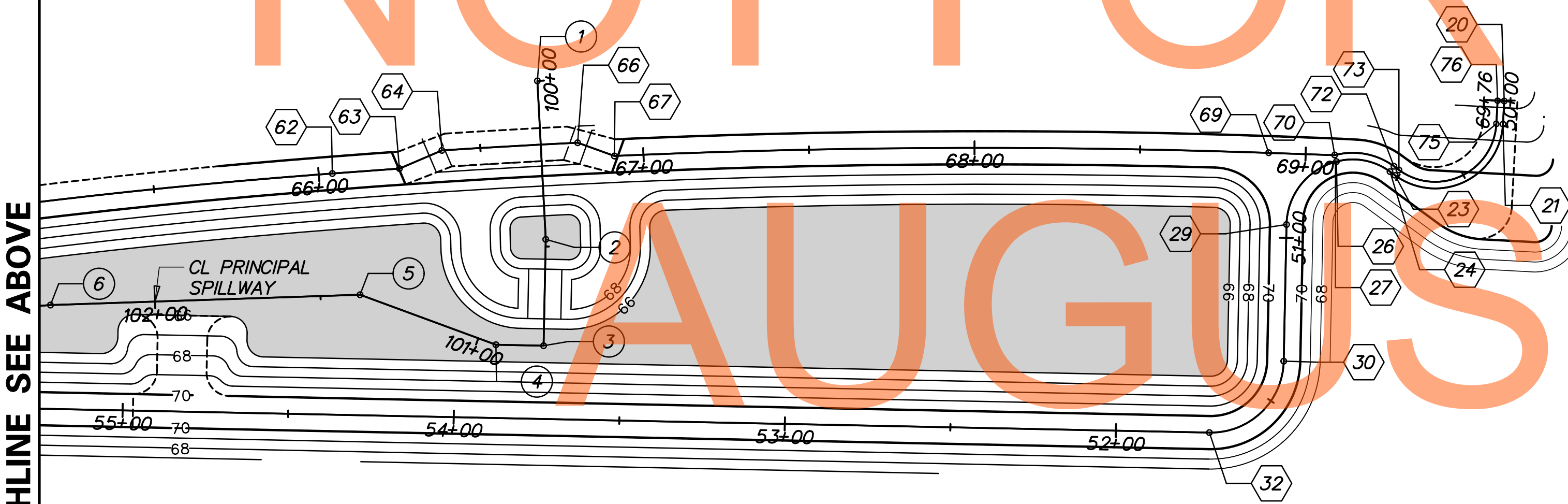


STAKEOUT - BMP 670 (BASIN 9A)

MATCHLINE SEE BELOW



STAKEOUT - BMP 670 (BASIN 9A)

MATCHLINE SEE ABOVE

CL EMBANKMENT		
STATION	NORTHING	EASTING
20	POB STA. 50+00.00	538062.4072 567128.5293
21	PC STA. 50+06.98	538060.8078 567135.3213
22	PI STA. 50+44.88	538052.1192 567172.2184
23	PT STA. 50+51.05	538025.9979 567144.7490
24	PC STA. 50+52.93	538024.7053 567143.3897
25	PI STA. 50+62.06	538018.4114 567136.7709
26	PT STA. 50+69.96	538009.3113 567137.5523
27	PC STA. 50+70.25	538009.0208 567137.5772
28	PI STA. 50+85.25	537994.0745 567138.8605
29	PT STA. 50+95.99	537991.1227 567153.5686
30	PC STA. 51+37.22	537983.0111 567193.9872
31	PI STA. 51+59.22	537978.6822 567215.5571
32	PT STA. 51+71.77	537957.1123 567211.2282
33	PC STA. 55+86.59	537550.4100 567129.6068
34	PI STA. 56+00.87	537536.4067 567126.7965
35	PT STA. 56+14.86	537522.2867 567128.9450
36	PC STA. 59+16.87	537223.7111 567174.3776
37	PI STA. 59+19.42	537221.1918 567174.7610
38	PT STA. 59+21.41	537219.7797 567172.6397
39	PI STA. 59+97.76	537177.4702 567109.0841
40	PI STA. 60+12.76	537165.7942 567099.6655
41	PC STA. 60+17.31	537163.2731 567095.8783
42	PI STA. 60+95.18	537120.1198 567031.0552
43	PT STA. 60+80.32	537192.9413 567058.6464
44	PI STA. 60+91.01	537202.9387 567062.4343
45	PC STA. 60+92.10	537204.0297 567062.5012
46	PI STA. 62+09.68	537321.3843 567069.6929
47	PT STA. 63+27.22	537438.3467 567081.6776
48	PC STA. 63+27.83	537438.9520 567081.7396
49	PI STA. 63+30.95	537442.0558 567082.0576
50	PT STA. 63+33.88	537444.7897 567080.5543
51	PC STA. 63+51.28	537460.0433 567072.1666
52	PI STA. 63+57.98	537465.9132 567068.9389
53	PT STA. 63+64.37	537472.6104 567069.0785
54	PC STA. 63+75.47	537483.7017 567069.3098
55	PI STA. 63+81.27	537489.5015 567069.4307
56	PT STA. 63+86.81	537494.4876 567072.3957
57	PC STA. 63+93.25	537500.0176 567075.6841
58	PI STA. 63+96.01	537502.3904 567077.0951
59	PT STA. 63+98.63	537505.1510 567077.0889

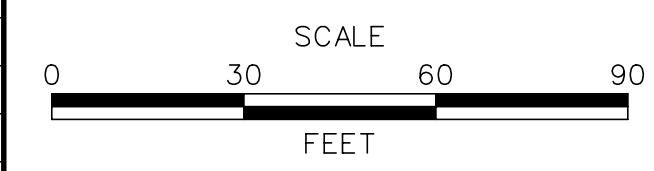
CL EMBANKMENT		
STATION	NORTHING	EASTING
60	PC STA. 63+99.45	537505.9706 567077.0871
61	PI STA. 65+01.89	537608.4110 567076.8585
62	PT STA. 66+04.14	537710.2958 567087.5145
63	PI STA. 66+24.44	537730.4884 567089.6264
64	PC STA. 66+38.38	537744.0703 567086.4988
65	PI STA. 66+58.92	537764.4742 567088.8157
66	PT STA. 66+79.45	537784.8380 567091.4625
67	PC STA. 66+91.22	537795.0327 567097.3490
68	PI STA. 67+90.07	537893.0029 567110.5290
69	PT STA. 68+88.83	537989.6367 567131.3561
70	PC STA. 69+08.78	538009.1402 567135.5596
71	PI STA. 69+18.87	538019.1982 567134.6960
72	PT STA. 69+27.60	538026.1546 567142.0115
73	PC STA. 69+29.47	538027.4473 567143.3708
74	PI STA. 69+63.68	538051.0201 567168.1603
75	PT STA. 69+69.25	538058.8610 567134.8629
76	POE STA. 69+76.23	538060.4604 567128.0708

CL PRINCIPAL SPILLWAY		
STATION	NORTHING	EASTING
1	POB STA. 100+00.00	537776.1411 567070.9579
2	PI STA. 100+47.87	537770.1809 567118.4504
3	PI STA. 100+79.95	537763.8683 567149.9052
4	PI STA. 100+94.34	537749.7532 567147.0725
5	PI STA. 101+38.06	537712.0345 567124.9745
6	PI STA. 102+31.59	537619.4811 567111.5193
7	PI STA. 103+25.11	537526.4760 567101.6398
8	PI STA. 106+13.30	537241.5737 567144.9918
9	POE STA. 106+86.61	537180.5562 567185.6298

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ADDENDUMS / REVISIONS	



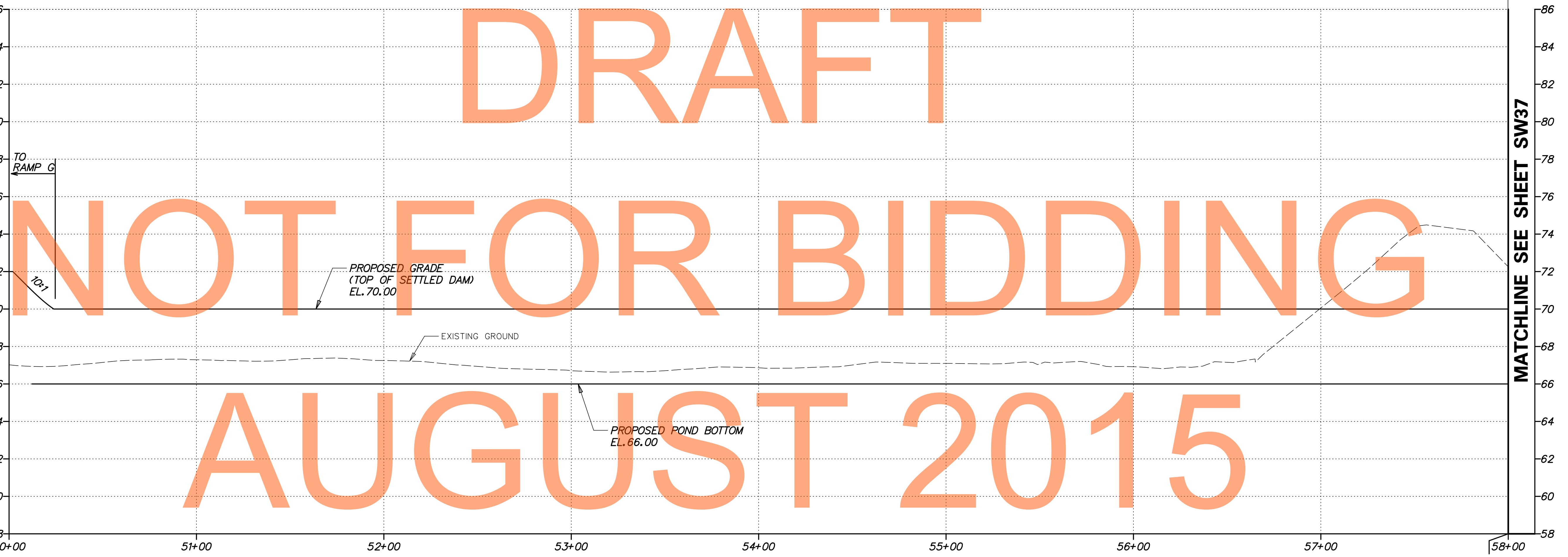
**US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD**

CONTRACT T200911303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: DB
	CHECKED BY: JZ

**STORMWATER
MANAGEMENT DETAILS
BMP 670 (BASIN 9A)**

SW-59
SHEET NO. 744
TOTAL SHTS. 1256

DRAFT



EMBANKMENT PROFILE FOR BMP 670 (BASIN 9A)
 HORIZONTAL SCALE: 1" = 30'
 VERTICAL SCALE: 1" = 3'
 0 30 60 90 0 3 6 9
 FEET FEET

NOT FOR BIDDING
 AUGUST 2015

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ADDENDUMS / REVISIONS	

AS SHOWN

US 301
 LEVELS ROAD
 TO SUMMIT BRIDGE ROAD

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: DB
NEW CASTLE	CHECKED BY: JZ

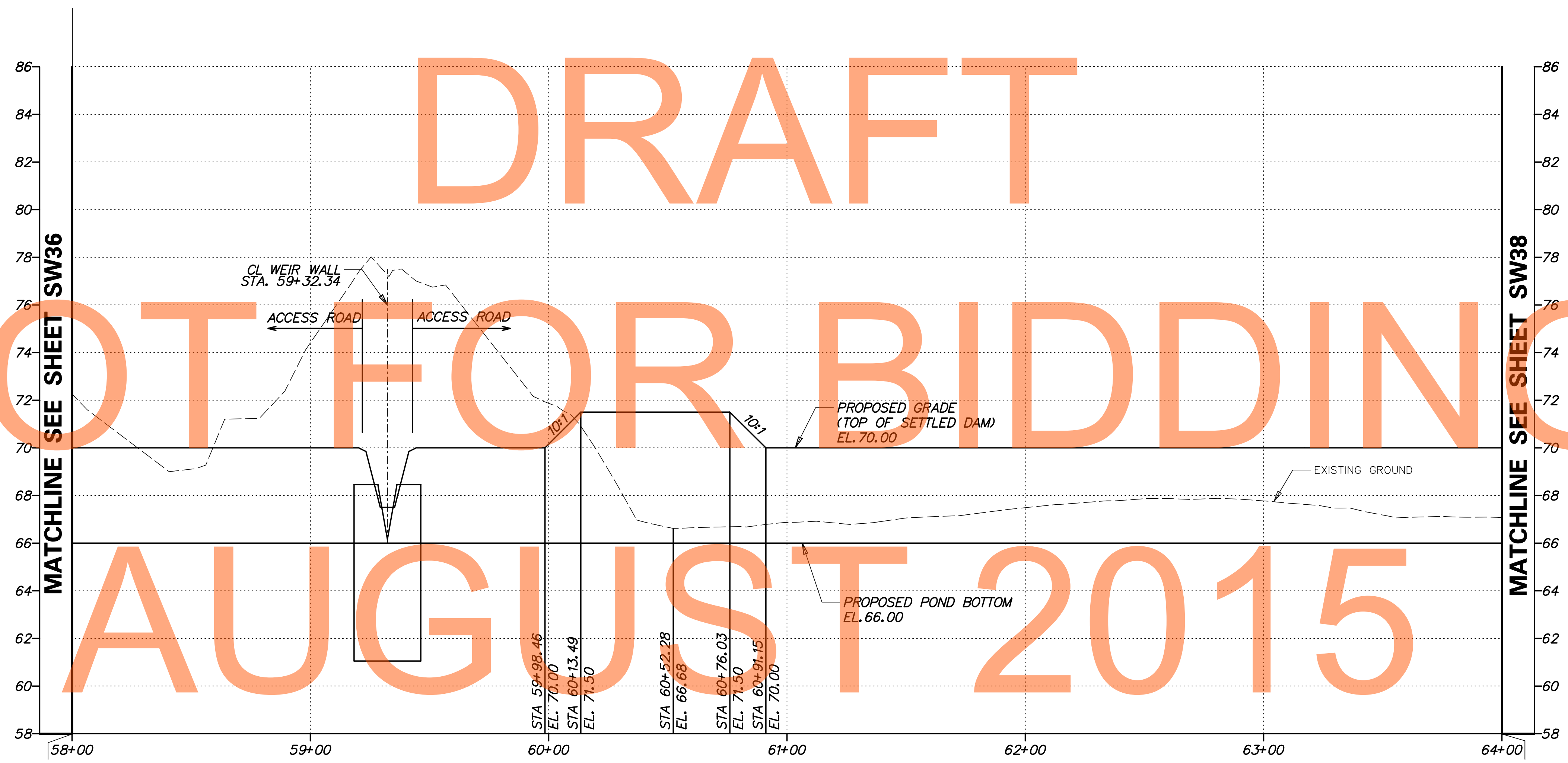
STORMWATER
 MANAGEMENT DETAILS
 BMP 670 (BASIN 9A)

SW-60
SHEET NO.
745
TOTAL SHTS.
1256

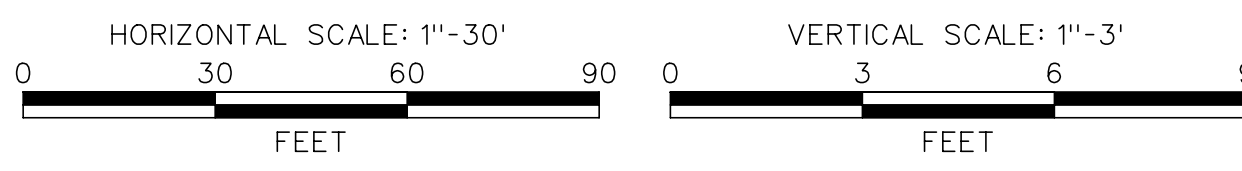
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NOT FOR BIDDING

AUGUST 2015



EMBANKMENT PROFILE FOR BMP 670 (BASIN 9A)



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ADDENDUMS / REVISIONS	

AS SHOWN

**US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD**

CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: DB
	CHECKED BY: JZ

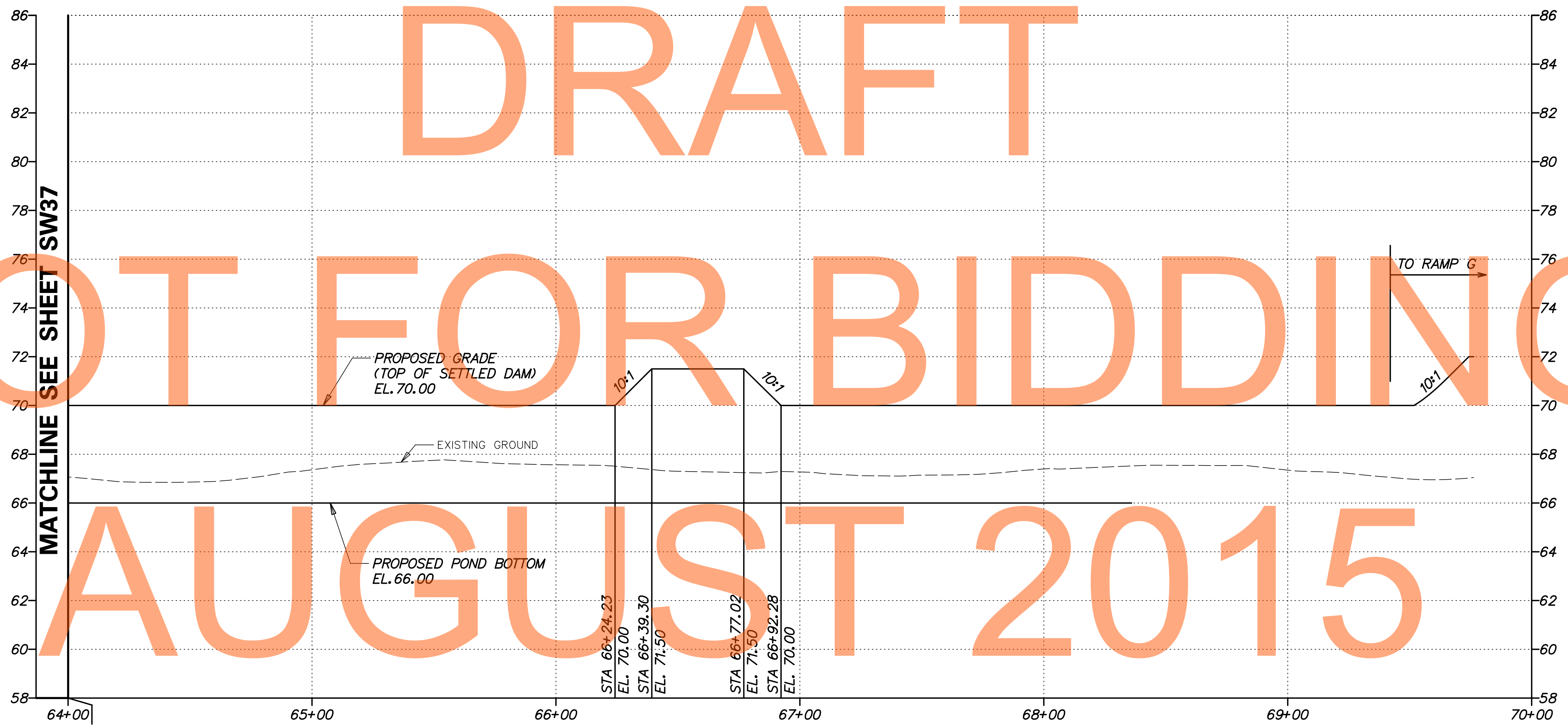
**STORMWATER
MANAGEMENT DETAILS
BMP 670 (BASIN 9A)**

SW-61
SHEET NO. 746
TOTAL SHTS. 1256

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AUGUST 2015



EMBANKMENT PROFILE FOR BMP 670 (BASIN 9A)

HORIZONTAL SCALE: 1"=30'
 VERTICAL SCALE: 1"=3'

0 30 60 90 0 3 6 9
 FEET FEET

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ADDENDUMS / REVISIONS

AS SHOWN

US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD

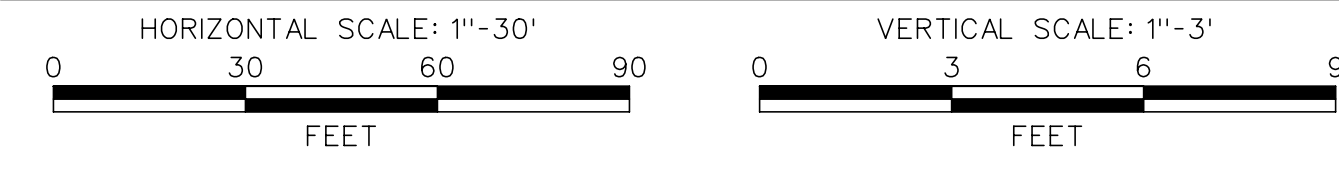
CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: DB
NEW CASTLE	CHECKED BY: JZ

STORMWATER
MANAGEMENT DETAILS
BMP 670 (BASIN 9A)

SW-62
SHEET NO.
747
TOTAL SHTS.
1256



SPILLWAY PROFILE - BMP 670 (BASIN 9A)



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AUGUST 2015

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ADDENDUMS / REVISIONS	

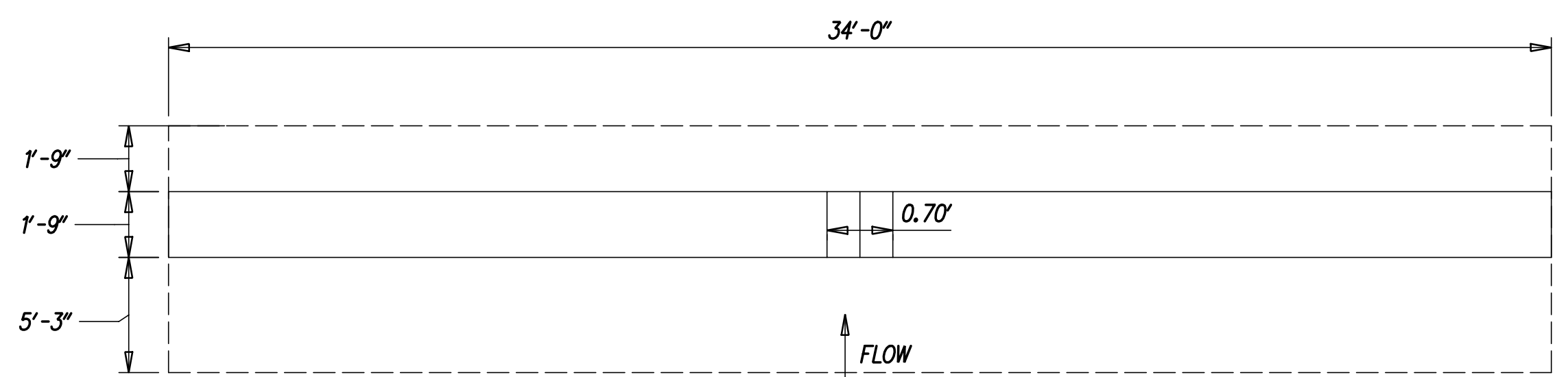
AS SHOWN

**US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD**

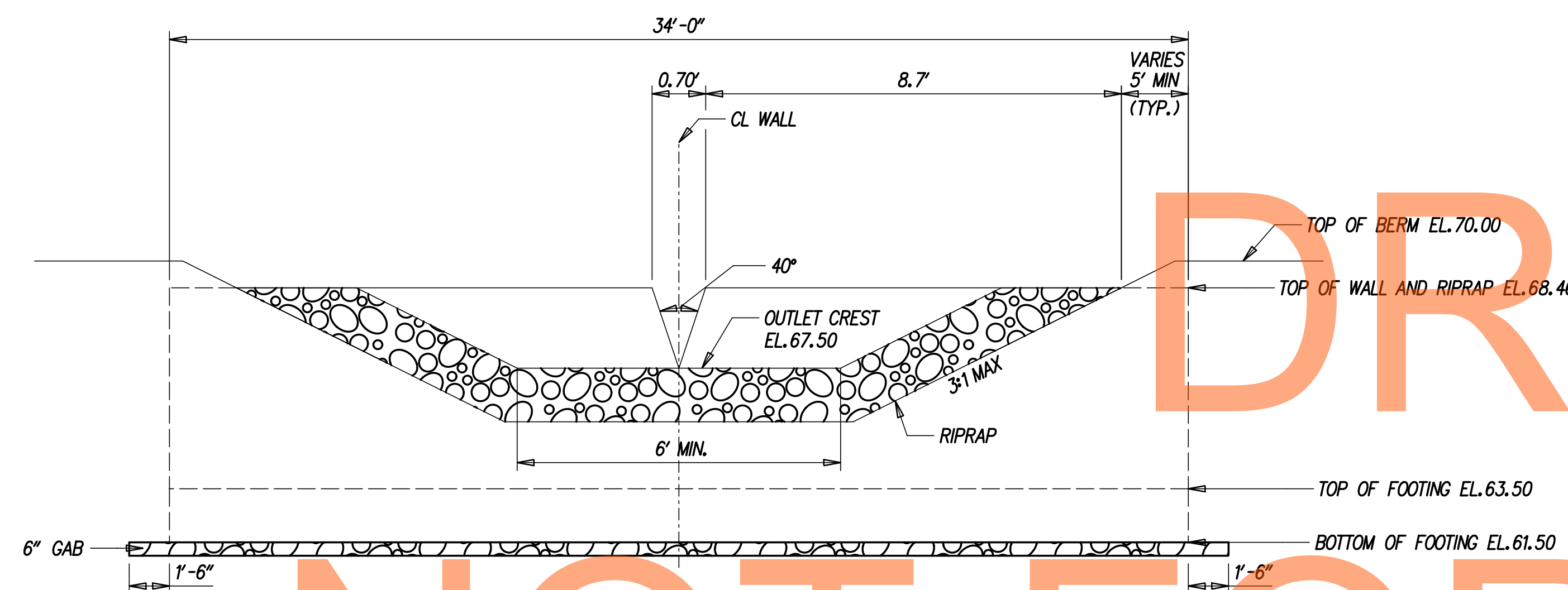
CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: DB
	CHECKED BY: JZ

**STORMWATER
MANAGEMENT DETAILS
BMP 670 (BASIN 9A)**

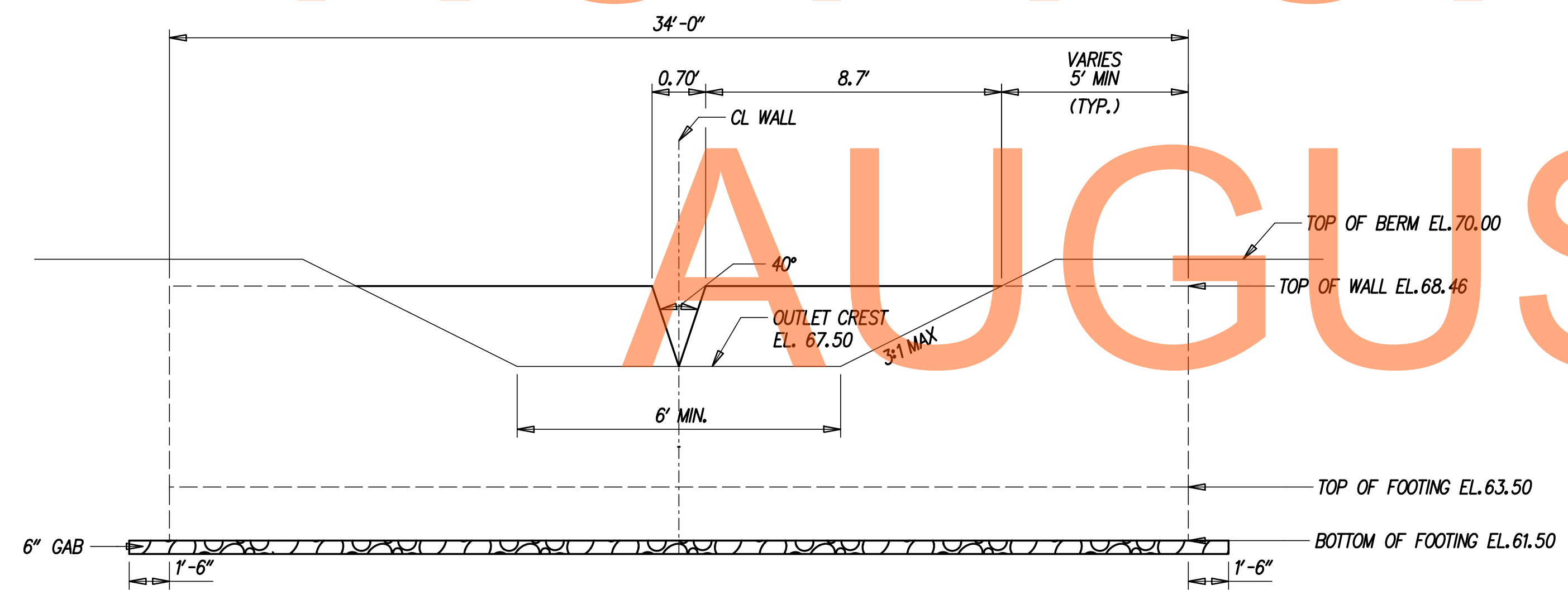
SW-63
SHEET NO. 748
TOTAL SHTS. 1256



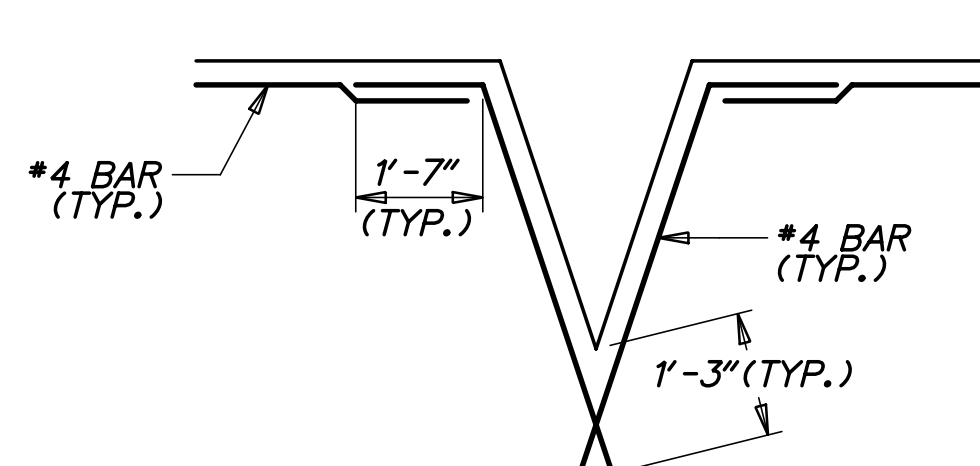
**WEIR WALL
PLAN**
SCALE: NONE



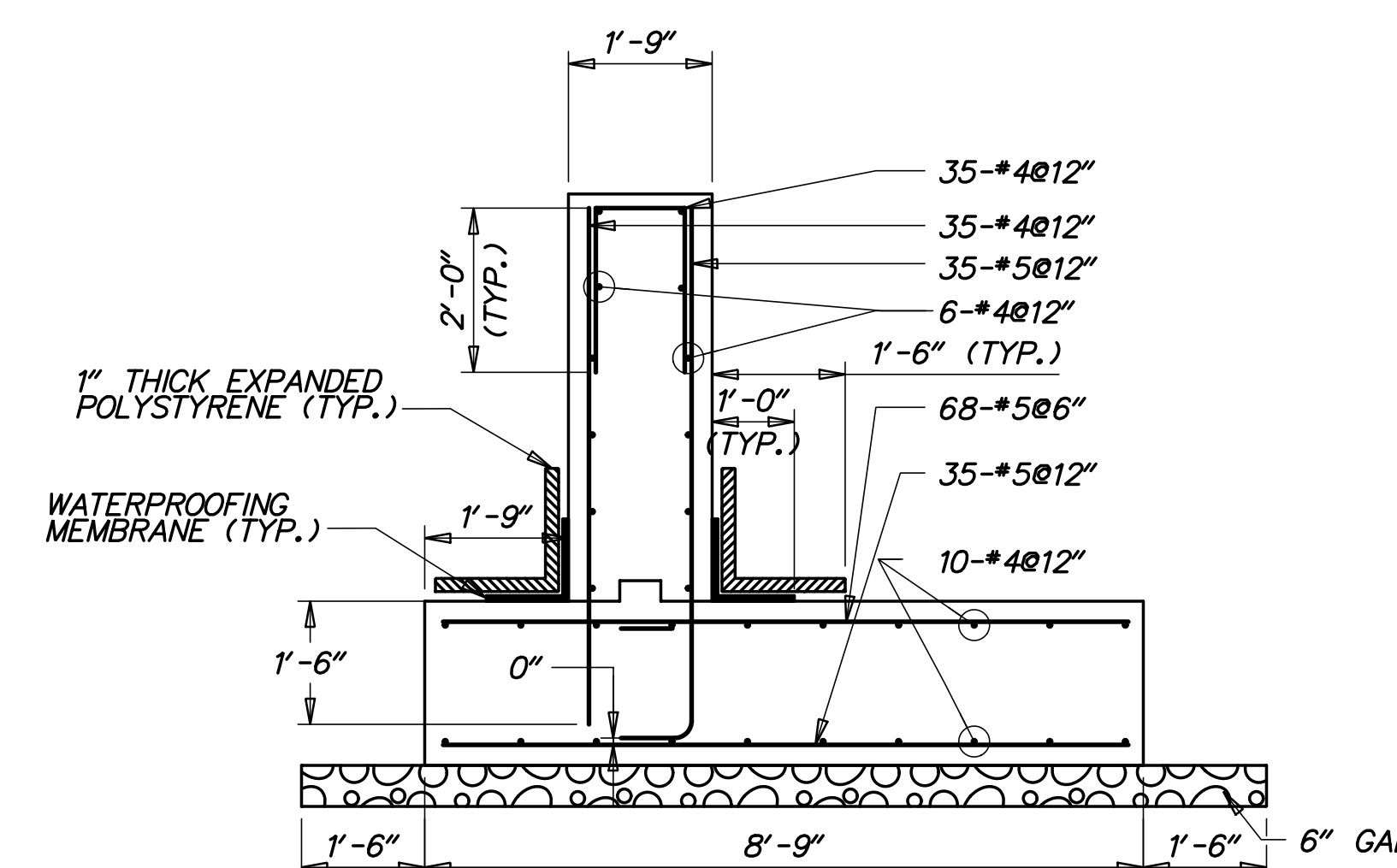
**WEIR WALL
EXTERIOR ELEVATION
WITH RIPRAP APRON**
SCALE: NONE



**WEIR WALL
INTERIOR ELEVATION**
SCALE: NONE



OPENING DETAILS
SCALE: NONE



WEIR WALL SECTION
SCALE: 1/2" = 1'-0"

GENERAL NOTES

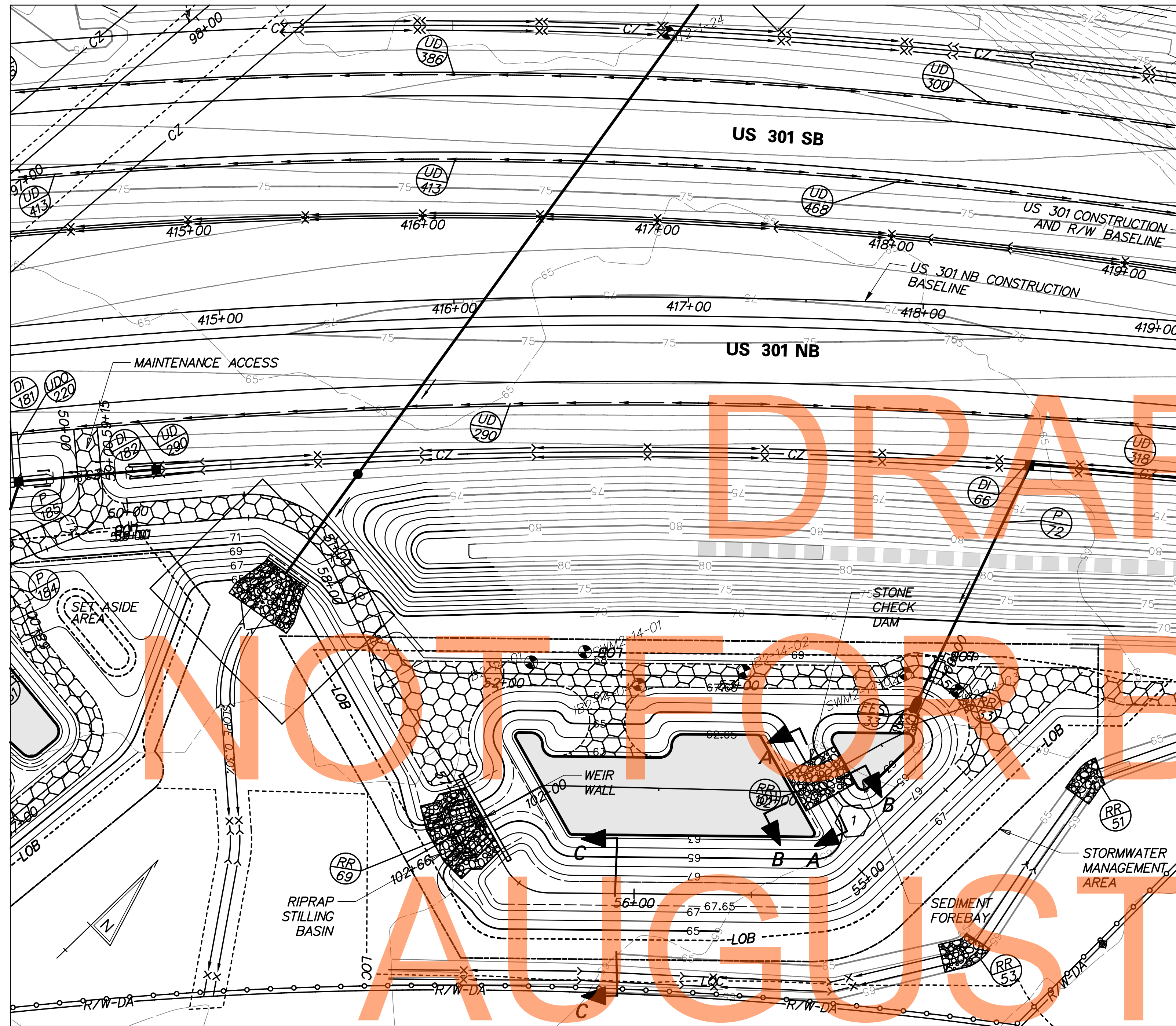
- DESIGN SPECIFICATIONS:
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 4TH EDITION, 2007, INCLUDING 2008 AND 2009 INTERIM REVISIONS, AND AS SUPPLEMENTED BY DELAWARE DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL, MAY 2005, INCLUDING LATEST REVISIONS.
PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS, AASHTO/AWS D1.5M/D1.5 BRIDGE WELDING CODE, AND CONTRACT SPECIAL PROVISIONS.
- LOADING:
UNIT WEIGHTS OF MATERIALS SHALL BE IN ACCORDANCE WITH THE DELAWARE DESIGN MANUAL.
- PORTLAND CEMENT CONCRETE:
PORTLAND CEMENT CONCRETE FOR CAST-IN-PLACE ELEMENTS SHALL BE AS FOLLOWS:
(28 DAY COMPRESSIVE STRENGTH)
(CLASS B, F'c=3000 PSI) - WEIR WALL FOOTING
(CLASS A, F'c=4500 PSI) - WEIR WALL STEM

WEIR WALLS MUST BE CAST-IN-PLACE.
MIX REQUIREMENTS SHALL CONFORM TO SECTION 812 OF THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
ALL EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED WITH 3/4" X 3/4" MILLED CHAMFER STRIPS EXCEPT ON UNEXPOSED FOOTINGS.
- BAR REINFORCEMENT:
REINFORCING STEEL SHALL CONFORM TO AASHTO M31 (ASTM A615), GRADE 60 AND IS TO BE EPOXY COATED. FUSION-BONDED EPOXY COATED REINFORCING STEEL SHALL CONFORM TO AASHTO M284 (ASTM D3963).
PROVIDE 3" CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.
LAP LENGTH OF #4 BARS TO BE 3'-0". STAGGER SPLICE LOCATIONS.
DO NOT WELD GRADE 60 REINFORCING STEEL.
- CONSTRUCTION JOINTS:
KEYED CONSTRUCTION JOINTS SHALL BE 2" x 4" OR AS NOTED.
- WATERPROOFING MEMBRANE:
ADHESIVE BACKED WATERPROOFING MEMBRANE IS TO BE USED. SPLICING OF THE MEMBRANE IS PROHIBITED.
- REFER TO SPECIFICATION SECTION 272501 FOR CONSTRUCTION SEQUENCE.
- GAB IS INCIDENTAL TO WALL CONSTRUCTION.

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	DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	AS SHOWN	US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT	BRIDGE NO.	STORMWATER MANAGEMENT DETAILS BMP 670 (BASIN 9A)	SHEET NO.
						T20091303		
					COUNTY	CHECKED BY: JZ	TOTAL SHTS.	
					NEW CASTLE		1256	



PLAN - BMP 671 (BASIN 9B)

POND DESIGN SUMMARY				
DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC.FT.)
QUALITY STORM (1 YR)	4.83	0.00	63.55	0.112
10 - YEAR	14.17	1.02	65.24	0.420
100 - YEAR	30.00	8.54	66.64	0.788

DRAINAGE AREA TO FACILITY: 3.85 ACRES

MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY BY INFILTRATION OF 1 YEAR STORM RUNOFF, WATER QUANTITY FOR 10 AND 100 YEAR STORMS.

RIPRAP SCHEDULE		
NO.	TYPE	AREA (SY)
33	R-4	11
69	R-5	105
92	R-4	48

CHECK CONSTRUCTION PLANS FOR SCHEDULE OF RIPRAP OUTSIDE OF THE BASIN AREA.

INFILTRATION BASIN CONSTRUCTION SEQUENCE

THE STORMWATER MANAGEMENT BASIN SHALL FUNCTION AS AN INFILTRATION FACILITY AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:

SECTION 271 - STORMWATER MANAGEMENT POND
SECTION 272 - POND OUTLET STRUCTURE, CONCRETE

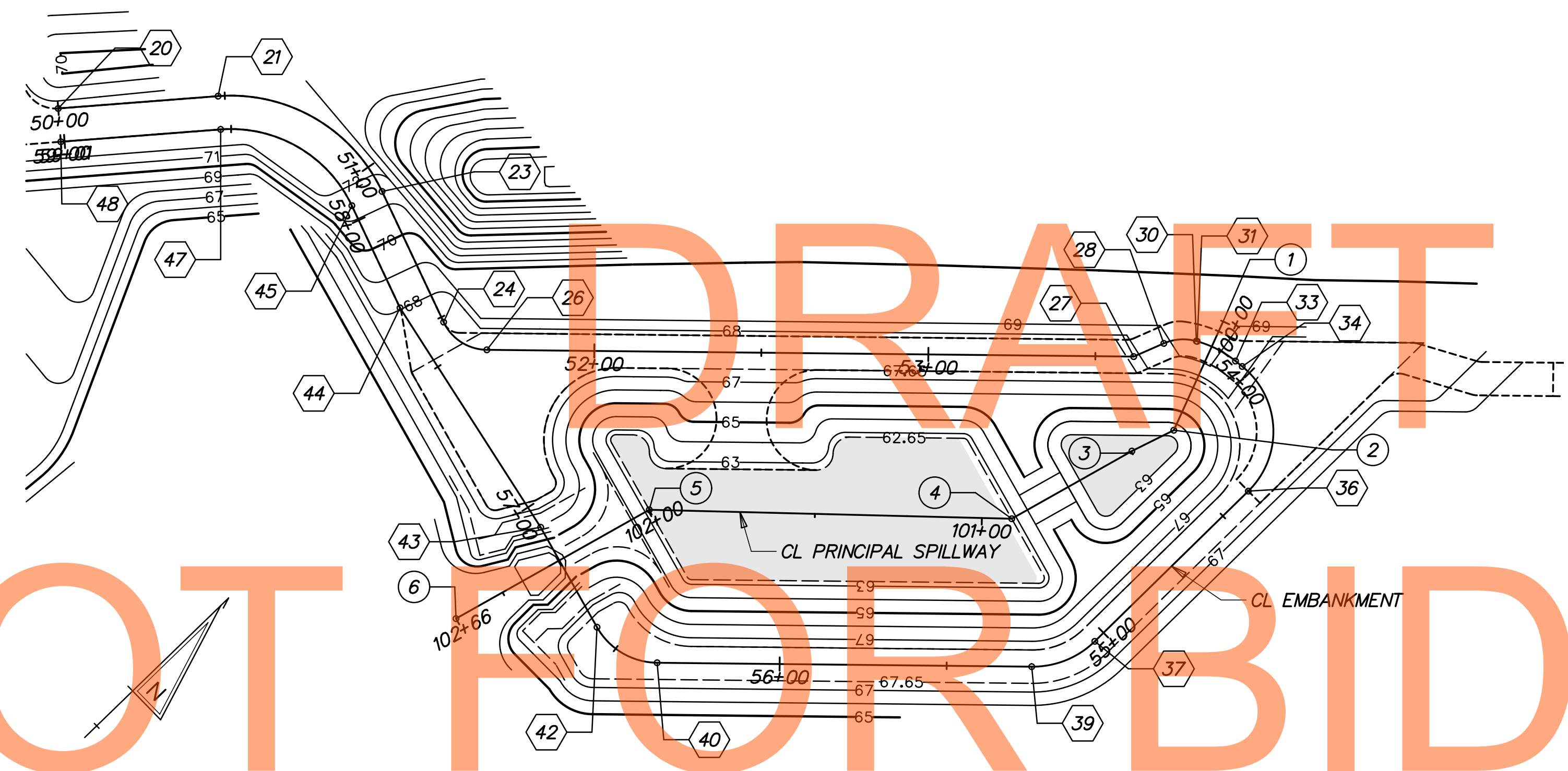
- PRIOR TO DISTURBANCE OF THE SITE UPSTREAM OF THE BASIN, INSTALL FENCE AROUND THE BASIN AREA TO PREVENT CONSTRUCTION EQUIPMENT AND STOCKPILED MATERIALS FROM ENTERING THE BASIN AREA AND COMPACTING THE SUBGRADE SOILS.
- CONSTRUCT INFILTRATION BASIN AFTER ALL AREAS DRAINING TO THE BASIN HAVE BEEN PERMANENTLY STABILIZED AND THE ENGINEER HAS APPROVED THE CONSTRUCTION. IF BASIN CONSTRUCTION CANNOT BE DELAYED UNTIL ITS DRAINAGE AREA IS STABILIZED, INSTALL DIVERSION BERMS OR OTHER SUITABLE MEASURES AROUND THE BASIN'S PERIMETER DURING ALL PHASES OF CONSTRUCTION TO DIVERT ALL RUNOFF AND SEDIMENT AWAY FROM THE BASIN. MAINTAIN THESE DIVERSION MEASURES UNTIL ALL CONSTRUCTION WITHIN THE BASIN'S DRAINAGE AREA IS COMPLETED AND THE DRAINAGE AREA STABILIZED.
- SEE CONSTRUCTION PLANS FOR EROSION AND SEDIMENT CONTROL MEASURES.
- CONSTRUCT THE INFILTRATION BASIN WITHOUT COMPACTING THE BASIN'S SUBGRADE SOILS. EXCAVATION SHALL BE PERFORMED BY CONSTRUCTION EQUIPMENT PLACED OUTSIDE THE BASIN, WHERE POSSIBLE. ALL EXCAVATION SHALL BE PERFORMED WITH THE LIGHTEST PRACTICAL EXCAVATION EQUIPMENT.
- CONSTRUCT WEIR WALL, RIPRAP ENERGY DISSIPATER AT END OF PRINCIPAL SPILLWAY AND PARTIAL EMBANKMENT AS NEEDED TO INSTALL WEIR WALL. DE-WATER FOUNDATION AS NEEDED IN ACCORDANCE WITH SECTION 111 AND USE SUMP PIT FOR PUMPING.
- EXCAVATE THE POND AND COMPLETE THE EMBANKMENT, GRADES AND DETAILS SHOWN IN THE CONSTRUCTION PLANS. DURING EXCAVATION, THE CONTRACTOR SHALL SALVAGE AND STOCKPILE SOILS CLASSIFIED AS CH, CL, SC AND GG PER THE UNIFIED SOIL CLASSIFICATION SYSTEM TO BE USED TO CONSTRUCT EMBANKMENT. THE ABOVE CLASSIFIED SOILS MAY BE OBTAINED FROM ELSEWHERE WITHIN THE PROJECT LIMITS, IF NECESSARY.
- STABILIZE BASIN EMBANKMENT AND BOTTOM WITH PERMANENT SEEDING.
- REMOVE EROSION AND SEDIMENT CONTROLS, WATER DIVERSION PRACTICES AND FENCE UPON FINAL STABILIZATION AND APPROVAL FROM INSPECTOR.
- THE CONTRACTOR SHALL PROVIDE 'AS-BUILT' DRAWINGS OF ALL STORMWATER MANAGEMENT FACILITIES SUCH AS PONDS, INFILTRATION BASINS, BIOFILTRATION SWALES, ETC. 'AS-BUILT' DRAWINGS SHALL SHOW THE ACTUAL FINISHED GROUND CONTOURS, OUTLET STRUCTURE DIMENSIONS AND ELEVATIONS, ETC. AS THEY EXIST AT THE COMPLETION OF THE PROJECT. THESE DRAWINGS SHALL BE SIGNED BY A PROFESSIONAL ENGINEER OR LAND SURVEYOR.

PLANTING SCHEDULE

PLACE PERMANENT GRASS SEEDING - WET GROUND UP TO ELEVATION 63.65.
PLACE PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 63.65.
PLACE TOPSOIL ABOVE BASIN BOTTOM ELEVATION 62.65.

POND QUANTITIES			
ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	1758	CY
272501	POND OUTLET STRUCTURE, 12, SPECIAL	1	EACH
302011	DELAWARE NO. 3 STONE	254	TON
302012	DELAWARE NO. 57 STONE	25	TON
712005	R-4 RIPRAP	11	SY
712006	R-5 RIPRAP	105	SY
712020	R-4 RIPRAP	34	TON
713001	GEOTEXTILES, STABILIZATION	1694	SY
713003	GEOTEXTILES, RIPRAP	202	SY
733002	TOPSOILING, 6" DEPTH	5816	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	5575	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	696	SY

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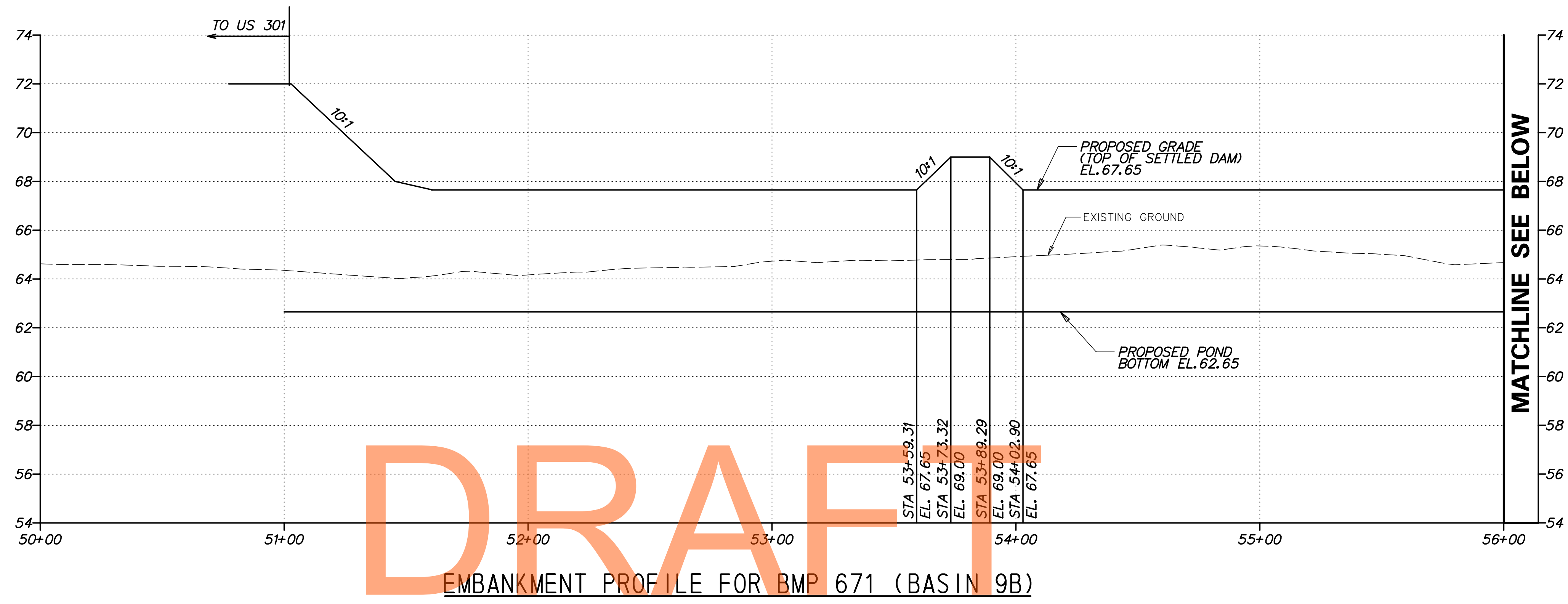
STAKEOUT - BMP 671 (BASIN 9B)

CL PRINCIPAL SPILLWAY		
STATION	NORTHING	EASTING
① POB STA. 100+00.00	536927.7913	567355.1840
② PI STA. 100+35.76	536894.5140	567368.2814
③ PI STA. 100+49.77	536881.1680	567364.0277
④ PI STA. 100+91.07	536841.2281	567353.5286
⑤ PI STA. 101+99.59	536765.2259	567276.0608
⑥ POE STA. 102+65.99	536701.0060	567259.1792

CL EMBANKMENT		
STATION	NORTHING	EASTING
②① POB STA. 50+00.00	536721.9405	567066.5934
②① PC STA. 50+48.00	536758.8587	567097.2638
22 PI STA. 50+82.49	536785.3875	567119.3030
②③ PT STA. 51+08.38	536774.2083	567151.9301
②④ PC STA. 51+51.64	536760.1874	567192.8512
25 PI STA. 51+60.71	536757.2454	567201.4378
②⑥ PT STA. 51+67.85	536763.6938	567207.8254
②⑦ PI STA. 53+61.47	536901.2534	567344.0865
②⑧ PC STA. 53+71.32	536910.4787	567347.5257
29 PI STA. 53+76.50	536915.3296	567349.3340
③① PT STA. 53+81.26	536917.9383	567353.8056
③① PC STA. 53+81.54	536918.0799	567354.0484
32 PI STA. 53+88.12	536921.3934	567359.7281
③③ PT STA. 53+94.51	536922.1987	567366.2542
③④ PC STA. 53+97.12	536922.5176	567368.8381
35 PI STA. 54+25.26	536925.9640	567396.7662
③⑥ PT STA. 54+39.34	536897.8244	567396.8997
③⑦ PC STA. 55+03.65	536833.5142	567397.2047
38 PI STA. 55+14.67	536822.4963	567397.2569
③⑨ PT STA. 55+24.54	536814.6684	567389.5030
④① PC STA. 56+36.67	536735.0078	567310.5944
41 PI STA. 56+48.74	536726.4289	567302.0965
④② PT STA. 56+58.57	536729.4998	567290.4183
④③ PI STA. 56+92.93	536738.2378	567257.1893
④④ PI STA. 57+70.98	536753.7811	567180.6972
④⑤ PC STA. 58+04.82	536764.7482	567148.6887
46 PI STA. 58+32.41	536773.6915	567122.5871
④⑦ PT STA. 58+53.13	536752.4685	567104.9557
④⑧ POE STA. 59+01.12	536715.5503	567074.2853

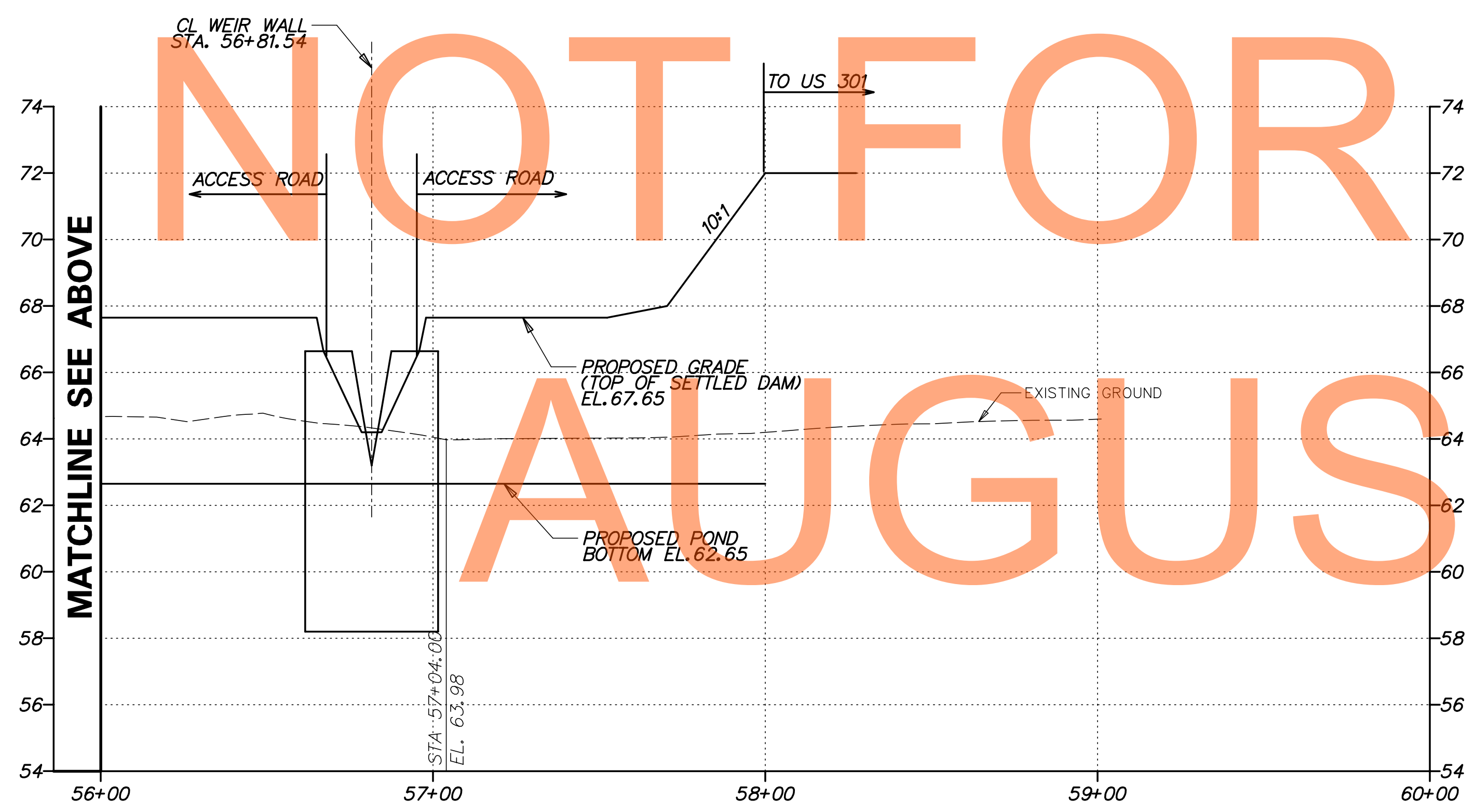
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DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	SCALE 0 30 60 90 FEET	US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT T20091303	BRIDGE NO.	STORMWATER MANAGEMENT DETAILS BMP 671 (BASIN 9B)	SHEET NO. 752
					NEW CASTLE		DESIGNED BY: DB

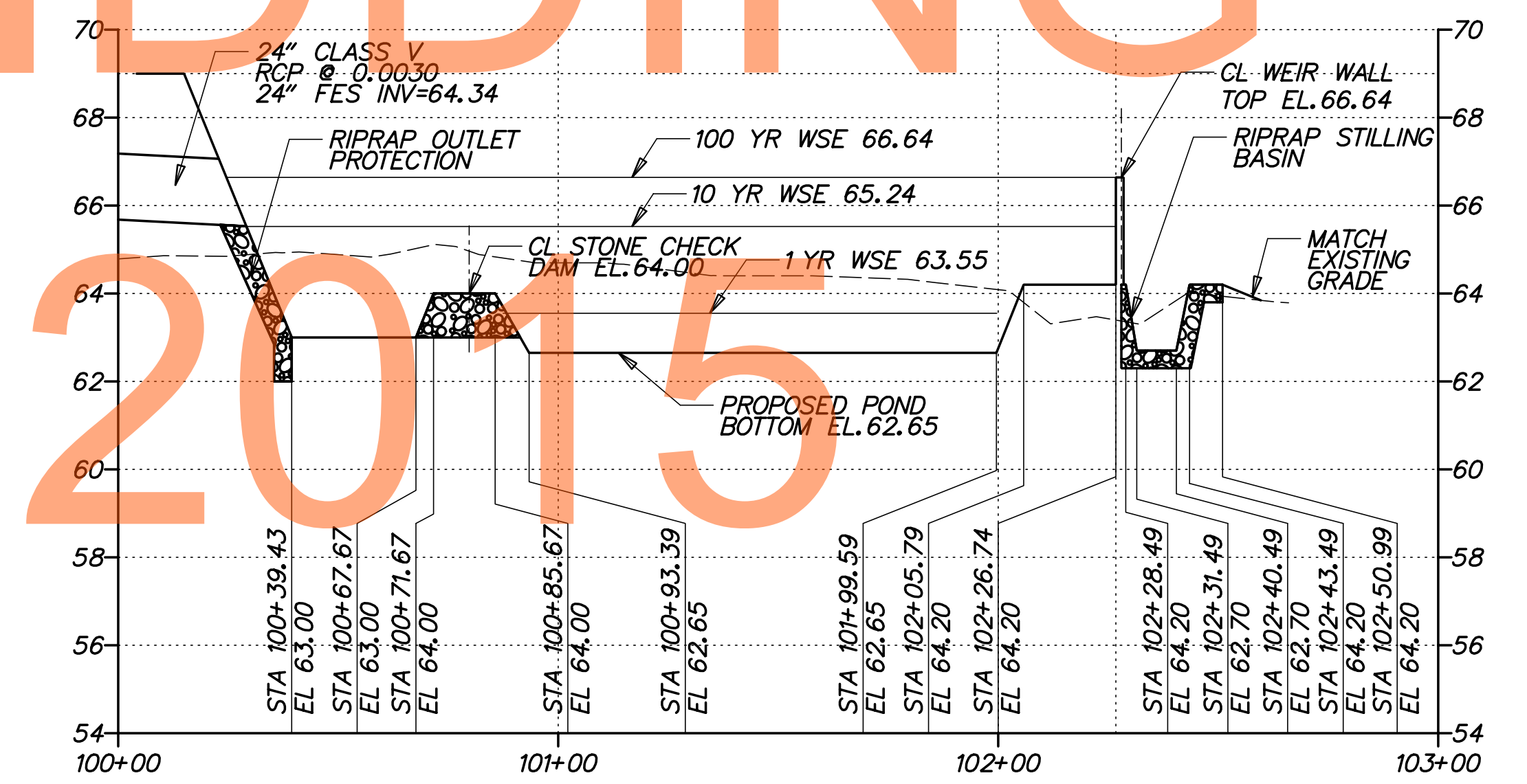
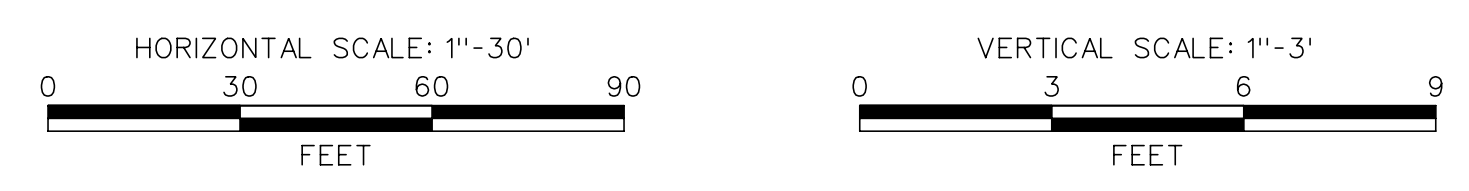


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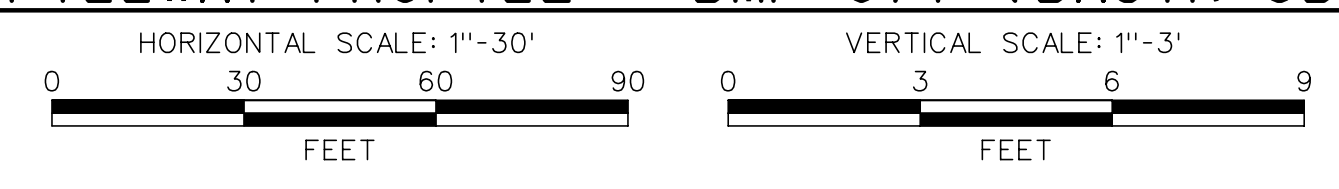
EMBANKMENT PROFILE FOR BMP 671 (BASIN 9B)



EMBANKMENT PROFILE FOR BMP 671 (BASIN 9B)



SPILLWAY PROFILE - BMP 671 (BASIN 9B)



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ADDENDUMS / REVISIONS

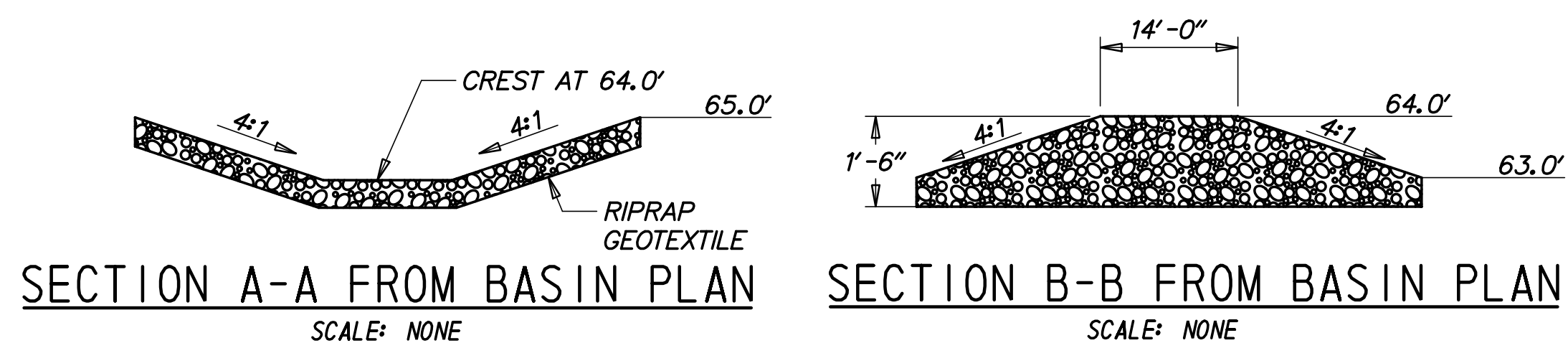
AS SHOWN

**US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD**

CONTRACT T200911303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: DB
	CHECKED BY: JZ

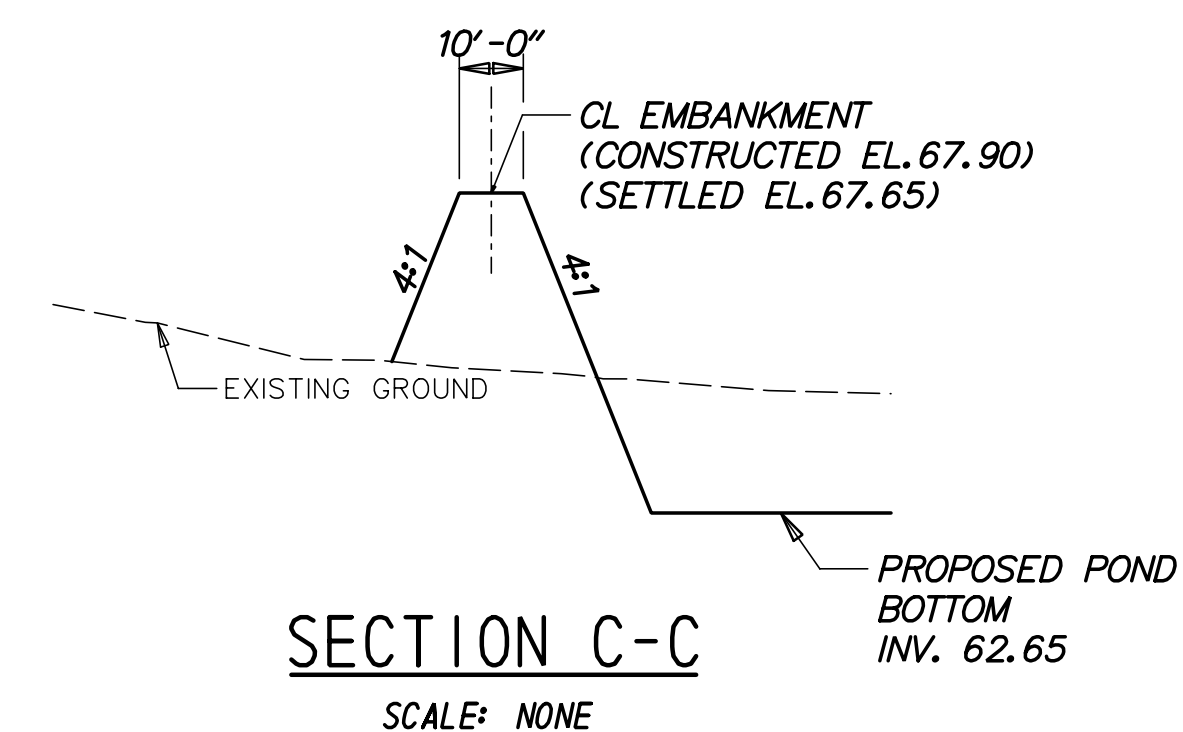
**STORMWATER
MANAGEMENT DETAILS
BMP 671 (BASIN 9B)**

SW-68
SHEET NO. 753
TOTAL SHTS. 1256

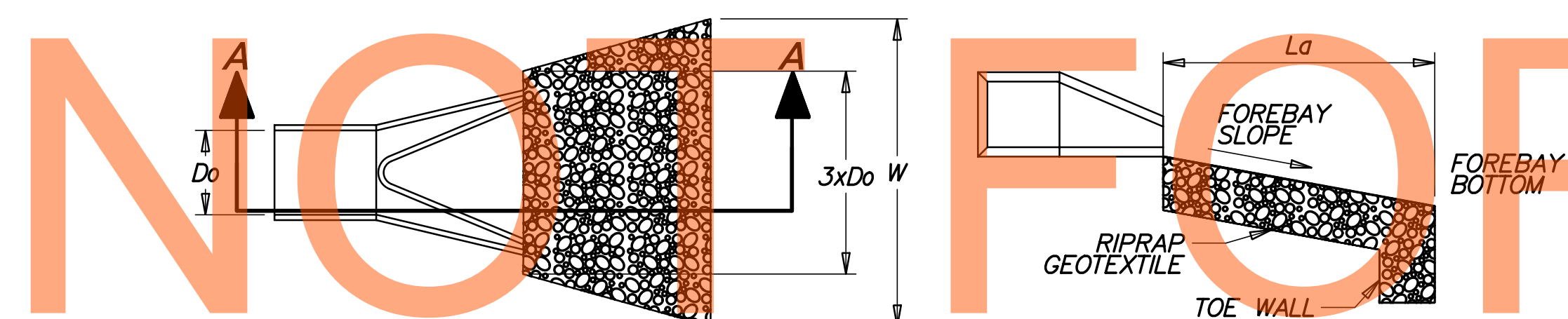


STONE CHECK DAM
SCALE: NONE

- NOTES:
 1. RIPRAP ITEM# 712020
 2. GEOTEXTILE, RIPRAP ITEM# 713003
 3. SEE STANDARD NO. E-10 FOR GEOTEXTILE PLACEMENT.



SECTION C-C
SCALE: NONE



PLAN
SCALE: NONE

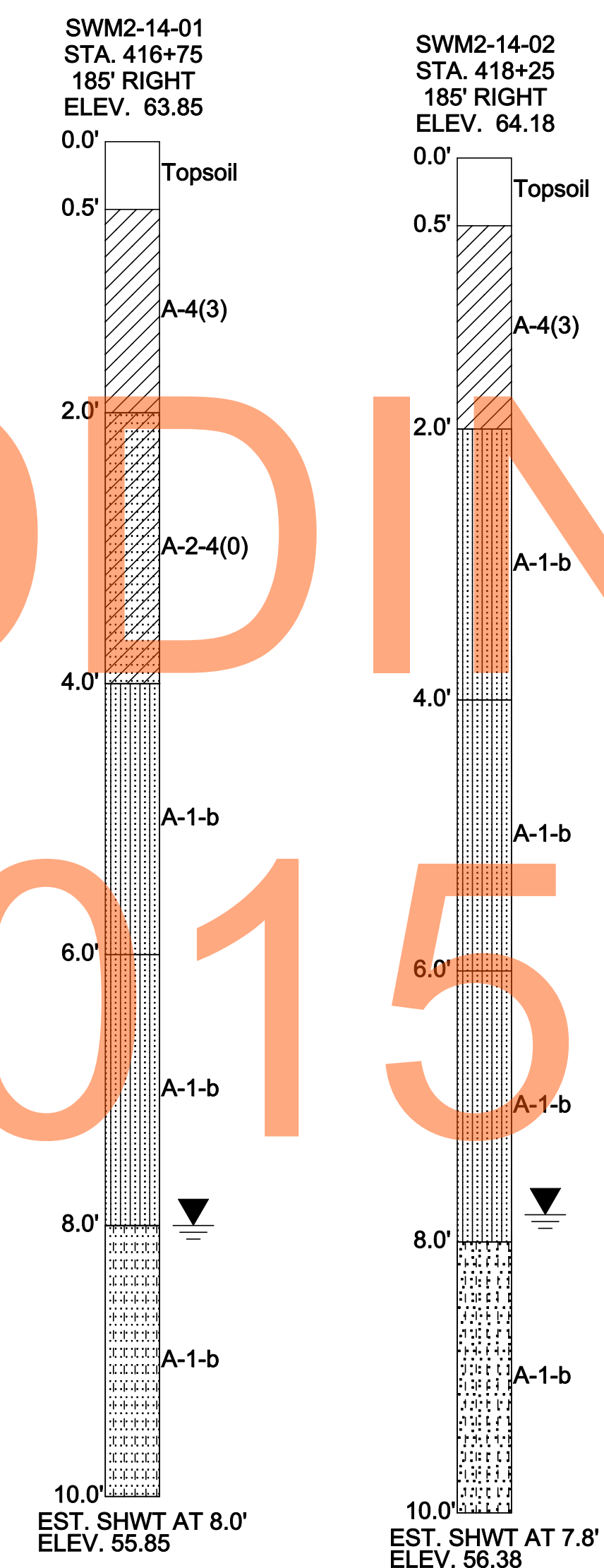
SECTION A-A
SCALE: NONE

DATA				
PIPE DIAMETER (Do)	APRON LENGTH (La)	APRON WIDTH (W)	RIPRAP SIZE (R No.)	
33	2.0'	4.9'	10.0'	R-4

FES ID	Do	La	W	R No.
33	2.0'	4.9'	10.0'	R-4

FOREBAY RIPRAP OUTLET PROTECTION
SCALE: NONE

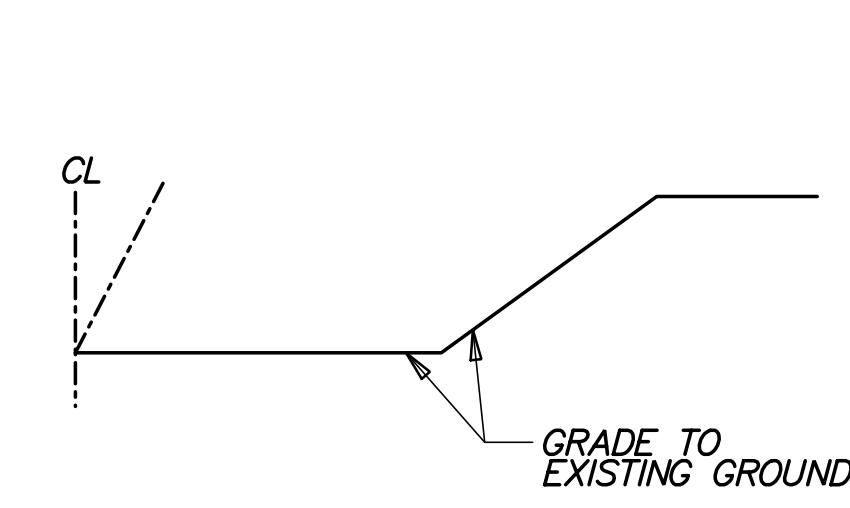
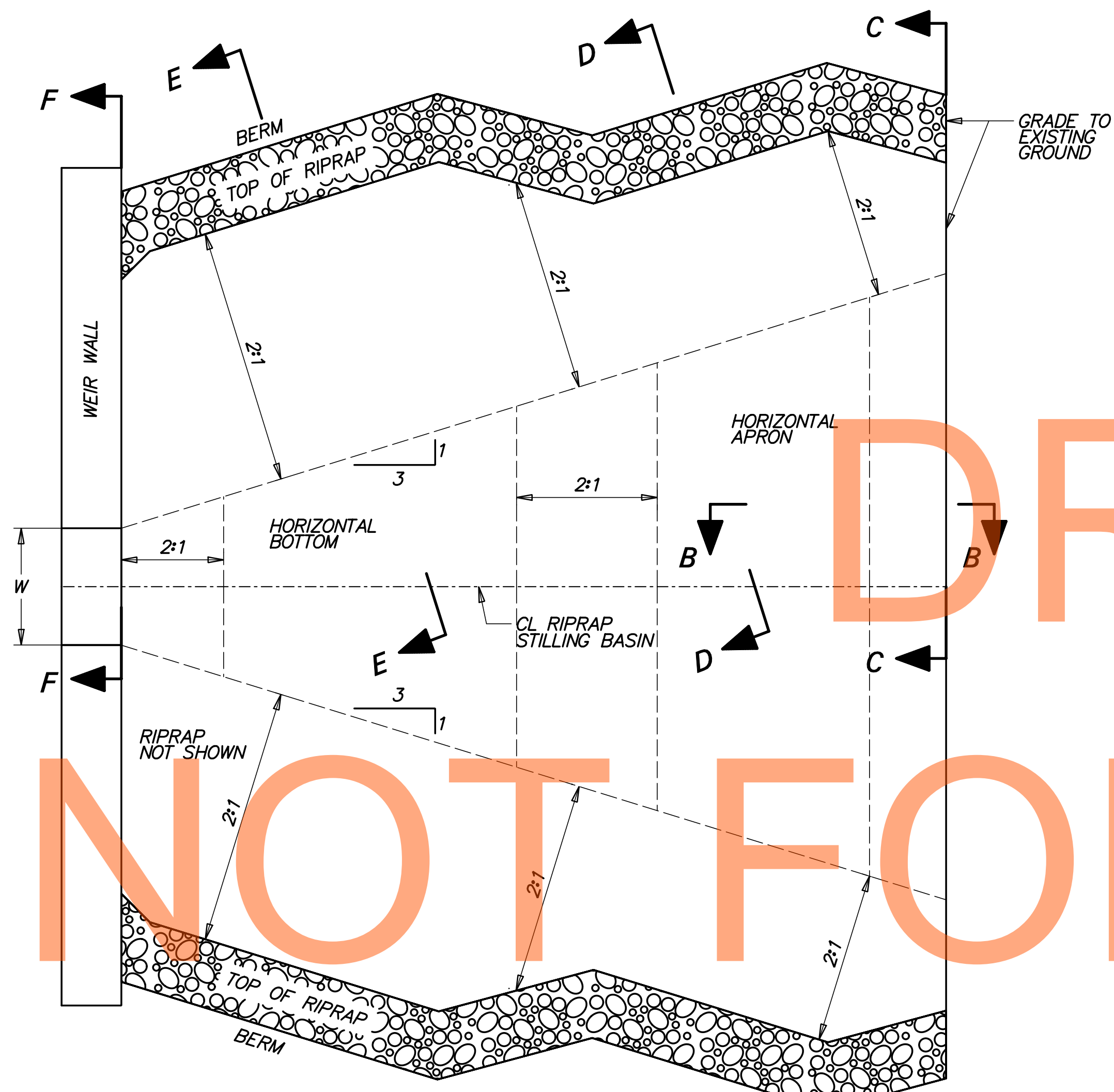
- NOTES:
 1. RIPRAP ITEM# 712005.
 2. GEOTEXTILES, RIPRAP ITEM# 713003
 3. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.
 4. DEPRESS CENTERLINE OF APRON SLIGHTLY TO PREVENT EDGE CUTTING.



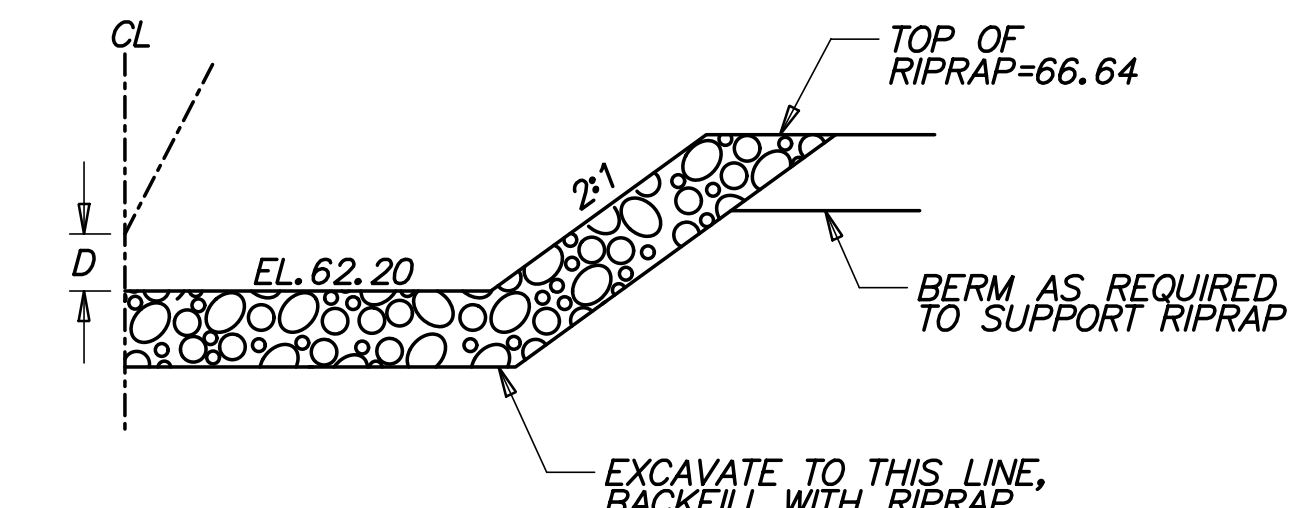
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NOT FOR BIDDING
AUGUST 2015

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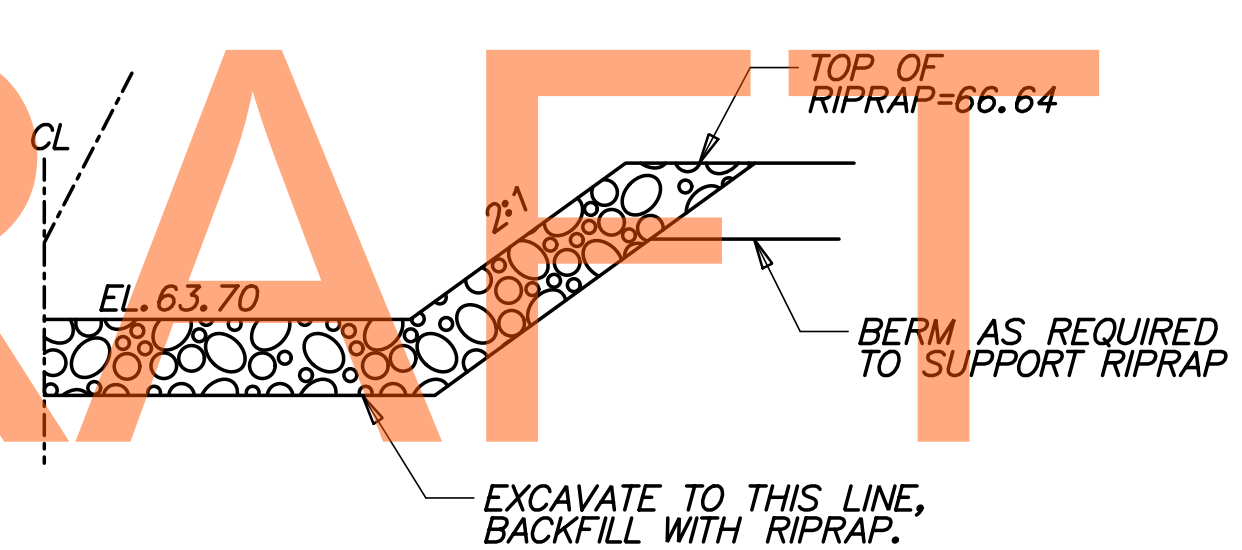
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	AS SHOWN	US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT T20091303	BRIDGE NO.	STORMWATER MANAGEMENT DETAILS BMP 671 (BASIN 9B)	SHEET NO. 754
					COUNTY NEW CASTLE		DESIGNED BY: DB
				CHECKED BY: JZ			



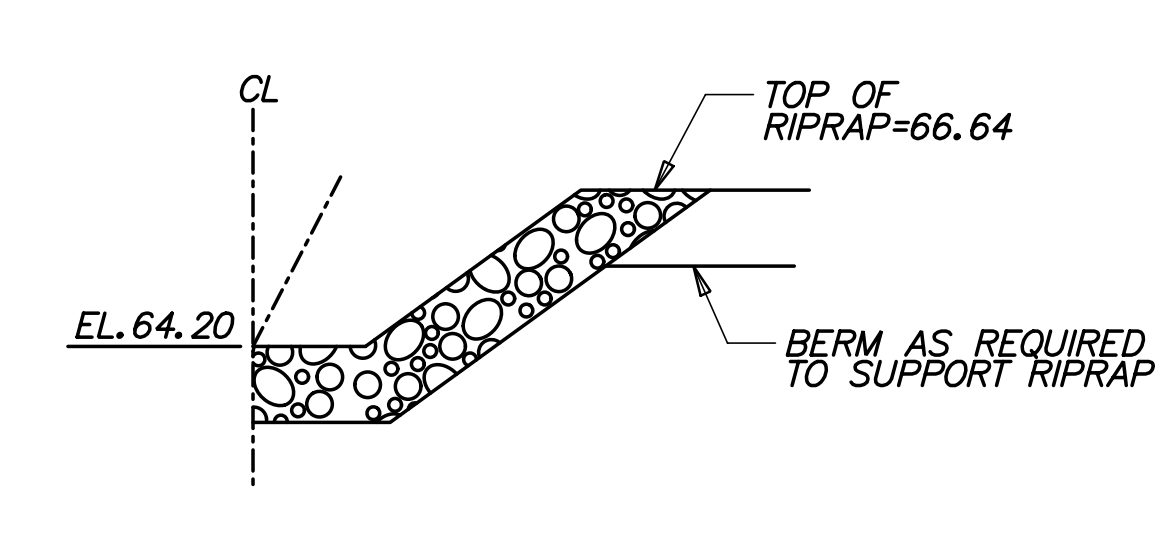
SECTION C-C
SCALE: NONE



SECTION E-E
SCALE: NONE



SECTION D-D
SCALE: NONE



SECTION F-F
SCALE: NONE

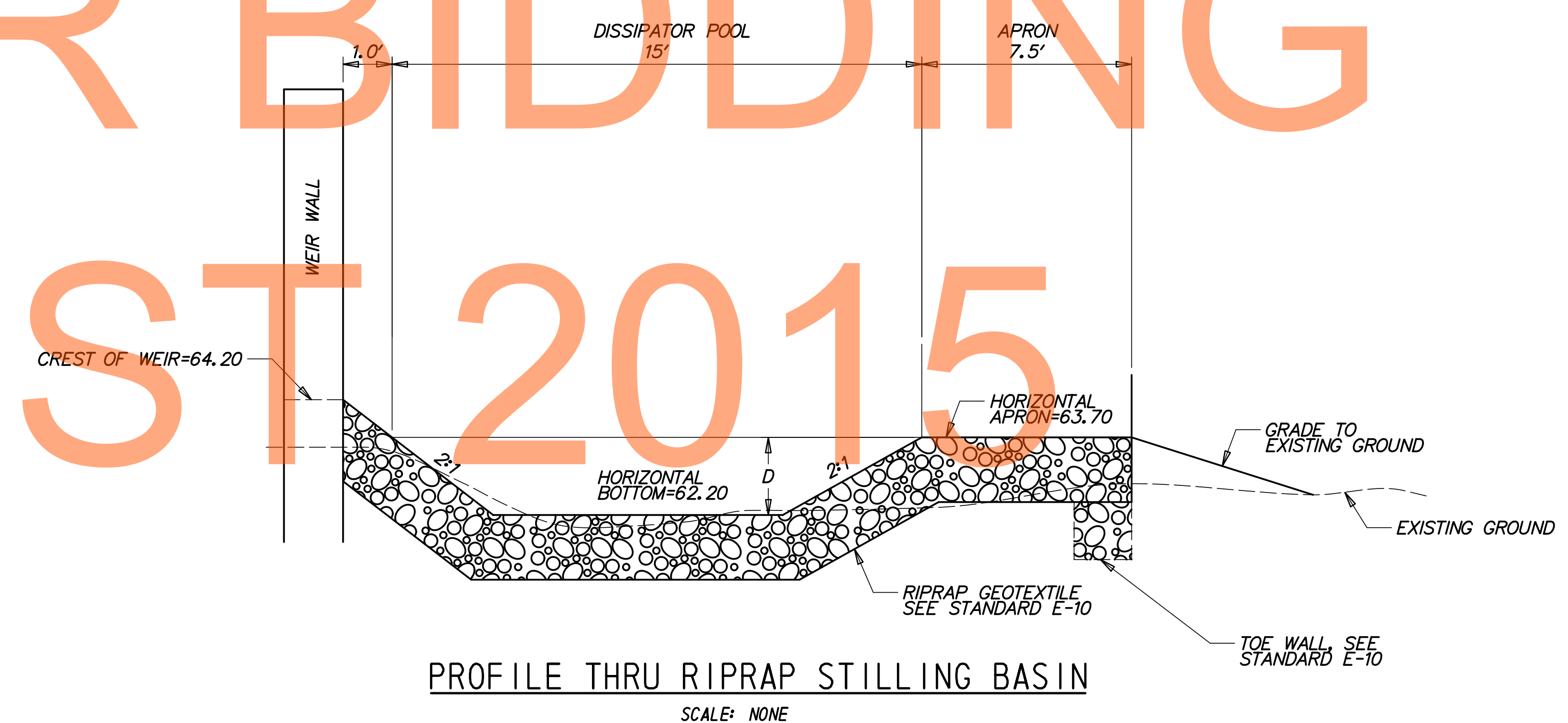


PLAN
SCALE: NONE

DATA

TOP OF V-NOTCH WEIR WIDTH $W = 1.78'$
 DEPTH OF BASIN FROM WEIR CREST $D = 1.50'$
 RIPRAP SIZE (R No.) = R-5 WITH NO. 57 STONE

- NOTES:**
1. RIPRAP ITEM# 712006.
 2. GEOTEXTILES, RIPRAP ITEM# 713003
 3. DELAWARE NO. 57 STONE ITEM# 302012
 4. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.



PROFILE THRU RIPRAP STILLING BASIN
SCALE: NONE

RIPRAP STILLING BASIN
SCALE: NONE

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ADDENDUMS / REVISIONS	

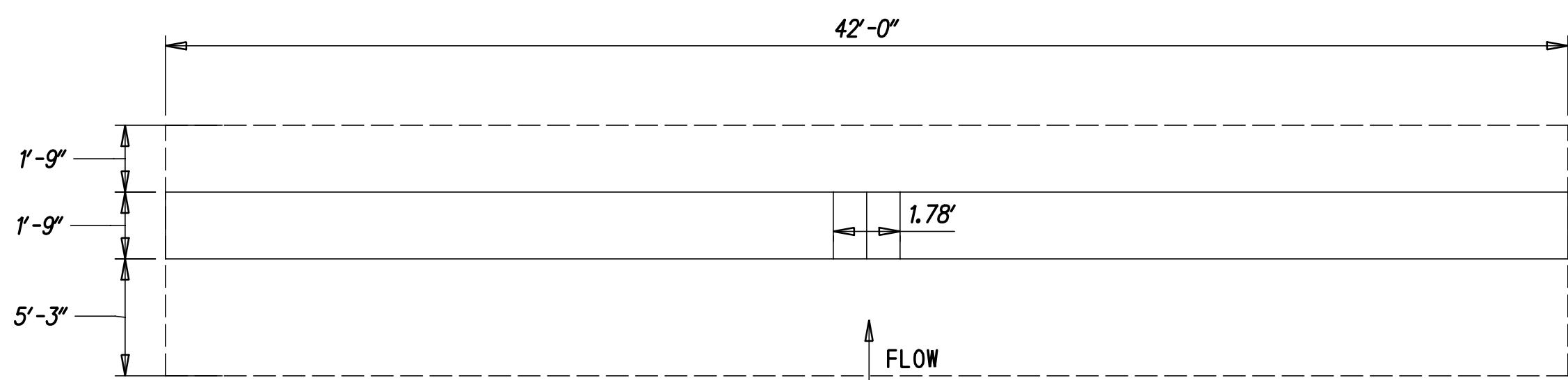
AS SHOWN

US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD

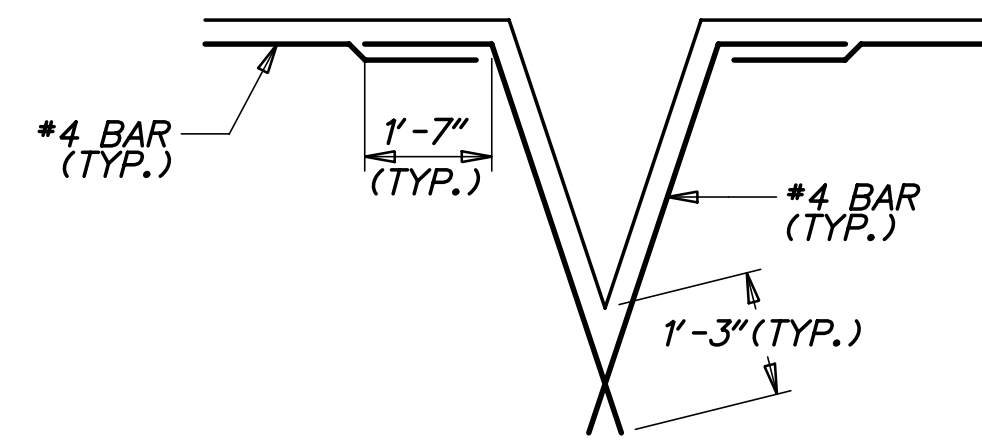
CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: DB
NEW CASTLE	CHECKED BY: JZ

**STORMWATER
MANAGEMENT DETAILS
BMP 671 (BASIN 9B)**

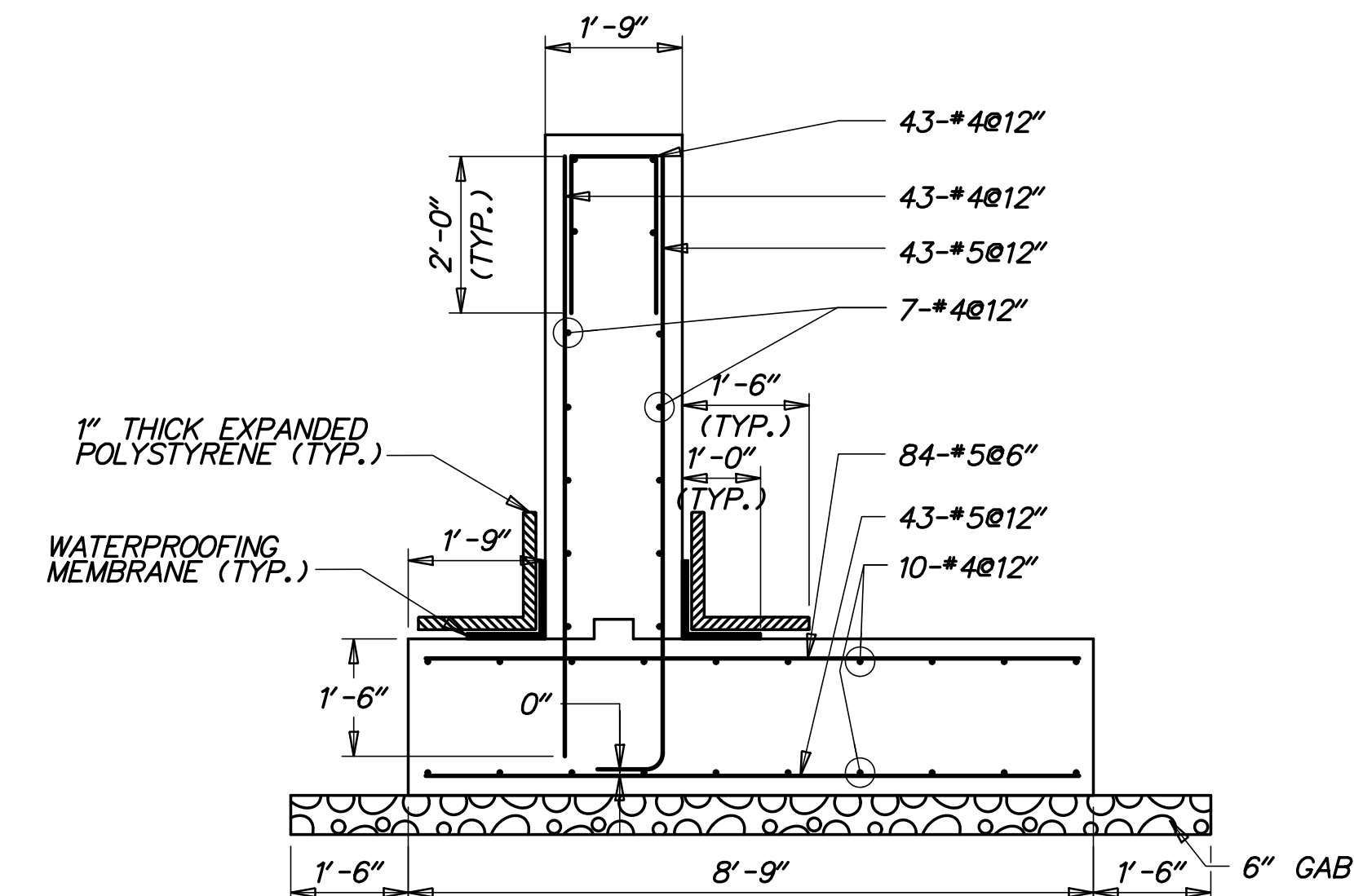
SW-70
SHEET NO.
755
TOTAL SHTS.
1256



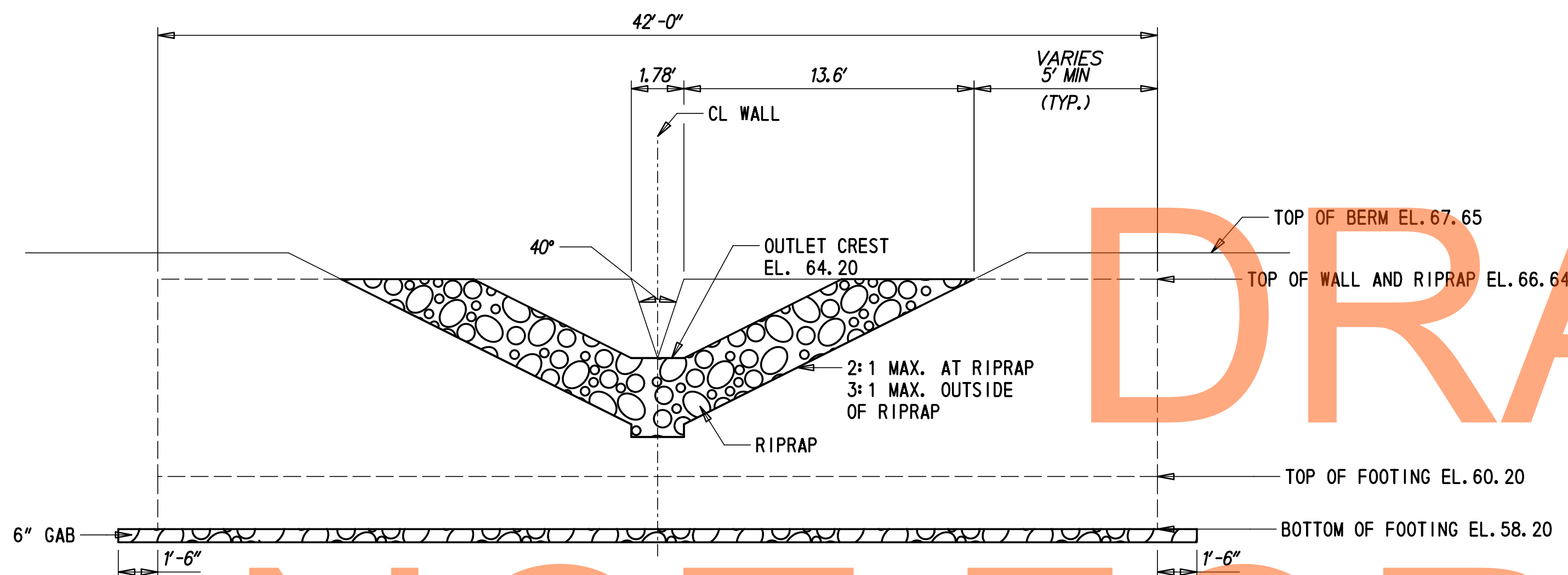
WEIR WALL PLAN
SCALE: NONE



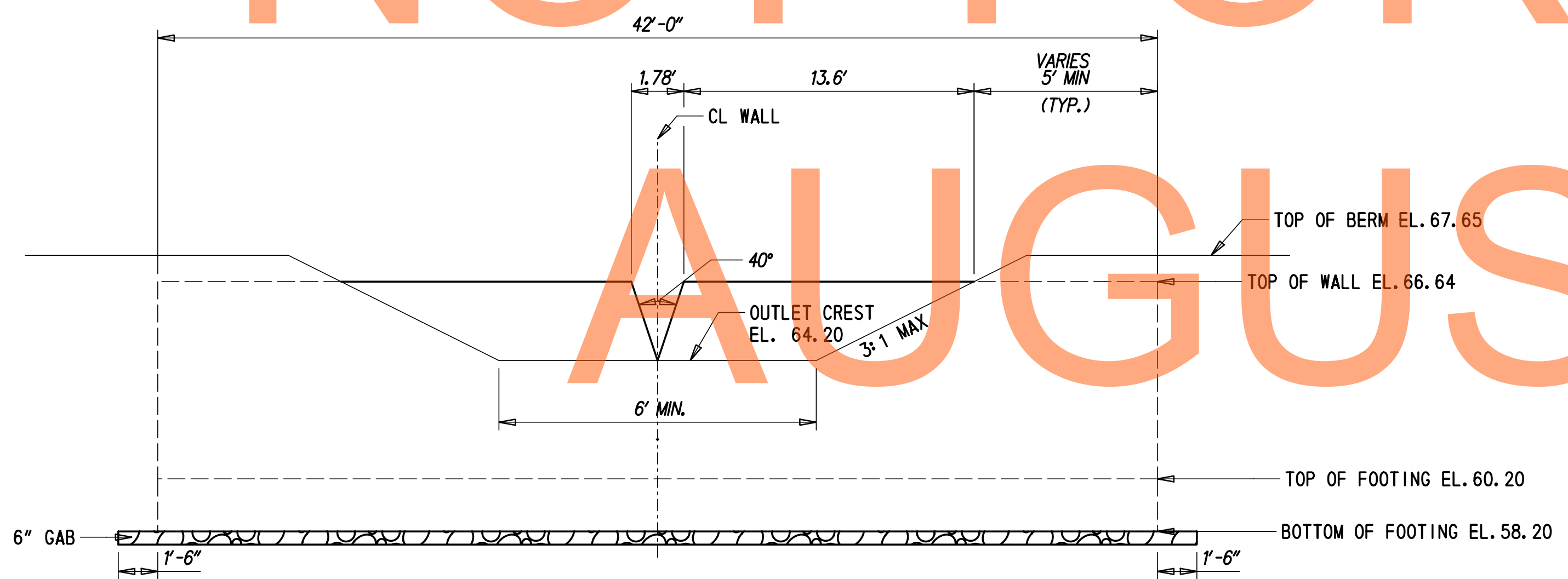
OPENING DETAILS
SCALE: NONE



WEIR WALL SECTION
SCALE: 1/2" = 1'-0"



WEIR WALL EXTERIOR ELEVATION WITH RIPRAP STILLING BASIN
SCALE: NONE



WEIR WALL INTERIOR ELEVATION
SCALE: NONE

GENERAL NOTES

- DESIGN SPECIFICATIONS:**
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 4TH EDITION, 2007, INCLUDING 2008 AND 2009 INTERIM REVISIONS, AND AS SUPPLEMENTED BY DELAWARE DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL, MAY 2005, INCLUDING LATEST REVISIONS.
PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS, AASHTO/AWS D1.5M/D1.5 BRIDGE WELDING CODE, AND CONTRACT SPECIAL PROVISIONS.
- LOADING:**
UNIT WEIGHTS OF MATERIALS SHALL BE IN ACCORDANCE WITH THE DELAWARE DESIGN MANUAL.
- PORTLAND CEMENT CONCRETE:**
PORTLAND CEMENT CONCRETE FOR CAST-IN-PLACE ELEMENTS SHALL BE AS FOLLOWS:
(28 DAY COMPRESSIVE STRENGTH)
(CLASS B, F'c=3000 PSI) - WEIR WALL FOOTING
(CLASS A, F'c=4500 PSI) - WEIR WALL STEM
WEIR WALLS MUST BE CAST-IN-PLACE.
MIX REQUIREMENTS SHALL CONFORM TO SECTION 812 OF THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
ALL EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED WITH 3/4" x 3/4" MILLED CHAMFER STRIPS EXCEPT ON UNEXPOSED FOOTINGS.
- BAR REINFORCEMENT:**
REINFORCING STEEL SHALL CONFORM TO AASHTO M31 (ASTM A615), GRADE 60 AND IS TO BE EPOXY COATED. FUSION-BONDED EPOXY COATED REINFORCING STEEL SHALL CONFORM TO AASHTO M284 (ASTM D3963).
PROVIDE 3" CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.
LAP LENGTH OF #4 BARS TO BE 3'-0". STAGGER SPLICE LOCATIONS.
DO NOT WELD GRADE 60 REINFORCING STEEL.
- CONSTRUCTION JOINTS:**
KEYED CONSTRUCTION JOINTS SHALL BE 2" x 4" OR AS NOTED.
- WATERPROOFING MEMBRANE:**
ADHESIVE BACKED WATERPROOFING MEMBRANE IS TO BE USED. SPLICING OF THE MEMBRANE IS PROHIBITED.
- REFER TO SPECIFICATION SECTION 272501 FOR CONSTRUCTION SEQUENCE.
- GAB IS INCIDENTAL TO WALL CONSTRUCTION.

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ADDENDUMS / REVISIONS	

AS SHOWN

US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: DB
NEW CASTLE	CHECKED BY: JZ

STORMWATER MANAGEMENT DETAILS BMP 671 (BASIN 9B)

SW-71
SHEET NO.
756
TOTAL SHTS.
1256

POND CONSTRUCTION SEQUENCE AND NOTES

THE STORMWATER MANAGEMENT POND SHALL FUNCTION AS A SEDIMENT BASIN DURING ROADWAY CONSTRUCTION AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE STANDARD SPECIFICATIONS:

- SECTION 271 - STORMWATER MANAGEMENT POND
SECTION 272 - POND OUTLET STRUCTURE, CONCRETE
1. INSTALL STABILIZED CONSTRUCTION ENTRANCE.
 2. CLEAR AND GRUB FOR INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS.
 3. INSTALL PERIMETER SEDIMENT CONTROLS AS SHOWN.
 4. CLEAR AND GRUB REMAINING AREA FOR POND CONSTRUCTION.
 5. CONSTRUCT WEIR WALL, RIPRAP STILLING BASIN AND PARTIAL EMBANKMENT AS NEEDED TO INSTALL WEIR WALL. INSTALL SKIMMER AND DE-WATER FOUNDATION AS NEEDED IN ACCORDANCE WITH SECTION 111 AND USE SUMP PIT FOR PUMPING. (SEE EROSION AND SEDIMENT CONTROL DETAILS FOR SKIMMER DE-WATERING DEVICE INSTALLATION)
 6. EXCAVATE THE POND AND COMPLETE THE EMBANKMENT, GRADES AND DETAILS SHOWN IN THE CONSTRUCTION PLANS. DURING EXCAVATION, THE CONTRACTOR SHALL SALVAGE AND STOCKPILE SOILS CLASSIFIED AS CH, CL, SC AND GG PER THE UNIFIED SOIL CLASSIFICATION SYSTEM TO BE USED TO CONSTRUCT EMBANKMENT. THE ABOVE CLASSIFIED SOILS MAY BE OBTAINED FROM ELSEWHERE WITHIN THE PROJECT LIMITS, IF NECESSARY.
 7. STABILIZE ALL BARE AREAS.
NOTE: SEE CONSTRUCTION SEQUENCE PLANS FOR LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.
 8. THE CONTRACTOR SHALL PROVIDE 'AS-BUILT' DRAWINGS OF ALL STORMWATER MANAGEMENT FACILITIES SUCH AS PONDS, INFILTRATION BASINS, BIOFILTRATION SWALES, ETC. 'AS-BUILT' DRAWINGS SHALL SHOW THE ACTUAL FINISHED GROUND CONTOURS, OUTLET STRUCTURE DIMENSIONS AND ELEVATIONS, ETC. AS THEY EXIST AT THE COMPLETION OF THE PROJECT. THESE DRAWINGS SHALL BE SIGNED BY A PROFESSIONAL ENGINEER OR LAND SURVEYOR.

MAINTENANCE OF POND AS A SEDIMENT BASIN

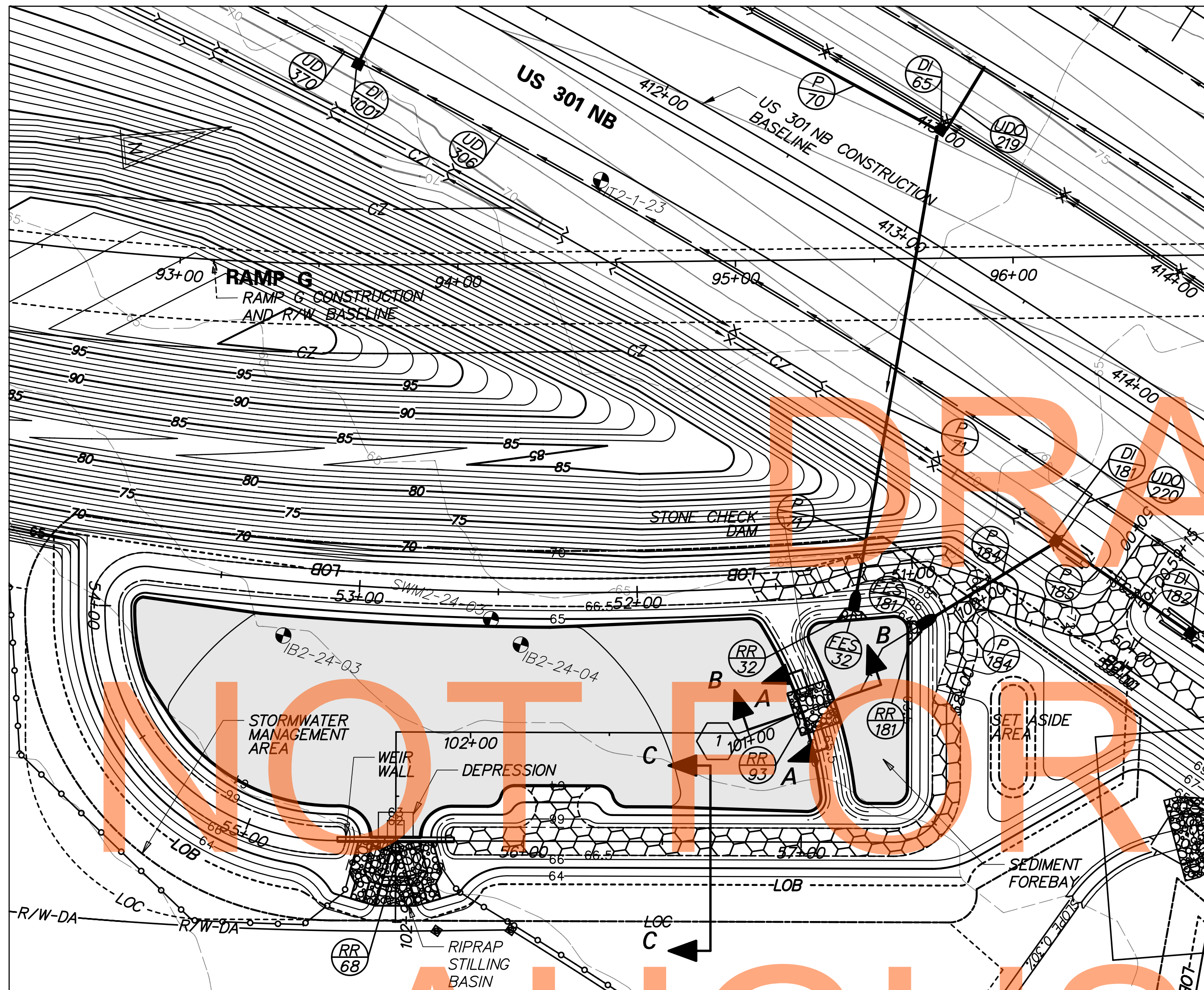
1. CONTRACTOR SHALL INSPECT THE BASIN IMMEDIATELY AFTER EVERY RAIN AND MAKE REPAIRS AS NEEDED.
2. CONTRACTOR SHALL CLEARLY MARK THE CLEANOUT ELEVATION ON A STAKE DRIVEN INTO THE GROUND AT A LOCATION CLEARLY VISIBLE FROM THE EMBANKMENT. SEDIMENT SHALL BE REMOVED WHEN CLEANOUT ELEVATION IS REACHED AND DISPOSED OF AT A LOCATION APPROVED BY THE ENGINEER. CLEANOUT ELEVATION IS 63.74 IN PHASE 1, AND 64.02 IN PHASE 2.

CONVERSION TO PERMANENT STORMWATER MANAGEMENT POND

1. CONVERT THE BASIN INTO THE PERMANENT STORMWATER MANAGEMENT POND AFTER ALL AREAS DRAINING TO THE POND HAVE BEEN PERMANENTLY STABILIZED AND THE ENGINEER HAS APPROVED THE CONVERSION.
2. REMOVE ACCUMULATED SEDIMENT TO FINAL GRADE AND DISPOSE SEDIMENT AT A LOCATION APPROVED BY THE ENGINEER.
3. COMPLETE STABILIZATION OF ALL BARE AREAS. REMOVE EROSION AND SEDIMENT CONTROL MEASURES AND DEACTIVATE DE-WATERING DEVICE.

PLANTING SCHEDULE

1. POND BOTTOM AND EMBANKMENT SHALL RECEIVE PERMANENT GRASS SEEDING - DRY GROUND .
2. EMBANKMENT SLOPE SHALL BE TOPSOILED AND MULCHED.



PLAN - BMP 672 (BASIN 9C)

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POND DESIGN SUMMARY				
DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC.FT.)
QUALITY STORM (1YR)	3.97	0.52	63.90	0.087
10 - YEAR	13.27	2.12	64.58	0.304
100 - YEAR	29.68	6.67	65.49	0.688

DRAINAGE AREA TO FACILITY: 4.06 ACRES

MANAGEMENT PROVIDED BY FACILITY: WATER QUANTITY FOR 1, 10 AND 100 YEAR STORMS.

SKIMMER DEVICE SUMMARY		
	PHASE 1	PHASE 2
SKIMMER ELEVATION	63.08	63.08
ORIFICE SIZE (IN)	2	2
BLOCK WEIR UP TO ELEVATION	64.18	64.48

RIPRAP SCHEDULE		
NO.	TYPE	AREA (SY)
32	R-4	4
68	R-5	93
93	R-4	27
181	R-4	4

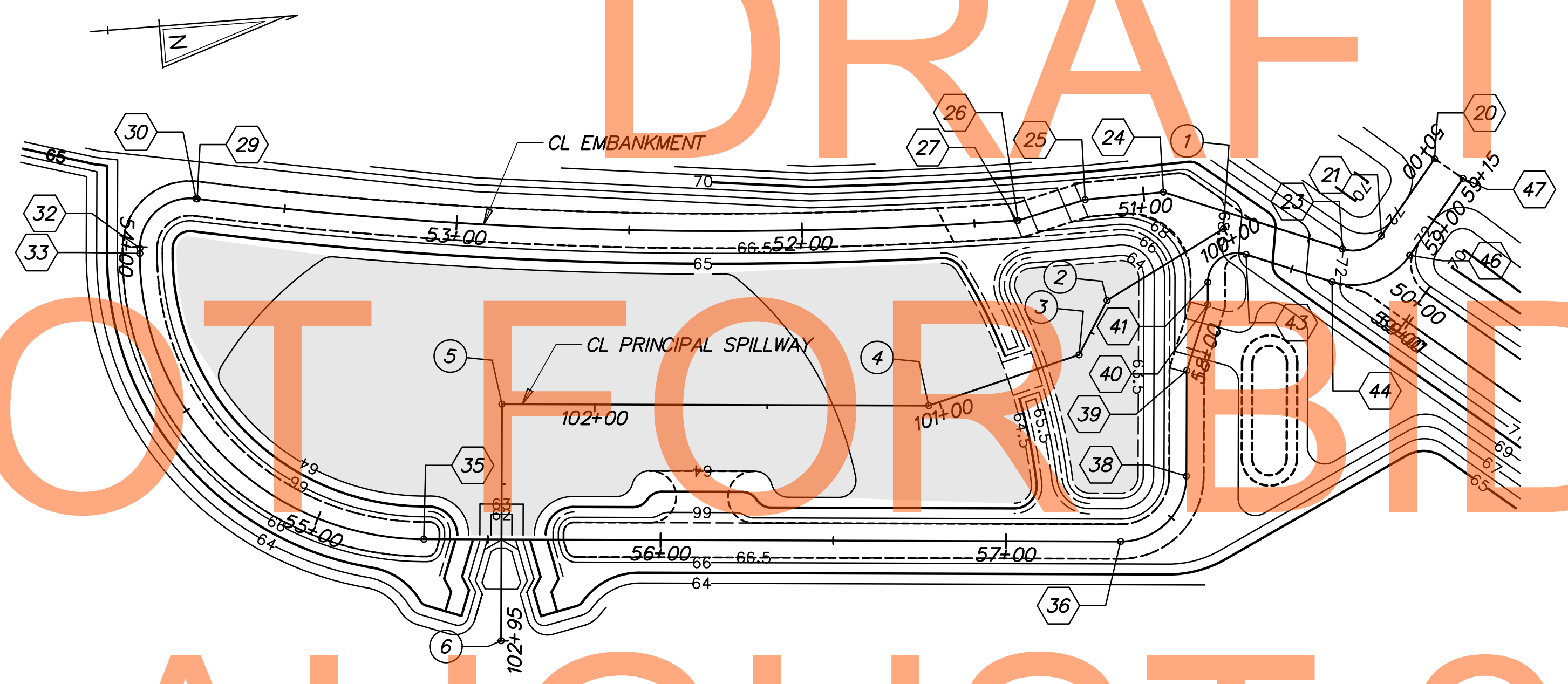
CHECK CONSTRUCTION PLANS FOR SCHEDULE OF RIPRAP OUTSIDE OF THE BASIN AREA.

POND QUANTITIES			
ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	2003	CY
272501	POND OUTLET STRUCTURE, 13, SPECIAL	1	EACH
302011	DELAWARE NO. 3 STONE	182	TON
302012	DELAWARE NO. 57 STONE	22	TON
712005	R-4 RIPRAP	8	SY
712006	R-5 RIPRAP	93	SY
712020	R-4 RIPRAP	19	TON
713001	GEOTEXTILES, STABILIZATION	1225	SY
713003	GEOTEXTILES, RIPRAP	165	SY
733002	TOPSOILING, 6" DEPTH	6174	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	6174	SY

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	ADDENDUMS / REVISIONS	SCALE 0 30 60 90 FEET	US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT T20091303	BRIDGE NO.	STORMWATER MANAGEMENT DETAILS BMP 672 (BASIN 9C)	SW-72
					COUNTY NEW CASTLE		DESIGNED BY: DB JW
							TOTAL SHTS. 1256

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AUGUST 2015



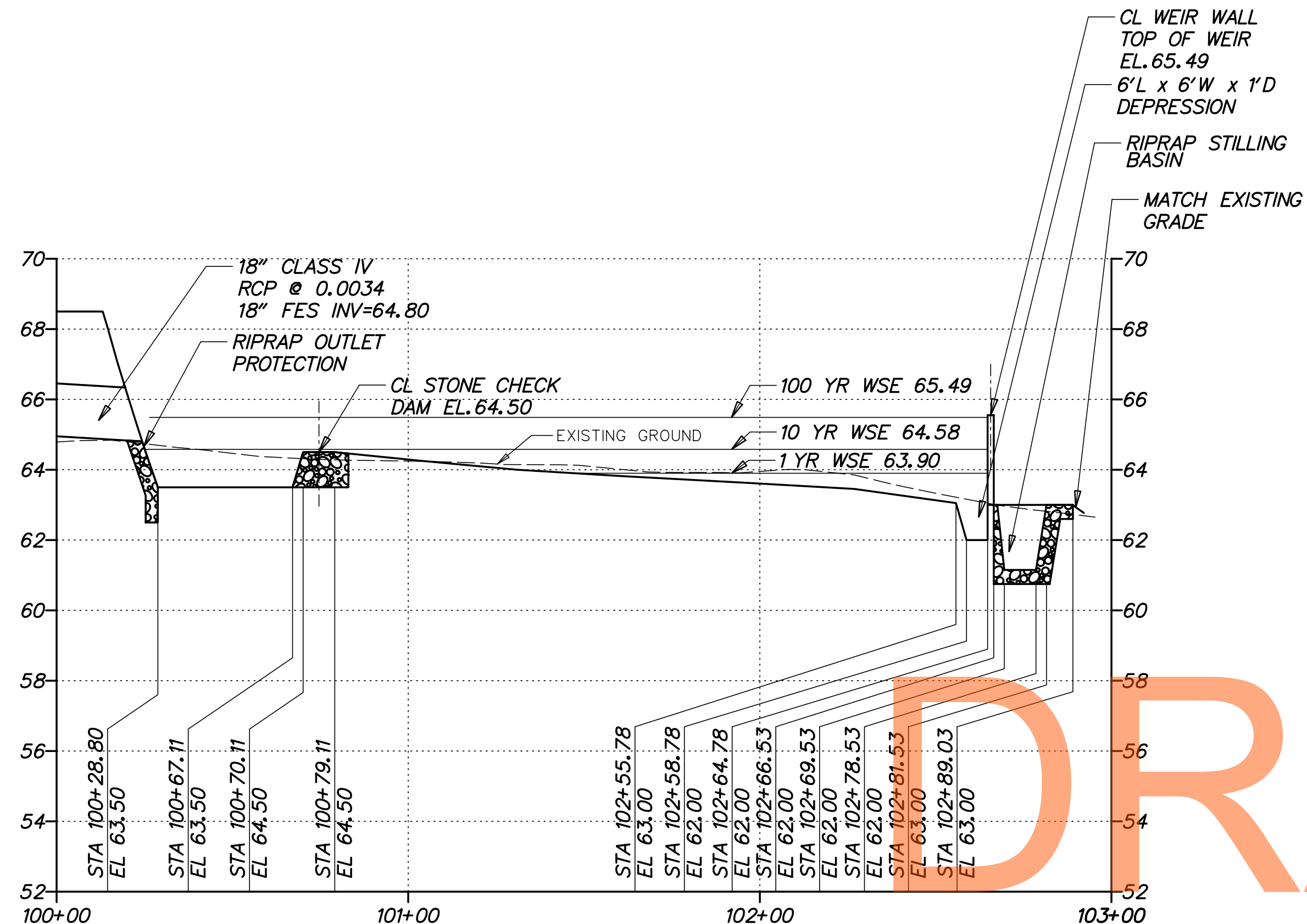
STAKEOUT - BMP 672 (BASIN 9C)

CL PRINCIPAL SPILLWAY		
STATION	NORTHING	EASTING
① POB STA. 100+00.00	536665.0066	567043.5834
② PI STA. 100+39.57	536629.7800	567061.6091
③ PI STA. 100+57.29	536620.4892	567076.6961
④ PI STA. 101+03.25	536575.9204	567087.9418
⑤ PI STA. 102+26.85	536452.7392	567077.8213
⑥ POE STA. 102+95.35	536447.1303	567146.0895

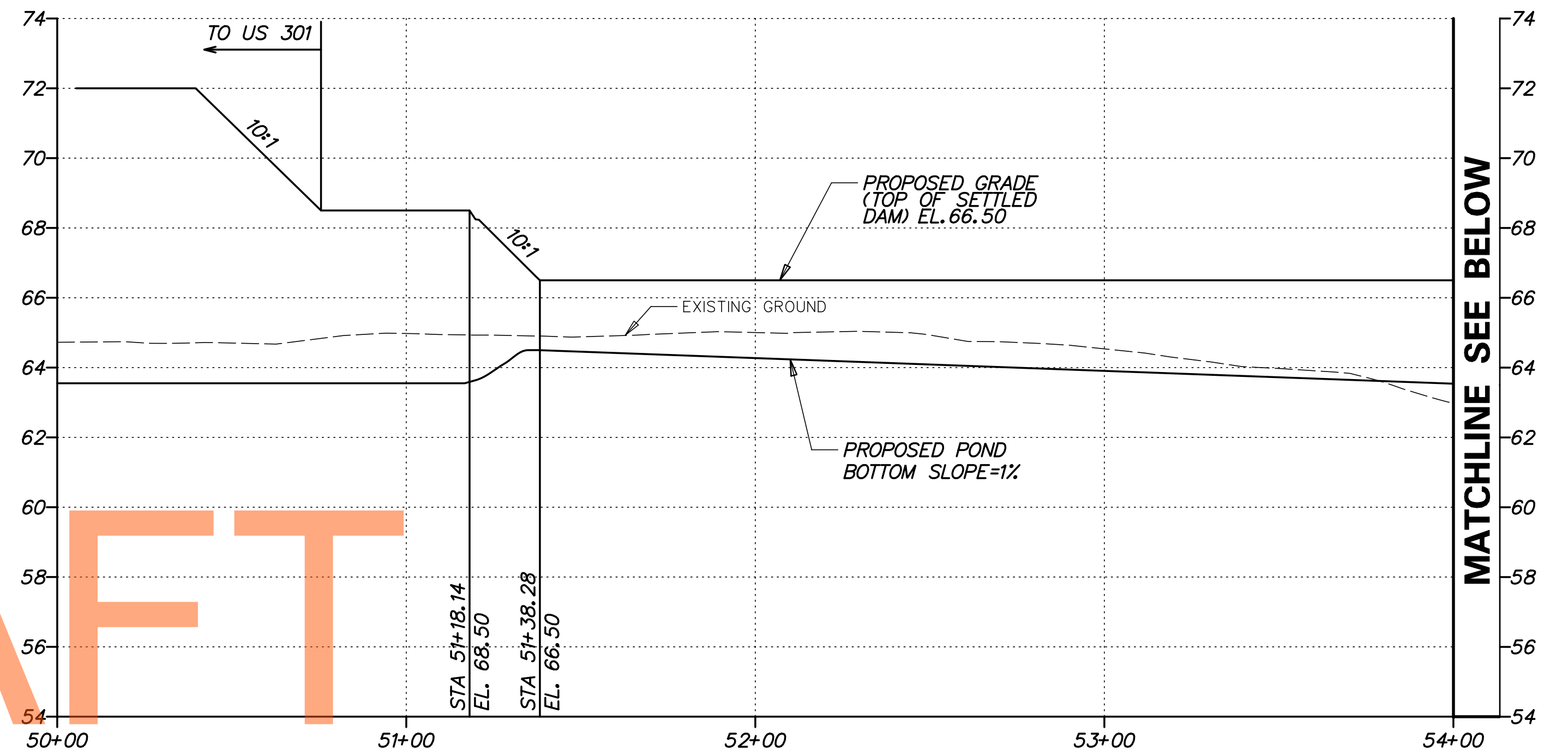
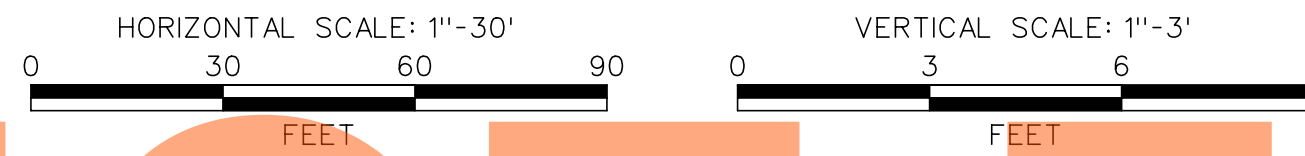
CL EMBANKMENT		
STATION	NORTHING	EASTING
②① POB STA. 50+00.00	536727.5543	567028.1861
②② PC STA. 50+27.07	536710.4569	567049.1765
22 PI STA. 50+34.46	536705.7887	567054.9077
②③ PT STA. 50+39.80	536698.9402	567052.1260
②④ PI STA. 50+94.23	536648.5183	567031.6453
②⑤ PI STA. 51+16.99	536625.7560	567032.0287
②⑥ PI STA. 51+37.36	536605.8922	567036.5187
②⑦ PC STA. 51+37.70	536605.5526	567036.5158
28 PI STA. 52+56.96	536486.2948	567035.4959
②⑨ PT STA. 53+75.48	536369.4545	567011.5836
③① PC STA. 53+75.82	536369.1222	567011.5156
31 PI STA. 53+92.17	536353.1028	567008.2371
③② PT STA. 54+00.33	536351.7636	567024.5336
③③ PC STA. 54+01.85	536351.6393	567026.0463
34 PI STA. 54+84.35	536344.8822	567108.2707
③⑤ PT STA. 55+31.44	536427.1068	567115.0262
③⑥ PC STA. 57+33.22	536628.2066	567131.5484
37 PI STA. 57+52.22	536647.1427	567133.1042
③⑧ PT STA. 57+63.06	536648.6985	567114.1680
③⑨ PI STA. 57+93.66	536651.2040	567083.6730
④① PI STA. 58+13.68	536658.7476	567065.1307
④② PC STA. 58+20.16	536659.2783	567058.6696
42 PI STA. 58+31.75	536660.2270	567047.1186
④③ PT STA. 58+36.11	536670.9591	567051.4946
④④ PC STA. 58+62.25	536695.1652	567061.3647
45 PI STA. 58+77.05	536708.8738	567066.9544
④⑥ PT STA. 58+87.74	536718.2234	567055.4759
④⑦ POE STA. 59+14.79	536735.3077	567034.5015

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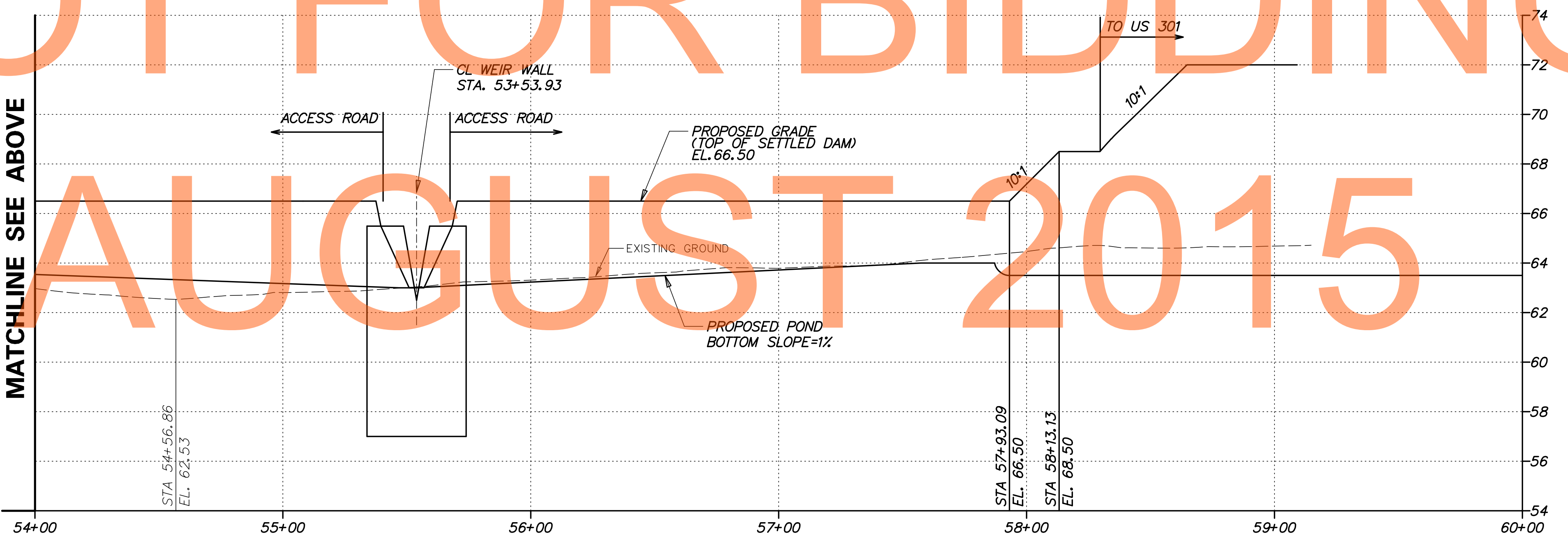
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	SCALE 0 30 60 90 FEET	US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT T20091303	BRIDGE NO.	STORMWATER MANAGEMENT DETAILS BMP 672 (BASIN 9C)	SHEET NO. 758
					COUNTY NEW CASTLE		DESIGNED BY: DB



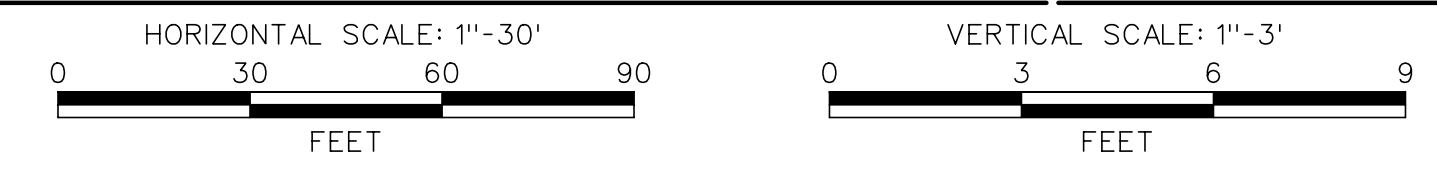
SPILLWAY PROFILE - BMP 672 (BASIN 9C)



EMBANKMENT PROFILE FOR BMP 672 (BASIN 9C)



EMBANKMENT PROFILE FOR BMP 672 (BASIN 9C)



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ADDENDUMS / REVISIONS	

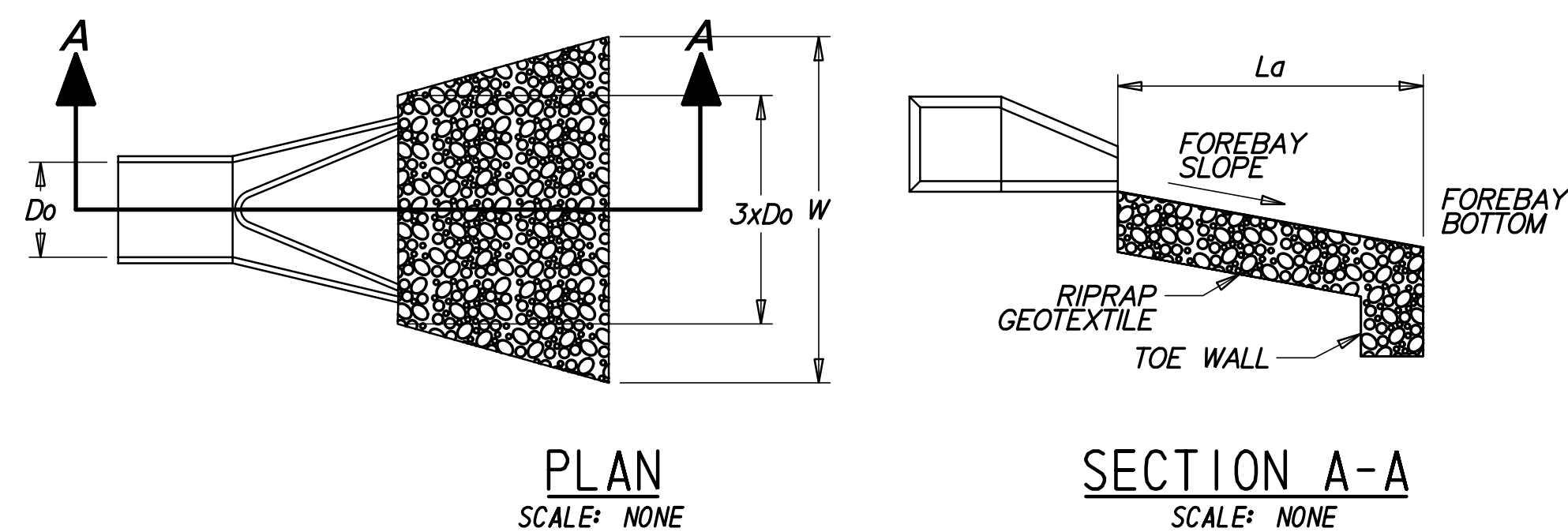
AS SHOWN

**US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD**

CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: DB
	CHECKED BY: JZ

**STORMWATER
MANAGEMENT DETAILS
BMP 672 (BASIN 9C)**

SW-74
SHEET NO. 759
TOTAL SHTS. 1256



DATA

PIPE DIAMETER (Do)
 APRON LENGTH (La)
 APRON WIDTH (W)
 RIPRAP SIZE (R No.)

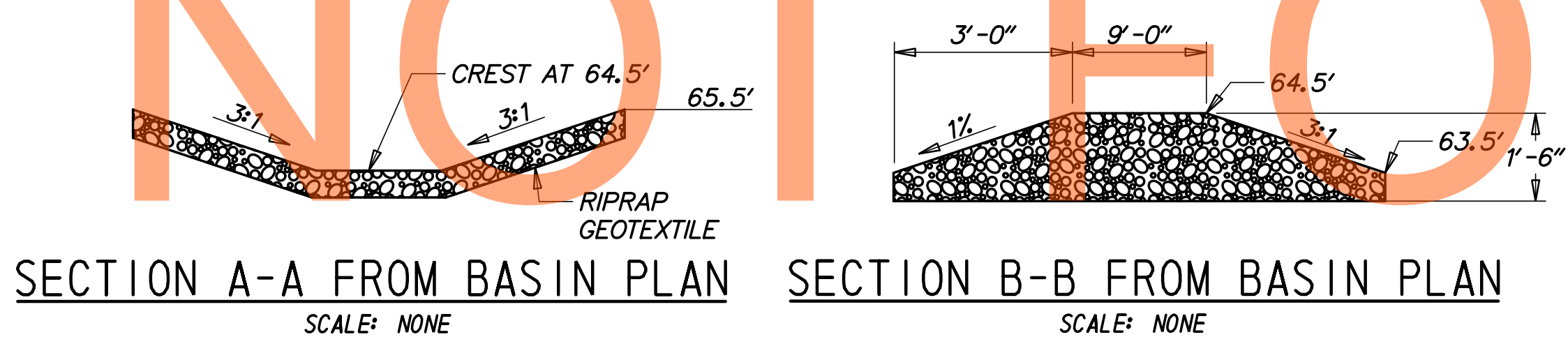
FES ID	Do	La	W	R No.
32	2.0'	3.0'	11.0'	R-4
181	1.5'	3.9'	8.0'	R-4

FOREBAY RIPRAP OUTLET PROTECTION
 SCALE: NONE

- NOTES:
 1. RIPRAP ITEM# 712005.
 2. GEOTEXTILES, RIPRAP ITEM# 713003
 3. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.
 4. DEPRESS CENTERLINE OF APRON SLIGHTLY TO PREVENT EDGE CUTTING.

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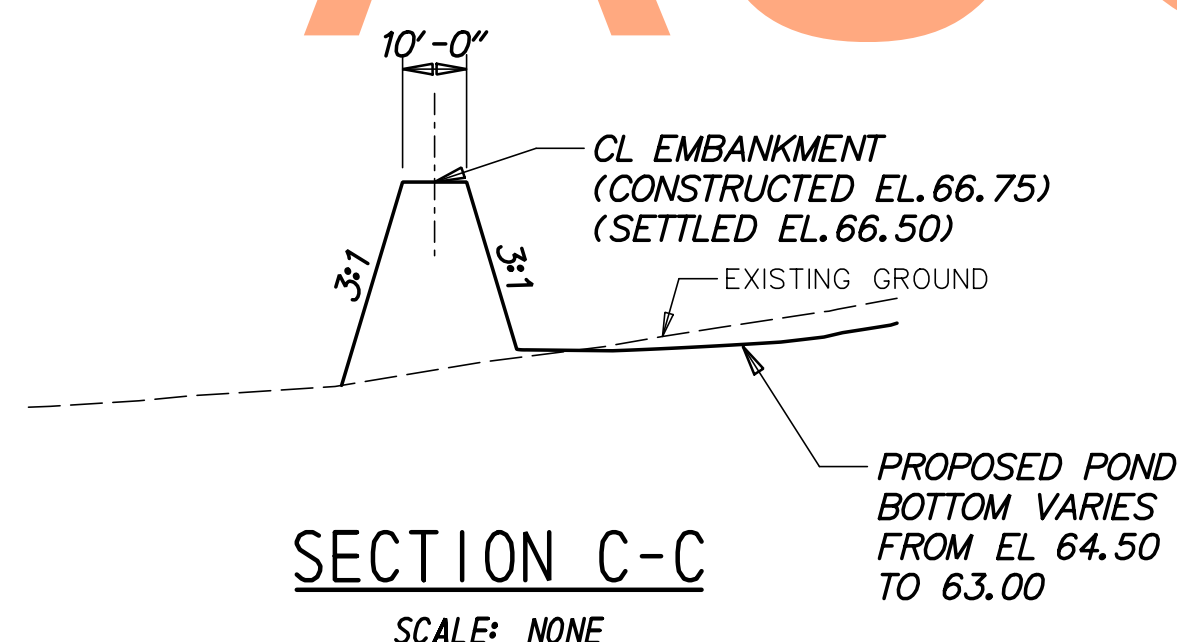
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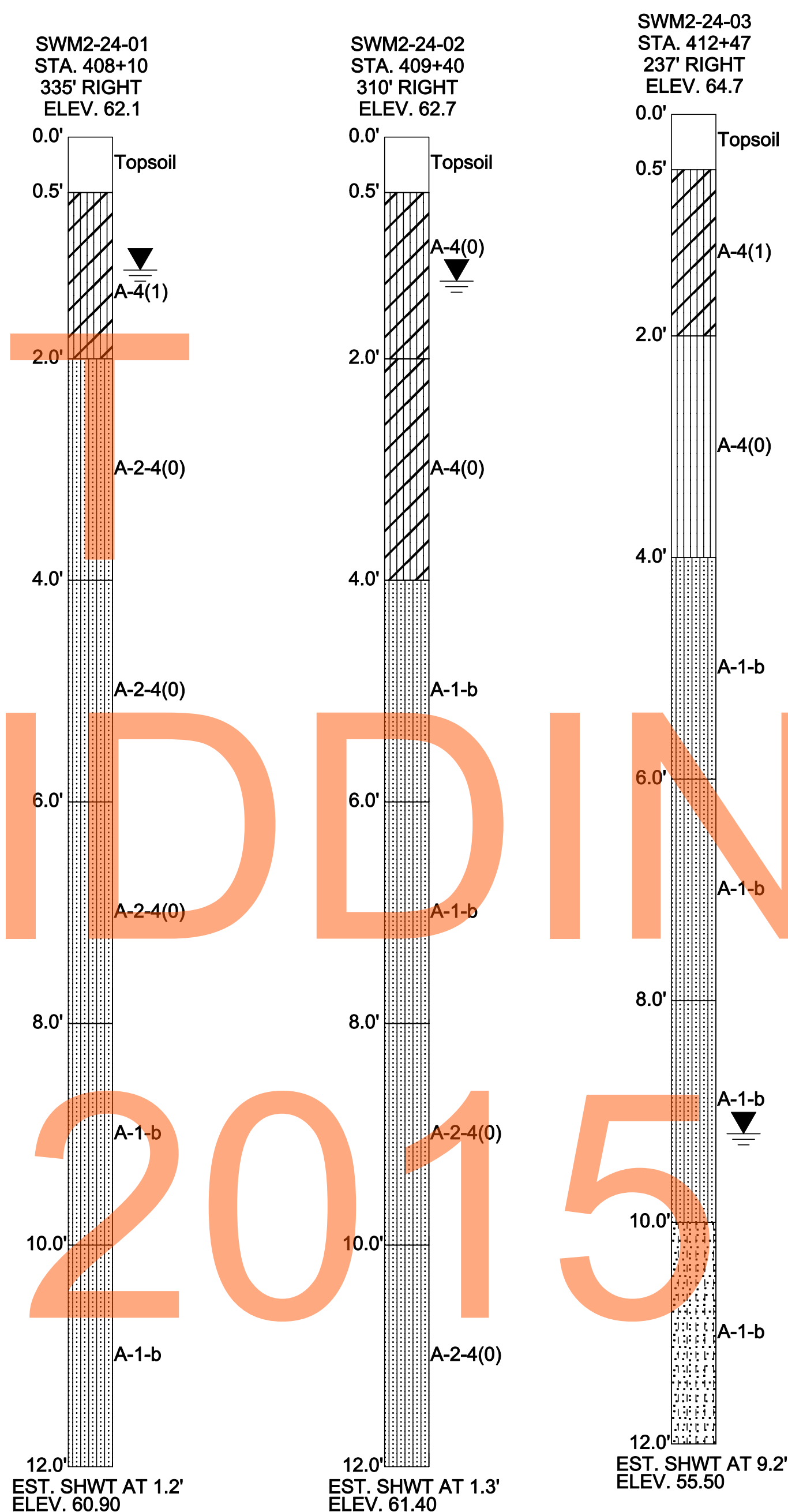
SECTION A-A FROM BASIN PLAN SCALE: NONE
SECTION B-B FROM BASIN PLAN SCALE: NONE

STONE CHECK DAM
 SCALE: NONE

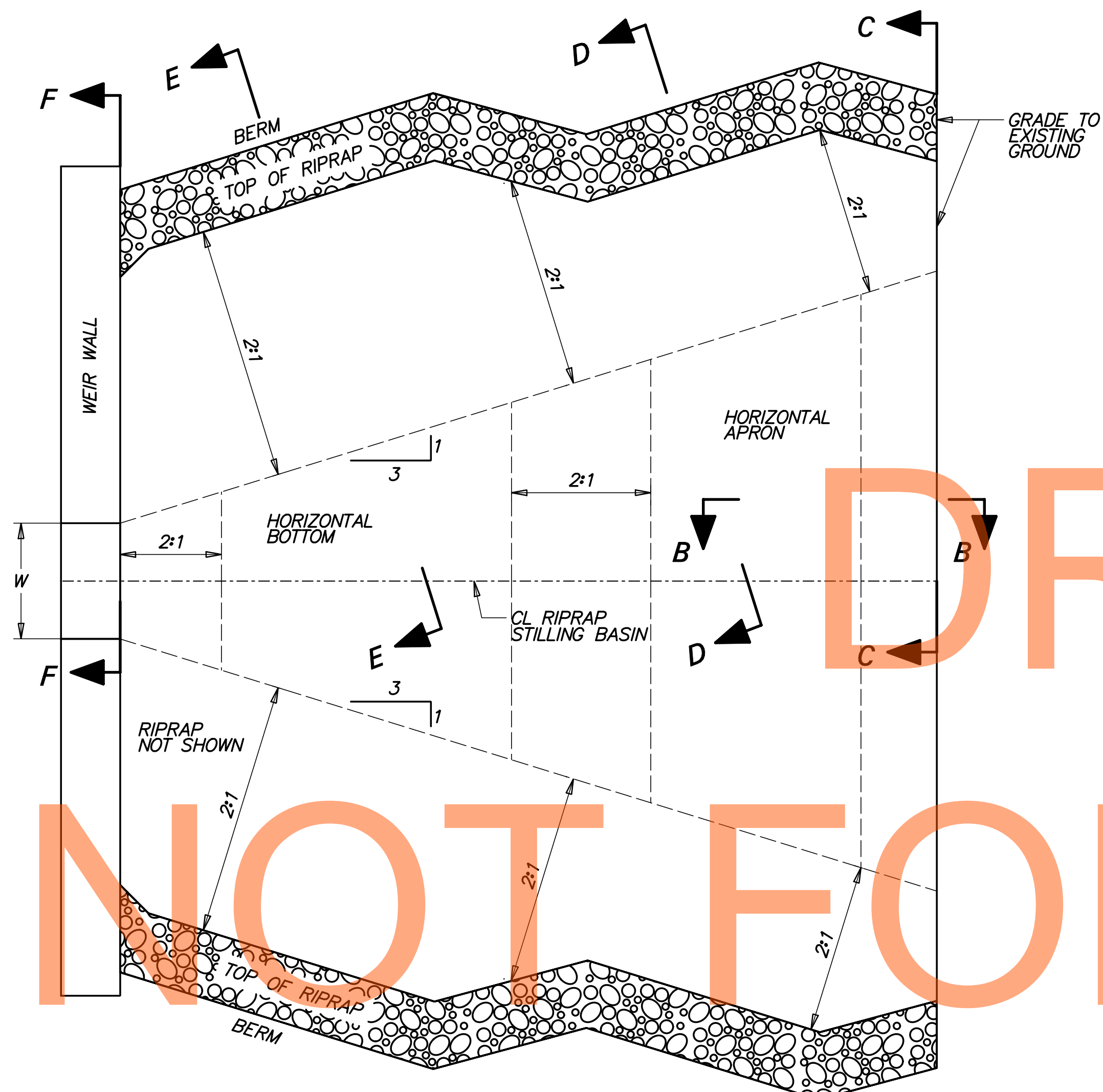
- NOTES:
 1. RIPRAP ITEM# 712020
 2. GEOTEXTILE, RIPRAP ITEM# 713003
 3. SEE STANDARD NO. E-10 FOR GEOTEXTILE PLACEMENT.



SECTION C-C
 SCALE: NONE



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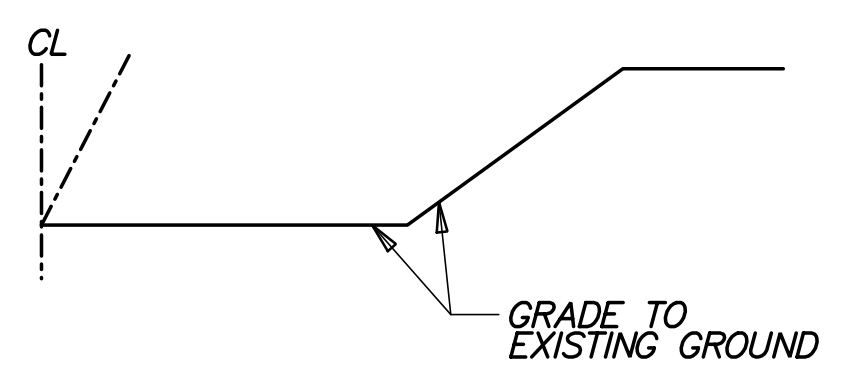
AUGUST 2015

PLAN
SCALE: NONE

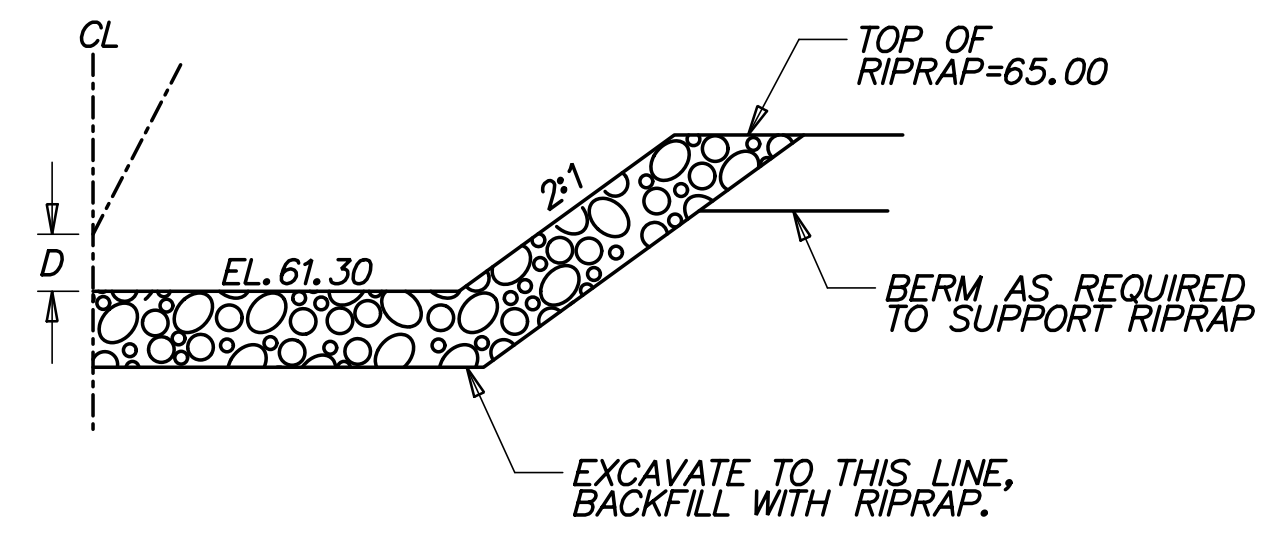
DATA
TOP OF V-NOTCH WEIR WIDTH $W = 1.33'$
DEPTH OF BASIN FROM WEIR CREST $D = 1.50'$
RIPRAP SIZE (R No.) = R-5 WITH NO. 57 STONE

- NOTES:
1. RIPRAP ITEM# 712006.
 2. GEOTEXTILES, RIPRAP ITEM# 713003
 3. DELAWARE NO. 57 STONE ITEM# 302012
 4. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.

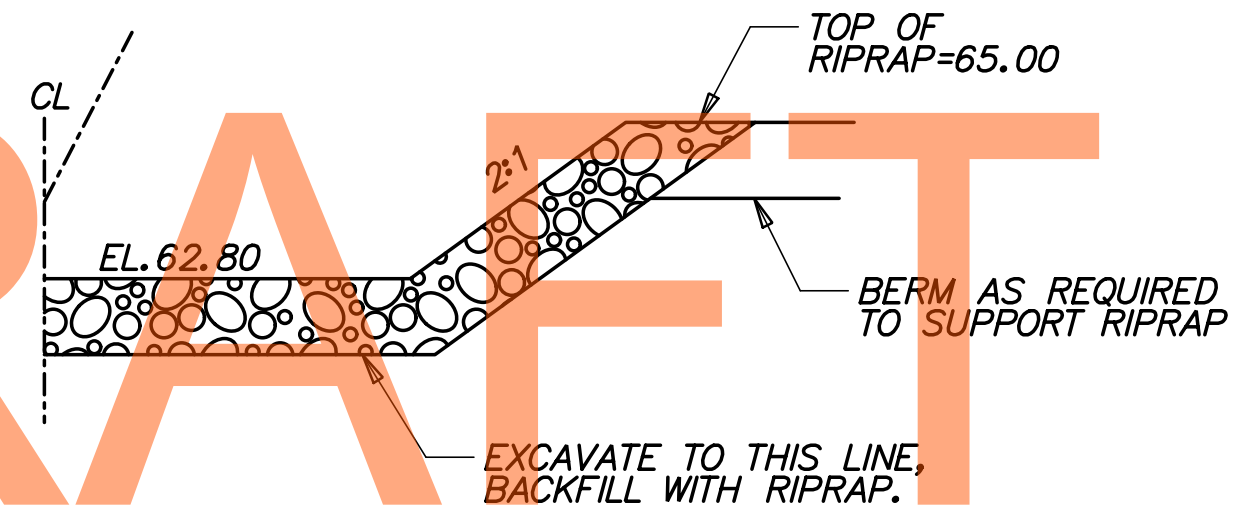
RIPRAP STILLING BASIN
SCALE: NONE



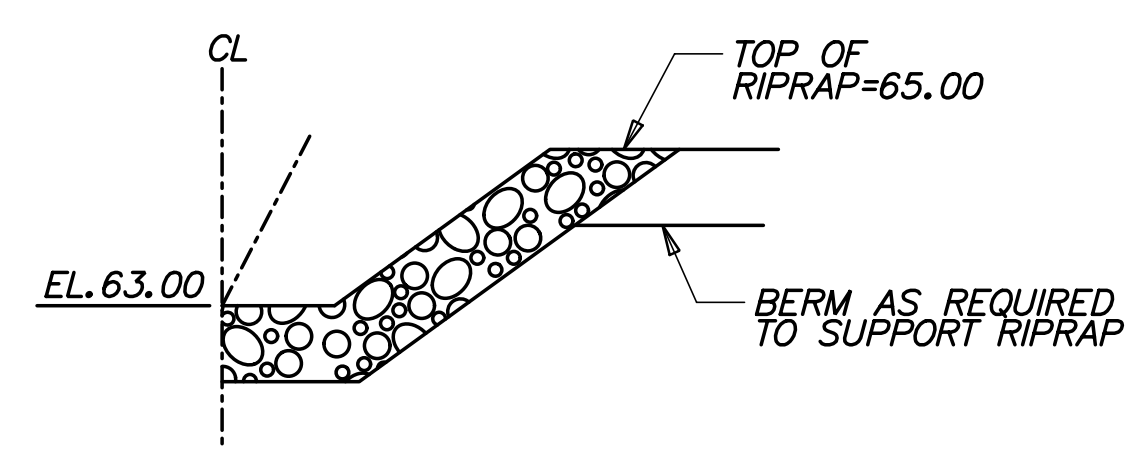
SECTION C-C
SCALE: NONE



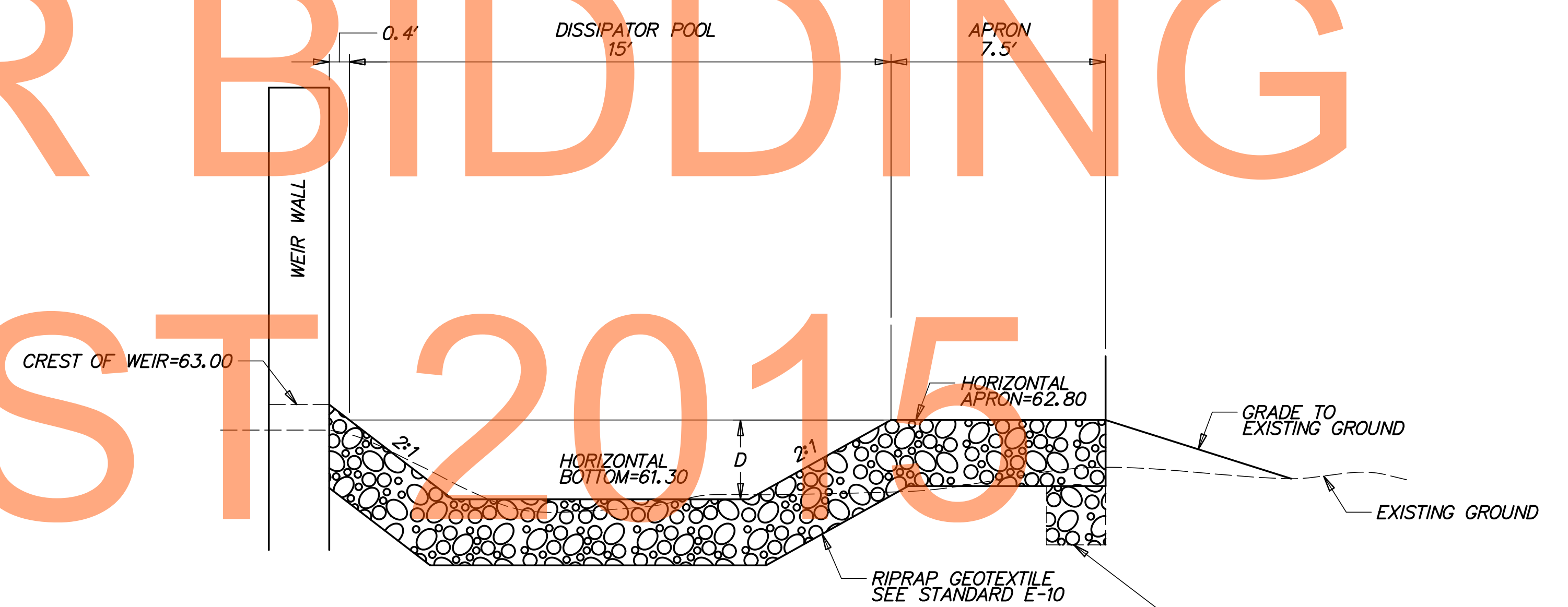
SECTION E-E
SCALE: NONE



SECTION D-D
SCALE: NONE



SECTION F-F
SCALE: NONE



PROFILE THRU RIPRAP STILLING BASIN
SCALE: NONE

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ADDENDUMS / REVISIONS

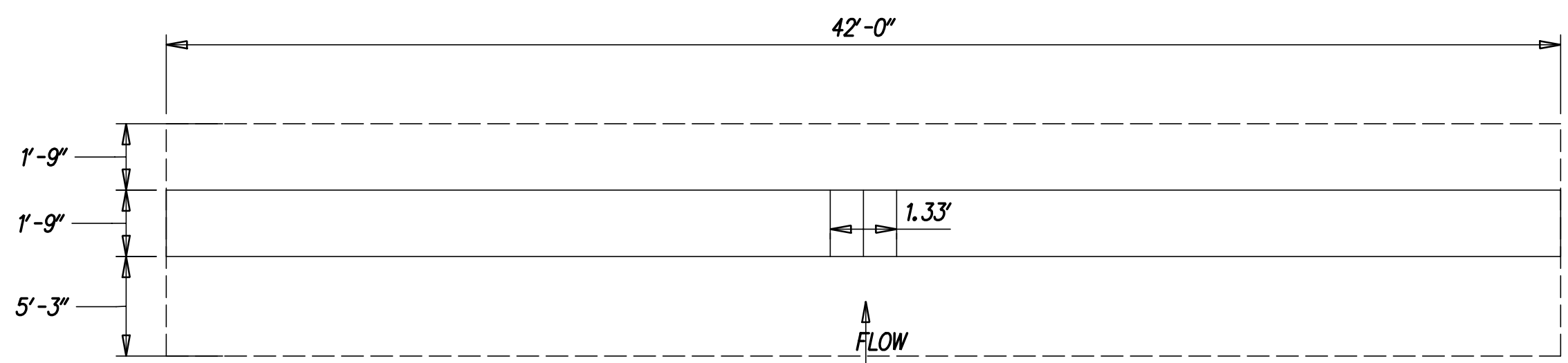
AS SHOWN

US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD

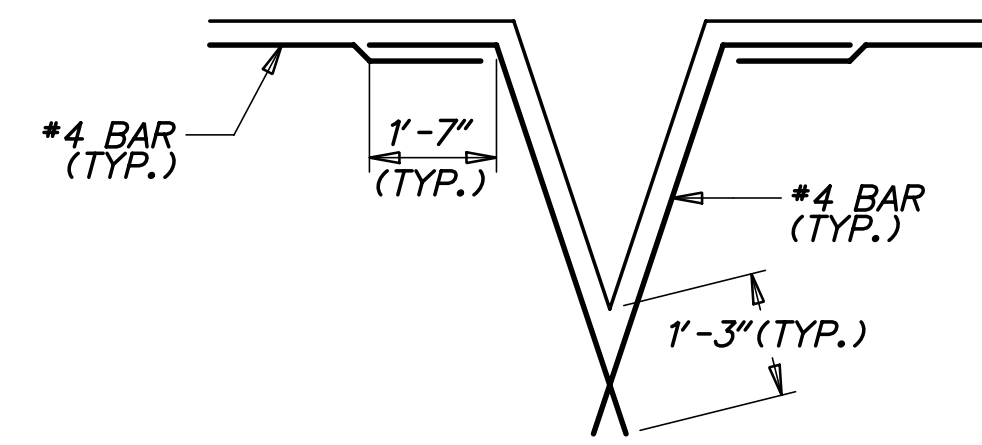
CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: DB
NEW CASTLE	CHECKED BY: JZ

**STORMWATER
MANAGEMENT DETAILS
BMP 672 (BASIN 9C)**

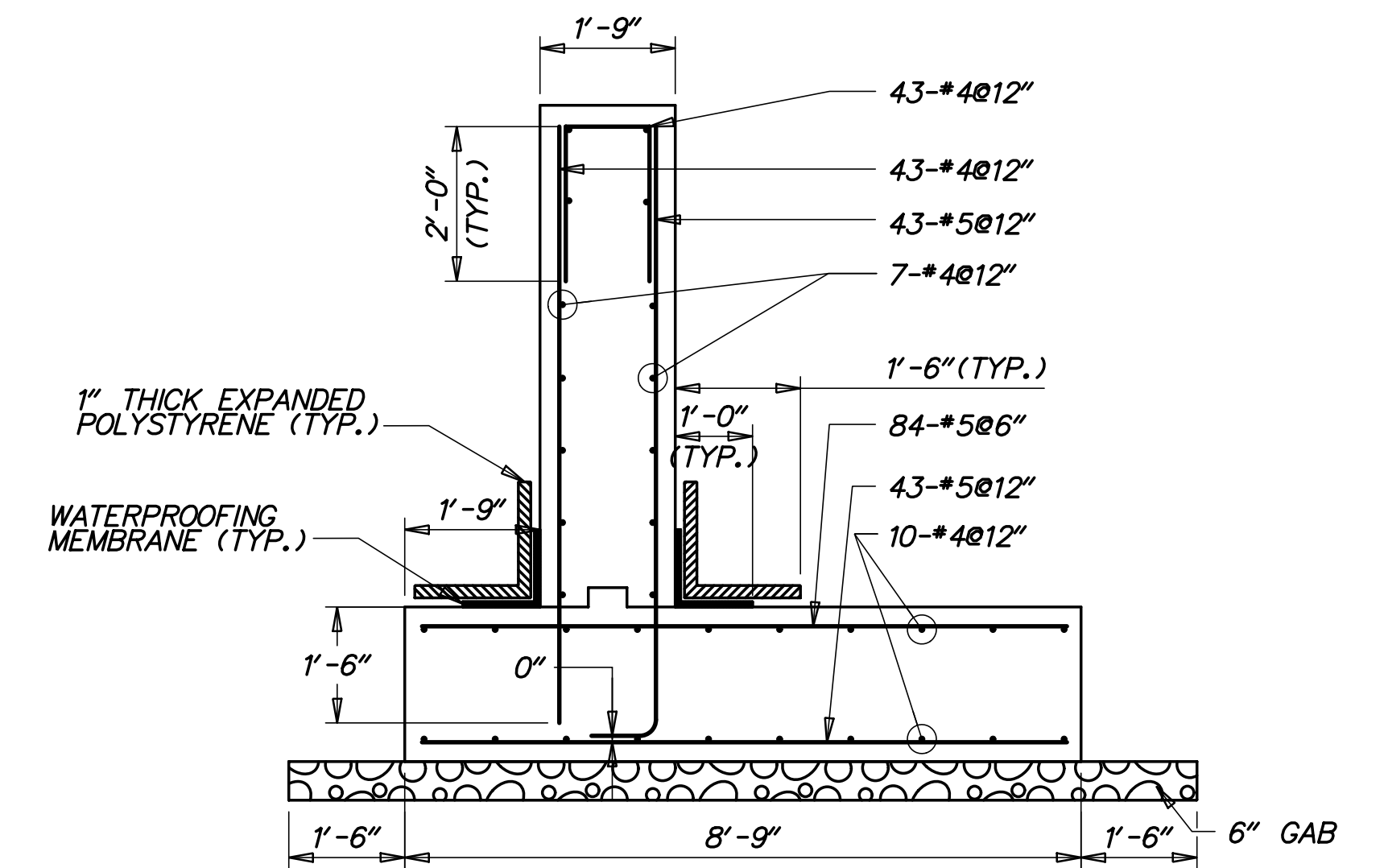
SW-76
SHEET NO.
761
TOTAL SHTS.
1256



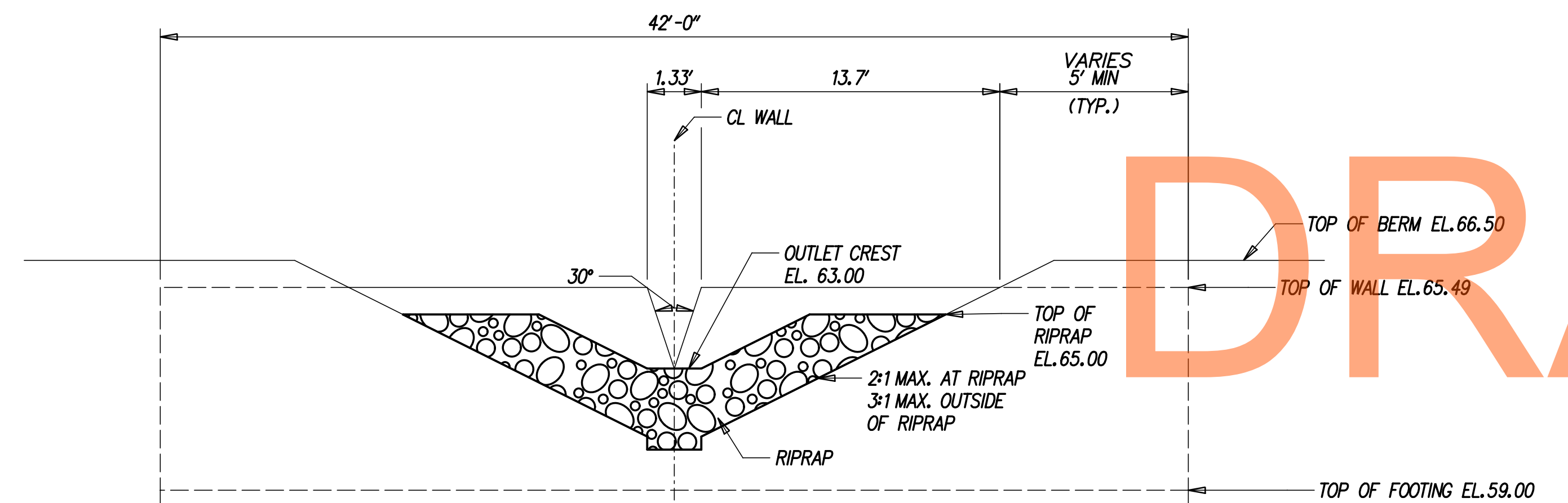
**WEIR WALL
PLAN**
SCALE: NONE



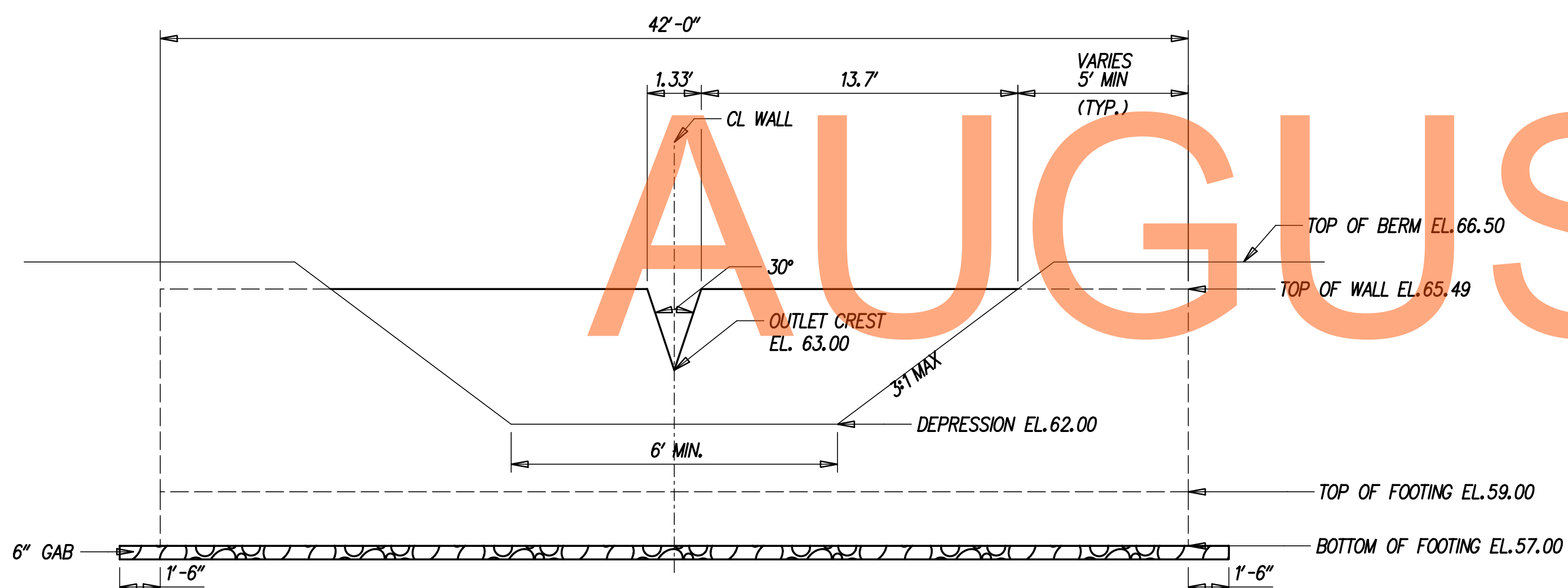
OPENING DETAILS
SCALE: NONE



WEIR WALL SECTION
SCALE: 1/2" = 1'-0"



**WEIR WALL
EXTERIOR ELEVATION
WITH RIPRAP STILLAGE BASIN**
SCALE: NONE



**WEIR WALL
INTERIOR ELEVATION**
SCALE: NONE

GENERAL NOTES

- DESIGN SPECIFICATIONS:
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 4TH EDITION, 2007, INCLUDING 2008 AND 2009 INTERIM REVISIONS, AND AS SUPPLEMENTED BY DELAWARE DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL, MAY 2005, INCLUDING LATEST REVISIONS.
PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS, AASHTO/AWS D1.5M/D1.5 BRIDGE WELDING CODE, AND CONTRACT SPECIAL PROVISIONS.
- LOADING:
UNIT WEIGHTS OF MATERIALS SHALL BE IN ACCORDANCE WITH THE DELAWARE DESIGN MANUAL.
- PORTLAND CEMENT CONCRETE:
PORTLAND CEMENT CONCRETE FOR CAST-IN-PLACE ELEMENTS SHALL BE AS FOLLOWS:
(28 DAY COMPRESSIVE STRENGTH)
(CLASS B, F'c=3000 PSI) - WEIR WALL FOOTING
(CLASS A, F'c=4500 PSI) - WEIR WALL STEM
WEIR WALLS MUST BE CAST-IN-PLACE.
MIX REQUIREMENTS SHALL CONFORM TO SECTION 812 OF THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
ALL EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED WITH 3/4" X 3/4" MILLED CHAMFER STRIPS EXCEPT ON UNEXPOSED FOOTINGS.
- BAR REINFORCEMENT:
REINFORCING STEEL SHALL CONFORM TO AASHTO M31 (ASTM A615), GRADE 60 AND IS TO BE EPOXY COATED. FUSION-BONDED EPOXY COATED REINFORCING STEEL SHALL CONFORM TO AASHTO M284 (ASTM D3963).
PROVIDE 3" CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.
LAP LENGTH OF #4 BARS TO BE 3'-0". STAGGER SPLICE LOCATIONS.
DO NOT WELD GRADE 60 REINFORCING STEEL.
- CONSTRUCTION JOINTS:
KEYED CONSTRUCTION JOINTS SHALL BE 2" X 4" OR AS NOTED.
- WATERPROOFING MEMBRANE:
ADHESIVE BACKED WATERPROOFING MEMBRANE IS TO BE USED. SPLICING OF THE MEMBRANE IS PROHIBITED.
- REFER TO SPECIFICATION SECTION 272501 FOR CONSTRUCTION SEQUENCE.
- GAB IS INCIDENTAL TO WALL CONSTRUCTION.

DRAFT
NOT FOR BIDDING
AUGUST 2015

G:\60049040_US301\CIVIL\PLANS\2A\CP\SW-77.DGN

	ADDENDUMS / REVISIONS		AS SHOWN	US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT	BRIDGE NO.	STORMWATER MANAGEMENT DETAILS BMP 672 (BASIN 9C)	SHEET NO.
	T20091303	DESIGNED BY: DB			762			
					COUNTY	CHECKED BY: JZ	TOTAL SHTS.	1256
					NEW CASTLE			

POND CONSTRUCTION SEQUENCE AND NOTES

THE STORMWATER MANAGEMENT POND SHALL FUNCTION AS A SEDIMENT BASIN DURING ROADWAY CONSTRUCTION AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE STANDARD SPECIFICATIONS:

SECTION 271 - STORMWATER MANAGEMENT POND
SECTION 272 - POND OUTLET STRUCTURE, CONCRETE

- INSTALL STABILIZED CONSTRUCTION ENTRANCE.
- CLEAR AND GRUB FOR INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS.
- INSTALL PERIMETER SEDIMENT CONTROLS AS SHOWN.
- CLEAR AND GRUB REMAINING AREA FOR POND CONSTRUCTION.
- CONSTRUCT WEIR WALL, RIPRAP STILLING BASIN AND PARTIAL EMBANKMENT AS NEEDED TO INSTALL WEIR WALL. INSTALL SKIMMER AND DE-WATER FOUNDATION AS NEEDED IN ACCORDANCE WITH SECTION 111 AND USE SUMP PIT FOR PUMPING. (SEE EROSION AND SEDIMENT CONTROL DETAILS FOR SKIMMER DE-WATERING DEVICE INSTALLATION)
- EXCAVATE THE POND AND COMPLETE THE EMBANKMENT, GRADES AND DETAILS SHOWN IN THE CONSTRUCTION PLANS. DURING EXCAVATION, THE CONTRACTOR SHALL SALVAGE AND STOCKPILE SOILS CLASSIFIED AS CH, CL, SC AND GG PER THE UNIFIED SOIL CLASSIFICATION SYSTEM TO BE USED TO CONSTRUCT EMBANKMENT. THE ABOVE CLASSIFIED SOILS MAY BE OBTAINED FROM ELSEWHERE WITHIN THE PROJECT LIMITS, IF NECESSARY.
- STABILIZE ALL BARE AREAS.
NOTE: SEE CONSTRUCTION SEQUENCE PLANS FOR LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.
- THE CONTRACTOR SHALL PROVIDE 'AS-BUILT' DRAWINGS OF ALL STORMWATER MANAGEMENT FACILITIES SUCH AS PONDS, INFILTRATION BASINS, BIOFILTRATION SWALES, ETC. 'AS-BUILT' DRAWINGS SHALL SHOW THE ACTUAL FINISHED GROUND CONTOURS, OUTLET STRUCTURE DIMENSIONS AND ELEVATIONS, ETC. AS THEY EXIST AT THE COMPLETION OF THE PROJECT. THESE DRAWINGS SHALL BE SIGNED BY A PROFESSIONAL ENGINEER OR LAND SURVEYOR.

MAINTENANCE OF POND AS A SEDIMENT BASIN

- CONTRACTOR SHALL INSPECT THE BASIN IMMEDIATELY AFTER EVERY RAIN AND MAKE REPAIRS AS NEEDED.
- CONTRACTOR SHALL CLEARLY MARK THE CLEANOUT ELEVATION ON A STAKE DRIVEN INTO THE GROUND AT A LOCATION CLEARLY VISIBLE FROM THE EMBANKMENT. SEDIMENT SHALL BE REMOVED WHEN CLEANOUT ELEVATION IS REACHED AND DISPOSED OF AT A LOCATION APPROVED BY THE ENGINEER. CLEANOUT ELEVATION IS 66.59.

CONVERSION TO PERMANENT STORMWATER MANAGEMENT POND

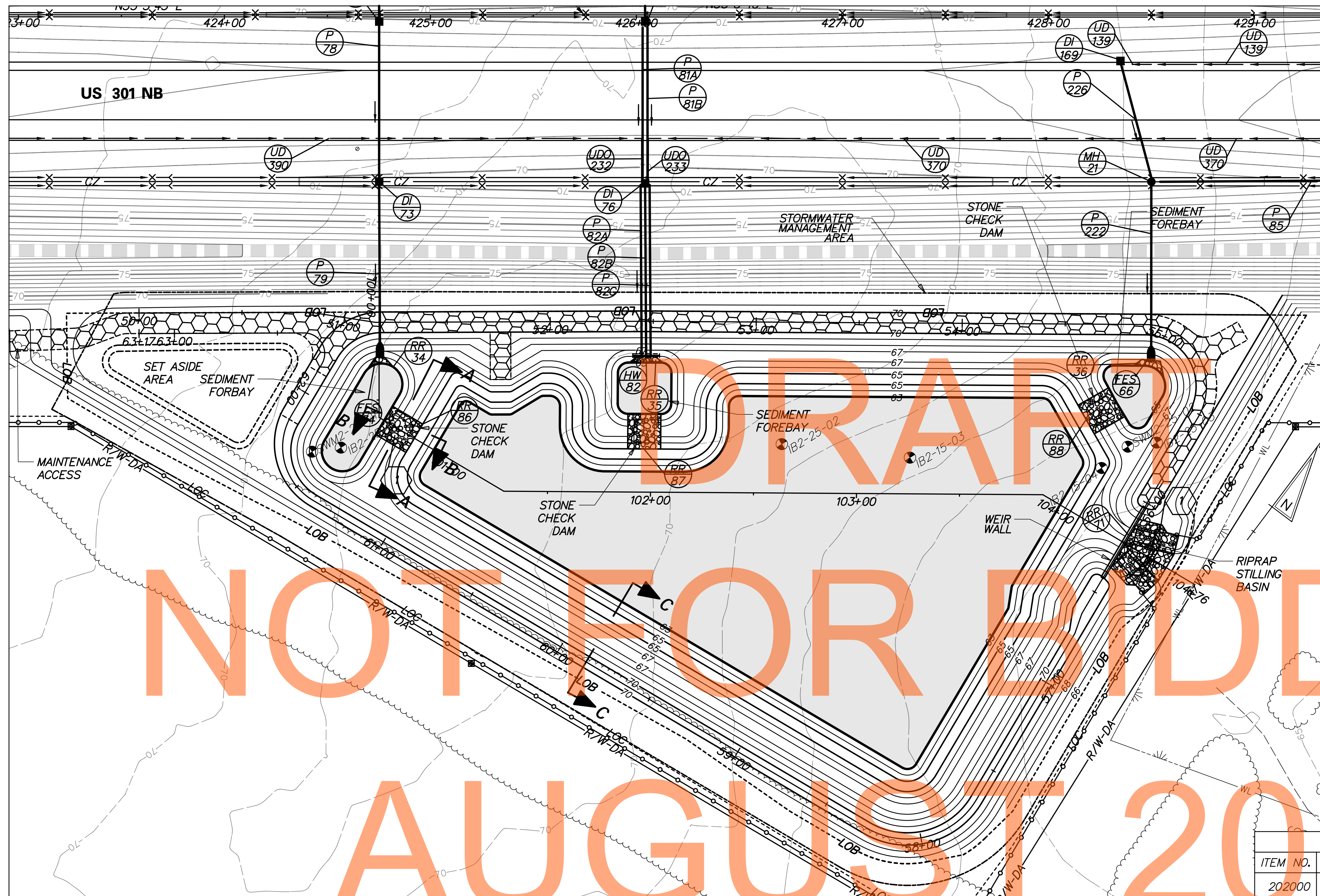
- CONVERT THE BASIN INTO THE PERMANENT STORMWATER MANAGEMENT POND AFTER ALL AREAS DRAINING TO THE POND HAVE BEEN PERMANENTLY STABILIZED AND THE ENGINEER HAS APPROVED THE CONVERSION.
- REMOVE ACCUMULATED SEDIMENT TO ELEVATION 63.00 AND DISPOSE SEDIMENT AT A LOCATION APPROVED BY THE ENGINEER.
- COMPLETE STABILIZATION OF ALL BARE AREAS. REMOVE EROSION AND SEDIMENT CONTROL MEASURES AND DEACTIVATE DE-WATERING DEVICE.

PLANTING SCHEDULE

PLACE PERMANENT GRASS SEEDING - WET GROUND UP TO ELEVATION 67.00
PLACE PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 67.00
PLACE TOPSOIL ON LOWER BENCH ELEVATION 65.00 AND ABOVE.

POND QUANTITIES

ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	14167	CY
272501	POND OUTLET STRUCTURE, 14, SPECIAL	1	EACH
302011	DELAWARE NO. 3 STONE	258	TON
302012	DELAWARE NO. 57 STONE	23	TON
712005	R-4 RIPRAP	14	SY
712006	R-5 RIPRAP	95	SY
712020	R-4 RIPRAP	66	TON
713001	GEOTEXTILES, STABILIZATION	1743	SY
713003	GEOTEXTILES, RIPRAP	256	SY
733002	TOPSOILING, 6" DEPTH	8585	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	6230	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	6511	SY



PLAN - BMP 676 (BASIN 10)

NOT FOR BIDDING
AUGUST 2015

DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC.FT.)*
QUALITY STORM (1 YR)	18.75	0.25	66.72	3.498
10 - YEAR	45.97	1.31	67.40	4.385
100 - YEAR	89.48	5.15	68.42	5.829

DRAINAGE AREA TO FACILITY: 10.43 ACRES

MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY BY EXTENDED DETENTION OF 1 YEAR RUNOFF, WATER QUANTITY FOR 10 AND 100 YEAR STORMS.

*INCLUDES NORMAL POOL VOLUME OF 2.662 AC-FT

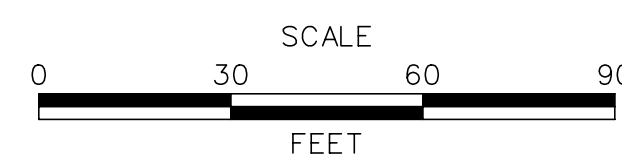
SKIMMER ELEVATION	66.08
ORIFICE SIZE (IN)	2
BLOCK WEIR UP TO ELEVATION	67.09

NO.	TYPE	AREA (SY)
34	R-4	4
35	R-4	5
36	R-4	5
71	R-5	95
86	R-4	31
87	R-4	31
88	R-4	31

CHECK CONSTRUCTION PLANS FOR SCHEDULE OF RIPRAP OUTSIDE OF THE BASIN AREA.



ADDENDUMS / REVISIONS



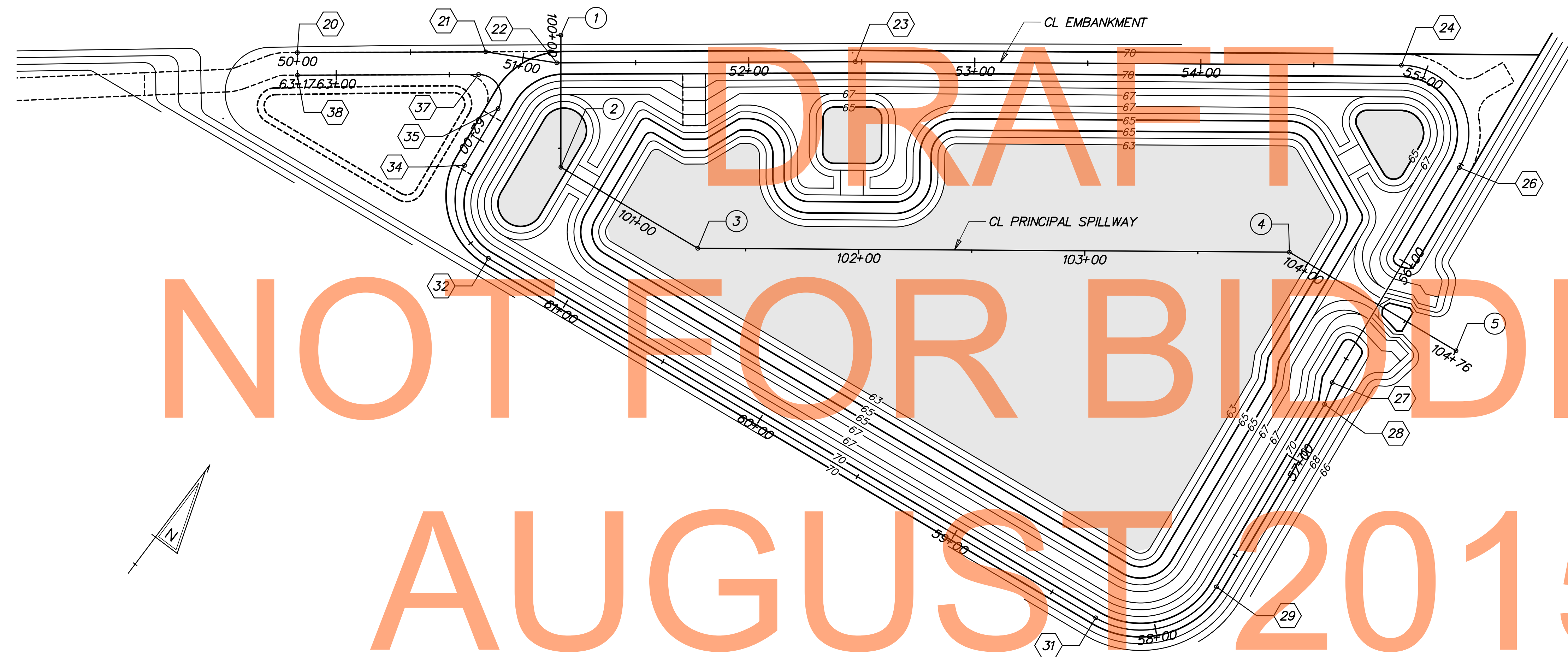
**US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.	
T20091303	DESIGNED BY:	DB JW
COUNTY	CHECKED BY:	JZ SF
NEW CASTLE		

**STORMWATER
MANAGEMENT DETAILS
BMP 676 (BASIN 10)**

SW-78
SHEET NO.
763
TOTAL SHTS.
1256

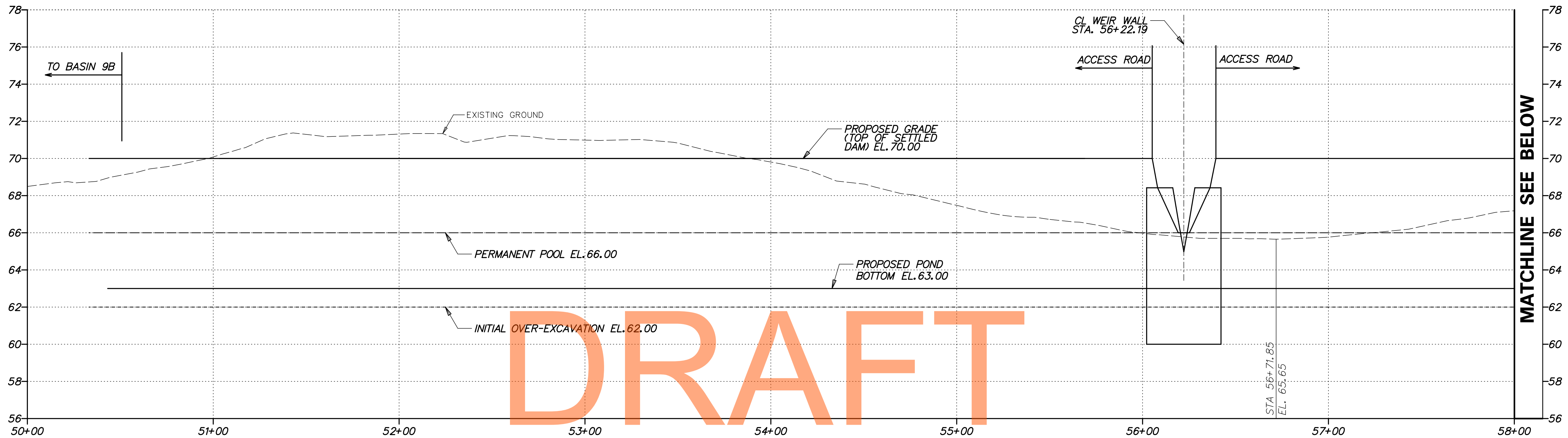
G:\60049040_US301\CIVIL\PLANS\2A\CP\SW-79.DGN



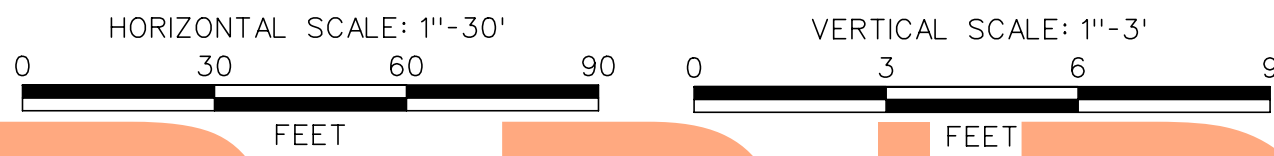
CL PRINCIPAL SPILLWAY		
STATION	NORTHING	EASTING
① POB STA. 100+00.00	537334.5667	567830.8526
② PI STA. 100+58.44	537287.8543	567865.9727
③ PI STA. 101+28.81	537295.6088	567935.9123
④ PI STA. 103+90.49	537451.5563	568146.0464
⑤ POE STA. 104+76.16	537460.9972	568231.1961

CL EMBANKMENT		
STATION	NORTHING	EASTING
②① POB STA. 50+00.00	537258.3343	567742.3490
②① PI STA. 50+83.27	537308.6503	567808.6928
②② PI STA. 51+15.08	537323.6511	567836.7459
②③ PI STA. 52+47.15	537403.4484	567941.9817
②④ PC STA. 54+88.74	537547.4254	568135.9865
②⑤ PI STA. 55+40.97	537578.5506	568177.9268
②⑥ PT STA. 55+51.70	537526.6407	568183.6822
②⑦ PI STA. 56+62.18	537416.8339	568195.8570
②⑧ PI STA. 56+72.38	537407.1152	568198.9468
②⑨ PC STA. 57+66.22	537313.8455	568209.2879
③① PI STA. 58+05.22	537275.0830	568213.5857
③① PT STA. 58+27.48	537270.7853	568174.8232
③② PC STA. 61+39.68	537236.3813	567864.5249
③③ PI STA. 61+69.68	537233.0753	567834.7076
③④ PT STA. 61+86.81	537262.8926	567831.4016
③⑤ PC STA. 62+15.97	537291.8818	567828.1875
③⑥ PI STA. 62+33.60	537309.3957	567826.2457
③⑦ PT STA. 62+37.07	537298.7475	567812.2056
③⑧ POE STA. 63+17.17	537250.3429	567748.3819

STAKEOUT - BMP 676 (BASIN 10)



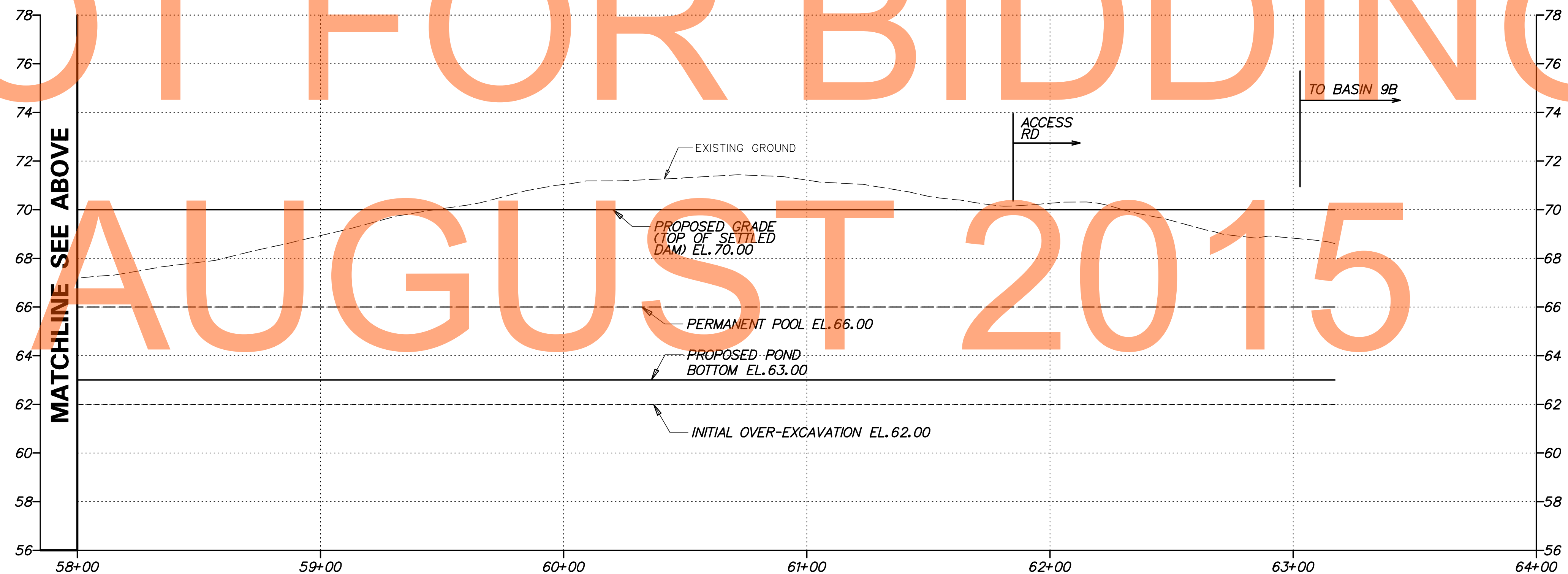
EMBANKMENT PROFILE FOR BMP 676 (BASIN 10)



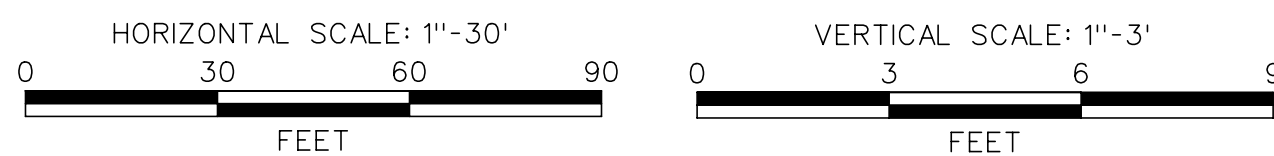
DRAFT

NOT FOR BIDDING

AUGUST 2015



EMBANKMENT PROFILE FOR BMP 676 (BASIN 10)



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ADDENDUMS / REVISIONS	

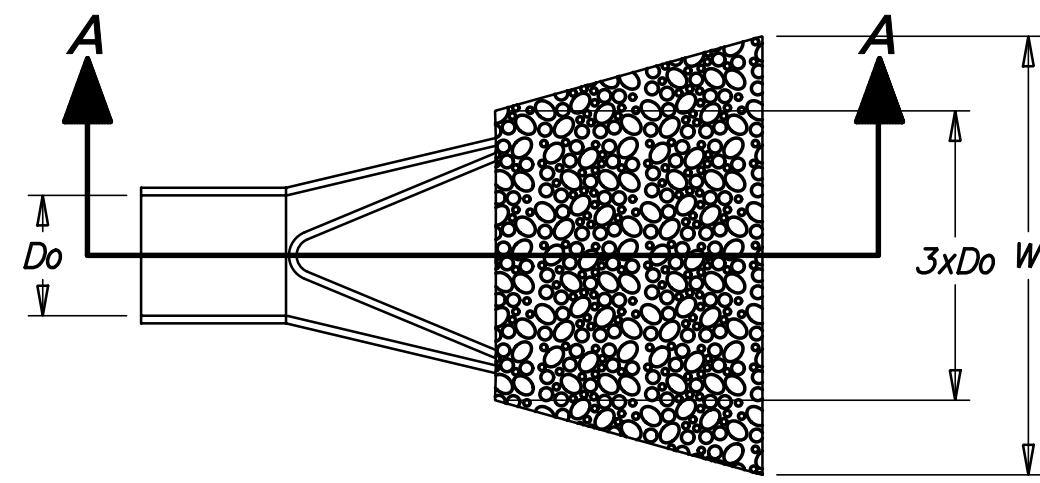
AS SHOWN

**US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD**

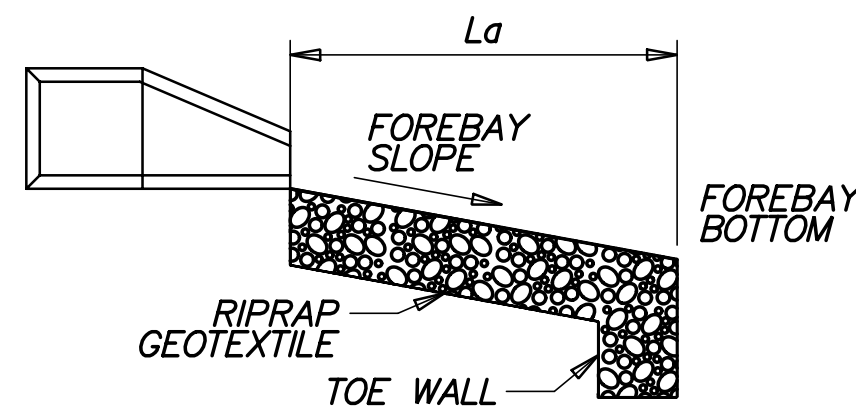
CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: DB
	CHECKED BY: JZ

**STORMWATER
MANAGEMENT DETAILS
BMP 676 (BASIN 10)**

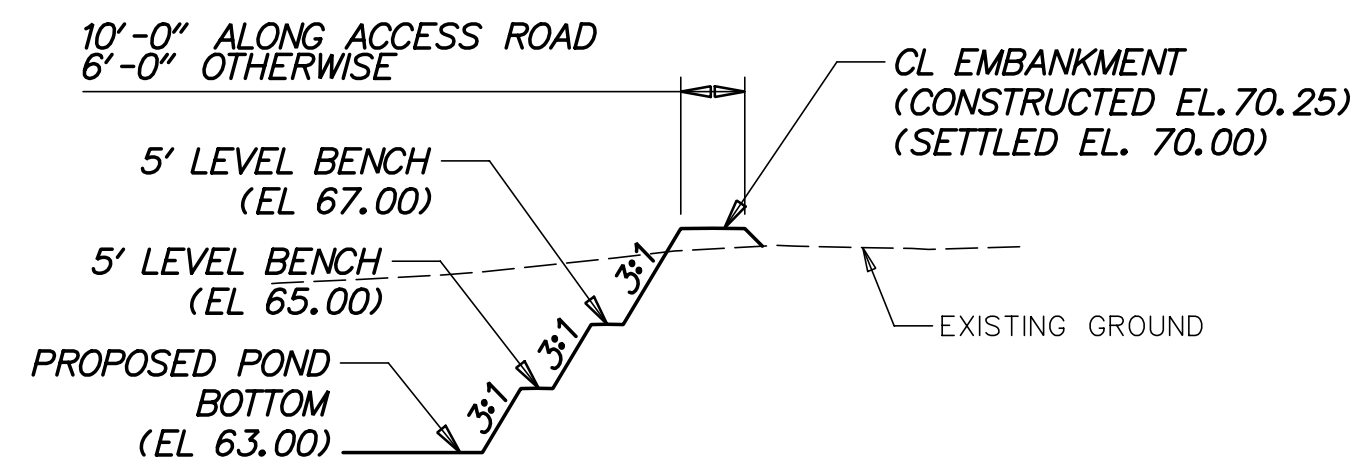
SW-80
SHEET NO. 765
TOTAL SHTS. 1256



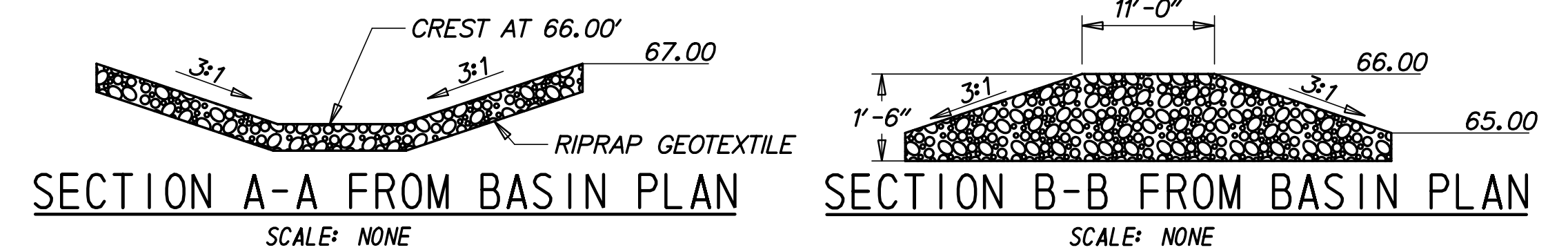
PLAN
SCALE: NONE



SECTION A-A
SCALE: NONE



SECTION C-C
SCALE: NONE



STONE CHECK DAM
SCALE: NONE

DATA

PIPE DIAMETER (Do)
APRON LENGTH (La)
APRON WIDTH (W)
RIPRAP SIZE (R No.)

RR ID	Do	La	W	R No.
34	1.5'	3.0'	13.0'	R-4
35	*3.0'	3.0'	17.0'	R-4
36	*3.2'	2.9'	18.0'	R-4

*EQUIVALENT Do

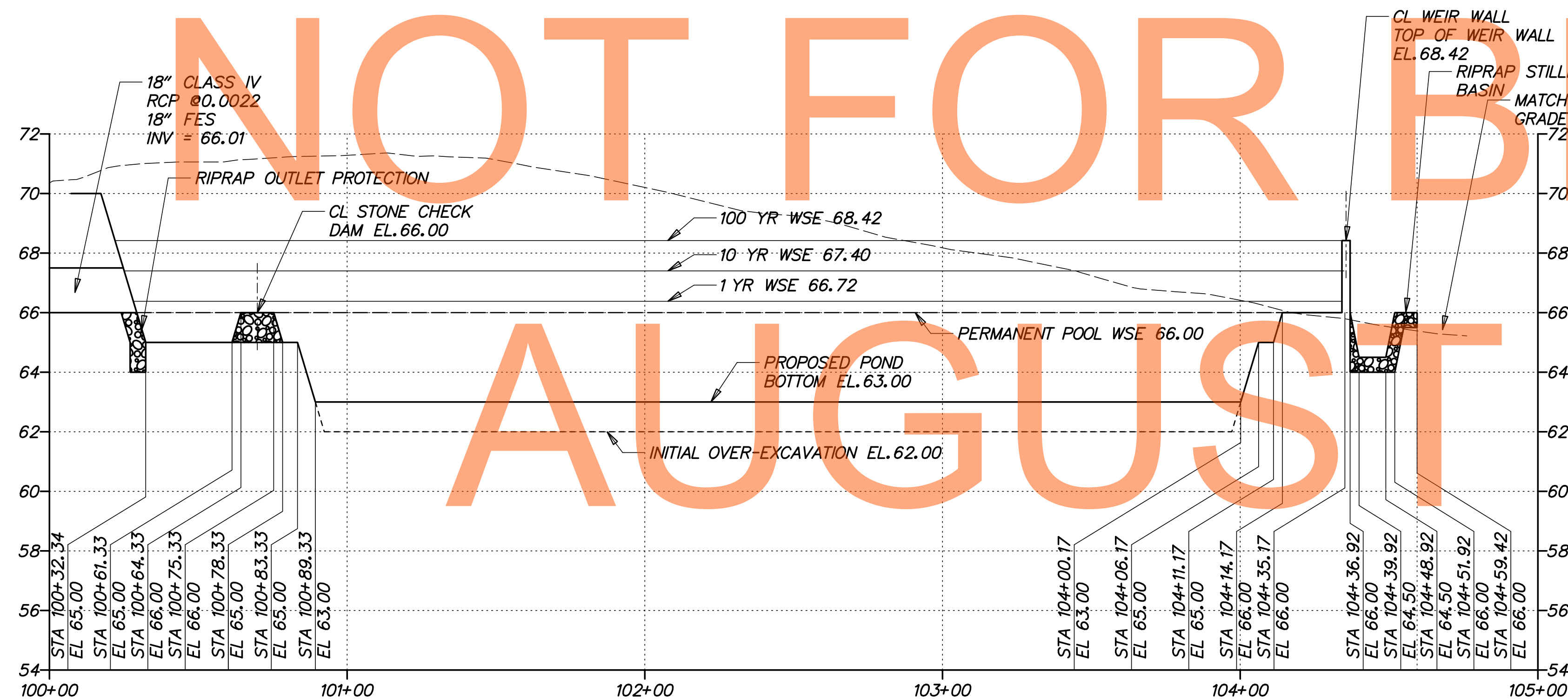
FOREBAY RIPRAP OUTLET PROTECTION
SCALE: NONE

- NOTES:
- RIPRAP ITEM# 712005.
 - GEOTEXTILES, RIPRAP ITEM# 713003
 - SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.
 - DEPRESS CENTERLINE OF APRON SLIGHTLY TO PREVENT EDGE CUTTING.

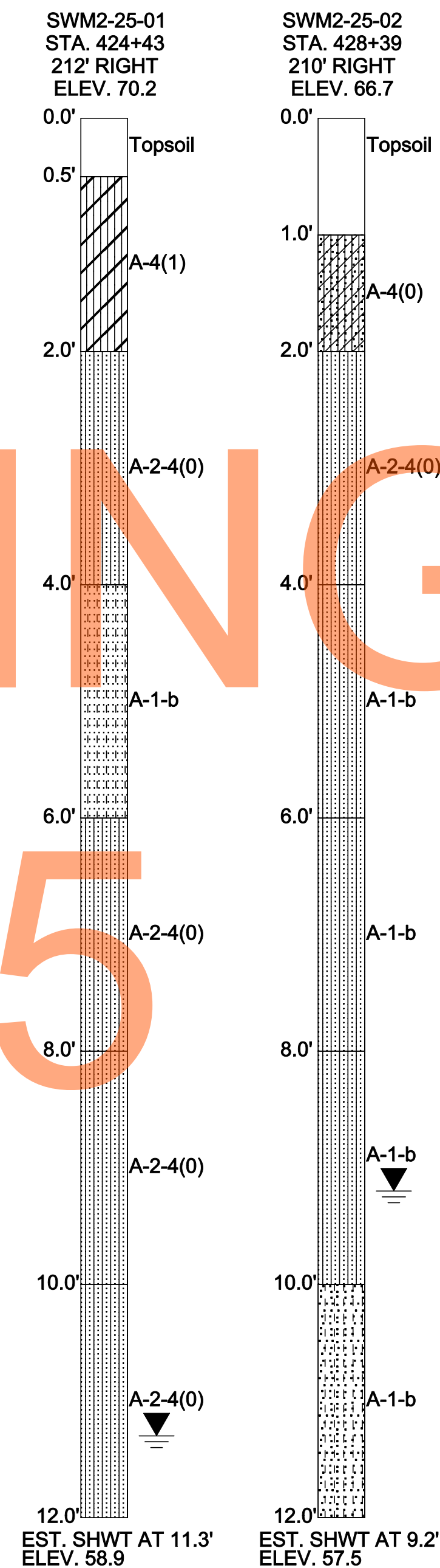
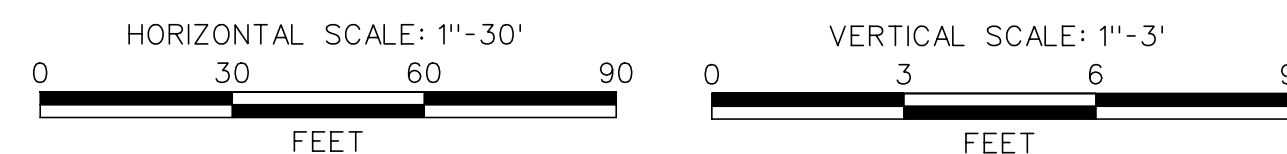
DRAFT

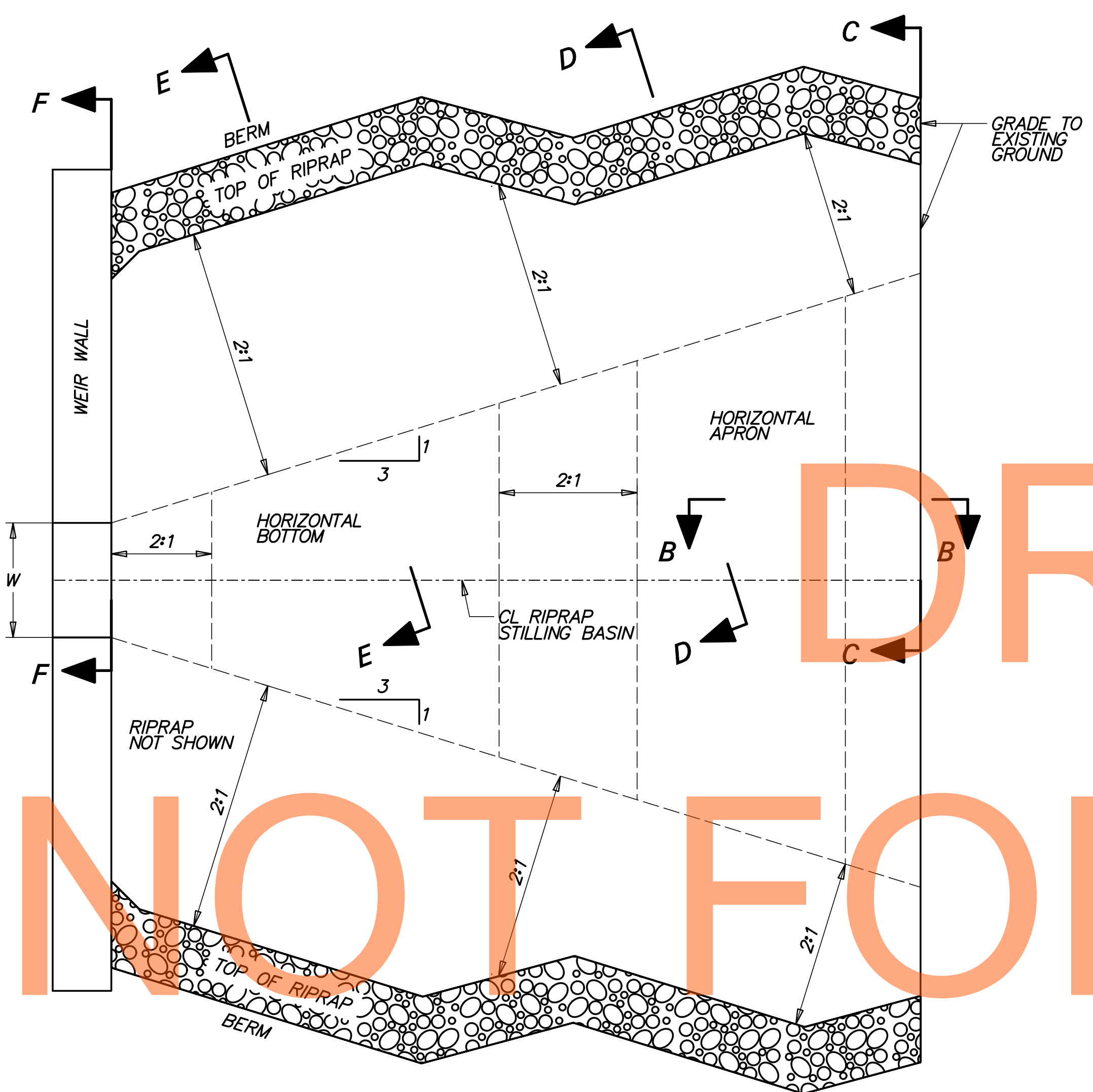
NOT FOR BIDDING

AUGUST 2015



SPILLWAY PROFILE - BMP 676 (BASIN 10)





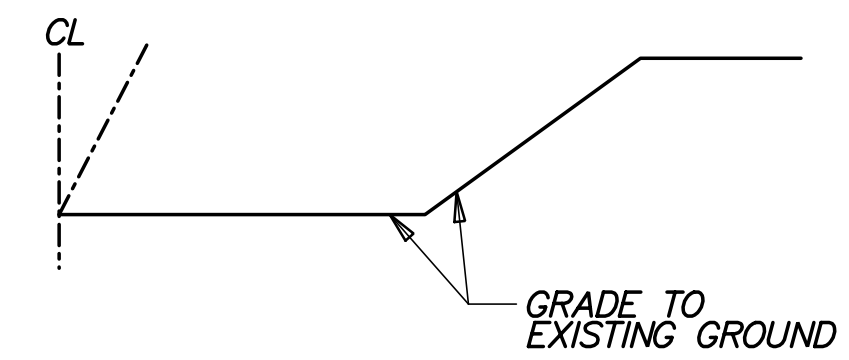
PLAN

SCALE: NONE

DATA

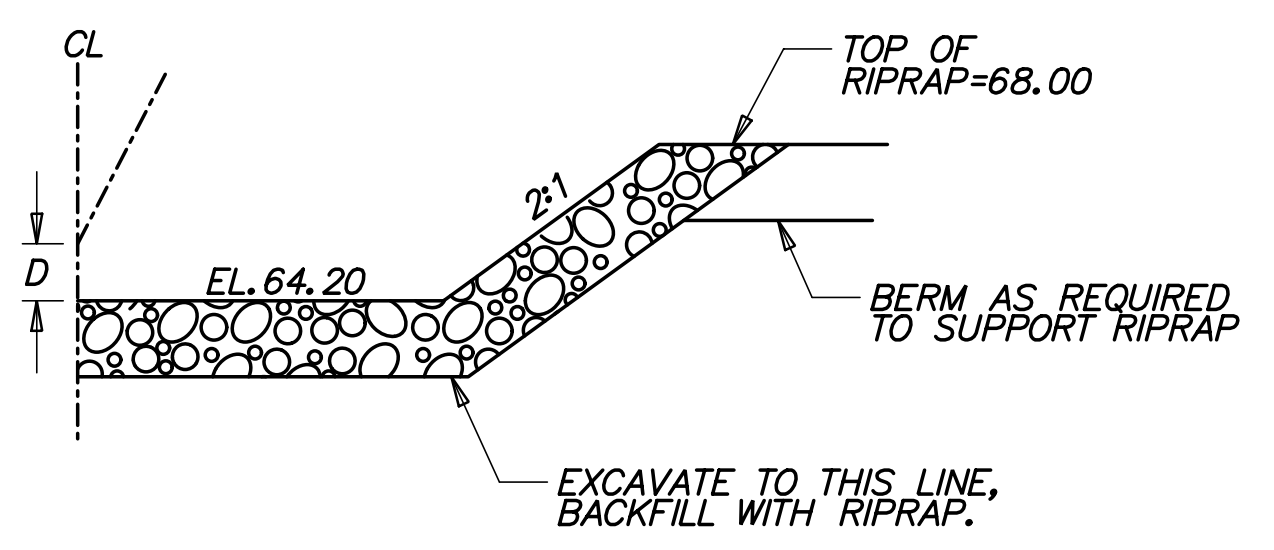
TOP OF V-NOTCH WEIR WIDTH $W = 1.07'$
 DEPTH OF BASIN FROM WEIR CREST $D = 1.50'$
 RIPRAP SIZE (R No.) = R-5 WITH NO. 57 STONE

- NOTES:
 1. RIPRAP ITEM# 712006.
 2. GEOTEXTILES, RIPRAP ITEM# 713003
 3. DELAWARE NO. 57 STONE ITEM# 302012
 4. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.



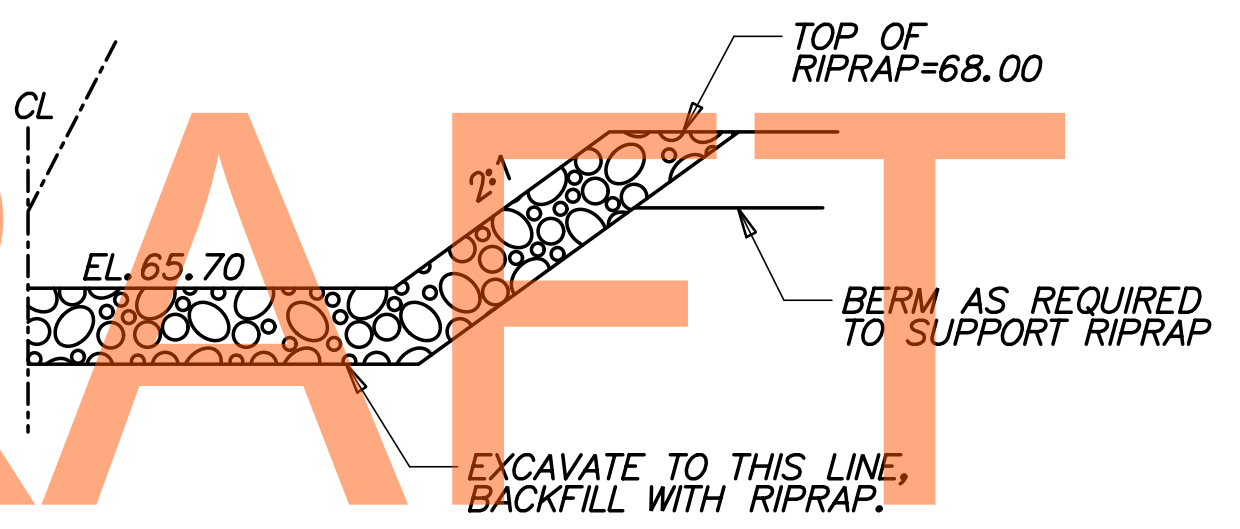
SECTION C-C

SCALE: NONE



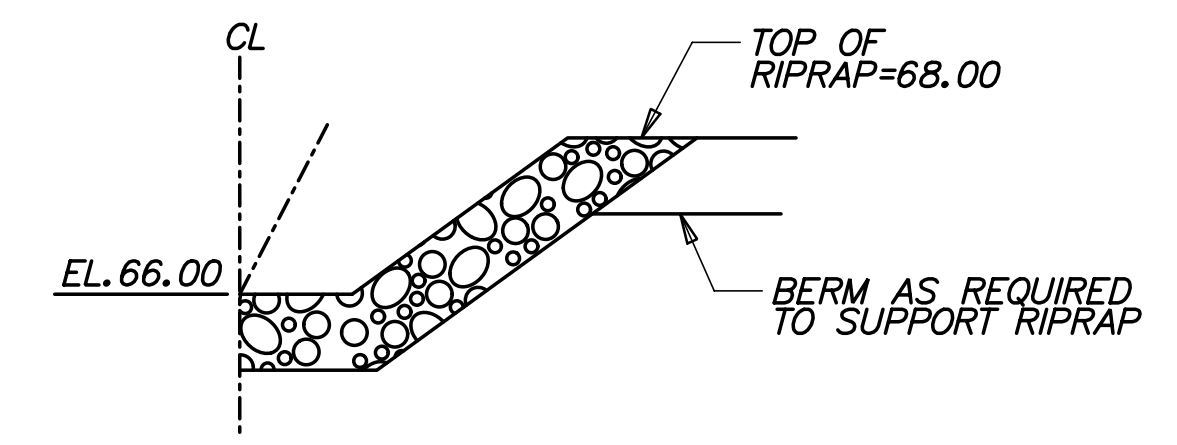
SECTION E-E

SCALE: NONE



SECTION D-D

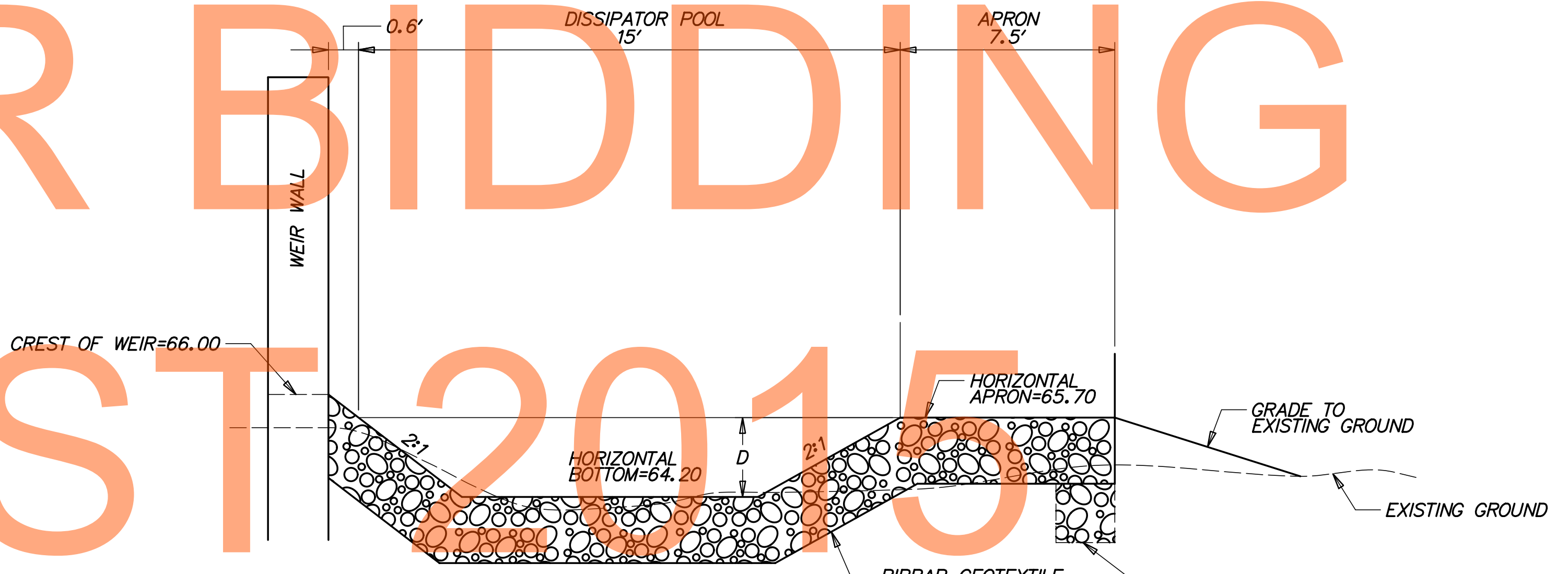
SCALE: NONE



SECTION F-F

SCALE: NONE

NOT FOR BIDDING



PROFILE THRU RIPRAP STILLING BASIN

SCALE: NONE

RIPRAP STILLING BASIN

SCALE: NONE

ADDENDUMS / REVISIONS

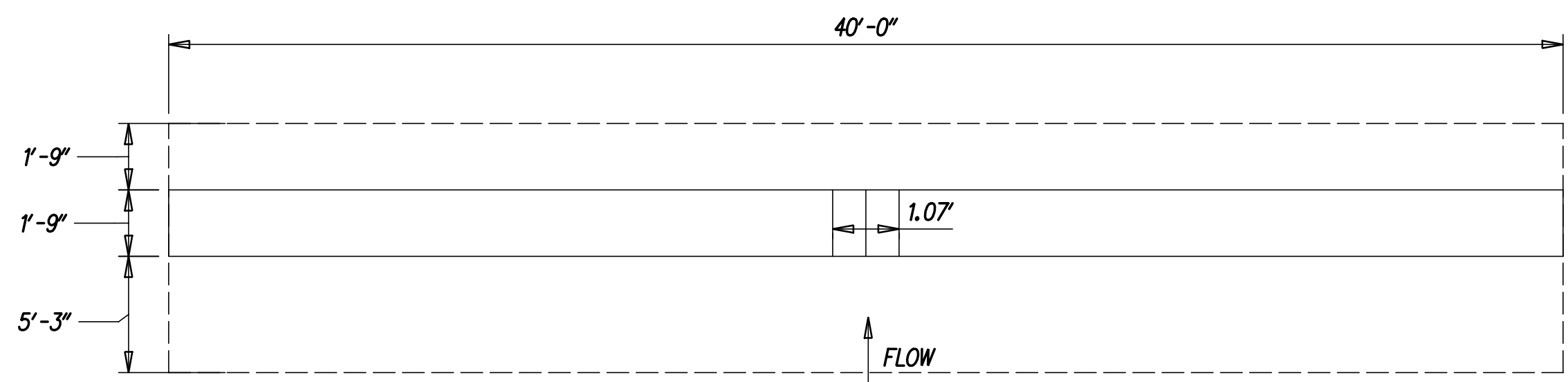
AS SHOWN

US 301
 LEVELS ROAD
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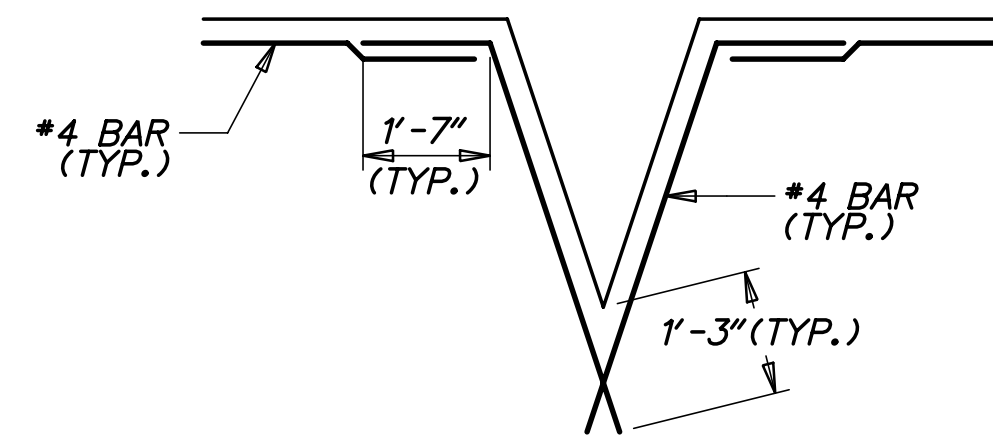
CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: DB
NEW CASTLE	CHECKED BY: JZ

STORMWATER
 MANAGEMENT DETAILS
 BMP 676 (BASIN 10)

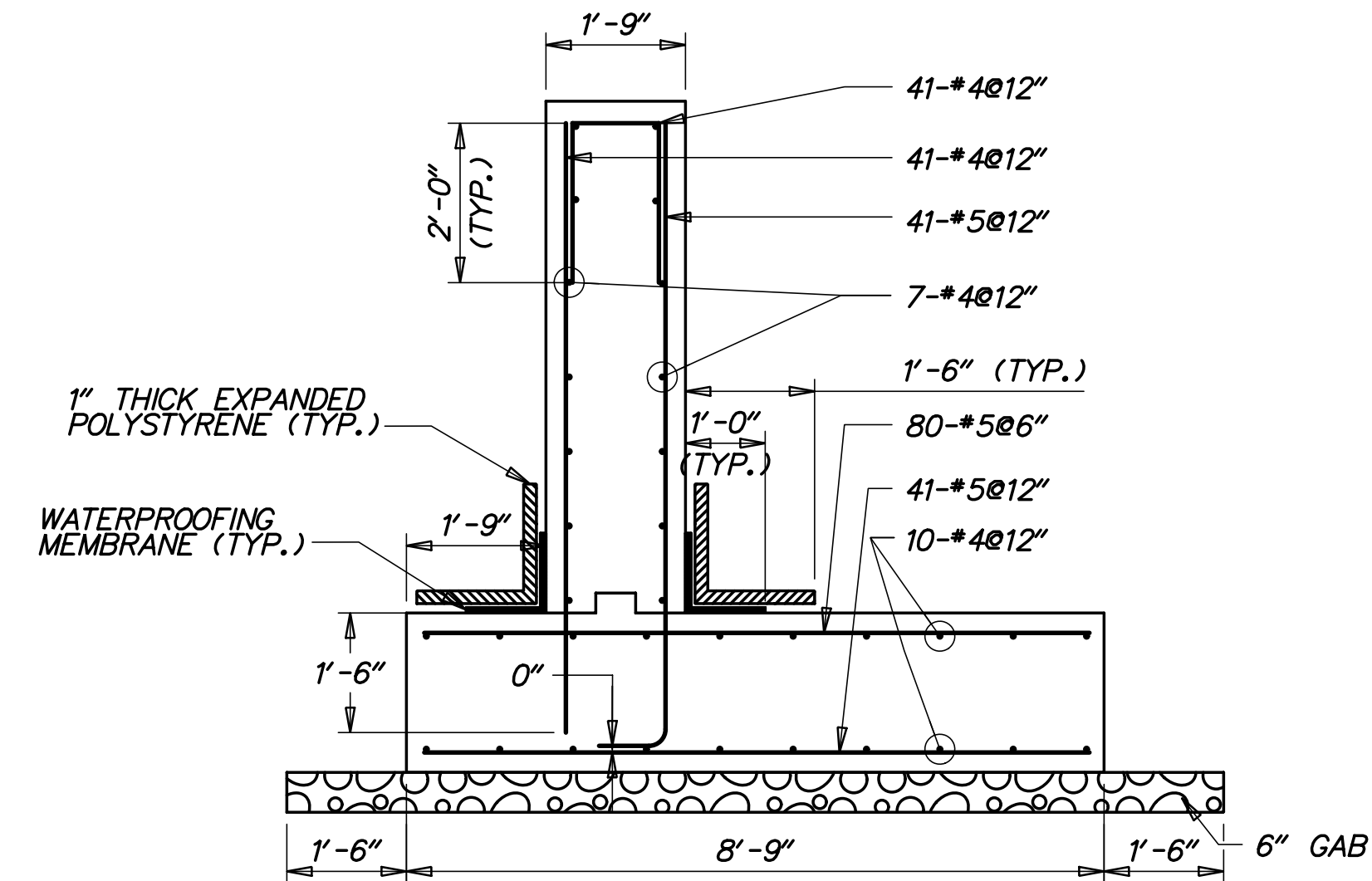
SW-82
SHEET NO.
767
TOTAL SHTS.
1256



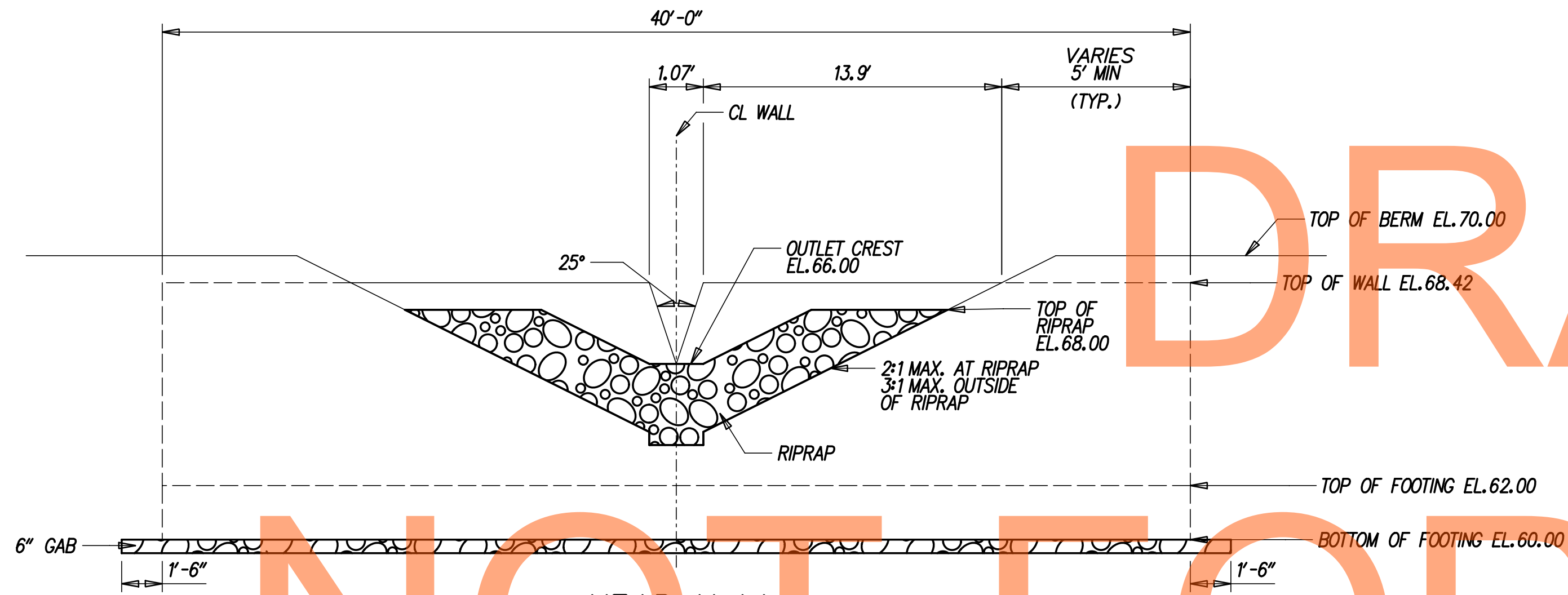
WEIR WALL PLAN
SCALE: NONE



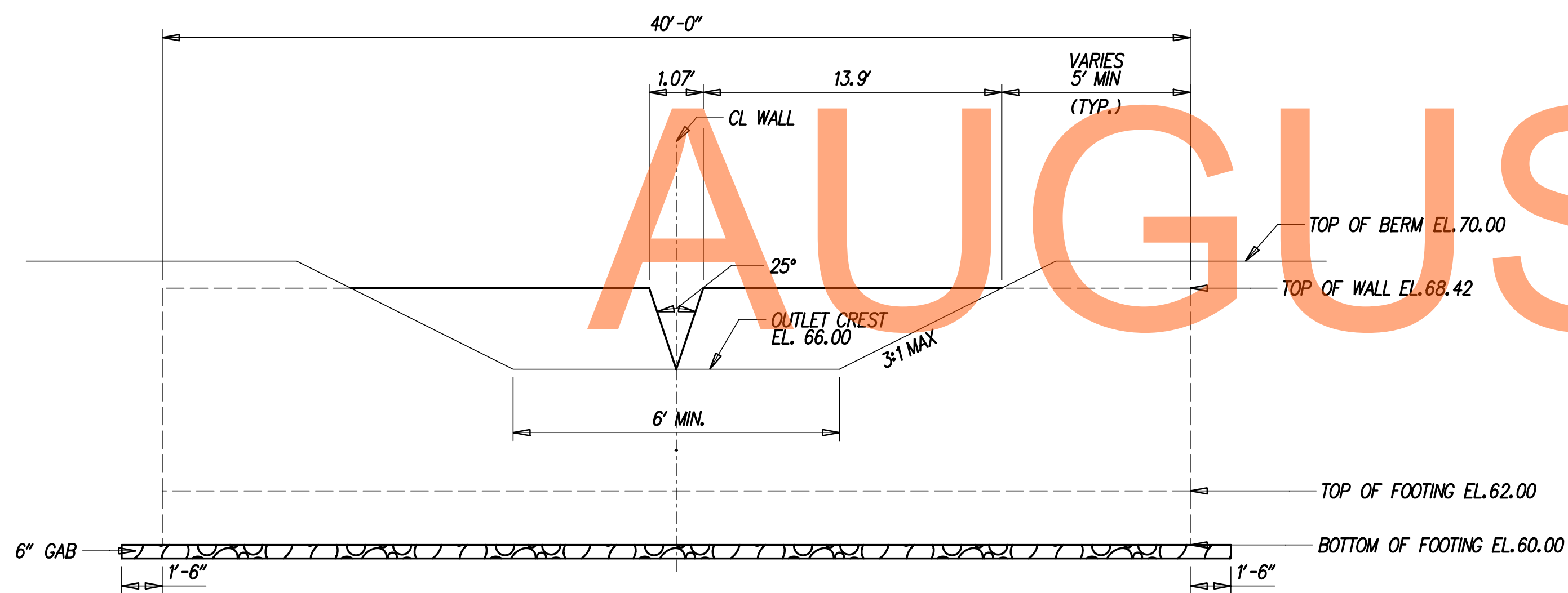
OPENING DETAILS
SCALE: NONE



WEIR WALL SECTION
SCALE: 1/2" = 1'-0"



WEIR WALL EXTERIOR ELEVATION WITH RIPRAP STILLING BASIN
SCALE: NONE



WEIR WALL INTERIOR ELEVATION
SCALE: NONE

GENERAL NOTES

1. DESIGN SPECIFICATIONS:

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 4TH EDITION, 2007, INCLUDING 2008 AND 2009 INTERIM REVISIONS, AND AS SUPPLEMENTED BY DELAWARE DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL, MAY 2005, INCLUDING LATEST REVISIONS.

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2. LOADING:

UNIT WEIGHTS OF MATERIALS SHALL BE IN ACCORDANCE WITH THE DELAWARE DESIGN MANUAL.

3. PORTLAND CEMENT CONCRETE:

PORTLAND CEMENT CONCRETE FOR CAST-IN-PLACE ELEMENTS SHALL BE AS FOLLOWS:
(28 DAY COMPRESSIVE STRENGTH)
(CLASS B, F'c=3000 PSI) - WEIR WALL FOOTING
(CLASS A, F'c=4500 PSI) - WEIR WALL STEM

WEIR WALLS MUST BE CAST-IN-PLACE.

MIX REQUIREMENTS SHALL CONFORM TO SECTION 812 OF THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.

ALL EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED WITH 3/4" X 3/4" MILLED CHAMFER STRIPS EXCEPT ON UNEXPOSED FOOTINGS.

4. BAR REINFORCEMENT:

REINFORCING STEEL SHALL CONFORM TO AASHTO M31 (ASTM A615), GRADE 60 AND IS TO BE EPOXY COATED. FUSION-BONDED EPOXY COATED REINFORCING STEEL SHALL CONFORM TO AASHTO M284 (ASTM D3963).

PROVIDE 3" CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.

LAP LENGTH OF #4 BARS TO BE 3'-0". STAGGER SPLICE LOCATIONS.

DO NOT WELD GRADE 60 REINFORCING STEEL.

5. CONSTRUCTION JOINTS:

KEYED CONSTRUCTION JOINTS SHALL BE 2" X 4" OR AS NOTED.

6. WATERPROOFING MEMBRANE:

ADHESIVE BACKED WATERPROOFING MEMBRANE IS TO BE USED. SPLICING OF THE MEMBRANE IS PROHIBITED.

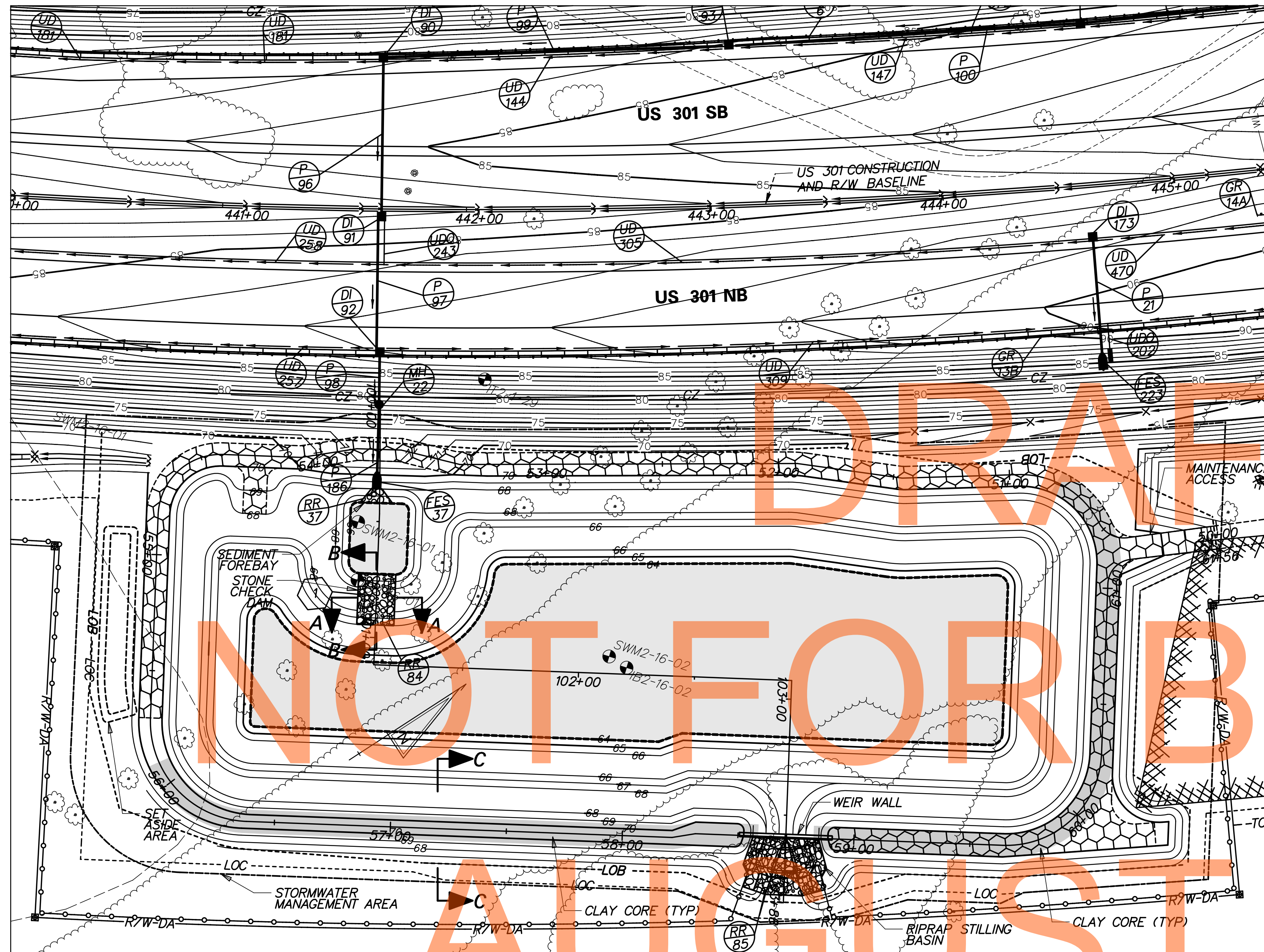
7. REFER TO SPECIFICATION SECTION 272501 FOR CONSTRUCTION SEQUENCE.

8. GAB IS INCIDENTAL TO WALL CONSTRUCTION.

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AUGUST 2015

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DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	AS SHOWN	US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT	BRIDGE NO.	STORMWATER MANAGEMENT DETAILS BMP 676 (BASIN 10)	SW-83	
				T20091303			SHEET NO.	768
				COUNTY	DESIGNED BY: DB		TOTAL SHTS.	1256
				NEW CASTLE	CHECKED BY: JZ			



PLAN - BMP 683 (BASIN 11)

POND DESIGN SUMMARY				
DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC.FT.)*
QUALITY STORM (1YR)	11.32	0.14	67.57	1.768
10 - YEAR	24.64	0.66	68.06	2.241
100 - YEAR	45.43	2.06	68.68	3.010

DRAINAGE AREA TO FACILITY: 5.03 ACRES

MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY BY EXTENDED DETENTION OF 1 YEAR STORM, WATER QUANTITY FOR 10 AND 100 YEAR STORMS.

*INCLUDES NORMAL POOL VOLUME OF 1.880 AC-FT.

SKIMMER DEVICE SUMMARY	
SKIMMER ELEVATION	65.50
ORIFICE SIZE (IN)	4
BLOCK WEIR UP TO ELEVATION	NONE

RIPRAP SCHEDULE		
NO.	TYPE	AREA (SY)
37	R-4	7
84	R-4	40
85	R-5	107

CHECK CONSTRUCTION PLANS FOR SCHEDULE OF RIPRAP OUTSIDE OF THE BASIN AREA.

POND CONSTRUCTION SEQUENCE AND NOTES

THE STORMWATER MANAGEMENT POND SHALL FUNCTION AS A SEDIMENT BASIN DURING ROADWAY CONSTRUCTION AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE STANDARD SPECIFICATIONS:

- SECTION 271 - STORMWATER MANAGEMENT POND
- SECTION 272 - POND OUTLET STRUCTURE, CONCRETE
- SECTION 274 - CLAY BORROW, STORMWATER MANAGEMENT POND

1. INSTALL STABILIZED CONSTRUCTION ENTRANCE.
2. CLEAR AND GRUB FOR INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS.
3. INSTALL PERIMETER SEDIMENT CONTROLS AS SHOWN.
4. CLEAR AND GRUB REMAINING AREA FOR POND CONSTRUCTION.
5. CONSTRUCT WEIR WALL, RIPRAP STILLING BASIN, CLAY CORE AND PARTIAL EMBANKMENT AS NEEDED TO INSTALL WEIR WALL. INSTALL SKIMMER AND DE-WATER FOUNDATION AS NEEDED IN ACCORDANCE WITH SECTION 111 AND USE SUMP PIT FOR PUMPING. (SEE EROSION AND SEDIMENT CONTROL DETAILS FOR SKIMMER DE-WATERING DEVICE INSTALLATION)
6. EXCAVATE THE POND AND COMPLETE THE EMBANKMENT, GRADES AND DETAILS SHOWN IN THE CONSTRUCTION PLANS. DURING EXCAVATION, THE CONTRACTOR SHALL SALVAGE AND STOCKPILE SOILS CLASSIFIED AS CH, CL, SC AND GC PER THE UNIFIED SOIL CLASSIFIED SYSTEM TO BE USED TO CONSTRUCT EMBANKMENT AND CLAY CORE. THE ABOVE CLASSIFIED SOILS MAY BE OBTAINED FROM ELSEWHERE WITHIN THE PROJECT LIMITS, IF NECESSARY.
7. STABILIZE ALL BARE AREAS.
NOTE: SEE CONSTRUCTION SEQUENCE PLANS FOR LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.
8. THE CONTRACTOR SHALL PROVIDE 'AS-BUILT' DRAWINGS OF ALL STORMWATER MANAGEMENT FACILITIES SUCH AS PONDS, INFILTRATION BASINS, BIOFILTRATION SWALES, ETC. 'AS-BUILT' DRAWINGS SHALL SHOW THE ACTUAL FINISHED GROUND CONTOURS, OUTLET STRUCTURE DIMENSIONS AND ELEVATIONS, ETC. AS THEY EXIST AT THE COMPLETION OF THE PROJECT. THESE DRAWINGS SHALL BE SIGNED BY A PROFESSIONAL ENGINEER OR LAND SURVEYOR.

MAINTENANCE OF POND AS A SEDIMENT BASIN

1. CONTRACTOR SHALL INSPECT THE BASIN IMMEDIATELY AFTER EVERY RAIN AND MAKE REPAIRS AS NEEDED.
2. CONTRACTOR SHALL CLEARLY MARK THE CLEANOUT ELEVATION ON A STAKE DRIVEN INTO THE GROUND AT A LOCATION CLEARLY VISIBLE FROM THE EMBANKMENT. SEDIMENT SHALL BE REMOVED WHEN CLEANOUT ELEVATION IS REACHED AND DISPOSED OF AT A LOCATION APPROVED BY THE ENGINEER. CLEANOUT ELEVATION IS 65.82.

CONVERSION TO PERMANENT STORMWATER MANAGEMENT POND

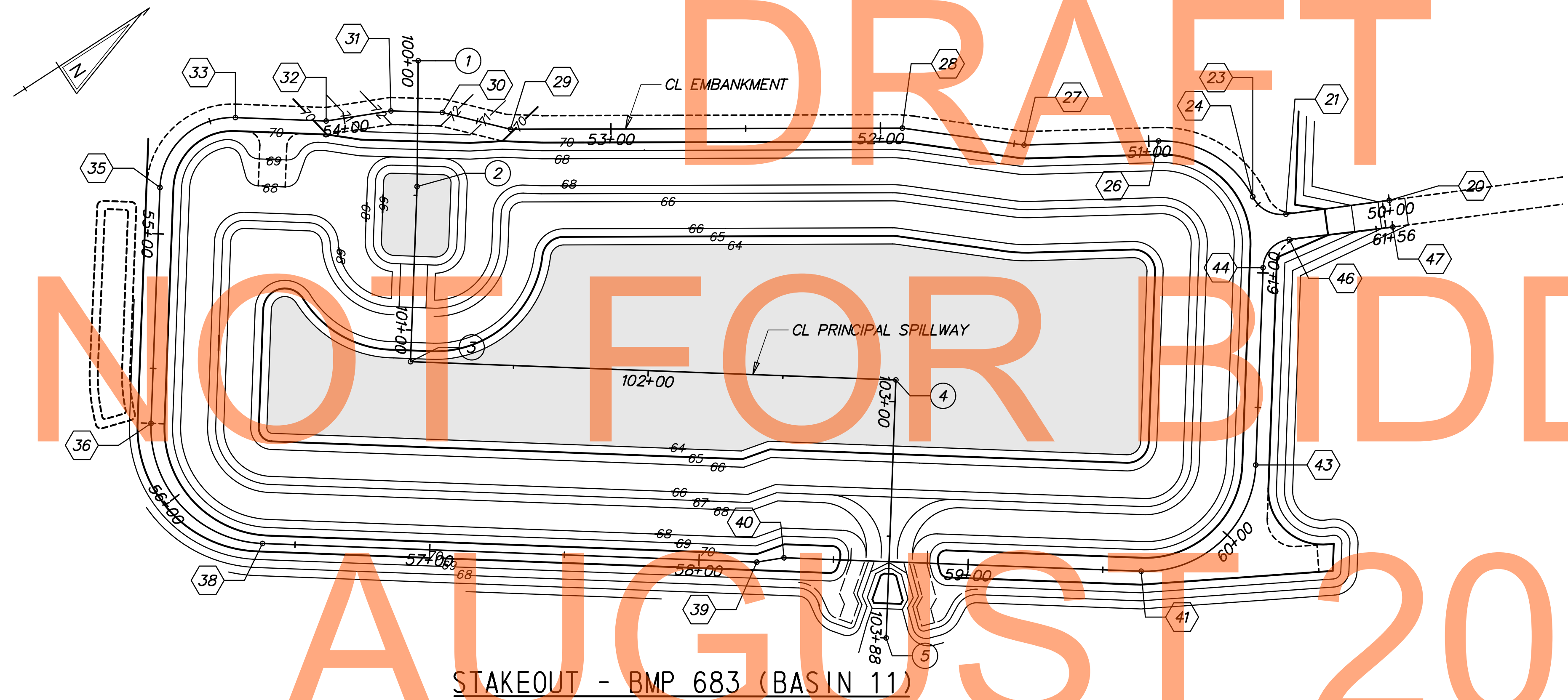
1. CONVERT THE BASIN INTO THE PERMANENT STORMWATER MANAGEMENT POND AFTER ALL AREAS DRAINING TO THE POND HAVE BEEN PERMANENTLY STABILIZED AND THE ENGINEER HAS APPROVED THE CONVERSION.
2. REMOVE ACCUMULATED SEDIMENT TO ELEVATION 63.00 AND DISPOSE SEDIMENT AT A LOCATION APPROVED BY THE ENGINEER.
3. COMPLETE STABILIZATION OF ALL BARE AREAS. REMOVE EROSION AND SEDIMENT CONTROL MEASURES, DEACTIVATE AND REMOVE DE-WATERING DEVICE, AND REPAIR HOLE IN WEIR WALL WITH NON-SHRINK GROUT.

PLANTING SCHEDULE

- PLACE PERMANENT GRASS SEEDING - WET GROUND UP TO ELEVATION 68.00
- PLACE PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 68.00
- PLACE TOPSOIL ON LOWER BENCH ELEVATION 66.00 AND ABOVE.

POND QUANTITIES			
ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	3749	CY
272501	POND OUTLET STRUCTURE, 15, SPECIAL	1	EACH
274000	CLAY BORROW, STORMWATER MANAGEMENT POND, CUT-OFF TRENCH	1291	CY
302011	DELAWARE NO. 3 STONE	302	TON
302012	DELAWARE NO. 57 STONE	25	TON
712005	R-4 RIPRAP	7	SY
712006	R-5 RIPRAP	107	SY
712020	R-4 RIPRAP	29	TON
713001	GEOTEXTILES, STABILIZATION	2039	SY
713003	GEOTEXTILES, RIPRAP	191	SY
733002	TOPSOILING, 6" DEPTH	7145	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	4076	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	5851	SY

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CL PRINCIPAL SPILLWAY		
STATION	NORTHING	EASTING
① POB STA. 100+00.00	538544.8742	569035.8655
② PI STA. 100+46.68	538519.1123	569074.7878
③ PI STA. 101+11.73	538481.6408	569127.9634
④ PI STA. 102+91.93	538628.9447	569231.7647
⑤ POE STA. 103+87.74	538573.7583	569310.0794

CL EMBANKMENT		
STATION	NORTHING	EASTING
②⑩ POB STA. 50+00.00	538818.7572	569275.5605
②⑪ PC STA. 50+38.67	538783.8083	569258.9979
22 PI STA. 50+47.18	538776.1218	569255.3552
②⑬ PT STA. 50+53.47	538777.0135	569246.8960
②⑭ PC STA. 50+53.53	538777.0189	569246.8450
25 PI STA. 50+77.55	538779.5370	569222.9558
②⑯ PT STA. 50+96.35	538759.0079	569210.4822
②⑰ PI STA. 51+46.29	538716.3261	569184.5486
②⑱ PI STA. 51+91.87	538681.8965	569154.6795
③⑰ PI STA. 53+37.26	538559.7439	569075.8262
③⑰ PI STA. 53+63.28	538541.9503	569056.8486
③⑰ PI STA. 53+82.38	538526.2565	569045.9626
③⑰ PI STA. 54+06.69	538504.0736	569036.0092
③⑰ PC STA. 54+40.38	538476.5379	569016.6055
③⑰ PI STA. 54+67.38	538454.4672	569001.0528
③⑰ PT STA. 54+82.79	538438.9145	569023.1236
③⑰ PC STA. 55+70.39	538388.4543	569094.7316
37 PI STA. 56+13.39	538363.6854	569129.8812
③⑰ PT STA. 56+37.93	538398.8349	569154.6502
③⑰ PI STA. 58+21.45	538548.8494	569260.3617
④① PI STA. 58+31.65	538558.1758	569264.4870
④① PC STA. 59+64.26	538666.5769	569340.8746
④② PI STA. 60+05.28	538700.1080	569364.5031
④③ PT STA. 60+28.68	538723.7202	569330.9605
④④ PC STA. 61+01.94	538765.8897	569271.0559
45 PI STA. 61+11.34	538771.3016	569263.3680
④⑥ PT STA. 61+17.50	538779.7384	569267.5166
④⑦ POE STA. 61+56.21	538814.4747	569284.5971

STAKEOUT - BMP 683 (BASIN 11)

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ADDENDUMS / REVISIONS	

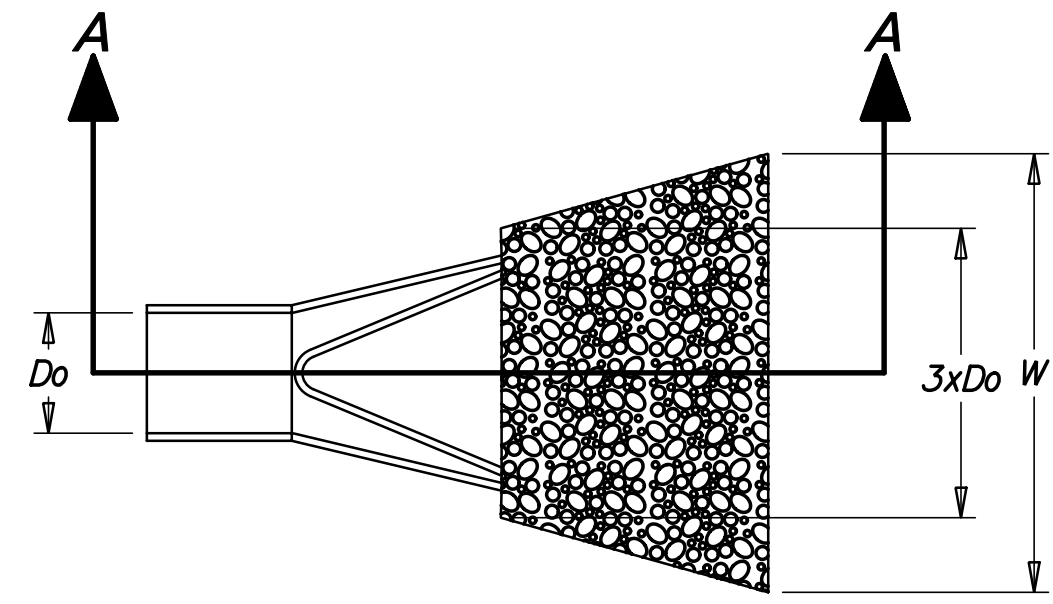


**US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD**

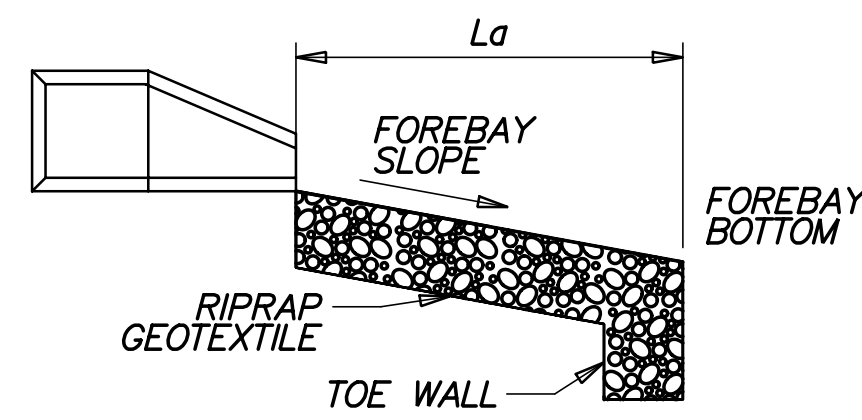
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T20091303	
COUNTY	DESIGNED BY: DB
NEW CASTLE	CHECKED BY: JZ

**STORMWATER
MANAGEMENT DETAILS
BMP 683 (BASIN 11)**

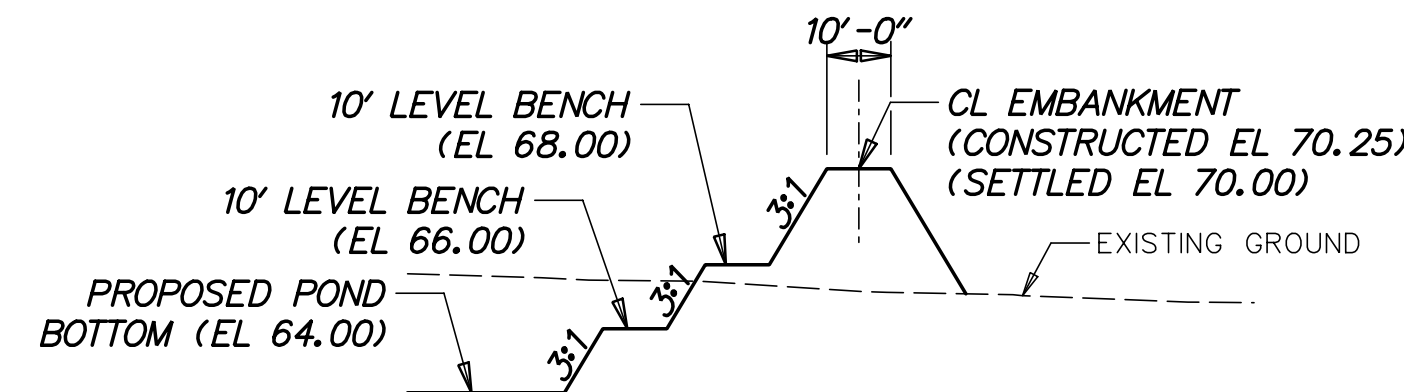
SW-85
SHEET NO. 770
TOTAL SHTS. 1256



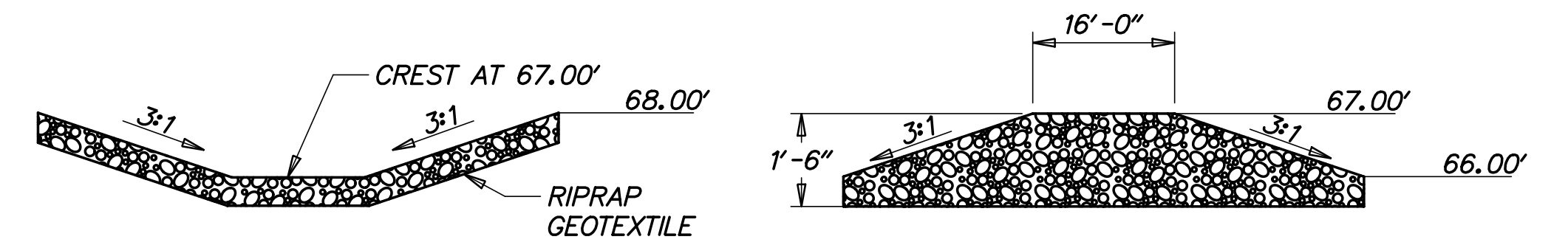
PLAN
SCALE: NONE



SECTION A-A
SCALE: NONE



SECTION C-C
SCALE: NONE



SECTION A-A FROM BASIN PLAN SECTION B-B FROM BASIN PLAN
SCALE: NONE

STONE CHECK DAM
SCALE: NONE

- NOTES:
 1. RIPRAP ITEM# 712020
 2. GEOTEXTILE RIPRAP ITEM# 713003
 3. SEE STANDARD NO. E-10 FOR GEOTEXTILE PLACEMENT.

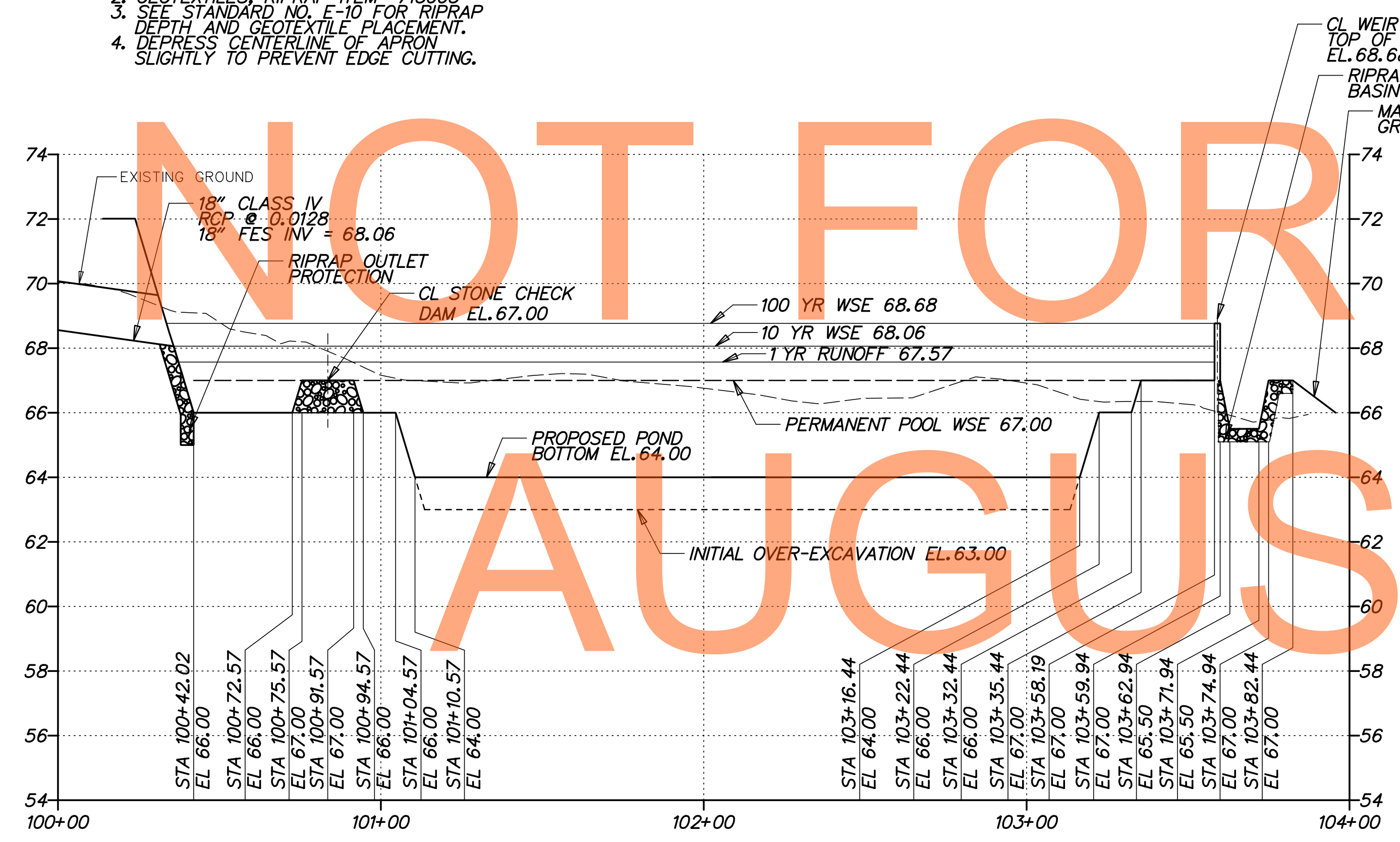
DATA

PIPE DIAMETER (Do)
 APRON LENGTH (La)
 APRON WIDTH (W)
 RIPRAP SIZE (R No.)

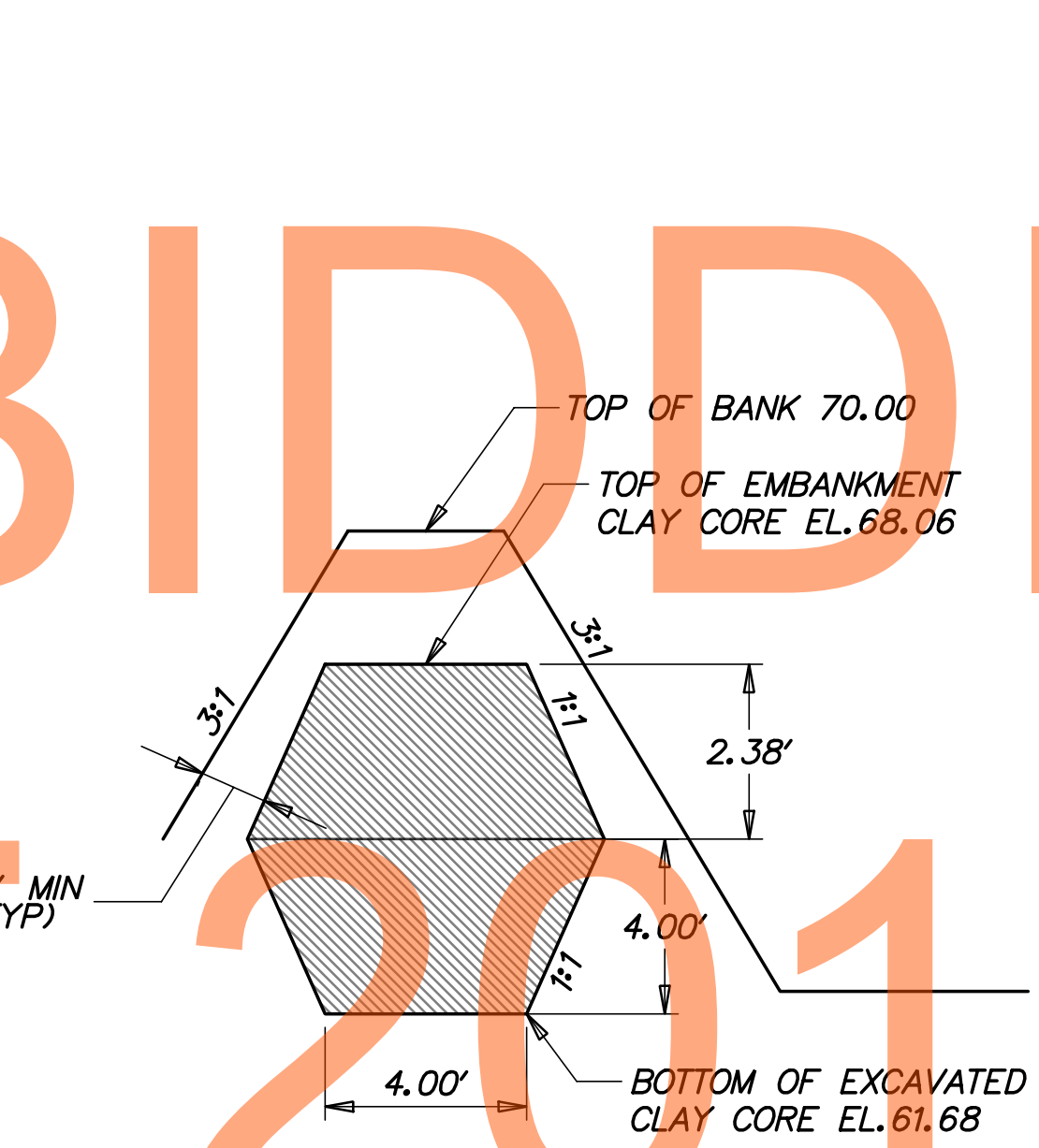
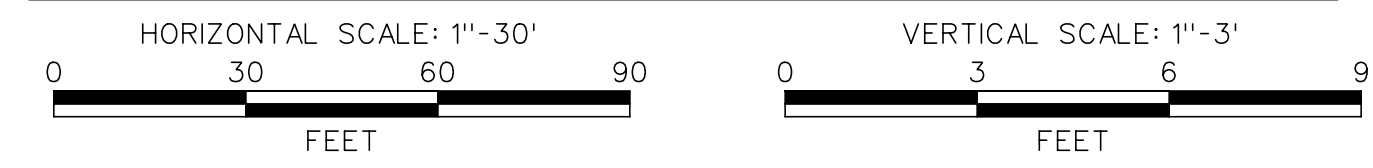
FES ID	Do	La	W	R No.
37	1.5'	6.2'	14.0'	R-4

FOREBAY RIPRAP OUTLET PROTECTION
SCALE: NONE

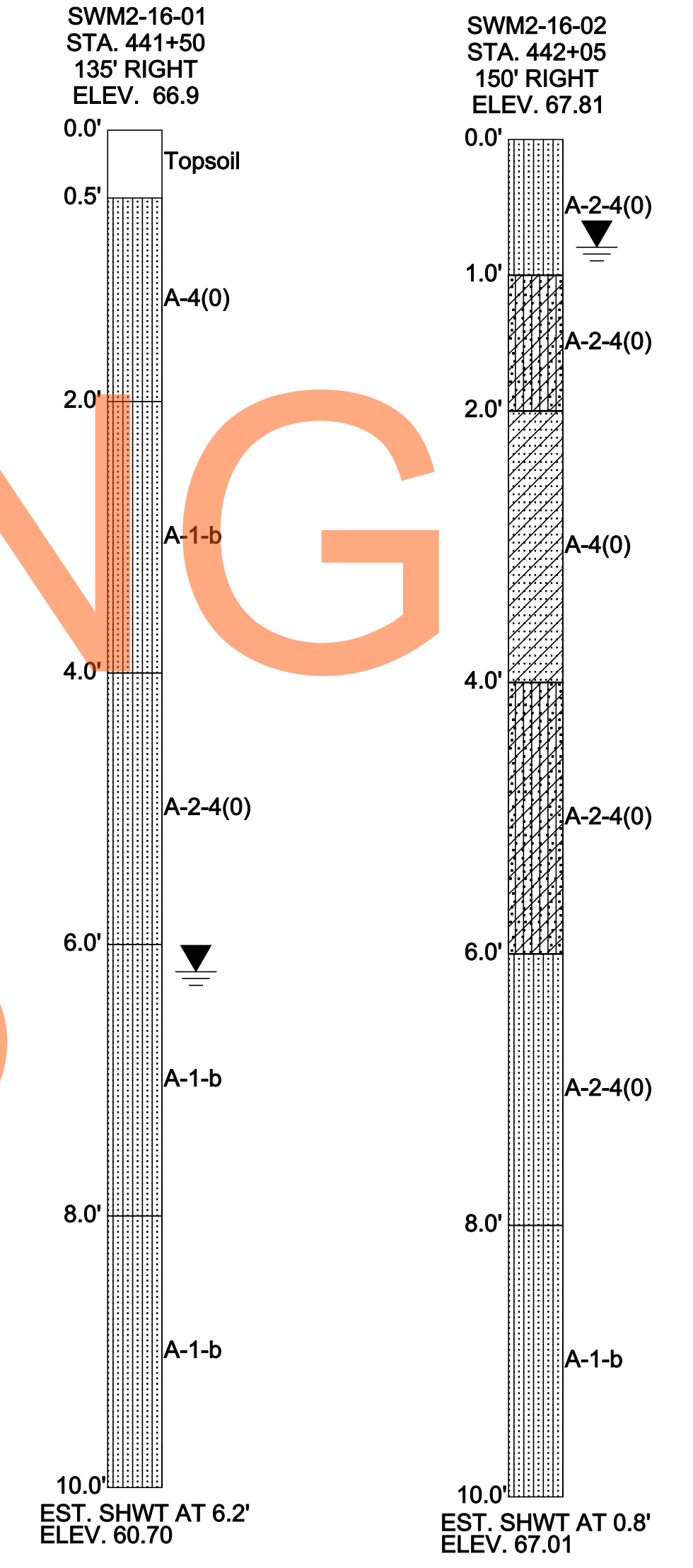
- NOTES:
 1. RIPRAP ITEM# 712005.
 2. GEOTEXTILES, RIPRAP ITEM# 713003
 3. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.
 4. DEPRESS CENTERLINE OF APRON SLIGHTLY TO PREVENT EDGE CUTTING.



SPILLWAY PROFILE BMP 683 (BASIN 11)



CLAY CORE TYPICAL SECTION
SCALE: NONE



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ADDENDUMS / REVISIONS

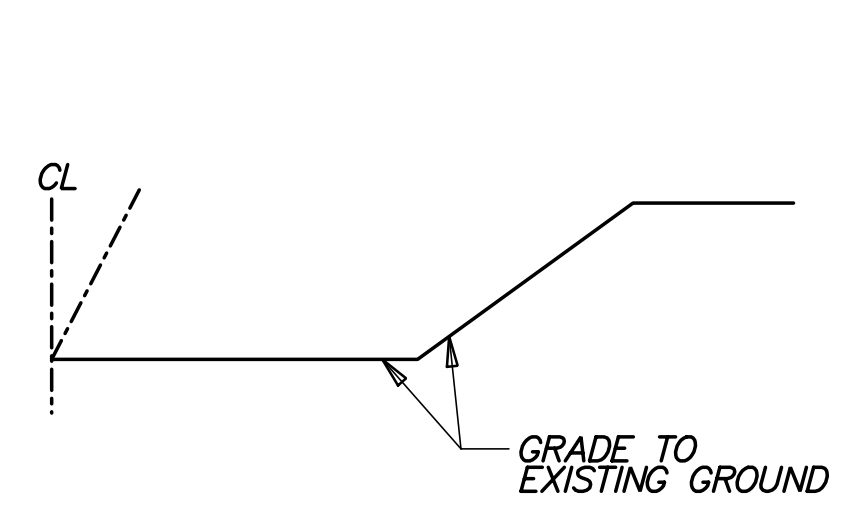
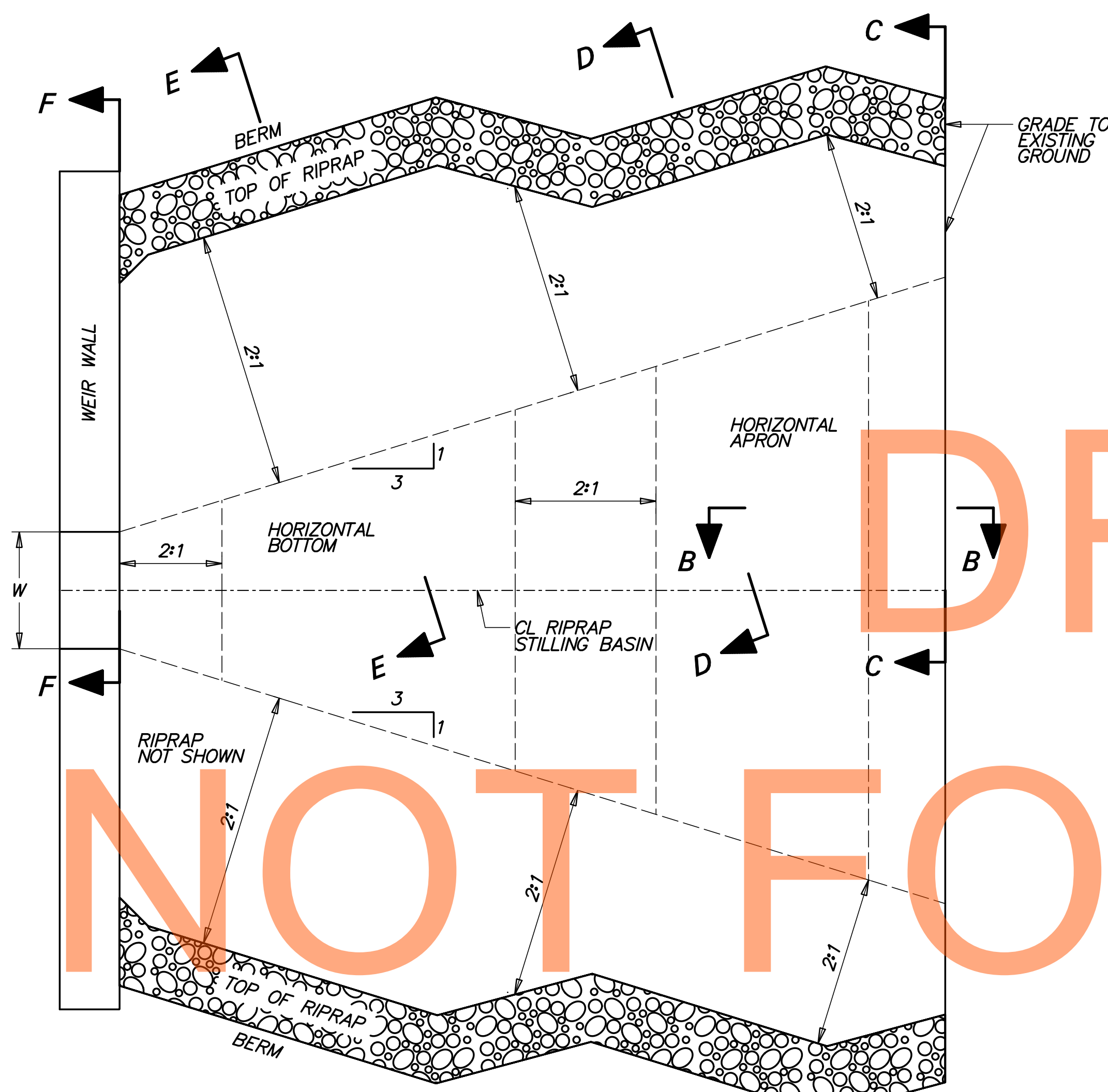
AS SHOWN

US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD

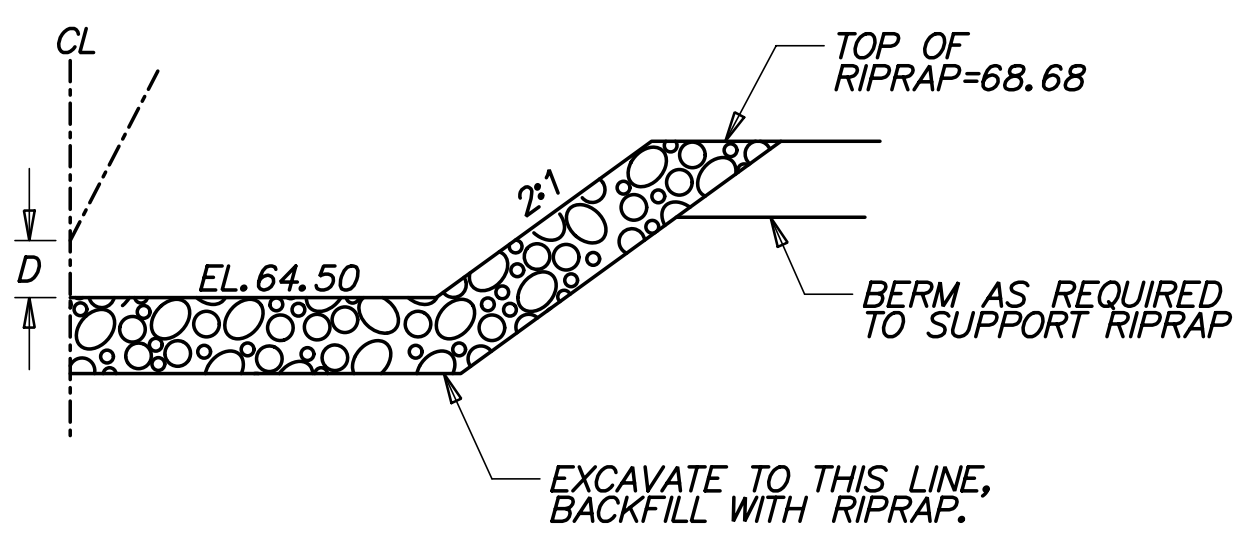
CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: DB
	CHECKED BY: JZ

STORMWATER MANAGEMENT DETAILS BMP 683 (BASIN 11)

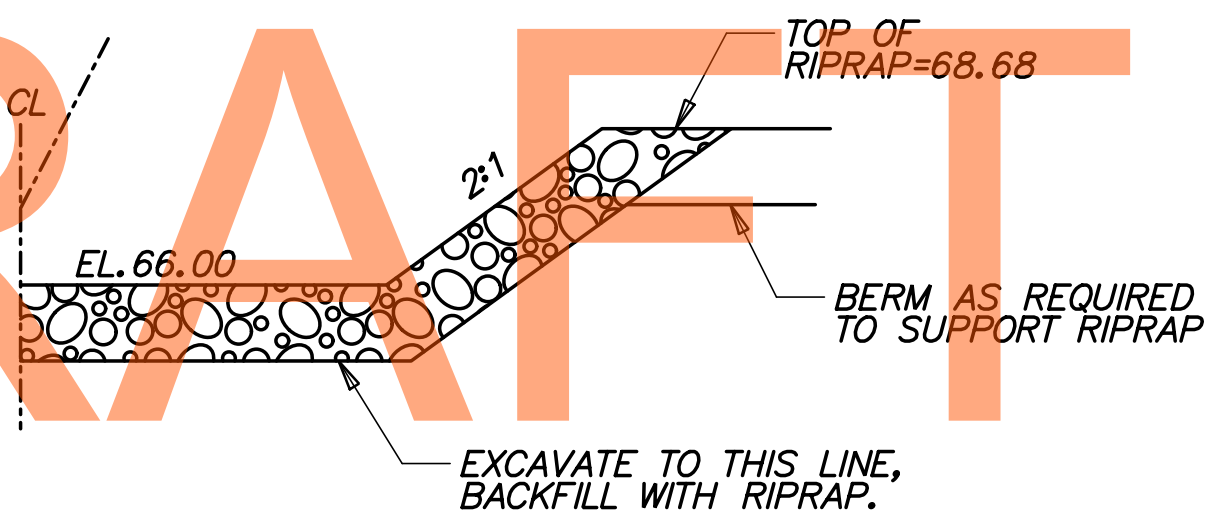
SW-86
SHEET NO. 771
TOTAL SHTS. 1256



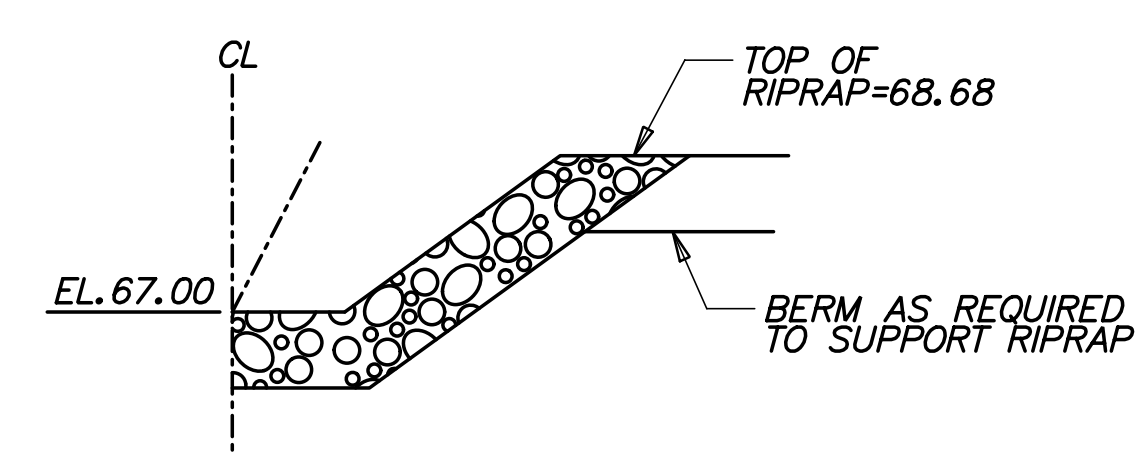
SECTION C-C
SCALE: NONE



SECTION E-E
SCALE: NONE



SECTION D-D
SCALE: NONE



SECTION F-F
SCALE: NONE

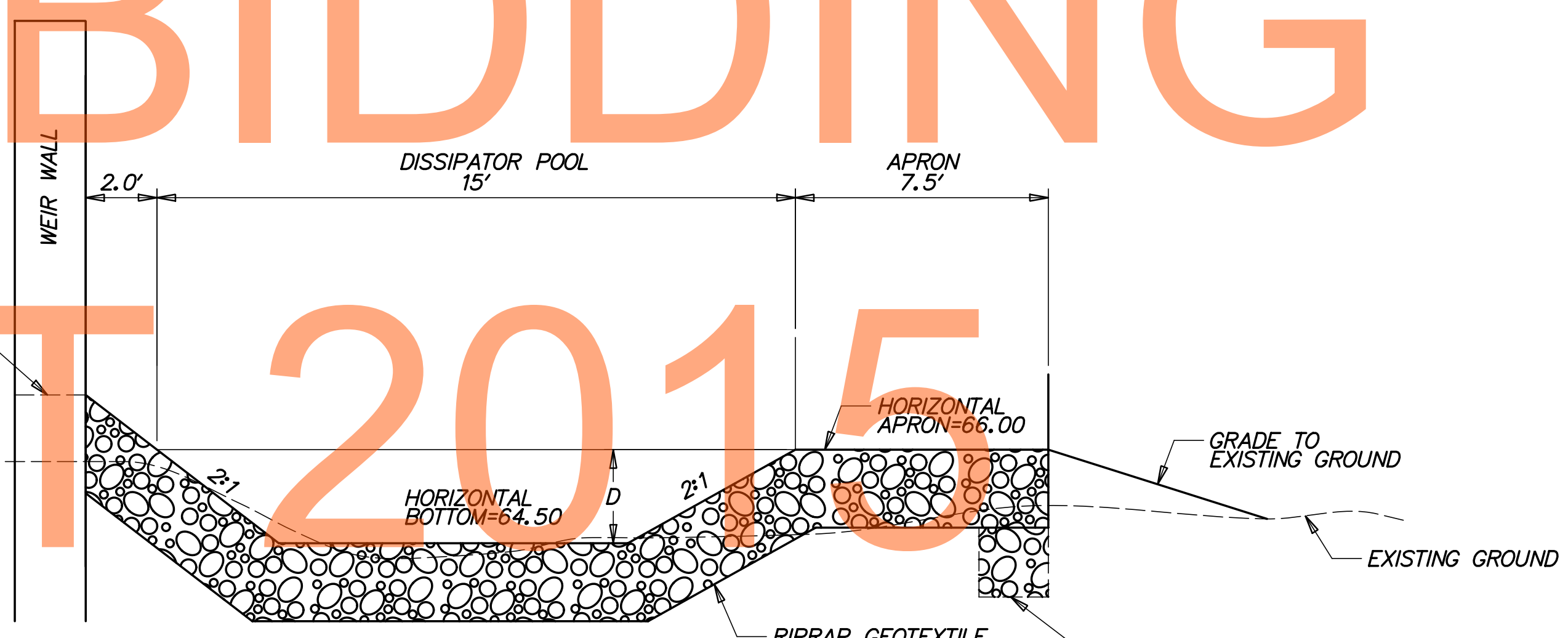
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AUGUST 2015

PLAN
SCALE: NONE

DATA

TOP OF V-NOTCH WEIR WIDTH $W = 0.74'$
DEPTH OF BASIN FROM WEIR CREST $D = 1.50'$
RIPRAP SIZE (R No.) = R-5 WITH NO. 57 STONE

- NOTES:
1. RIPRAP ITEM# 712006.
 2. GEOTEXTILES, RIPRAP ITEM# 713003
 3. DELAWARE NO. 57 STONE ITEM# 302012
 4. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.



PROFILE THRU RIPRAP STILLING BASIN
SCALE: NONE

RIPRAP STILLING BASIN
SCALE: NONE

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ADDENDUMS / REVISIONS

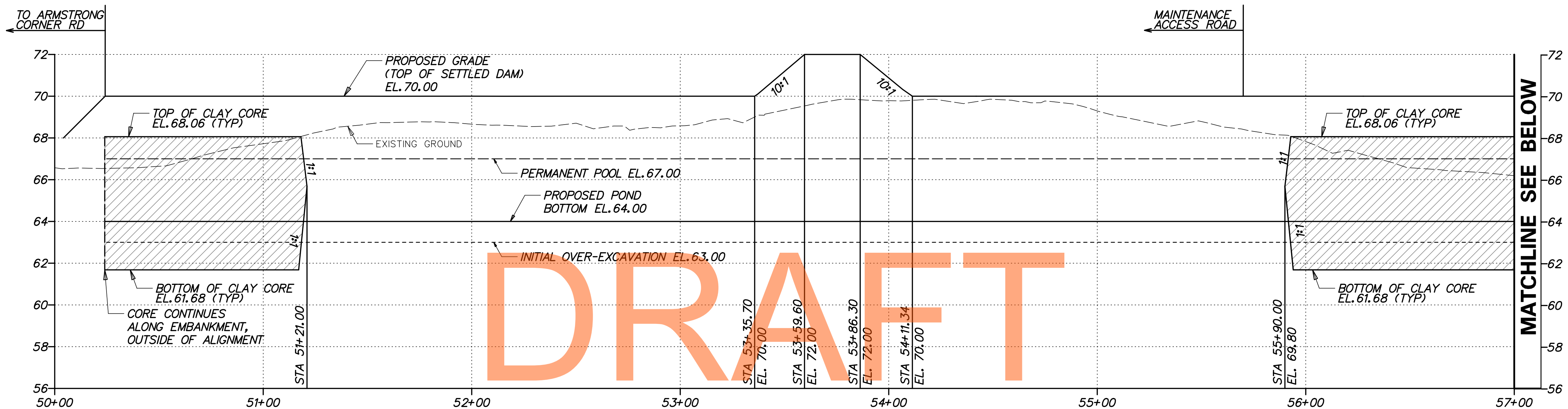
AS SHOWN

**US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD**

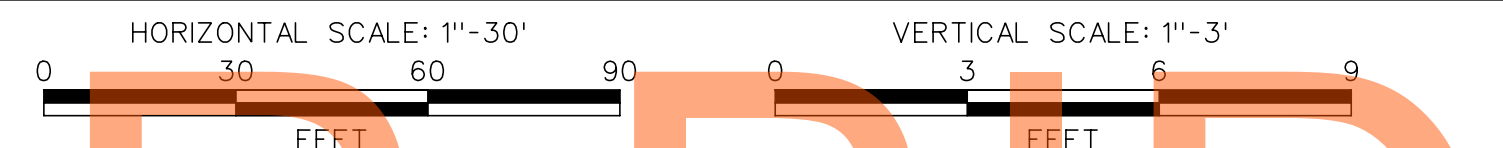
CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: DB CHECKED BY: JZ

**STORMWATER
MANAGEMENT DETAILS
BMP 683 (BASIN 11)**

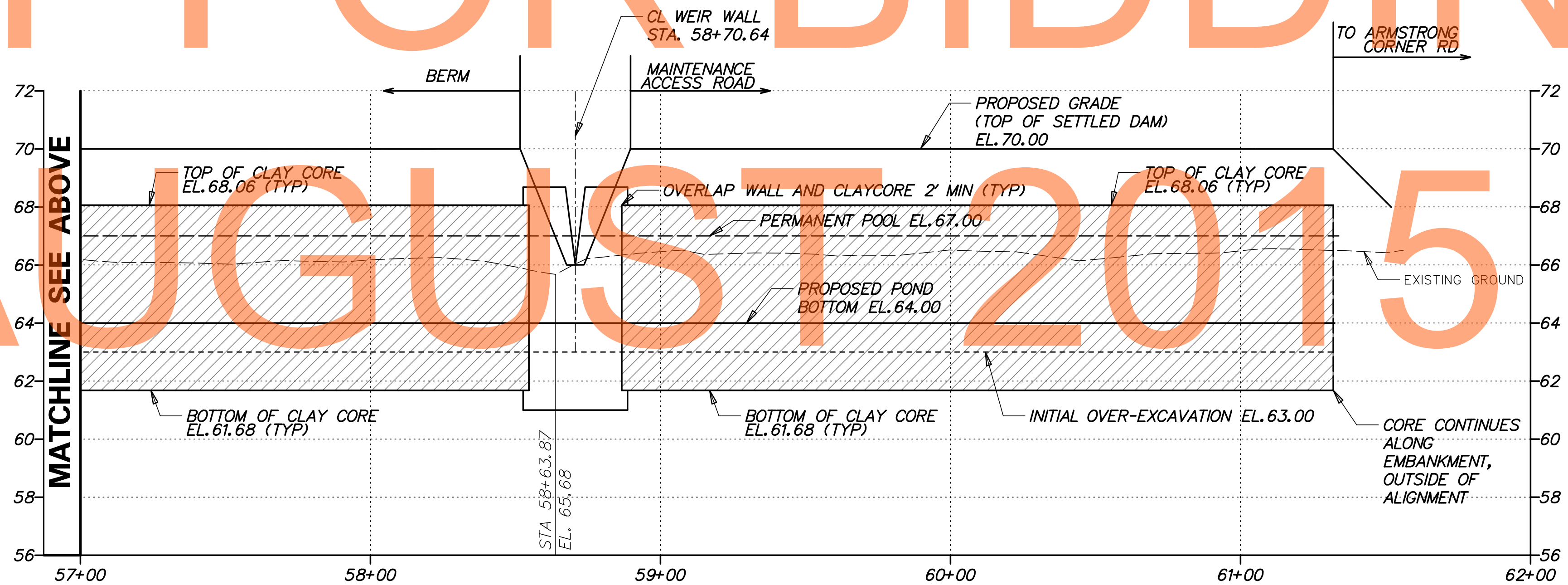
SW-87
SHEET NO. 772
TOTAL SHTS. 1256



EMBankment Profile for BMP 683 (BASIN 11)



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EMBankment Profile for BMP 683 (BASIN 11)



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ADDENDUMS / REVISIONS	

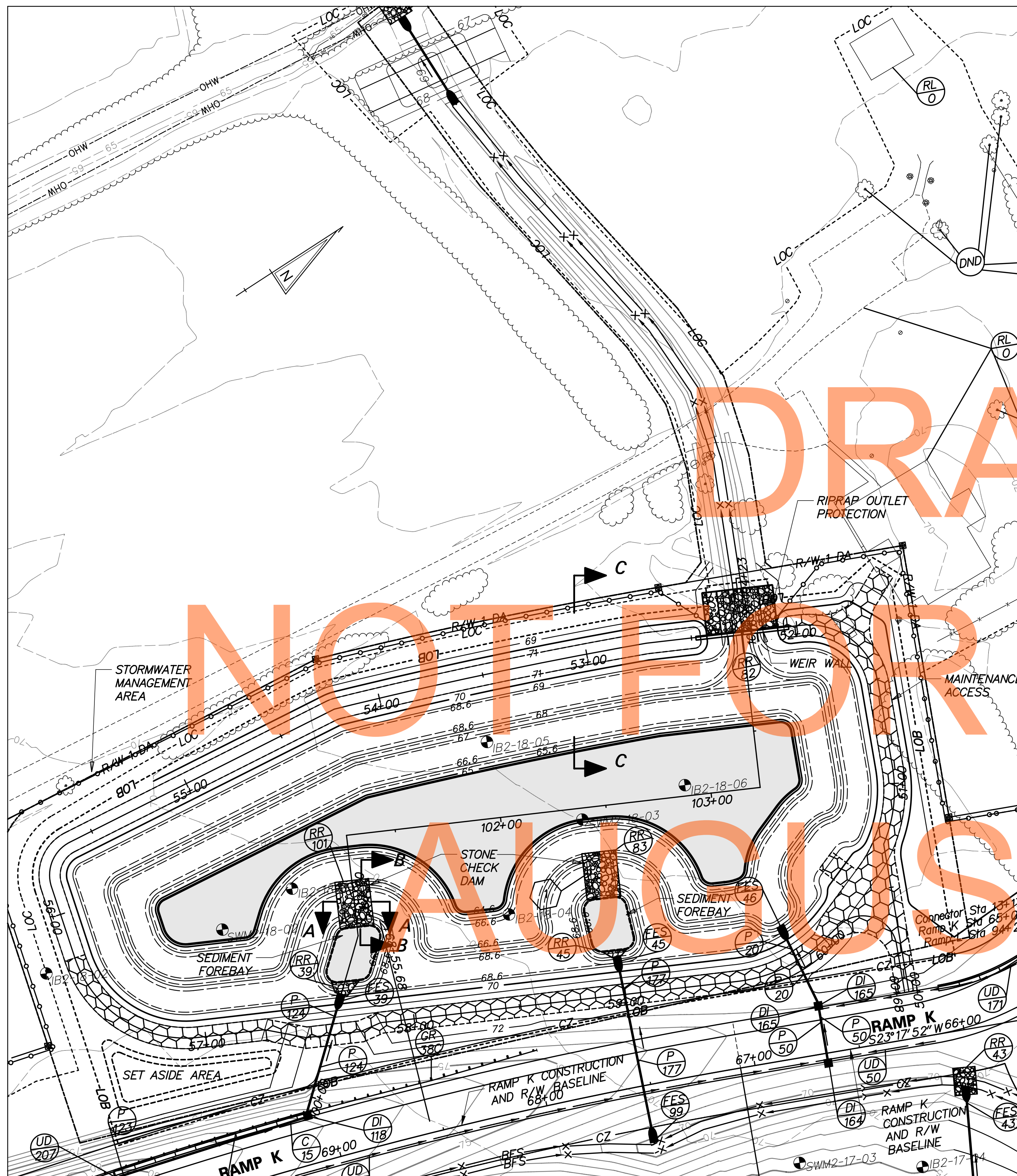
AS SHOWN

**US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD**

CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: DB
	CHECKED BY: JZ

**STORMWATER
MANAGEMENT DETAILS
BMP 683 (BASIN 11)**

SW-89
SHEET NO. 774
TOTAL SHTS. 1256



PLAN - BMP 684 (BASIN 15)

POND CONSTRUCTION SEQUENCE AND NOTES

THE STORMWATER MANAGEMENT POND SHALL FUNCTION AS A SEDIMENT BASIN DURING ROADWAY CONSTRUCTION AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE STANDARD SPECIFICATIONS:

- SECTION 271 - STORMWATER MANAGEMENT POND
SECTION 272 - POND OUTLET STRUCTURE, CONCRETE
- INSTALL STABILIZED CONSTRUCTION ENTRANCE.
 - CLEAR AND GRUB FOR INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS.
 - INSTALL PERIMETER SEDIMENT CONTROLS AS SHOWN.
 - CLEAR AND GRUB REMAINING AREA FOR POND CONSTRUCTION.
 - CONSTRUCT WEIR WALL, RIPRAP OUTLET PROTECTION AND PARTIAL EMBANKMENT AS NEEDED TO INSTALL WEIR WALL. INSTALL SKIMMER AND DE-WATER FOUNDATION AS NEEDED IN ACCORDANCE WITH SECTION 111 AND USE SUMP PIT FOR PUMPING. (SEE EROSION AND SEDIMENT CONTROL DETAILS FOR SKIMMER DE-WATERING DEVICE INSTALLATION).
 - EXCAVATE THE POND AND COMPLETE THE EMBANKMENT, GRADES AND DETAILS SHOWN IN THE CONSTRUCTION PLANS. DURING EXCAVATION, THE CONTRACTOR SHALL SALVAGE AND STOCKPILE SOILS CLASSIFIED AS CH, CL, SC AND GG PER THE UNIFIED SOIL CLASSIFICATION SYSTEM TO BE USED TO CONSTRUCT EMBANKMENT. THE ABOVE CLASSIFIED SOILS MAY BE OBTAINED FROM ELSEWHERE WITHIN THE PROJECT LIMITS, IF NECESSARY.
 - STABILIZE ALL BARE AREAS.
NOTE: SEE CONSTRUCTION SEQUENCE PLANS FOR LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.
 - THE CONTRACTOR SHALL PROVIDE 'AS-BUILT' DRAWINGS OF ALL STORMWATER MANAGEMENT FACILITIES SUCH AS PONDS, INFILTRATION BASINS, BIOFILTRATION SWALES, ETC. 'AS-BUILT' DRAWINGS SHALL SHOW THE ACTUAL FINISHED GROUND CONTOURS, OUTLET STRUCTURE DIMENSIONS AND ELEVATIONS, ETC. AS THEY EXIST AT THE COMPLETION OF THE PROJECT. THESE DRAWINGS SHALL BE SIGNED BY A PROFESSIONAL ENGINEER OR LAND SURVEYOR.

MAINTENANCE OF POND AS A SEDIMENT BASIN

- CONTRACTOR SHALL INSPECT THE BASIN IMMEDIATELY AFTER EVERY RAIN AND MAKE REPAIRS AS NEEDED.
- CONTRACTOR SHALL CLEARLY MARK THE CLEANOUT ELEVATION ON A STAKE DRIVEN INTO THE GROUND AT A LOCATION CLEARLY VISIBLE FROM THE EMBANKMENT. SEDIMENT SHALL BE REMOVED WHEN CLEANOUT ELEVATION IS REACHED AND DISPOSED OF AT A LOCATION APPROVED BY THE ENGINEER. CLEANOUT ELEVATION IS 68.19.

CONVERSION TO PERMANENT STORMWATER MANAGEMENT POND

- CONVERT THE BASIN INTO THE PERMANENT STORMWATER MANAGEMENT POND AFTER ALL AREAS DRAINING TO THE POND HAVE BEEN PERMANENTLY STABILIZED AND THE ENGINEER HAS APPROVED THE CONVERSION.
- REMOVE ACCUMULATED SEDIMENT TO ELEVATION 64.60 AND DISPOSE SEDIMENT AT A LOCATION APPROVED BY THE ENGINEER.
- COMPLETE STABILIZATION OF ALL BARE AREAS. REMOVE EROSION AND SEDIMENT CONTROL MEASURES AND DEACTIVATE DE-WATERING DEVICE.

PLANTING SCHEDULE

PLACE PERMANENT GRASS SEEDING - WET GROUND UP TO ELEVATION 68.60
PLACE PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 68.60
PLACE TOPSOIL ON LOWER BENCH ELEVATION 66.60 AND ABOVE.

SKIMMER DEVICE SUMMARY	
SKIMMER ELEVATION	67.64
ORIFICE SIZE (IN)	3
BLOCK WEIR UP TO ELEVATION	68.69

POND DESIGN SUMMARY				
DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC.FT.)*
QUALITY STORM (1 YR)	11.46	0.22	68.28	1.757
10 - YEAR	29.95	1.16	68.94	2.326
100 - YEAR	60.93	4.39	69.87	3.303

DRAINAGE AREA TO FACILITY: 7.57 ACRES

MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY BY EXTENDED DETENTION OF 1 YEAR STORM, WATER QUANTITY FOR 10 AND 100 YEAR STORMS.

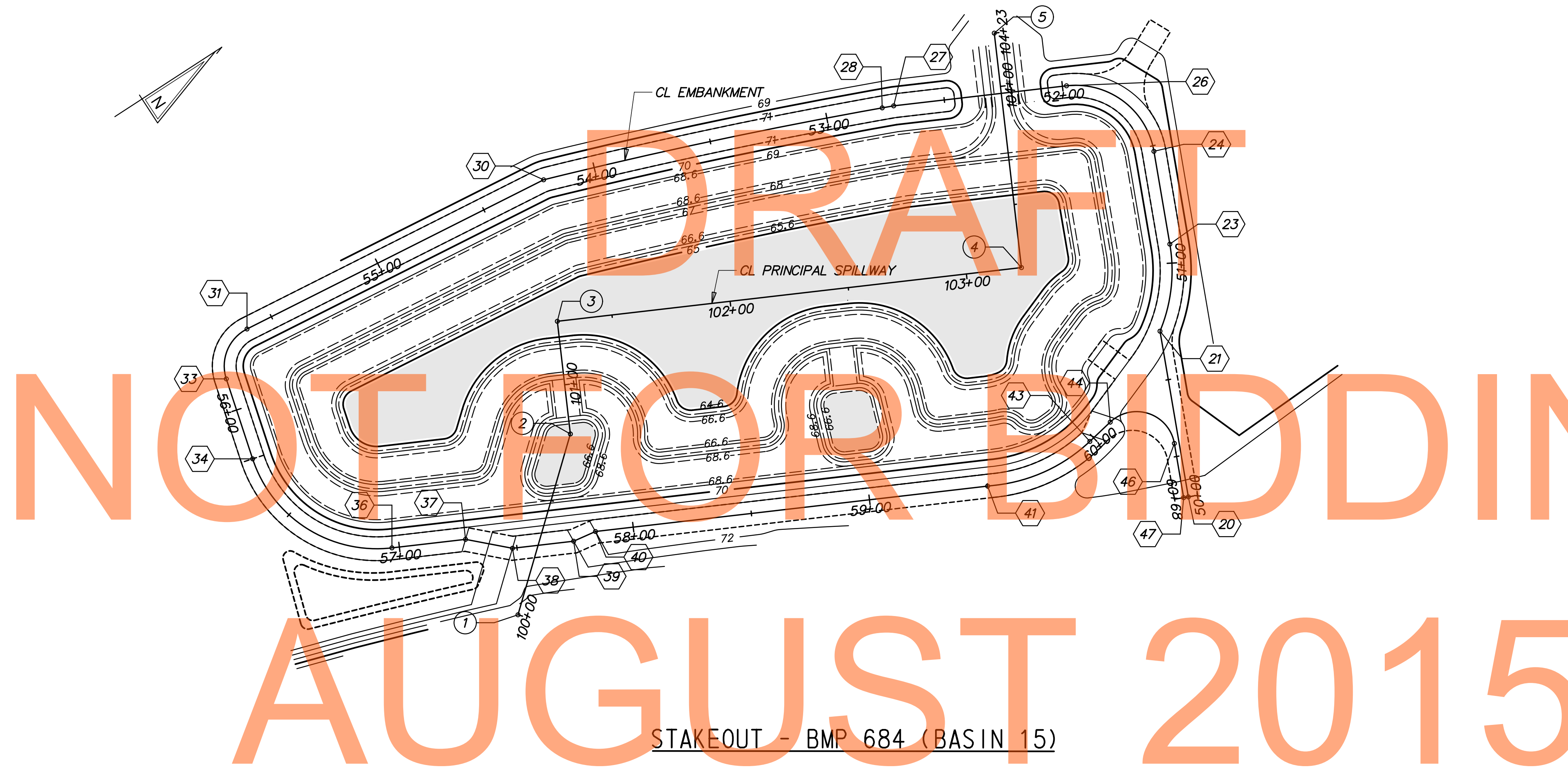
*INCLUDES NORMAL POOL VOLUME OF 1.269 AC-FT.

RIPRAP SCHEDULE		
NO.	TYPE	AREA (SY)
39	R-4	7
45	R-4	3
82	R-5	79
83	R-4	40
101	R-4	40

CHECK CONSTRUCTION PLANS FOR SCHEDULE OF RIPRAP OUTSIDE OF THE BASIN AREA.

POND QUANTITIES			
ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	6666	CY
272501	POND OUTLET STRUCTURE, 16, SPECIAL	1	EACH
302011	DELAWARE NO. 3 STONE	246	TON
302012	DELAWARE NO. 57 STONE	19	TON
712005	R-4 RIPRAP	10	SY
712006	R-5 RIPRAP	79	SY
712020	R-4 RIPRAP	58	TON
713001	GEOTEXTILES, STABILIZATION	1659	SY
713003	GEOTEXTILES, RIPRAP	214	SY
733002	TOPSOILING, 6" DEPTH	7947	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	4968	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	4772	SY

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STAKEOUT - BMP 684 (BASIN 15)

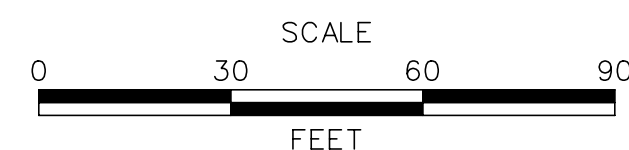
CL PRINCIPAL SPILLWAY		
STATION	NORTHING	EASTING
① POB STA. 100+00.00	540418.8220	569658.4757
② PI STA. 100+79.18	540478.7293	569606.7059
③ PI STA. 101+26.87	540499.9414	569563.9889
④ PI STA. 103+23.30	540675.8705	569651.3498
⑤ POE STA. 104+22.55	540720.0010	569562.4488

CL EMBANKMENT		
STATION	NORTHING	EASTING
②① POB STA. 50+00.00	540682.1740	569770.4344
②② PC STA. 50+70.70	540710.1476	569705.5064
②③ PI STA. 50+89.87	540725.9727	569694.6786
②④ PT STA. 51+08.02	540733.5565	569677.0673
②⑤ PC STA. 51+47.63	540749.2208	569640.6912
②⑥ PI STA. 51+79.27	540761.7351	569611.6301
②⑦ PT STA. 51+98.29	540733.3929	569597.5634
②⑧ PI STA. 52+71.43	540667.8812	569565.0489
②⑨ PC STA. 52+76.32	540663.3721	569563.1436
③① PI STA. 53+49.13	540596.3064	569534.8047
③② PT STA. 54+21.88	540527.5193	569510.9459
③③ PC STA. 55+61.47	540388.7799	569495.6264
③④ PI STA. 55+76.46	540373.8748	569493.9806
③⑤ PT STA. 55+86.22	540370.0467	569508.4795
③⑥ PC STA. 56+21.62	540361.0102	569542.7060
③⑦ PI STA. 56+66.46	540349.5629	569586.0633
③⑧ PT STA. 56+96.86	540389.7267	569606.0072
③⑨ PI STA. 57+28.01	540417.6248	569619.8603
④① PT STA. 57+48.10	540432.1280	569633.7614
④② PI STA. 57+73.98	540455.3096	569645.2727
④③ PC STA. 57+84.02	540465.2293	569646.8490
④④ PI STA. 59+53.59	540617.1008	569722.2641
④⑤ PT STA. 59+76.50	540637.6234	569732.4550
④⑥ PC STA. 59+97.83	540660.1592	569728.3110
④⑦ PI STA. 60+09.64	540671.7766	569726.1747
④⑧ PT STA. 60+39.76	540701.4016	569720.7270
④⑨ PC STA. 60+44.43	540689.4881	569748.3926
⑤① POE STA. 60+67.57	540680.3371	569769.6434

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ADDENDUMS / REVISIONS	

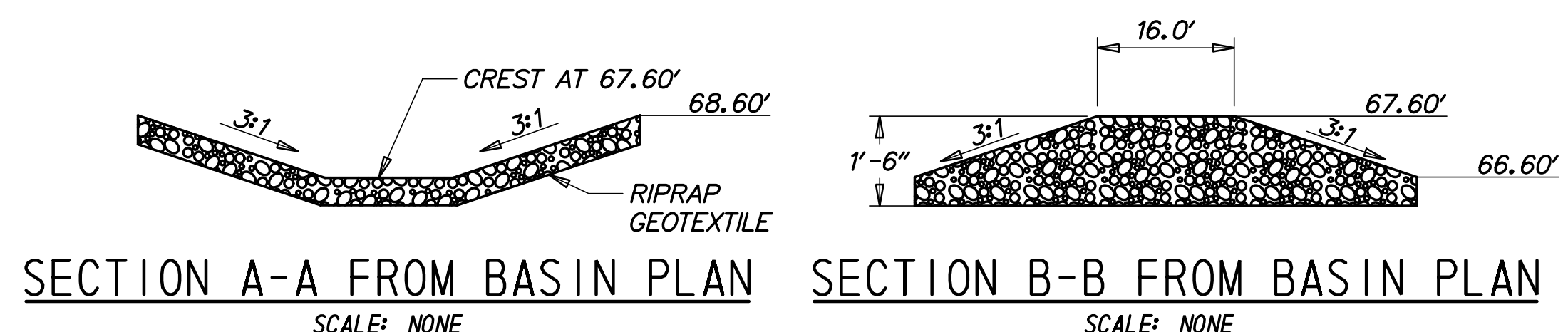


**US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD**

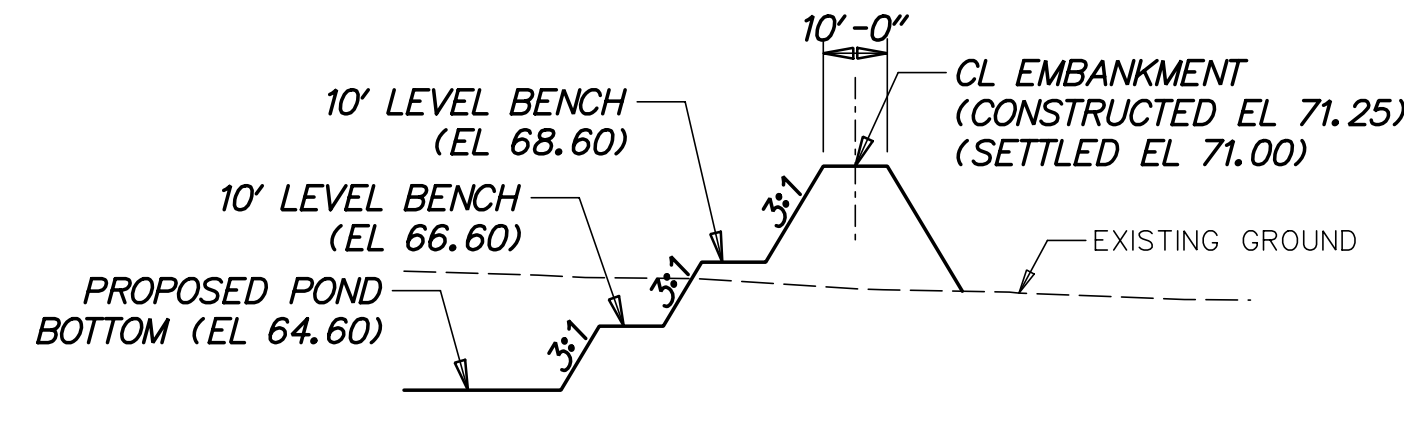
CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: DB
NEW CASTLE	CHECKED BY: JZ

**STORMWATER
MANAGEMENT DETAILS
BMP 684 (BASIN 15)**

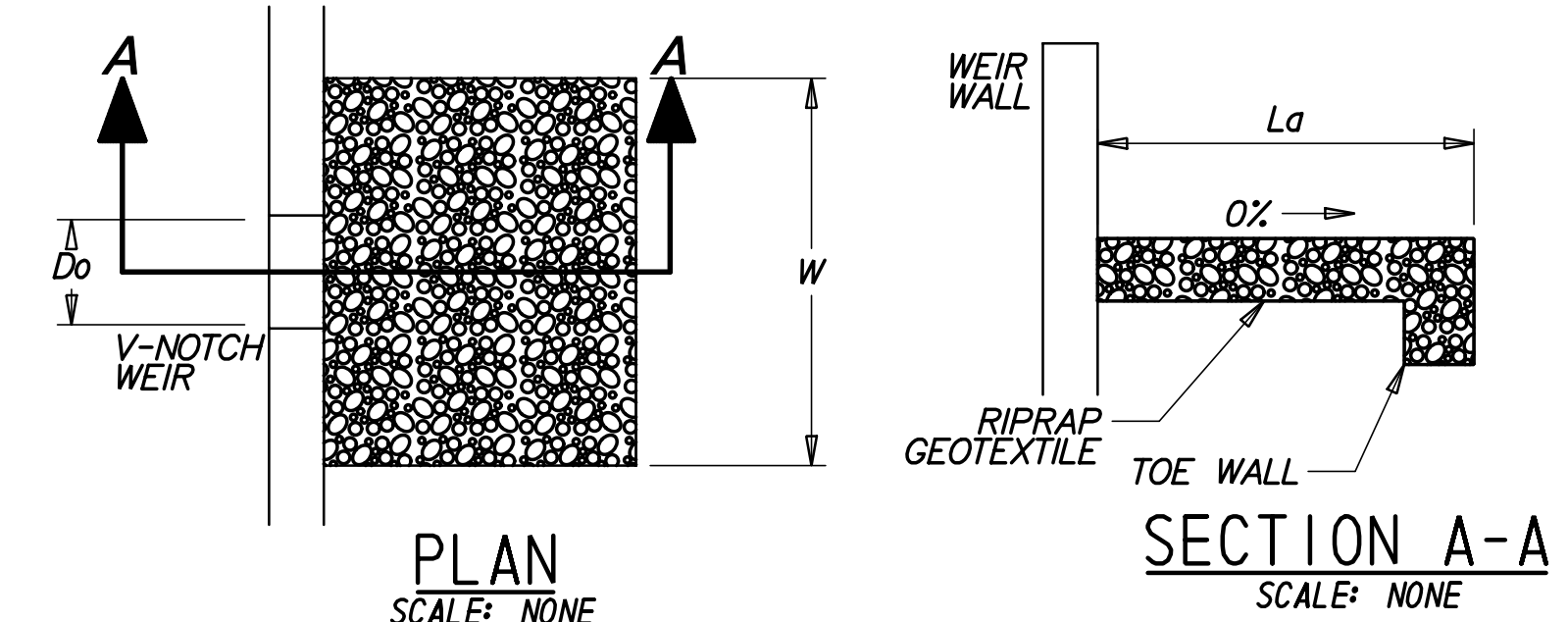
SW-91
SHEET NO.
776
TOTAL SHTS.
1256



STONE CHECK DAM
SCALE: NONE



SECTION C-C
SCALE: NONE

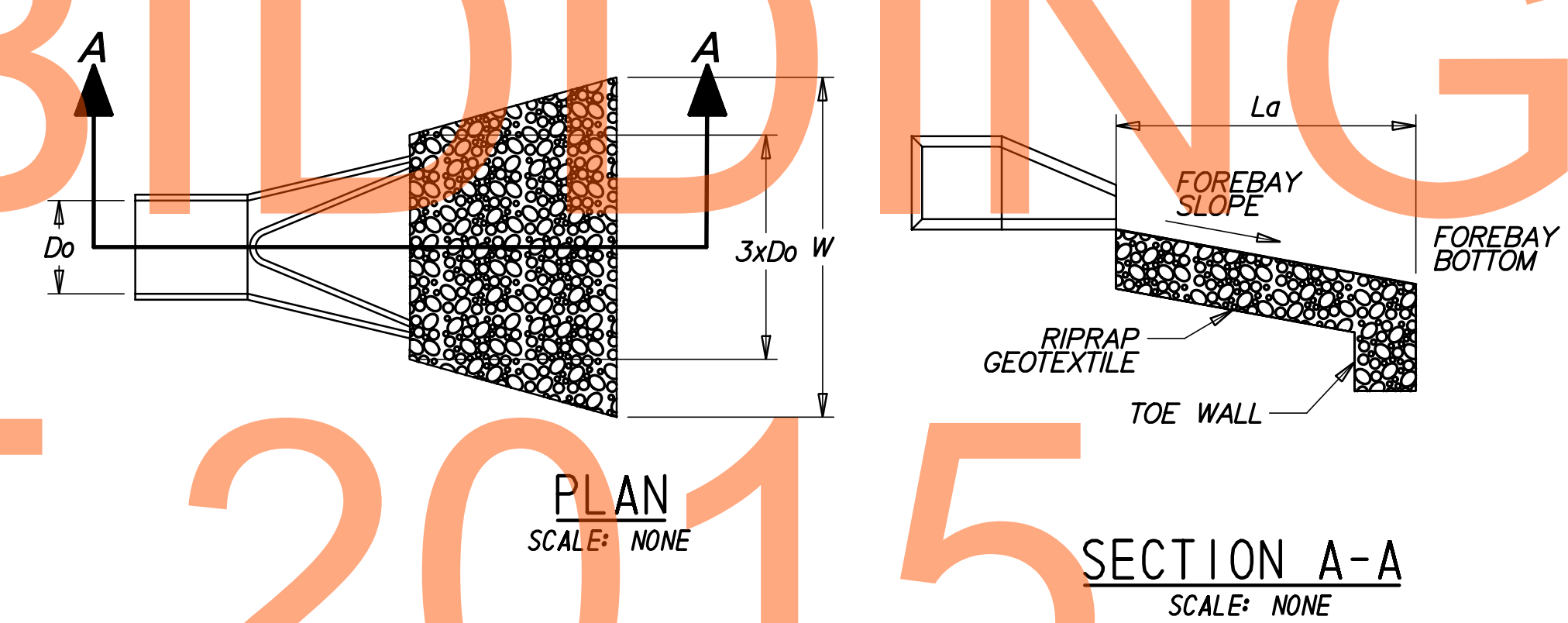


DATA

WEIR TOP WIDTH (Do) = 1.0'
 APRON LENGTH (La) = 20.0'
 APRON WIDTH (W) = 23.0'
 RIPRAP SIZE (R No.) = R-5 WITH NO. 57 STONE

BASIN RIPRAP OUTLET PROTECTION
SCALE: NONE

- NOTES:
 1. RIPRAP ITEM# 712006.
 2. GEOTEXTILES, RIPRAP ITEM# 713003
 3. DELAWARE NO. 57 STONE ITEM# 302012
 4. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.
 5. DEPRESS CENTERLINE OF APRON SLIGHTLY TO PREVENT EDGE CUTTING.



DATA

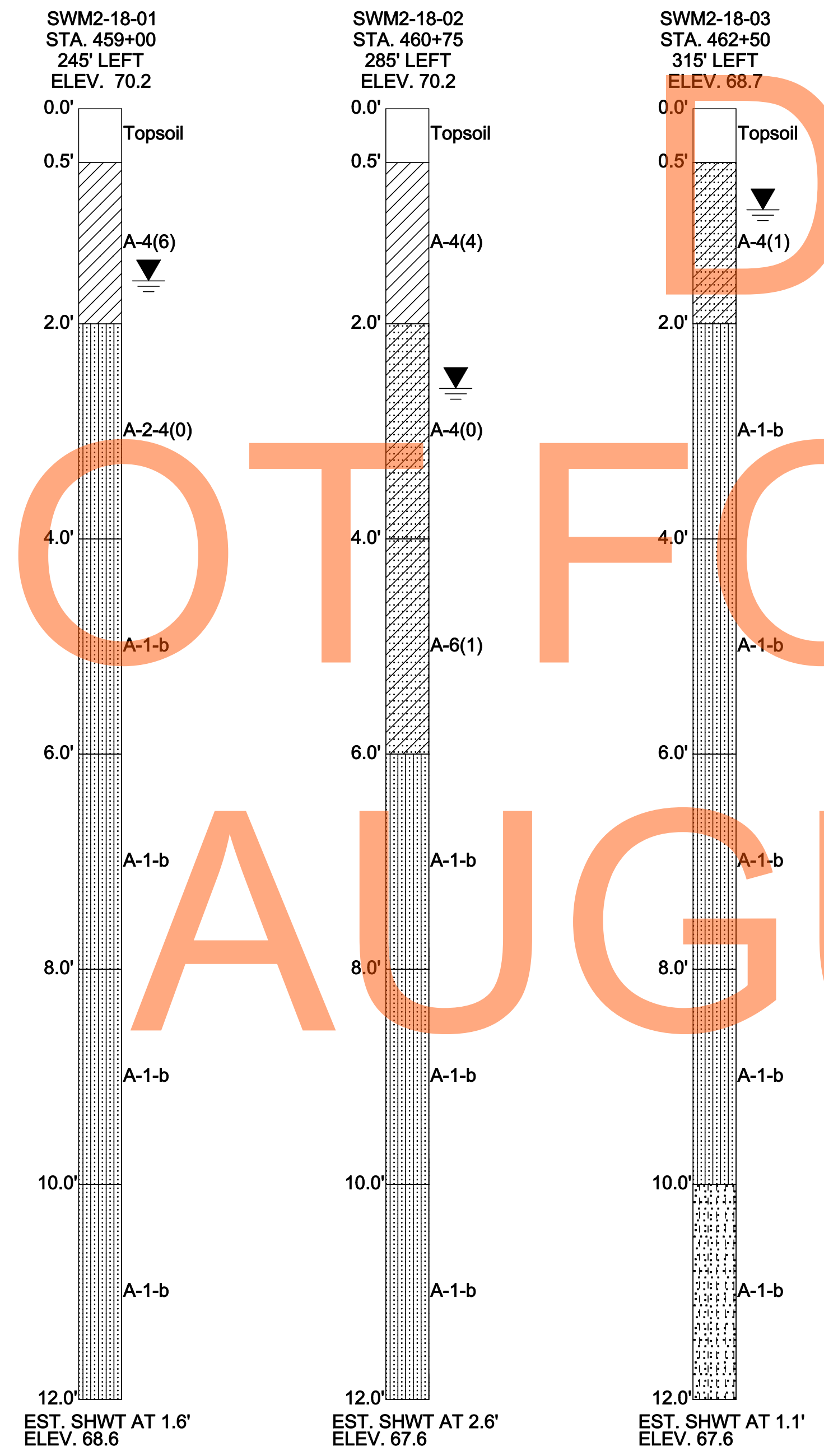
PIPE DIAMETER (Do)
 APRON LENGTH (La)
 APRON WIDTH (W)
 RIPRAP SIZE (R No.)

FES ID	Do	La	W	R No.
39	2.0'	7.5'	13'	R-4
45	1.5'	4.8'	12'	R-4

FOREBAY RIPRAP OUTLET PROTECTION
SCALE: NONE

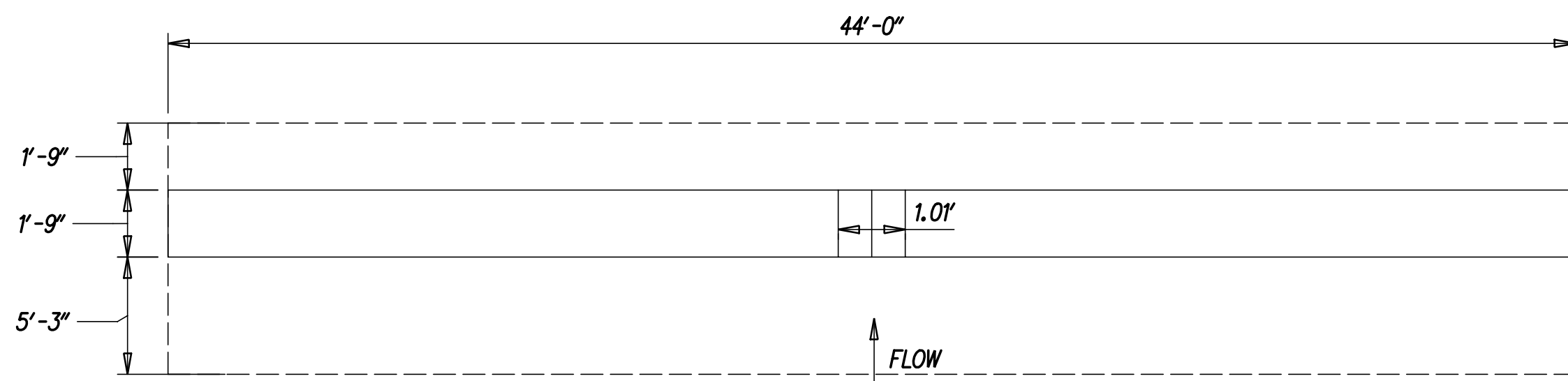
- NOTES:
 1. RIPRAP ITEM# 712005.
 2. GEOTEXTILES, RIPRAP ITEM# 713003
 3. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.
 4. DEPRESS CENTERLINE OF APRON SLIGHTLY TO PREVENT EDGE CUTTING.

- NOTES:
 1. RIPRAP ITEM# 712020
 2. GEOTEXTILE, RIPRAP ITEM# 713003
 3. SEE STANDARD NO. E-10 FOR GEOTEXTILE PLACEMENT.

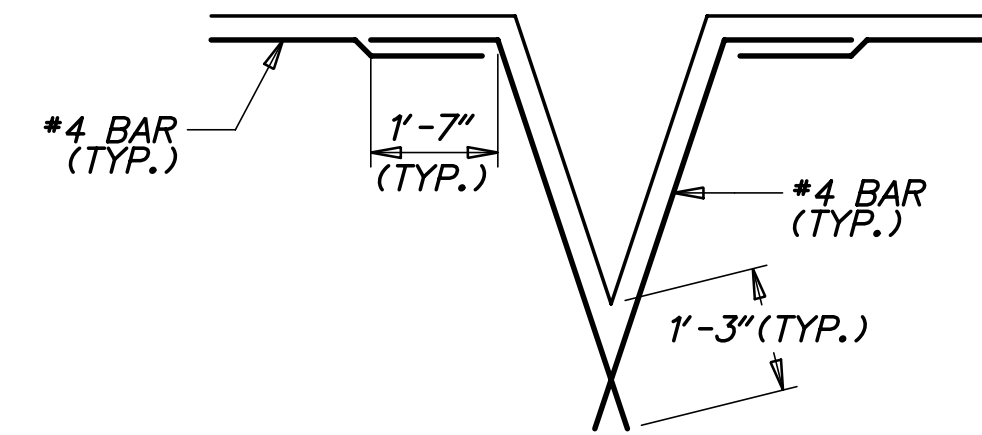


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AUGUST 2015

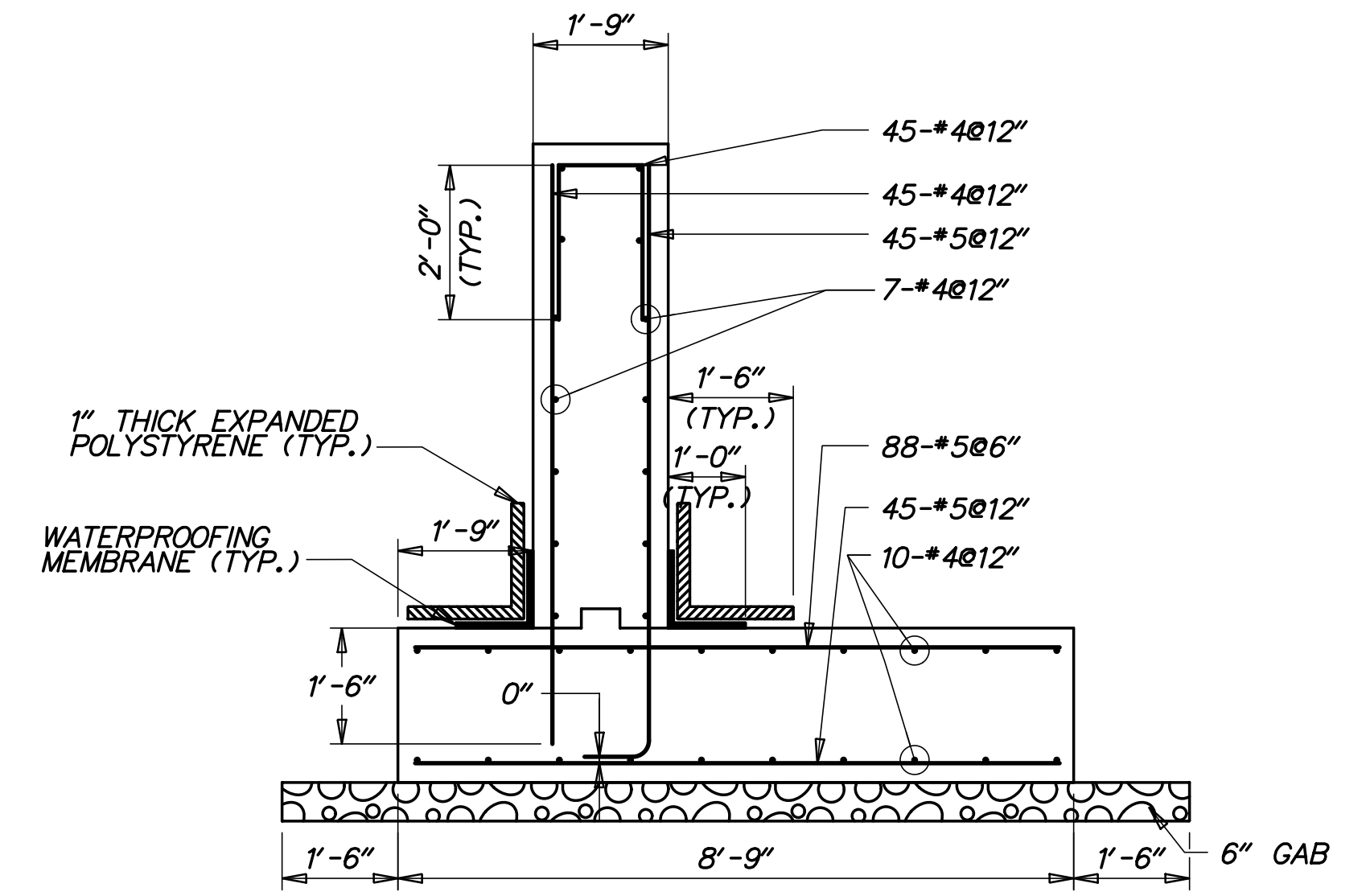
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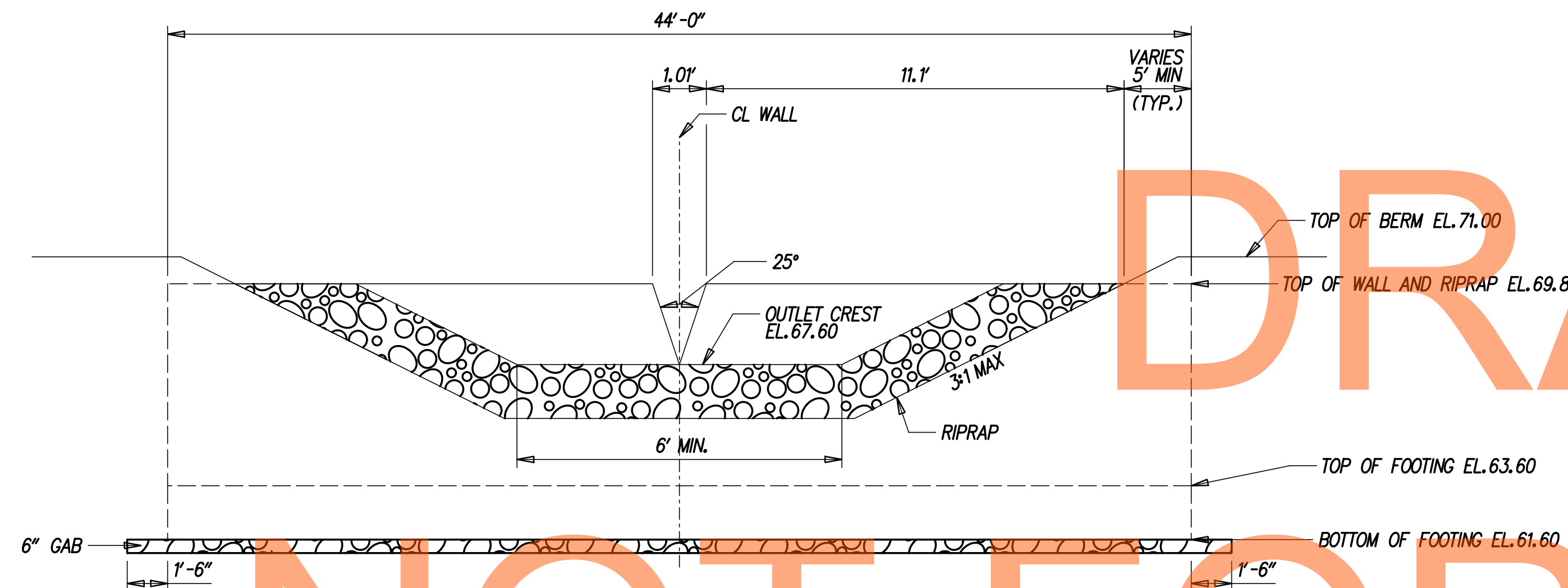
**WEIR WALL
PLAN**
SCALE: NONE



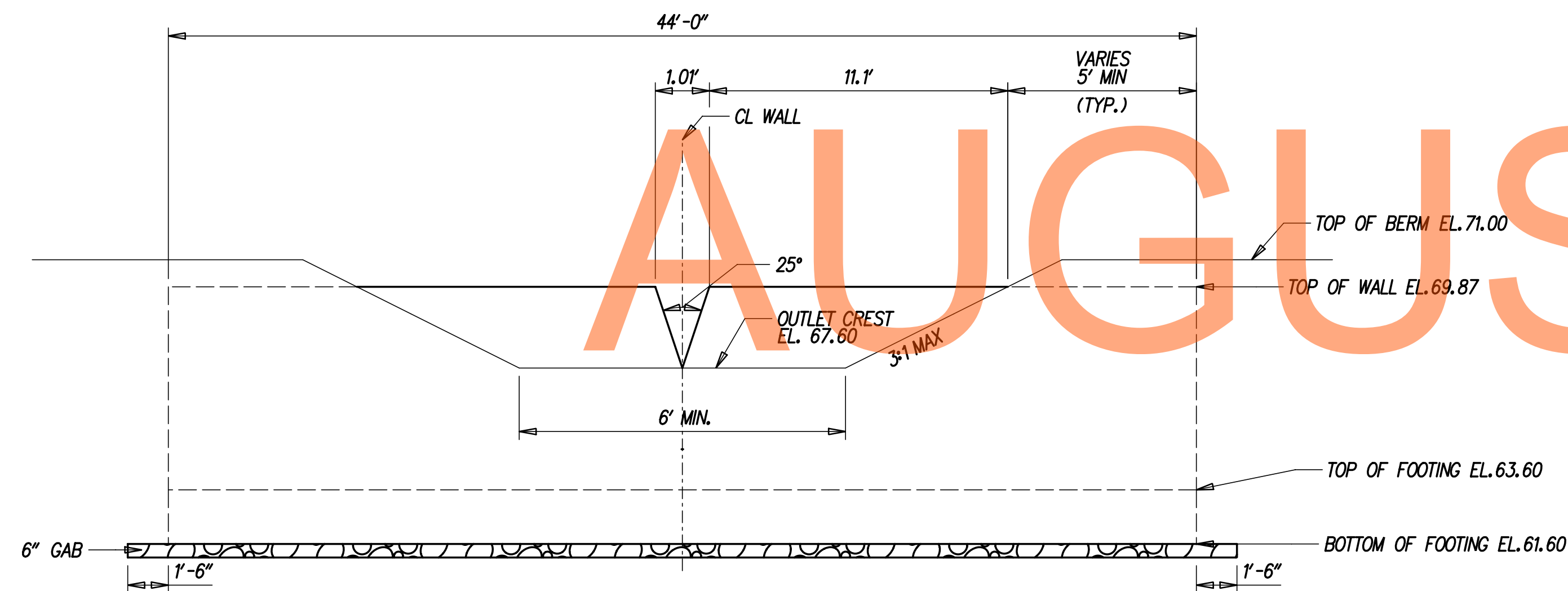
OPENING DETAILS
SCALE: NONE



WEIR WALL SECTION
SCALE: 1/2" = 1'-0"



**WEIR WALL
EXTERIOR ELEVATION
WITH RIPRAP APRON**
SCALE: NONE



**WEIR WALL
INTERIOR ELEVATION**
SCALE: NONE

GENERAL NOTES

- DESIGN SPECIFICATIONS:
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 4TH EDITION, 2007, INCLUDING 2008 AND 2009 INTERIM REVISIONS, AND AS SUPPLEMENTED BY DELAWARE DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL, MAY 2005, INCLUDING LATEST REVISIONS.
PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS, AASHTO/AWS D1.5M/D1.5 BRIDGE WELDING CODE, AND CONTRACT SPECIAL PROVISIONS.
- LOADING:
UNIT WEIGHTS OF MATERIALS SHALL BE IN ACCORDANCE WITH THE DELAWARE DESIGN MANUAL.
- PORTLAND CEMENT CONCRETE:
PORTLAND CEMENT CONCRETE FOR CAST-IN-PLACE ELEMENTS SHALL BE AS FOLLOWS:
(28 DAY COMPRESSIVE STRENGTH)
(CLASS B, $F'c=3000$ PSI) - WEIR WALL FOOTING
(CLASS A, $F'c=4500$ PSI) - WEIR WALL STEM
WEIR WALLS MUST BE CAST-IN-PLACE.
MIX REQUIREMENTS SHALL CONFORM TO SECTION 812 OF THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
ALL EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED WITH $\frac{3}{4}$ " x $\frac{3}{4}$ " MILLED CHAMFER STRIPS EXCEPT ON UNEXPOSED FOOTINGS.
- BAR REINFORCEMENT:
REINFORCING STEEL SHALL CONFORM TO AASHTO M31 (ASTM A615), GRADE 60 AND IS TO BE EPOXY COATED. FUSION-BONDED EPOXY COATED REINFORCING STEEL SHALL CONFORM TO AASHTO M284 (ASTM D3963).
PROVIDE 3" CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.
LAP LENGTH OF #4 BARS TO BE 3'-0". STAGGER SPLICE LOCATIONS.
DO NOT WELD GRADE 60 REINFORCING STEEL.
- CONSTRUCTION JOINTS:
KEYED CONSTRUCTION JOINTS SHALL BE 2" x 4" OR AS NOTED.
- WATERPROOFING MEMBRANE:
ADHESIVE BACKED WATERPROOFING MEMBRANE IS TO BE USED. SPLICING OF THE MEMBRANE IS PROHIBITED.
- REFER TO SPECIFICATION SECTION 272501 FOR CONSTRUCTION SEQUENCE.
- GAB IS INCIDENTAL TO WALL CONSTRUCTION.

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AUGUST 2015

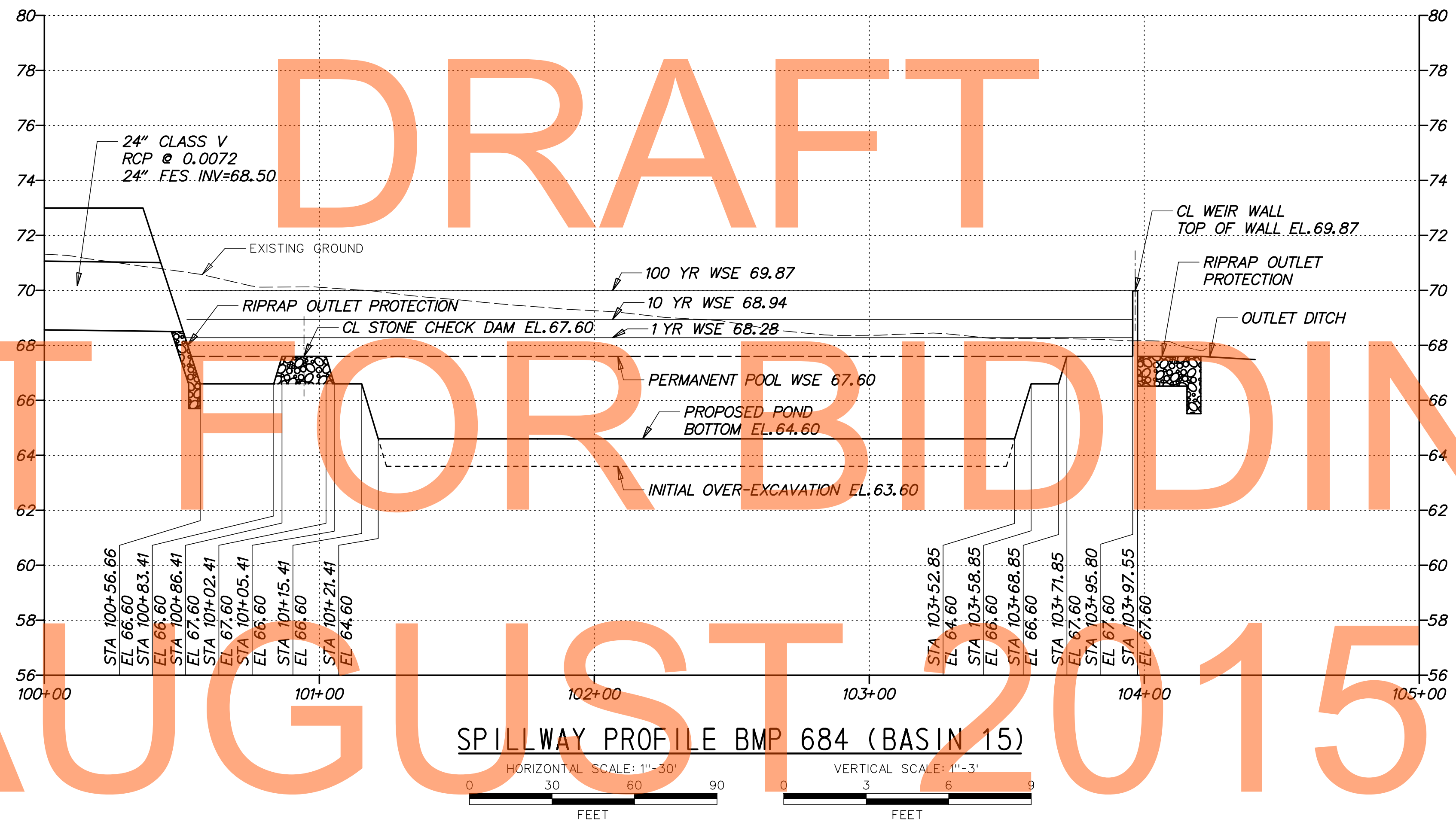
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DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	AS SHOWN	US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT T20091303	BRIDGE NO.	STORMWATER MANAGEMENT DETAILS BMP 684 (BASIN 15)	SHEET NO. 778
					COUNTY NEW CASTLE		DESIGNED BY: DB

DRAFT

NOT FOR BIDDING

AUGUST 2015



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**DELAWARE
DEPARTMENT OF TRANSPORTATION**

ADDENDUMS / REVISIONS

NO.	DATE	DESCRIPTION

AS SHOWN

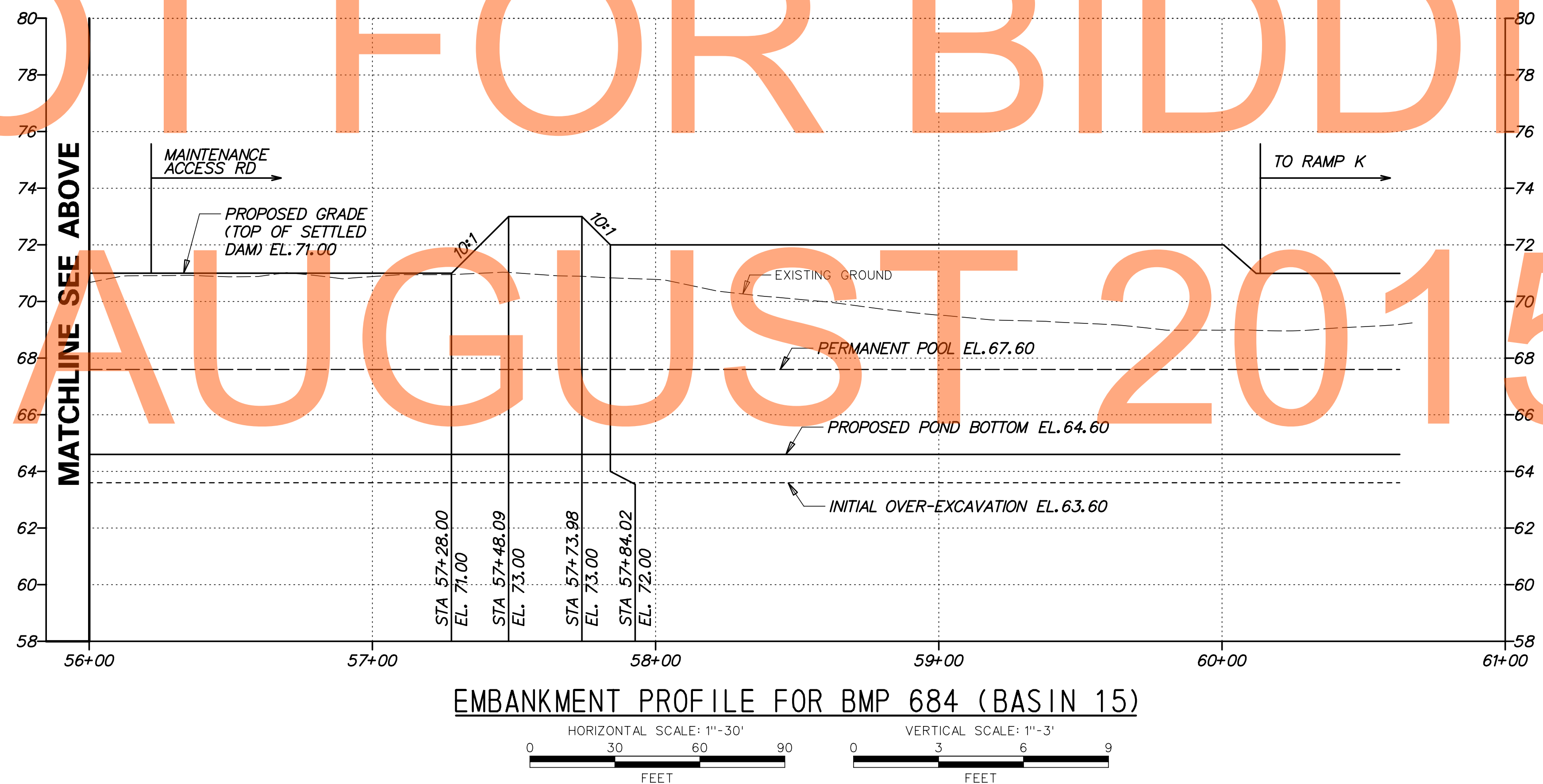
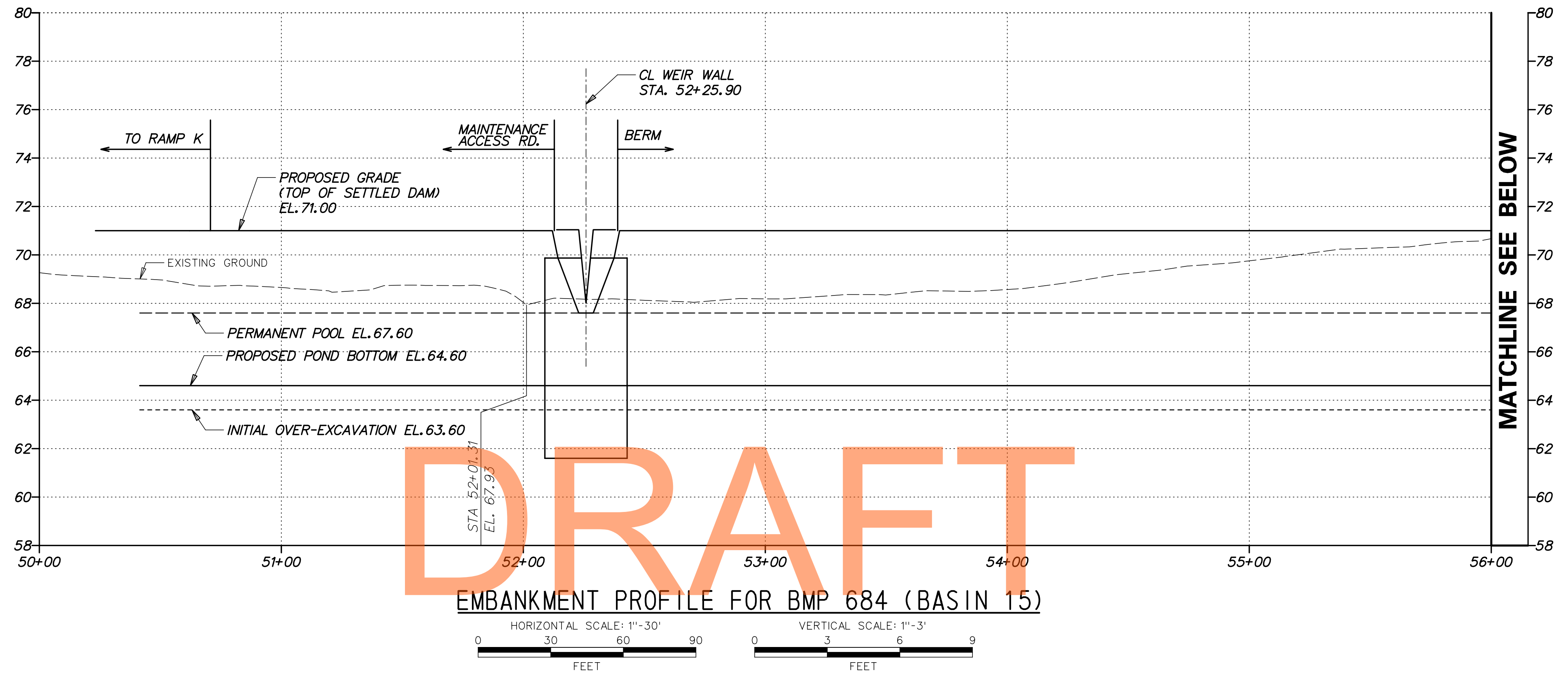
**US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD**

CONTRACT
T20091303
COUNTY
NEW CASTLE

BRIDGE NO.
DESIGNED BY: DB
CHECKED BY: JZ

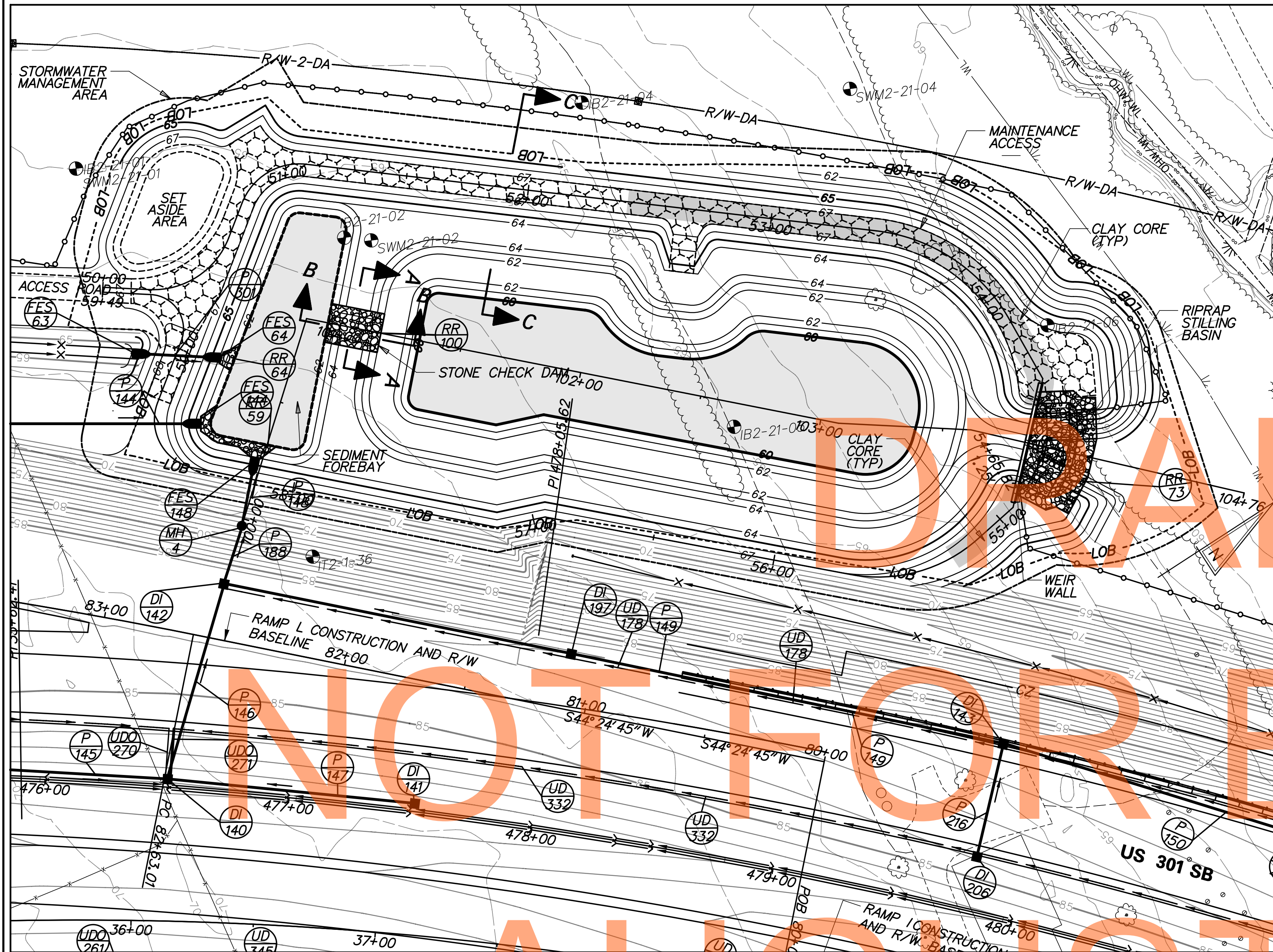
**STORMWATER
MANAGEMENT DETAILS
BMP 684 (BASIN 15)**

SW-94
SHEET NO. 779
TOTAL SHTS. 1256



NOT FOR BIDDING
AUGUST 2015

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PLAN - BMP 686 (BASIN 18)

POND DESIGN SUMMARY

DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC.FT.)*
QUALITY STORM (1YR)	12.93	2.85	63.57	1.342
10 - YEAR	35.43	10.38	64.34	1.876
100 - YEAR	74.16	24.67	65.39	2.773

DRAINAGE AREA TO FACILITY: 10.97 ACRES

MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY BY EXTENDED DETENTION OF 1 YEAR RUNOFF, WATER QUANTITY FOR 10 AND 100 YEAR STORMS.

*INCLUDES NORMAL POOL VOLUME OF 1.010 AC-FT

SKIMMER DEVICE SUMMARY

SKIMMER ELEVATION	63.08
ORIFICE SIZE (IN)	2
BLOCK WEIR UP TO ELEVATION	64.73

POND CONSTRUCTION SEQUENCE AND NOTES

THE STORMWATER MANAGEMENT POND SHALL FUNCTION AS A SEDIMENT BASIN DURING ROADWAY CONSTRUCTION AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE STANDARD SPECIFICATIONS:

- SECTION 271 - STORMWATER MANAGEMENT POND
 - SECTION 272 - POND OUTLET STRUCTURE, CONCRETE
 - SECTION 274 - CLAY BORROW, STORMWATER MANAGEMENT POND
1. INSTALL STABILIZED CONSTRUCTION ENTRANCE.
 2. CLEAR AND GRUB FOR INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS.
 3. INSTALL PERIMETER SEDIMENT CONTROLS AS SHOWN.
 4. CLEAR AND GRUB REMAINING AREA FOR POND CONSTRUCTION.
 5. CONSTRUCT WEIR WALL, RIPRAP STILLING BASIN, CLAY CORE AND PARTIAL EMBANKMENT AS NEEDED TO INSTALL WEIR WALL. INSTALL SKIMMER AND DE-WATER FOUNDATION AS NEEDED IN ACCORDANCE WITH SECTION 111 AND USE SUMP PIT FOR PUMPING. (SEE EROSION AND SEDIMENT CONTROL DETAILS FOR SKIMMER DE-WATERING DEVICE INSTALLATION).
 6. EXCAVATE THE POND AND COMPLETE THE EMBANKMENT, GRADES AND DETAILS SHOWN IN THE CONSTRUCTION PLANS. DURING EXCAVATION, THE CONTRACTOR SHALL SALVAGE AND STOCKPILE SOILS CLASSIFIED AS CH, CL, SC AND GG PER THE UNIFIED SOIL CLASSIFICATION SYSTEM TO BE USED TO CONSTRUCT EMBANKMENT. THE ABOVE CLASSIFIED SOILS MAY BE OBTAINED FROM ELSEWHERE WITHIN THE PROJECT LIMITS, IF NECESSARY.
 7. STABILIZE ALL BARE AREAS. NOTE: SEE CONSTRUCTION SEQUENCE PLANS FOR LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.
 8. THE CONTRACTOR SHALL PROVIDE 'AS-BUILT' DRAWINGS OF ALL STORMWATER MANAGEMENT FACILITIES SUCH AS PONDS, INFILTRATION BASINS, BIOFILTRATION SWALES, ETC. 'AS-BUILT' DRAWINGS SHALL SHOW THE ACTUAL FINISHED GROUND CONTOURS, OUTLET STRUCTURE DIMENSIONS AND ELEVATIONS, ETC. AS THEY EXIST AT THE COMPLETION OF THE PROJECT. THESE DRAWINGS SHALL BE SIGNED BY A PROFESSIONAL ENGINEER OR LAND SURVEYOR.

MAINTENANCE OF POND AS A SEDIMENT BASIN

1. CONTRACTOR SHALL INSPECT THE BASIN IMMEDIATELY AFTER EVERY RAIN AND MAKE REPAIRS AS NEEDED.
2. CONTRACTOR SHALL CLEARLY MARK THE CLEANOUT ELEVATION ON A STAKE DRIVEN INTO THE GROUND AT A LOCATION CLEARLY VISIBLE FROM THE EMBANKMENT. SEDIMENT SHALL BE REMOVED WHEN CLEANOUT ELEVATION IS REACHED AND DISPOSED OF AT A LOCATION APPROVED BY THE ENGINEER. CLEANOUT ELEVATION IS 64.09.

CONVERSION TO PERMANENT STORMWATER MANAGEMENT POND

1. CONVERT THE BASIN INTO THE PERMANENT STORMWATER MANAGEMENT POND AFTER ALL AREAS DRAINING TO THE POND HAVE BEEN PERMANENTLY STABILIZED AND THE ENGINEER HAS APPROVED THE CONVERSION.
2. REMOVE ACCUMULATED SEDIMENT TO ELEVATION 60.00 AND DISPOSE SEDIMENT AT A LOCATION APPROVED BY THE ENGINEER.
3. COMPLETE STABILIZATION OF ALL BARE AREAS. REMOVE EROSION AND SEDIMENT CONTROL MEASURES AND DEACTIVATE DE-WATERING DEVICE.

PLANTING SCHEDULE

PLACE PERMANENT GRASS SEEDING - WET GROUND UP TO ELEVATION 64.00. PLACE PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 64.00. PLACE TOPSOIL ON LOWER BENCH ELEVATION 62.00 AND ABOVE.

RIPRAP SCHEDULE

NO.	TYPE	AREA (SY)
59	R-4	17
64	R-4	5
73	R-5	162
100	R-4	40

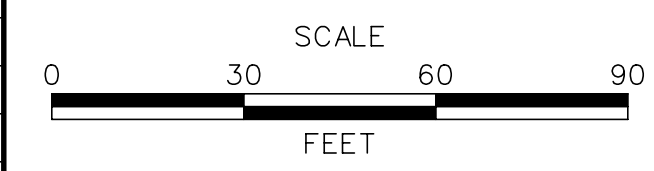
CHECK CONSTRUCTION PLANS FOR SCHEDULE OF RIPRAP OUTSIDE OF THE BASIN AREA.

POND QUANTITIES			
ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	5625	CY
272501	POND OUTLET STRUCTURE, 17, SPECIAL	1	EACH
274000	CLAY BORROW, STORMWATER MANAGEMENT POND, CUT-OFF TRENCH	559	CY
302011	DELAWARE NO. 3 STONE	212	TON
302012	DELAWARE NO. 57 STONE	38	TON
712005	R-4 RIPRAP	22	SY
712006	R-5 RIPRAP	162	SY
712020	R-4 RIPRAP	29	TON
713001	GEOTEXTILES, STABILIZATION	1421	SY
713003	GEOTEXTILES, RIPRAP	279	SY
733002	TOPSOILING, 6" DEPTH	7436	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	5016	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	3790	SY

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ADDENDUMS / REVISIONS



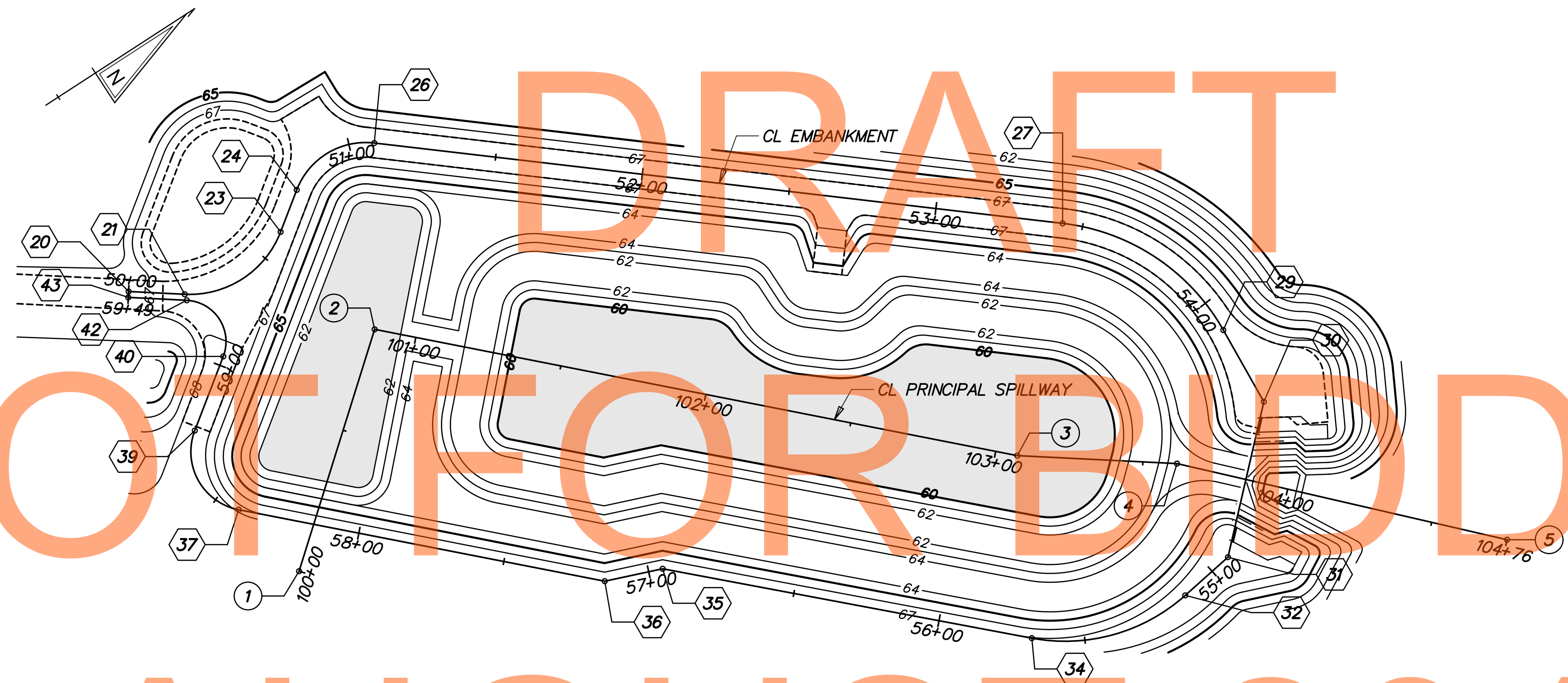
US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD

CONTRACT	T20091303
COUNTY	NEW CASTLE
BRIDGE NO.	
DESIGNED BY:	DB JW
CHECKED BY:	JZ SF

STORMWATER
MANAGEMENT DETAILS
BMP 686 (BASIN 18)

SW-96
SHEET NO.
781
TOTAL SHTS.
1256

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AUGUST 2015



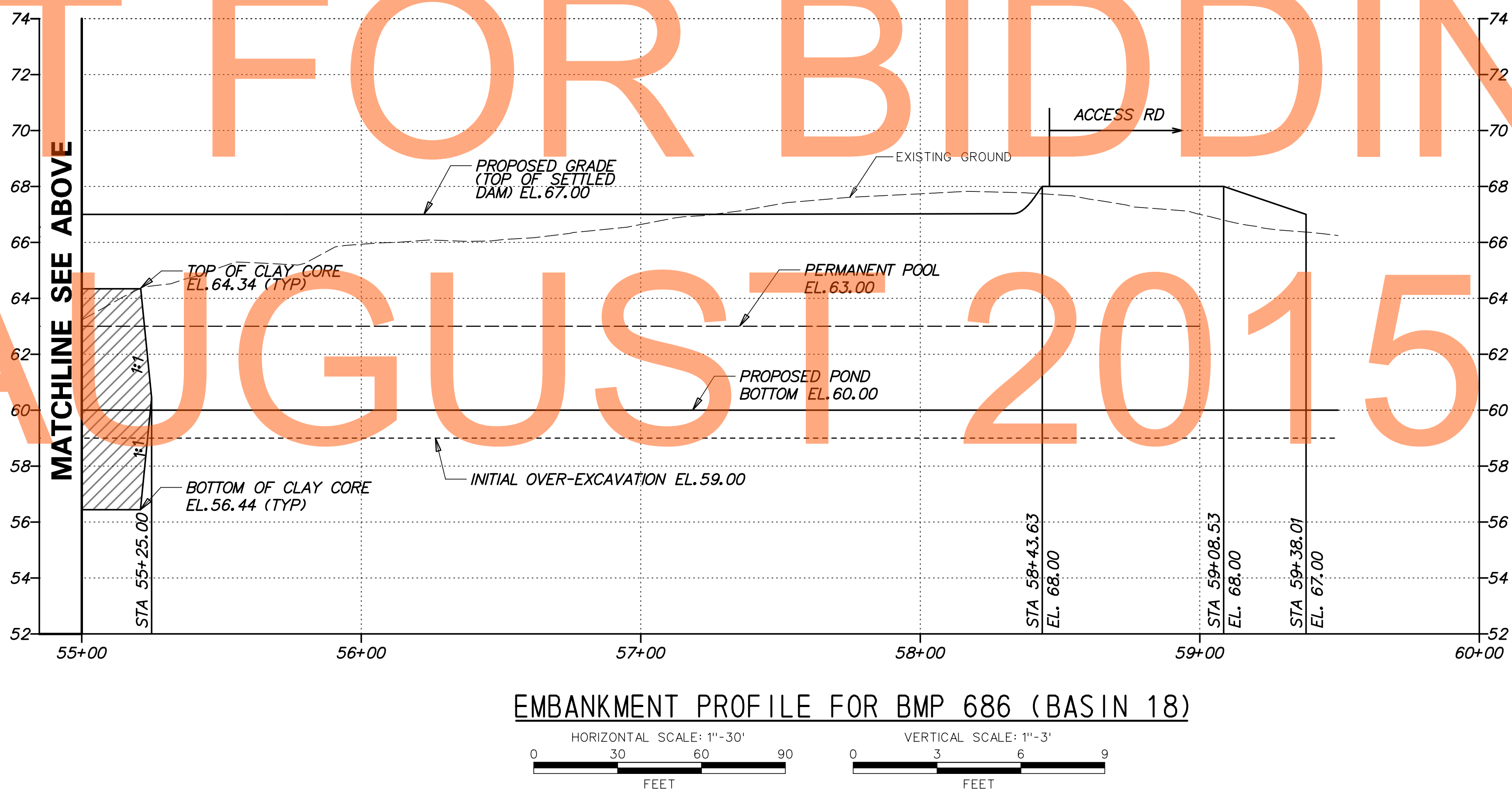
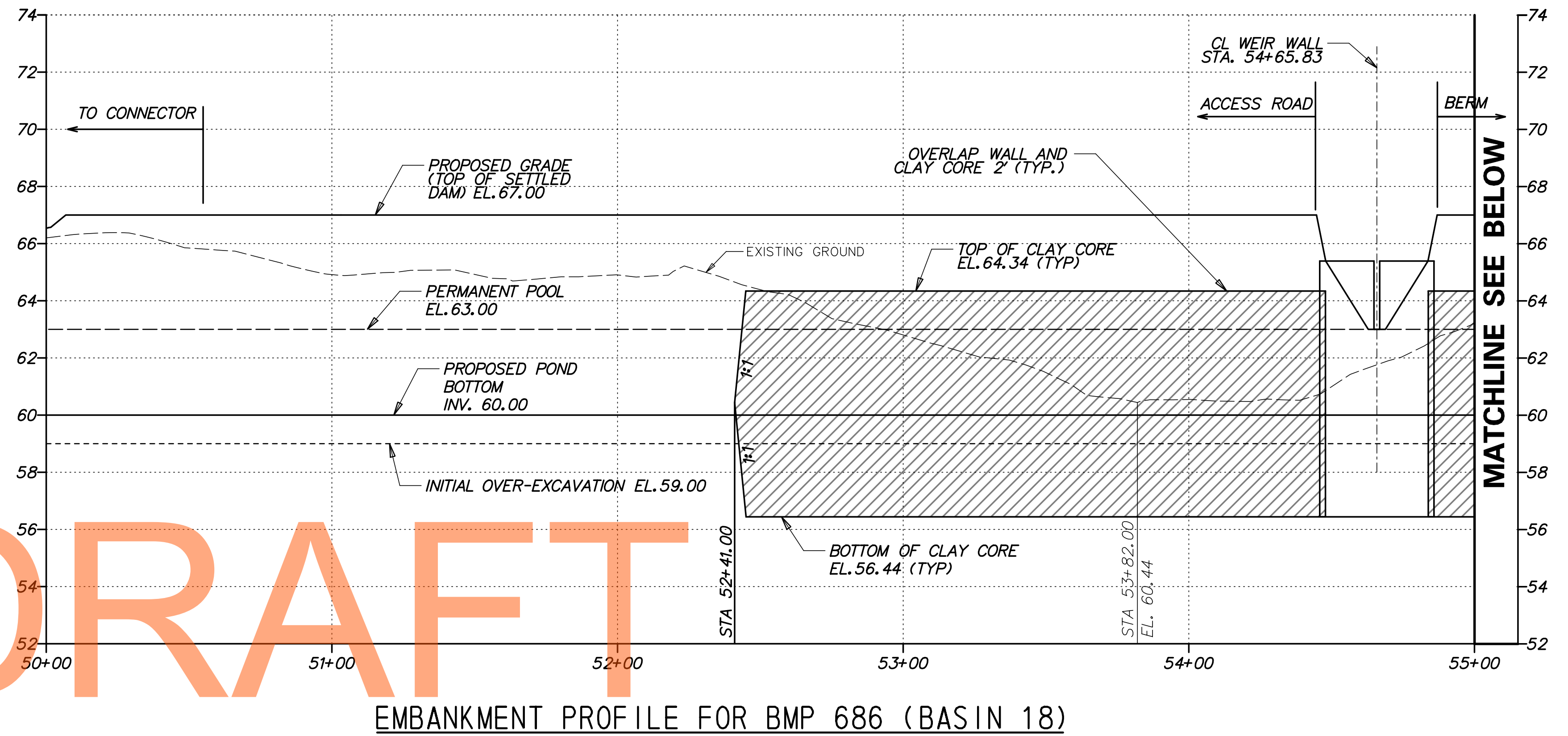
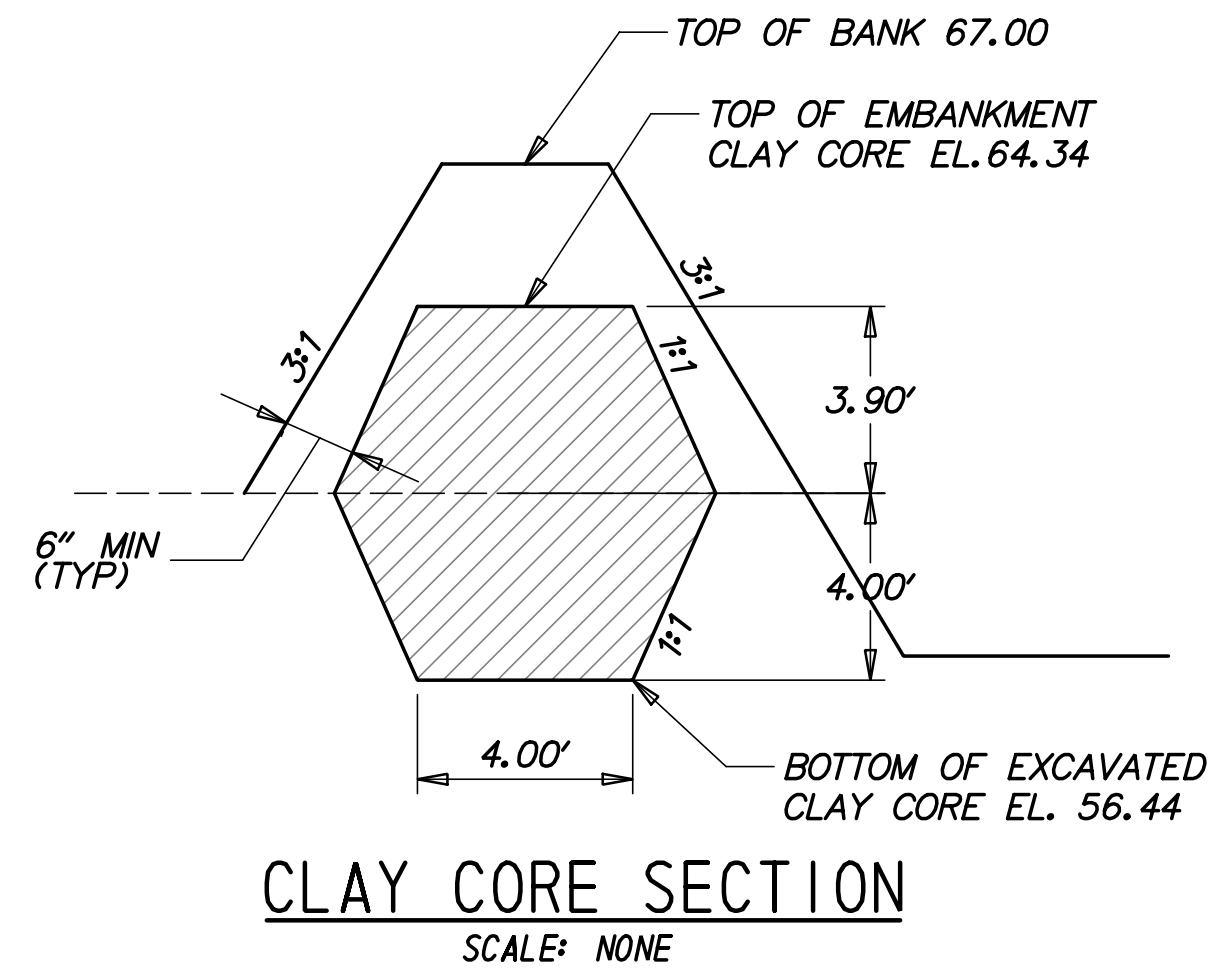
STAKEOUT - BMP 686 (BASIN 18)

CL PRINCIPAL SPILLWAY		
STATION	NORTHING	EASTING
① POB STA. 100+00.00	541786.4785	570472.4760
② PI STA. 100+85.80	541852.5420	570417.7292
③ PI STA. 103+07.45	542011.6208	570572.0761
④ PI STA. 103+61.55	542055.4647	570603.7754
⑤ POE STA. 104+76.19	542135.0883	570686.2502

CL EMBANKMENT		
STATION	NORTHING	EASTING
②① POB STA. 50+00.00	541789.7028	570361.6265
②① PC STA. 50+19.02	541805.1190	570372.7695
22 PI STA. 50+42.93	541824.4952	570386.7748
②③ PT STA. 50+60.40	541843.8407	570372.7270
②④ PC STA. 50+75.64	541856.1671	570363.7761
25 PI STA. 50+95.05	541871.8748	570352.3699
②⑥ PT STA. 51+08.65	541886.8166	570364.7627
②⑦ PC STA. 53+43.20	542067.3548	570514.5028
28 PI STA. 53+79.80	542095.5267	570537.8688
②⑨ PT STA. 54+10.93	542093.2506	570574.3990
③① PI STA. 54+38.82	542091.5157	570602.2439
③① PI STA. 54+92.82	542052.6664	570639.7503
③② PC STA. 55+12.22	542033.5045	570642.7179
33 PI STA. 55+42.27	542003.8007	570647.3181
③④ PT STA. 55+68.07	541982.0554	570626.5668
③⑤ PI STA. 56+95.17	541890.1053	570538.8194
③⑥ PI STA. 57+15.21	541871.3852	570531.6760
③⑦ PC STA. 58+41.45	541780.6763	570443.8729
38 PI STA. 58+65.26	541763.5663	570427.3110
③⑨ PT STA. 58+76.34	541782.8348	570413.3191
④① PC STA. 59+03.23	541804.5969	570397.5165
41 PI STA. 59+22.56	541820.2334	570386.1620
④② PT STA. 59+29.66	541804.5720	570374.8418
④③ POE STA. 59+49.45	541788.5312	570363.2474

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	DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	SCALE 0 30 60 90 FEET	US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT T20091303	BRIDGE NO.	STORMWATER MANAGEMENT DETAILS BMP 686 (BASIN 18)	SW-97
					COUNTY NEW CASTLE	DESIGNED BY: DB CHECKED BY: JZ		SHEET NO. 782 TOTAL SHTS. 1256



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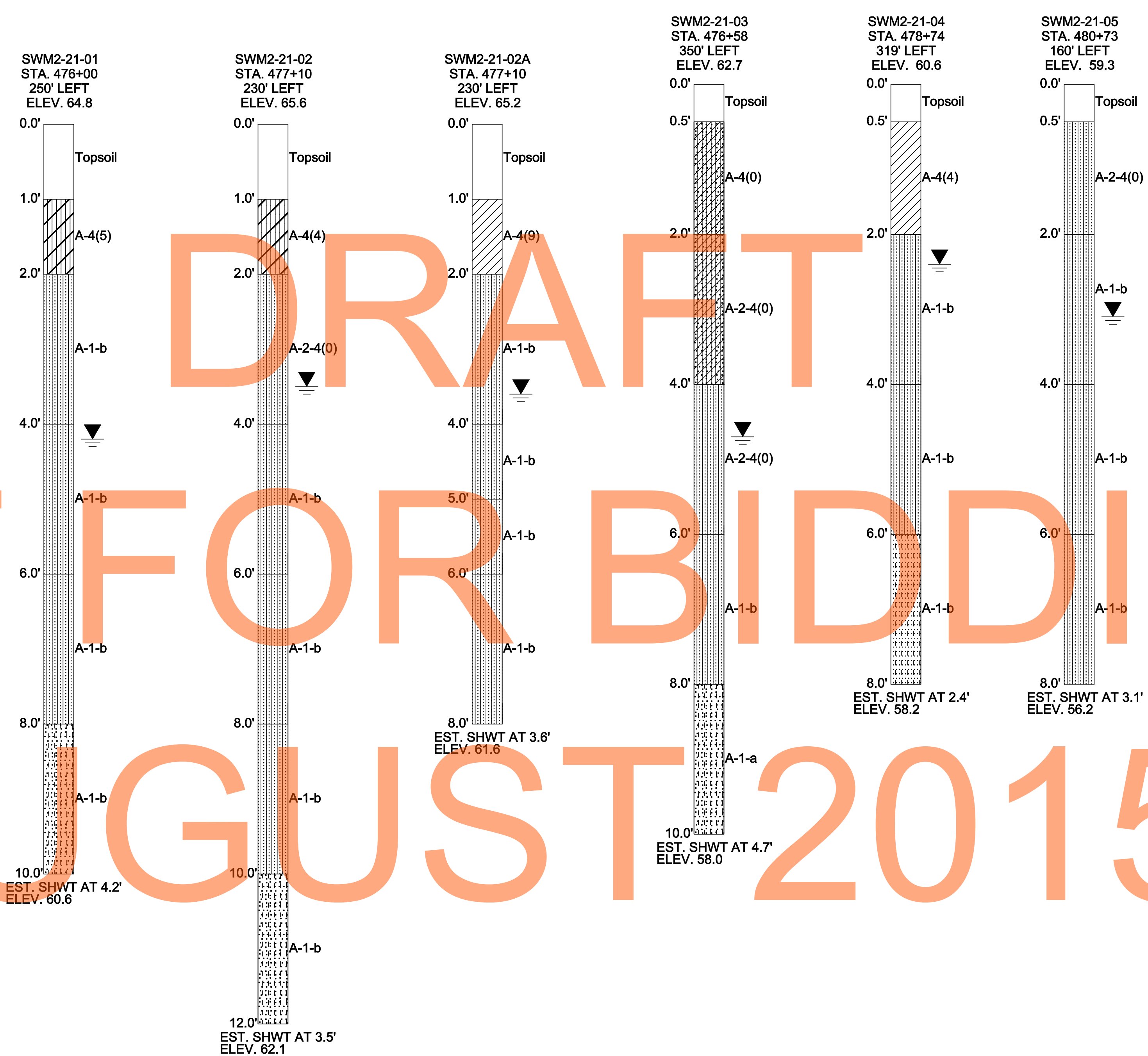
AUGUST 2015

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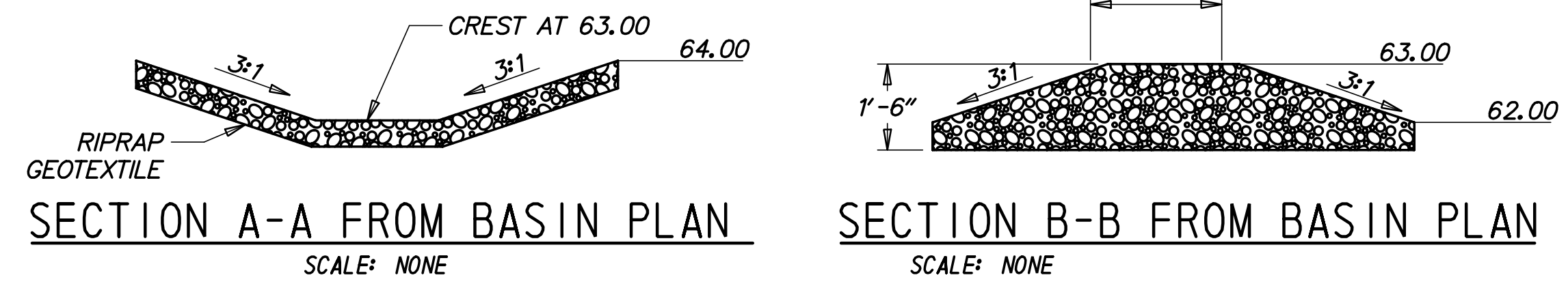
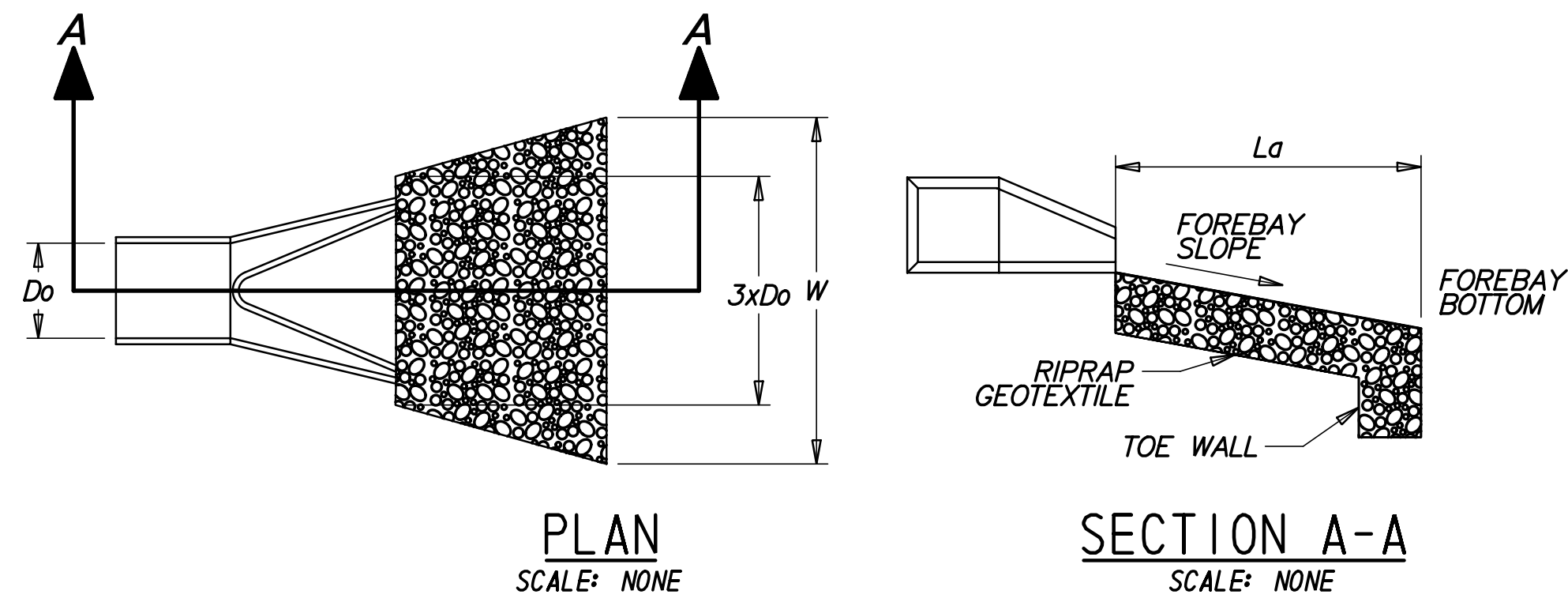
NOT FOR BIDDING

AUGUST 2015



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DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	AS SHOWN	US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT	BRIDGE NO.	STORMWATER MANAGEMENT DETAILS BMP 686 (BASIN 18)	SW-99
				T20091303			SHEET NO.
				COUNTY	DESIGNED BY: DB		784
				NEW CASTLE	CHECKED BY: JZ		TOTAL SHTS.
						1256	



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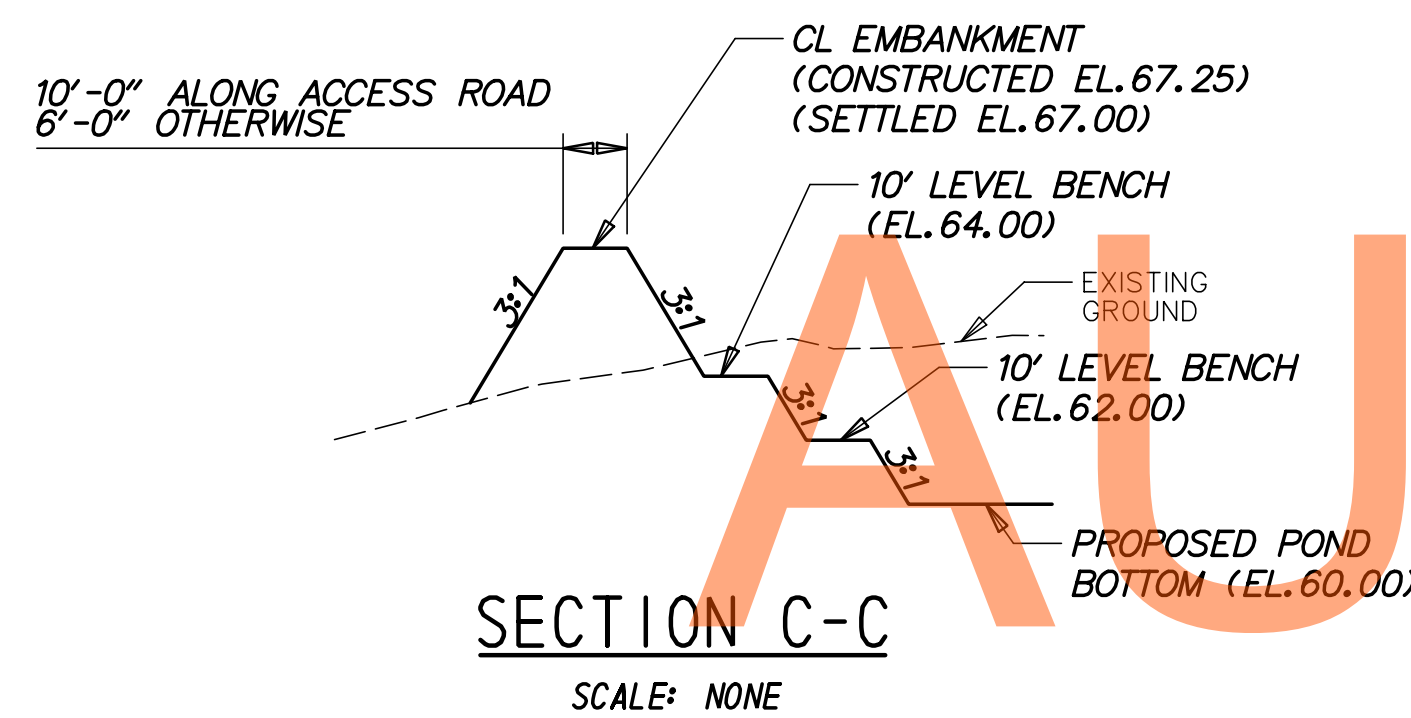
PIPE DIAMETER (Do)
APRON LENGTH (La)
APRON WIDTH (W)
RIPRAP SIZE (R No.)

RR ID	Do	La	W	R No.
64	1.5'	5.3'	12.0'	R-4
59*	2.0'	3.0'/7.1'	13.0'/14.0'	R-4

*TWO COMBINED OUTFALLS, P-144/P-148

FOREBAY RIPRAP OUTLET PROTECTION
SCALE: NONE

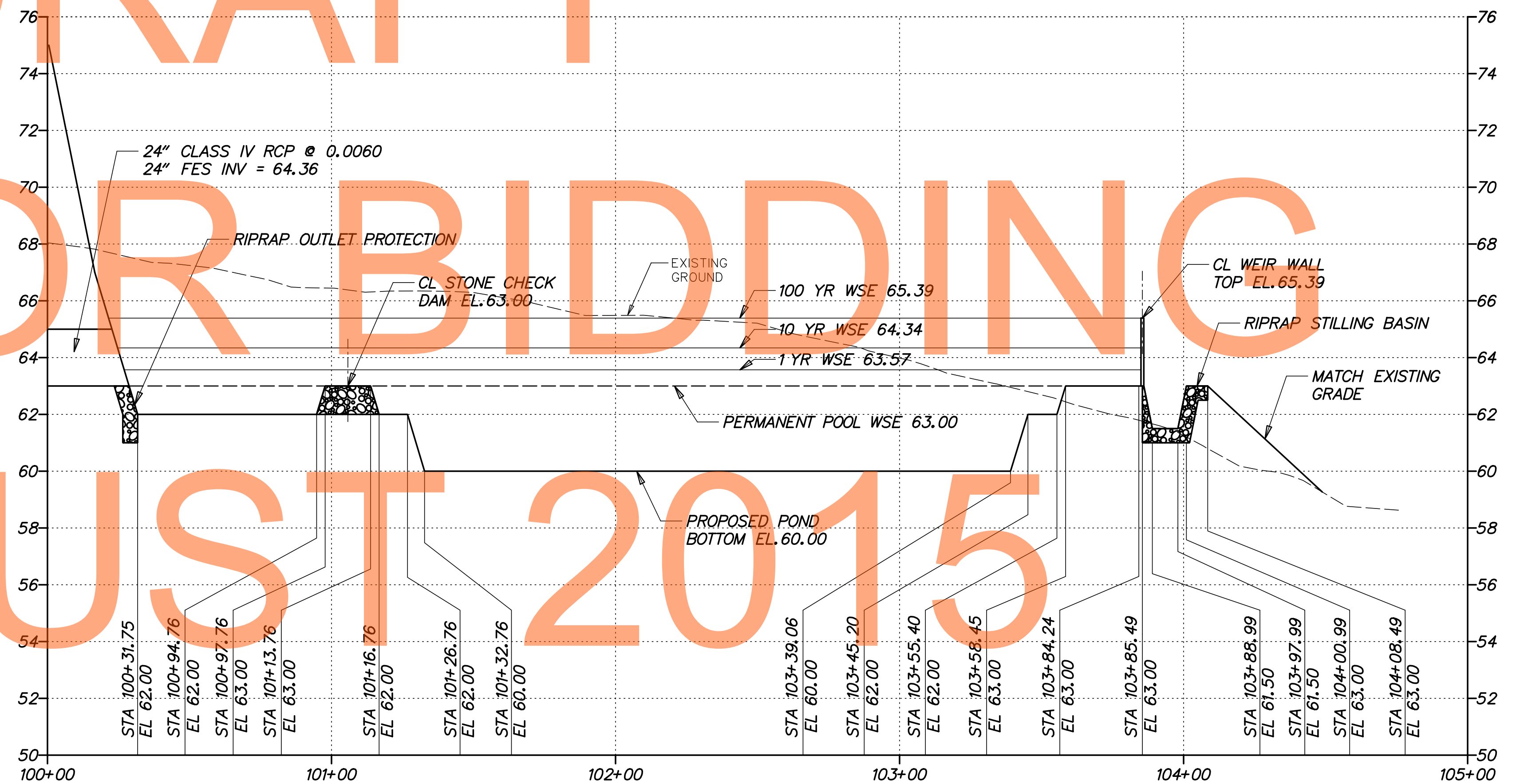
- NOTES:
1. RIPRAP ITEM# 712005.
 2. GEOTEXTILES: RIPRAP ITEM# 713003
 3. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.
 4. DEPRESS CENTERLINE OF APRON SLIGHTLY TO PREVENT EDGE CUTTING.



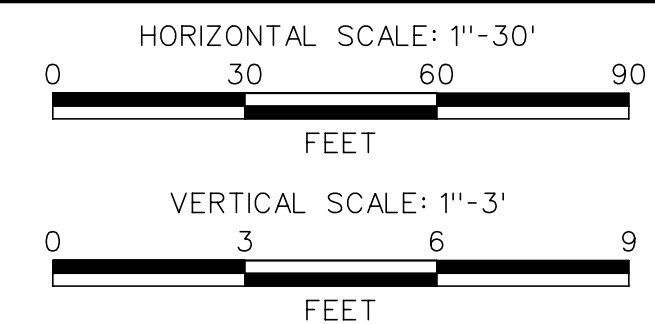
- NOTES:
1. RIPRAP ITEM# 712020
 2. GEOTEXTILE: RIPRAP ITEM# 713003
 3. SEE STANDARD NO. E-10 FOR GEOTEXTILE PLACEMENT.

STONE CHECK DAM
SCALE: NONE

DRAFT
NOT FOR BIDDING
AUGUST 2015

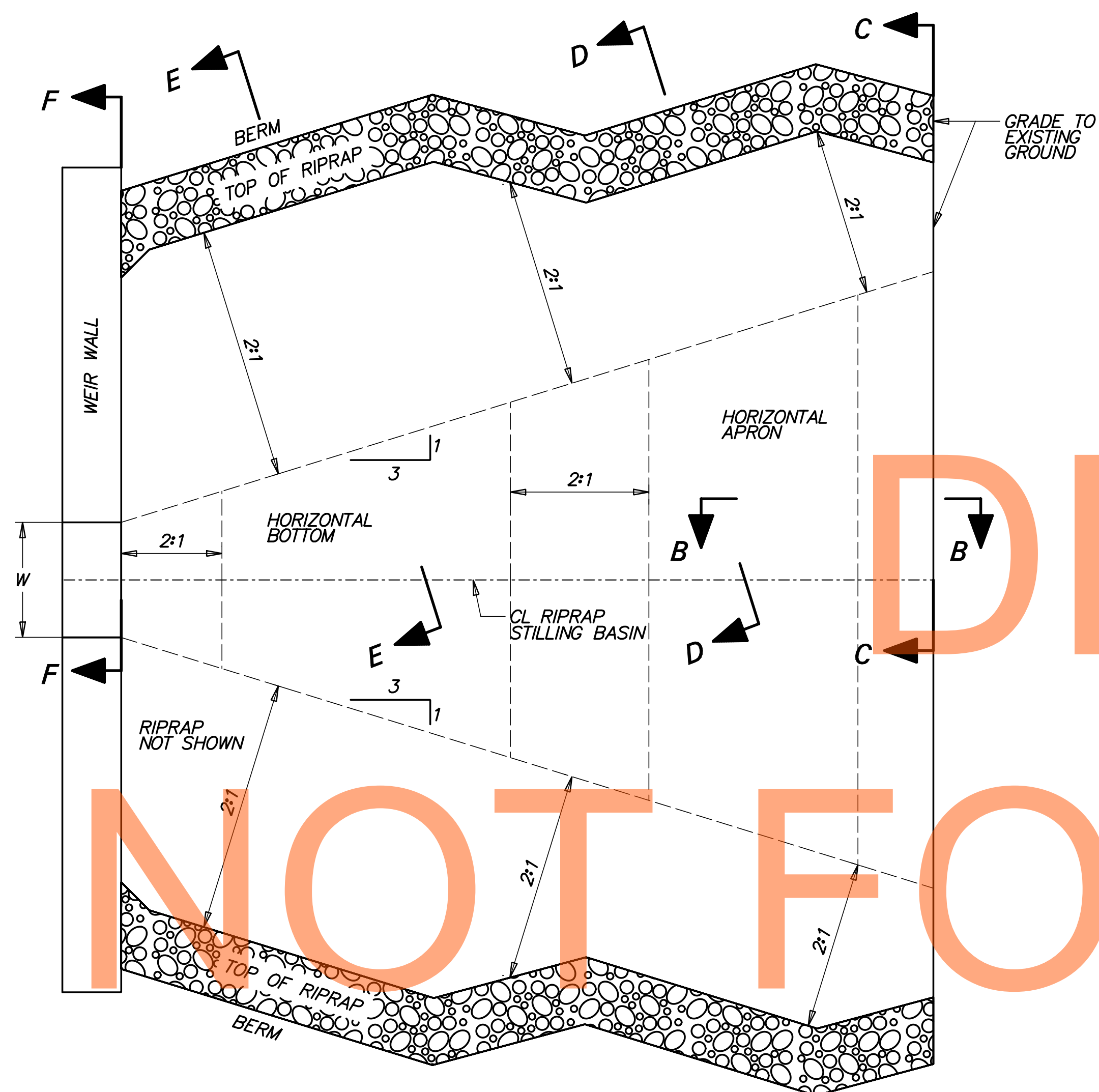


SPILLWAY PROFILE BMP 686 (BASIN 18)



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<p>DELAWARE DEPARTMENT OF TRANSPORTATION</p>	ADDENDUMS / REVISIONS		AS SHOWN	US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT	BRIDGE NO.	STORMWATER MANAGEMENT DETAILS BMP 686 (BASIN 18)	SW-100
	T20091303				SHEET NO.			
	COUNTY	DESIGNED BY: DB			785			
	NEW CASTLE	CHECKED BY: JZ			TOTAL SHTS.			
							1256	



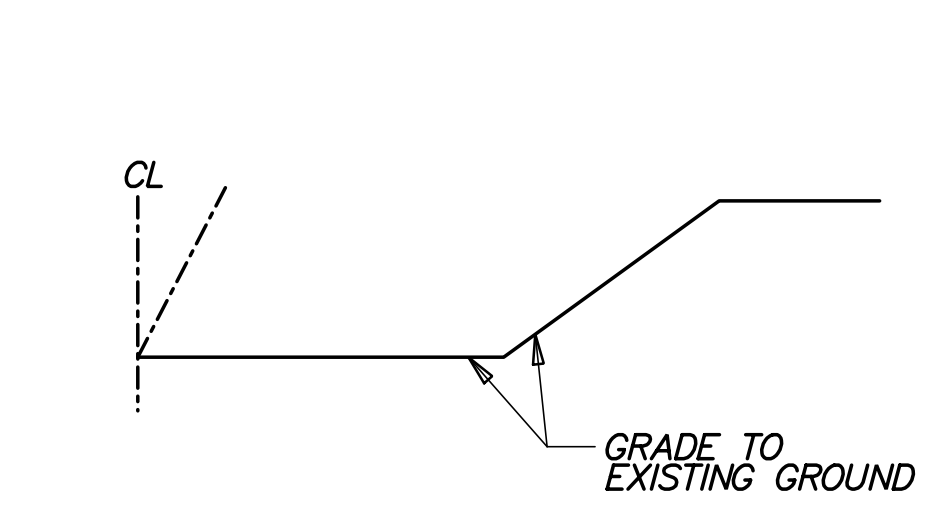
PLAN
SCALE: NONE

DATA	
TOP OF V-NOTCH WEIR WIDTH W = 2.0'	
DEPTH OF BASIN FROM WEIR CREST D = 1.50'	
RIPRAP SIZE (R No.) = R-5 WITH NO. 57 STONE	

- NOTES:
 1. RIPRAP ITEM# 712006.
 2. GEOTEXTILES, RIPRAP ITEM# 713003
 3. DELAWARE NO. 57 STONE ITEM# 302012
 4. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.

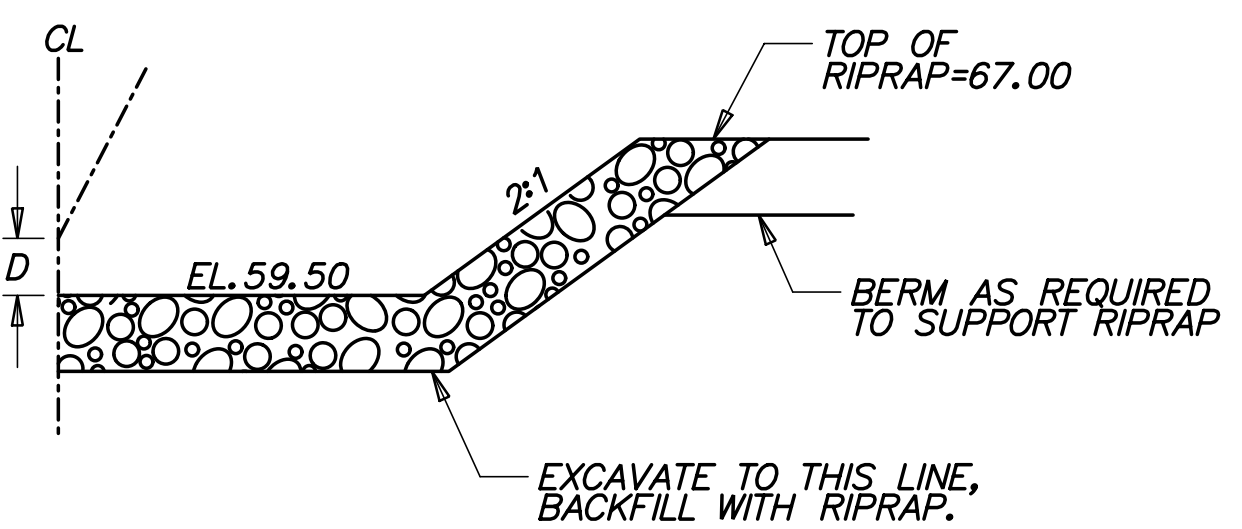
RIPRAP STILLING BASIN

SCALE: NONE



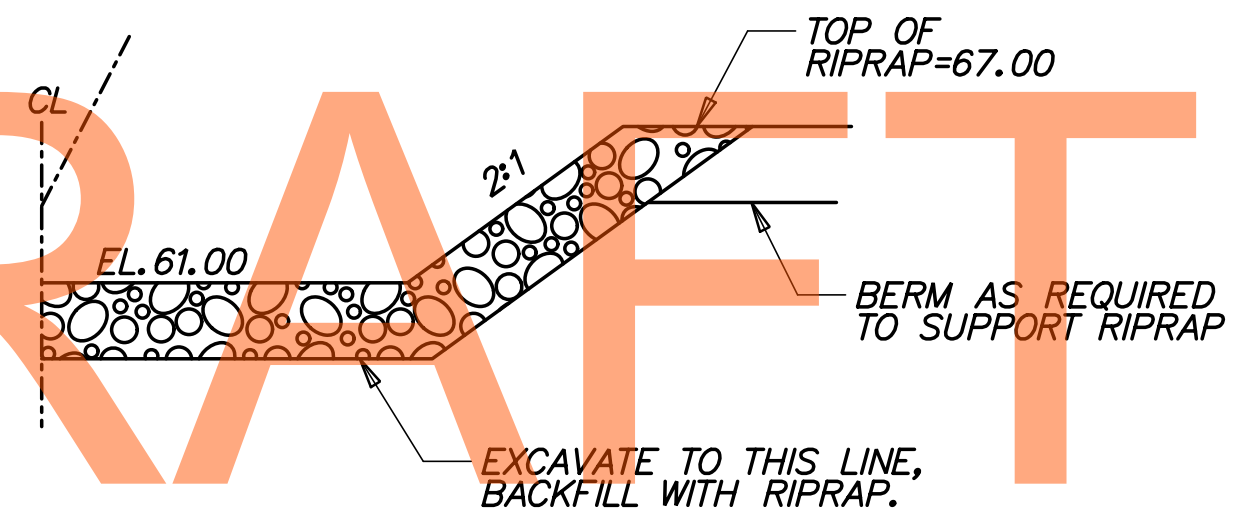
SECTION C-C

SCALE: NONE



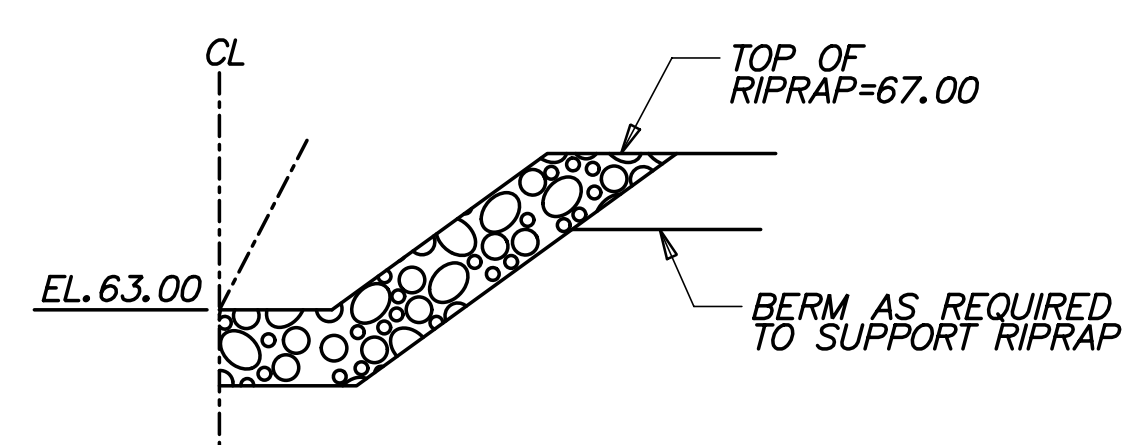
SECTION E-E

SCALE: NONE



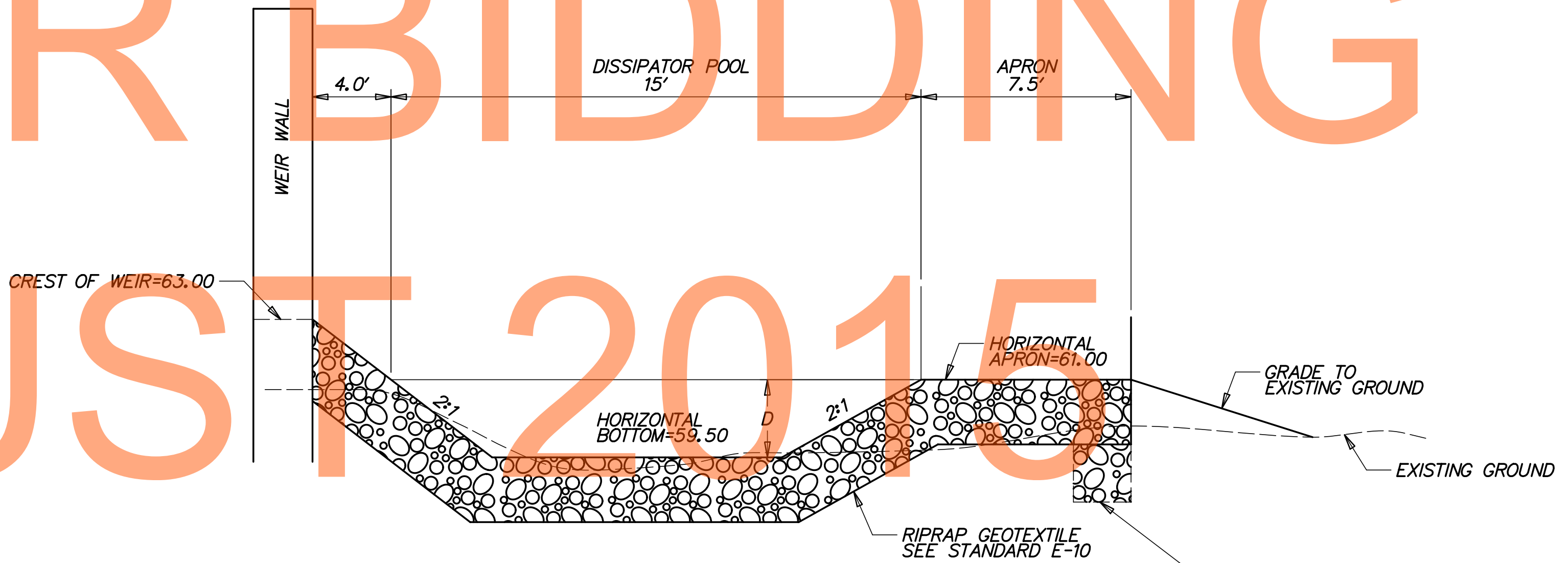
SECTION D-D

SCALE: NONE



SECTION F-F

SCALE: NONE



PROFILE THRU RIPRAP STILLING BASIN

SCALE: NONE

ADDENDUMS / REVISIONS

AS SHOWN

**US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD**

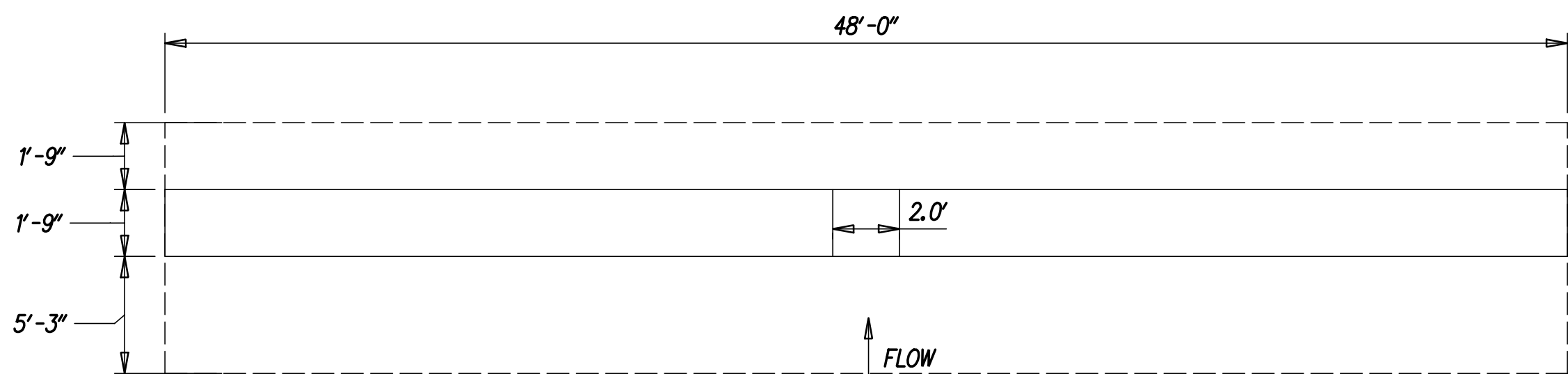
CONTRACT
T20091303
COUNTY
NEW CASTLE

BRIDGE NO.
DESIGNED BY: DB
CHECKED BY: JZ

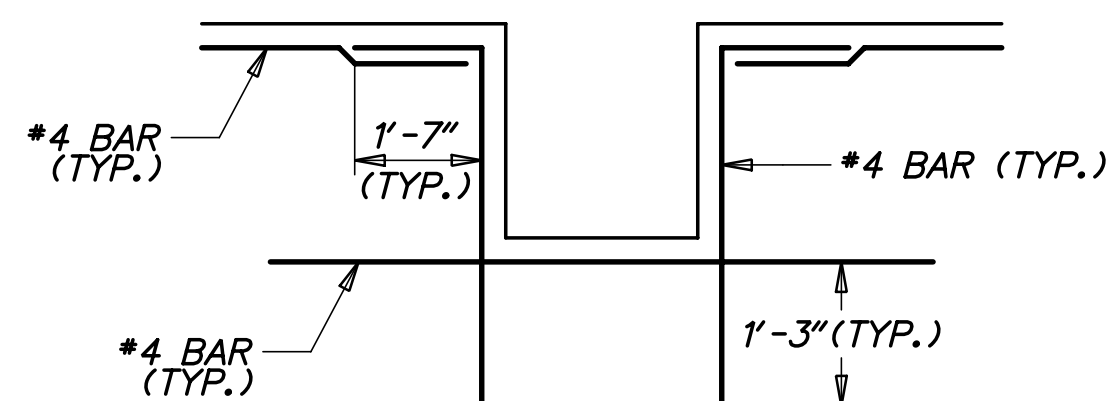
**STORMWATER
MANAGEMENT DETAILS
BMP 686 (BASIN 18)**

SW-101
SHEET NO.
786
TOTAL SHTS.
1256

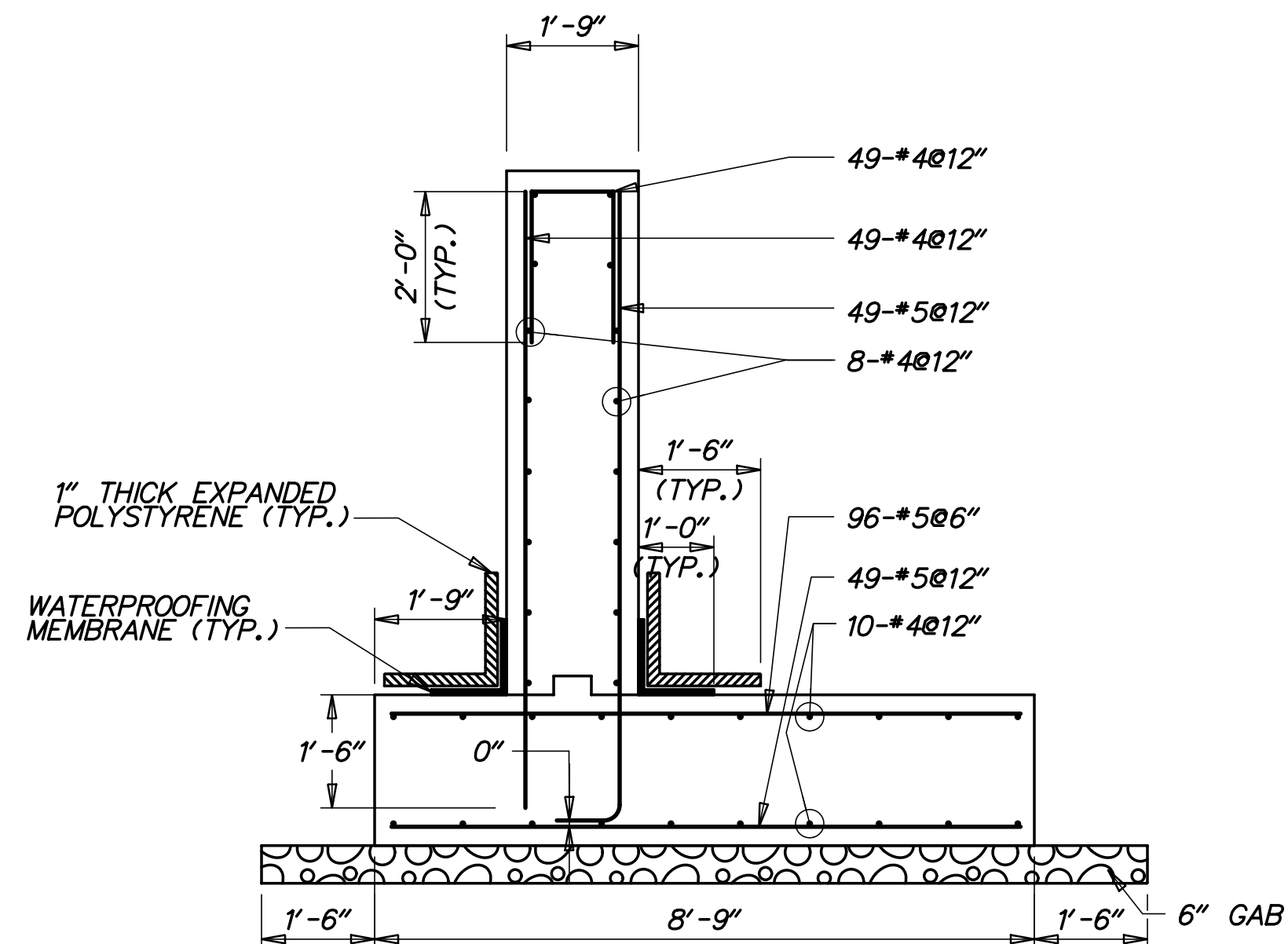




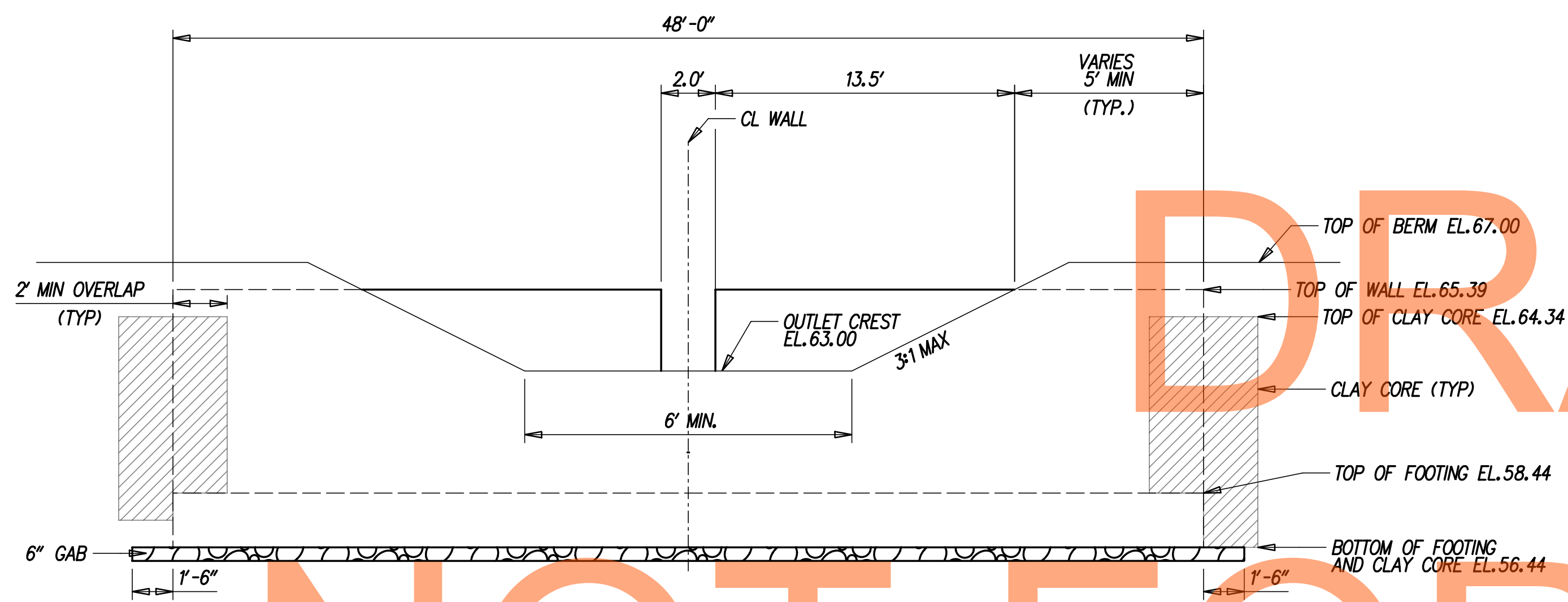
**WEIR WALL
PLAN**
SCALE: NONE



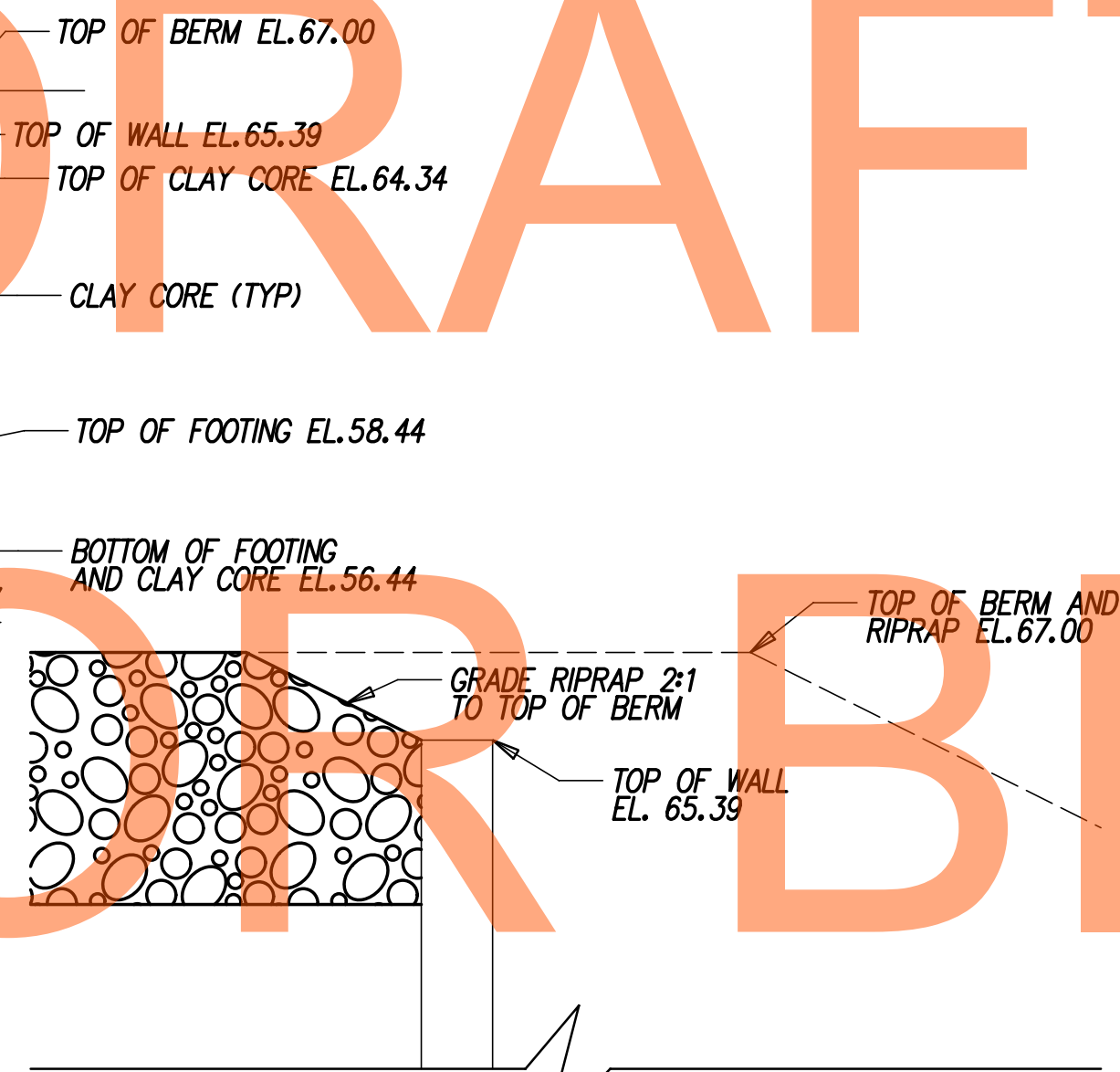
RECTANGULAR DETAIL
SCALE: NONE



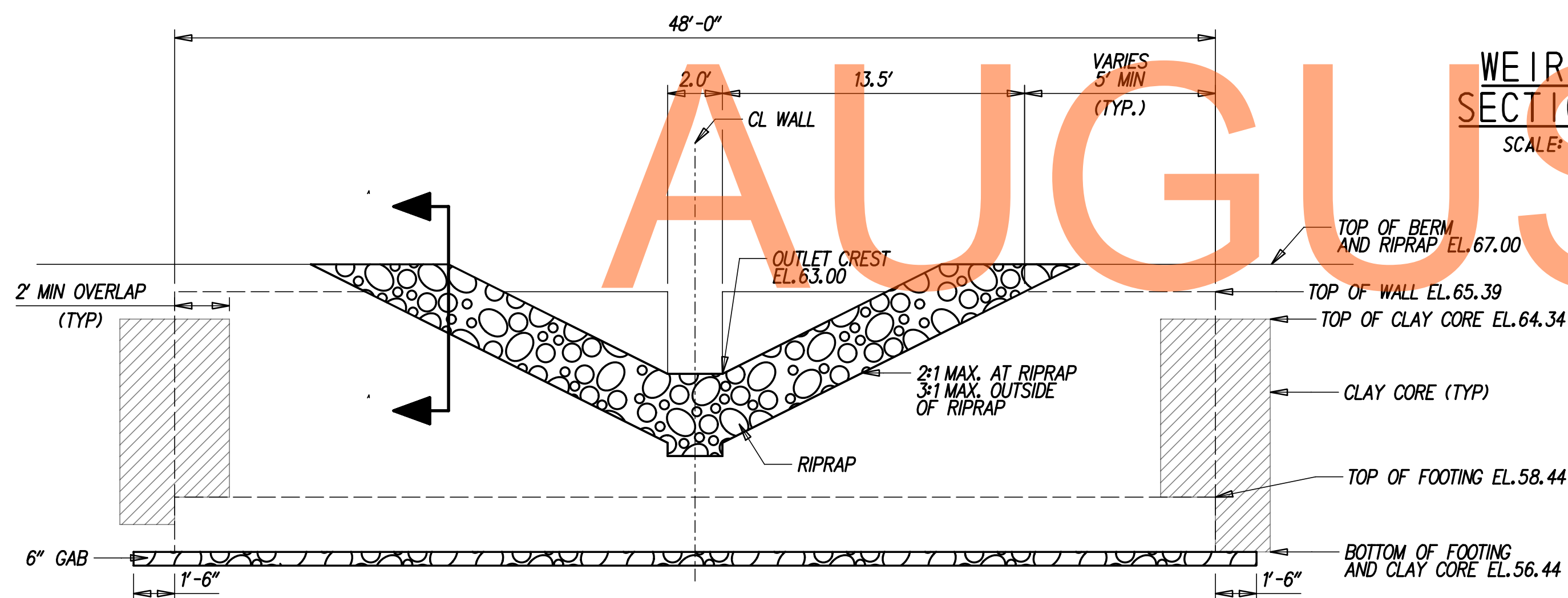
WEIR WALL SECTION
SCALE: 1/2"=1'-0"



**WEIR WALL
INTERIOR ELEVATION**
SCALE: NONE



**WEIR WALL
SECTION A-A**
SCALE: NONE



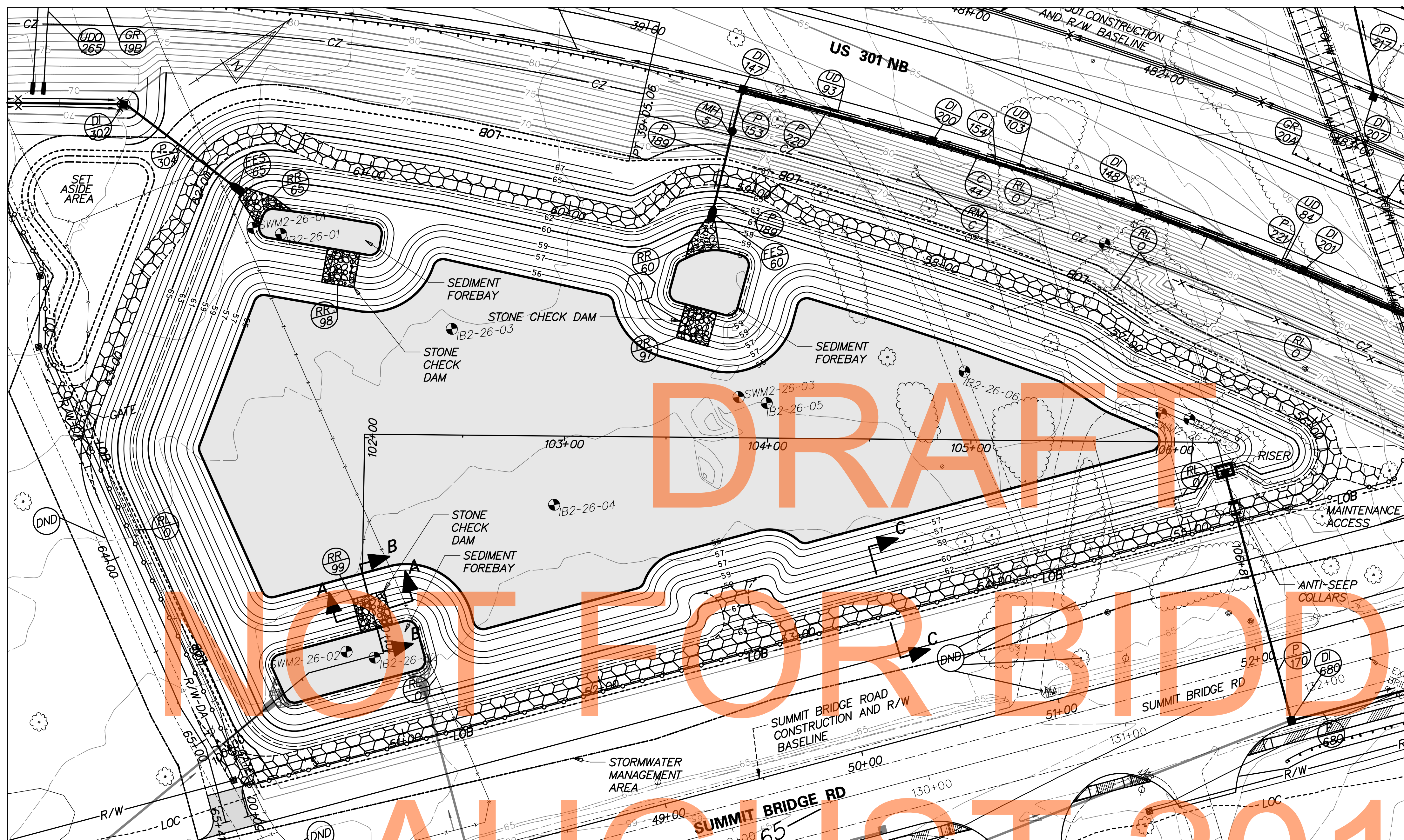
**WEIR WALL
EXTERIOR ELEVATION
WITH RIPRAP STILLING BASIN**
SCALE: NONE

GENERAL NOTES

- DESIGN SPECIFICATIONS:
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 4TH EDITION, 2007, INCLUDING 2008 AND 2009 INTERIM REVISIONS, AND AS SUPPLEMENTED BY DELAWARE DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL, MAY 2005, INCLUDING LATEST REVISIONS.
PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS, AASHTO/AWS D1.5M/D1.5 BRIDGE WELDING CODE, AND CONTRACT SPECIAL PROVISIONS.
- LOADING:
UNIT WEIGHTS OF MATERIALS SHALL BE IN ACCORDANCE WITH THE DELAWARE DESIGN MANUAL.
- PORTLAND CEMENT CONCRETE:
PORTLAND CEMENT CONCRETE FOR CAST-IN-PLACE ELEMENTS SHALL BE AS FOLLOWS:
(28 DAY COMPRESSIVE STRENGTH)
(CLASS B, F'c=3000 PSI) - WEIR WALL FOOTING
(CLASS A, F'c=4500 PSI) - WEIR WALL STEM
WEIR WALLS MUST BE CAST-IN-PLACE.
MIX REQUIREMENTS SHALL CONFORM TO SECTION 812 OF THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
ALL EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED WITH 3/4" X 3/4" MILLED CHAMFER STRIPS EXCEPT ON UNEXPOSED FOOTINGS.
- BAR REINFORCEMENT:
REINFORCING STEEL SHALL CONFORM TO AASHTO M31 (ASTM A615), GRADE 60 AND IS TO BE EPOXY COATED. FUSION-BONDED EPOXY COATED REINFORCING STEEL SHALL CONFORM TO AASHTO M284 (ASTM D3963).
PROVIDE 3" CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.
LAP LENGTH OF #4 BARS TO BE 3'-0". STAGGER SPLICE LOCATIONS.
DO NOT WELD GRADE 60 REINFORCING STEEL.
- CONSTRUCTION JOINTS:
KEYED CONSTRUCTION JOINTS SHALL BE 2" X 4" OR AS NOTED.
- WATERPROOFING MEMBRANE:
ADHESIVE BACKED WATERPROOFING MEMBRANE IS TO BE USED. SPLICING OF THE MEMBRANE IS PROHIBITED.
- REFER TO SPECIFICATION SECTION 272501 FOR CONSTRUCTION SEQUENCE.
- GAB IS INCIDENTAL TO WALL CONSTRUCTION.

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PLAN - BMP 690 (BASIN 20)

POND CONSTRUCTION SEQUENCE AND NOTES
 THE STORMWATER MANAGEMENT POND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE STANDARD SPECIFICATIONS:

- SECTION 271 - STORMWATER MANAGEMENT POND
 SECTION 272 - POND OUTLET STRUCTURE, CONCRETE
1. INSTALL STABILIZED CONSTRUCTION ENTRANCE.
 2. CLEAR AND GRUB FOR INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS.
 3. INSTALL PERIMETER SEDIMENT CONTROLS AS SHOWN.
 4. CLEAR AND GRUB REMAINING AREA FOR POND CONSTRUCTION.
 5. CONSTRUCT OUTLET STRUCTURE, CLAY CORE AND PARTIAL EMBANKMENT AS NEEDED TO INSTALL OUTLET STRUCTURE, DE-WATER FOUNDATION AS NEEDED IN ACCORDANCE WITH SECTION 111 AND USE SUMP PIT FOR PUMPING.
 6. EXCAVATE THE POND AND COMPLETE THE EMBANKMENT, GRADES AND DETAILS SHOWN IN THE CONSTRUCTION PLANS. DURING EXCAVATION, THE CONTRACTOR SHALL SALVAGE AND STOCKPILE SOILS CLASSIFIED AS CH, CL, SC AND GG PER THE UNIFIED SOIL CLASSIFICATION SYSTEM TO BE USED TO CONSTRUCT EMBANKMENT. THE ABOVE CLASSIFIED SOILS MAY BE OBTAINED FROM ELSEWHERE WITHIN THE PROJECT LIMITS, IF NECESSARY.
 7. STABILIZE ALL BARE AREAS. REMOVE EROSION AND SEDIMENT CONTROL MEASURES AND DEACTIVATE DE-WATERING DEVICE.
 NOTE: SEE CONSTRUCTION SEQUENCE PLANS FOR LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.
 8. THE CONTRACTOR SHALL PROVIDE 'AS-BUILT' DRAWINGS OF ALL STORMWATER MANAGEMENT FACILITIES SUCH AS PONDS, INFILTRATION BASINS, BIOFILTRATION SWALES, ETC. 'AS-BUILT' DRAWINGS SHALL SHOW THE ACTUAL FINISHED GROUND CONTOURS, OUTLET STRUCTURE DIMENSIONS AND ELEVATIONS, ETC. AS THEY EXIST AT THE COMPLETION OF THE PROJECT. THESE DRAWINGS SHALL BE SIGNED BY A PROFESSIONAL ENGINEER OR LAND SURVEYOR.

PLANTING SCHEDULE
 PLACE PERMANENT GRASS SEEDING - WET GROUND UP TO ELEVATION 59.00
 PLACE PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 59.00
 PLACE TOPSOIL ON LOWER BENCH ELEVATION 57.00 AND ABOVE.

RIPRAP SCHEDULE		
NO.	TYPE	AREA (SY)
60	R-4	21
65	R-4	24
97	R-4	31
98	R-4	31
99	R-4	31

CHECK CONSTRUCTION PLANS FOR SCHEDULE OF RIPRAP OUTSIDE OF THE BASIN AREA.

POND DESIGN SUMMARY				
DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC.FT.)*
QUALITY STORM (1 YR)	32.40	2.84	58.82	5.415
10 - YEAR	84.52	11.05	59.89	7.519
100 - YEAR	171.28	29.59	61.49	10.978

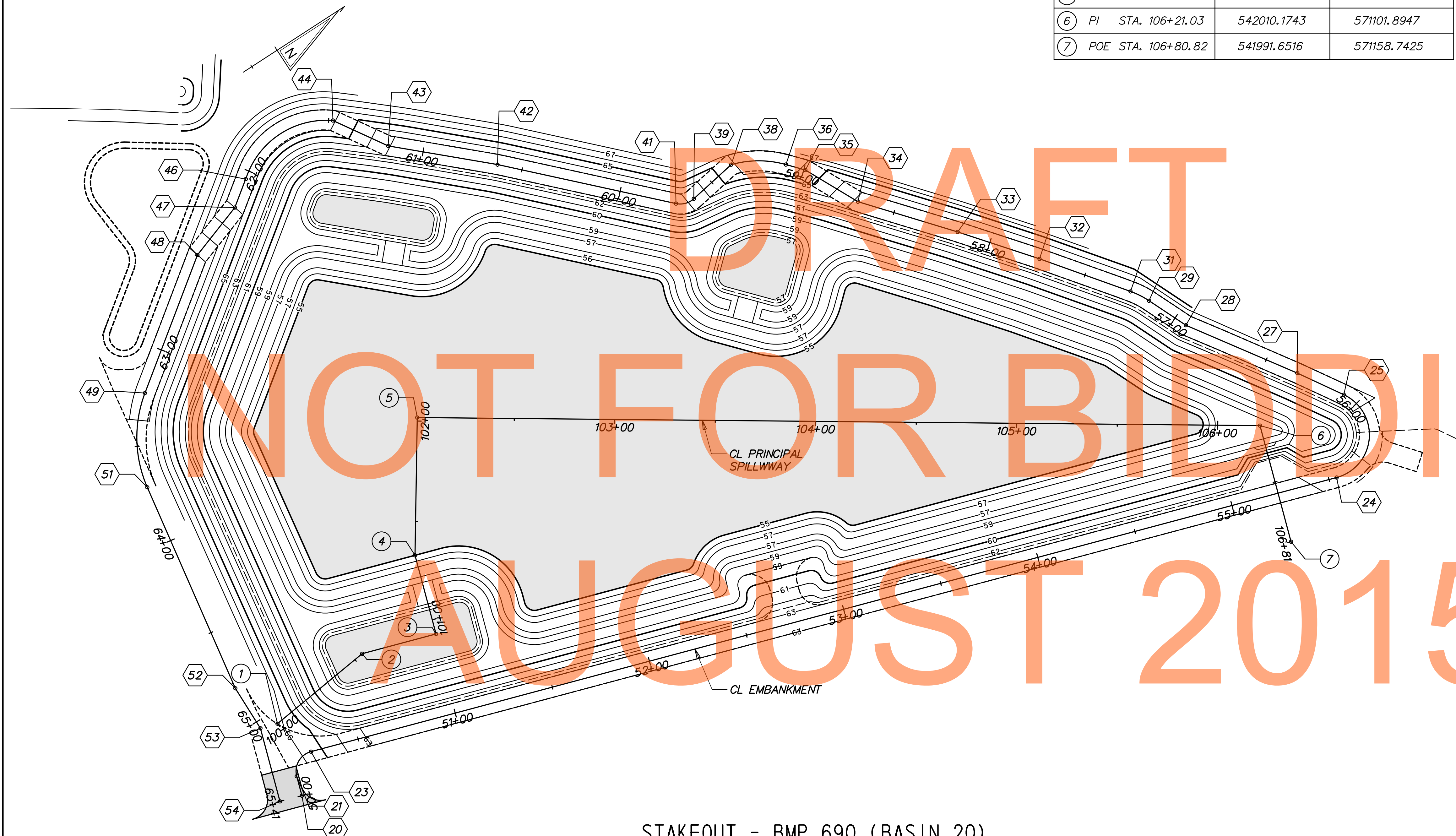
DRAINAGE AREA TO FACILITY: 29.77 ACRES
 MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY BY EXTENDED DETENTION OF 1 YEAR STORM RUNOFF, WATER QUANTITY FOR 10 AND 100 YEAR STORMS.
 *INCLUDES NORMAL POOL VOLUME OF 4.007 AC-FT.

POND QUANTITIES			
ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	49713	CY
272000	POND OUTLET STRUCTURE, CONCRETE, #1	1	EACH
302011	DELAWARE NO. 3 STONE	501	TON
712005	R-4 RIPRAP	45	SY
712020	R-4 RIPRAP	66	TON
713001	GEOTEXTILES, STABILIZATION	3389	SY
713003	GEOTEXTILES, RIPRAP	168	SY
733002	TOPSOILING, 6" DEPTH	11615	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	8292	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	9577	SY

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CL PRINCIPAL SPILLWAY		
STATION	NORTHING	EASTING
① POB STA. 100+00.00	541519.4854	570959.9459
② PI STA. 100+54.64	541573.7686	570953.6937
③ PI STA. 100+92.69	541609.9469	570965.4817
④ PI STA. 101+33.20	541622.4948	570926.9714
⑤ PI STA. 102+01.75	541660.7794	570870.1085
⑥ PI STA. 106+21.03	542010.1743	571101.8947
⑦ POE STA. 106+80.82	541991.6516	571158.7425

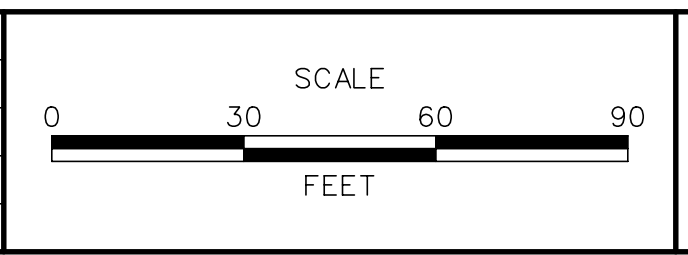
CL EMBANKMENT		
STATION	NORTHING	EASTING
②⑩ POB STA. 50+00.00	541510.1704	570996.6022
②⑪ PC STA. 50+10.00	541513.2682	570987.0948
②⑫ PI STA. 50+20.00	541516.3662	570977.5868
②⑬ PT STA. 50+25.71	541525.8742	570980.6848
②⑭ PC STA. 55+53.88	542028.0636	571144.3126
②⑮ PI STA. 56+14.53	542085.7274	571163.1011
②⑯ PT STA. 56+07.69	542053.5207	571111.7119
②⑰ PI STA. 56+33.18	542039.9840	571090.1128
②⑱ PI STA. 56+93.53	542006.4621	571039.9274
②⑲ PC STA. 57+15.57	541997.7249	571019.6921
③⑰ PI STA. 57+20.75	541995.6701	571014.9330
③⑱ PT STA. 57+25.88	541992.5302	571010.8084
③⑲ PI STA. 57+73.97	541963.4022	570972.5457
③⑲ PI STA. 58+16.83	541936.5494	570939.1500
③⑲ PI STA. 58+68.70	541903.1268	570899.4768
③⑲ PI STA. 58+99.20	541889.7977	570872.0459
③⑲ PC STA. 59+09.26	541883.1567	570864.4827
③⑲ PI STA. 59+23.41	541873.8196	570853.8488
③⑲ PT STA. 59+36.84	541860.2944	570849.6856
③⑲ PC STA. 59+62.02	541835.4510	570853.7871
④⑰ PI STA. 59+67.20	541830.3457	570854.6299
④⑰ PT STA. 59+71.57	541826.7089	570850.9493
④⑰ PI STA. 60+62.45	541762.8323	570786.3038
④⑰ PI STA. 61+17.65	541722.2614	570748.8849
④⑰ PC STA. 61+47.89	541706.0947	570723.3312
④⑰ PI STA. 61+79.38	541681.1267	570704.1325
④⑰ PT STA. 62+01.93	541655.7026	570722.7230
④⑰ PI STA. 62+19.44	541641.5753	570733.0531
④⑰ PI STA. 62+49.47	541613.1366	570742.6987
④⑰ PC STA. 63+22.95	541553.8166	570786.0747
④⑰ PI STA. 63+48.30	541533.3590	570801.0337
④⑰ PT STA. 63+71.07	541529.2377	570826.0397
④⑰ PI STA. 64+80.24	541511.4838	570933.7602
④⑰ PI STA. 65+03.73	541511.1072	570957.2431
④⑰ POE STA. 65+41.37	541499.4473	570993.0282



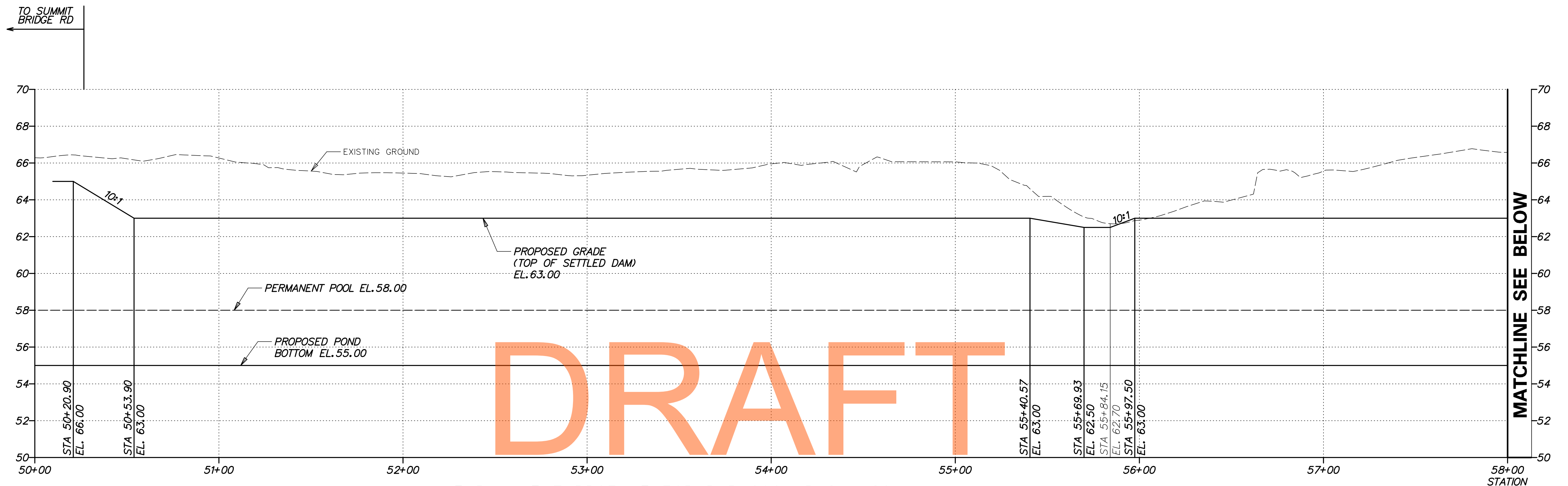
STAKEOUT - BMP 690 (BASIN 20)

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ADDENDUMS / REVISIONS



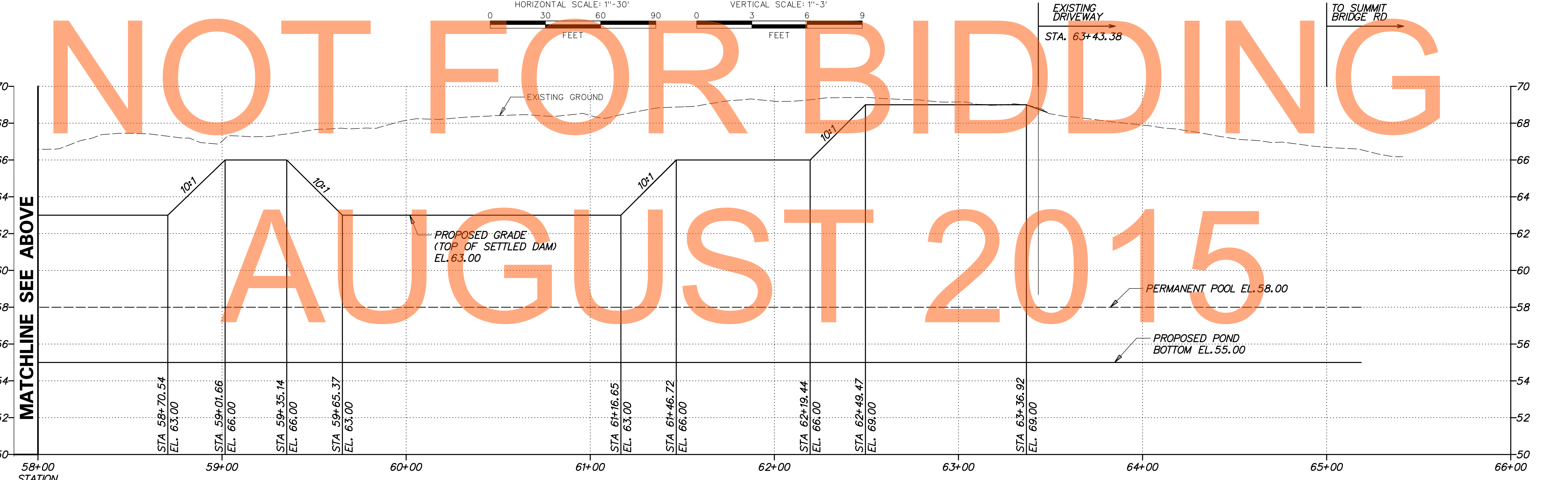
CONTRACT	BRIDGE NO.
T200911303	
COUNTY	DESIGNED BY: DB
NEW CASTLE	CHECKED BY: JZ



EMBANKMENT PROFILE FOR BMP 690 (BASIN 20)

HORIZONTAL SCALE: 1"=30' VERTICAL SCALE: 1"=3'

0 30 60 90 0 3 6 9 FEET FEET



EMBANKMENT PROFILE FOR BMP 690 (BASIN 20)

HORIZONTAL SCALE: 1"=30' VERTICAL SCALE: 1"=3'

0 30 60 90 0 3 6 9 FEET FEET

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ADDENDUMS / REVISIONS	

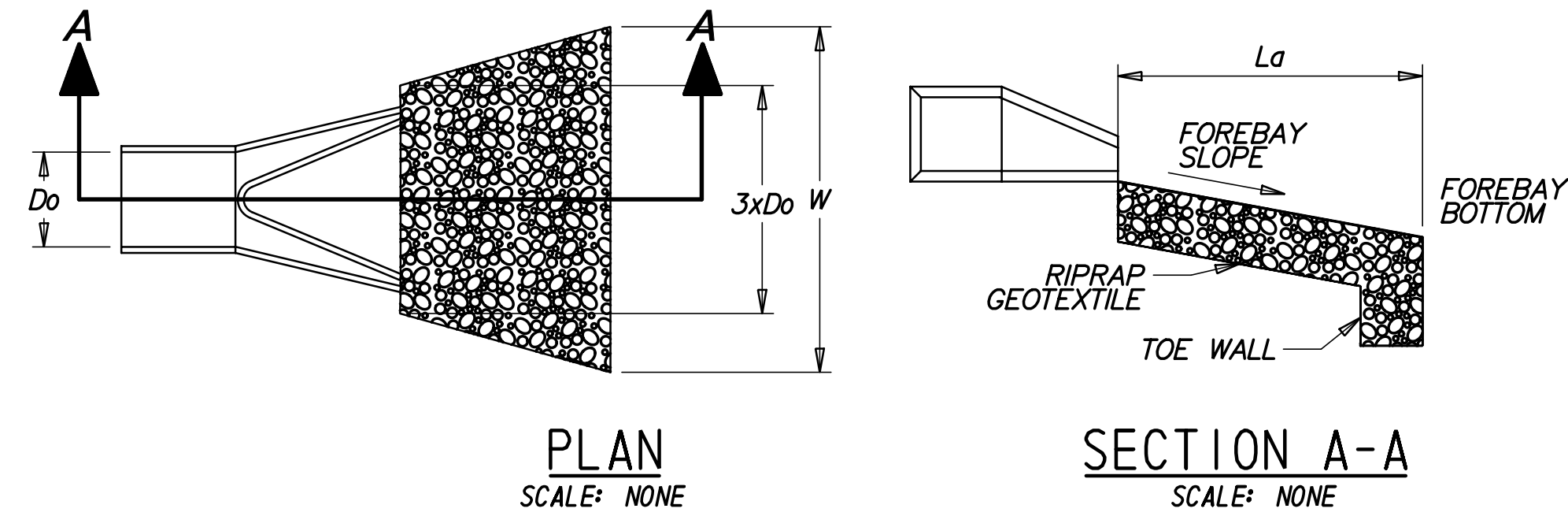
AS SHOWN

US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD

CONTRACT T200911303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: DB
	CHECKED BY: JZ

**STORMWATER MANAGEMENT DETAILS
BMP 690 (BASIN 20)**

SW-105
SHEET NO. 790
TOTAL SHTS. 1256



DATA

PIPE DIAMETER (Do)
 APRON LENGTH (La)
 APRON WIDTH (W)
 RIPRAP SIZE (R No.)

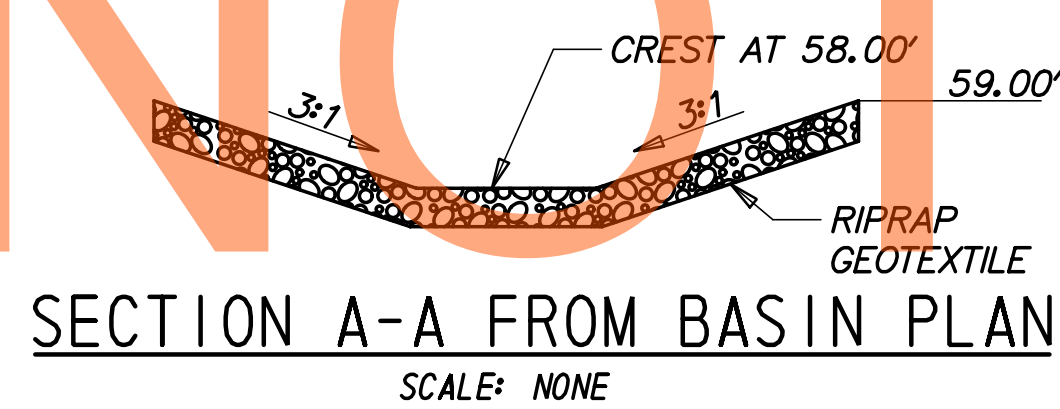
FES ID	Do	La	W	R No.
60	1.5'	9.8'	15.0'	R-4
65	2.0'	9.8'	15.0'	R-4

FOREBAY RIPRAP OUTLET PROTECTION
 SCALE: NONE

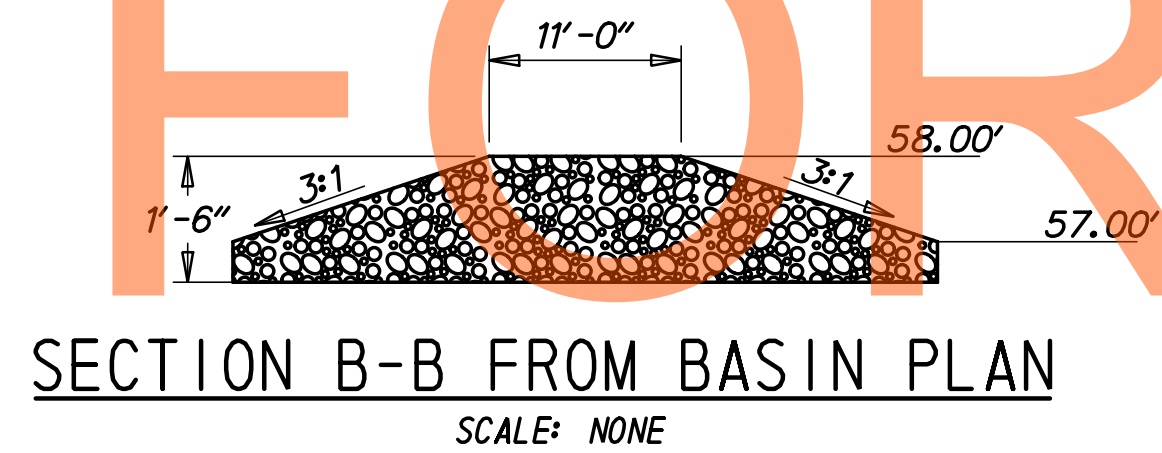
- NOTES:**
1. RIPRAP ITEM# 712005.
 2. GEOTEXTILES, RIPRAP ITEM# 713003
 3. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.
 4. DEPRESS CENTERLINE OF APRON SLIGHTLY TO PREVENT EDGE CUTTING.

DRAFT

NOT FOR BIDDING



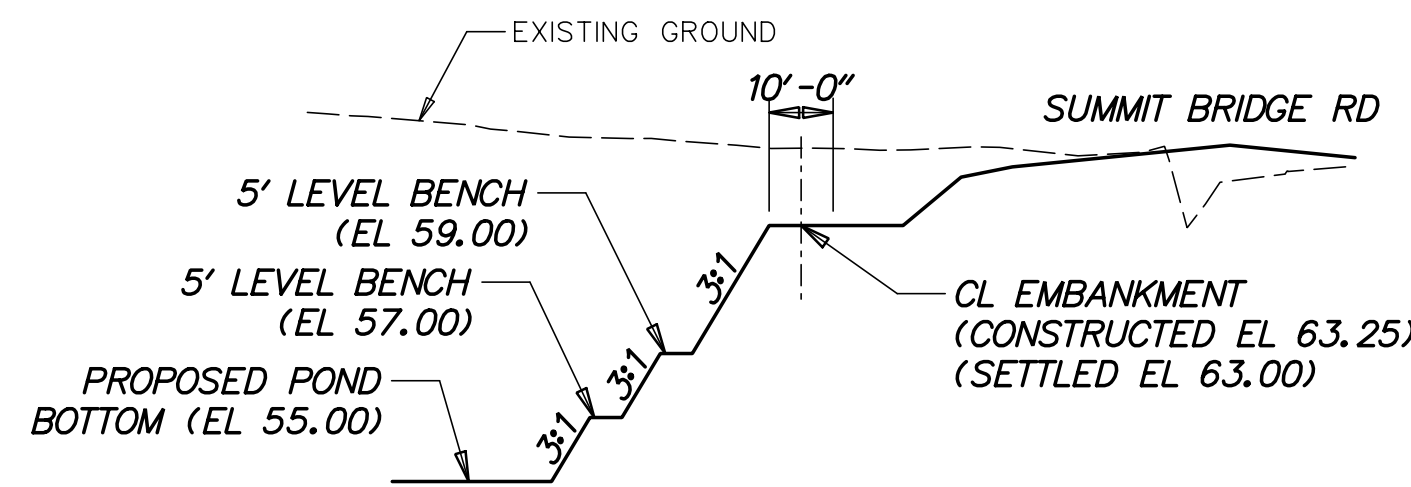
SECTION A-A FROM BASIN PLAN
 SCALE: NONE



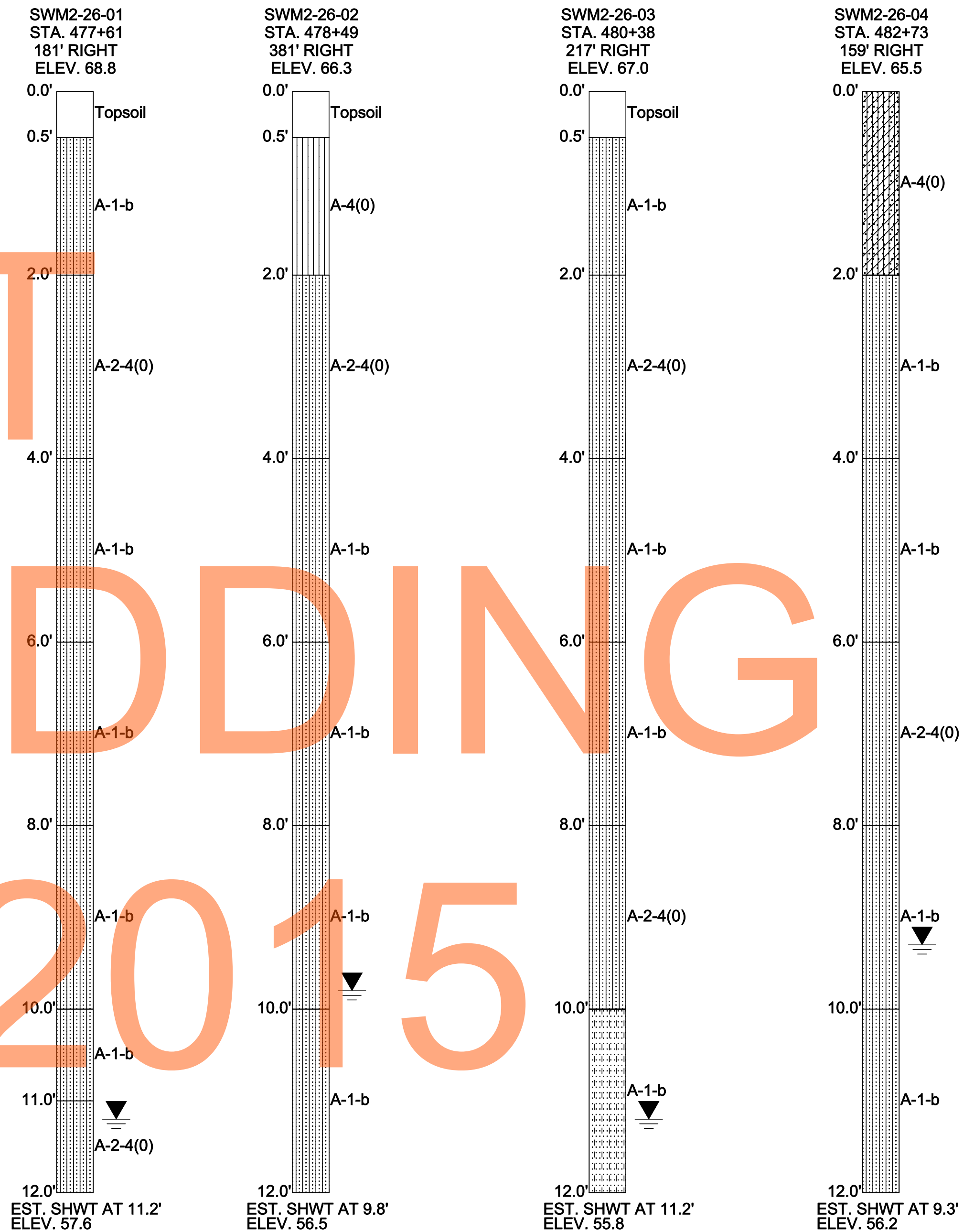
SECTION B-B FROM BASIN PLAN
 SCALE: NONE

STONE CHECK DAM
 SCALE: NONE

- NOTES:**
1. RIPRAP ITEM# 712020
 2. GEOTEXTILE, RIPRAP ITEM# 713003
 3. SEE STANDARD NO. E-10 FOR GEOTEXTILE PLACEMENT.



SECTION C-C FROM BASIN PLAN
 SCALE: NONE



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ADDENDUMS / REVISIONS

AS SHOWN

US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: DB
NEW CASTLE	CHECKED BY: JZ

STORMWATER MANAGEMENT DETAILS BMP 690 (BASIN 20)

SW-106
SHEET NO.
791
TOTAL SHTS.
1256



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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

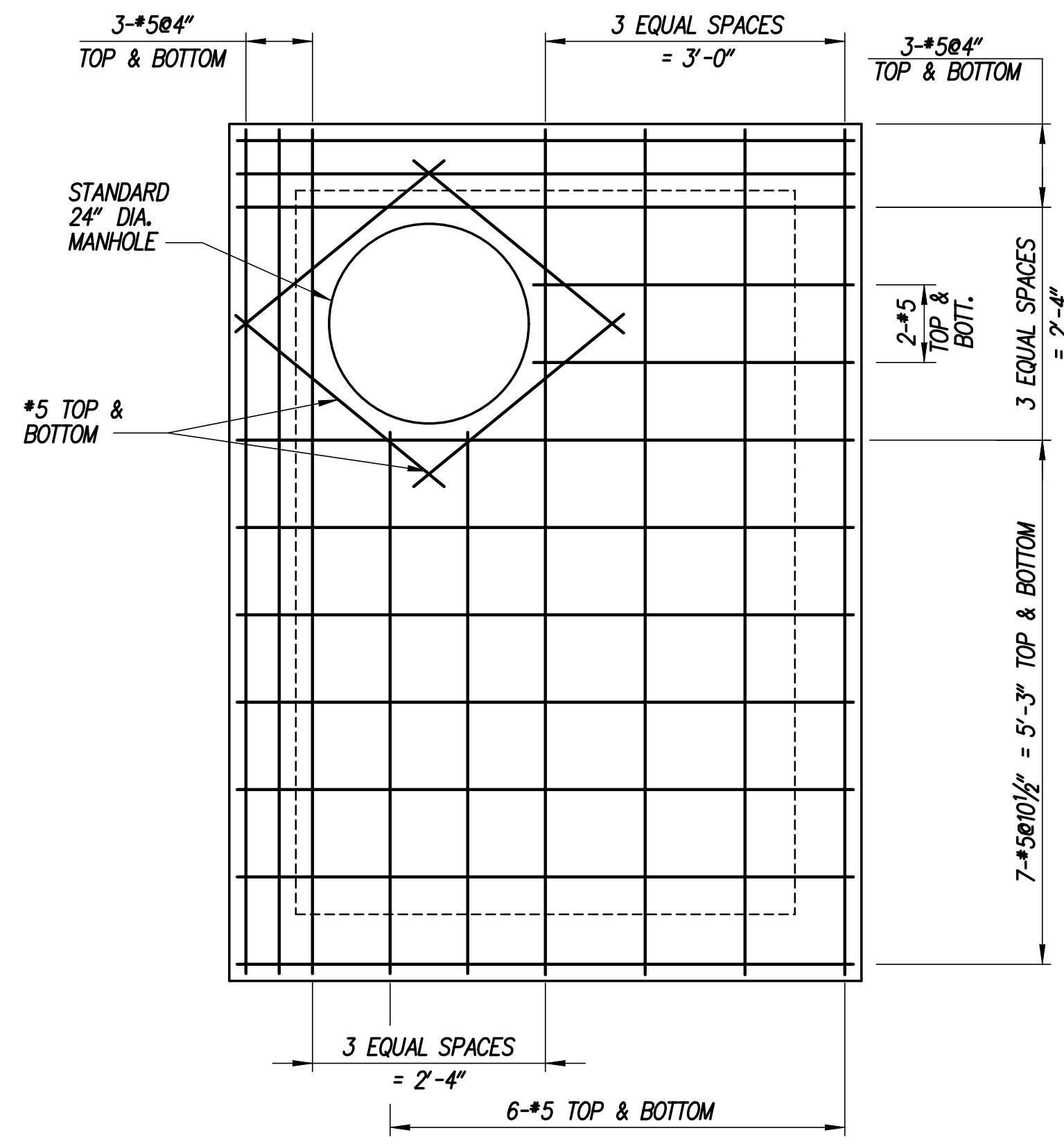
AS SHOWN

US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD

CONTRACT T200911303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: DB
	CHECKED BY: JZ

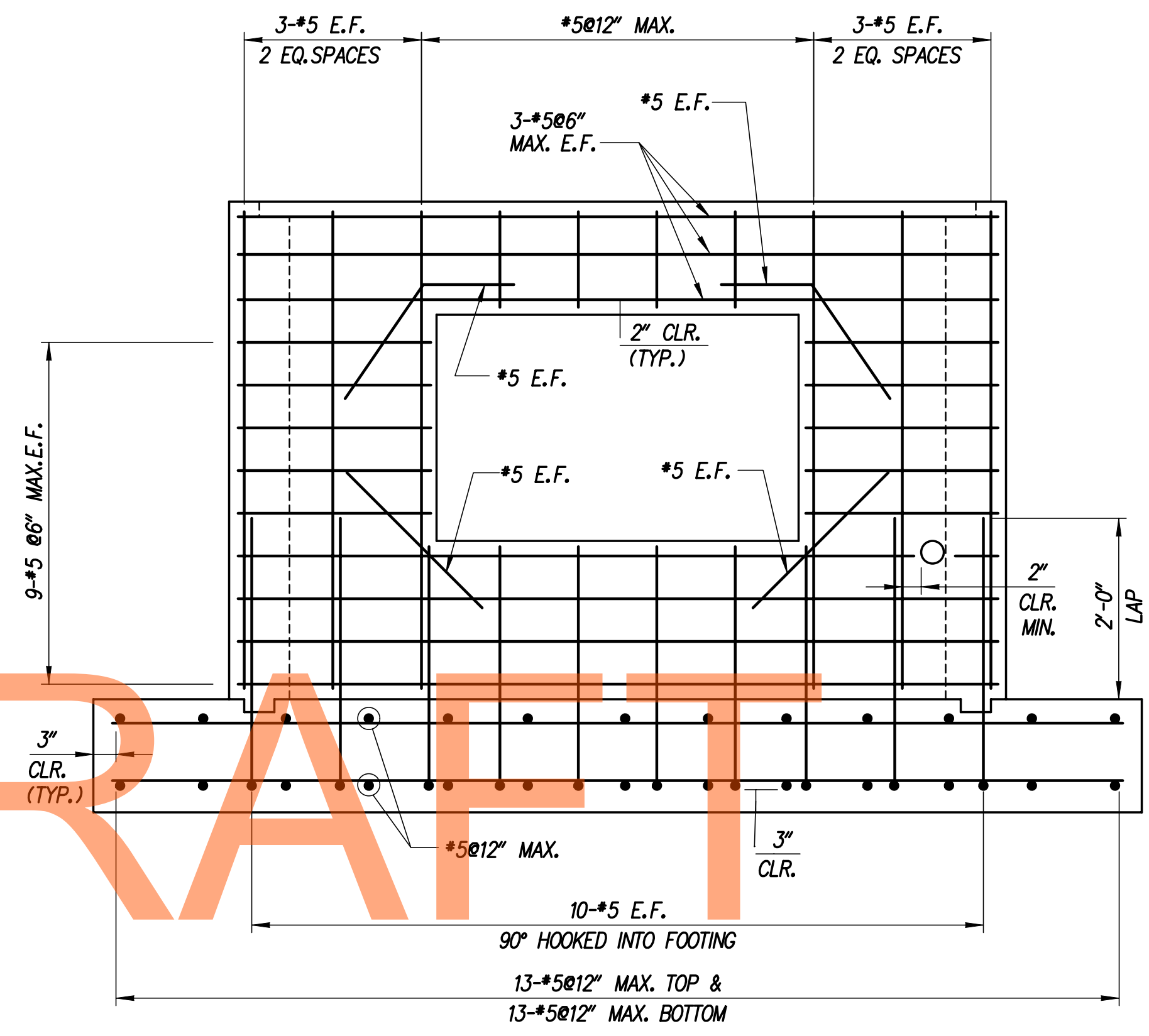
STORMWATER MANAGEMENT DETAILS BMP 690 (BASIN 20)

SW-107
SHEET NO.
792
TOTAL SHTS.
1256



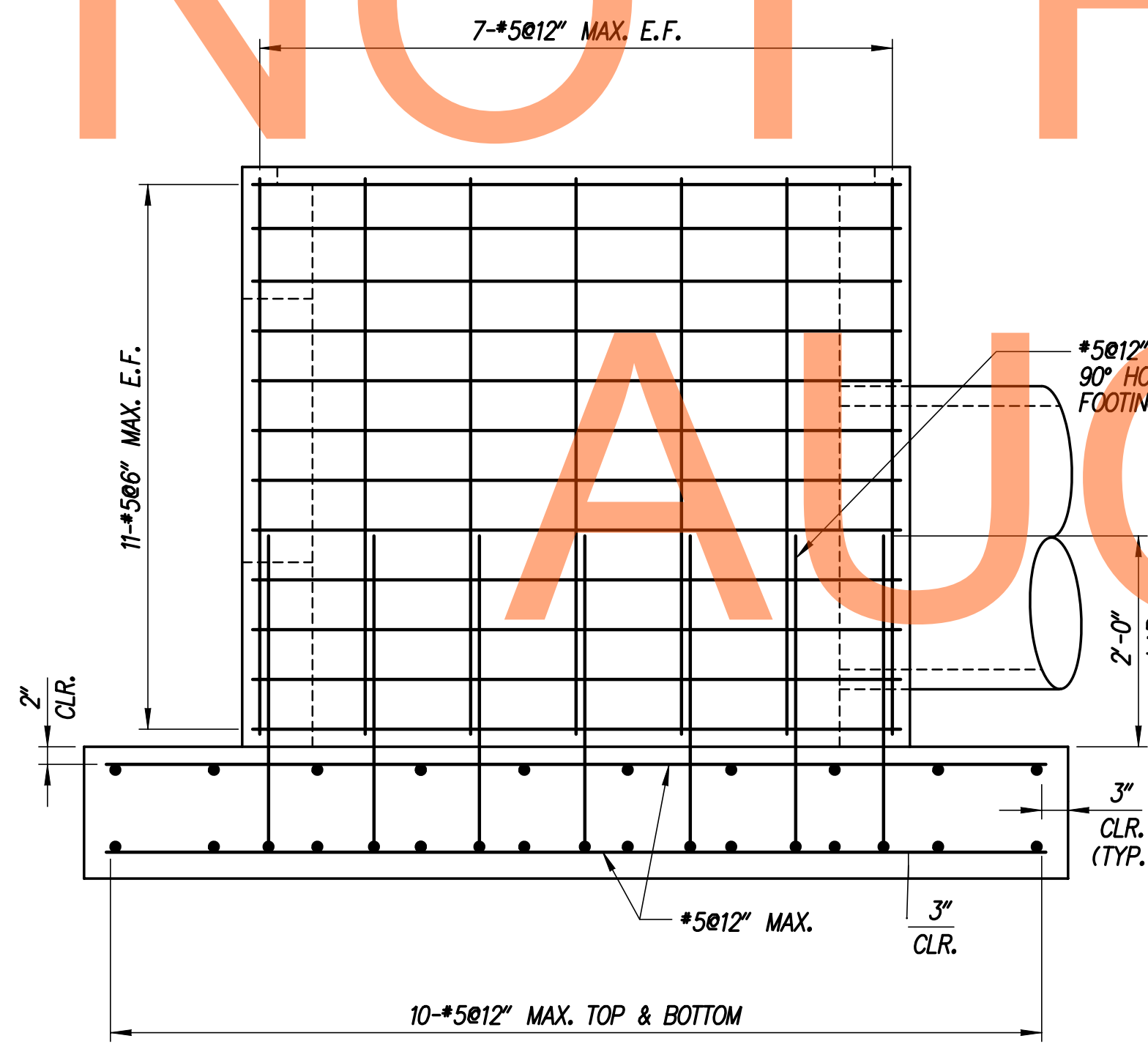
TOP SLAB - REINFORCEMENT PLAN

SCALE: 3/4" = 1'-0"



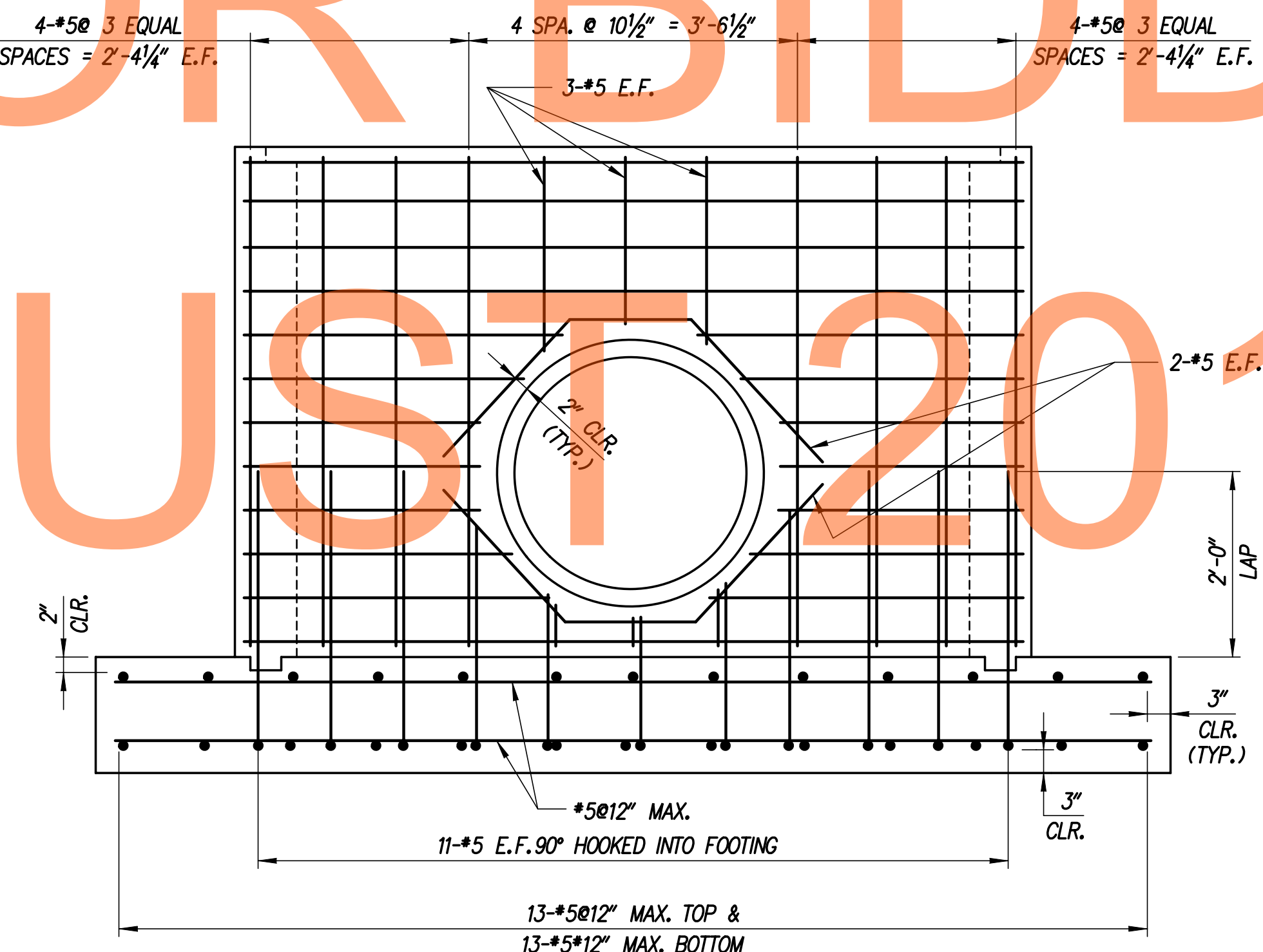
SECTION D-D

SCALE: 3/4" = 1'-0"



SECTION C-C

SCALE: 3/4" = 1'-0"

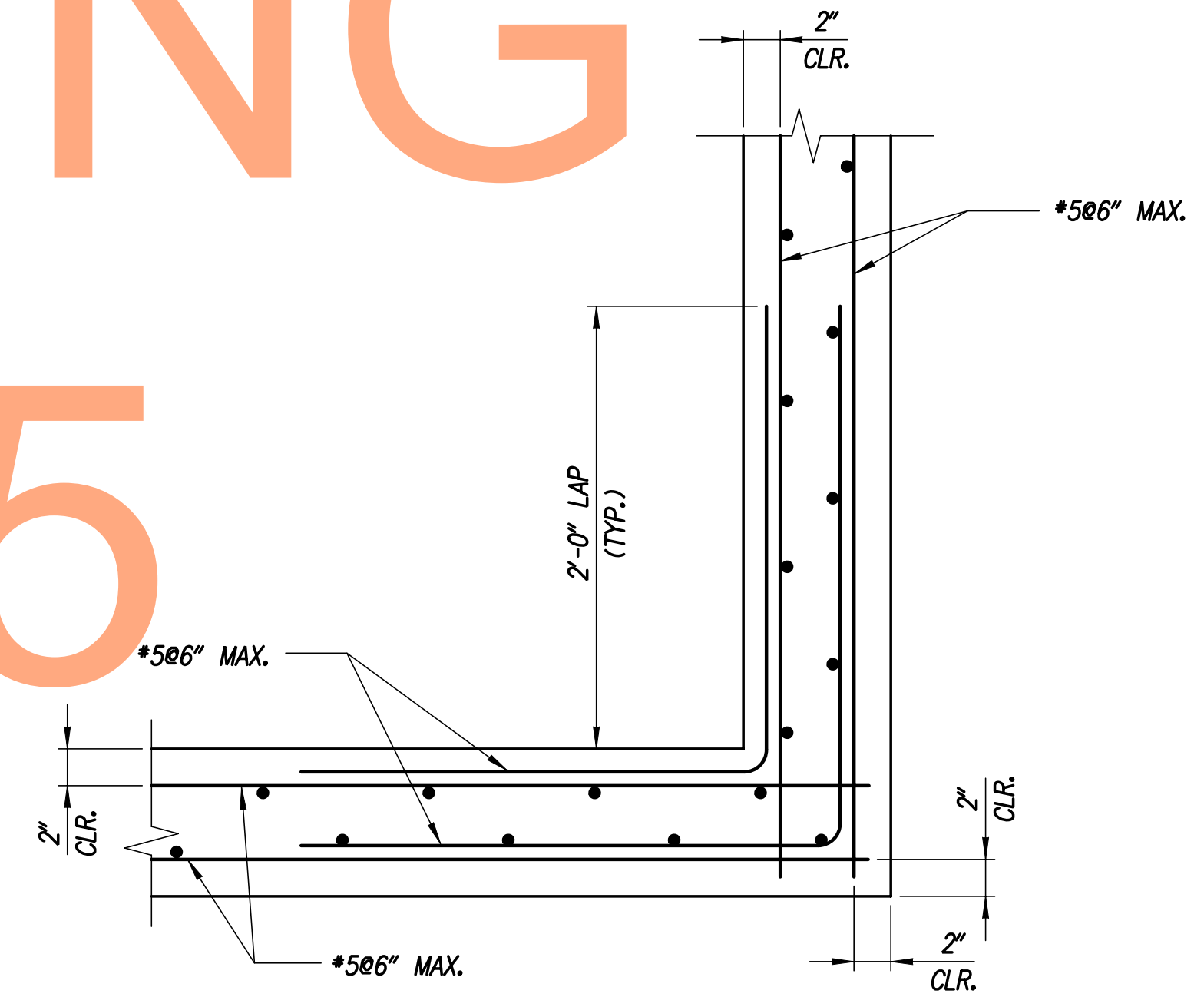


SECTION E-E

SCALE: 3/4" = 1'-0"

NOTE:

1. TOP SLAB, TRASH RACKS, AND MANHOLE STEPS NOT SHOWN IN SECTION FOR CLARITY.
2. THE ORIFICE MUST BE PRE-CAST.



CORNER REINFORCEMENT DETAIL

SCALE: 3/4" = 1'-0"

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AUGUST 2015

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ADDENDUMS / REVISIONS

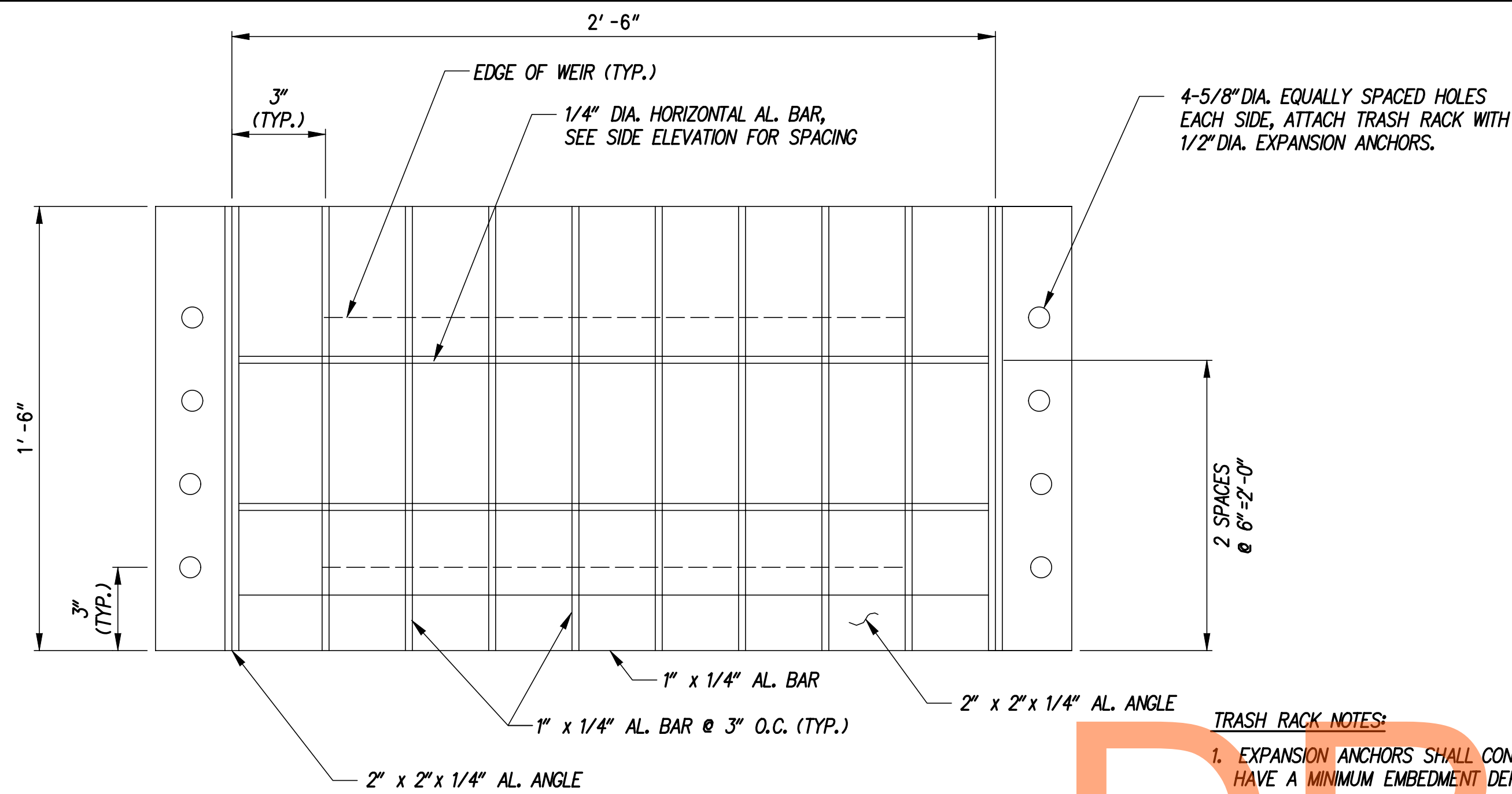
AS SHOWN

US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: DB
NEW CASTLE	CHECKED BY: JZ

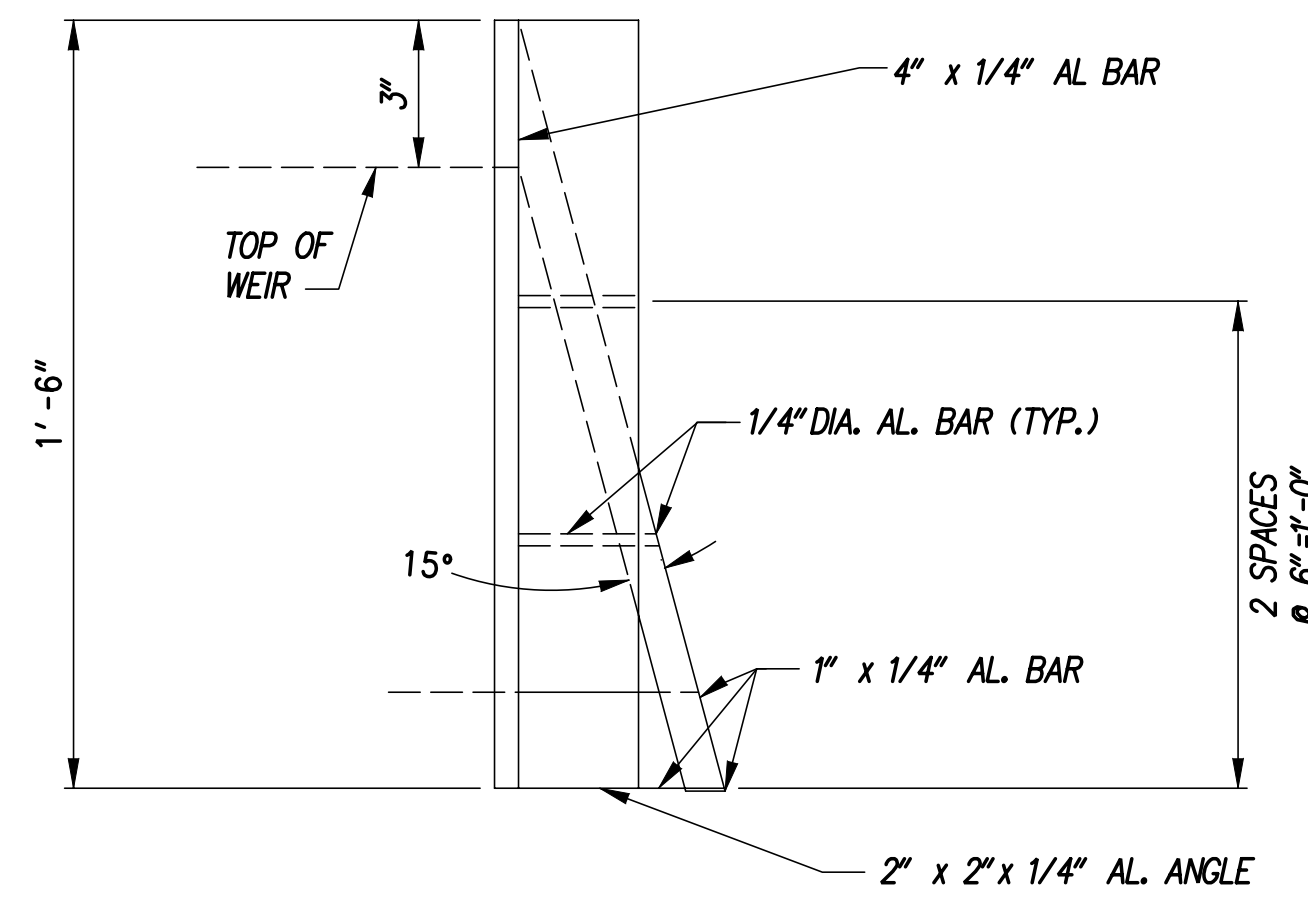
STORMWATER MANAGEMENT DETAILS
BMP 690 (BASIN 20)

SW-108
SHEET NO.
793
TOTAL SHTS.
1256



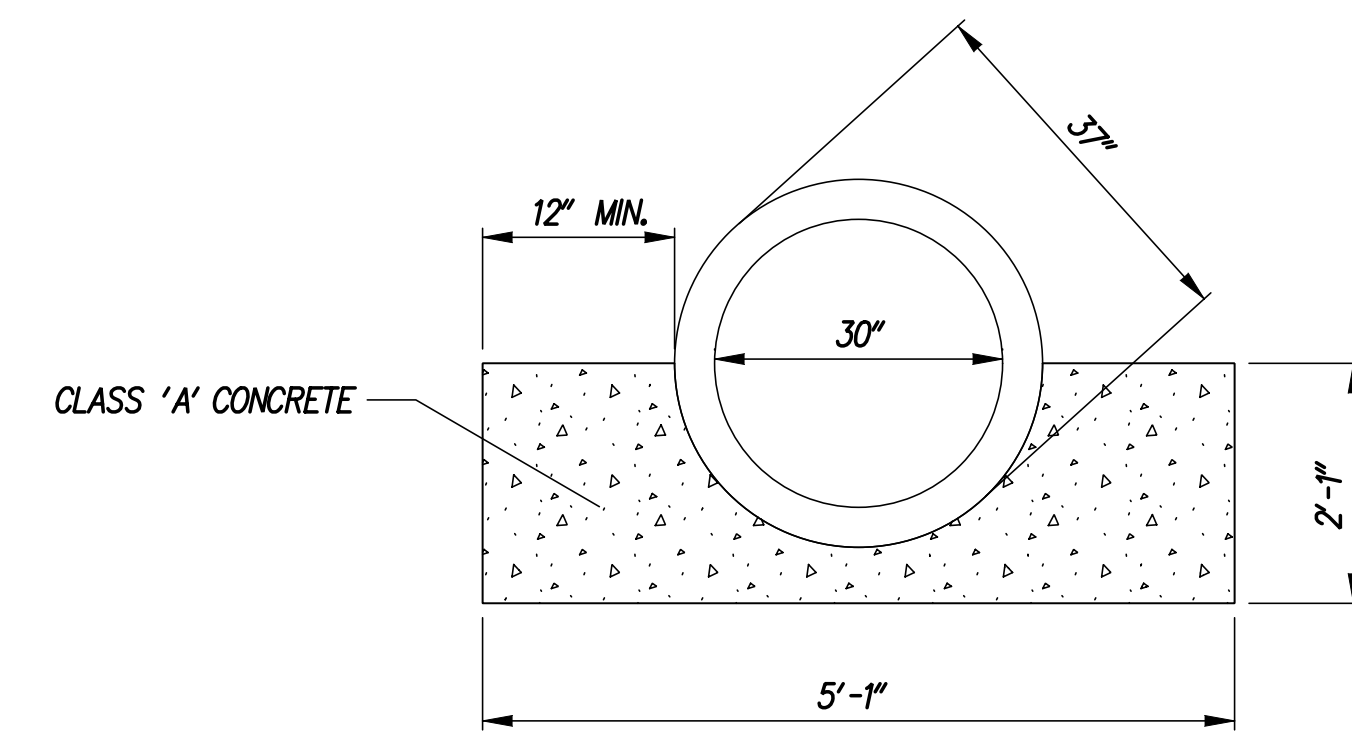
TRASH RACK - FRONT ELEVATION

SCALE: NONE



TRASH RACK - SIDE ELEVATION

SCALE: NONE



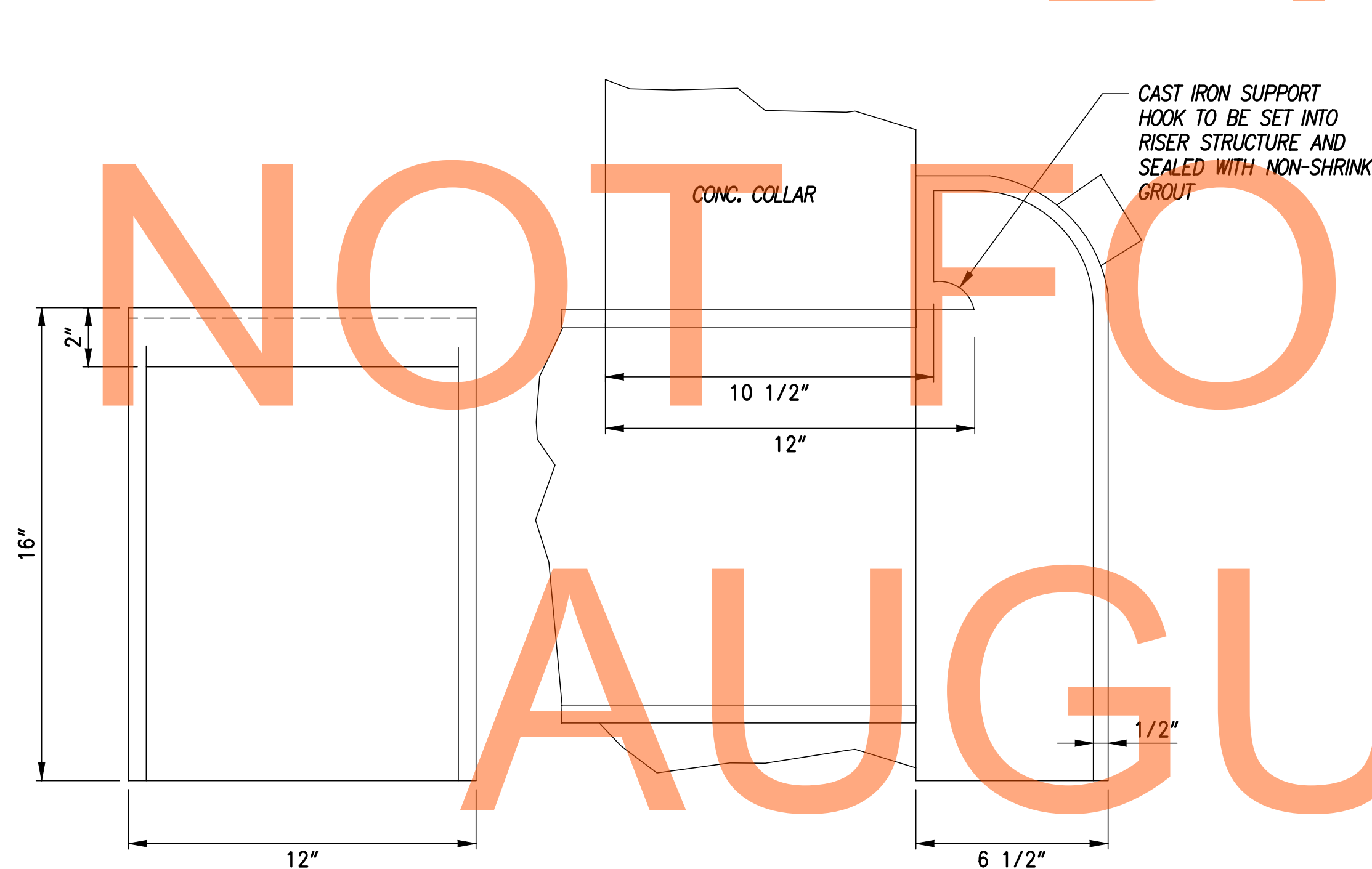
CONCRETE CRADLE

SCALE: NONE

TRASH RACK NOTES:

1. EXPANSION ANCHORS SHALL CONFORM TO ASTM A510 AND SHALL HAVE A MINIMUM EMBEDMENT DEPTH OF 4" UNLESS NOTED OTHERWISE.
2. EXPANSION ANCHORS SHALL BE ZINC PLATED IN CONFORMANCE WITH ASTM B633, TYPE III/FE/ZN 5.
3. ALUMINUM ANGLES SHALL CONFORM TO ASTM B308 ALLOY 6061-T6. REMAINING ALUMINUM CONFORM TO ASTM B211 ALLOY 6061-T6.

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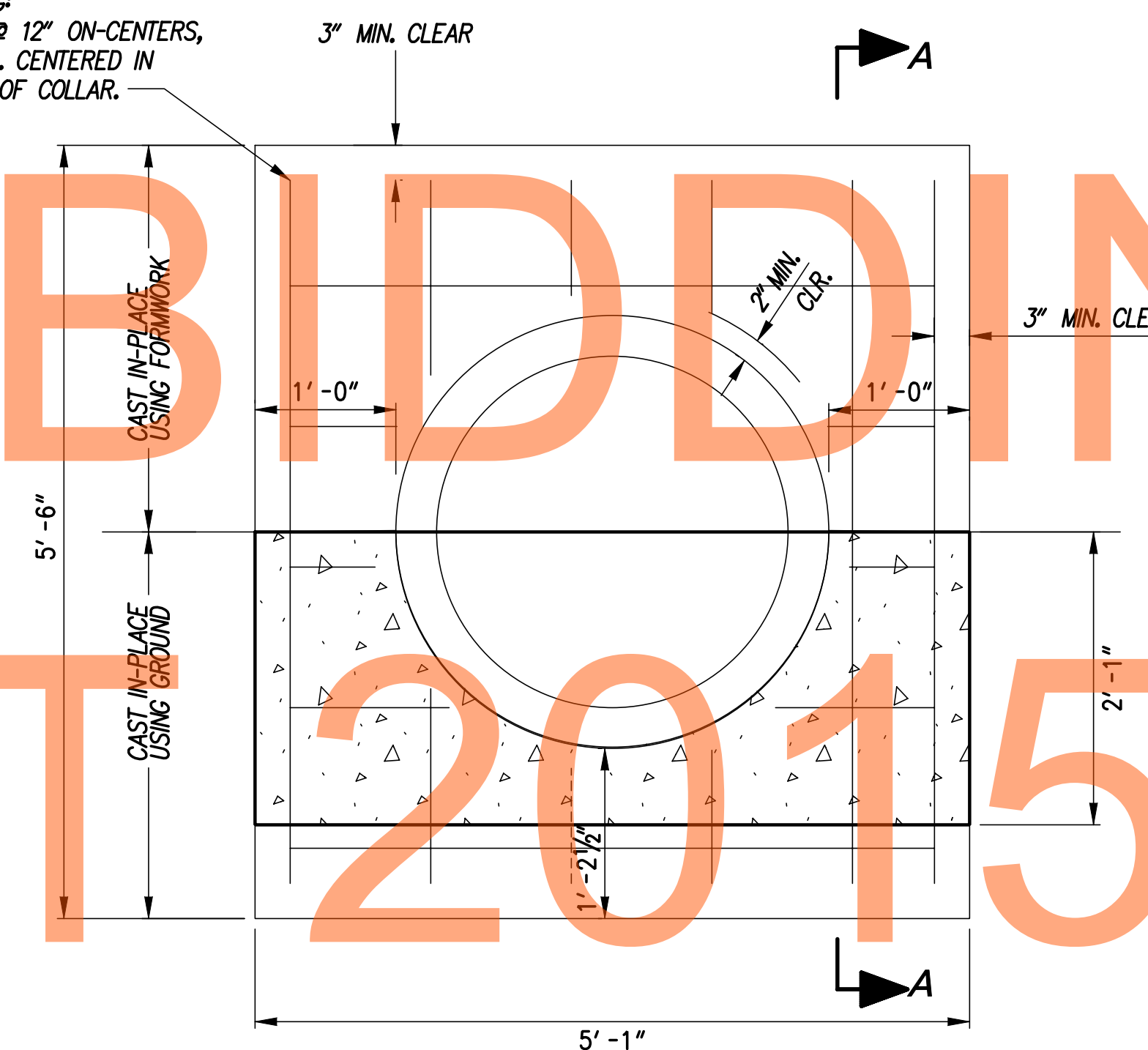
CATCH BASIN TRAP

N.T.S.

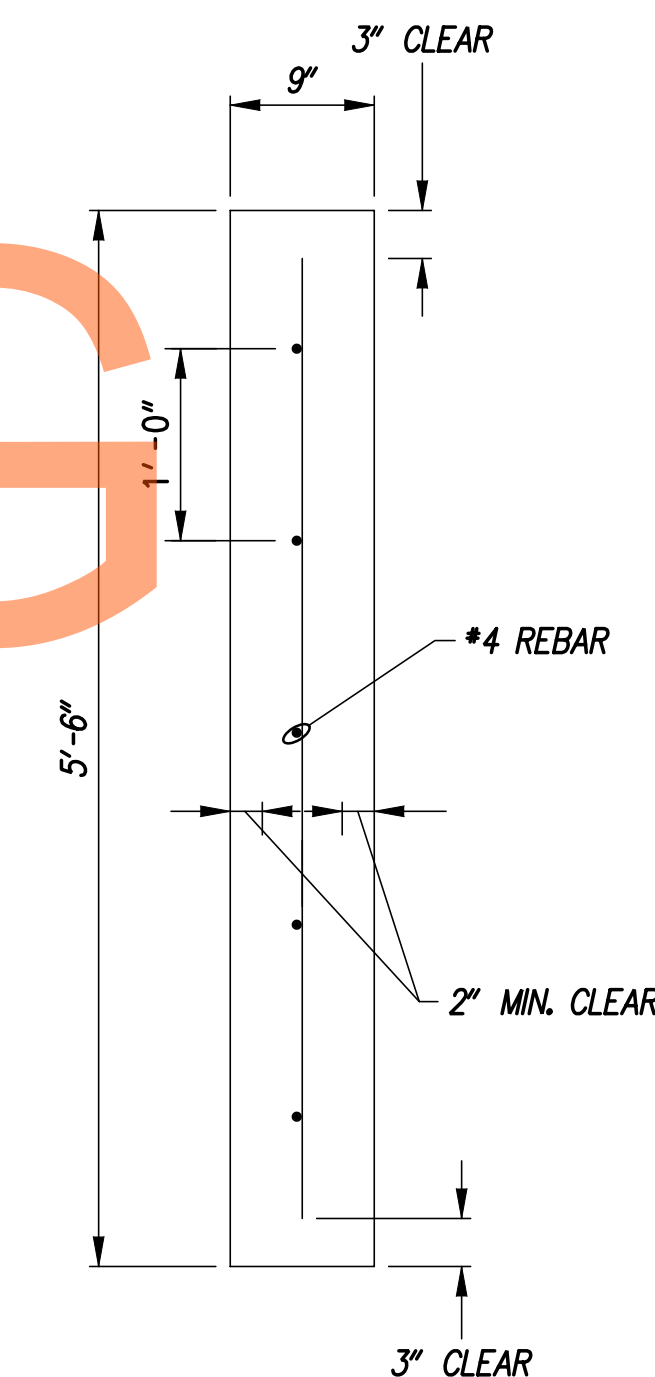
CATCH BASIN TRAP NOTES:

1. CATCH BASIN TRAP AND SUPPORT HOOKS SHALL BE FABRICATED FROM CAST IRON.
2. BOTTOM OF TRAP SHALL EXTEND A MINIMUM OF 6-INCHES BELOW THE BOTTOM OF THE COVERED ORIFICE.
3. THE COST OF ALL CATCH BASIN TRAPS SHALL BE INCIDENTAL TO THE CONTRACT UNIT COST FOR THE POND OUTLET STRUCTURE.

REINFORCING:
#4 REBAR @ 12" ON-CENTERS,
BOTH WAYS, CENTERED IN
THICKNESS OF COLLAR.



ELEVATION



SECTION A-A

NOTES:

1. CAST ANTI-SEEP COLLAR IN TWO PARTS.

CONCRETE ANTI-SEEP COLLAR

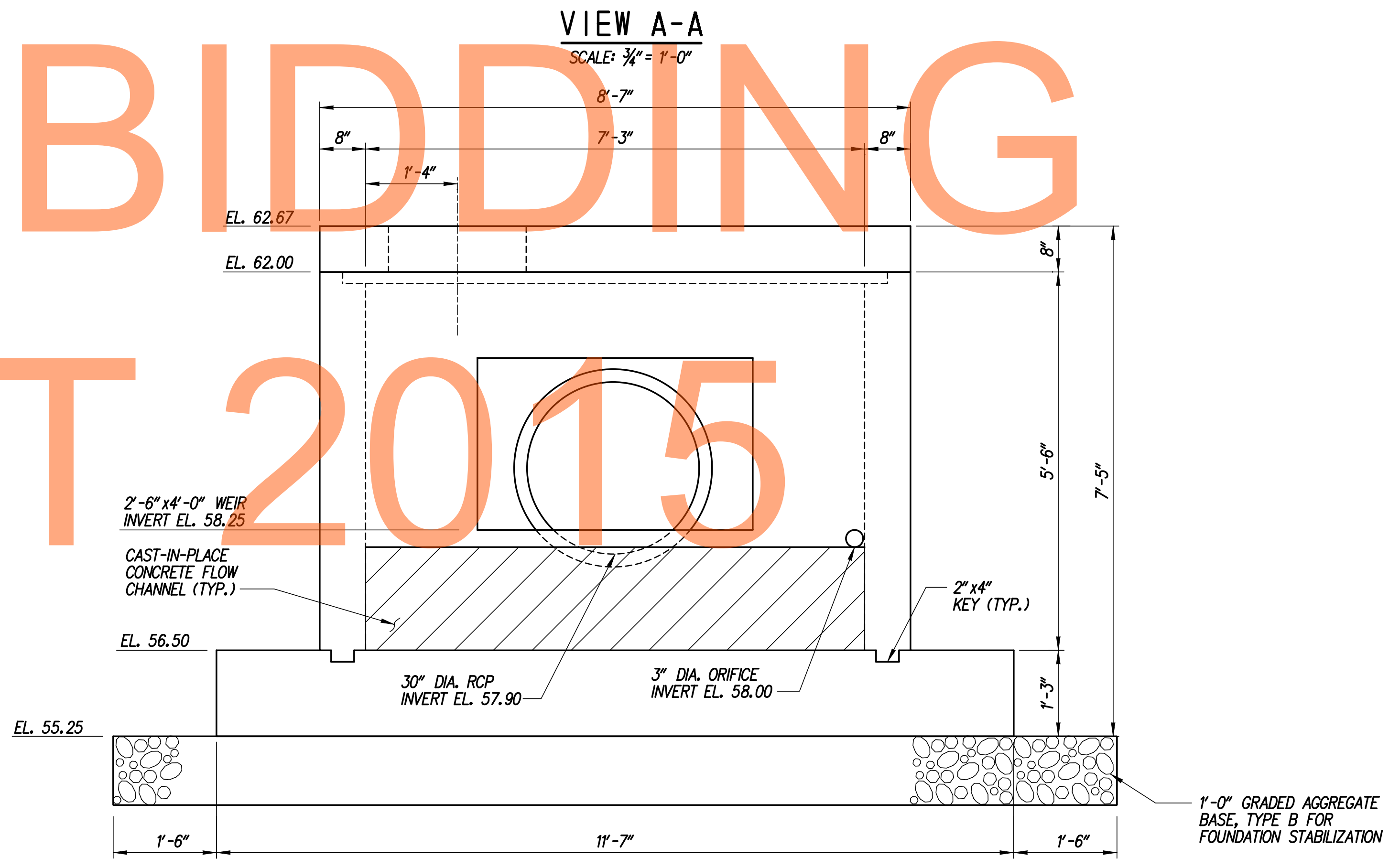
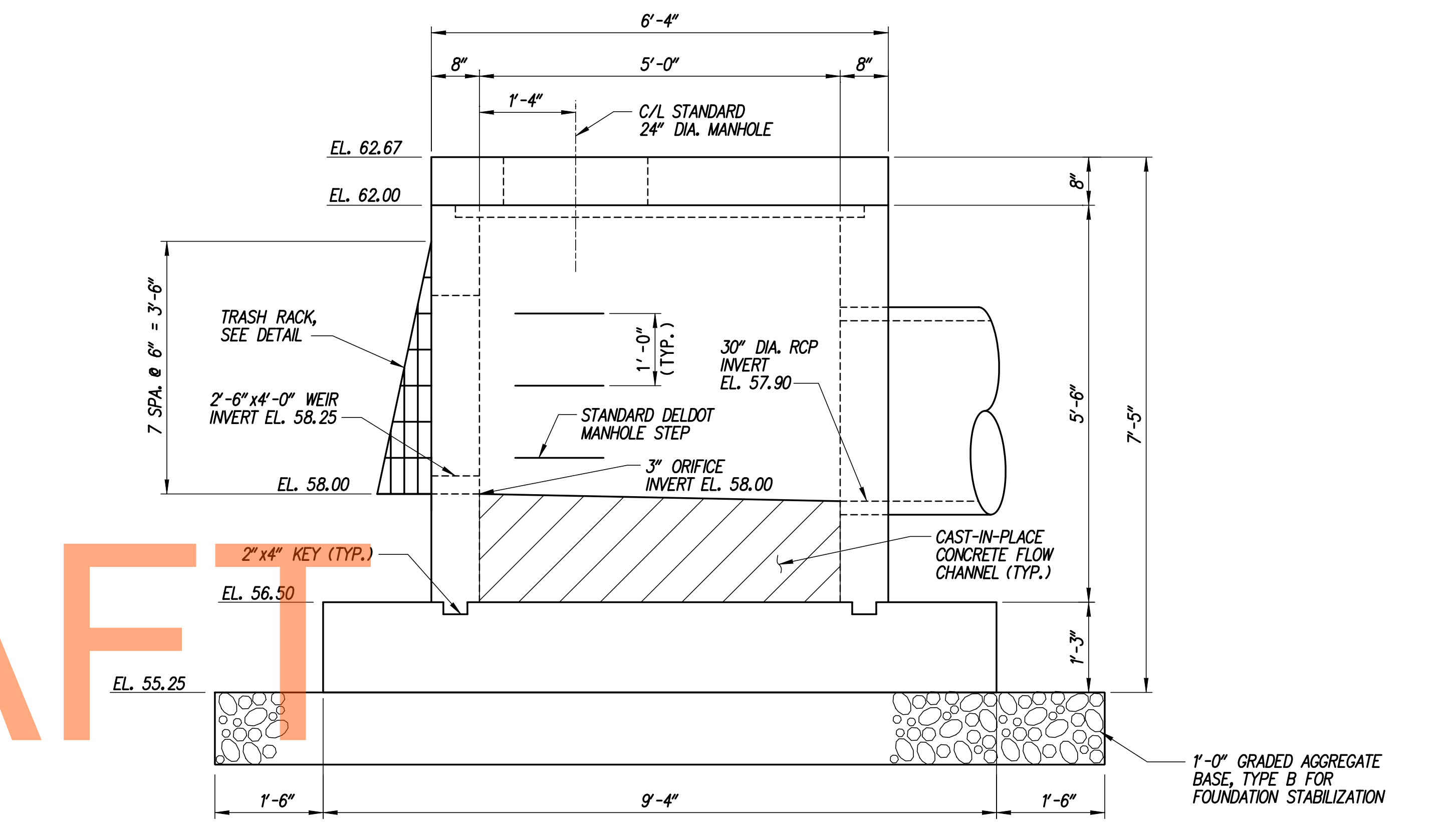
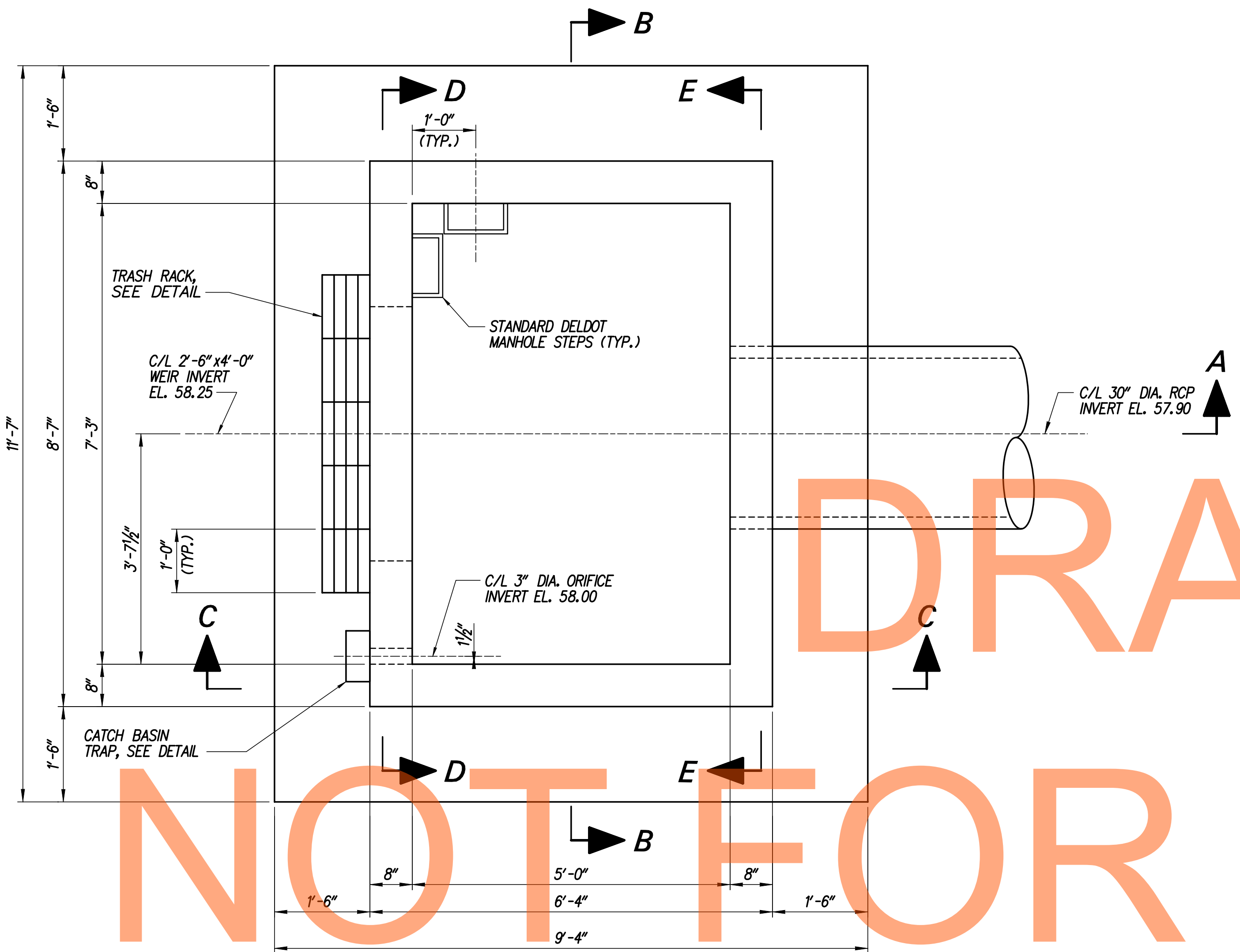
SCALE: NONE

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DRAFT

NOT FOR BIDDING

AUGUST 2015



- NOTES:**
1. SEE STANDARD CONSTRUCTION DETAILS FOR MANHOLE FRAME AND COVER DETAILS.
 2. SEE STANDARD CONSTRUCTION DETAILS FOR MANHOLE STEP DETAILS.

- CROSS REFERENCE NOTES:**
1. FOR SECTIONS C-C, D-D AND E-E, SEE DWG. NO. SW-108.

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ADDENDUMS / REVISIONS

AS SHOWN

US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: DB
NEW CASTLE	CHECKED BY: JZ

STORMWATER MANAGEMENT DETAILS BMP 690 (BASIN 20)

SW-110
SHEET NO.
795
TOTAL SHTS.
1256

POND CONSTRUCTION SEQUENCE AND NOTES
 THE STORMWATER MANAGEMENT POND SHALL FUNCTION AS A SEDIMENT BASIN DURING ROADWAY CONSTRUCTION AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE STANDARD SPECIFICATIONS:

- SECTION 271 - STORMWATER MANAGEMENT POND
 SECTION 272 - POND OUTLET STRUCTURE, CONCRETE
 SECTION 274 - CLAY BORROW, STORMWATER MANAGEMENT POND
- INSTALL STABILIZED CONSTRUCTION ENTRANCE.
 - CLEAR AND GRUB FOR INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS.
 - INSTALL PERIMETER SEDIMENT CONTROLS AS SHOWN.
 - CLEAR AND GRUB REMAINING AREA FOR POND CONSTRUCTION.
 - CONSTRUCT WEIR WALL, RIPRAP STILLING BASIN, CLAY CORE AND PARTIAL EMBANKMENT AS NEEDED TO INSTALL WEIR WALL. INSTALL SKIMMER AND DE-WATER FOUNDATION AS NEEDED IN ACCORDANCE WITH SECTION 111 AND USE SUMP PIT FOR PUMPING. (SEE EROSION AND SEDIMENT CONTROL DETAILS FOR SKIMMER DE-WATERING DEVICE INSTALLATION)
 - EXCAVATE THE POND AND COMPLETE THE EMBANKMENT, GRADES AND DETAILS SHOWN IN THE CONSTRUCTION PLANS. DURING EXCAVATION, THE CONTRACTOR SHALL SALVAGE AND STOCKPILE SOILS CLASSIFIED AS CH, CL, SC AND GG PER THE UNIFIED SOIL CLASSIFICATION SYSTEM TO BE USED TO CONSTRUCT EMBANKMENT. THE ABOVE CLASSIFIED SOILS MAY BE OBTAINED FROM ELSEWHERE WITHIN THE PROJECT LIMITS, IF NECESSARY.
 - STABILIZE ALL BARE AREAS.
 NOTE: SEE CONSTRUCTION SEQUENCE PLANS FOR LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.
 - THE CONTRACTOR SHALL PROVIDE 'AS-BUILT' DRAWINGS OF ALL STORMWATER MANAGEMENT FACILITIES SUCH AS PONDS, INFILTRATION BASINS, BIOFILTRATION SWALES, ETC. 'AS-BUILT' DRAWINGS SHALL SHOW THE ACTUAL FINISHED GROUND CONTOURS, OUTLET STRUCTURE DIMENSIONS AND ELEVATIONS, ETC. AS THEY EXIST AT THE COMPLETION OF THE PROJECT. THESE DRAWINGS SHALL BE SIGNED BY A PROFESSIONAL ENGINEER OR LAND SURVEYOR.

MAINTENANCE OF POND AS A SEDIMENT BASIN

- CONTRACTOR SHALL INSPECT THE BASIN IMMEDIATELY AFTER EVERY RAIN AND MAKE REPAIRS AS NEEDED.
- CONTRACTOR SHALL CLEARLY MARK THE CLEANOUT ELEVATION ON A STAKE DRIVEN INTO THE GROUND AT A LOCATION CLEARLY VISIBLE FROM THE EMBANKMENT. SEDIMENT SHALL BE REMOVED WHEN CLEANOUT ELEVATION IS REACHED AND DISPOSED OF AT A LOCATION APPROVED BY THE ENGINEER. CLEANOUT ELEVATION IS 58.41.

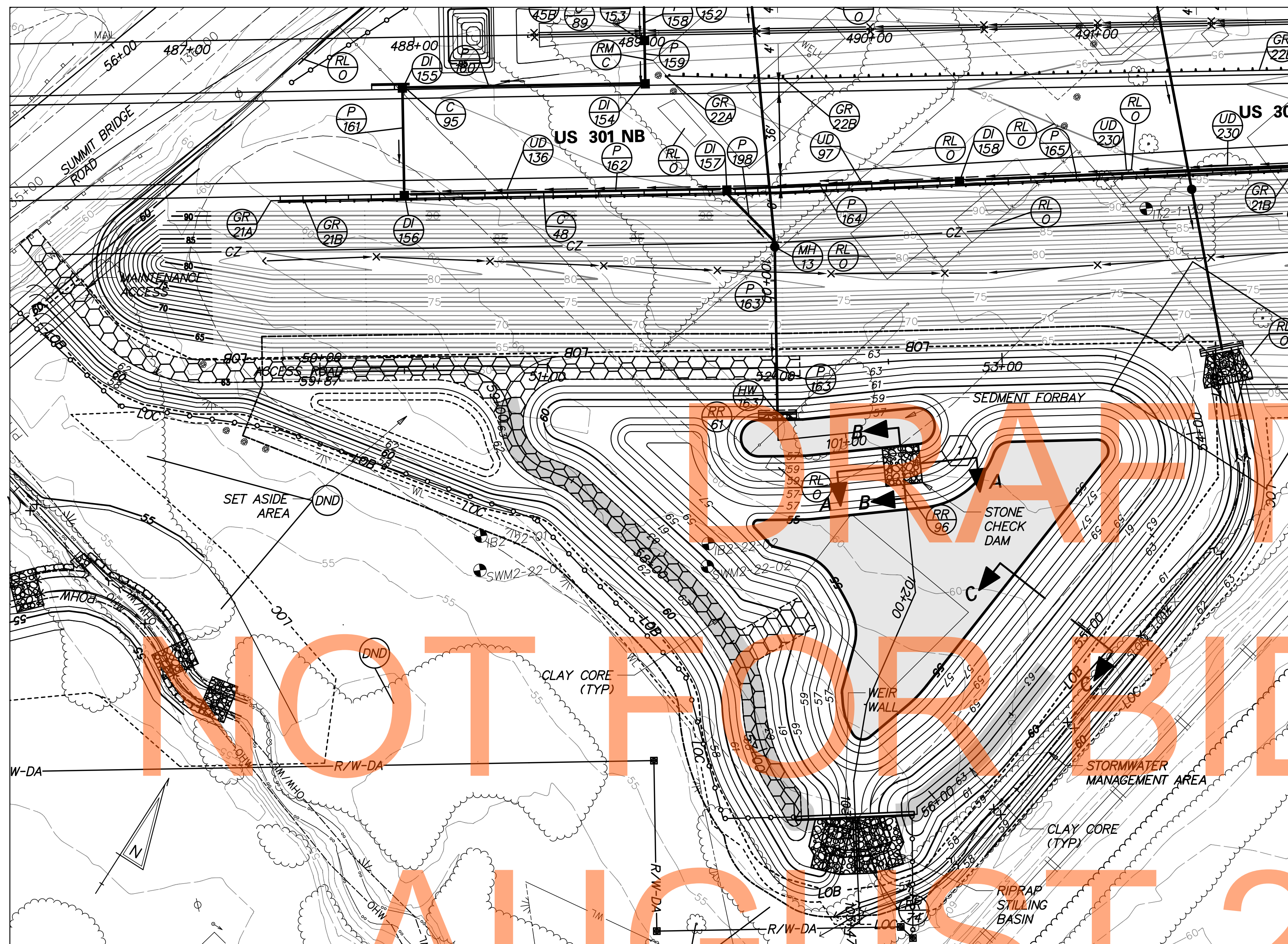
CONVERSION TO PERMANENT STORMWATER MANAGEMENT POND

- CONVERT THE BASIN INTO THE PERMANENT STORMWATER MANAGEMENT POND AFTER ALL AREAS DRAINING TO THE POND HAVE BEEN PERMANENTLY STABILIZED AND THE ENGINEER HAS APPROVED THE CONVERSION.
- REMOVE ACCUMULATED SEDIMENT TO ELEVATION 55.0 AND DISPOSE SEDIMENT AT A LOCATION APPROVED BY THE ENGINEER.
- COMPLETE STABILIZATION OF ALL BARE AREAS. REMOVE EROSION AND SEDIMENT CONTROL MEASURES AND DEACTIVATE DE-WATERING DEVICE.

PLANTING SCHEDULE

PLACE PERMANENT GRASS - WET GROUND UP TO ELEVATION 59.00.
 PLACE PERMANENT GRASS - DRY GROUND ABOVE ELEVATION 59.00.
 PLACE TOP SOIL ON LOWER BENCH ELEVATION 57.00 AND ABOVE.

POND QUANTITIES			
ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	4816	CY
272501	POND OUTLET STRUCTURE, 18, SPECIAL	1	EACH
274000	CLAY BORROW, STORMWATER MANAGEMENT POND, CUT-OFF TRENCH	782	CY
302011	DELAWARE NO. 3 STONE	234	TON
302012	DELAWARE NO. 57 STONE	29	TON
712005	R-4 RIPRAP	4	SY
712006	R-5 RIPRAP	125	SY
712020	R-4 RIPRAP	22	TON
713001	GEOTEXTILES, STABILIZATION	1575	SY
713003	GEOTEXTILES, RIPRAP	199	SY
733002	TOPSOILING, 6" DEPTH	6148	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	4597	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	2780	SY



PLAN - BMP 687 (BASIN 21)

POND DESIGN SUMMARY				
DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC.FT.)*
QUALITY STORM (1 YR)	11.97	0.85	59.11	1,330
10 - YEAR	32.68	5.38	60.31	2,072
100 - YEAR	66.91	20.34	61.94	3,187

DRAINAGE AREA TO FACILITY: 11.55 ACRES

MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY BY EXTENDED DETENTION OF 1 YEAR STORM RUNOFF, WATER QUANTITY FOR 10 AND 100 YEAR STORMS.

*INCLUDES NORMAL POOL VOLUME OF 0.814 AC-FT

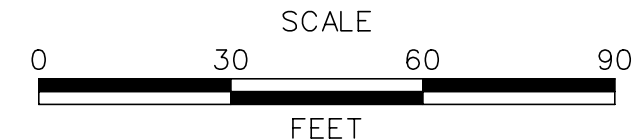
RIPRAP SCHEDULE

NO.	TYPE	AREA (SY)
61	R-4	4
74	R-5	125
96	R-4	31

CHECK CONSTRUCTION PLANS FOR SCHEDULE OF RIPRAP OUTSIDE OF THE BASIN AREA.

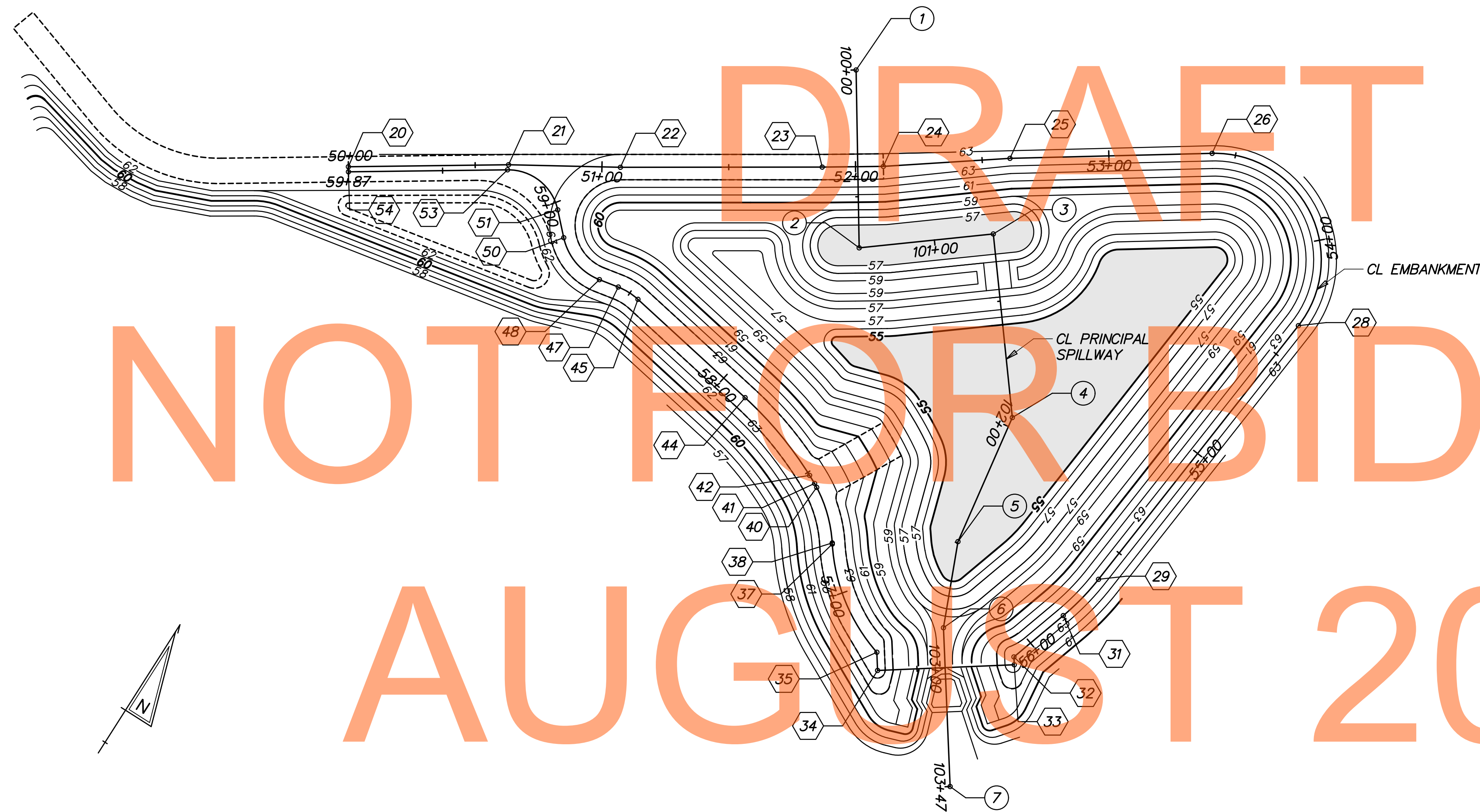
SKIMMER DEVICE SUMMARY

SKIMMER ELEVATION	58.04
ORIFICE SIZE (IN)	3
BLOCK WEIR UP TO ELEVATION	58.78



CL PRINCIPAL SPILLWAY		
STATION	NORTHING	EASTING
① POB STA. 100+00.00	542420.4066	571622.2594
② PI STA. 100+70.17	542361.8733	571660.9629
③ PI STA. 101+23.35	542394.9044	571702.6354
④ PI STA. 101+96.16	542337.8391	571747.8673
⑤ PI STA. 102+49.58	542285.0536	571756.0717
⑥ PI STA. 102+84.04	542253.3237	571769.4951
⑦ POE STA. 103+46.74	542201.8964	571805.3615

CL EMBANKMENT		
STATION	NORTHING	EASTING
②⑩ POB STA. 50+00.00	542280.6702	571473.8889
②⑪ PI STA. 50+63.17	542315.2687	571526.7446
②⑫ PI STA. 51+07.29	542338.1101	571564.4924
②⑬ PI STA. 51+86.85	542380.9123	571631.5568
②⑭ PI STA. 52+10.99	542394.1093	571651.7644
②⑮ PI STA. 52+61.00	542423.5945	571692.1600
②⑯ PC STA. 53+40.73	542468.0754	571758.3331
②⑰ PI STA. 54+30.09	542517.9276	571832.4969
②⑱ PT STA. 54+35.77	542429.0146	571823.5527
②⑲ PC STA. 55+63.15	542302.2788	571810.8037
③① PI STA. 55+73.18	542292.2981	571809.7997
③② PT STA. 55+83.14	542282.7340	571806.7745
③③ PI STA. 56+08.52	542258.5362	571799.1205
③④ PI STA. 56+11.61	542256.0051	571800.8857
③⑤ PI STA. 56+65.55	542225.1447	571756.6363
③⑥ PC STA. 56+72.73	542231.0331	571752.5296
③⑦ PI STA. 56+97.12	542237.8675	571729.1139
③⑧ PT STA. 57+19.74	542257.6125	571714.7913
③⑨ PC STA. 57+20.19	542257.9820	571714.5233
④① PI STA. 57+31.83	542267.3980	571707.6931
④② PT STA. 57+43.11	542273.1668	571697.5919
④③ PI STA. 57+44.87	542274.0407	571696.0616
④④ PC STA. 57+48.62	542275.6620	571692.6799
④⑤ PI STA. 57+68.70	542284.3415	571674.5770
④⑥ PT STA. 57+88.53	542287.8490	571654.8097
④⑦ PC STA. 58+45.92	542297.8763	571598.2982
④⑧ PI STA. 58+50.58	542298.6899	571593.7134
④⑨ PT STA. 58+55.13	542297.7982	571589.1431
④⑩ PC STA. 58+63.11	542296.2703	571581.3123
④⑪ PI STA. 58+75.43	542293.9098	571569.2138
④⑫ PT STA. 58+85.74	542302.6772	571560.5490
④⑬ PC STA. 58+96.98	542310.6753	571552.6445
④⑭ PI STA. 59+13.34	542322.3070	571541.1488
④⑮ PT STA. 59+24.40	542313.3503	571527.4657
④⑯ POE STA. 59+87.13	542278.9968	571474.9842

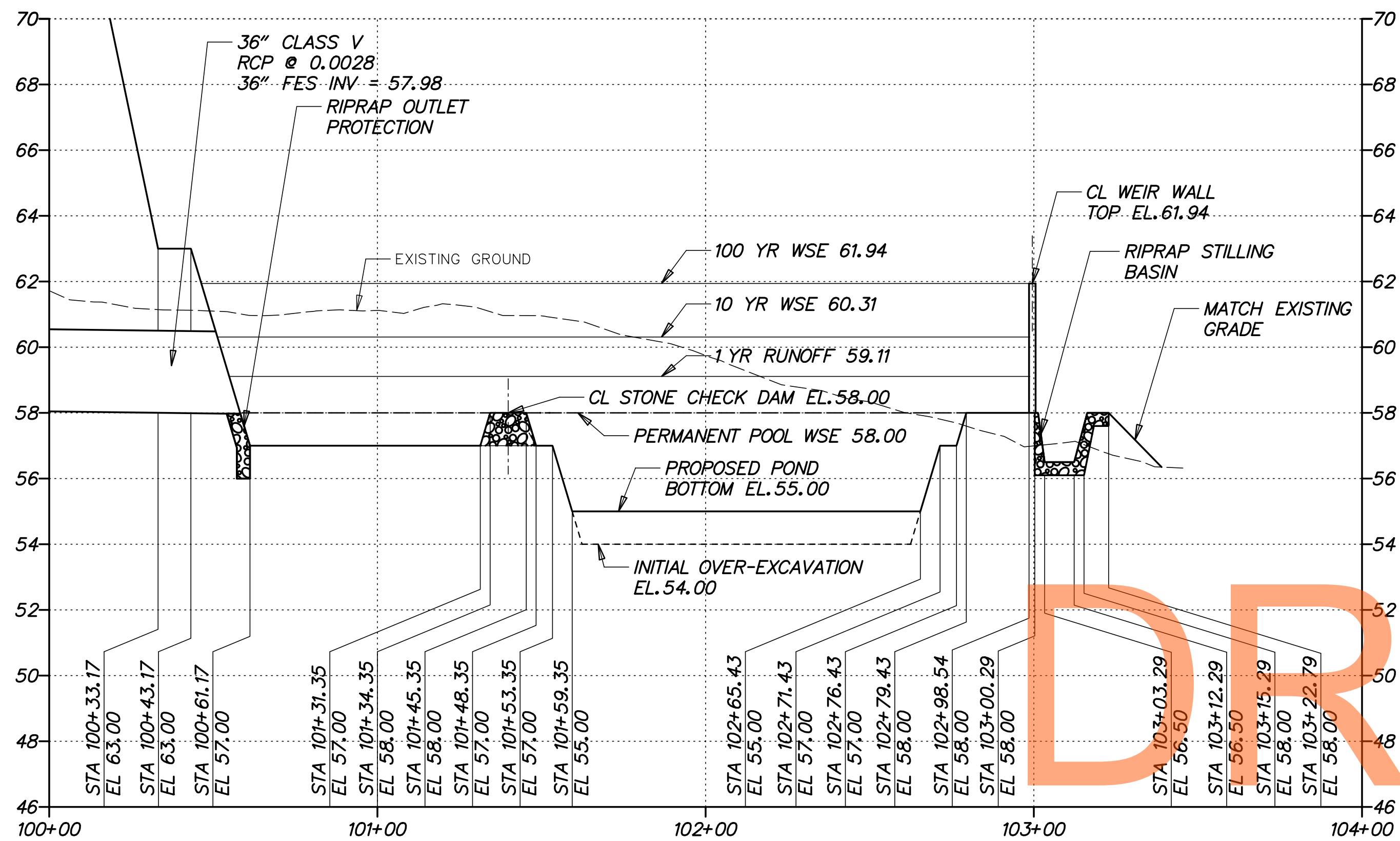


STAKEOUT - BMP 687 (BASIN 21)

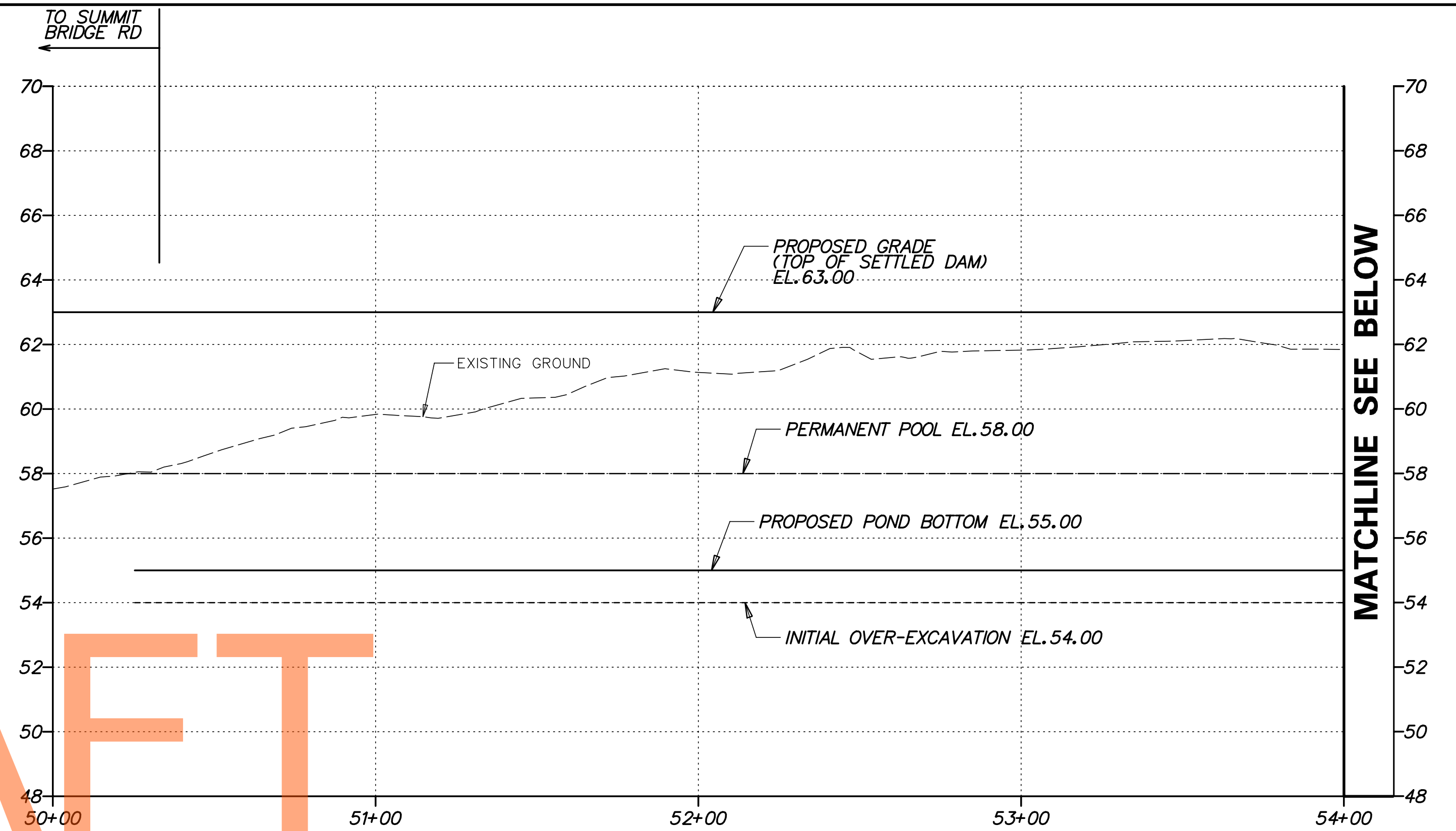
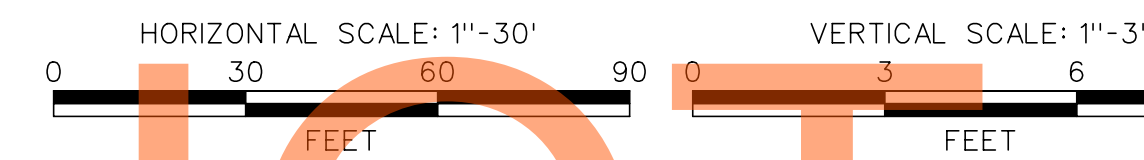
DRAFT
NOT FOR BIDDING
AUGUST 2015

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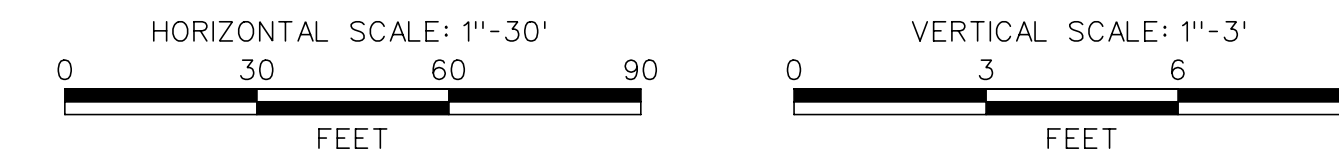
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	SCALE 0 30 60 90 FEET	US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT T200911303	BRIDGE NO.	STORMWATER MANAGEMENT DETAILS BMP 687 (BASIN 21)	SHEET NO. 797
					COUNTY NEW CASTLE		DESIGNED BY: DB



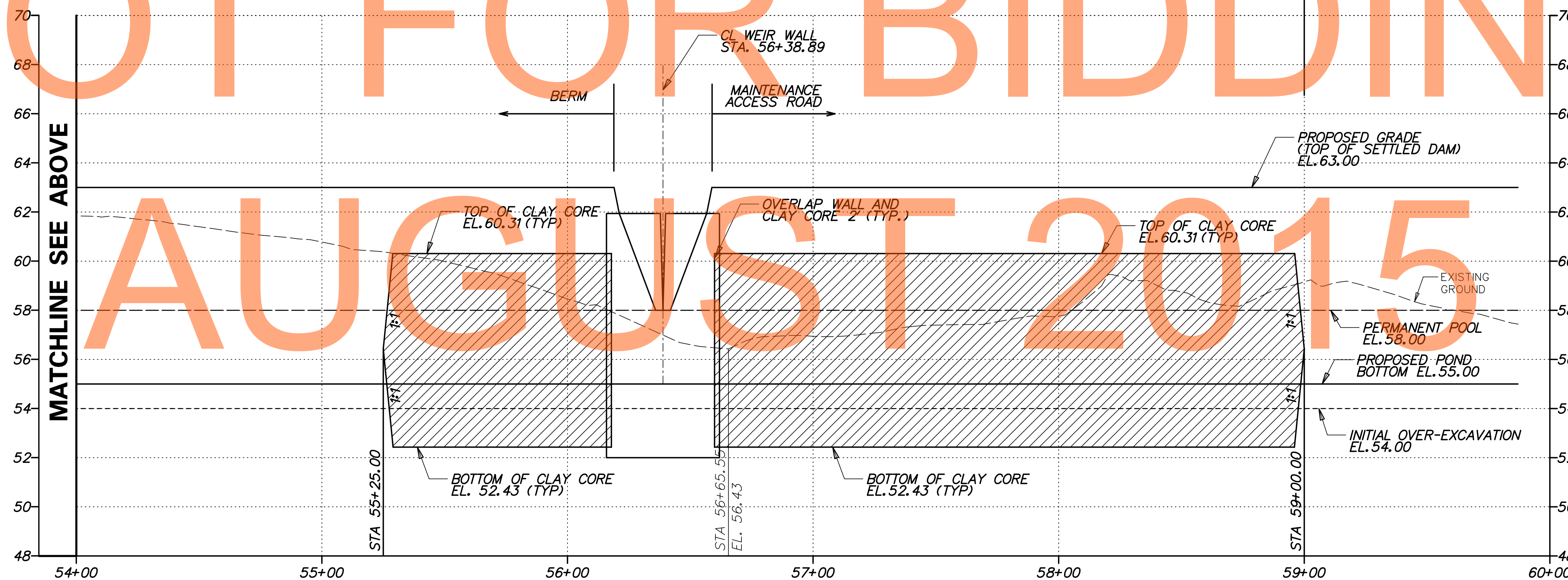
SPILLWAY PROFILE - BMP 687 (BASIN 21)



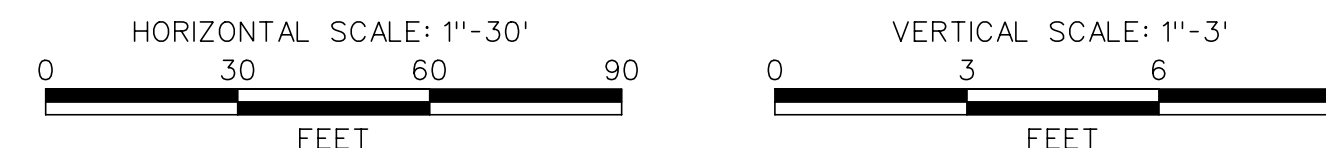
EMBANKMENT PROFILE FOR BMP 687 (BASIN 21)



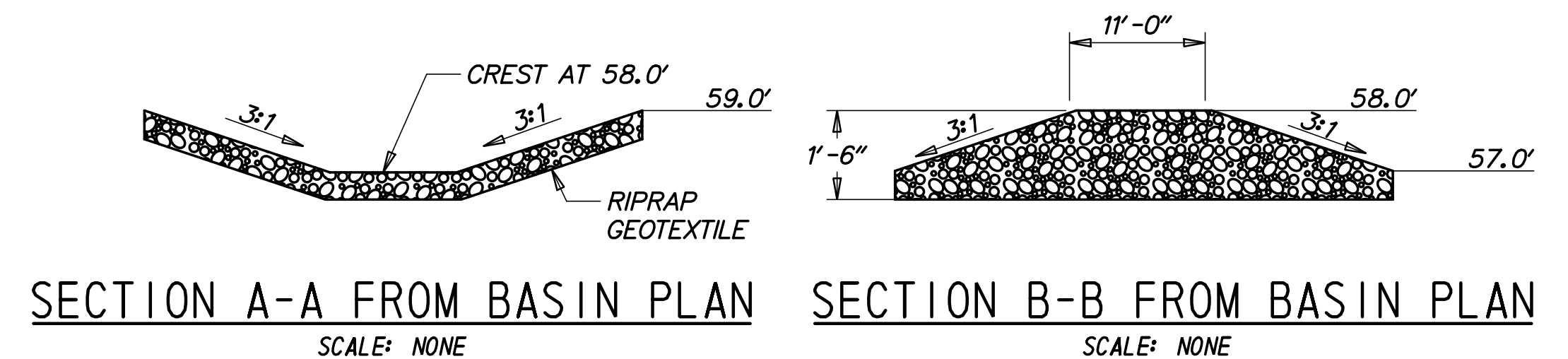
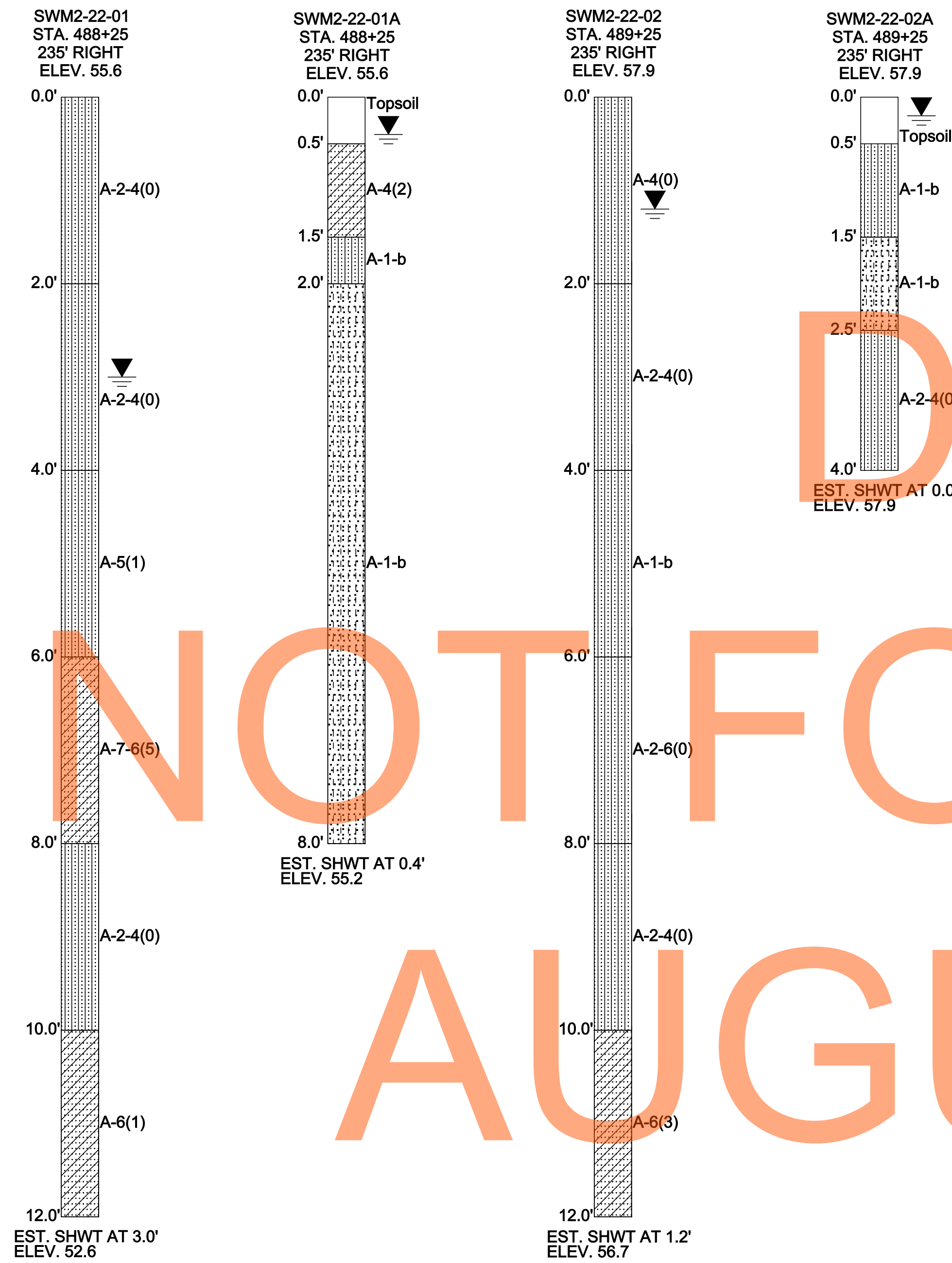
NOT FOR BIDDING



EMBANKMENT PROFILE FOR BMP 687 (BASIN 21)

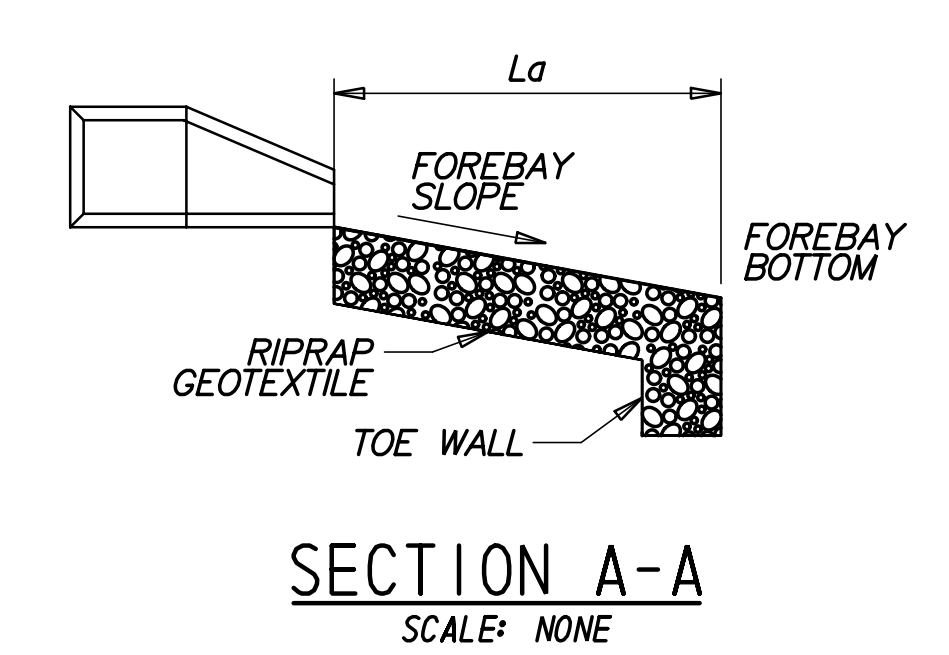
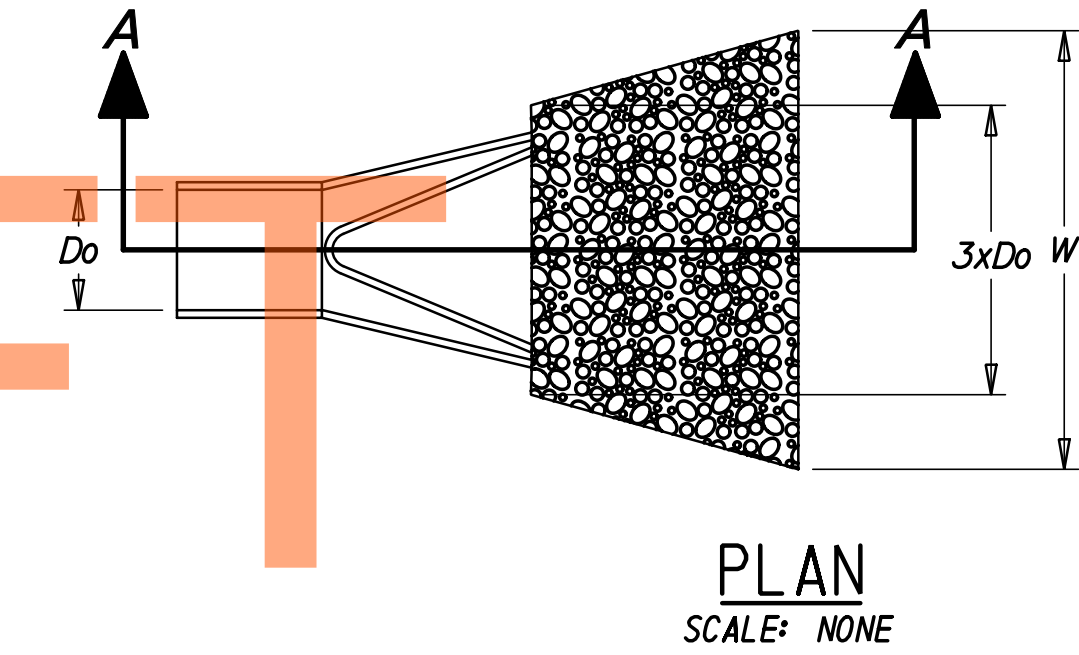


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SECTION A-A FROM BASIN PLAN SCALE: NONE
SECTION B-B FROM BASIN PLAN SCALE: NONE
STONE CHECK DAM
SCALE: NONE

- NOTES:
1. RIPRAP ITEM# 712020
2. GEOTEXTILE, RIPRAP ITEM# 713003
3. SEE STANDARD NO. E-10 FOR GEOTEXTILE PLACEMENT.



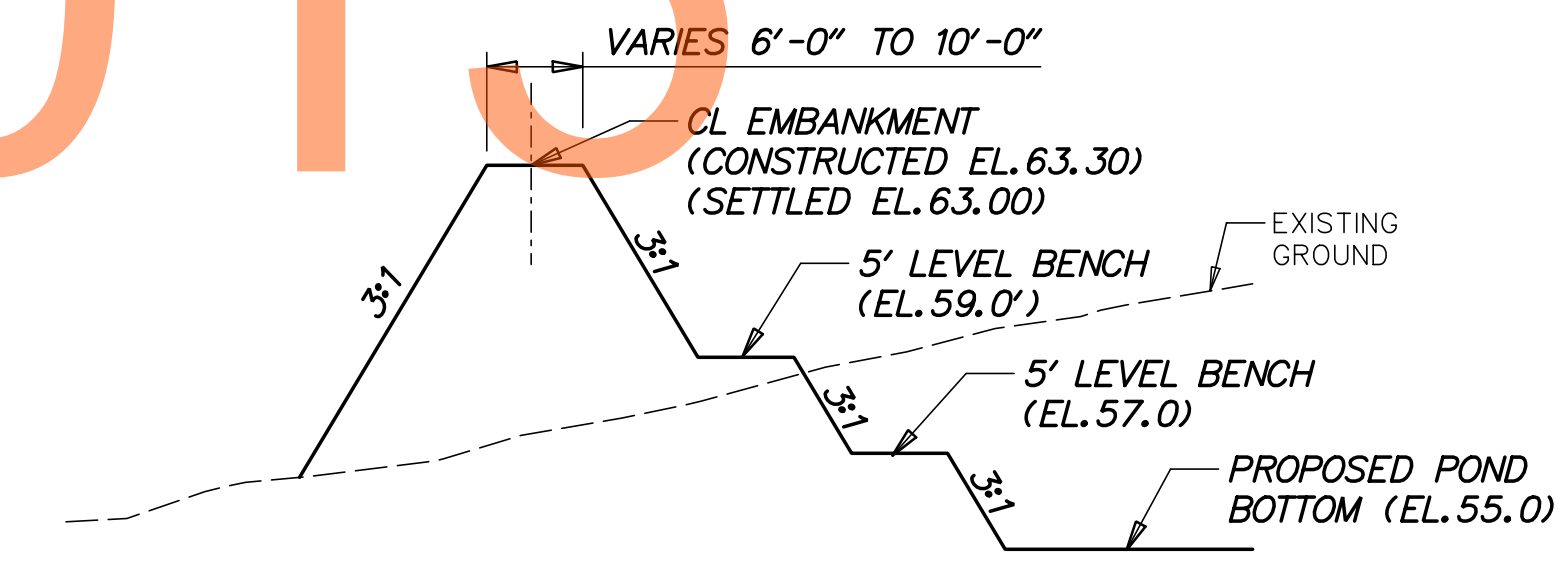
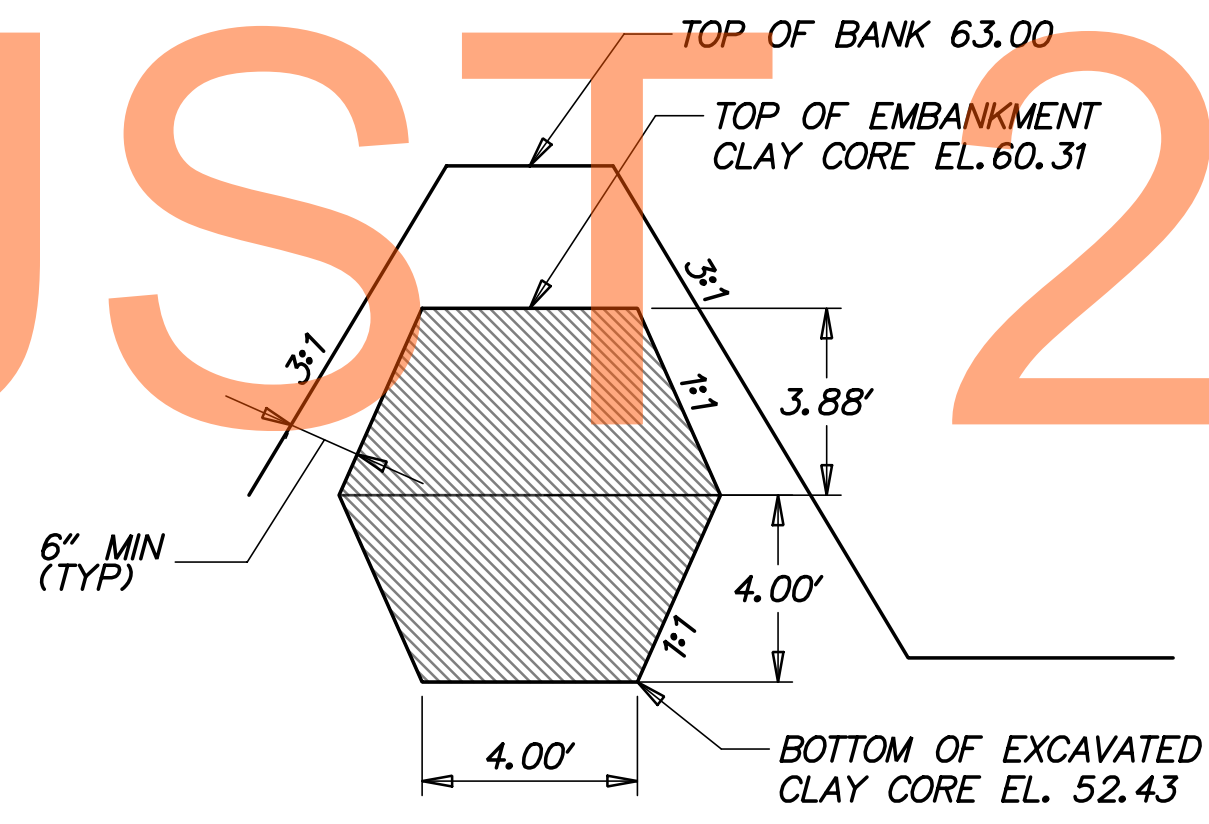
DATA

PIPE DIAMETER (Do)
APRON LENGTH (La)
APRON WIDTH (W)
RIPRAP SIZE (R No.)

RR ID	Do	La	W	R No.
61	3.0'	3.0'	15.0'	R-4

FOREBAY RIPRAP OUTLET PROTECTION
SCALE: NONE

- NOTES:
1. RIPRAP ITEM# 712005
2. GEOTEXTILES, RIPRAP ITEM# 713003
3. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.
4. DEPRESS CENTERLINE OF APRON SLIGHTLY TO PREVENT EDGE CUTTING.



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ADDENDUMS / REVISIONS

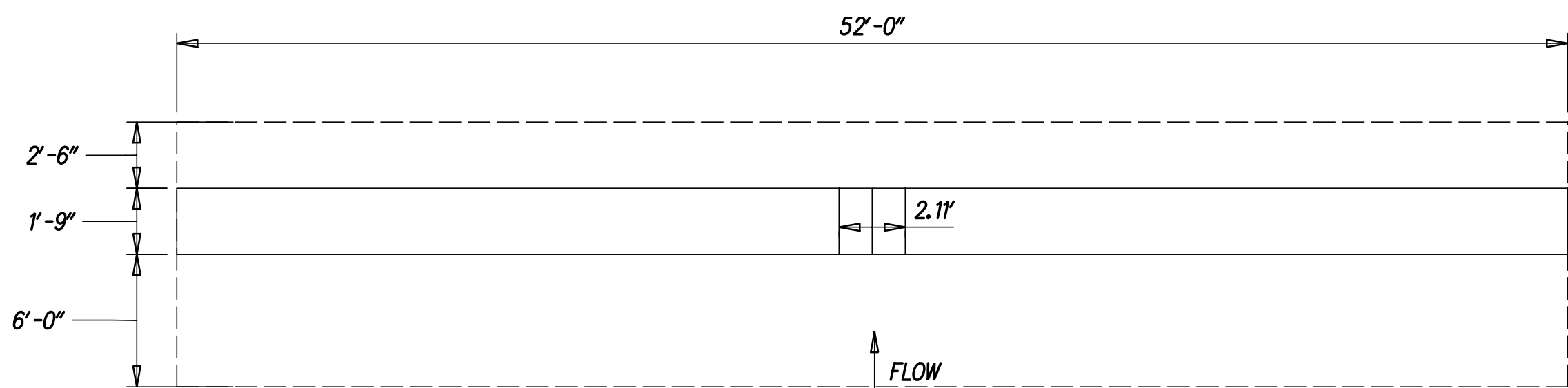
AS SHOWN

US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD

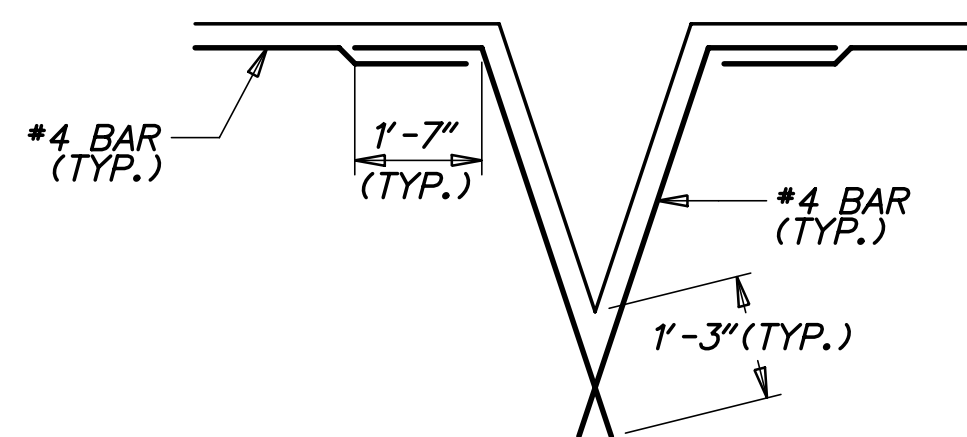
CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: DB
NEW CASTLE	CHECKED BY: JZ

STORMWATER MANAGEMENT PLAN BMP 687 (BASIN 21)

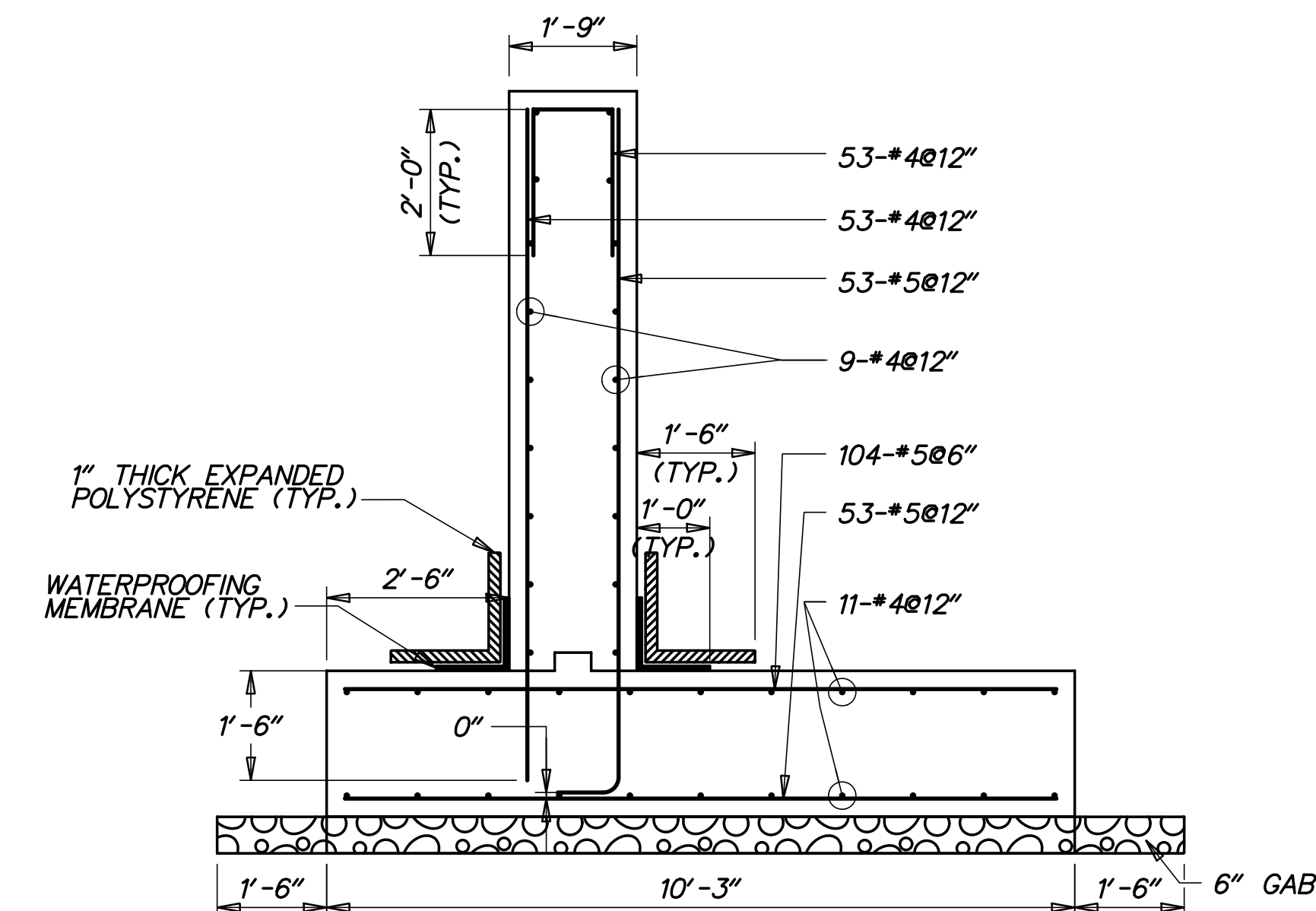
SW-114
SHEET NO.
799
TOTAL SHTS.
1256



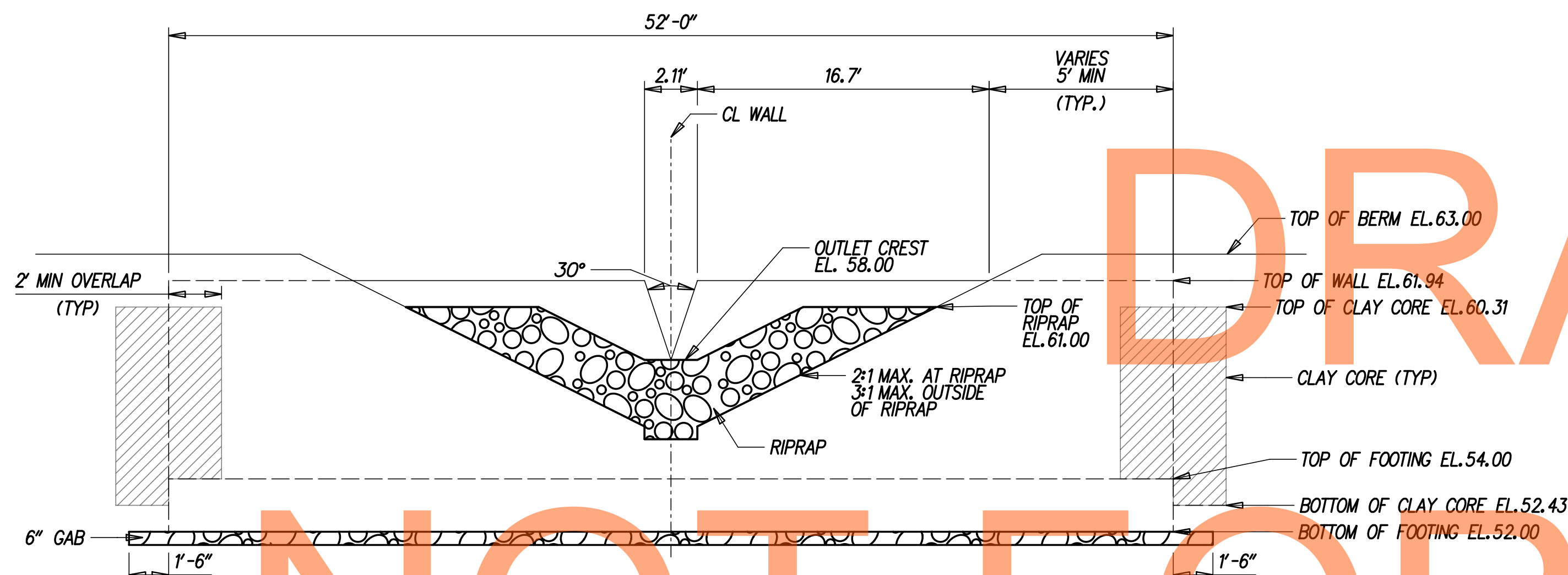
WEIR WALL PLAN
SCALE: NONE



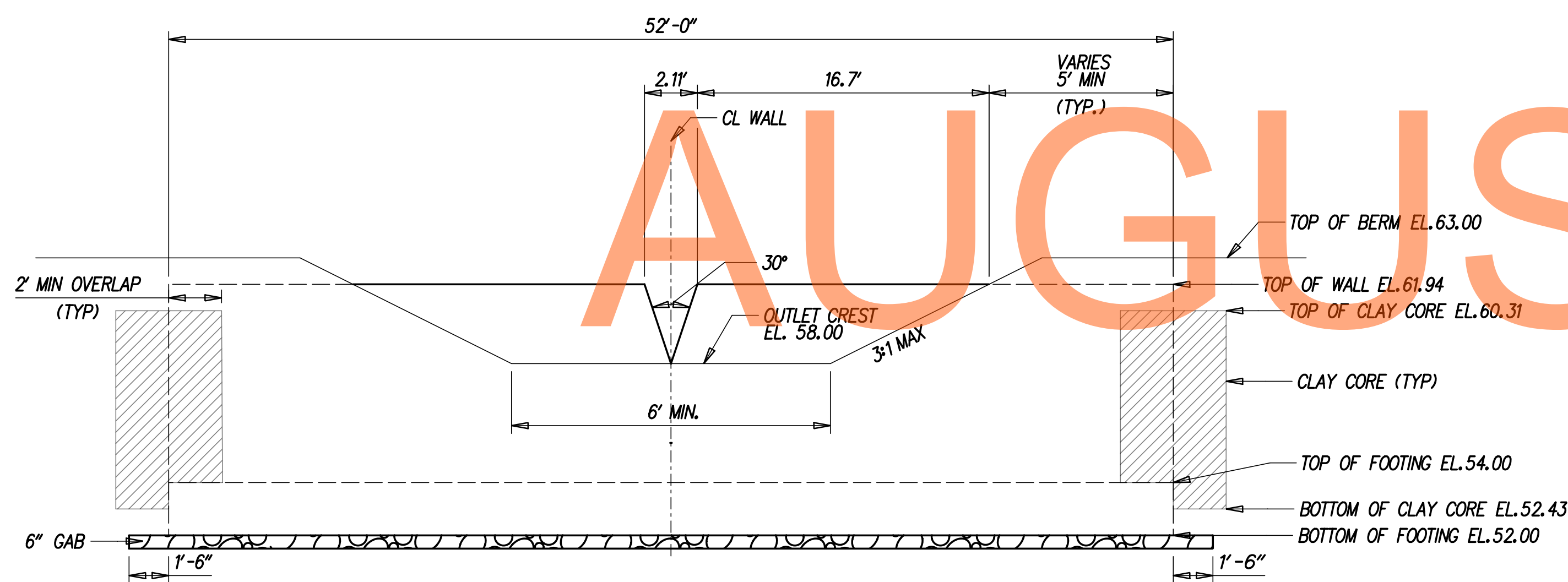
OPENING DETAILS
SCALE: NONE



WEIR WALL SECTION
SCALE: 1/2" = 1'-0"



WEIR WALL EXTERIOR ELEVATION WITH RIPRAP STILLING BASIN
SCALE: NONE



WEIR WALL INTERIOR ELEVATION
SCALE: NONE

GENERAL NOTES

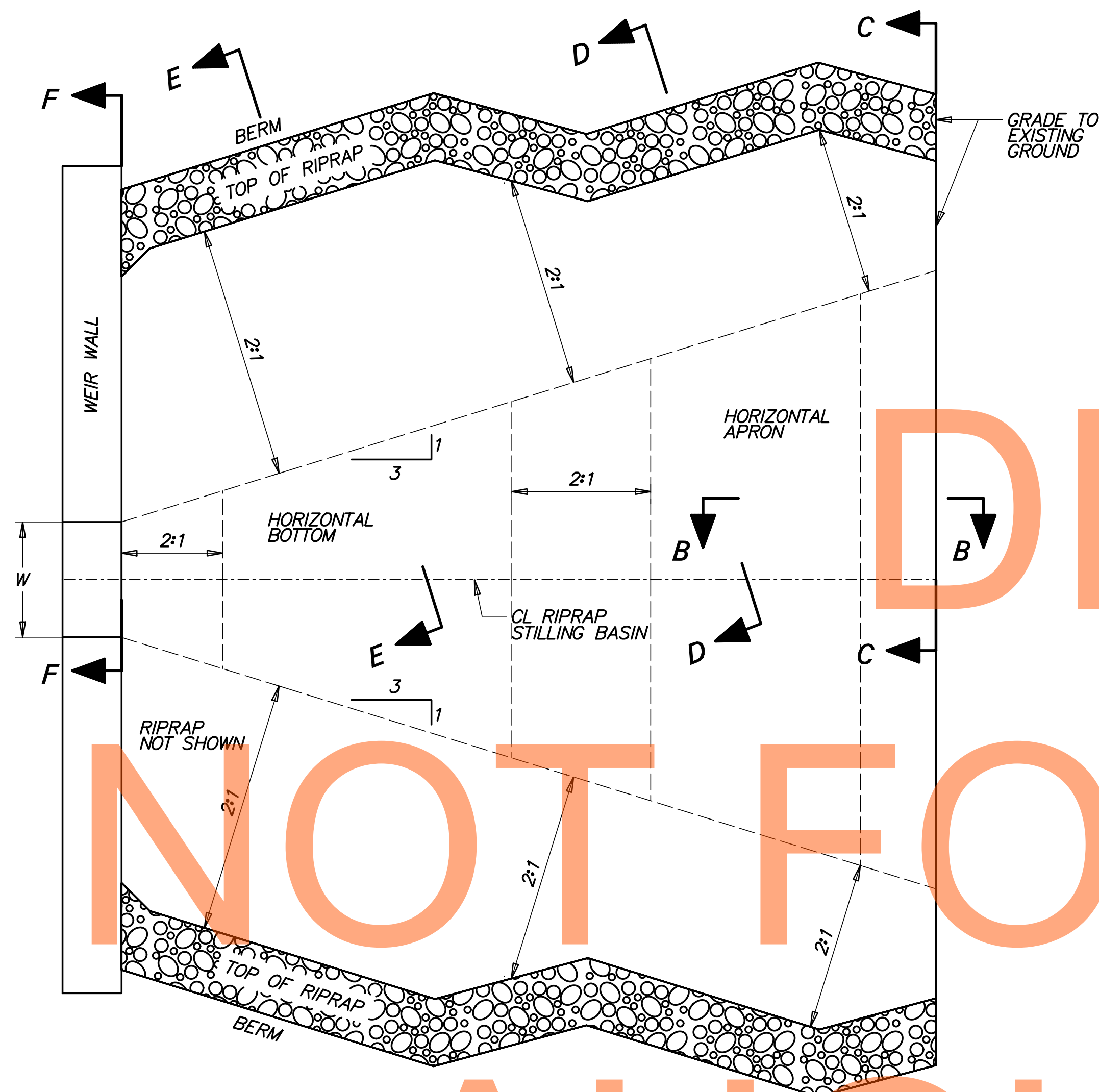
- DESIGN SPECIFICATIONS:
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 4TH EDITION, 2007, INCLUDING 2008 AND 2009 INTERIM REVISIONS, AND AS SUPPLEMENTED BY DELAWARE DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL, MAY 2005, INCLUDING LATEST REVISIONS.
PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS, AASHTO/AWS D1.5M/D1.5 BRIDGE WELDING CODE, AND CONTRACT SPECIAL PROVISIONS.
- LOADING:
UNIT WEIGHTS OF MATERIALS SHALL BE IN ACCORDANCE WITH THE DELAWARE DESIGN MANUAL.
- PORTLAND CEMENT CONCRETE:
PORTLAND CEMENT CONCRETE FOR CAST-IN-PLACE ELEMENTS SHALL BE AS FOLLOWS:
(28 DAY COMPRESSIVE STRENGTH)
(CLASS B, F'c=3000 PSI) - WEIR WALL FOOTING
(CLASS A, F'c=4500 PSI) - WEIR WALL STEM

WEIR WALLS MUST BE CAST-IN-PLACE.
MIX REQUIREMENTS SHALL CONFORM TO SECTION 812 OF THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
ALL EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED WITH 3/4" X 3/4" MILLED CHAMFER STRIPS EXCEPT ON UNEXPOSED FOOTINGS.
- BAR REINFORCEMENT:
REINFORCING STEEL SHALL CONFORM TO AASHTO M31 (ASTM A615), GRADE 60 AND IS TO BE EPOXY COATED. FUSION-BONDED EPOXY COATED REINFORCING STEEL SHALL CONFORM TO AASHTO M284 (ASTM D3963).
PROVIDE 3" CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.
LAP LENGTH OF #4 BARS TO BE 3'-0". STAGGER SPLICE LOCATIONS.
DO NOT WELD GRADE 60 REINFORCING STEEL.
- CONSTRUCTION JOINTS:
KEYED CONSTRUCTION JOINTS SHALL BE 2" x 4" OR AS NOTED.
- WATERPROOFING MEMBRANE:
ADHESIVE BACKED WATERPROOFING MEMBRANE IS TO BE USED. SPLICING OF THE MEMBRANE IS PROHIBITED.
- REFER TO SPECIFICATION SECTION 272501 FOR CONSTRUCTION SEQUENCE.
- GAB IS INCIDENTAL TO WALL CONSTRUCTION.

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AUGUST 2015

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	DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	AS SHOWN	US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT T20091303	BRIDGE NO.	STORMWATER MANAGEMENT PLAN BMP 687 (BASIN 21)	SHEET NO. 800
		COUNTY NEW CASTLE			DESIGNED BY: DB	CHECKED BY: JZ		TOTAL SHTS. 1256



PLAN

SCALE: NONE

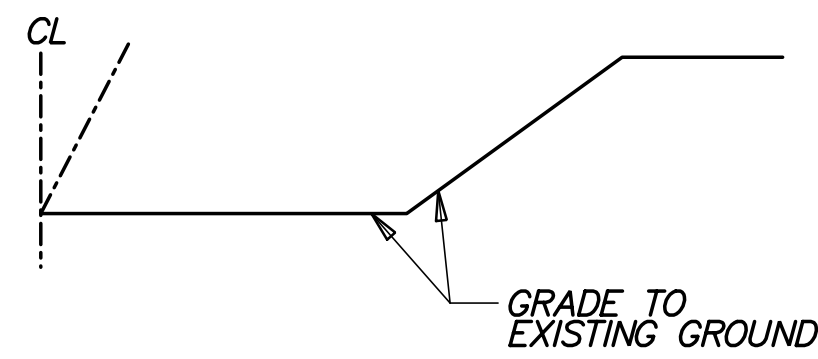
DATA

TOP OF V-NOTCH WEIR WIDTH $W = 1.51'$
 DEPTH OF BASIN FROM WEIR CREST $D = 1.50'$
 RIPRAP SIZE (R No.) = R-5 WITH NO. 57 STONE

- NOTES:
 1. RIPRAP ITEM# 712006.
 2. GEOTEXTILES, RIPRAP ITEM# 713003
 3. DELAWARE NO. 57 STONE ITEM# 302012
 4. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.

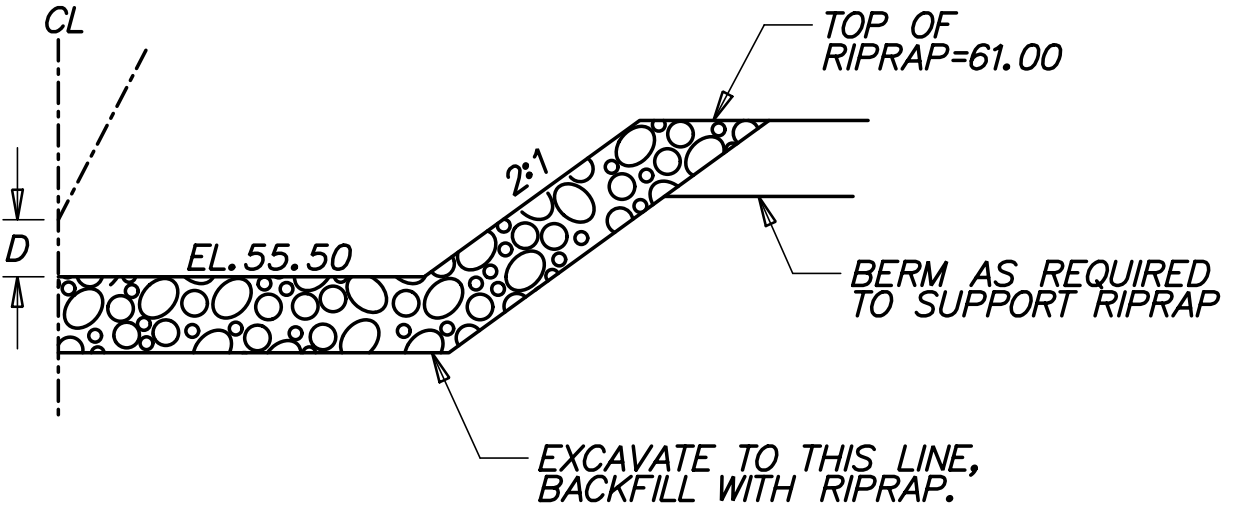
RIPRAP STILLING BASIN

SCALE: NONE



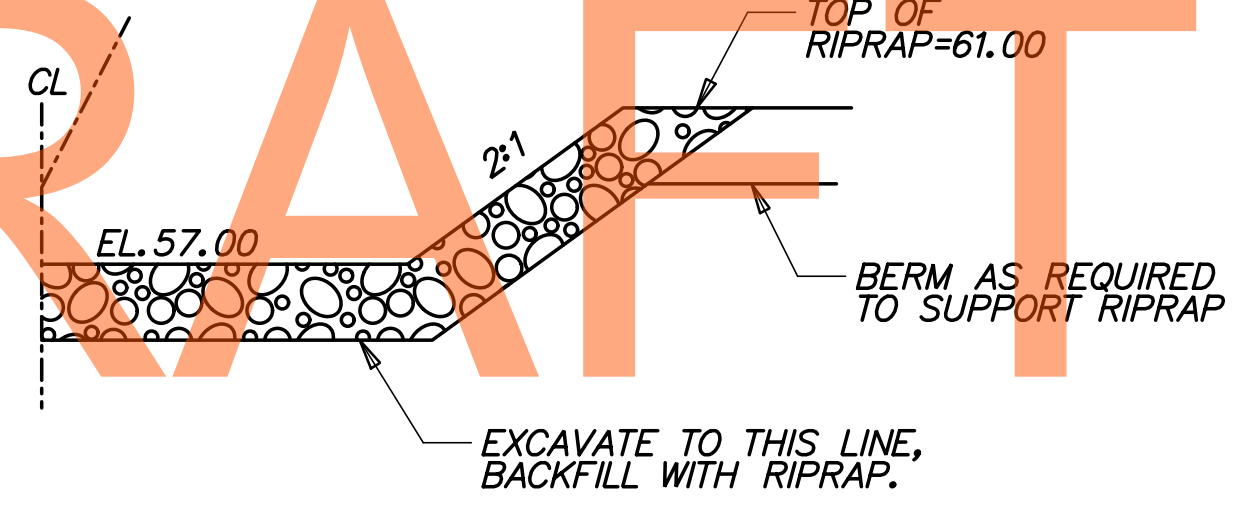
SECTION C-C

SCALE: NONE



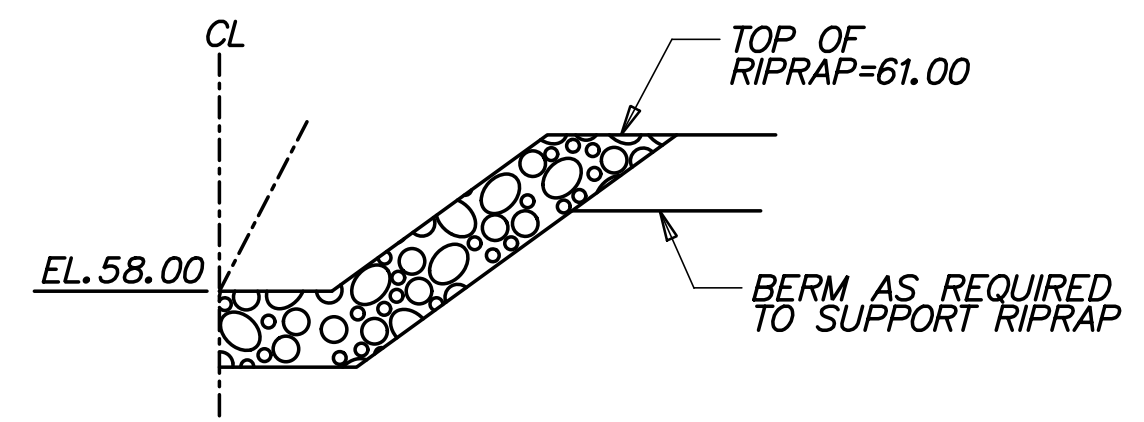
SECTION E-E

SCALE: NONE



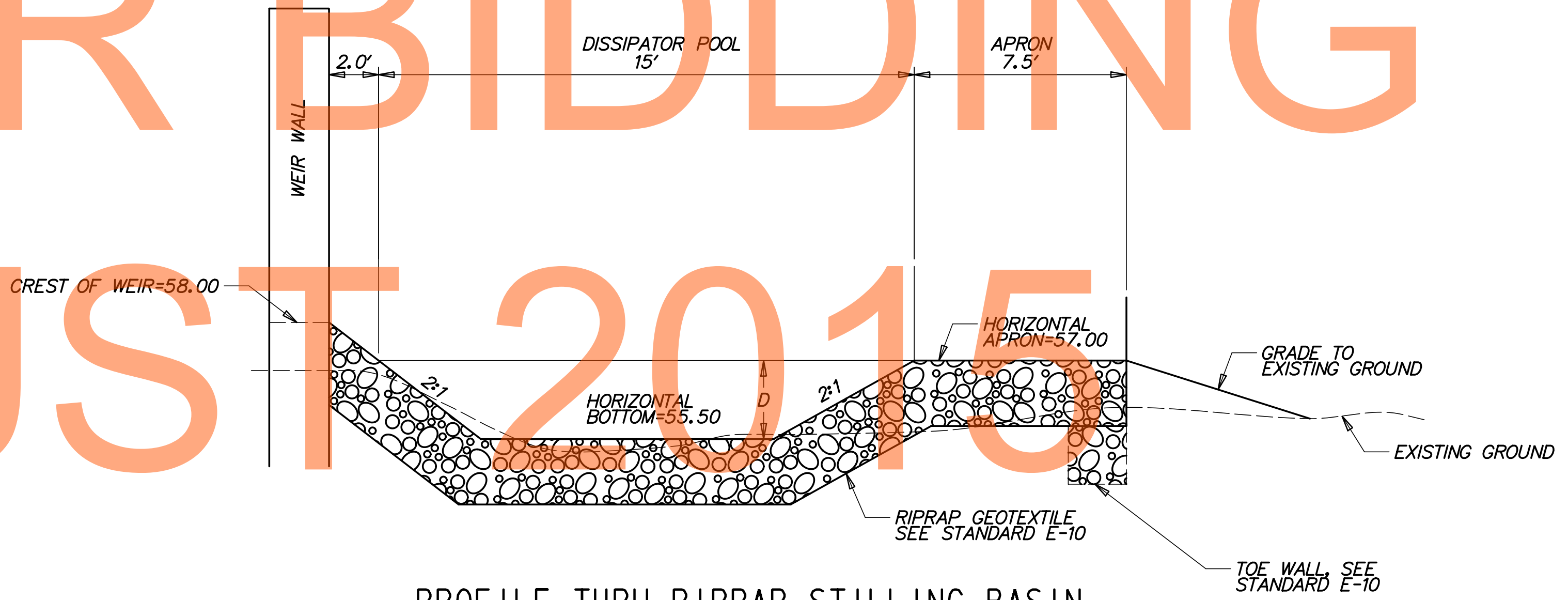
SECTION D-D

SCALE: NONE



SECTION F-F

SCALE: NONE



PROFILE THRU RIPRAP STILLING BASIN

SCALE: NONE

ADDENDUMS / REVISIONS

AS SHOWN

**US 301
 LEVELS ROAD
 TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: DB
NEW CASTLE	CHECKED BY: JZ

**STORMWATER
 MANAGEMENT DETAILS
 BMP 687 (BASIN 21)**

SW-116
SHEET NO.
801
TOTAL SHTS.
1256