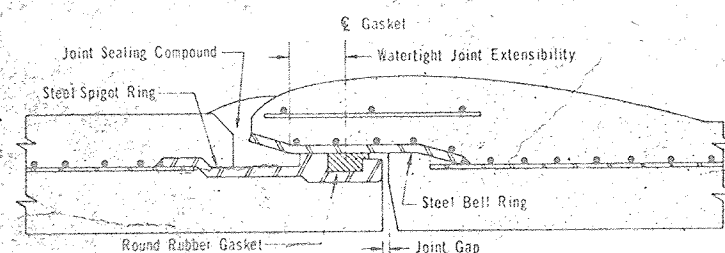
DETAIL OF CRADLE

NO CHANGE IN PLANS



SUGGESTED SUPPORT BLOCKS

Sufficient blocks shall be provided to support the pipe to the required line and grade. The Contractor shall determine the number and size of blocks required. Wedges may be used as an alternate (See Construction Spec. 41)



DETAIL B

Joint length equals watertight joint extensibility plus joint gap.
 The pipe shall be drawn together so that the maximum joint gap does not exceed 3/8 inch for pipe laid on a straight line. For cambered pipe or pipe laid on a curved line, the joint gap at the closest point shall not exceed 3/8 inch.

JOINT REQUIREMENTS			
Length of Pipe Section	Minimum Joint Length	Minimum Joint Limiting Angle	
feet	inches	radians	degrees
16	2 1/2	0.0157	0° - 54'

For pipe length other than shown, joint requirements will be determined by the Engineer.

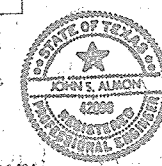
Where pipes of different length are connected, adjoining pipes shall meet the requirements of the longer pipe.

Prior to delivery of pipe, the pipe joint detail proposed for use shall be submitted to the Engineer for approval.

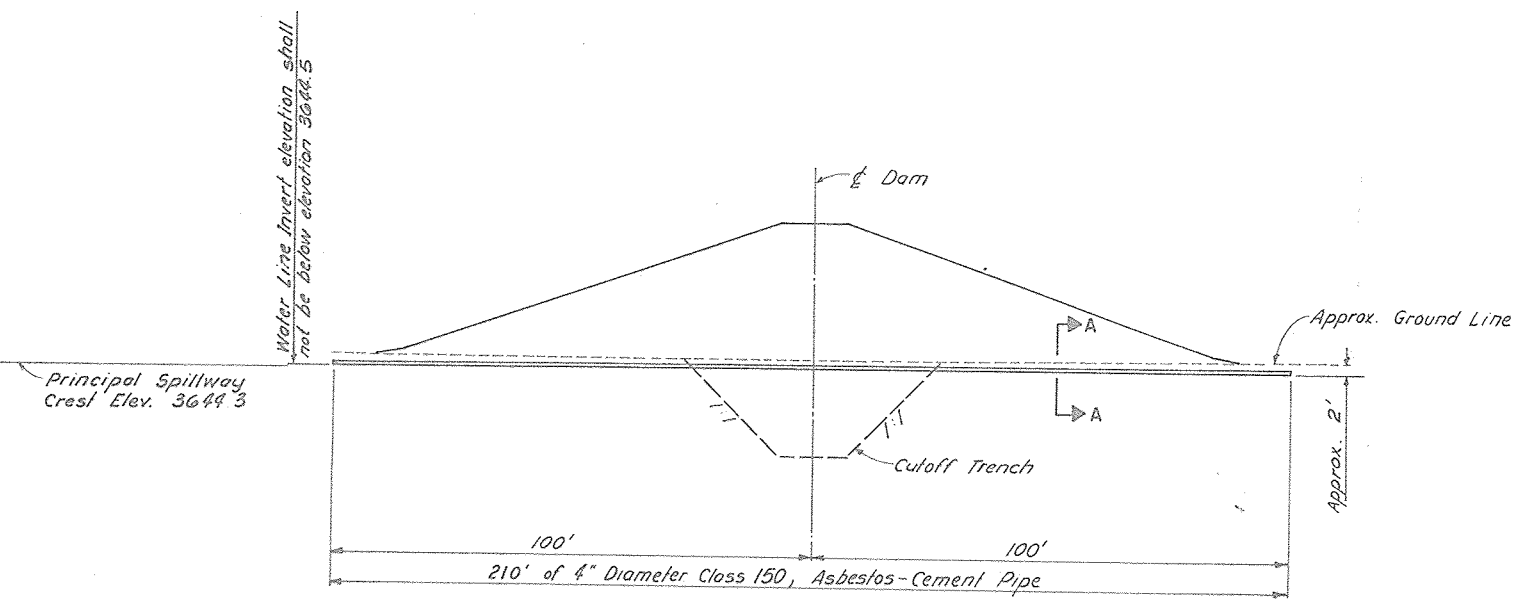
STRENGTH REQUIREMENTS			
Inside Diameter of Pipe	Internal Load	External Load	
		Minimum Three-Edge Bearing Strength in Pounds per Linear Foot of Pipe	
inches	feet	Applicable Standard Specification	
		AWWA C-301	AWWA C-300
42	50	Load to produce 0.001 inch crack one foot long	Load to produce 0.01 inch crack one foot long
		10,500	

The outside diameter of pipe assumed in design is 49 1/4 inches. Where the pipe furnished has an outside diameter greater than assumed in design, the three-edge bearing strength of the pipe furnished must not be less than the specified three-edge bearing strength multiplied by the ratio of the outside diameter of the pipe furnished to the outside diameter assumed in design.

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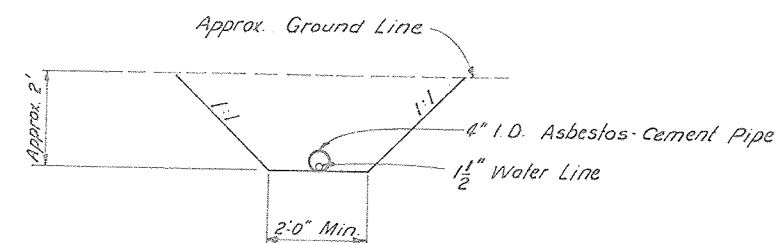


PIPE DETAILS			
FLOODWATER RETARDING STRUCTURE SITE NO. 1			
SANDERSON CANYON WATERSHED			
IN			
BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS			
U.S. DEPARTMENT OF AGRICULTURE			
SOIL CONSERVATION SERVICE			
Designed	Date	Approved by	
J. S. Almon	10/79	J. S. Almon	
Drawn	Date	Traced	
G. Ovalle	10/79		
Checked	Date	Sheet No.	Drawing No.
J. S. Almon	10/79	8	4-E-36-850



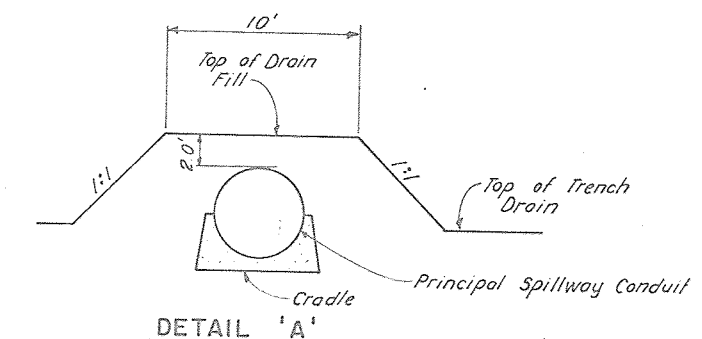
Note:
The existing 1" waterline shall be removed and replaced with a 1 1/2" waterline through the 4" Asbestos-Cement pipe.
The upstream and downstream ends of the Asbestos-Cement pipe shall be sealed with packing glands at the upstream & downstream ends.

SECTION
ENCASEMENT PIPE FOR WATERLINE
(APPROX. STA. 14+00 @ DAM)



Note:
All Asbestos-Cement Pipe and Couplings shall be Class 150, Pressure Pipe and shall conform to the requirements of Materials Specification 545.
The installation of the pipe shall be with ordinary bedding that provides uniform and continuous bedding contact throughout the entire line. Joining shall be in accordance with the manufacturers recommendations. Backfill and compaction shall be as specified in Construction Specification 23A.

SECTION A - A



Note:
Drain fill shall not be dropped more than 5 feet vertically unless a tremie or other equivalent means is used to prevent segregation.

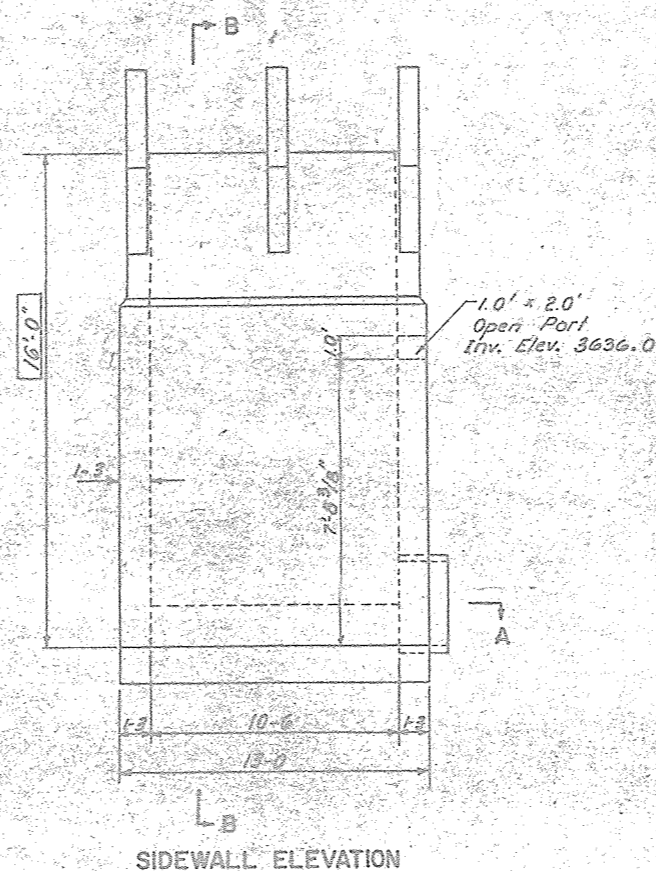
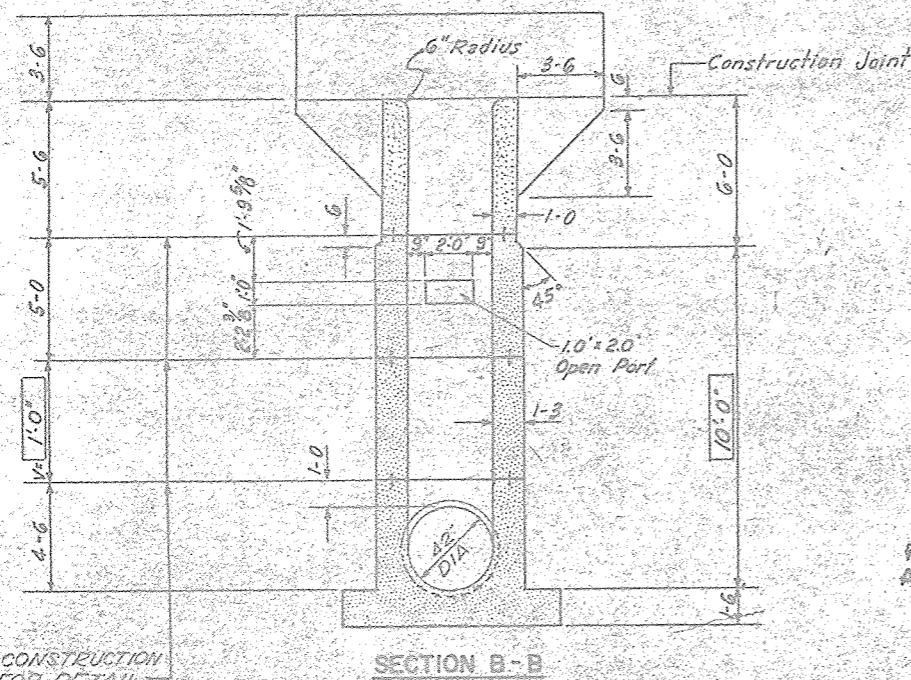
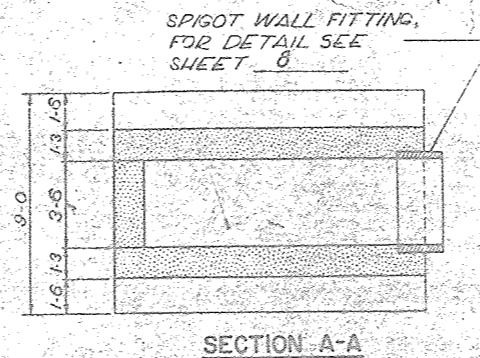
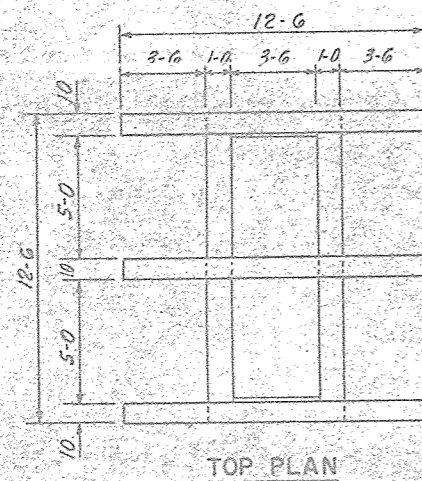
NO CHANGE IN PLANS

AS-BUILT PLANS
CONSTRUCTION
COMPLETED 10/3/86
124



REPRINTED W/MINOR REVISIONS BY SCS - 6/84

WATER LINE ENCASEMENT AND TRENCH DRAIN DETAILS FLOODWATER RETARDING STRUCTURE SITE NO. 1 SANDERSON CANYON WATERSHED IN BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
DESIGNED	J. S. Almon	DATE	10/79
DRAWN	G. Ovalle	DATE	10/79
TRACED		DATE	
CHECKED	J. S. Almon	DATE	10/79
APPROVED BY		TITLE	
[Signature]		STATE CONSULTING ENGINEER'S & S.C. TERRELL, TEXAS	
[Signature]		Benham-Blair & Associates, Inc.	
SHEET		DRAWING NO.	
No. 9		4-E-36,850	
of 21			



STEEL SCHEDULE															
MARK	SIZE	QUANTITY	LENGTH	TYPE	B	C	TOTAL LENGTH	MARK	SIZE	QUANTITY	LENGTH	TYPE	B	C	TOTAL LENGTH
B1	G 13	8-6	1	-	-	-	110-6	T1	6 12	5-2	1				62-0
B2	G 9	12-6	1	-	-	-	112-6	T2	6 8	8-10	1				70-8
B3	G 48	11-6	21	4-0	7-6	552-0	T3	6 16	5-4	1					85-4
B4	G 9	12-6	1	-	-	-	112-6	T4	6 8	8-10	1				70-8
B5	G 13	8-6	1	-	-	-	110-6	T5	5 14	11-6	1				161-0
B6	G 2	3-7	1	-	-	-	7-2	T6	5 4	4-2	1				16-8
B7	G 6	8-5	21	1-0	7-5	50-2	T7	5 32	10-4	21	3-5	6-11			330-8
B8	G 4	8-5	21	1-0	7-5	33-8	T8	5 2	6-6	1					13-0
B9	G 20	8-5	21	1-0	7-5	168-4	T9	5 2	8-6	1					17-0
B10	G 2	8-5	21	1-0	7-5	16-10	T10	5 2	10-6	1					21-0
B11	G 18	11-6	1	-	-	-	207-0	T11	5 22	12-2	1				267-8
B12	G 5	4-6	1	-	-	-	22-6	T12	5 12	8-6	19	3-9	4-9		102-0
B13	G 20	11-2	21	3-10	7-4	223-4	T13	5 8	4-10	1					38-8
B14	G 4	5-8	21	1-4	7-4	34-8	T14	5 8	5-10	1					46-8
B15	G 4	8-4	21	1-0	7-4	33-4	T15	5 8	6-10	1					54-8
B16	G 6	8-1	21	0-9	7-4	45-6	T16	5 2	6-10	1					13-8
B17	G 2	9-8	21	2-4	7-4	19-4	T17	5 2	9-6	1					19-0
B18	G 2	3-3	1	-	-	-	6-6	T18	5 6	3-2	1				19-0
B19	G 2	2-8	1	-	-	-	5-4	T19	5 8	8-10	1				70-8
B20	G 2	2-10	1	-	-	-	5-8	T20	5 4	6-4	1				25-4
								T21	5 4	5-1	1				20-4
								T22	5 4	3-3	21	1-7	1-8		13-0
								T23	5 4	4-6	21	1-7	2-11		18-0
								T24	5 4	5-8	21	1-7	4-1		22-8

R1	G 20	7'-11"	1	-	-	-	158'-4"
R2	G 8	7'-11"	1	-	-	-	63'-4"
R3	G 26	5'-6"	1	-	-	-	143'-0"
R4	G 12	5'-6"	1	-	-	-	66'-0"
R5	G 4	11'-6"	1	-	-	-	46'-0"
R6	G 2	4'-6"	1	-	-	-	9'-0"
R7	G 8	10'-10"	21	3-8	7-2	86'-8"	
R8	G 16	11'-2"	1	-	-	-	178'-8"
R9	G 10	4'-6"	1	-	-	-	45'-0"
R10	G 28	10'-10"	21	3-8	7-2	303'-4"	
R11	G 26	4'-4"	1	-	-	-	112'-8"
R12	G 8	4'-4"	1	-	-	-	34'-8"
R13	G 4	10'-4"	21	3-5	6-11	41'-4"	

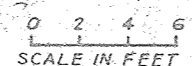
QUANTITIES

STEEL	#5 BARS	2153'-8"	2246.3 LBS
	#6 BARS	2042'-4"	3067.6 LBS
	#8 BARS	552-0	1474 LBS
			6787.9 LBS

CONCRETE = $32.76 + 1.53V = 34.29$ CU.YDS.

LENGTH OF #5 BARS = $(2021 - 0) + (\text{LENGTH OF BARS R5 \& R7})$
 LENGTH OF #6 BARS = $(1602 - 8) + (\text{LENGTH OF BARS R1 THROUGH R4 \& R6})$

STANDARD OPEN RISER	
STANDARD DWG. NO. ES-3142-2020 R	
DATE 4-67	SHEET 1 OF 4
ADAPTED FROM	
STANDARD COVERED RISER	
DESIGN CONSTANTS $f_c = 4000$ psi $f_s = 1600$ psi	
$n = 8$ $f_s = 20,000$ psi	
STANDARD DWG. NO. ES-3042-2520 R	
DATE 8-66	SHEET 1 OF 4



NO CHANGE IN PLANS

AS-BUILT PLANS
CONSTRUCTION
COMPLETED 10/13/86
BY



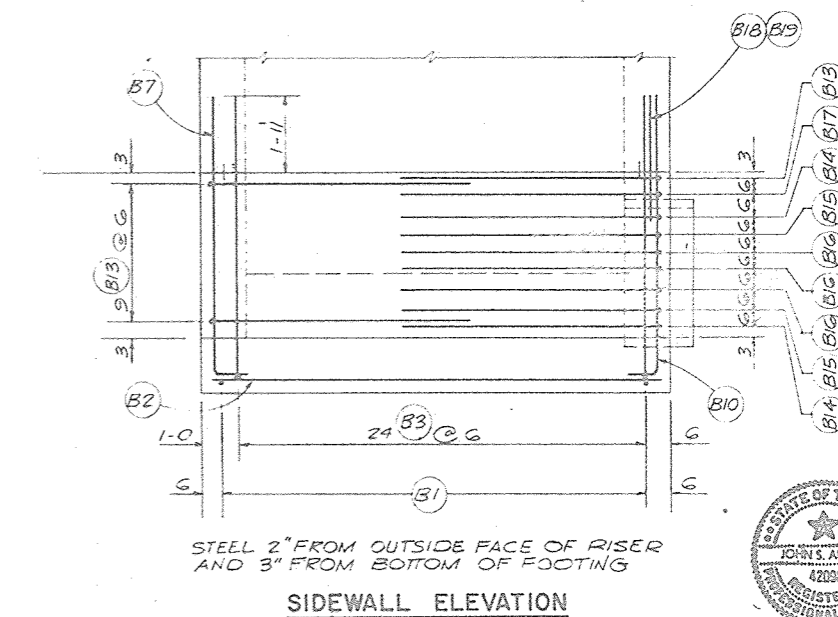
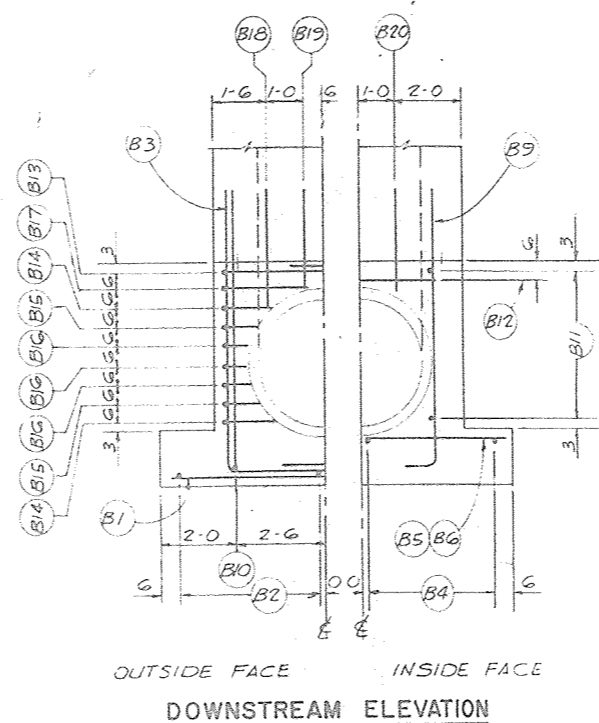
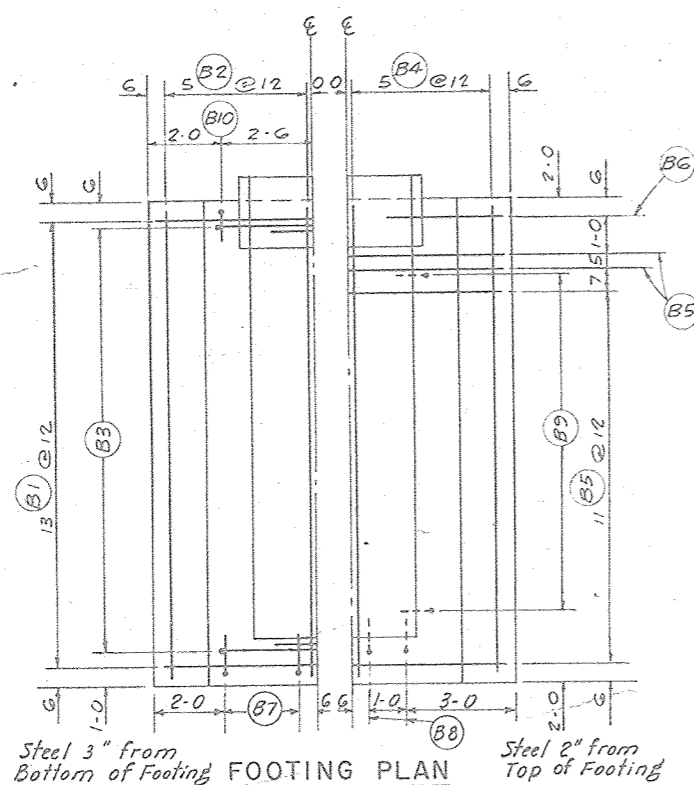
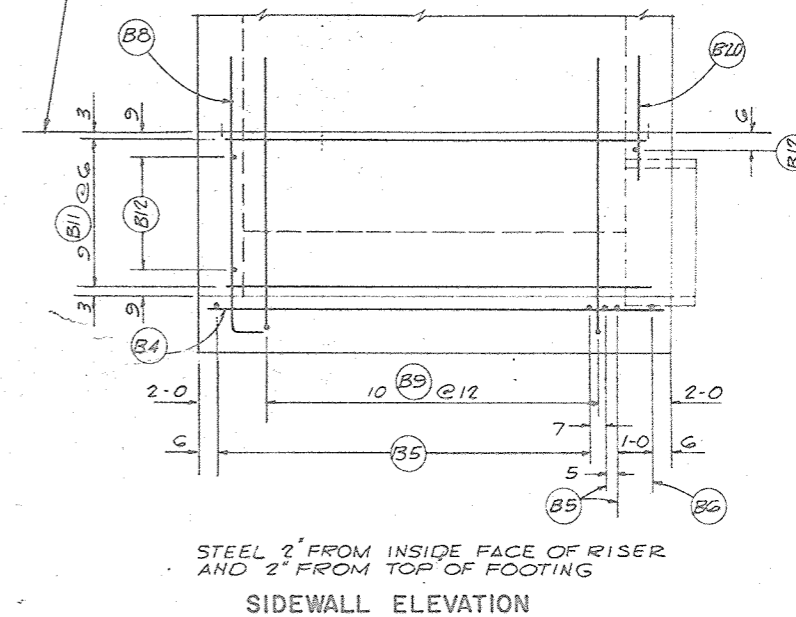
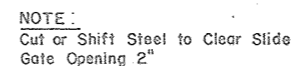
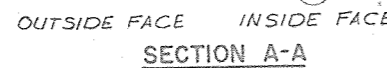
REPRINTED W/MINOR REVISIONS BY SCS - 6/84

PRINCIPAL SPILLWAY INLET
FLOODWATER RETARDING STRUCTURE SITE NO. 1
SANDERSON CANYON WATERSHED

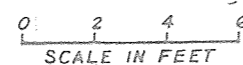
IN
BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

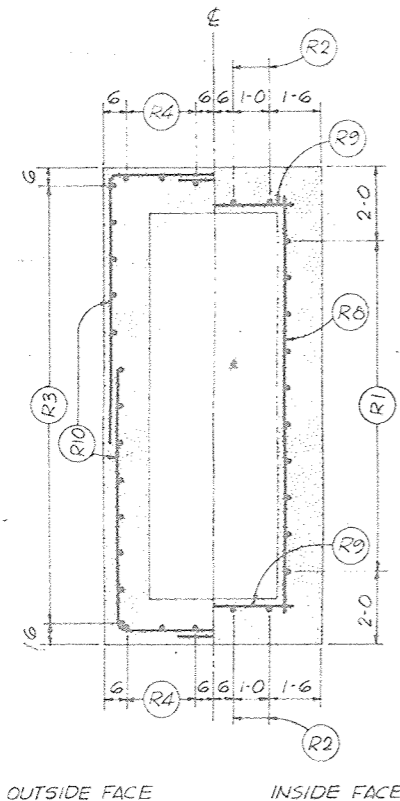
Designed by J. S. Almon	Date 10/79	Approved by J. S. Almon	Date 10/79
Drawn by G. Ovalle	Date 10/79	Checked by J. S. Almon	Date 10/79
Traced by		Sheet No. 10	Drawing No. 4-E-36,850
Checked by J. S. Almon	Date 10/79	of 21	



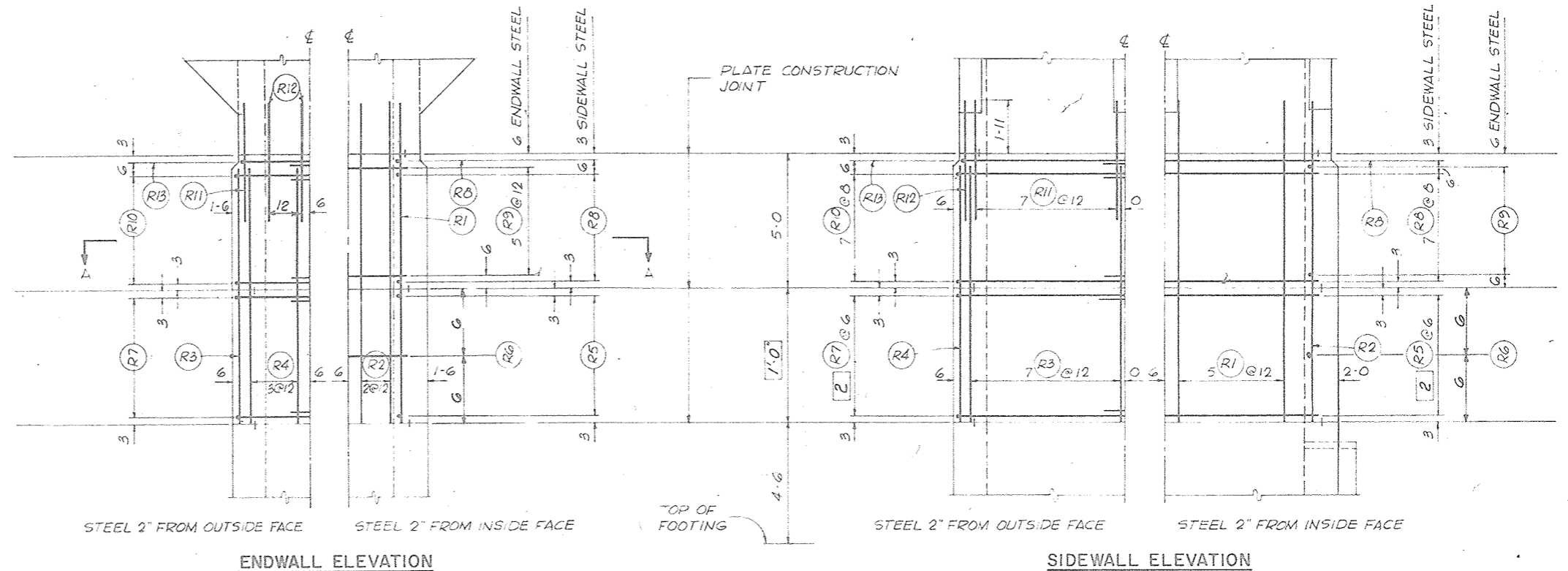
STANDARD OPEN RISER	
STANDARD DWG. NO. ES-3142-2020 R.	
DATE 4-67	SHEET 2 OF 4
ADAPTED FROM	
STANDARD COVERED RISER	
DESIGN CONSTANTS	
$f'_c = 4000 \text{ psi}$ $n = 8$	$f'_c = 1600 \text{ psi}$ $f_s = 20,000 \text{ psi}$
STANDARD DWG. NO. ES-3042-2520 R	
DATE 8-66	SHEET 2 OF 4



6 <div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> 31 </div>	6 <div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> 31 </div>	6 <div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> 31 </div>
STEEL 2" FROM OUTSIDE FACE OF RISER AND 3" FROM BOTTOM OF FOOTING		
<u>SIDEWALL ELEVATION</u>		
REPRINTED W/MINOR REVISIONS BY SCS - 6/84		
AS-BUILT PLANS CONSTRUCTION COMPLETED <u>10/3/86</u> <div style="text-align: right; margin-top: -20px;"><i>BJ</i></div>		
NO CHANGE IN PLANS		



SECTION A-A
OTHER SECTIONS SIMILAR



NOTE:
Cut or Shift Steel to Clear
Port Opening 2"

NO CHANGE IN PLANS



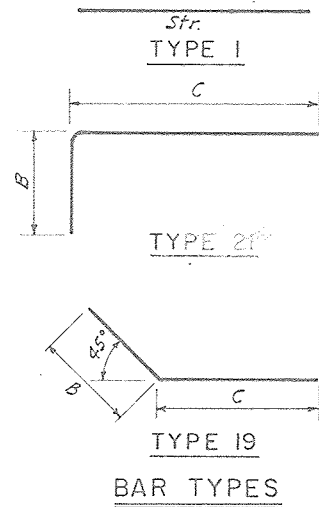
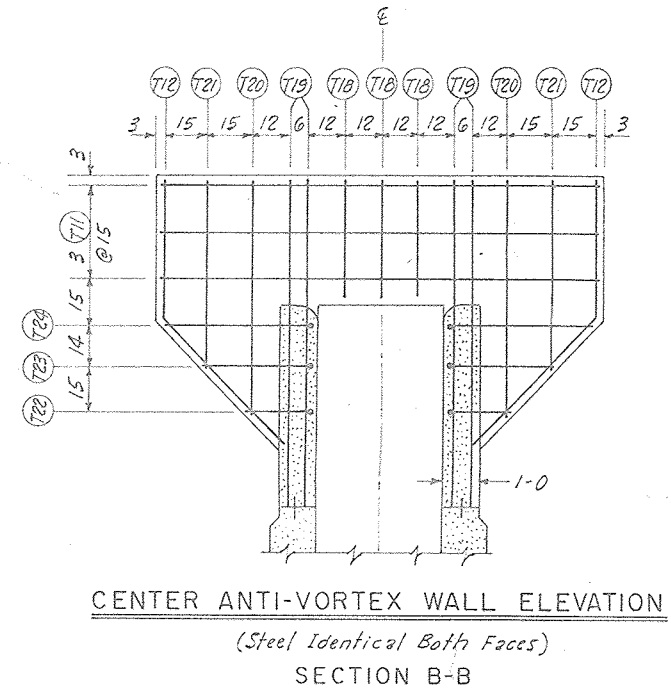
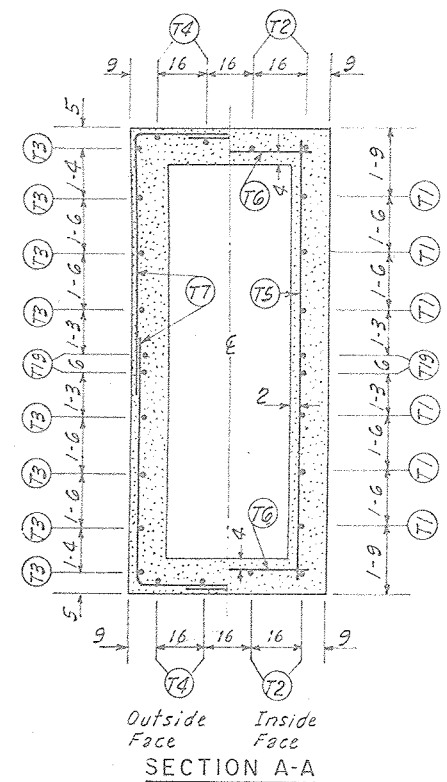
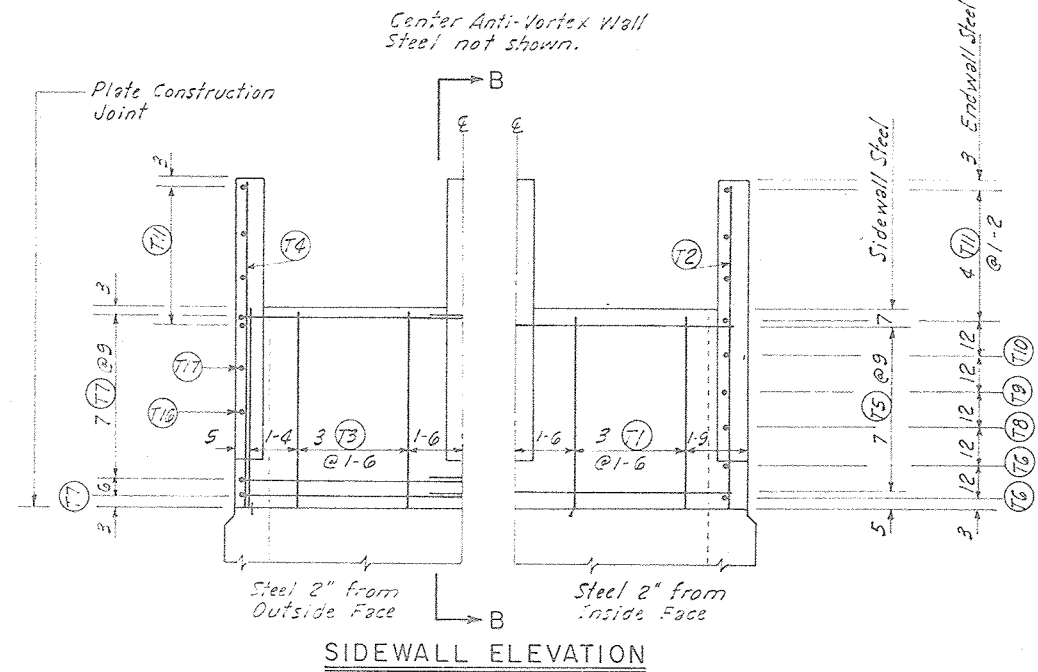
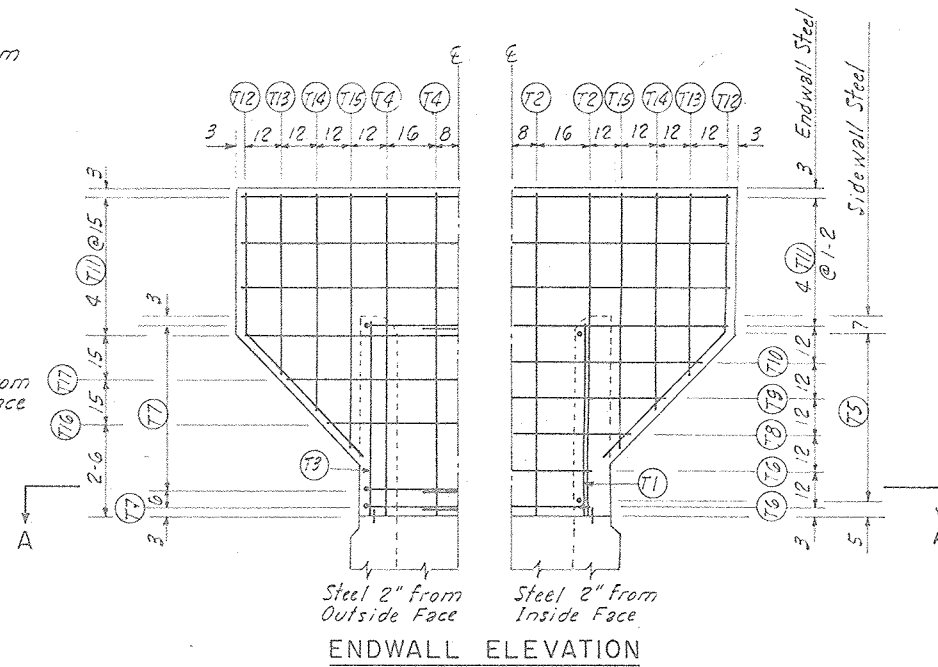
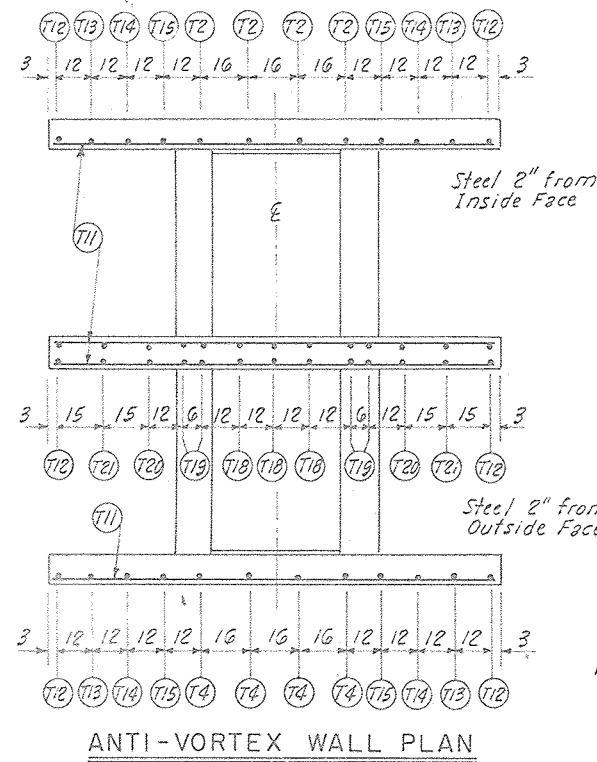
AS-BUILT PLANS
CONSTRUCTION
COMPLETED 10/3/86

REPRINTED W/MINOR REVISIONS BY SCS - 6/84

STANDARD OPEN RISER	
STANDARD DWG. NO.	ES-3142-2020R
DATE 4-67	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-3042-2520R
DATE 8-66	SHEET 3 OF 4

0 2 4 6
SCALE IN FEET

STEEL PLACEMENT-PRINCIPAL SPILLWAY INLET FLOODWATER RETARDING STRUCTURE SITE NO. 1 SANDERSON CANYON WATERSHED IN BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS			
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
Designed J. S. Almon	Date 10/79	Approved by <i>[Signature]</i>	State Conservation Engineer, S. C. S.
Drawn G. Ovalle	Date 10/79	John S. Almon, P.E.	Professional Engineer
Traced	Sheet No 12 of 21	Drawing No	4-E-36,850
Checked J. S. Almon	Date 10/79		



AS-BUILT PLANS
CONSTRUCTION
COMPLETED 10/3/86



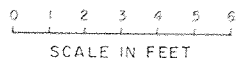
REPRINTED W/MINOR REVISIONS BY SCS - 6/84

STEEL PLACEMENT-PRINCIPAL SPILLWAY INLET FLOODWATER RETARDING STRUCTURE SITE NO. 1 SANDERSON CANYON WATERSHED IN BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS			
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
Designed	J. S. Almon	Date	10/79
Drawn	G. Ovalle	Date	10/79
Traced		Sheet	No 13 of 21
Checked	J. S. Almon	Date	10/79
Approved by		Benham-Blair & Associates, Inc.	
		4-E-36,850	

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	$f'_c = 4000$ psi $f_c = 1600$ psi $n = 8$ $f_s = 20,000$ psi
STANDARD DWG. NO.	ES-3142-2022R
DATE	4-67
SHEET	4 OF 4



2'-0"

7"

2'-0"

When mod 200

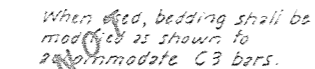
SECTION

1" Clear Opening

GRATING



HALF PLAN



All parts of the trash rack shall be galvanized See Construction Specification 81 and Material Specification 582.

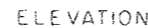
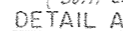
11'-8"

2" 5'-10" 1/2" 4'-0"

Cut or punch in two 3/4" x 1 1/2" slots

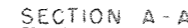
ANGLE B

DETAIL OF ANGLES FOR TRASH RACK



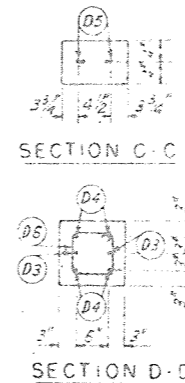
BASE STEEL
PIPE CANTILEVER SUPPORT

FOR TYPICAL BAR TYPES REFER TO ACI STANDARD 315																
No.	LOCATION	QTY	LENGTH	TOTAL LENGTH	SIZE	TYPE	A	B	C	D	E	F	G	H	J	O
C1	Pipe Cantilever	29	10'-2"	294'-10"	4	S10		2-7	5-0	2-7						
C2	" "	7	28'-6"	199'-2"	4	Str										
C3	" "	7	5'-0"	35'-0"	4	"										
C4	" "	4	28'-6"	114'-0"	8	"										
Total Steel in Pipe Cantilever					(Size 4) =	529'-4"		352.59 lbs.								
					(Size 8) =	114'-0"		304.39 lbs.								
					Total Steel			657.97 lbs.								
Total Reinforced Concrete in Pipe Cantilever = 6.33 cu yds.																
D1	Cantilever Support	10	7'-0"	70'-0"	4	Str										
D2	" "	10	3'-7"	37'-0"	4	"										
D3	" "	4	3'-9"	15'-0"	6	2	1-3	2-6								
D4	" "	8	11'-10"	94'-8"	7	Str										
D5	" "	4	4'-2"	16'-8"	4	2	1-0	3-2								
D6	" "	30	3'-2"	95'-0"	3	T1	0-4-0	7-4-0	7-4-0	7-4-0	7-4-0				0-4	
Total Steel in Pipe Cantilever Support					(Size 3) =	95'-0"		36.72 lbs.								
					(Size 4) =	159'-6"		106.55 lbs.								
					(Size 6) =	15'-0"		22.33 lbs.								
					(Size 7) =	94'-8"		133.50 lbs.								
Total Steel					=	358.3 lbs.										
Total Reinforced Concrete in Cantilever Support = 2.199 Cu yds.																

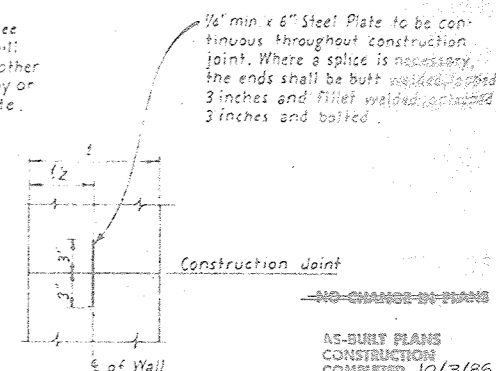
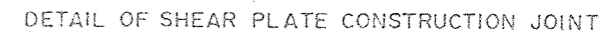


SECTION B-B

SECTION B - B



SECTION D-D



18" X 18" SLIDE GATE

Construction joint

AS-BUILT PLANS
CONSTRUCTION
COMPLETED 10/3/86

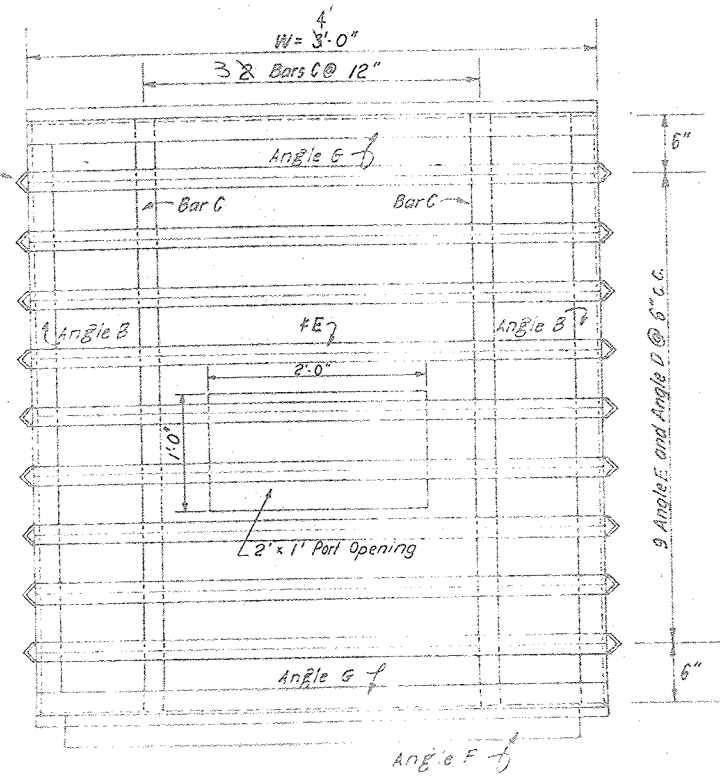
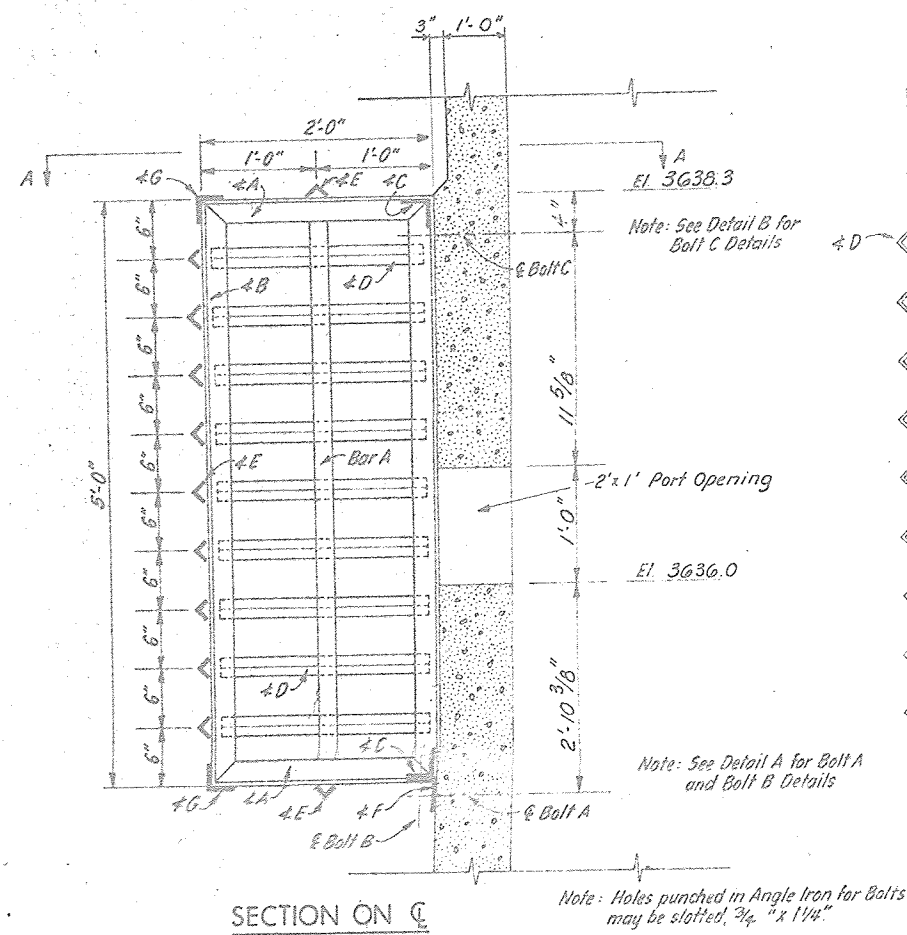
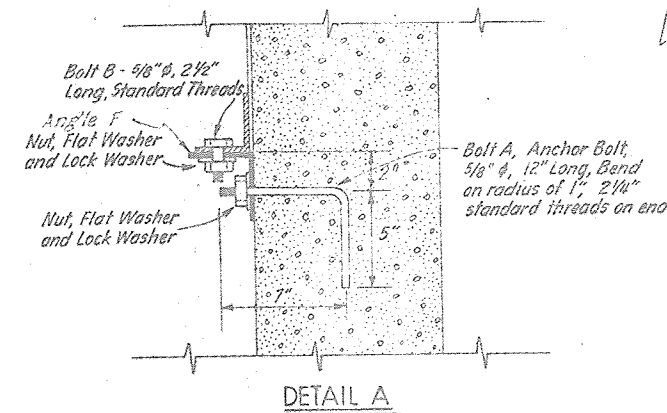
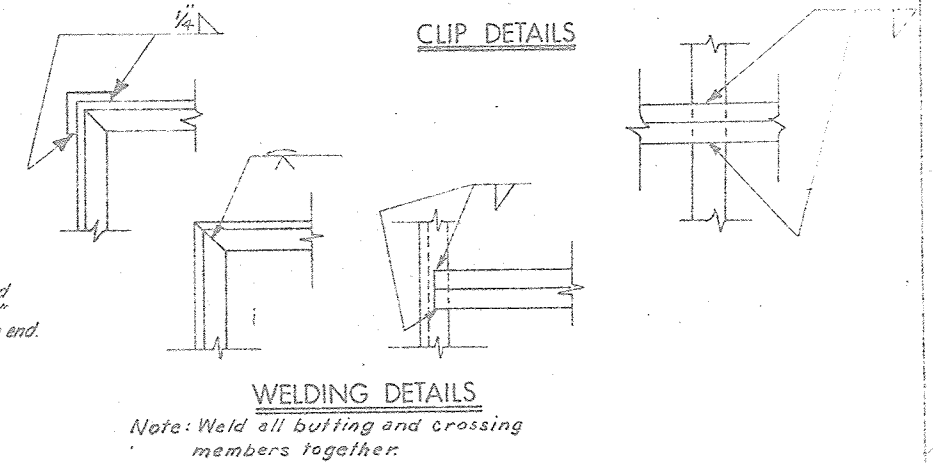
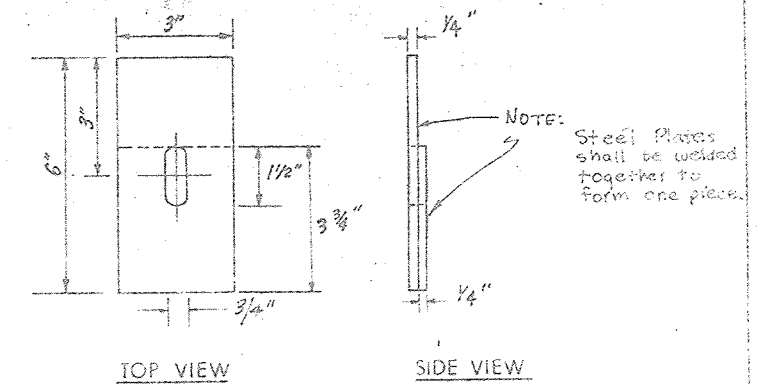
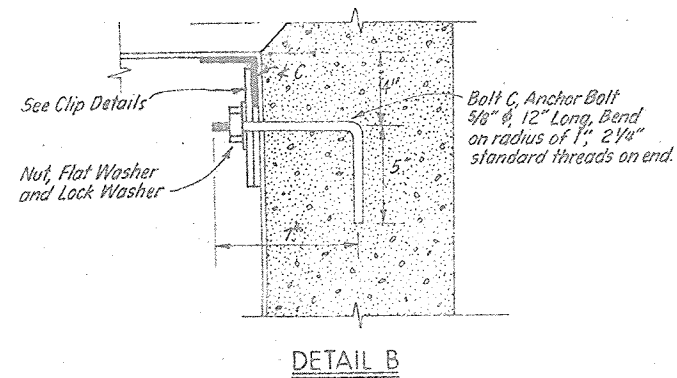
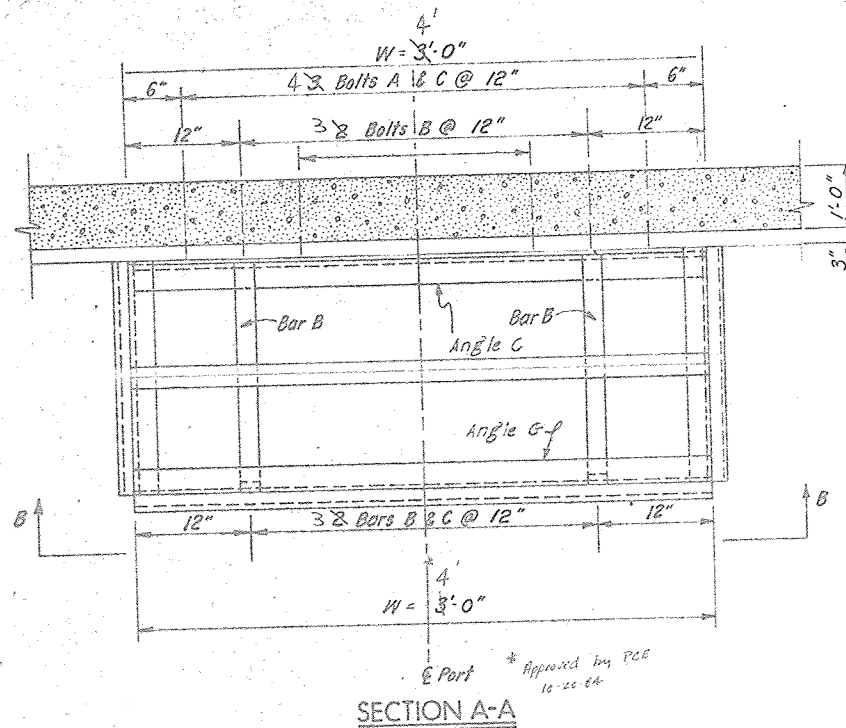
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TRASH RACK, SLIDE GATE, AND
PIPE CANTILEVER SUPPORT DETAILS
FLOODWATER RETARDING STRUCTURE SITE NO. 1
SANDERSON CANYON WATERSHED

BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed	J. S. Almon	10/79	Approved by	<i>ELU</i>
				TIME: 1.5 HOURS
Drawn	G. Cwalie	10/79	John J. Edmon, P.E.	
			Benham-Blair & Associates, Inc.	
Traced				
			Sheet	Drawing No
Checked	J. S. Almon	10/79	No 14	
			21	4-E-36,850



SCHEDULE OF MATERIALS REQUIRED FOR ONE RACK		
QUANTITY	ITEM	DESCRIPTION
4	Angle A	2 1/2" x 2 1/2" x 1/4" x 2'-0" Cut and weld
4	Angle B	2 1/2" x 2 1/2" x 1/4" x 5'-0" Cut and weld
2	Angle C*	3" x 3" x 1/4" x 2'-11 1/2" Weld
18	Angle D	1 1/2" x 1 1/2" x 1/4" x 1'11" Weld
11	Angle E	1 1/2" x 1 1/2" x 1/4" x 3'-0" Weld
1	Angle F*	3 1/2" x 3 1/2" x 1/4" x 2'-6"
2	Angle G	2 1/2" x 2 1/2" x 1/4" x 3'-0" Weld
2	Bar A	1/4" x 2" x 4'-7" Weld
4	Bar B	1/4" x 2" x 2'-0" Weld
3	Bar C	1/4" x 2" x 4'-11 1/4" Weld
3	Bolt A	5/8" x 12" Anchor Bolt, See Detail A
2	Bolt B	5/8" x 12" Anchor Bolt, See Detail A
3	Bolt C	5/8" x 12" Anchor Bolt, See Detail B
3	Clip	See Clip Details
2	Nuts, Flat & Lock Washers	See Detail A and Detail B

*Angle C and Angle F shall have slots punched to allow Bolts A, B and C to pass through.

Trash Rack shall be galvanized after Fabrication.

Number of Racks Required: One

All bolts, nuts, washers and other parts of trash rack shall be galvanized.



AS-BUILT PLANS
CONSTRUCTION
COMPLETED 10/2/86

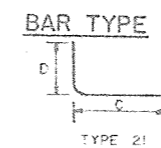
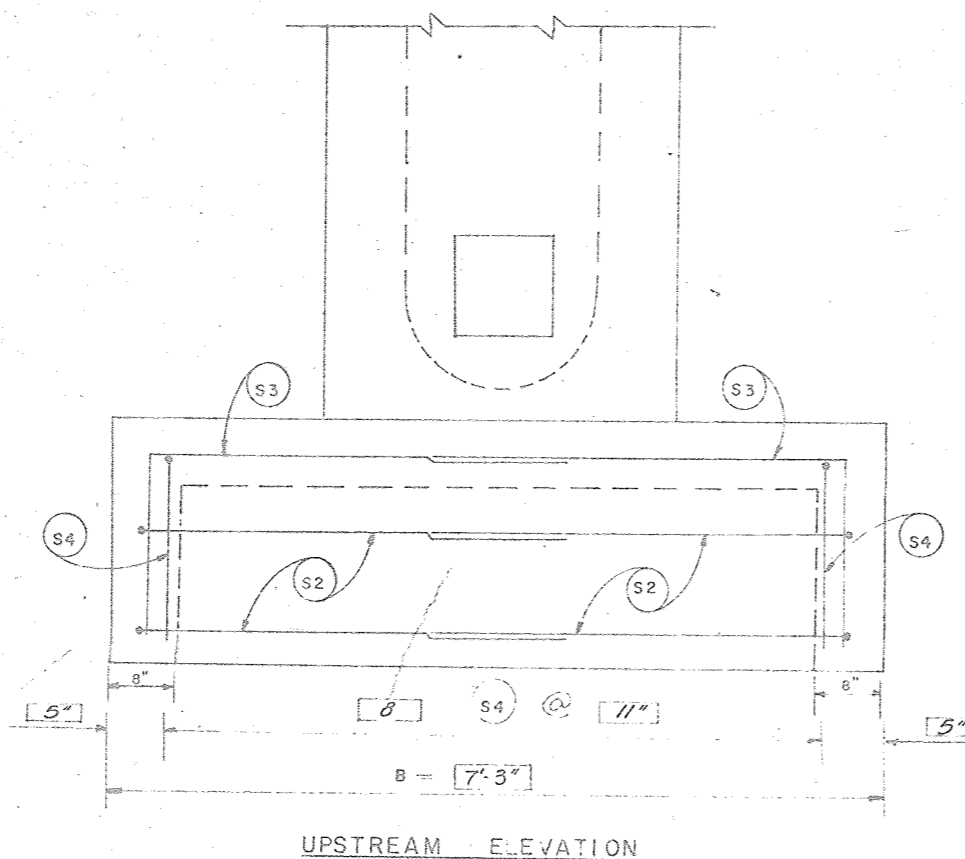
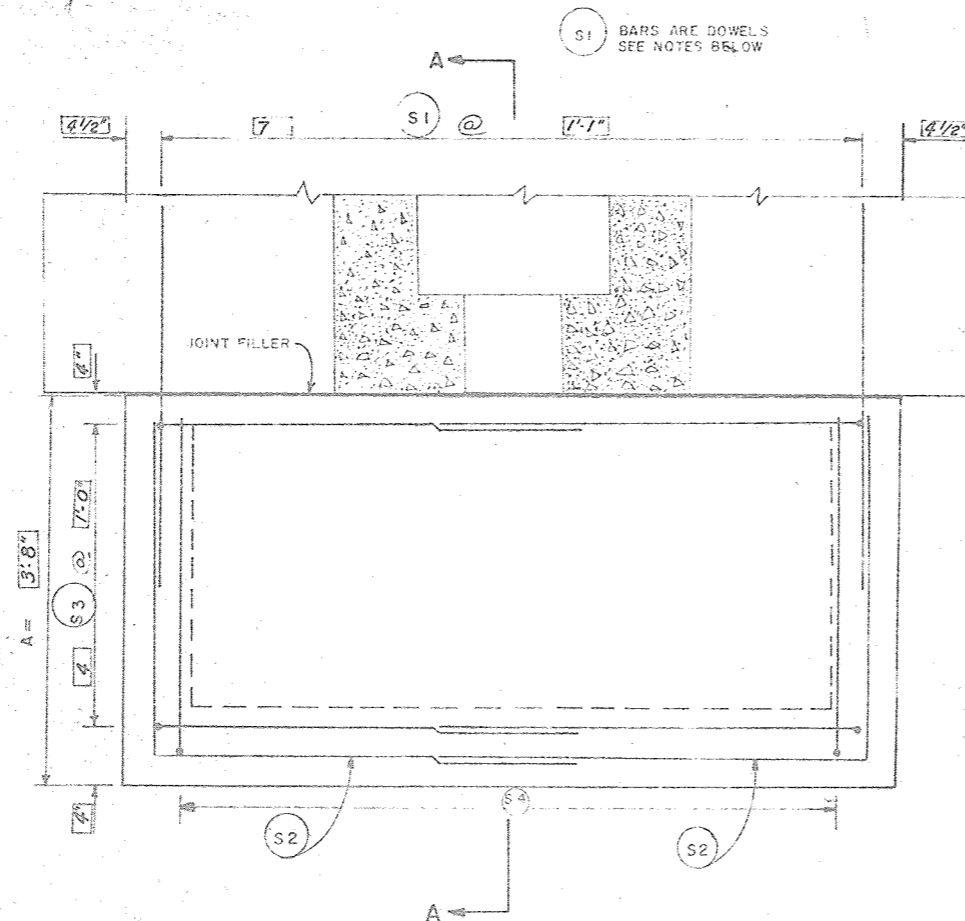
REPRINTED W/MINOR REVISIONS BY SCS - 6/84

PORT TRASH RACK
FLOODWATER RETARDING STRUCTURE SITE NO. 1
SANDERSON CANYON WATERSHED
IN
BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

DESIGNED: J. S. Almon 10/79
DRAWN: G. Ovalle 10/79
CHECKED: J. S. Almon 10/79
APPROVED: J. S. Almon, P.E.
Benham-Blair & Associates, Inc.
SHEET 15 OF 21
4-E-36,850

VARIABLE BAR DATA
Length of Angle C = W - 1/2"
Length of Angle E = W
Length of Angle F = W - 6"
Length of Angle G = W



MARK	SIZE	QTY	LENGTH	TYPE	D	C	TOTAL LENGTH	BAR NO.	C. LENGTH EQUALS	D. LENGTH EQUALS
S2	4	4	7' 3"	21	3' 2"	4' 1"	29' 0"	S2	B+S	A-G
S3	4	8	5' 11"	21	1-11"	4' 0"	47' 4"	S3	B-S	
S4	4	8	5' 1"	21	1-11"	3' 2"	40' 8"	S4	A-E	

TOTAL STEEL (SIZE 4) 117' 0" Lin. Ft.

TOTAL STEEL 78.16 Lbs.

TOTAL REINFORCED CONCRETE 126 Cu. Yds.

CU. YDS. CONCRETE = $\frac{8(A)(B) + (7/6)(B) + 352(A)}{4656}$
A=INCHES
B=INCHES

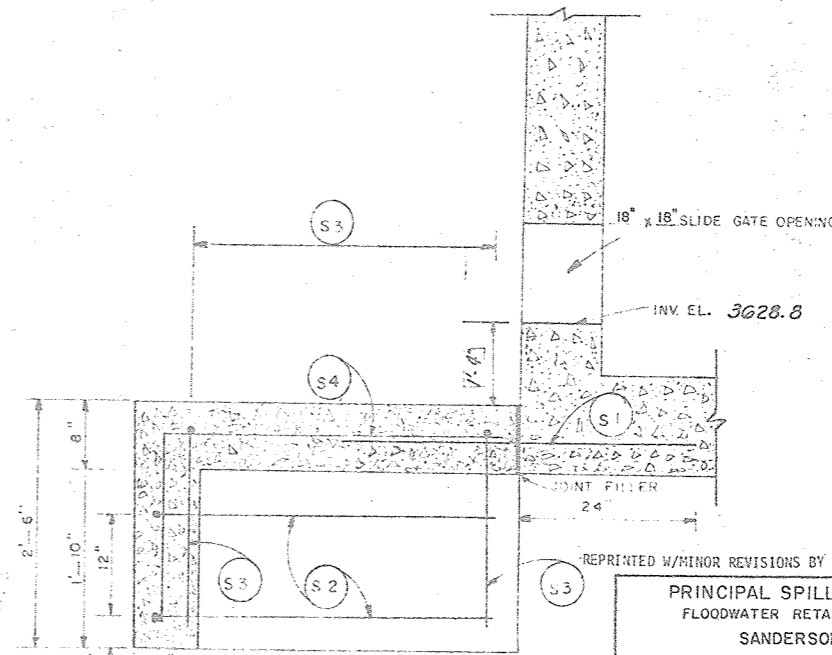
NOTES: MAXIMUM CENTER SPACING OF NO. 4 BARS SHALL NOT EXCEED 12"

THE SCOUR APRON SHALL BE FASTENED TO THE INLET BASE WITH DOWELS OF NO. 6 DEFORMED REINFORCING STEEL 4 FEET LONG; 7' ARE REQUIRED. CENTER SPACING OF NO. 6 BARS SHALL BE 15" OR LESS.

ALL CONCRETE SHALL EQUAL OR EXCEED CLASS 4000.

MINIMUM STEEL CLEARANCE AGAINST EARTH SHALL BE 3" EXCEPT S1 DOWELS AND S4 BARS SHALL BE CENTERED IN THE TOP SLAB.

JOINT FILLER SHALL BE 3/4" PREFORMED EXPANSION JOINT FILLER.



NO CHANGE IN PLANS.
AS-BUILT PLANS
CONSTRUCTION
COMPLETED 10/3/86



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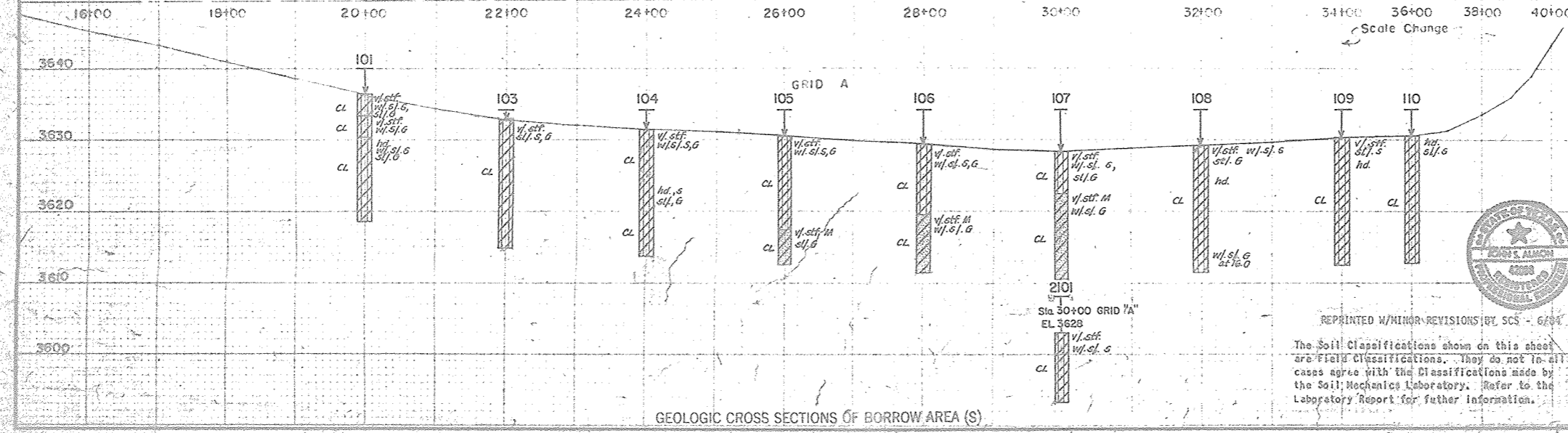
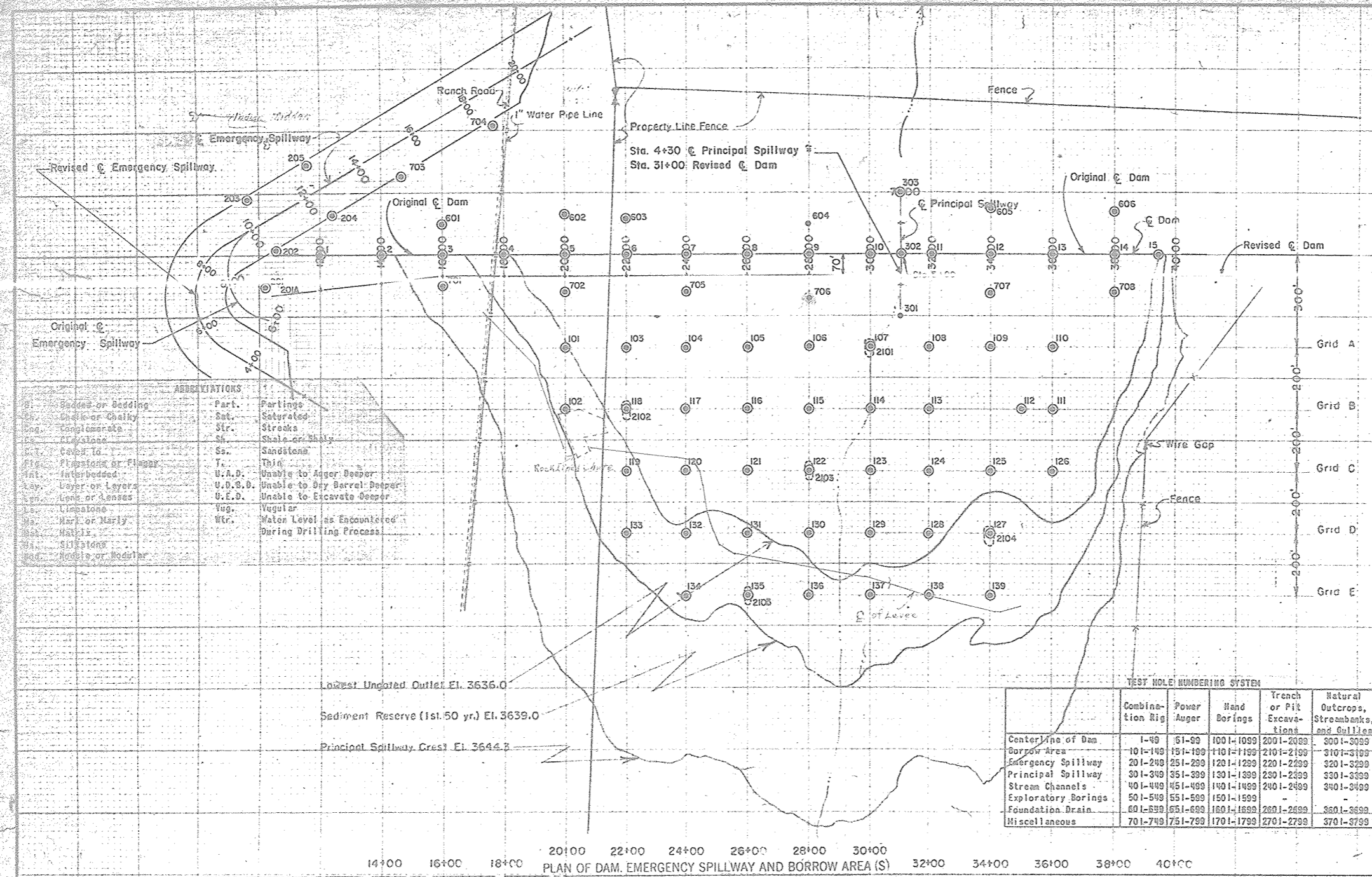
PRINCIPAL SPILLWAY INLET SCOUR APRON
FLOODWATER RETARDING STRUCTURE SITE NO. 1
SANDERSON CANYON WATERSHED
IN
BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

DESIGNED BY J. S. Almon DATE 10/79
DRAWN BY G. Ovalle DATE 10/79
TRACED BY J. S. Almon DATE 10/79
CHECKED BY J. S. Almon DATE 10/79

APPROVED BY *J.S. Almon* DATE 10/79
STATE CONSERVATION ENGINEER, S. C. S.
Benham-Blair & Affiliates, Inc.

SHEET 16 OF 21
DRAWING NO. 4-E-36,850



LEGEND

SYMBOLS

UNCONSOLIDATED MATERIAL

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

CONSOLIDATED MATERIAL

Sedimentary Rocks

conglomerate	shale	limestone	coal
breccia	siltstone	dolomite	gypsum
sandstone	marl	chalk	chert
			chert

Metamorphic Rocks

gneiss	schist	intrusive	extrusive
quartzite	slate	pyroclastic	
marble	soapstone	undifferentiated	
	talc		
	serpentine		

Other Symbols

hole logged only	strike and dip
hole sampled	pit or trench

ABBREVIATIONS

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

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	101-1099	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 Drains	601-649	651-699	1601-1699	2601-2699	3601-3699
Miscellaneous	701-749	751-799	1701-1799	2701-2799	3701-3799

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	101-1099	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
Centerline of outlet structure	301-349	351-399	1301-1399	2301-2399	3301-3399

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

PLAN AND PROFILES FOR GEOLOGIC INVESTIGATIONS

FLOODWATER RETARDING STRUCTURE SITE NO. 1

SANDERSON CANYON WATERSHED

IN

BREWSTER COUNTY, TEXAS

U. S. DEPARTMENT OF AGRICULTURE

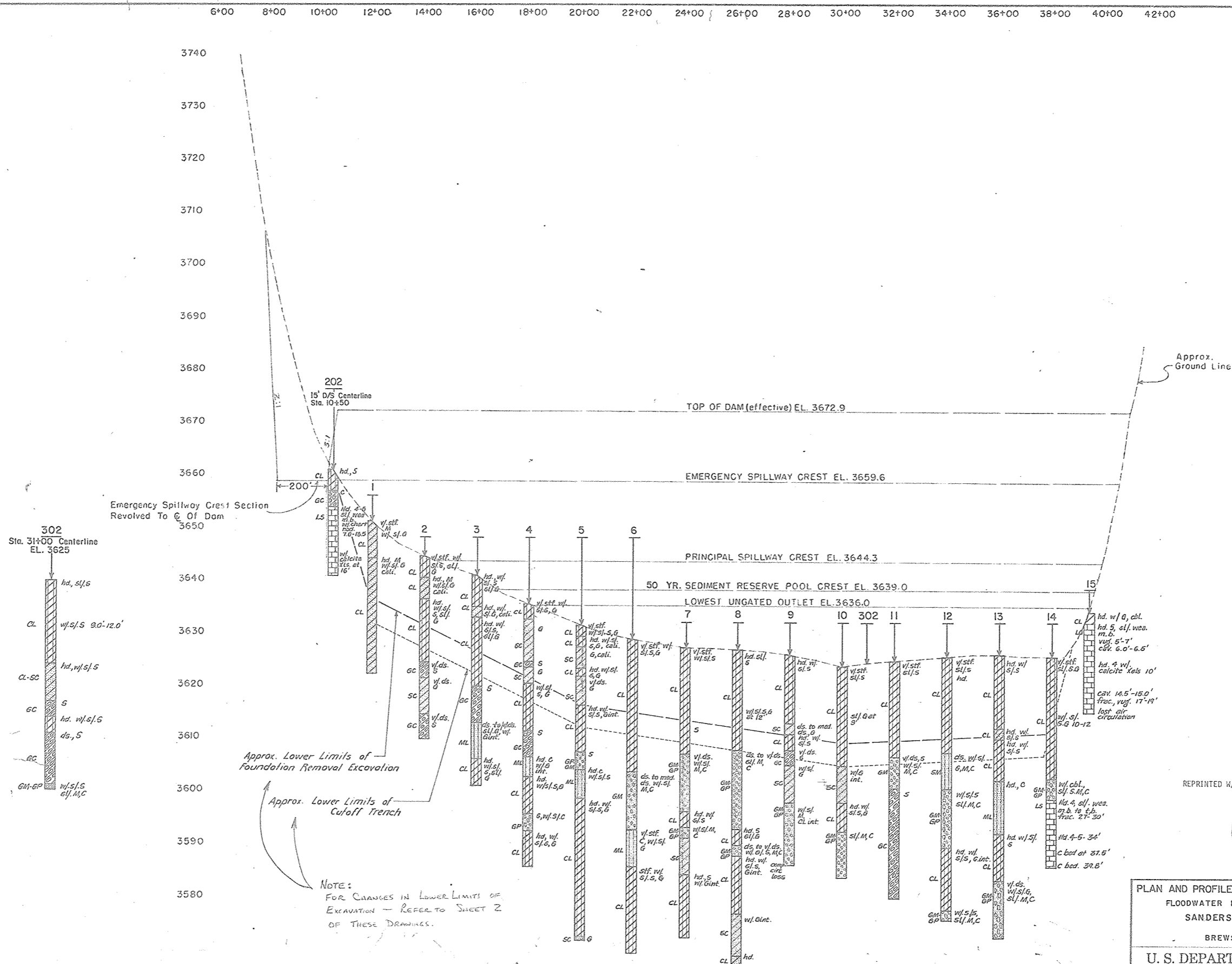
SOIL CONSERVATION SERVICE

Investigated by	Date	Approved by
R. Czajkowski, A. J. Ireland	9/78	W. S. Allen
Staff Engineer		Staff Engineer
Checked by		Checked by
J. Ireland	1/78	W. S. Allen
Staff Geologist		Staff Geologist
Woodward-Clyde Consultants		Woodward-Clyde Consultants

Reprinted with minor revisions by SCS - 6/84

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.

ES 900 Sheet 1 of 3 SCS-35A (April 1959)



PROFILE AND GEOLOGIC SECTION: CENTERLINE OF DAM (BASED ON ORIGINAL C. DAM)

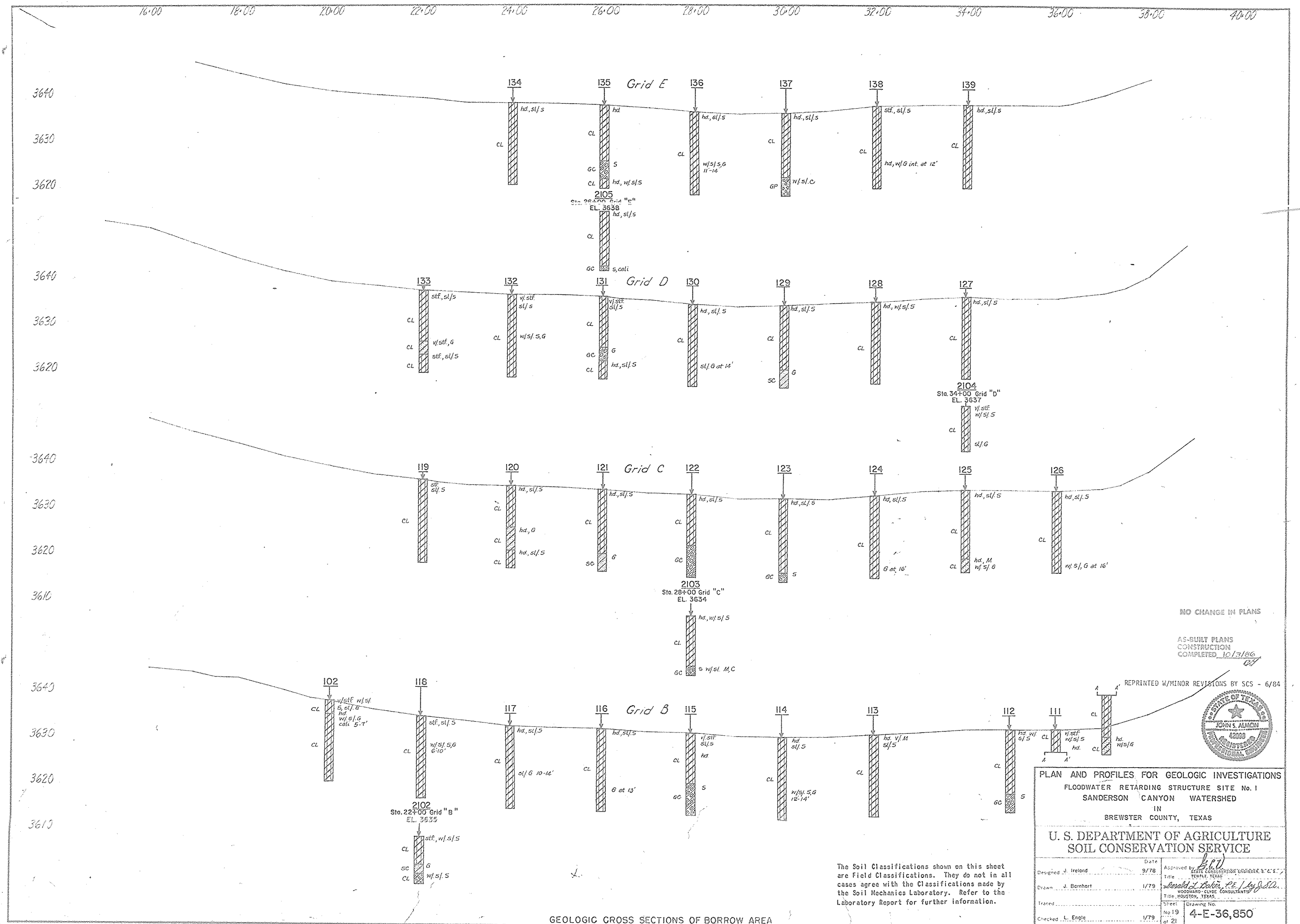
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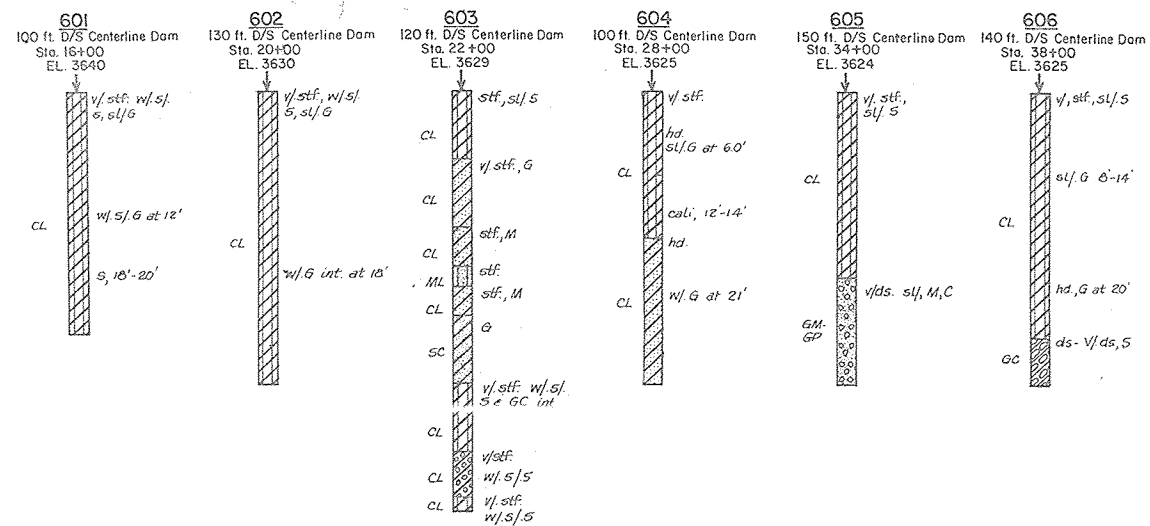
AS-BUILT PLANS
CONSTRUCTION
COMPLETED 10/3/86

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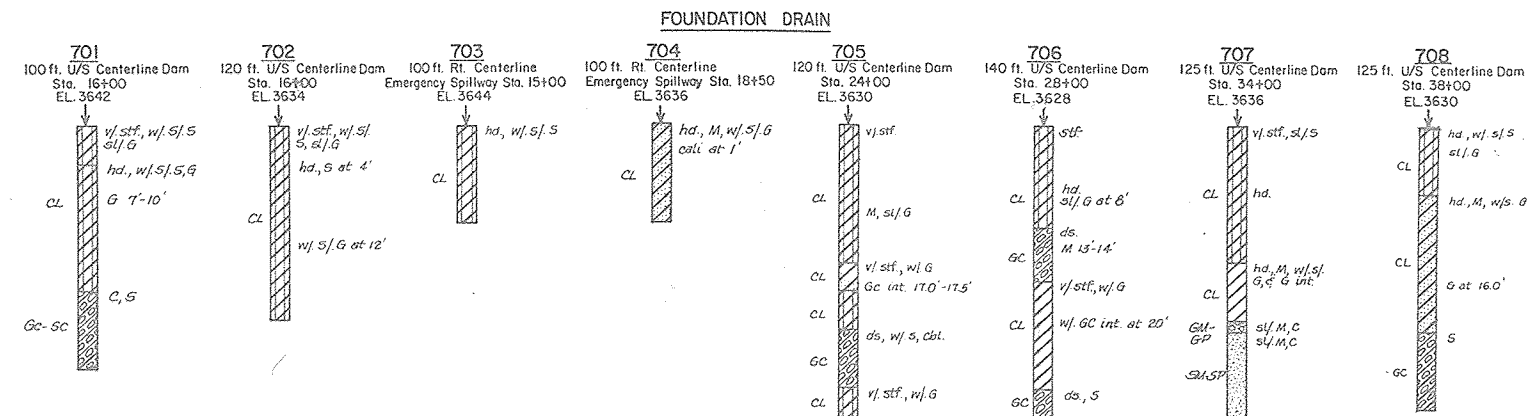


PLAN AND PROFILES FOR GEOLOGIC INVESTIGATIONS FLOODWATER RETARDING STRUCTURE SITE No. 1 SANDERSON CANYON WATERSHED IN BREWSTER COUNTY, TEXAS			
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
Designed J. Ireland	Date 9/78	Approved by SCS	State Conservation Engineer, S.C.S.
Drawn J. Bornhart	1/79	Checked by SCS	W. C. Baker, P.E., SCS
Traced		Sheet No. 18 of 21	Drawing No. 4-E-36,850
Checked, L. Engle	1/79		

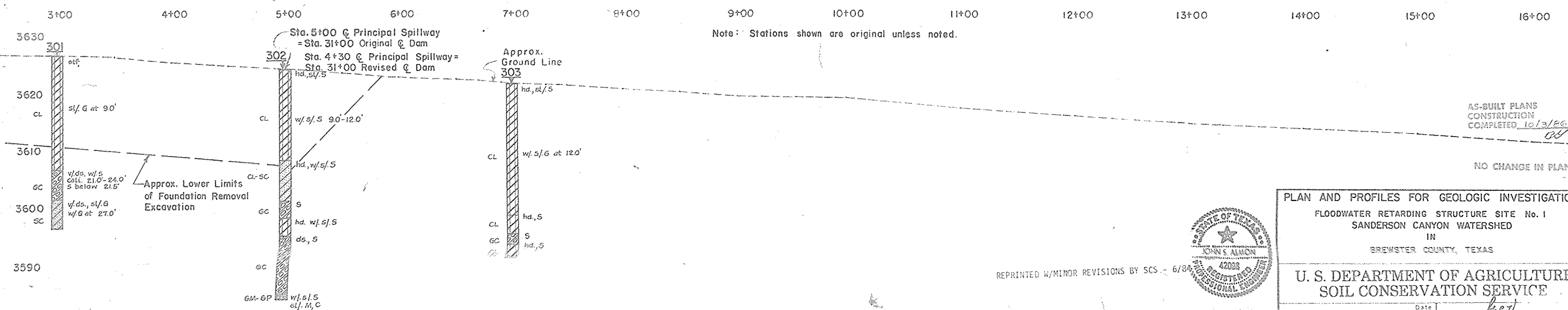




Note: Vertical Scale is 1"=10'



MISCELLANEOUS BORINGS
(BASED ON ORIGINAL Q DAM)



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PLAN AND PROFILES FOR GEOLOGIC INVESTIGATIONS			
FLOODWATER RETARDING STRUCTURE SITE No. 1			
SANDERSON CANYON WATERSHED			
IN BREWSTER COUNTY, TEXAS			
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
Designed: J. Ireland	Date: 9/78	Approved by: J. Ireland	State Conservation Engineer - C.S.
Drawn: J. Barnhart	1/79	Checked: J. Ireland	WOODWARD-COPE CONSULTANTS
Traced: L. Engle	1/79	Sheet: No. 20	Drawing No: 4-E-36,850
Checked: L. Engle	1/79	of 21	

PROFILE: CENTERLINE OF PRINCIPAL SPILLWAY