



FLOODWATER RETARDING DAM NO. 5 SANDERSON CANYON WATERSHED PROJECT

BREWSTER, PECOS AND TERRELL COUNTIES, TEXAS

DRAINAGE AREA 5243 ACRES
TOTAL STORAGE 1604 AC.F.T.
HEIGHT OF DAM 62 FEET
VOLUME OF FILL 767,569 CU. YDS.

RIO GRANDE-PECOS RIVER, BIG BEND AND TRANS-PECOS SOIL AND WATER CONSERVATION DISTRICTS
TERRELL, PECOS AND BREWSTER COUNTY COMMISSIONERS COURTS

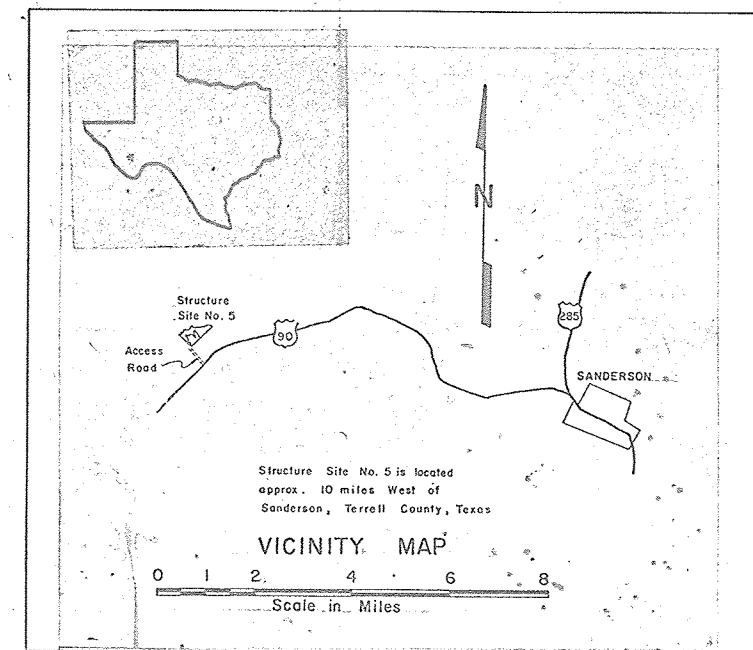
COOPERATING WITH
SOIL CONSERVATION SERVICE
OF THE
U.S. DEPARTMENT OF AGRICULTURE
1979

AS BUILT PLANS
CONTRACT NO. 50-7442-4-3029
CONTRACTOR West Texas Roads, Inc.
CONSTRUCTION COMMENCED 10/27/84
CONTRACT SUPERVISOR John W. Jackson
SUPERVISOR Thad W. Sansing
EST. PRICE \$2,213,926.04
FINAL PRICE \$2,226,161.22
CONSTRUCTION COMPLETED 4/27/79
BLOM ENGINEERING CORP.
HOUSTON, TEXAS

151 Robert A. Frank, Jr. Approved
by letter dated 5-3-79
HEAD, ENGINEERING STAFF, S.C.S.
FT. WORTH, TEXAS

Gene S. Vittetoe (P.E.) 5-3-79
STATE CONSERVATION ENGINEER SCS
TEMPLE, TEXAS

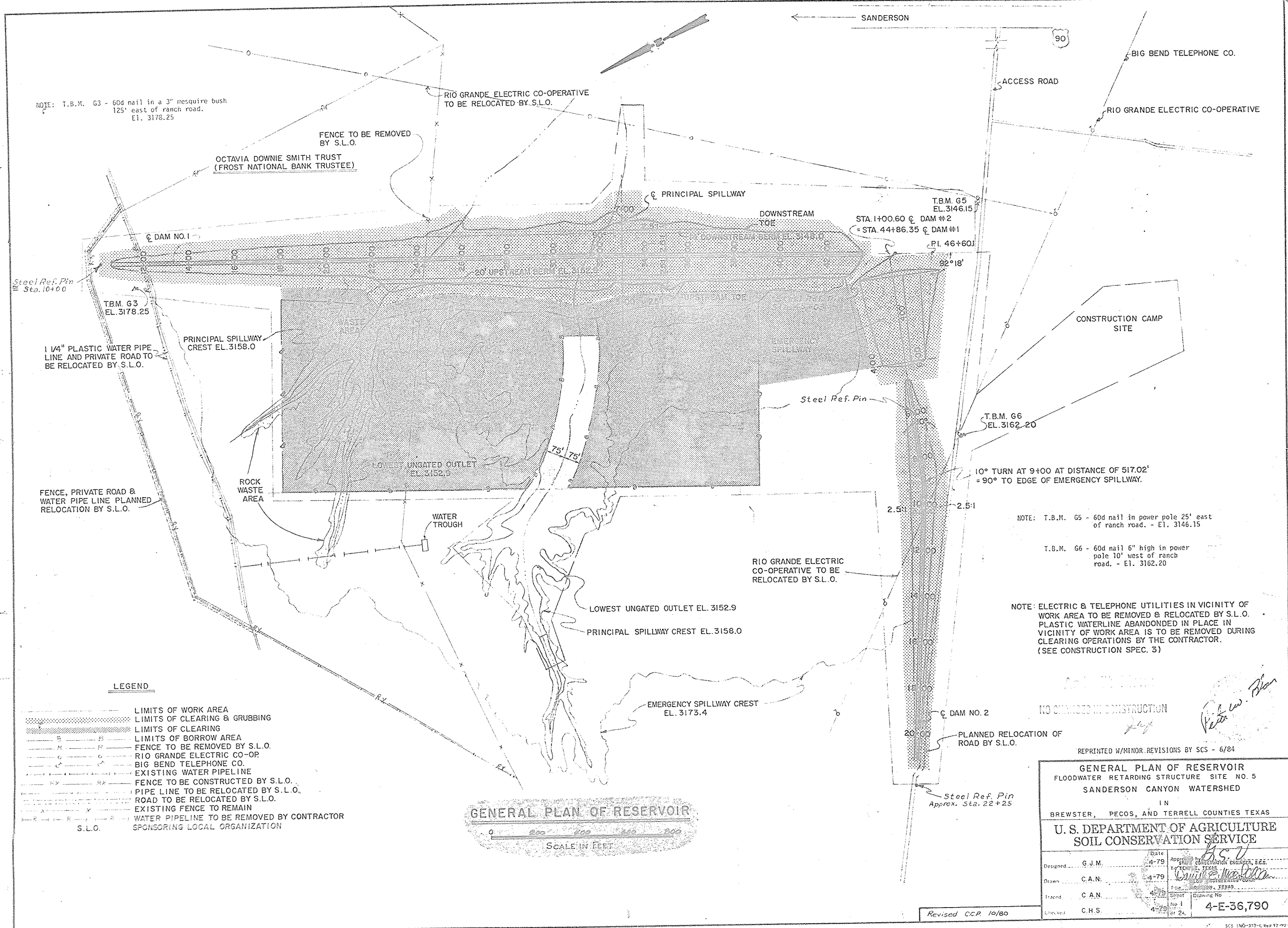
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17	Principal Spillway Inlet Scour Apron
18	Port Trash Rack
19	Trash Rack, Slide Gate, and Pipe Cantilever Support Details
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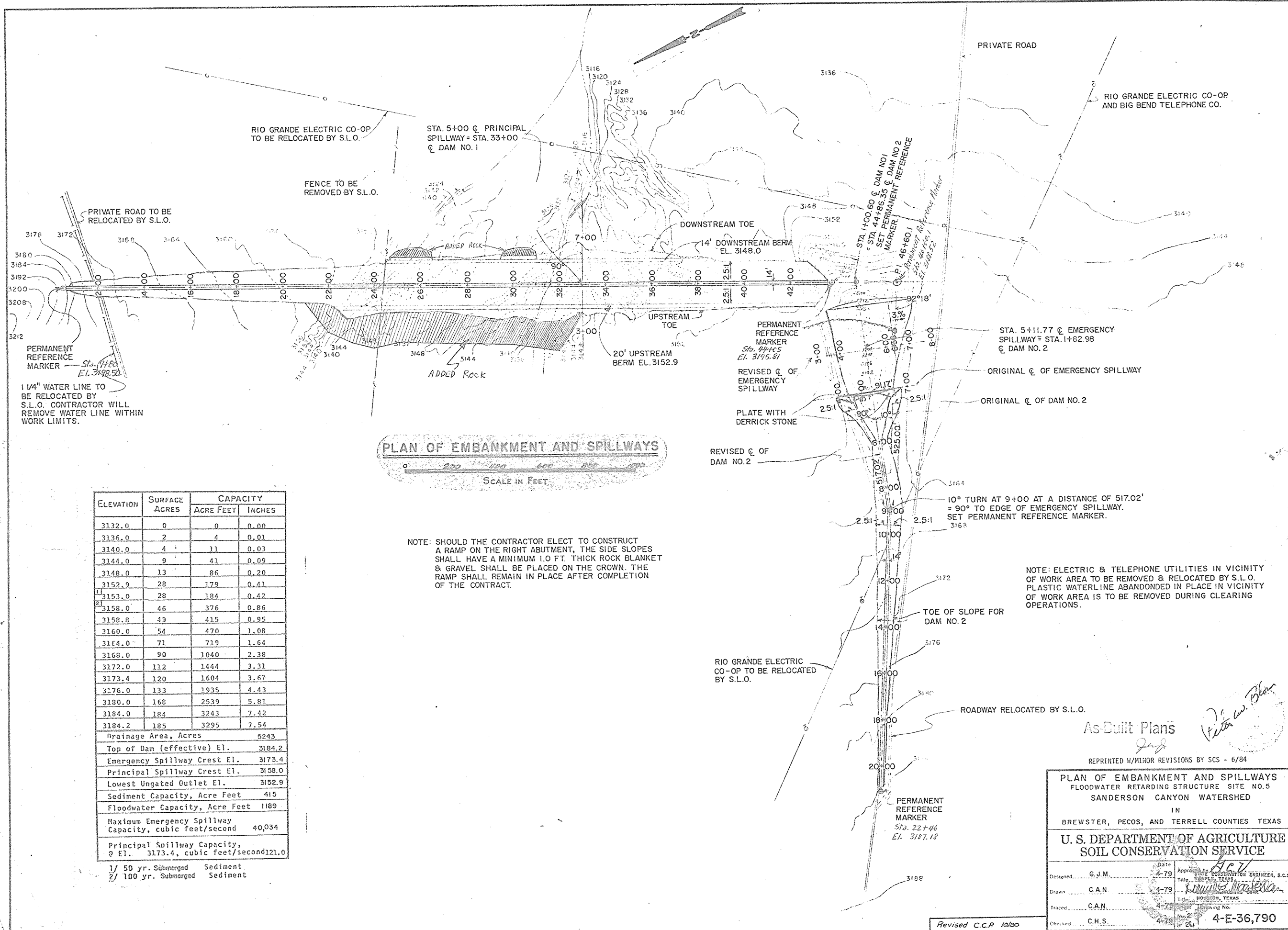


BLOM ENGINEERING CORPORATION
HOUSTON, TEXAS

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4-E-36,790





PLAN OF EMBANKMENT AND SPILLWAYS
 SCALE IN FEET
 0 200 400 600 800 1000

ELEVATION	SURFACE ACRES	CAPACITY	
		ACRE FEET	INCHES
3132.0	0	0	0.00
3136.0	2	4	0.01
3140.0	4	11	0.03
3144.0	9	41	0.09
3148.0	13	86	0.20
3152.9	28	179	0.41
3153.0	28	184	0.42
3158.0	46	376	0.86
3158.8	43	415	0.95
3160.0	54	470	1.08
3164.0	71	719	1.64
3168.0	90	1040	2.38
3172.0	112	1444	3.31
3173.4	120	1604	3.67
3176.0	133	1935	4.43
3180.0	168	2539	5.81
3184.0	184	3243	7.42
3184.2	185	3295	7.54
Drainage Area, Acres		5243	
Top of Dam (effective) El.		3184.2	
Emergency Spillway Crest El.		3173.4	
Principal Spillway Crest El.		3158.0	
Lowest Ungated Outlet El.		3152.9	
Sediment Capacity, Acre Feet		415	
Floodwater Capacity, Acre Feet		1189	
Maximum Emergency Spillway Capacity, cubic feet/second		40,034	
Principal Spillway Capacity, @ El. 3173.4, cubic feet/second		121.0	

1/ 50 yr. Submerged Sediment
 2/ 100 yr. Submerged Sediment

NOTE: SHOULD THE CONTRACTOR ELECT TO CONSTRUCT A RAMP ON THE RIGHT ABUTMENT, THE SIDE SLOPES SHALL HAVE A MINIMUM 1.0 FT. THICK ROCK BLANKET & GRAVEL SHALL BE PLACED ON THE CROWN. THE RAMP SHALL REMAIN IN PLACE AFTER COMPLETION OF THE CONTRACT.

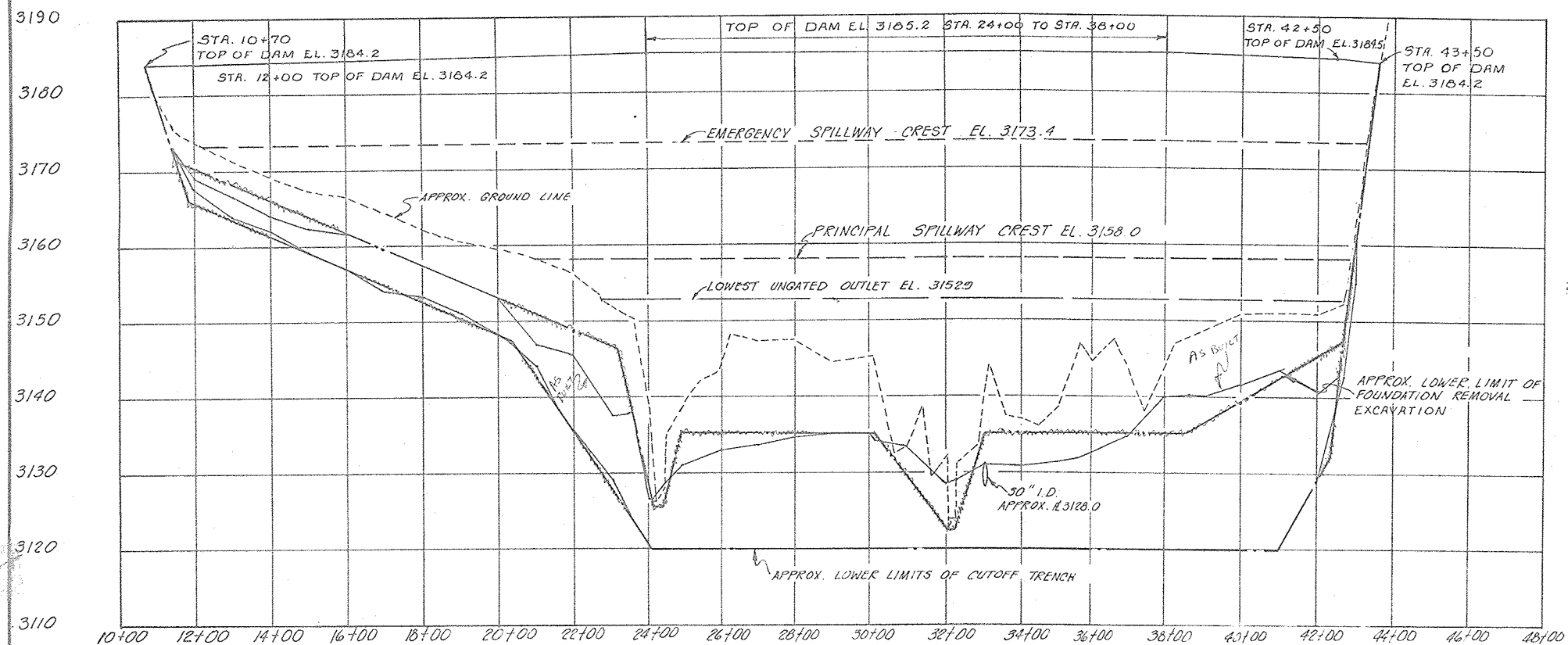
NOTE: ELECTRIC & TELEPHONE UTILITIES IN VICINITY OF WORK AREA TO BE REMOVED & RELOCATED BY S.L.O. PLASTIC WATERLINE ABANDONED IN PLACE IN VICINITY OF WORK AREA IS TO BE REMOVED DURING CLEARING OPERATIONS.

As-Built Plans

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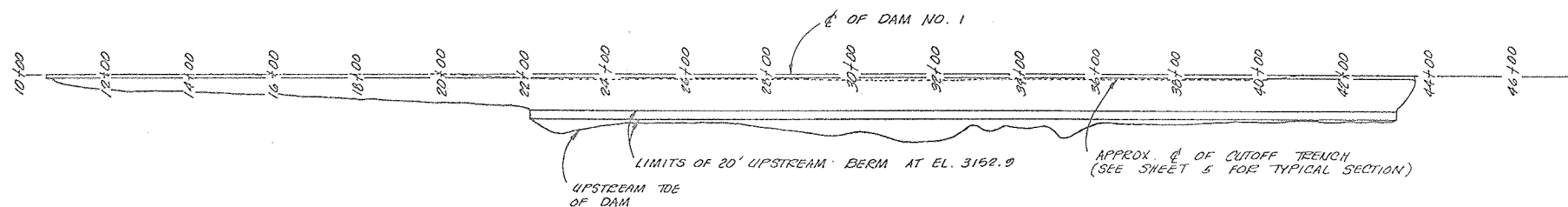
PLAN OF EMBANKMENT AND SPILLWAYS FLOODWATER RETARDING STRUCTURE SITE NO.5 SANDERSON CANYON WATERSHED IN BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS			
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
Designed.....	G.J.M.	Date.....	4-79
Drawn.....	C.A.N.	App'd.....	4-79
Traced.....	C.A.N.	Checked.....	4-79
Checked.....	C.H.S.	Drawn No.....	4-E-36,790

Revised C.C.P. 12/80



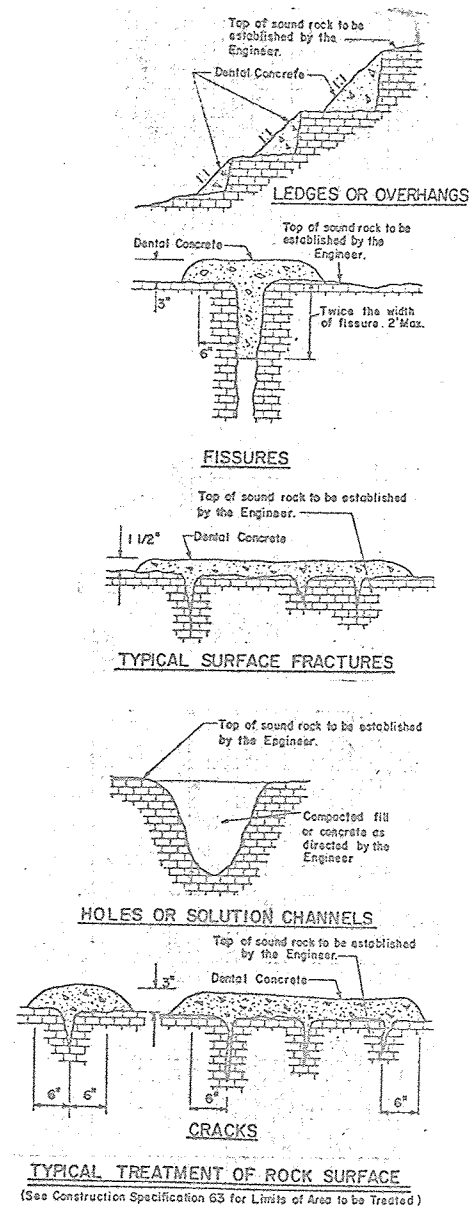
PROFILE ON \bar{C} OF DAM NO. 1

NOTE: THE CUTOFF TRENCH SHALL BE EXTENDED ALONG THE EMBANKMENT TO THE TOP OF DAM. AN INSPECTION OF THE FOUNDATION SHALL BE MADE AND TREATED IF REQUIRED, SEE CONSTRUCTION SPECIFICATION 63.



PLAN OF CUTOFF TRENCH

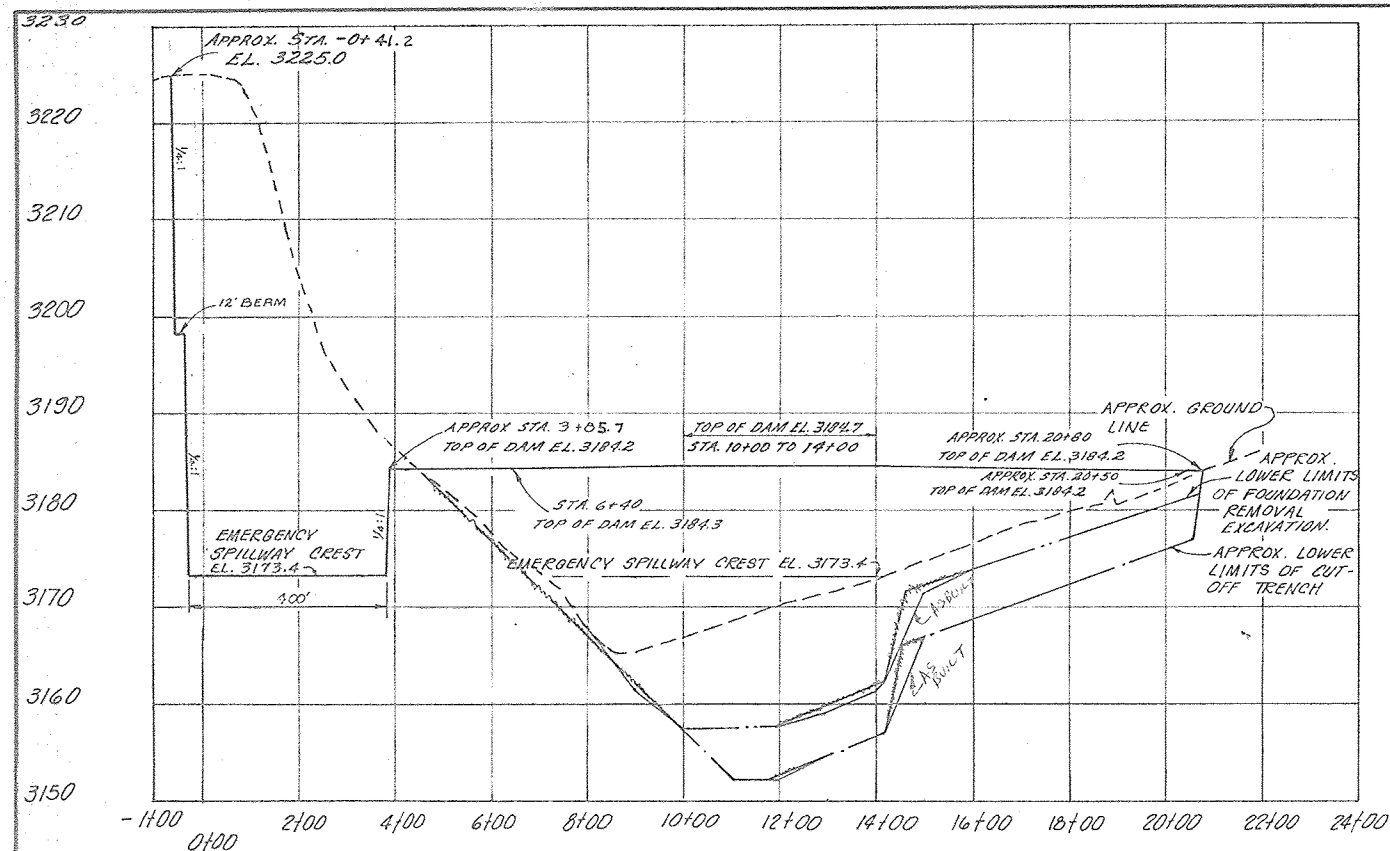
NOTE: THE LOCATION OF THE CUTOFF TRENCH MAY BE ALTERED BY THE ENGINEER IN THE FIELD.



As-Built Plans

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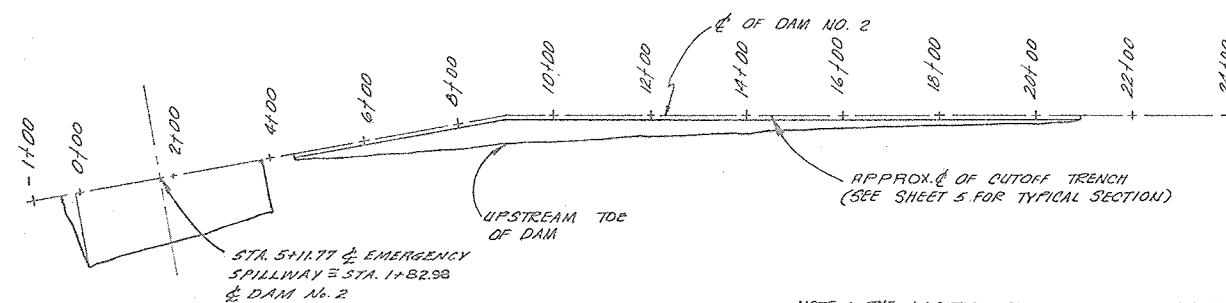
PROFILE ON \bar{C} OF DAM FLOODWATER RETARDING STRUCTURE SITE NO. 5 SANDERSON CANYON WATERSHED IN BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS			
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
Designed by G. J. M.	Date 4-79	Approved by [Signature]	Title [Signature]
Drawn C. A. N.	Date 4-79	Checked by [Signature]	Title [Signature]
Traced C. A. N.	Date 4-79	Sheet No. 3	Drawing No. 4-E-36,790
Checked C. H. S.	Date 4-79	of 24	



PROFILE ON C OF DAM NO. 2

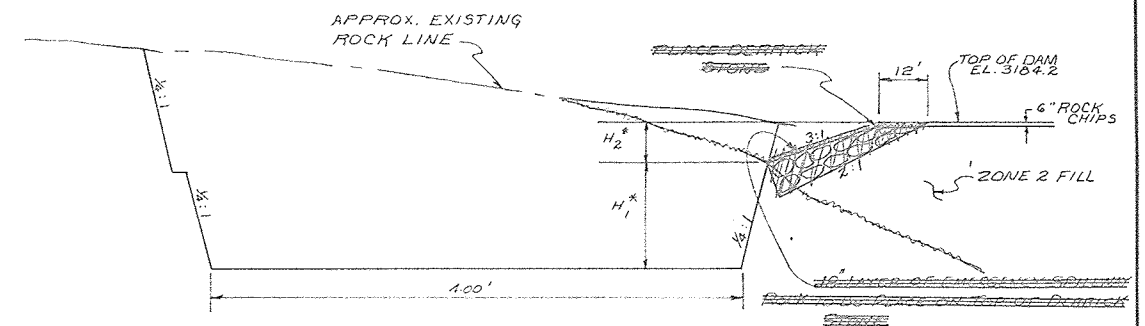
NOTE: PRESPLITTING OF EMERGENCY SPILLWAY SLOPES WILL BE REQUIRED.

NOTE: THE CUTOFF TRENCH SHALL BE EXTENDED ALONG THE EMBANKMENT TO THE TOP OF DAM. AN INSPECTION OF THE FOUNDATION SHALL BE MADE AND TREATED IF REQUIRED, SEE CONSTRUCTION SPECIFICATION NO. 63.



PLAN OF CUTOFF TRENCH

NOTE: THE LOCATION OF THE CUTOFF TRENCH MAY BE ALTERED BY THE ENGINEER IN THE FIELD



TYPICAL SECTION - EMERGENCY SPILLWAY

NOTE:

STA. 3+80 TO STA. 4+70
 H_1 VARIES FROM 0 TO 10.8
 H_2 VARIES FROM 10.8 TO 0
 STA. 4+70 TO 5+40
 $H_1 = 10.8$ $H_2 = 0$
 STA. 5+40 TO 6+00
 H_1 VARIES FROM 10.8 TO 0
 H_2 VARIES FROM 0 TO 10.8

NOTES:

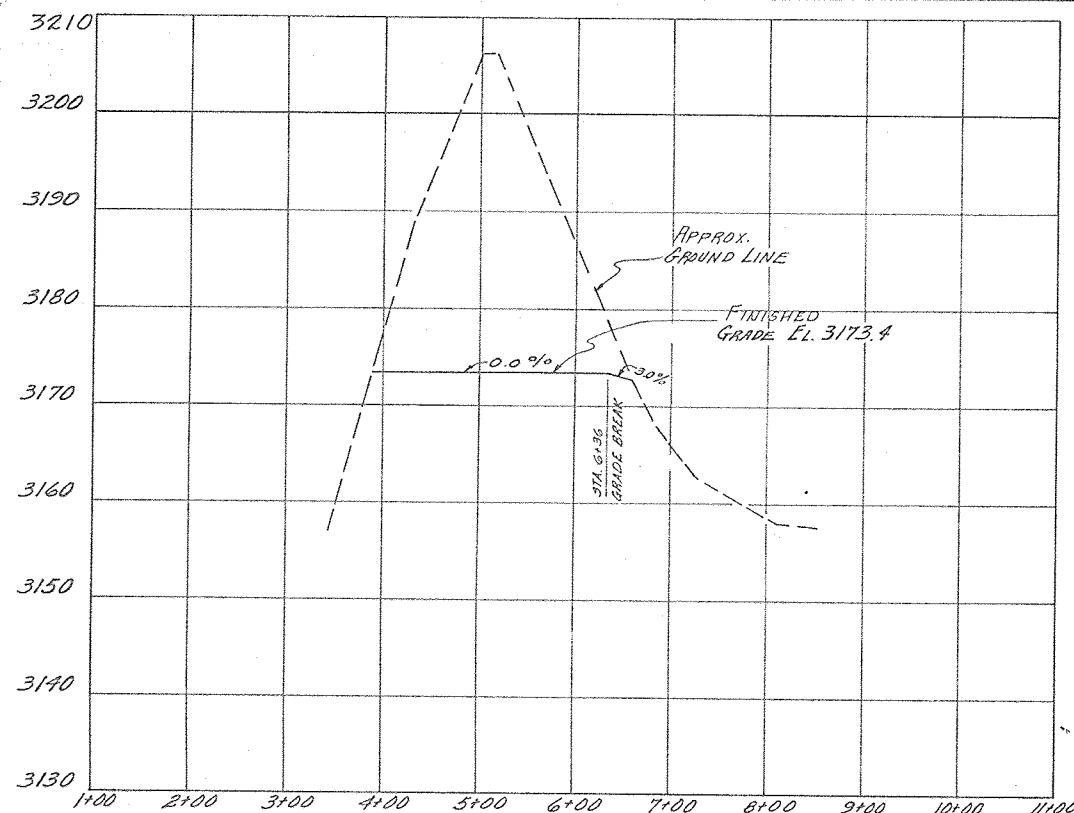
- (1) THE ROCK USED FOR THE DERRICK STONE SHALL BE HARVESTED OR PRODUCED STONE THAT SHALL HAVE INDIVIDUAL OR STONE WEIGHTS RANGING FROM 1400 TO 4000 POUNDS. THE DERRICK STONE SHALL BE PLACED SO AS TO PRODUCE A REASONABLY DENSE FILL WITH A MINIMUM OF VOIDS. (SEE CONSTRUCTION SPECIFICATION 61.) APPROX. 664 CUBIC YARDS OF DERRICK STONE REQUIRED.
- (2) AREAS OF EMERGENCY SPILLWAY FLOOR AND SIDE SLOPES WHERE DURABLE ROCK IS NOT EXPOSED AT GRADE SHALL BE OVEREXCAVATED A MINIMUM OF 18 INCHES AND BROUGHT BACK TO GRADE WITH ROCK RIPRAP MATERIAL. EMERGENCY SPILLWAY ROCK SHALL BE REASONABLY WELL GRADED FROM A MAX. ROCK SIZE OF 18 INCHES DOWN TO THE 4 INCH SIZE WITH NOT MORE THAN 50% BY WEIGHT SMALLER THAN 12 INCHES. SIZING OF OVERSIZED ROCK MATERIALS FROM THE REQUIRED EXCAVATIONS OR QUARRY AREA TO MEET THE SPECIFIED GRADATION WILL BE REQUIRED. NO SPECIAL COMPACTION OR MOISTURE CONTROL WILL BE REQUIRED. (SEE CONSTRUCTION SPECIFICATION 25A.) APPROXIMATELY 300 CUBIC YARDS EMERGENCY SPILLWAY ROCK FILL REQUIRED.

As-Built Plans

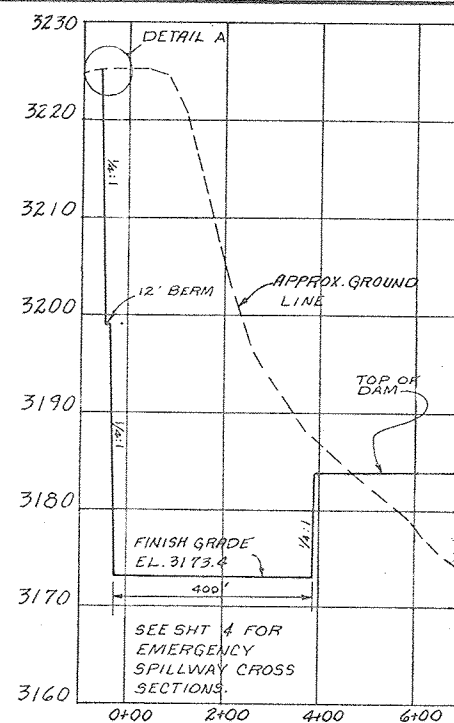
REPRINTED W/MINOR REVISIONS BY SCS - 6/84

PROFILE AND SECTION FLOODWATER RETARDING STRUCTURE SITE NO. 5 SANDERSON CANYON WATERSHED IN BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS			
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
Designed by G. J. M.	Date 4-79	Approved by [Signature]	Title [Signature]
Drawn C. A. N.	4-79	Checked [Signature]	Title [Signature]
Traced C. A. N.	4-79	Sheet No. 4	Drawing No. 4-E-36,790
Checked C. H. S.	4-79	of 24	

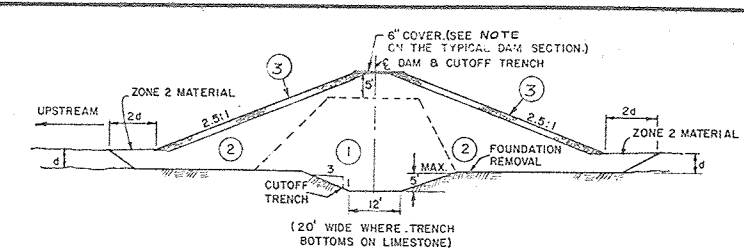
Revised C.C.P. 10/80



PROFILE ON C OF EMERGENCY SPILLWAY



TYPICAL SECTION
EMERGENCY SPILLWAY



TYPICAL ABUTMENT AND DAM NO. 2 SECTION

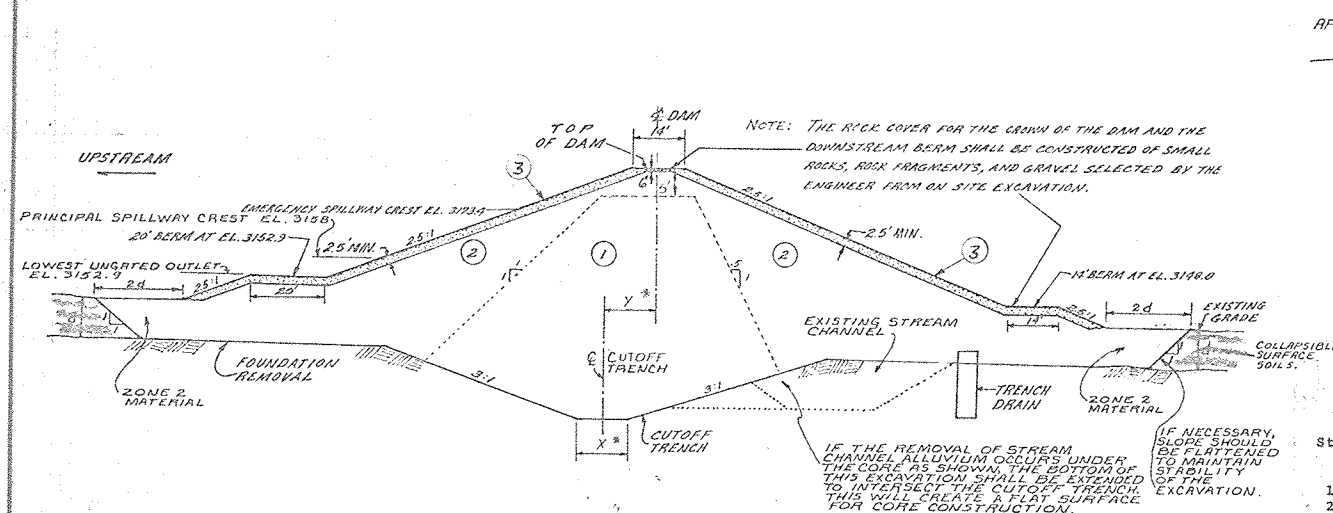
1. Dam No. 1 abutment stationing from sta. 10+70 to sta. 11+80 and sta. 42+50 to sta. 43+50
2. Dam No. 2 stationing from sta. 6+00 to sta. 20+50

ZONED EMBANKMENT DATA

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. Rock shall be reasonably well graded from a maximum particle size of 24" down to the 6" size with not less than 50% by weight larger than 12". Up to 5% of materials finer than the 6" size will be permitted. Sizing of oversized rock materials from the required excavations or quarry area to meet the specified gradations will be required. No special compaction or moisture control will be required. (See Construction Specification 25A.)
3. Class "C" compaction shall be accomplished by a minimum of 4 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.
4. Less gravelly materials shall be used in Zone 1 or Zone 2. Only more gravelly materials shall be used in Zone 3.
5. For use in construction inspection in determining in-place mass densities and adequacy of method compaction, not a contract requirement.

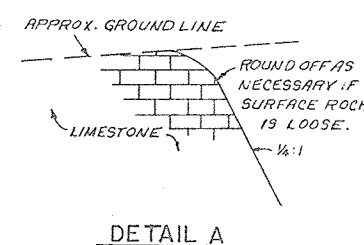
MATERIALS PLACEMENT DATA

Embankment Zone	Unified Classification and Type	ASTM Test		Max. Allowable Particle Size	Max. Hatched Layer Thickness	Specified Compaction Classification	Min. Dry Density Percent of Field Optimum	Moisture Limits Relative to Field Optimum	
		Number	Method					From	To
①	CL: clay, sandy clay, gravelly clay	D-698	A or B	6"	9"	A	95	Opt.	Up
①	SC: clayey sand, gravelly clayey sand	D-698	A or B	6"	9"	A	95	Opt.	Up
②	SC: clayey sand, gravelly clayey sand	D-698 Moisture Only	A or B	6"	9"	C-2	95	-1%	Up
②	GC: clayey gravel, sandy clayey gravel	D-698 Moisture Only	A or B	6"	9"	C-2	95	-1%	Up
③	Limestone rock, cobbles, boulders	---	---	24"	36"	III	---	---	---



TYPICAL DAM NO. 1 SECTION

*FOR DIMENSIONS SEE TABLE I



DETAIL A

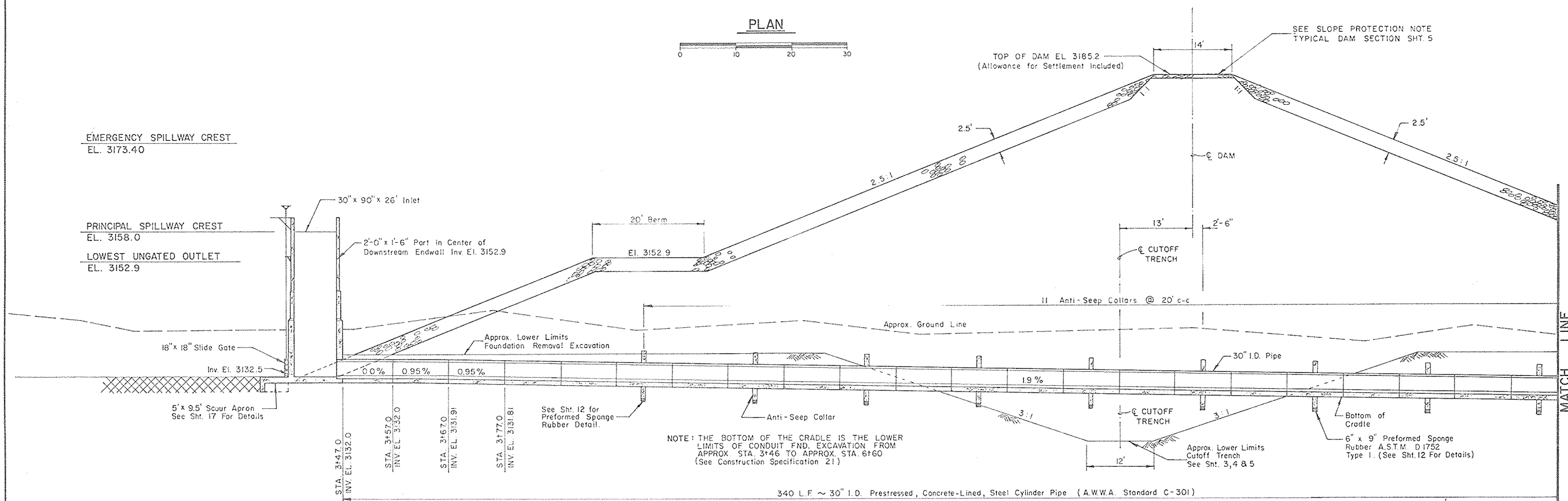
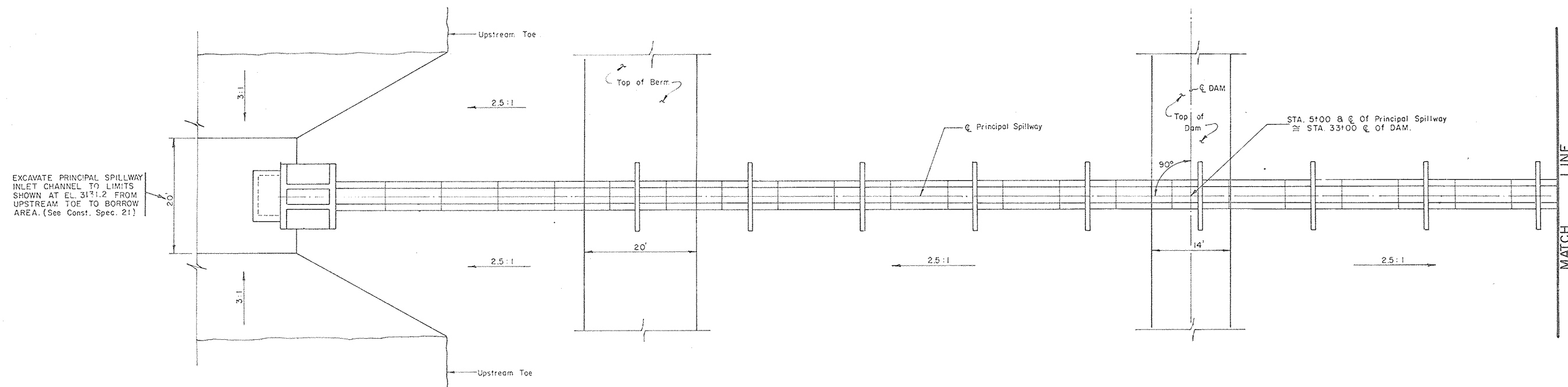
TABLE I

Station	Dist. to Cutoff Trench	Cutoff Trench Width
12+00	0	12
20+00	0	12
22+50	13	12
23+50	13	12
24+00	13	12
24+50	13	12
25+00	13	12
25+50	13	12
29+00	13	12
30+60	13	12
31+60	13	102
32+10	13	102
33+10	13	12
40+00	13	12
41+00	0	12
42+75	0	12

NOTE: Trench widths and offsets vary uniformly between stations.

AS-BUILT PLANS
NO CHANGES IN CONSTRUCTION
REPRINTED W/MINOR REVISIONS BY SCS - 6/84

PROFILE AND SECTIONS
FLOODWATER RETARDING STRUCTURE SITE NO. 5
SANDERSON CANYON WATERSHED
IN
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Date 4-79
Designed G. J. M.
Drawn C. A. N.
Traced C. A. N.
Checked C. H. S.
Approved by [Signature]
Title [Signature]
Sheet No. 5 of 24
Drawing No. 4-E-36,790



As-Built Plans

NO CHANGES IN CONSTRUCTION

SECTION
PRINCIPAL SPILLWAY

PRINCIPAL SPILLWAY

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PRINCIPAL SPILLWAY - PLAN AND SECTION
FLOODWATER RETARDING STRUCTURE SITE NO. 5
SANDERSON CANYON WATERSHED
IN
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS

FLOODWATER RETARDING STRUCTURE SITE NO. 5

SANDERSON CANYON WATERSHED

IN

BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS



U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

 SOIL CONSERVATION SERVICE

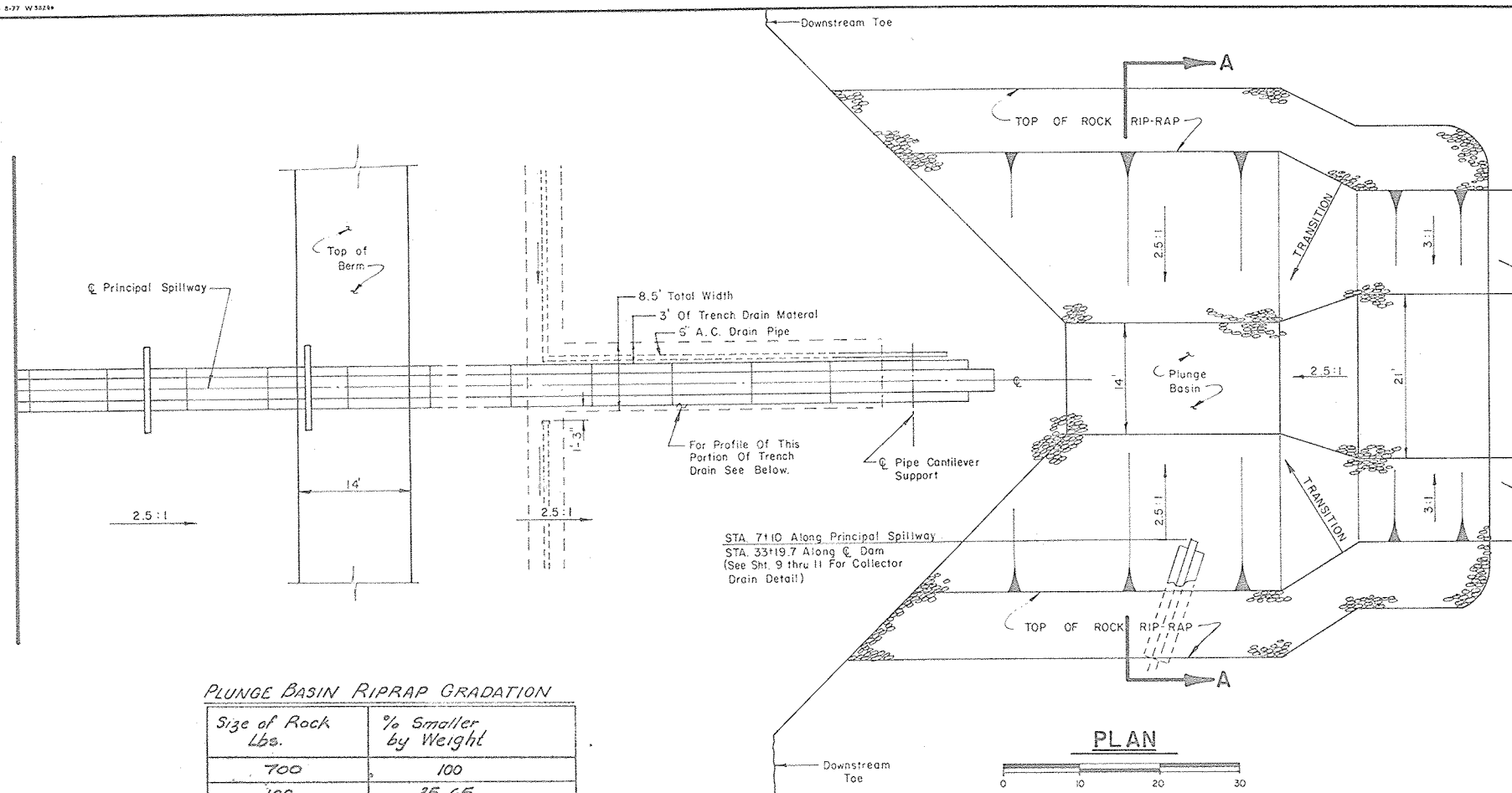
Designed	G. J. M.	Date	4-79	Approved by	<i>[Signature]</i> CONSOLIDATION ENGINEER, S.C.S.
Drawn	C. A. N.	Title	4-79	Title	STATIONARY ENGINEER
Traced	D. O. W.	Title	4-79	Title	GLOU ENGINEERING CORP. HOUSTON, TEXAS
Checked	C. H. S.	Sheet	4-79	Sheet	No. 6 of 24
				Drawing No	4-E-36,790

Drawn C.A.N. 4-79 BLON ENGINEERING CORP.

Traced	D. O. W.	4-79	Title <u>HOUSTON, TEXAS</u>	
			Sheet	Drawing No.

CHS 4-79 No 6 4-E-36 790

No 6 4-F-36 790

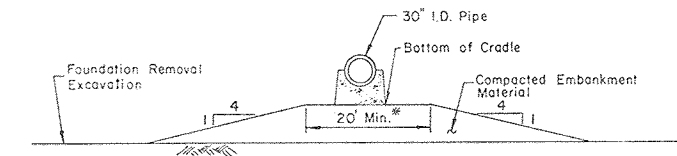
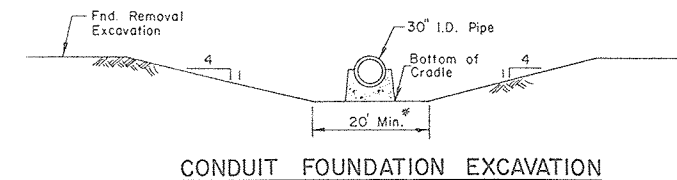
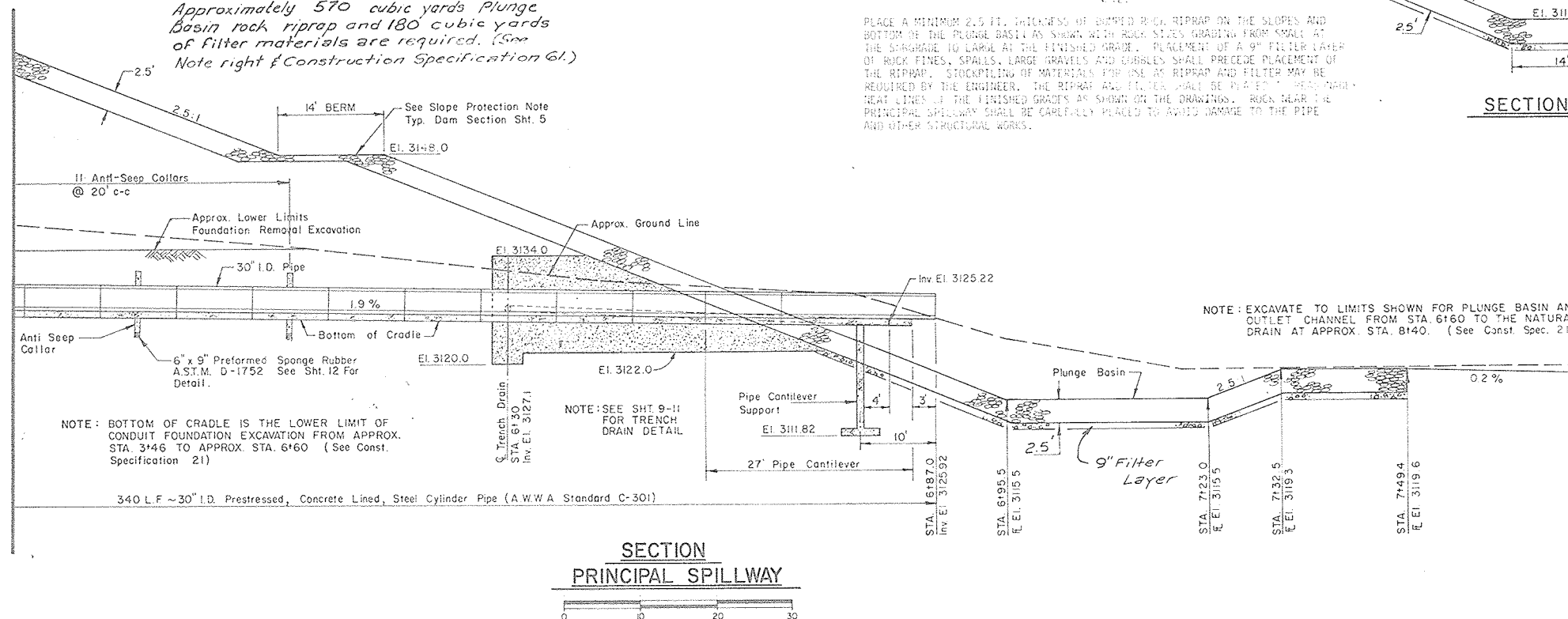


PLUNGE BASIN RIPRAP GRADATION

Size of Rock Lbs.	% Smaller by Weight
700	100
100	35-65
10	5-10

The least dimension of an individual rock fragment shall not be less than one-third of the greatest dimension of the fragment.

Approximately 570 cubic yards Plunge Basin rock riprap and 180 cubic yards of filter materials are required. (See Note right of Construction Specification 61.)



NOTES

- 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.

* MINIMUM WIDTH REQUIRED TO FACILITATE CONSTRUCTION OF CONDUIT.

Top of Rock Rip Rap Shall Extend to The Natural Ground Line or El. 3126.6 Which Ever is Higher.

NOTE:

PLACE A MINIMUM 2.5 FT. THICKNESS OF BUMPTED ROCK RIPRAP ON THE SLOPES AND BOTTOM OF THE PLUNGE BASIN AS SHOWN WITH ROCK SIZES GRADING FROM SMALL AT THE SHAGRADE TO LARGE AT THE FINISHED GRADE. PLACEMENT OF A 9" FILTER LAYER OF ROCK FINES, SPALLS, LARGE GRAVELS AND LABBLES SHALL PRECEDE PLACEMENT OF THE RIPRAP. STOCKPILING OF MATERIALS FOR USE AS RIPRAP AND FILTER MAY BE REQUIRED BY THE ENGINEER. THE RIPRAP AND FILTER SHALL BE PLACED IN NEARLY NEAT LINES TO THE FINISHED GRADES AS SHOWN ON THE DRAWINGS. ROCK NEAR THE PRINCIPAL SPILLWAY SHALL BE CAREFULLY PLACED TO AVOID DAMAGE TO THE PIPE AND OTHER STRUCTURAL WORKS.

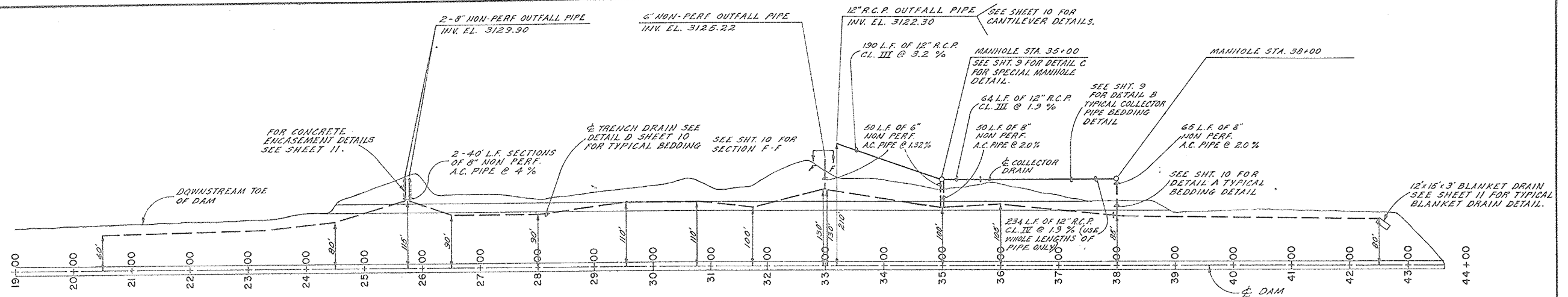
As-Built Plans
NO CHANGES IN CONSTRUCTION

REVISIONS/REVISIONS BY SCS 4/7/14

PRINCIPAL SPILLWAY - PLAN AND SECTION
FLOODWATER RETARDING STRUCTURE SITE NO. 5
SANDERSON CANYON WATERSHED
IN
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed	G. J. M.	Date	4-79	Approved	<i>[Signature]</i>
Drawn	C. A. N.	Date	4-79	Title	STATE CONSERVATION ENGINEER, SCS.
Traced	D. O. W.	Date	4-79	Title	WATERWAYS ENGINEER, SCS.
Checked	C. H. S.	Date	4-79	Sheet	No. 7 of 24
				Drawing No.	4-E-36,790

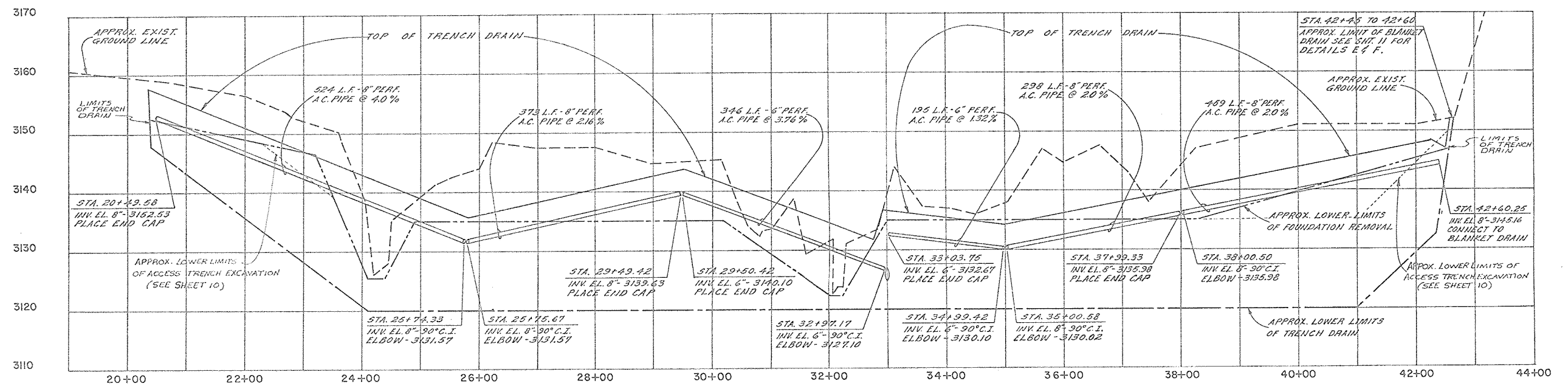


PLAN OF TRENCH DRAIN

PIPE QUANTITY TABLE

Type of Pipe	Size	Lin. Ft.
Non-Perforated	6"	100
Non-Perforated	8"	195
Perforated	6"	541
Perforated	8"	1654
R.C.P., Type III	12"	254
R.C.P., Type IV	12"	234
R.C.P. Manholes	36"	265

NOTE:
FOR INVERT ELEVATIONS
OF ALL MANHOLES AND
PIPES ENTERING
MANHOLES SEE TABLE 2
ON SHT. 9.

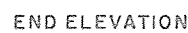
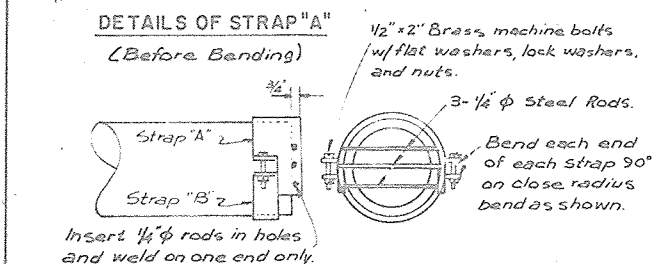
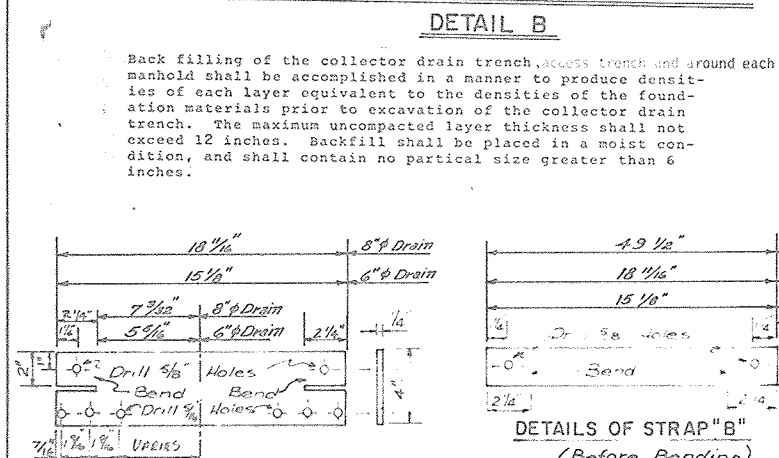
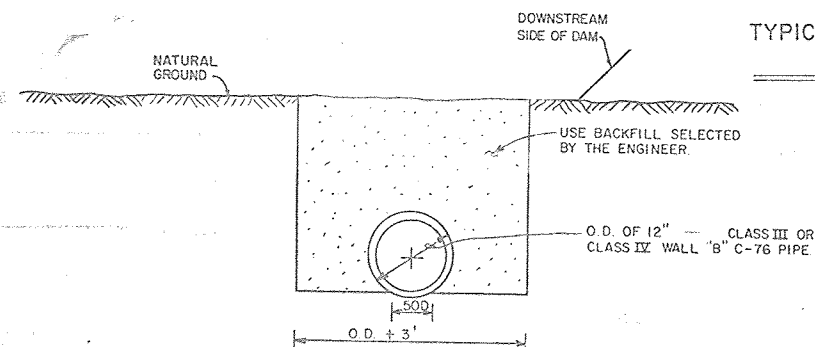
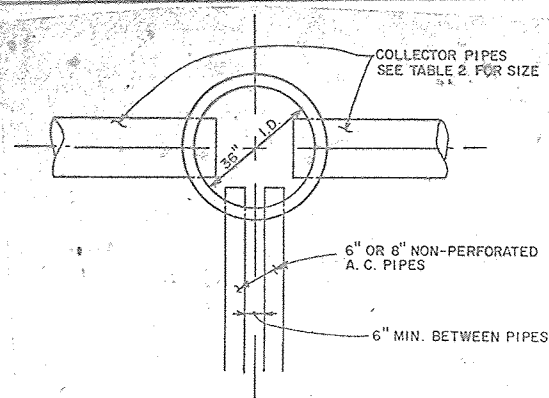


PROFILE ON C OF TRENCH DRAIN

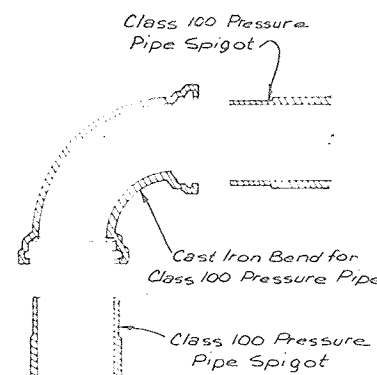
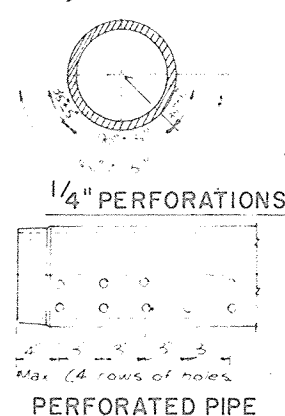
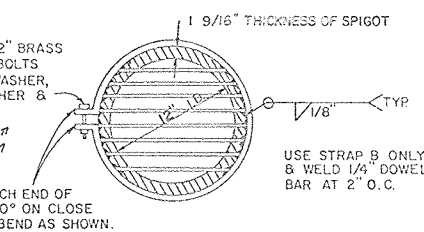
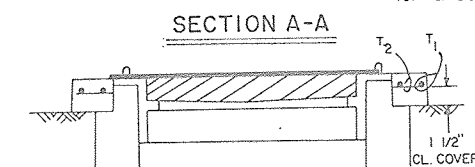
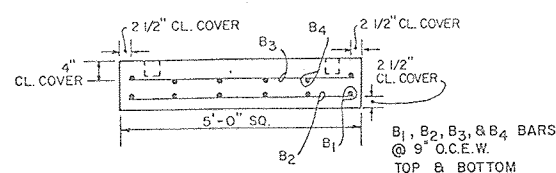
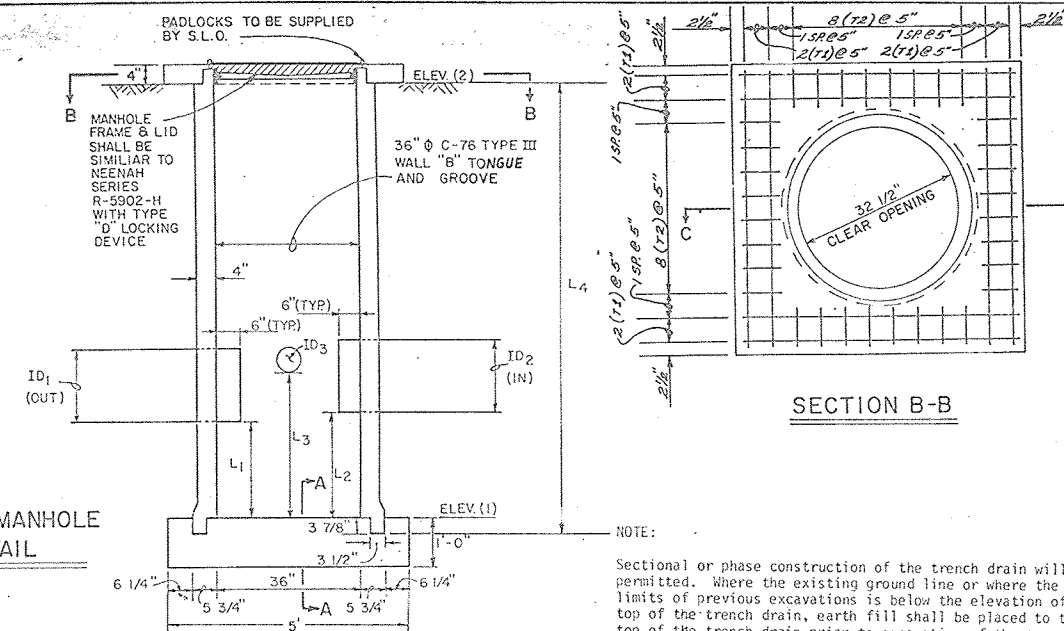
As-Built Plans
NO CHANGES IN CONSTRUCTION

EMBANKMENT, FOUNDATION DRAIN FLOODWATER RETARDING STRUCTURE SITE NO. 5 SANDERSON CANYON WATERSHED IN BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS			
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
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Traced	J. E. G.	Date	4-79
Checked	C. H. S.	Date	4-79
Approved by State Conservation Engineer, SCS		Title EMBANKMENT, FOUNDATION DRAIN	
Drawing No. No. 8 of 24		4-E-36,790	

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Note: Band Straps A and B are 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.



MANHOLE STATION	ELEV. (1)	ELEV. (2)	L ₁ Ft.	L ₂ Ft.	L ₃ Ft.	L ₄ Ft.	ID ₁ In.	ID ₂ In.	ID ₃ In.
35+00	3126.82	3134.0	1.56	1.56	2.62	7.5	12	12	6
36+00	3131.82	3150.5	2.26	—	2.86	19	12	—	8

MANHOLE SLAB QUANTITIES					
BAR NO.	SIZE	QUANTITY	LENGTH	TYPE	TOTAL LENGTH
T ₁	4	8	4'-7"	1	36'-8"
T ₂	4	20	0'-6"	1	10'-0"
B ₁	4	7	4'-7"	1	32'-1"
B ₂	4	7	4'-7"	1	32'-1"
B ₃	4	7	4'-7"	1	32'-1"
B ₄	4	7	4'-7"	1	32'-1"
Total steel size No. 4 in lin. ft.					175'-0"
Total steel weight per manhole in lb.					116.9 lb.
Total steel for 2 manholes in lb.					233.8
Total concrete top slab in cu. yd.					.25 c.y.
Total concrete bottom slab in cu. yd.					.93 c.y.
Total concrete per manhole in cu. yd.					1.18 c.y.
Total concrete for 2 manholes in cu. yd.					2.36

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.

REPRINTED W/MINOR REVISIONS BY SCS - 6/84

DETAILS - PIPE FITTINGS

Other than straight couplings

Sieve Size	Percent Finer
1-1/2"	100
1"	95 - 100
1/2"	25 - 100
3/8"	20 - 75
4	0 - 25
8	0 - 10
16	0 - 5
200	0 - 5

The manholes shall be factory fabricated with pipe holes set to the elevation shown in Table 2. The total length of each manhole shall equal the length shown in Table 2. Once the collector pipes and trench drain pipe have been set to the prescribed elevation the void between the manhole sidewall and the O.P. of pipe shall be grouted.

The bedding of perforated pipe installed in drain fill 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 drain fill 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 23A.

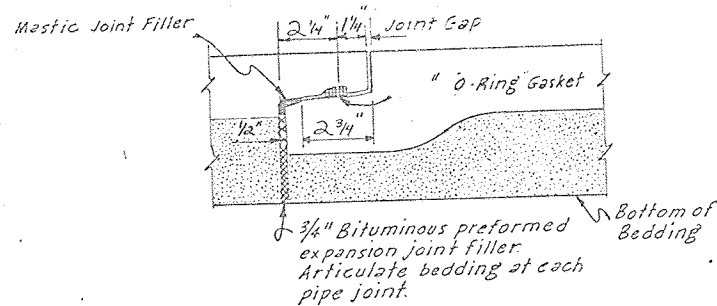
STRAIGHT TYPE I , As-Built Plans

BAR TYPE NO CHANGES IN CONSTRUCTION

EMBANKMENT FOUNDATION DRAIN
FLOODWATER RETARDING STRUCTURE SITE NO. 5
SANDERSON CANYON WATERSHED
IN
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS

 U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

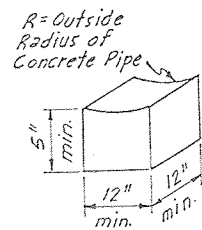
C.H.S.	4-79	STATE CONSERVATION ENGINEER, S. TOSPLE, TEXAS
C.A.N.	4-79	GLOW ENGINEERING CORP. HOUSTON, TEXAS
C.A.N.	4-79	
G.J.M.	4-79	4-E-36.790



Upstream Downstream

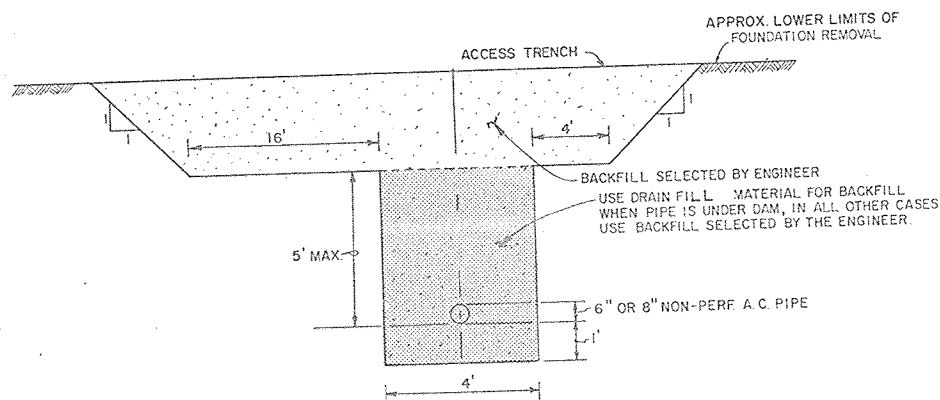
PIPE JOINT PIPE JOINT DETAILS

The pipe shall be drawn together so that the maximum joint gap does not exceed $\frac{3}{8}$ " 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 $\frac{3}{8}$ ".

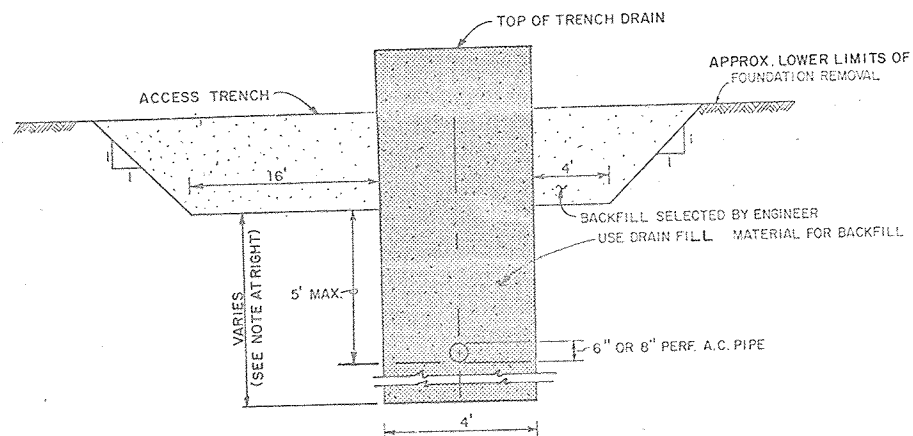


Use 2 or more blocks per joint of pipe. Opposed concrete wedge blocks are an acceptable alternate to the above support block.

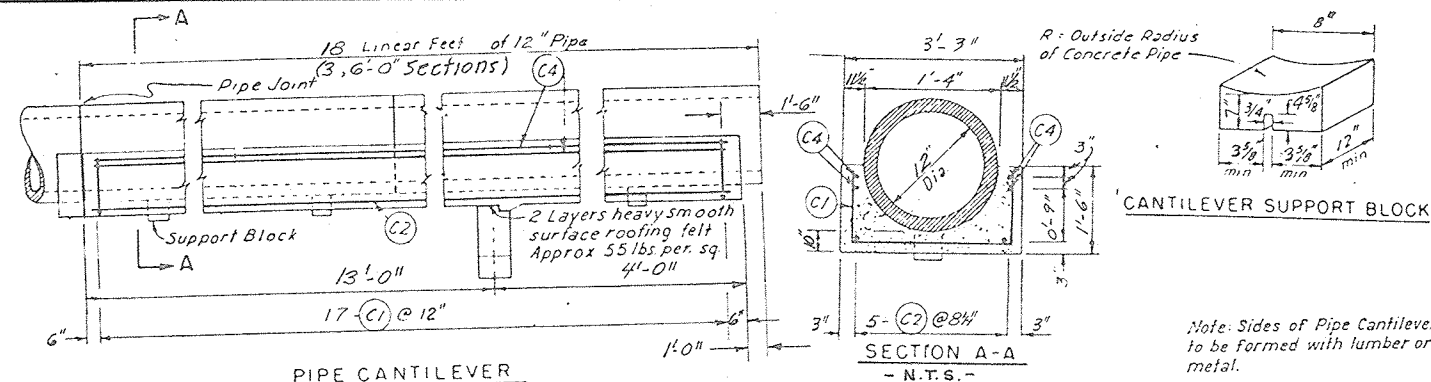
SUPPORT BLOCK



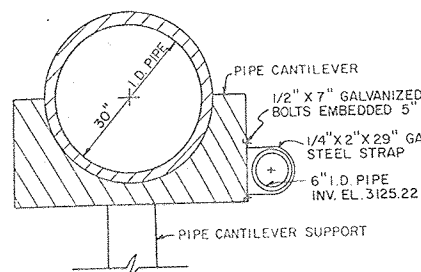
TYPICAL BEDDING DETAIL DETAIL A



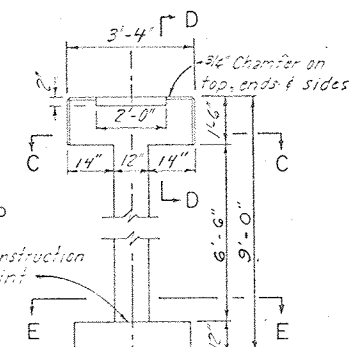
TRENCH DRAIN DETAIL DETAIL D



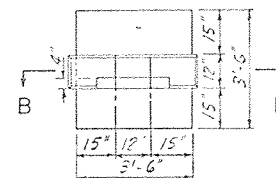
PIPE CANTILEVER



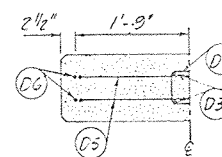
SECTION F-F



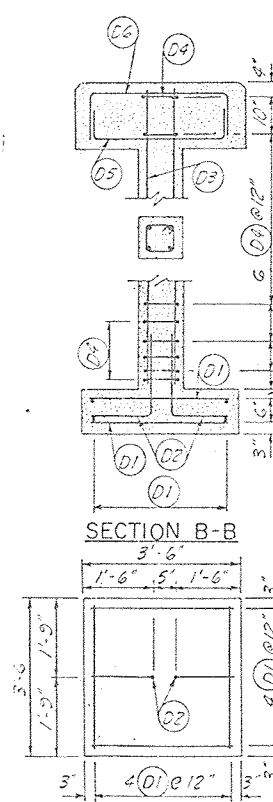
ELEVATION



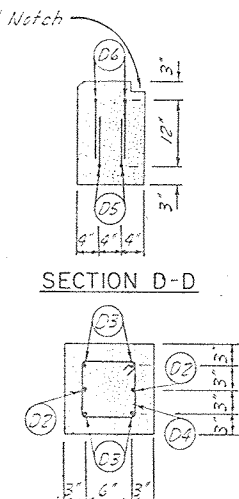
PLAN



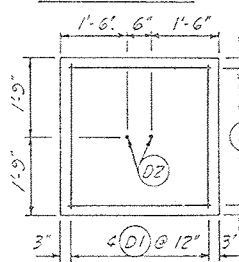
SECTION C-C



BASE BOTTOM STEEL



SECTION D-D



SECTION E-E

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.

PIPE CANTILEVER SUPPORT

Note: Pipe supplied will be manufactured in accordance with the standard for ASTM C-76 Class III, or Class II, Wall B, having a D-load capacity of not less than 2000 lbs. at the .01" crack. For class III and not less than 3000 lbs for Class II. Elliptical reinforcement will not be permitted.

Pipe supplied with joint dimensions different from those shown, shall be approved by the Engineer.

As-Built Plans *Jan*

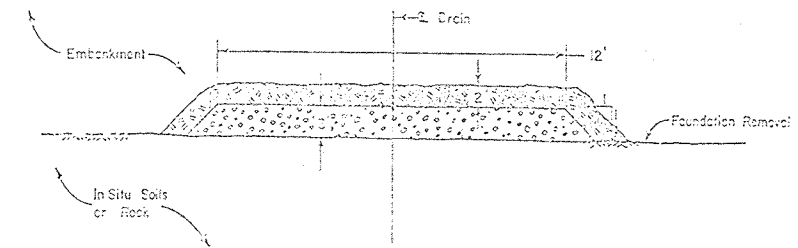
REPRINTED W/MINOR REVISIONS BY SCS - 6/84 NO CHANGES IN CONSTRUCTION

Bar No.	Location	Qty.	Lgth.	Total Length	Size	Type	A	B	C	D	E	F	G	H	J	O
C 1	Pipe Cantilever	17	4'-11"	83'-7"	4	S10	1-1	2-7	1-1							
C 2	"	5	16'-6"	82'-6"	5	Str.										
C 4	"	4	16'-6"	66'-0"	7	Str.										
Total Steel in Pipe Cantilever (Size 4) = 83'-7" = 55.83 lbs.																
Total Steel in Pipe Cantilever (Size 5) = 82'-6" = 86.05 lbs.																
Total Steel in Pipe Cantilever (Size 7) = 66'-0" = 134.90 lbs.																
Total Steel = 276.78 lbs.																
Total Reinforced Concrete in Pipe Cantilever = 2.63 cu. yds.																
D-1	Cantilever Support	16	3'-1"	49'-4"	4	Str.										
D 2	"	2	3'-9"	7'-6"	6	2	2-6	1-3								
D 3	"	4	7'-9"	31'-0"	6	Str.										
D 4	"	12	3'-2"	38'-0"	3	1-1	0-4	0-7 1/2	0-7 1/2	0-7 1/2	0-7 1/2			0-4		
D 5	"	2	4'-11"	9'-10"	4	2	0-9	3-5						0-9		
D 6	"	2	5'-7"	11'-2"	6	2	1-0	3-7						1-0		
Total Steel in Pipe Cantilever Support (Size No. 3) = 36'-0" = 14.29 lbs.																
Total Steel in Pipe Cantilever Support (Size No. 4) = 59'-2" = 39.52 lbs.																
Total Steel in Pipe Cantilever Support (Size No. 6) = 49'-8" = 74.60 lbs.																
Total Steel = 128.41 lbs.																
Total Reinforced Concrete in Pipe Cantilever Support = .88 cu. yds.																

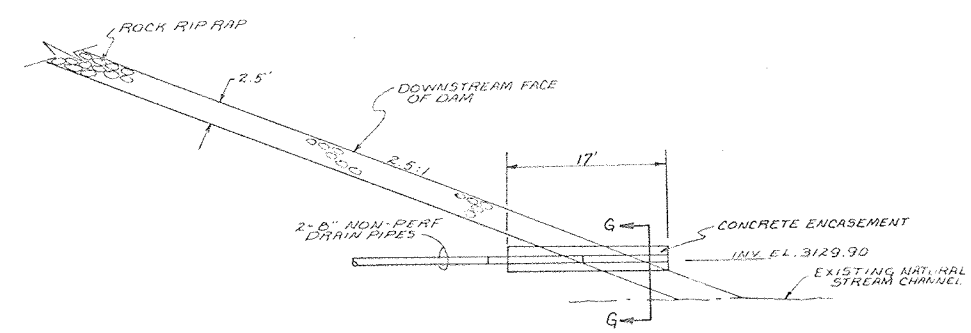
EMBANKMENT FOUNDATION DRAIN
FLOODWATER RETARDING STRUCTURE SITE NO. 5
SANDERSON CANYON WATERSHED
IN
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

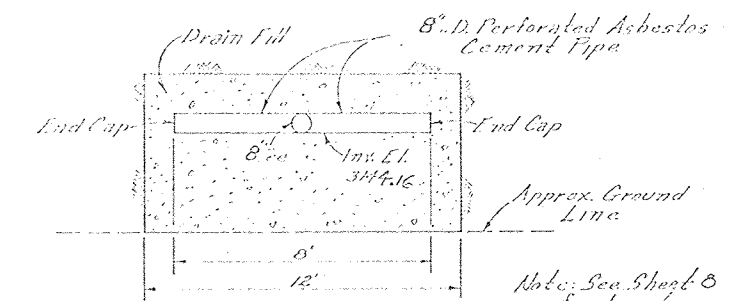
Designed: G.J.M. Date: 3-79
Drawn: G.J.M. 3-79
Traced: J.E.G. 3-79
Checked: C.H.S. 3-79
Approved by: *As-Built Plans*
Title: EMBANKMENT FOUNDATION DRAIN
Sheet: 10
Drawing No: 4-E-36,790



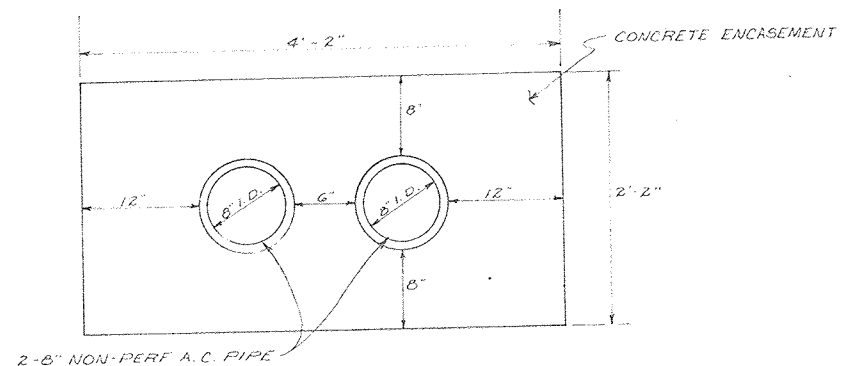
TYPICAL SECTION - BLANKET DRAIN



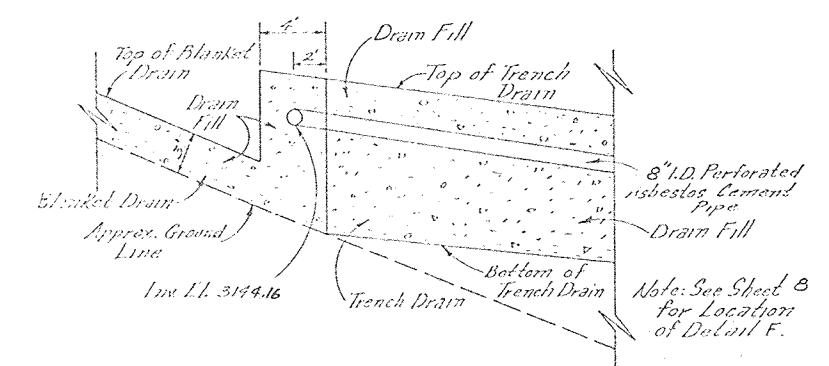
DRAIN OUTFALL STA. 25+75



DETAIL E



SECTION G-G



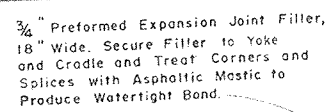
DETAIL F

REQUIRED CONCRETE FOR DRAIN OUTFALL = 5.08 C.Y.

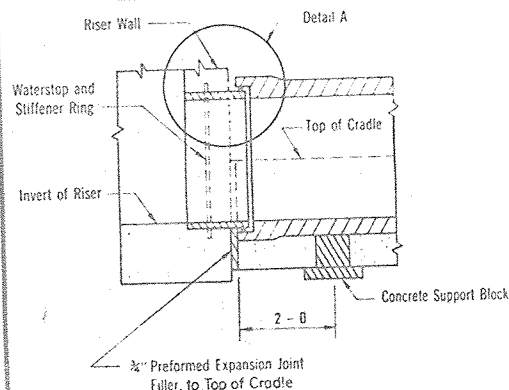
As-Built Plans
NO CHANGES IN CONSTRUCTION

REPRINTED W/MINOR REVISIONS BY SCS - 6/84

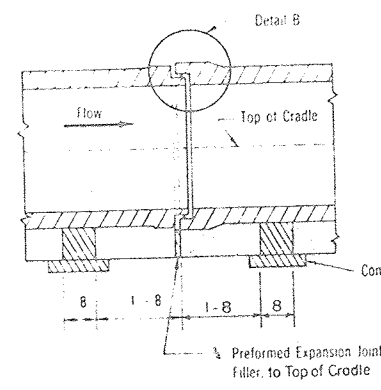
EMBANKMENT FOUNDATION DRAIN FLOODWATER RETARDING STRUCTURE SITE NO. 5 SANDERSON CANYON WATERSHED BREWSTER, PECOS, AND TERRELL COUNTIES, TEXAS			
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE			
Designed	G. J. M.	Date	4-79
Drawn	C. A. N.	Approved by	State Conservation Engineer, S.C.S.
Traced	C. A. N.	Date	4-79
Checked	C. H. S.	Title	HOUSTON, TEXAS
		Sheet	4-E-36,790
		No. 11 of 24	



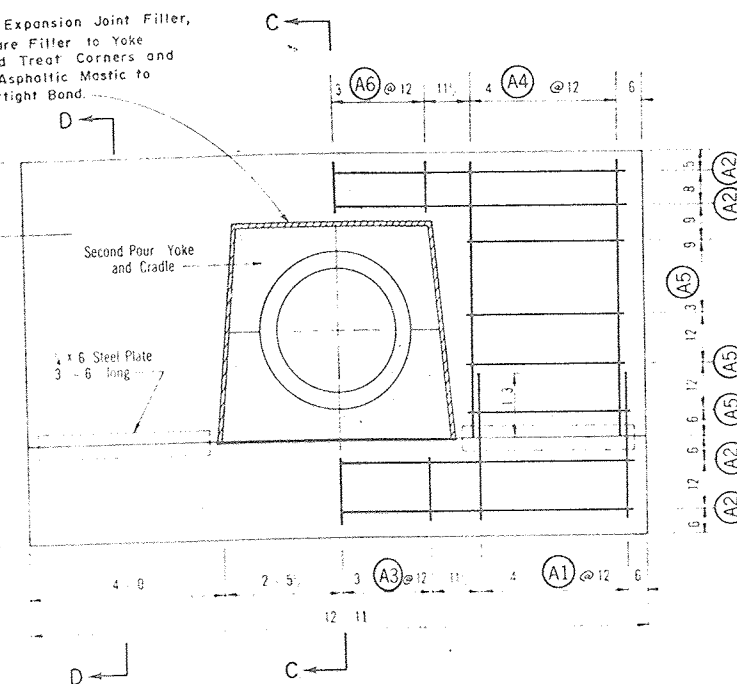
Type I, preformed expansion joint filler (ASTM D-1752) shall be placed under each anti-seep collar as shown. (See materials specification 535).



DETAIL OF SPIGOT WALL FITTING

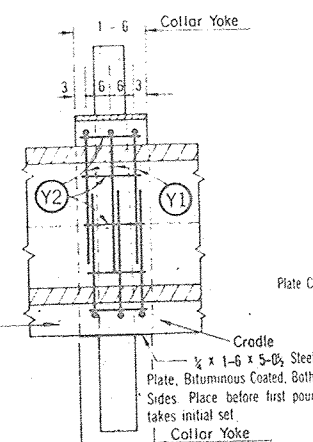


DETAIL OF PIPE JOINT



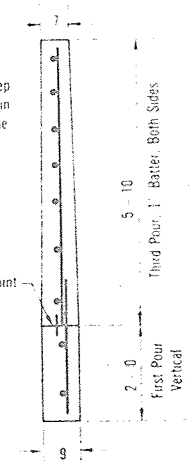
DETAIL OF ANTI-SEEP COLLAR

Yoke steel not shown.

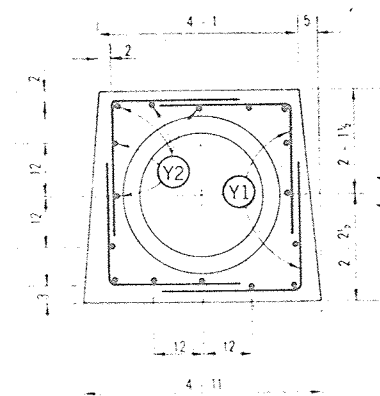


SECTION C-C

Anti-seep collar steel not shown.



SECTION D-D



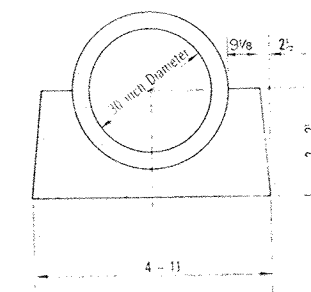
DETAIL OF ANTI-SEEP
COLLAR YOKE

STEEL SCHEDULE						
Angle and Collar and Yoke 11" Required						
Mark	Size	Quantity of Collar	Length	Type	Total Quantity	Total Length
A1	4	8	3 - 0	1	88	264-0
A2	4	4	12 - 5	1	44	546-4
A3	4	5	1 - 6	1	55	82-6
A4	4	8	5 - 7	1	88	491-4
A5	4	10	3 - 6	1	110	385-0
A6	4	5	1 - 0	1	55	55-0
Y1	4	12	5 - 2	21	132	682-0
Y2	4	16	1 - 2	1	176	205-4
Total						2711-6

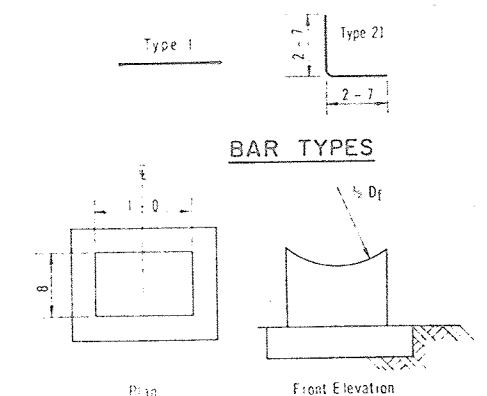
QUANTITIES		Ct. Yes
Cradle		
Anti-sweep Collar including yoke		
• Each		<u>2 777</u>
Total	11 Collars	<u>30.55</u>
Cradle		
•• Per Lineal Foot of Cradle		<u>0.2560</u>
Total (210 lin. ft. less 16.5 lin. ft. in yokes)		<u>75.14</u>
S-cot		Pounds
Anti-sweep Collar including yoke, 1 collar		<u>64.662</u>
Total	11 Collars	<u>1811.28</u>

Concrete quantities are based on an outside diameter of pipe of 35 3/4 inches.
Steel quantities do not change with outside diameter of pipe.

- This quantity is given by
 $3.14 \times 0.000303 (D_f)^2 \text{ cu yds}$
 - This quantity is given by
 $0.385 \times 0.000303 (D_f)^2 \text{ cu yds}$
- D_f outside diameter of pipe furnished, inches



DETAIL OF CRADLE

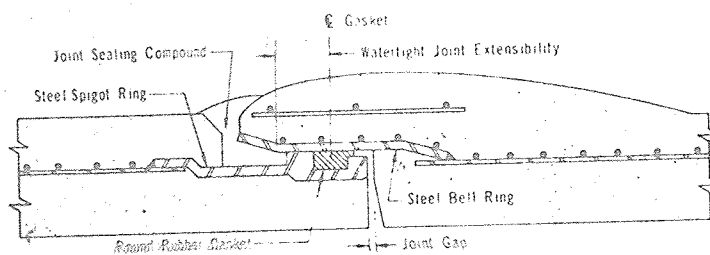


BAR TYPES

SUGGESTED SUPPORT BLOCKS

As-Built Plans *Ref*
NO CHANGES IN CONSTRUCTION

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 Specification 41)



DETAIL 8

Length of Pipe Section feet	Minimum Joint Length inches	Minimum Joint Limiting Angle	
		radians	degrees
10	2.875	0.022	1.26
20	2.875	0.022	1.26

For outfall section only

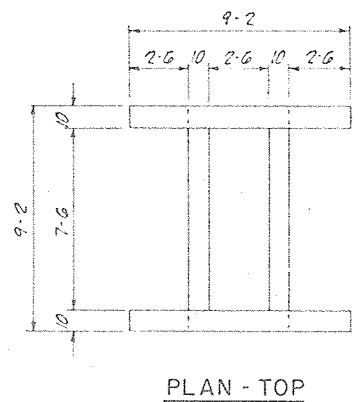
For pipe length other than shown, joint requirements will be determined by the Engineer.

STRENGTH REQUIREMENTS			
Inside Diameter of Pipe	Internal Load	External Load	
	Hydrostatic Pressure	Minimum 3-Edge Bearing Strength in Pounds per Lineal Foot of Pipe	
		Applicable Standard Specification	
		AWWA C-301	
	Head of Water	Load to produce 0.001 inch crack one foot long.	
inches	feet		
30	50	8,500	

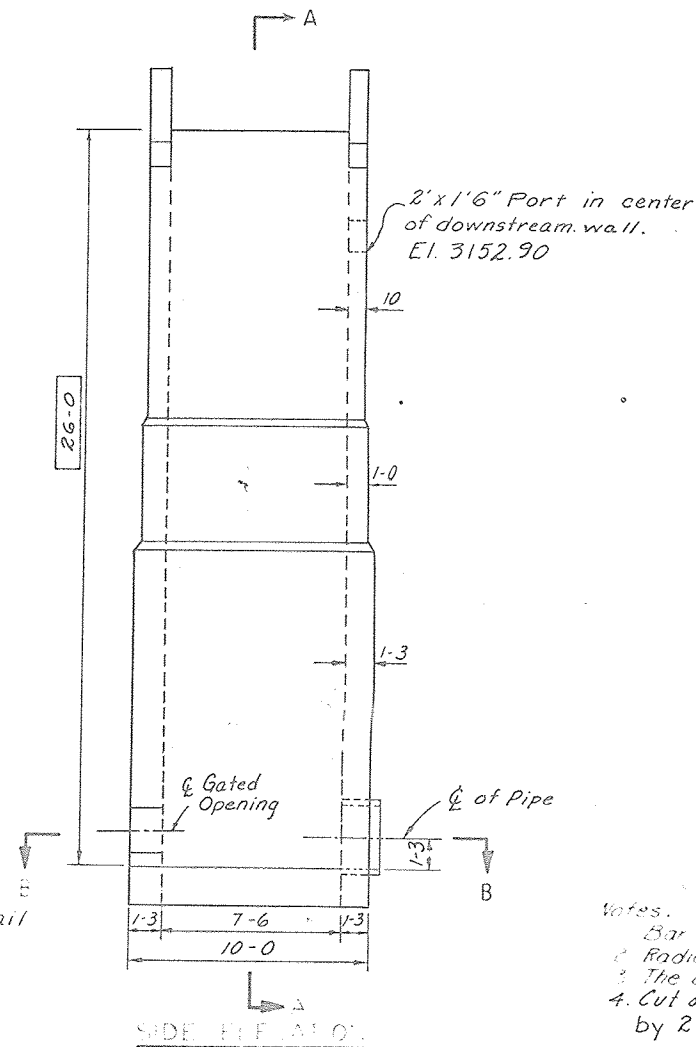
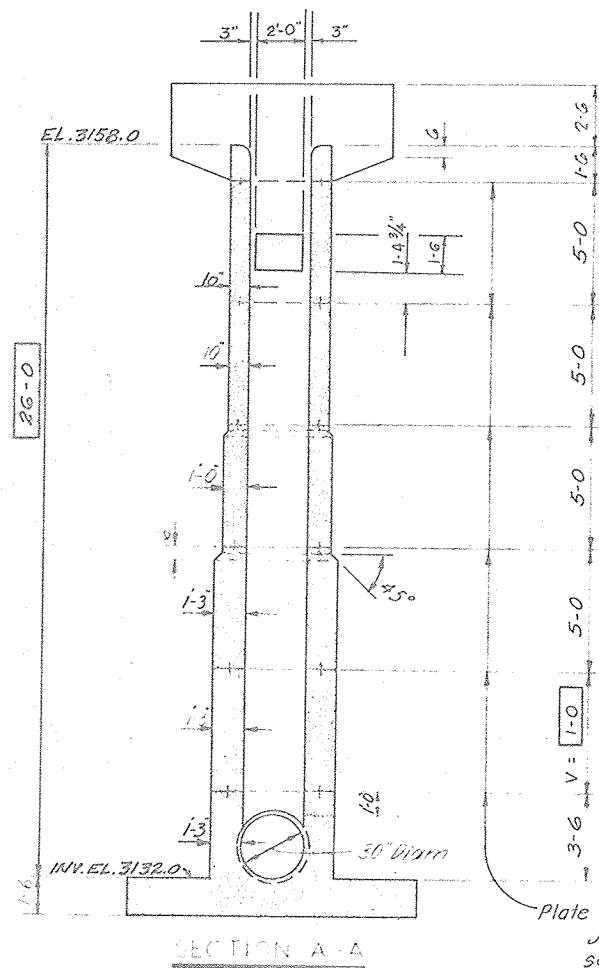
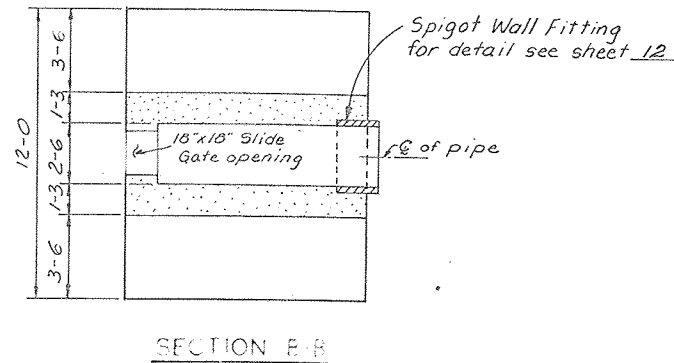
The outside diameter of pipe assumed in design is $35\frac{3}{4}$ inches.

PIPE DETAILS
FLOODWATER RETARDING STRUCTURE SITE NO. 5
SANDERSON CANYON WATERSHED
IN
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed	Date	Approved by
G. J. M.	4-79	<i>B. G. O.</i> STATE CONSERVATION ENGINEER, S. C. S. J/MPLE, TEXAS



For details of Trash
Rack Angles and Grating
see sheets 18 & 19



STEEL SCHEDULE															
Mark	Size	Quantity	Length	Type	B	C	Total Length	Mark	Size	Quantity	Length	Type	B	C	Total Length
B1	#7	14	11-6	1			161-6								
B2	#6	13	9-6	1			114-0								
B3	#7	38	10-0	21	3-5	6-7	380-0								
B4	#6	1	4-6	1			14-0								
B5	#6	10	11-6	1			115-0								
B6	#6	2	5-0	1			10-0	T1	3	8	8-0	21	2-9	5-3	66-0
B7	#6	6	7-6	21	1-0	6-6	45-0	T2	5	2	3-3	1			33-0
B8	#6	19	7-6	21	1-0	6-6	142-6	T3	5	12	3-10	1			25-0
B9	#5	14	5-6	1			119-0	T4	5	3	3-7	1			28-3
B10	#6	5	5-6	1			17-6	T5	5	8	3-2	1			25-0
B11	#6	2	2-6	1			7-6	T6	5	3	5-3	19	2-6	2-9	42-0
B12	#6	2	2-6	1			5-0	T7	5	12	3-10	1			106-0
B13	#6	10	6-9	31	0-10	5-11	97-6	T8	5	4	5-8	1			26-8
B14	#6	18	4-3	31	3-4	5-11	166-6								

R1	#6	22	7-7	1			166-0
R2	#5	4	5-6	1			34-0
R3	#6	2	5-6	1			7-0
R4	#6	33	5-6	1			154-0
R5	#6	8	7-5	21	3-4	5-4	74-0
R6	#6	14	5-6	1			119-
R7	#6	10	3-6	1			35-
R8	#6	16	4-0	1			104-
R9	#5	36	8-9	21	3-12	5-7 1/2	315-0
R10	#5	4	8-3	21	2-10 1/2	5-4 1/2	33-0
R11	#5	22	6-9	1			148-
R12	#6	14	5-3	1			115-
R13	#5	10	3-6	1			35-0
R14	#5	26	4-6	1			117-0
R15	#5	20	7-8	1			73-4
R16	#5	56	5-3	21	2-10 1/2	5-4 1/2	247-0
R17	#5	4	8-3	21	2-9	5-3	32-0
R18	#5	6	11-9	1			70-0
R19	#6	12	8-3	1			115-0
R20	#5	3	3-3	1			26-0
R21	#5	6	11-9	1			70-0
R22	#5	40	6-1	21	2-9	5-3	320-0
R23	#5	16	8-3	1			88-0
R24	#5	8	3-3	1			26-0
R25	#5	28	5-6	21	2-9	5-3	224-0
R26	#5	16	11-6	1			158-8
R27	#5	14	11-7	1			156-0

BAR TYPES



Votes.

1. Bar dimensions are out to out of bar
2. Radius of bends equals 3 bar diameters for sizes equal to or less than #7.
3. The 2" and 3" dimensions from face of concrete to steel are clear distances.
4. Cut or shift steel where necessary to clear the port opening by 2".

0 2 4 6
Scale in Feet

STANDARD OPEN RISER	
STANDARD DWG. NO.	ES-3130-3030 R
DATE 6-67	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-3030 3530 R
DATE 7-67	SHEET 1 OF 4

Steel:

5 Bars
6 Bars
7 Bars

Length of #5 Bars = $(2,676-0) \times (\text{length of Bar } R2)$
Length of #6 Bars = $(1,293-6) \times (\text{length of Bars } R1, R3, R4 \text{ and } \dots)$

$$\text{Total Concrete} = (30.70) + (1.16V) =$$

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QUANTITIES

2710-0 610. 17

1695-4 Lim. Ft.

541-0 Lin Fr

1022

2826.53 (65)

2546.39 66

176 lbs

6478.92 (r)

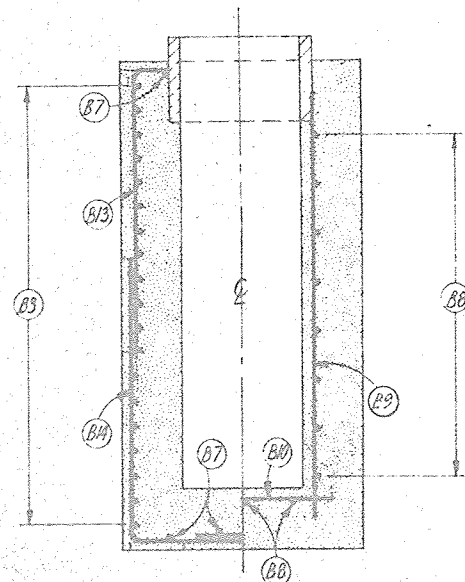
As-Built Plans

NO CHANGES IN CONSTRUCTION



PRINCIPAL SPILLWAY INLET		Date	
FLOODWATER RETARDING STRUCTURE SITE NO. 5		4-79	
SANDERSON CANYON WATERSHED		Approved _____	
IN		SOUTHERN CONSTRUCTION ENGINEER, INC.	
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS		TEMPLE, TEXAS	
U. S. DEPARTMENT OF AGRICULTURE		Checked _____	
SOIL CONSERVATION SERVICE		ELBO ENGINEERING CORP.	
G. J. M.		HOUSTON, TEXAS	
S. C. S.		Date _____	
S. C. S.		Drawing No. _____	
Checked _____		4-E-36,790	

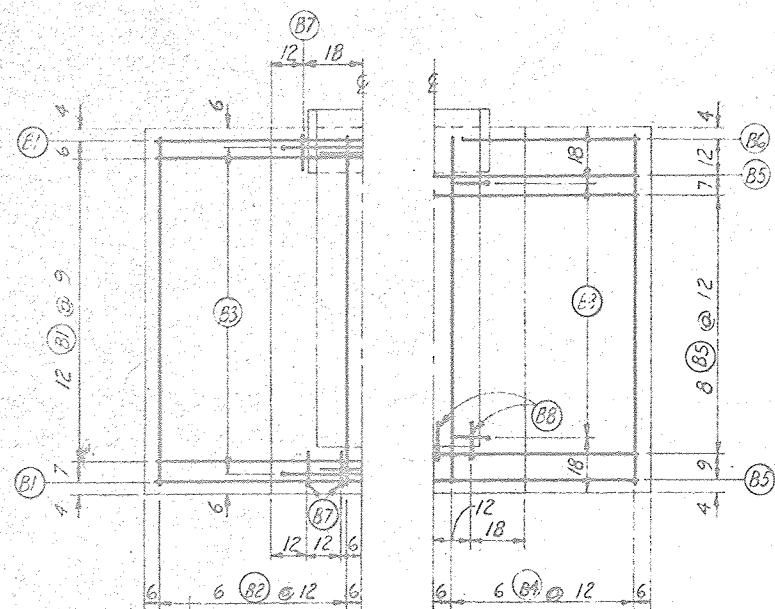
REPRINTED W/MINOR REVISIONS BY SCS - 6/84



Outside Steel Inside Steel

SECTION A-A

0 1 2 3
Scale in Feet

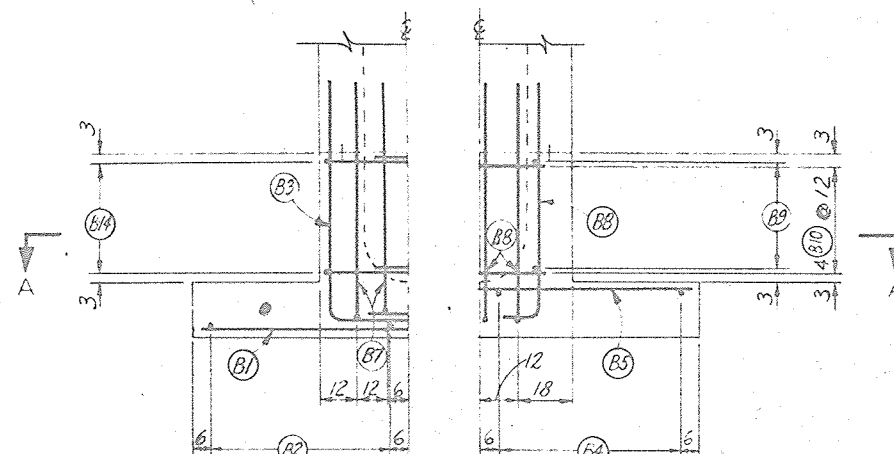


Steel 3" From Bottom of Footing

Steel 2" From Top of Footing

PLAN FOOTING

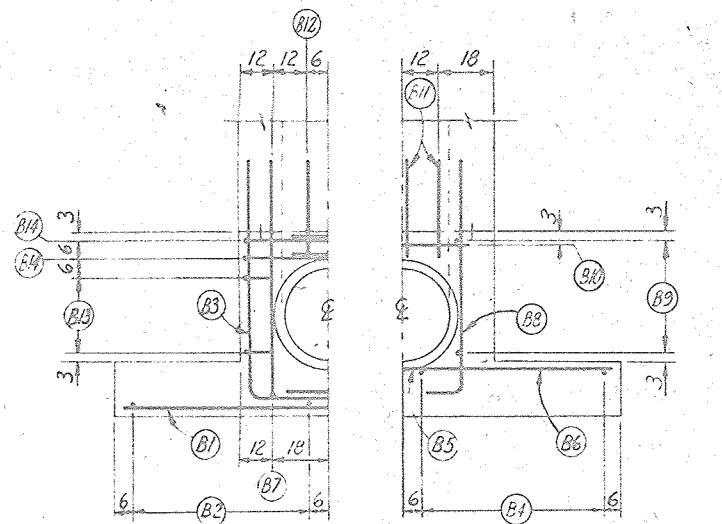
STANDARD OPEN RISER	
STANDARD DWG. NO.	ES-3130-3030 R
DATE	6-67
SHEET	2 OF 4
ADAPTED FROM	
STANDARD COVERED RISER	
DESIGN CONSTANTS	$f'_c = 4000 \text{ psi}$ $f_c = 1600 \text{ psi}$
	$n = 8$ $f_s = 20,000 \text{ psi}$
STANDARD DWG. NO.	ES-3030-3530 R
DATE	7-65
SHEET	2 OF 4



Steel 2" From Outside Face

Steel 2" From Inside Face

UPSTREAM ELEVATION

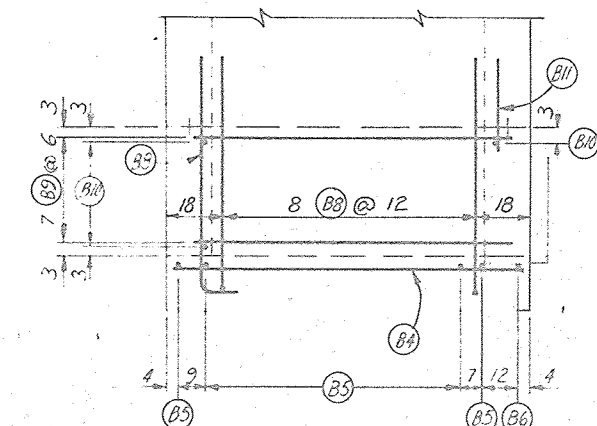


Steel 2" From Outside Face

Steel 2" From Inside Face

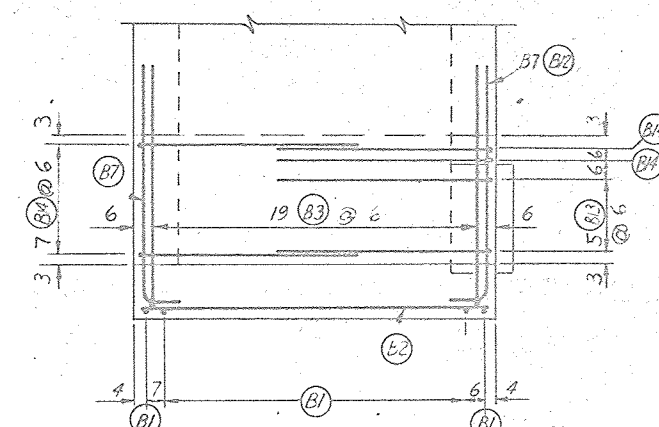
DOWNSTREAM ELEVATION

Note: Cut or shift steel to clear slide gate opening 2"



Steel 2" From Inside Face
and 2" From Top of Footing

SIDEWALL ELEVATION



Steel 2" From Outside Face
and 3" From Bottom of Footing

SIDEWALL ELEVATION

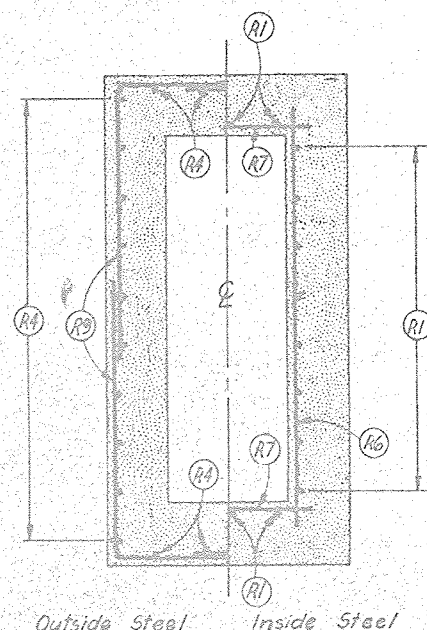
0 2 4
Scale in Feet

Unless Otherwise Shown

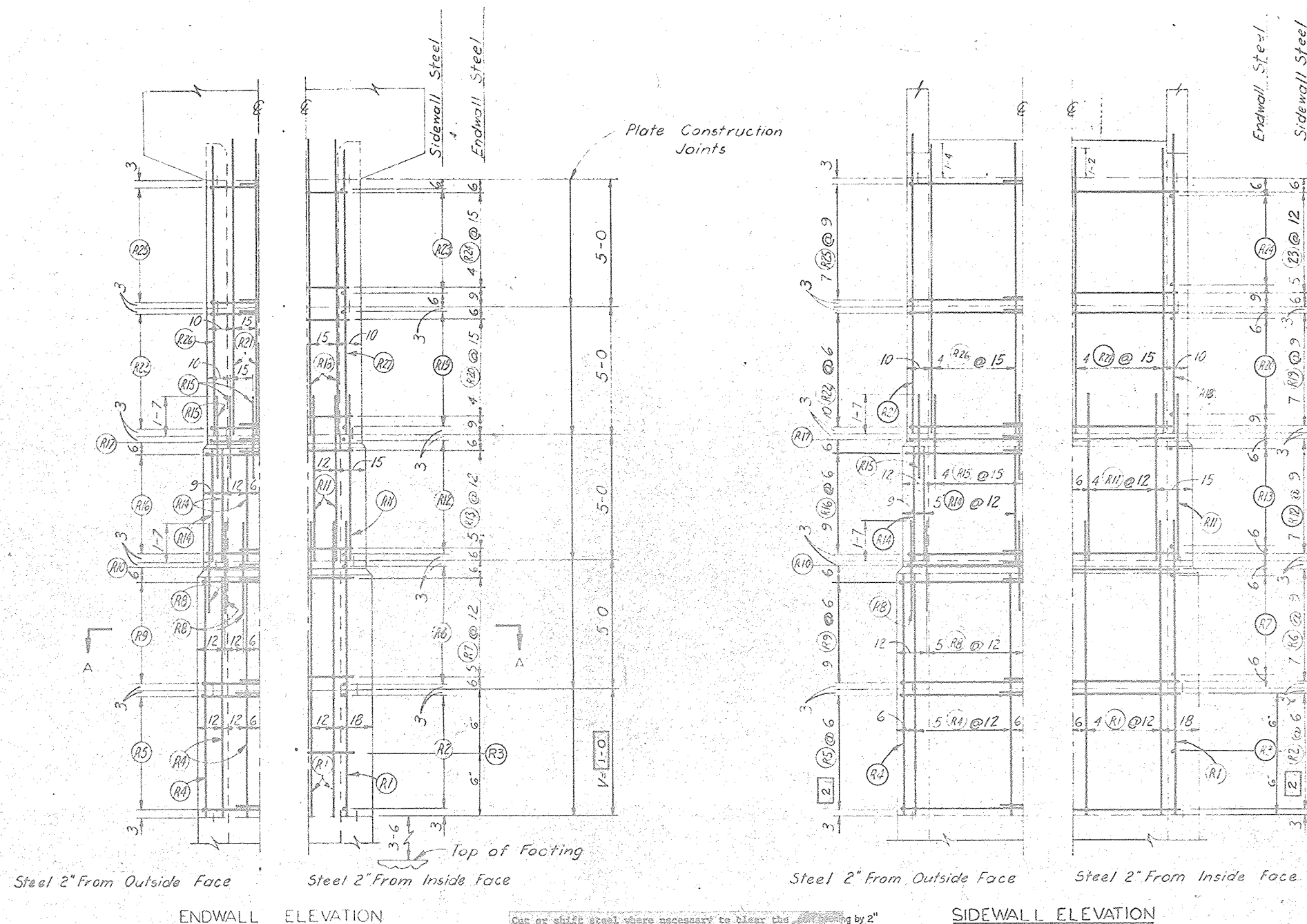
As-Built Plans
NO CHANGES IN CONSTRUCTION
dup

STEEL PLACEMENT - PRINCIPAL SPILLWAY INLET	
FLOODWATER RETARDING STRUCTURE SITE NO. 5	
SANDERSON CANYON WATERSHED	
IN	
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS	
U. S. DEPARTMENT OF AGRICULTURE	
SOIL CONSERVATION SERVICE	
Designed	S.C.S. 4-79
Drawn	S.C.S. 4-79
Traced	S.C.S. 4-79
Checked	C.H.S. 4-79
Date 4-79	
Title SANDERSON CANYON WATERSHED	
Drawn S.C.S. 4-79	
Traced S.C.S. 4-79	
Checked C.H.S. 4-79	
Drawing No. 4-E-36,790	

REPRINTED WITH MINOR REVISIONS BY SCS - 6/88



SECTION A-A
0 1 2 3
Scale in Feet



Cut or shift steel where necessary to clear the opening by 2"

As-Built Plans

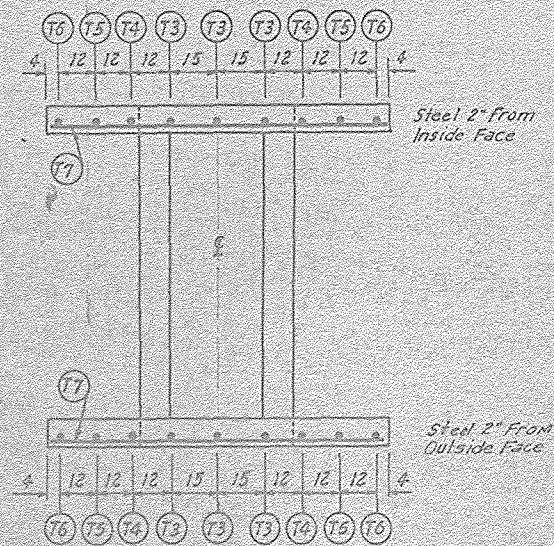
NO CHANGES IN CONSTRUCTION
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0 2 4
Scale in Feet
Unless Otherwise Shown

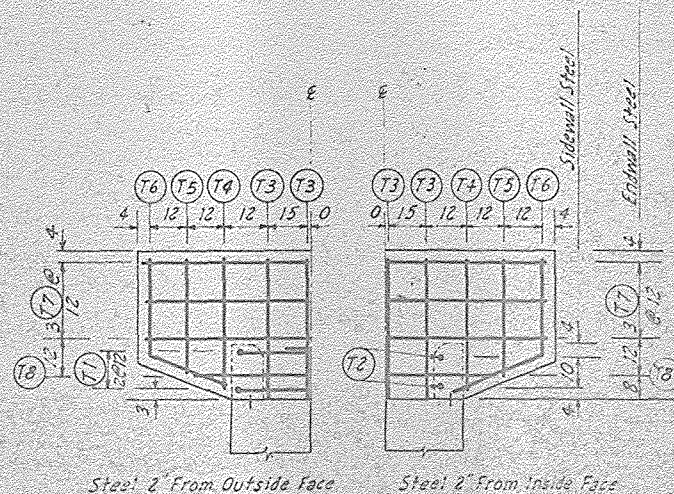
STANDARD OPEN RISER	
STANDARD DWG. NO. ES-3130-3030R	
DATE 6-67	SHEET 3 OF 4
ADAPTED FROM	
STANDARD COVERED RISER	
DESIGN CONSTANTS	
$f'_c = 4000$ psi	$f'_c = 1600$ psi
$n = 8$	$f_s = 20,000$ psi
STANDARD DWG. NO. ES-B030-3530R	
DATE 7-65	SHEET 3 OF 4

STEEL PLACEMENT - PRINCIPAL SPILLWAY INLET	
FLOODWATER RETARDING STRUCTURE SITE NO. 5	
SANDERSON CANYON WATERSHED	
IN	
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS	
U. S. DEPARTMENT OF AGRICULTURE	
SOIL CONSERVATION SERVICE	
Designed S.C.S.	4-79
Drawn S.C.S.	4-79
Fielded S.C.S.	4-79
Checked C.H.S.	4-79
Date	4-79
Approved	<i>[Signature]</i>
Title	STATE CONSERVATION ENGINEER, S.C.S.
Location	TEMPLE, TEXAS
Sheet	15
Drawing No.	4-E-36,790
Check	24

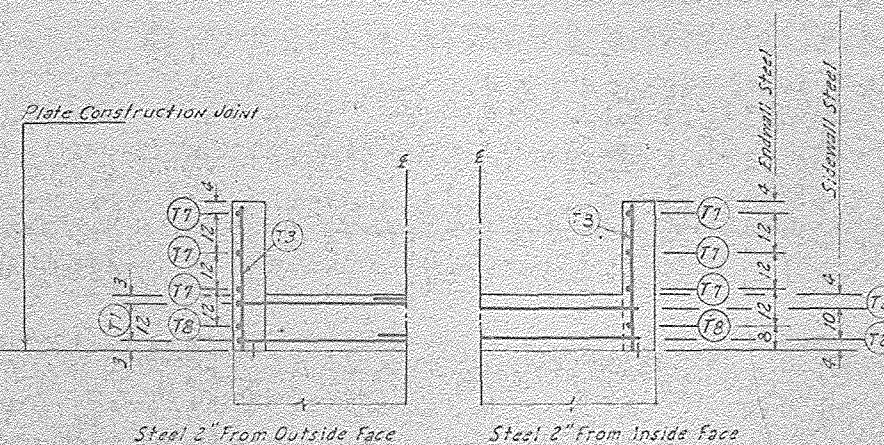
REPRINTED MINOR REVISIONS BY SCS - 6/84



PLAN-TOP



ENDWALL ELEVATION



SIDEWALL ELEVATION

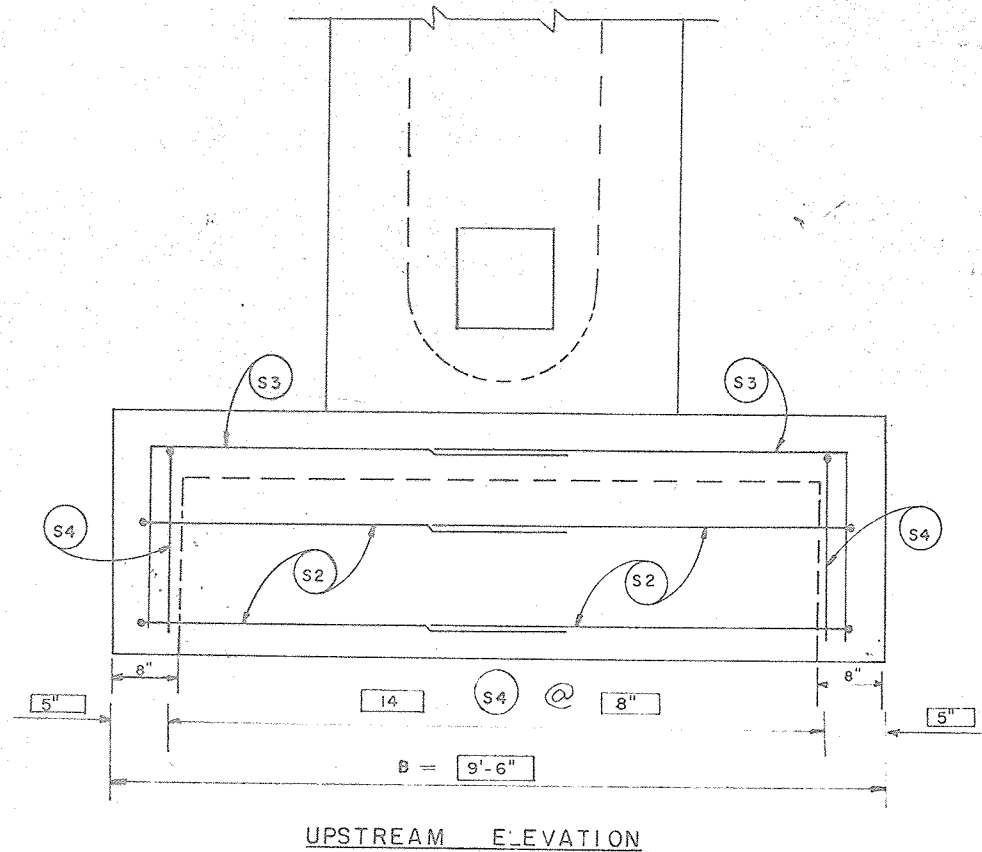
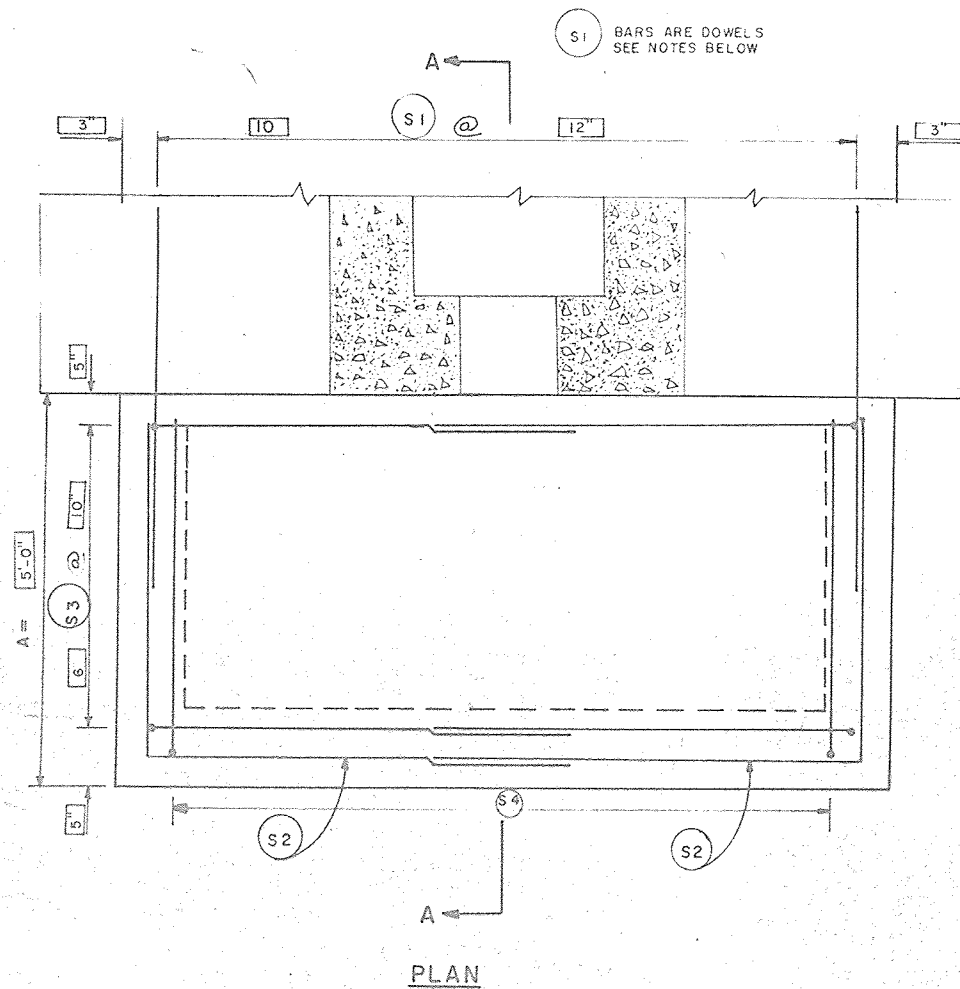
0 1 2 3 4 5 6
Scale in Feet

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-3130-3030 R
DATE	4-67
SHEET	4 OF 4

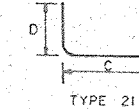
REPRINTED WITH MINOR REVISIONS BY SCS - 6/88

As-Built Plans
NO CHANGES IN CONSTRUCTION

STEEL PLACEMENT - PRINCIPAL SPILLWAY INLET			
FLOODWATER RETARDING STRUCTURE SITE NO. 5			
SANDERSON CANYON WATERSHED			
IN			
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS			
U. S. DEPARTMENT OF AGRICULTURE			
SOIL CONSERVATION SERVICE			
Designed	S.C.S.	Date	4-79
Drawn	S.C.S.	Date	4-79
Traced	S.C.S.	Date	4-79
Checked	C.H.S.	Date	4-79
		Sheet	No. 16 of 24
		4-E-36,790	



BAR TYPE



MARK	SIZE	QUAN	TYPE	D	C	TOTAL LENGTH	BAR NO.	C. LENGTH EQUALS	D. LENGTH EQUALS
S2	4	4	9'-8"	21	4'-6"	5'-2"	38'-8"	S2	B+5"
S3	4	12	7'-0"	21	1'-11"	5'-1"	84'-0"	S3	B+4"
S4	4	14	6'-5"	21	1'-11"	4'-6"	89'-10"	S4	A-6"
S1	6	10	4'-0"	-	-	-	40'-0"		

TOTAL STEEL (SIZE 4) 212'-6" = 141.95 LBS.

TOTAL STEEL 252'-6" = 202.03 LBS.

TOTAL REINFORCED CONCRETE 2.0 CU. YDS.

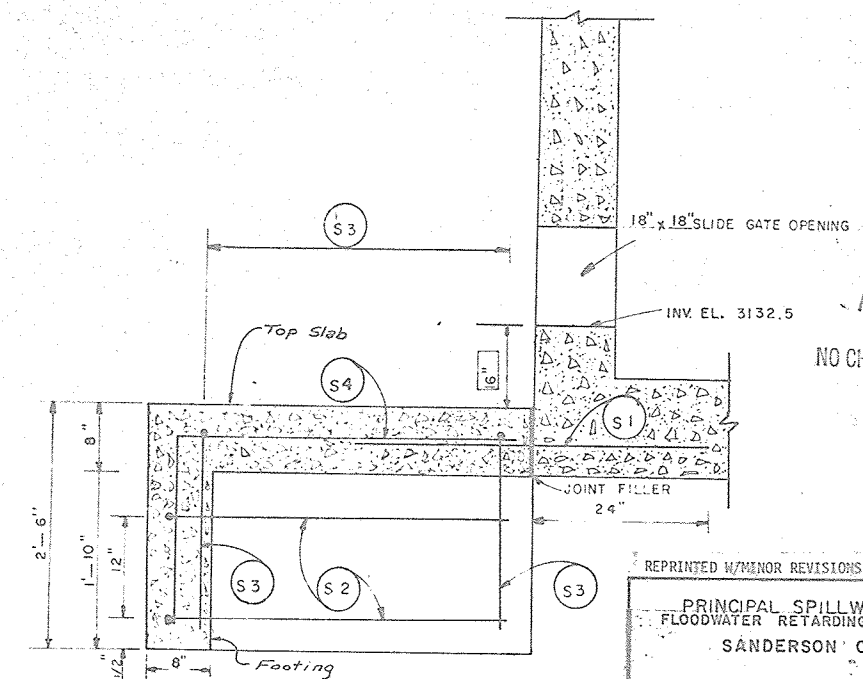
CU YDS. CONCRETE = $8(A)(B) + 176(B) + 352(A) - 2816$
46556

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; 10 ARE REQUIRED. CENTER SPACING OF NO.6 (S) BARS SHALL BE 15" OR LESS. ALL CONCRETE SHALL EQUAL OR EXCEED CLASS 4000.

MINIMUM STEEL CLEARANCE AGAINST EARTH SHALL BE 3" EXCEPT (S) DOWELS AND (S) BARS SHALL BE CENTERED IN THE TOP SLAB.



As-Built Plans

NO CHANGES IN CONSTRUCTION

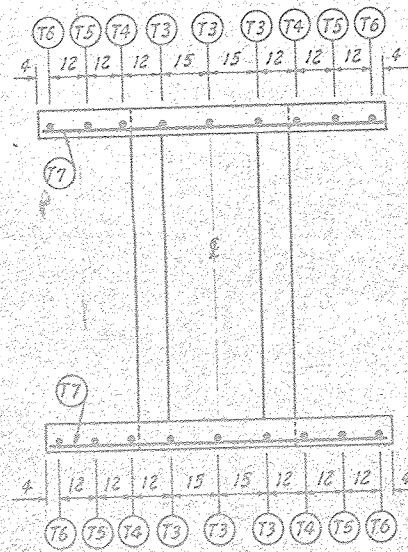
REPRINTED W/MINOR REVISIONS BY SCS - 6/84

PRINCIPAL SPILLWAY INLET SCOUR APRON
FLOODWATER RETARDING STRUCTURE SITE NO. 3
SANDERSON CANYON WATERSHED

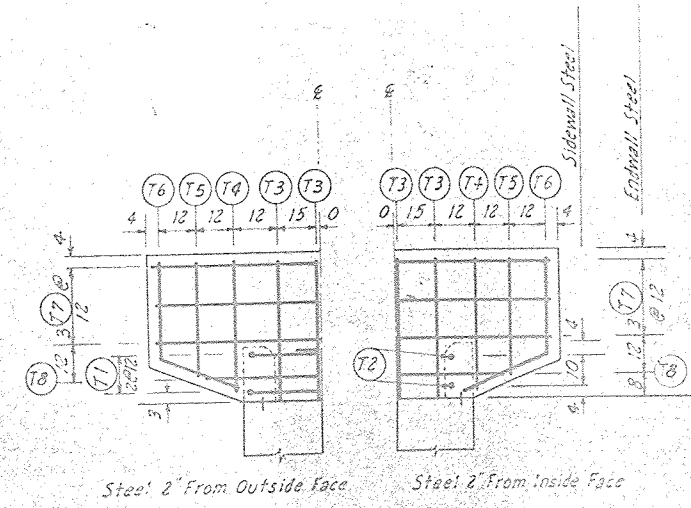
IN
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

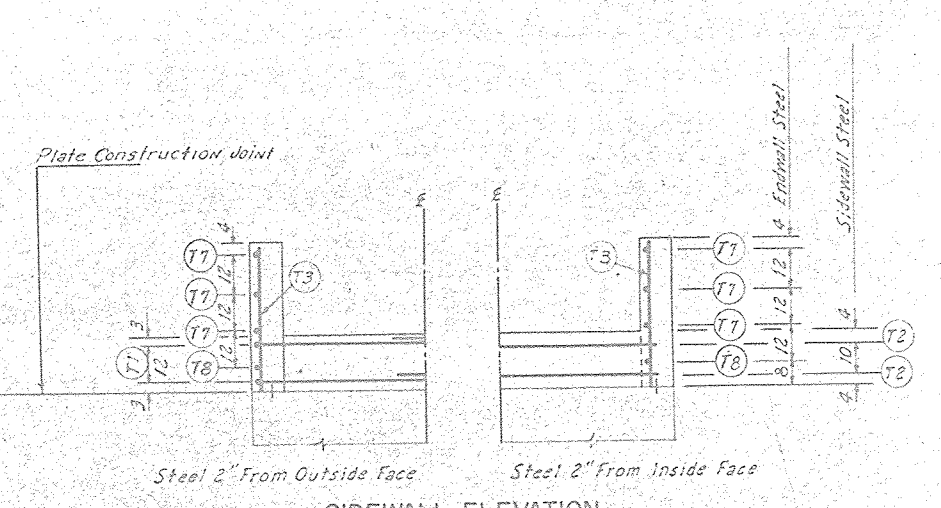
DESIGNED BY G. J. M.	DATE 4-79	APPROVED BY [Signature]	DATE 4-79
DRAWN S.C.S.	DATE 4-79	STATE CONSERVATION ENGINEER, S. C. S.	
TRACED S.C.S.	DATE 4-79	TEMPLE, TEXAS	
CHECKED C.H.S.	DATE 4-79	BLUM ENGINEERING CORP.	
		HOUSTON, TEXAS	
		SHEET 17	DRAWING NO. 4-E-36,790
		OF 24	



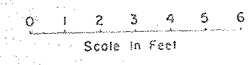
PLAN-TOP



ENDWALL ELEVATION



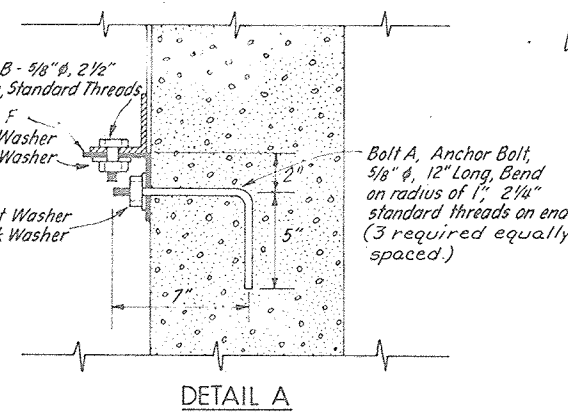
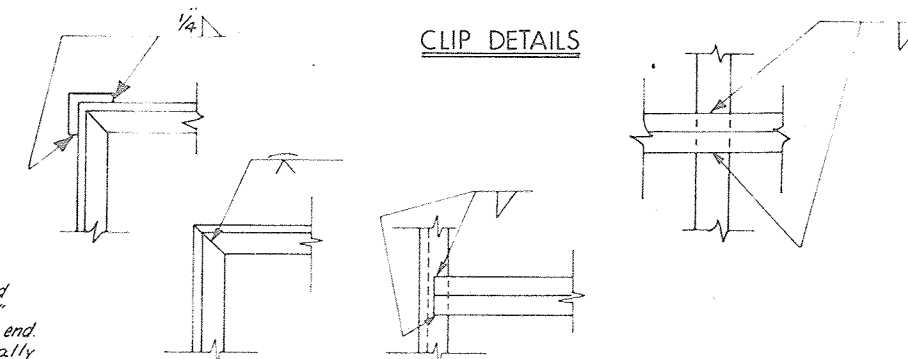
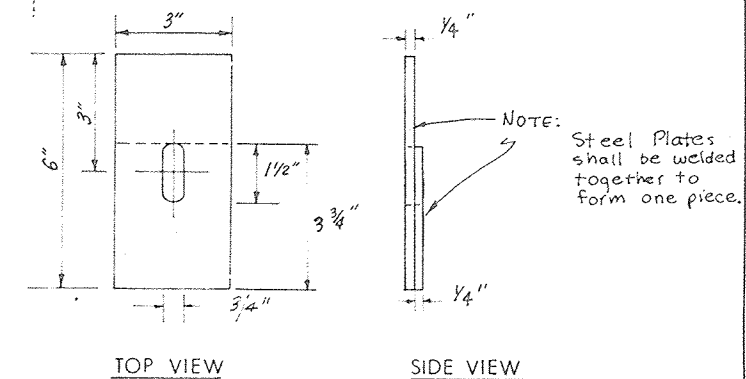
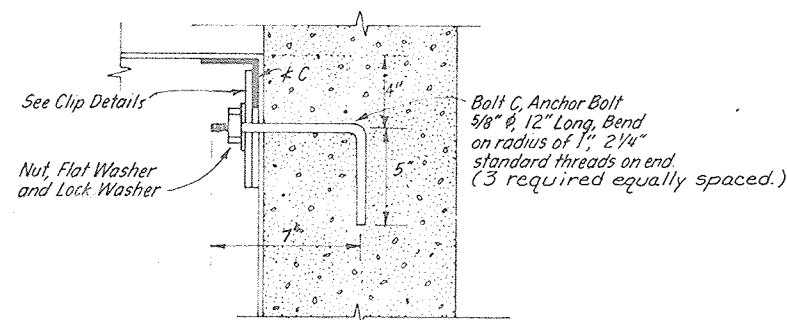
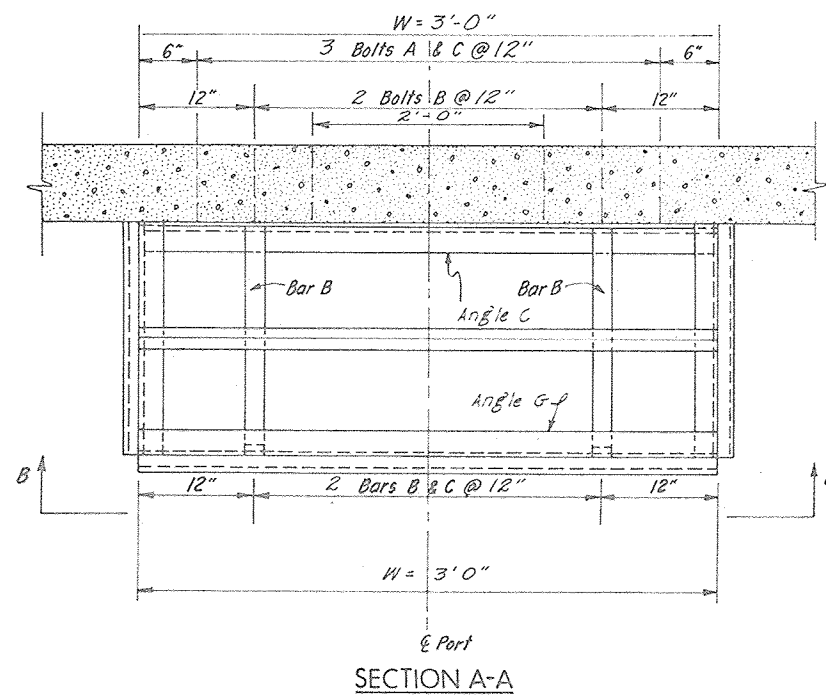
SIDEWALL ELEVATION



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-3130-3030 R
DATE 4-67	SHEET 4 OF 4

As-Built Plans
NO CHANGES IN CONSTRUCTION
[Signature]

STEEL PLACEMENT - PRINCIPAL SPILLWAY INLET			
FLOODWATER RETARDING STRUCTURE SITE NO. 5			
SANDERSON CANYON WATERSHED			
IN			
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS			
U. S. DEPARTMENT OF AGRICULTURE			
SOIL CONSERVATION SERVICE			
Designed	S.C.S.	Date	4-79
Drawn	S.C.S.	Date	4-79
Traced	S.C.S.	Date	4-79
Checked	C.H.S.	Date	4-79
REPRINTED W/MINOR REVISIONS BY SCS 8/84		4-E-36,790	



SCHEDULE OF MATERIALS REQUIRED FOR ONE RACK		
QUANTITY	ITEM	DESCRIPTION
4	Angle A	2½" x 2½" x ¼" x 2'0" Cut and weld
4	Angle B	2½" x 2½" x ¼" x 5'-0" Cut and weld
2	Angle C*	3" x 3" x ¼" x 2'-11½" Weld
18	Angle D	1½" x 1½" x ¼" x 1'11" Weld
11	Angle E	1½" x 1½" x ¼" x 3'-0" Weld
1	Angle F*	3½" x 3½" x ¼" x 2'-6"
2	Angle G	2½" x 2½" x ¼" x 3'-0" Weld
2	Bar A	¼" x 2" x 4'7" Weld
4	Bar B	¼" x 2" x 2'0" Weld
2	Bar C	¼" x 2" x 4'11¼" Weld
3	Bolt A	5/8" Ø Anchor Bolt, See Detail A
2	Bolt B	5/8" Ø, See Detail A
3	Bolt C	5/8" Ø, Anchor Bolt, See Detail B
3	Clip	See Clip Details
8	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 track rack shall be galvanized.


As-Built Plans

NO CHANGES IN CONSTRUCTION

REPRINTED W/MINOR REVISIONS BY SCS - 6/84

PORT TRASH RACK
FLOODWATER RETARDING STRUCTURE SITE NO. 5
SANDERSON CANYON WATERSHED

IN
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS

 U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

DATE	4-79	APPROVED BY SPECIAL INSPECTION ENGINEER, S.C.S. TEMPLE, TEXAS
DESIGNED	G. J. M.	
DRAWN	S. C. S.	BLOM ENGINEERING CORP. HOUSTON, TEXAS
TRACED	S. C. S.	
CHECKED	C. H. S.	
	4-79	SHEET NO. 18 DRAWING NO. 4-E-36-790

SCS-ENG-314 (Rev. 7-72)

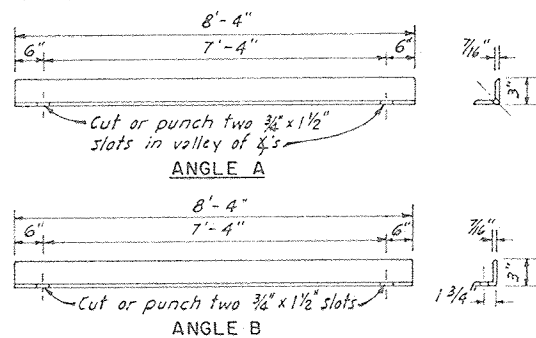
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SCS-ENG-314

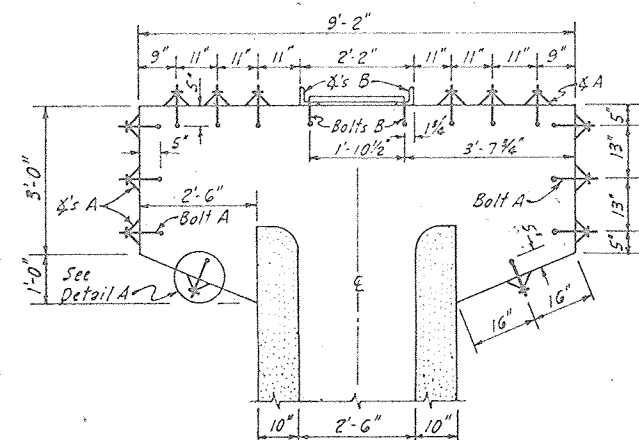
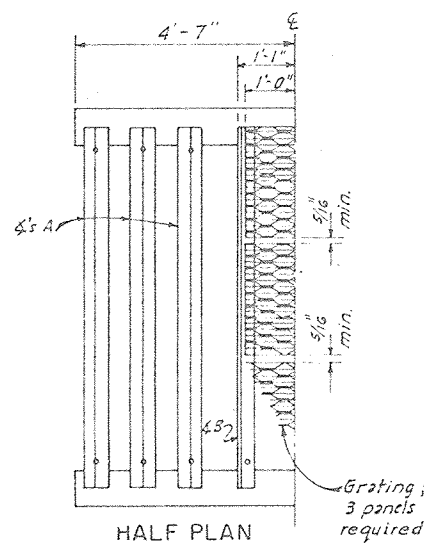
SCS-ENG-314 1 Rev 7-72

SCHEDULE OF MATERIALS FOR TRASH RACK			
Item	Quan.	Length	Total Feet
3"x3"x1/16" Angles A	14	8'-4"	116'-8"
5/8" Angle Bolts A, w/washers & nuts	28	21"	
3/4" I.D. Pipe Sleeve	32	0'-10"	26'-8"
5/8" Angle Bolts B, w/washers & nuts	4	20"	
3"x3"x1/16" Angles B	2	8'-4"	16'-8"
Grating Panels	3		

All parts of the trash rack shall be galvanized. See Construction Specification B1 and Material Specification 582.

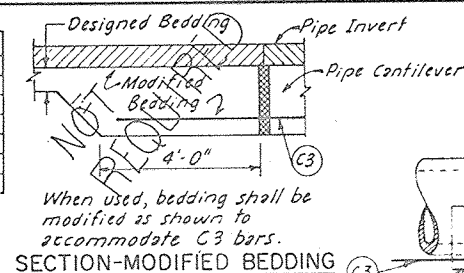


DETAIL OF ANGLES FOR TRASH RACK



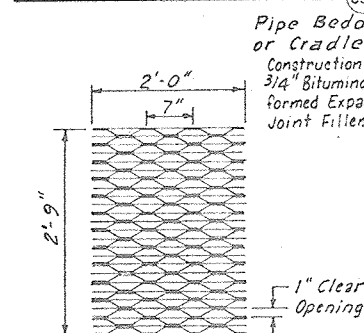
SECTION A-A

TRASH RACK



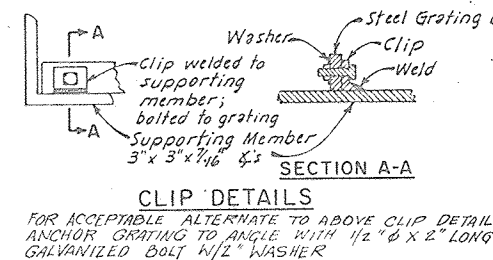
When used, bedding shall be modified as shown to accommodate C3 bars.

SECTION-MODIFIED BEDDING

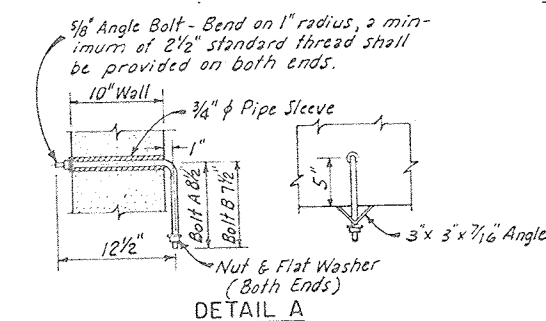


Grating: Galvanized steel; pattern as shown; bearing bars 1" x 1/4", min. weight 9.0 lbs. per sq. ft. Fasten to supporting angles with clips as shown. Not less than 3 clips on each side of each panel. 3 panels required.

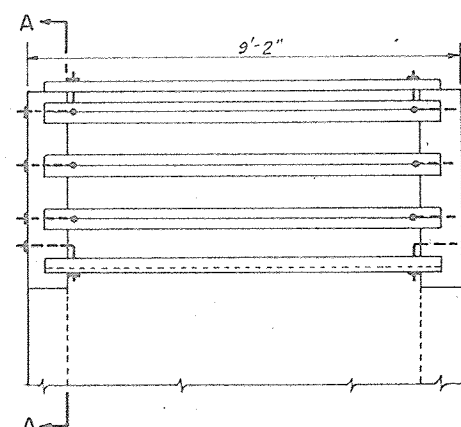
GRATING



FOR ACCEPTABLE ALTERNATE TO ABOVE CLIP DETAIL, ANCHOR GRATING TO ANGLE WITH 1/2" x 2" LONG GALVANIZED BOLT W/1/2" WASHER



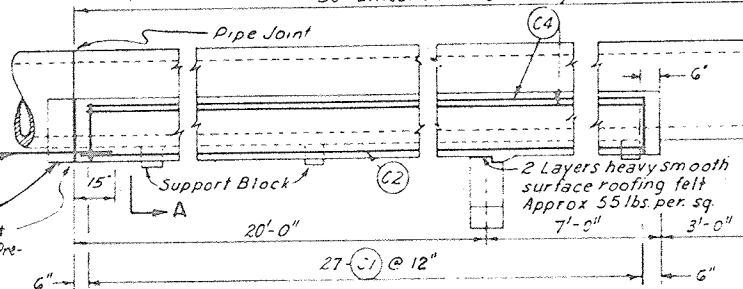
DETAIL A



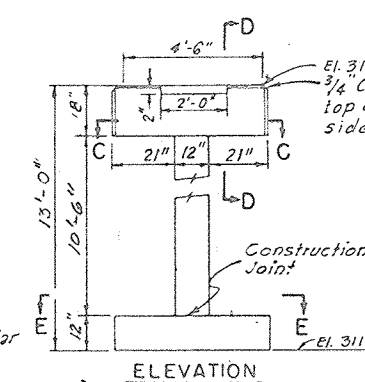
SIDE ELEVATION

Note: At the Contractor's option two 10-foot length joints of pipe may be used in lieu of the 20-foot length joint shown on the drawings.

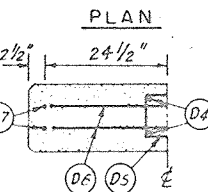
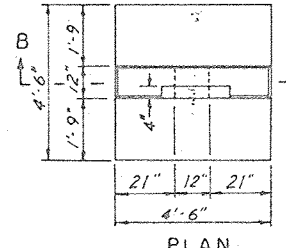
30 Linear Feet of 30" Pipe



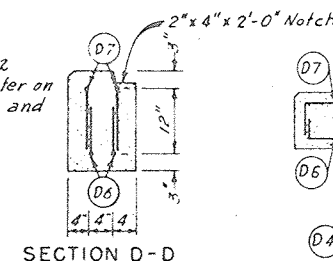
PIPE CANTILEVER



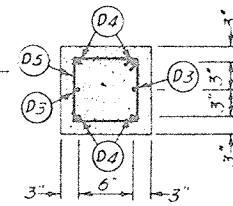
ELEVATION



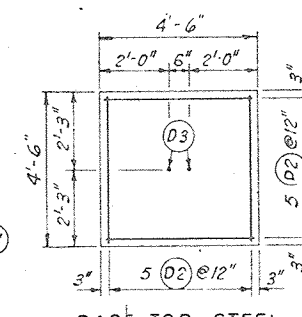
SECTION C-C



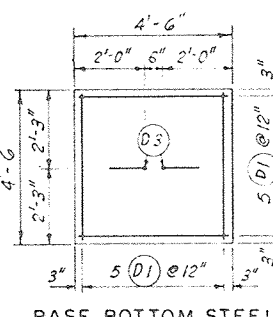
SECTION D-D



SECTION E-E

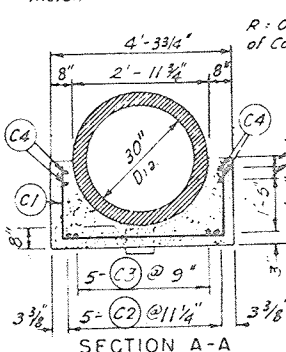


PIPE CANTILEVER SUPPORT

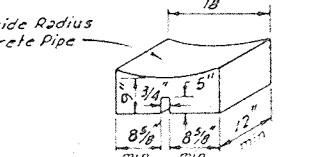


BASE BOTTOM STEEL

Note: Sides of Pipe Cantilever to be formed with lumber or metal.



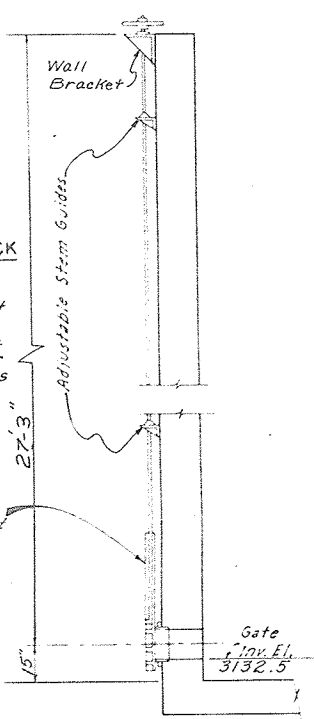
SECTION A-A



CANTILEVER SUPPORT BLOCK

Note: Wall bracket & stem guides shall have sufficient adjustment to insure a vertical mounting for the gate stem. See sht. for location of wall thickness changes.

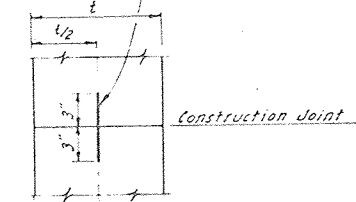
Note: Wall bracket and stem guides shall have sufficient adjustment to ensure a vertical mounting for the gate stem. Detail at right is not to scale.



The slide gate shall be centered in the upstream wall of the riser. See manufacturer's data of gate frame, stem splices and anchor bolt layout.

18" X 18" SLIDE GATE

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.



DETAIL OF SHEAR PLATE CONSTRUCTION JOINT

As-Built Plans

NO CHANGES IN CONSTRUCTION

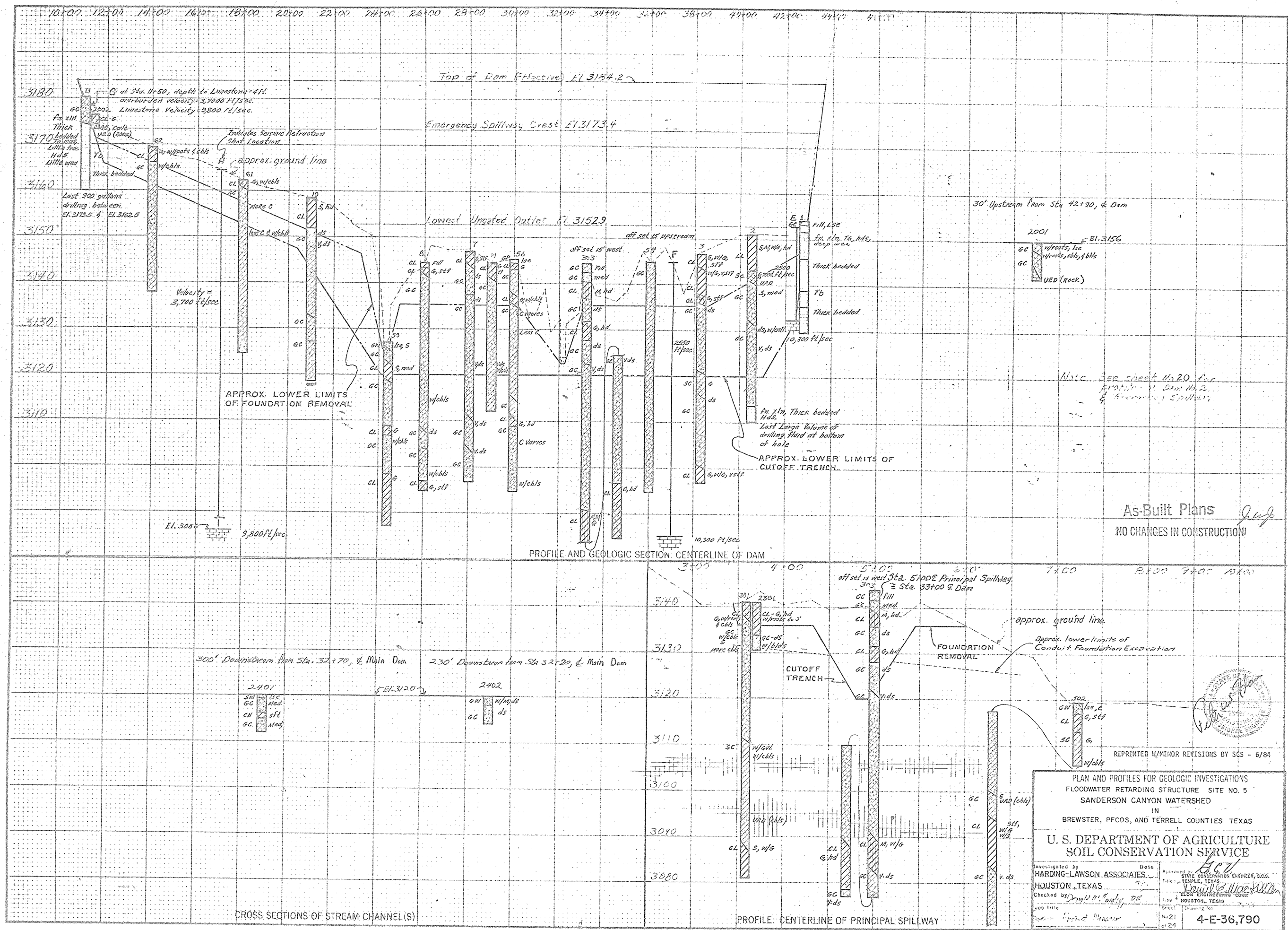
Note: All concrete shall equal or exceed class 4000

REPRINTED W/MINOR REVISIONS BY SCS - 6/84

TRASH RACK, SLIDE GATE, AND PIPE CANTILEVER SUPPORT DETAILS
FLOODWATER RETARDING STRUCTURE SITE NO. 5
SANDERSON CANYON WATERSHED
IN
BREWER, PECOS, AND TERRELL COUNTIES TEXAS
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed	By	Date	Approved
G.J.M.	4-79	4-79	4-79
Drawn	S.C.S.	4-79	4-79
Traced	S.C.S.	4-79	4-79
Checked	C.H.S.	4-79	4-79

FOR TYPICAL BAR TYPES REFER TO A.C.I. STANDARD 315										
Bar No.	Location	Qty	Lgth	Total Length	Size	Type	A	B	C	D
C-1	Pipe Cantilever	27	7'-4"	198'-0"	4	S/O		1-9	3-10	1-9
C-2	"	5	26'-6"	132'-6"	5	Sfr				
C-3	"	5	5'-0"	25'-0"	5	Sfr				
C-4	"	4	26'-6"	106'-0"	7	Sfr				
Total Steel in Pipe Cantilever (Size #4) = 198'-0" = 132.26 lbs.										
Total Steel in Pipe Cantilever (Size #5) = 132'-6" = 164.27 lbs.										
Total Steel in Pipe Cantilever (Size #7) = 106'-0" = 216.66 lbs.										
Total Steel = 513.19 lbs.										
Total Reinforced Concrete in Pipe Cantilever = 5.86 Cu. yds.										
D1	Cantilever Support	10	4'-1"	40'-10"	5	Sfr				
D2	"	10	4'-1"	40'-10"	4	Sfr				
D3	"	2	3'-9"	7'-6"	6	2	2-6	1-3		
D4	"	4	11'-9"	47'-0"	6	Sfr				
D5	"	16	3'-2"	50'-8"	3	Ft	0-4	0-7	0-7	0-7
D6	"	2	5'-6"	11'-0"	4	2	0-9	4-0		0-9
D7	"	2	6'-2"	12'-4"	7	2	1-0	4-2		1-0
Total Steel in Pipe Cantilever Support (Size #3) = 50'-8" = 19.05 lbs.										
Total Steel in Pipe Cantilever Support (Size #4) = 51'-10" = 34.62 lbs.										
Total Steel in Pipe Cantilever Support (Size #5) = 40'-10" = 42.59 lbs.										
Total Steel in Pipe Cantilever Support (Size #6) = 54'-6" = 81.86 lbs.										
Total Steel in Pipe Cantilever Support (Size #7) = 12'-4" = 25.21 lbs.										
Total Steel = 203.33 lbs.										
Total Reinforced Concrete in Pipe Cantilever Support = 1.39 Cu. yds.										



As-Built Plans
NO CHANGES IN CONSTRUCTION

REPRINTED W/MINOR REVISIONS BY SCS - 6/84

PLAN AND PROFILES FOR GEOLOGIC INVESTIGATIONS
FLOODWATER RETARDING STRUCTURE SITE NO. 5
SANDERSON CANYON WATERSHED
IN
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Investigated by
HARDING-LAWSON ASSOCIATES
HOUSTON, TEXAS

Checked by
[Signature]
[Signature]

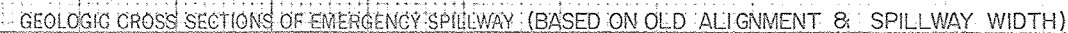
Date
[Signature]
[Signature]

Approved by
STATE CONSERVATION ENGINEER, SCS
HOUSTON, TEXAS

Job Title
[Signature]
[Signature]

Sheet
No. 21
of 24

Drawing No.
4-E-36,790



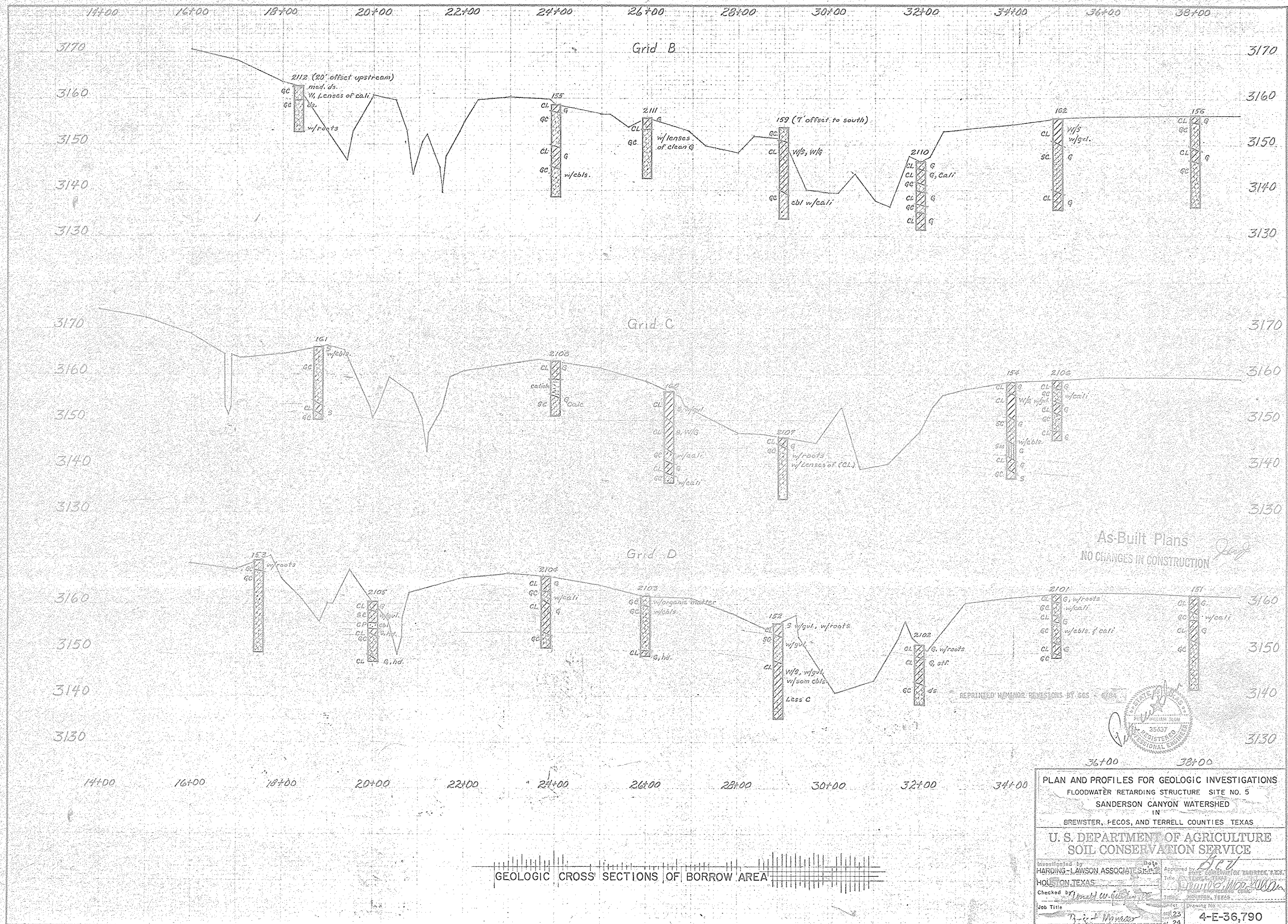
FILED

REPRINTED MINOR REVISIONS BY SCS - 6/84

PLAN AND PROFILES FOR GEOLOGIC INVESTIGATIONS
FLOODWATER RETARDING STRUCTURE SITE NO. 5
SANDERSON CANYON WATERSHED
IN
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Investigated by HARDING - LAWSON ASSOCIATES, Inc.	Date 1-12-82	Approved by <i>BCV</i> CONVERSE ENGINEERS, S.C.S.
HOUSTON, TEXAS	Title TEMPLE, TEXAS	<i>Charles W. B. B. B.</i>
Checked by <i>Donald W. Quigley, P.E.</i>	Title BLON ENGINEERING CORP.	HOUSTON, TEXAS
Job Title <i>Project Manager</i>	Sheet No. 22 of 24	Drawing No. 4-E-36,790



PLAN AND PROFILES FOR GEOLOGIC INVESTIGATIONS
FLOODWATER RETARDING STRUCTURE SITE NO. 5
SANDERSON CANYON WATERSHED
IN
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Investigated by
HARDING-LAWSON ASSOCIATES, INC.
HOUSTON, TEXAS

Checked by
[Signature]
[Signature]

Job Title
District Engineer

Approved by
[Signature]
[Signature]

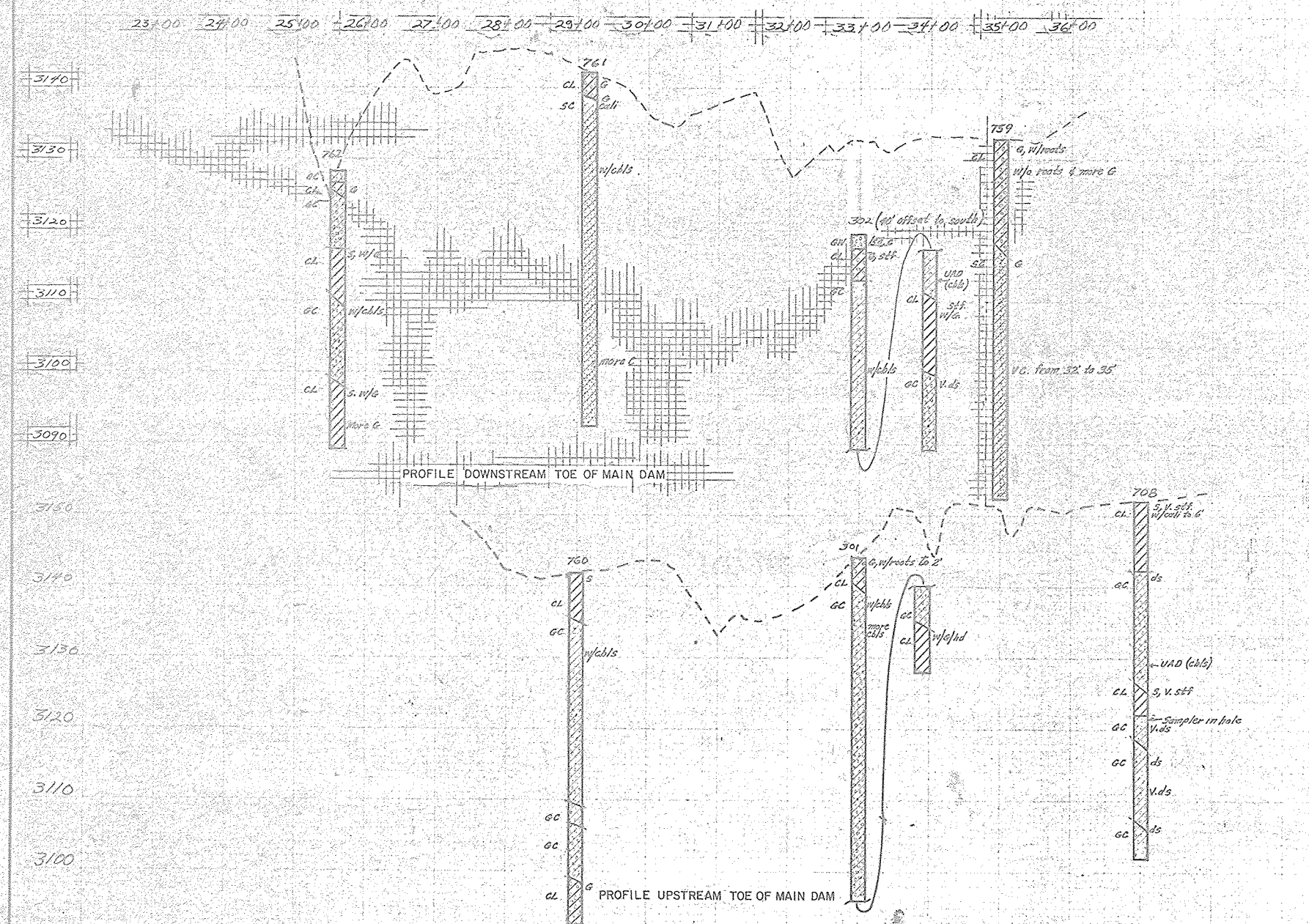
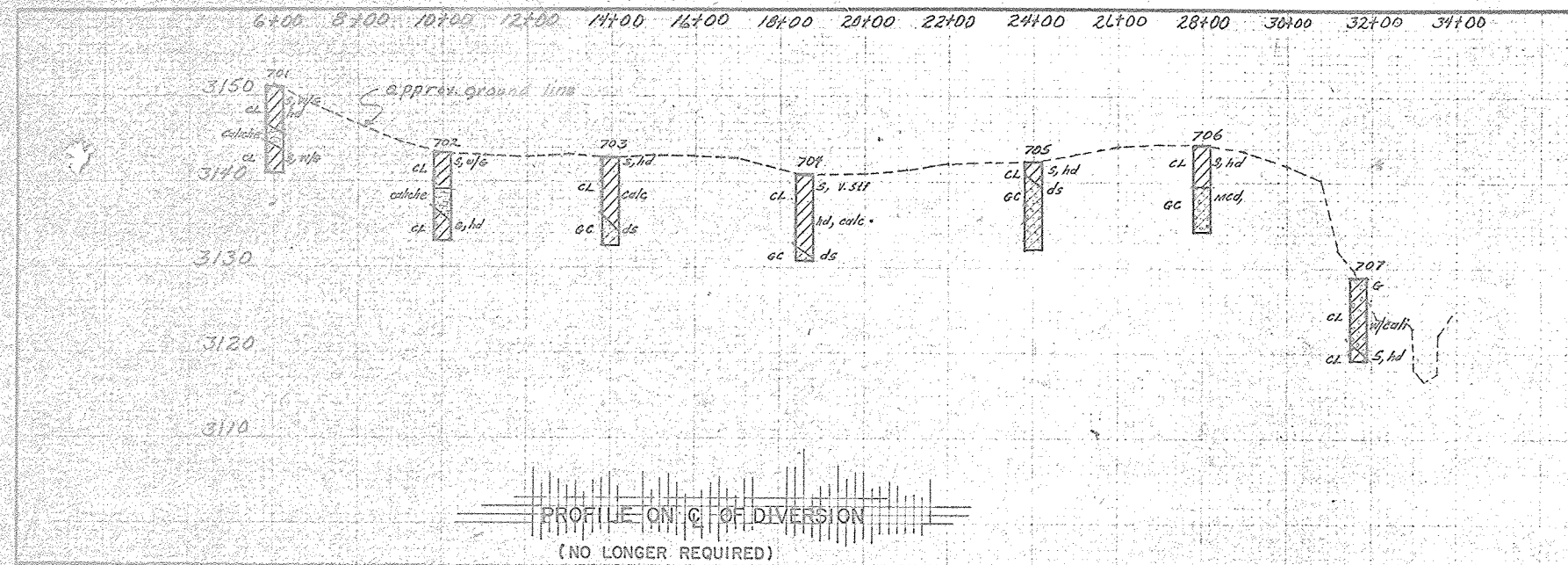
Title
District Engineer, Texas

Time
Houston, Texas

Sheet
23 of 24

Drawing No.
4-E-36,790

GEOLOGIC CROSS SECTIONS OF BORROW AREA



As-Built Plans

NO CHANGES IN CONSTRUCTION



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PLAN AND PROFILES FOR GEOLOGIC INVESTIGATIONS
FLOODWATER RETARDING STRUCTURE SITE NO. 5
SANDERSON CANYON WATERSHED
IN
BREWSTER, PECOS, AND TERRELL COUNTIES TEXAS
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Investigated by HARDING-LAWSON ASSOCIATES HOUSTON, TEXAS	Date 11-1-83	Approved by W. C. LAMSON, E.C.S. Date 11-1-83
Checked by J. W. D. [Signature]	Job Title Project Manager	Sheet 24 of 24
		Drawing No. 4-E-36,790