

**PART V**  
**DRAWINGS**

**DRAWING NO. TX-EN-0652**

**Olmitos & Garcias Creeks Watershed**  
**Floodwater Retarding Structure Site 7 Rehabilitation**  
**Starr County, Texas**

**CONTENTS**

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United States Department of Agriculture  
Natural Resources Conservation Service

# OLMITOS AND GARCIAS WATERSHED

FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHABILITATION  
STARR COUNTY, TEXAS

DRAINAGE AREA	12,960 ACRES
TOTAL STORAGE	4,975 AC. FT.
HEIGHT OF DAM	45 FEET

SPONSORED BY

STARR COUNTY SOIL AND WATER CONSERVATION DISTRICT  
COMMISSIONERS COURT OF STARR COUNTY

COOPERATING WITH

NATURAL RESOURCES CONSERVATION SERVICE  
OF THE  
U.S. DEPARTMENT OF AGRICULTURE

2015

CONSTRUCTION DRAWINGS APPROVED  
ENGINEERING JOB CLASS VII



B. TRENT STREET  
TEXAS REG. P.E. NO. 61421

*John W. Mueller*  
STATE CONSERVATION ENGINEER, N.R.C.S.  
TEMPLE, TEXAS



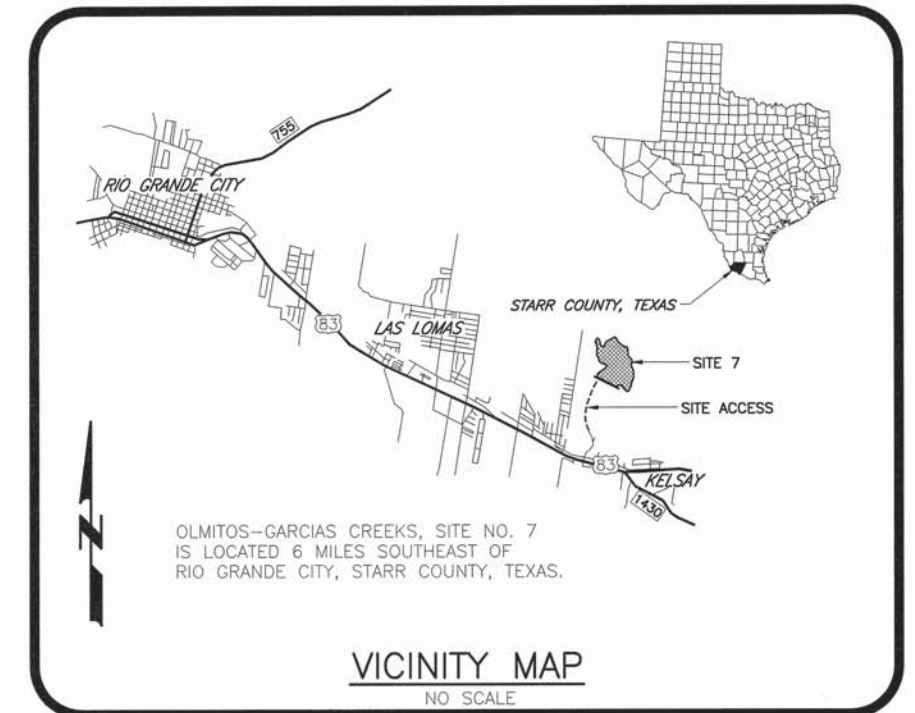
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Soil & Water Engineering Solutions  
F-4324

5/11/2015  
DATE

5/14/15  
DATE

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**STABILIZED CONST. ENTRANCE - DETAIL**  
NOT TO SCALE

- NOTES:
1. A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROVIDED AND MAINTAINED IN ACCORDANCE WITH CONSTRUCTION SPECIFICATION 8 AND 9 AND TxDOT SPECIFICATION 506.
  2. THE STABILIZED CONSTRUCTION ENTRANCE SHALL CONSIST OF A MINIMUM OF 8" THICKNESS OF CRUSHED ROCK PREDOMINANTLY 4" TO 8" IN SIZE. THE AGGREGATES SHALL BE CLEAN, HARD, DURABLE, AND FREE FROM ADHERENT COATINGS SUCH AS SALT, ALKALI, DIRT, CLAY, LOAM, SHALE, SOFT OR FLAKY MATERIALS, AND ORGANIC OR INJURIOUS MATTER.

**STORAGE TABLE**

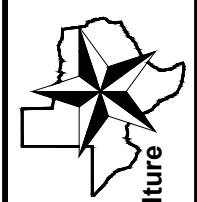
Elevation	Surface Acres	Storage	
		Acre Feet	Inches
152	2.3	2.3	0.00
154	8.6	13.1	0.01
156	13.0	34.7	0.03
158	15.4	63.1	0.06
160	18.2	96.7	0.09
162	21.8	136.7	0.13
164	25.5	184.0	0.17
166	34.1	243.6	0.23
168	45.3	323.0	0.30
170	61.3	429.6	0.40
170.2	63.2	442.0	0.41
172	78.7	569.7	0.53
174	94.5	742.9	0.69
176	122.9	960.3	0.89
178	138.4	1221.6	1.13
180	160.8	1520.8	1.41
182	180.1	1861.7	1.72
184	201.7	2243.5	2.08
186	225.7	2670.9	2.47
188	246.1	3142.7	2.91
190	275.5	3664.3	3.39
190.8	283.1	3887.8	3.60
192	296.0	4235.2	3.92
194	319.7	4850.9	4.49
196	345.7	5516.2	5.11
198	371.0	6232.9	5.77
200	409.2	7013.1	6.49
205	477.3	9229.4	8.55
Top of Dam (Effective) Elev.		203.5	
Auxiliary Spillway Crest Elev.		190.8	
Principal Spillway Crest Elev.		170.2	
Sediment Storage, Acre Feet		588.3	
Floodwater Storage, Acre Feet		3,794	
Drainage Area, Acres		12960	
Auxiliary Spillway Capacity At El. 190.8 (CFS)		32,761	
Principal Spillway Discharge At El. 170.2 (CFS)		240	



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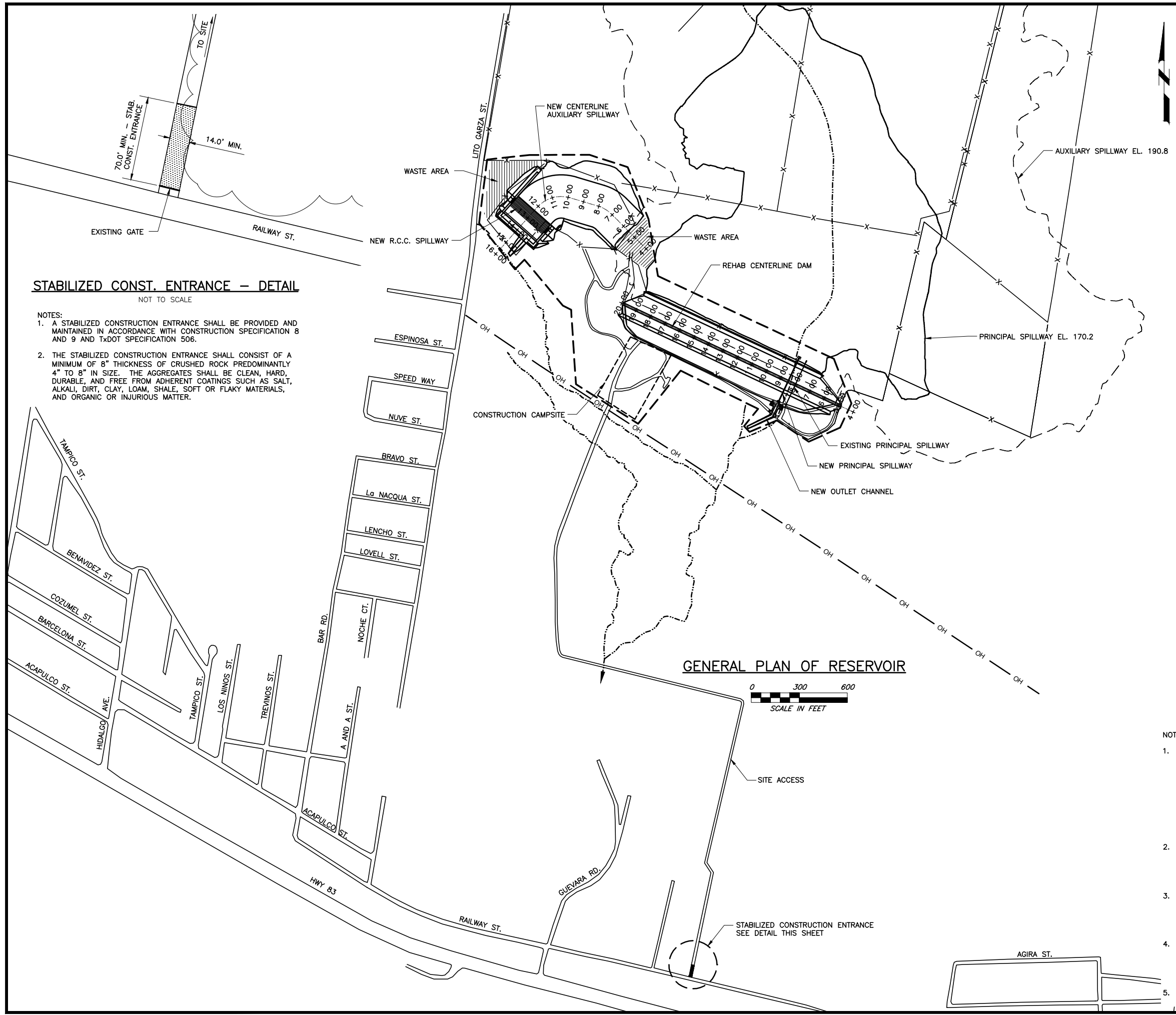
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GENERAL PLAN  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
OLMITOS-GARCIAS CREEKS WATERSHED  
IN  
STARR COUNTY, TEXAS



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SHEET **1**



**GENERAL PLAN OF RESERVOIR**



- LEGEND**
- CONSTRUCTION CAMPSITE
  - APPROX. LIMITS OF WORK AREA
  - OH OVERHEAD POWER LINES
  - X EXISTING FENCE
  - STREAM CHANNEL
  - WASTE AREA
  - VEGETATION

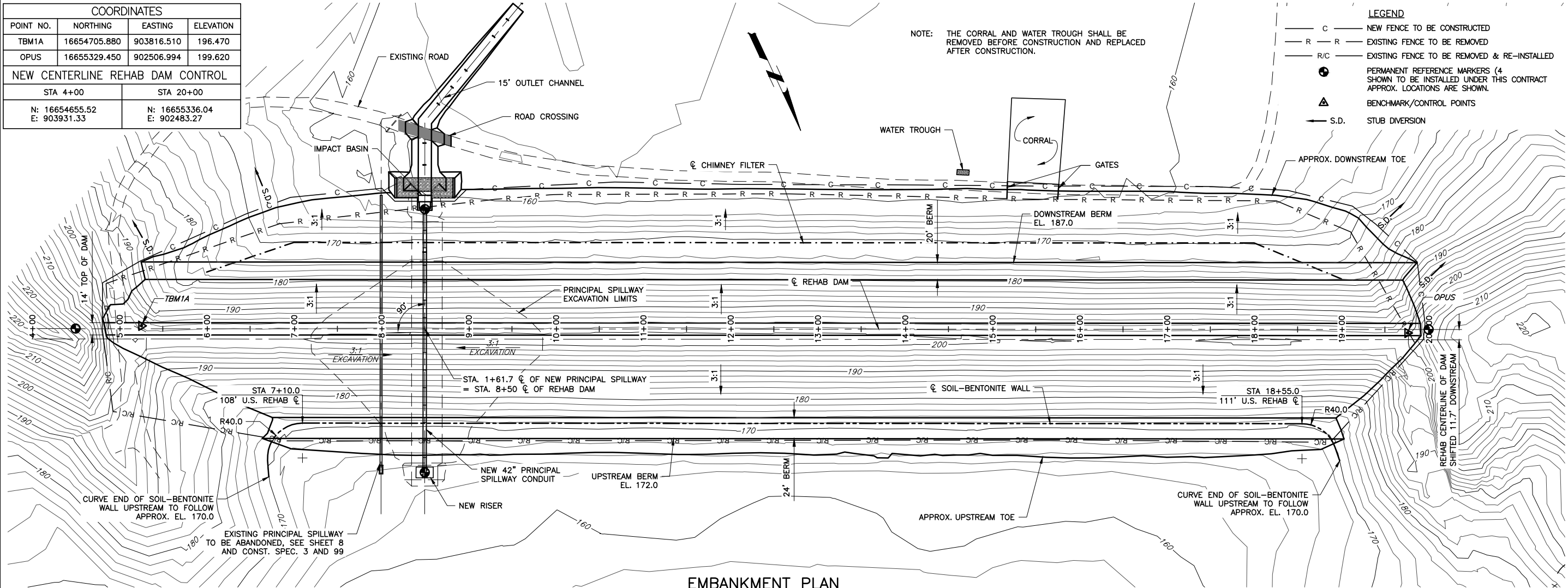
- NOTES:
1. THE CONTRACTOR SHALL BE LIABLE FOR DAMAGE TO IMPROVEMENTS AND UTILITIES ALONG THE ACCESS ROUTE AND AT OR NEAR THE WORKSITE. UTILITIES MAY EXIST AND NOT BE SHOWN ON THE CONSTRUCTION DRAWINGS. THE SITE SHALL BE CAREFULLY SCRUTINIZED FOR EVIDENCE OF UTILITIES. AT A MINIMUM, PRIOR TO ANY GROUND DISTURBANCE, THE TELEPHONE NUMBER 811 SHALL BE CALLED TO ASCERTAIN IF UNDERGROUND UTILITIES EXIST IN THE GENERAL WORK AREA. CALLING THIS TELEPHONE NUMBER WILL ONLY ASCERTAIN THE EXISTENCE OF UNDERGROUND UTILITIES OWNED BY COMPANIES THAT SUBSCRIBE TO THIS ORGANIZATION. THERE MAY BE OTHER UNDERGROUND UTILITIES IN THE WORK AREA.
  2. THE CONTRACTOR SHALL NOTIFY THE OWNERS OF ALL UTILITIES A MINIMUM OF TEN (10) DAYS IN ADVANCE OF INTENT TO PERFORM WORK IN THE VICINITY OF THE AFFECTED UTILITY. THE NOTICE SHALL BE IN WRITING AND A COPY SHALL BE FURNISHED TO THE CONTRACTING OFFICER.
  3. THE APPROXIMATE LOCATIONS OF THE ACCESS ROAD, STABILIZED CONSTRUCTION ENTRANCE, CONSTRUCTION CAMPSITE, SOIL STOCKPILE, AND WASTE AREAS, ARE SHOWN. THE FINAL LOCATIONS OF THESE AREAS SHALL BE DESIGNATED AT THE TIME OF SHOWING OF THE WORKSITE TO PROSPECTIVE BIDDERS.
  4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, INSTALLING, AND MAINTAINING ALL BARRICADES, WARNING SIGNS, TRAFFIC CONTROL DEVICES, ETC. NECESSARY TO CONTROL TRAFFIC AND PROVIDE FOR PUBLIC SAFETY AT THE ENTRANCE TO THE SITE (REFER TO CONSTRUCTION SPECIFICATION 9).
  5. CONSTRUCTION ACTIVITIES SHALL NOT OCCUR OUTSIDE THE DESIGNATED WORK LIMITS, UNLESS OTHERWISE AUTHORIZED.



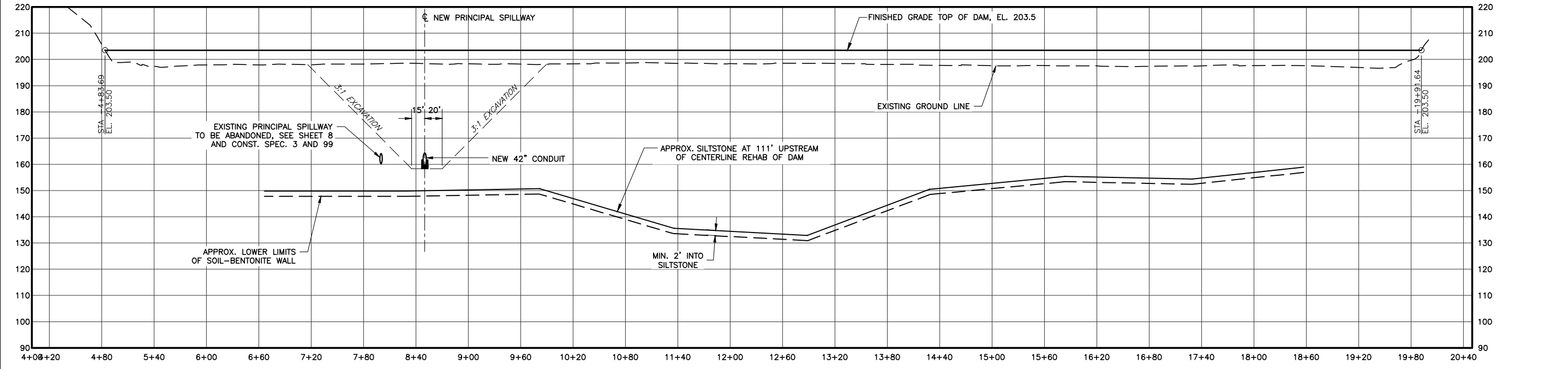
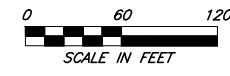
COORDINATES			
POINT NO.	NORTHING	EASTING	ELEVATION
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OPUS	16655329.450	902506.994	199.620

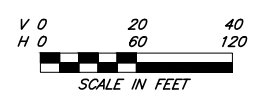
NEW CENTERLINE REHAB DAM CONTROL	
STA 4+00	STA 20+00
N: 16654655.52 E: 903931.33	N: 16655336.04 E: 902483.27



EMBANKMENT PLAN



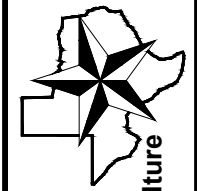
EMBANKMENT PROFILE



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EMBANKMENT - PLAN AND PROFILE  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
 OLMITOS-GARCIAS CREEKS WATERSHED  
 IN STARR COUNTY, TEXAS



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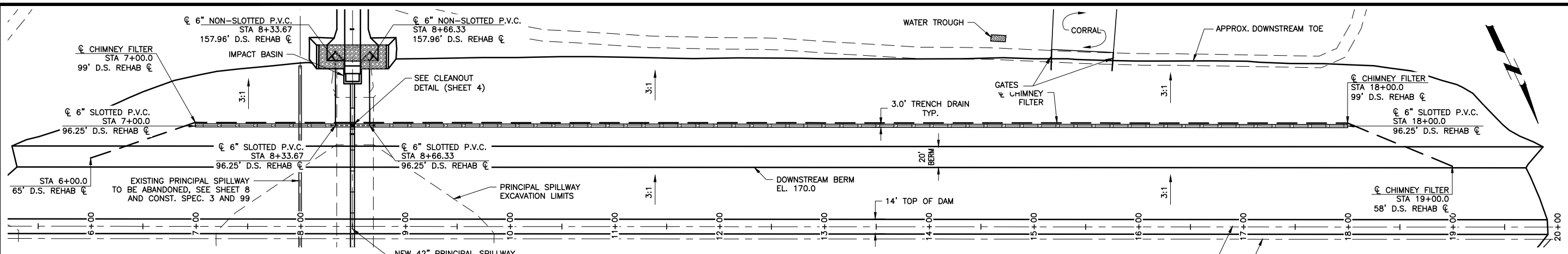
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CHIMNEY FILTER - PLAN AND PROFILE  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
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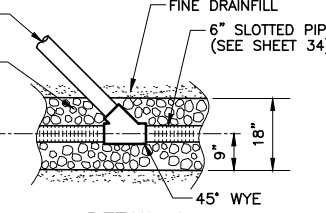


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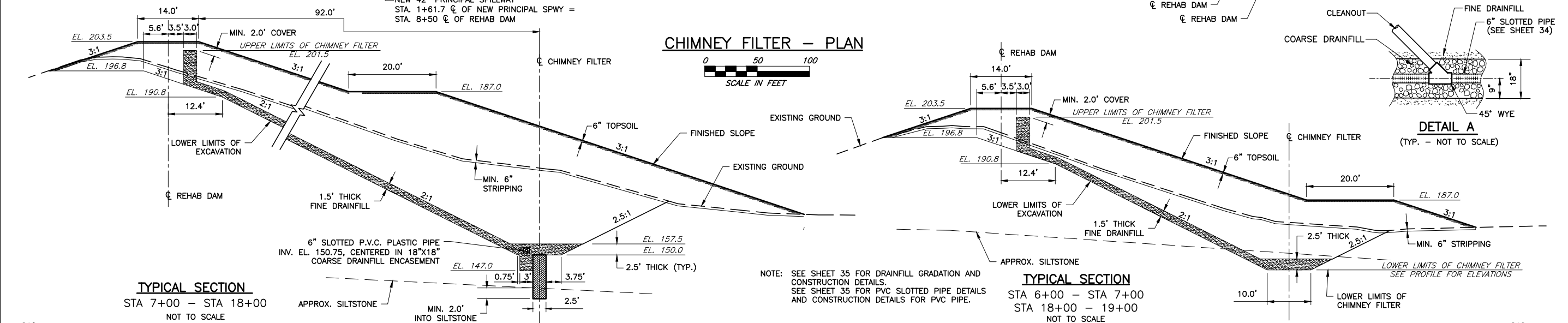
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CHIMNEY FILTER - PLAN

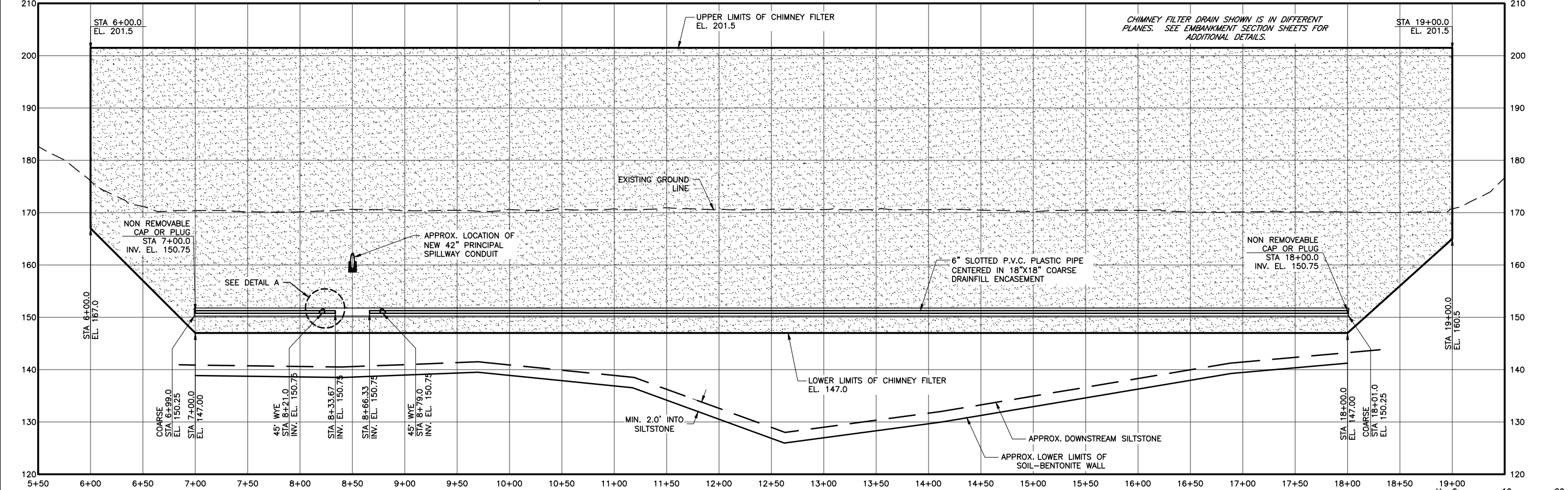


DETAIL A  
(TYP. - NOT TO SCALE)

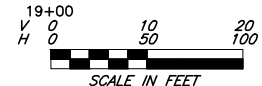


TYPICAL SECTION  
STA 7+00 - STA 18+00  
NOT TO SCALE

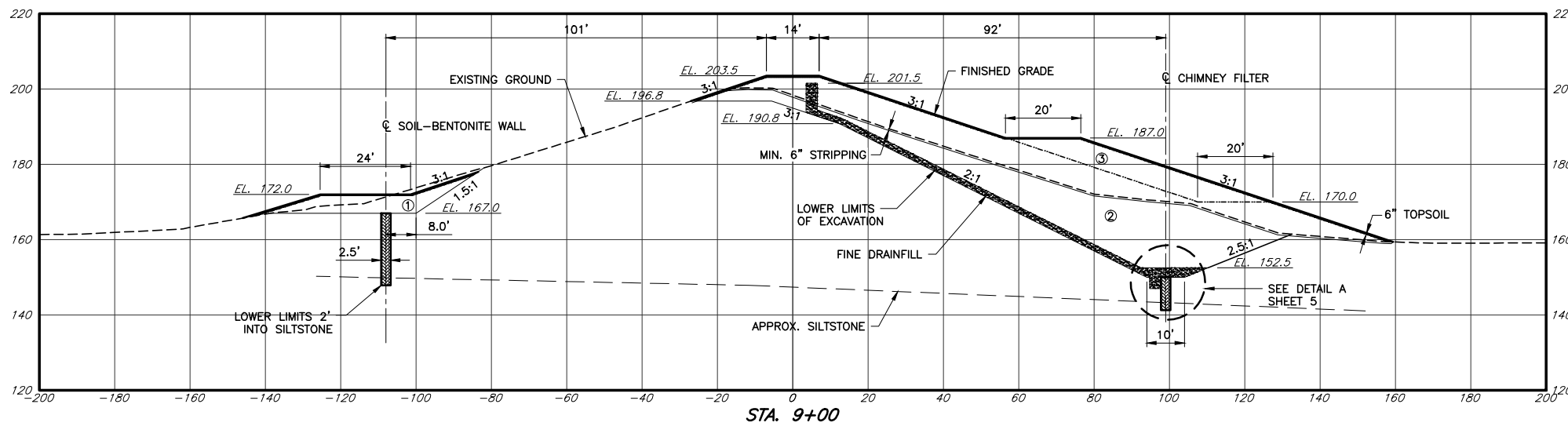
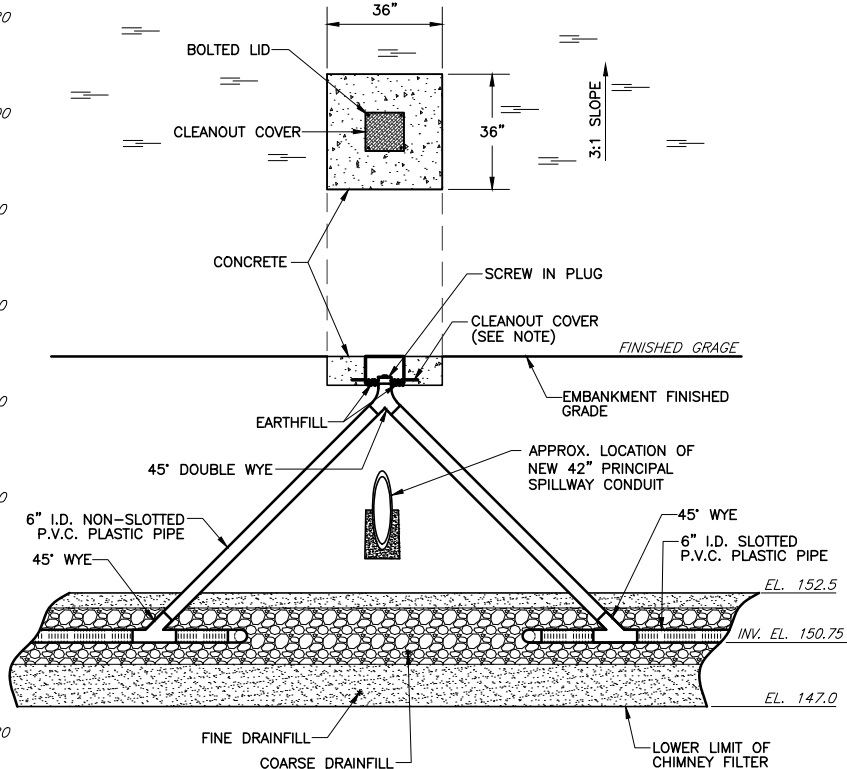
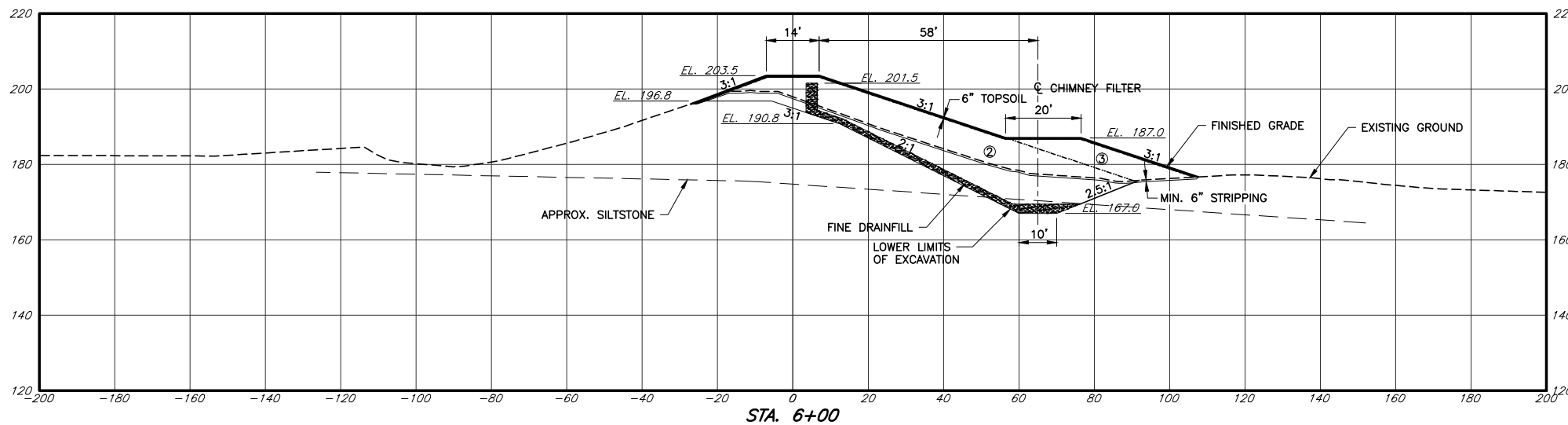
TYPICAL SECTION  
STA 6+00 - STA 7+00  
STA 18+00 - 19+00  
NOT TO SCALE



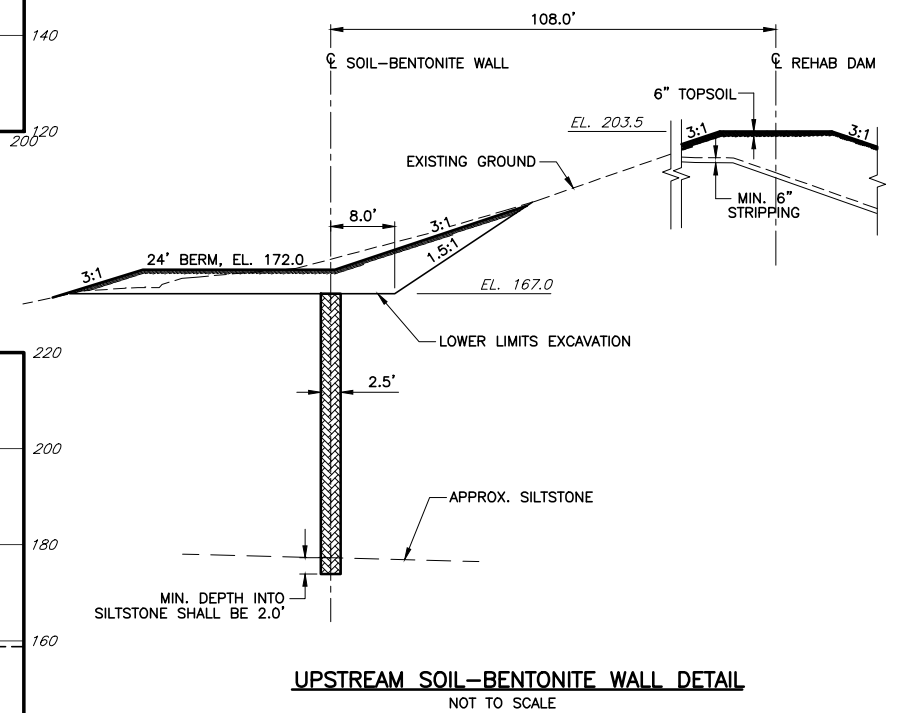
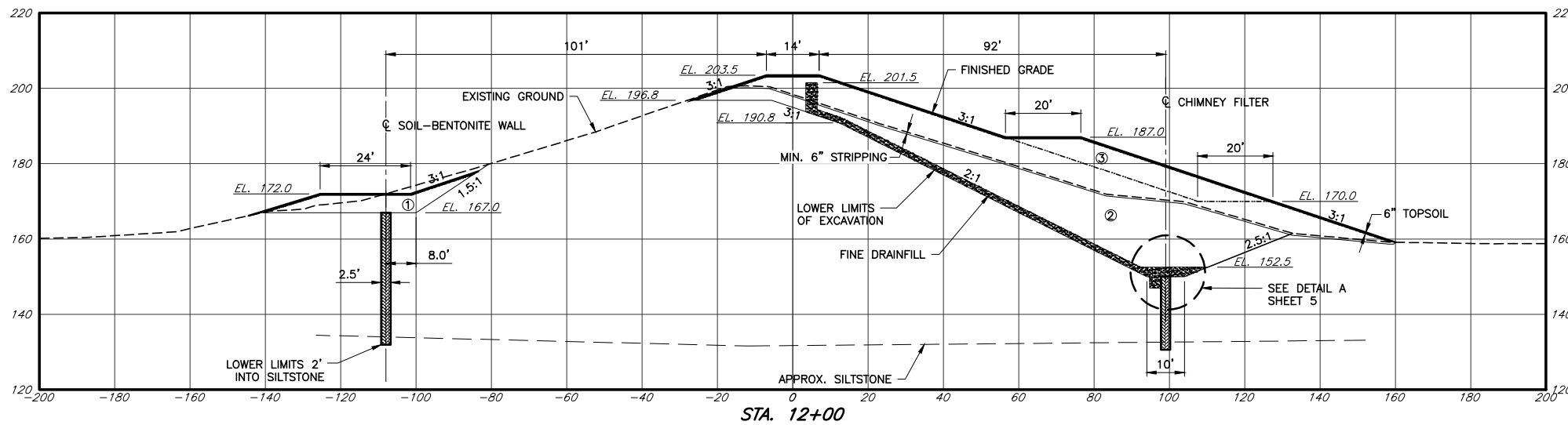
CENTERLINE CHIMNEY FILTER - PROFILE



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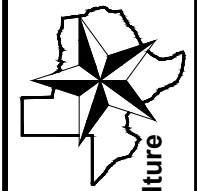
NOTE: A (2) FOOT MINIMUM THICK AND 10 FOOT MINIMUM TOP WIDTH PROTECTIVE EARTHFILL CAP OF LOOSE MATERIAL SHALL BE PLACED OVER THE TOP OF THE COMPLETED SOIL-BENTONITE WALL. THIS LOOSE EARTHFILL CAP SHALL BE PLACED IMMEDIATELY AFTER SOIL-BENTONITE WALL BACKFILLING IS COMPLETED OVER EACH 100 FOOT REACH AND SHALL REMAIN IN PLACE FOR A MINIMUM OF 10 DAYS. THE TOP ELEVATION OF THE (2) FOOT LOOSE EARTHFILL SHALL BE EL. 169.0 THROUGHOUT THE LENGTH OF THE LENGTH OF THE SOIL-BENTONITE WALL. AFTER 10 DAYS, THE LOOSE EARTHFILL CAP SHALL BE REMOVED AND REPLACED WITH COMPACTED EARTHFILL AS SHOWN ON THE EMBANKMENT CROSS SECTIONS. THE COMPACTED EARTHFILL SHALL BE PLACED TO A DRY DENSITY OF 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE TO +3% IN ACCORDANCE WITH ASTM D-698. THE MAXIMUM LAYER OF THICKNESS (BEFORE COMPACTION) SHALL BE 6 INCHES WITH A MAXIMUM PARTICLE SIZE OF 2 INCHES. THE FINAL COMPACTED EARTHFILL ELEVATIONS AND EXISTING GROUND LINES SHALL BE AS SHOWN ON THE EMBANKMENT CROSS SECTIONS.



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EMBANKMENT SECTIONS  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
 OLMITOS-GARCIAS CREEKS WATERSHED  
 IN  
 STARR COUNTY, TEXAS



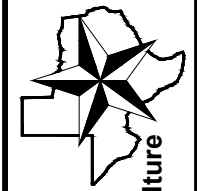
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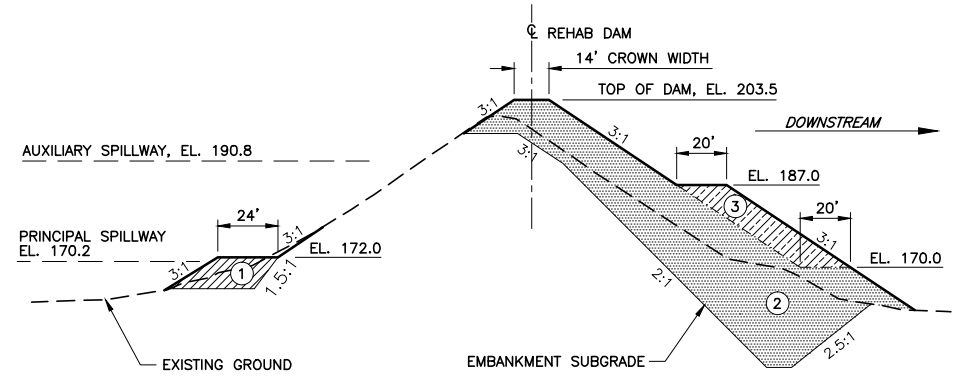
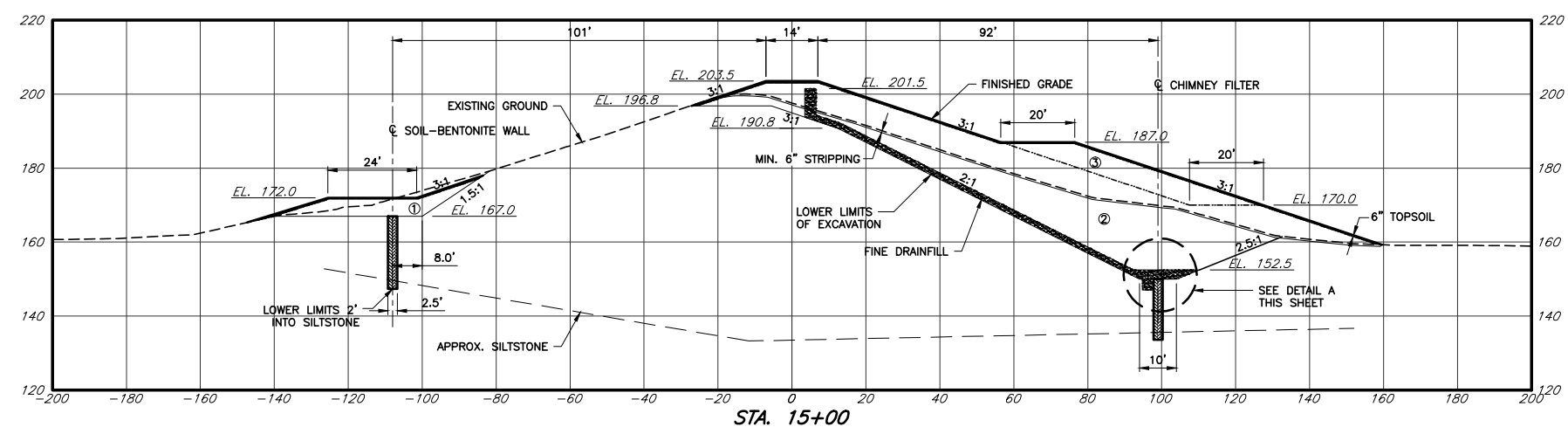
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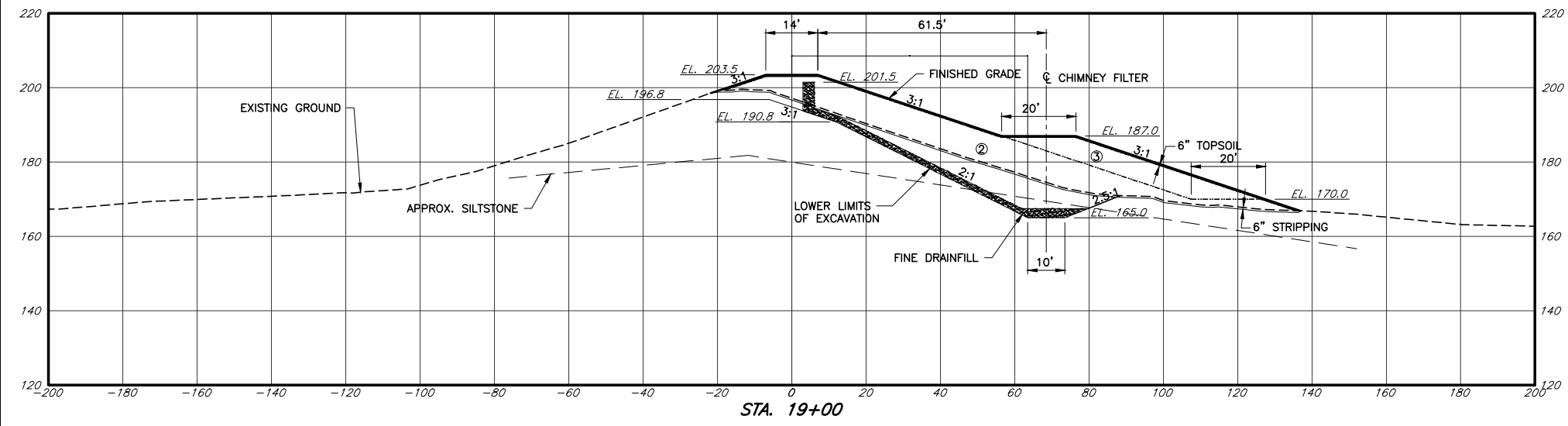
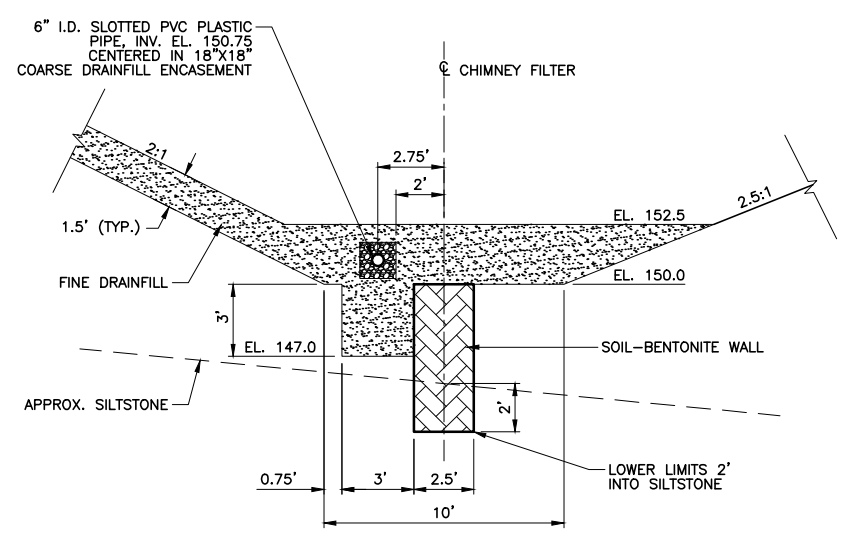
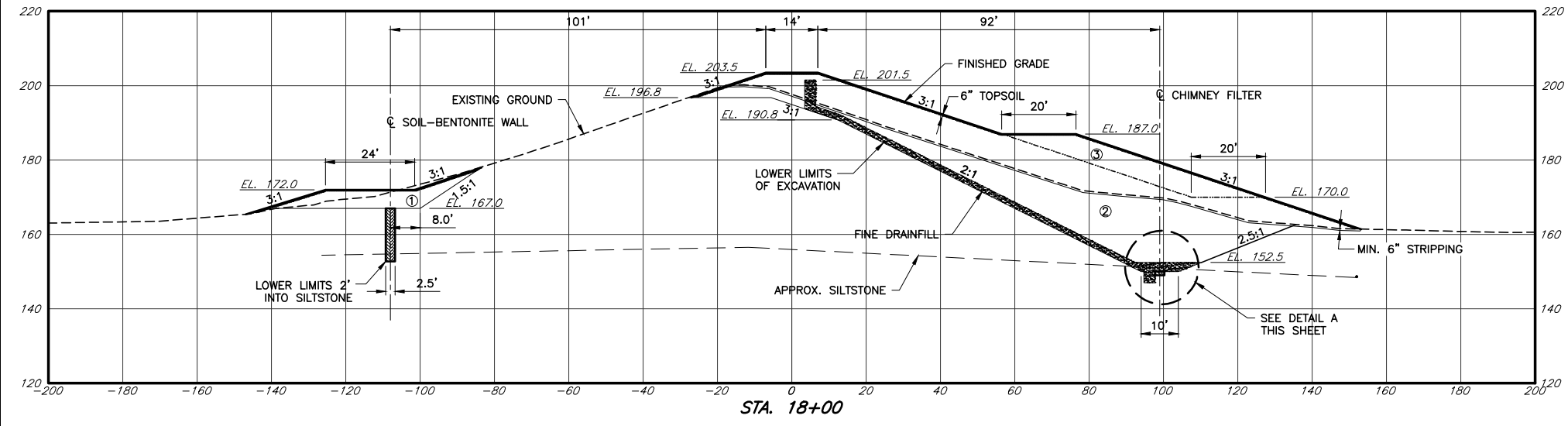
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NOTE: THE CONTRACTOR SHALL PLACE THE MORE PLASTIC MATERIALS IN ZONE 1 AND SANDIER MATERIALS IN ZONES 2 AND 3. COURSE SAND SHALL BE PLACED IN THE LOWER PART OF ZONE 2. ZONE 3 SHALL MEET CLASS 3 COMPACTION. SEE CONSTRUCTION SPECIFICATION 23 FOR COMPACTED EARTHFILL REQUIREMENTS.

NOTE: A (2) FOOT MINIMUM THICK AND 10 FOOT MINIMUM TOP WIDTH PROTECTIVE EARTHFILL CAP OF LOOSE MATERIAL SHALL BE PLACED OVER THE TOP OF THE COMPLETED SOIL-BENTONITE WALL. THIS LOOSE EARTHFILL CAP SHALL BE PLACED IMMEDIATELY AFTER SOIL-BENTONITE WALL BACKFILLING IS COMPLETED OVER EACH 100 FOOT REACH AND SHALL REMAIN IN PLACE FOR A MINIMUM OF 10 DAYS. THE TOP ELEVATION OF THE (2) FOOT LOOSE EARTHFILL SHALL BE EL. 169.0 THROUGHOUT THE LENGTH OF THE LENGTH OF THE SOIL-BENTONITE WALL. AFTER 10 DAYS, THE LOOSE EARTHFILL CAP SHALL BE REMOVED AND REPLACED WITH COMPACTED EARTHFILL AS SHOWN ON THE EMBANKMENT CROSS SECTIONS. THE COMPACTED EARTHFILL SHALL BE PLACED TO A DRY DENSITY OF 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE TO +3% IN ACCORDANCE WITH ASTM D-698. THE MAXIMUM LAYER OF THICKNESS (BEFORE COMPACTION) SHALL BE 6 INCHES WITH A MAXIMUM PARTICLE SIZE OF 2 INCHES. THE FINAL COMPACTED EARTHFILL ELEVATIONS AND EXISTING GROUND LINES SHALL BE AS SHOWN ON THE EMBANKMENT CROSS SECTIONS.



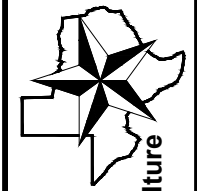
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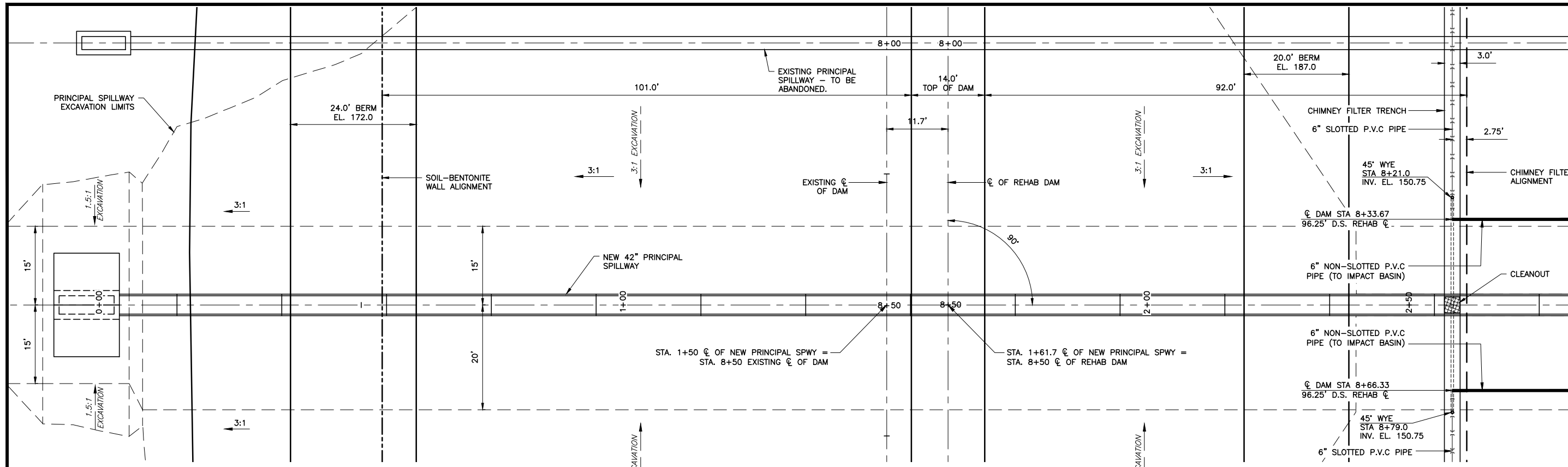
**PRINCIPAL SPILLWAY - PLAN AND PROFILE**  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
**OLMITOS-GARCIAS CREEKS WATERSHED**  
 IN STARR COUNTY, TEXAS



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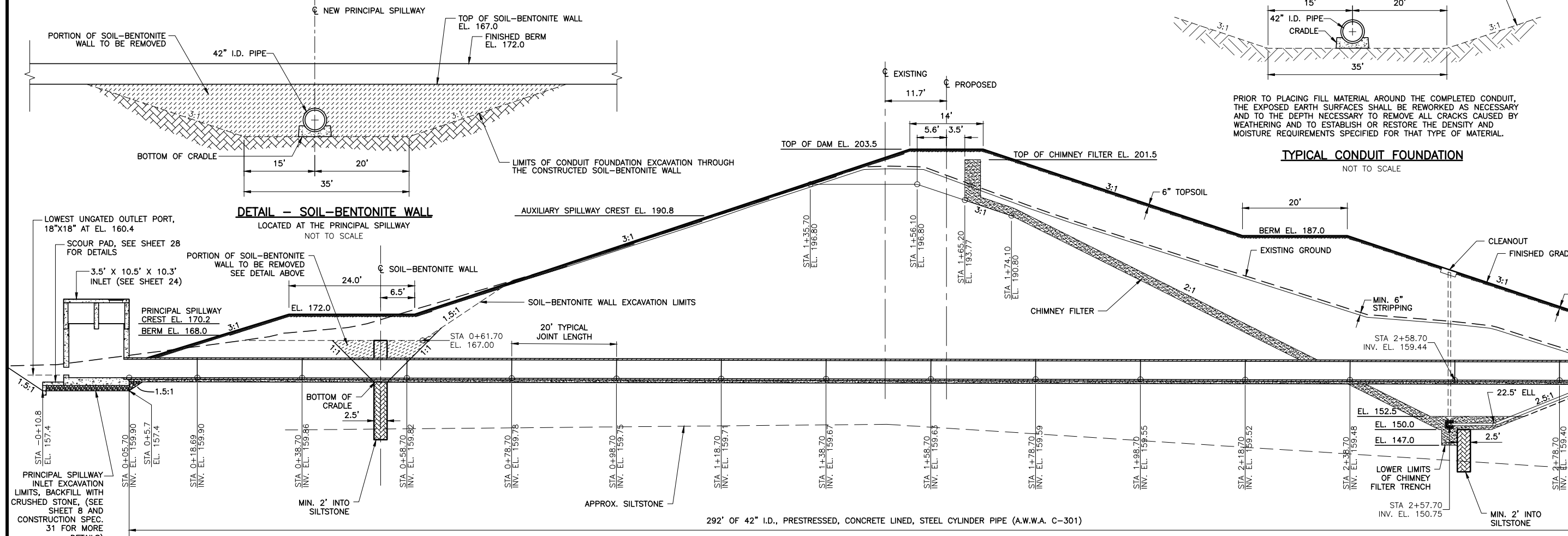
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**6**



**PRINCIPAL SPILLWAY - PLAN VIEW**

NOTE: THE CONDUIT FOUNDATION EXCAVATION SHALL NOT BE PERFORMED UNTIL THE SOIL-BENTONITE WALL BACKFILL IS ABLE TO STAND ON A 3:1 SLOPE FOR THE INSTALLATION OF THE PRINCIPAL SPILLWAY.  
 NOTE: THE PORTION OF THE COMPLETED SOIL-BENTONITE WALL REMOVED BY THESE EXCAVATIONS SHALL NOT BE REPLACED BUT BACKFILLED AND COMPACTED WITH BORROW MATERIAL. THE REMOVED SOIL-BENTONITE MIXTURE SHALL BE BLEND INTO THE BORROW MATERIAL USED FOR BACKFILL IN THESE REACHES.



**PRINCIPAL SPILLWAY - PROFILE VIEW**



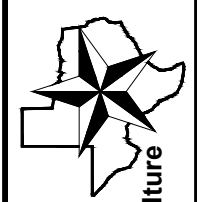
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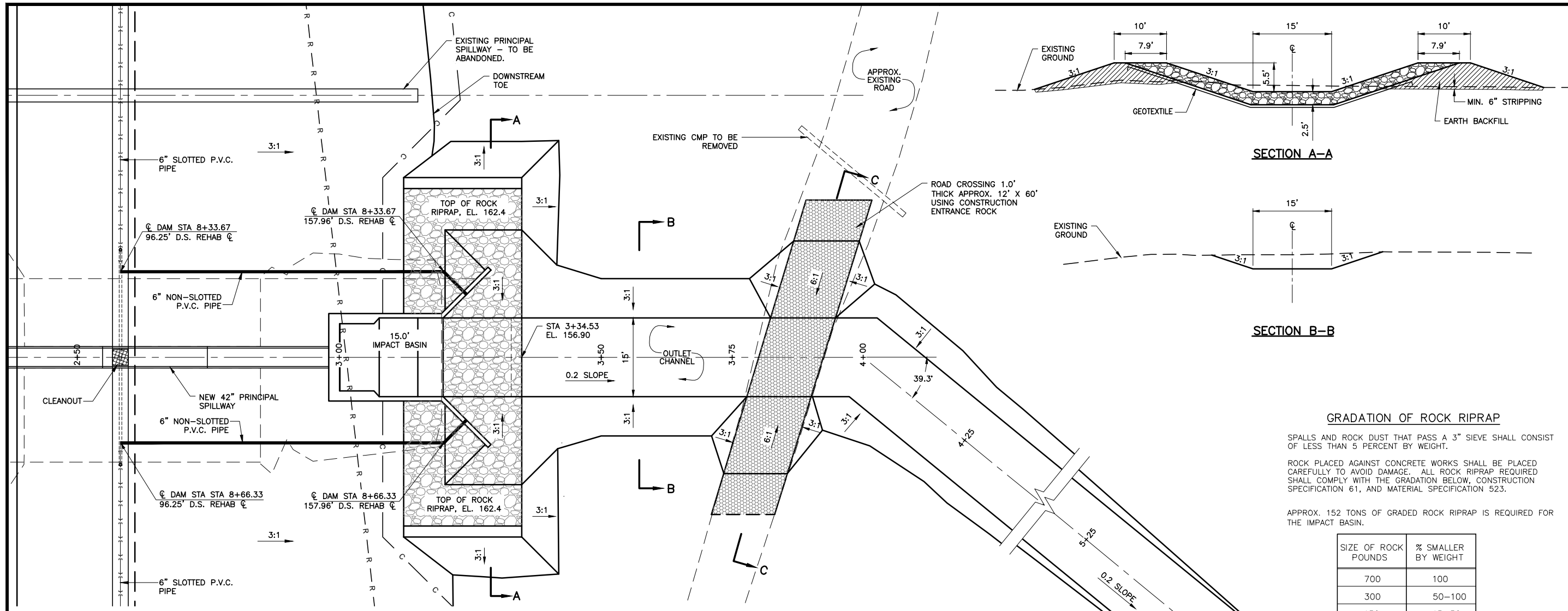
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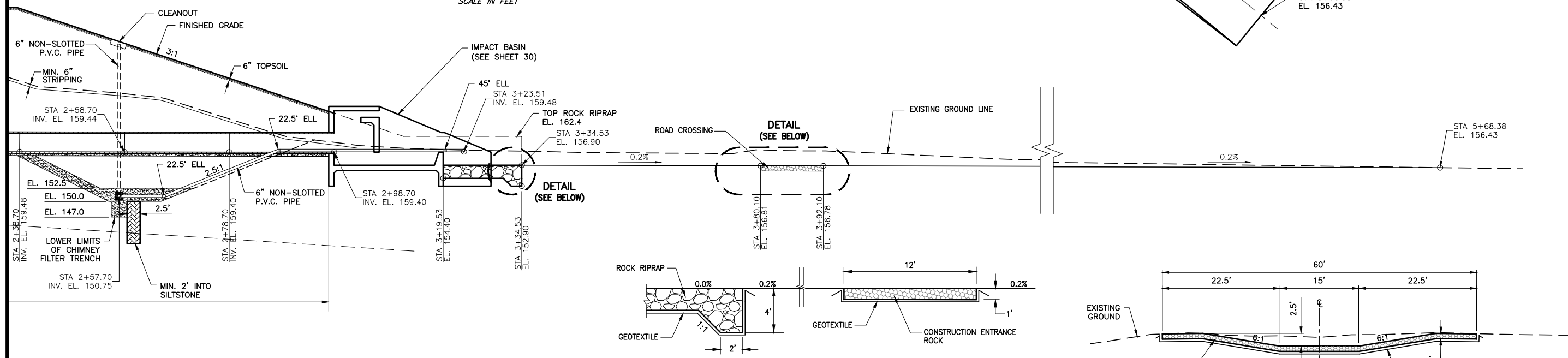
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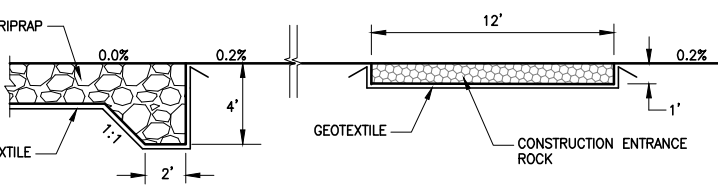
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PRINCIPAL SPILLWAY - PLAN VIEW

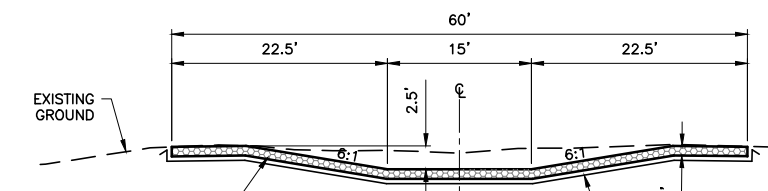


PRINCIPAL SPILLWAY - PROFILE VIEW



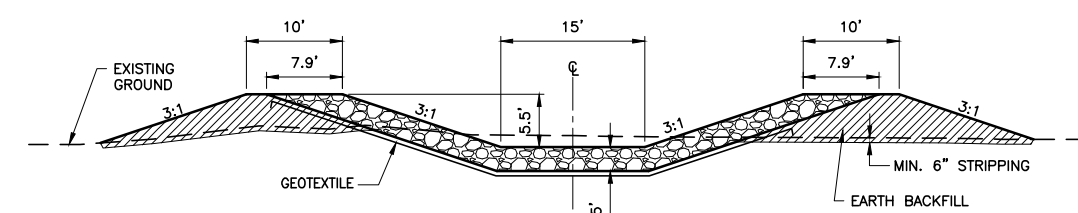
KEY END OF ROCK RIPRAP PLACEMENT IN THE OUTLET CHANNEL INTO THE GROUND AS SHOWN, FOR 15' BOTTOM ONLY.

DETAIL

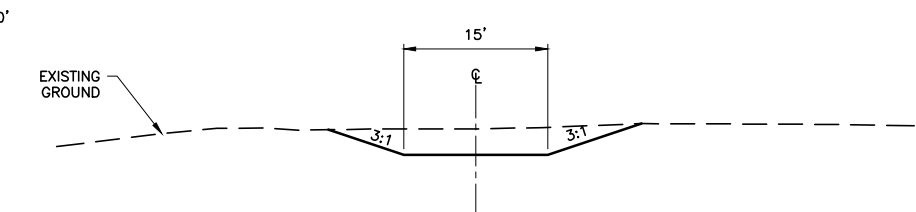


NOTE: THE ROCK FROM THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE USED FOR ROAD CROSSING.

SECTION C-C



SECTION A-A



SECTION B-B

GRADATION OF ROCK RIPRAP

SPALLS AND ROCK DUST THAT PASS A 3" SIEVE SHALL CONSIST OF LESS THAN 5 PERCENT BY WEIGHT.

ROCK PLACED AGAINST CONCRETE WORKS SHALL BE PLACED CAREFULLY TO AVOID DAMAGE. ALL ROCK RIPRAP REQUIRED SHALL COMPLY WITH THE GRADATION BELOW, CONSTRUCTION SPECIFICATION 61, AND MATERIAL SPECIFICATION 523.

APPROX. 152 TONS OF GRADED ROCK RIPRAP IS REQUIRED FOR THE IMPACT BASIN.

SIZE OF ROCK POUNDS	% SMALLER BY WEIGHT
700	100
300	50-100
150	15-50
45	0-15

REFERENCE A.S.T.M. D 6092 (R-300)

NOTE: FINAL OUTLET CHANNEL ALIGNMENT SHALL BE AS APPROVED BY THE ENGINEER. ADJUSTMENTS SHALL BE MADE AS REQUIRED TO BEST FIT SITE TOPOGRAPHY.

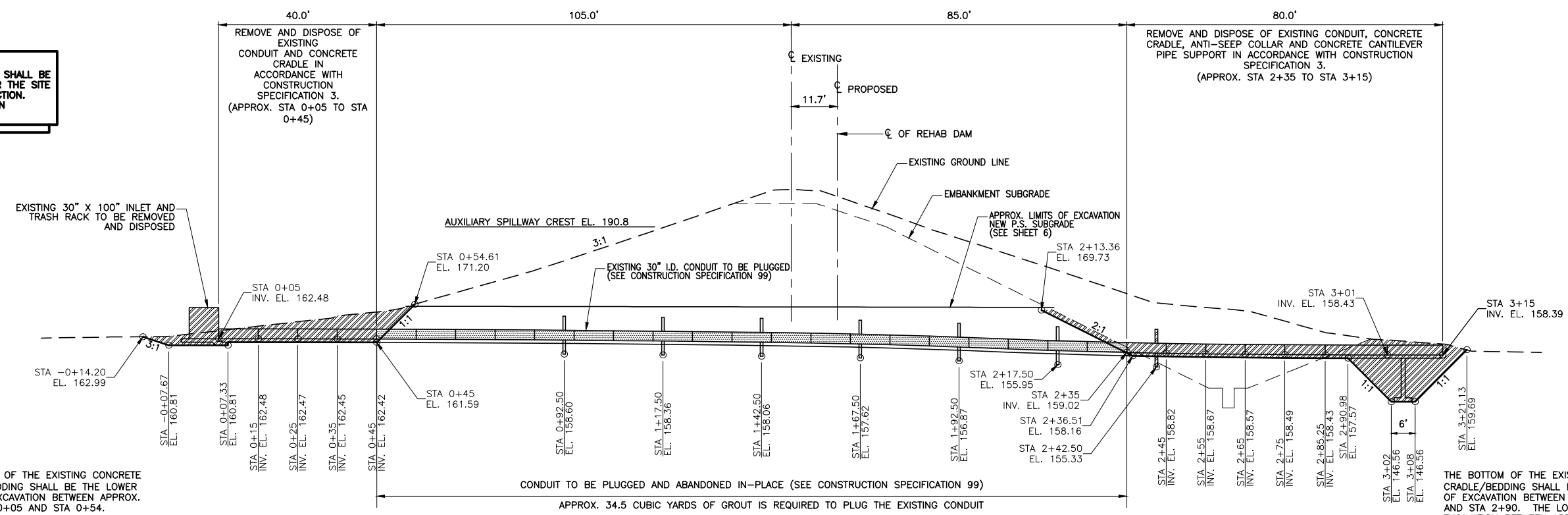
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**NOTE:**  
EXISTING CONDUIT SHALL BE USED TO DEWATER THE SITE DURING CONSTRUCTION. SEE CONSTRUCTION SPECIFICATION 11.

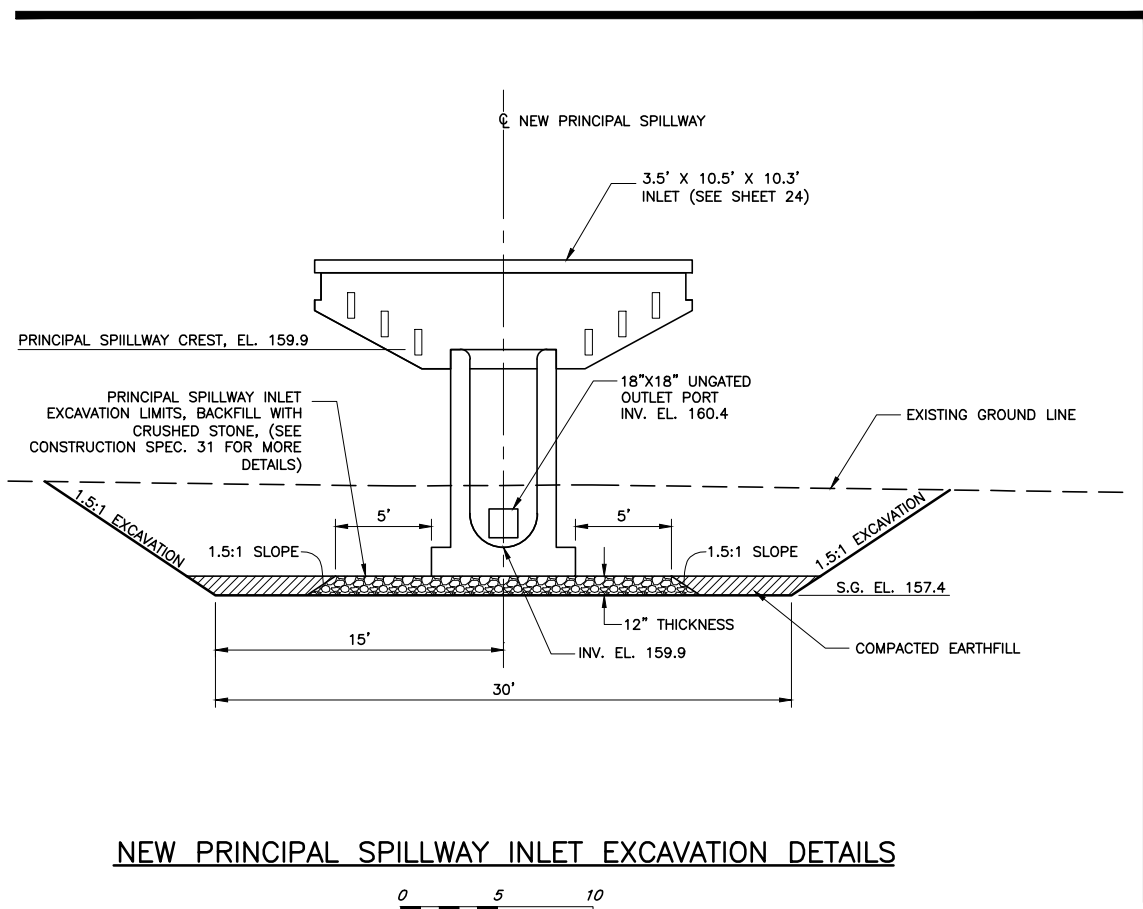
THE BOTTOM OF THE EXISTING CONCRETE CRADLE/BEDDING SHALL BE THE LOWER LIMITS OF EXCAVATION BETWEEN APPROX. STA 0+05 AND STA 0+54.

CONDUIT TO BE PLUGGED AND ABANDONED IN-PLACE (SEE CONSTRUCTION SPECIFICATION 99)  
APPROX. 34.5 CUBIC YARDS OF GROUT IS REQUIRED TO PLUG THE EXISTING CONDUIT

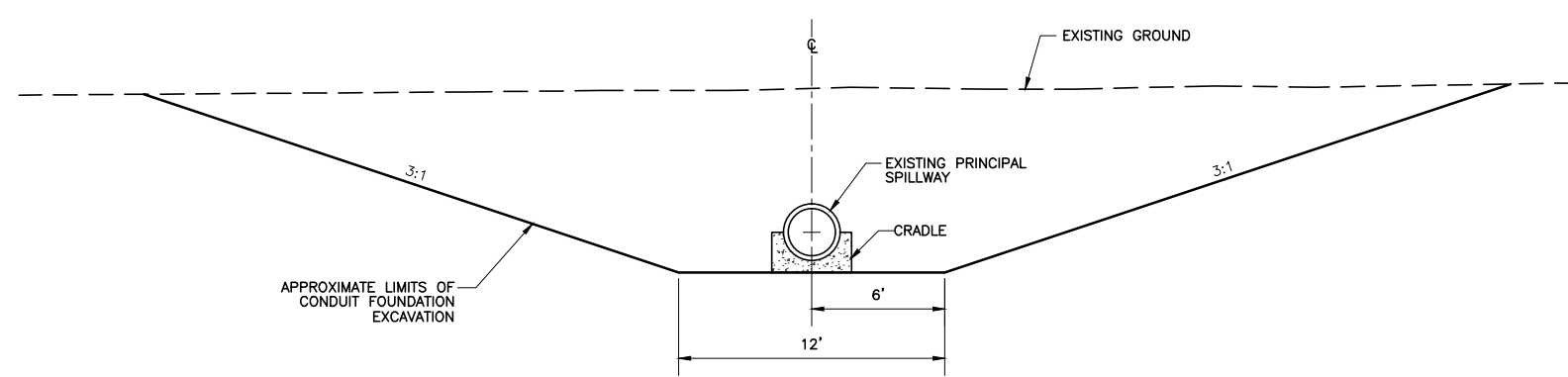
THE BOTTOM OF THE EXISTING CONCRETE CRADLE/BEDDING SHALL BE THE LOWER LIMITS OF EXCAVATION BETWEEN APPROX. STA 2+36 AND STA 2+90. THE LOWER LIMITS OF EXCAVATION BETWEEN APPROX. STA 2+90 AND STA 2+21 SHALL BE AS SHOWN ABOVE.



**EXISTING PRINCIPAL SPILLWAY MODIFICATIONS**



**NEW PRINCIPAL SPILLWAY INLET EXCAVATION DETAILS**



**TYPICAL EXISTING PRINCIPAL SPILLWAY EXCAVATION LIMITS**

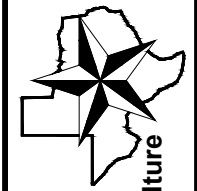
NOT TO SCALE



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**CONDUIT ABANDONMENT**  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
**OLMITOS-GARCIAS CREEKS WATERSHED**  
IN  
STARR COUNTY, TEXAS

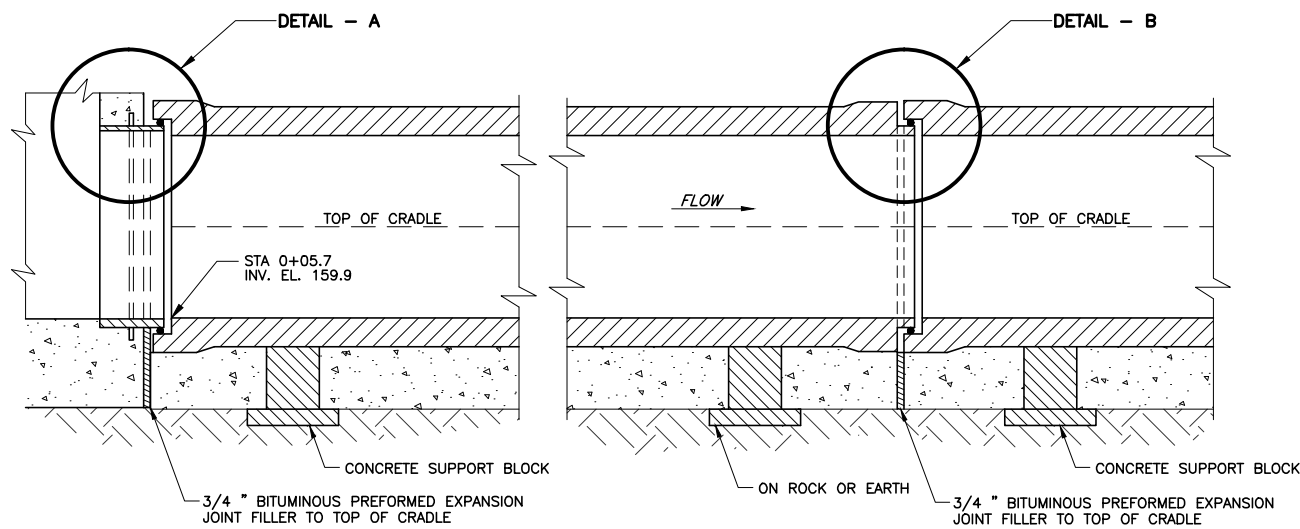


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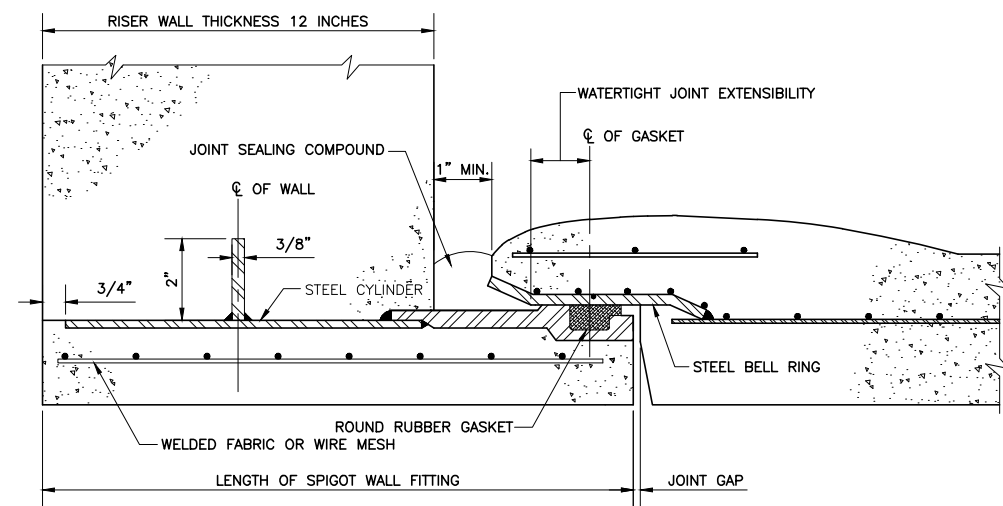
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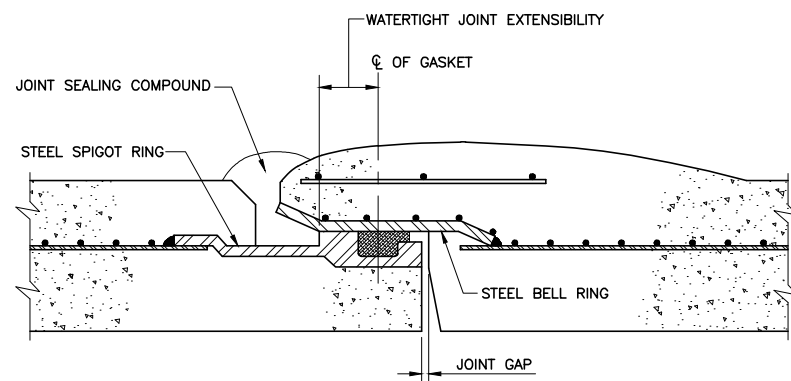


**DETAIL OF SPIGOT WALL FITTING**  
NOT TO SCALE

**DETAIL OF PIPE JOINT**  
NOT TO SCALE



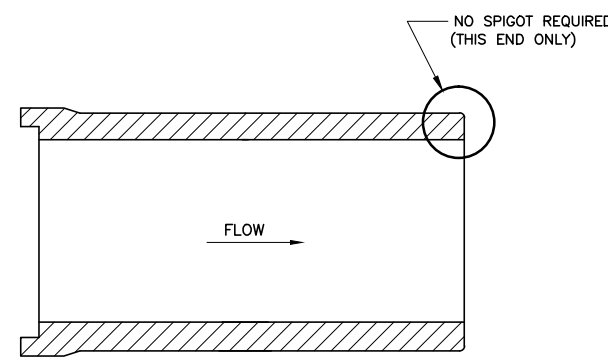
**DETAIL - A**  
NOT TO SCALE



**DETAIL - B**  
NOT TO SCALE

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.



**TERMINAL PIPE SECTION DETAIL**  
- ONE REQUIRED -  
NOT TO SCALE

**CRADLE CONCRETE QUANTITIES**

CONCRETE QUANTITY IS BASED ON OUTSIDE DIAMETER OF PIPE, Df, OF 49 1/4 INCHES.

THIS QUANTITY IS GIVEN BY:  
 LENGTH (L) X 0.36595 = xxxxx CU. YDS.  
 PER LINEAL FOOT OF BEDDING

292' X 0.36595 = 106.9 CU. YDS.  
 TOTAL CONCRETE QUANTITY = 106.9 CU. YDS.

**JOINT REQUIREMENTS**

LENGTH OF PIPE SECTION	MINIMUM JOINT LENGTH	MINIMUM JOINT LIMITING ANGLE	
		RADIANS	DEGREES
FEET	INCHES		
20	3 1/8	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 CONTRACTING OFFICER FOR APPROVAL.

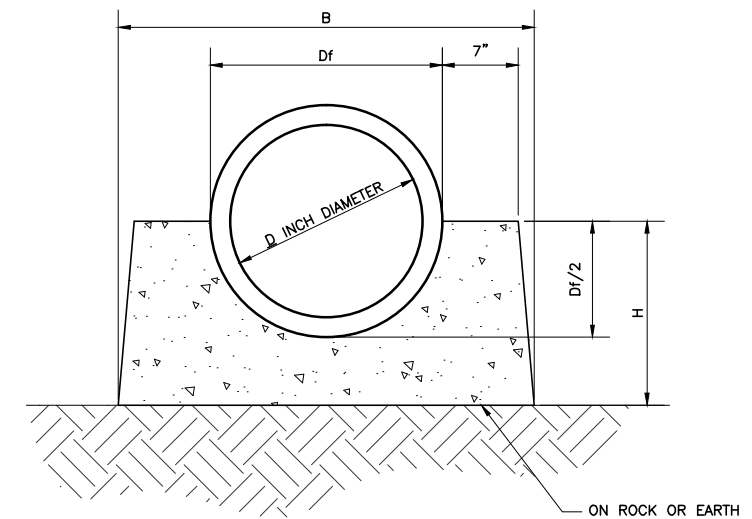
**STRENGTH REQUIREMENTS**

I.D. OF PIPE	INTERNAL LOAD	EXTERNAL LOAD	
	HYDROSTATIC PRESSURE	MINIMUM 3-EDGE BEARING STRENGTH IN POUNDS PER LINEAL FOOT OF PIPE	APPLICABLE STANDARD SPECIFICATION
INCHES	FEET	LOAD TO PRODUCE 0.001 IN. CRACK ONE FOOT LONG	AWWA C-301
		LOAD TO PRODUCE 0.01 IN. CRACK ONE FOOT LONG	AWWA C-300
42	50	7,500	—

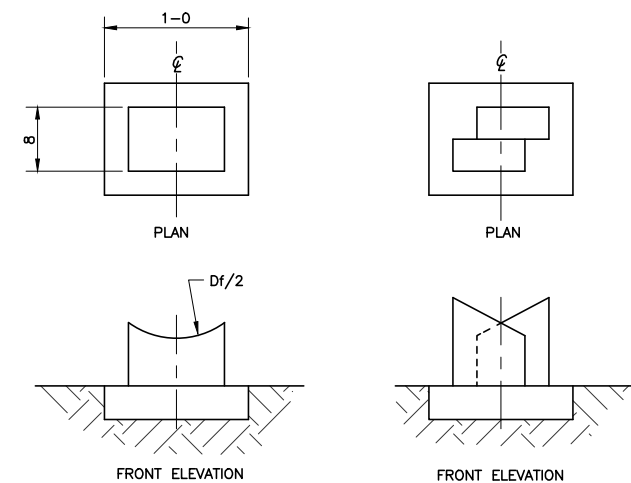
THE OUTSIDE DIAMETER OF PIPE ASSUMED IN DESIGN IS 49 1/4 INCHES. WHERE THE PIPE FURNISHED HAS AN OUTSIDE DIAMETER GREATER THAN ASSUMED IN DESIGN, THE THREE-EDGE BEARING STRENGTH OF THE PIPE FURNISHED MUST BE LESS THAN THE SPECIFIED THREE-EDGE BEARING STRENGTH MULTIPLIED BY THE RATIO OF THE OUTSIDE DIAMETER OF THE PIPE FURNISHED TO THE OUTSIDE DIAMETER ASSUMED IN DESIGN.

**CRADLE DIMENSIONS & CONCRETE QUANTITY RELATIONS**

PIPE DIAMETER D INCHES	PIPE OUTSIDE DIAMETER Df INCHES	CRADLE WIDTH B FT. - IN.	CRADLE HEIGHT H FT. - IN.	CONCRETE QUANTITIES CU. YDS. / FT. OF CRADLE
42	49 1/4	6-0	2-11 1/8	0.36595



**DETAIL OF CRADLE**  
NOT TO SCALE



SUFFICIENT BLOCKS OR WEDGES SHALL BE PROVIDED TO SUPPORT THE PIPE TO THE REQUIRED LINE AND GRADE. THE CONTRACTOR SHALL DETERMINE THE NUMBER AND SIZE OF BLOCKS OR WEDGES REQUIRED. A MINIMUM OF TWO SUPPORTS SHALL BE REQUIRED FOR EACH SECTION OF PIPE.

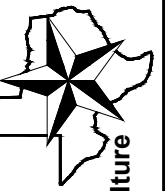
**SUGGESTED SUPPORT BLOCKS AND WEDGES**  
NOT TO SCALE



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PRINCIPAL SPILLWAY PIPE DETAILS  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
 OLMITOS-GARCIAS CREEKS WATERSHED  
 IN STARR COUNTY, TEXAS

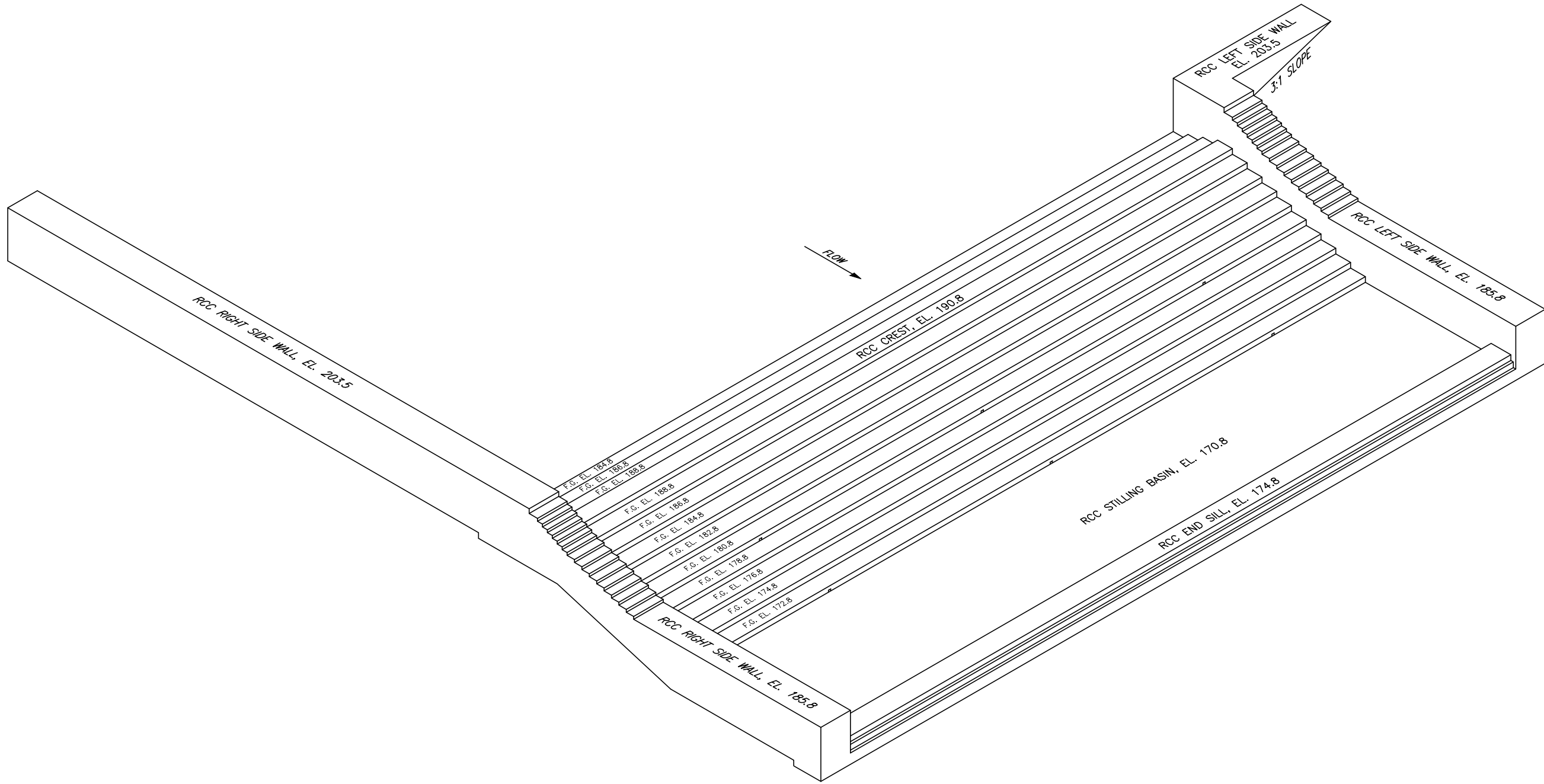


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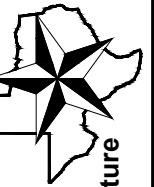


RCC 3-D VIEW



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 DRAWN BY: G.M.K.  
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 FILE NAME: OG7\_RCC\_R1.dwg  
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**RCC 3-D VIEW**  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
**OLMITOS-GARCIAS CREEKS WATERSHED**  
 IN  
 STARR COUNTY, TEXAS



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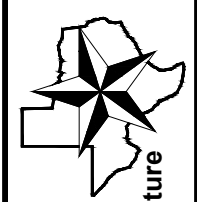
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**10**

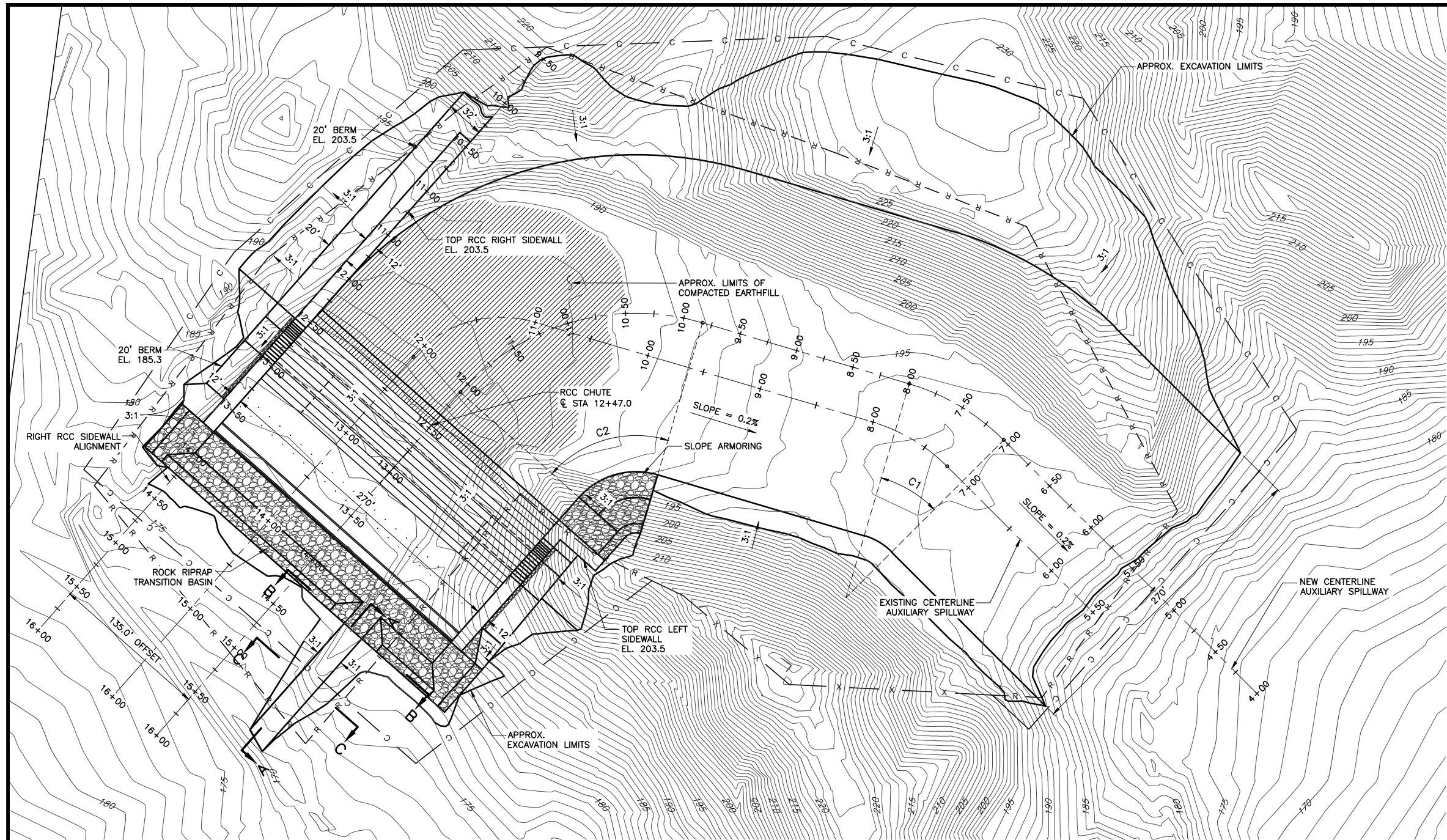


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 DRAWN BY: G.M.K.  
 CHECKED BY: B.T.S.  
 FILE NAME: 067\_RCC\_R1.dwg  
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**AUXILIARY SPILLWAY PLAN**  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
**OLMITOS-GARCIAS CREEKS WATERSHED**  
 IN  
 STARR COUNTY, TEXAS



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 SHEET **11**

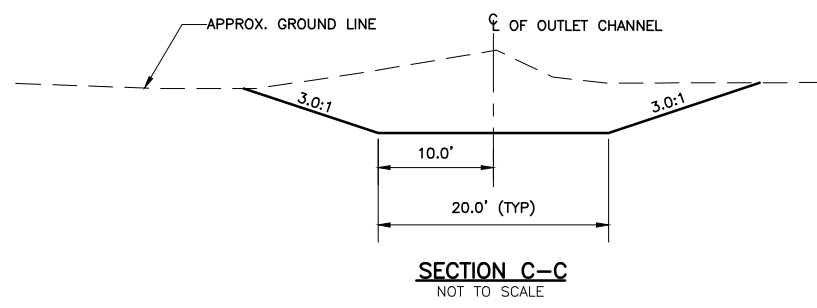
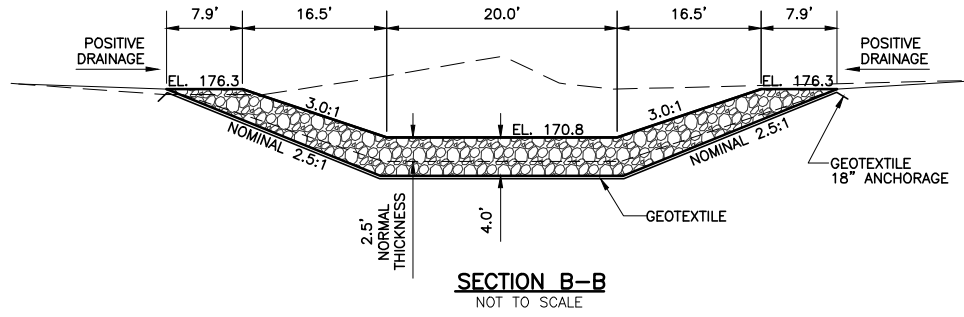
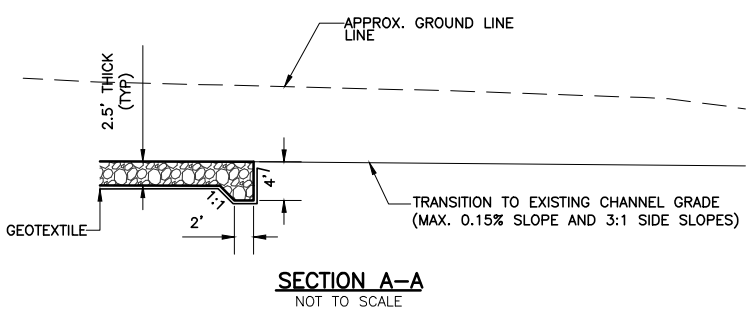


**LEGEND**

- x - x - EXISTING FENCES NOT TO BE REMOVED
- r - r - FENCE TO BE REMOVED
- c - c - FENCE TO BE CONSTRUCTED

NEW CENTERLINE AUXILIARY SPILLWAY CONTROL	
STA 4+00	STA 16+00
N: 16655679.62 E: 902633.04	N: 16655643.34 E: 901695.92

**AUXILIARY SPILLWAY PLAN**



ALIGNMENT CURVE DATA								
CURVE NO.	DELTA (Δ)	D	R	L	P.C.	P.I.	P.T.	T
C1	28° 34' 11"	30' 09' 20"	190.00	94.74	STA 7+04.57 N: 16655895.08 E: 902417.76	STA 7+51.94 N: 16655929.30 E: 902383.57	STA 7+99.31 N: 16655943.00 E: 902337.18	48.38
C2	64° 56' 00"	28' 38' 53"	200.00	226.66	STA 9+82.79 N: 16655994.98 E: 902161.21	STA 10+96.12 N: 16656031.02 E: 902039.17	STA 12+09.45 N: 16655935.75 E: 901954.82	127.25

KEY END OF ROCK RIPRAP INTO THE OUTLET CHANNEL AS SHOWN TO FORM CUTOFF. CONSTRUCT CUTOFF TO A NORMAL DEPTH OF 4' ALONG THE DOWNSTREAM EDGE OF THE PLACED RIPRAP AS INDICATED.

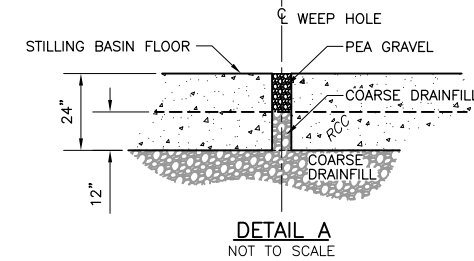
NOTE: FOR GRADATION OF ROCK RIPRAP SEE SHEET 12 FOR DETAILS.

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- RCC CONSTRUCTION NOTES:**
1. CONSTRUCT THE ROLLER COMPACTED CONCRETE (RCC) CHUTE SPILLWAY TO THE LINES AND GRADES SHOWN AND AS SPECIFIED IN CONSTRUCTION SPECIFICATION 36.
  2. APPROXIMATE LOCATION AND LIMITS OF THE STRUCTURE ARE SHOWN. FINAL LOCATION AND LIMITS SHALL BE AS STAKED BY THE ENGINEER.
  3. CONSTRUCT A 10' WIDE X 1' VERTICAL VOID AREA AT THE BOTTOM OF THE ENDSILL TO DRAIN THE STILLING BASIN.



**NOTE:**  
WEEP HOLES SHALL BE PROVIDED IN THE STILLING BASIN FLOOR. THE WEEP HOLES SHALL BE INSTALLED IN TWO ROWS SPACED 10' APART ON 12' CENTERS FOR A TOTAL OF FORTY (46) HOLES. WEEP HOLES SHALL BE 2" HOLES DRILLED IN THE HARDENED RCC. CARE SHALL BE USED TO INSURE THAT THE UNDERLYING DRAINFILL IS NOT FULLY PENETRATED BY THE BORE HOLE. EACH HOLE SHALL BE BACKFILLED WITH 12" OF COARSE DRAINFILL AND TOPPED WITH 12" OF PEA GRAVEL. PREDOMINANTLY COMPRISED OF 1/4" WASHED, WELL ROUNDED, STONE.

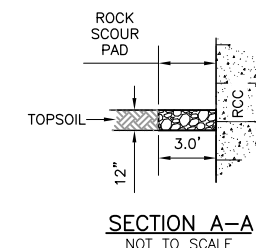
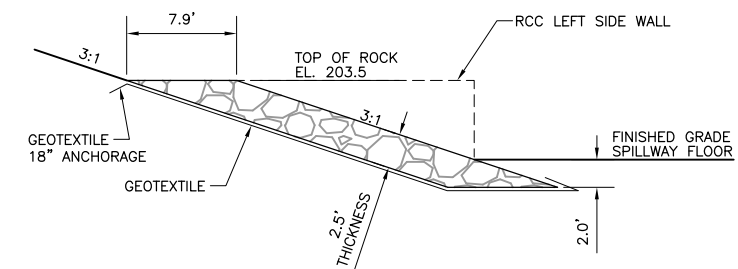
**ROCK RIPRAP GRADATION FOR ROCK RIPRAP TRANSITION BASIN AND RCC SLOPE ARMORING**

ROCK RIPRAP FOR THE ROCK RIPRAP TRANSITION BASIN AND THE RCC SLOPE ARMORING SHALL MEET THE GRADATION REQUIREMENTS OF ASTM D6092 FOR R-300 ROCK RIPRAP AS SHOWN ON SHEET 7. IT IS ESTIMATED THAT 2,112 TONS OF R-300 ROCK WILL BE REQUIRED TO CONSTRUCT THE ROCK RIPRAP TRANSITION BASIN AND THE RCC SLOPE ARMORING.

ALL ROCK RIPRAP SHALL COMPLY WITH CONSTRUCTION SPECIFICATION 61, AND MATERIAL SPECIFICATION 523.

SPALLS AND ROCK DUST THAT PASS A 3" SIEVE SHALL CONSIST OF LESS THAN 5 PERCENT BY WEIGHT.

ROCK PLACED AGAINST RCC SHALL BE PLACED CAREFULLY TO AVOID DAMAGE.



**ROCK SCOUR PAD CONST. NOTES:**

1. CONSTRUCT THE ROCK SCOUR PADS TO THE DIMENSIONS AND LOCATIONS SHOWN IN THE CONSTRUCTION DRAWINGS.
2. ROCK SCOUR PADS SHALL BE LOCATED ALONG BOTH SIDEWALLS OF THE RCC STRUCTURE. THE SCOUR PAD SHALL EXTEND THE LEFT AND RIGHT SIDEWALL FROM STA. 12+55.6 TO STA. 13+46.6.

**GRADATION OF ROCK FOR ROCK SCOUR PAD**

PREDOMINANT ROCK SIZE (INCHES)	MINIMUM ROCK SIZE (INCHES)	MAXIMUM ROCK SIZE (INCHES)
5 TO 7	3	9

AT LEAST 80 PERCENT OF THE ROCK PARTICLES, BY WEIGHT, SHALL BE WITHIN THE PREDOMINANT ROCK SIZE RANGE SHOWN ABOVE.

SPALLS AND ROCK DUST THAT WILL PASS A 3" SIEVE SHALL CONSIST OF LESS THAN 5 PERCENT BY WEIGHT.

IT IS ESTIMATED THAT APPROXIMATELY 30.3 TONS OF ROCK WILL BE REQUIRED TO CONSTRUCT THE ROCK SCOUR PADS.



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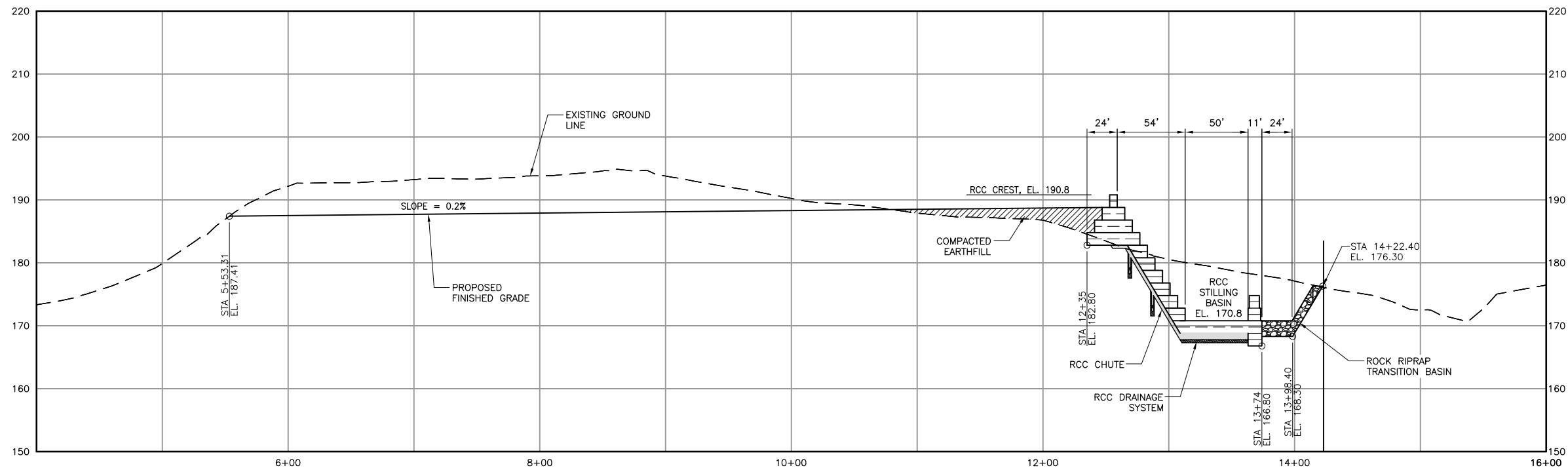
**RCC PLAN**  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
OLMITOS-GARCIAS CREEKS WATERSHED  
IN  
STARR COUNTY, TEXAS



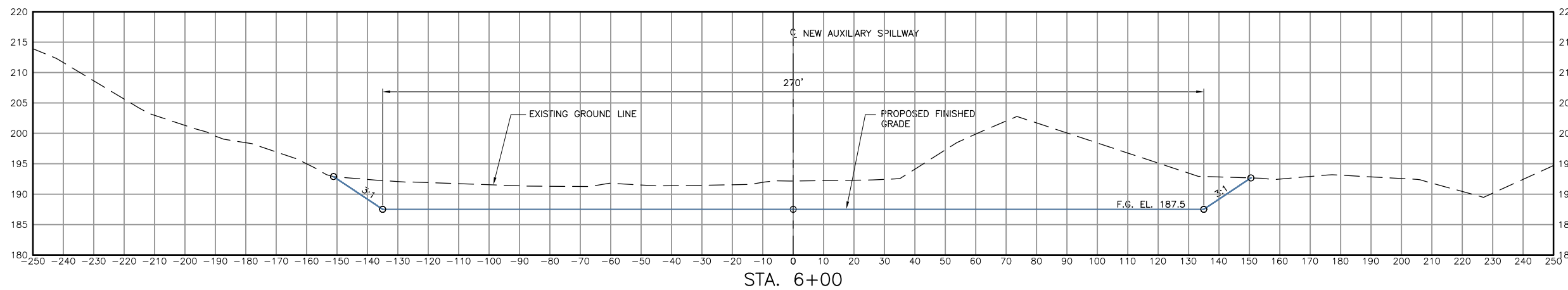
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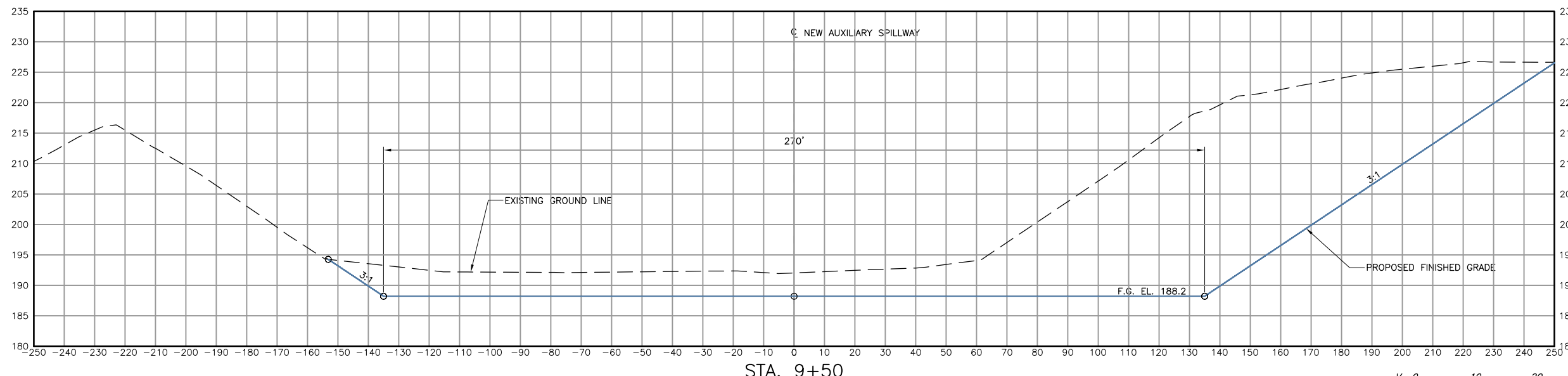
**12**



AUXILIARY SPILLWAY CENTERLINE PROFILE



STA. 6+00



STA. 9+50

AUXILIARY SPILLWAY SECTIONS



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AUXILIARY SPILLWAY - PROFILE AND SECTIONS  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
 OLMITOS-GARCIAS CREEKS WATERSHED  
 IN STARR COUNTY, TEXAS



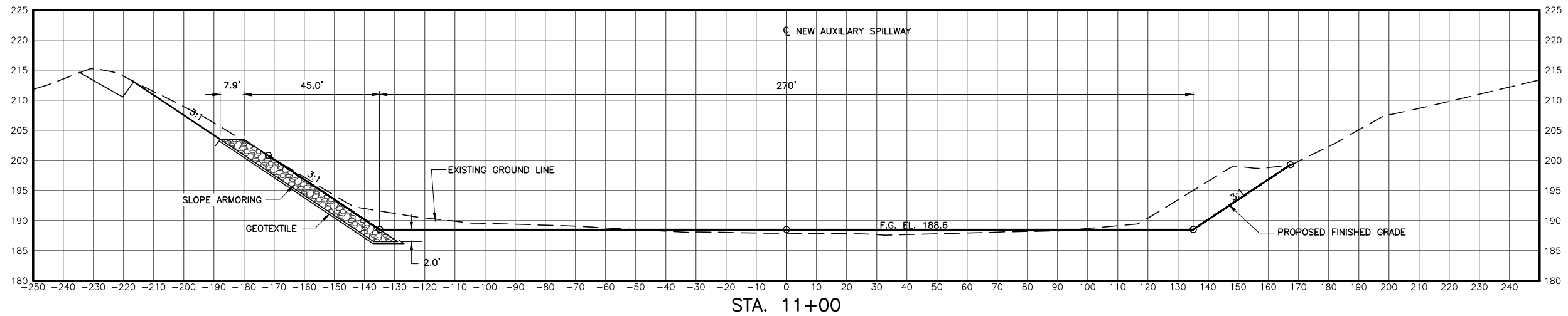
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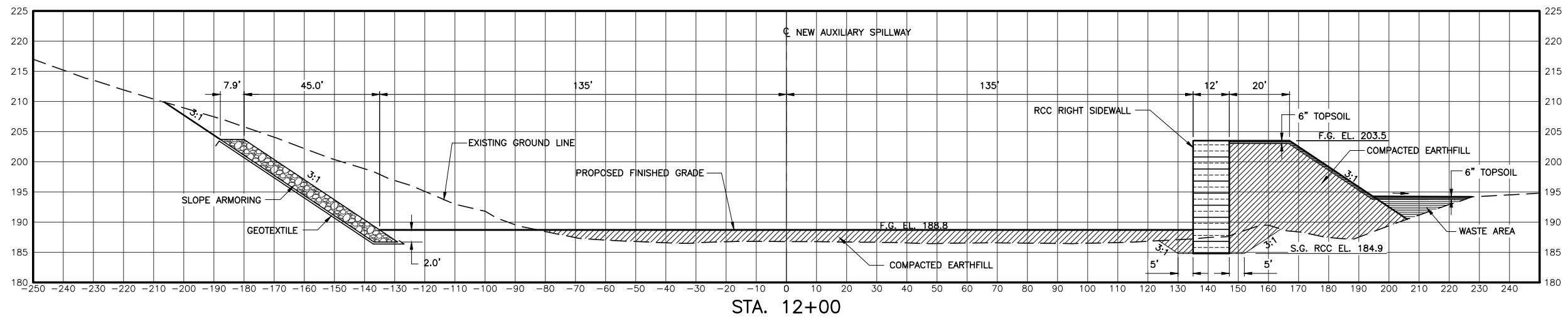
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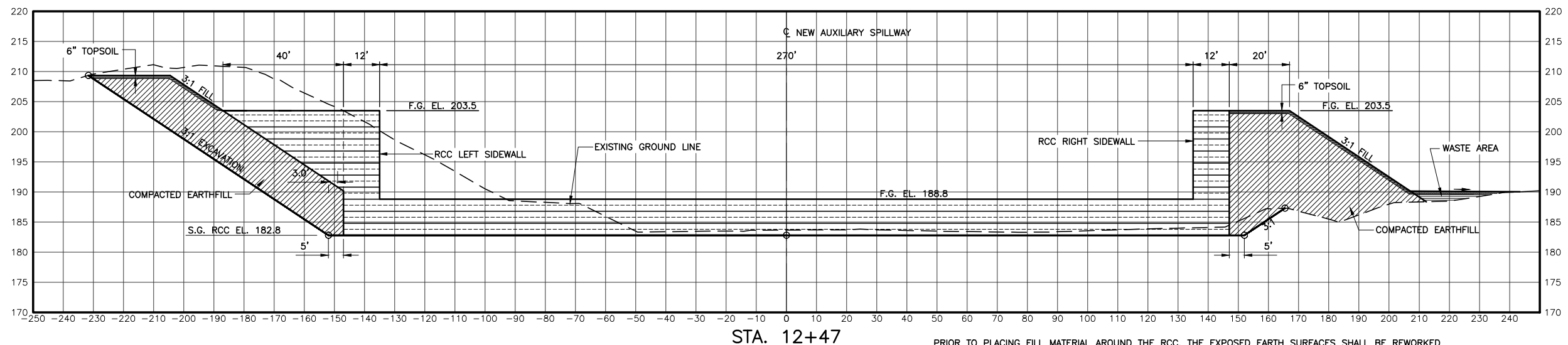
13



STA. 11+00



STA. 12+00



STA. 12+47

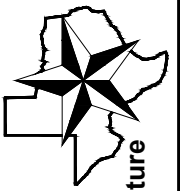
PRIOR TO PLACING FILL MATERIAL AROUND THE RCC, THE EXPOSED EARTH SURFACES SHALL BE REWORKED AS NECESSARY AND TO THE DEPTH NECESSARY TO REMOVE ALL CRACKS CAUSED BY WEATHERING AND TO COMPACT THE FOUNDATION OF THE RCC TO 100% STANDARD PROCTOR MAXIMUM DENSITY.

BLEND WASTE UNIFORMLY TO CONFORM TO EXISTING TOPOGRAPHY. AS A MINIMUM, THE WASTE SHALL BE PLACED AT AN ELEVATION TO ELIMINATE ANY CONCENTRATED FLOW ADJACENT TO THE COMPACTED EARTHFILL AND SHALL BE GRADED AT 0.5% AWAY FROM THE COMPACTED FILL. FINAL PLACEMENT SHALL BE AS APPROVED BY THE ENGINEER. SIX (6) INCHES OF TOPSOIL SHALL BE PLACED ON ALL EARTHFILL AND WASTE AREAS



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AUXILIARY SPILLWAY SECTIONS  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
 OLMITOS-GARCIAS CREEKS WATERSHED  
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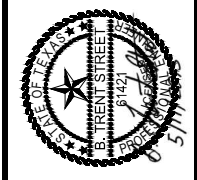


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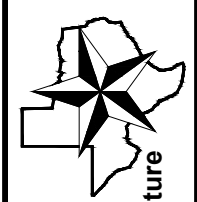




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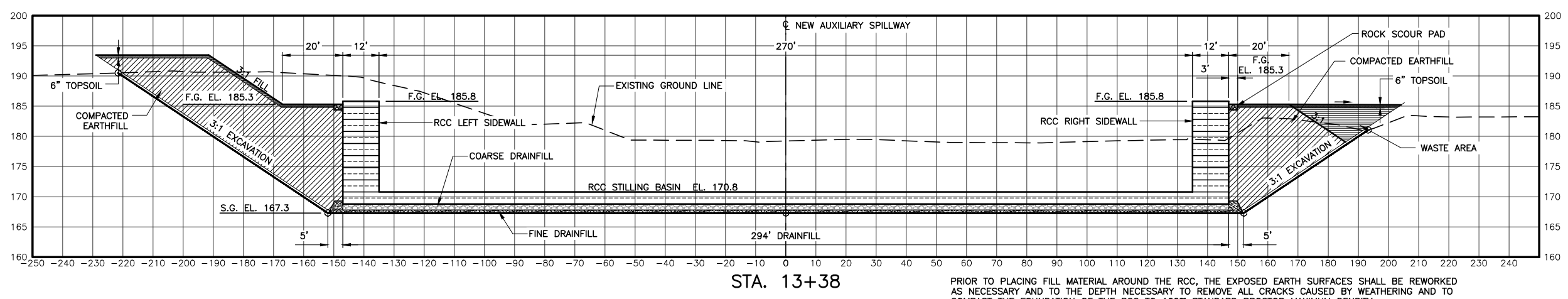
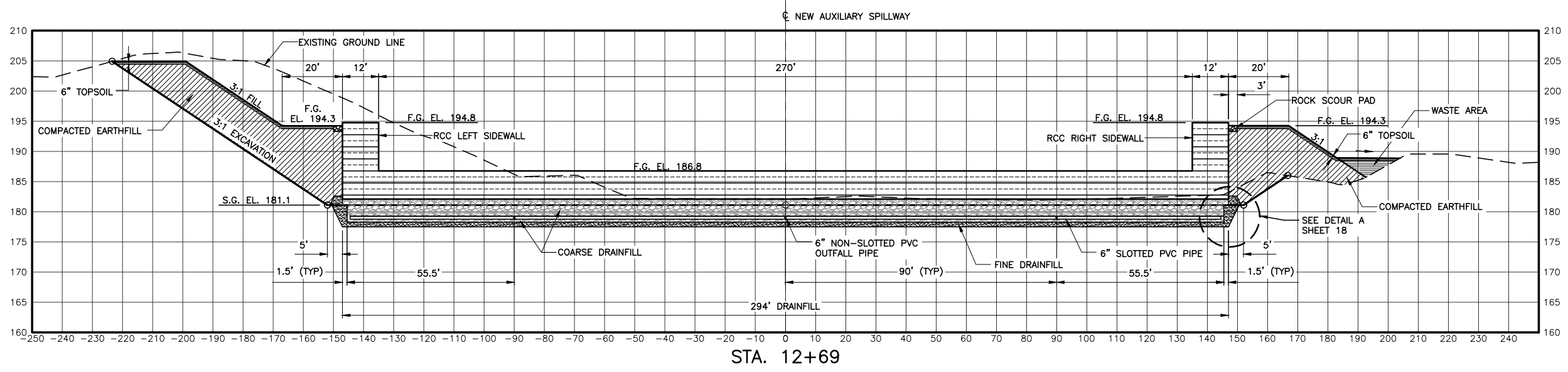
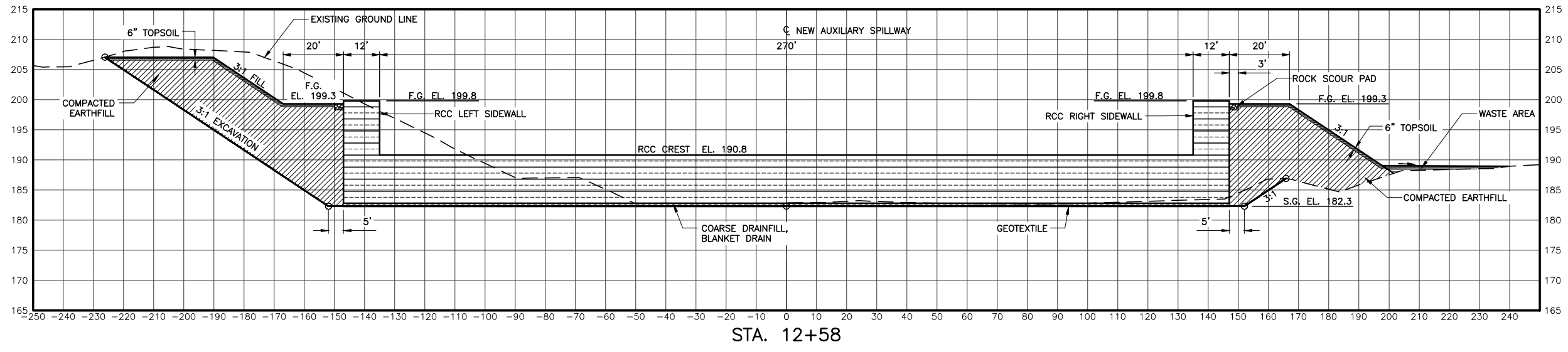
AUXILIARY SPILLWAY SECTIONS  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
OLMITOS-GARCIAS CREEKS WATERSHED  
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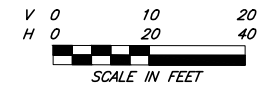
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15

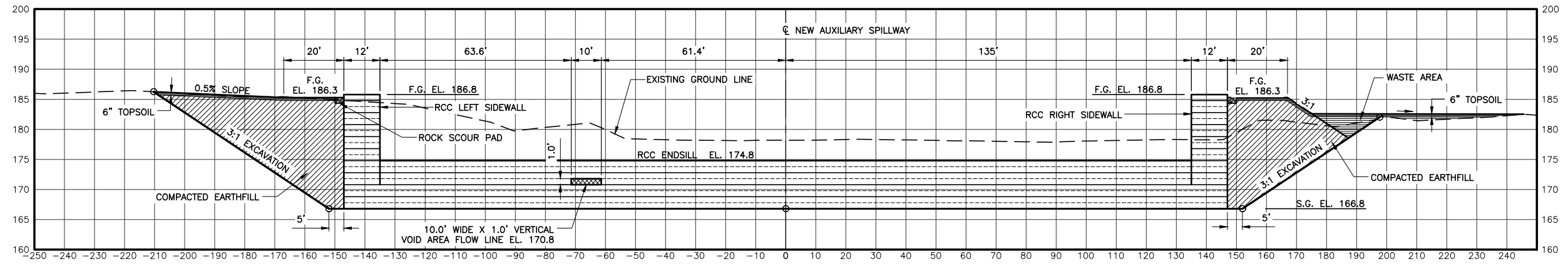


PRIOR TO PLACING FILL MATERIAL AROUND THE RCC, THE EXPOSED EARTH SURFACES SHALL BE REWORKED AS NECESSARY AND TO THE DEPTH NECESSARY TO REMOVE ALL CRACKS CAUSED BY WEATHERING AND TO COMPACT THE FOUNDATION OF THE RCC TO 100% STANDARD PROCTOR MAXIMUM DENSITY.

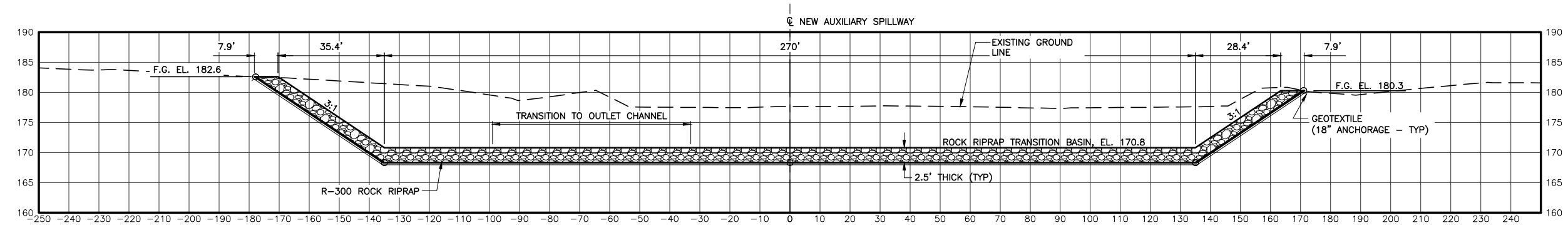
BLEND WASTE UNIFORMLY TO CONFORM TO EXISTING TOPOGRAPHY. AS A MINIMUM, THE WASTE SHALL BE PLACED AT AN ELEVATION TO ELIMINATE ANY CONCENTRATED FLOW ADJACENT TO THE COMPACTED EARTHFILL AND SHALL BE GRADED AT 0.5% AWAY FROM THE COMPACTED FILL. FINAL PLACEMENT SHALL BE AS APPROVED BY THE ENGINEER. SIX (6) INCHES OF TOPSOIL SHALL BE PLACED ON ALL EARTHFILL AND WASTE AREAS



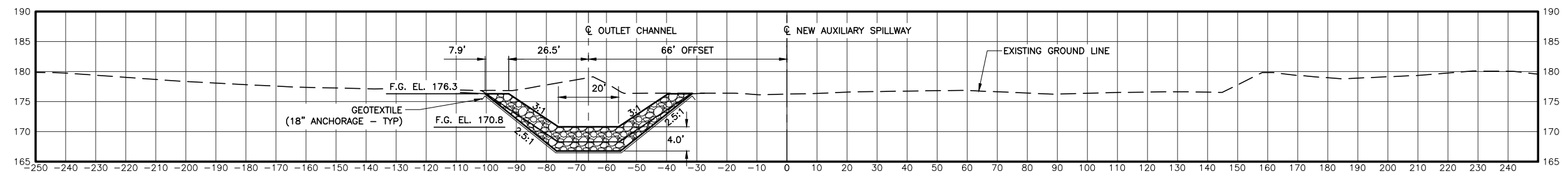
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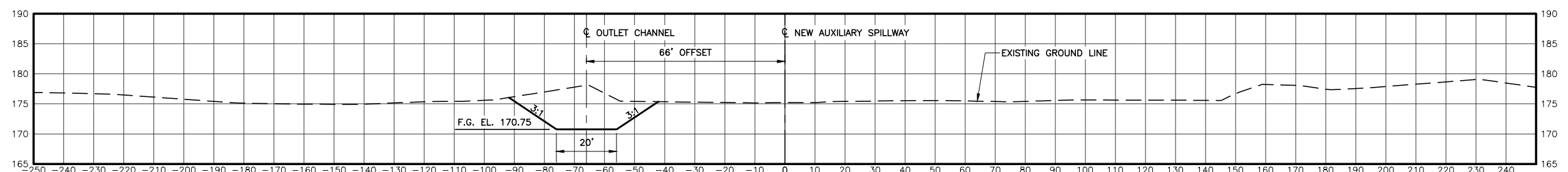
STA. 13+68



STA. 13+86



STA. 14+20



STA. 14+50

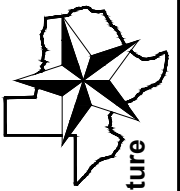
PRIOR TO PLACING FILL MATERIAL AROUND THE RCC, THE EXPOSED EARTH SURFACES SHALL BE REWORKED AS NECESSARY AND TO THE DEPTH NECESSARY TO REMOVE ALL CRACKS CAUSED BY WEATHERING AND TO COMPACT THE FOUNDATION OF THE RCC TO 100% STANDARD PROCTOR MAXIMUM DENSITY.

BLEND WASTE UNIFORMLY TO CONFORM TO EXISTING TOPOGRAPHY. AS A MINIMUM, THE WASTE SHALL BE PLACED AT AN ELEVATION TO ELIMINATE ANY CONCENTRATED FLOW ADJACENT TO THE COMPACTED EARTHFILL AND SHALL BE GRADED AT 0.5% AWAY FROM THE COMPACTED FILL. FINAL PLACEMENT SHALL BE AS APPROVED BY THE ENGINEER. SIX (6) INCHES OF TOPSOIL SHALL BE PLACED ON ALL EARTHFILL AND WASTE AREAS



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AUXILIARY SPILLWAY SECTIONS  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
 OLMITOS-GARCIAS CREEKS WATERSHED  
 IN STARR COUNTY, TEXAS



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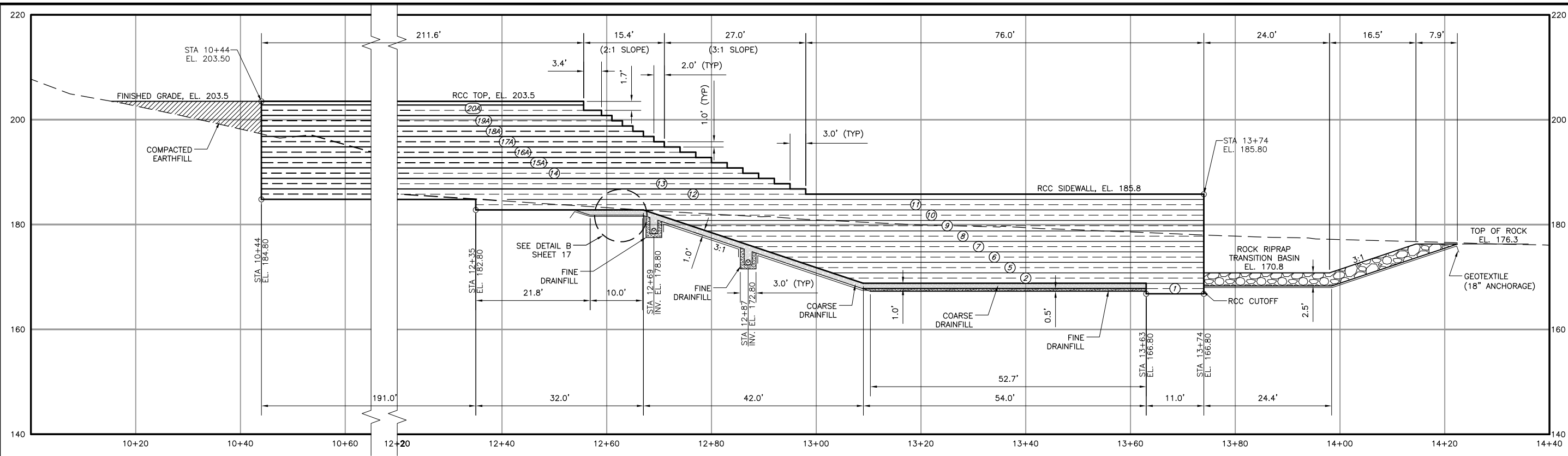
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**RCC RIGHT SIDEWALL PROFILE**

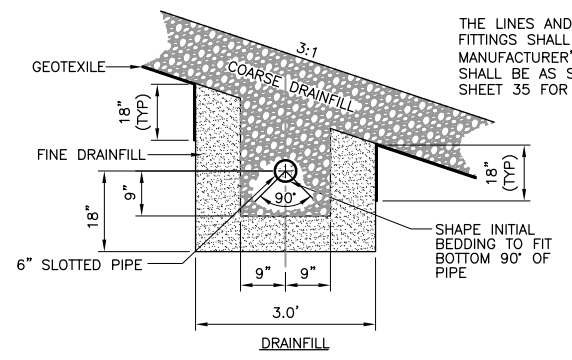


**CONSTRUCTION NOTES:**

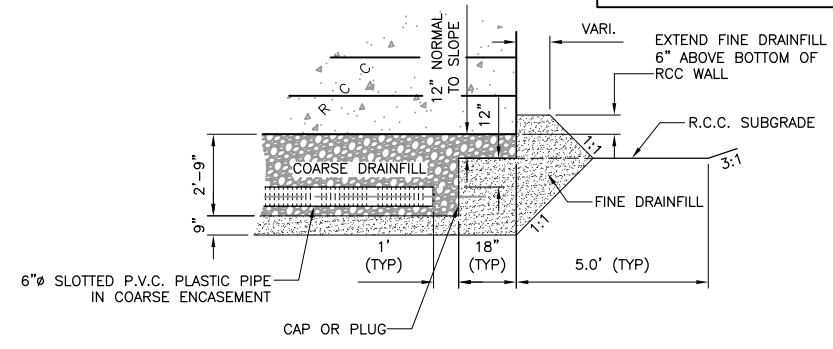
THE LINES AND GRADES FOR THE SLOTTED AND NON-PERFORATED PIPE AND FITTINGS SHALL BE AS SHOWN. JOINING SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. BACKFILL AND COMPACTION REQUIREMENTS SHALL BE AS SPECIFIED IN CONSTRUCTION SPECIFICATIONS 24 AND 45. SEE SHEET 35 FOR SLOTTED PIPE DETAILS.

⊙ - LAYER DESIGNATION

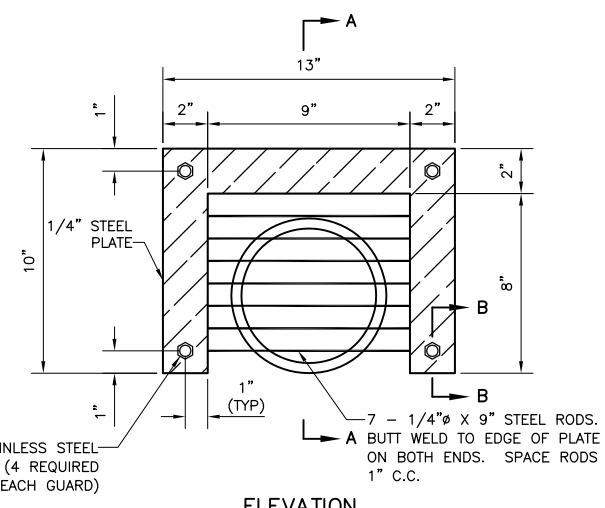
REFER TO SHEETS 19 - 22 FOR RCC LAYER GEOMETRY AND DIMENSION DETAILS.



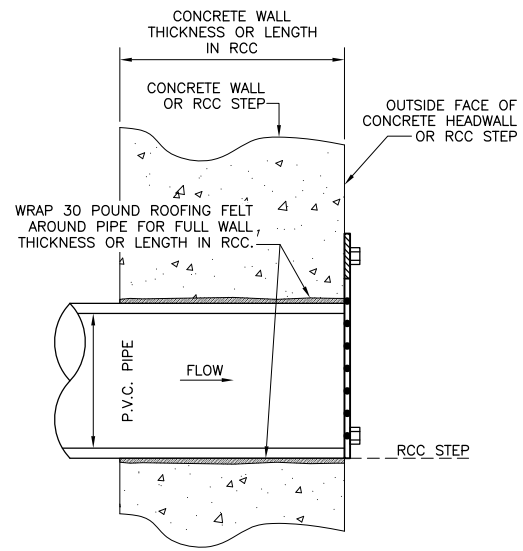
**DRAIN PIPE BEDDING DETAILS**  
NOT TO SCALE



**DETAIL A**  
NOT TO SCALE



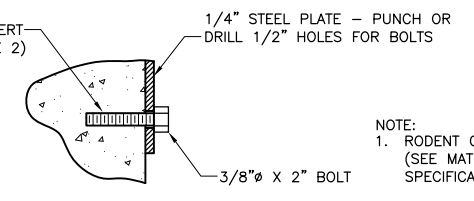
**ELEVATION**



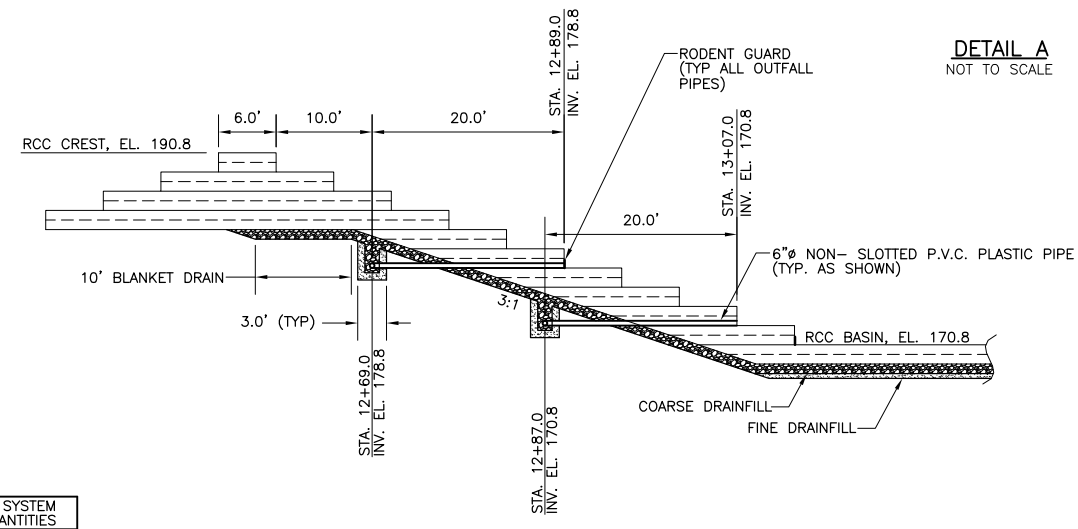
**SECTION A-A**  
NOT TO SCALE

**RODENT GUARD DETAILS**

(6 REQUIRED)  
NOT TO SCALE



**SECTION B-B**  
NOT TO SCALE



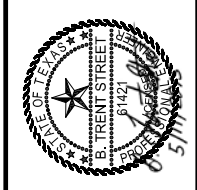
**PROFILE ON C-C OF RCC OUTFALL LINES**  
NOT TO SCALE

RCC DRAINAGE SYSTEM DRAINFILL QUANTITIES	
DRAINFILL:	
FINE	468.2 CU. YDS.
COARSE	1,287.9 CU. YDS.
TOTAL	1,756.1 CU. YDS.

**DRAINFILL GRADATION REQUIREMENTS**

NOTE: INSTALLATION AND MATERIALS QUALITY SHALL COMPLY WITH THE REQUIREMENTS OF CONSTRUCTION SPECIFICATION 24 AND MATERIALS SPECIFICATION 521.

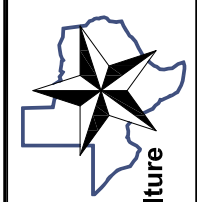
RCC DRAINAGE SYSTEM P.V.C. PIPE QUANTITIES	
6\"/>	



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RCC PROFILES  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
OLMITOS-GARCIAS CREEKS WATERSHED  
IN STARR COUNTY, TEXAS



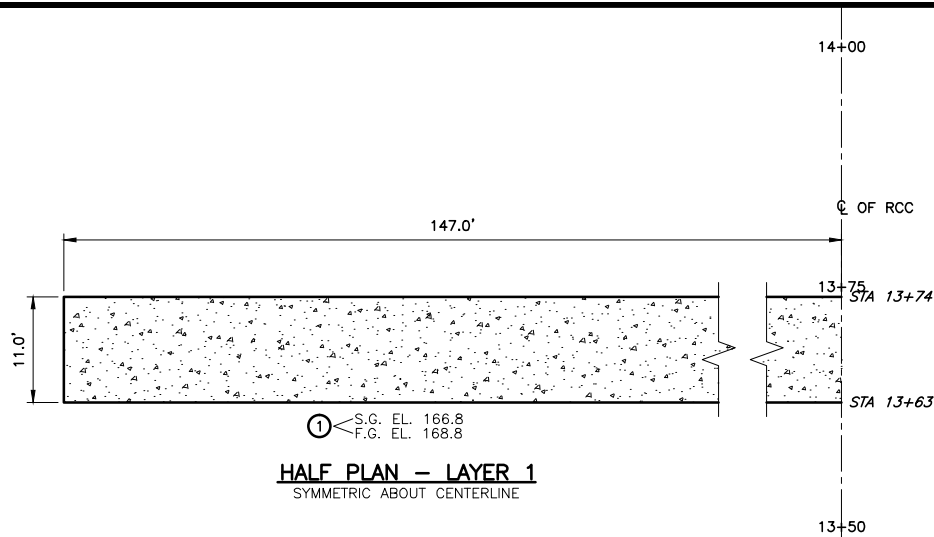
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SHEET

**18**

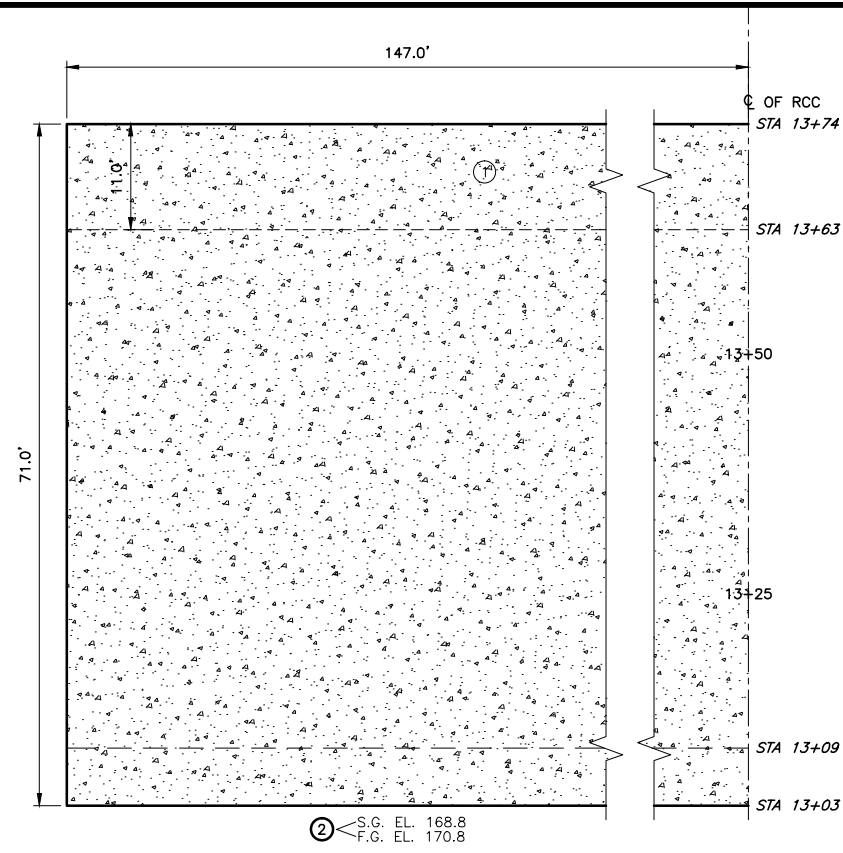
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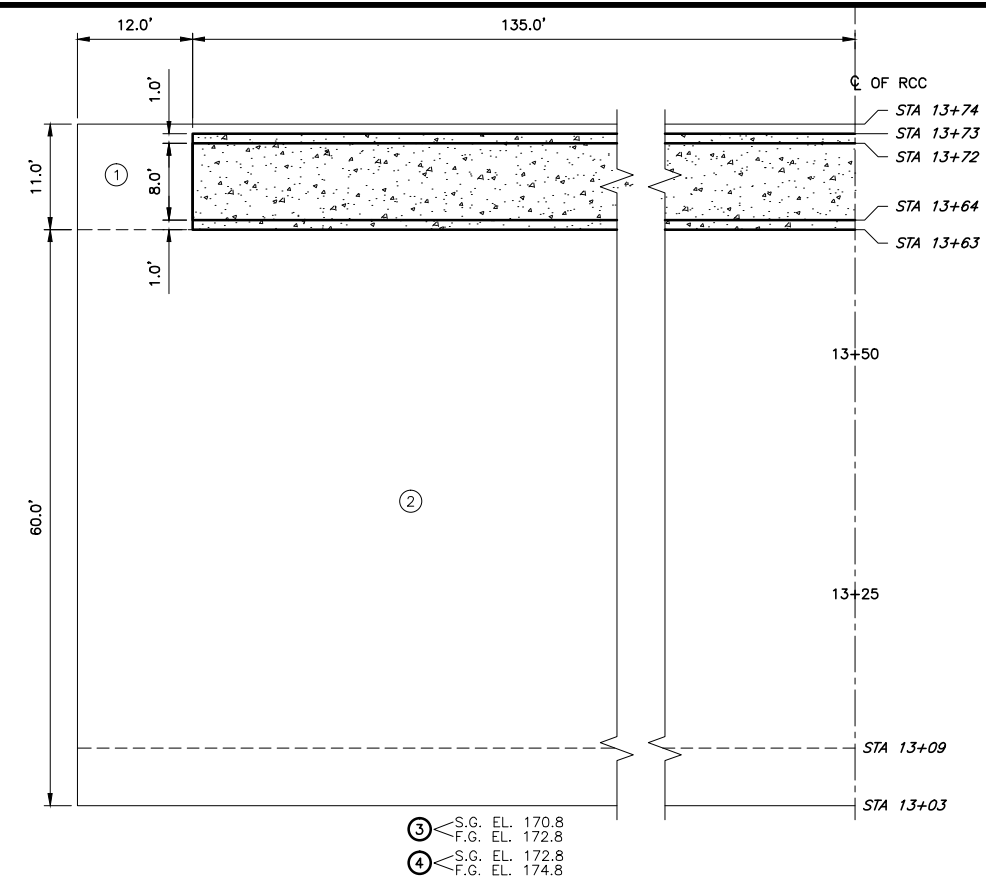


**HALF PLAN - LAYER 1**  
SYMMETRIC ABOUT CENTERLINE

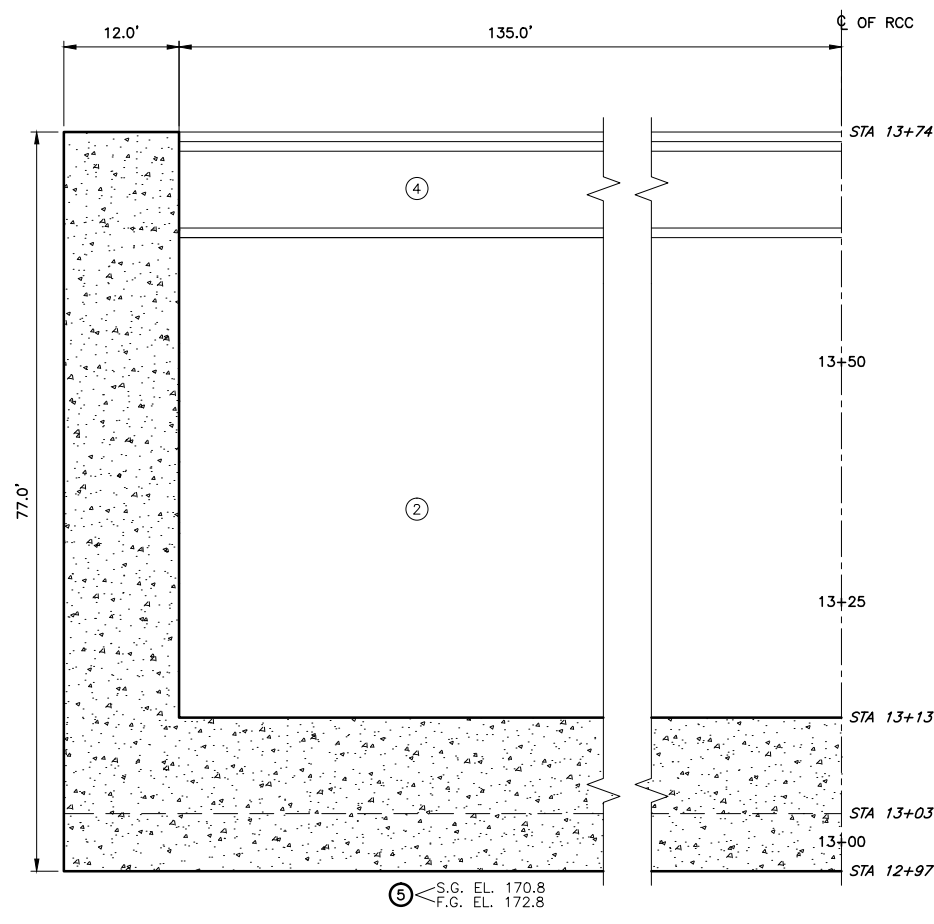
- NOTE:
- 1) ALL LAYERS SHOWN ARE SYMMETRIC ABOUT CENTERLINE UNLESS OTHERWISE NOTED.
  - 2) ALL LAYERS SHALL BE CONSTRUCTED OF TWO (2) 12" LIFTS AND BE 24" THICK AFTER COMPACTION UNLESS OTHERWISE NOTED (REFER TO CONSTRUCTION SPECIFICATION 36).
  - 3) THE LAYER SEQUENCE SHOWN ON THIS SHEET IS A LOGICAL PROGRESSION FOR THE PLACEMENT OF THE ROLLER COMPACTED CONCRETE FOR THE CONSTRUCTION OF THE CHUTE SPILLWAY. ACTUAL ORDER AND LIMITS MAY VARY ONLY AS PERMITTED BY THE ENGINEER.
  - 4) S.G. = SUBGRADE; F.G. = FINISHED GRADE



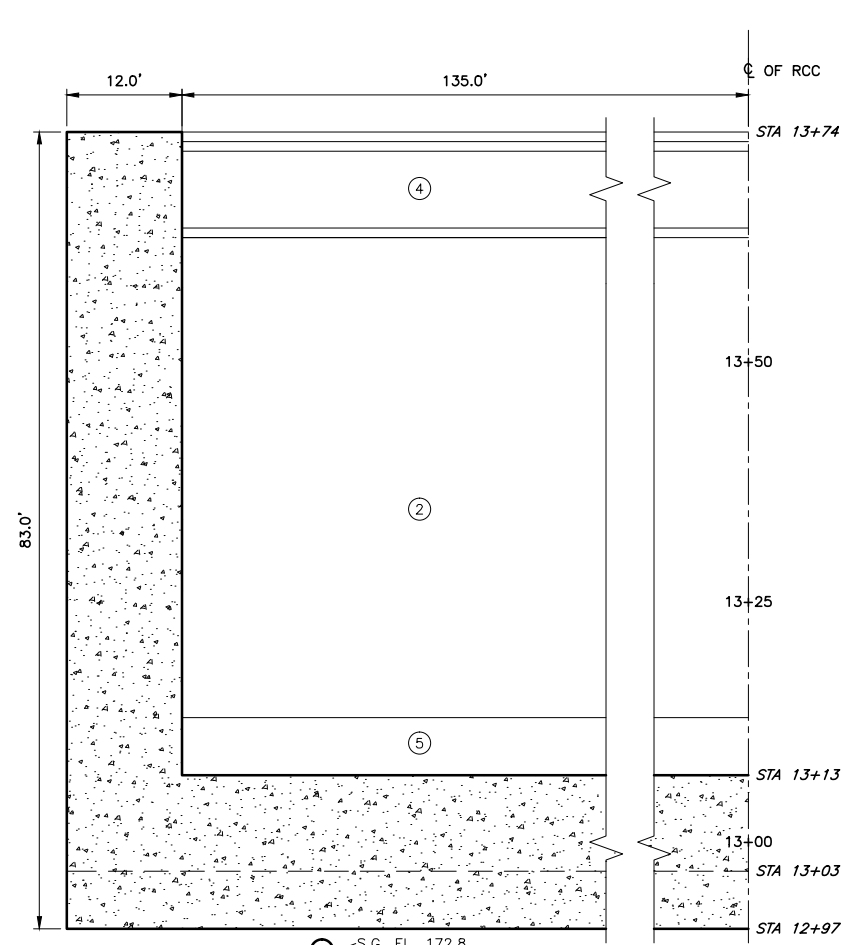
**HALF PLAN - LAYER 2**  
SYMMETRIC ABOUT CENTERLINE



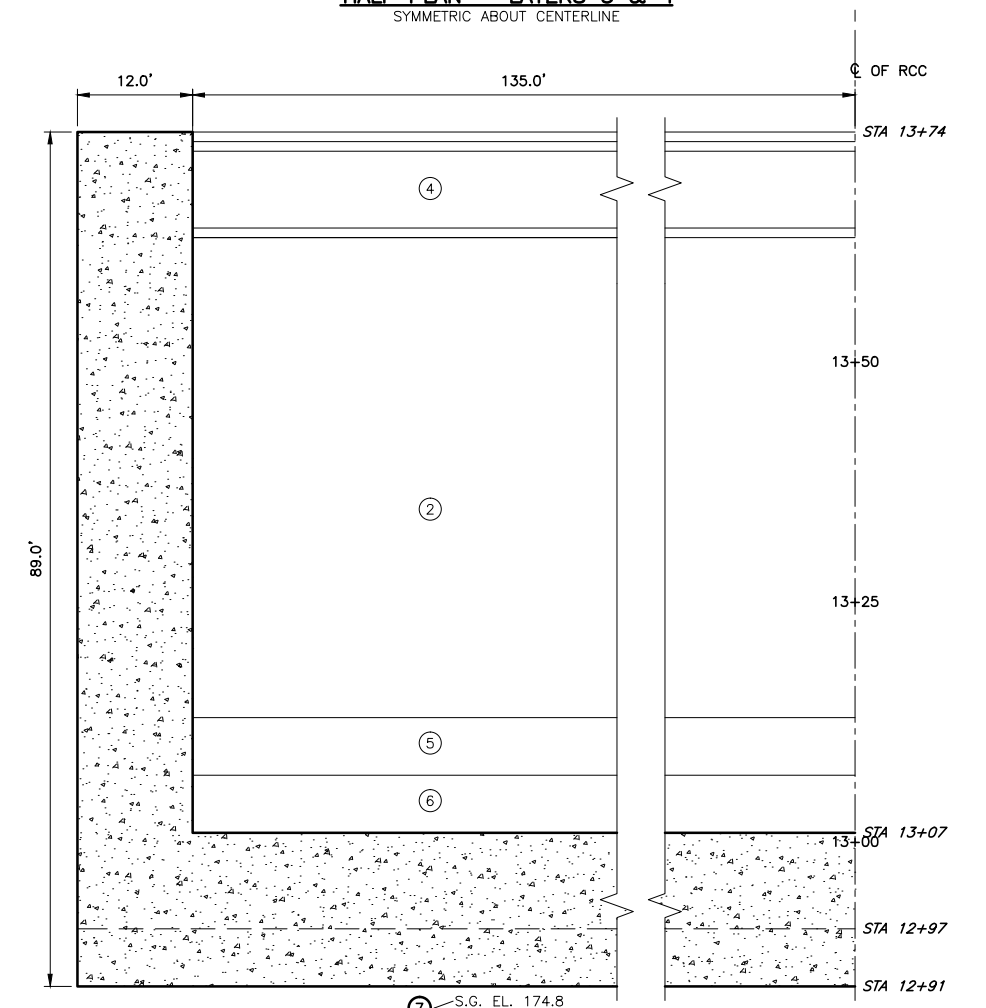
**HALF PLAN - LAYERS 3 & 4**  
SYMMETRIC ABOUT CENTERLINE



**HALF PLAN - LAYER 5**  
SYMMETRIC ABOUT CENTERLINE



**HALF PLAN - LAYER 6**  
SYMMETRIC ABOUT CENTERLINE



**HALF PLAN - LAYER 7**  
SYMMETRIC ABOUT CENTERLINE

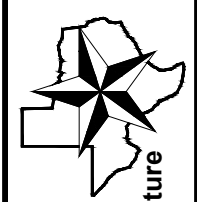
**RCC LAYER SECTIONS**



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**RCC LAYER SECTIONS**  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
**OLMITOS-GARCIAS CREEKS WATERSHED**  
IN  
STARR COUNTY, TEXAS

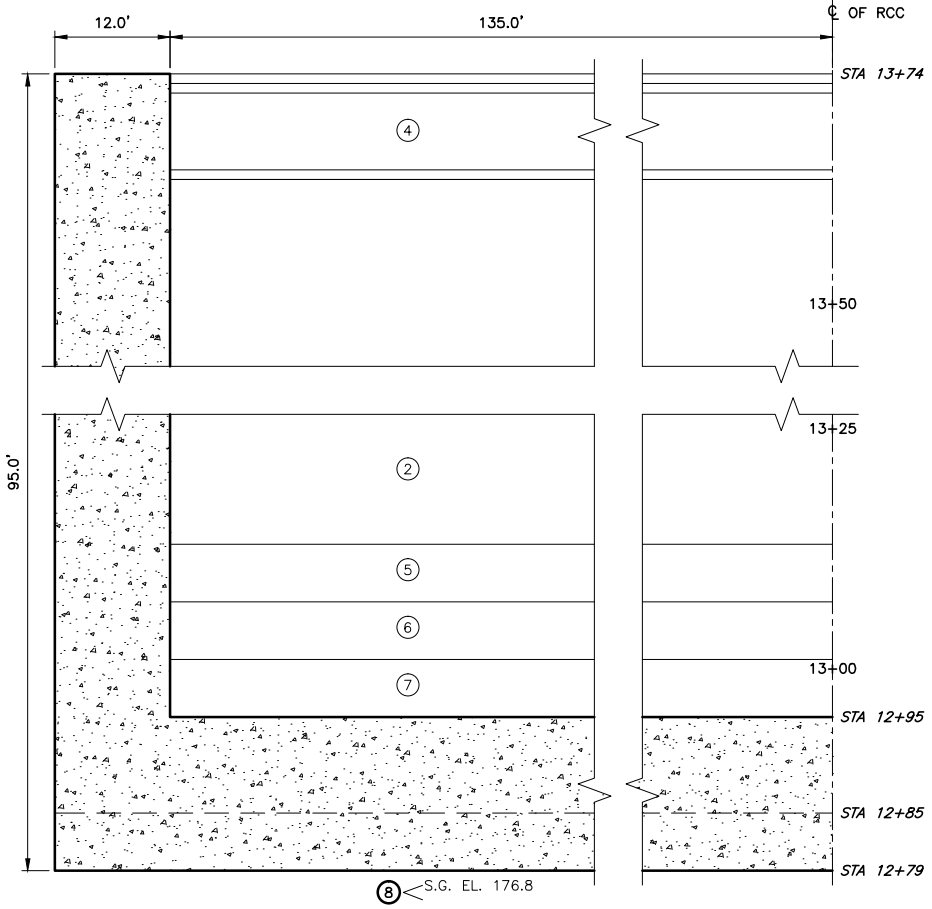


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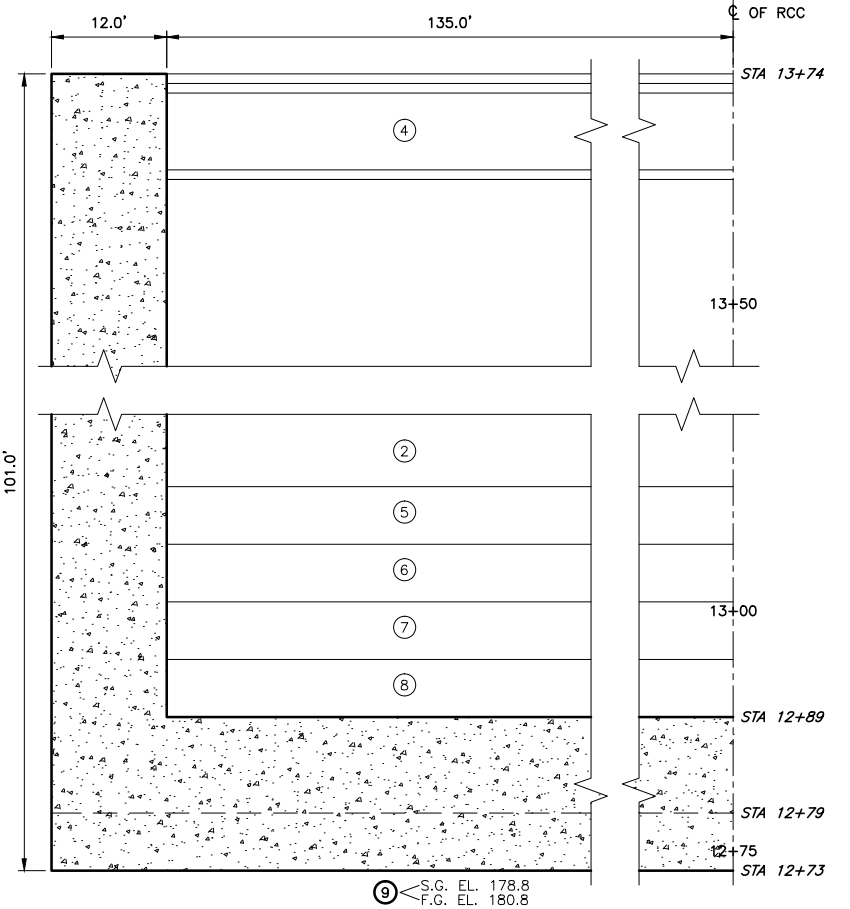
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**19**

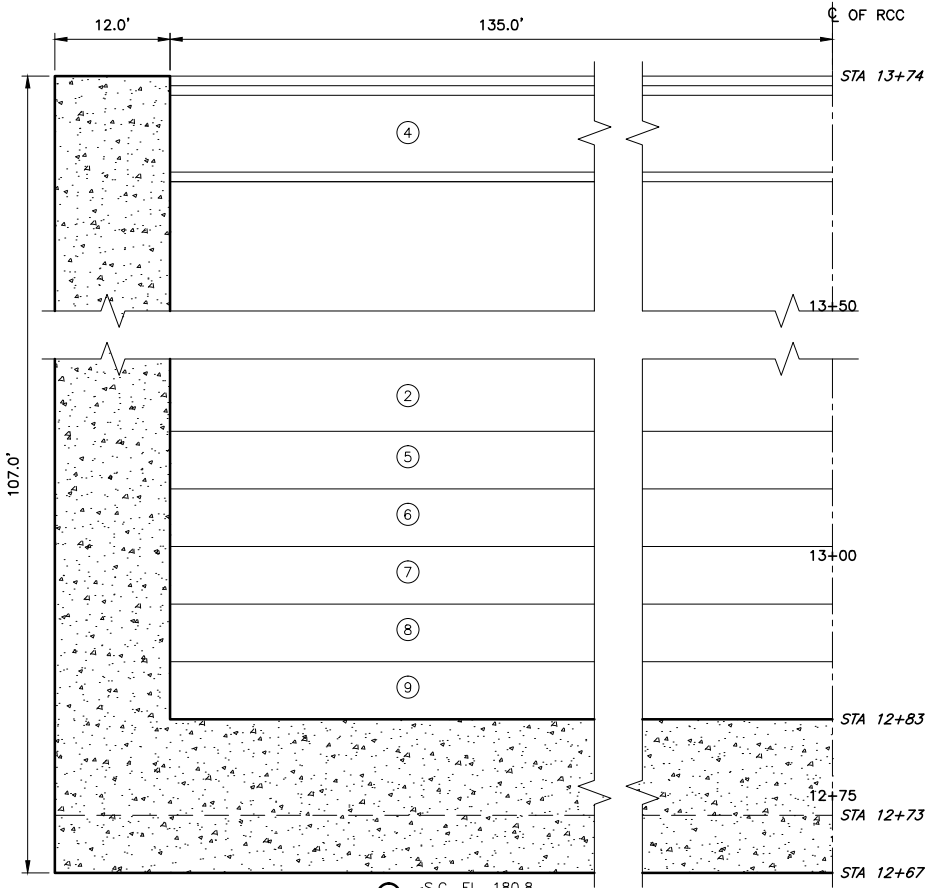
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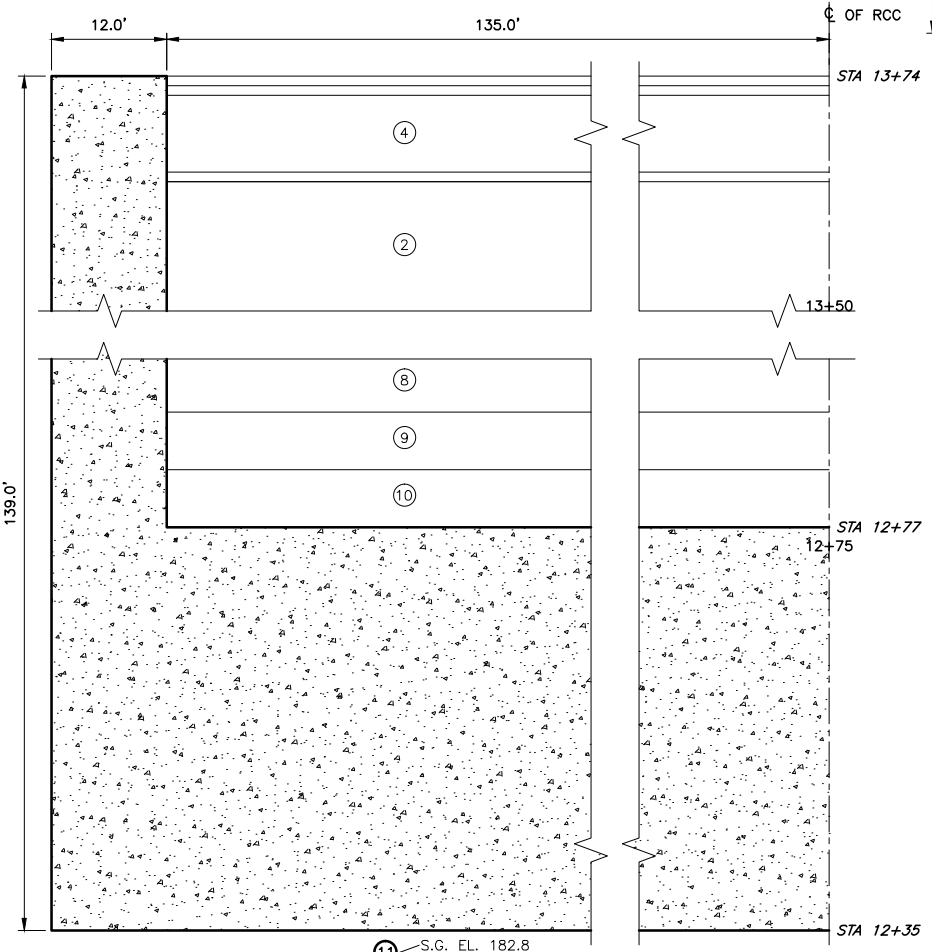
**HALF PLAN - LAYER 8**  
SYMMETRIC ABOUT CENTERLINE



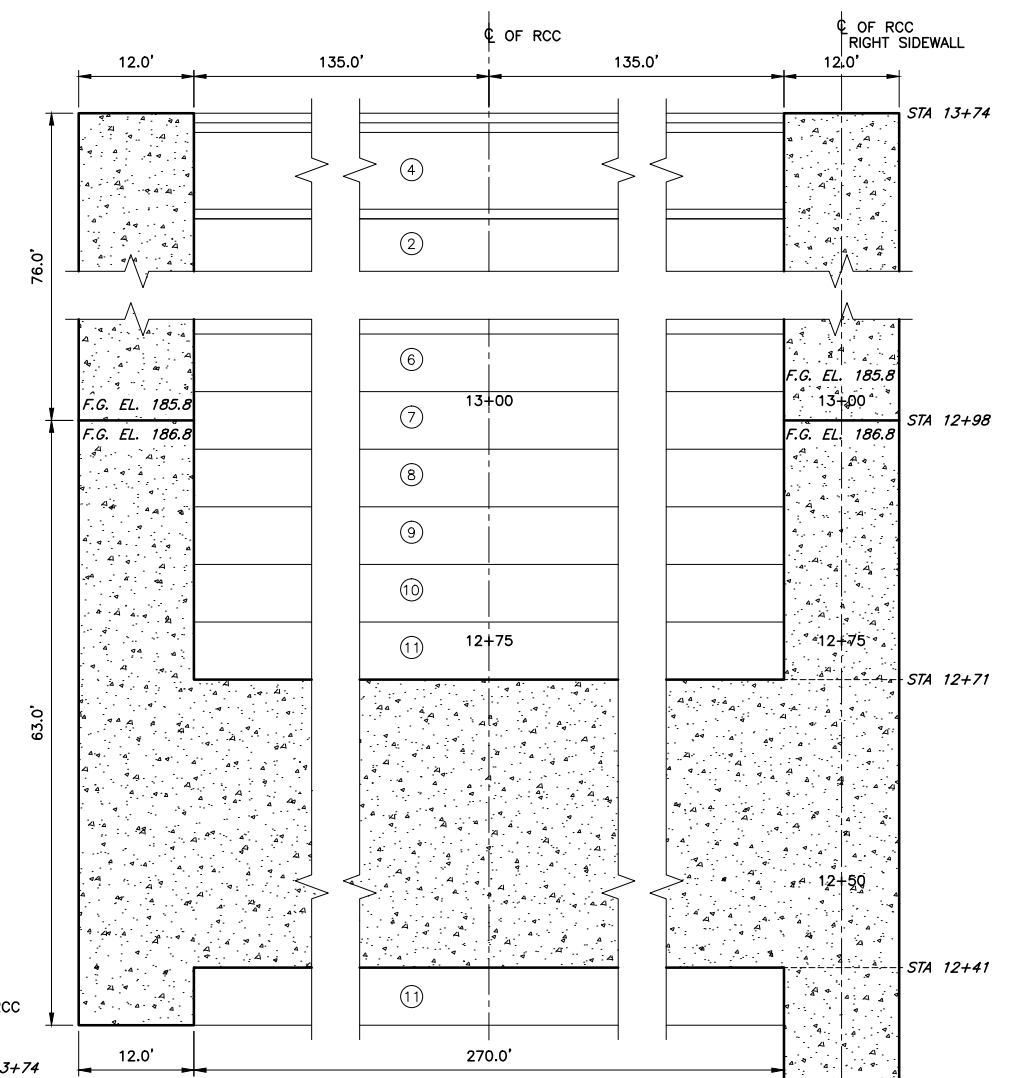
**HALF PLAN - LAYER 9**  
SYMMETRIC ABOUT CENTERLINE



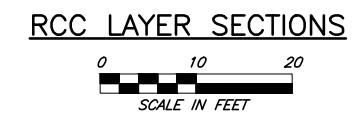
**HALF PLAN - LAYER 10**  
SYMMETRIC ABOUT CENTERLINE



**HALF PLAN - LAYER 11**  
SYMMETRIC ABOUT CENTERLINE



**HALF PLAN - LAYER 12**  
NOT SYMMETRICAL ABOUT CENTERLINE

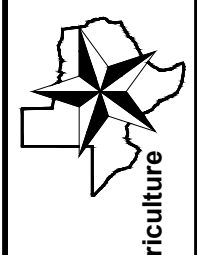


- NOTE:**
- 1) ALL LAYERS SHOWN ARE SYMMETRIC ABOUT CENTERLINE UNLESS OTHERWISE NOTED.
  - 2) ALL LAYERS SHALL BE CONSTRUCTED OF TWO (2) 12" LIFTS AND BE 24" THICK AFTER COMPACTION UNLESS OTHERWISE NOTED (REFER TO CONSTRUCTION SPECIFICATION 36).
  - 3) THE LAYER SEQUENCE SHOWN ON THIS SHEET IS A LOGICAL PROGRESSION FOR THE PLACEMENT OF THE ROLLER COMPACTED CONCRETE FOR THE CONSTRUCTION OF THE CHUTE SPILLWAY. ACTUAL ORDER AND LIMITS MAY VARY ONLY AS PERMITTED BY THE ENGINEER.
  - 4) S.G. = SUBGRADE; F.G. = FINISHED GRADE



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**RCC LAYER SECTIONS**  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
OLMITOS-GARCIAS CREEKS WATERSHED  
IN  
STARR COUNTY, TEXAS



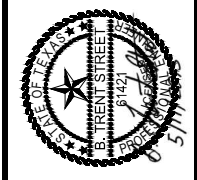
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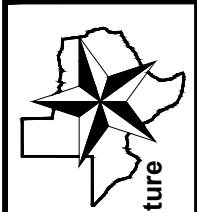




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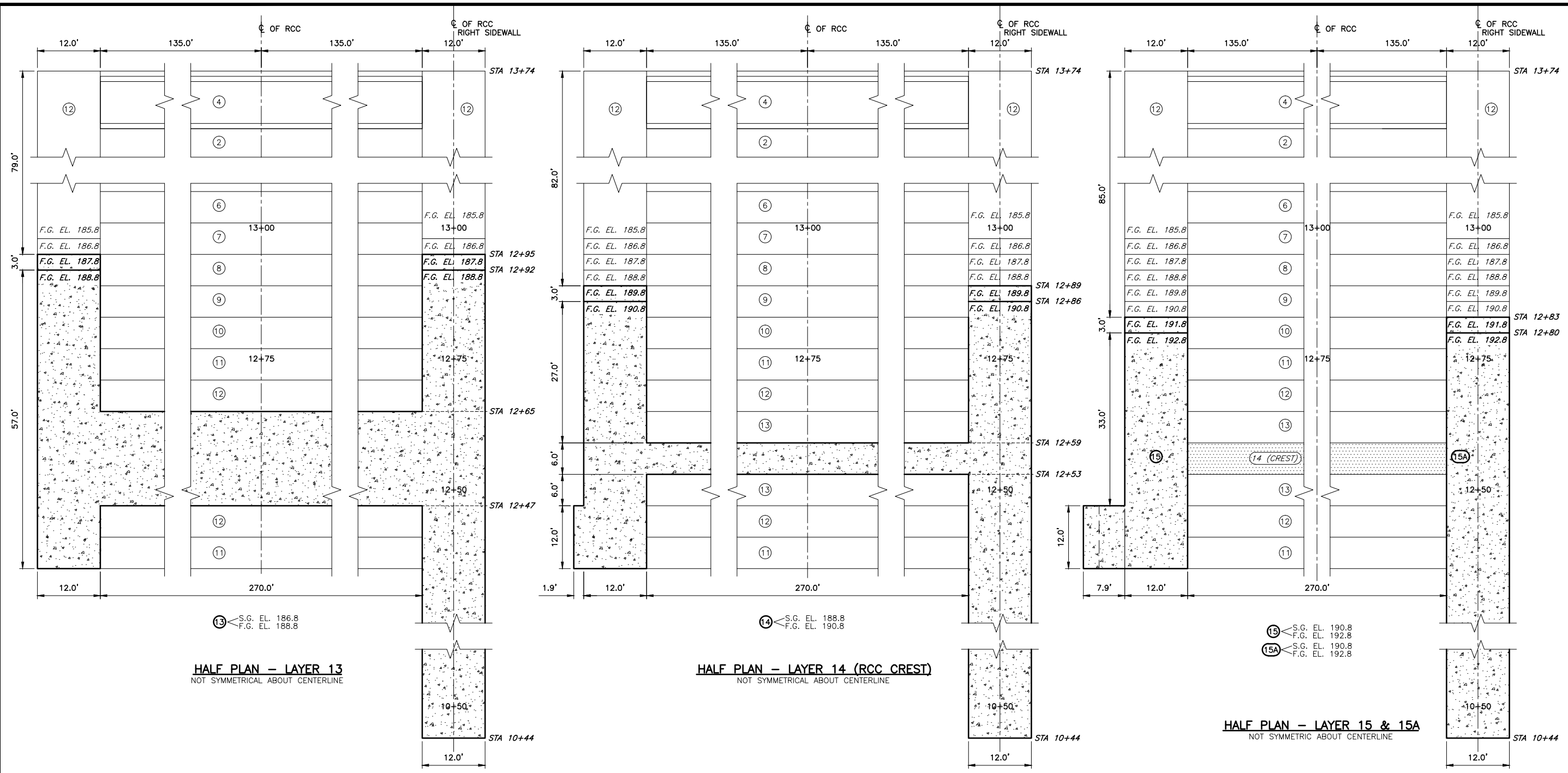
RCC LAYER SECTIONS  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
OLMITOS-GARCIAS CREEKS WATERSHED  
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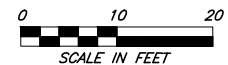


**HALF PLAN - LAYER 13**  
NOT SYMMETRICAL ABOUT CENTERLINE

**HALF PLAN - LAYER 14 (RCC CREST)**  
NOT SYMMETRICAL ABOUT CENTERLINE

**HALF PLAN - LAYER 15 & 15A**  
NOT SYMMETRICAL ABOUT CENTERLINE

**RCC LAYER SECTIONS**



- NOTE:
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  - 2) ALL LAYERS SHALL BE CONSTRUCTED OF TWO (2) 12" LIFTS AND BE 24" THICK AFTER COMPACTION UNLESS OTHERWISE NOTED (REFER TO CONSTRUCTION SPECIFICATION 36).
  - 3) THE LAYER SEQUENCE SHOWN ON THIS SHEET IS A LOGICAL PROGRESSION FOR THE PLACEMENT OF THE ROLLER COMPACTED CONCRETE FOR THE CONSTRUCTION OF THE CHUTE SPILLWAY. ACTUAL ORDER AND LIMITS MAY VARY ONLY AS PERMITTED BY THE ENGINEER.
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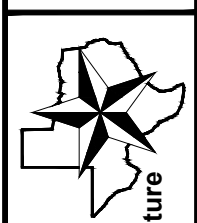
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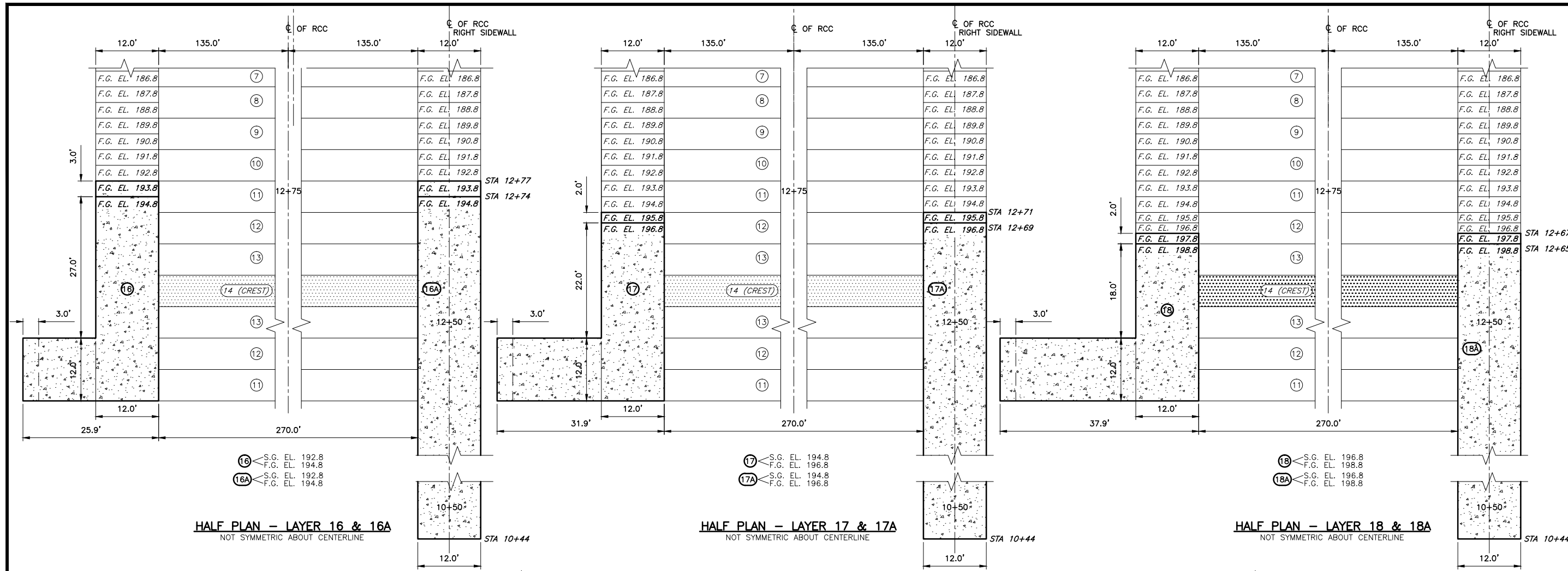
RCC LAYER SECTIONS  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
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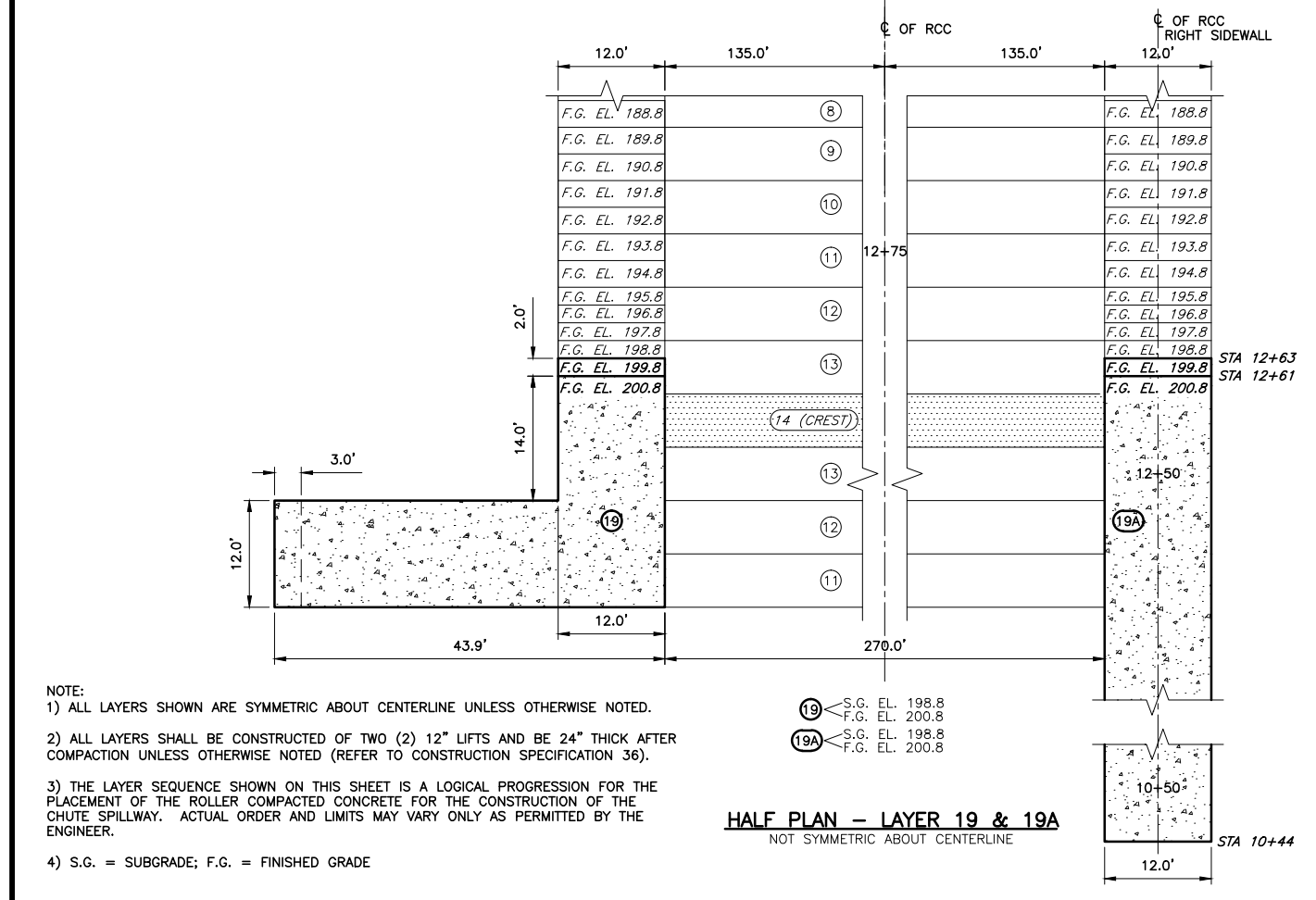
**22**



**HALF PLAN - LAYER 16 & 16A**  
NOT SYMMETRIC ABOUT CENTERLINE

**HALF PLAN - LAYER 17 & 17A**  
NOT SYMMETRIC ABOUT CENTERLINE

**HALF PLAN - LAYER 18 & 18A**  
NOT SYMMETRIC ABOUT CENTERLINE

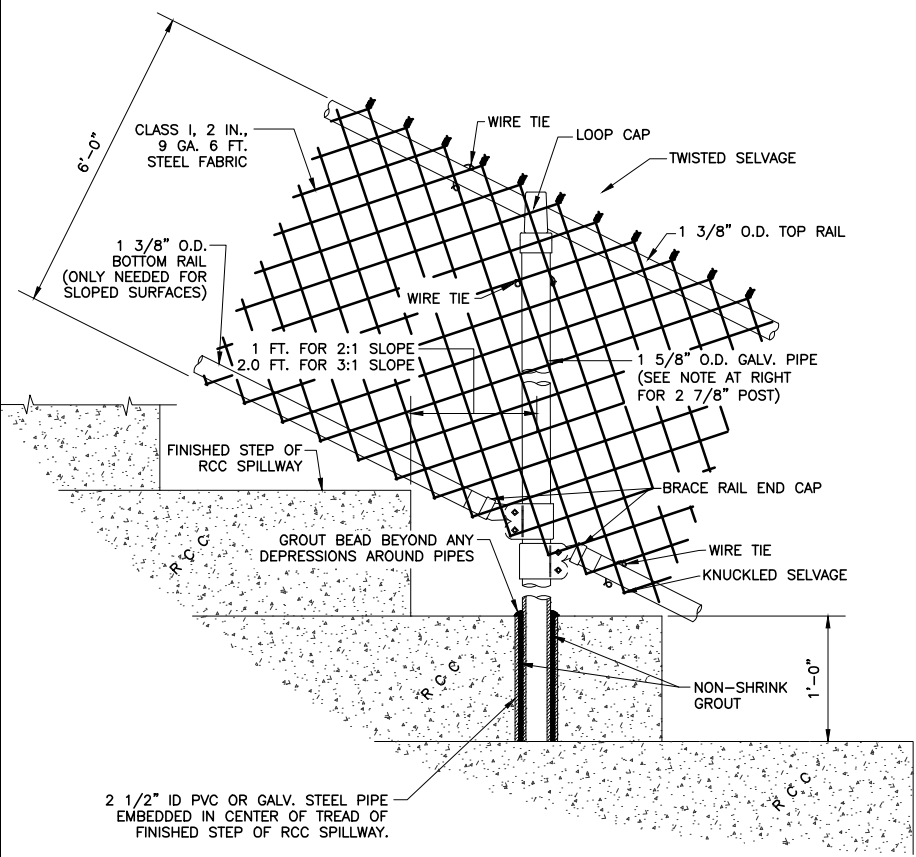


**HALF PLAN - LAYER 19 & 19A**  
NOT SYMMETRIC ABOUT CENTERLINE

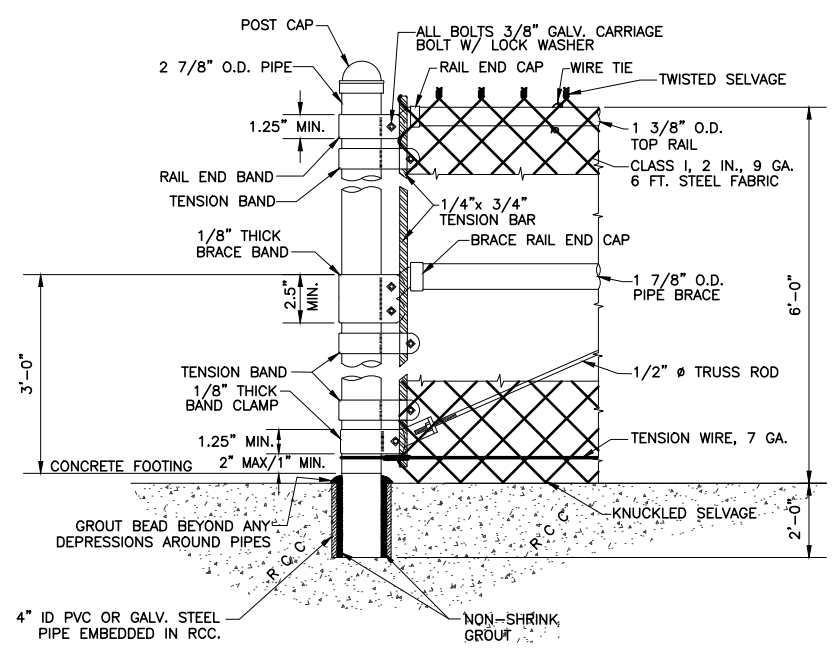
**HALF PLAN - LAYER 20 & 20A**  
NOT SYMMETRIC ABOUT CENTERLINE



- NOTE:
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  - 4) S.G. = SUBGRADE; F.G. = FINISHED GRADE

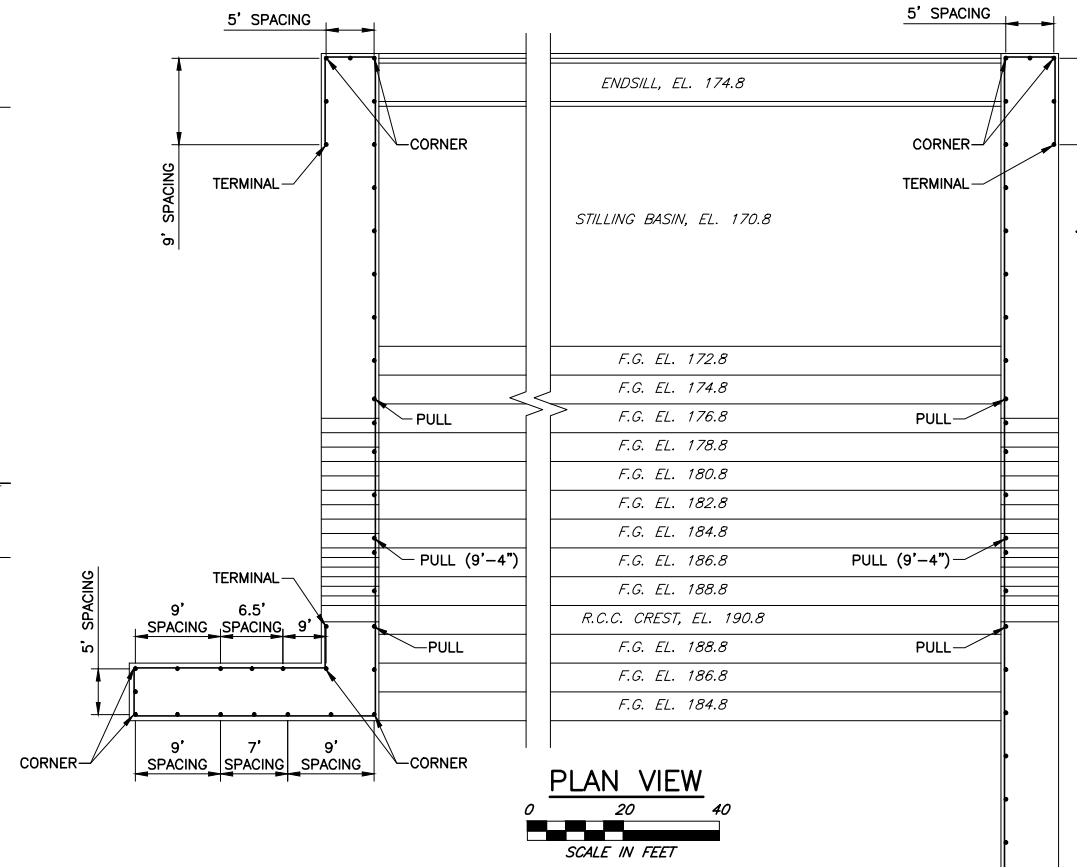


**LINE POST DETAIL**  
(NOT TO SCALE)

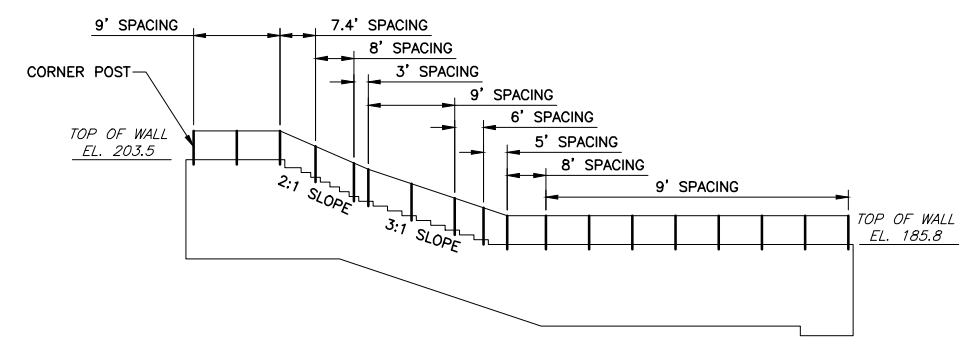


**POST DETAIL**  
(CORNER, PULL & TERMINAL POST)  
(NOT TO SCALE)

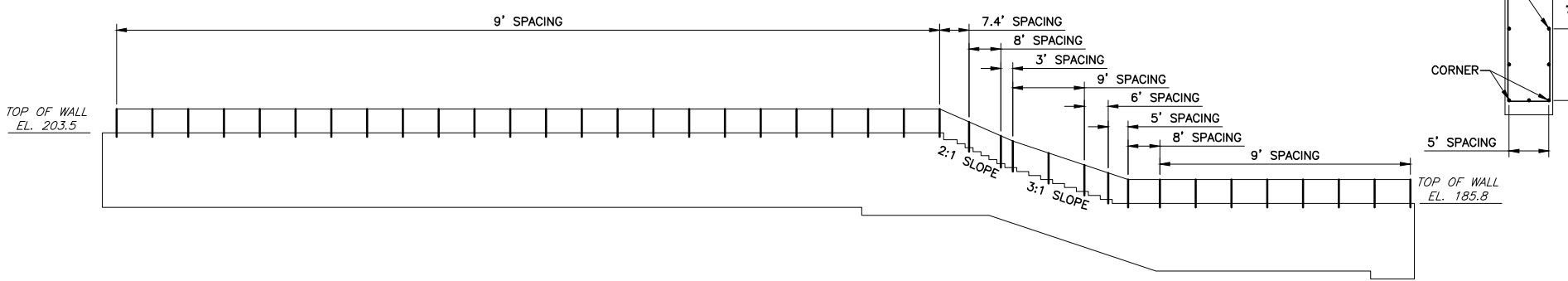
**NOTES:**  
 FOR 2 7/8" POST, A 4" PVC OR GALV. STEEL PIPE SHALL BE EMBEDDED IN RCC. SEE LINE POST DETAIL IN RCC.  
 WIRE TIES SHALL HAVE MAX. SPACING OF 24 INCHES ON TOP RAIL AND 12 INCHES ON LINE POSTS.  
 TIE WIRE SHALL BE MIN. 9 GAGE STEEL GALV. WIRE.  
 FOUR (4) 12 GA. TENSION BANDS SHALL BE USED PER TENSION BAR.  
 TENSION WIRE SHALL BE MARCELLED (SPIRAL OR CRIMP) #7 GAGE AS PER ASTM A 824, TYPE II ZINC-COAT CLASS 2. TENSION WIRE IS NOT REQUIRED ON SLOPING PORTION OF FENCE.  
 BOTTOM RAIL IS ONLY REQUIRED ON SLOPING PORTION OF FENCE.  
 WHEN THERE IS NO LINE POST BETWEEN A TERMINAL POST AND A CORNER POST, ONLY ONE (1) TRUSS ROD IS REQUIRED AND SHALL BE ATTACHED AT THE BOTTOM OF THE CORNER POST.



**PLAN VIEW**



**LEFT SIDE ELEVATION**



**RIGHT SIDE ELEVATION**

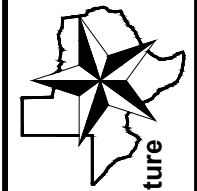
BILL OF MATERIALS - R.C.C. FENCE	
168'-6"	2 7/8" GALV. STEEL PIPE FOR CORNER, PULL & TERMINAL POST (CUT INTO (18) 8'-4", (2) 9'-3" POST)
448'-0"	1 5/8" GALV. STEEL PIPE FOR LINE POST (CUT INTO (53) 7'-0", (6) 7'-8", (2) 7'-6" AND (2) 8'-0" POST)
764'-11"	1 3/8" GALV. STEEL PIPE FOR TOP AND BOTTOM RAIL (CUT AS REQUIRED)
663'-8"	6'-0" HIGH CHAIN LINK FABRIC (SELVAGE SHALL BE TWISTED AT TOP AND KNUCKLED AT BOTTOM)
259'-10"	1 7/8" GALV. STEEL PIPE FOR BRACE RAIL (CUT AS REQUIRED)
36	TENSION BARS
144	TENSION BANDS
20	DOME POST CAPS
63	LOOP CAPS FOR LINE JPOSTS
55	TRUSS RODS
110	TRUSS BAND CLAMP
44	1 3/8" RAIL END CAP
44	RAIL END CAP CLAMP FOR TOP AND BOTTOM RAIL
44	1 7/8" PIPE BRACE RAIL END CAP
44	1 7/8" PIPE BRACE CLAMP
2.5	CU. FT. NON-SHRINK GROUT
570'-0"	7 GAGE GALVANIZED TENSION WIRE
63'-0"	2 1/2" PVC OR GALV. STEEL SLEEVE PIPE (CUT INTO 12" LENGTHS)
40'-0"	4" PVC OR GALV. STEEL SLEEVE PIPE (CUT INTO 2'-0" LENGTHS)



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**RCC FENCE DETAILS**  
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 OLMITOS-GARCIA CREEKS WATERSHED  
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 Natural Resources Conservation Service

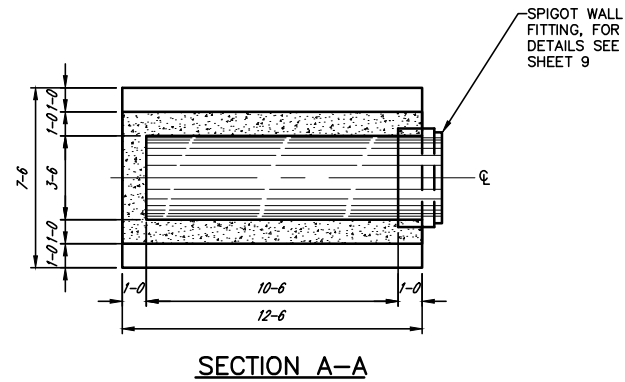
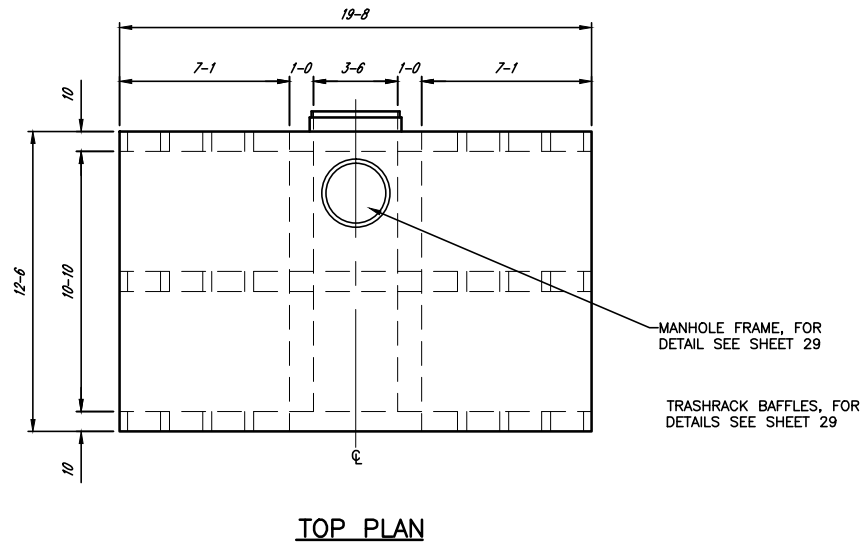
REVISIONS \_\_\_\_\_ DATE \_\_\_\_\_  
 DRAWING NO. TX-EN-0652  
 SHEET

**23**

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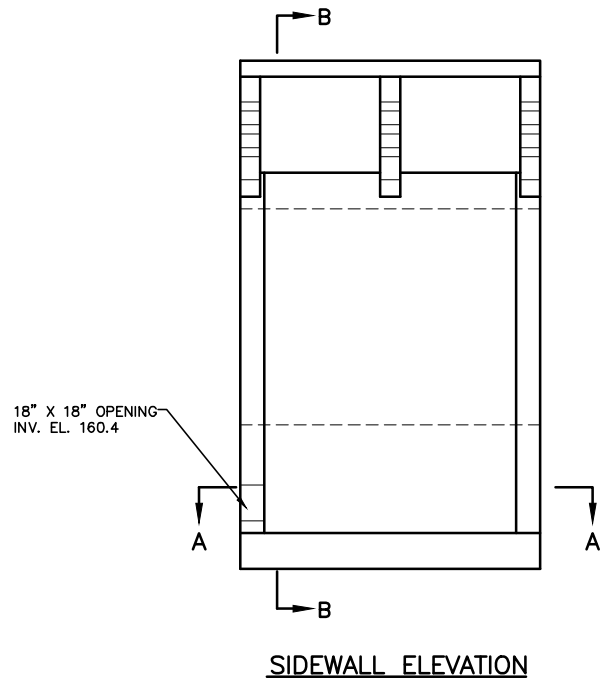
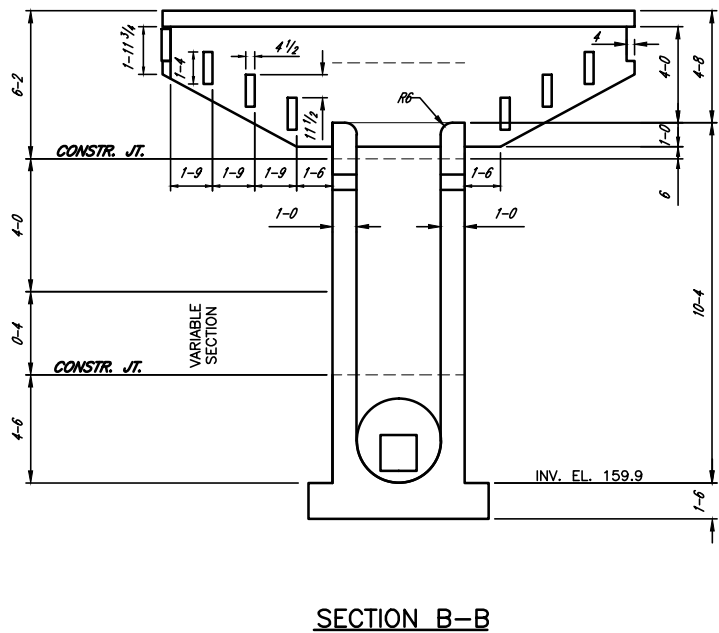


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NOTE:  
THESE BARS ARE NOT REQUIRED.  
THE VARIABLE SECTION SHOWN IS 4  
INCHES. THE SPACING OF THE  
HORIZONTAL BARS AND LENGTH OF  
THE VERTICAL BARS FROM THE  
4-FOOT SECTION (TOP SECTION)  
SHALL BE ADJUSTED TO ACCOUNT  
FOR THE 4 INCH VARIABLE SECTION.

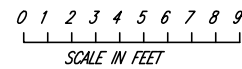
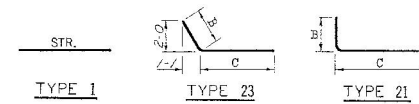
STEEL SCHEDULE															
MARK	SIZE	QUANTITY	LENGTH	TYPE	B	C	TOTAL LENGTH	MARK	SIZE	QUANTITY	LENGTH	TYPE	B	C	TOTAL LENGTH
B1	6	13	7-0	1	-	-	91-0	T1	5	12	10-1	1	-	-	121-0
B2	6	8	12-0	1	-	-	96-0	T2	5	16	5-6	1	-	-	88-0
B3	7	44	11-2	21	3-8	7-6	491-4	T3	5	6	4-4	1	-	-	26-0
B4	6	8	12-0	1	-	-	96-0	T4	5	12	11-6	1	-	-	138-0
B5	6	12	7-0	1	-	-	84-0	T5	5	4	10-1	1	-	-	40-4
B6	6	2	2-10	1	-	-	5-8	T6	5	4	12-1	21	1-9	10-4	48-4
B7	6	4	8-5	21	1-0	7-5	33-8	T7	5	16	5-7	1	-	-	89-4
B8	6	4	8-5	21	1-0	7-5	33-8	T8	5	24	10-4	21	3-5	6-11	248-0
B9	6	14	8-5	21	1-0	7-5	117-10	T9	5	4	4-4	1	-	-	17-4
B10	6	2	8-5	21	1-0	7-5	16-10	T10	5	4	11-6	1	-	-	46-0
B11	6	14	11-2	1	-	-	156-4	T11	5	4	8-8	1	-	-	34-8
B12	6	4	4-2	1	-	-	16-8	T12	5	4	8-2	1	-	-	32-8
B13	6	20	10-8	21	3-7	7-1	213-4	T13	5	4	11-8	1	-	-	46-8
B14	6	4	8-2	21	1-1	7-1	32-8	T14	5	4	15-2	1	-	-	60-8
B15	6	4	7-10	21	0-9	7-1	31-4	T15	5	4	18-8	1	-	-	74-8
B16	6	6	7-7	21	0-6	7-1	45-6	T16	5	24	5-1	1	-	-	122-0
B17	6	2	9-2	21	2-1	7-1	18-4	T17	5	8	4-8	1	-	-	37-4
B18	6	2	2-9	1	-	-	5-6	T18	5	8	4-3	1	-	-	34-0
B19	6	2	2-10	1	-	-	5-8	T19	5	8	3-9	1	-	-	30-0
B20	6	4	2-2	1	-	-	8-8	T20	5	8	3-3	1	-	-	26-0
R1	6	14		1	-	-		T21	5	8	2-10	1	-	-	22-8
R2	6	6		1	-	-		T22	5	8	8-2	23	2-4	5-10	65-4
R3	6	16		1	-	-		T23	5	8	10-4	21	3-5	6-11	82-8
R4	6	8		1	-	-		T24	5	2	8-8	1	-	-	17-4
R5	6		11-2	1	-	-		T25	5	2	8-2	1	-	-	16-4
R6	6		4-2	1	-	-		T26	5	2	11-8	1	-	-	23-4
R7	6		10-8	21	3-7	7-1		T27	5	2	15-2	1	-	-	30-4
								T28	5	2	18-8	1	-	-	37-4
								T29	5	8	7-1	21	1-9	5-4	56-8
								T30	5	4	6-8	21	1-9	4-11	26-8
								T31	5	4	6-3	21	1-9	4-6	25-0
								T32	5	4	5-9	21	1-9	4-0	23-0
								T33	5	4	5-4	21	1-9	3-7	21-4
								T34	5	4	4-10	21	1-9	3-1	19-4
								T35	5	4	4-5	21	1-9	2-8	17-8
								T36	5	4	5-11	1	-	-	23-8
								T37	5	6	3-6	21	1-9	1-9	21-0
								T38	5	2	2-7	21	0-10	1-9	5-2
								T39	4	2	8-1	1	-	-	16-2
								T40	4	20	11-6	1	-	-	230-0
								T41	4	10	19-4	1	-	-	193-4
								T42	4	4	8-3	1	-	-	33-0
								T43	5	2	8-2	1	-	-	16-4
								T44	5	20	11-9	1	-	-	235-0
								T45	5	2	12-2	1	-	-	24-4
								T46	4	10	19-4	1	-	-	193-4
								T47	4	4	8-2	1	-	-	32-8



STEEL QUANTITIES				
WEIGHT PER LIN FOOT	BAR SIZE	LENGTH IN FEET	TOTAL LENGTH IN FEET	TOTAL WEIGHT IN POUNDS
0.668	4	698-6	698-6	467
1.043	5	2171-6	2171-6	2265
1.502	6	1108-8	1108-8	1665
2.044	7	491-4	491-4	1004
2.670	8			
TOTAL WEIGHT ALL BARS				5401

CONCRETE QUANTITIES  
29.9 + 1.18 V= 30.3 CU.YDS

BAR TYPES



SEE SHEET 28 FOR SCOUR APRON AND SLIDE GATE DETAILS.

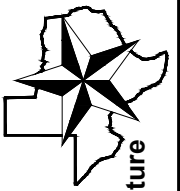
<b>STANDARD BAFFLER RISER</b>	
STANDARD DWG. NO.	ES-3242-1515 R
DATE	9-79 SHEET 1 OF 4
ADAPTED FROM	
<b>STANDARD COVERED RISER</b>	
DESIGN CONSTANTS	$f'_c = 4000 \text{ psi}$ $f_c = 1600 \text{ psi}$
	$n = 8$ $f_s = 20,000 \text{ psi}$
STANDARD DWG. NO.	ES-3042-2015 R
DATE	4-65 SHEET 1 OF 4



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F-4324

DESIGNED BY: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
FILE NAME: 067\_PS\_INLET.dwg  
DATE CHECKED: 5/1/2015

PRINCIPAL SPILLWAY INLET  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
OLMITOS-GARCIAS CREEKS WATERSHED  
IN  
STARR COUNTY, TEXAS

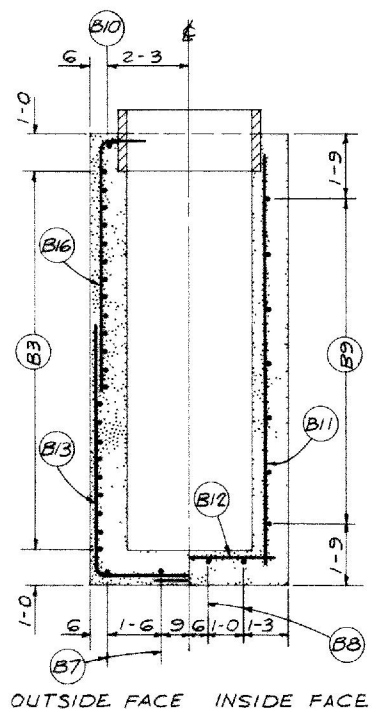


**NRCS**  
United States Department of Agriculture  
Natural Resources Conservation Service

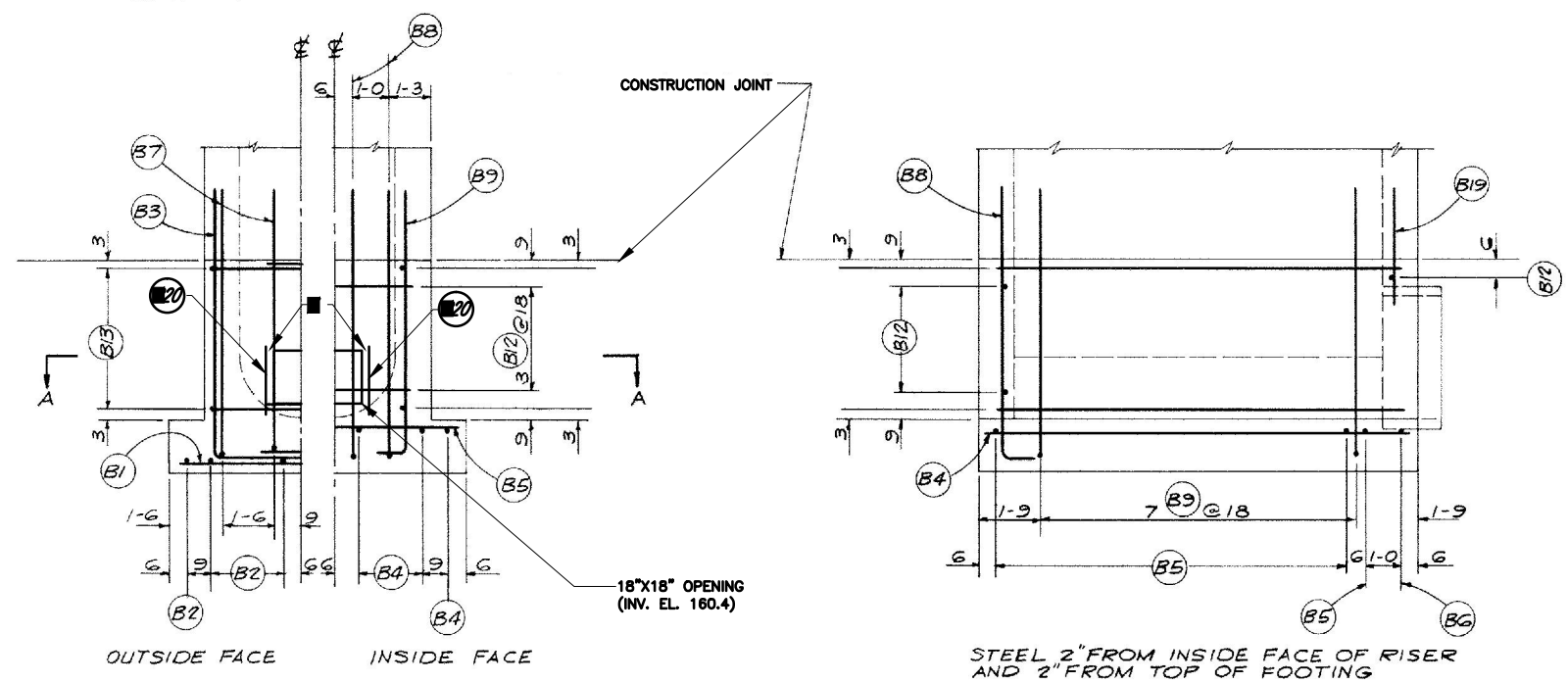
REVISIONS \_\_\_\_\_ DATE \_\_\_\_\_  
DRAWING NO. TX-EN-0652  
SHEET

24

REVISED BY B.T.S. - 09/2014  
PER TR-30, TR-31, TR-37, AND TR-68

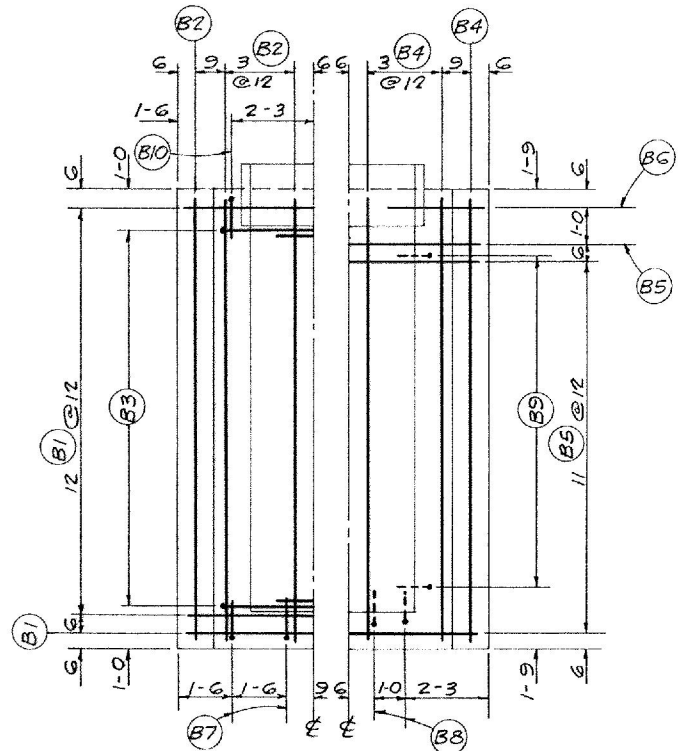


SECTION A-A

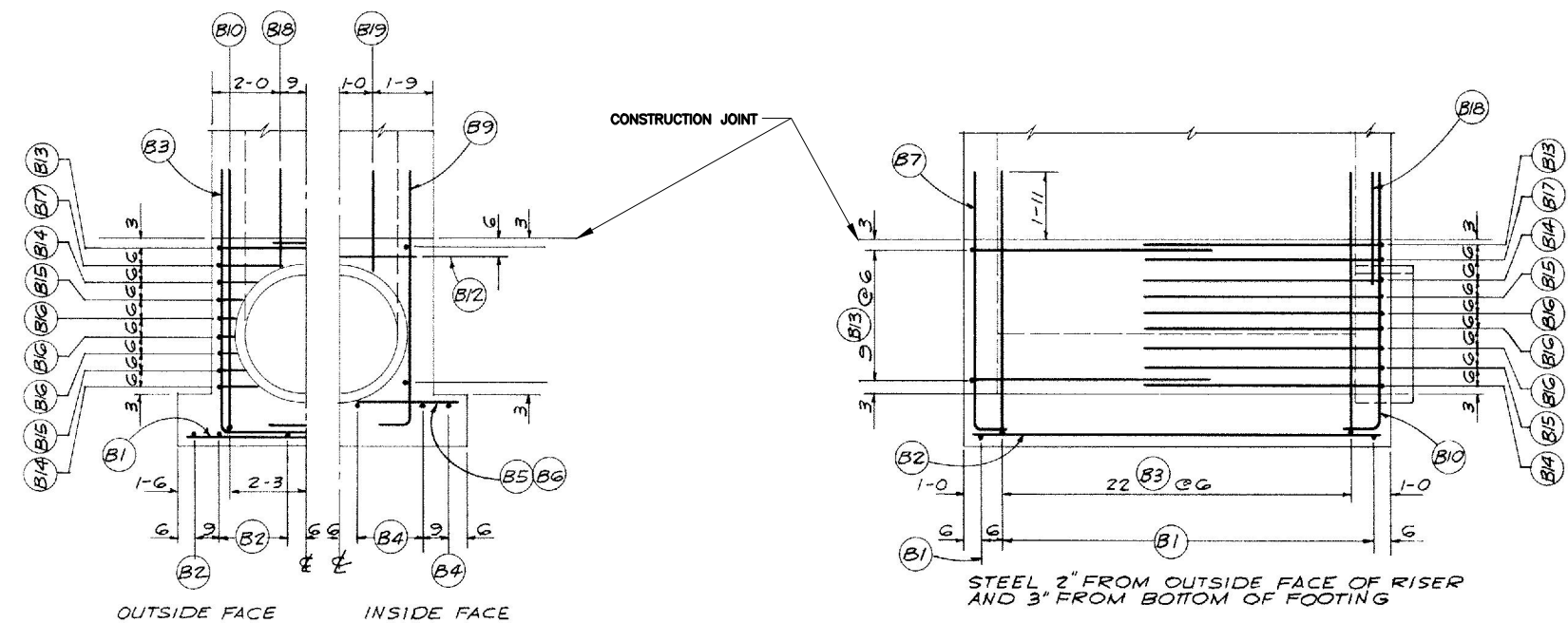


UPSTREAM ELEVATION

SIDEWALL ELEVATION



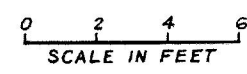
FOOTING PLAN



DOWNSTREAM ELEVATION

SIDEWALL ELEVATION

STANDARD BAFFLE RISER	
STANDARD DWG. NO.	ES-3242 - 1515R
DATE	9-79
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-3042 - 2015R
DATE	8-66
SHEET	2 OF 4



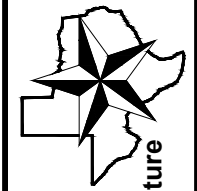
THE STEEL BAR PLACEMENT AROUND THE UPSTREAM ENDWALL OPENING SHALL REQUIRE CUTTING SOME BARS TO PROVIDE 2 INCH CLEARANCE ADJACENT TO THE OPENING. TWO (2) B7, TWO (2) B8, ONE (1) B12 AND SIX (6) B13 BARS WILL REQUIRE CUTTING.

NOTE:  
WATERSTOPS NOT REQUIRED AT CONSTRUCTION JOINTS (SEE CONSTRUCTION SPECIFICATION 31).



DESIGNED BY: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 FILE NAME: 067\_PS\_INLET.dwg  
 DATE CHECKED: 5/1/2015

PRINCIPAL SPILLWAY INLET  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
 OLMITOS-GARCIA CREEKS WATERSHED  
 IN  
 STARR COUNTY, TEXAS



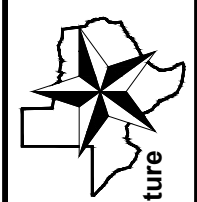
NRCS  
 United States Department of Agriculture  
 Natural Resources Conservation Service

REVISIONS \_\_\_\_\_ DATE \_\_\_\_\_  
 DRAWING NO. TX-EN-0652  
 SHEET



DESIGNED BY: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 FILE NAME: 067\_PS\_INLET.dwg  
 DATE CHECKED: 5/1/2015

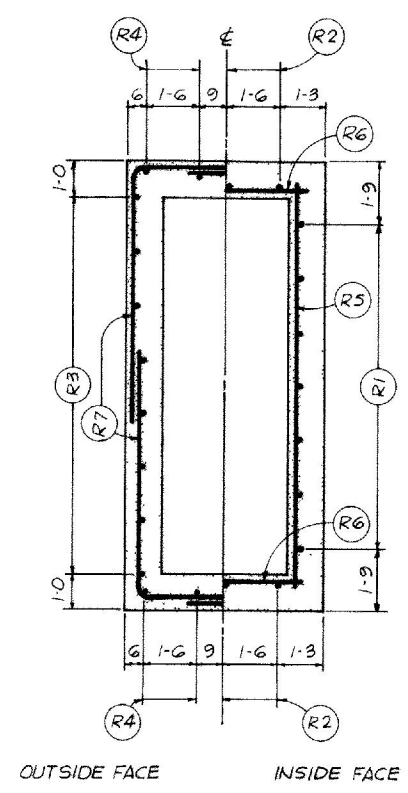
PRINCIPAL SPILLWAY INLET  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
 OLMITOS-GARCIAS CREEKS WATERSHED  
 IN  
 STARR COUNTY, TEXAS



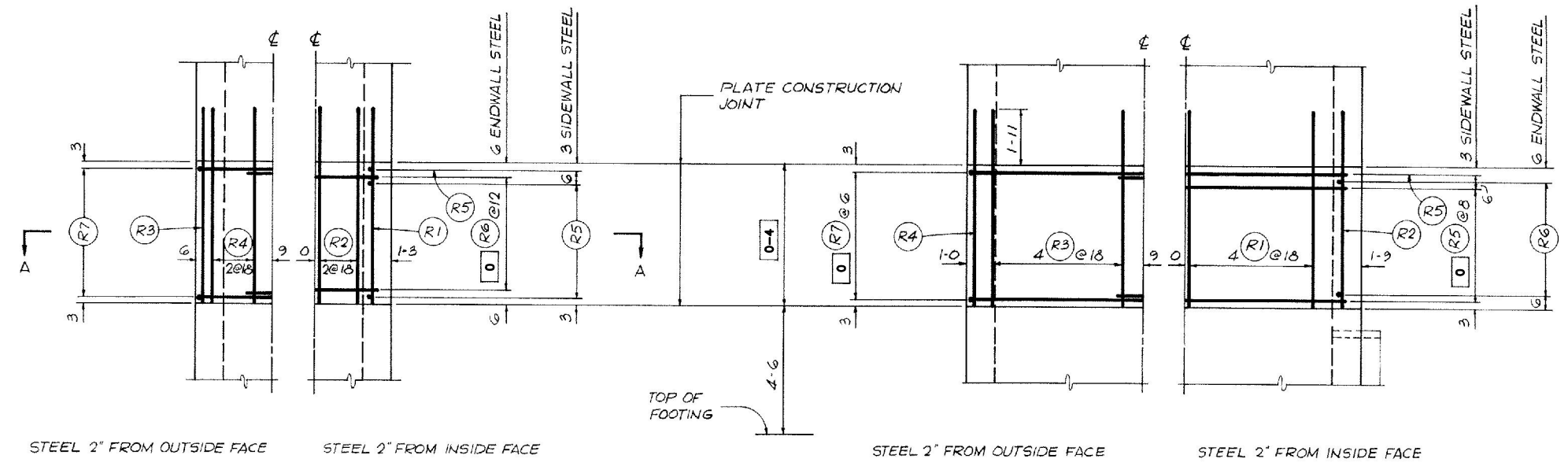
**NRCS**  
 United States Department of Agriculture  
 Natural Resources Conservation Service

REVISIONS \_\_\_\_\_ DATE \_\_\_\_\_  
 DRAWING NO. TX-EN-0652  
 SHEET

**26**



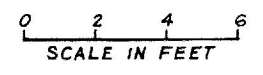
**SECTION A-A**  
 OTHER SECTIONS SIMILAR



**ENDWALL ELEVATION**

**SIDEWALL ELEVATION**

<b>STANDARD BAFFLE RISER</b>	
STANDARD DWG. NO. ES-3242 - 1515 R	
DATE 9-79	SHEET 3 OF 4
ADAPTED FROM	
<b>STANDARD COVERED RISER</b>	
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 - 2015R	
DATE 8-66	SHEET 3 OF 4

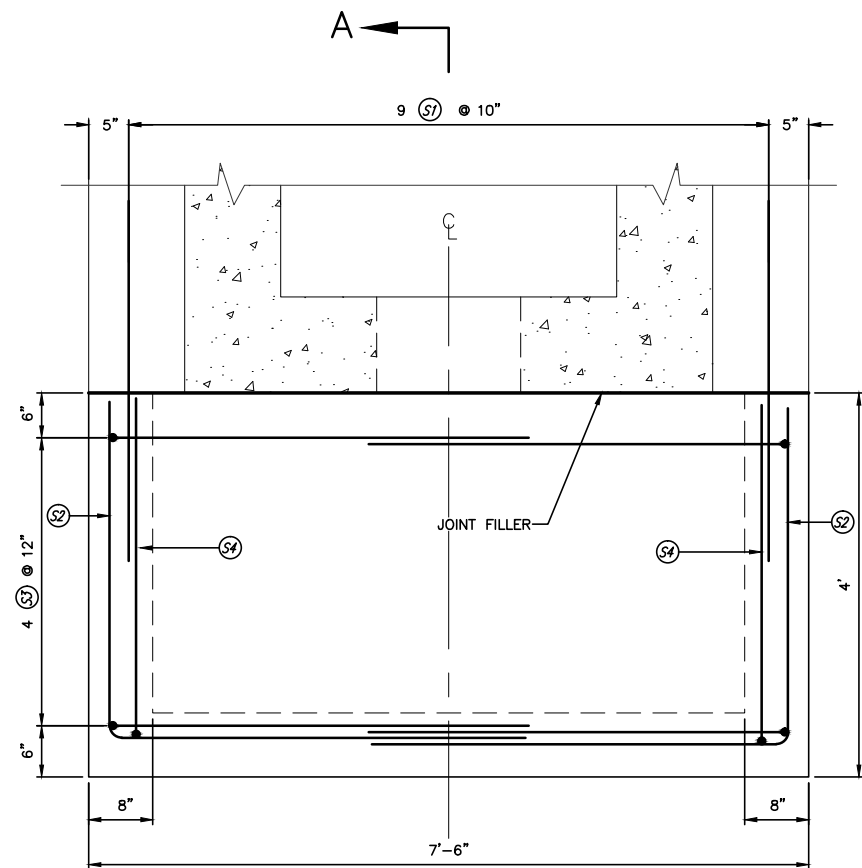


**NOTE:**  
 THE BARS SHOWN IN THIS SECTION ARE NOT REQUIRED. THE VARIABLE SECTION SHOWN ON SHEET 24 AND ABOVE IS 4 INCHES. THE SPACING OF THE HORIZONTAL BARS AND LENGTH OF THE VERTICAL BARS FROM THE TOP SECTION (SHEET 27) SHALL BE ADJUSTED TO ACCOUNT FOR THE 4 INCHES.

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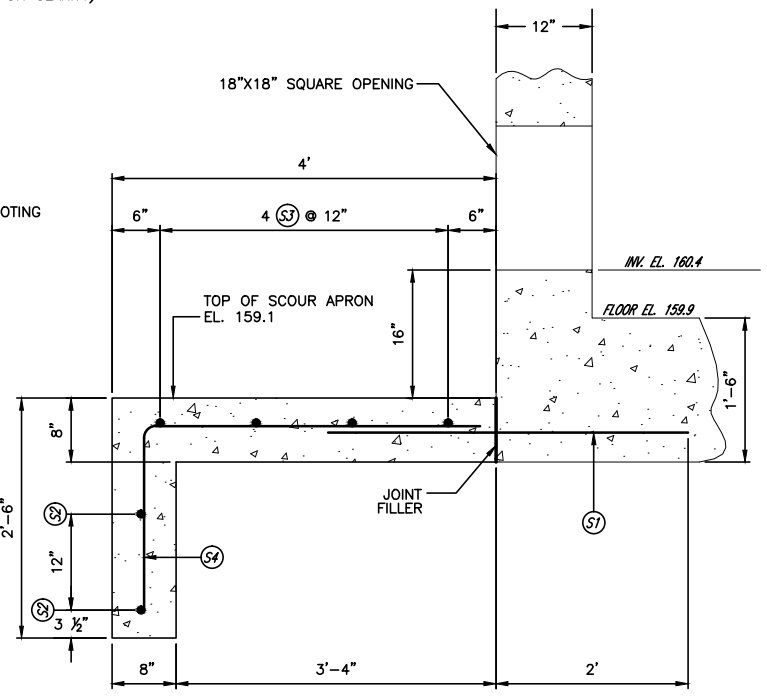
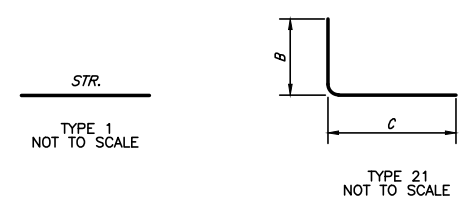




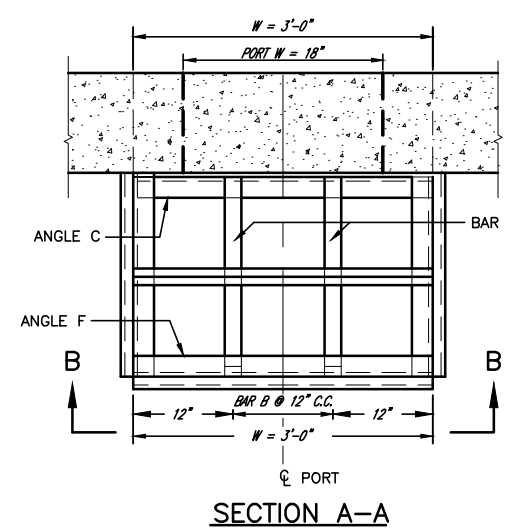
UPSTREAM ELEVATION

BAR NO.	SIZE	TYPE	QTY.	LENGTH	B	C	TOTAL LENGTH
S1	6	STR.	9	3-9	-	-	33-9
S2	4	21	4	7-8	3-6	4-2	30-8
S3	4	21	8	6-1	1-11	4-2	48-8
S4	4	21	9	5-5	1-11	3-6	48-9
TOTAL STEEL (SIZE 6) = 33'-9" = 50.7 LBS.							
TOTAL STEEL (SIZE 4) = 128'-1" = 85.6 LBS.							
TOTAL STEEL IN SCOUR APRON = 136.3 LBS.							
TOTAL REINFORCED CONC. IN SCOUR APRON = 1.4 CU. YDS.							

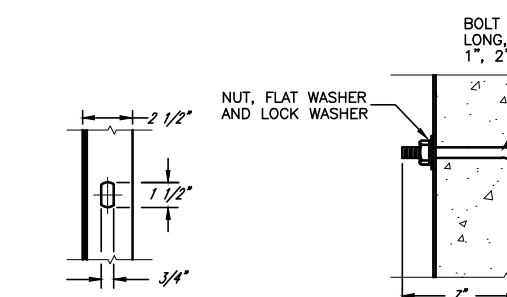
- NOTES:
- THE SCOUR APRON SHALL BE FASTENED TO THE INLET BASE WITH 9 S1 BARS, 3'-9" LONG. ALL STEEL SHALL BE CENTERED IN THE TOP SLAB AND FOOTING, EXCEPT WHERE DIMENSIONED.
  - JOINT FILLER SHALL BE 3/4" PREFORMED BITUMINOUS EXPANSION JOINT FILLER. CONCRETE SHALL BE AS SPECIFIED IN CONSTRUCTION SPECIFICATION 31.



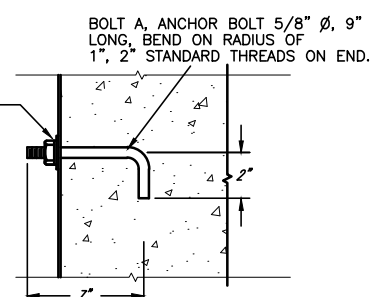
SECTION A-A



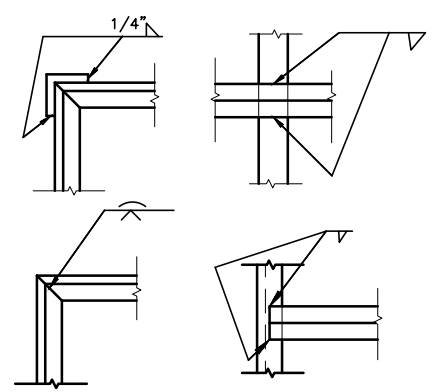
SECTION A-A



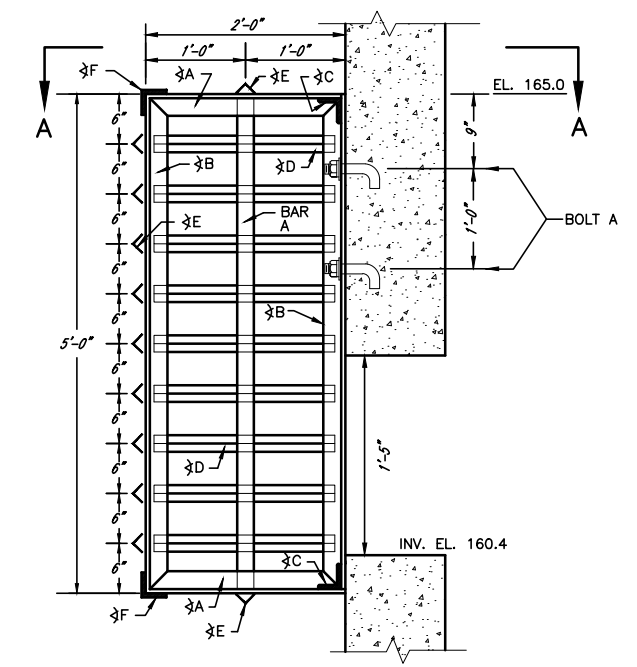
ANGLE B DETAILS



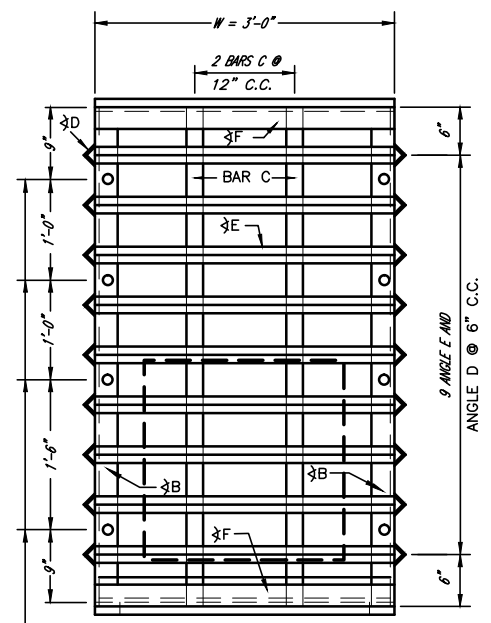
DETAIL-A



WELDING DETAILS



SECTION ON C



SECTION B-B

PORT TRASHRACK  
(NOT TO SCALE)

VARIABLE BAR DATA

LENGTH OF ANGLE C = W - 1/2"  
 LENGTH OF ANGLE E = W  
 LENGTH OF ANGLE F = W

SCHEDULE OF MATERIALS REQUIRED FOR ONE RACK

QUANTITY	ITEM	DESCRIPTION
4	ANGLE A	2 1/2"x2 1/2"x1/4"x2'-0" CUT AND WELD
4	ANGLE B*	2 1/2"x2 1/2"x1/4"x5'-0" CUT AND WELD
2	ANGLE C	3"x3"x1/4"x2'-11 1/2" WELD
18	ANGLE D	1 1/2"x1 1/2"x1/4"x1'-11" WELD
11	ANGLE E	1 1/2"x1 1/2"x1/4"x3'-0" WELD
2	ANGLE F	2 1/2"x2 1/2"x1/4"x3'-0" WELD
2	BAR A	1/4"x2"x4'-11 1/2" WELD
2	BAR B	1/4"x2"x2'-0" WELD
2	BAR C	1/4"x2"x4'-11 1/4" WELD
8	BOLT A	5/8" diameter ANCHOR BOLT, SEE DETAIL-A
8	NUTS, FLAT & LOCK WASHERS	SEE DETAIL-A

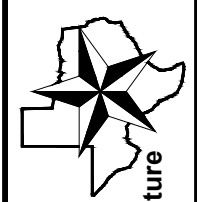
\* ANGLE B SHALL HAVE SLOTS PUNCHED TO ALLOW BOLT A TO PASS THROUGH.  
 TRASHRACK SHALL BE GALVANIZED AFTER FABRICATION.  
 NUMBER OF RACKS REQUIRED: 1  
 ALL BOLTS, NUTS, WASHERS AND OTHER PARTS OF TRASH-RACK SHALL BE GALVANIZED.



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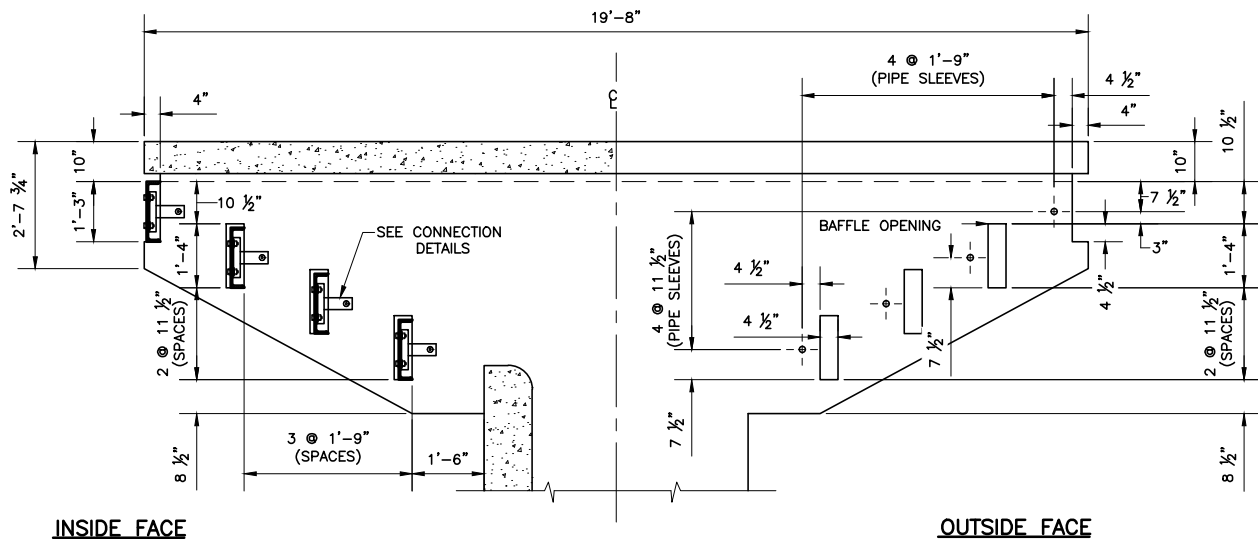
DESIGNED BY: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 FILE NAME: 067\_PS\_INLET.dwg  
 DATE CHECKED: 5/1/2015

SCOUR APRON AND PORT TRASHRACK DETAILS  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
 OLMITOS-GARCIAS CREEKS WATERSHED  
 IN STARR COUNTY, TEXAS



REVISIONS \_\_\_\_\_ DATE \_\_\_\_\_  
 DRAWING NO. TX-EN-0652  
 SHEET





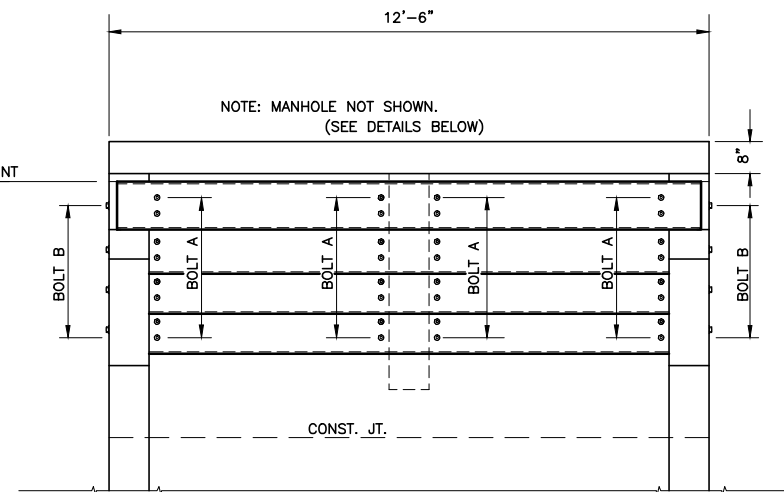
INSIDE FACE

OUTSIDE FACE

ENDWALL ELEVATION

NOT TO SCALE

(CONNECTION DETAILS OMITTED)



SIDEWALL ELEVATION

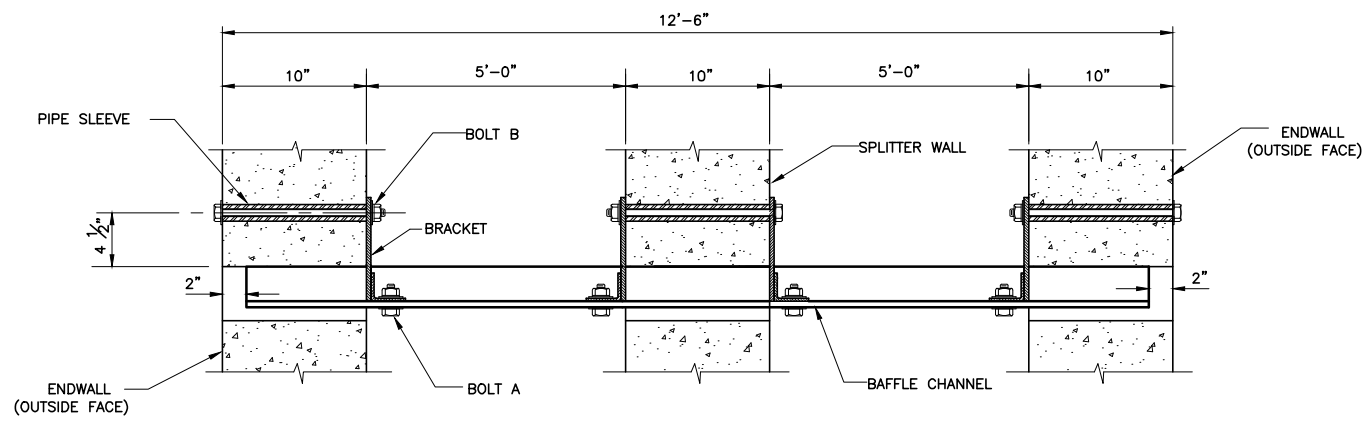
NOT TO SCALE

SCHEDULE OF QUANTITIES		
ITEM	SIZE	QUANTITY
CHANNEL	C 15 X 33.9	8
BRACKET	SEE DETAIL	32
BOLT A	1/2 x 2	64
BOLT B	5/8 x 12	24
PIPE SLEEVE	3/4 x 10	24

1/2 BOLT WITH TWO FLAT WASHERS, ONE LOCK WASHER AND NUT.

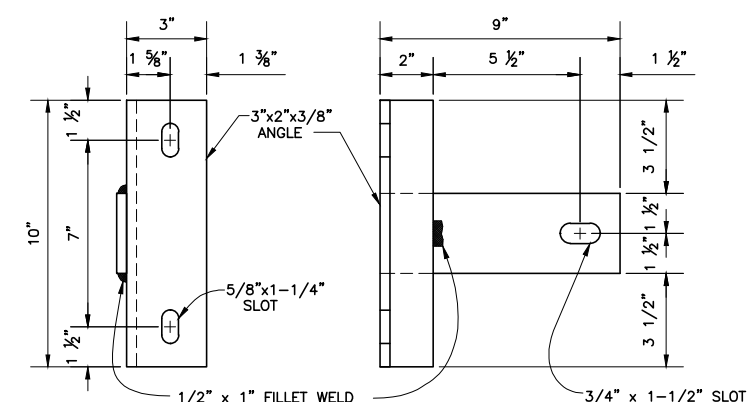
NOTE: ALL PARTS OF TRASH RACK SHALL BE GALVANIZED AFTER FABRICATION. (SEE CONSTRUCTION SPECIFICATION 81 AND MATERIAL SPECIFICATIONS 581 AND 582.)

STAINLESS STEEL BOLTS, WASHERS, AND NUTS MAY BE SUBSTITUTED FOR GALVANIZED ITEMS.



SECTIONAL TOP VIEW

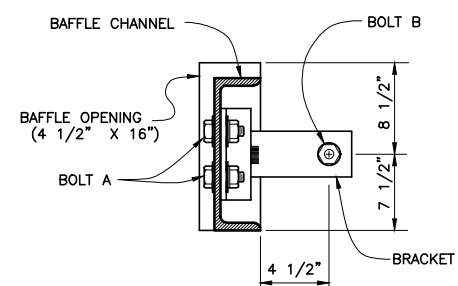
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BRACKET

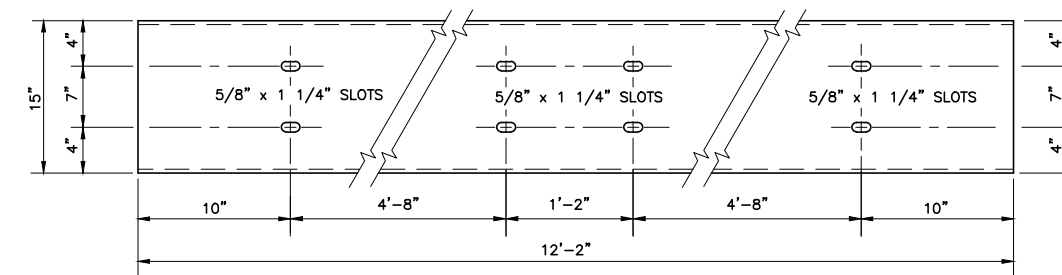
NOT TO SCALE

(FABRICATE BRACKET FROM 3/8 INCH STEEL PLATE AND ANGLE)



SIDE VIEW

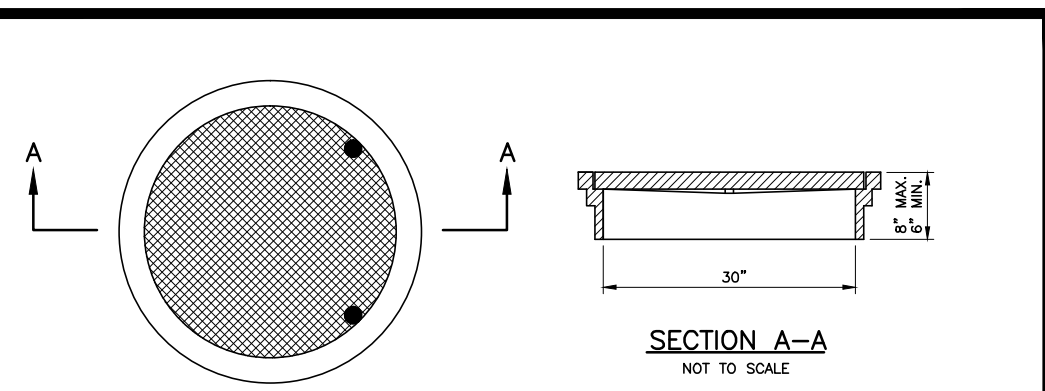
NOT TO SCALE



BAFFLE CHANNEL

NOT TO SCALE

STEEL FOR THE BAFFLE CHANNELS SHALL BE ASTM A 36 STEEL. REFER TO CONSTRUCTION SPECIFICATION 81 AND MATERIAL SPECIFICATIONS 581 AND 582.



MANHOLE COVER DETAILS

NOT TO SCALE

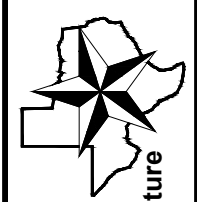
NOTE: MANHOLE COVER SHALL BE NEENAH FOUNDRY COMPANY R-6078 ROUND SERIES WITH TYPE E LOCKING DEVICE (WITH STAINLESS STEEL CAP SCREWS) OR EQUIVALENT AS APPROVED BY THE ENGINEER. IF AN APPROVED EQUIVALENT IS USED, IT SHALL HAVE A SIMILAR LOCKING DEVICE. (SEE CONSTRUCTION SPECIFICATION 81.)



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CHECKED BY: B.T.S.  
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DATE CHECKED: 5/1/2015

TRASH RACK AND MANHOLE COVER DETAILS  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
OLMITOS-GARCIAS CREEKS WATERSHED  
IN STARR COUNTY, TEXAS



NRCS  
United States Department of Agriculture  
Natural Resources Conservation Service

REVISIONS DATE

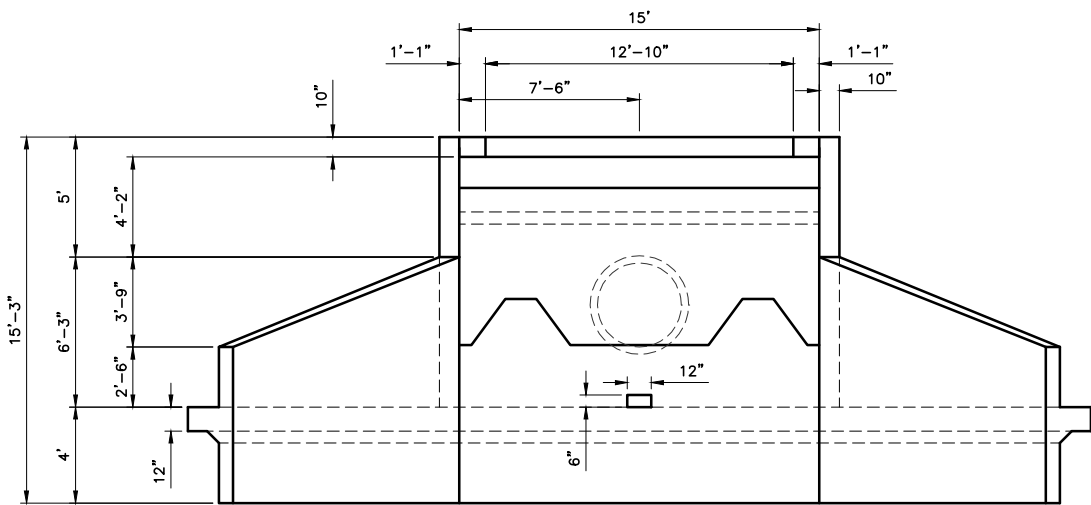
DRAWING NO. TX-EN-0652

SHEET

29

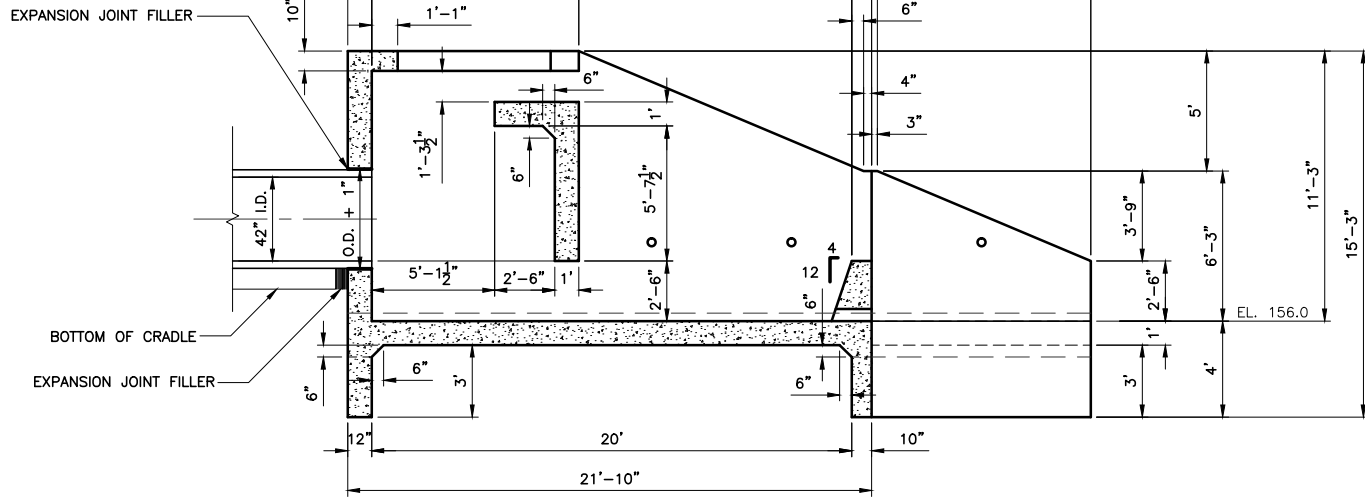
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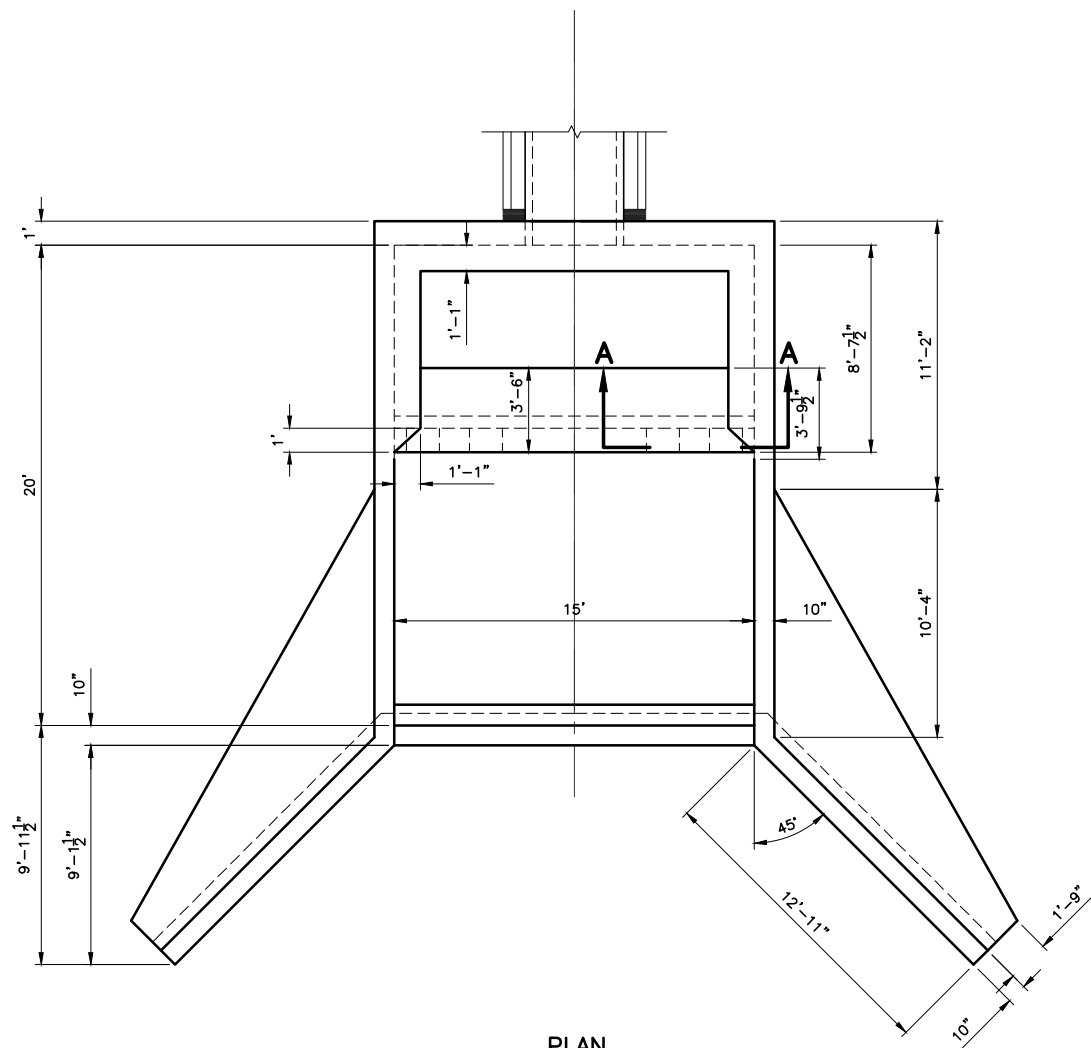


DOWNSTREAM ELEVATION

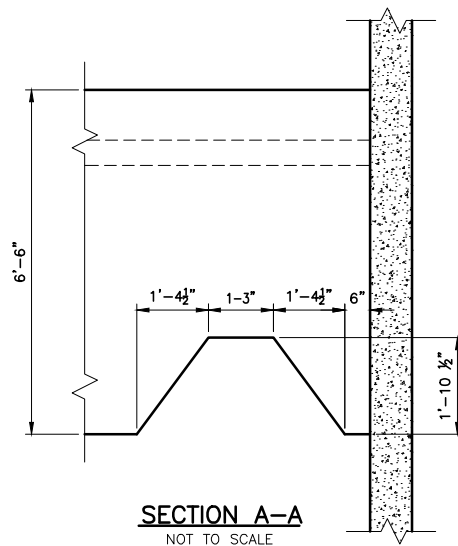
EXPANSION JOINT FILLER SHALL BE ASTM D 1752-84, TYPE I SPONGE RUBBER, 1/2" THICK AND SHALL BE A 12" WIDE STRIP COMPLETELY ENCOMPASSING THE 42" I.D. PIPE. (SEE MATERIAL SPECIFICATION 535)



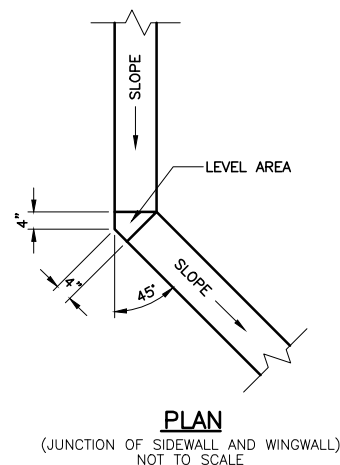
DOWNSTREAM ELEVATION



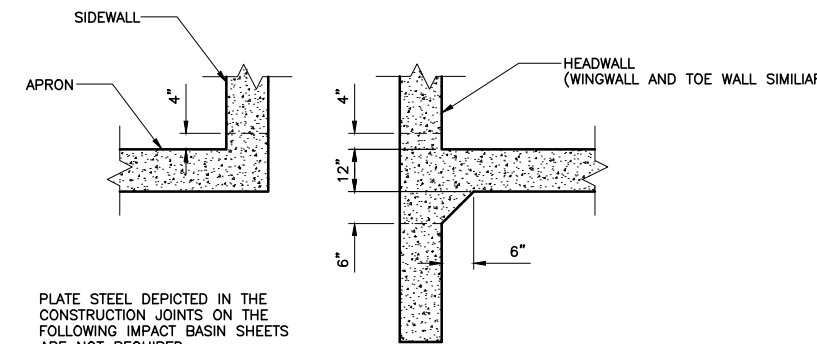
PLAN



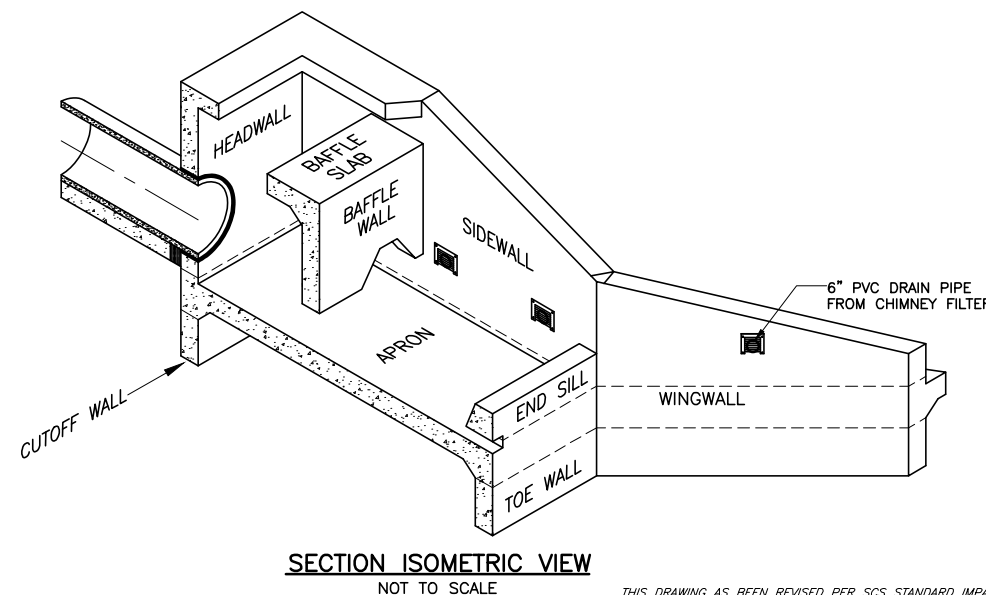
SECTION A-A  
NOT TO SCALE



PLAN  
(JUNCTION OF SIDEWALL AND WINGWALL)  
NOT TO SCALE



CONSTRUCTION JOINT DETAILS  
NOT TO SCALE



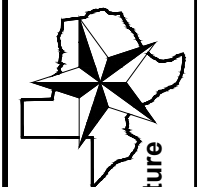
SECTION ISOMETRIC VIEW  
NOT TO SCALE

THIS DRAWING AS BEEN REVISED PER SCS STANDARD IMPACT BASIN DESIGN MODIFICATIONS BY DON BASINGER, SOUTH TECHNICAL SERVICE CENTER, FORT WORTH, TEXAS; AUG. 26-30, 1974



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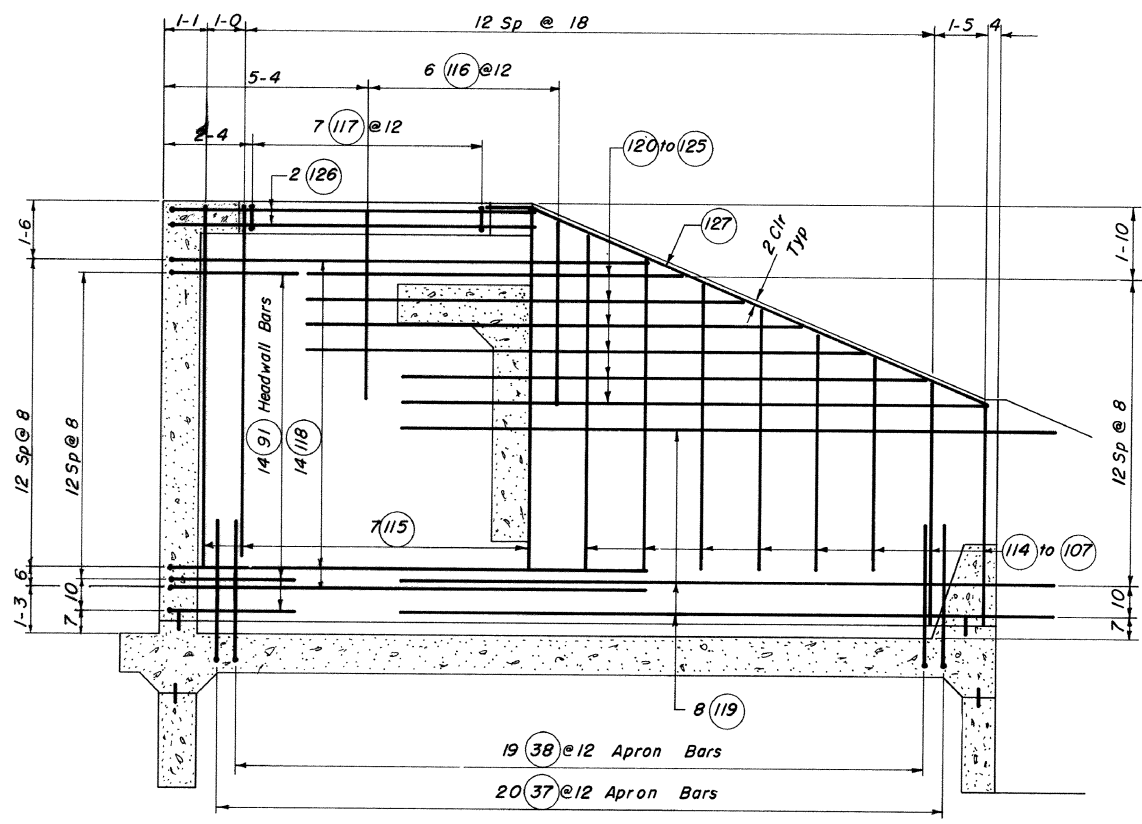
IMPACT BASIN PLAN AND SECTION VIEW  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
OLMITOS-GARCIA CREEKS WATERSHED  
IN STARR COUNTY, TEXAS



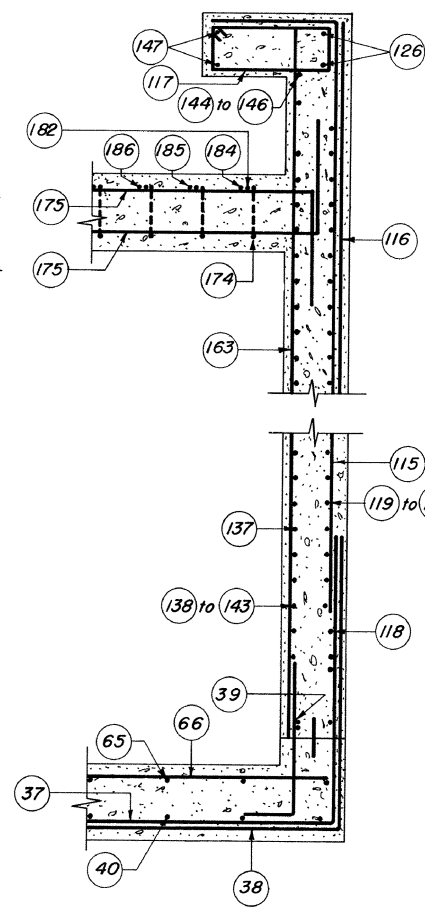
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SHEET

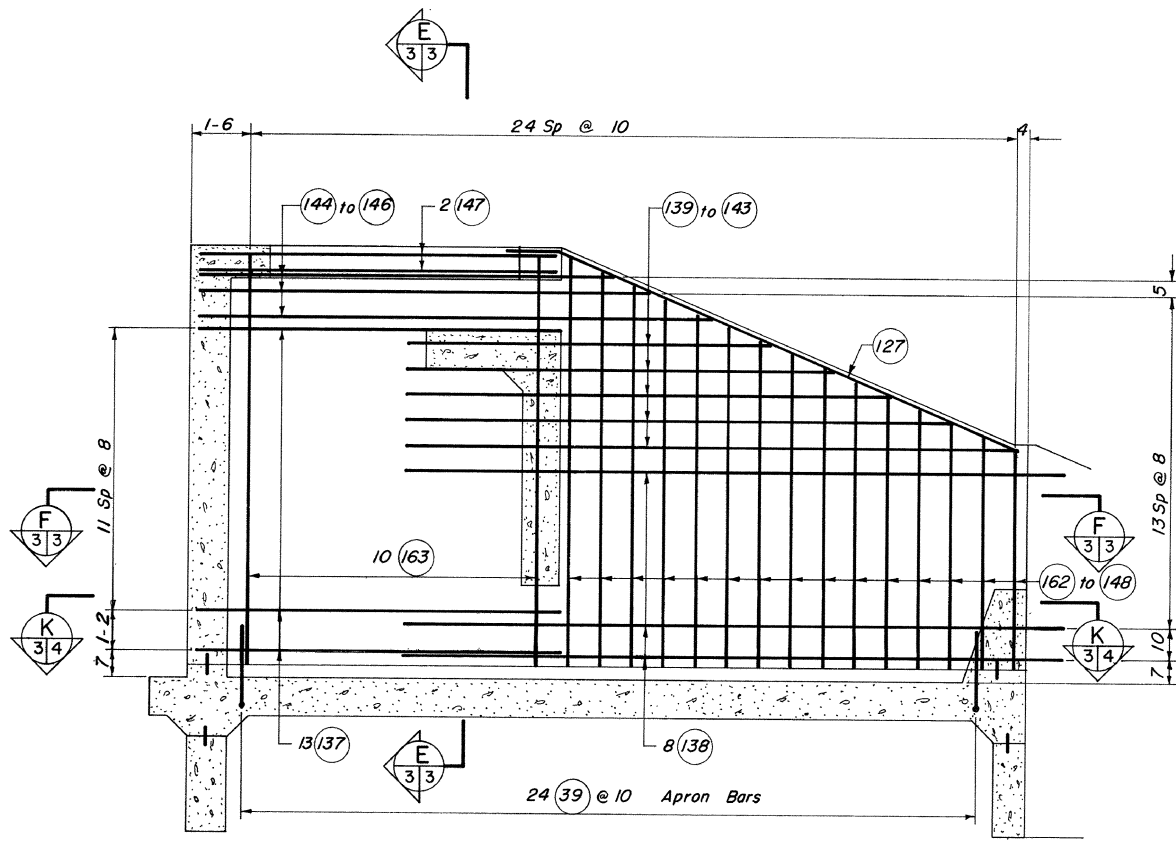
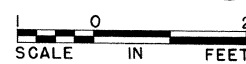




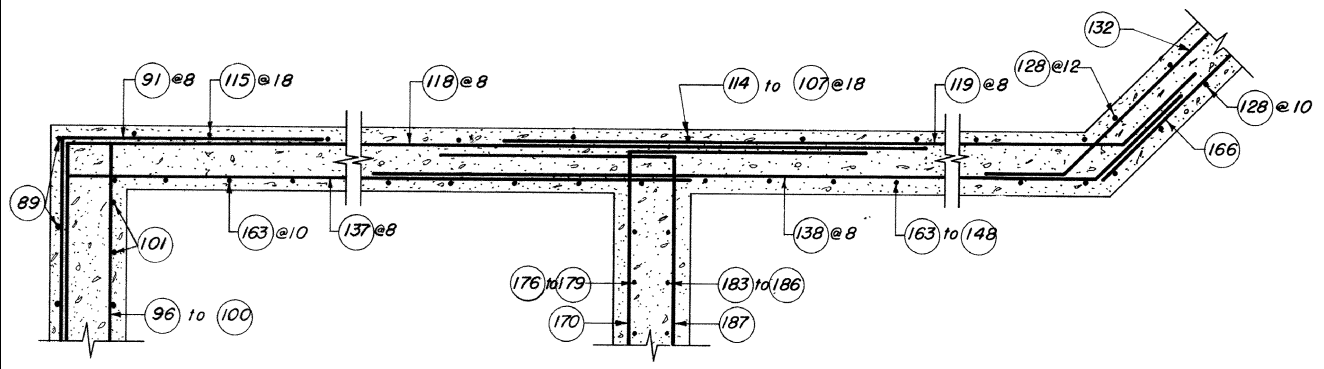
UNEXPOSED FACE  
ELEVATION SIDEWALL



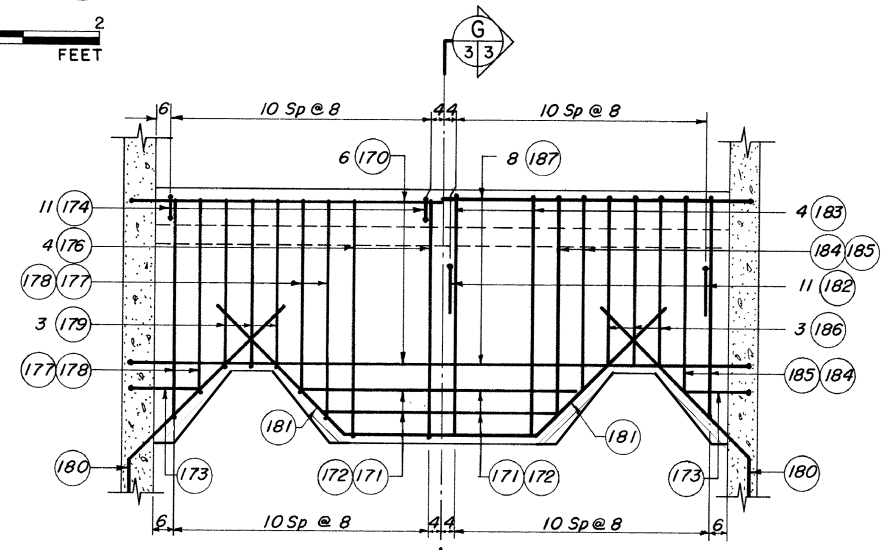
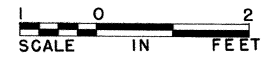
SECTION E  
3/3



EXPOSED FACE  
ELEVATION SIDEWALL

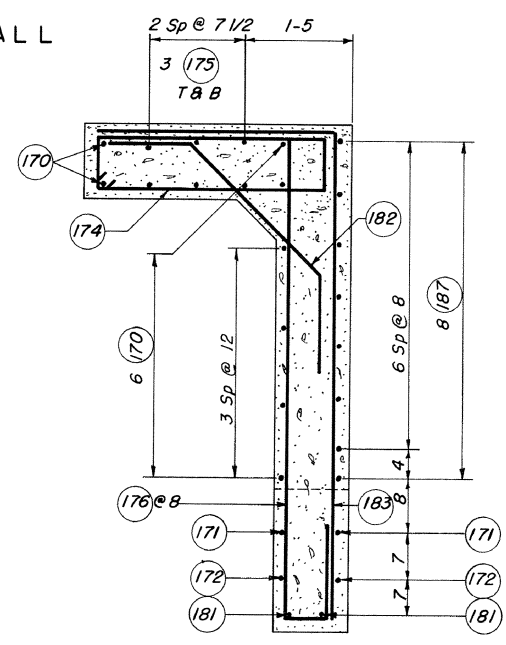
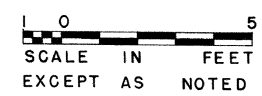


SECTION F  
3/3 4/3

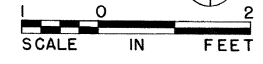


UPSTREAM FACE DOWNSTREAM FACE

BAFFLE ELEVATION



SECTION G  
3/3



STANDARD IMPACT BASIN	
DESIGN CONSTANTS	$f'_c = 4000$ psi $f'_c = 1600$ psi $n = 8$ $f_s = 20,000$ psi
STANDARD DRAWING NO. ES-4150	
DATE 1-70	SHEET 3 OF 5

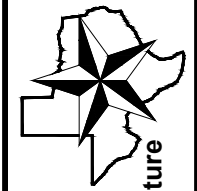
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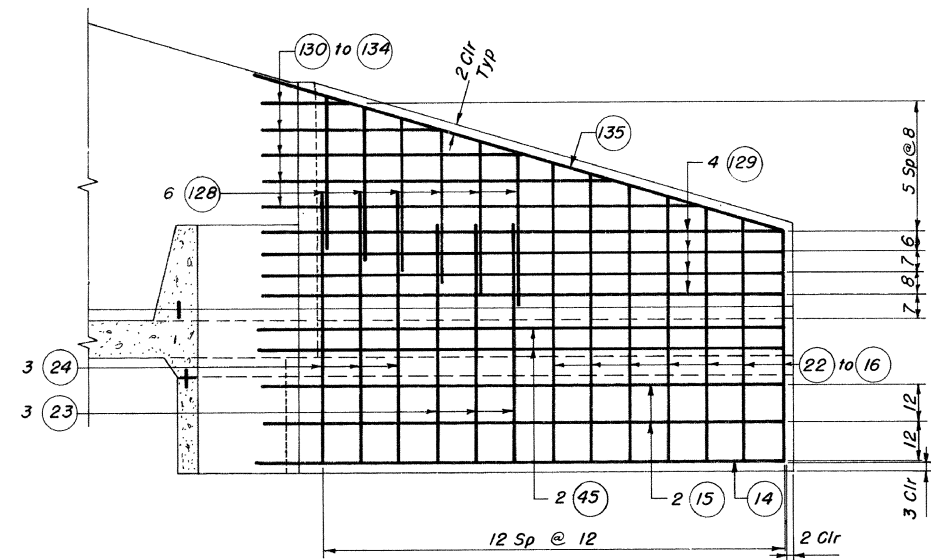
IMPACT BASIN STEEL PLACEMENT  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
OLMITOS-GARCIAS CREEKS WATERSHED  
IN STARR COUNTY, TEXAS



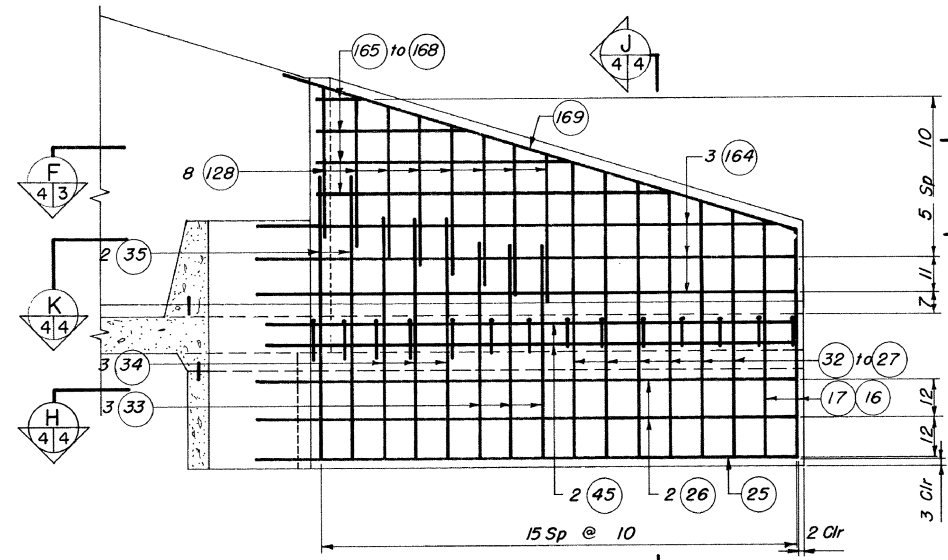
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REVISIONS DATE  
DRAWING NO. TX-EN-0652  
SHEET

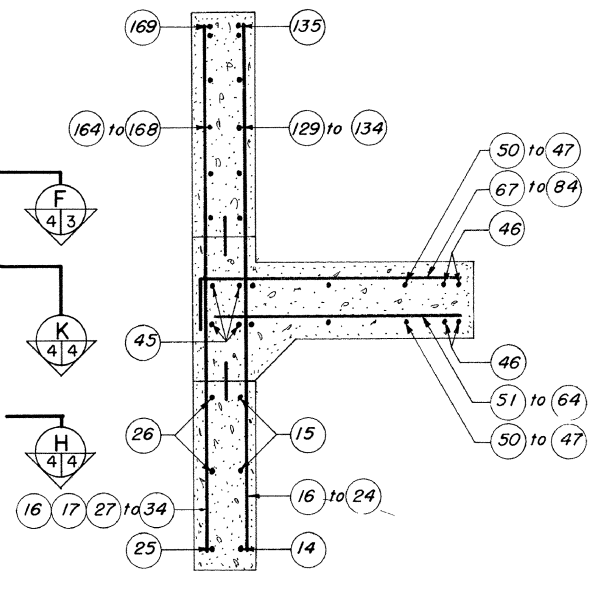




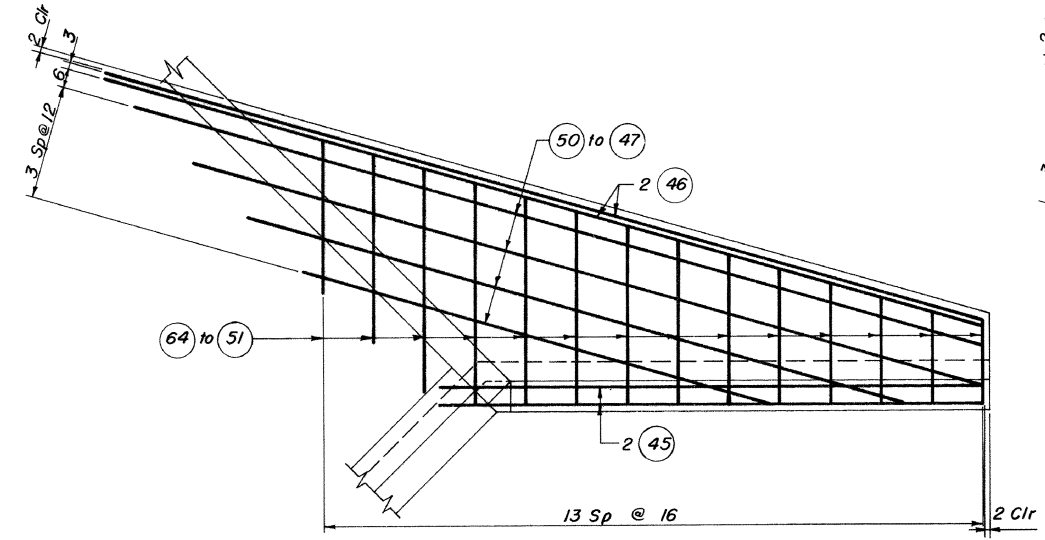
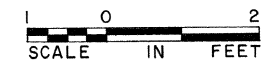
UNEXPOSED FACE  
WINGWALL ELEVATION



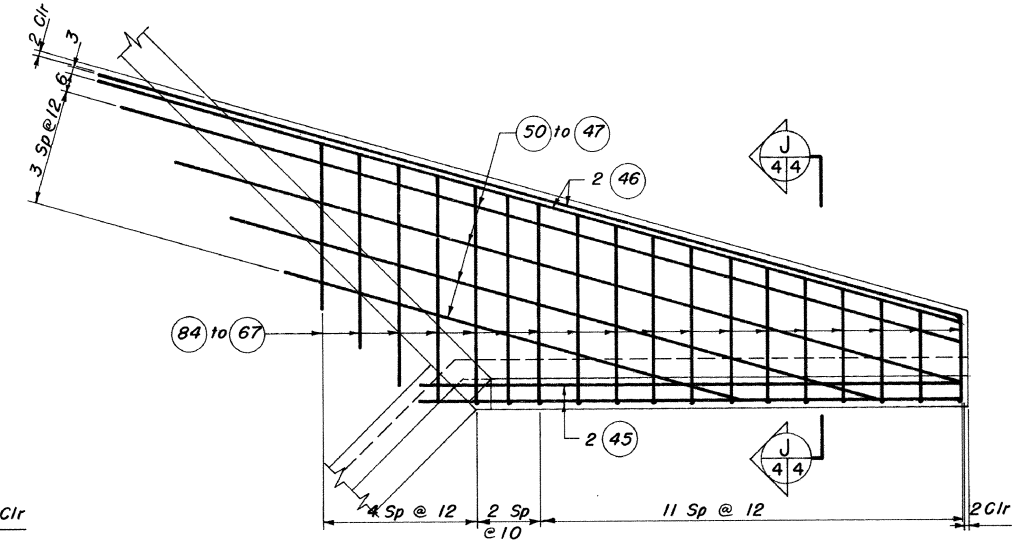
EXPOSED FACE  
WINGWALL ELEVATION



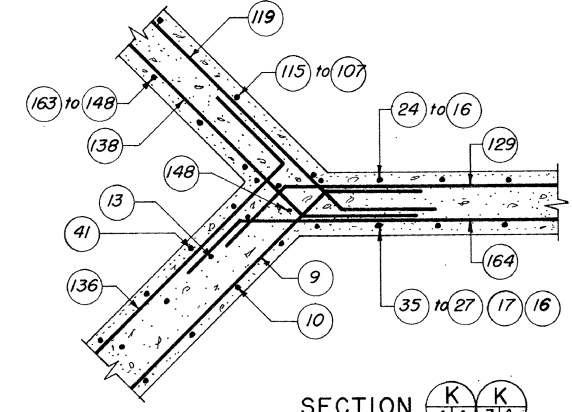
SECTION J  
4/4



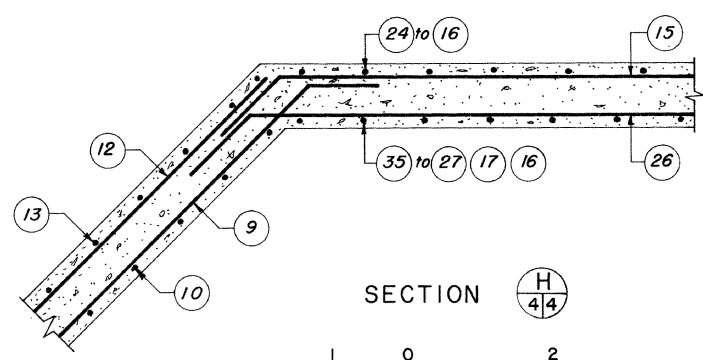
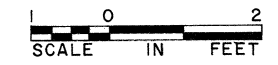
BOTTOM FACE  
PLAN WINGWALL FOOTING



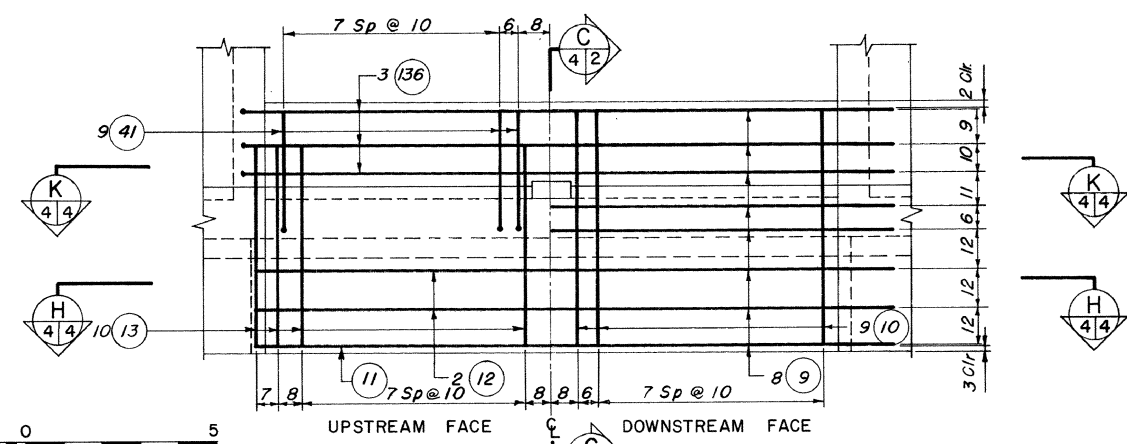
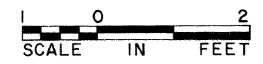
TOP FACE  
PLAN WINGWALL FOOTING



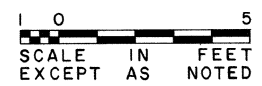
SECTION K  
4/4 3/4



SECTION H  
4/4



ELEVATION OF END SILL & TOEWALL



STANDARD IMPACT BASIN	
DESIGN CONSTANTS	$f'_c = 4000 \text{ psi}$ $f'_c = 1600 \text{ psi}$ $n = 8$ $f_s = 20,000 \text{ psi}$
STANDARD DRAWING NO. ES-4150	
DATE 1-70	SHEET 4 OF 5

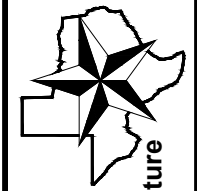
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DATE CHECKED: 5/1/2015

IMPACT BASIN STEEL PLACEMENT  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
OLMITOS-GARCIAS CREEKS WATERSHED  
IN STARR COUNTY, TEXAS



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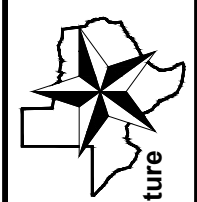
REVISIONS      DATE  
DRAWING NO. TX-EN-0652  
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**IMPACT BASIN DRAINAGE SYSTEM**  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
**OLMITOS-GARCIAS CREEKS WATERSHED**  
 IN  
 STARR COUNTY, TEXAS



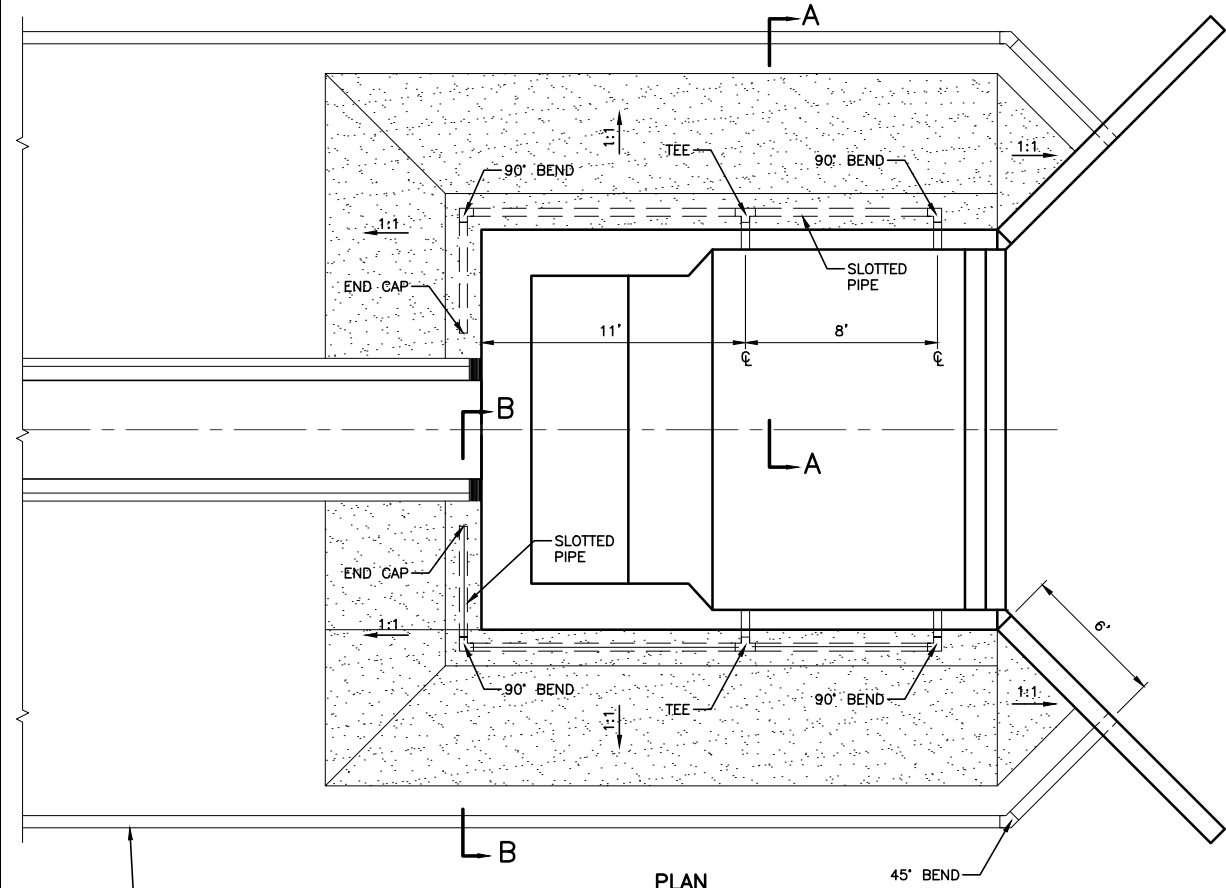
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REVISIONS \_\_\_\_\_ DATE \_\_\_\_\_  
 DRAWING NO. **TX-EN-0652**  
 SHEET

IMPACT BASIN DRAINAGE QUANTITIES	
6" SLOTTED DRAIN PIPE	50 LIN. FT.
6" NON-SLOTTED DRAIN PIPE	8 LIN. FT.
RODENT GUARD	6 EA.
6" DRAIN PIPE TEES	2 EA.
6" DRAIN PIPE 90° ELLS	4 EA.
6" DRAIN PIPE END CAPS	2 EA.
COARSE DRAIN FILTER MATERIAL	4.7 CU. YDS.
FINE DRAIN FILTER MATERIAL	40.7 CU. YDS.

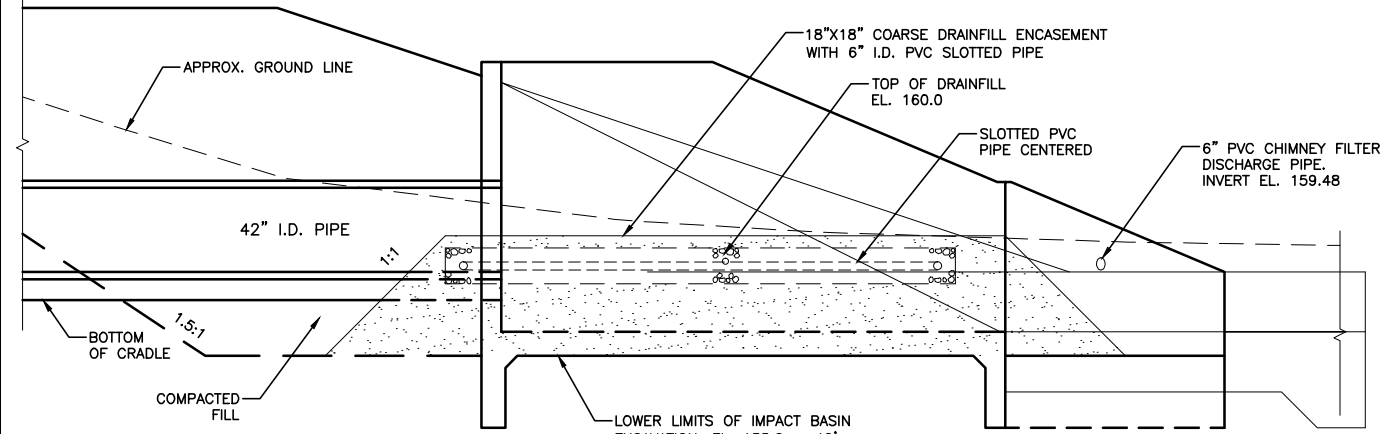
CHIMNEY FILTER DRAINAGE QUANTITIES	
6" SLOTTED DRAIN PIPE	1,066 LIN. FT.
6" NON-SLOTTED DRAIN PIPE	234 LIN. FT.
6" 22.5° ELLS	4 EA.
6" 45° ELLS	2 EA.
6" 45° DOUBLE WYE	2 EA.
6" 90° ELLS	2 EA.
6" 45° WYE	2 EA.
6" NON-REMOVABLE CAP OR PLUG	2 EA.
6" SCREW IN CAPS	1 EA.
CLEANOUT COVER	1 EA.
FINE DRAIN FILL MATERIAL	9915 CU. YDS.
COARSE DRAIN FILL MATERIAL	92 CU. YDS.

NOTES:  
 PVC PIPE CONNECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. BACKFILL AND COMPACTION REQUIREMENTS SHALL BE AS SPECIFIED IN CONSTRUCTION SPECIFICATIONS 24 AND 45.  
 RODENT GUARDS SHALL BE PLACED OVER ALL PVC PIPE OUTLETS THROUGH THE IMPACT BASIN. CONSTRUCTION AND PLACEMENT DETAILS ARE SHOWN ON SHEET 18.



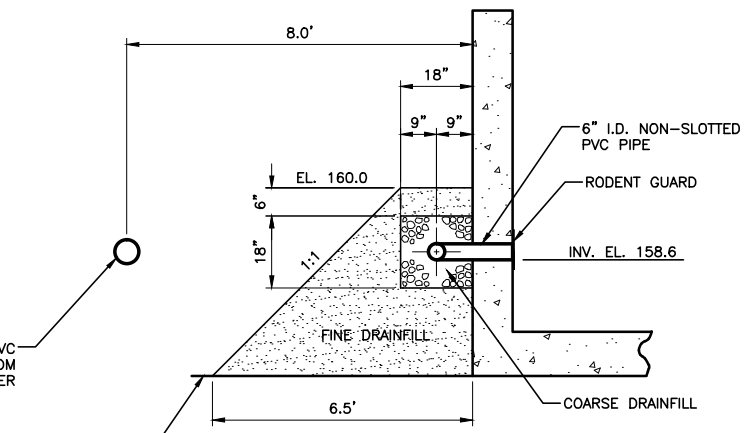
**PLAN**  
 NOT TO SCALE

6" NON-SLOTTED PVC DISCHARGE PIPE FROM CHIMNEY FILTER LOCATED 8' FROM EDGE OF IMPACT BASIN.



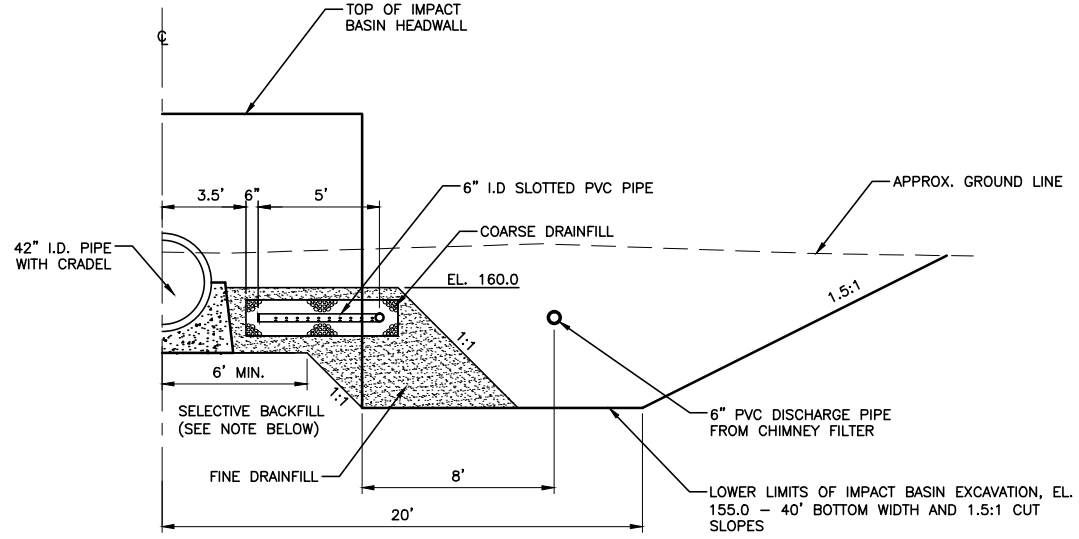
**ELEVATION**  
 NOT TO SCALE

LOWER LIMITS OF IMPACT BASIN EXCAVATION, EL. 155.0 - 40' BOTTOM WIDTH AND 1.5:1 CUT SLOPES FROM STA. 2+86 TO APPROX. STA. 3+29.



**SECTION A-A**  
 NOT TO SCALE

6" NON-SLOTTED PVC DISCHARGE PIPE FROM CHIMNEY FILTER  
 LOWER LIMITS OF IMPACT BASIN EL. 155.0

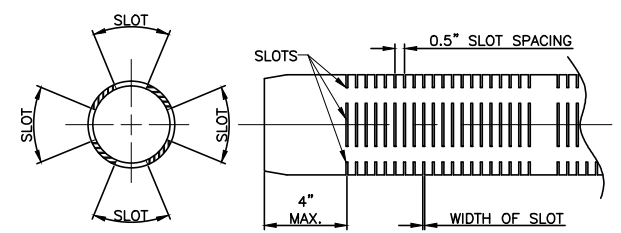


**SECTION B-B**  
 NOT TO SCALE

NOTE: USE COMPACTED BACKFILL OF LOW COMPRESSIBILITY UNDER THE CONDUIT AND CRADLE IN THE AREA UPSTREAM OF THE BASIN HEADWALL TO THE LIMITS SHOWN.

DRAINFILL SHALL COMPLY WITH CONSTRUCTION SPECIFICATION 24 AND MATERIAL SPECIFICATION 521.

**DRAINFILL GRADATION REQUIREMENTS**

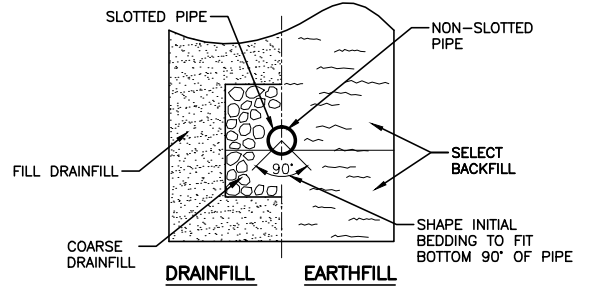


ALL P.V.C. PLASTIC PIPE AND FITTINGS SHALL MEET THE REQUIREMENTS OF MATERIAL SPECIFICATION 547 AND CONSTRUCTION SPECIFICATION 45.

**SLOTTED P.V.C. PLASTIC PIPE DETAILS**  
 NOT TO SCALE

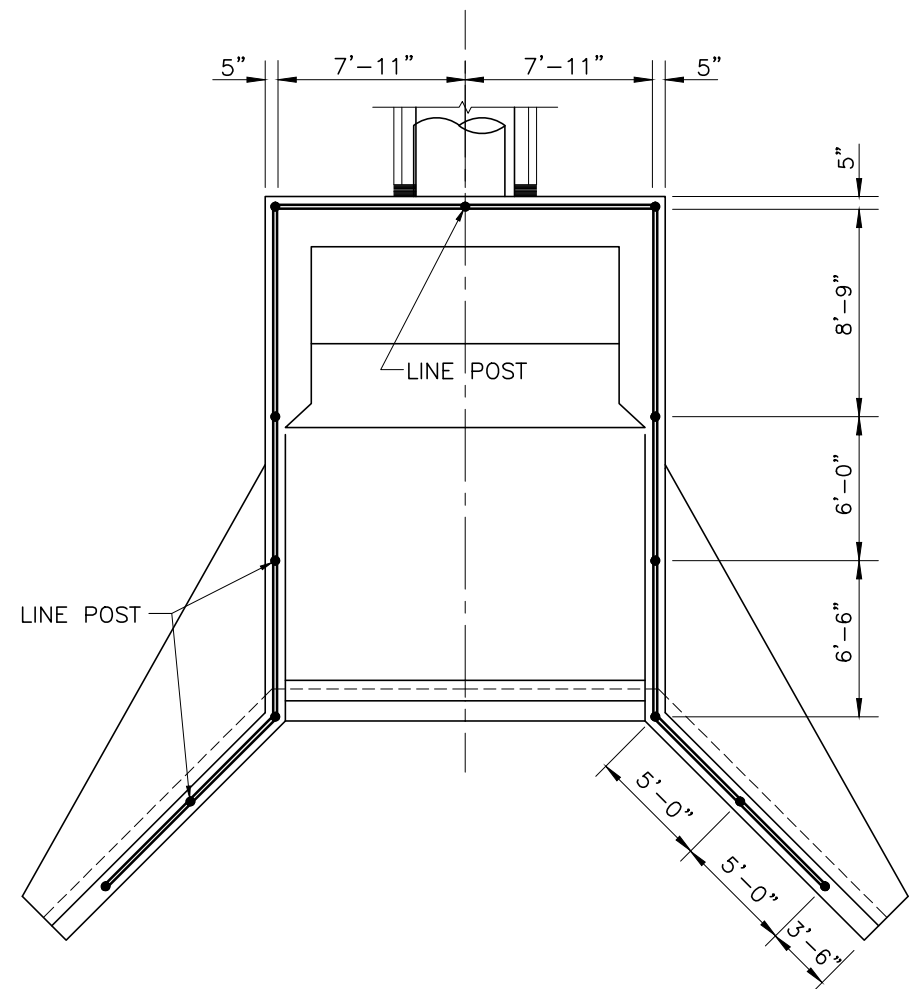
SLOTTED P.V.C. PLASTIC PIPE SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. THE MINIMUM REQUIREMENTS ARE AS FOLLOWS:

1. THE SLOT WIDTH SHALL NOT EXCEED 0.062 INCHES.
2. SLOT SPACING SHALL BE 0.5".
3. SLOTS SHALL BE PLACED IN NO MORE THAN FOUR (4) ROWS SYMMETRICALLY ABOUT THE PIPE CENTERLINE (UNLESS OTHERWISE APPROVED).
4. SLOTTED PIPE SHALL PROVIDE A MINIMUM ONE (1) SQ. IN. OF OPEN AREA PER FOOT OF PIPE.

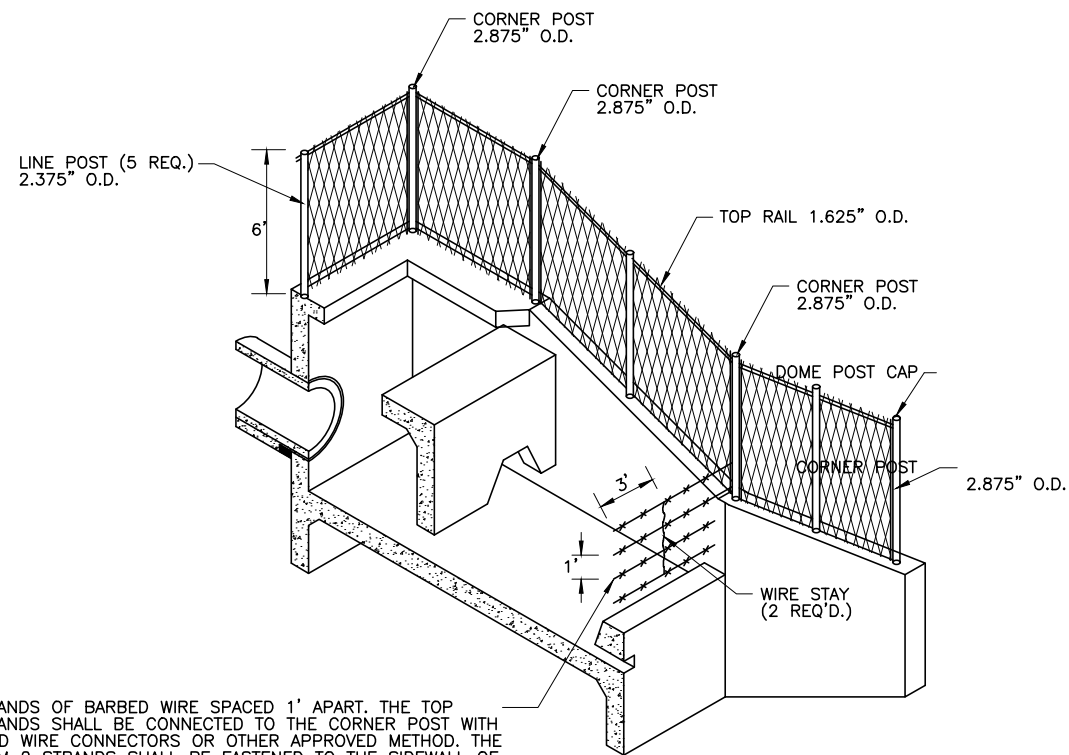


**DRAIN PIPE BEDDING DETAILS**  
 NOT TO SCALE





PLAN



4 STRANDS OF BARBED WIRE SPACED 1' APART. THE TOP 2 STRANDS SHALL BE CONNECTED TO THE CORNER POST WITH BARBED WIRE CONNECTORS OR OTHER APPROVED METHOD. THE BOTTOM 2 STRANDS SHALL BE FASTENED TO THE SIDEWALL OF THE IMPACT BASIN WITH 3/8" EYEBOLTS OR OTHER APPROVED METHOD. A TURN BUCKLE SHALL BE INSTALLED AT ONE END TO MAINTAIN TENSION.

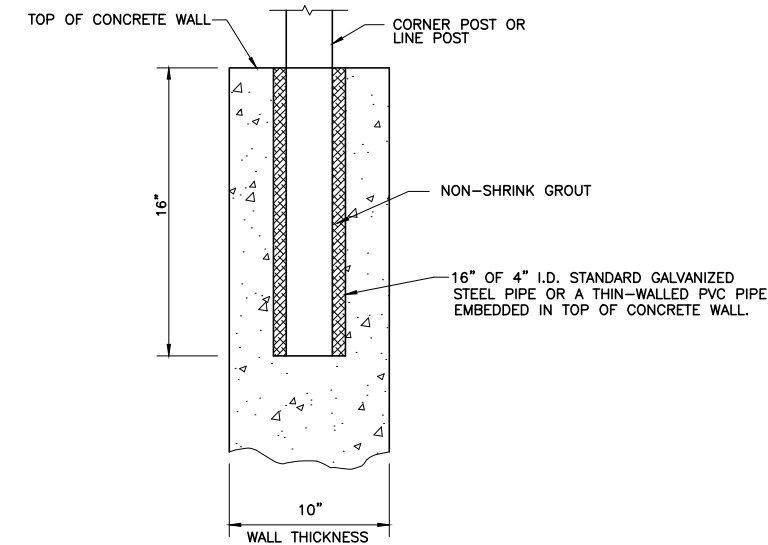
NOTE: WIRE STAYS SHALL BE 9 1/2 GA. (MIN SIZE) GALVANIZED TWO STRAND SPIRAL, TWIST - ON TYPE. THE MINIMUM LENGTH OF STAYS SHALL BE 52".

HALF ISOMETRIC

(NTS)

BILL OF MATERIALS - SAFETY FENCE IMPACT BASIN	
60'-0"	2.875" O.D. TUBULAR STEEL PIPE FOR CORNER POST (CUT INTO 8 7'-6" POST)
37'-6"	2.375" O.D. TUBULAR STEEL PIPE FOR FIVE LINE POST (CUT INTO 5 7'6" POST)
78'-6"	1.625" O.D. TUBULAR STEEL PIPE FOR TOP RAIL (CUT AS REQUIRED)
78'-6"	6'-0" HIGH CHAIN LINK FABRIC (SELVAGE SHALL BE KNUCKLED AT BOTTOM AND TOP)
14	TENSION BARS
56	TENSION BANDS
14	OFFSET CUPS (FOR TOP RAIL)
13	DOME POST CAPS
62'-0"	BARBED WIRE (SEE NOTE)
4	BARBED WIRE CONNECTORS
4	TURN BUCKLES
4	3/8" EYE BOLTS
17'-4"	4" I.D. STANDARD GALVANIZED STEEL PIPE OR PVC FOR EMBEDMENT (CUT INTO 9 1'-4" LENGTHS)
1.0	CU. FT. OF NON-SHRINK GROUT

NOTE: QUANTITY OF TIE WIRE REQUIRED NOT INCLUDED IN TABLE ABOVE.  
FOR TYPE AND SPECIFICATIONS OF FENCING MATERIALS SEE CONSTRUCTION SPECIFICATION 91.



NOTE: A MINIMUM OF 4 DAYS CURING TIME IS REQUIRED FOR THE GROUT BEFORE CHAIN LINK FABRIC CAN BE STRETCHED.

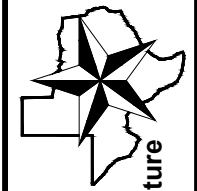
FENCE POST EMBEDMENT DETAILS

(NTS)



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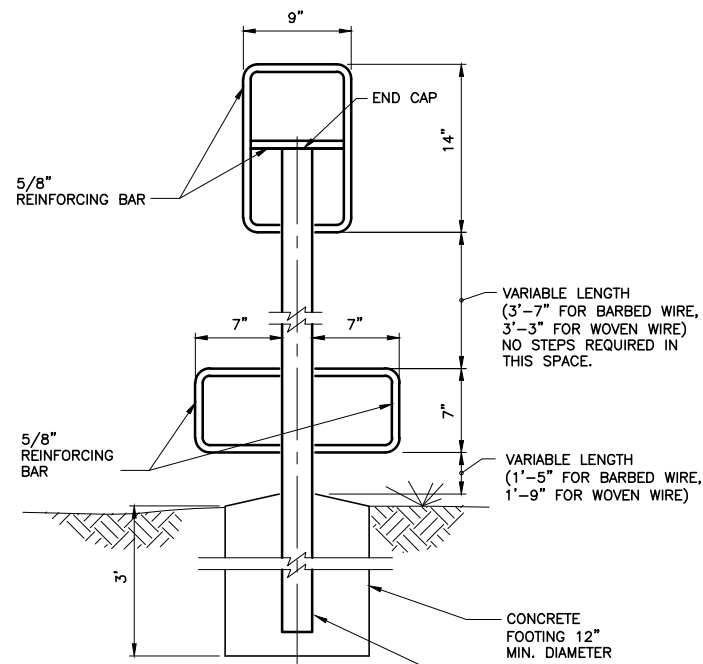
IMPACT BASIN SAFETY FENCE  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
OLMITOS-GARCIAS CREEKS WATERSHED  
IN  
STARR COUNTY, TEXAS



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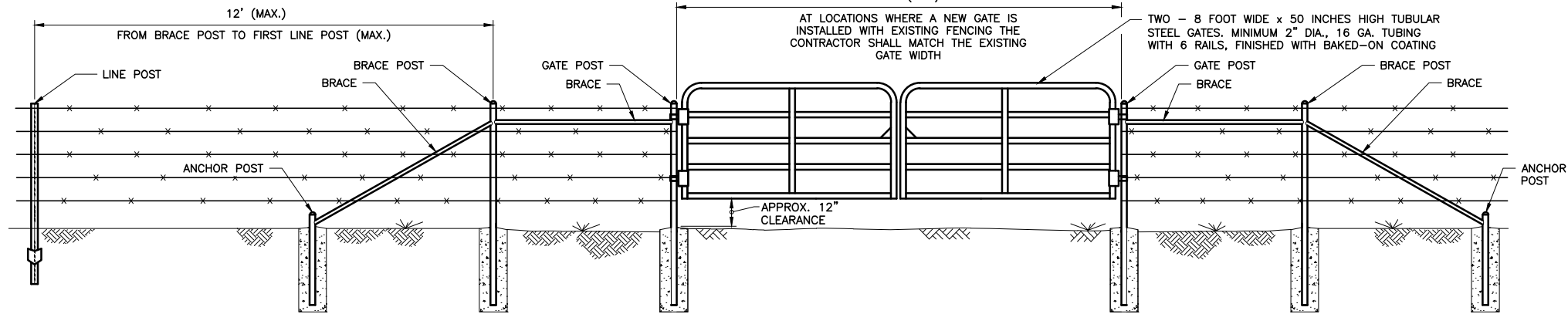
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**STILE DETAIL**

NOT TO SCALE  
(1 REQUIRED)

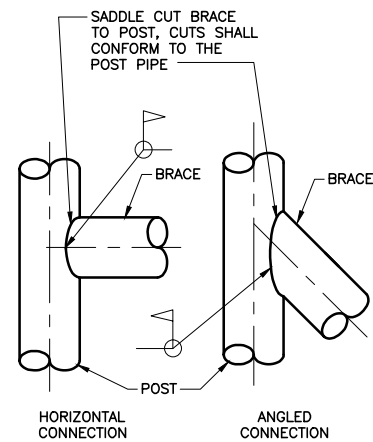
NOTE:  
POSITION STILE SO THAT STEPS AND HANDLE ARE PERPENDICULAR TO ALIGNMENT OF FENCE.  
ALL BAR BENDS SHOWN SHALL HAVE AN INSIDE RADIUS OF APPROX. 1 1/2" PIPE FOR STILE SHALL BE 3" NPS SCHEDULE 40 STEEL PIPE.  
ALL BAR CONNECTIONS SHALL HAVE ALL AROUND FILLET WELD.  
ATTACH END CAP TO PIPE WITH ALL AROUND WELD, AND BAR TO END CAP BY WELDING BOTH SIDES.  
GALVANIZE STILE AFTER FABRICATION.  
STILE LOCATIONS WILL BE DESIGNATED BY THE ENGINEER DURING FENCE LAYOUT.



**16' GATE OPENING**

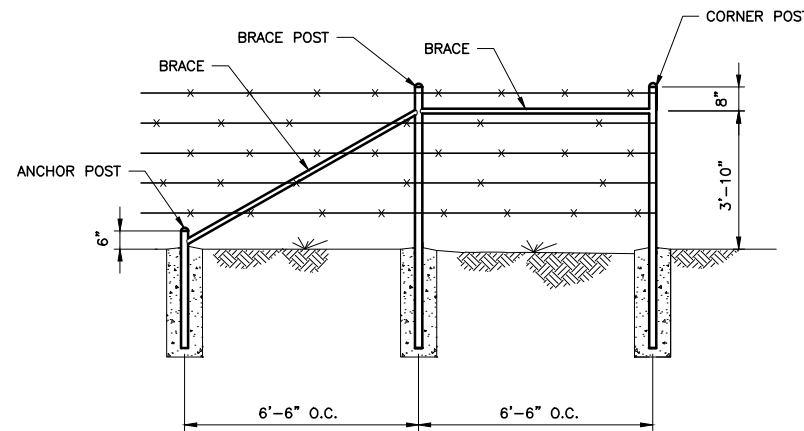
NOT TO SCALE  
(SIX (6) OPENINGS REQUIRED)

STEEL LINE POST SHALL MEET THE REQUIREMENTS OF ASTM A702 WITH TWO COATS OF PAINT. ALL LINE POST SHALL BE THE SAME COLOR.  
PIPE POSTS AND BRACES SHALL MEET THE REQUIREMENTS OF ASTM A500 OR ASTM A53, EXCEPT SECTION B, HYDROSTATIC TEST SHALL NOT APPLY.  
GATE AND CORNER POSTS SHALL BE 3" NPS, BRACE POSTS, ANCHOR POSTS, AND BRACES SHALL BE MIN. 2 1/2" NPS. ALL POSTS AND BRACES SHALL BE SCHEDULE 40 PIPE.



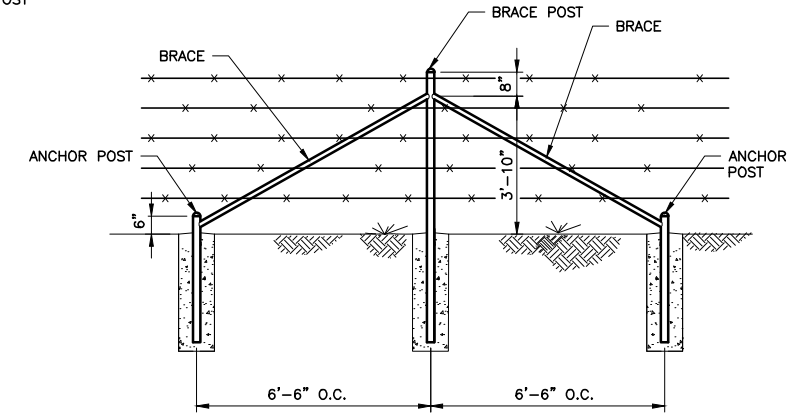
**POST DETAILS**

NOT TO SCALE



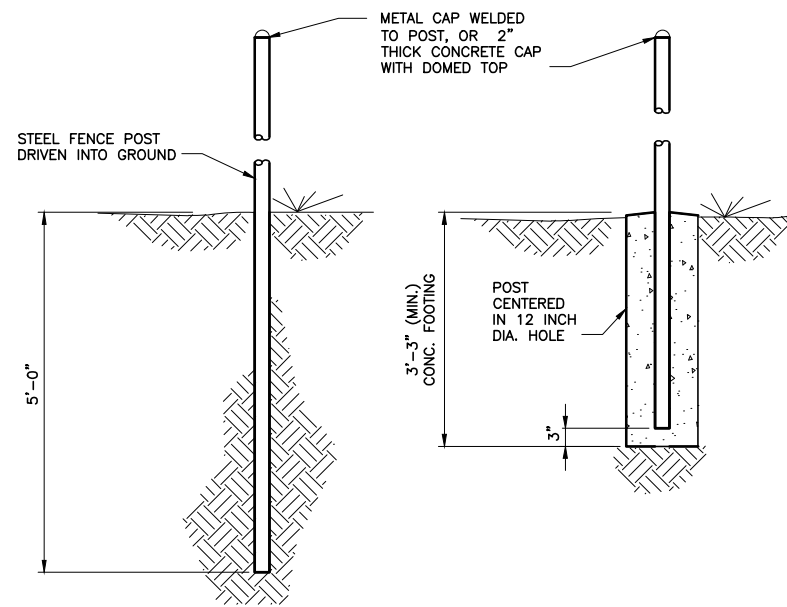
**CORNER PANEL**

NOT TO SCALE



**PULL PANEL**

NOT TO SCALE



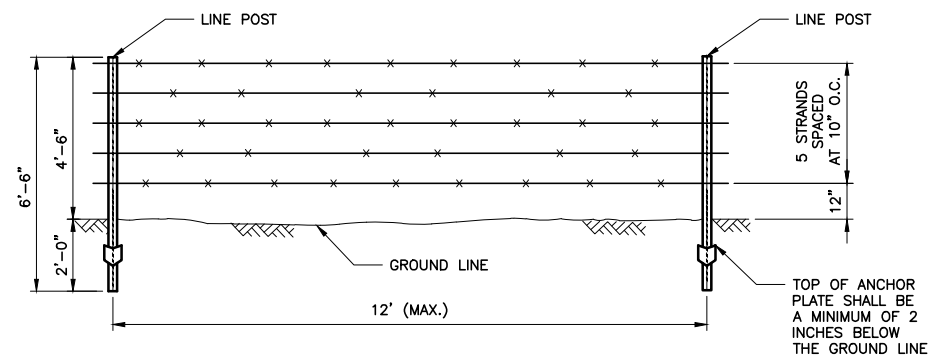
**POST CAP & EMBEDMENT**

**DETAIL**  
NOT TO SCALE

**POST CAP & EMBEDMENT**

**DETAIL**  
CONCRETE FOOTING TYPE  
NOT TO SCALE

NOTES:  
SET STEEL CORNER, BRACE, AND GATE POST IN CONCRETE AS DETAILED ABOVE.  
IF SOUND ROCK IS ENCOUNTERED THE DRILL HOLE MAY BE A MINIMUM OF 6" IN DIAMETER  
UNLESS OTHERWISE STATED OR APPROVED THE CONCRETE FOR THE FOOTING SHALL HAVE A MINIMUM STRENGTH OF 3,000 psi AT 28 DAYS.  
AT CHANGES IN VERTICAL ALIGNMENT, SUCH AS CROSSING OF STUB DIVERSIONS, LINE POSTS OR PULL PANEL POSTS THAT RESTRAIN UPWARD PULL OF THE FENCE STRANDS SHALL BE ANCHORED BY SETTING SUCH POST IN 18" OF CONCRETE. THE ENGINEER WILL DESIGNATE THE LOCATIONS WHERE THIS ANCHORAGE TREATMENT IS REQUIRED.



**5-STRAND BARBED WIRE**

NOT TO SCALE

BARBED WIRE REQUIRED SHALL BE STEEL DOUBLE STRAND 12 1/2 GA., COATING TYPE Z (ZINC GALVANIZED) AND COATING CLASS 3 WIRE CONFORMING TO ASTM A121.  
BARBS SHALL BE (2) POINT, 14 GA. OR LARGER, ROUND OR FLAT AND ON 4" SPACING.  
ATTACH EACH BARBED WIRE STRAND TO THE CORNER, END POST, AND PULL PANEL BRACE POST WITH A DOUBLE WRAP OF GALVANIZED WIRE TIED BACK WITH A MIN. OF 4 WRAPS.  
ANCHORAGE OF FENCE WIRE TO POSTS WHERE THERE IS A CHANGE IN VERTICAL ALIGNMENT THAT PRODUCES UPWARD OR DOWNWARD PULL SHALL BE ACCOMPLISHED WITH DOUBLE TIE WIRES TO EACH SUCCESSIVE FENCE WIRE. THE ENGINEER WILL DESIGNATE THE POSTS WHERE THIS SPECIAL FASTENING OF THE FENCE WIRES ARE REQUIRED.

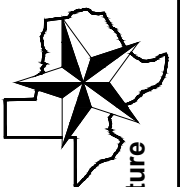
THE APPROX. LOCATION OF FENCES TO BE CONSTRUCTED ARE SHOWN ON SHEET 2.



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DESIGNED BY: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
FILE NAME: 067\_FENCE.dwg  
DATE CHECKED: 5/1/2015

FENCE DETAILS  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
OLMITOS-GARCIAS CREEKS WATERSHED  
IN STARR COUNTY, TEXAS

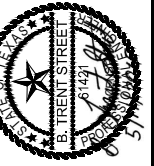


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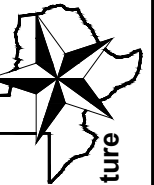
DRAWING NO. TX-EN-0652

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DESIGNED BY:            JPK  
 DRAWN BY:            JPK  
 CHECKED BY:            JPK  
 FILE NAME:            067\_GI-B.dwg  
 DATE CHECKED:            5/1/2015

**GEOLOGIC INVESTIGATION PLAN**  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
**OLMITOS-GARCIA CREEKS WATERSHED**  
 IN  
 STARR COUNTY, TEXAS

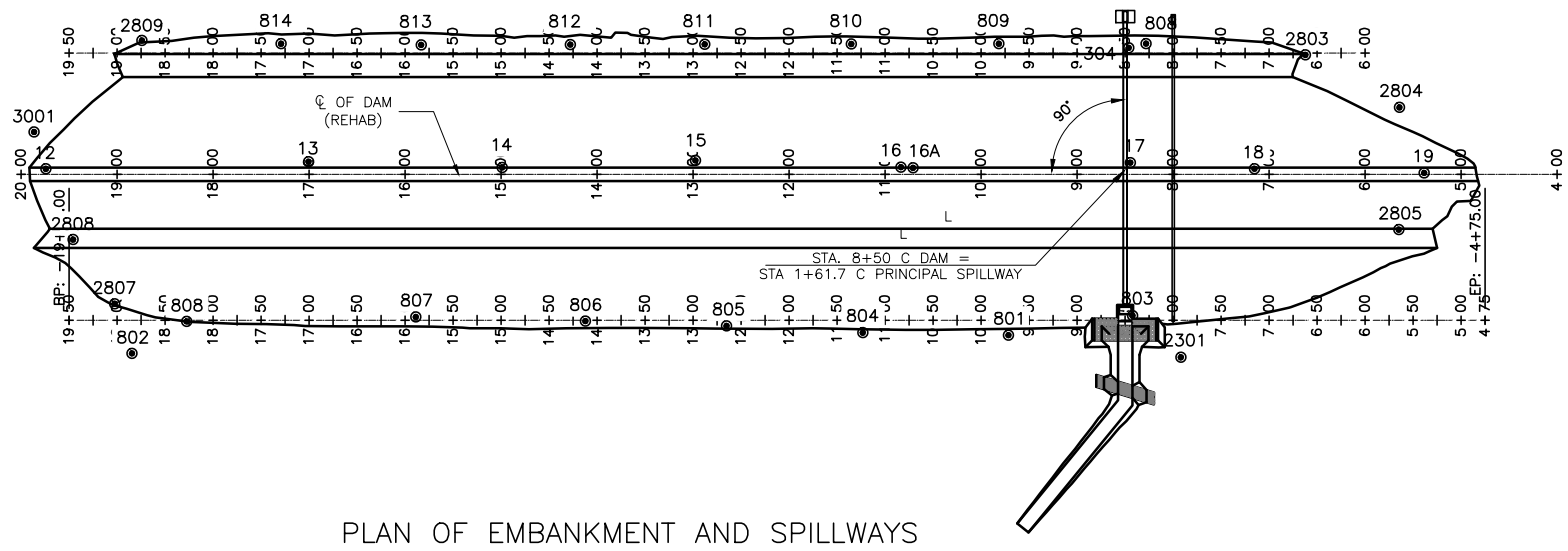
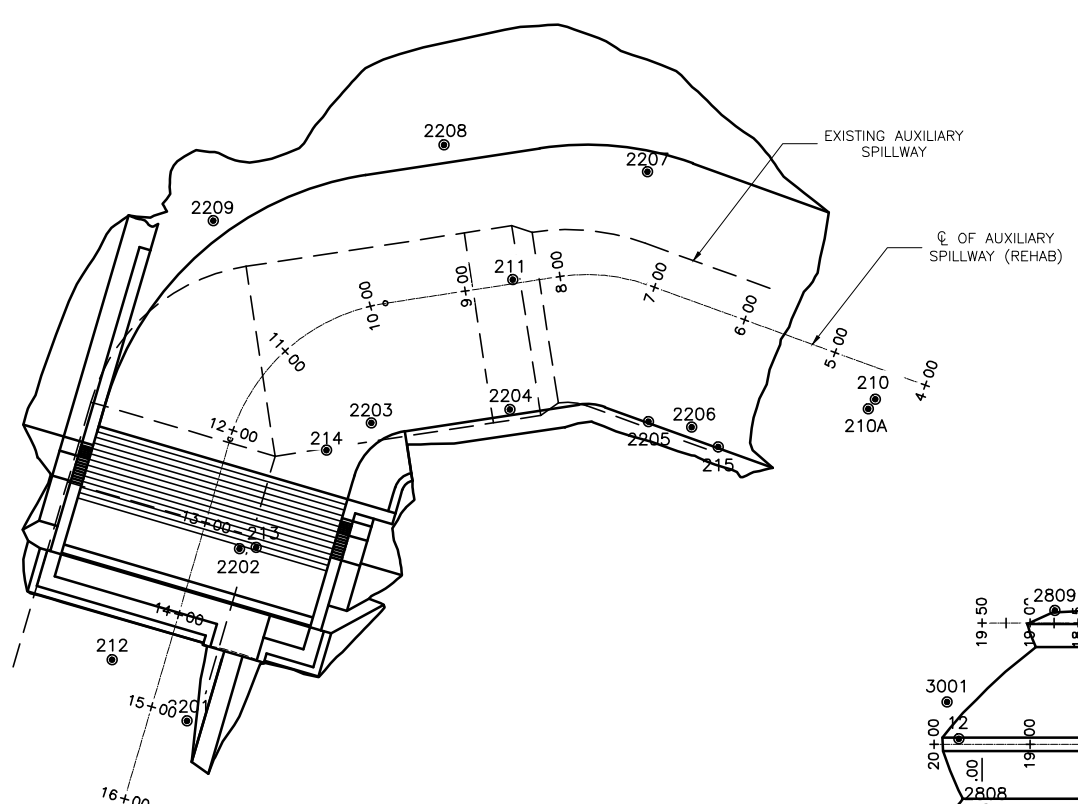


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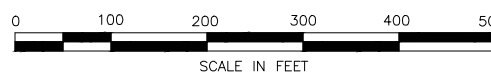
DRAWING NO. **TX-EN-0652**

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**38**



**PLAN OF EMBANKMENT AND SPILLWAYS**



**SYMBOLS LEGEND**

**UNCONSOLIDATED MATERIAL**

- GRAVEL
- SAND
- SILT
- CLAY
- GRAVEL, SANDY
- SAND, GRAVELLY
- SILT, GRAVELLY
- CLAY, GRAVELLY
- GRAVEL, SILTY
- SAND, SILTY
- SILT, SANDY
- CLAY, SANDY
- GRAVEL, CLAYEY
- SAND, CLAYEY
- SILT, CLAYEY
- CLAY, SILTY
- COBBLES, BOULDERS

**CONSOLIDATED MATERIAL (SEDIMENTARY ROCKS)**

- CONGLOMERATE CNG.
- SHALE SH.
- LIMESTONE LS.
- BRECCIA BRC.
- SILTSTONE MS
- DOLOMITE DOL.
- GYPSUM GYP.
- SANDSTONE SS.
- CLAYSTONE CS.
- CHALK CH.
- CHERT CHT.

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

NOTE: ADDITIONAL SOIL AND FOUNDATION INVESTIGATION DATA ARE AVAILABLE IN THE NRCS FIELD CONSTRUCTION OFFICE FOR REVIEW BY PROSPECTIVE BIDDERS.

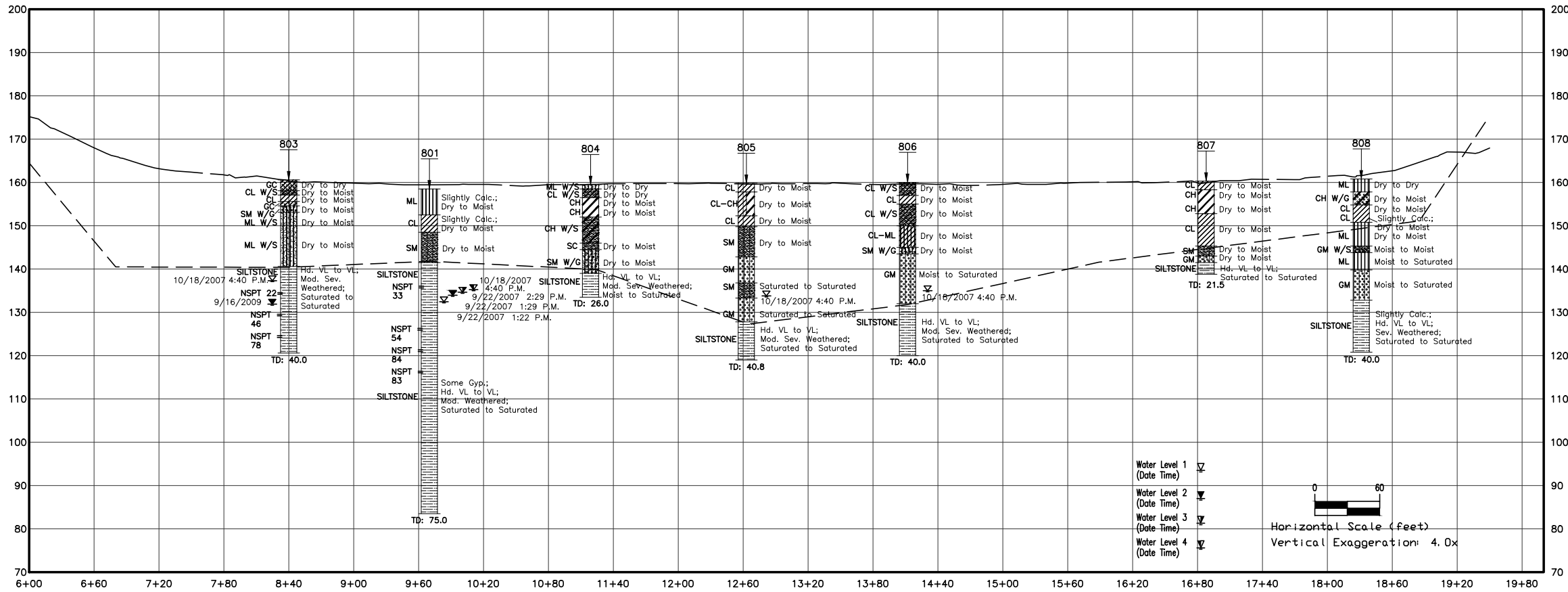
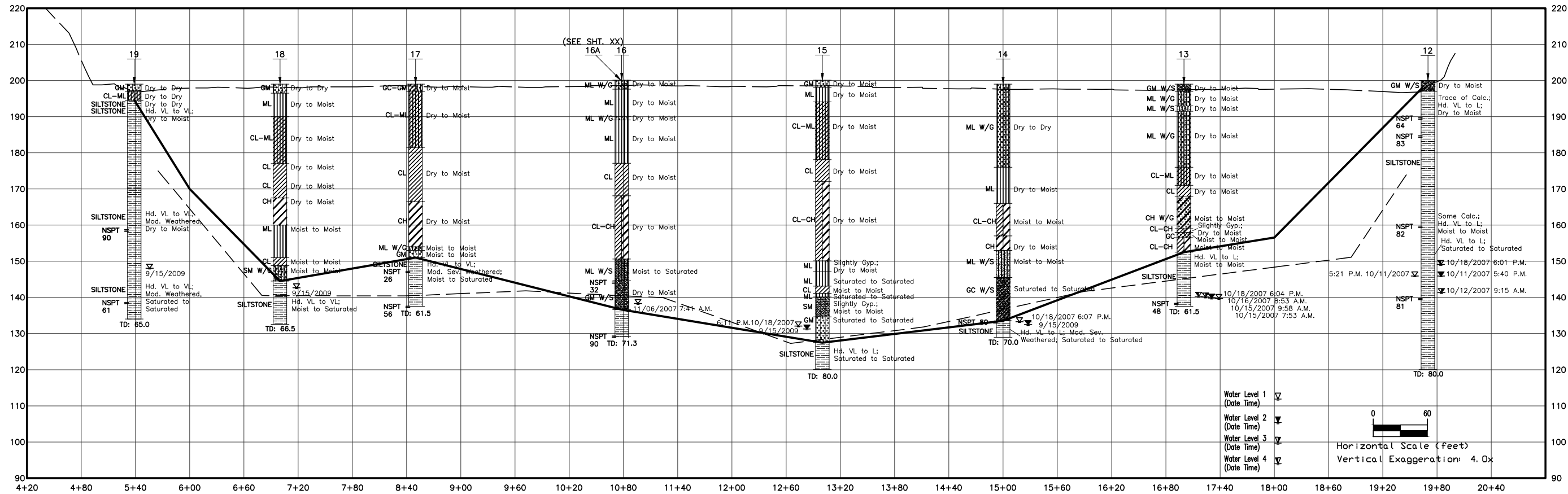
	TEST HOLE NUMBERING SYSTEM				
	COMBINATION RIG	POWER AUGER	HAND BORINGS	TRENCH OR PIT EXCAVATIONS	NATURAL OUTCROPS, STREAMBANKS, AND GULLIES
CENTERLINE OF DAM	1-49	51-99	1001-1099	2001-2099	3001-3099
BORROW AREA	101-149	151-199	1101-1199	2101-2199	3101-3199
EMERGENCY SPILLWAY	201-249	251-299	1201-1299	2201-2299	3201-3299
PRINCIPAL SPILLWAY	301-349	351-399	1301-1399	2301-2399	3301-3399
STREAM CHANNELS	401-449	451-499	1401-1499	2401-2499	3401-3499
EXPLORATORY BORINGS	501-549	551-599	1501-1599		
FOUNDATION DRAIN	601-649	651-699	1601-1699	2601-2699	3601-3699
MISCELLANEOUS	701-749	751-799	1701-1799	2701-2799	3701-3799

**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

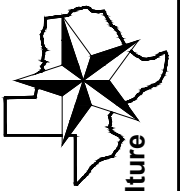
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DESIGNED BY: BIT  
 DRAWN BY: JPK  
 CHECKED BY: BIT  
 FILE NAME: 067\_GI-B.dwg  
 DATE CHECKED: 5/1/2015

GEOLOGIC INVESTIGATION PROFILES  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
 OLMITOS-GARCIAS CREEKS WATERSHED  
 IN  
 STARR COUNTY, TEXAS



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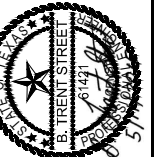
REVISIONS DATE

DRAWING NO.  
**TX-EN-0652**

SHEET

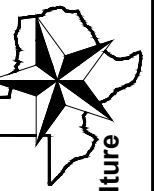
**39**

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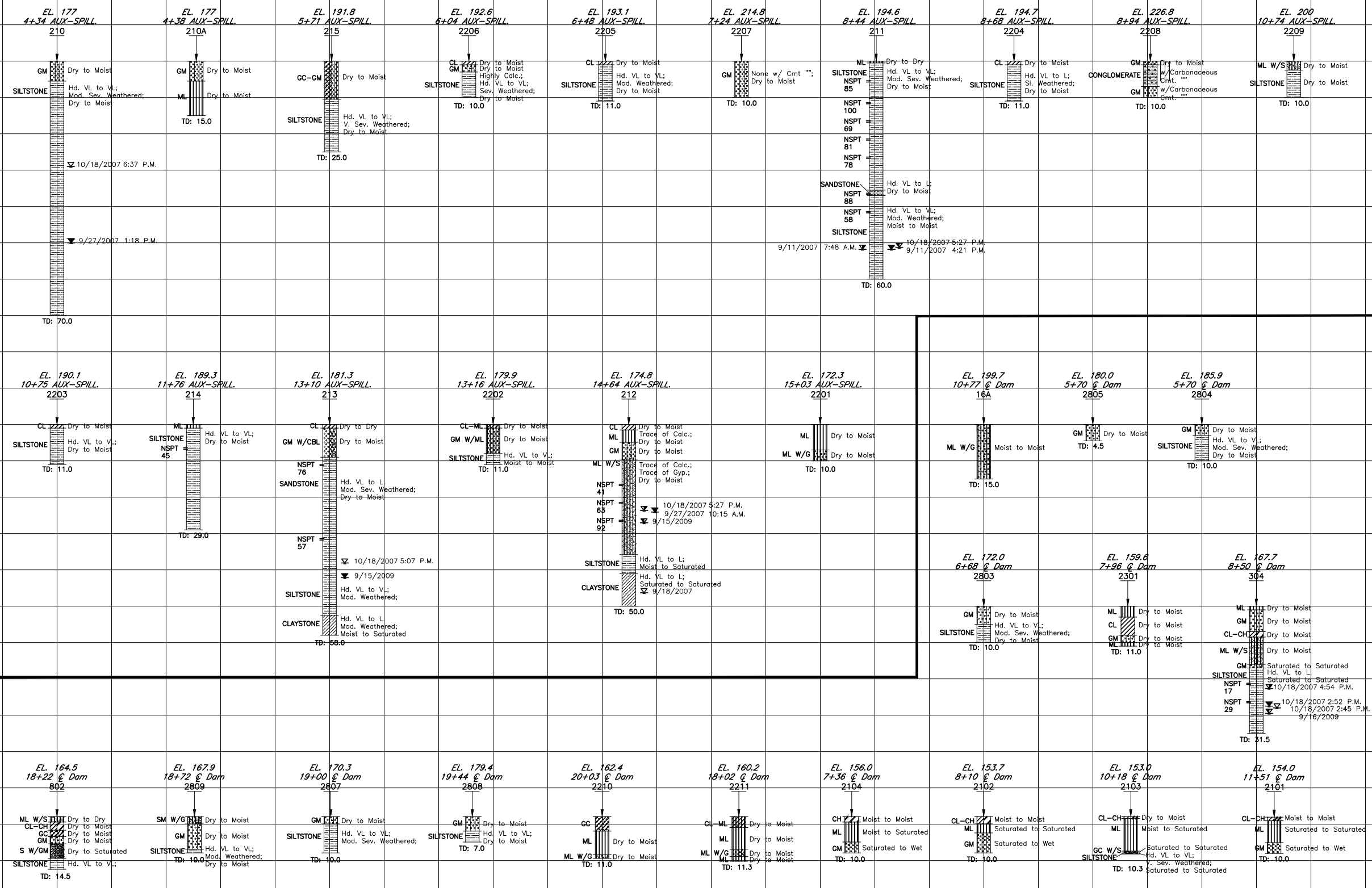
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 DRAWN BY:            JPK  
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 DATE CHECKED:            5/1/2015

**GEOLOGIC INVESTIGATION PROFILES**  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
**OLMITOS-GARCIAS CREEKS WATERSHED**  
 IN  
 STARR COUNTY, TEXAS

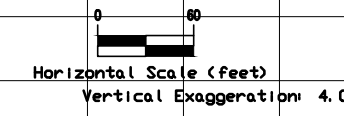


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- Water Level 1 ▽
- Water Level 2 ▽
- Water Level 3 ▽
- Water Level 4 ▽



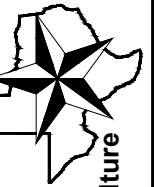
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F-4324

DESIGNED BY:            BIS  
DRAWN BY:            JPK  
CHECKED BY:            BIS  
FILE NAME:            067\_GI-B.dwg  
DATE CHECKED:            5/1/2015

**GEOLOGIC INVESTIGATION PROFILES**  
FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
**OLMITOS-GARCIAS CREEKS WATERSHED**  
IN  
STARR COUNTY, TEXAS



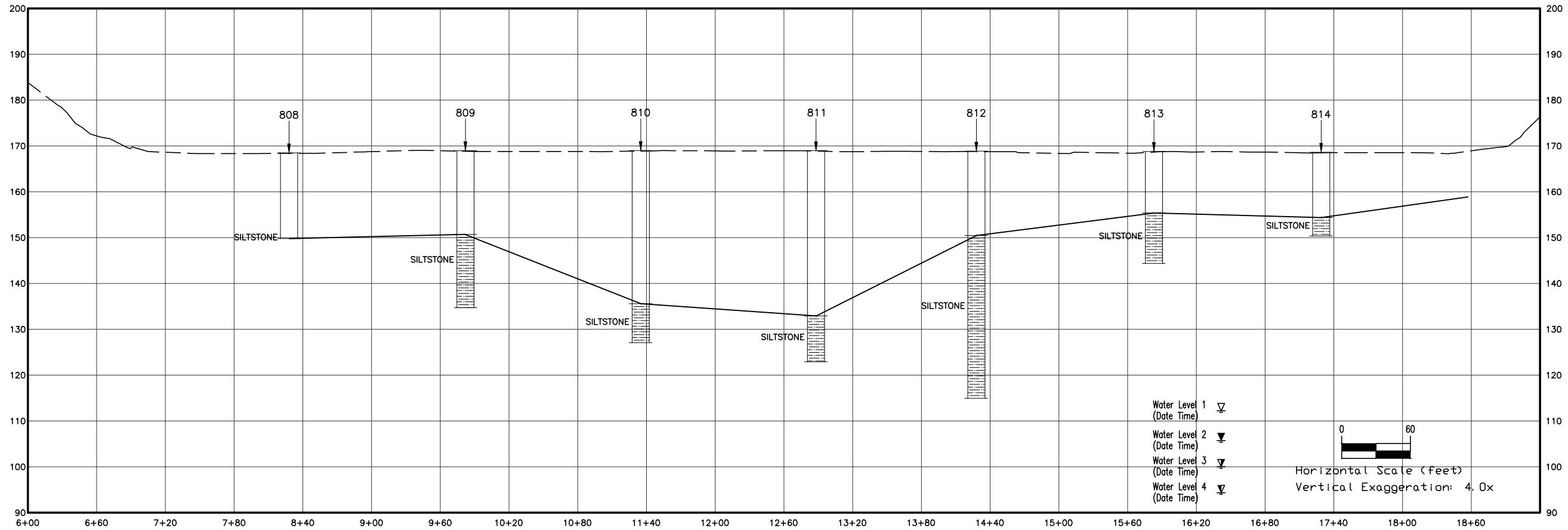
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**41**





NOTE:  
 CONTRACTOR SHALL ADD LOCATION(S) OF  
 SEDIMENT FENCE TO PLAN AS REQUIRED.

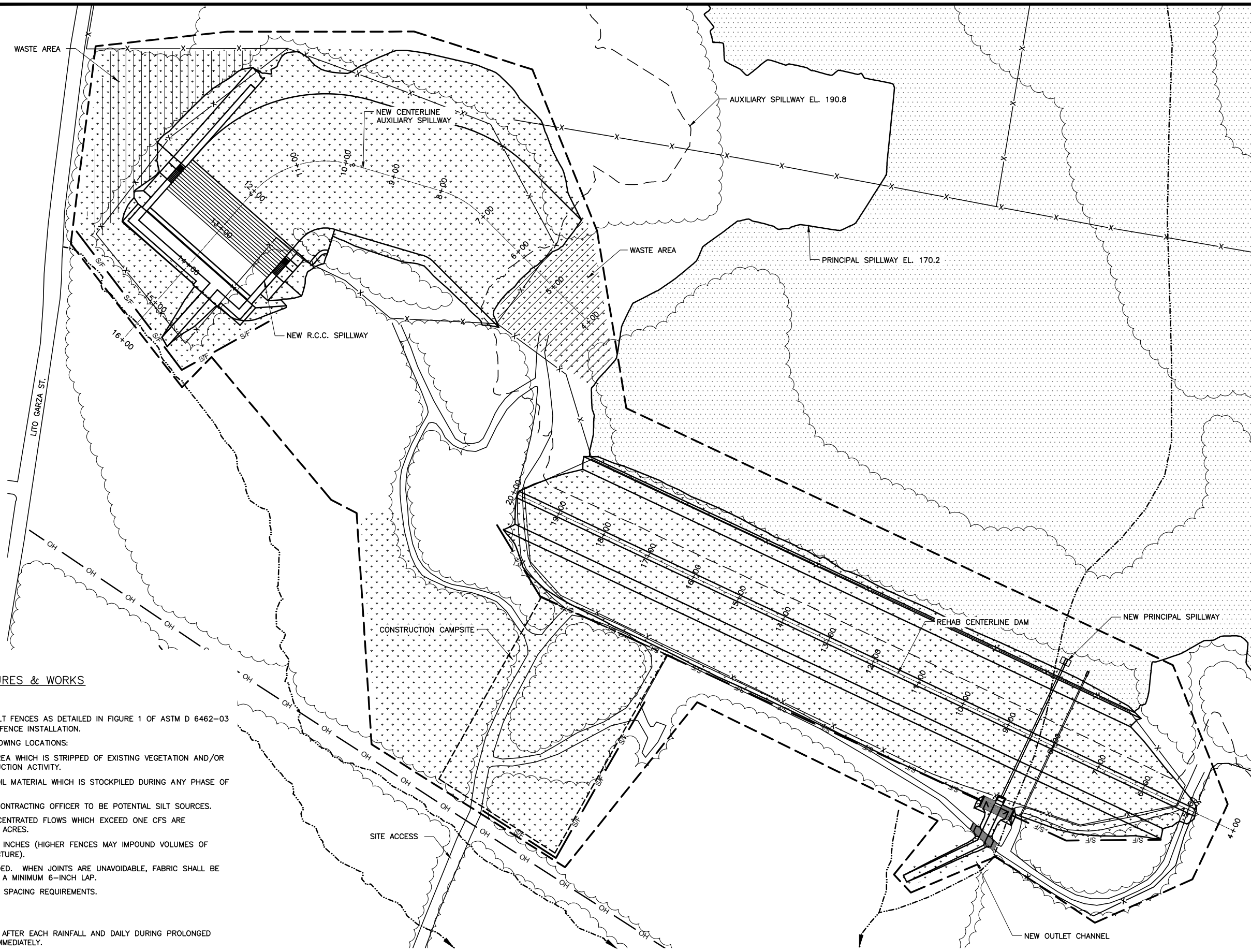
APPROXIMATELY 2,595 FEET OF SEDIMENT FENCE  
 IS CURRENTLY SHOWN.

CONTRACTOR SHALL INDICATE ON THE PLAN ALL  
 PRODUCT SPECIFIC STORAGE AREAS AS DESCRIBED  
 IN THE SWP3.

THESE AREAS SHALL INCLUDE, BUT ARE NOT  
 LIMITED TO:  
 - EQUIPMENT STORAGE  
 - FUEL STORAGE  
 - HAZARDOUS MATERIAL STORAGE  
 - CONCRETE WASHOUT PITS  
 - PUG MILL

A DRAWING SHOWING THE LOCATIONS OF THE  
 DRAINAGE WORKS AND ALL POLLUTION CONTROL  
 MEASURES SHALL BE KEPT IN ACCORDANCE WITH THE  
 STORM WATER POLLUTION PREVENTION PLAN.

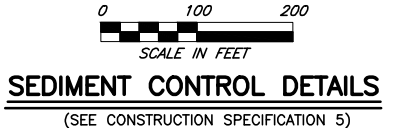
NOTE:  
 IN ADDITION TO THE EMBANKMENT AND OUTLET  
 CHANNEL EARTHWORK AREAS, DISTURBED  
 AREAS WITHIN THE CAMPSITE, STOCKPILE, AND  
 ACCESS ROAD AREAS SHALL HAVE PERMANENT  
 VEGETATION ESTABLISHED.



**GENERAL NOTES:**  
**EROSION & SEDIMENT CONTROL MEASURES & WORKS**

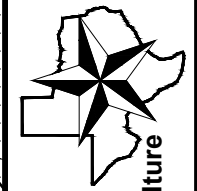
- SEDIMENT FILTERS**
- SEDIMENT FILTERS SHALL BE FABRIC (GEOTEXTILE) SILT FENCES AS DETAILED IN FIGURE 1 OF ASTM D 6462-03 (REAPPROVED 2008) STANDARD PRACTICE FOR SILT FENCE INSTALLATION.
  - SEDIMENT FILTERS SHALL BE PROVIDED AT THE FOLLOWING LOCATIONS:
    - ALONG THE DOWNSTREAM BOUNDARY OF ANY AREA WHICH IS STRIPPED OF EXISTING VEGETATION AND/OR SURFACE MATERIAL DURING ANY PHASE OF CONSTRUCTION ACTIVITY.
    - ALONG THE DOWNSTREAM BOUNDARY OF ANY SOIL MATERIAL WHICH IS STOCKPILED DURING ANY PHASE OF CONSTRUCTION ACTIVITY FOR MORE THAN 14 DAYS.
    - OTHER AREAS WHICH ARE DETERMINED BY THE CONTRACTING OFFICER TO BE POTENTIAL SILT SOURCES.
  - SEDIMENT FILTERS SHALL NOT BE USED WHERE CONCENTRATED FLOWS WHICH EXCEED ONE CFS ARE EXPECTED, OR WHERE DRAINAGE AREA EXCEEDS TWO ACRES.
  - THE HEIGHT OF SILT FENCES SHALL NOT EXCEED 48 INCHES (HIGHER FENCES MAY IMPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE OF THE STRUCTURE).
  - SPLICES IN THE FILTER FABRIC ARE NOT RECOMMENDED. WHEN JOINTS ARE UNAVOIDABLE, FABRIC SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6-INCH LAP.
  - SEE MATERIAL SPECIFICATION 592 FOR MATERIAL AND SPACING REQUIREMENTS.
- MAINTENANCE**
- SEDIMENT FILTERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
  - SILT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN THE LEVEL OF DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE SEDIMENT FILTER.
  - SHOULD THE FABRIC ON A SILT FENCE DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE, THE FABRIC SHALL BE REPLACED PROMPTLY UNLESS INSPECTION REPORTS INDICATE THAT THE REPLACEMENT IS UNNECESSARY.

**PLAN OF EMBANKMENT AND SPILLWAYS**



DESIGNED BY: BTB  
 DRAWN BY: GMK  
 CHECKED BY: BTB  
 FILE NAME: 067\_GP.dwg  
 DATE CHECKED: 5/1/2015

**STORM WATER POLLUTION PREVENTION PLAN**  
 FLOODWATER RETARDING STRUCTURE SITE NO. 7 REHAB  
**OLMITOS-GARCIAS CREEKS WATERSHED**  
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