

PLAN - BMP 650 (BASIN 1A)

POND DESIGN SUMMARY				
DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC. FT)
QUALITY STORM (1-YR)	4.75	0.00	52.49	0.25
10 - YEAR	18.92	1.53	53.66	0.88
100 - YEAR	45.48	11.18	55.07	1.78

RIPRAP SCHEDULE		
NO.	TYPE	AREA (SY)
75	R-5	86
200	R-4	32

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, DIVERSION BERMS OR OTHER SUITABLE MEASURES SHOULD BE PLACED AROUND THE BASIN'S PERIMETER DURING ALL PHASES OF CONSTRUCTION TO DIVERT ALL RUNOFF AND SEDIMENT AWAY FROM THE BASIN. THESE DIVERSION MEASURES SHOULD NOT BE REMOVED 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 THE 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 DUMPING.
- 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**

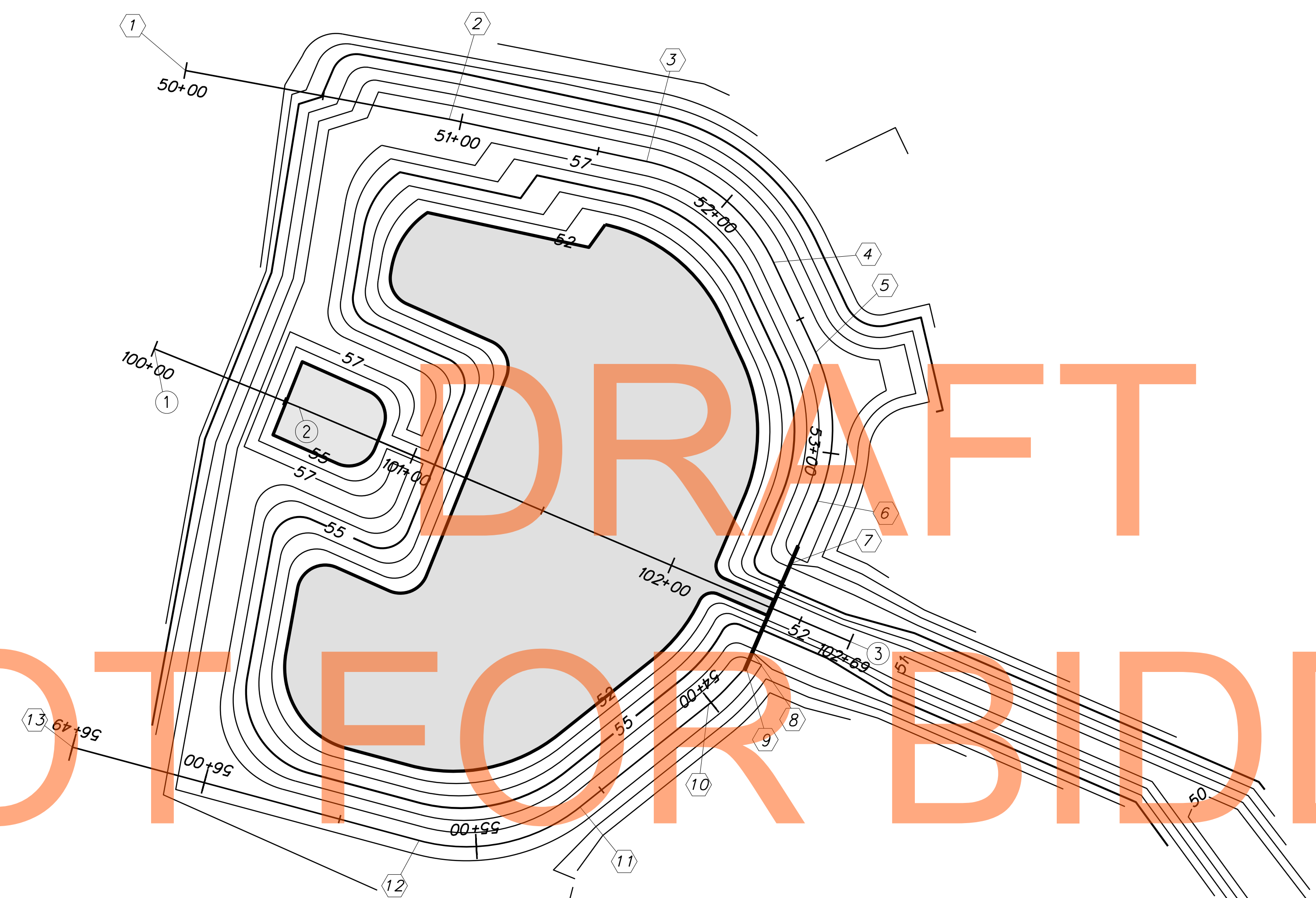
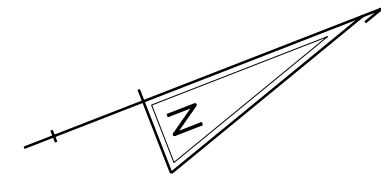
PERMANENT GRASS SEEDING - WET GROUND UP TO ELEVATION 53.0  
 PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 53.0  
 PLACE TOPSOIL ABOVE BASIN BOTTOM ELEVATION 52.0

POND QUANTITIES			
ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	15723	CY
272501	POND OUTLET STRUCTURE, 1, SPECIAL	1	EACH
302011	DELAWARE NO. 3 STONE	189	TON
302012	DELAWARE NO. 57 STONE	20	TON
712006	R-5 RIPRAP	86	SY
712020	R-4 RIPRAP	18	TON
713001	GEOTEXTILES, STABILIZATION	1275	SY
713003	GEOTEXTILES, RIPRAP	150	SY
733002	TOPSOILING, 6" DEPTH	7920	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	7685	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	2575	SY

HAZARD CLASSIFICATION: CLASS A AS PER POND CODE 378  
 DRAINAGE AREA TO FACILITY: 9.95 AC

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

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AUGUST 2015

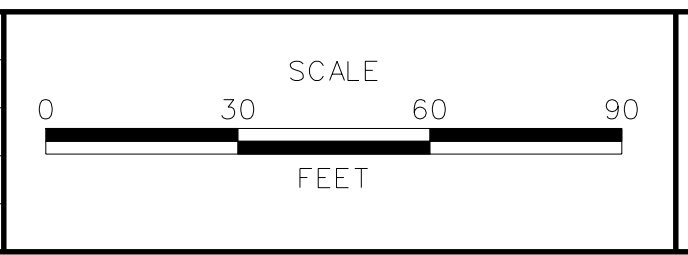
CL PRINCIPAL SPILLWAY			
NOTE	STATION	NORTHING	EASTING
① POE	100+00.00	526607.1814	561346.6760
② PI	100+55.69	526647.1711	561385.4300
③ POE	102+69.00	526797.7479	561537.0619

CL EMBANKMENT			
	STATION	NORTHING	EASTING
①	POB STA. 50+00.00	526654.9238	561258.9378
②	PI STA. 50+95.67	526735.4847	561310.5305
③	PC STA. 51+67.71	526795.0525	561351.0569
④	PT STA. 52+27.59	526823.4013	561401.4069
⑤	PC STA. 52+63.11	526825.2546	561436.8753
⑥	PT STA. 53+19.05	526805.8613	561486.2302
⑦	PI STA. 53+42.20	526788.4992	561503.2777
⑧	PI STA. 53+76.54	526763.8964	561527.4348
⑨	PC STA. 53+82.25	526759.8500	561531.4700
⑩	PT STA. 54+00.98	526742.4660	561538.7599
⑪	PC STA. 54+59.65	526686.1819	561555.3344
⑫	PT STA. 55+20.50	526628.4979	561544.7383
⑬	POE STA. 56+48.59	526526.5018	561467.2450

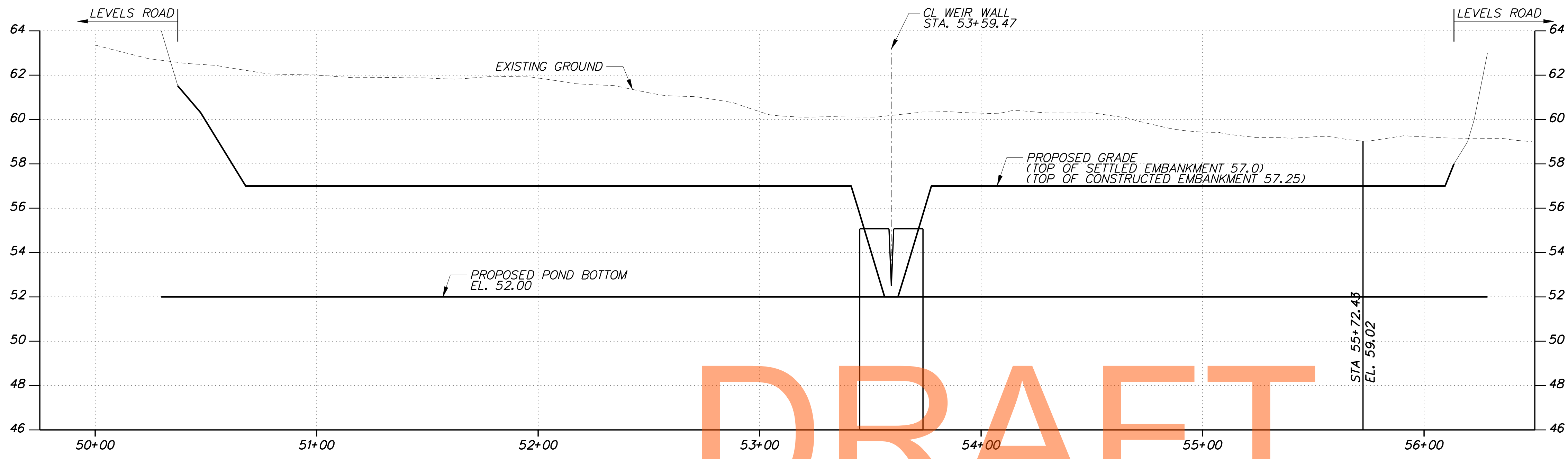
**STAKEOUT - BMP 650 (BASIN 1A)**

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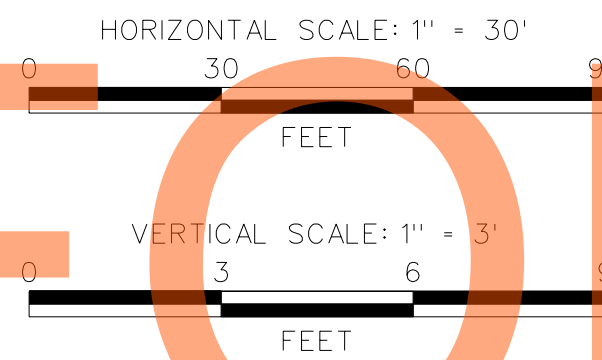
ADDENDUMS / REVISIONS



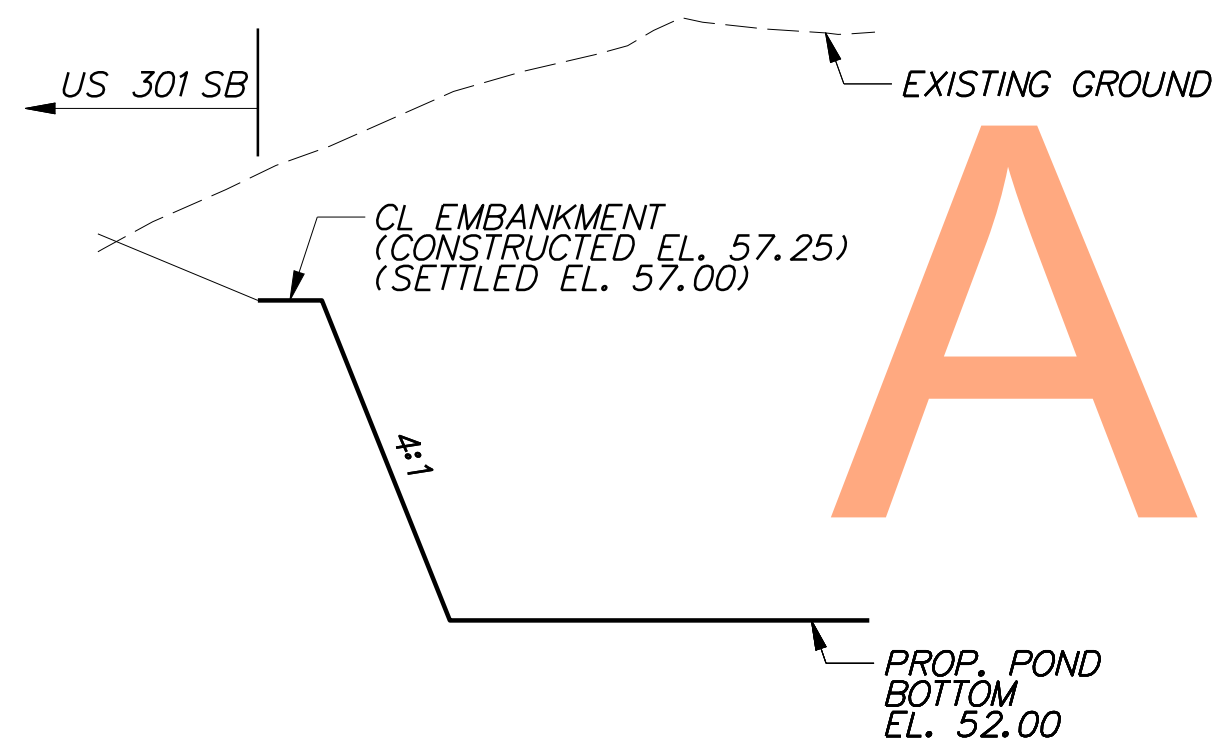
CONTRACT T200911303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: BAS
	CHECKED BY: JJW



EMBANKMENT PROFILE FOR BMP 650 (BASIN 1A)

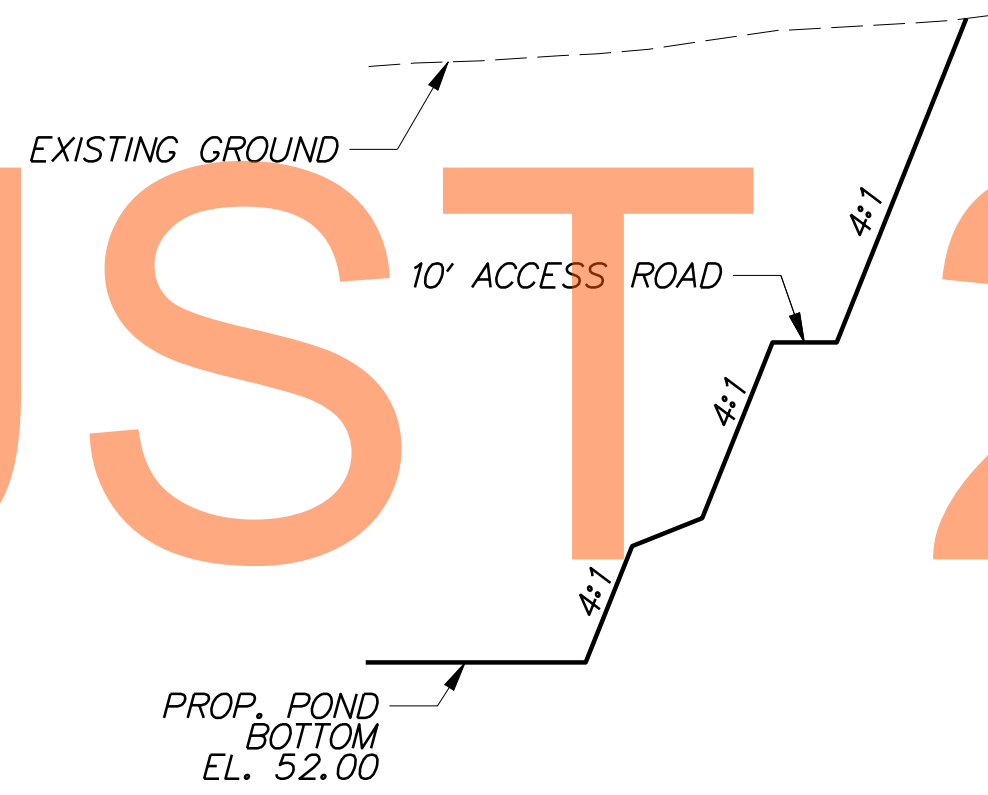


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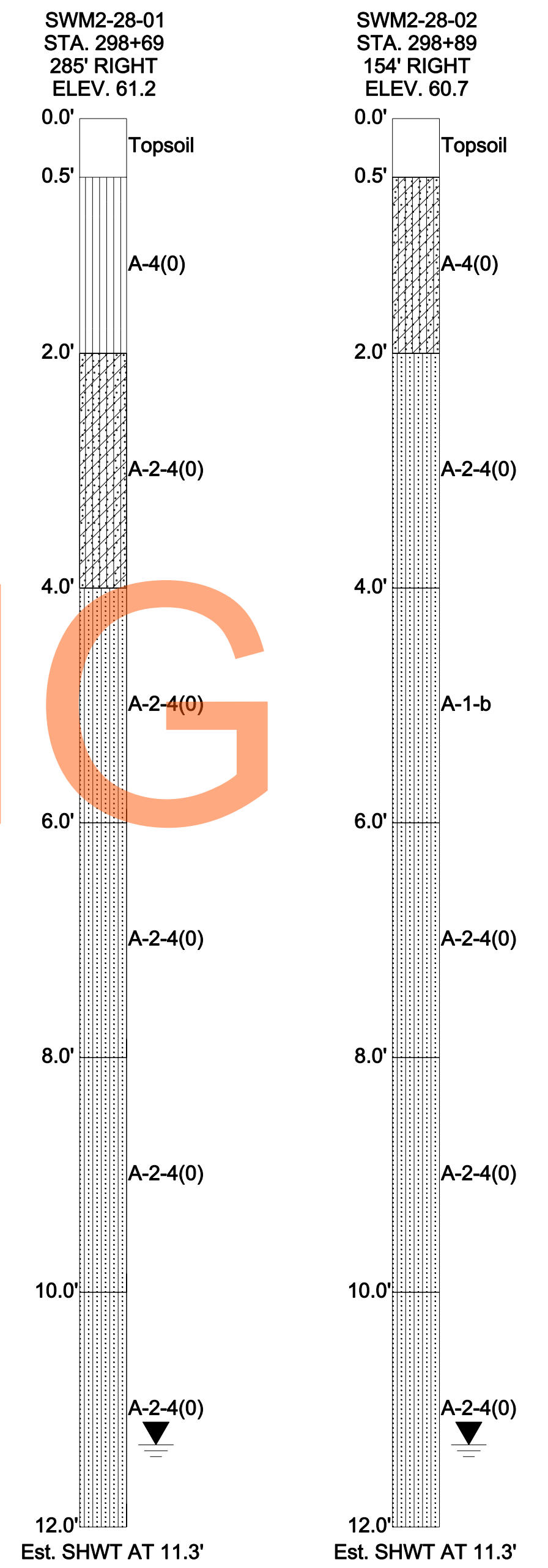
SECTION C-C FROM BASIN PLAN

SCALE: NONE



SECTION D-D FROM BASIN PLAN

SCALE: NONE



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ADDENDUMS / REVISIONS

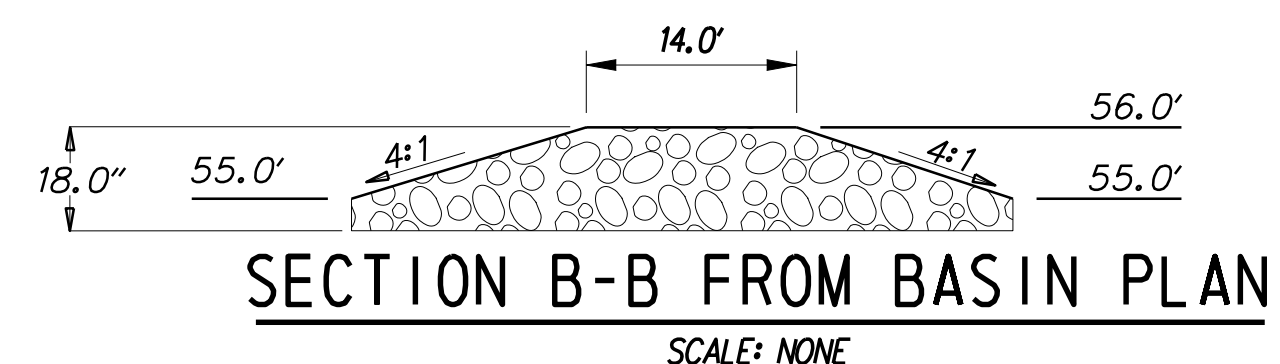
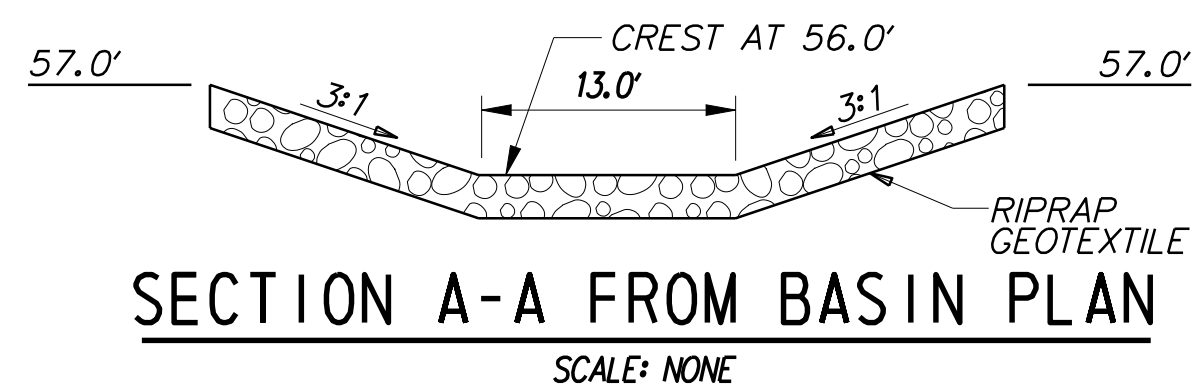
AS SHOWN

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

CONTRACT	BRIDGE NO.
T200911303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER  
MANAGEMENT DETAILS  
BMP 650 (BASIN 1A)**

SW03
SHEET NO.
688
TOTAL SHTS.
1256



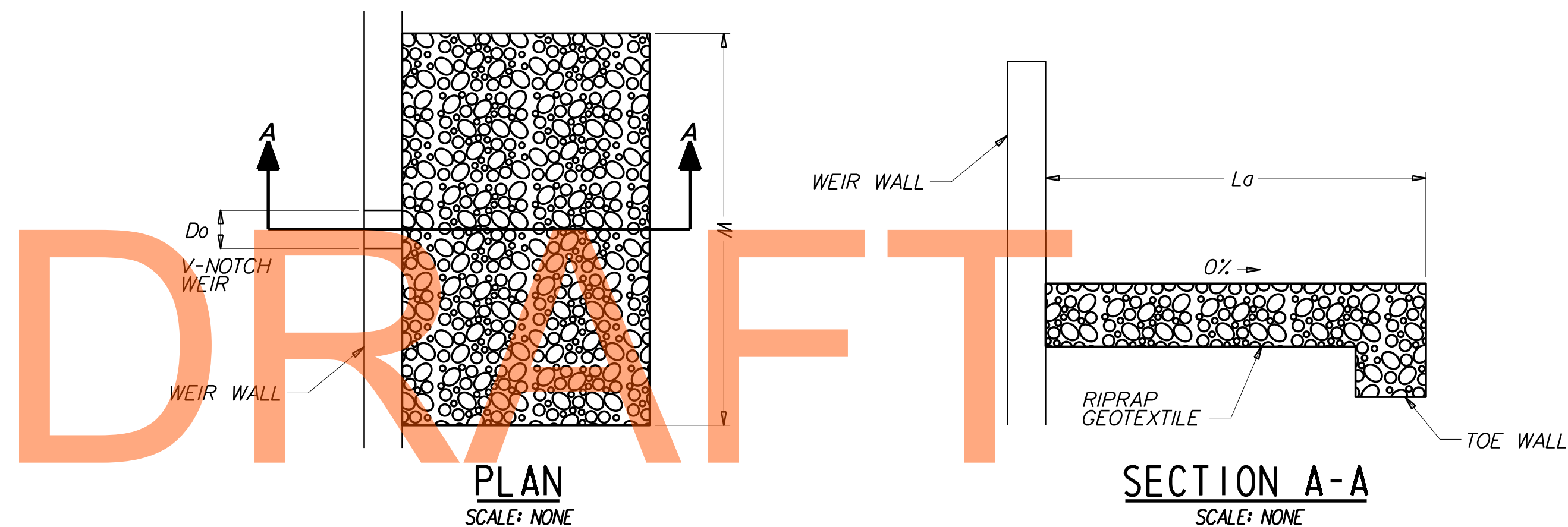
- NOTES:
1. RIPRAP ITEM 712020
  2. GEOTEXTILES, RIPRAP ITEM 713003
  3. SEE STANDARD NO. E-10 FOR GEOTEXTILE PLACEMENT

**STONE CHECK DAM**  
SCALE: NONE

**DATA**

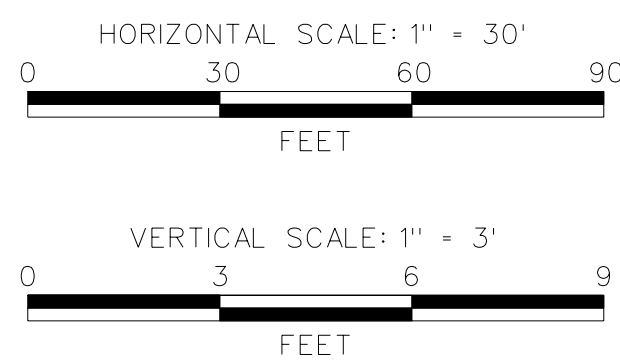
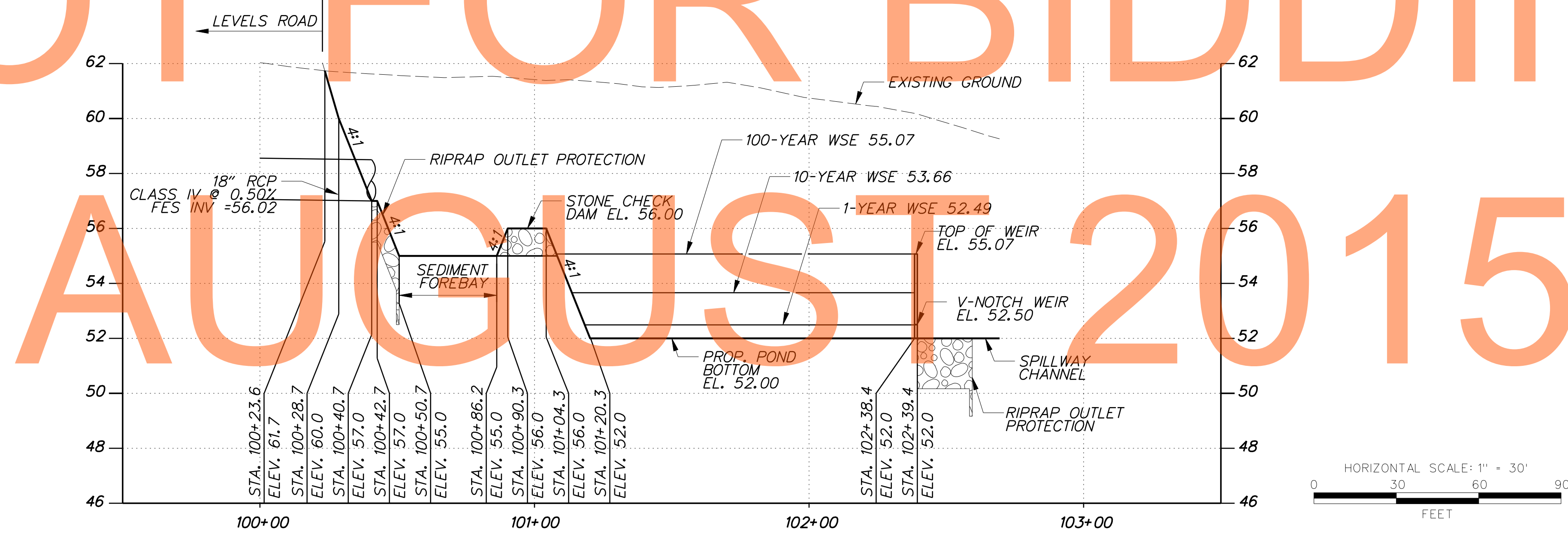
WEIR TOP OF WIDTH (D<sub>o</sub>) = 2.12'  
 APRON LENGTH (L<sub>a</sub>) = 20'  
 APRON WIDTH (W) = 22'  
 RIPRAP SIZE (R No.) = R-5 WITH NO. 57 STONE

- NOTES:
1. RIPRAP ITEM 712006
  2. GEOTEXTILES, RIPRAP ITEM 713003
  3. DELEWARE 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



**BASIN RIPRAP OUTLET PROTECTION**  
SCALE: NONE

NOT FOR BIDDING



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ADDENDUMS / REVISIONS	

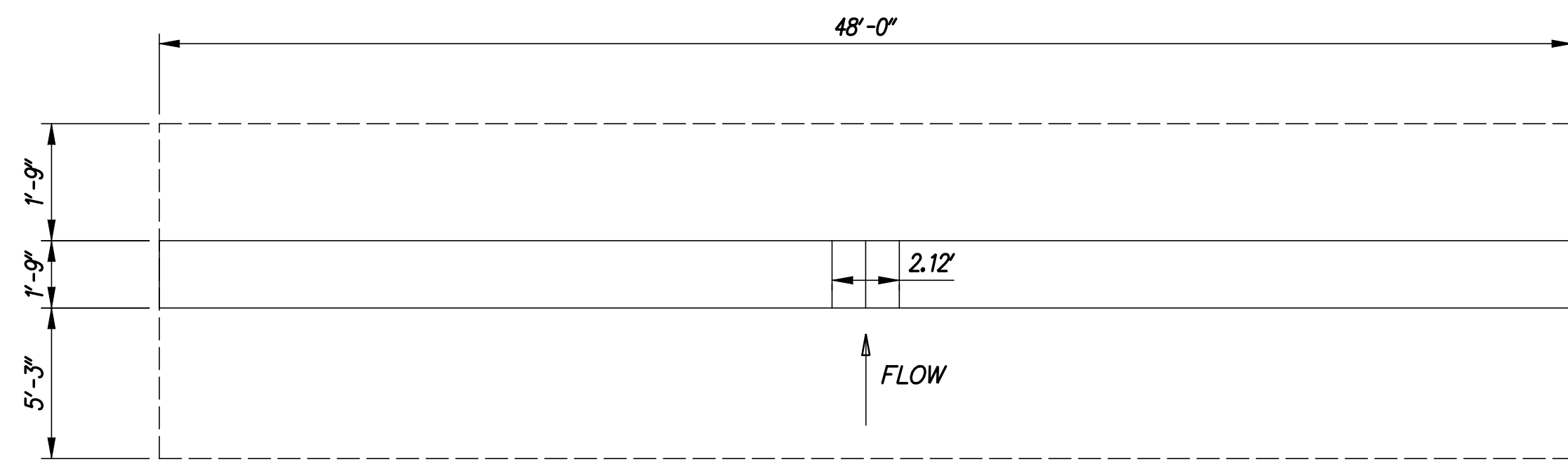
AS SHOWN

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

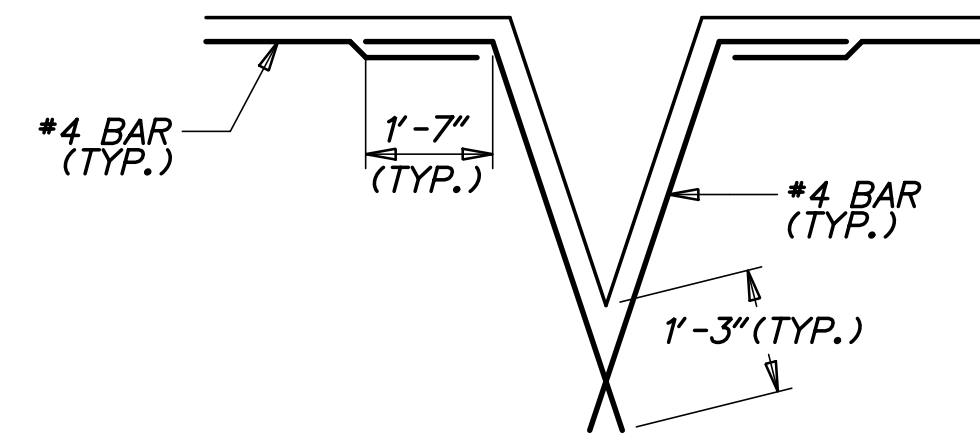
CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER MANAGEMENT DETAILS BMP 650 (BASIN 1A)**

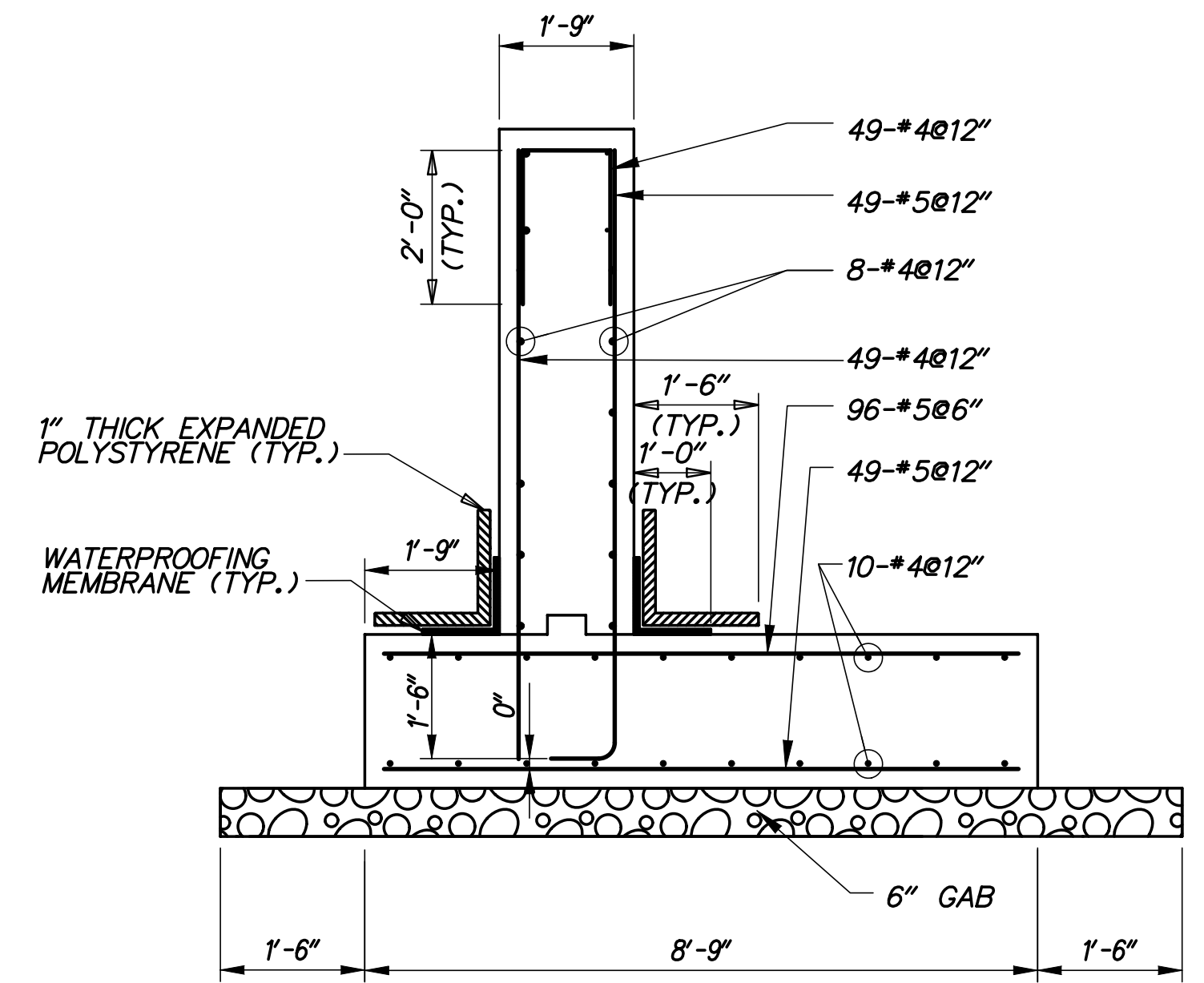
SW04
SHEET NO.
689
TOTAL SHTS.
1256



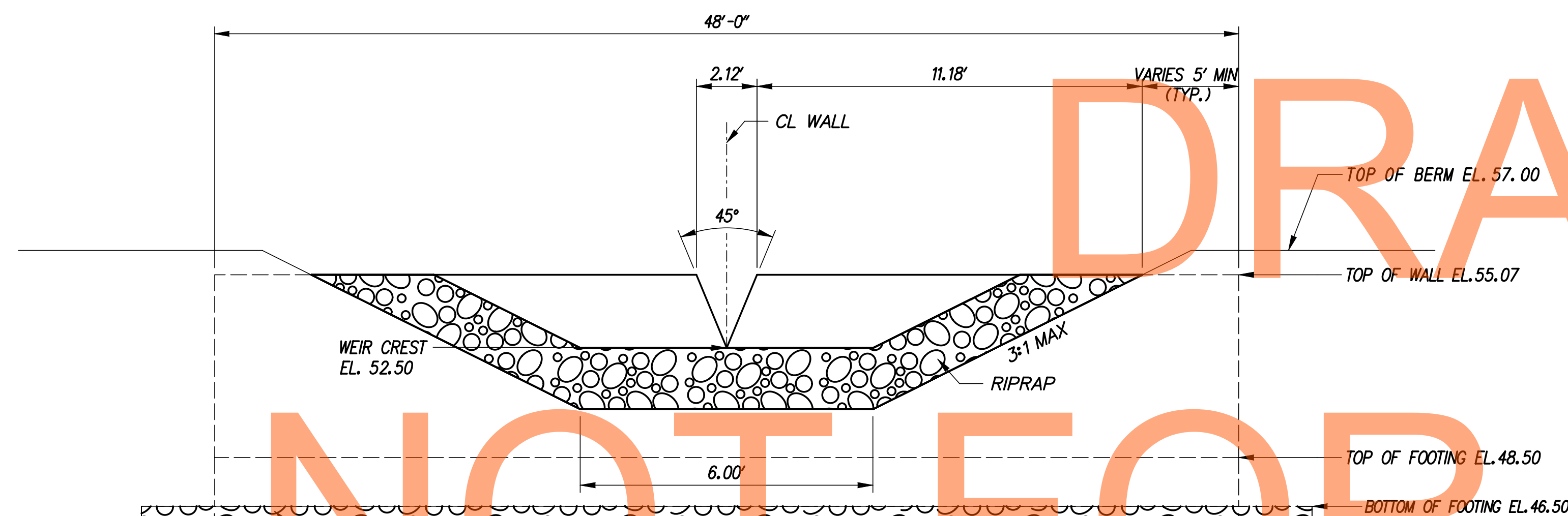
**WEIR WALL  
PLAN**  
SCALE: NONE



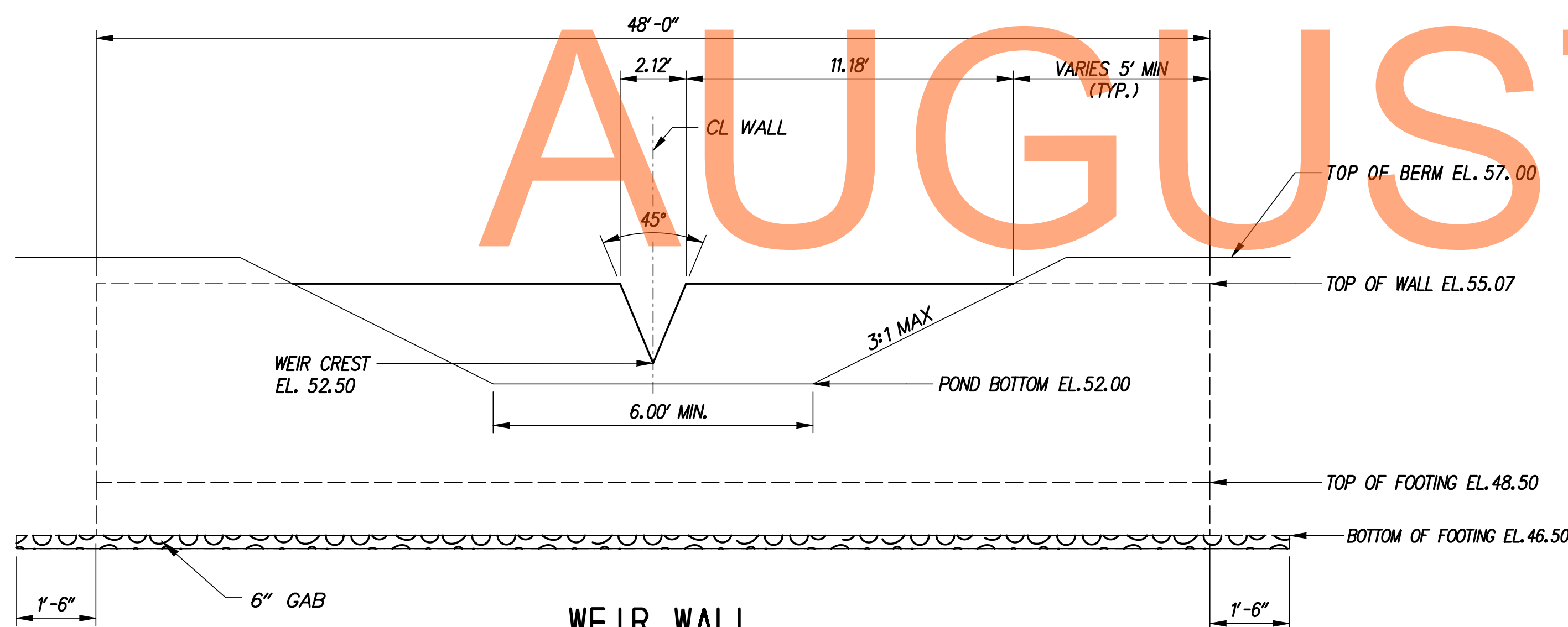
**OPENING DETAILS**  
SCALE: NONE



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



**WEIR WALL  
EXTERIOR ELEVATION  
WITH RIPRAP 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 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.	<b>STORMWATER MANAGEMENT DETAILS BMP 650 (BASIN 1A)</b>	SW-05
					T20091303		
				COUNTY	DESIGNED BY: BAS		TOTAL SHTS.
				NEW CASTLE	CHECKED BY: JJW		1256

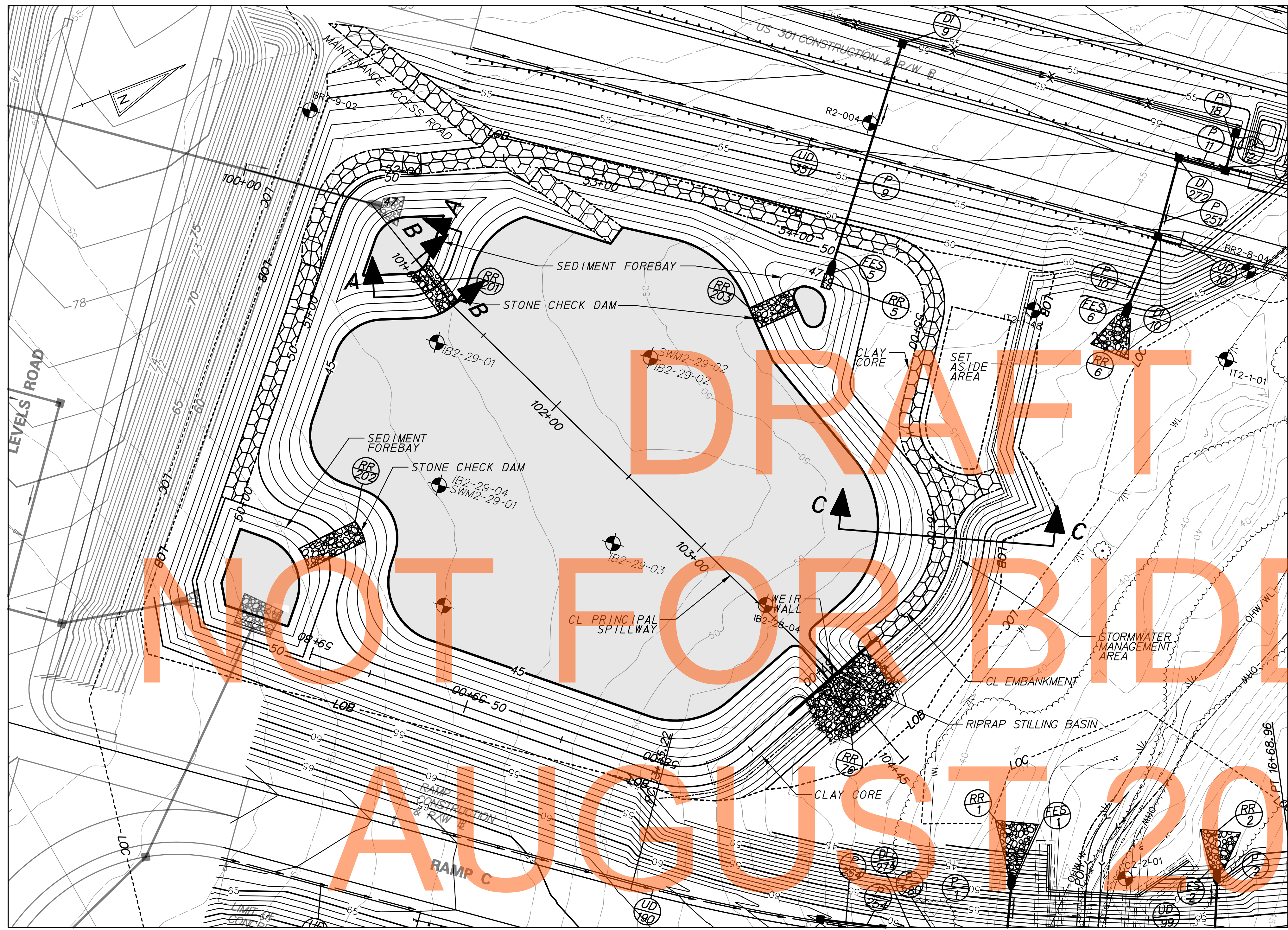
**INFILTRATION BASIN CONSTRUCTION SEQUENCE**  
 THE STORMWATER MANAGEMENT BASIN SHALL FUNCTION AS AN INFILTRATION FACILITY AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:

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

1. 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.
2. 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, DIVERSION BERMS OR OTHER SUITABLE MEASURES SHOULD BE PLACED AROUND THE BASIN'S PERIMETER DURING ALL PHASES OF CONSTRUCTION TO DIVERT ALL RUNOFF AND SEDIMENT AWAY FROM THE BASIN. THESE DIVERSION MEASURES SHOULD NOT BE REMOVED UNTIL ALL CONSTRUCTION WITHIN THE BASIN'S DRAINAGE AREA IS COMPLETED AND THE DRAINAGE AREA STABILIZED.
3. SEE CONSTRUCTION PLANS FOR EROSION AND SEDIMENT CONTROL MEASURES.
4. 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.
5. CONSTRUCT WEIR WALL, RIPRAP ENERGY DISSIPATER AT THE 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 DUMPING.
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 BASIN EMBANKMENT AND BOTTOM WITH PERMANENT SEEDING.
8. REMOVE EROSION AND SEDIMENT CONTROLS, WATER DIVERSION PRACTICES AND FENCE UPON FINAL STABILIZATION AND APPROVAL FROM INSPECTOR.
9. 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**  
 PERMANENT GRASS SEEDING - WET GROUND UP TO ELEVATION 46.0  
 PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 46.0  
 PLACE TOPSOIL ABOVE BASIN BOTTOM ELEVATION 45.0

POND QUANTITIES			
ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	23786	CY
272501	POND OUTLET STRUCTURE, 2, SPECIAL	1	EACH
274000	CLAY BORROW, STORMWATER MANAGEMENT POND, CUT-OFF TRENCH	732	CY
302011	DELAWARE NO. 3 STONE	302	TON
302012	DELAWARE NO. 57 STONE	37	TON
712005	R-4 RIPRAP	4	SY
712006	R-5 RIPRAP	159	SY
712020	R-4 RIPRAP	60	TON
713001	GEOTEXTILES, STABILIZATION	2040	SY
713003	GEOTEXTILES, RIPRAP	310	SY
733002	TOPSOILING, 6" DEPTH	7780	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	7365	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	5856	SY



**PLAN - BMP 651 (BASIN 1B)**

POND DESIGN SUMMARY				
DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC. FT)
QUALITY STORM (1-YR)	22.49	0	45.63	0.71
10 - YEAR	65.08	3.82	47.22	2.64
100 - YEAR	138.76	24.94	48.86	4.99

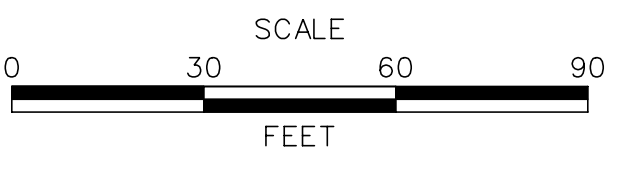
RIPRAP SCHEDULE		
NO.	TYPE	AREA (SY)
76	R-5	159
5	R-4	4
201	R-4	30
202	R-4	39
203	R-4	28

HAZARD CLASSIFICATION: CLASS A AS PER POND CODE 378  
 DRAINAGE AREA TO FACILITY: 23.19 AC  
 MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY BY INFILTRATION OF 1-YEAR STORM RUNOFF, WATER QUANTITY FOR 10 AND 100-YEAR STORMS.

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



ADDENDUMS / REVISIONS	



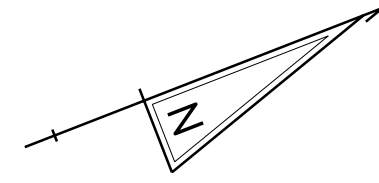
**US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER MANAGEMENT DETAILS BMP 651 (BASIN 1B)**

SW06
SHEET NO.
691
TOTAL SHTS.
1256

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AUGUST 2015

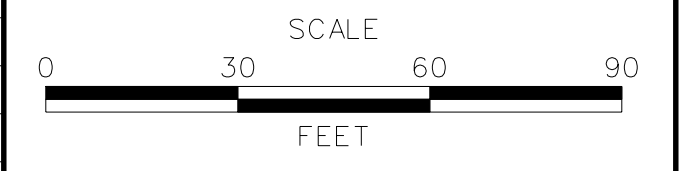
**STAKEOUT - BMP 651 (BASIN 1B)**

CL PRINCIPAL SPILLWAY			
	STATION	NORTHING	EASTING
①	POB STA. 100+00.00	526389.7328	561656.2923
②	PI STA. 100+64.17	526440.8249	561695.1105
③	PI STA. 101+28.77	526459.2397	561757.0349
④	PI STA. 103+90.33	526564.1039	561996.6478
⑤	POE STA. 104+45.04	526580.9197	562048.7153

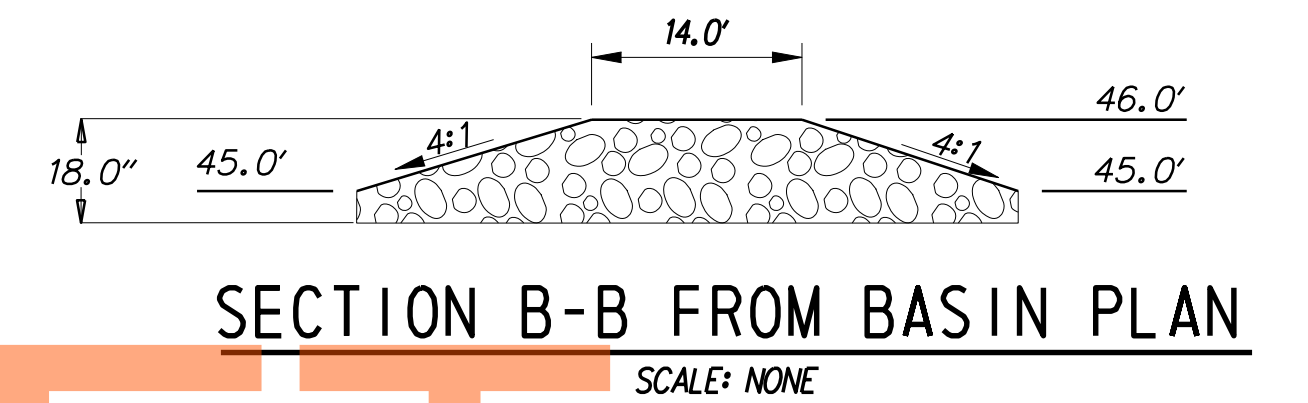
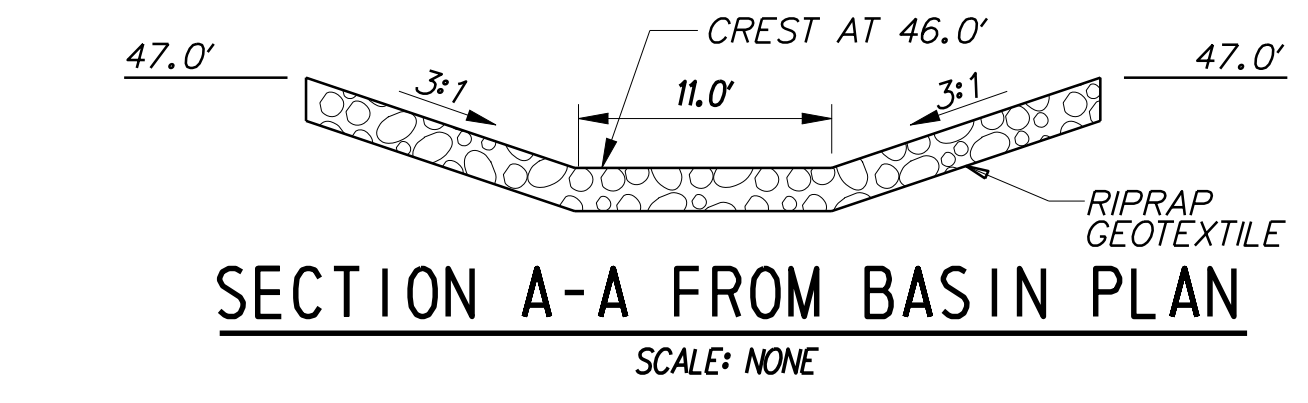
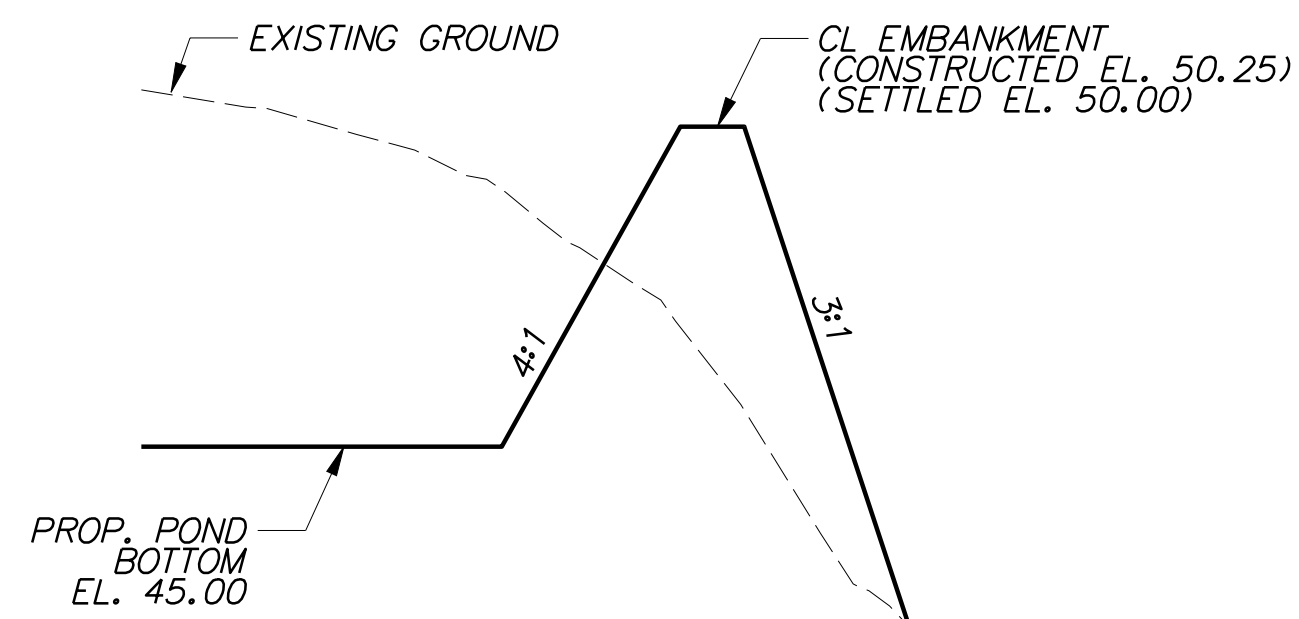
CL EMBANKMENT			
	STATION	NORTHING	EASTING
①	POB STA. 50+00.00	526321.7963	561804.6381
②	PI STA. 50+98.70	526387.0002	561730.5423
③	PI STA. 51+21.56	526401.3481	561712.7474
④	PI STA. 51+33.50	526406.7184	561702.0801
⑤	PC STA. 51+52.94	526419.5626	561687.4843
⑥	PT STA. 51+89.45	526453.6679	561677.8120
⑦	PI STA. 52+09.13	526471.2901	561686.4463
⑧	PI STA. 52+39.07	526500.0523	561694.7467
⑨	PI STA. 52+68.90	526527.6918	561705.9725
⑩	PI STA. 53+51.15	526595.1530	561753.0301
⑪	PI STA. 53+86.12	526622.5574	561774.7520
⑫	PI STA. 54+20.82	526649.7484	561796.3048
⑬	PC STA. 54+44.97	526669.3653	561810.3845
⑭	PT STA. 54+91.95	526676.3281	561852.1327
⑮	PC STA. 55+38.86	526649.1559	561890.3756
⑯	PRC STA. 55+65.25	526644.6351	561915.5214
⑰	PT STA. 56+47.75	526609.4776	561981.7488
⑱	PI STA. 56+75.12	526583.6107	561990.6887
⑲	PI STA. 57+16.02	526544.9543	562004.0489
⑳	PC STA. 57+53.88	526509.1735	562016.4151
㉑	PT STA. 58+01.35	526464.7281	562007.6502
㉒	POE STA. 59+80.46	526329.8748	561889.7759

11/13/2012 J:\BRIDGE\HIGHWAYS\9040\_Deidol\301\Civil\Plans\2A\SW\BMP\BMP\_02.dgn

ADDENDUMS / REVISIONS



CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW



SECTION C-C FROM BASIN PLAN  
SCALE: NONE

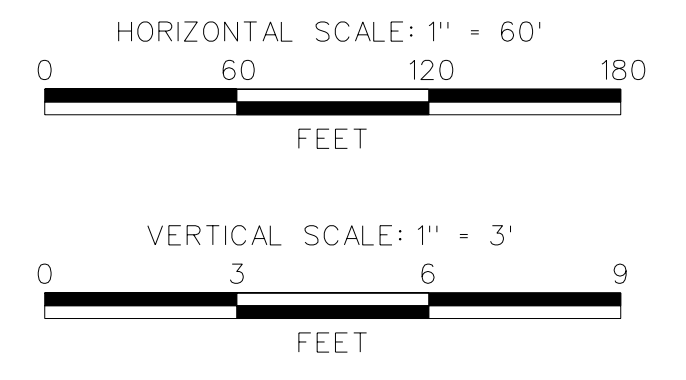
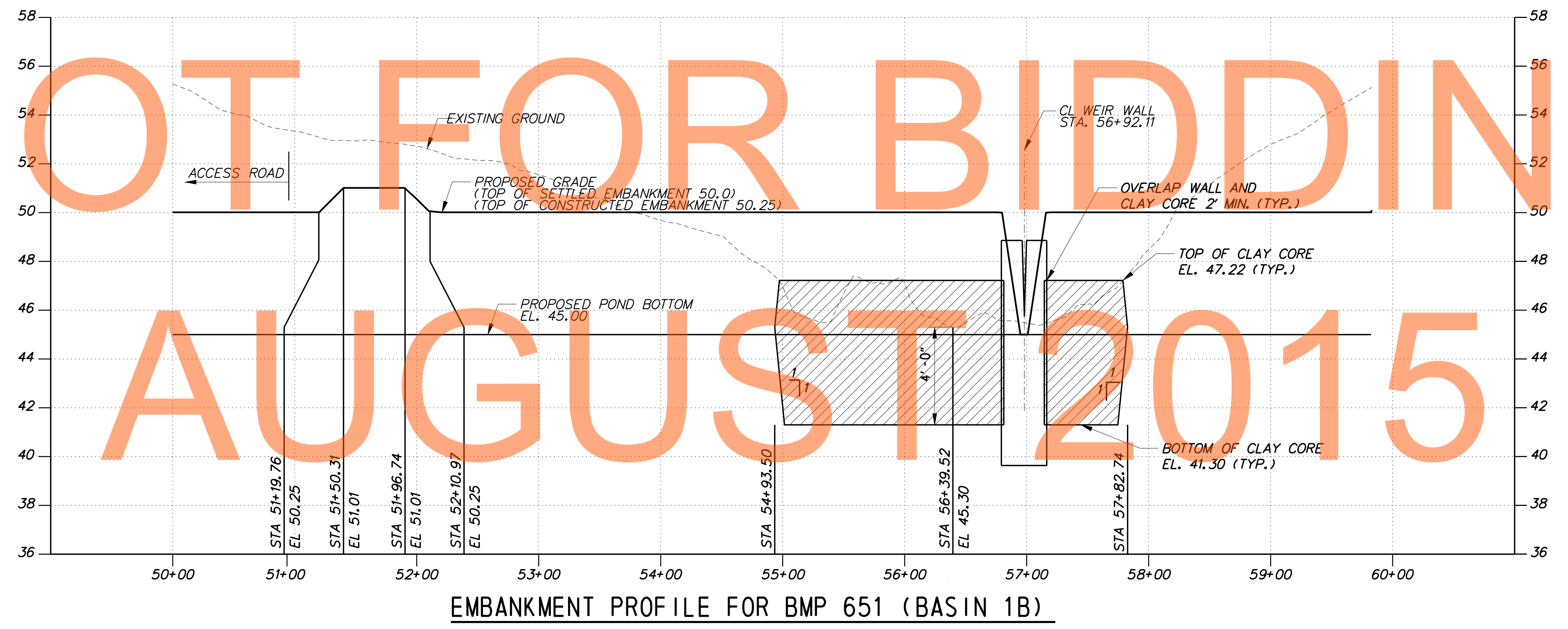
SECTION B-B FROM BASIN PLAN  
SCALE: NONE  
STONE CHECK DAM  
SCALE: NONE

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

DRAFT

NOT FOR BIDDING

AUGUST 2015



EMBAKMENT PROFILE FOR BMP 651 (BASIN 1B)

11/13/2012 J:\BRIDGE-HIGHWAYS\9040\_Deidol\_301\Civil\Plans\2A\SWM\Bmpnd 1\SW\_IB\_03.dgn



ADDENDUMS / REVISIONS	

AS SHOWN

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

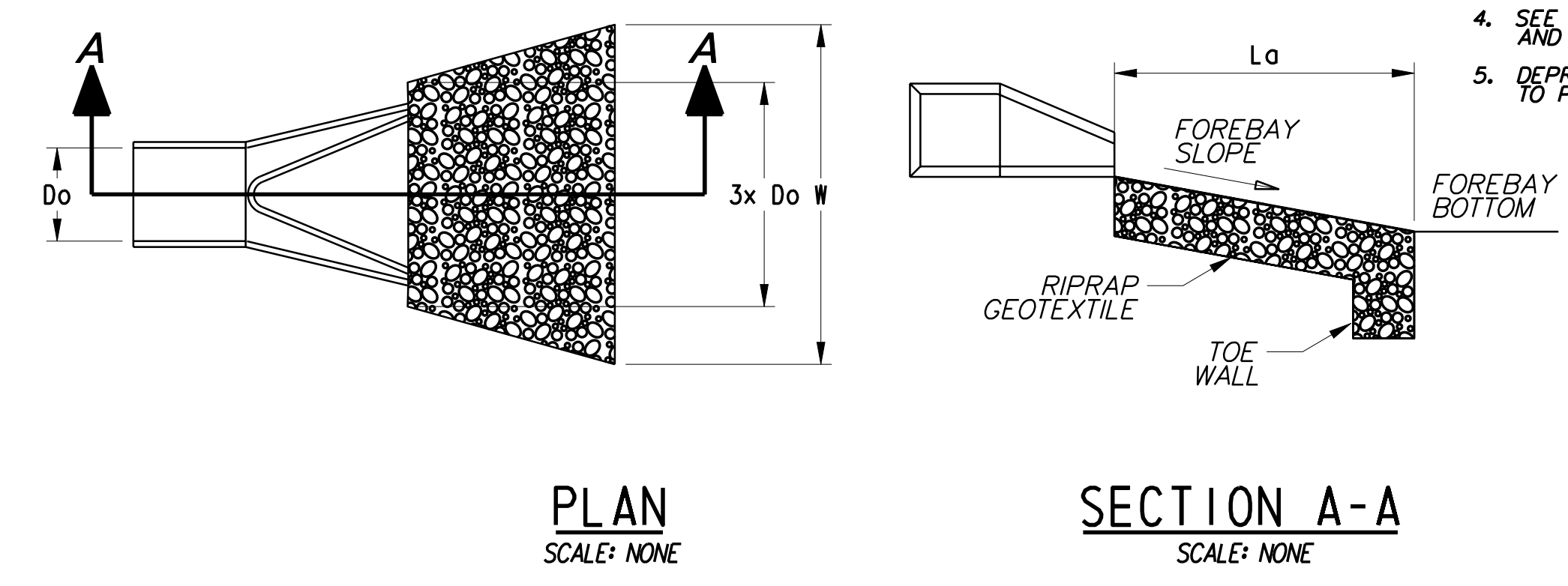
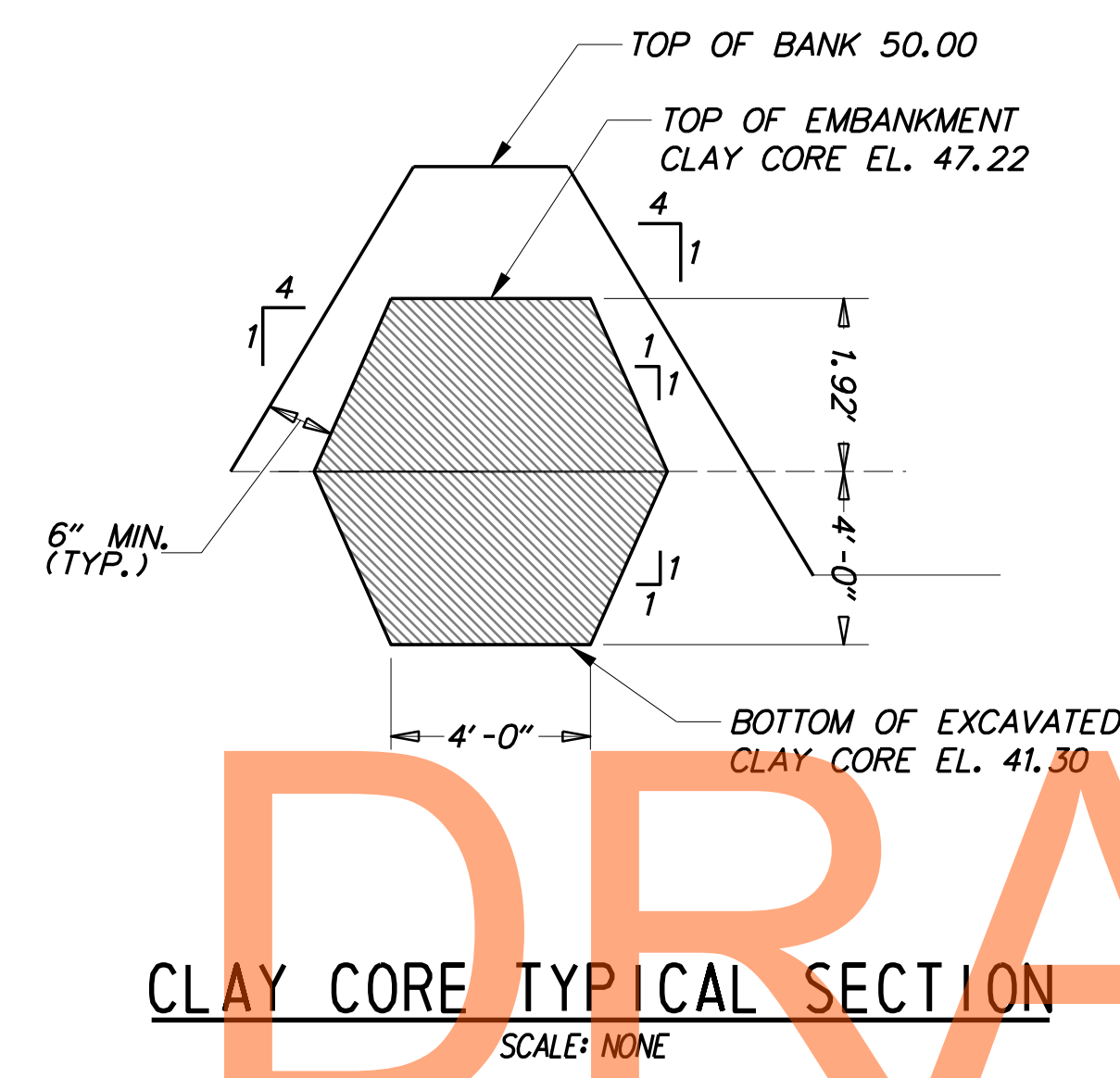
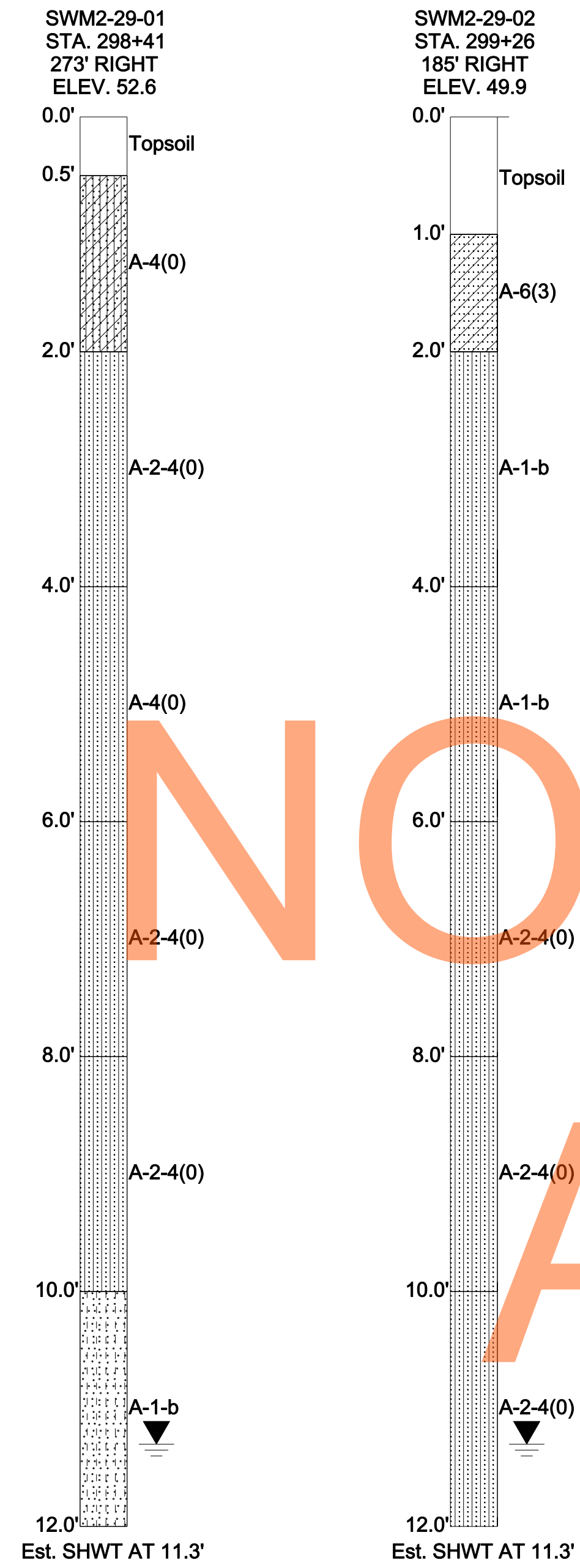
CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: BAS
	CHECKED BY: JJW

**STORMWATER  
MANAGEMENT DETAIL  
BMP 651 (BASIN 1B)**

SW08
SHEET NO. 693
TOTAL SHTS. 1256



- NOTES:
1. RIPRAP ITEM 712005
  2. GEOTEXTILES, RIPRAP ITEM 713003
  3. DELEWARE 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**

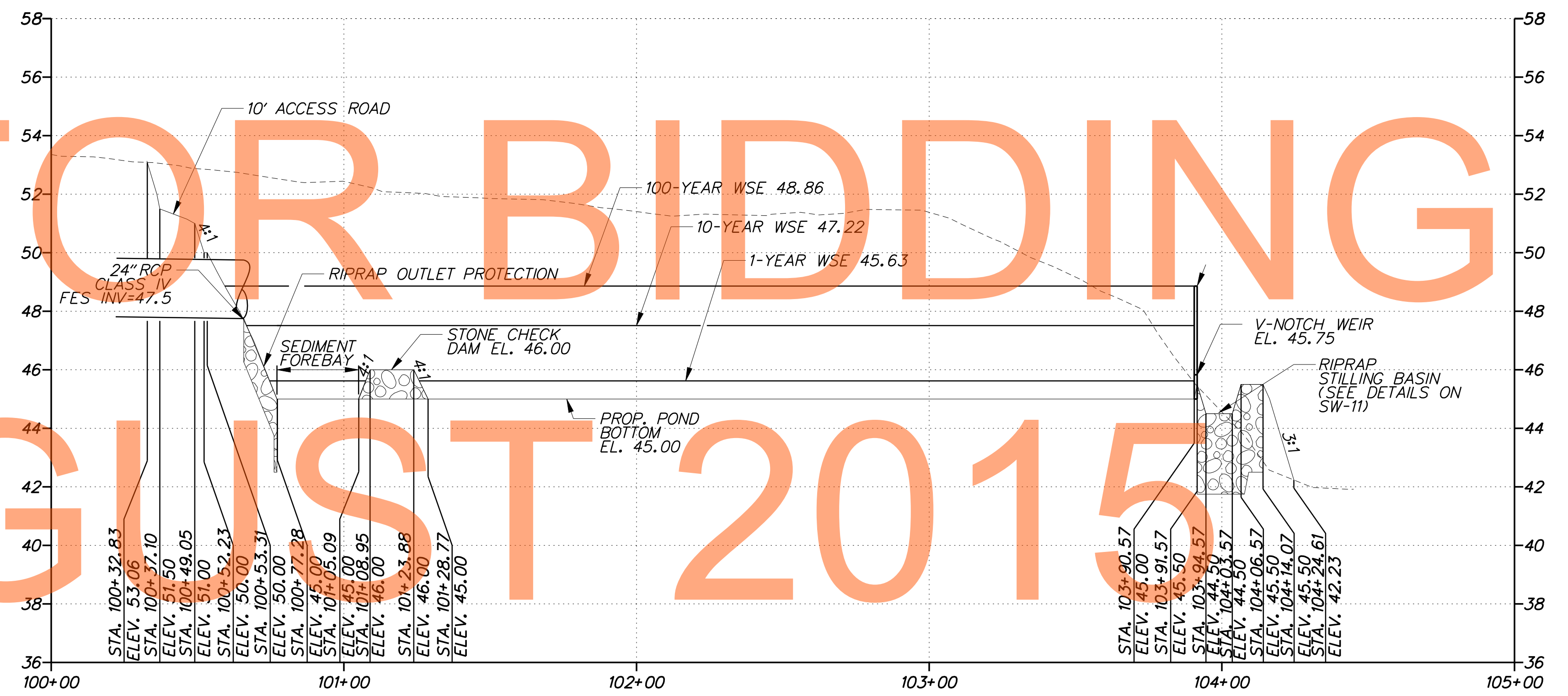
PIPE DIAMETER (Do)  
 APRON LENGTH (La)  
 APRON WIDTH (W)  
 RIPRAP SIZE (R No.)

FES ID	Do	La	W	R No.
5	1.5'	7.0'	6.0'	R-4

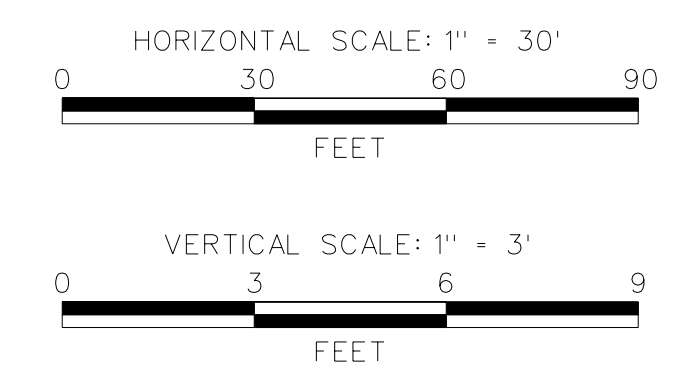
CLAY CORE TYPICAL SECTION  
SCALE: NONE

FOREBAY RIPRAP OUTLET PROTECTION  
SCALE: NONE

DRAFT  
NOT FOR BIDDING  
AUGUST 2015



SPILLWAY PROFILE - BMP 651 (BASIN 1B)



11/13/2012 J:\BRIDGE-HIGHWAYS\9040\_Delidol\_301\Civil\Plans\2A\SWM\Plan\1\SW\_IB\_04.dgn

ADDENDUMS / REVISIONS

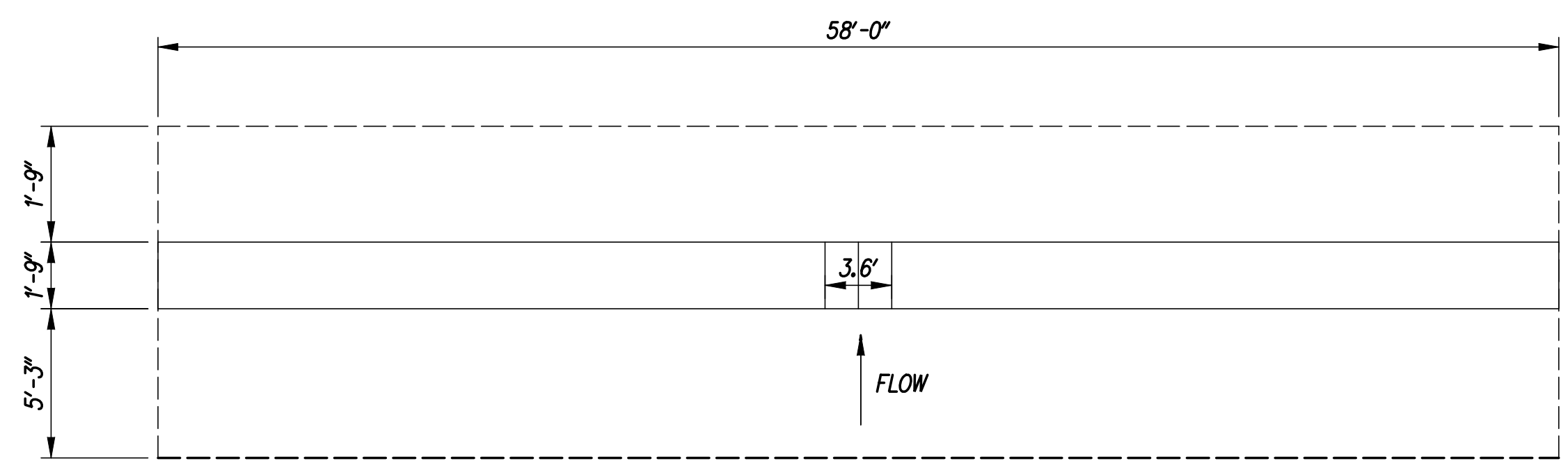
AS SHOWN

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

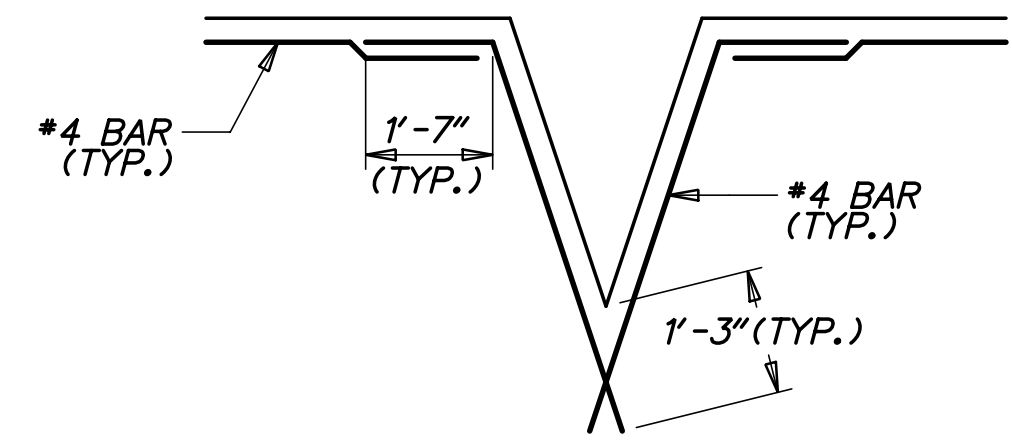
CONTRACT	T20091303
COUNTY	NEW CASTLE
BRIDGE NO.	
DESIGNED BY:	BAS
CHECKED BY:	JJW

**STORMWATER MANAGEMENT DETAILS BMP 651 (BASIN 1B)**

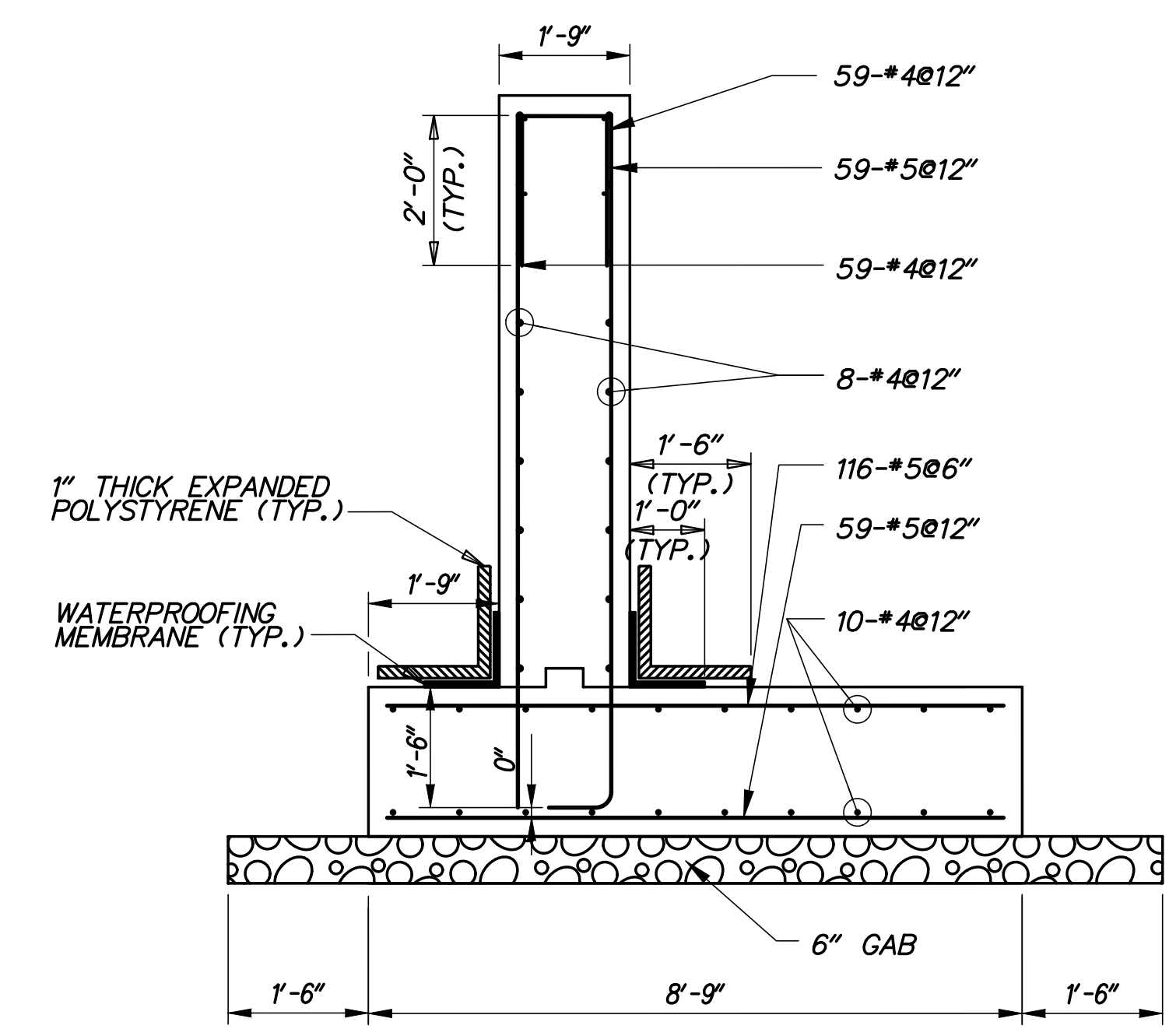
SW09
SHEET NO.
694
TOTAL SHTS.
1256



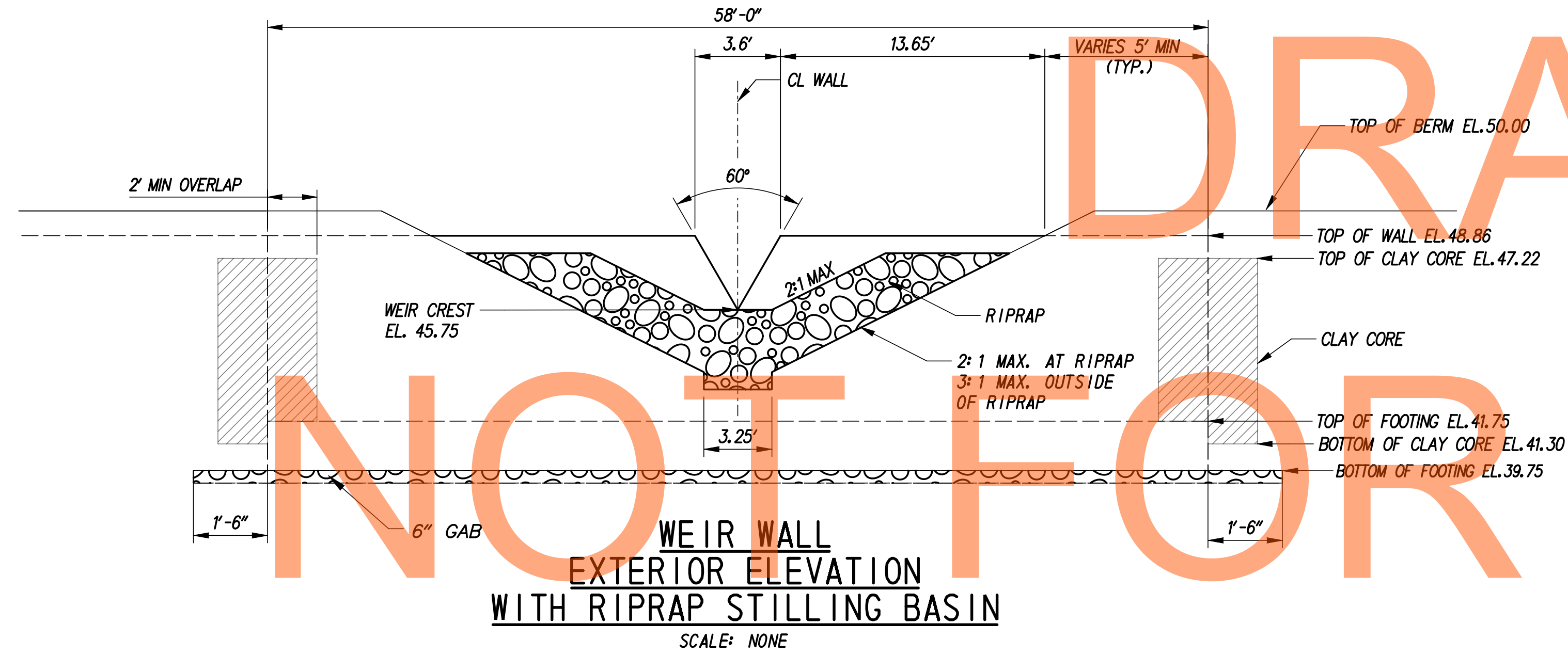
**WEIR WALL PLAN**  
SCALE: NONE



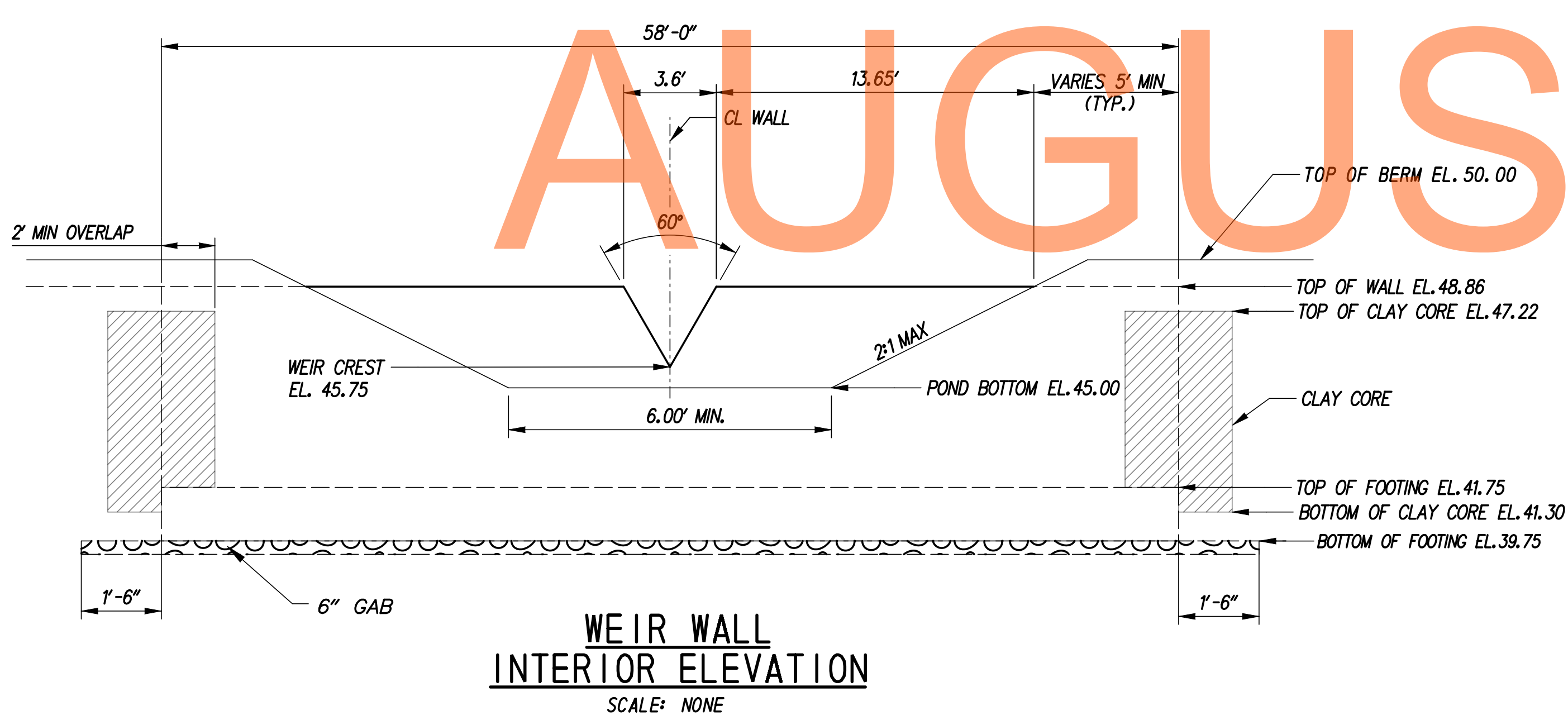
**OPENING DETAILS**  
SCALE: NONE



**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.

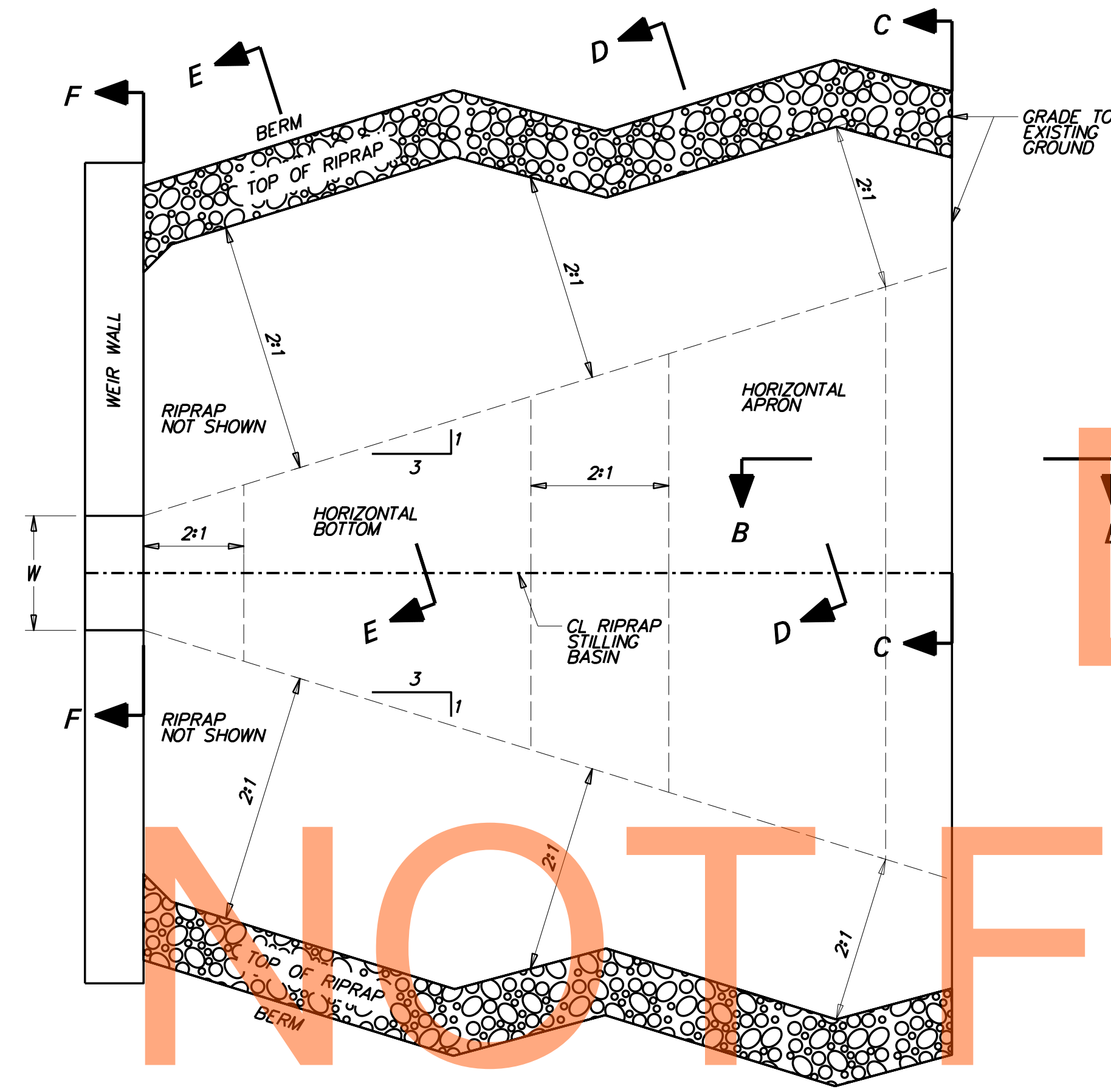
G:\60049040\_US301\CIVIL\PLANS\2A\CP\SW-10.DGN

ADDENDUMS / REVISIONS	

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

SW-10
SHEET NO.
695
TOTAL SHTS.
1256

11/13/2012 J:\BRIDGE-HIGHWAYS\9040\_Deloid\301\Civil\Plans\2A\SWM\Plan\1\SW\_1B\_06.dgn



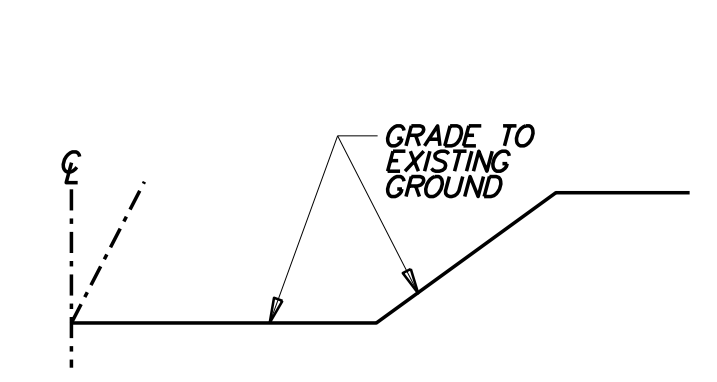
**PLAN**  
SCALE: NONE

**DATA**

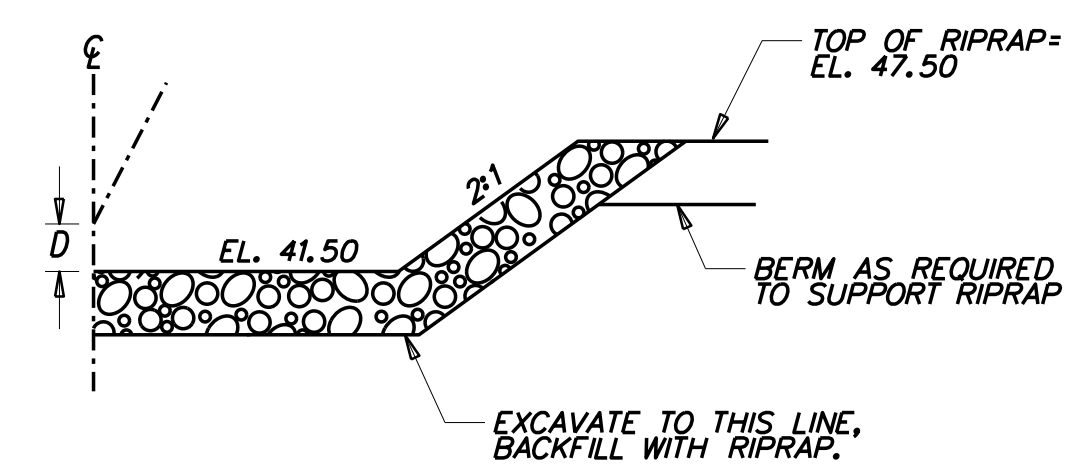
TOP OF V-NOTCH WEIR WIDTH  $W=3.59'$   
 DEPTH OF BASIN FROM WEIR CREST ( $D$ ) =  $1.50'$   
 RIPRAP SIZE (R No.) = R-5 WITH NO. 57 STONE

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

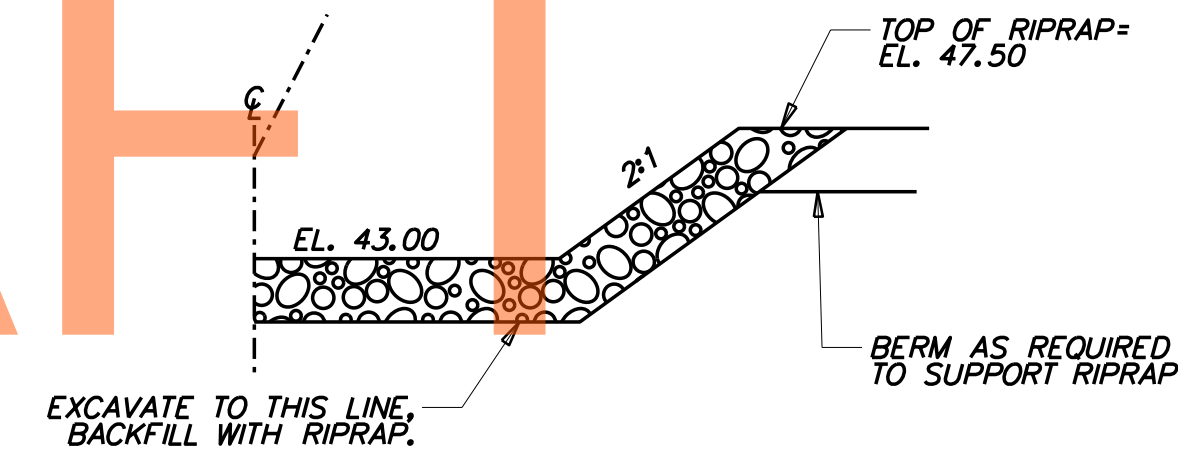
**RIPRAP STILLING BASIN**  
SCALE: NONE



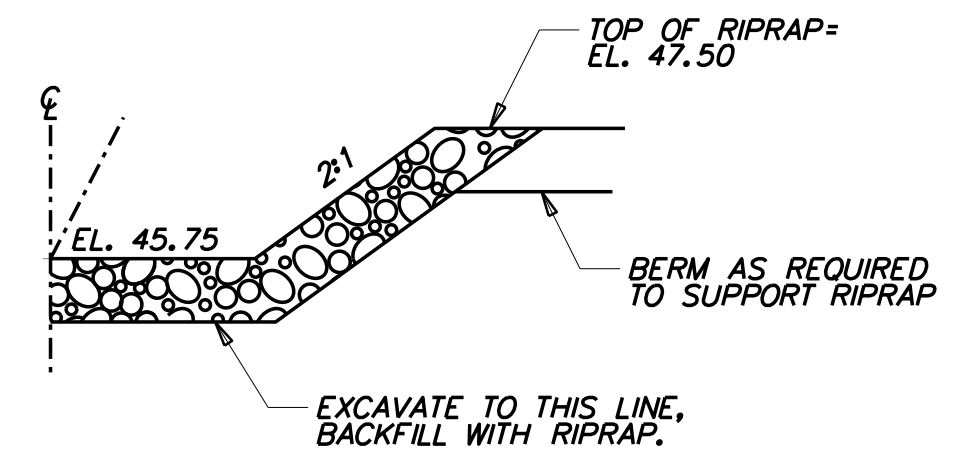
**SECTION C-C**  
SCALE: NONE



**SECTION E-E**  
SCALE: NONE

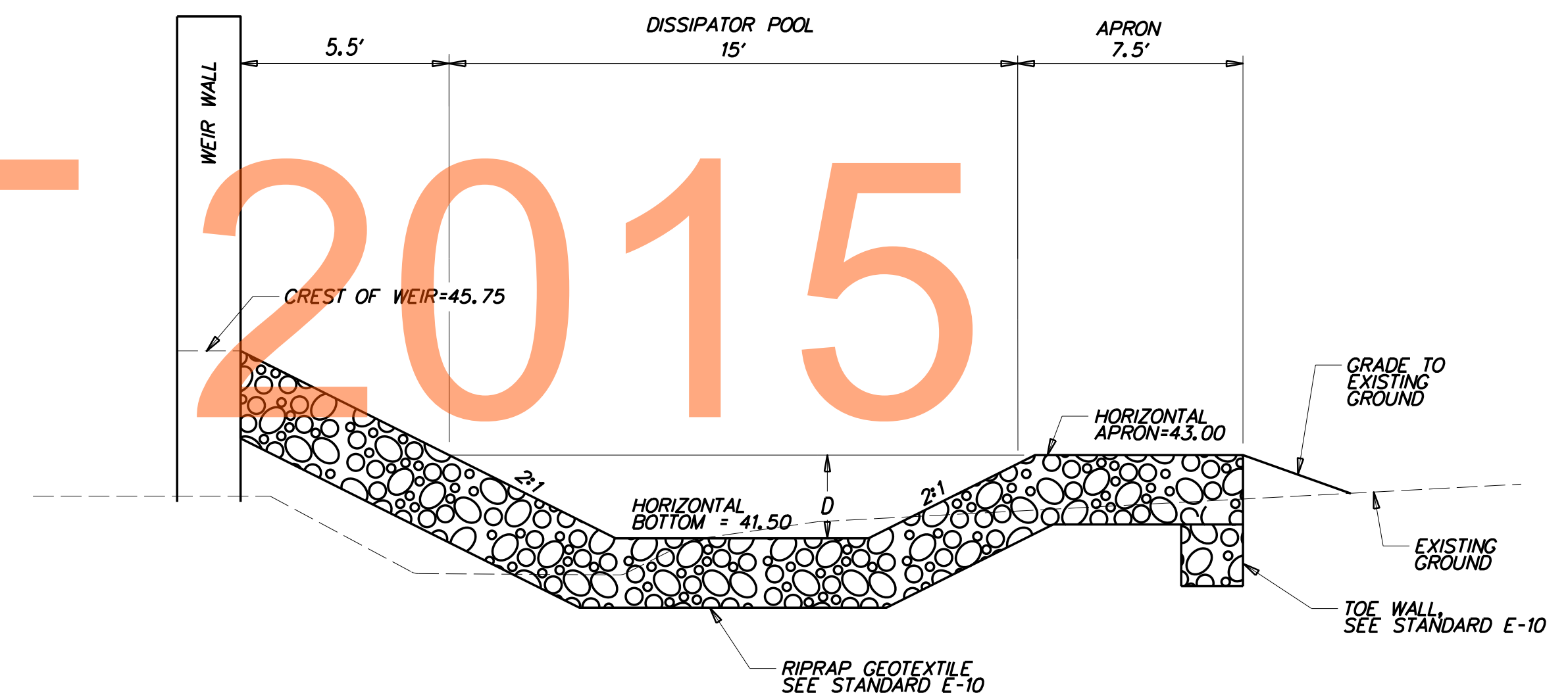


**SECTION D-D**  
SCALE: NONE



**SECTION F-F**  
SCALE: NONE

DRAFT  
NOT FOR BIDDING  
AUGUST 2015



**PROFILE THRU RIPRAP STILLING BASIN**  
SCALE: NONE

ADDENDUMS / REVISIONS	

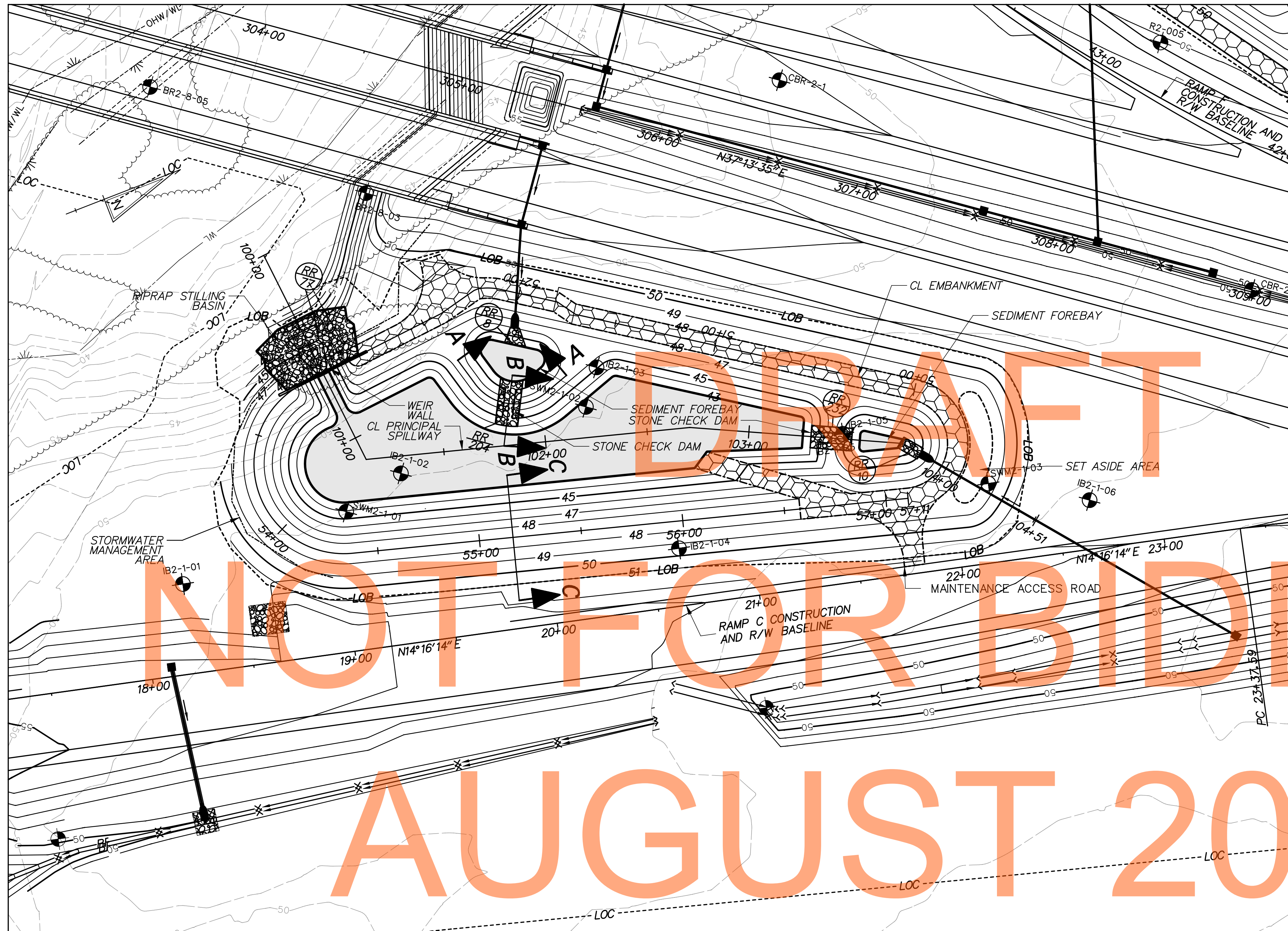
AS SHOWN

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

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER MANAGEMENT DETAILS BMP 651 (BASIN 1B)**

SW11
SHEET NO.
696
TOTAL SHTS.
1256



**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

1. 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.
2. 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, DIVERSION BERMS OR OTHER SUITABLE MEASURES SHOULD BE PLACED AROUND THE BASIN'S PERIMETER DURING ALL PHASES OF CONSTRUCTION TO DIVERT ALL RUNOFF AND SEDIMENT AWAY FROM THE BASIN. THESE DIVERSION MEASURES SHOULD NOT BE REMOVED UNTIL ALL CONSTRUCTION WITHIN THE BASIN'S DRAINAGE AREA IS COMPLETED AND THE DRAINAGE AREA STABILIZED.
3. SEE CONSTRUCTION PLANS FOR EROSION AND SEDIMENT CONTROL MEASURES.
4. 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.
5. CONSTRUCT WEIR WALL, RIPRAP ENERGY DISSIPATER AT THE 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 DUMPING.
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 BASIN EMBANKMENT AND BOTTOM WITH PERMANENT SEEDING.
8. REMOVE EROSION AND SEDIMENT CONTROLS, WATER DIVERSION PRACTICES AND FENCE UPON FINAL STABILIZATION AND APPROVAL FROM INSPECTOR.
9. 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**

PERMANENT GRASS SEEDING - WET GROUND UP TO ELEVATION 44.0  
 PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 44.0  
 PLACE TOPSOIL ABOVE BASIN BOTTOM ELEVATION 43.0

**POND QUANTITIES**

ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	8845	CY
272501	POND OUTLET STRUCTURE, 3, SPECIAL	1	EACH
302011	DELAWARE NO. 3 STONE	196	TON
302012	DELAWARE NO. 57 STONE	39	TON
712005	R-4 RIPRAP	16	SY
712006	R-5 RIPRAP	168	SY
712020	R-4 RIPRAP	34	TON
713001	GEOTEXTILES, STABILIZATION	1319	SY
713003	GEOTEXTILES, RIPRAP	289	SY
733002	TOPSOILING, 6" DEPTH	66.36	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	64.32	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	1193	SY

**PLAN - BMP 652 (BASIN 1C)**

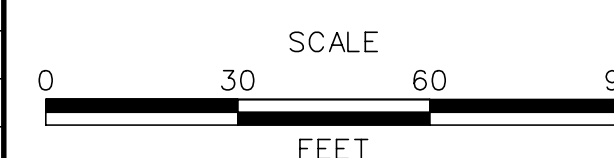
POND DESIGN SUMMARY				
DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC. FT)
QUALITY STORM (1-YR)	5.37	0.00	43.63	0.14
10 - YEAR	16.25	0.23	45.52	0.73
100 - YEAR	34.29	2.78	46.45	1.10

RIPRAP SCHEDULE		
NO.	TYPE	AREA (SY)
77	R-5	168
8	R-4	8
10	R-4	8
204	R-4	28
232	R-4	25

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

HAZARD CLASSIFICATION: CLASS A AS PER POND CODE 378  
 DRAINAGE AREA TO FACILITY: 4.50 AC  
 MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY BY INFILTRATION OF 1-YEAR STORM RUNOFF, WATER QUANTITY FOR 10 AND 100-YEAR STORMS.

ADDENDUMS / REVISIONS

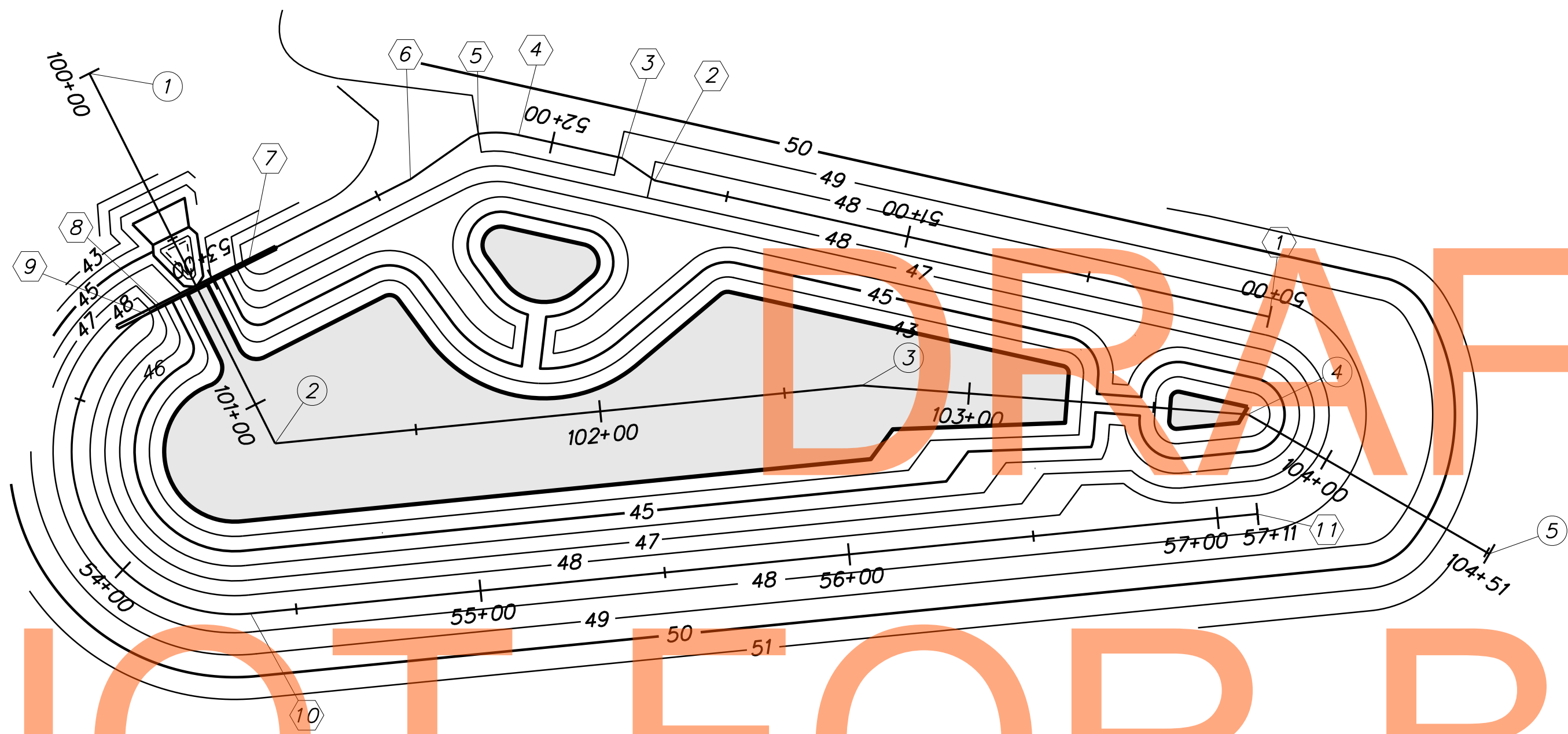
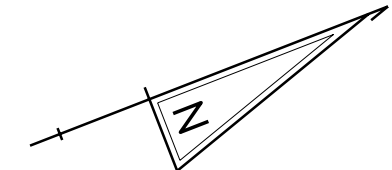


**US 301  
 LEVELS ROAD  
 TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER  
 MANAGEMENT DETAILS  
 BMP 652 (BASIN 1C)**

SW12
SHEET NO.
697
TOTAL SHTS.
1256



CL PRINCIPAL SPILLWAY		
STATION	NORTHING	EASTING
① POB STA. 100+00.00	526986.0519	562061.8086
② PI STA. 101+11.76	526994.8267	562173.2219
③ PI STA. 102+71.01	527147.5045	562218.5151
④ PI STA. 103+75.54	527241.0862	562265.0887
⑤ POE STA. 104+50.79	527287.2504	562324.5146

CL EMBANKMENT		
STATION	NORTHING	EASTING
① POB STA. 50+00.00	527256.3707	562242.8452
② PI STA. 51+69.97	527116.5688	562146.1708
③ PI STA. 51+80.74	527110.6188	562137.1932
④ PC STA. 52+09.29	527087.1350	562120.9539
⑤ PT STA. 52+20.23	527074.9498	562116.5517
⑥ PI STA. 52+40.08	527055.5989	562120.9647
⑦ PI STA. 52+89.03	527006.8173	562125.0151
⑧ PC STA. 53+15.67	526980.2681	562127.1932
⑨ PI STA. 53+30.33	526975.3695	562127.4247
⑩ PT STA. 54+37.58	526971.3798	562213.2265
⑪ POE STA. 57+10.82	527233.3350	562290.9377

DRAFT

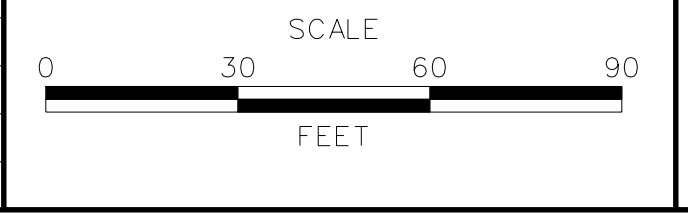
NOT FOR BIDDING

AUGUST 2015

STAKEOUT - BMP 652 (BASIN 1C)

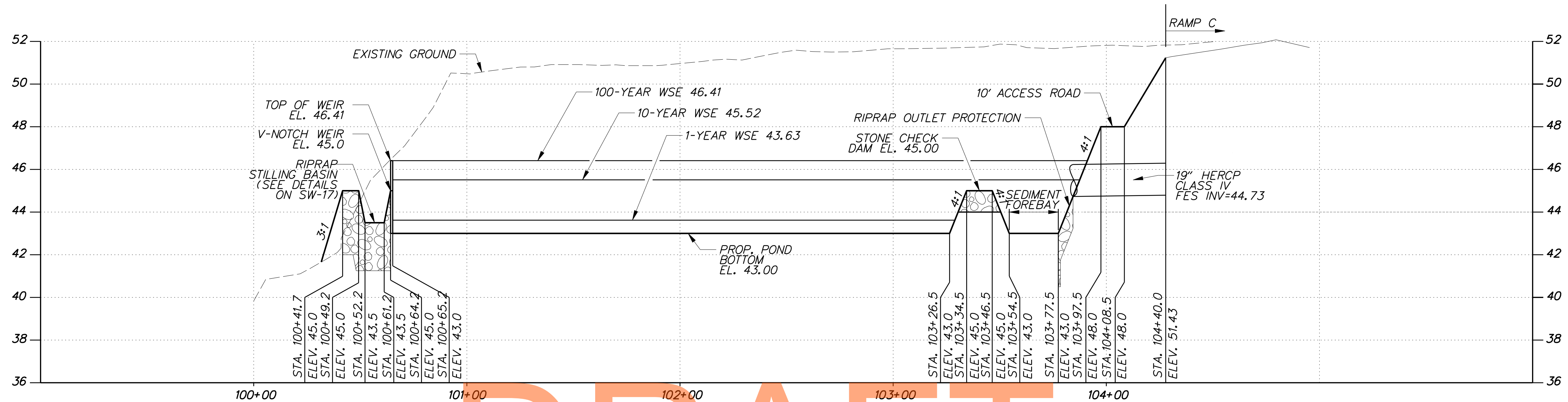
11/14/2012 J:\BRIDGE-HIGHWAYS\9040\_Deidol\_301\Civil\Plans\2A\SWM\Pond\_1\SW\_1C\_02.dgn

ADDENDUMS / REVISIONS	

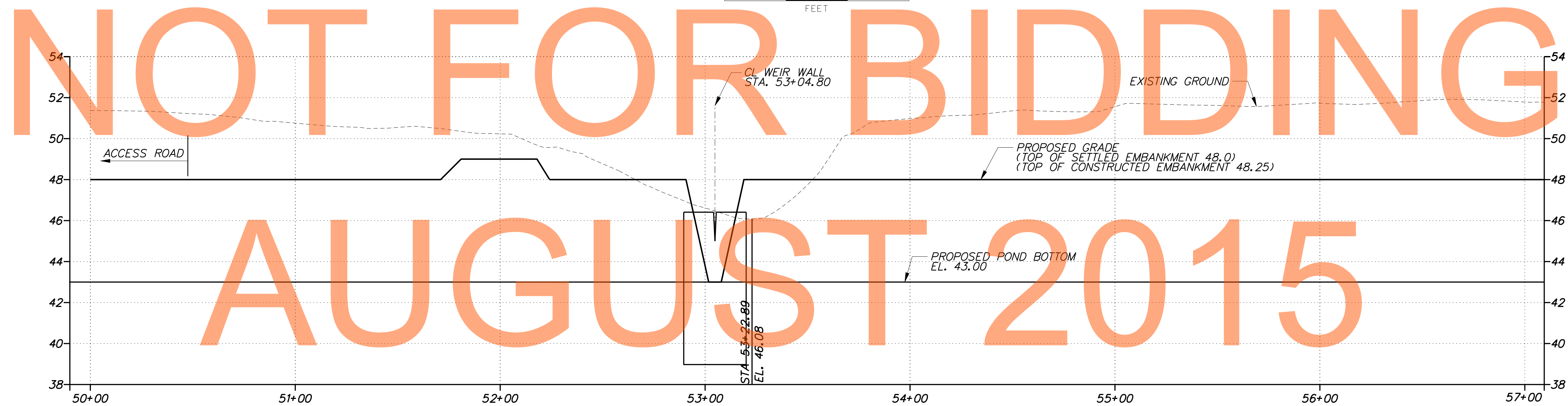
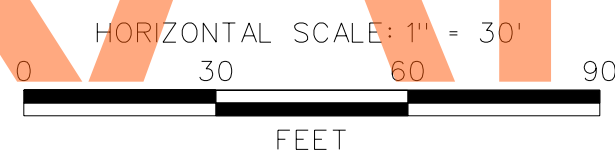


CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: BAS
	CHECKED BY: JJW

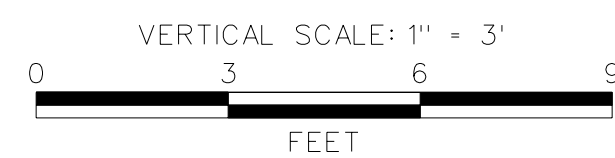
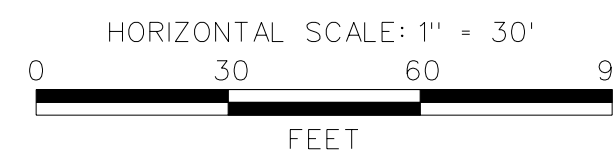
SW13
SHEET NO. 698
TOTAL SHTS. 1256



SPILLWAY PROFILE - BMP 652 (BASIN 1C)



EMBANKMENT PROFILE FOR BMP 652 (BASIN 1C)



DRAFT

NOT FOR BIDDING

AUGUST 2015

11/13/2012 J:\BRIDGE-HIGHWAYS\9040\_Delidol\_301\Civil\Plans\2A\SWM\Pond 1\SW\_1C\_03.dgn



ADDENDUMS / REVISIONS	

AS SHOWN

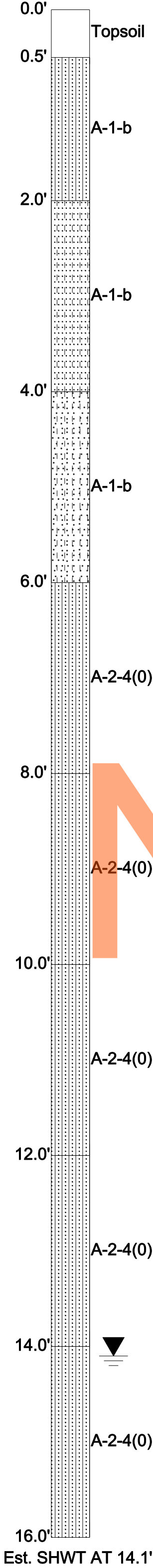
**US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER MANAGEMENT DETAILS BMP 652 (BASIN 1C)**

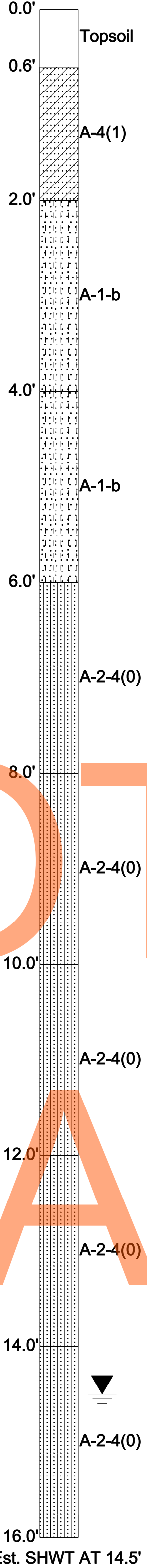
SW14
SHEET NO.
699
TOTAL SHTS.
1256

SWM2-1-01  
STA. 305+00  
220' RIGHT  
ELEV. 50.68



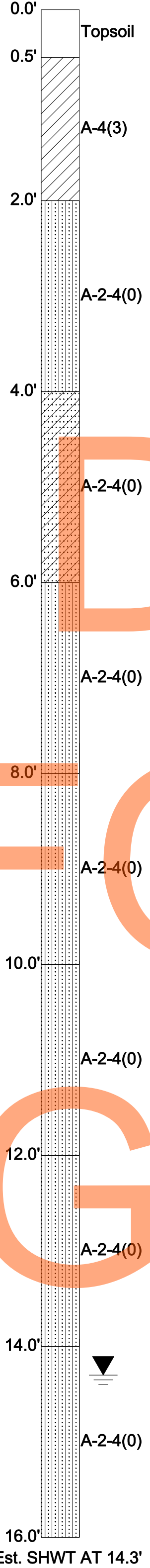
Est. SHWT AT 14.1'

SWM2-1-02  
STA. 306+00  
140' RIGHT  
ELEV. 50.85

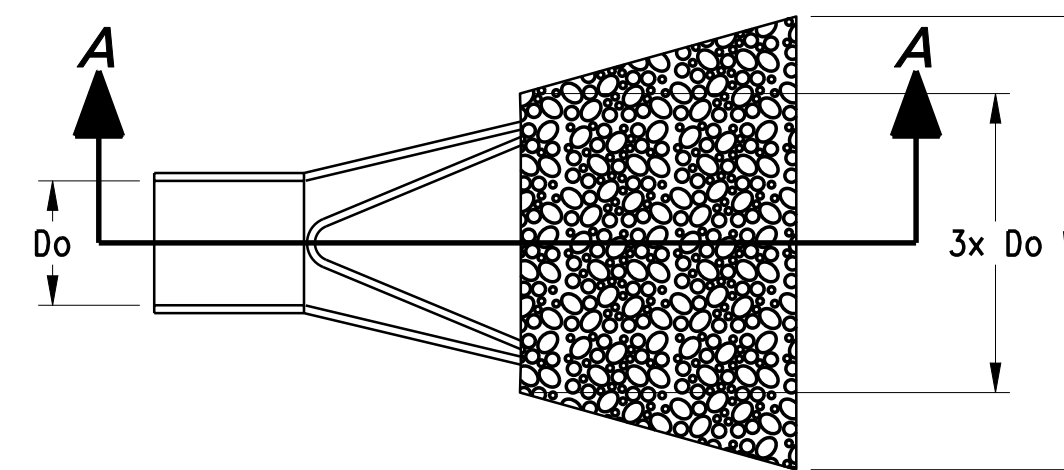


Est. SHWT AT 14.5'

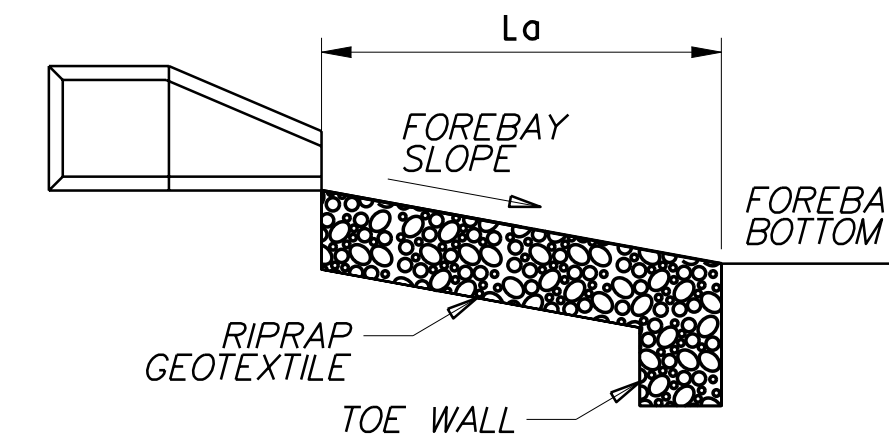
SWM2-1-03  
STA. 308+00  
125' RIGHT  
ELEV. 51.68



Est. SHWT AT 14.3'



PLAN  
SCALE: NONE



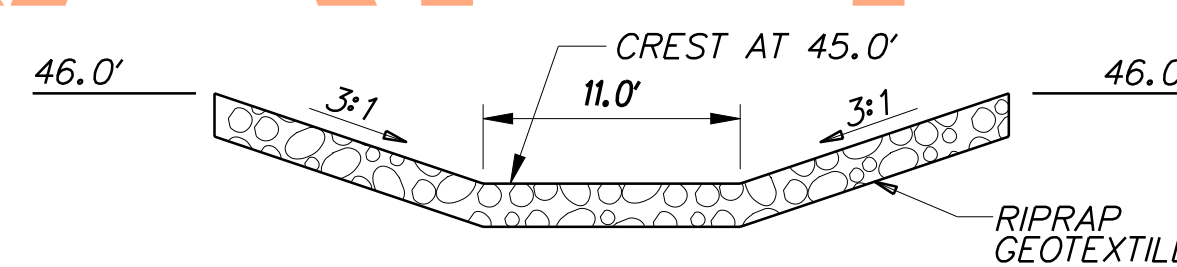
SECTION A-A  
SCALE: NONE

- NOTES:
1. RIPRAP ITEM 712005
  2. GEOTEXTILES, RIPRAP ITEM 713003
  3. DELEWARE 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

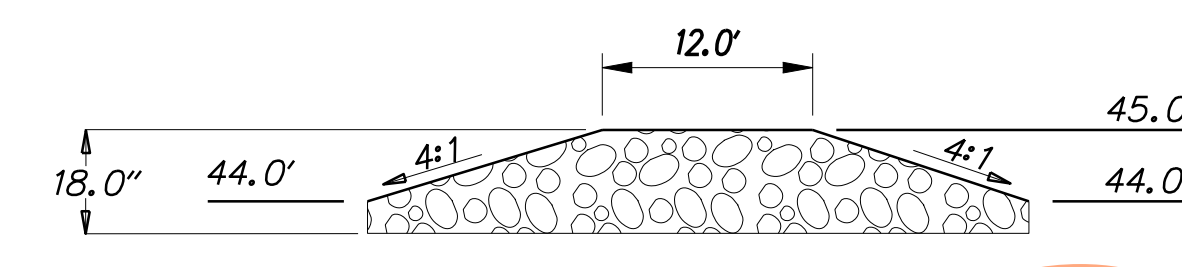
DATA				
WEIR TOP WIDTH (Do) =	xxx			
PIPE DIAMETER (Do)				
APRON LENGTH (La)				
APRON WIDTH (W)				
RIPRAP SIZE (R No.)				

FES ID	Do	La	W	R No.
10	1.5'	11.0'	6.0'	R-4
8	1.5'	9.0'	11.0'	R-4

FOREBAY RIPRAP OUTLET PROTECTION  
SCALE: NONE



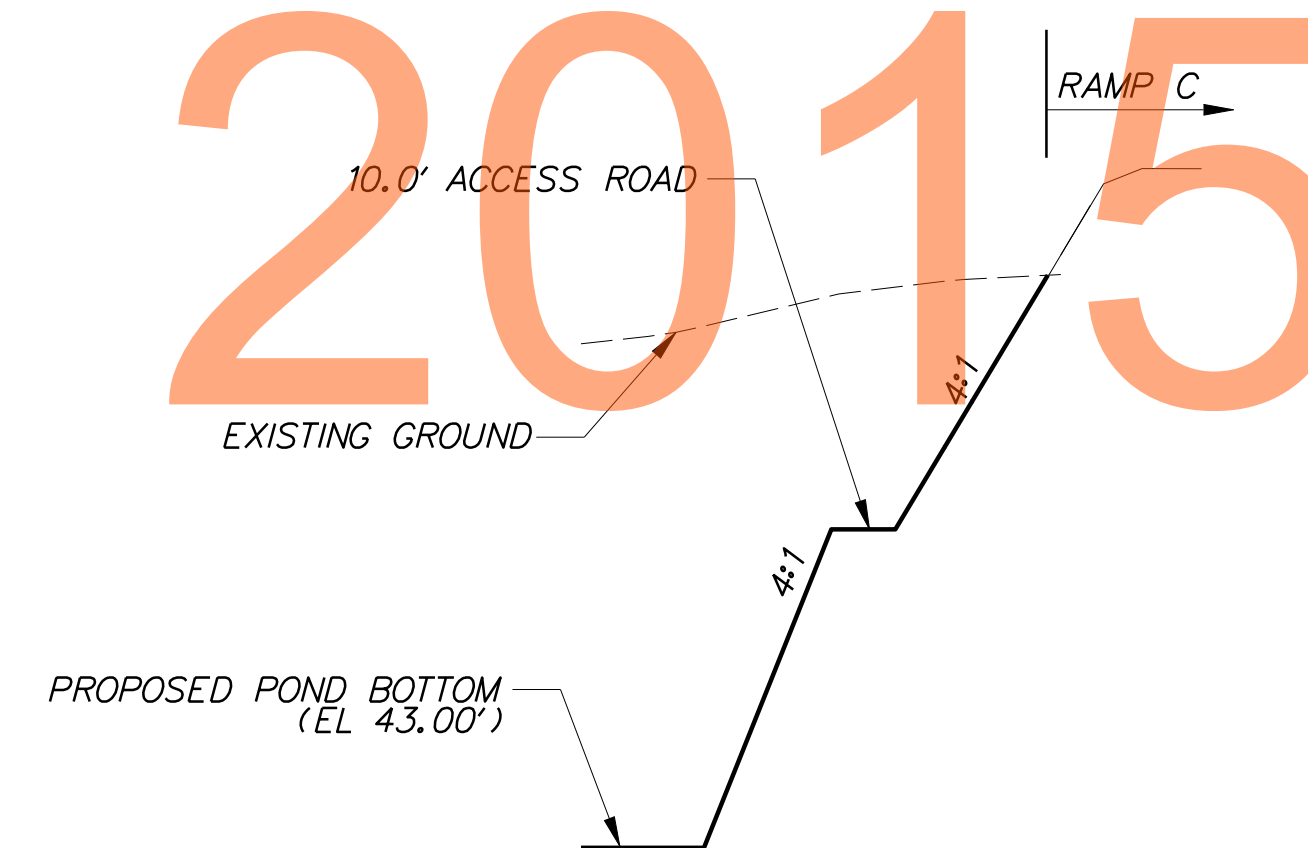
SECTION A-A FROM BASIN PLAN  
SCALE: NONE



SECTION B-B FROM BASIN PLAN  
SCALE: NONE

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

STONE CHECK DAM  
SCALE: NONE



SECTION C-C FROM BASIN PLAN  
SCALE: NONE

DRAFT  
NOT FOR BIDDING  
AUGUST 2015

11/13/2012 J:\BRIDGE-HIGHWAYS\9040\_Deidol\_301\Civil\Plans\2A\SWM\Fond 1\SW\_1C\_04.dgn

ADDENDUMS / REVISIONS

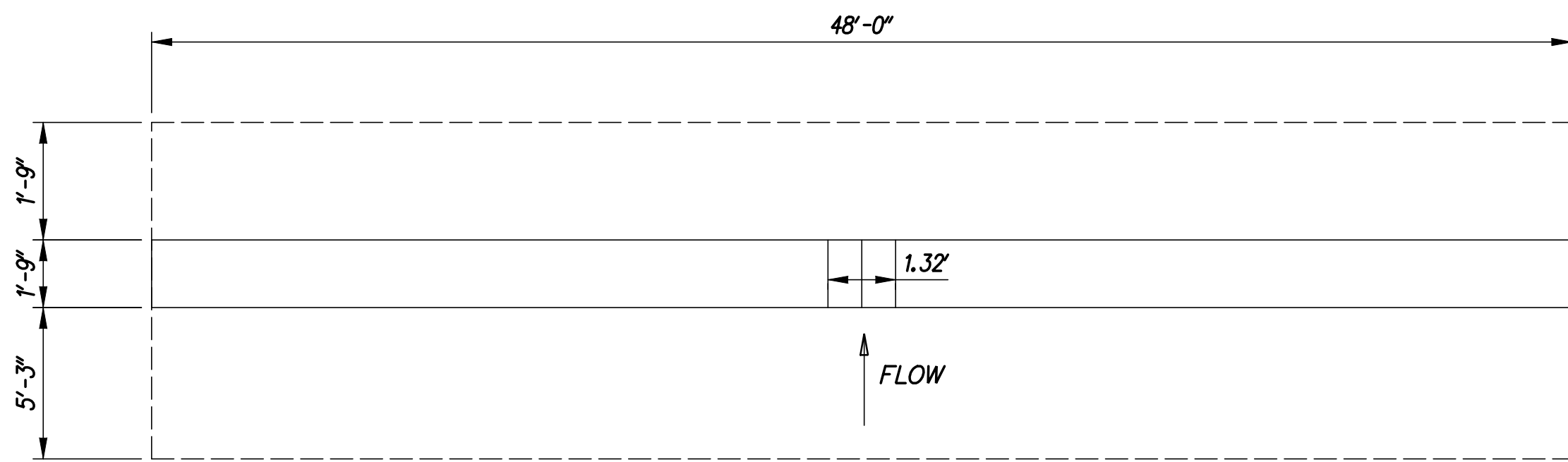
AS SHOWN

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

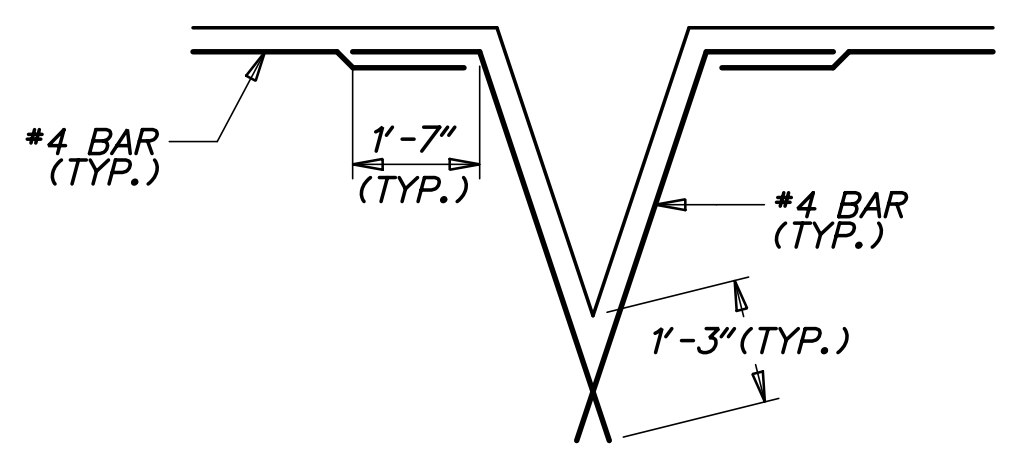
CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER MANAGEMENT DETAILS BMP 652 (BASIN 1C)**

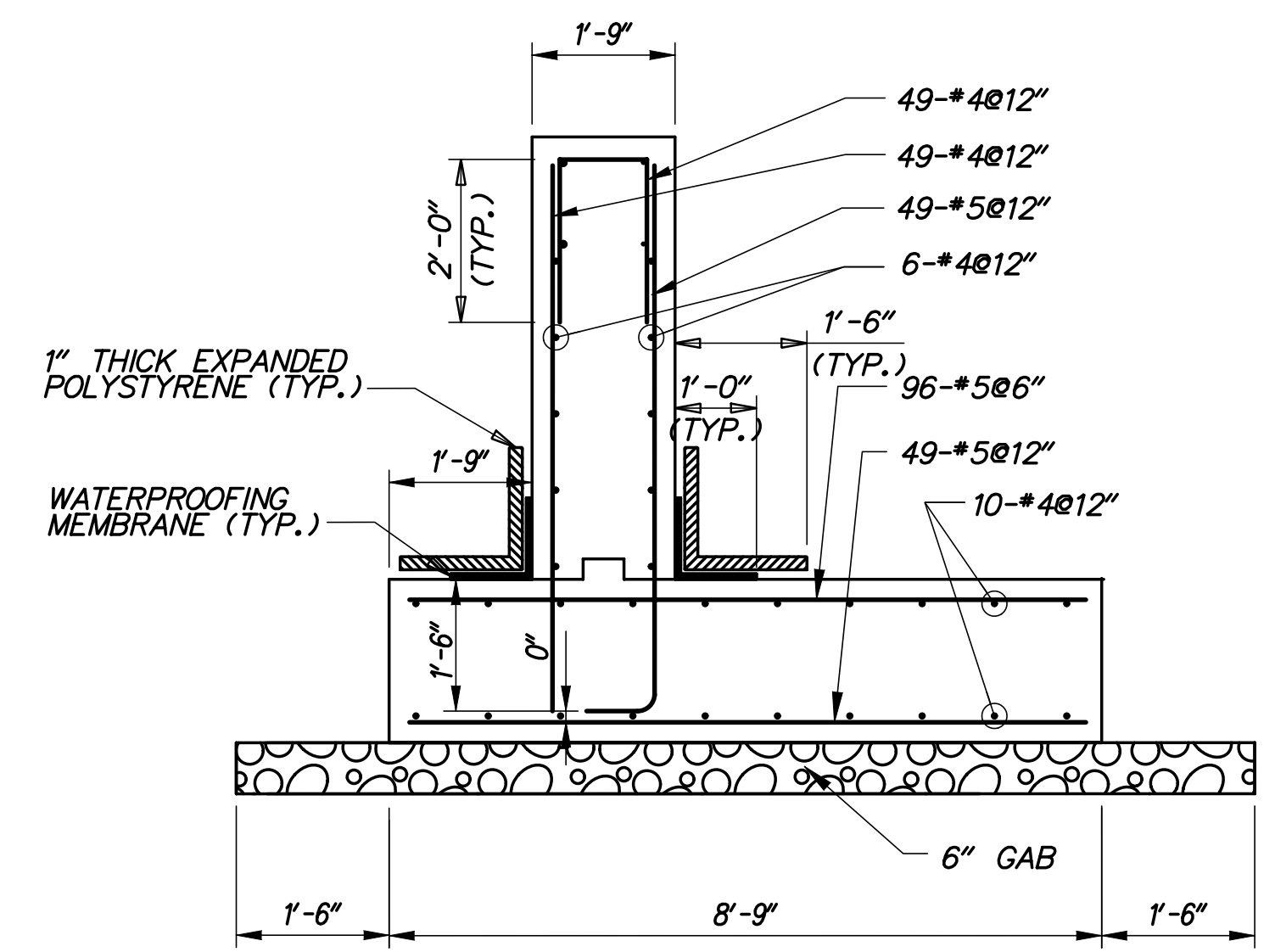
SW15
SHEET NO.
700
TOTAL SHTS.
1256



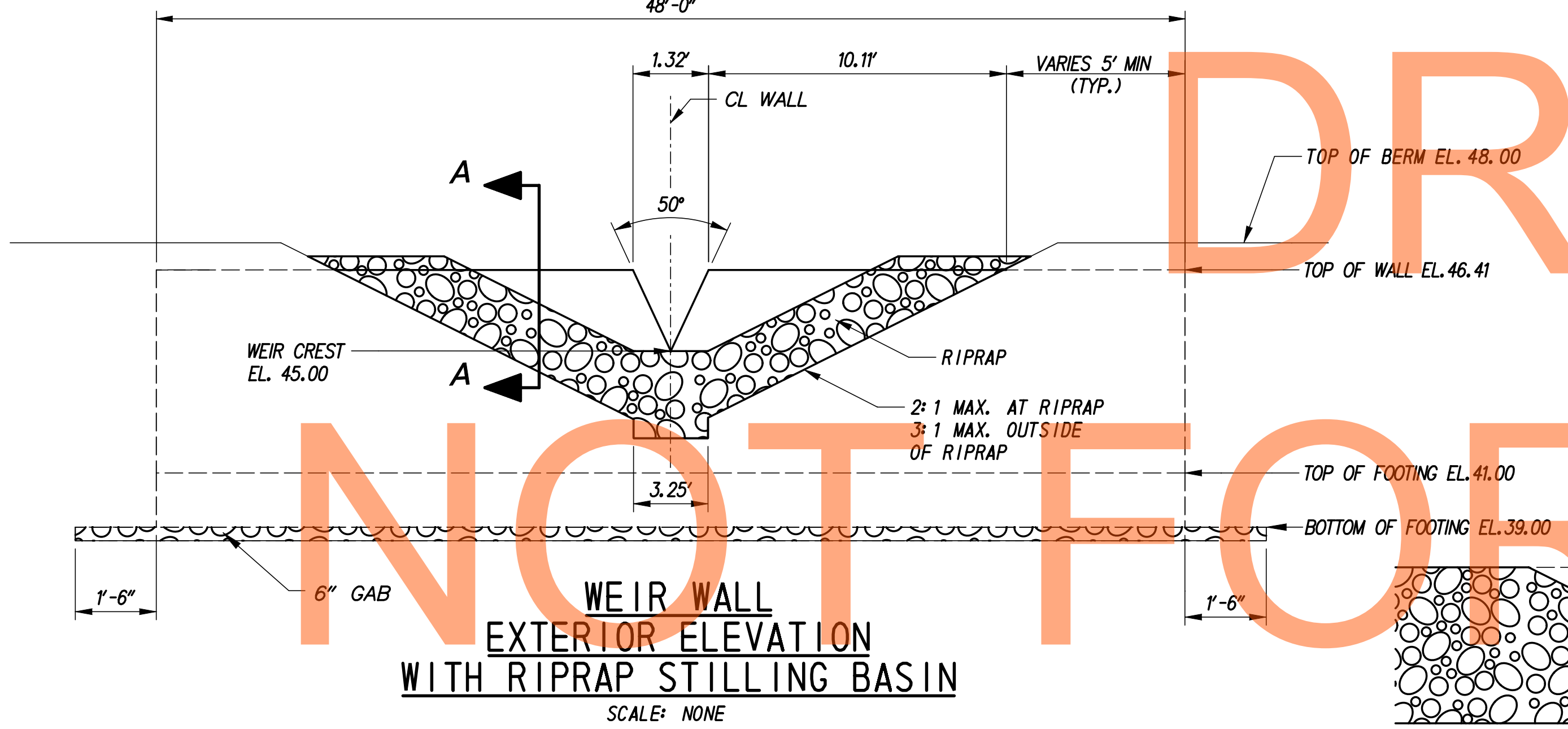
**WEIR WALL PLAN**  
SCALE: NONE



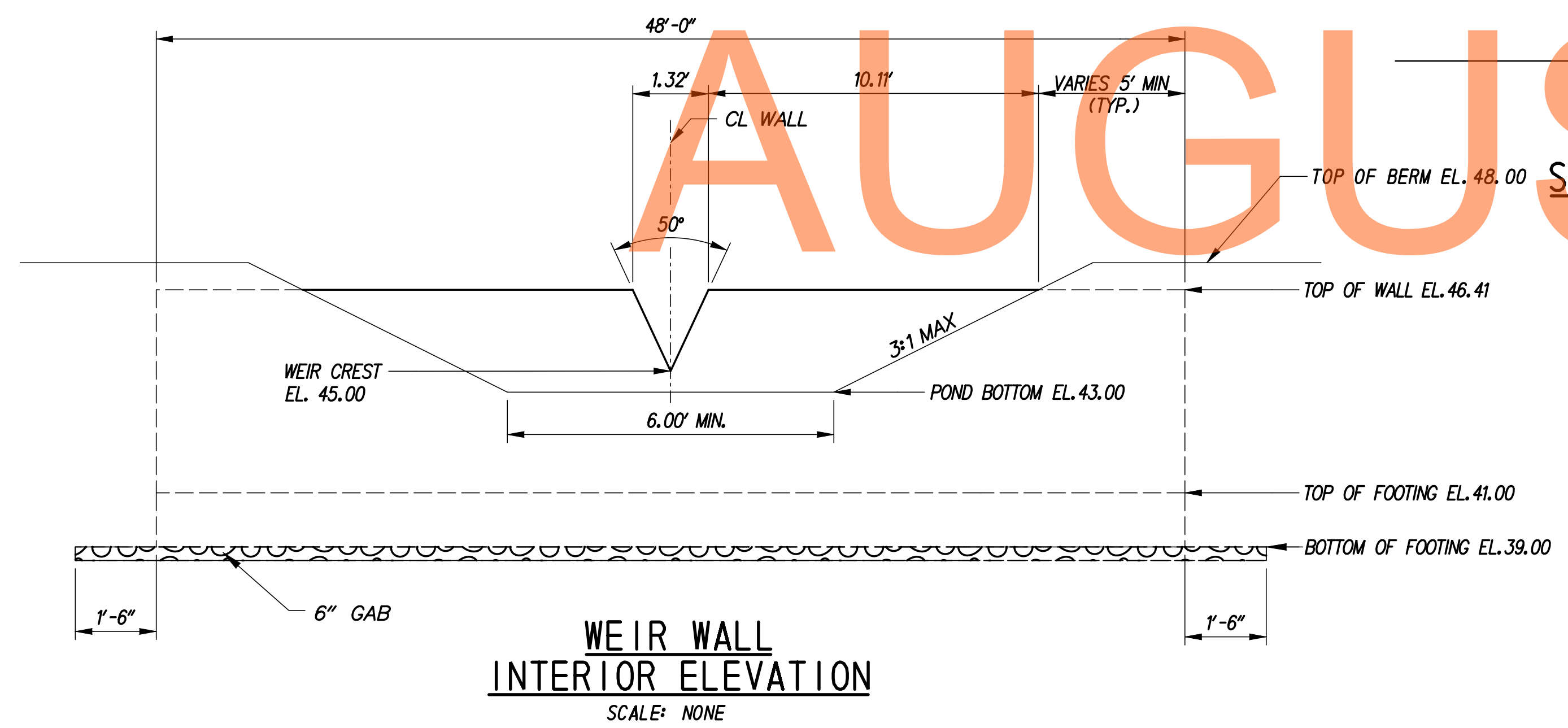
**OPENING DETAILS**  
SCALE: NONE



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



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



**WEIR WALL INTERIOR ELEVATION**  
SCALE: NONE

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

DRAFT

NOT FOR BIDDING

AUGUST 2015

**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.  
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.
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.

G:\60049040\_US301\CIVIL\PLANS\2A.CP\SW-16.DGN

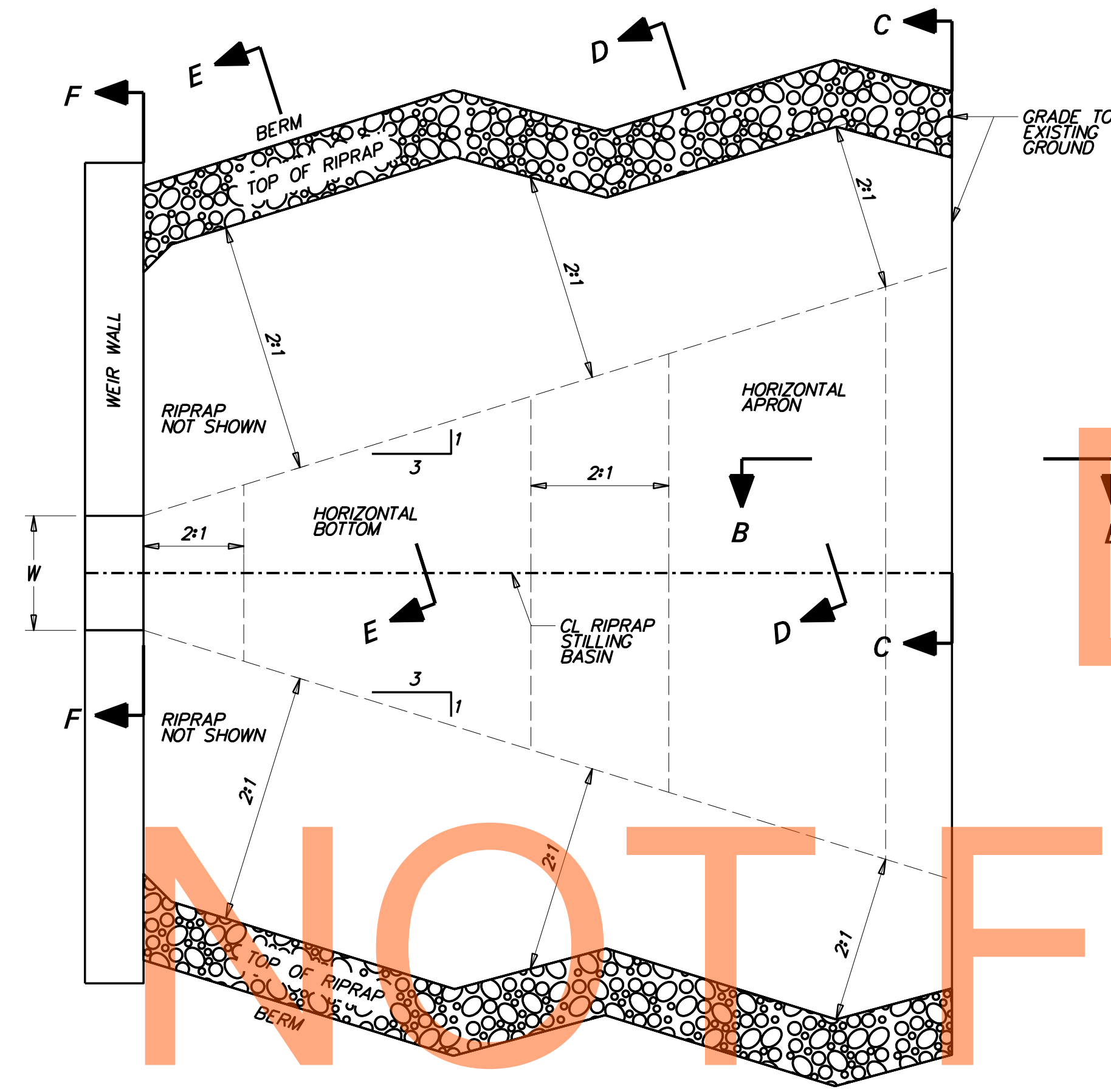
ADDENDUMS / REVISIONS	

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

SW-16
SHEET NO.
701
TOTAL SHTS.
1256



11/13/2012 10:58:00 AM J:\BRIDGE\HIGHWAYS\9040\_Deloid\301\Civil\Plans\2A\SWM\Plan\17.SW\_1C\_06.dgn

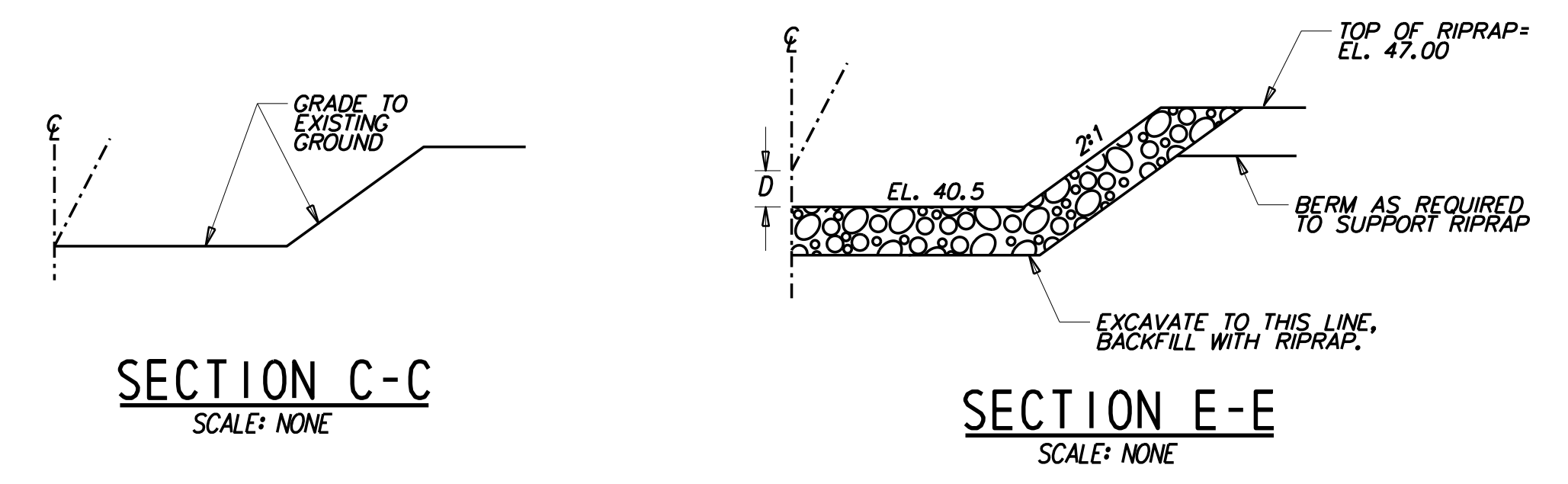


**PLAN**  
SCALE: NONE

**DATA**

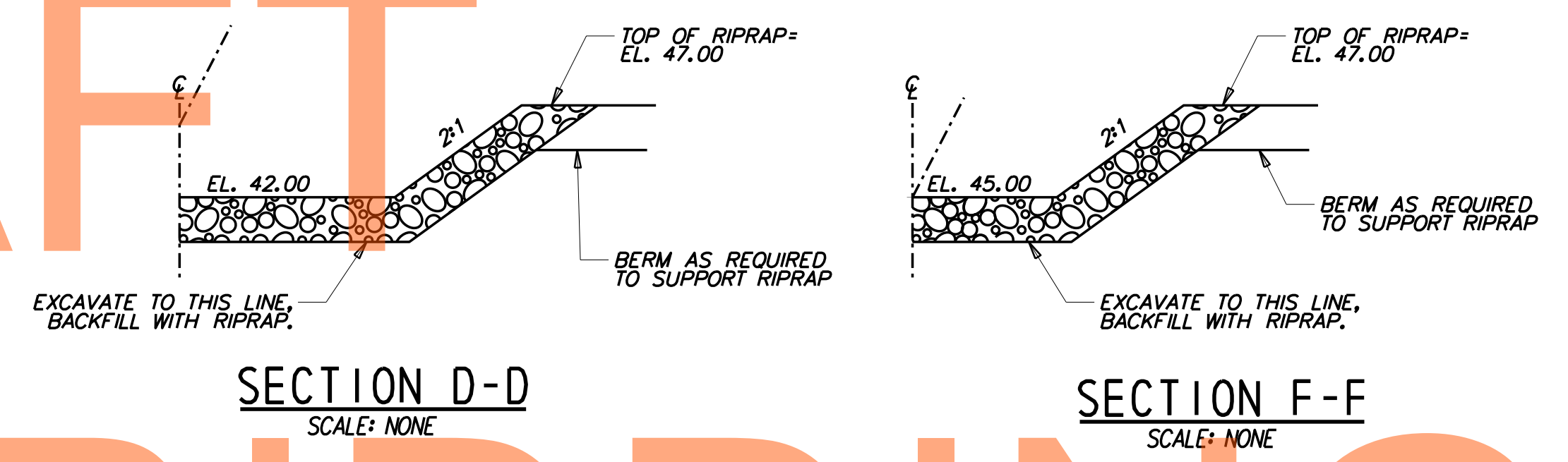
TOP OF V-NOTCH WEIR WIDTH  $W=1.32'$   
 DEPTH OF BASIN FROM WEIR CREST ( $D$ ) =  $1.50'$   
 RIPRAP SIZE (R No.) = R-5 WITH NO. 57 STONE

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



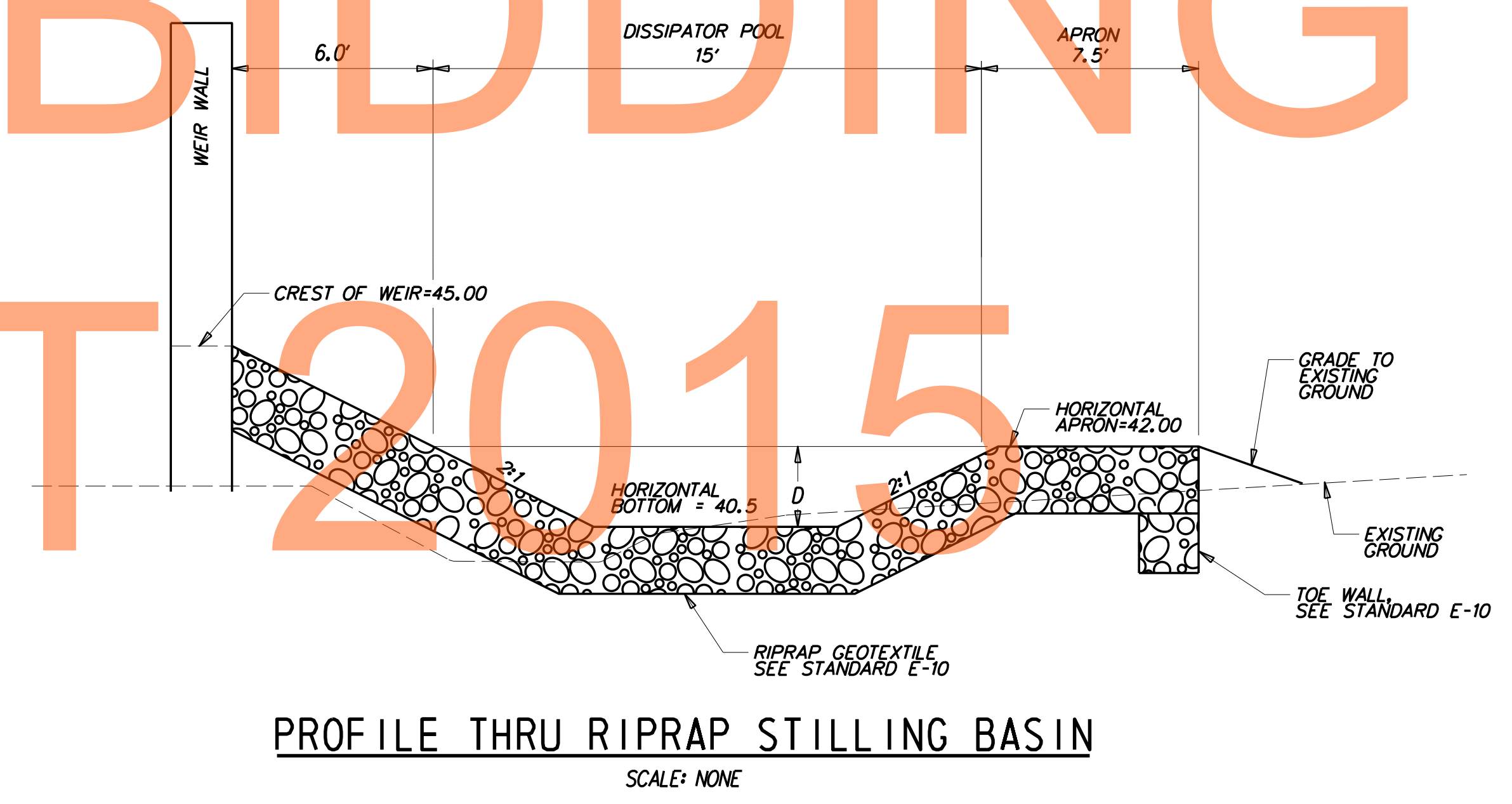
**SECTION C-C**  
SCALE: NONE

**SECTION E-E**  
SCALE: NONE



**SECTION D-D**  
SCALE: NONE

**SECTION F-F**  
SCALE: NONE



**PROFILE THRU RIPRAP STILLING BASIN**  
SCALE: NONE

**RIPRAP STILLING BASIN**  
SCALE: NONE

DRAFT  
NOT FOR BIDDING  
AUGUST 2015

ADDENDUMS / REVISIONS	

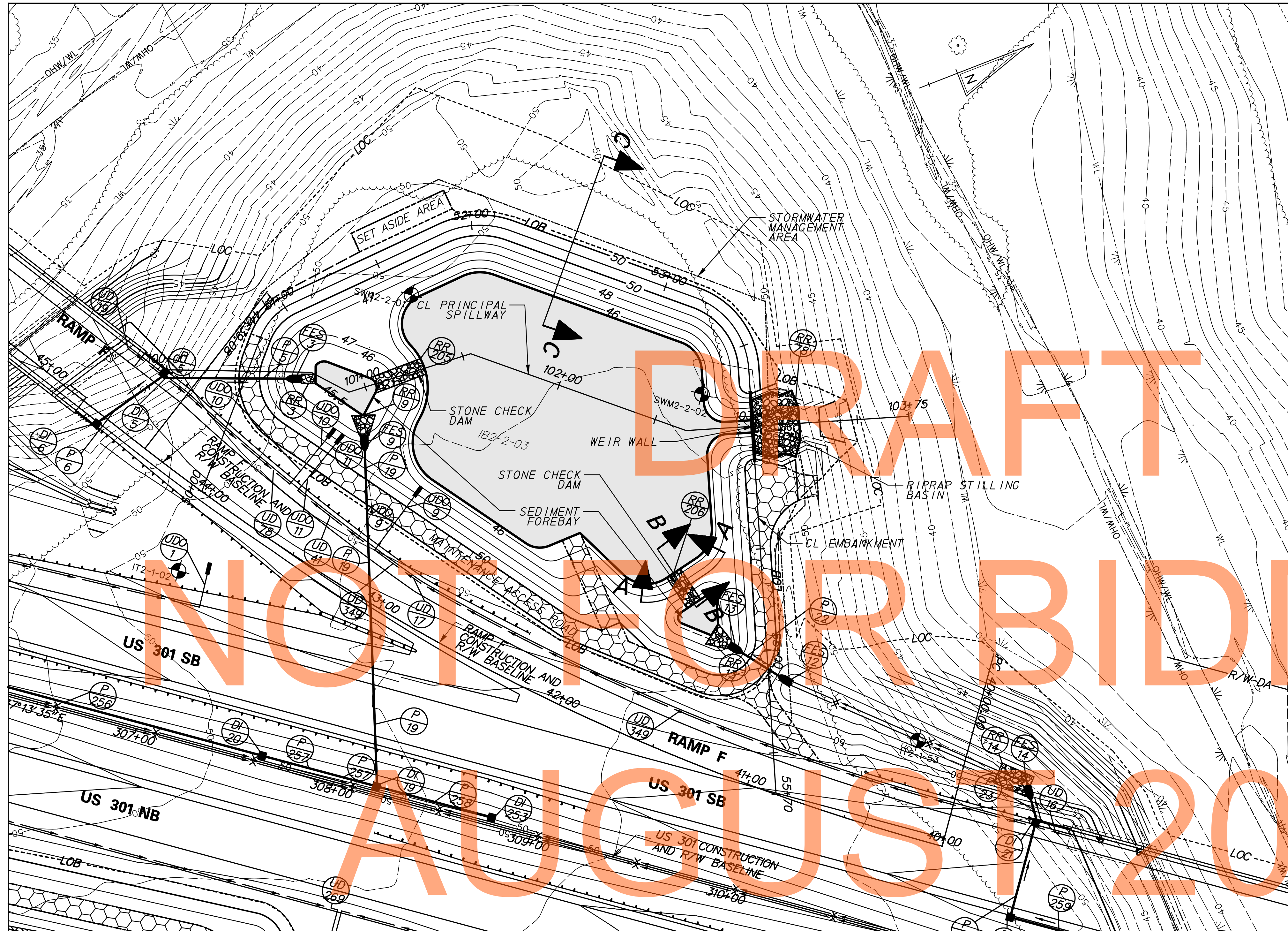
AS SHOWN

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

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER  
MANAGEMENT DETAILS  
BMP 652 (BASIN 1C)**

SW17
SHEET NO.
702
TOTAL SHTS.
1256



**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

1. 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.
2. 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, DIVERSION BERMS OR OTHER SUITABLE MEASURES SHOULD BE PLACED AROUND THE BASIN'S PERIMETER DURING ALL PHASES OF CONSTRUCTION TO DIVERT ALL RUNOFF AND SEDIMENT AWAY FROM THE BASIN. THESE DIVERSION MEASURES SHOULD NOT BE REMOVED UNTIL ALL CONSTRUCTION WITHIN THE BASIN'S DRAINAGE AREA IS COMPLETED AND THE DRAINAGE AREA STABILIZED.
3. SEE CONSTRUCTION PLANS FOR EROSION AND SEDIMENT CONTROL MEASURES.
4. 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.
5. CONSTRUCT WEIR WALL, RIPRAP ENERGY DISSIPATER AT THE 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 DUMPING.
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 BASIN EMBANKMENT AND BOTTOM WITH PERMANENT SEEDING.
8. REMOVE EROSION AND SEDIMENT CONTROLS, WATER DIVERSION PRACTICES AND FENCE UPON FINAL STABILIZATION AND APPROVAL FROM INSPECTOR.
9. 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**

PERMANENT GRASS SEEDING - WET GROUND UP TO ELEVATION 46.5  
 PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 46.5  
 PLACE TOPSOIL ABOVE BASIN BOTTOM ELEVATION 45.5

**POND QUANTITIES**

ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	6709	CY
272501	POND OUTLET STRUCTURE, 4, SPECIAL	1	EACH
302011	DELAWARE NO. 3 STONE	198	TON
302012	DELAWARE NO. 57 STONE	21	TON
712005	R-4 RIPRAP	24	SY
712006	R-5 RIPRAP	89	SY
712020	R-4 RIPRAP	28	TON
713001	GEOTEXTILES, STABILIZATION	1336	SY
713003	GEOTEXTILES, RIPRAP	197	SY
733002	TOPSOILING, 6" DEPTH	1090	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	3727	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	2097	SY

**PLAN - BMP 658 (BASIN 2A)**

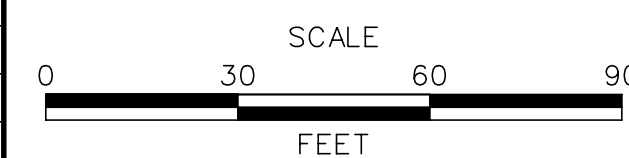
POND DESIGN SUMMARY				
DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC. FT)
QUALITY STORM (1-YR)	4.25	0.00	45.72	0.09
10 - YEAR	12.44	0.19	46.65	0.53
100 - YEAR	26.36	1.22	47.36	0.91

RIPRAP SCHEDULE		
NO.	TYPE	AREA (SY)
78	R-5	89
3	R-4	4
9	R-4	10
13	R-4	10
205	R-4	23
206	R-4	16

HAZARD CLASSIFICATION: CLASS A AS PER POND CODE 378  
 DRAINAGE AREA TO FACILITY: 3.42 AC  
 MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY BY INFILTRATION OF 1-YEAR STORM RUNOFF, WATER QUANTITY FOR 10 AND 100-YEAR STORMS.

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

ADDENDUMS / REVISIONS

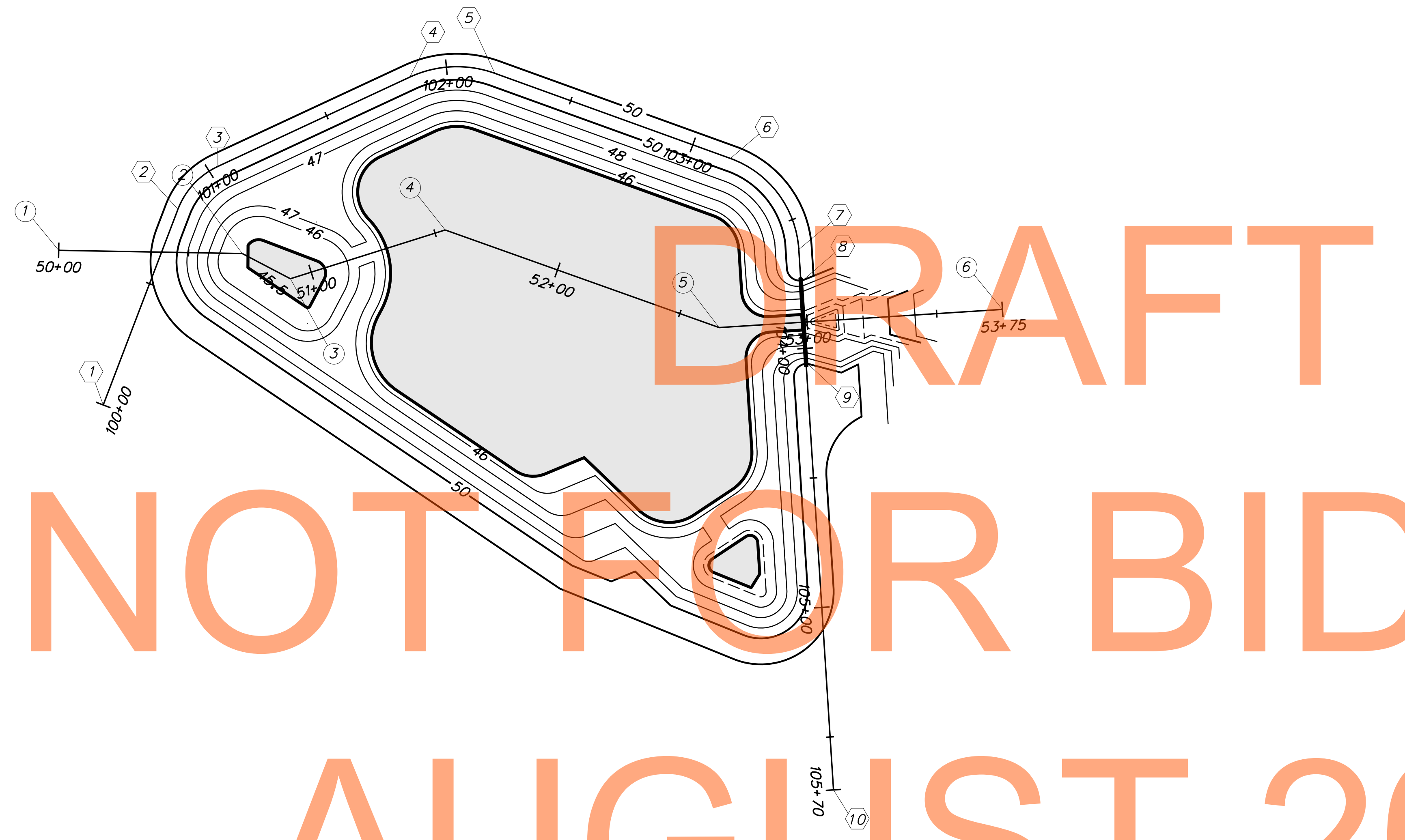


**US 301  
 LEVELS ROAD  
 TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER  
 MANAGEMENT DETAILS  
 BMP 658 (BASIN 2A)**

SW18
SHEET NO.
703
TOTAL SHTS.
1256



CL PRINCIPAL SPILLWAY		
STATION	NORTHING	EASTING
① POB STA. 50+00.00	527348.6533	561982.0144
② PI STA. 50+70.70	527413.6505	562009.8268
③ PI STA. 50+91.60	527427.1321	562025.7976
④ PI STA. 51+54.10	527489.4233	562030.8824
⑤ PI STA. 52+66.09	527572.9356	562105.5009
⑥ POE STA. 53+75.36	527676.5659	562140.1567

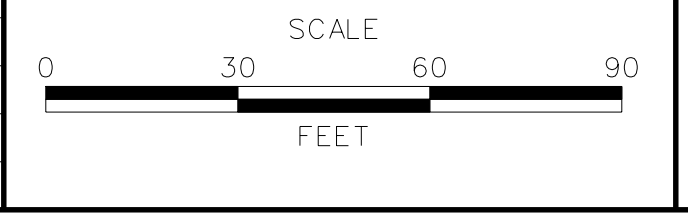
CL EMBANKMENT		
STATION	NORTHING	EASTING
① POB STA. 100+00.00	527342.0585	562043.6531
② PC STA. 100+80.69	527397.1441	561984.6856
③ PT STA. 101+03.81	527417.5958	561975.2010
④ PC STA. 101+85.31	527499.0030	561971.2052
⑤ PT STA. 102+18.97	527529.9054	561982.2178
⑥ PC STA. 103+15.41	527601.5283	562046.7955
⑦ PT STA. 103+61.80	527612.6779	562089.1892
⑧ PI STA. 103+74.39	527608.6837	562101.1330
⑨ PI STA. 104+05.35	527598.8646	562130.4947
⑩ POE STA. 105+70.43	527546.5086	562287.0531

DRAFT  
NOT FOR BIDDING  
AUGUST 2015

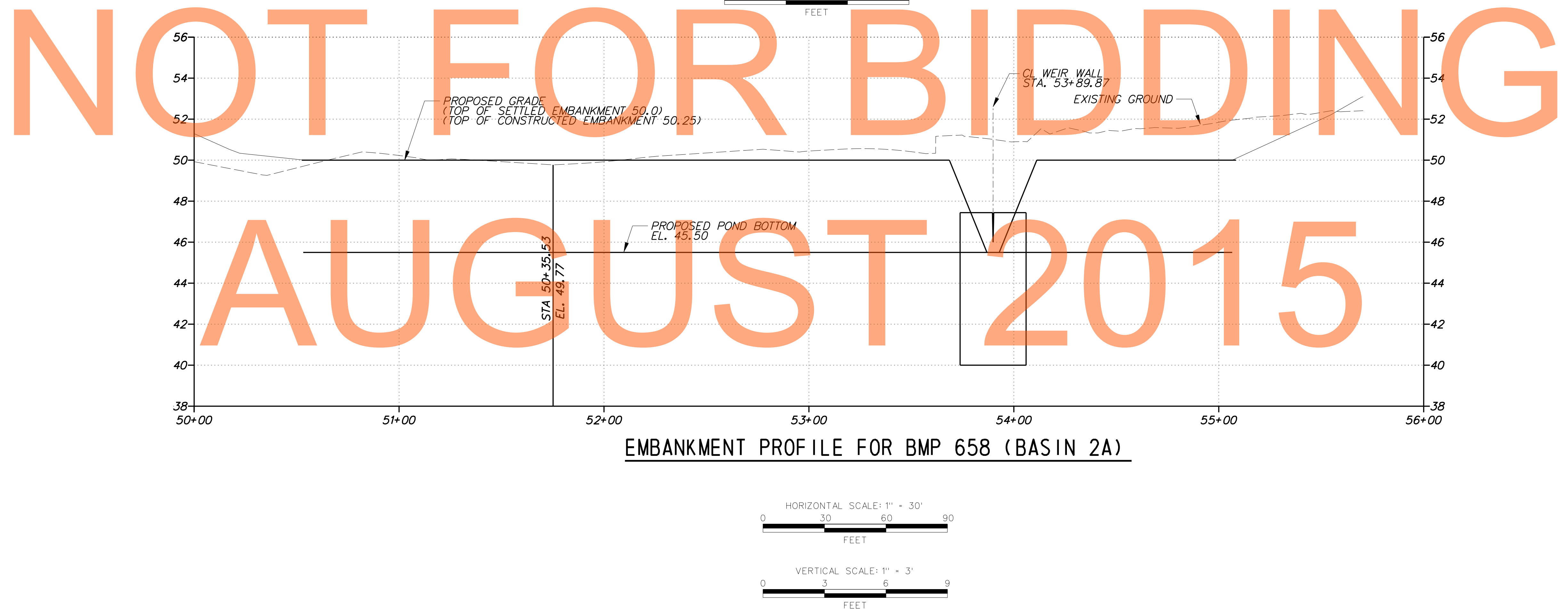
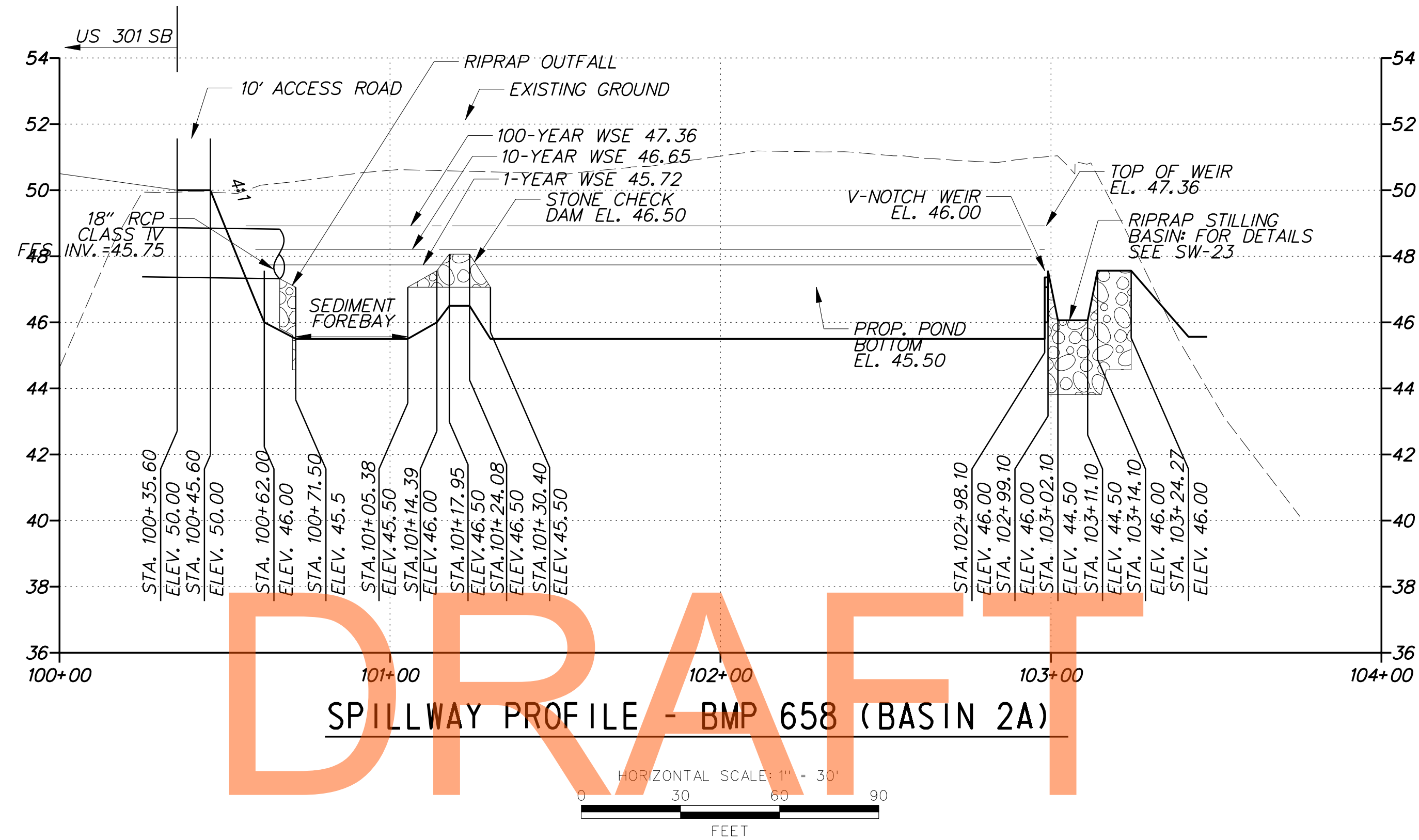
STAKEOUT - BMP 658 (BASIN 2A)

11/14/2012 J:\BRIDGE-HIGHWAYS\9040\_Deidol\301\Civil\Plans\2A\SWM\Pond 2\SW\_2A\_02.dgn

ADDENDUMS / REVISIONS



CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: BAS
	CHECKED BY: JJW



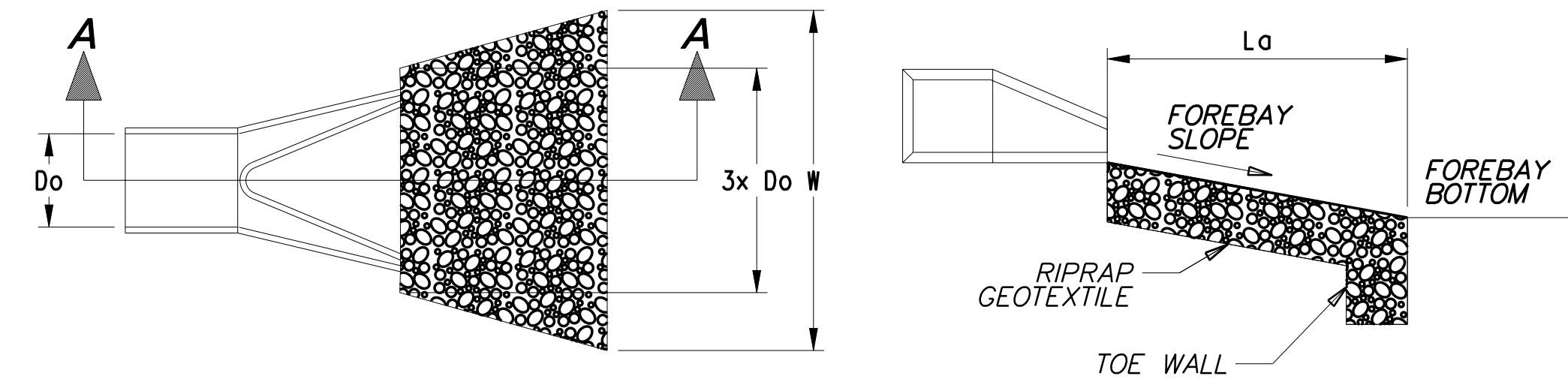
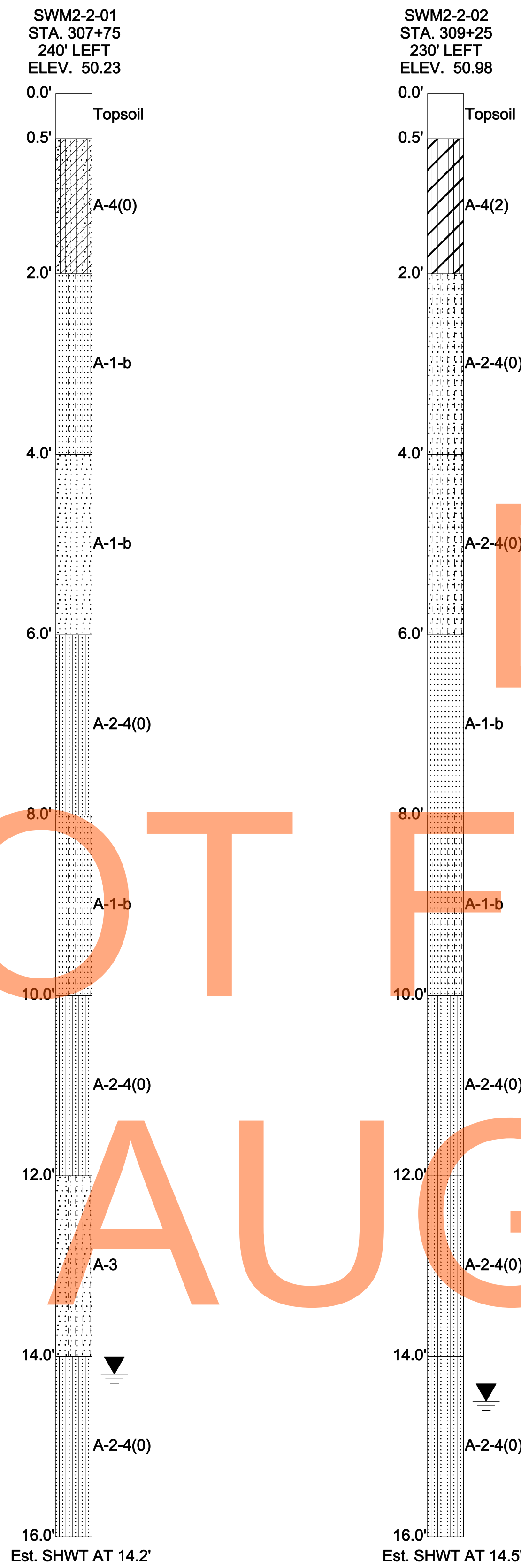
DRAFT

NOT FOR BIDDING

AUGUST 2015

11/13/2012 J:\BRIDGE-HIGHWAYS\9040\_Deidel\_L\_301\Civil\Plans\2A\SWM\Pond 2\SW\_2A\_03.dgn

<b>DELAWARE DEPARTMENT OF TRANSPORTATION</b>	ADDENDUMS / REVISIONS	AS SHOWN	<b>US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD</b>	CONTRACT	BRIDGE NO.	<b>STORMWATER MANAGEMENT DETAILS BMP 658 (BASIN 2A)</b>	SHEET NO.
					T20091303		
				COUNTY	CHECKED BY: JJW	TOTAL SHTS.	1256
				NEW CASTLE			



PLAN  
SCALE: NONE

SECTION A-A  
SCALE: NONE

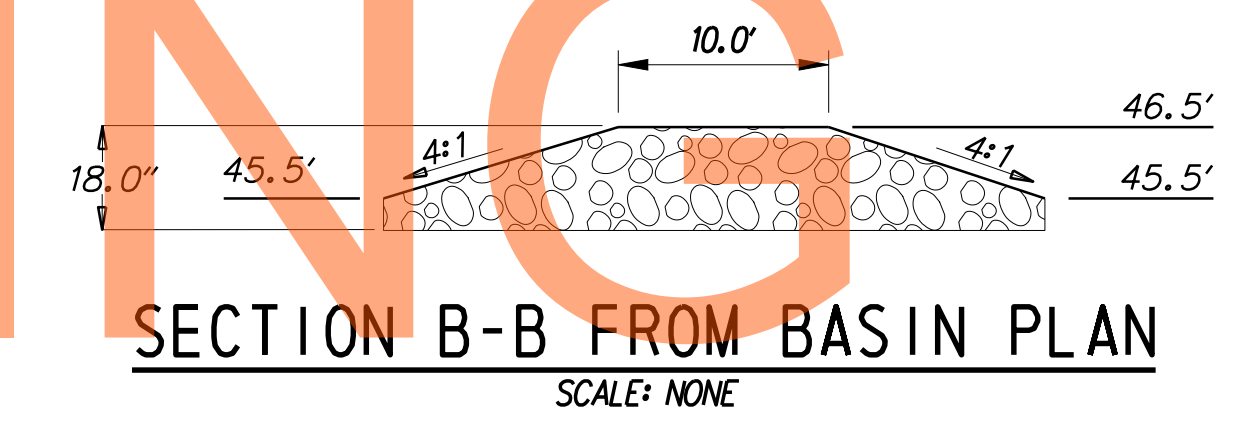
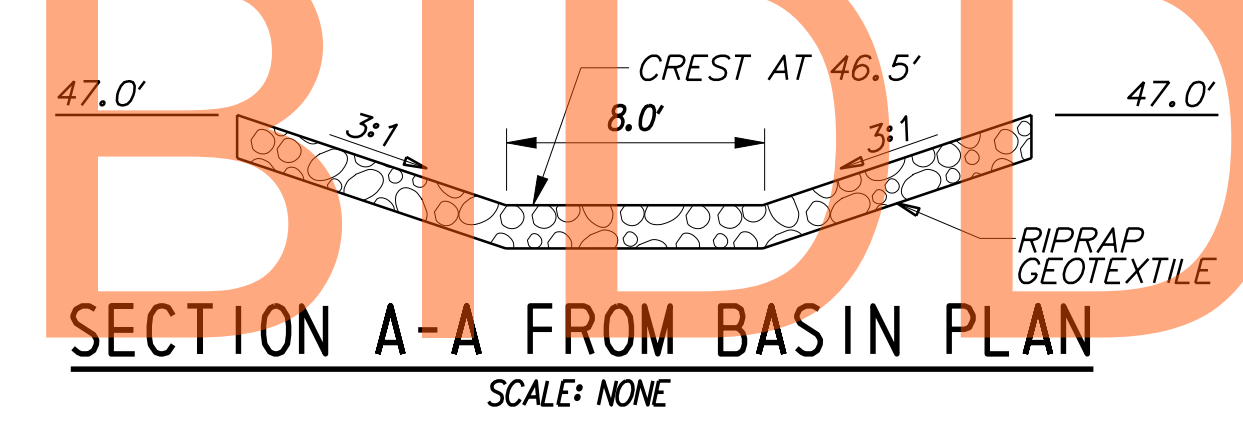
**DATA**

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

FES ID	Do	La	W	R No.
3	1.5'	9.0'	11.0'	R-4
9	1.5'	7.0'	4.0'	R-4
13	1.5'	9.0'	11.0'	R-4

- NOTES:
1. RIPRAP ITEM 712005
  2. GEOTEXTILES, RIPRAP ITEM 713003
  3. DELEWARE 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

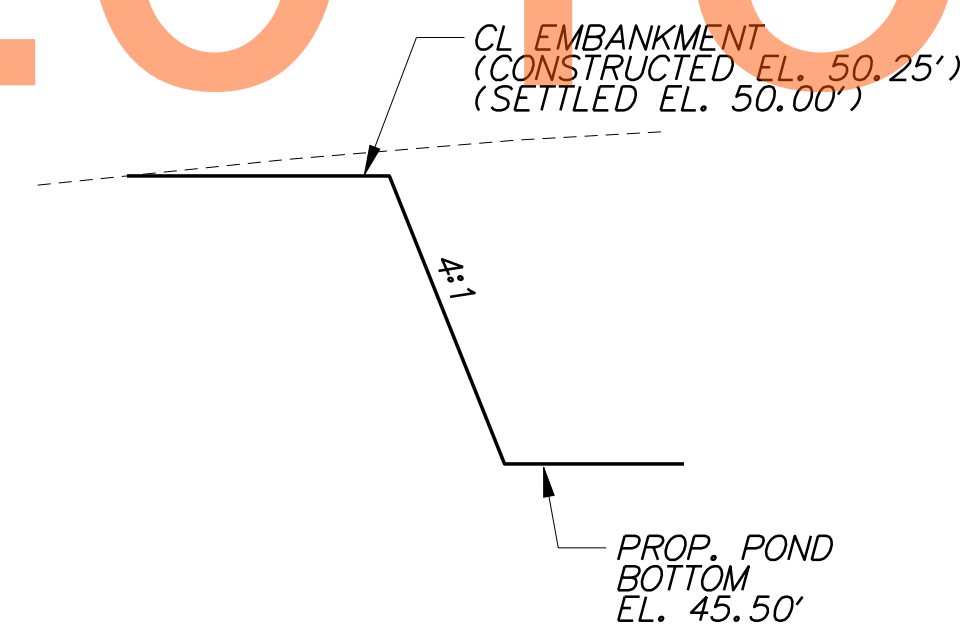
FOREBAY RIPRAP OUTLET PROTECTION  
SCALE: NONE



SECTION A-A FROM BASIN PLAN  
SCALE: NONE

SECTION B-B FROM BASIN PLAN  
SCALE: NONE

STONE CHECK DAM  
SCALE: NONE



SECTION C-C FROM BASIN PLAN  
SCALE: NONE

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

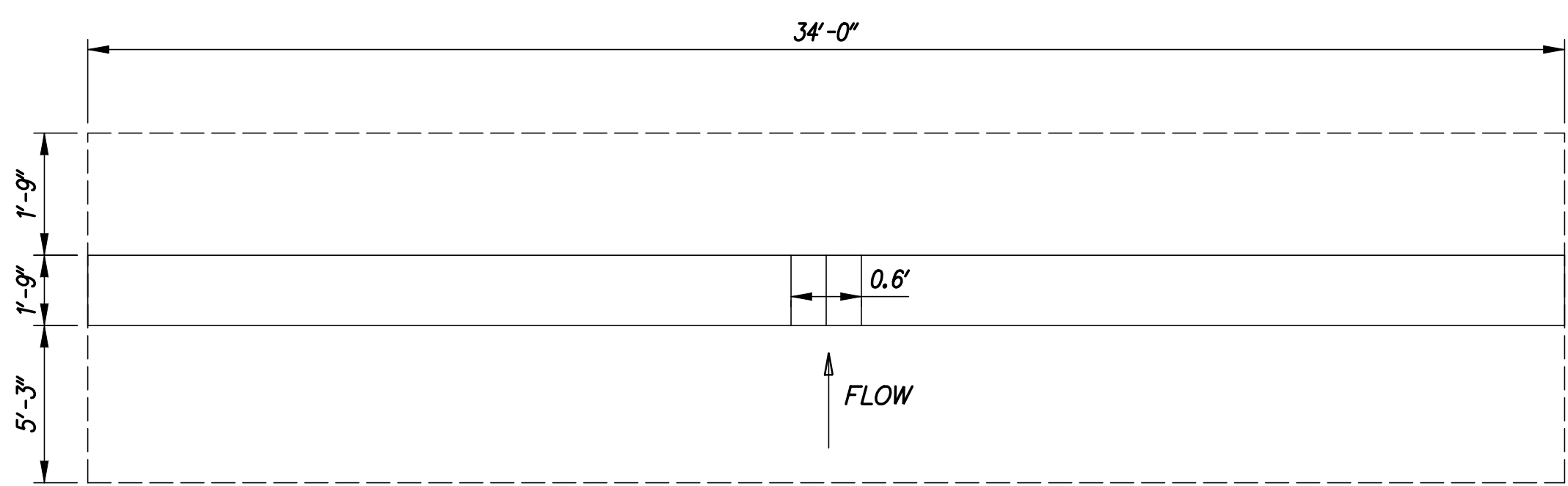
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NOT FOR BIDDING

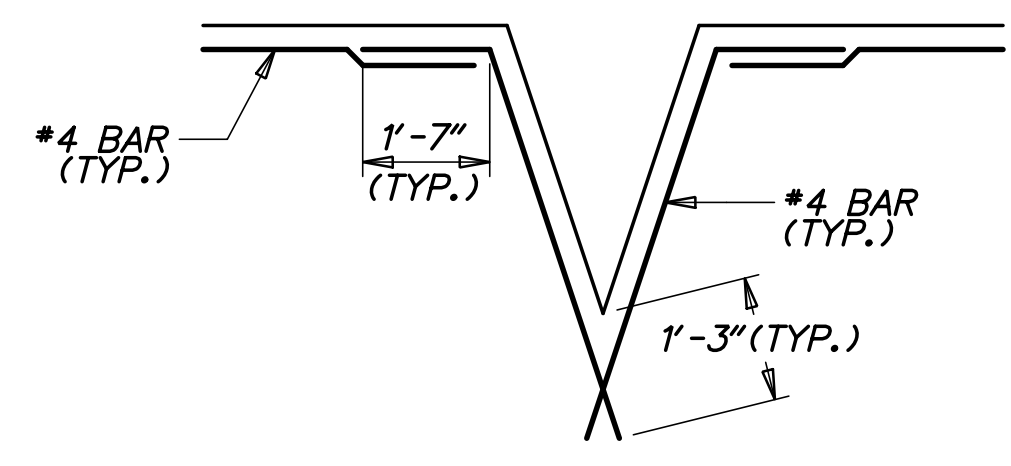
AUGUST 2015

11/13/2012 J:\BRIDGE-HIGHWAYS\9040\_Deido\301\Civil\Plans\2A\SWM\Pond 2\SW\_2A\_04.dgn

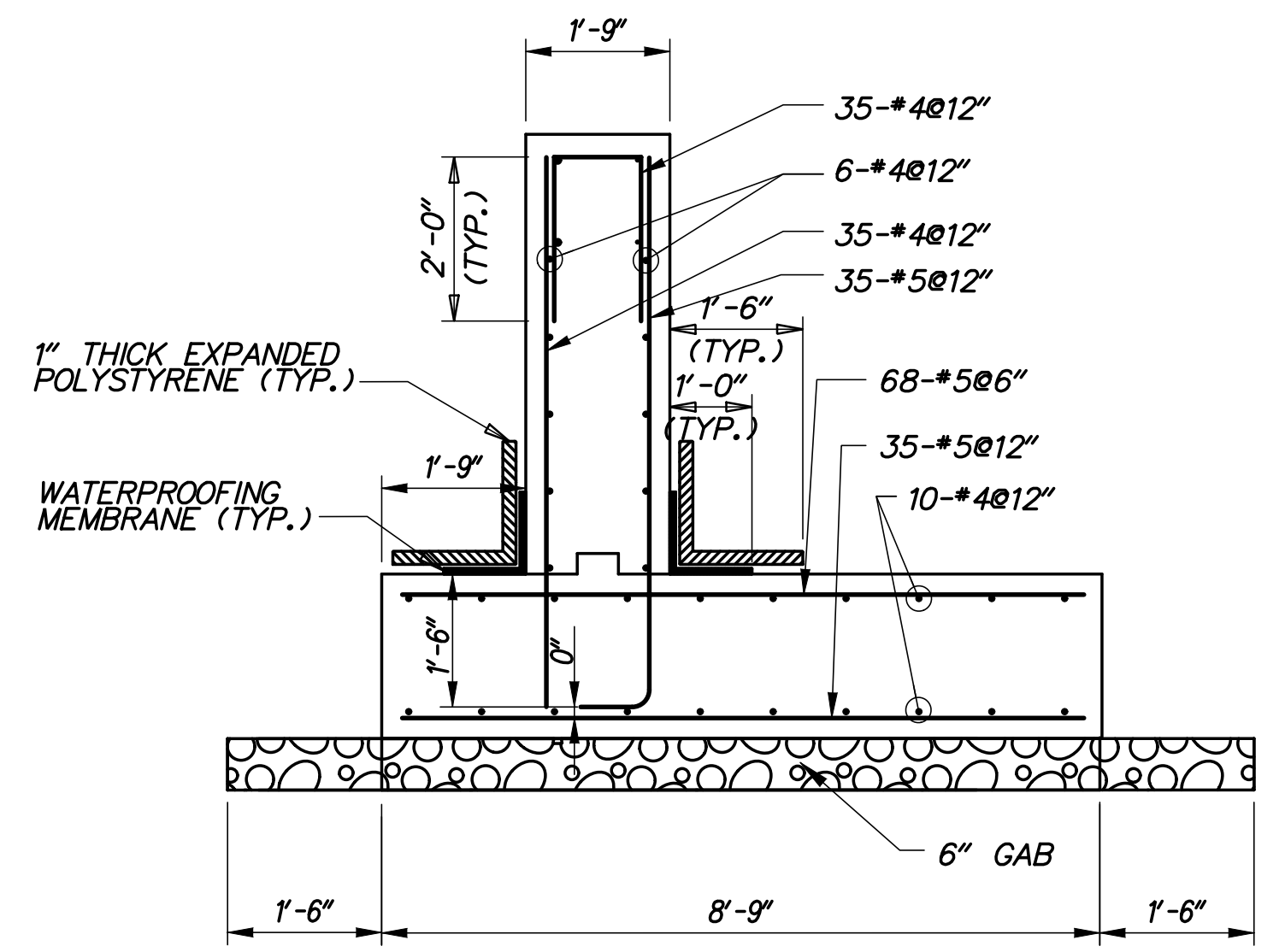
<p><b>DELAWARE DEPARTMENT OF TRANSPORTATION</b></p>	ADDENDUMS / REVISIONS	AS SHOWN	<b>US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD</b>	CONTRACT T200911303	BRIDGE NO.	<b>STORMWATER MANAGEMENT DETAILS BMP 658 (BASIN 2A)</b>	SHEET NO. 706
				COUNTY NEW CASTLE	DESIGNED BY: BAS		TOTAL SHTS. 1256
					CHECKED BY: JJW		



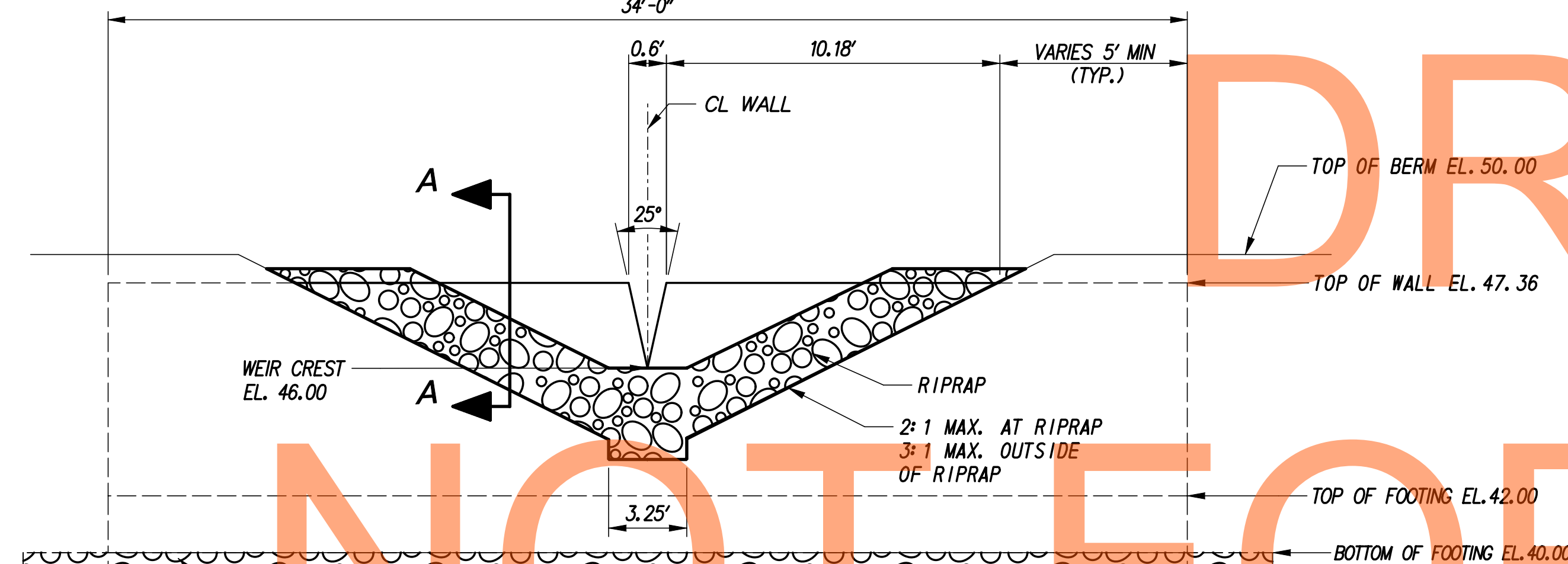
**WEIR WALL PLAN**  
SCALE: NONE



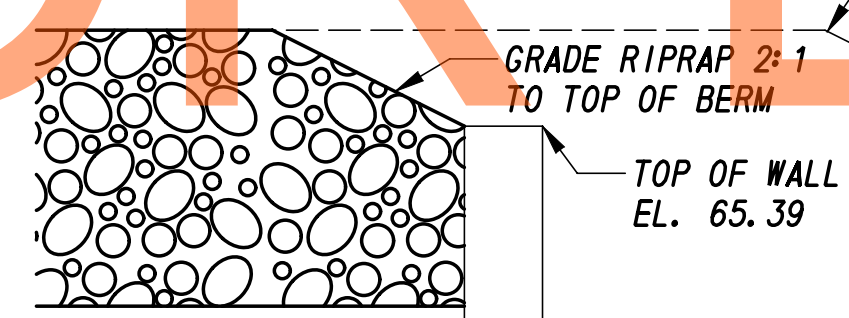
**OPENING DETAILS**  
SCALE: NONE



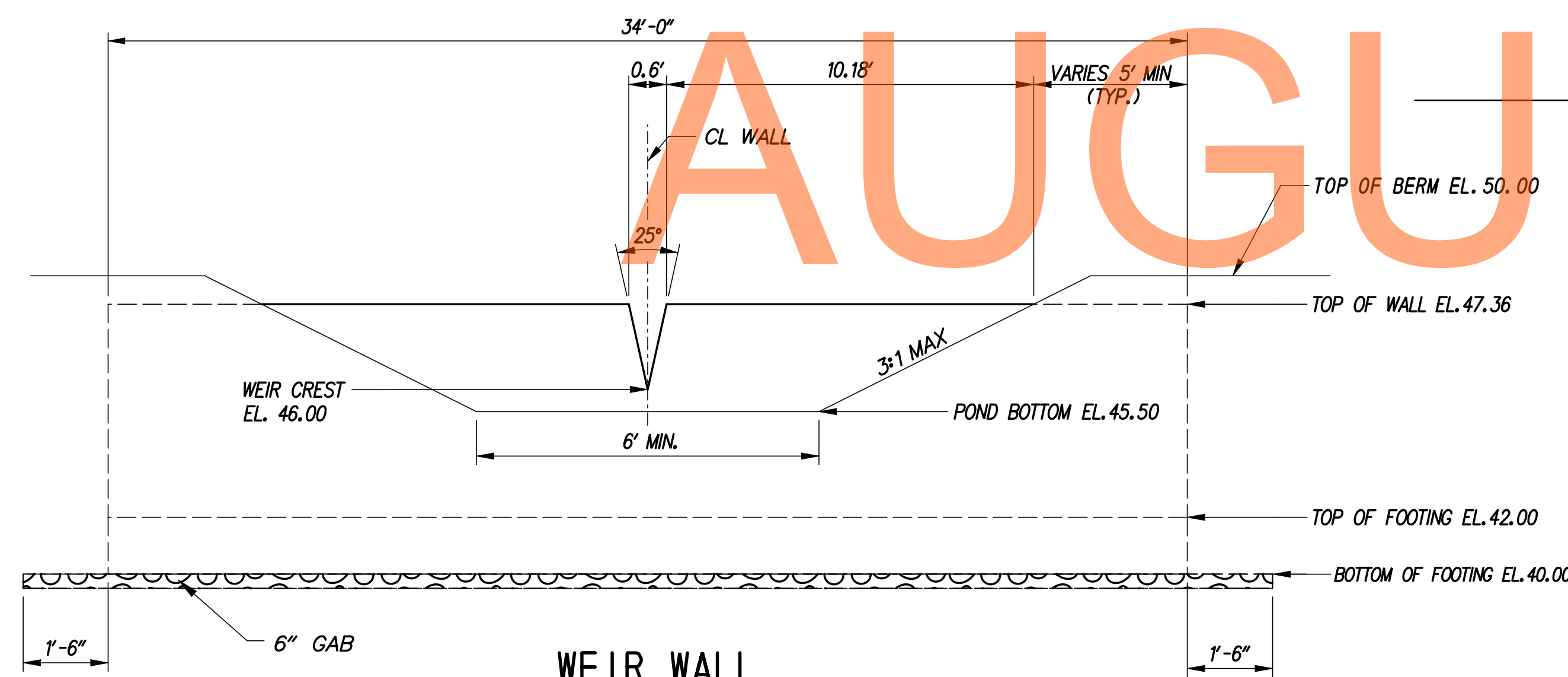
**WEIR WALL SECTION**  
SCALE: 1/2" = 1'-0"



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



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



**WEIR WALL INTERIOR ELEVATION**  
SCALE: NONE

**GENERAL NOTES**

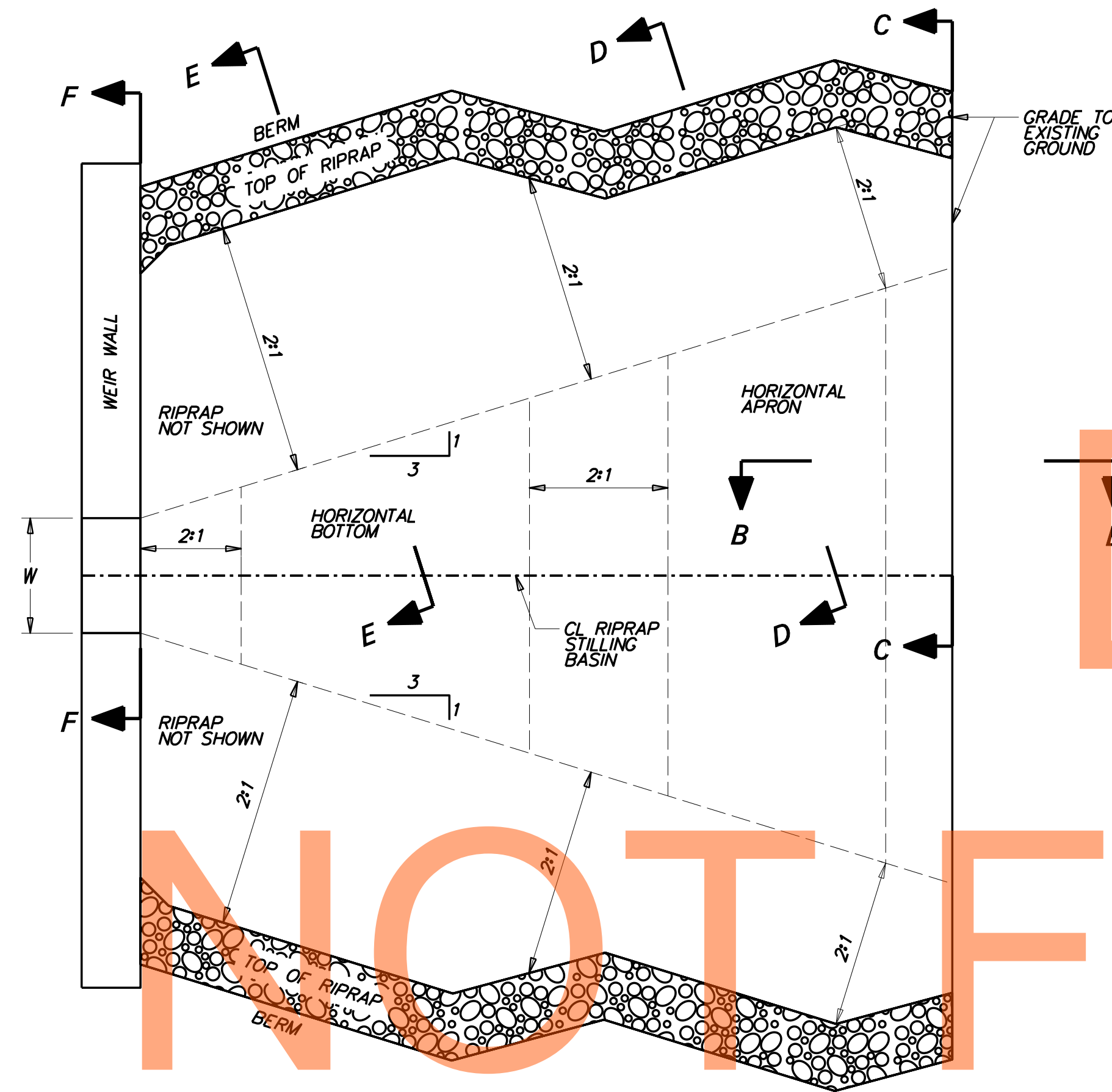
- DESIGN SPECIFICATIONS:  
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 4TH EDITION, 2007, INCLUDING 2008 AND 2009 INTERIM REVISIONS, AND AS SUPPLEMENTED BY DELAWARE DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL, MAY 2005, INCLUDING LATEST REVISIONS.  
PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE 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.

G:\60049040\_US301\CIVIL\PLANS\2A\CP\SW-22.DGN

ADDENDUMS / REVISIONS

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

SW-22
SHEET NO.
707
TOTAL SHTS.
1256

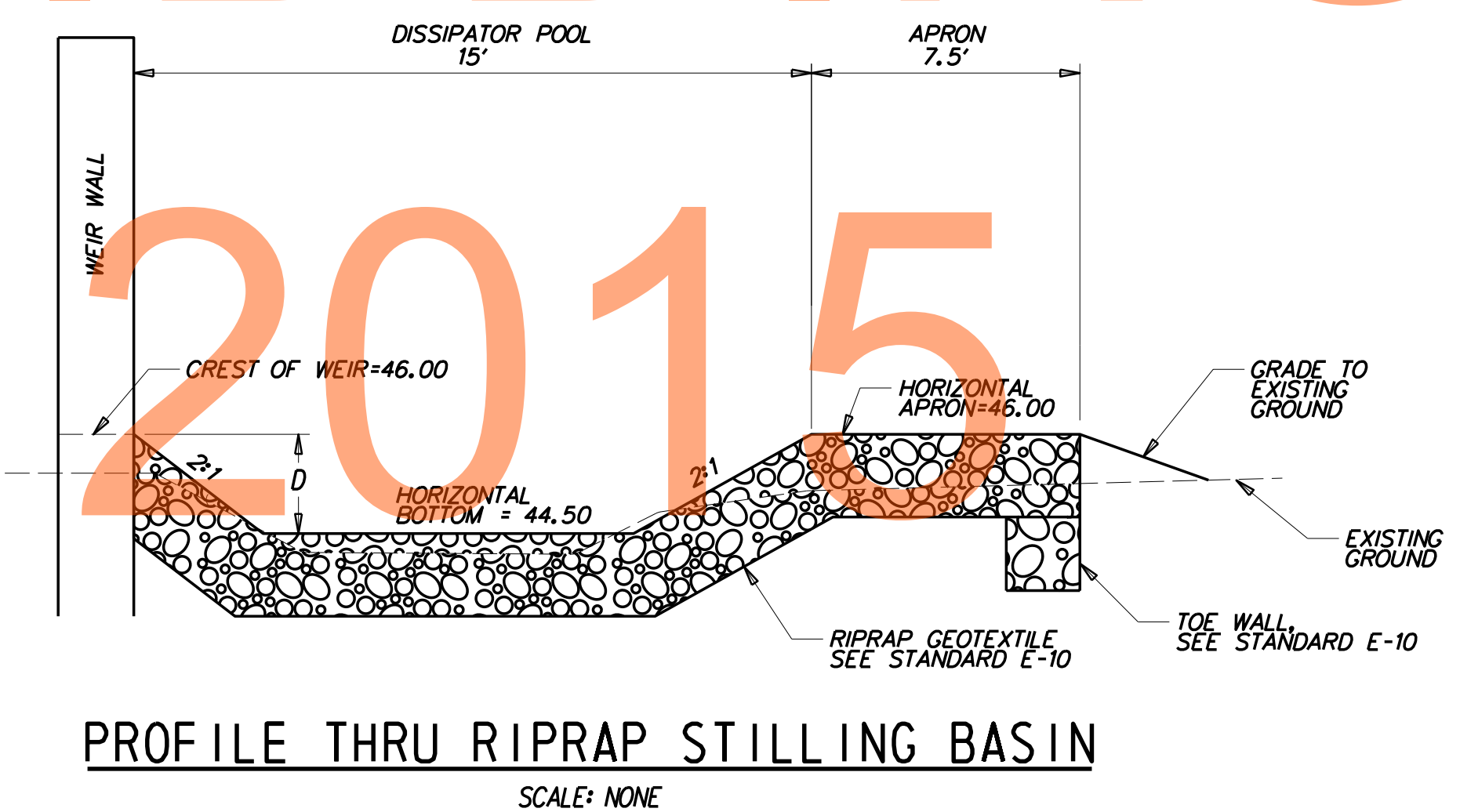
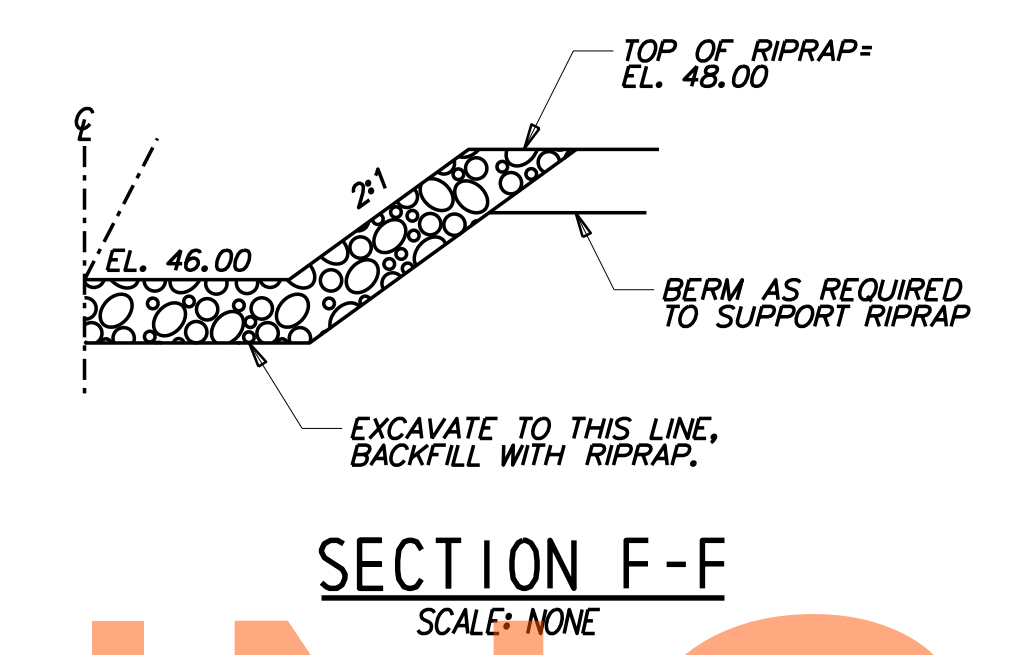
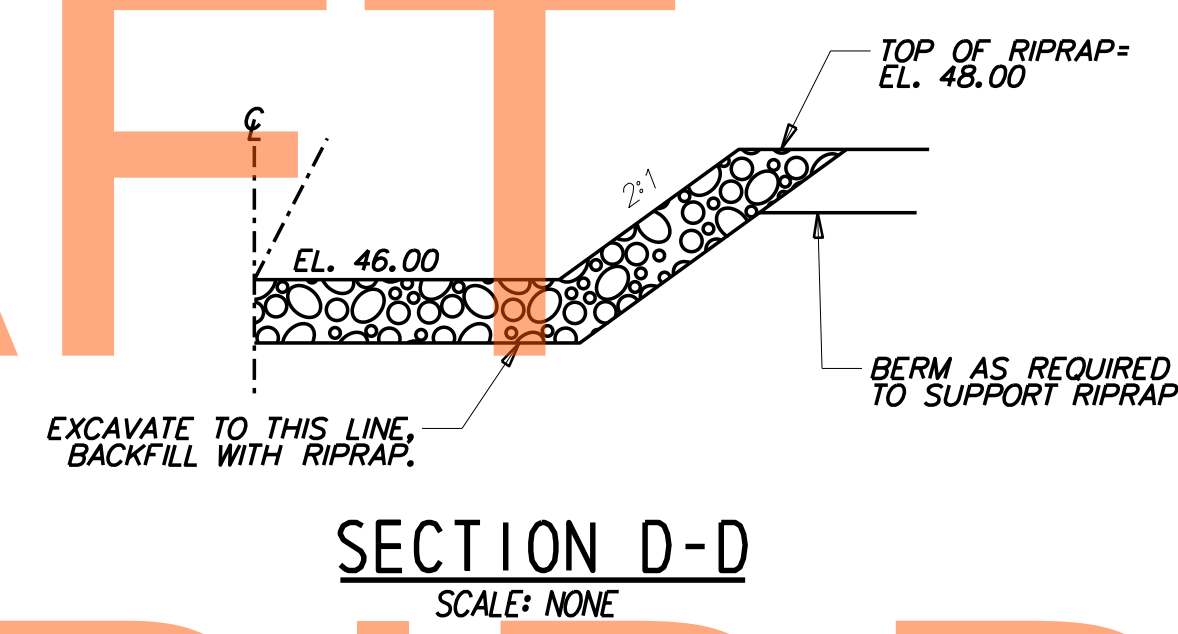
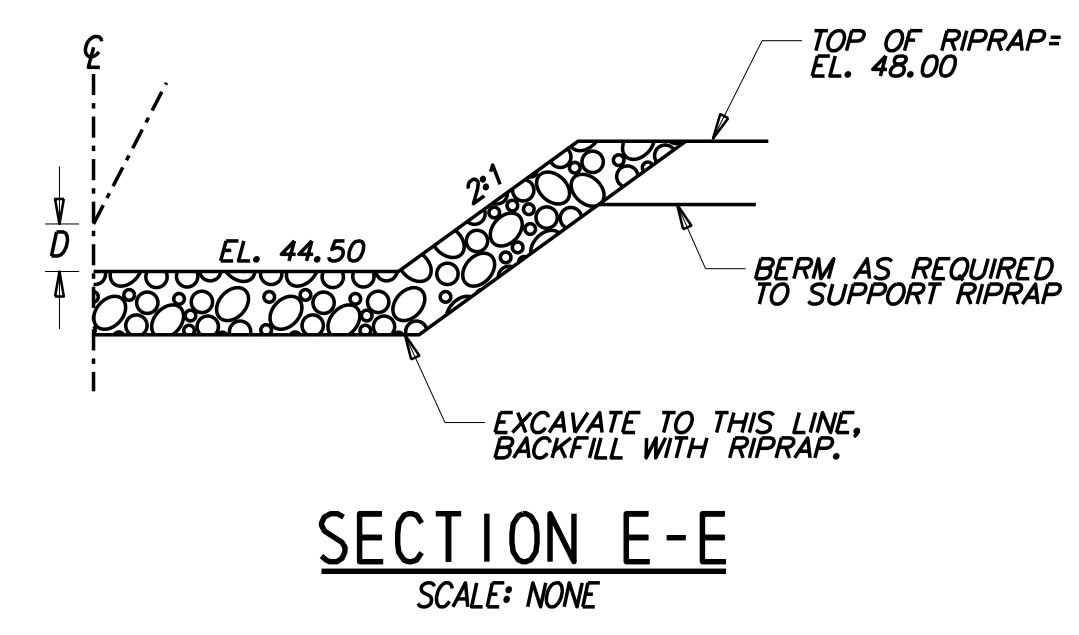
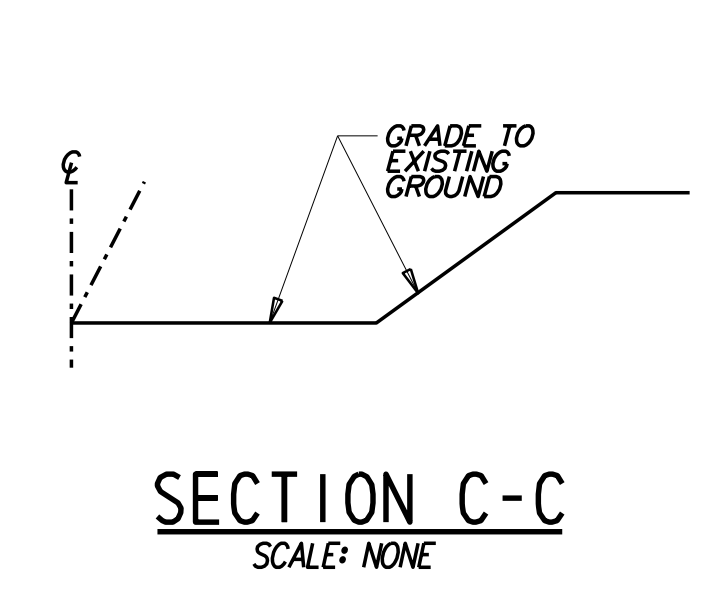


PLAN  
SCALE: NONE

**DATA**

TOP OF V-NOTCH WEIR WIDTH  $W=0.6'$   
 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. DELEWARE NO. 57 STONE ITEM 302012
  4. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.



PROFILE THRU RIPRAP STILLING BASIN  
SCALE: NONE

DRAFT  
NOT FOR BIDDING  
AUGUST 2015

RIPRAP STILLING BASIN

ADDENDUMS / REVISIONS

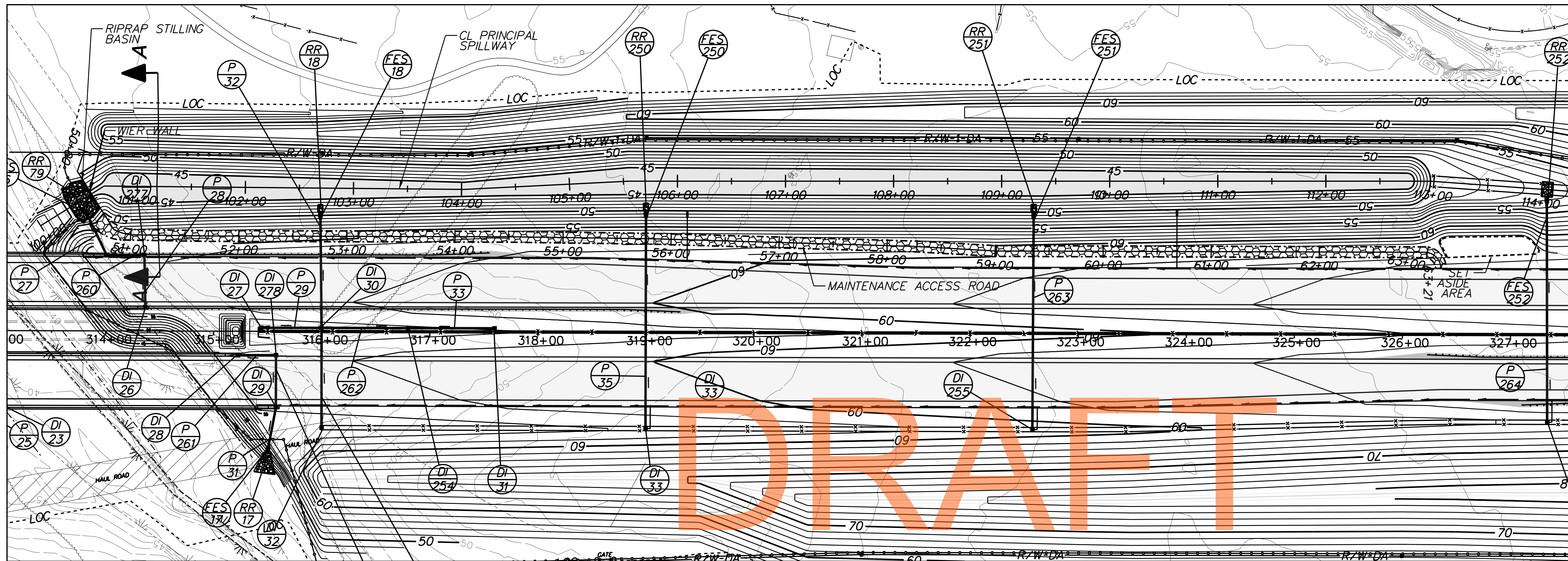
AS SHOWN

US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD

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

STORMWATER MANAGEMENT DETAILS  
BMP 658 (BASIN 2A)

SW23
SHEET NO.
708
TOTAL SHTS.
1256



PLAN - BMP 659 (BASIN 2B)

**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, DIVERSION BERMS OR OTHER SUITABLE MEASURES SHOULD BE PLACED AROUND THE BASIN'S PERIMETER DURING ALL PHASES OF CONSTRUCTION TO DIVERT ALL RUNOFF AND SEDIMENT AWAY FROM THE BASIN. THESE DIVERSION MEASURES SHOULD NOT BE REMOVED 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 THE 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 DUMPING.
- 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.

RIPRAP SCHEDULE		
NO.	TYPE	AREA (SY)
79	R-5	102
18	R-4	4
250	R-4	4
251	R-4	4

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

**PLANTING SCHEDULE**  
 PERMANENT GRASS SEEDING - WET GROUND UP TO ELEVATION 46.0  
 PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 46.0  
 PLACE TOPSOIL ABOVE BASIN BOTTOM ELEVATION 45.0

POND QUANTITIES			
ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	33818	CY
272501	POND OUTLET STRUCTURE, 5, SPECIAL	1	EACH
302011	DELAWARE NO. 3 STONE	437	TON
302012	DELAWARE NO. 57 STONE	24	TON
712005	R-4 RIPRAP	12	SY
712006	R-5 RIPRAP	102	SY
713001	GEOTEXTILES, STABILIZATION	2954	SY
713003	GEOTEXTILES, RIPRAP	150	SY
733002	TOPSOILING, 6" DEPTH	31107	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	29625	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	3276	SY
735533	SOIL RETENTION BLANKET MULCH, TYPE 3	12267	SY

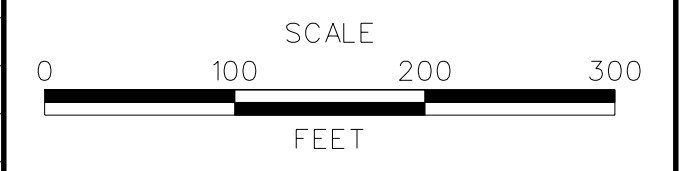
POND DESIGN SUMMARY				
DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC. FT)
QUALITY STORM (1-YR)	7.92	0.00	45.39	0.27
10 - YEAR	32.47	4.27	46.63	1.17
100 - YEAR	79.06	26.15	47.94	2.44

HAZARD CLASSIFICATION: CLASS A AS PER POND CODE 378  
 DRAINAGE AREA TO FACILITY: 15.85 AC  
 MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY BY INFILTRATION OF 1-YEAR STORM RUNOFF, WATER QUANTITY FOR 10 AND 100-YEAR STORMS.

11/14/2012 10:40:40 - Delidat\_301\Civil\Plans\2A\SWM\Pond 2\SW\_2B\_01.dgn



ADDENDUMS / REVISIONS



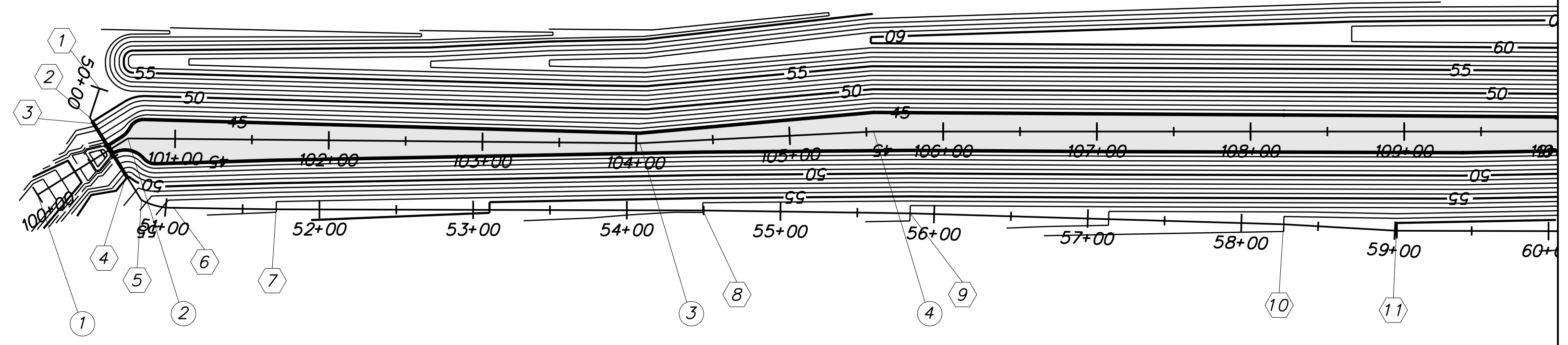
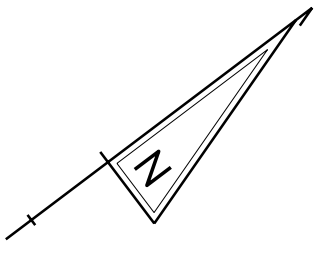
**US 301  
 LEVELS ROAD  
 TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER  
 MANAGEMENT DETAILS  
 BMP 659 (BASIN 2B)**

SW24
SHEET NO.
709
TOTAL SHTS.
1256



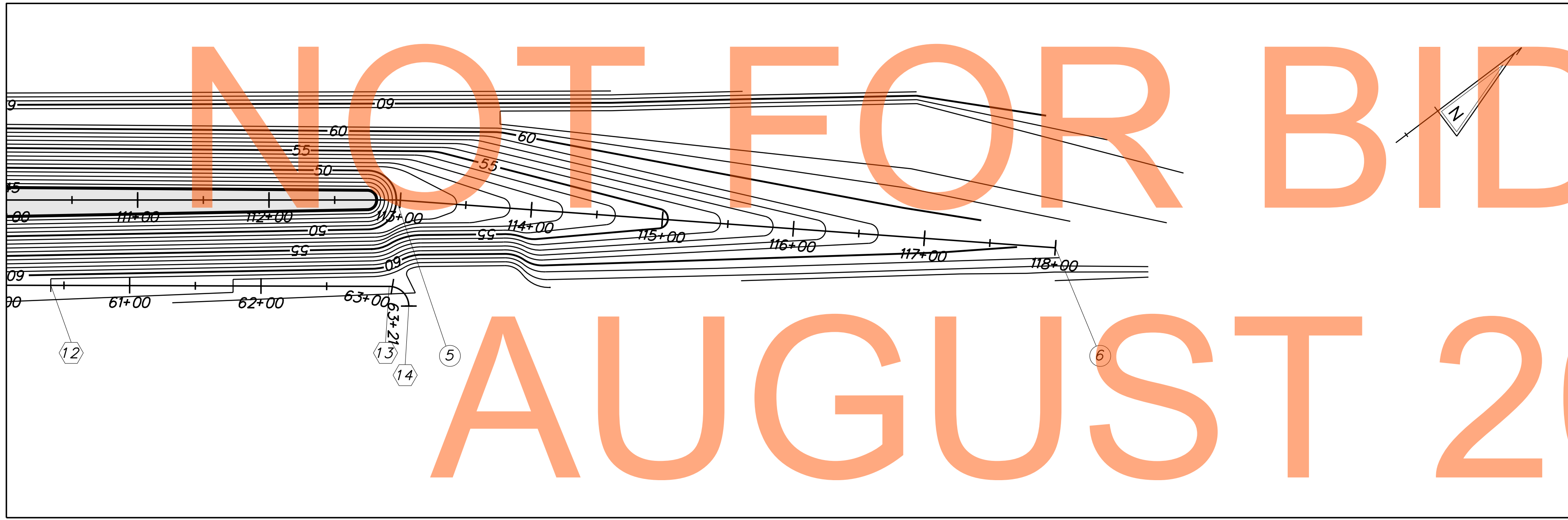


CL PRINCIPAL SPILLWAY		
STATION	NORTHING	EASTING
① POB STA. 100+00.00	527836.5093	562448.6466
② PI STA. 100+69.24	527905.4831	562454.7682
③ PI STA. 104+02.38	528169.3768	562658.0846
④ PI STA. 105+54.72	528295.3575	562743.7381
⑤ PI STA. 112+96.93	528887.5293	563191.1888
⑥ POE STA. 118+00.00	529265.9385	563522.6778

CL EMBANKMENT		
STATION	NORTHING	EASTING
① POB STA. 50+00.00	527910.3578	562417.6276
② PI STA. 50+19.97	527893.9583	562429.0184
③ PI STA. 50+24.65	527893.5447	562433.6787
④ PI STA. 50+64.61	527890.0121	562473.4822
⑤ PC STA. 50+83.32	527888.3573	562492.1279
⑥ PT STA. 51+05.23	527902.1401	562508.8312
⑦ PI STA. 51+71.83	527954.6542	562549.7970
⑧ PI STA. 54+49.42	528175.6853	562717.7292
⑨ PI STA. 55+84.34	528282.1846	562800.5545
⑩ PI STA. 58+27.43	528471.7588	562952.7252
⑪ PI STA. 59+01.05	528527.8747	563000.3819
⑫ PI STA. 60+39.98	528638.4987	563084.4304
⑬ PC STA. 62+97.57	528843.5371	563240.3576
⑭ PT STA. 63+21.04	528846.4708	563261.2791

DRAFT

MATCH LINE SEE ABOVE



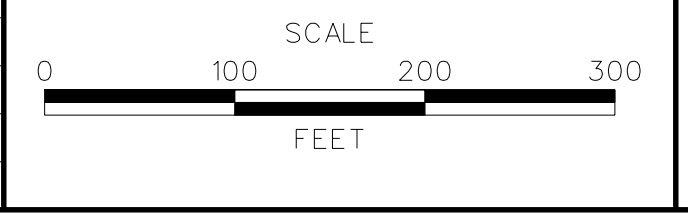
NOT FOR BIDDING  
AUGUST 2015

STAKEOUT - BMP 659 (BASIN 2B)

11/13/2012 J:\BRIDGE-HIGHWAYS\9040\_Delidol\_301\Civil\Plans\2A\SWM\Fond 2\SW\_2B\_02.dgn



ADDENDUMS / REVISIONS	

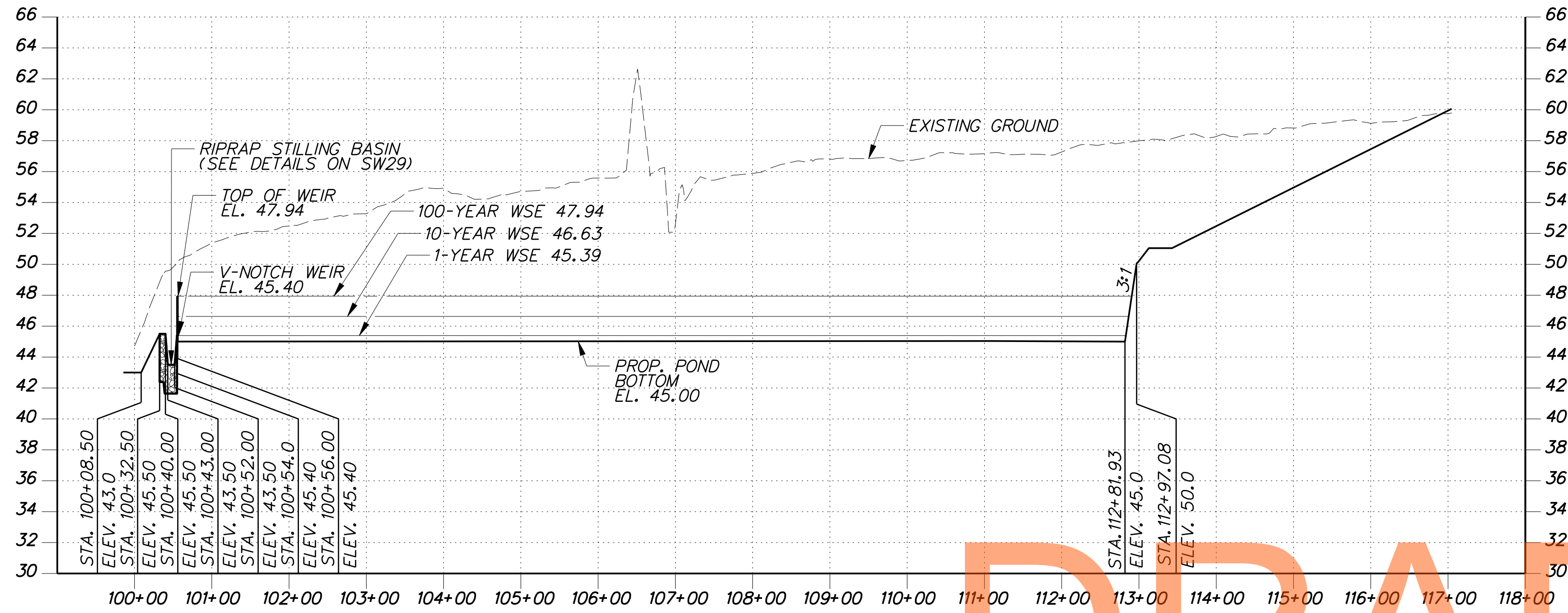


**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

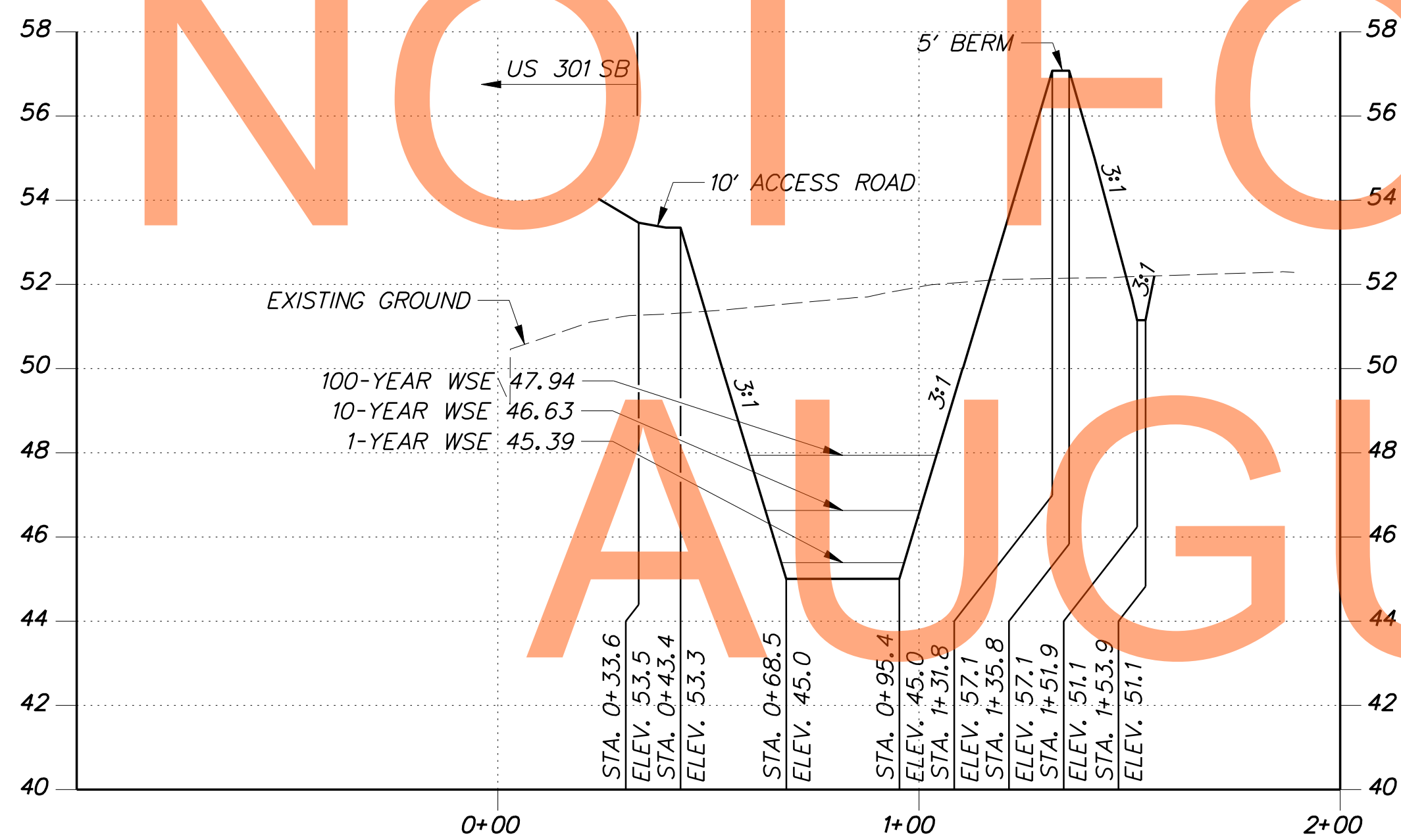
CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER  
MANAGEMENT DETAILS  
BMP 659 (BASIN 2B)**

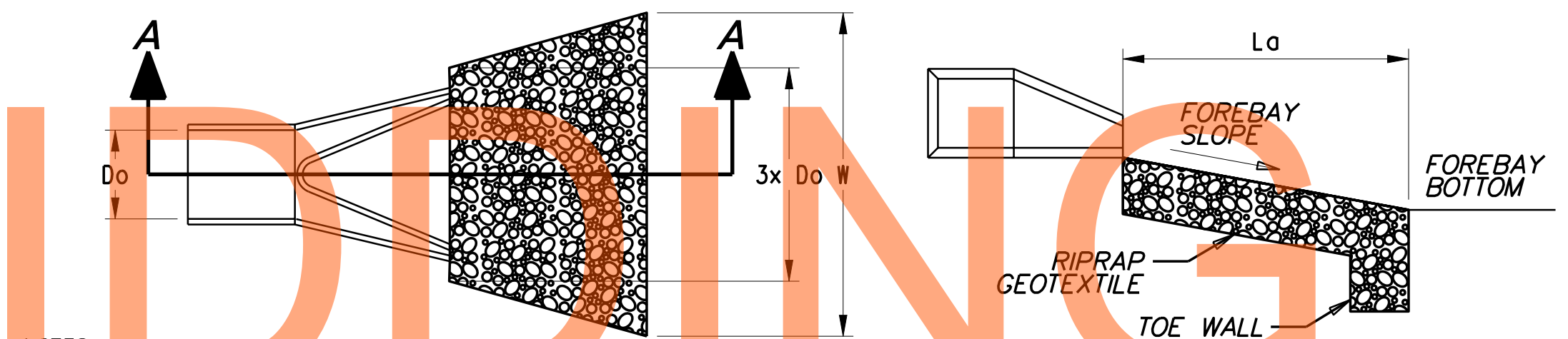
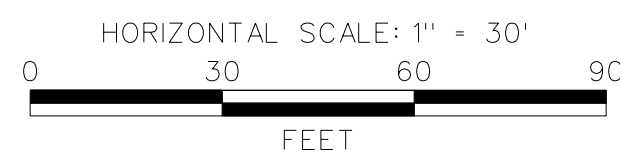
SW25
SHEET NO. 710
TOTAL SHTS. 1256



SPILLWAY PROFILE - BMP 659 (BASIN 2B)



SECTION A-A



- NOTES:
1. RIPRAP ITEM 712005
  2. GEOTEXTILES, RIPRAP ITEM 713003
  3. DELEWARE 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**

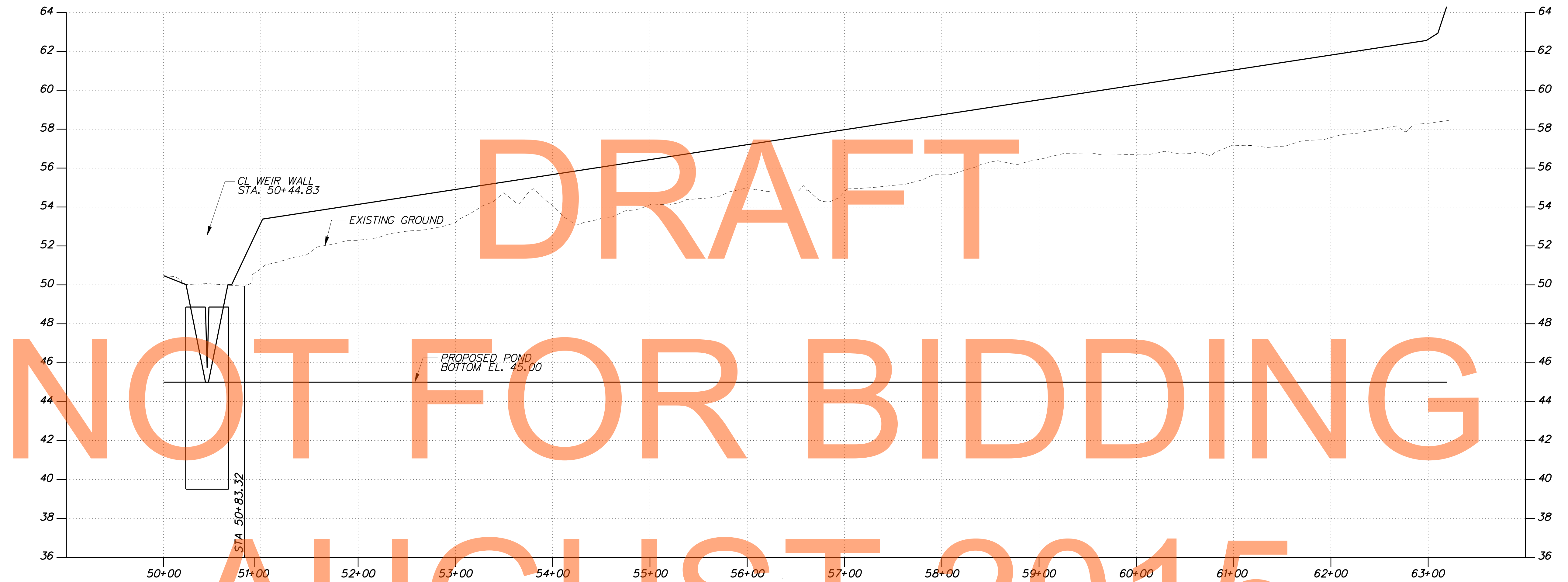
WEIR TOP WIDTH (Do) = xxx  
 PIPE DIAMETER (Do)  
 APRON LENGTH (La)  
 APRON WIDTH (W)  
 RIPRAP SIZE (R No.)

FES ID	Do	La	W	R No.
18	1.5'	9.0'	11.0'	R-4
250	1.5'	7.0'	4.0'	R-4
251	1.5'	7.0'	4.0'	R-4

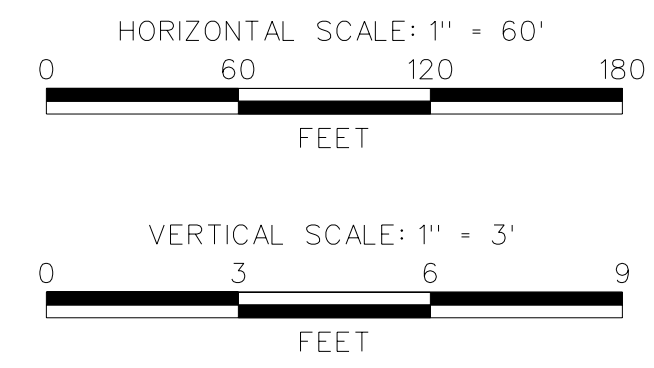
FOREBAY RIPRAP OUTLET PROTECTION

SCALE: NONE

11/13/2012 J:\BRIDGE-HIGHWAYS\9040\_Delidol\_301\Civil\Plans\2A\SWM\Pond 2\SW\_2B\_03.dgn



EMBANKMENT PROFILE FOR BMP 659 (BASIN 2B)



11/13/2012 J:\BRIDGE-HIGHWAYS\9040\_DeIdol\301\Civil\Plans\2A\SWM\Plan\2B\_04.dgn



ADDENDUMS / REVISIONS	

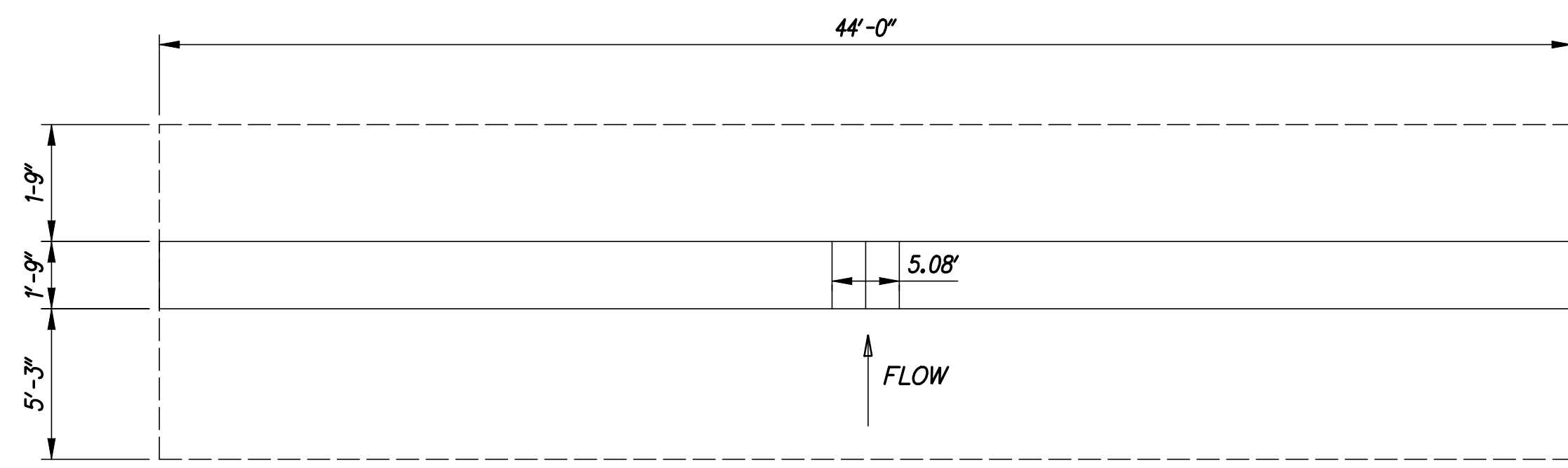
AS SHOWN

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

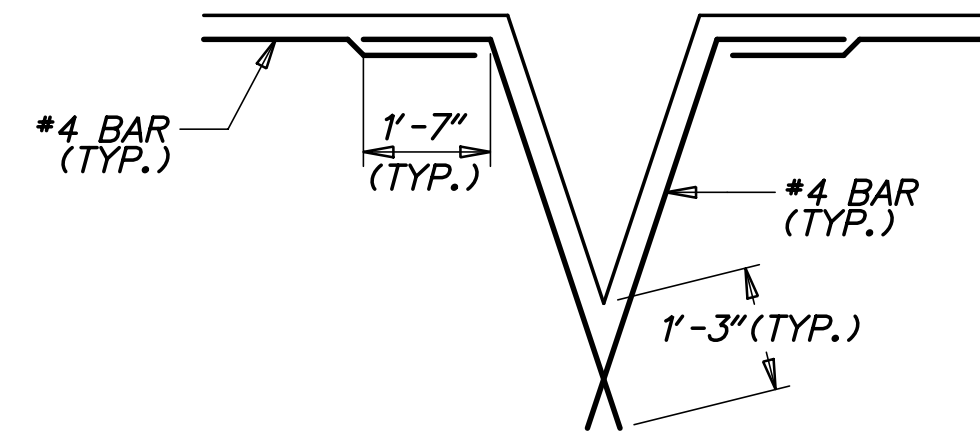
CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: BAS
	CHECKED BY: JJW

**STORMWATER  
MANAGEMENT DETAILS  
BMP 659 (BASIN 2B)**

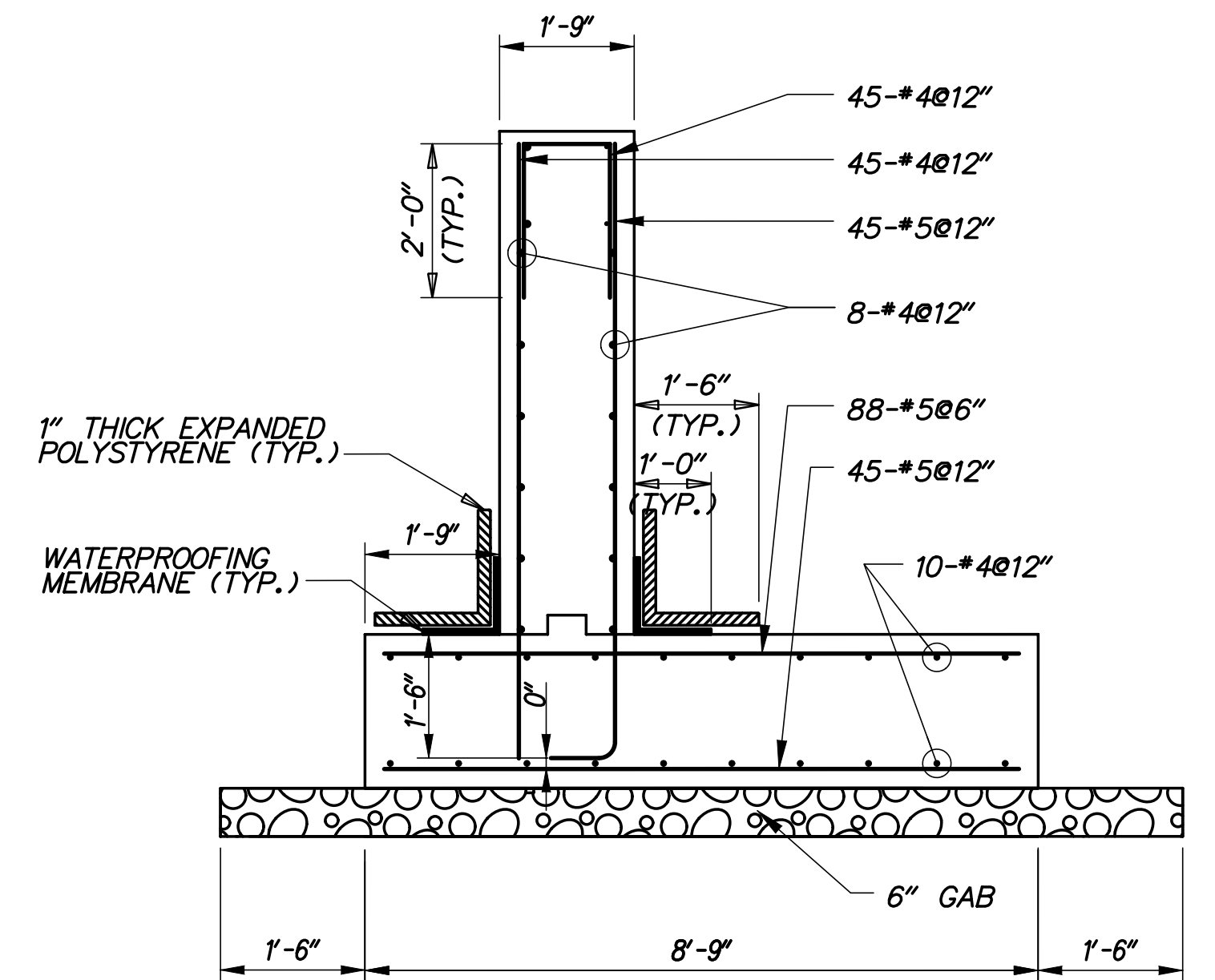
SW27
SHEET NO. 712
TOTAL SHTS. 1256



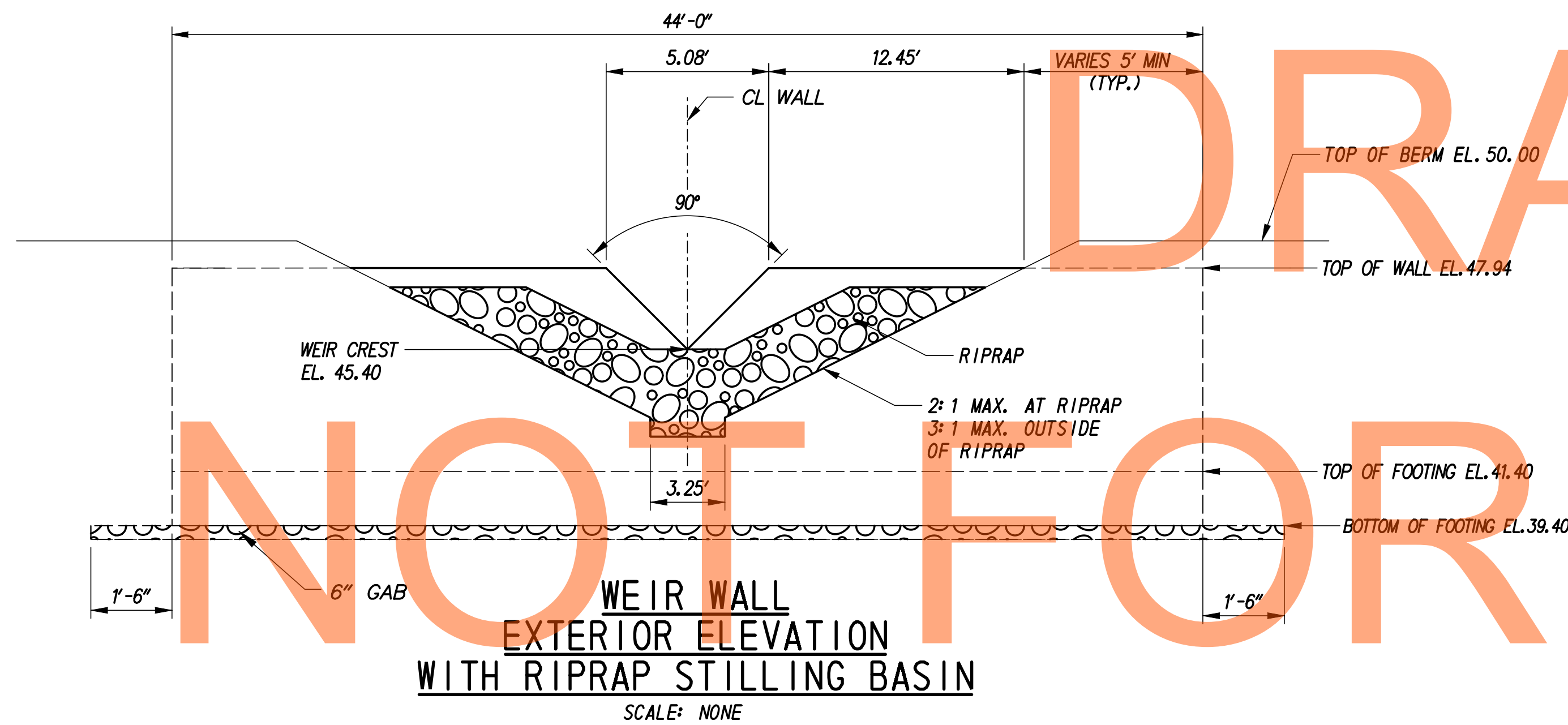
**WEIR WALL  
PLAN**  
SCALE: NONE



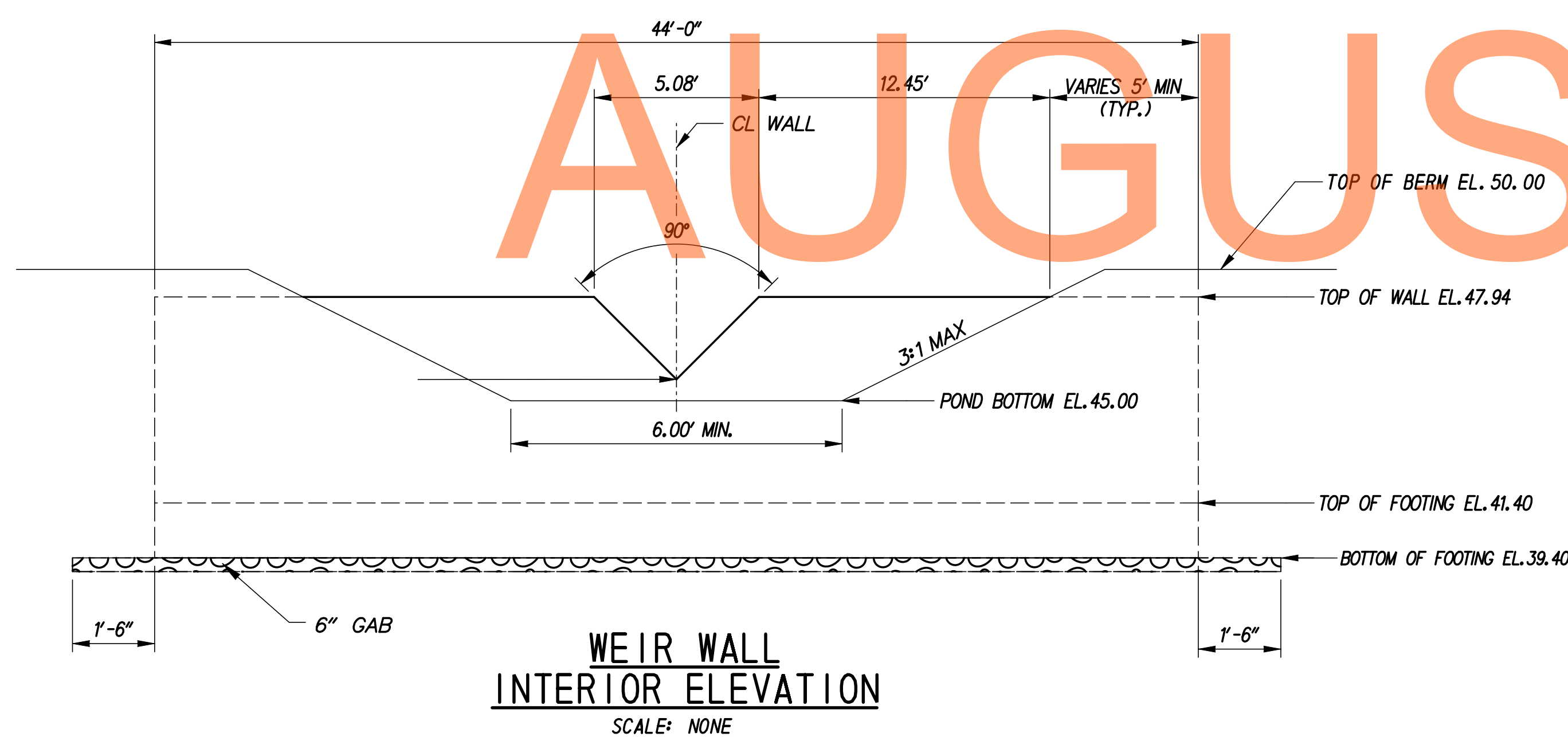
**OPENING DETAILS**  
SCALE: NONE



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



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



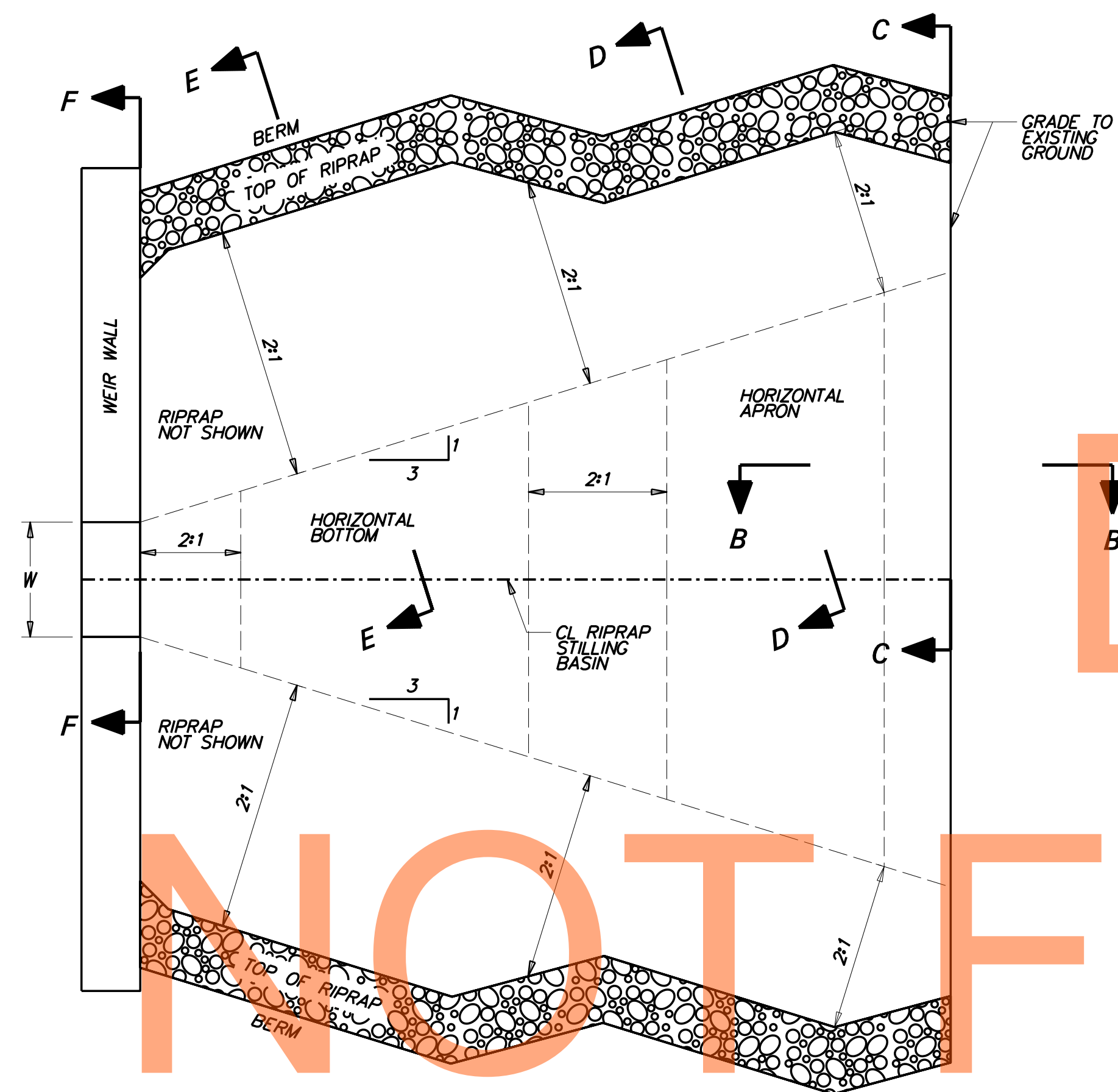
**WEIR WALL  
INTERIOR ELEVATION**  
SCALE: NONE

**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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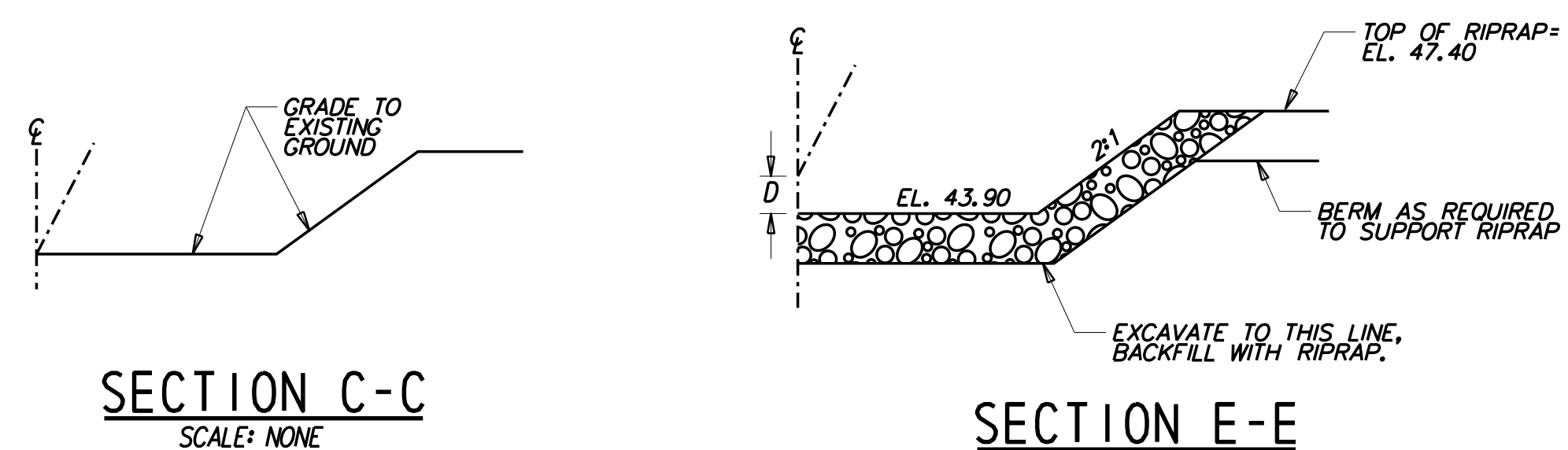
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**PLAN**  
SCALE: NONE

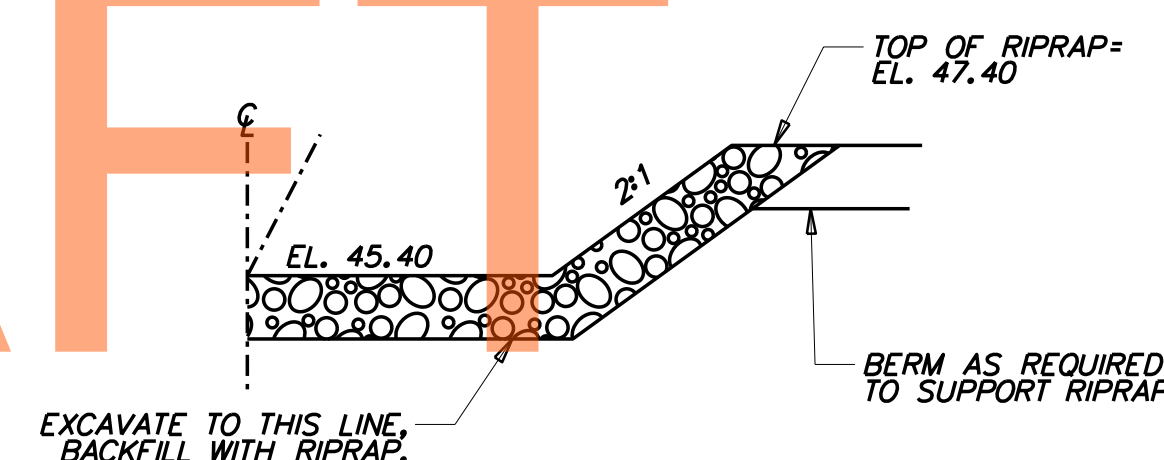
DATA
TOP OF V-NOTCH WEIR WIDTH $W=5.08'$
DEPTH OF BASIN FROM WEIR CREST ( $D$ ) = 1.50'
RIPRAP SIZE (R No.) = R-5 WITH NO. 57 STONE

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

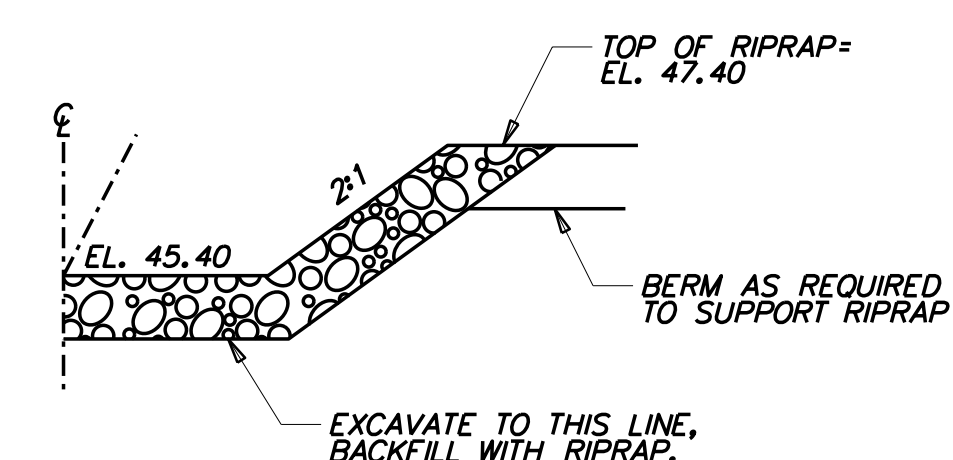


**SECTION C-C**  
SCALE: NONE

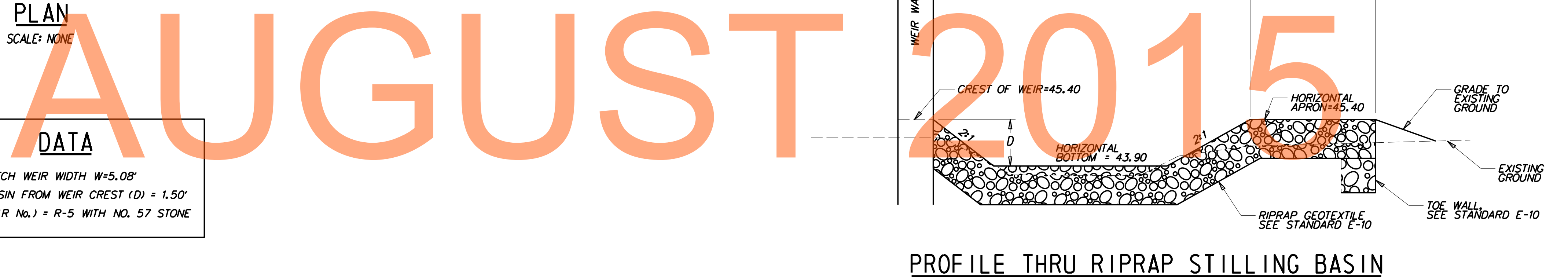
**SECTION E-E**  
SCALE: NONE



**SECTION D-D**  
SCALE: NONE



**SECTION F-F**  
SCALE: NONE



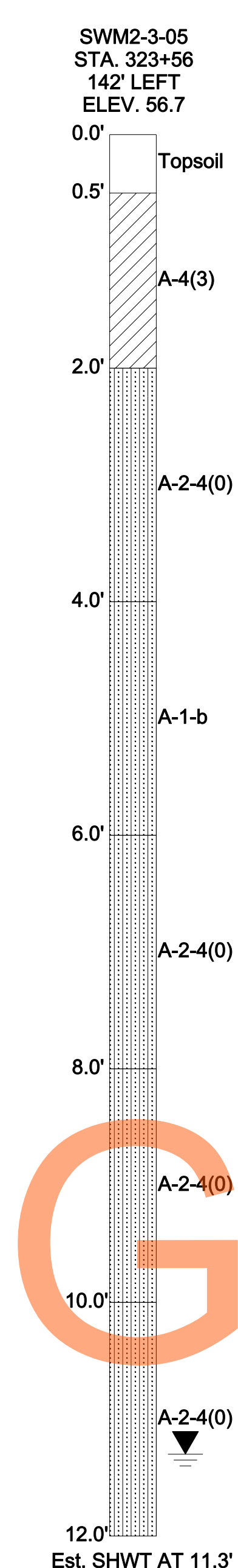
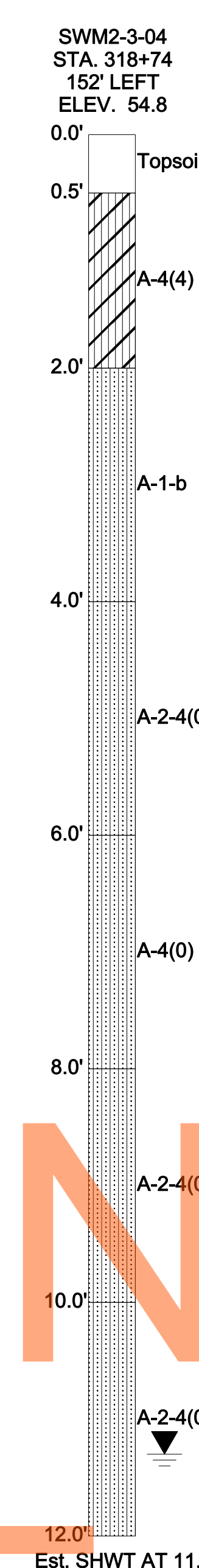
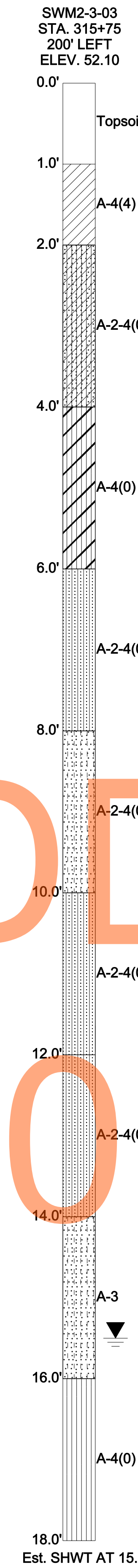
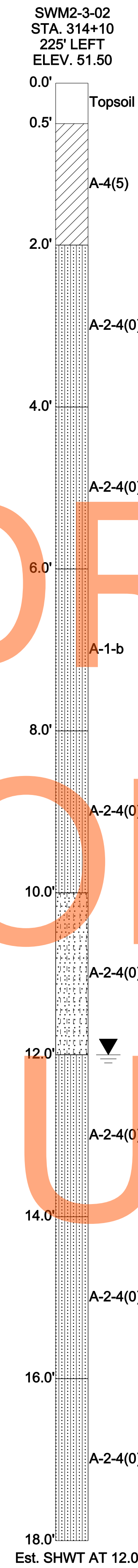
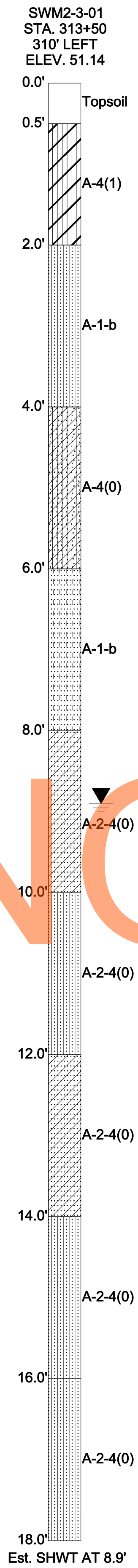
**PROFILE THRU RIPRAP STILLING BASIN**  
SCALE: NONE

**RIPRAP STILLING BASIN**  
SCALE: NONE

ADDENDUMS / REVISIONS

CONTRACT	BRIDGE NO.
T200911303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

SW29
SHEET NO.
714
TOTAL SHTS.
1256



DRAFT  
NOT FOR BIDDING  
AUGUST 2015

11/13/2012 J:\BRIDGE\_HIGHWAYS\9040\_Deidel\301\Civil\Plans\2A\SWM\Pond 2\SW\_2B\_07.dgn



ADDENDUMS / REVISIONS	

AS SHOWN

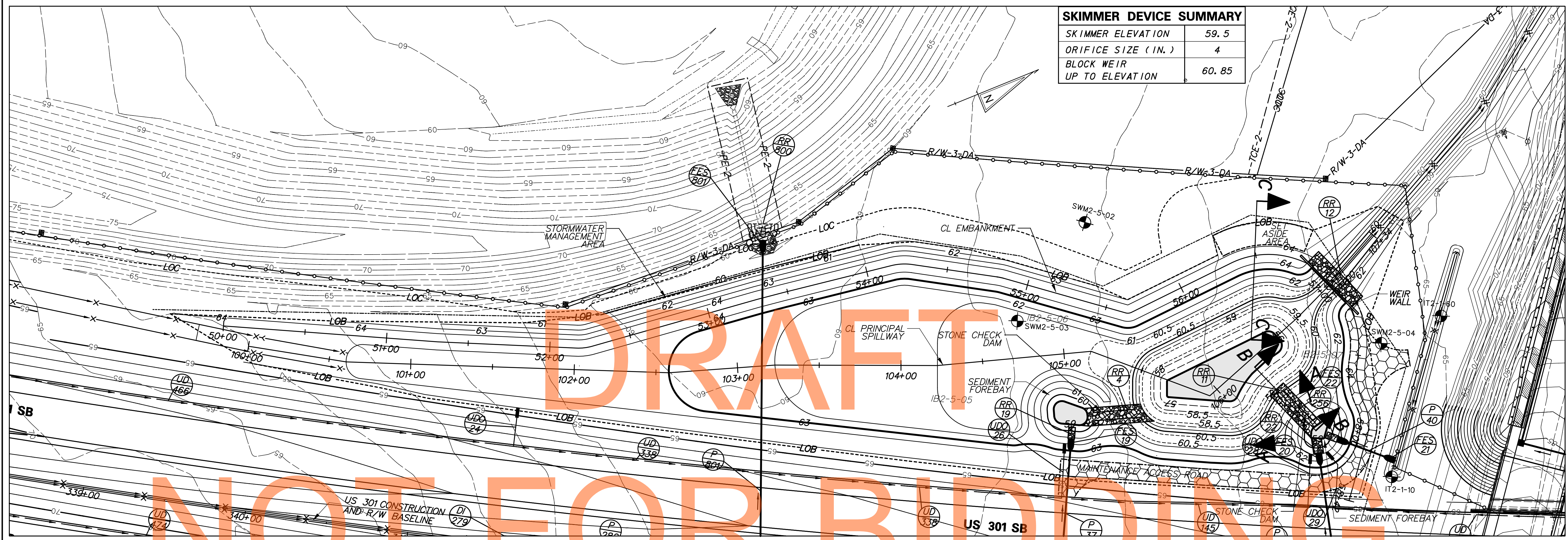
**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: BAS
	CHECKED BY: JJW

**STORMWATER  
MANAGEMENT DETAILS  
BMP 659 (BASIN 2B)**

SW30
SHEET NO. 715
TOTAL SHTS. 1256

SKIMMER DEVICE SUMMARY	
SKIMMER ELEVATION	59.5
ORIFICE SIZE (IN.)	4
BLOCK WEIR UP TO ELEVATION	60.85



**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 ON EROSION SEDIMENT CONTROL PLANS
- 4. CLEAR AND GRUB REMAINING AREA FOR POND CONSTRUCTION.
- 5. CONSTRUCT POND OUTLET STRUCTURE, RIPRAP ENERGY DISSIPATOR AT END OF PRINCIPAL SPILLWAY AND PARTIAL EMBANKMENT AS NEEDED TO INSTALL POND OUTLET STRUCTURE. INSTALL SKIMMER DEWATERING DEVICE. DE-WATER FOUNDATION AS NEEDED IN ACCORDANCE WITH SECTION 111 AND USE SUMP PIT FOR DUMPING. (SEE EROSION AND SEDIMENT CONTROL DETAILS FOR SKIMMER DEWATERING 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, AND GM PER THE UNIFIED SOIL CLASSIFIED SYSTEM TO BE USED TO CONSTRUCT EMBANKMENT AND TO LINE THE POND. THE ABOVE CLASSIFIED SOILS MAY BE OBTAINED FROM ELSEWHERE WITHIN THE PROJECT LIMITS, IF NECESSARY.
- 7. STABILIZE ALL BARE AREAS.  
NOTE: SEE EROSION AND SEDIMENT CONTROL 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.

**PLAN - BMP 660 (BASIN 3)**

**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 60.34.

**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 56.00 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 SKIMMER DEWATER DEVICE.

**PLANTING SCHEDULE**

PERMANENT GRASS SEEDING - WET GROUND UP TO ELEVATION 60.50  
 PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 60.50  
 PLACE TOPSOIL ON LOWER BENCH ELEVATION 58.50 AND ABOVE.

POND DESIGN SUMMARY				
DESIGN STORM	FACILITY INFLOW(CFS)	FACILITY DISCHARGE(CFS)	WATER SURFACE ELEVATION(FT)	STORAGE VOLUME (AC. FT)
QUALITY STORM (1-YR)	6.09	0.53	60.48	0.32
10 - YEAR	22.13	2.88	61.42	0.79
100 - YEAR	51.27	9.39	62.58	1.51

HAZARD CLASSIFICATION: CLASS A AS PER POND CODE 378  
 DRAINAGE AREA TO FACILITY: 7.38 AC  
 MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY FOR 1-YEAR STORM,  
 WATER QUANTITY FOR 10 AND 100-YEAR STORMS.

POND QUANTITIES			
ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	4925	CY
272501	POND OUTLET STRUCTURE, 6, SPECIAL	1	EACH
302011	DELAWARE NO. 3 STONE	126	TON
302012	DELAWARE NO. 57 STONE	10	TON
712005	R-4 RIPRAP	15	SY
712006	R-5 RIPRAP	41	SY
712020	R-4 RIPRAP	64	TON
713001	GEOTEXTILES, STABILIZATION	845	SY
713003	GEOTEXTILES, RIPRAP	188	SY
733002	TOPSOILING, 6" DEPTH	10869	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	10021	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	1252	SY

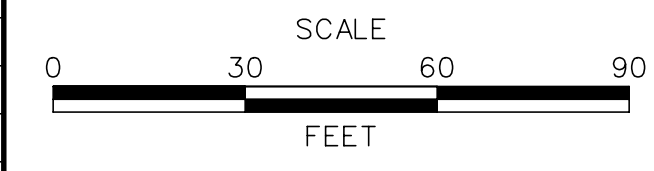
**RIPRAP SCHEDULE**

NO.	TYPE	AREA (SY)
12	R-5	41
4	R-4	45
11	R-4	41
19	R-4	4
22	R-4	7
256	R-4	4

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



ADDENDUMS / REVISIONS



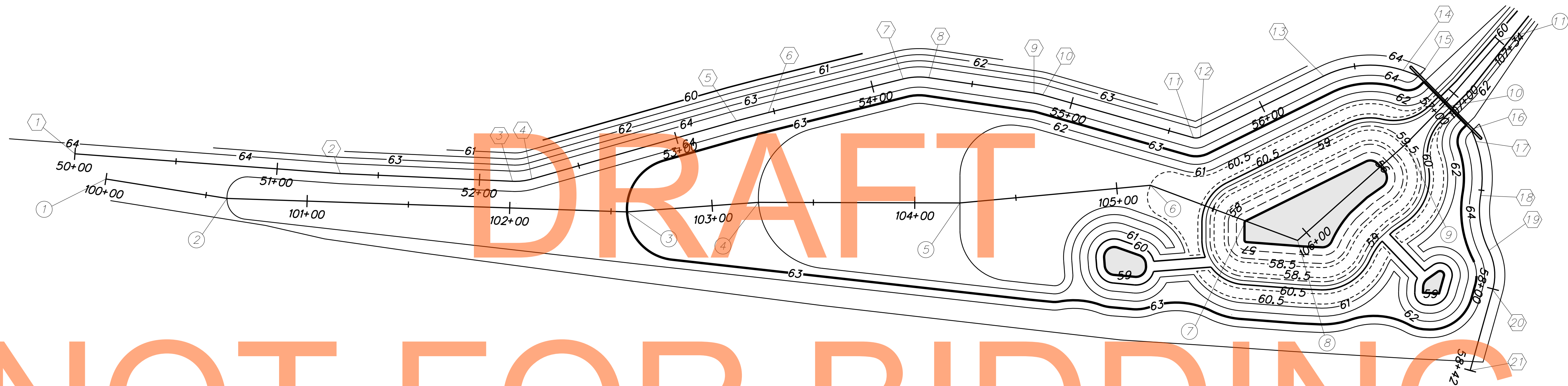
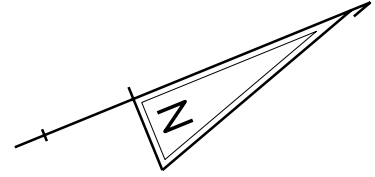
**US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER MANAGEMENT DETAILS BMP 660 (BASIN 3)**

SHEET NO.	716
TOTAL SHTS.	1256

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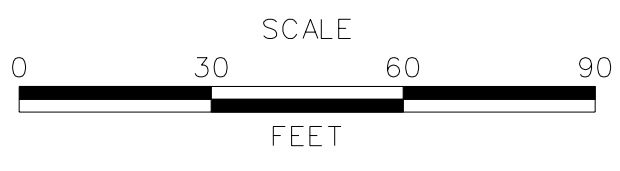
AUGUST 2015

STAKEOUT - BMP 660 (BASIN 3)

CL PRINCIPAL SPILLWAY			
	STATION	NORTHING	EASTING
①	POB STA. 100+00.00	529969.2774	563994.7457
②	PI STA. 100+60.49	530020.9847	564026.1318
③	PI STA. 102+57.90	530201.1979	564106.7198
④	PI STA. 103+22.93	530263.0452	564126.8336
⑤	PI STA. 104+22.30	530354.9620	564164.5909
⑥	PI STA. 105+16.64	530445.2385	564191.9620
⑦	PI STA. 105+66.80	530482.0997	564225.9754
⑧	PI STA. 105+94.16	530502.2109	564244.5329
⑨	PI STA. 106+65.91	530569.8304	564220.5526
⑩	PI STA. 106+90.99	530592.8491	564210.5903
⑪	POE STA. 107+34.39	530631.5406	564190.9160

CL EMBANKMENT			
	STATION	NORTHING	EASTING
①	POB STA. 50+00.00	529959.7964	563977.4735
②	PI STA. 51+31.30	530077.3938	564035.8736
③	PC STA. 52+16.28	530154.5793	564071.4358
④	PT STA. 52+25.93	530163.8374	564074.0072
⑤	PI STA. 53+30.90	530268.1702	564085.5386
⑥	PI STA. 53+47.12	530284.2445	564087.6572
⑦	PC STA. 54+15.63	530352.0688	564097.3865
⑧	PT STA. 54+28.39	530364.0385	564101.5976
⑨	PC STA. 54+80.81	530409.2247	564128.1778
⑩	PT STA. 54+85.16	530412.8129	564130.6197
⑪	PC STA. 55+62.49	530473.7493	564178.2386
⑫	PT STA. 55+66.10	530477.0810	564179.2159
⑬	PC STA. 56+33.90	530544.6882	564174.3153
⑭	PCC STA. 56+74.18	530582.0368	564186.4833
⑮	PT STA. 56+82.87	530588.6107	564192.3676
⑯	PC STA. 57+19.39	530602.5283	564226.1317
⑰	PCC STA. 57+25.55	530602.0437	564232.4696
⑱	PRC STA. 57+52.62	530594.2176	564258.0773
⑲	PRC STA. 57+80.50	530587.7628	564284.7172
⑳	PT STA. 58+00.45	530582.1759	564303.4045
㉑	POE STA. 58+41.71	530556.8767	564335.9982

ADDENDUMS / REVISIONS	



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

CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: BAS
	CHECKED BY: JJW

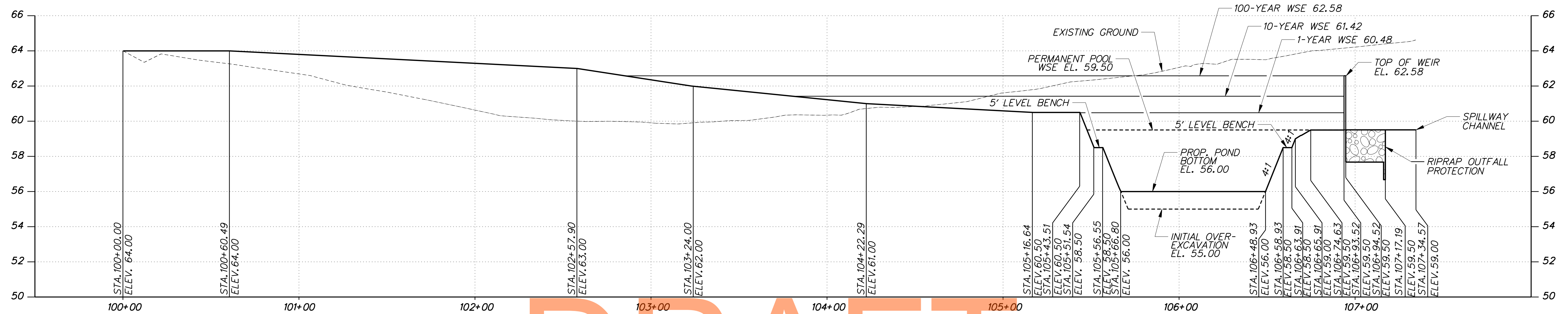
**STORMWATER  
MANAGEMENT DETAILS  
BMP 660 (BASIN 3)**

SW32
SHEET NO. 717
TOTAL SHTS. 1256

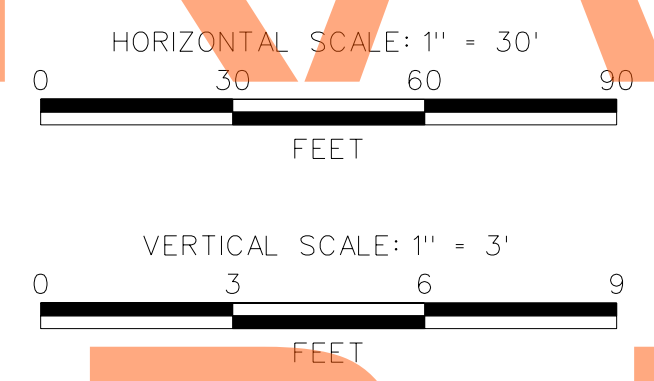
11/14/2012 J:\BRIDGE\_HIGHWAYS\9040\_Delidol\_301\Civil\Plans\2A\SW\Plan\3\SW\_3\_02.dgn



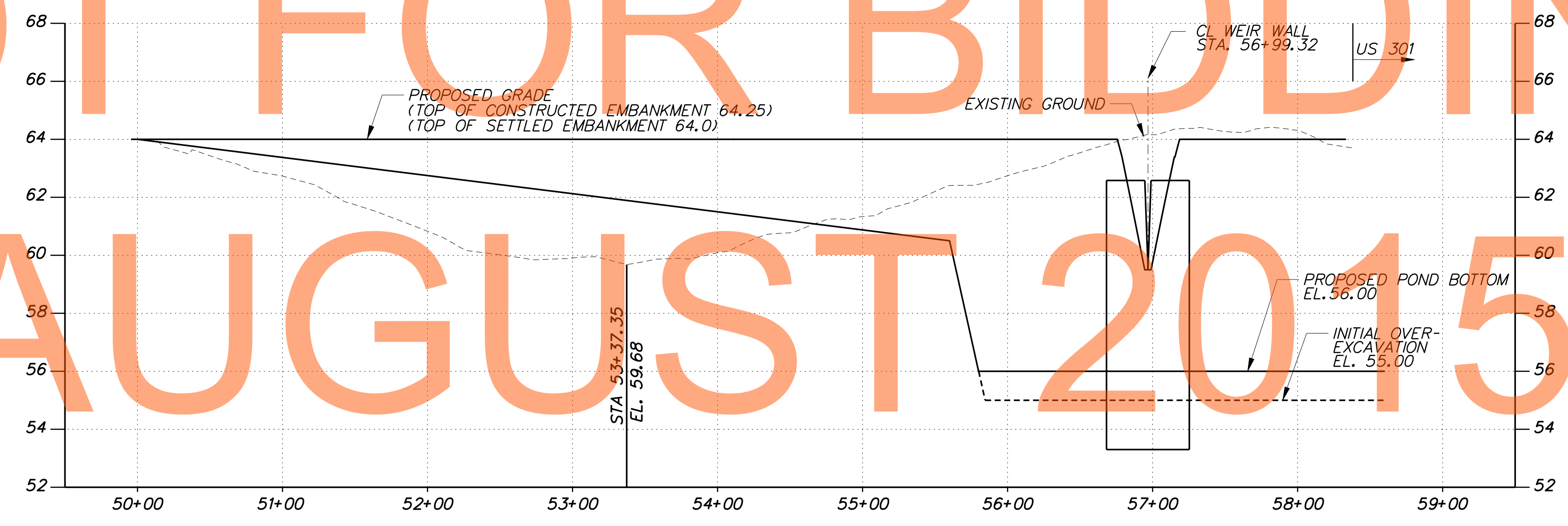




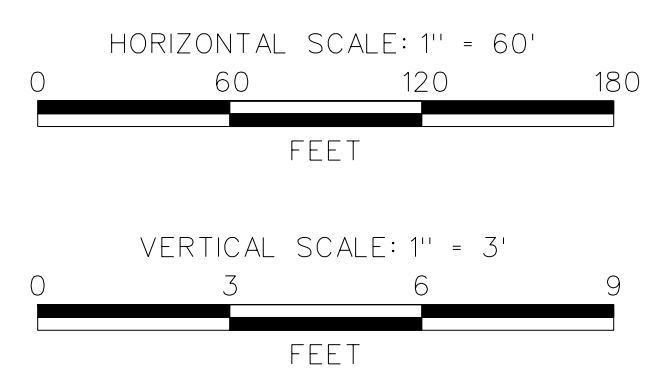
**SPILLWAY PROFILE - BMP 660 (BASIN 3)**



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**EMBANKMENT PROFILE FOR BMP 660 (BASIN 3)**



11/13/2012 J:\BRIDGE-HIGHWAYS\9040\_Delidol\_301\Civil\Plans\2A\SWM\ Pond 3\SW\_3\_03.dgn



ADDENDUMS / REVISIONS	

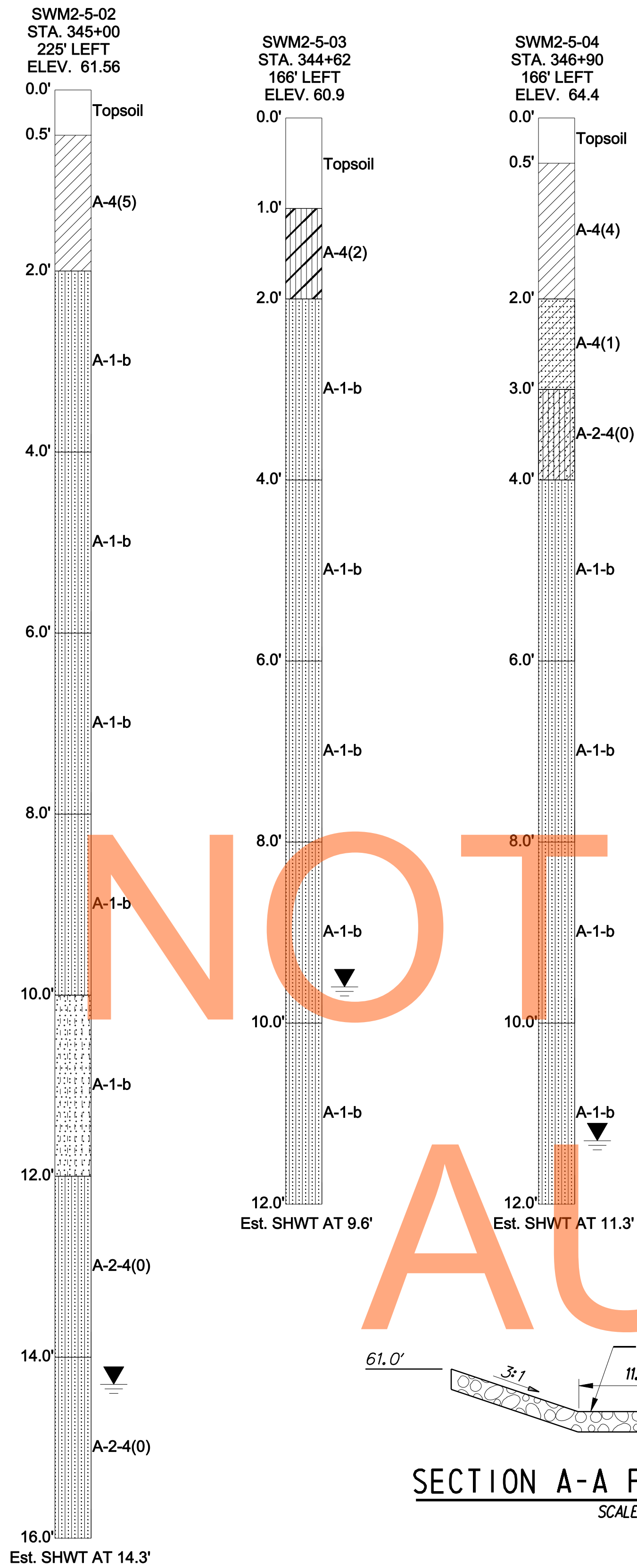
AS SHOWN

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

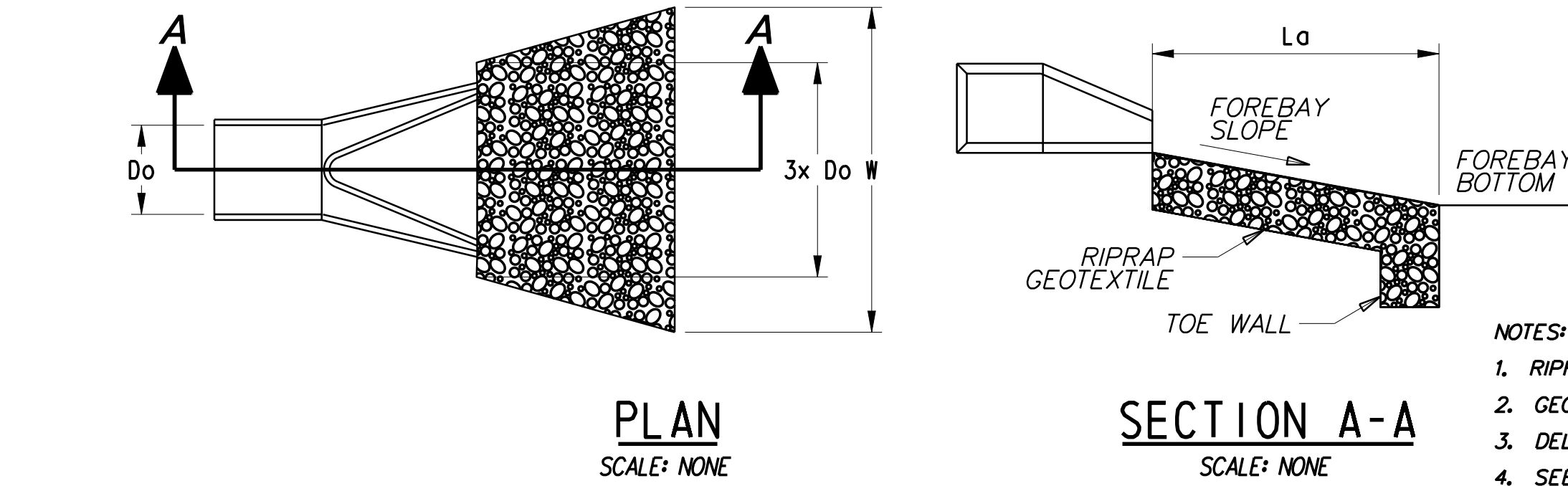
CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER  
MANAGEMENT DETAILS  
BMP 660 (BASIN 3)**

SW33
SHEET NO.
718
TOTAL SHTS.
1256



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



**PLAN**  
SCALE: NONE

**SECTION A-A**  
SCALE: NONE

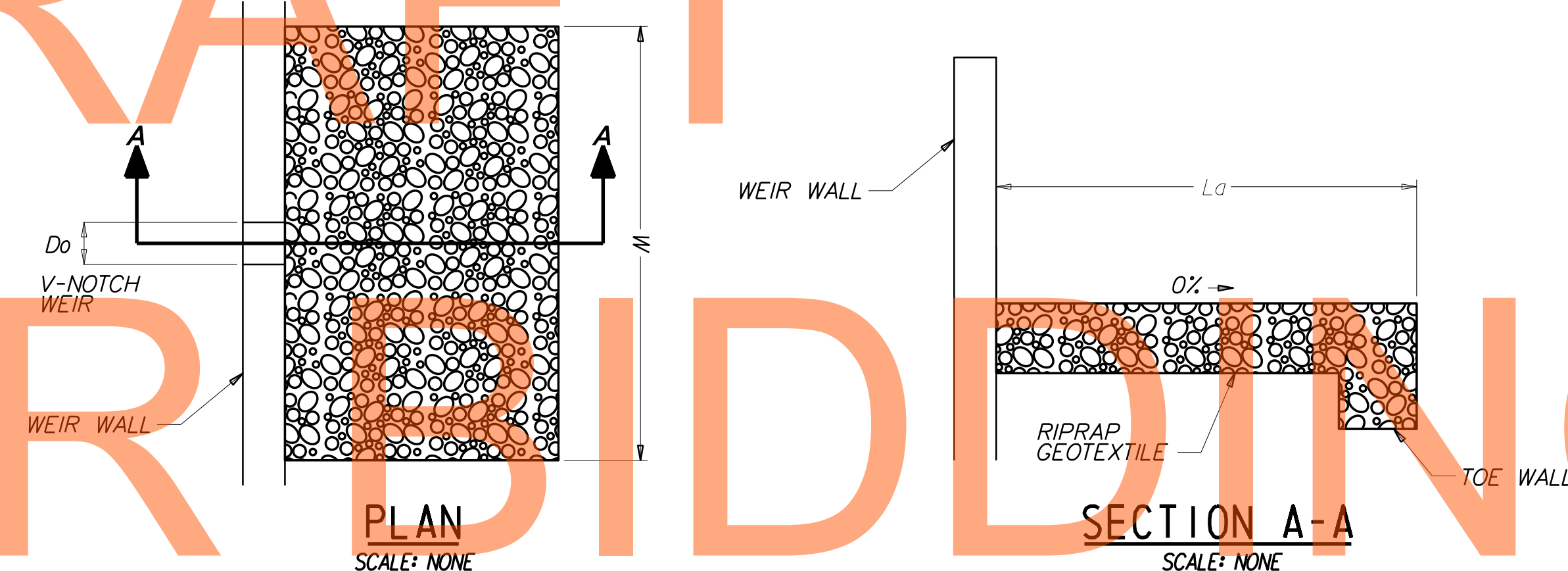
**DATA**

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

FES ID	Do	La	W	R No.
19	1.5'	7.0'	9.0'	R-4
20	2.0'	9.0'	6.0'	R-4
22	1.5'	7.0'	4.0'	R-4

- NOTES:**
- RIPRAP ITEM 712005
  - GEOTEXTILES, RIPRAP ITEM 713003
  - DELEWARE NO. 57 STONE ITEM 302012
  - SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.
  - DEPRESS CENTERLINE OF APRON SLIGHTLY TO PREVENT EDGE CUTTING

**FOREBAY RIPRAP OUTLET PROTECTION**  
SCALE: NONE



**PLAN**  
SCALE: NONE

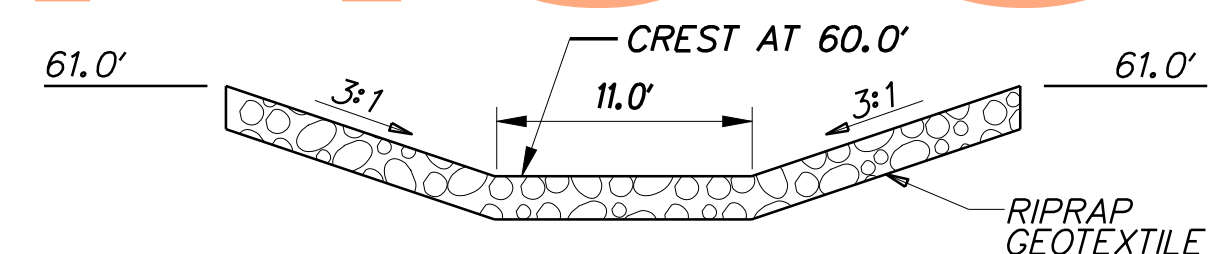
**SECTION A-A**  
SCALE: NONE

**DATA**

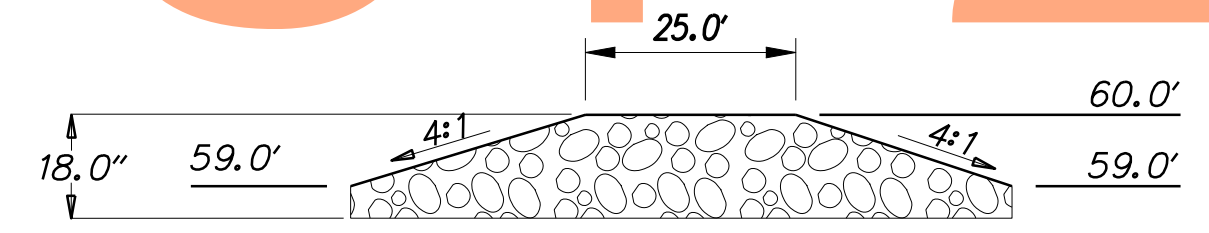
WEIR TOP OF WIDTH (Do) = 1.36'  
APRON LENGTH (La) = 20'  
APRON WIDTH (W) = 22'  
RIPRAP SIZE (R No.) = R-5 WITH NO. 57 STONE

- NOTES:**
- RIPRAP ITEM 712006
  - GEOTEXTILES, RIPRAP ITEM 713003
  - DELEWARE NO. 57 STONE ITEM 302012
  - SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.
  - DEPRESS CENTERLINE OF APRON SLIGHTLY TO PREVENT EDGE CUTTING

**BASIN RIPRAP OUTLET PROTECTION**  
SCALE: NONE

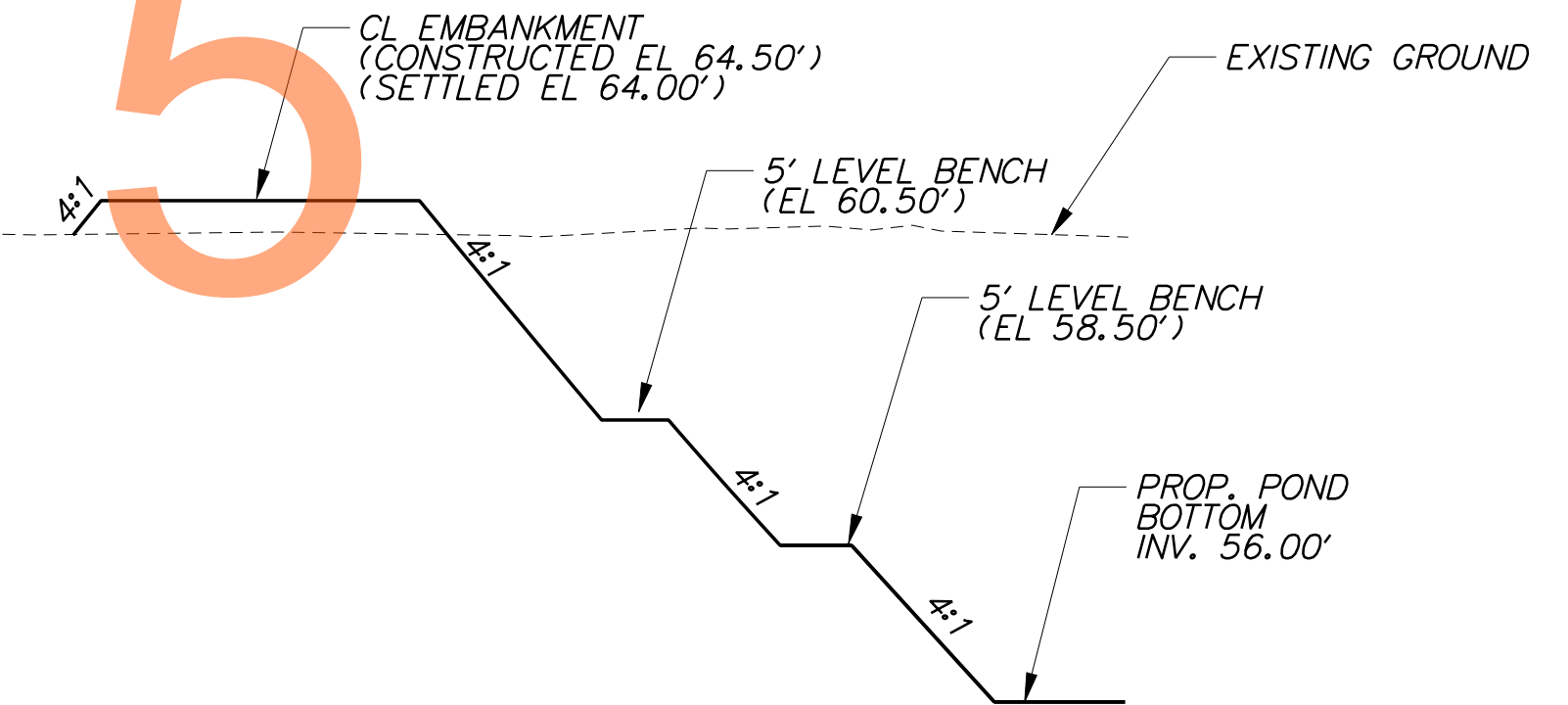


**STONE CHECK DAM**  
SCALE: NONE



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

- NOTES:**
- RIPRAP ITEM 712020
  - GEOTEXTILES, RIPRAP ITEM 713003
  - SEE STANDARD NO. E-10 FOR GEOTEXTILE PLACEMENT



**SECTION C-C FROM BASIN PLAN**  
SCALE: NONE

11/13/2012 J:\BRIDGE\_HIGHWAYS\9040\_Deidol\301\Civil\Plans\2A\SWM\Pond\_3\SW\_3\_04.dgn

ADDENDUMS / REVISIONS

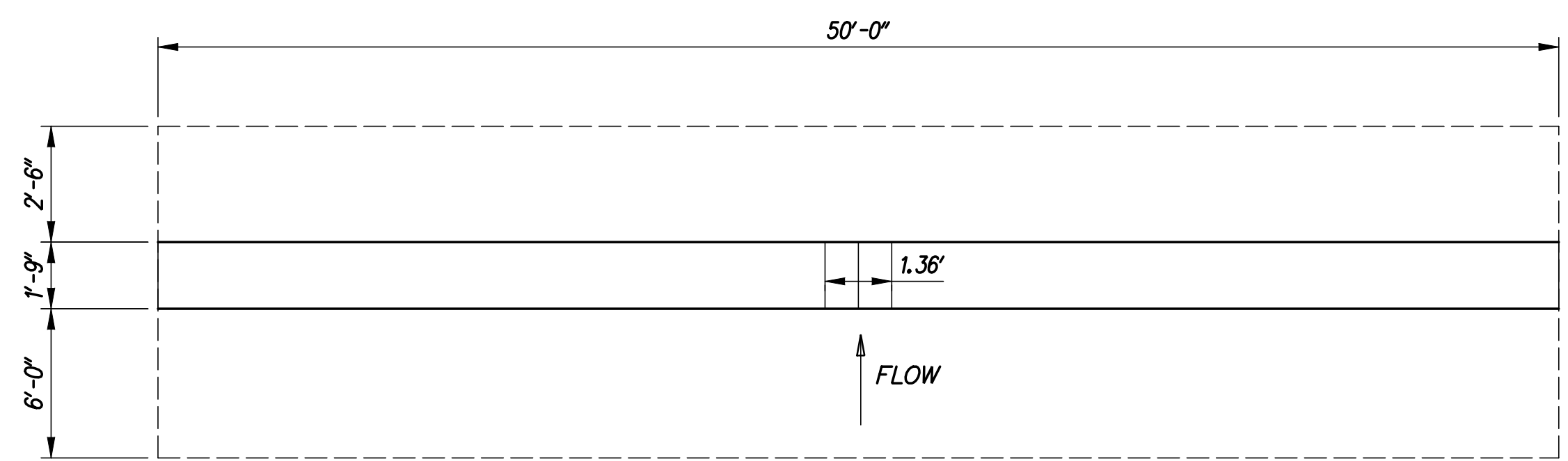
AS SHOWN

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

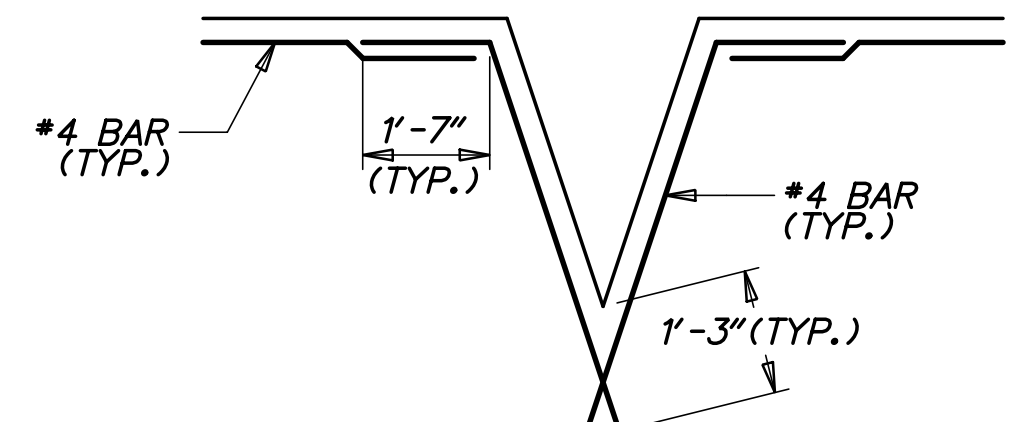
CONTRACT	BRIDGE NO.
T200911303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER MANAGEMENT DETAILS BMP 660 (BASIN 3)**

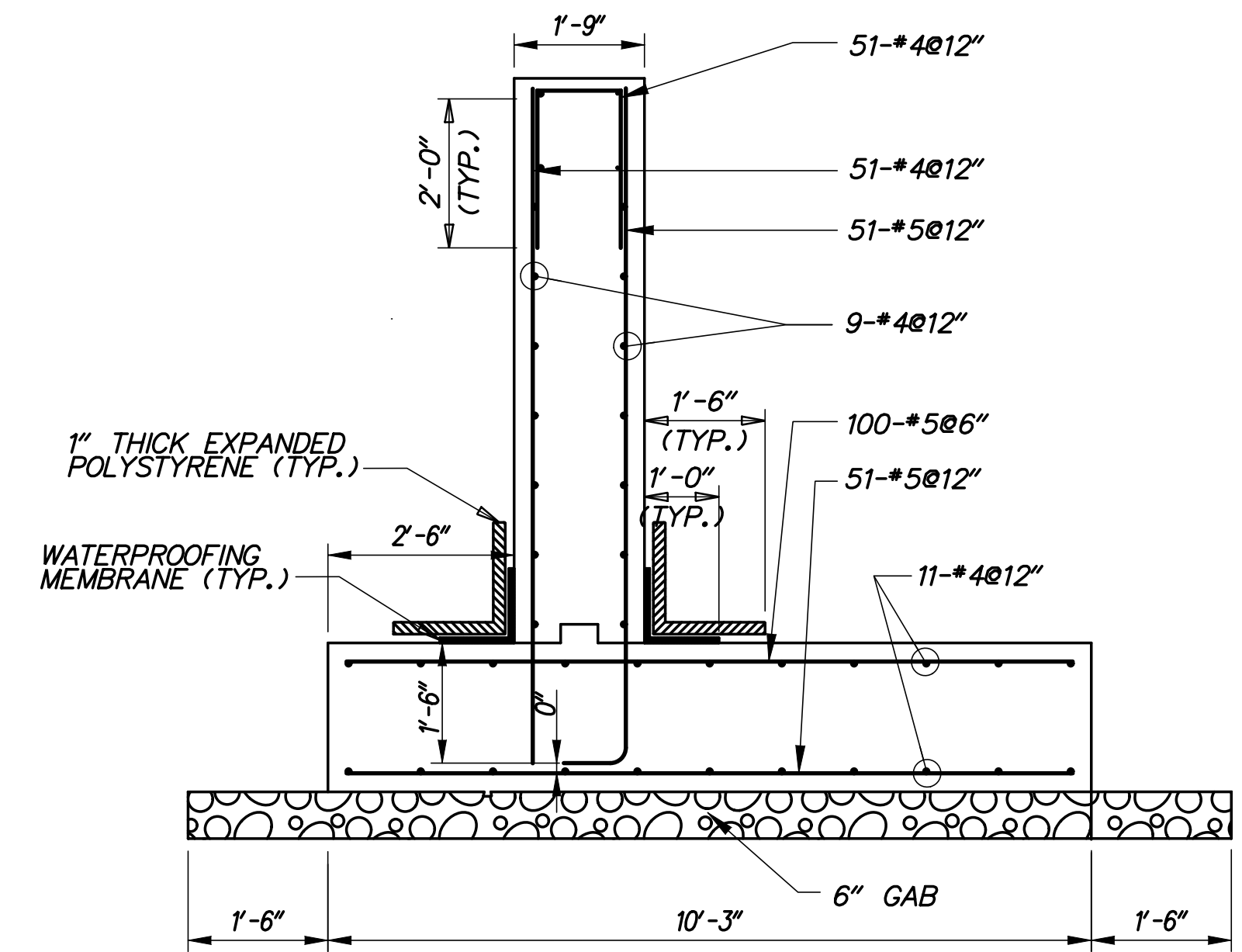
SW34
SHEET NO.
719
TOTAL SHTS.
1256



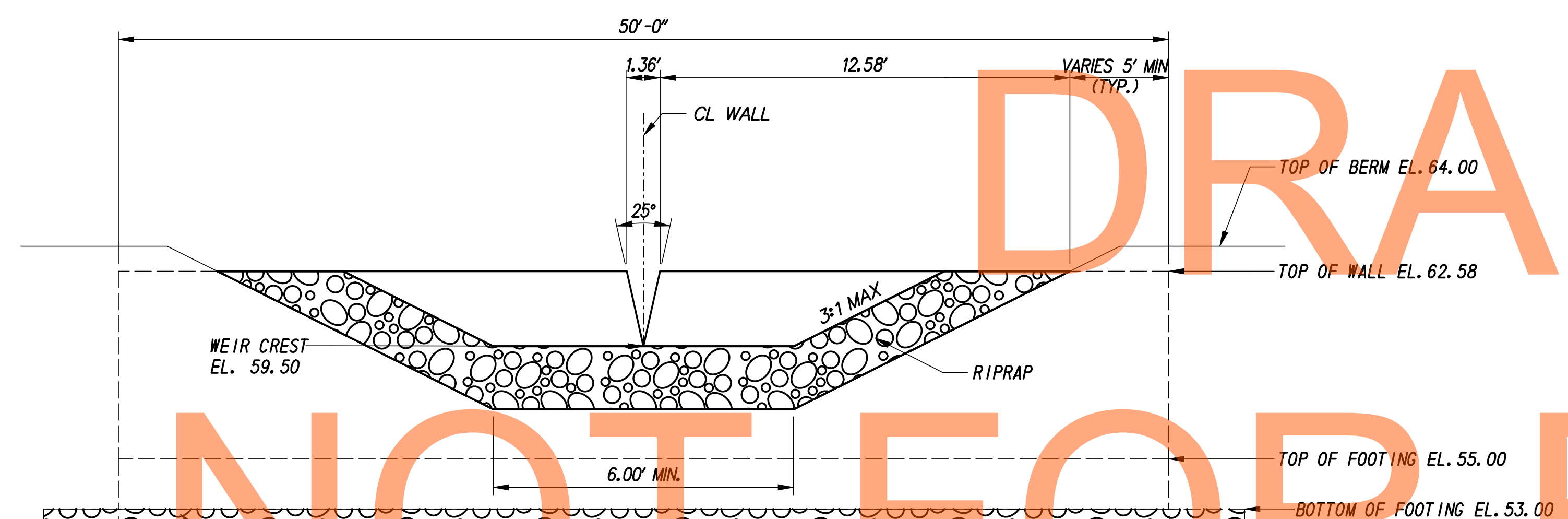
**WEIR WALL PLAN**  
SCALE: NONE



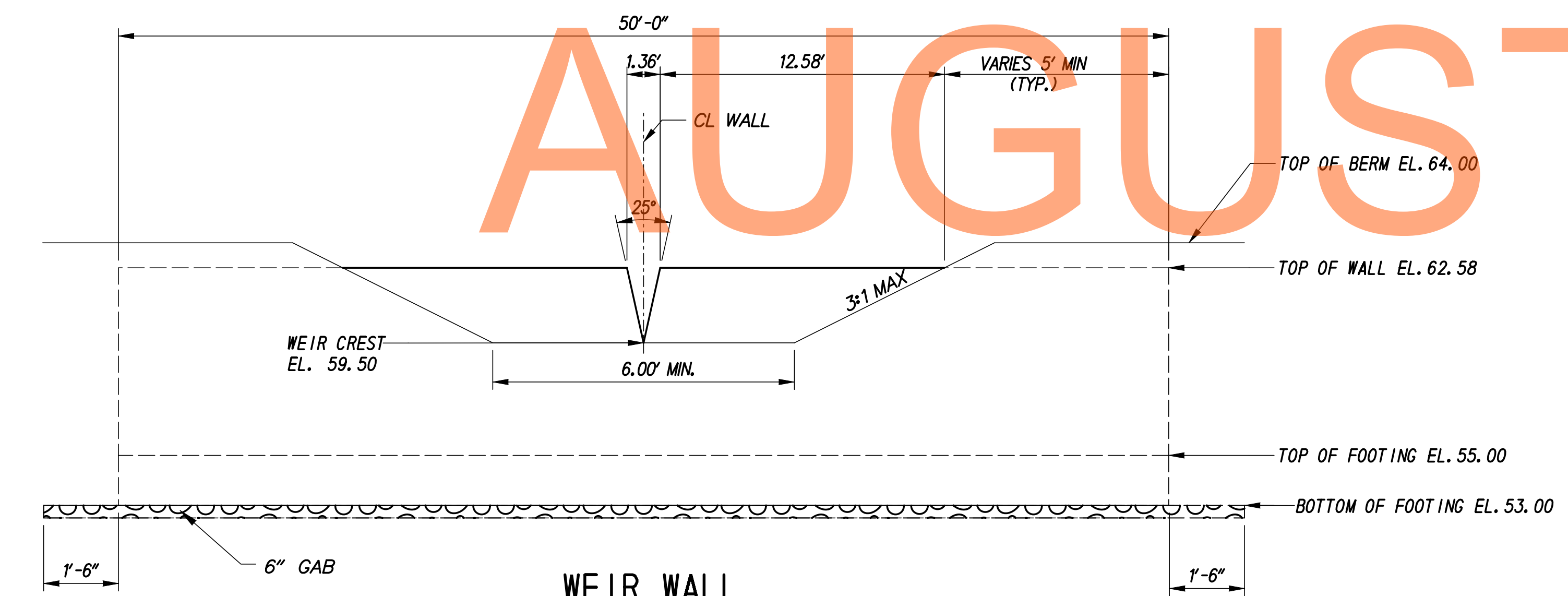
**OPENING DETAILS**  
SCALE: NONE



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



**WEIR WALL EXTERIOR ELEVATION WITH RIPRAP 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 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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<p><b>DELAWARE DEPARTMENT OF TRANSPORTATION</b></p>	ADDENDUMS / REVISIONS		AS SHOWN	<p><b>US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD</b></p>	CONTRACT	BRIDGE NO.	<p><b>STORMWATER MANAGEMENT DETAILS BMP 660 (BASIN 3)</b></p>	SW-35
	T20091303				SHEET NO.	720		
	COUNTY	DESIGNED BY: BAS			TOTAL SHTS.	1256		
	NEW CASTLE	CHECKED BY: JJW						

**INFILTRATION BASIN CONSTRUCTION SEQUENCE**

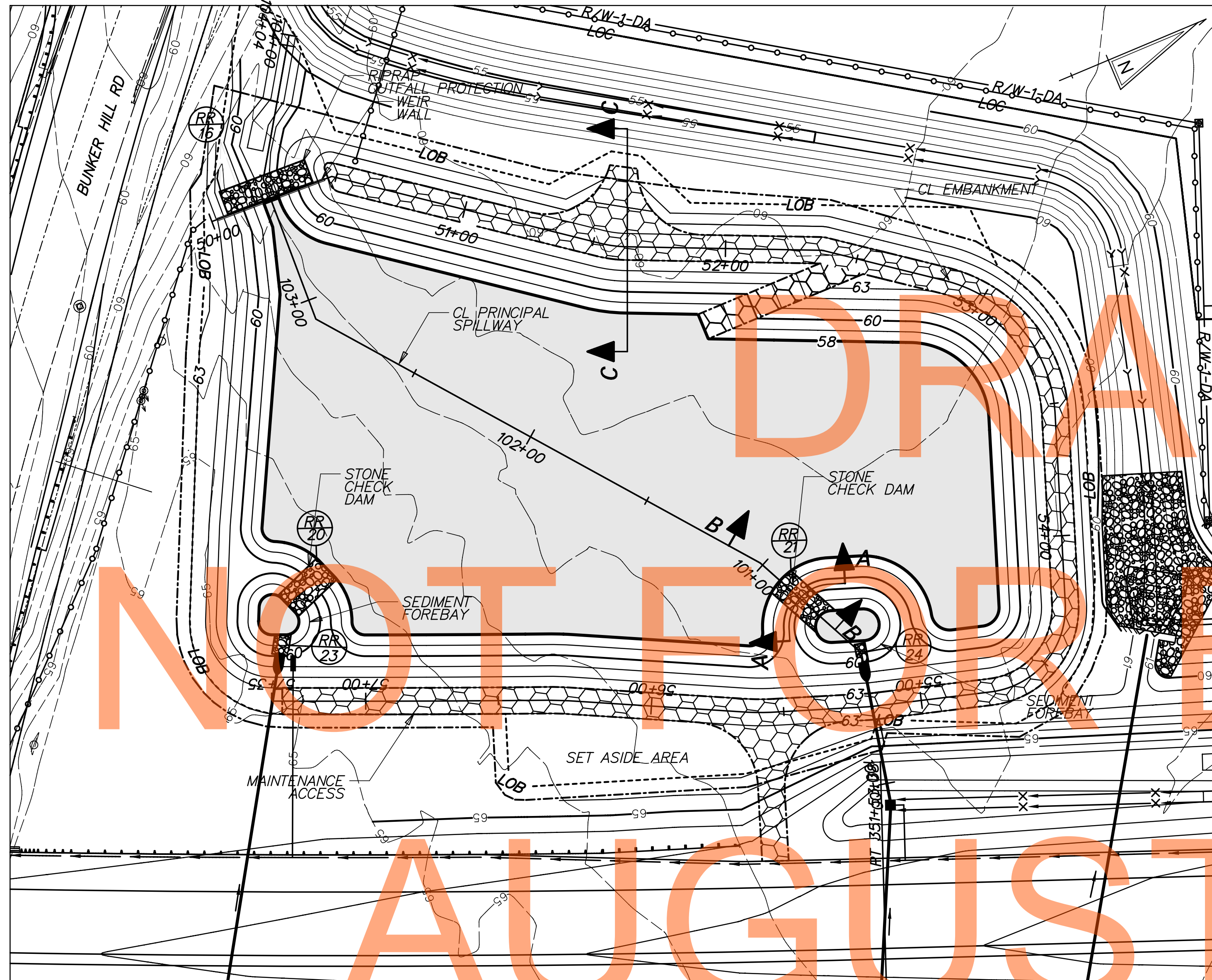
THE STORMWATER MANAGEMENT BASIN SHALL FUNCTION AS AN INFILTRATION FACILITY AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:

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, DIVERSION BERMS OR OTHER SUITABLE MEASURES SHOULD BE PLACED AROUND THE BASIN'S PERIMETER DURING ALL PHASES OF CONSTRUCTION TO DIVERT ALL RUNOFF AND SEDIMENT AWAY FROM THE BASIN. THESE DIVERSION MEASURES SHOULD NOT BE REMOVED 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 POND OUTLET STRUCTURE, RIPRAP ENERGY DISSIPATER AT END OF PRINCIPAL SPILLWAY AND PARTIAL EMBANKMENT AS NEEDED TO INSTALL POND OUTLET STRUCTURE. INSTALL SKIMMER DEWATERING DEVICE. DE-WATER FOUNDATION AS NEEDED IN ACCORDANCE WITH SECTION 110.13 AND USE SUMP PIT FOR DUMPING.
- 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, CH AND GM 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.
  - DURING EXCAVATION, THE CONTRACTOR SHALL SALVAGE AND STOCKPILE SOILS CLASSIFIED AS SW AND SP PER THE UNIFIED SOIL CLASSIFICATION SYSTEM TO BE USED TO FILL THE BASIN BOTTOM WHERE OVEREXCAVATED FOR REMOVAL OF UNSUITABLE SOIL. THE ABOVE CLASSIFIED SOILS MAY BE OBTAINED FROM ELSEWHERE WITHIN THE PROJECT LIMITS, IF NECESSARY.
- STABILIZE BASIN EMBANKMENT AND BOTTOM WITH PERMANENT SEEDING PER LANDSCAPING PLANS.
- REMOVE EROSION AND SEDIMENT CONTROLS, WATER DIVERSION PRACTICES AND FENCE UPON FINAL STABILIZATION AND APPROVAL FROM INSPECTOR.

**PLANTING SCHEDULE**

PERMANENT GRASS SEEDING - WET GROUND UP TO ELEVATION 59.0.  
PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 59.0.



**PLAN - BMP 663 (BASIN 4)**

POND DESIGN SUMMARY				
DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC. FT)
QUALITY STORM (1-YR)	8.78	0.00	58.32	0.68
10 - YEAR	32.42	0.67	60.07	1.20
100 - YEAR	76.25	5.03	61.40	4.09

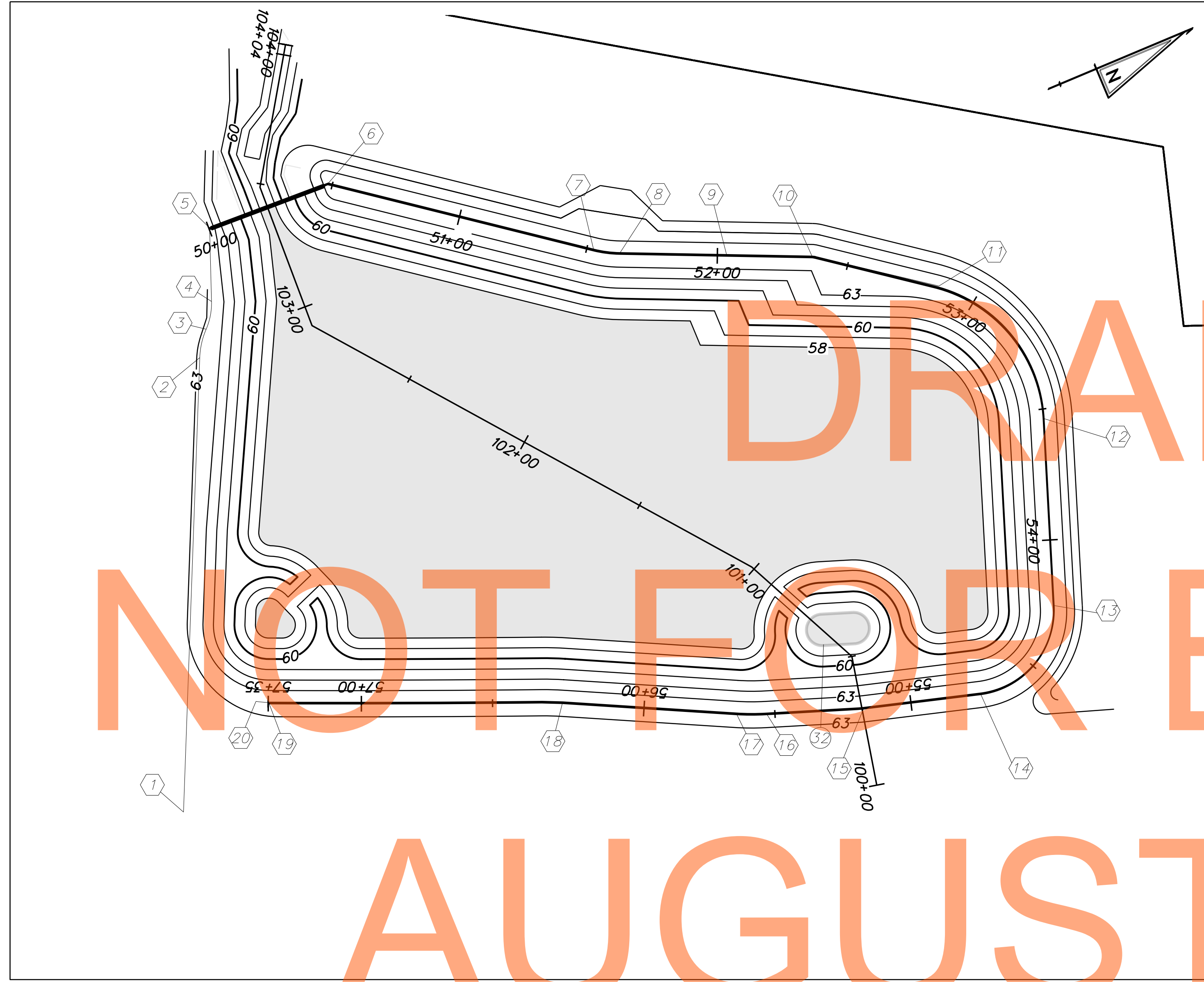
HAZARD CLASSIFICATION: CLASS A AS PER POND CODE 378  
DRAINAGE AREA TO FACILITY: 13.21 ACRES  
MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY BY INFILTRATION OF 1-YEAR STORM RUNOFF, WATER QUANTITY FOR 10 AND 100-YEAR STORMS.

RIPRAP SCHEDULE		
NO.	TYPE	AREA (SY)
16	R-5	37
20	R-4	25
21	R-4	26
23	R-4	6
24	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	7131	CY
272501	POND OUTLET STRUCTURE, 7, SPECIAL	1	EACH
302011	DELAWARE NO. 3 STONE	306	TON
302012	DELAWARE NO. 57 STONE	9	TON
712005	R-4 RIPRAP	10	SY
712006	R-5 RIPRAP	37	SY
712020	R-4 RIPRAP	30	TON
713001	GEOTEXTILES, STABILIZATION	2057	SY
713003	GEOTEXTILES, RIPRAP	134	SY
733002	TOPSOILING, 6" DEPTH	6002	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	5671	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	3875	SY

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PLAN - BMP 663 (BASIN 4)

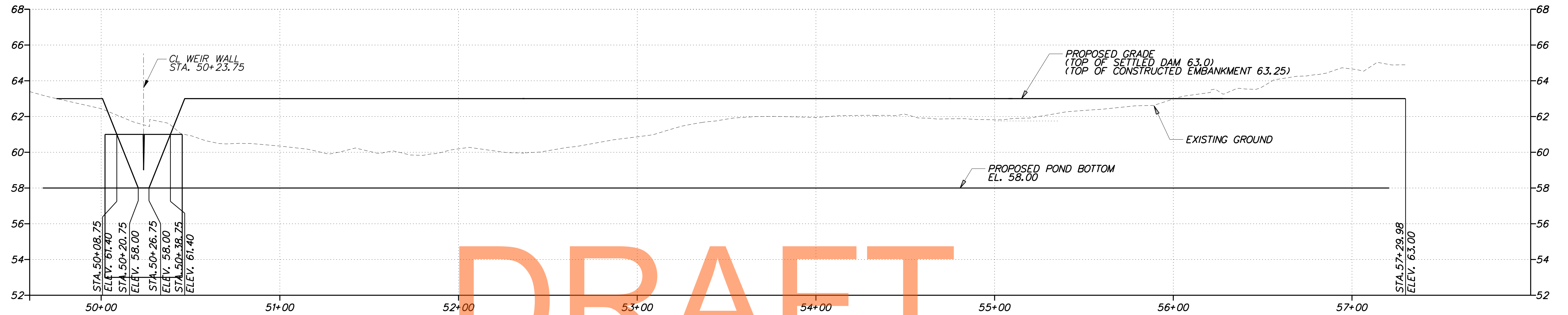
CL PRINCIPAL SPILLWAY		
STATION	NORTHING	EASTING
① POB STA. 100+00.00	531002.5369	564503.9204
② PI STA. 100+50.00	531012.8209	564454.9895
③ PI STA. 101+01.17	530990.8403	564408.7802
④ PI STA. 102+92.36	530872.0296	564258.9850
⑤ PI STA. 103+48.74	530874.1909	564202.6526
⑥ POE STA. 104+03.95	530904.2271	564156.3252

CL EMBANKMENT		
STATION	NORTHING	EASTING
① POB STA. 50+00.00	530850.1416	564209.8704
② PI STA. 50+02.15	530852.2949	564209.9530
③ PI STA. 50+45.35	530895.4631	564211.6095
④ PI STA. 50+48.31	530898.4186	564211.7229
⑤ PC STA. 51+52.54	530981.8843	564274.1504
⑥ PT STA. 51+62.71	530990.6421	564279.2724
⑦ PI STA. 52+03.36	531027.8185	564295.7071
⑧ PC STA. 52+35.94	531057.6236	564308.8831
⑨ PT STA. 52+37.10	531058.6203	564309.4700
⑩ PC STA. 52+83.98	531096.1836	564337.4565
⑪ PT STA. 53+54.11	531115.0921	564400.1352
⑫ PC STA. 54+25.48	531090.9890	564467.3138
⑬ PT STA. 54+73.54	531052.1571	564487.2983
⑭ PI STA. 55+18.22	531009.1721	564475.1364
⑮ PC STA. 55+53.50	530973.9873	564462.7058
⑯ PT STA. 55+64.96	530963.4431	564458.2263
⑰ PC STA. 56+31.24	530904.1145	564428.6794
⑱ PT STA. 57+35.50	530800.7834	564385.3572

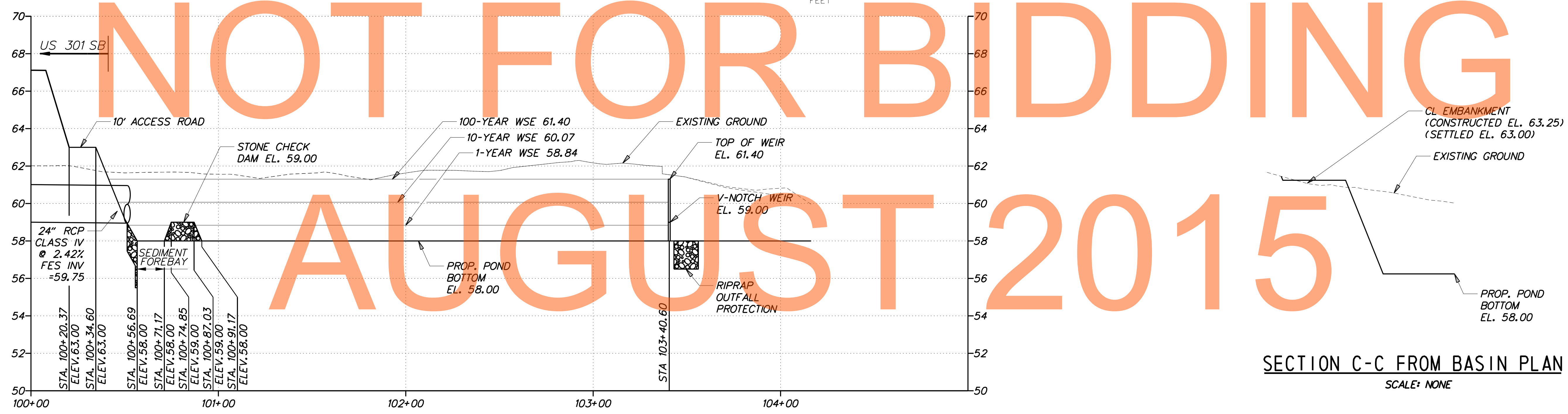
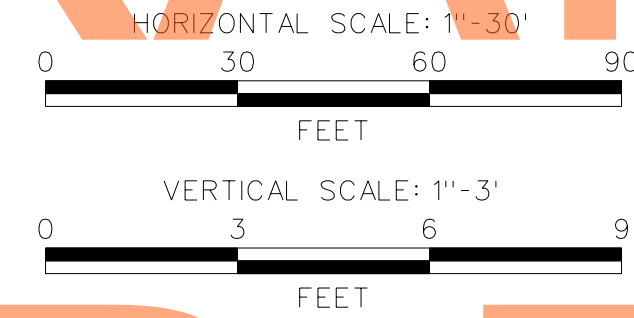
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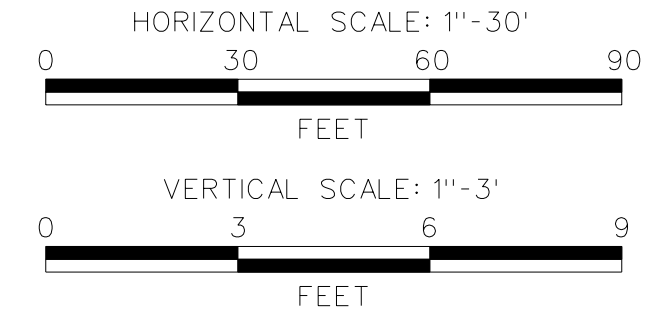
	<b>DELAWARE</b> <b>DEPARTMENT OF TRANSPORTATION</b>	ADDENDUMS / REVISIONS <table border="1" style="width: 100%; height: 20px;"> <tr><td> </td><td> </td></tr> </table>			SCALE 0      30      60      90 FEET	<b>US 301</b> <b>LEVELS ROAD</b> <b>TO SUMMIT BRIDGE ROAD</b>	CONTRACT T20091303 COUNTY NEW CASTLE	BRIDGE NO. DESIGNED BY: BAS CHECKED BY: JJW	<b>STORMWATER</b> <b>MANAGEMENT DETAILS</b> <b>BMP 663 (BASIN 4)</b>	SW37 SHEET NO. 722 TOTAL SHTS. 1256



EMBANKMENT PROFILE FOR BMP 663 (BASIN 4)



SPILLWAY PROFILE - BMP 663



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AUGUST 2015

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ADDENDUMS / REVISIONS	

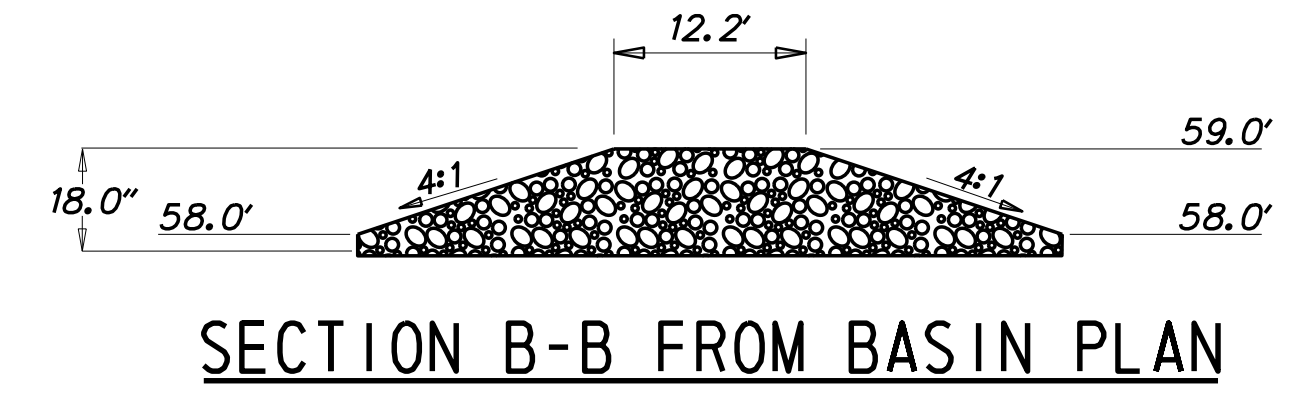
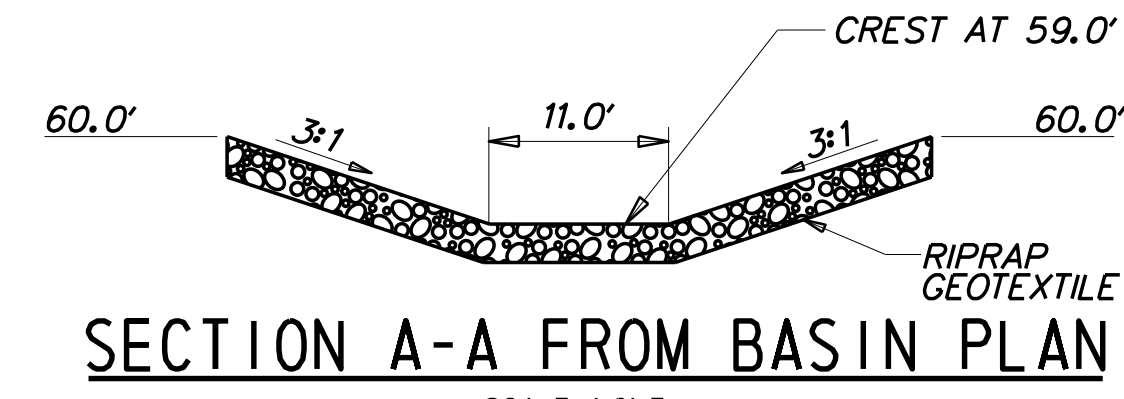
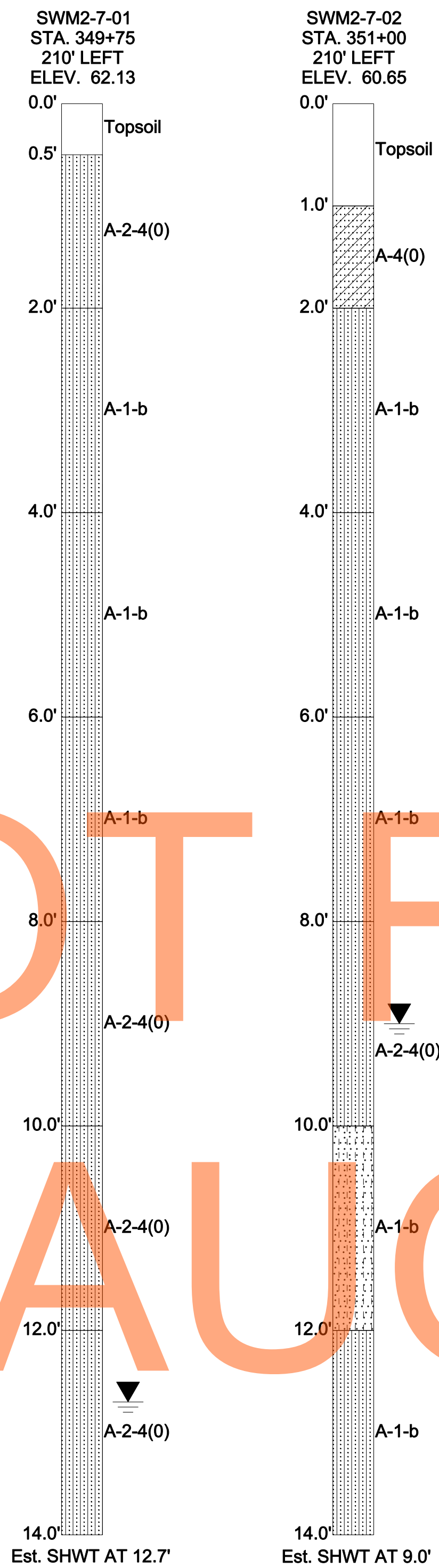
AS SHOWN

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

CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: BAS
	CHECKED BY: JJW

**STORMWATER  
MANAGEMENT DETAILS  
BMP 663 (BASIN 4)**

SW38
SHEET NO. 723
TOTAL SHTS. 1256

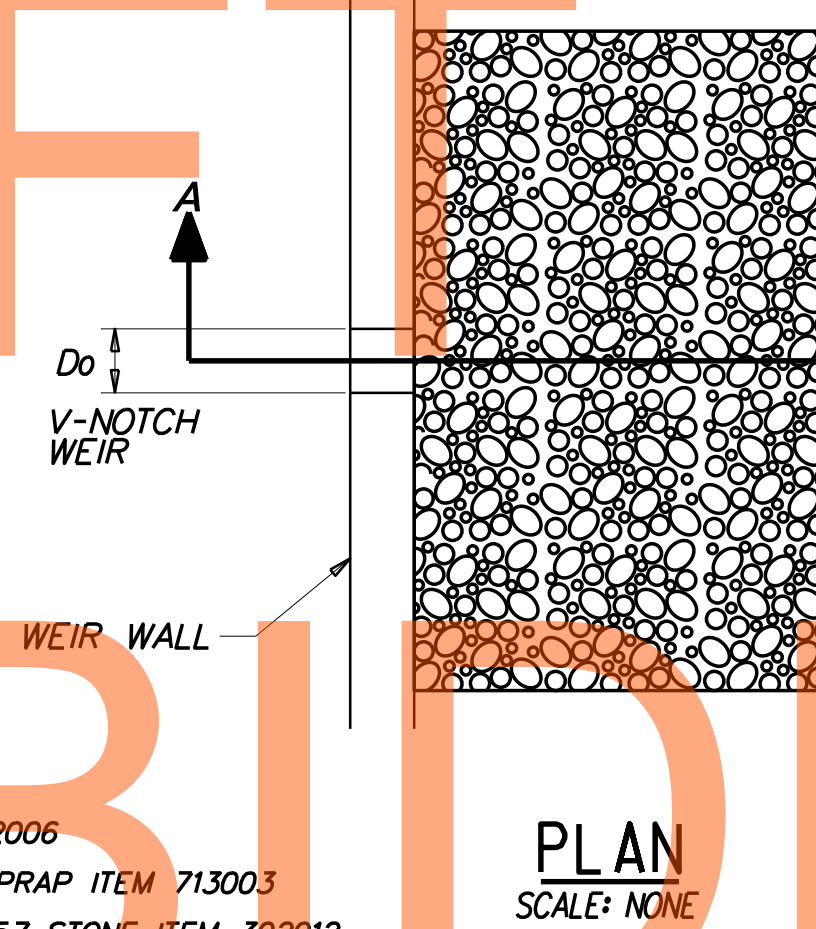


- NOTES:
1. RIPRAP ITEM 712020
  2. GEOTEXTILES, RIPRAP ITEM 713003
  3. SEE STANDARD NO. E-10 FOR GEOTEXTILE PLACEMENT

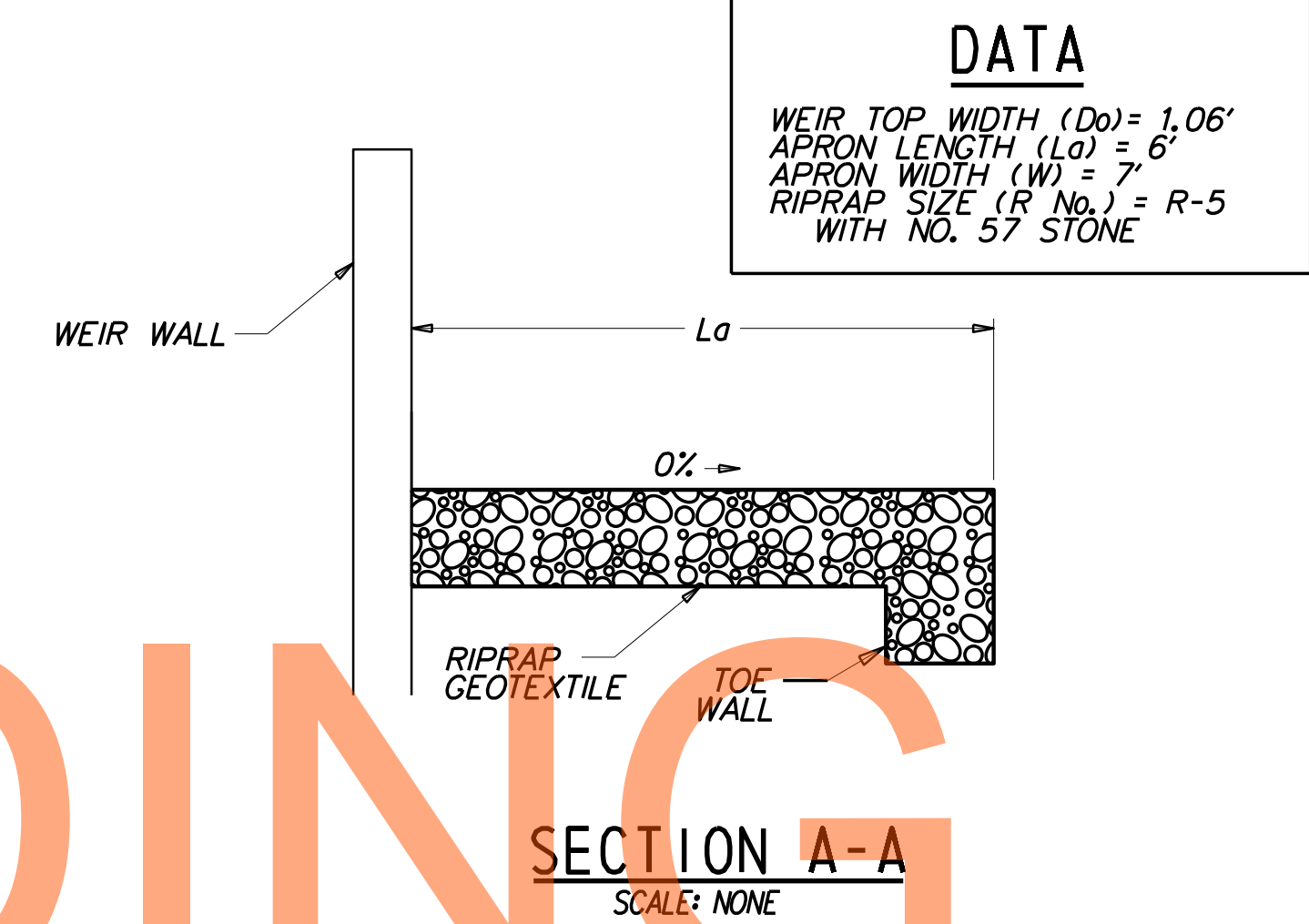
**STONE CHECK DAM**  
SCALE: NONE

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AUGUST 2015

- NOTES:
1. RIPRAP ITEM 712006
  2. GEOTEXTILES, RIPRAP ITEM 713003
  3. DELEWARE 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



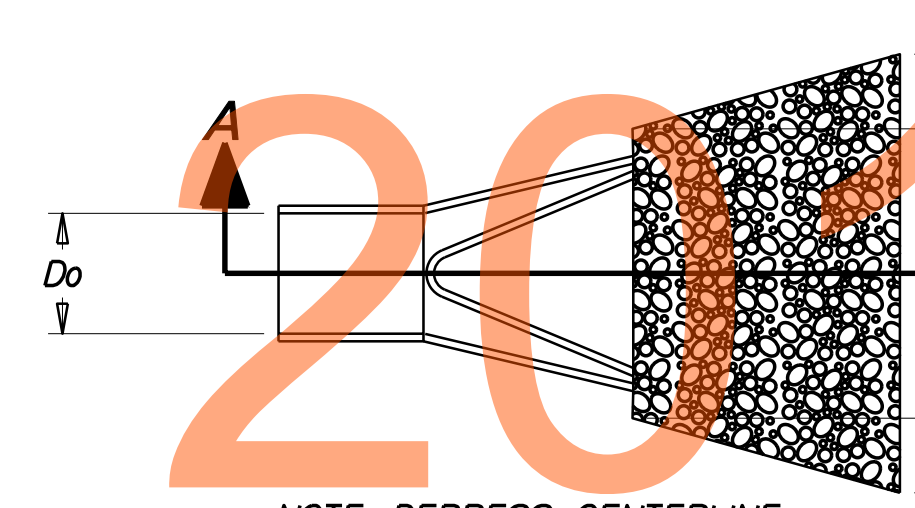
PLAN  
SCALE: NONE



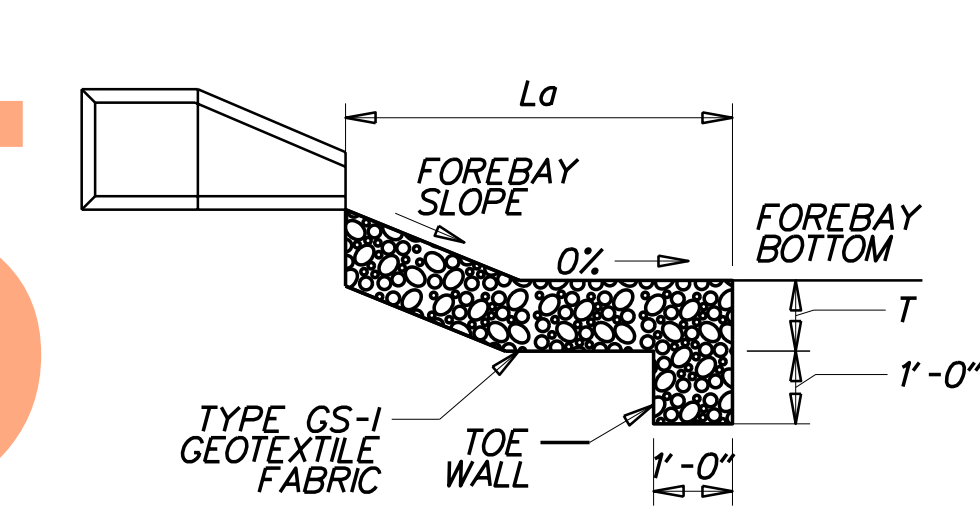
SECTION A-A  
SCALE: NONE

DATA	
WEIR TOP WIDTH (Do)	= 1.06'
APRON LENGTH (La)	= 6'
APRON WIDTH (W)	= 7'
RIPRAP SIZE (R No.)	= R-5
WITH NO. 57 STONE	

**BASIN RIPRAP OUTLET PROTECTION**  
SCALE: NONE



PLAN  
SCALE: NONE



SECTION A-A  
SCALE: NONE

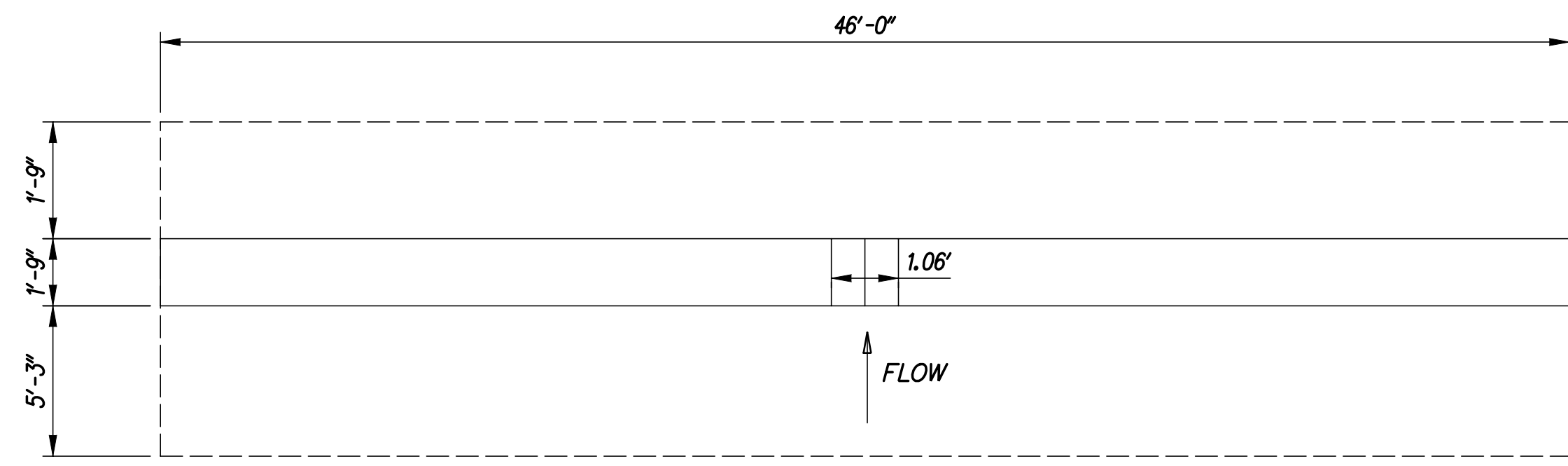
- NOTES:
1. RIPRAP ITEM 712005
  2. GEOTEXTILES, RIPRAP ITEM 713003
  3. DELEWARE NO. 57 STONE ITEM 302012
  4. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.
  5. DEPRESS CENTERLINE OF APRON SLIGHTLY TO PREVENT EDGE CUTTING

DATA					
PIPE DIAMETER (Do)	APRON LENGTH (La)	APRON WIDTH (W)	RIPRAP SIZE (R No.)	RIPRAP THICKNESS (T)	
23	1.75'	11.0'	6.0'	R-4	1.5'
24	2.0'	6.0'	4.0'	R-4	1.5'

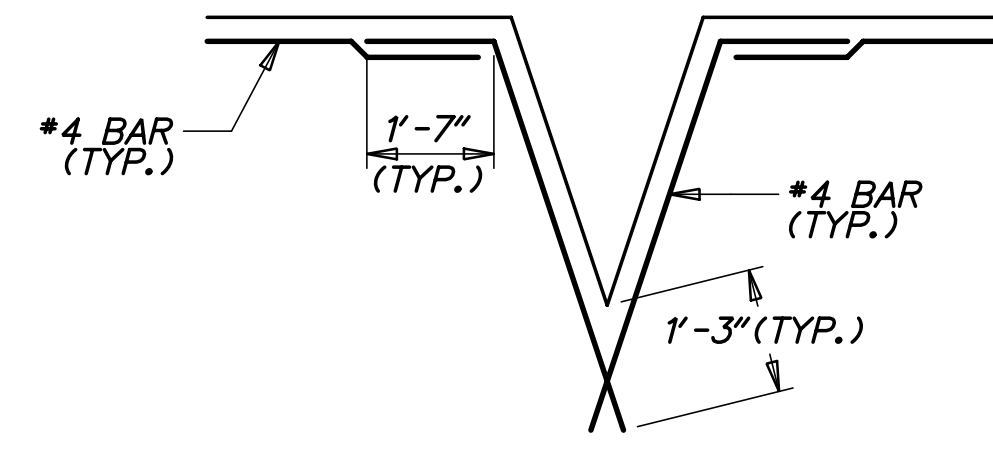
**INFLOW PIPE RIPRAP OUTLET PROTECTION**  
SCALE: NONE

FES ID	Do	La	W	R No.	T
23	1.75'	11.0'	6.0'	R-4	1.5'
24	2.0'	6.0'	4.0'	R-4	1.5'

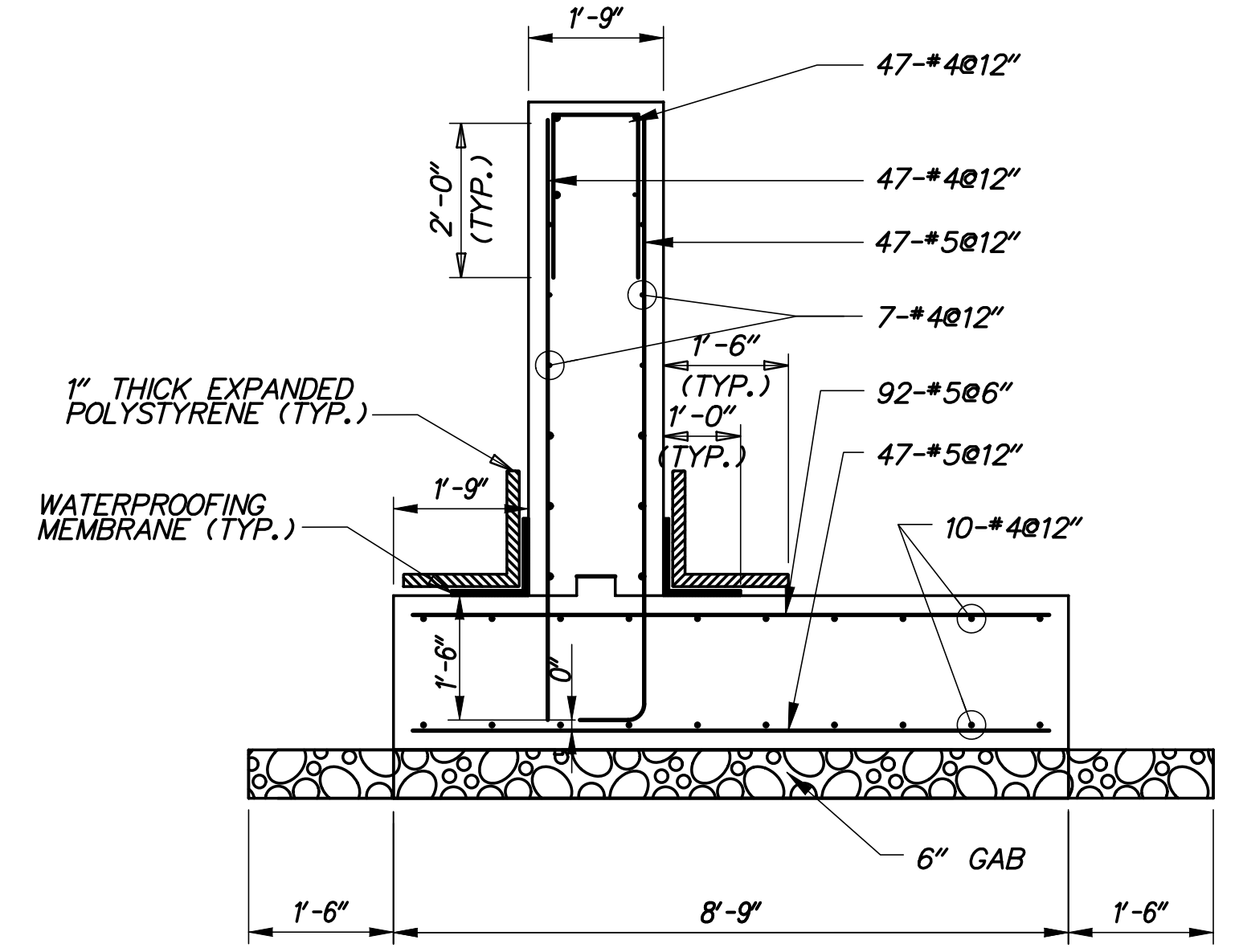
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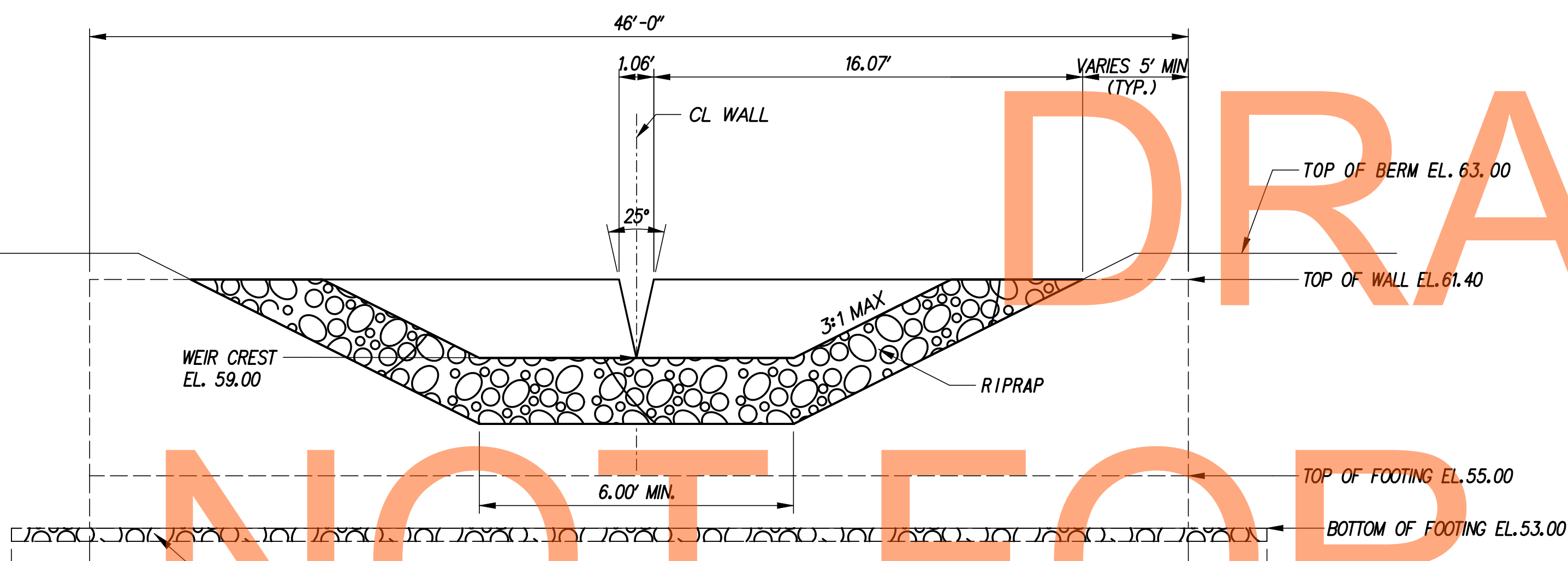
**WEIR WALL PLAN**  
SCALE: NONE



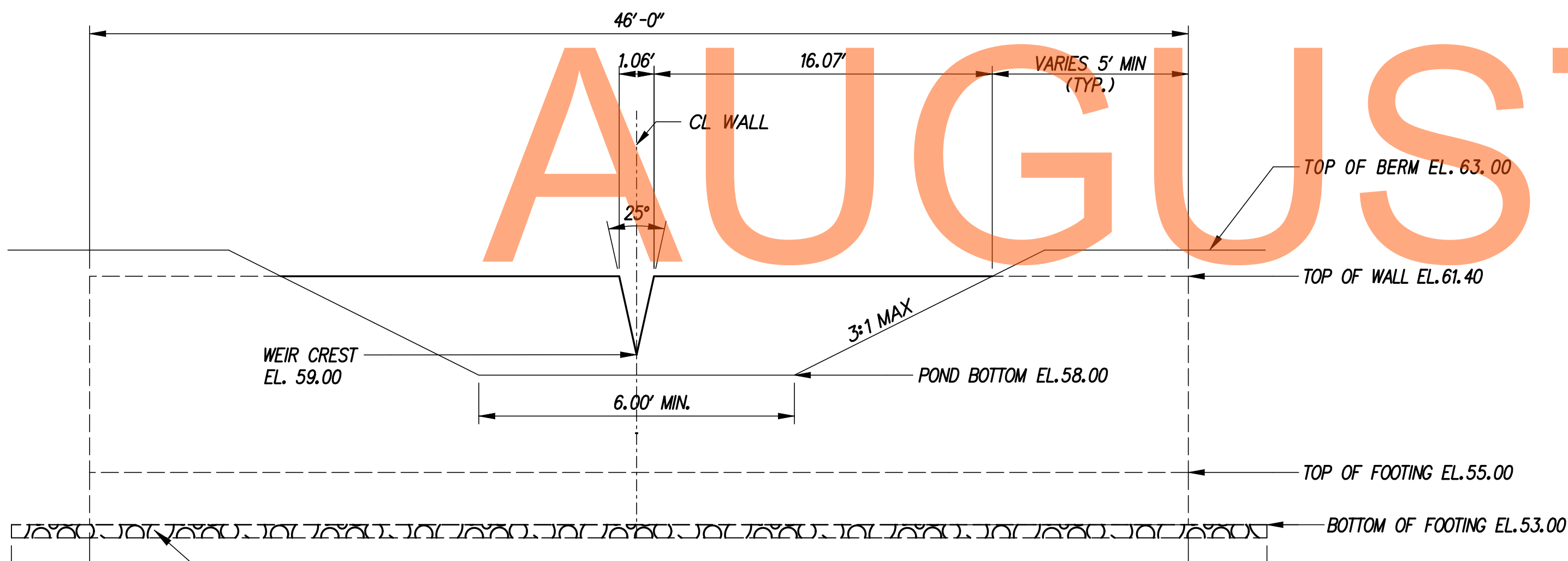
**OPENING DETAILS**  
SCALE: NONE



**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**

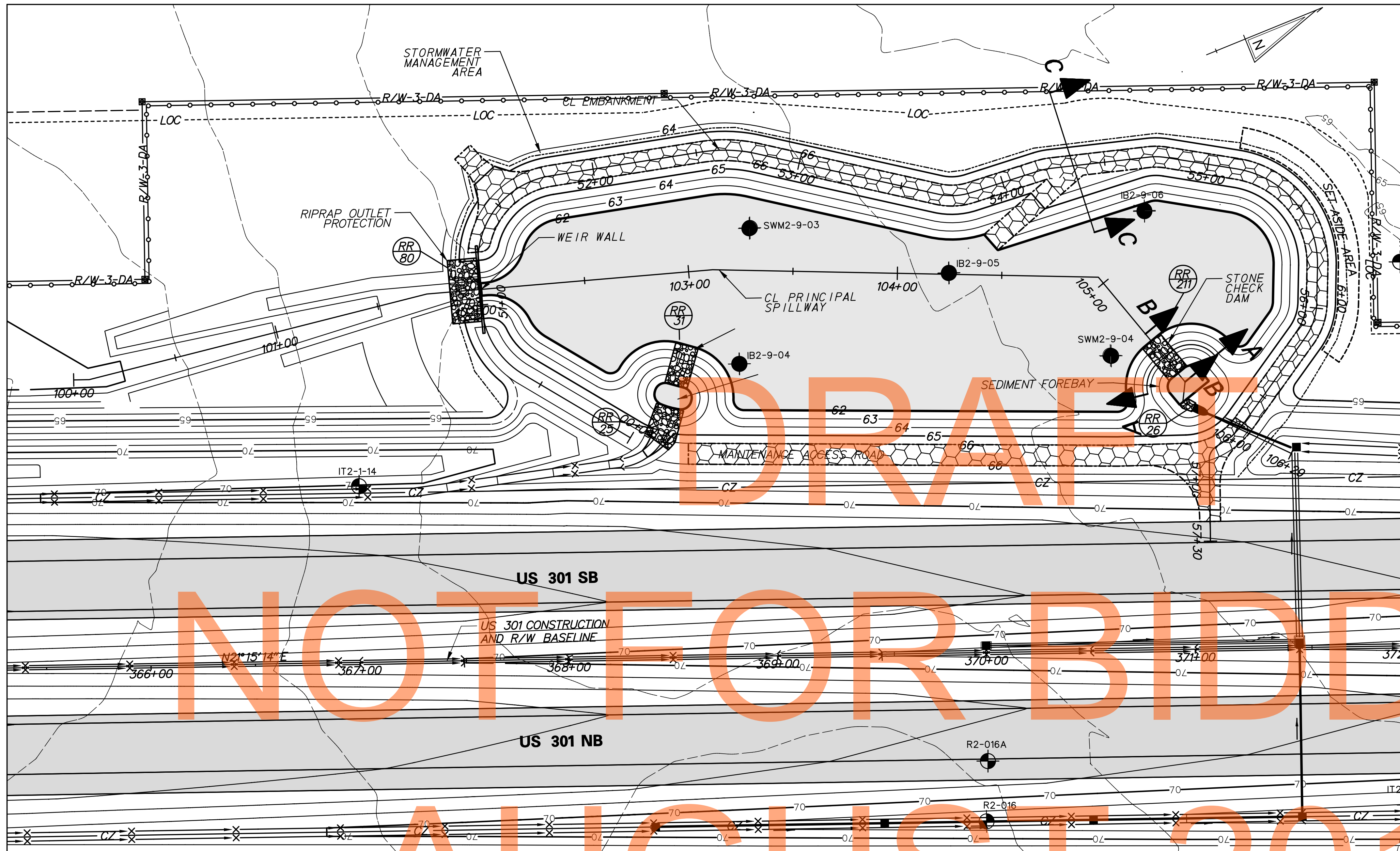
- DESIGN SPECIFICATIONS:
  - AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 4TH EDITION, 2007, INCLUDING 2008 AND 2009 INTERIM REVISIONS, AND AS SUPPLEMENTED BY DELAWARE DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL, MAY 2005, INCLUDING LATEST REVISIONS.
  - PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE 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 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	<b>US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD</b>	CONTRACT	BRIDGE NO.	<b>STORMWATER MANAGEMENT DETAILS BMP 663 (BASIN 4)</b>	SHEET NO.
					T20091303	DESIGNED BY: BAS		725
					COUNTY	CHECKED BY: JJW	TOTAL SHTS.	1256
					NEW CASTLE			





**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

1. 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.
2. 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, DIVERSION BERMS OR OTHER SUITABLE MEASURES SHOULD BE PLACED AROUND THE BASIN'S PERIMETER DURING ALL PHASES OF CONSTRUCTION TO DIVERT ALL RUNOFF AND SEDIMENT AWAY FROM THE BASIN. THESE DIVERSION MEASURES SHOULD NOT BE REMOVED UNTIL ALL CONSTRUCTION WITHIN THE BASIN'S DRAINAGE AREA IS COMPLETED AND THE DRAINAGE AREA STABILIZED.
3. SEE CONSTRUCTION PLANS FOR EROSION AND SEDIMENT CONTROL MEASURES.
4. 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.
5. CONSTRUCT WEIR WALL, RIPRAP ENERGY DISSIPATER AT THE 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 DUMPING.
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 BASIN EMBANKMENT AND BOTTOM WITH PERMANENT SEEDING.
8. REMOVE EROSION AND SEDIMENT CONTROLS, WATER DIVERSION PRACTICES AND FENCE UPON FINAL STABILIZATION AND APPROVAL FROM INSPECTOR.
9. 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**  
 PERMANENT GRASS SEEDING - WET GROUND UP TO ELEVATION 63.0  
 PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 63.0  
 PLACE TOPSOIL ABOVE BASIN BOTTOM ELEVATION 62.0

PLAN - BMP 664 (BASIN 5)

POND QUANTITIES			
ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	3730	CY
272501	POND OUTLET STRUCTURE, 8, SPECIAL	1	EACH
302011	DELAWARE NO. 3 STONE	325	TON
302012	DELAWARE NO. 57 STONE	12	TON
712005	R-4 RIPRAP	18	SY
712006	R-5 RIPRAP	50	SY
712020	R-4 RIPRAP	30	TON
713001	GEOTEXTILES, STABILIZATION	2190	SY
713003	GEOTEXTILES, RIPRAP	157	SY
733002	TOPSOILING, 6" DEPTH	6259	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	5752	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	3645	SY

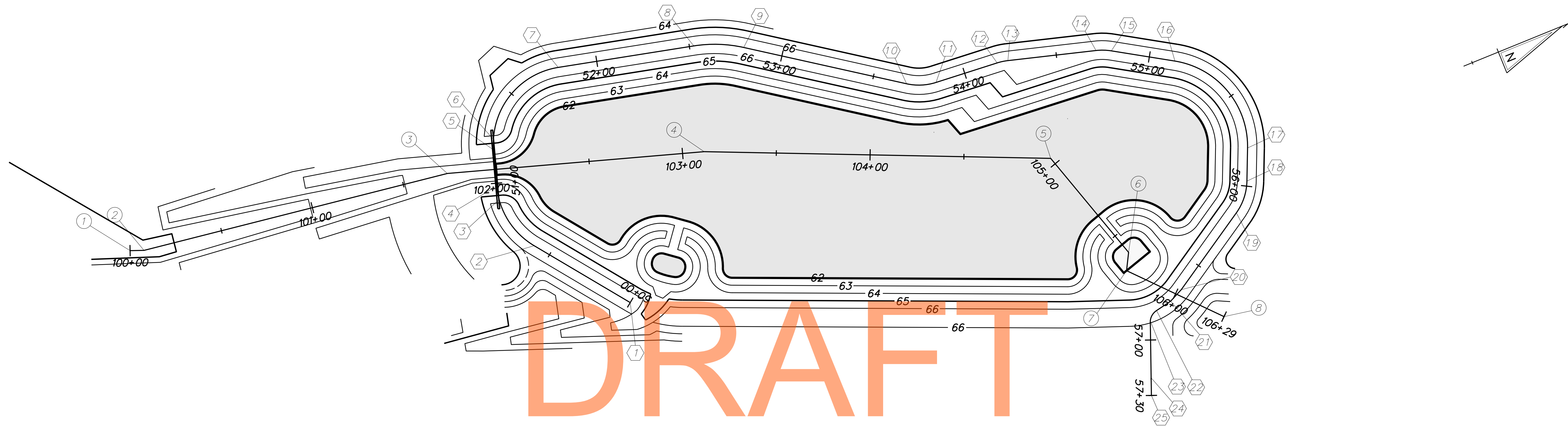
RIPRAP SCHEDULE		
NO.	TYPE	AREA (SY)
80	R-5	50
25	R-4	14
26	R-4	4
31	R-4	25
211	R-4	25

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)	6.21	0.00	62.22	0.16
10 - YEAR	19.89	0.38	63.25	0.93
100 - YEAR	44.34	2.31	64.16	1.69

HAZARD CLASSIFICATION: CLASS A AS PER POND CODE 378  
 DRAINAGE AREA TO FACILITY: 6.68 AC  
 MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY BY INFILTRATION OF 1-YEAR STORM RUNOFF, WATER QUANTITY FOR 10 AND 100-YEAR STORMS.

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**CL PRINCIPAL SPILLWAY**

STATION	NORTHING	EASTING
① POB STA. 100+00.00	564969.9778	532333.7210
② PI STA. 100+07.41	564972.6478	532340.6382
③ PI STA. 101+74.18	564995.6675	532505.8039
④ PI STA. 103+11.53	565036.5288	532636.9398
⑤ PI STA. 104+96.26	565109.5171	532806.6370
⑥ PI STA. 105+61.33	565171.5775	532826.1870
⑦ PI STA. 105+71.13	565180.1907	532821.5001
⑧ POE STA. 106+28.57	565222.4706	532860.3800

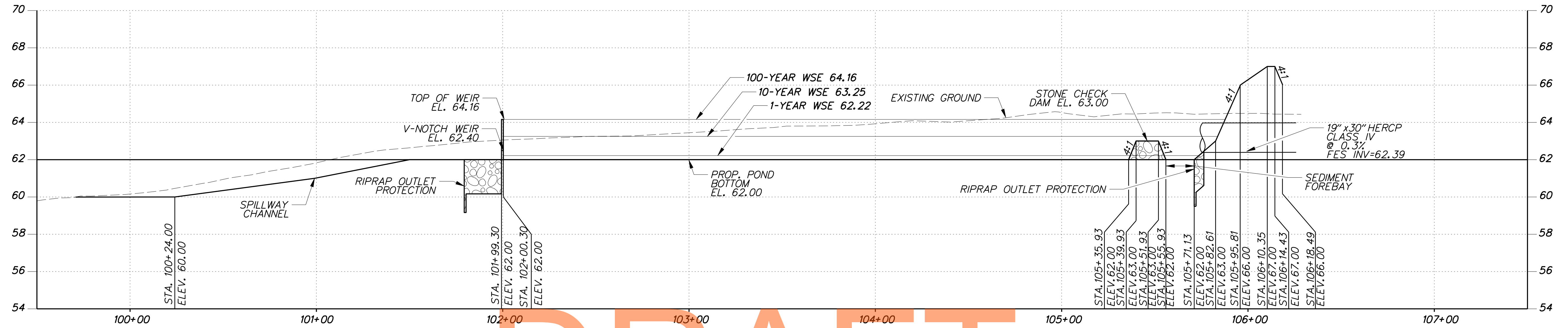
**STAKEOUT - BMP 664 (BASIN 5)**

**CL EMBANKMENT**

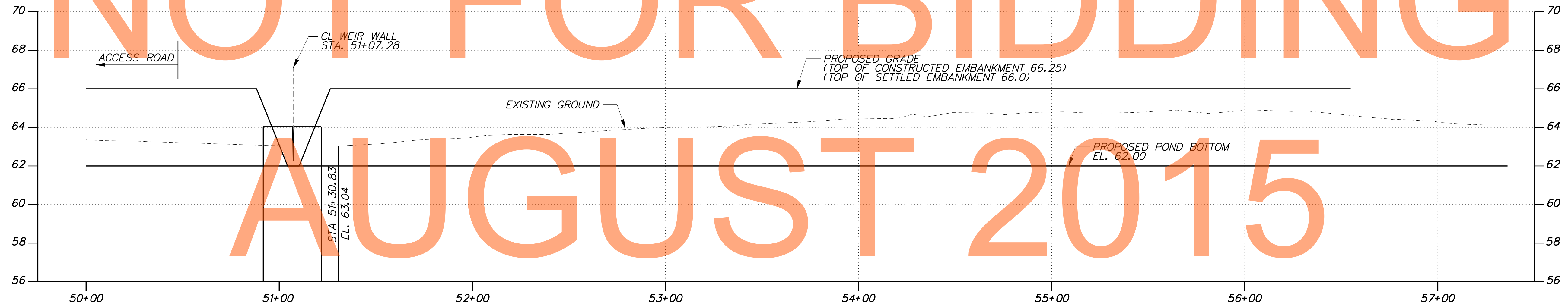
STATION	NORTHING	EASTING
① POB STA. 50+00.00	532570.1250	565096.1616
② PC STA. 50+59.47	532534.1585	565048.7993
③ PI STA. 50+90.80	532525.3910	565019.2352
④ PI STA. 50+98.47	532527.6634	565011.8182
⑤ PT STA. 51+17.80	532533.4080	564993.3626
⑥ PC STA. 51+23.93	532535.1587	564987.4209
⑦ PT STA. 51+79.24	532581.8828	564965.6230
⑧ PC STA. 52+52.39	532653.1146	564982.2649
⑨ PT STA. 52+79.13	532677.4102	564993.0513
⑩ PC STA. 53+68.09	532750.5195	565043.7294
⑪ PT STA. 53+83.94	532765.2849	565048.9835
⑫ PC STA. 54+18.16	532799.3955	565051.6356
⑬ PT STA. 54+24.01	532805.1506	565052.6541
⑭ PC STA. 54+71.29	532850.6860	565065.3900
⑮ PT STA. 54+79.50	532858.1853	565068.6441
⑯ PC STA. 55+13.82	532887.5219	565086.4722
⑰ PT STA. 55+79.64	532905.8913	565143.9528
⑱ PC STA. 55+97.30	532898.9165	565160.1739
⑲ PT STA. 56+15.38	532887.3396	565173.7112
⑳ PI STA. 56+65.79	532844.6808	565200.5679
㉑ PI STA. 56+74.14	532837.1243	565204.1211
㉒ PC STA. 56+83.16	532828.2867	565205.9122
㉓ PT STA. 56+89.83	532823.1140	565209.7642
㉔ PI STA. 57+20.16	532812.0906	565238.0155
㉕ POE STA. 57+29.55	532808.6856	565246.7689

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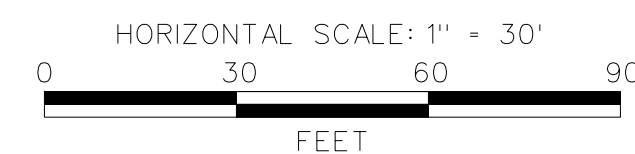




SPILLWAY PROFILE - BMP 664 (BASIN 5)



EMBANKMENT PROFILE FOR BMP 664



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AUGUST 2015

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ADDENDUMS / REVISIONS	

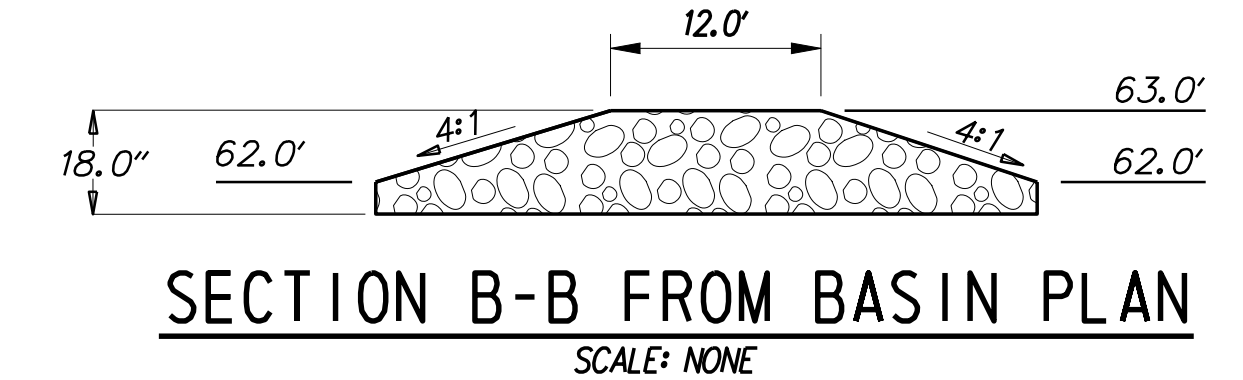
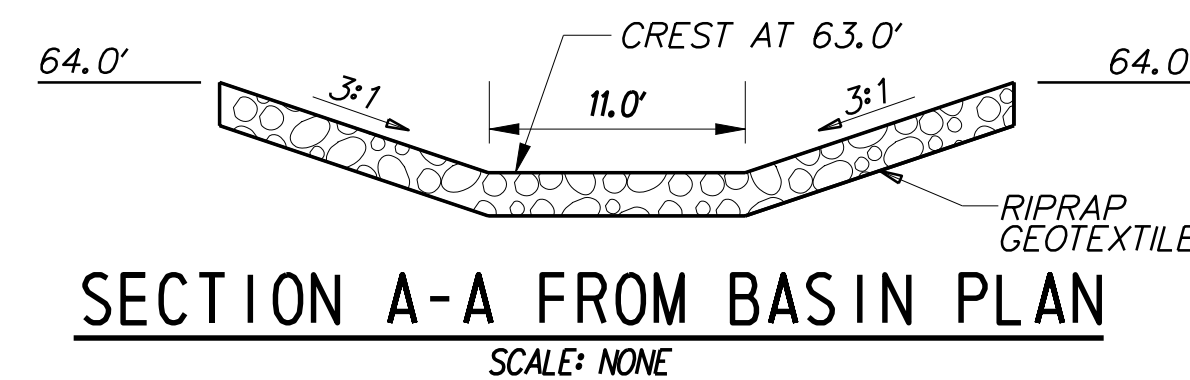
AS SHOWN

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

CONTRACT T200911303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: BAS
	CHECKED BY: JJW

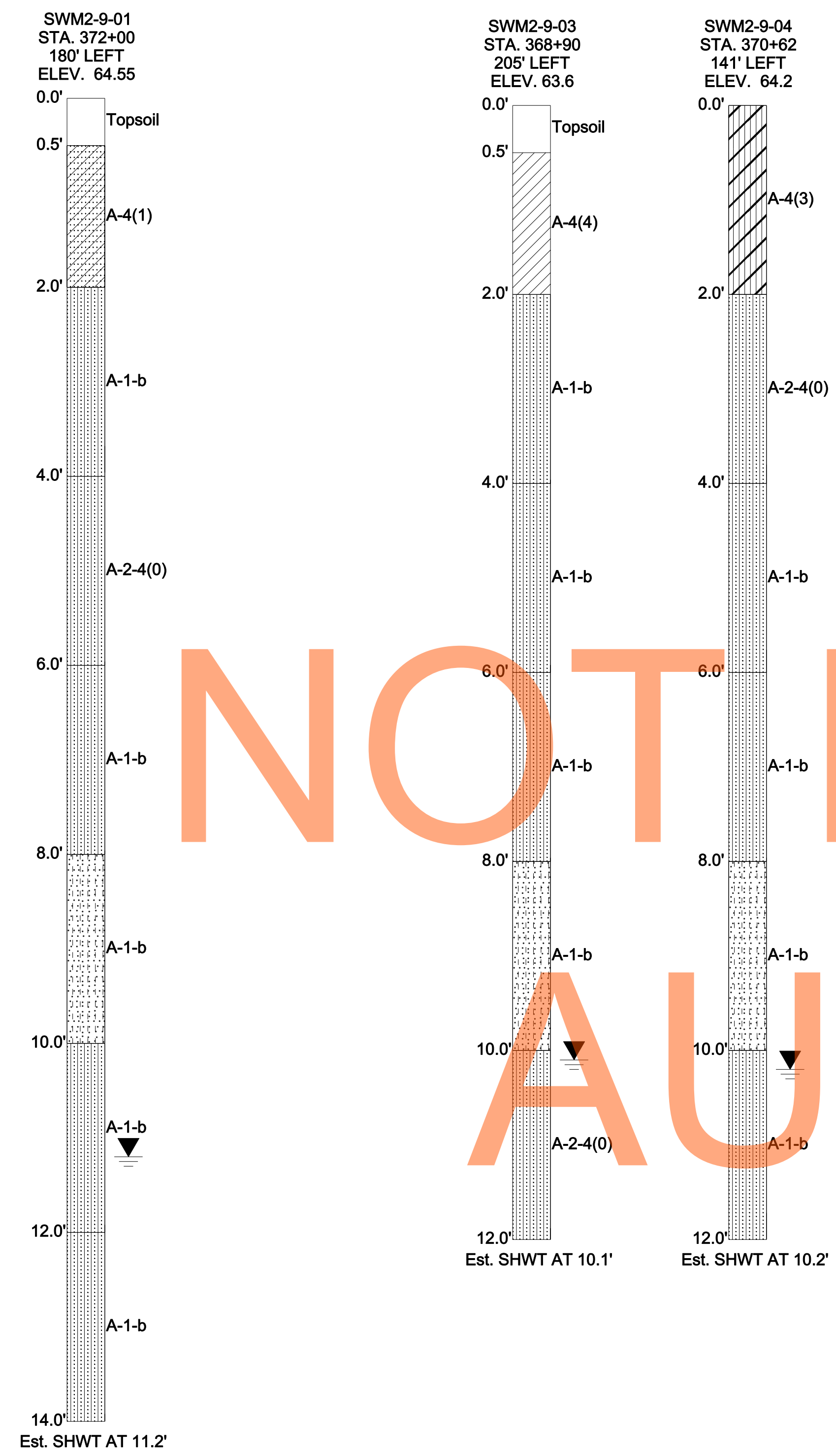
**STORMWATER  
MANAGEMENT DETAILS  
BMP 664 (BASIN 5)**

SW43
SHEET NO. 728
TOTAL SHTS. 1256



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

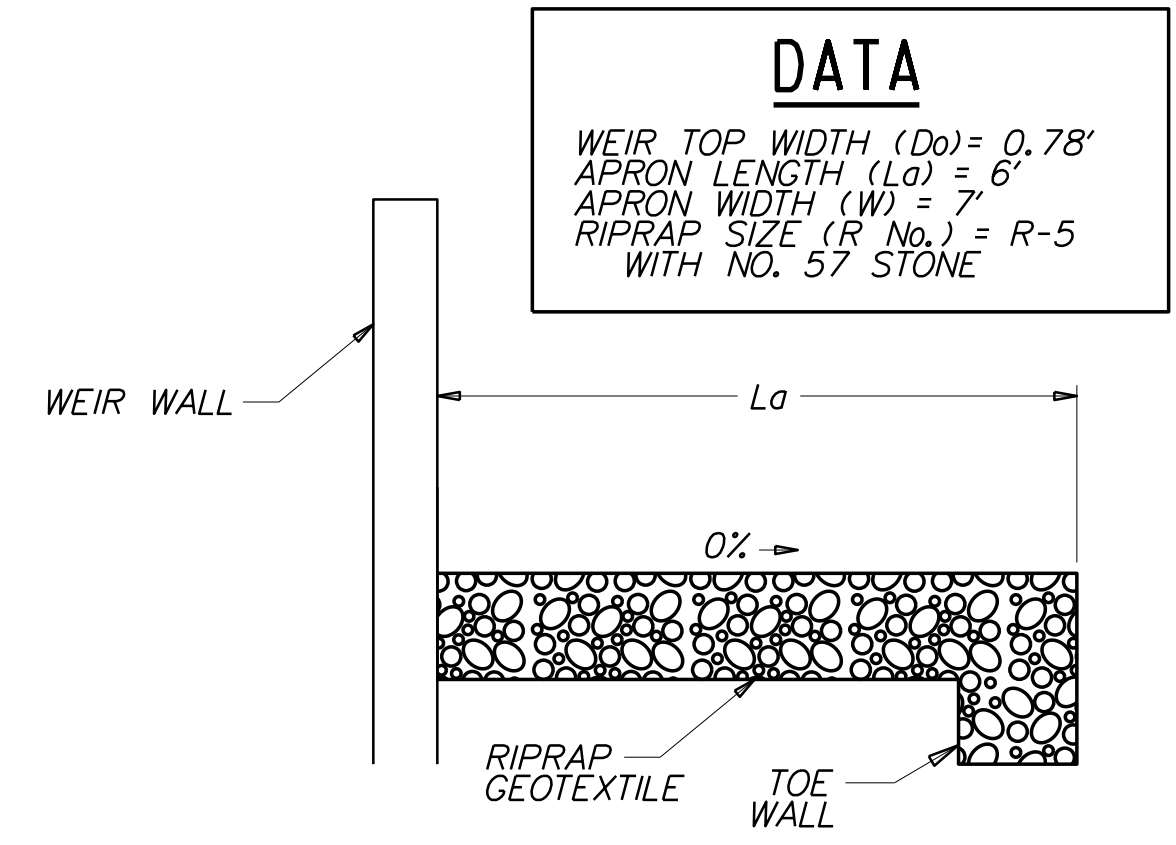
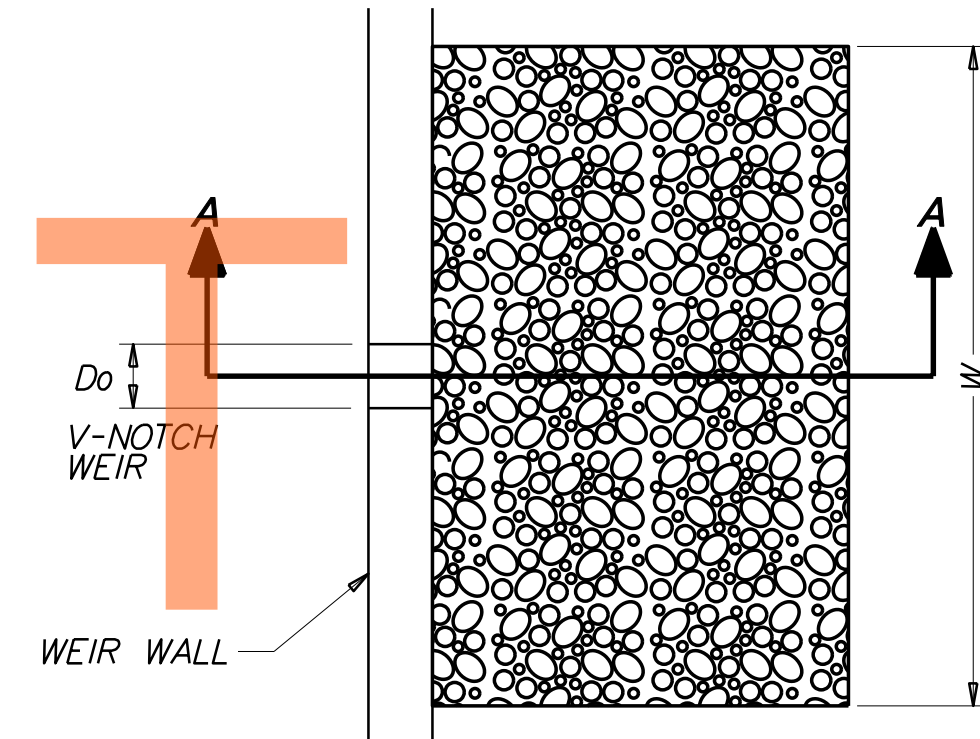
**STONE CHECK DAM**  
SCALE: NONE



**DRAFT**

**NOT FOR BIDDING**

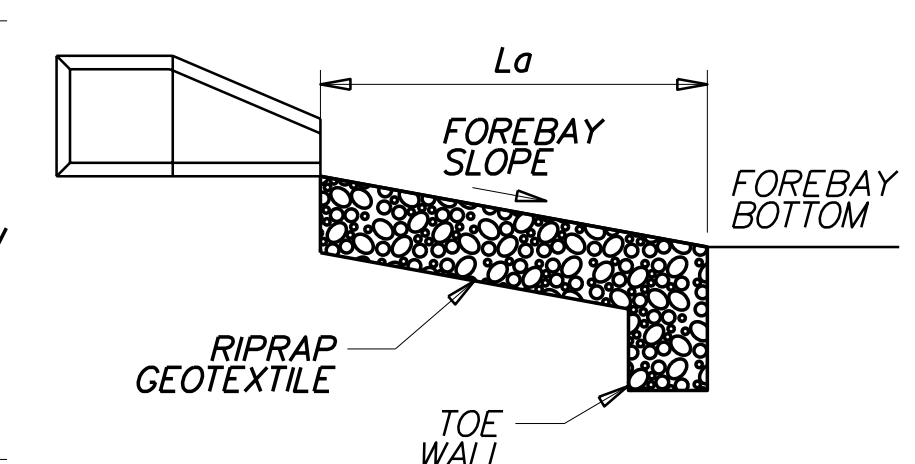
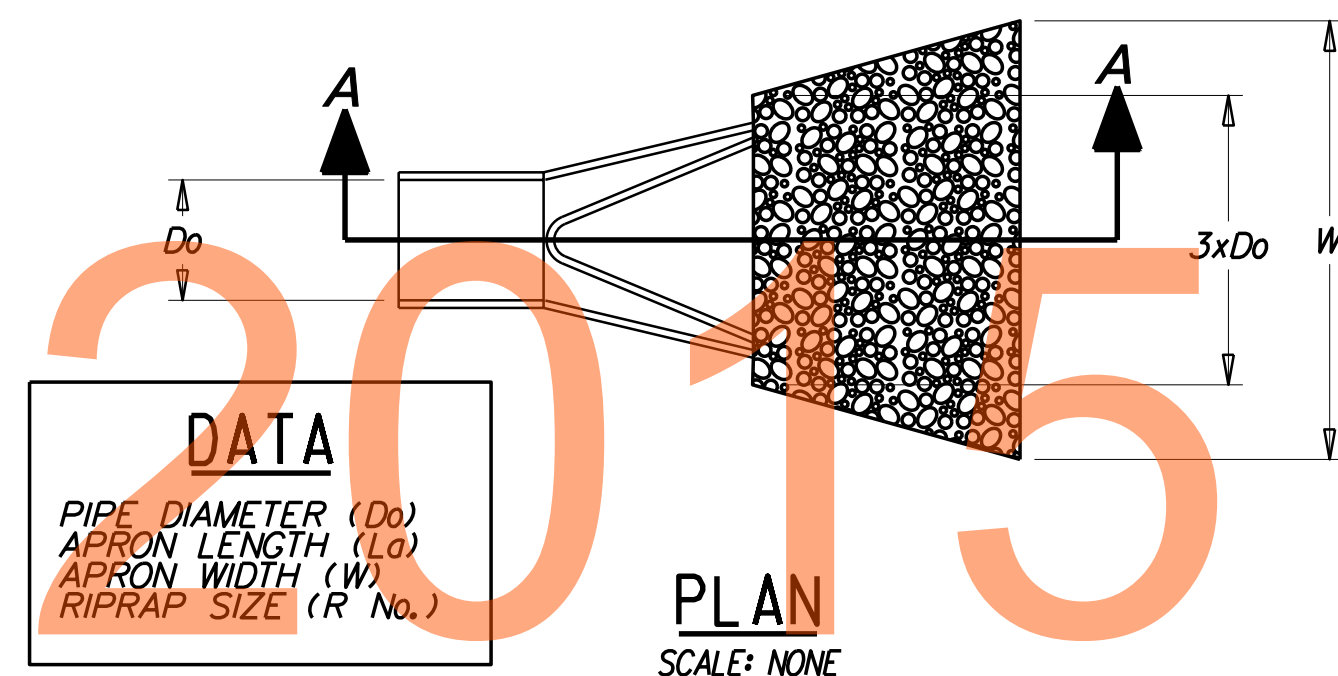
- NOTES:
1. RIPRAP ITEM 712006
  2. GEOTEXTILES, RIPRAP ITEM 713003
  3. DELEWARE NO. 57 STONE ITEM 302012
  4. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.
  5. DEPRESS CENTERLINE OF APRON SLIGHTLY TO PREVENT EDGE CUTTING



**DATA**

WEIR TOP WIDTH (Do) = 0.78'  
 APRON LENGTH (La) = 6'  
 APRON WIDTH (W) = 7'  
 RIPRAP SIZE (R No.) = R-5  
 WITH NO. 57 STONE

**BASIN RIPRAP OUTLET PROTECTION**  
SCALE: NONE



**DATA**

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

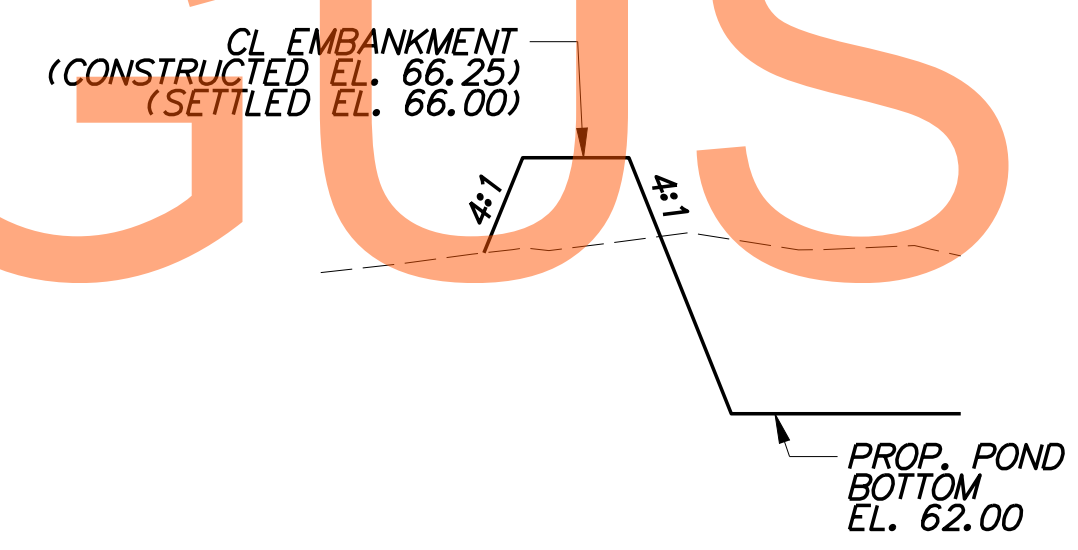
- NOTES:
1. RIPRAP ITEM 712005
  2. GEOTEXTILES, RIPRAP ITEM 713003
  3. DELEWARE NO. 57 STONE ITEM 302012
  4. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.
  5. DEPRESS CENTERLINE OF APRON SLIGHTLY TO PREVENT EDGE CUTTING

FES ID	Do	La	W	R No.
26	1.50'	10.0'	6.0'	R-4

RR ID	La	W	R No.
25*	18.0'	13.5'	R-4

\*TO BE DESIGNED PER STANDARD NO. E-10

**FOREBAY RIPRAP OUTLET PROTECTION**  
SCALE: NONE



**SECTION C-C FROM BASIN PLAN**  
SCALE: NONE

11/13/2012 J:\BRIDGE-HIGHWAYS\9040\_Deidol\_301\Civil\Plans\2A\SWM\Plan\5\SW\_5\_04.dgn

ADDENDUMS / REVISIONS	

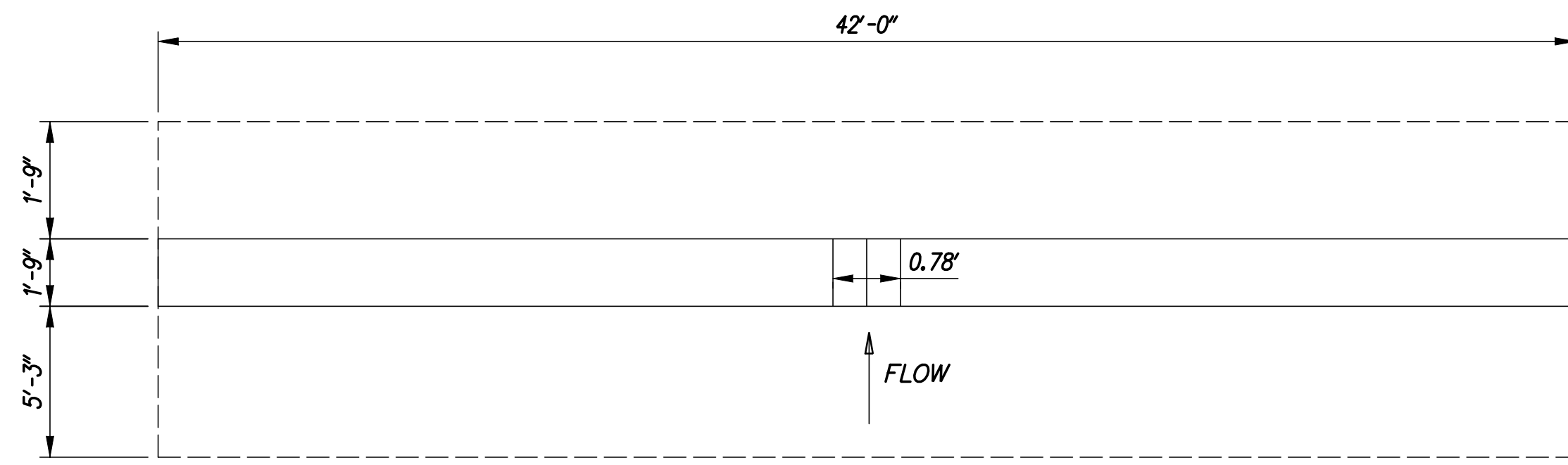
AS SHOWN

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

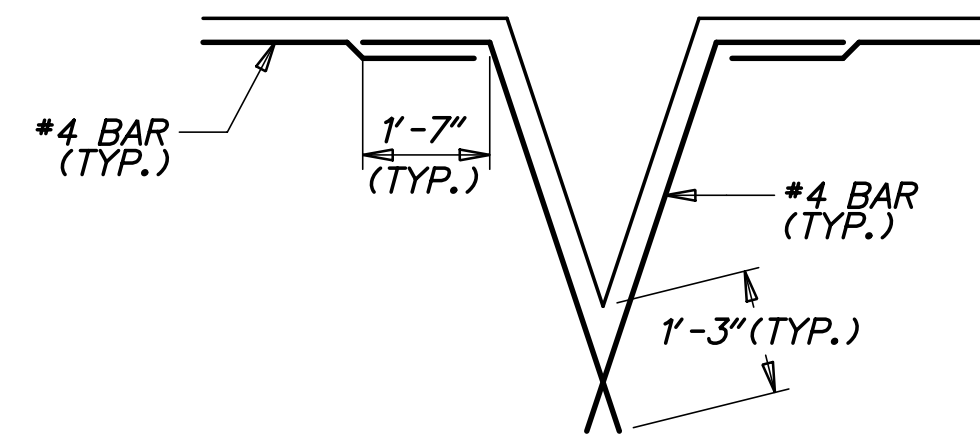
CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER MANAGEMENT DETAILS BMP 664 (BASIN 5)**

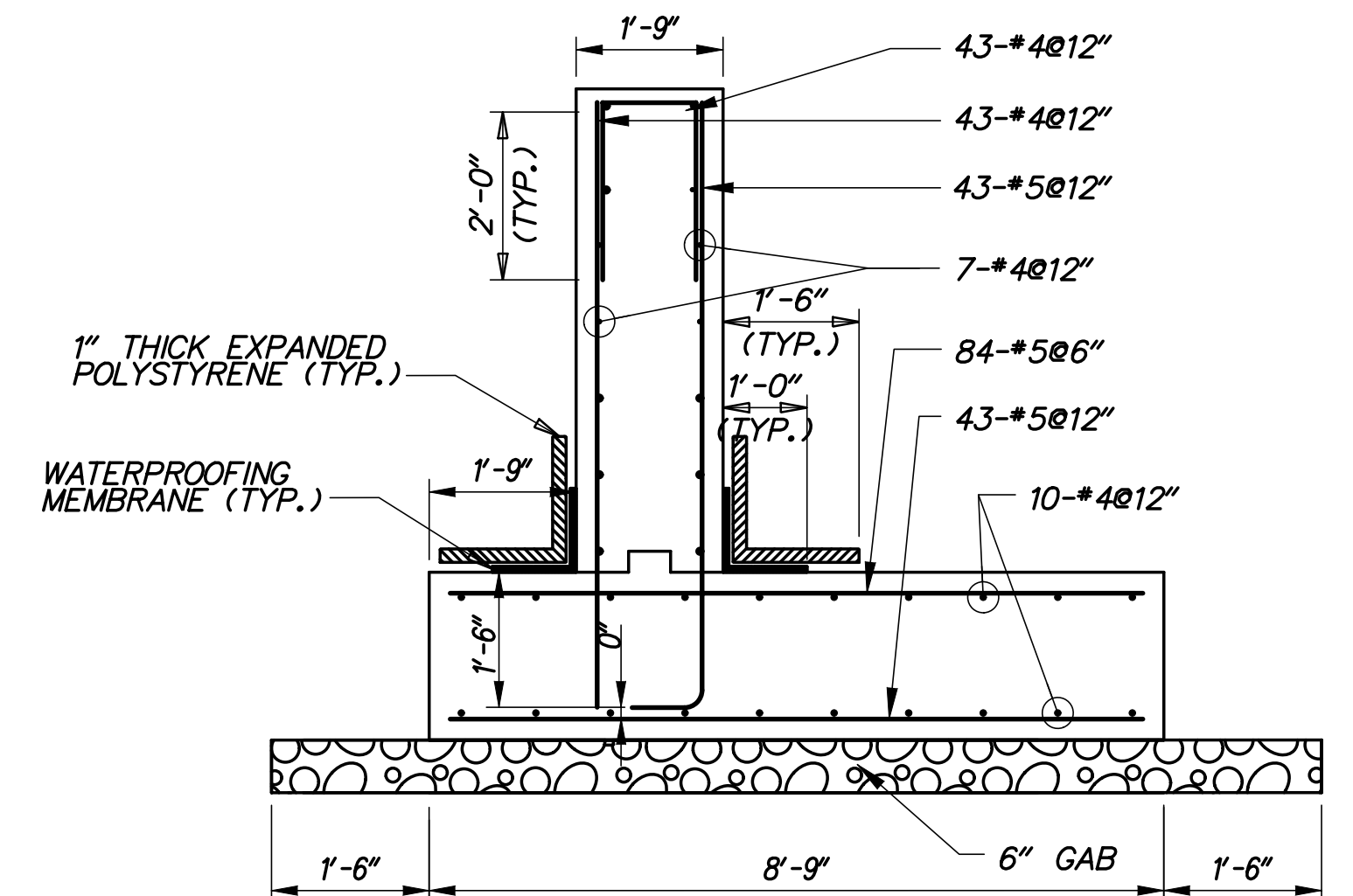
SW44
SHEET NO.
729
TOTAL SHTS.
1256



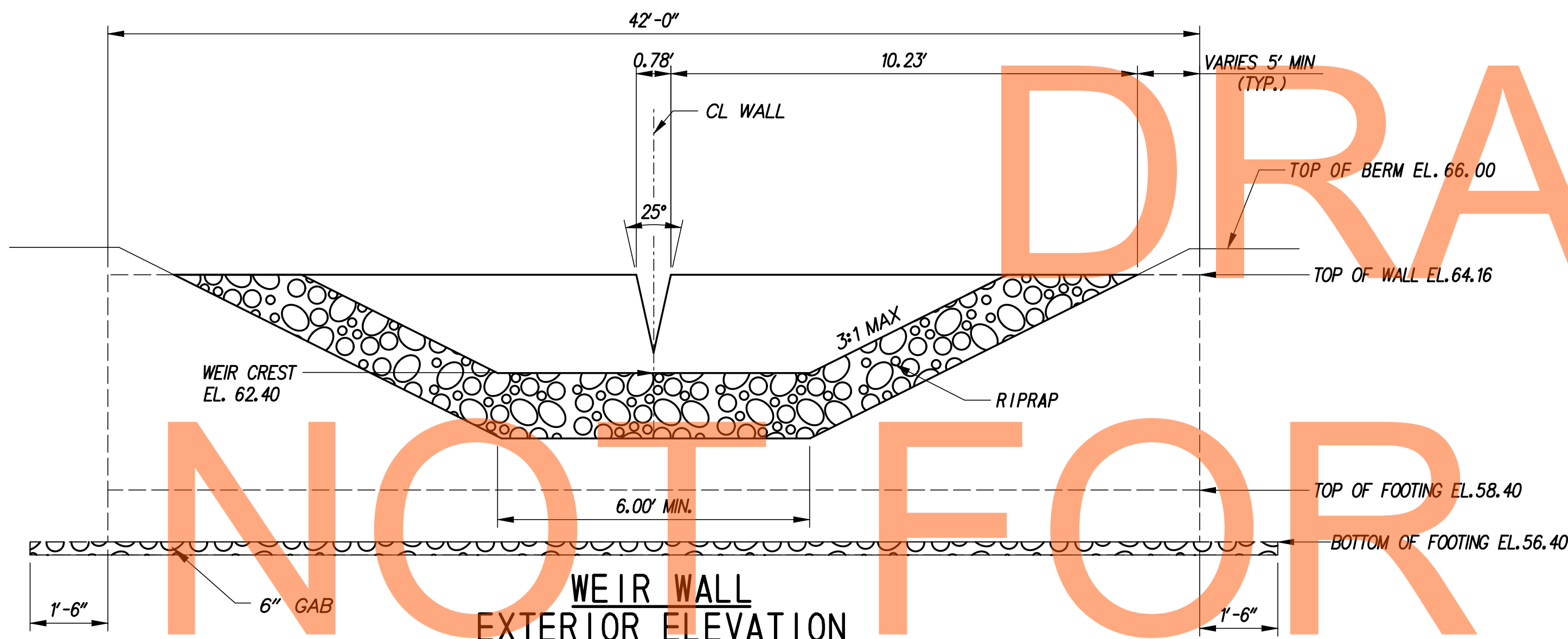
**WEIR WALL PLAN**  
SCALE: NONE



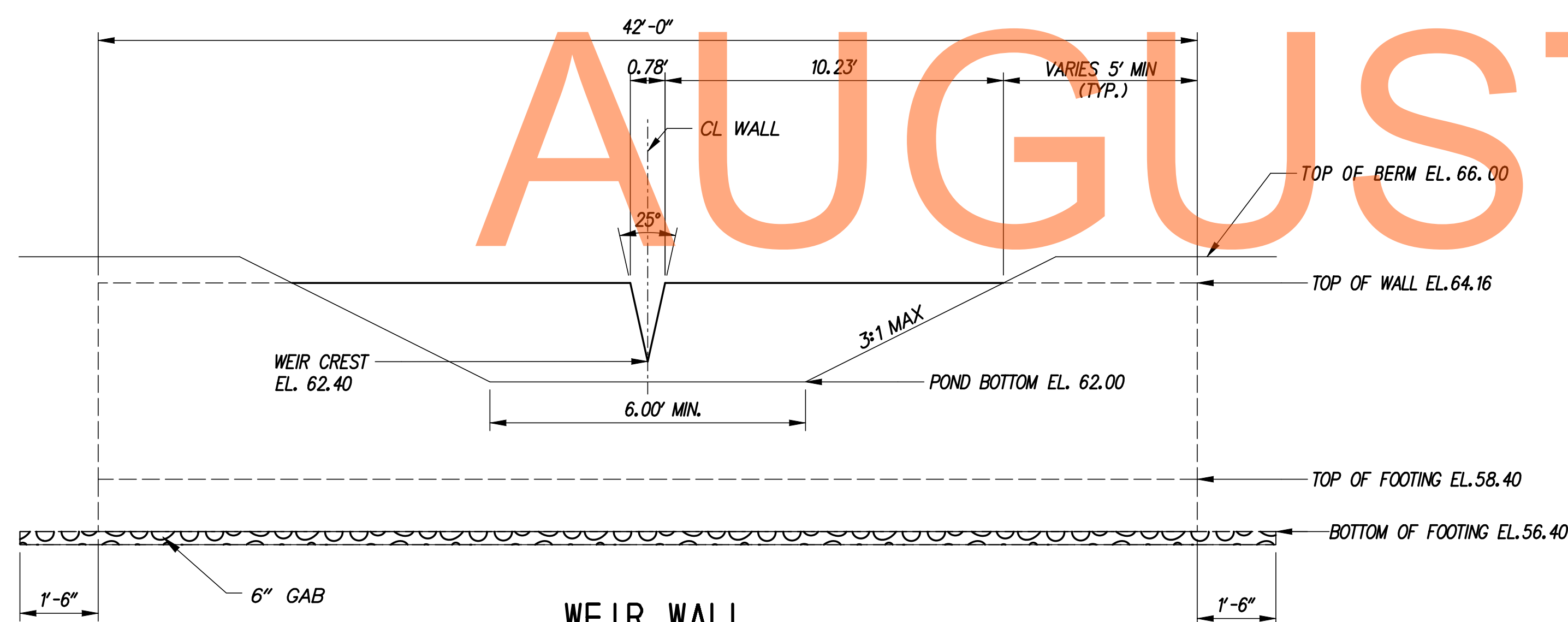
**OPENING DETAILS**  
SCALE: NONE



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



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

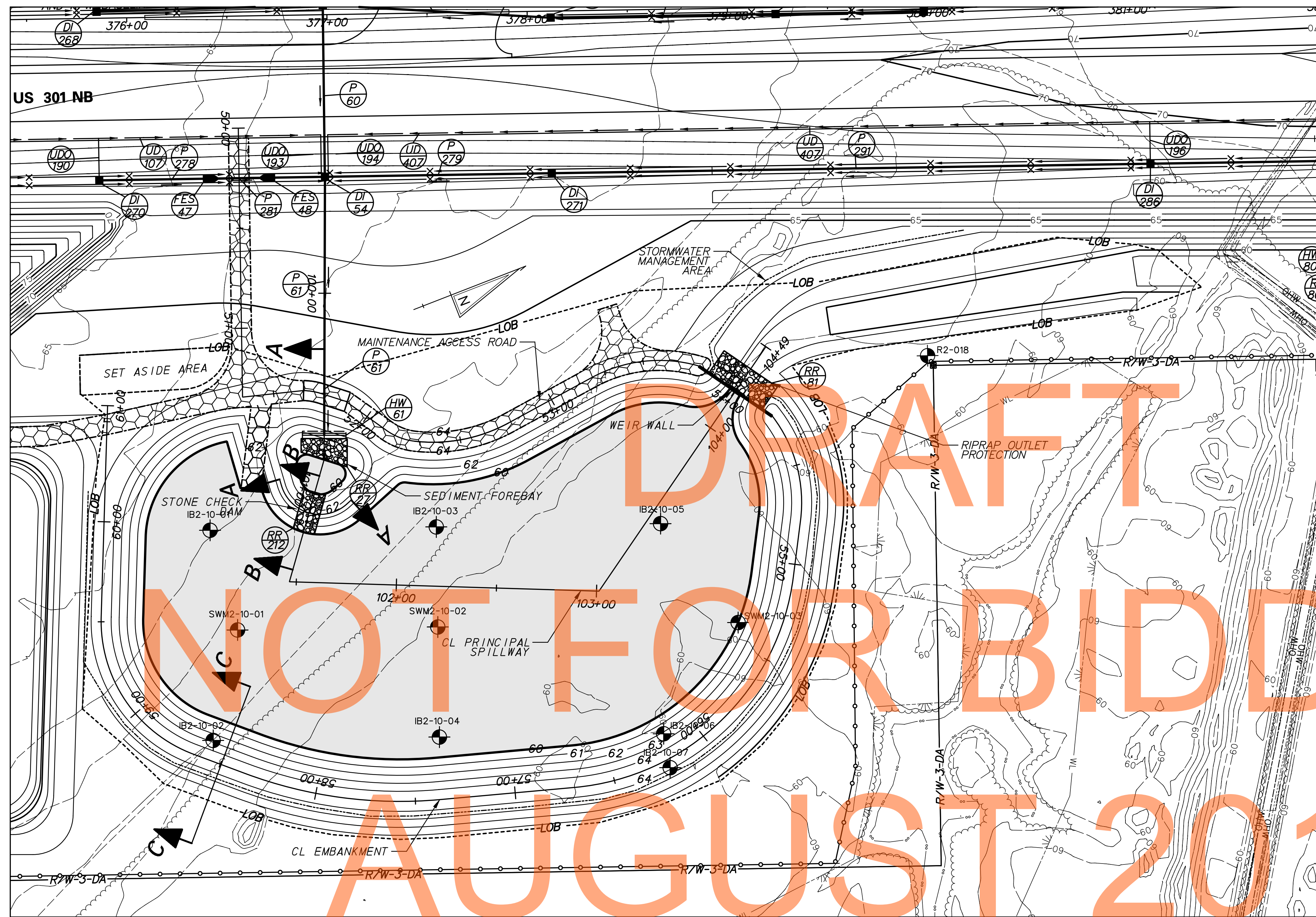


**WEIR WALL INTERIOR ELEVATION**  
SCALE: NONE

**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 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.

G:\60049040\_US301\CIVIL\PLANS\2A\CP\SW-45.DGN



PLAN - BMP 665 (BASIN 6)

**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

1. 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.
2. 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, DIVERSION BERMS OR OTHER SUITABLE MEASURES SHOULD BE PLACED AROUND THE BASIN'S PERIMETER DURING ALL PHASES OF CONSTRUCTION TO DIVERT ALL RUNOFF AND SEDIMENT AWAY FROM THE BASIN. THESE DIVERSION MEASURES SHOULD NOT BE REMOVED UNTIL ALL CONSTRUCTION WITHIN THE BASIN'S DRAINAGE AREA IS COMPLETED AND THE DRAINAGE AREA STABILIZED.
3. SEE CONSTRUCTION PLANS FOR EROSION AND SEDIMENT CONTROL MEASURES.
4. 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.
5. CONSTRUCT WEIR WALL, RIPRAP ENERGY DISSIPATER AT THE 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 DUMPING.
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 BASIN EMBANKMENT AND BOTTOM WITH PERMANENT SEEDING.
8. REMOVE EROSION AND SEDIMENT CONTROLS, WATER DIVERSION PRACTICES AND FENCE UPON FINAL STABILIZATION AND APPROVAL FROM INSPECTOR.
9. 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**  
 PERMANENT GRASS SEEDING - WET GROUND UP TO ELEVATION 61.00  
 PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 61.00  
 PLACE TOPSOIL ABOVE BASIN BOTTOM ELEVATION 60.0

POND QUANTITIES			
ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	1531	CY
272501	POND OUTLET STRUCTURE, 10, SPECIAL	1	EACH
302011	DELAWARE NO. 3 STONE	547	TON
302012	DELAWARE NO. 57 STONE	12	TON
712005	R-4 RIPRAP	29	SY
712006	R-5 RIPRAP	50	SY
712020	R-4 RIPRAP	15	TON
713001	GEOTEXTILES, STABILIZATION	3688	SY
713003	GEOTEXTILES, RIPRAP	139	SY
733002	TOPSOILING, 6" DEPTH	7207	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	6727	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	4966	SY

POND DESIGN SUMMARY				
DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC. FT)
QUALITY STORM (1-YR)	12.88	0.00	60.40	0.39
10 - YEAR	37.44	3.32	61.33	1.32
100 - YEAR	79.08	22.16	62.39	2.50

RIPRAP SCHEDULE		
NO.	TYPE	AREA (SY)
81	R-5	50
27	R-4	29
212	R-4	25

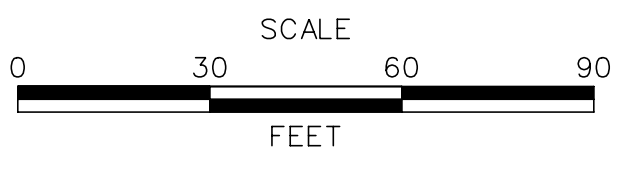
CHECK CONSTRUCTION PLANS FOR SCHEDULE OF RIPRAP OUTSIDE OF THE BASIN AREA.

HAZARD CLASSIFICATION: CLASS A AS PER POND CODE 378  
 DRAINAGE AREA TO FACILITY: 11.54 AC  
 MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY BY INFILTRATION OF 1-YEAR STORM RUNOFF, WATER QUANTITY FOR 10 AND 100-YEAR STORMS.

P:\CADD\260049040 US301\LEVELS\PLANS\2A\BAL\T.SWM\POND 6\SW\_6\_01.DGN



ADDENDUMS / REVISIONS

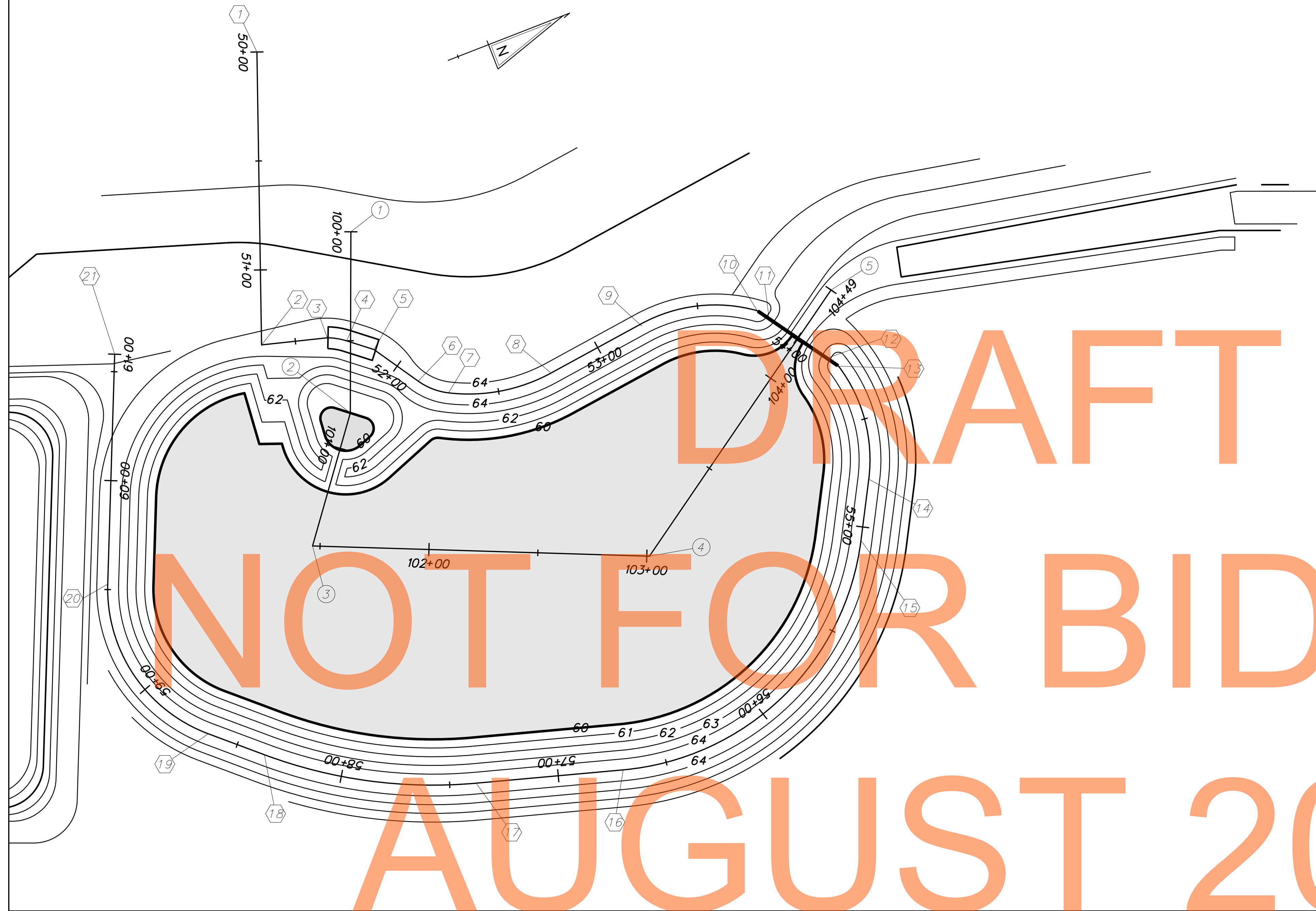


**US 301  
 LEVELS ROAD  
 TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER  
 MANAGEMENT DETAILS  
 BMP 665 (BASIN 6)**

SW46
SHEET NO.
731
TOTAL SHTS.
1256



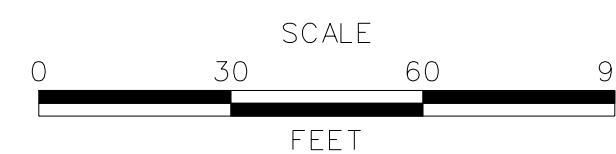
CL PRINCIPAL SPILLWAY			
	STATION	NORTHING	EASTING
①	POB STA. 100+00.00	533279.2228	565545.2292
②	PI STA. 100+83.11	533256.4529	565714.7616
③	PI STA. 101+46.56	533217.3659	565764.7424
④	PI STA. 103+01.23	533358.7742	565827.4016
⑤	POE STA. 104+49.08	533482.0320	565745.7411

CL EMBANKMENT			
	STATION	NORTHING	EASTING
①	POB STA. 50+00.00	533279.2228	565545.2292
②	PI STA. 51+34.40	533230.5035	565670.4843
③	PC STA. 51+64.73	533259.6671	565678.8436
④	PT STA. 51+73.76	533267.3630	565683.5009
⑤	PI STA. 51+86.91	533277.4621	565691.9162
⑥	PC STA. 52+11.85	533290.7919	565712.9936
⑦	PCC STA. 52+26.94	533301.6658	565723.2320
⑧	PT STA. 52+75.64	533348.6844	565732.5438
⑨	PC STA. 53+22.73	533395.3532	565728.3740
⑩	PT STA. 53+77.76	533447.1204	565741.8094
⑪	PI STA. 53+84.24	533450.6990	565747.2110
⑫	PI STA. 54+16.40	533468.4611	565774.0209
⑬	PC STA. 54+22.88	533472.0397	565779.4225
⑭	PT STA. 54+77.90	533465.3104	565832.6594
⑮	PC STA. 55+06.25	533451.3940	565857.3497
⑯	PT STA. 56+70.10	533310.6190	565913.6532
⑰	PC STA. 57+37.83	533245.8490	565893.8579
⑱	PT STA. 58+36.70	533160.7720	565845.1112
⑳	PC STA. 58+64.19	533140.5498	565826.4973
㉑	PT STA. 59+52.50	533123.7213	565745.4950
㉒	POE STA. 60+58.03	533166.4708	565649.0186

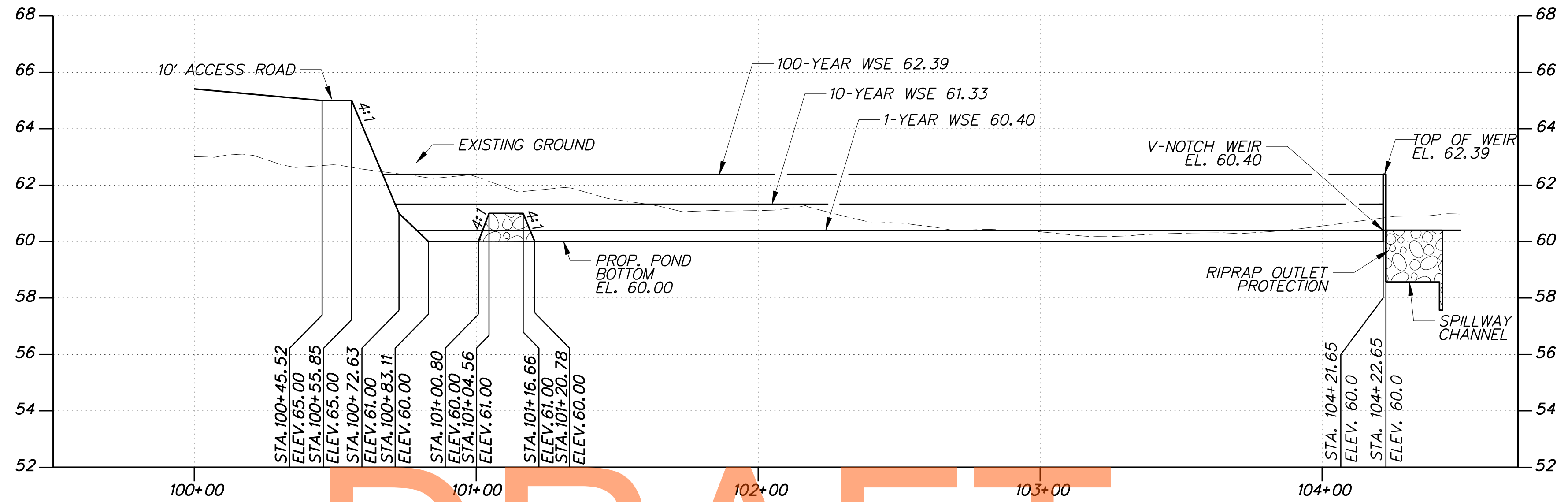
STAKEOUT - BMP 665 (BASIN 6)

11/13/2012 J:\BRIDGE\_HIGHWAYS\9040\_Deidol\_301\Civil\Plans\2A\SWM\Pond 6\SW\_6\_02.dgn

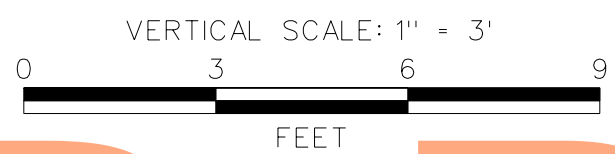
ADDENDUMS / REVISIONS



CONTRACT	BRIDGE NO.
T200911303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW



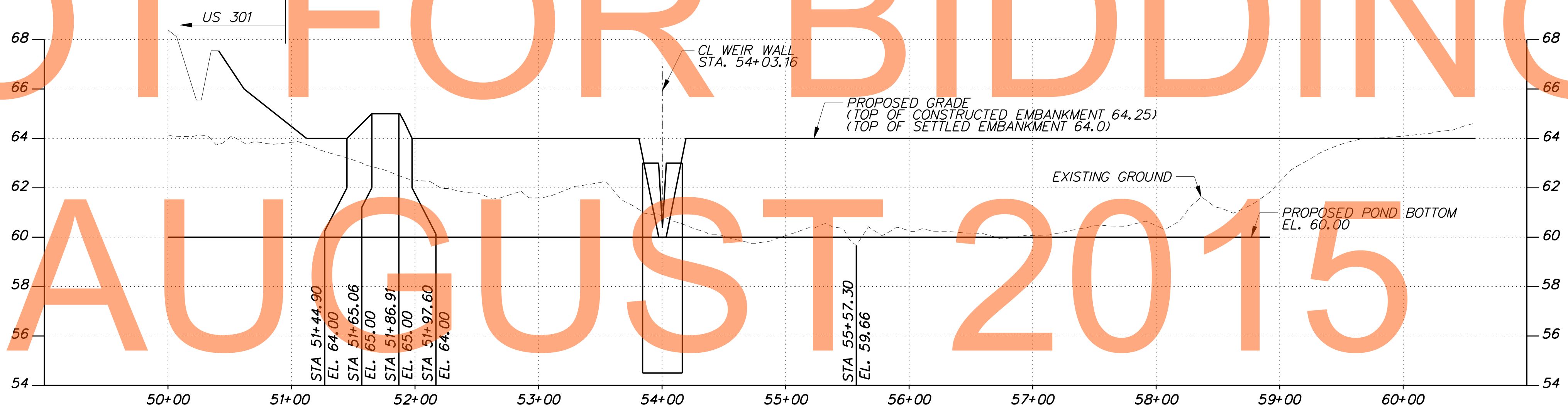
SPILLWAY PROFILE - BMP 665 (BASIN 6)



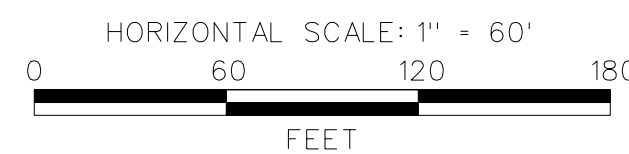
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AUGUST 2015



EMBANKMENT PROFILE FOR BMP 665



11/13/2012 J:\BRIDGE-HIGHWAYS\9040\_Deidol\_301\Civil\Plans\2A\SWM\Pond 6\SW\_6\_03.dgn



ADDENDUMS / REVISIONS	

AS SHOWN

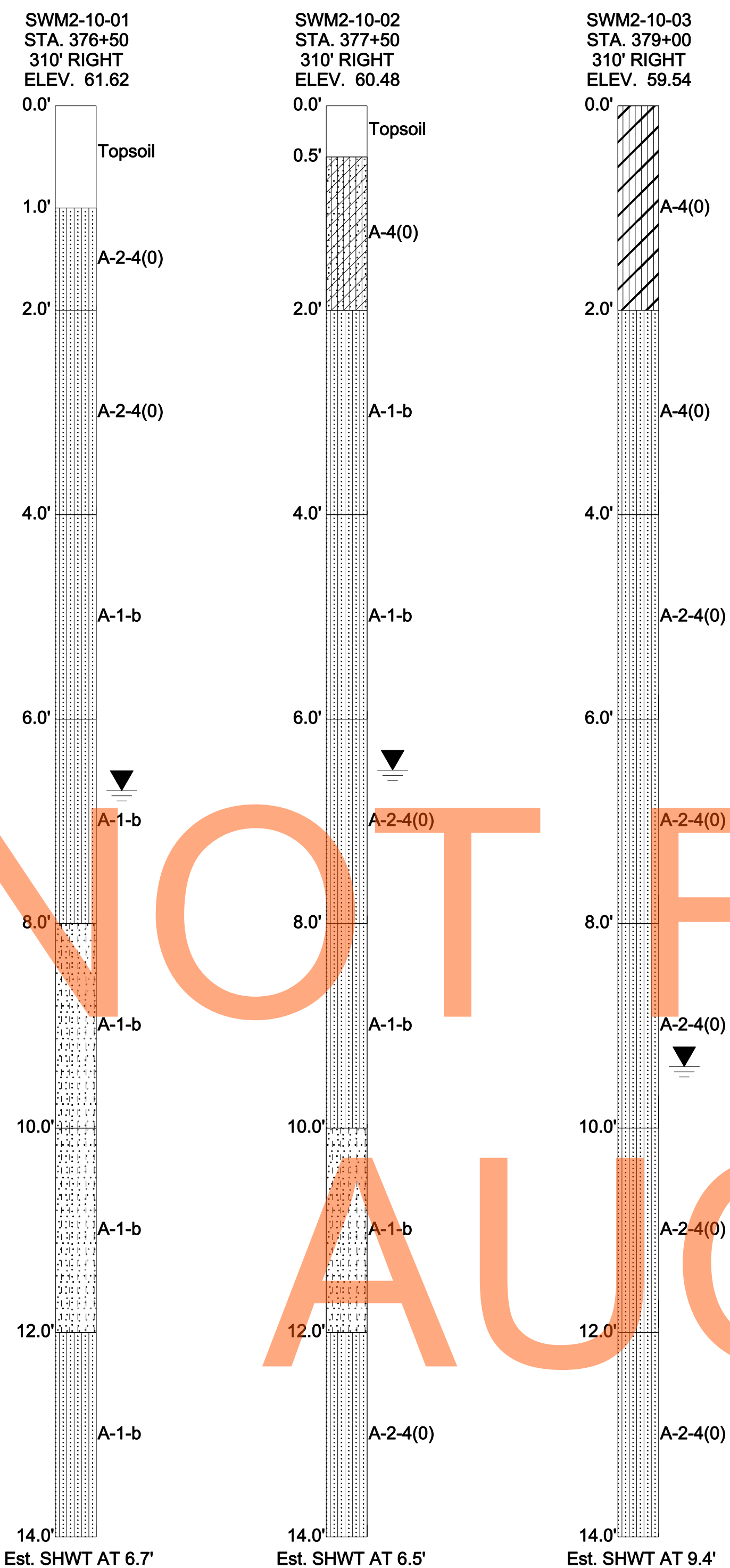
**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: BAS
	CHECKED BY: JJW

**STORMWATER  
MANAGEMENT DETAILS  
BMP 665 (BASIN 6)**

SW48
SHEET NO. 733
TOTAL SHTS. 1256





DRAFT

NOT FOR BIDDING

AUGUST 2015

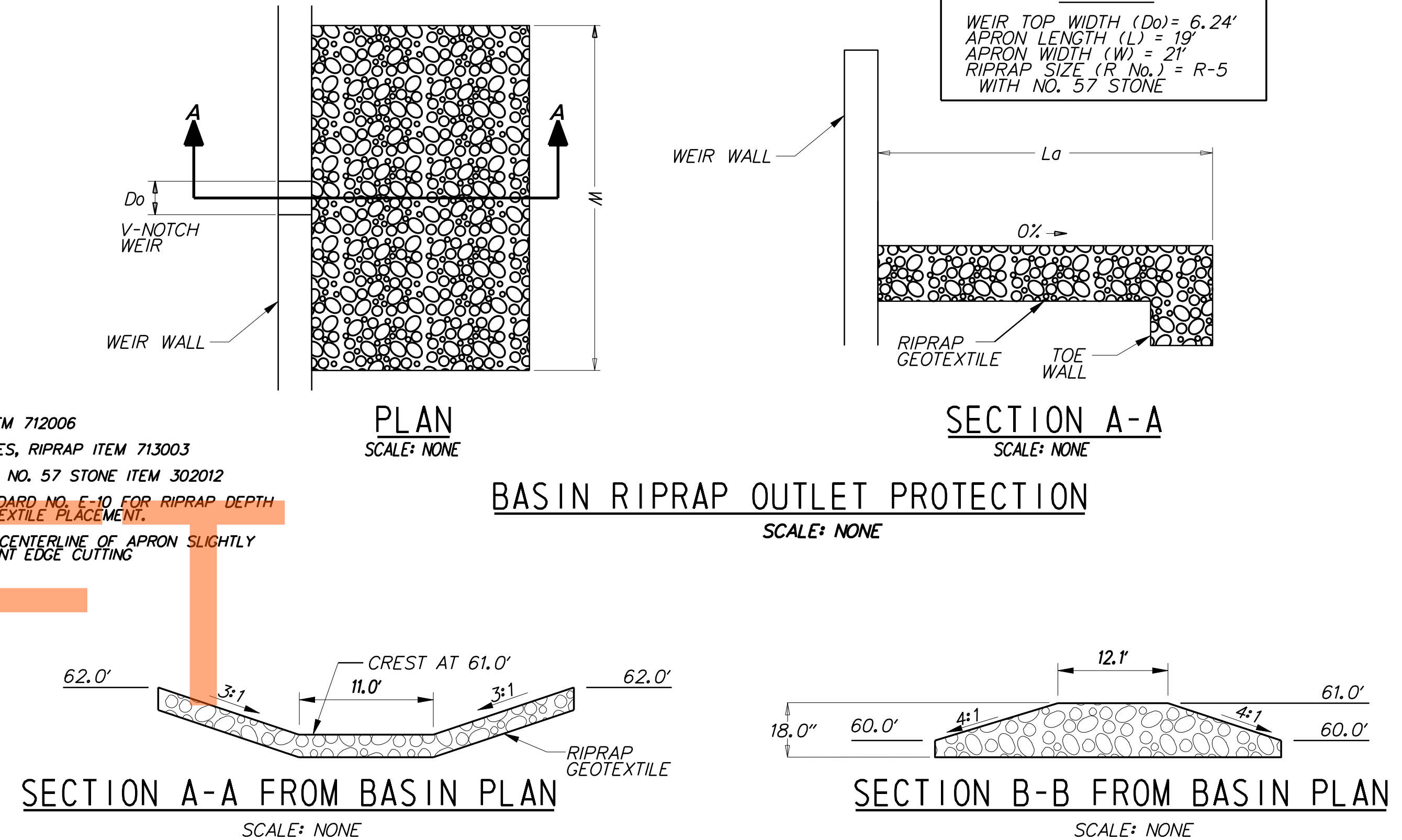
- NOTES:**
1. RIPRAP ITEM 712006
  2. GEOTEXTILES, RIPRAP ITEM 713003
  3. DELEWARE NO. 57 STONE ITEM 302012
  4. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.
  5. DEPRESS CENTERLINE OF APRON SLIGHTLY TO PREVENT EDGE CUTTING

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

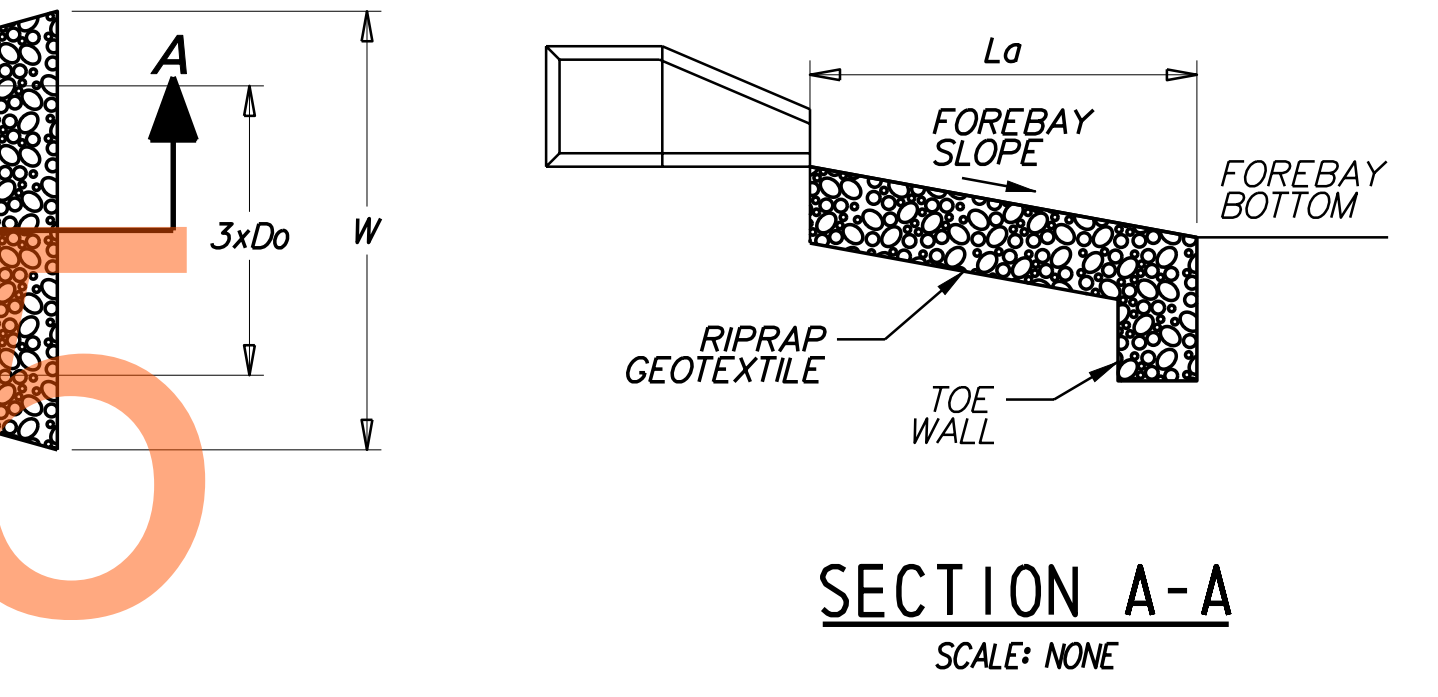
**DATA**

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

- NOTES:**
1. RIPRAP ITEM 712005
  2. GEOTEXTILES, RIPRAP ITEM 713003
  3. DELEWARE 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



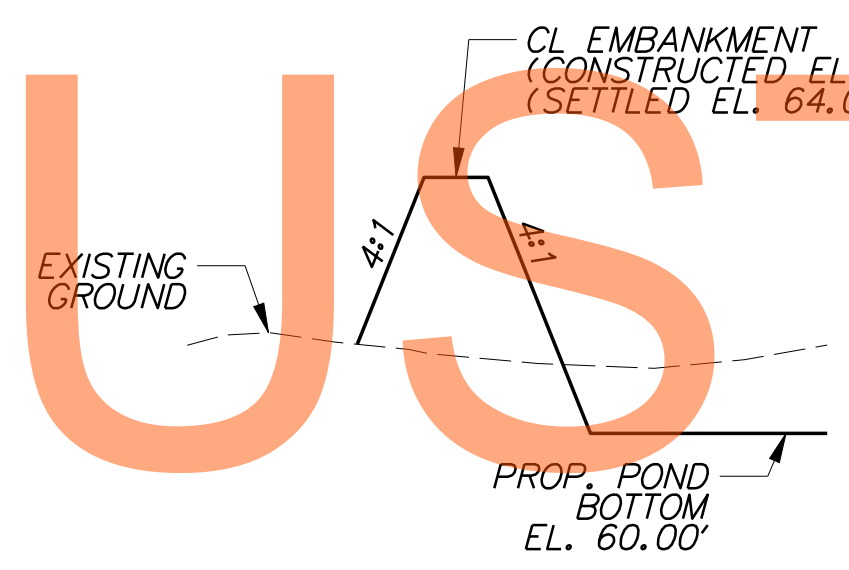
**STONE CHECK DAM**  
SCALE: NONE



FES ID	Do	La	W	R No.
61	1.50'	14.0'	23.0'	R-4

**FOREBAY RIPRAP OUTLET PROTECTION**  
SCALE: NONE

**SECTION C-C FROM BASIN PLAN**



11/13/2012 J:\BRIDGE-HIGHWAYS\9040\_Deidol\301\Civil\Plans\2A\SWM\Pond 6\SW\_6\_04.dgn

ADDENDUMS / REVISIONS	

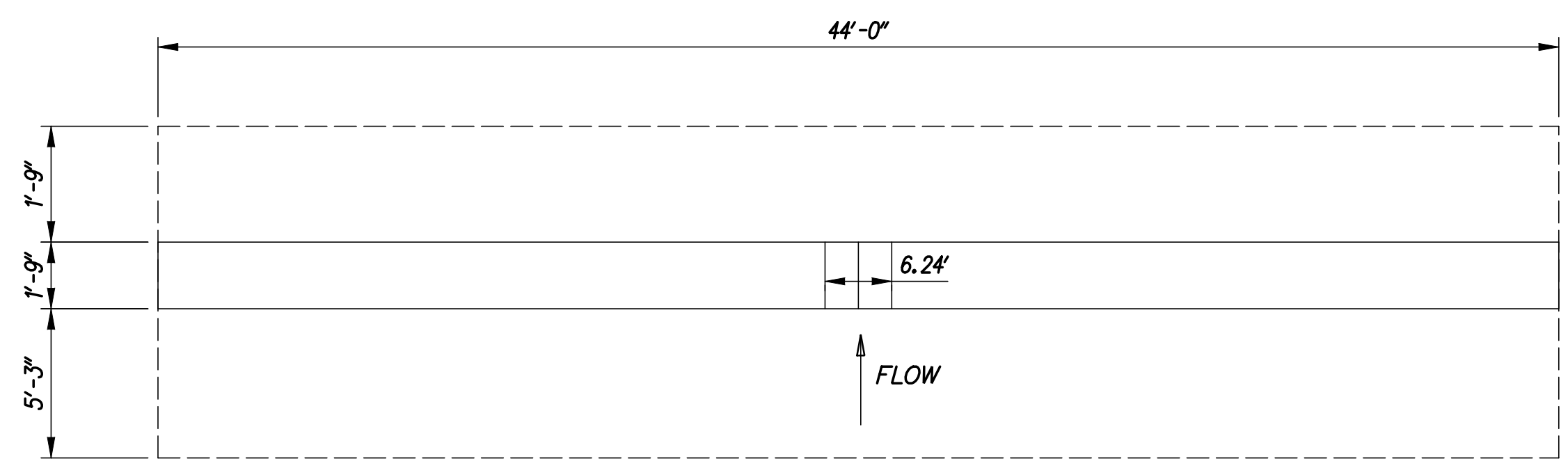
AS SHOWN

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

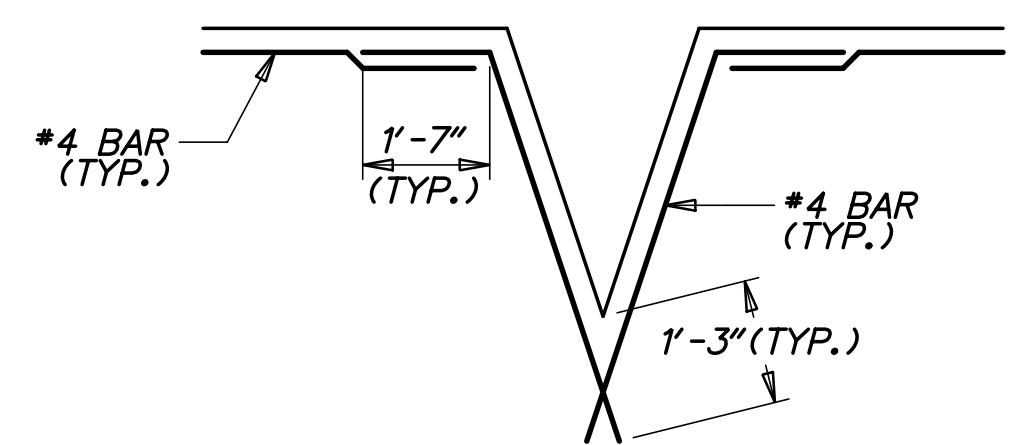
CONTRACT	BRIDGE NO.
T20091303	
COUNTY	DESIGNED BY: BAS
NEW CASTLE	CHECKED BY: JJW

**STORMWATER MANAGEMENT DETAILS BMP 665 (BASIN 6)**

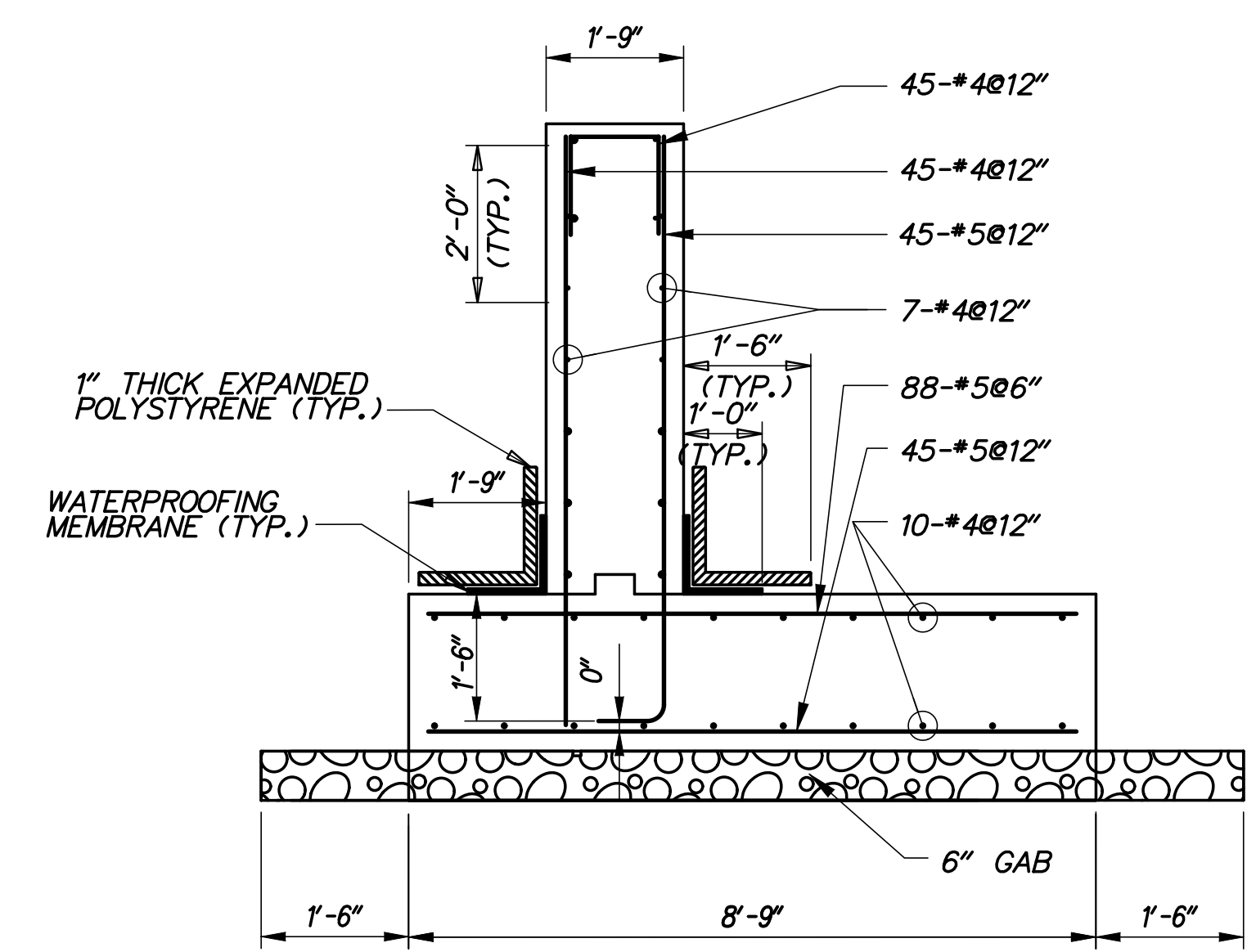
SW49
SHEET NO.
734
TOTAL SHTS.
1256



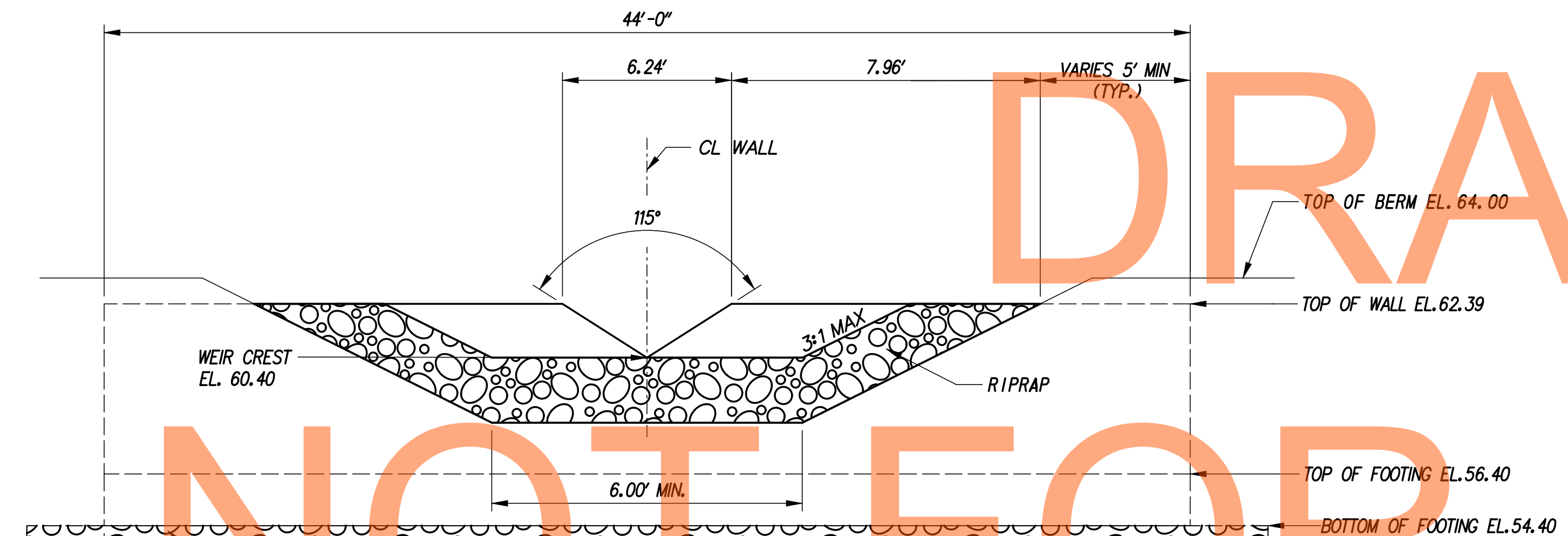
**WEIR WALL PLAN**  
SCALE: NONE



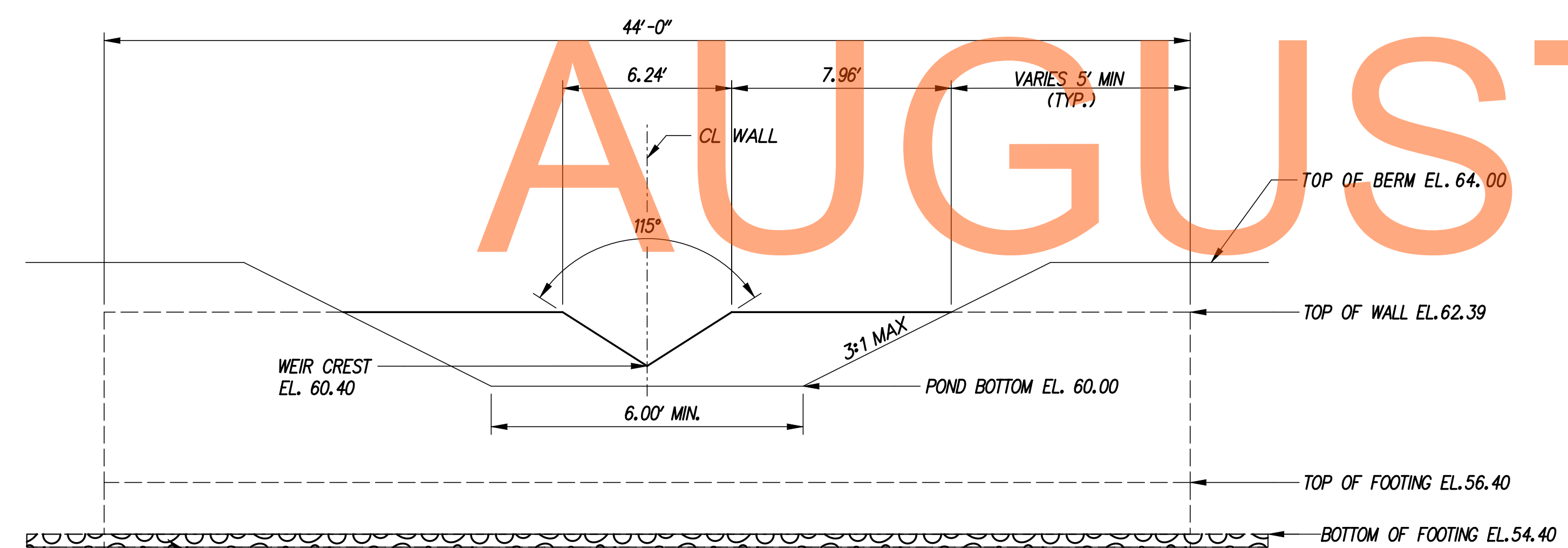
**OPENING DETAILS**  
SCALE: NONE



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



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



**WEIR WALL INTERIOR ELEVATION**  
SCALE: NONE

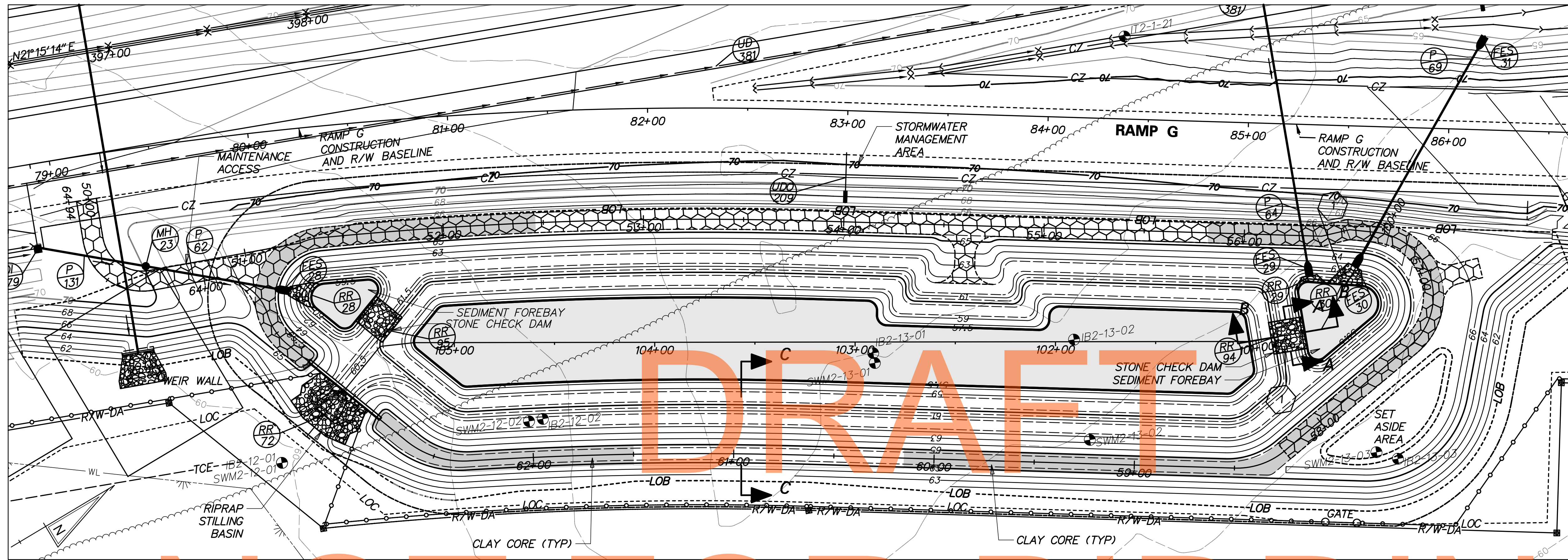
**GENERAL NOTES**

- 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.  
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(CLASS B, F'c=3000 PSI) - WEIR WALL FOOTING  
(CLASS A, F'c=4500 PSI) - WEIR WALL STEM  
  
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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

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	ADDENDUMS / REVISIONS	AS SHOWN	US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT	BRIDGE NO.	<b>STORMWATER MANAGEMENT DETAILS BMP 665 (BASIN 6)</b>	SW-50
					T20091303		
				COUNTY	DESIGNED BY: BAS		TOTAL SHTS.
				NEW CASTLE	CHECKED BY: JJW		1256



RIPRAP SCHEDULE		
NO.	TYPE	AREA (SY)
28	R-4	13
29	R-4	5
30	R-4	15
72	R-5	101
94	R-4	31
95	R-4	31

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

PLAN - BMP 666 (BASIN 7)

**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 60.94 IN PHASE 1, AND 61.52 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 ELEVATION 57.50 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 61.50  
 PLACE PERMANENT GRASS SEEDING - DRY GROUND ABOVE ELEVATION 61.50  
 PLACE TOPSOIL ON LOWER BENCH ELEVATION 59.50 AND ABOVE.

POND DESIGN SUMMARY				
DESIGN STORM	FACILITY INFLOW (CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE ELEVATION (FT)	STORAGE VOLUME (AC.FT.)*
QUALITY STORM (1 YR)	19.86	0.60	61.52	2.337
10 - YEAR	50.93	3.25	62.51	3.329
100 - YEAR	101.80	12.90	64.00	4.974

DRAINAGE AREA TO FACILITY: 13.07 ACRES

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

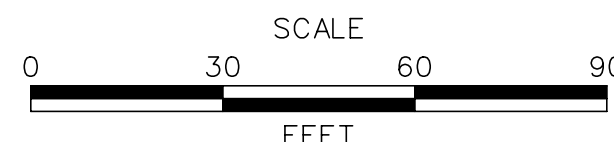
\*INCLUDES NORMAL POOL VOLUME OF 1.538 AC-FT

**SKIMMER DEVICE SUMMARY**

	PHASE 1	PHASE 2
SKIMMER ELEVATION	60.63	60.63
ORIFICE SIZE (IN)	1	1
BLOCK WEIR UP TO ELEVATION	61.25	62.22

POND QUANTITIES			
ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	5031	CY
272501	POND OUTLET STRUCTURE, 10, SPECIAL	1	EACH
274000	CLAY BORROW, STORMWATER MANAGEMENT POND, CUT-OFF TRENCH	1101	CY
302011	DELAWARE NO. 3 STONE	330	TON
302012	DELAWARE NO. 57 STONE	24	TON
712005	R-4 RIPRAP	33	SY
712006	R-5 RIPRAP	101	SY
712020	R-4 RIPRAP	44	TON
713001	GEOTEXTILES, STABILIZATION	2226	SY
713003	GEOTEXTILES, RIPRAP	251	SY
733002	TOPSOILING, 6" DEPTH	8323	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	6105	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	4586	SY

ADDENDUMS / REVISIONS



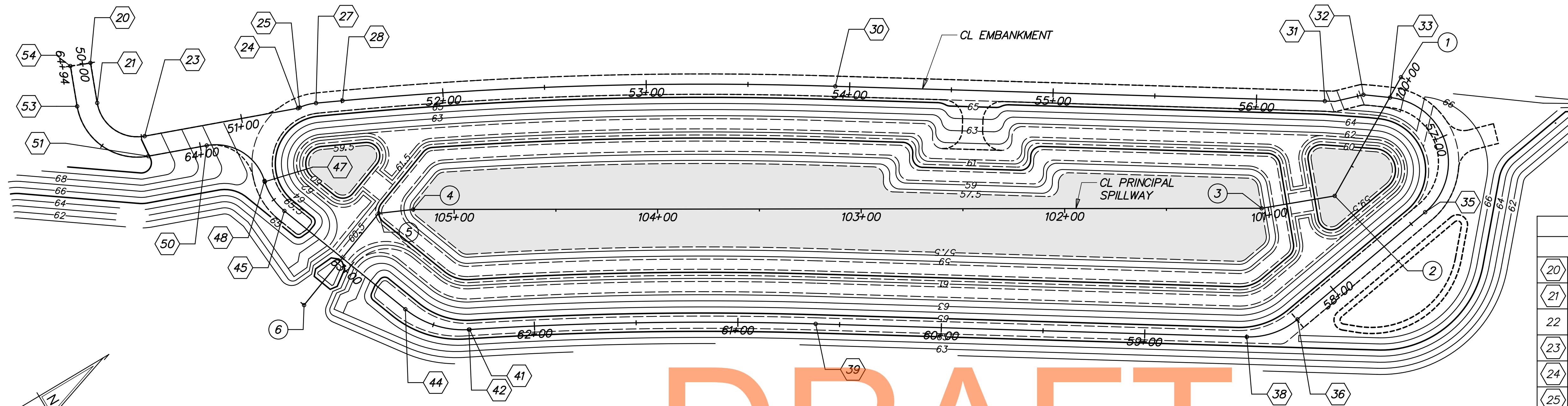
US 301  
 LEVELS ROAD  
 TO SUMMIT BRIDGE ROAD

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

STORMWATER  
 MANAGEMENT DETAILS  
 BMP 666 (BASIN 7)

SW-51
SHEET NO.
736
TOTAL SHTS.
1256

DELAWARE  
 DEPARTMENT OF TRANSPORTATION



DRAFT

STAKEOUT - BMP 666 (BASIN 7)

NOT FOR BIDDING

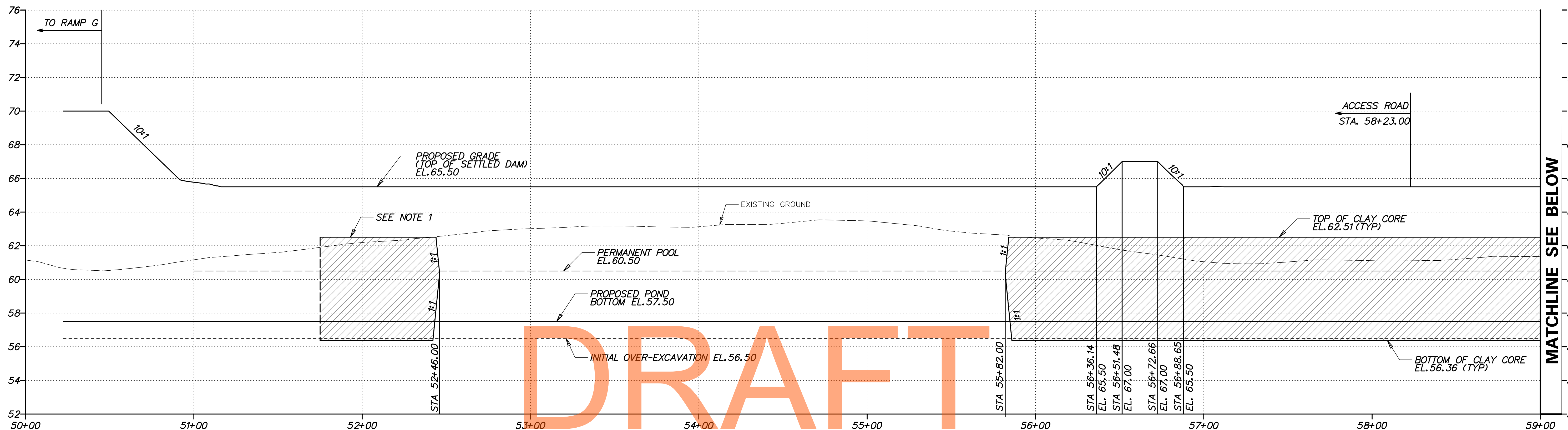
AUGUST 2015

CL EMBANKMENT		
STATION	NORTHING	EASTING
20	POB STA. 50+00.00	535161.5634 566295.8566
21	PC STA. 50+19.95	535154.3311 566314.4509
22	PI STA. 50+40.20	535146.9918 566333.3202
23	PT STA. 50+51.61	535165.9496 566340.4279
24	PI STA. 51+28.18	535237.6433 566367.3074
25	PC STA. 51+29.10	535238.5605 566367.4118
26	PI STA. 51+33.32	535242.7486 566367.8888
27	PT STA. 51+37.45	535246.5487 566369.7127
28	PC STA. 51+50.51	535258.3181 566375.3614
29	PI STA. 52+68.95	535365.0987 566426.6110
30	PT STA. 53+87.10	535464.8715 566490.4388
31	PI STA. 56+38.55	535676.6822 566625.9408
32	PI STA. 56+52.94	535690.3861 566630.3358
33	PC STA. 56+66.08	535700.9059 566638.2071
34	PI STA. 57+41.60	535761.3735 566683.4514
35	PT STA. 57+40.96	535686.8078 566695.4241
36	PC STA. 58+22.88	535605.9227 566708.4114
37	PI STA. 58+36.98	535591.9979 566710.6472
38	PT STA. 58+49.83	535580.1179 566703.0472
39	PC STA. 60+61.79	535401.5648 566588.8212
40	PI STA. 61+46.92	535329.8543 566542.9457
41	PT STA. 62+31.93	535254.1886 566503.9372
42	PC STA. 62+32.25	535253.8966 566503.7867
43	PI STA. 62+49.85	535238.2577 566495.7243
44	PT STA. 62+65.80	535232.2351 566479.1924
45	PC STA. 63+42.41	535206.0116 566407.2091
46	PI STA. 63+51.44	535202.9189 566398.7198
47	PT STA. 63+59.94	535205.1109 566389.9546
48	PC STA. 63+60.41	535205.2236 566389.5037
49	PI STA. 63+82.72	535210.6358 566367.8614
50	PT STA. 63+96.84	535189.7470 566360.0298
51	PC STA. 64+26.00	535162.4390 566349.7915
52	PI STA. 64+56.37	535134.0023 566339.1299
53	PT STA. 64+73.49	535145.0112 566310.8259
54	POE STA. 64+93.57	535152.2892 566292.1143

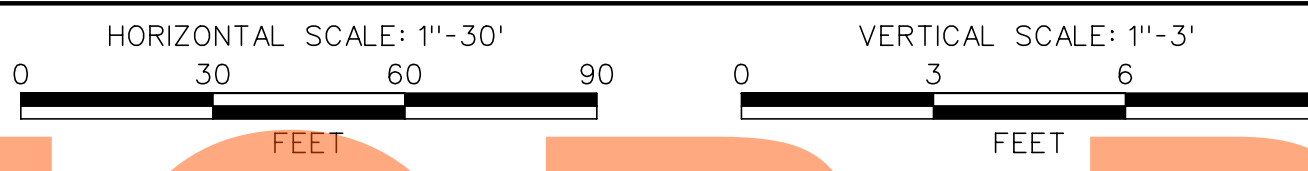
CL PRINCIPAL SPILLWAY		
STATION	NORTHING	EASTING
1	POB STA. 100+00.00	535710.6331 566632.3960
2	PI STA. 100+66.79	535652.7677 566665.7506
3	PI STA. 101+03.22	535618.8148 566652.5445
4	PI STA. 105+20.14	535260.6872 566439.0774
5	PI STA. 105+37.20	535245.1662 566432.0074
6	POE STA. 105+95.30	535190.5713 566451.8964

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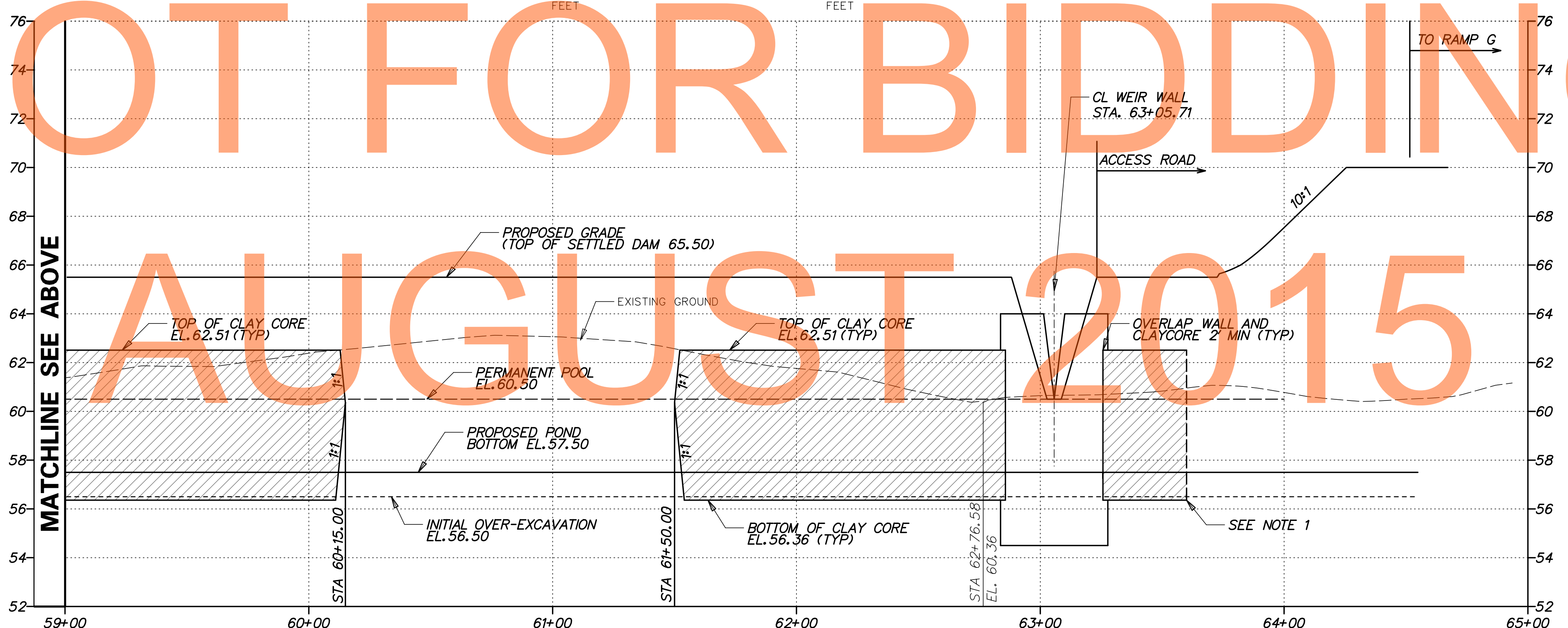
<b>DELAWARE DEPARTMENT OF TRANSPORTATION</b>	ADDENDUMS / REVISIONS	SCALE 0      30      60      90 FEET	<b>US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD</b>	CONTRACT T200911303 COUNTY NEW CASTLE	BRIDGE NO. DESIGNED BY: DB CHECKED BY: JZ	<b>STORMWATER MANAGEMENT DETAILS BMP 666 (BASIN 7)</b>	SW-52 SHEET NO. 737 TOTAL SHTS. 1256



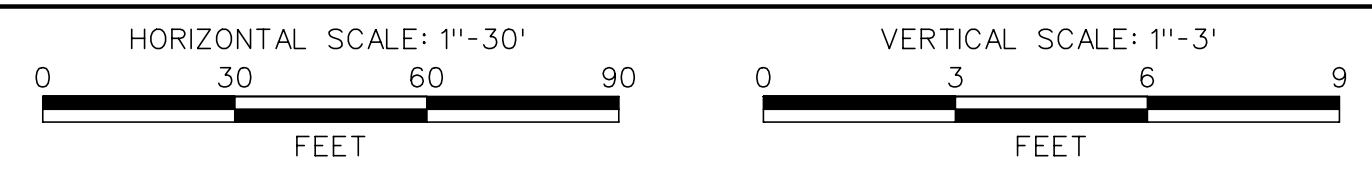
EMBANKMENT PROFILE FOR BMP 666 (BASIN 7)



NOT FOR BIDDING



EMBANKMENT PROFILE FOR BMP 666 (BASIN 7)



- NOTES:**
- ALIGNMENT DIVERTS FROM EMBANKMENT CENTERLINE. CLAY CORE IS CONTINUOUS BETWEEN STA. 52+46 AND WEIR WALL.

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ADDENDUMS / REVISIONS	

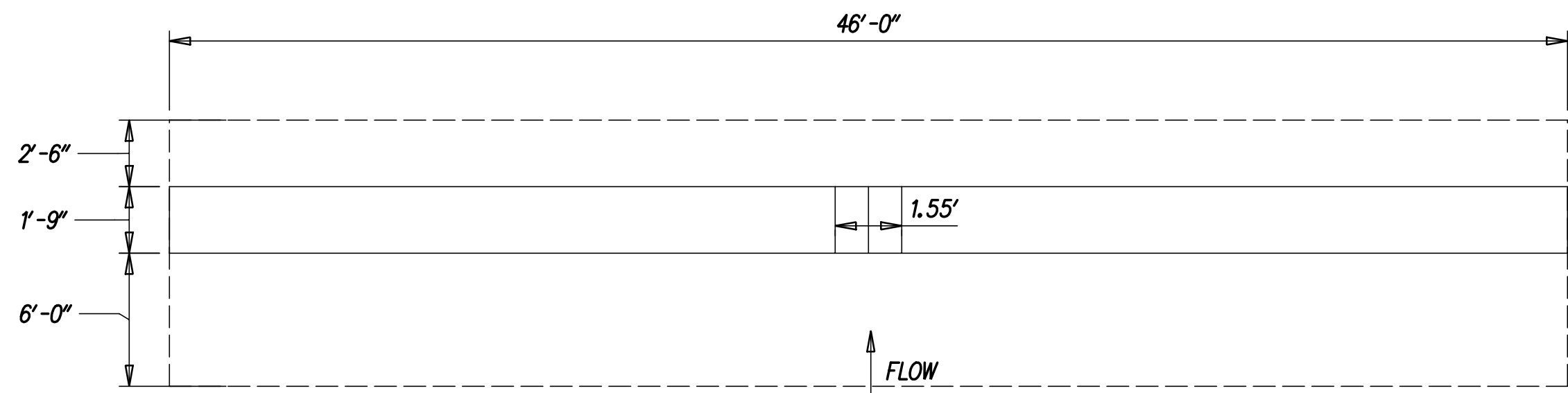
**AS SHOWN**

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

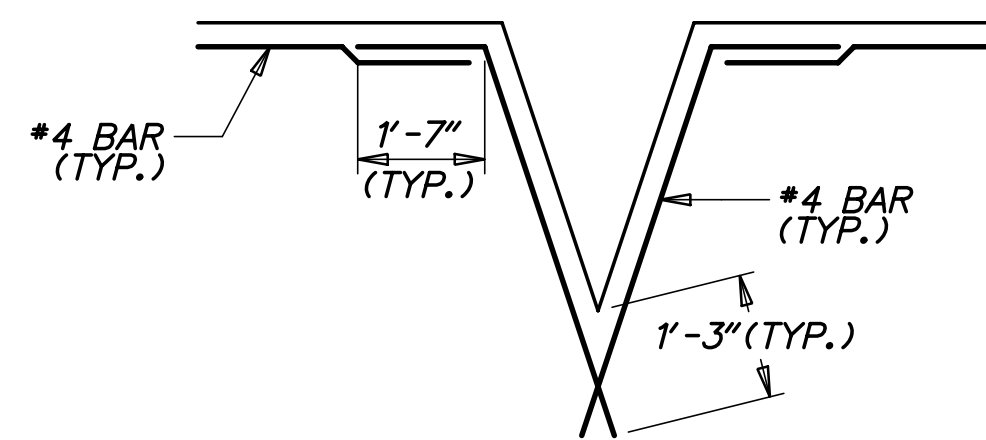
CONTRACT T20091303	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: DB
	CHECKED BY: JZ

**STORMWATER  
MANAGEMENT DETAILS  
BMP 666 (BASIN 7)**

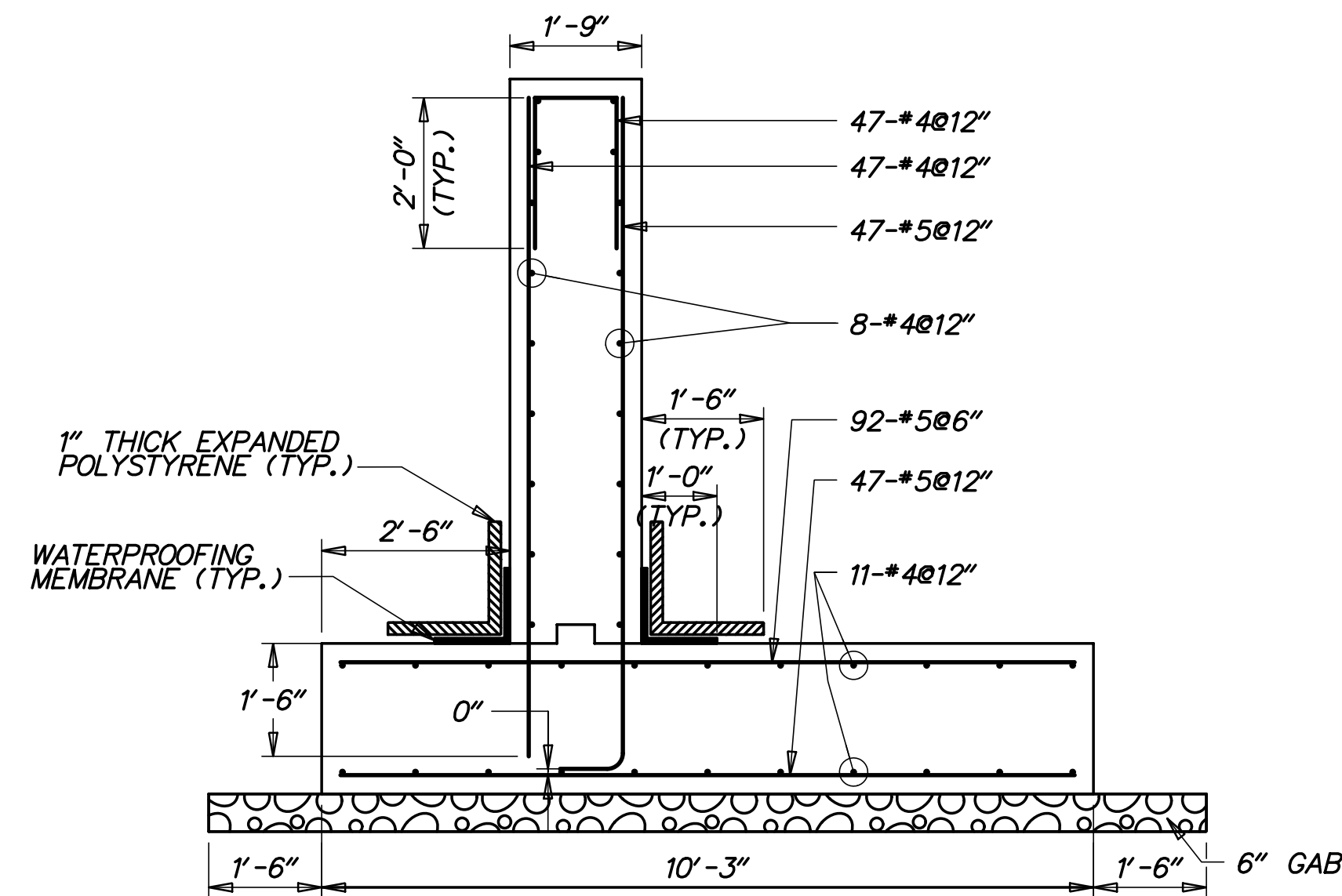
SW-53
SHEET NO. 738
TOTAL SHTS. 1256



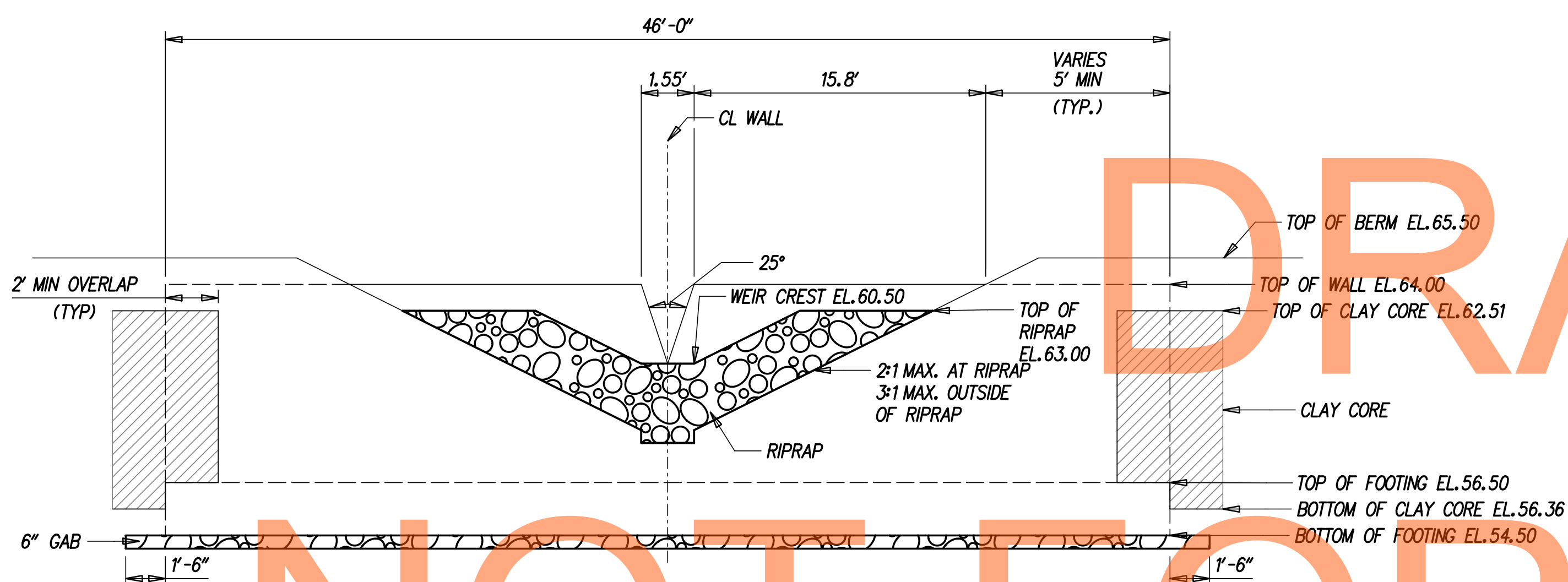
**WEIR WALL  
PLAN**  
SCALE: NONE



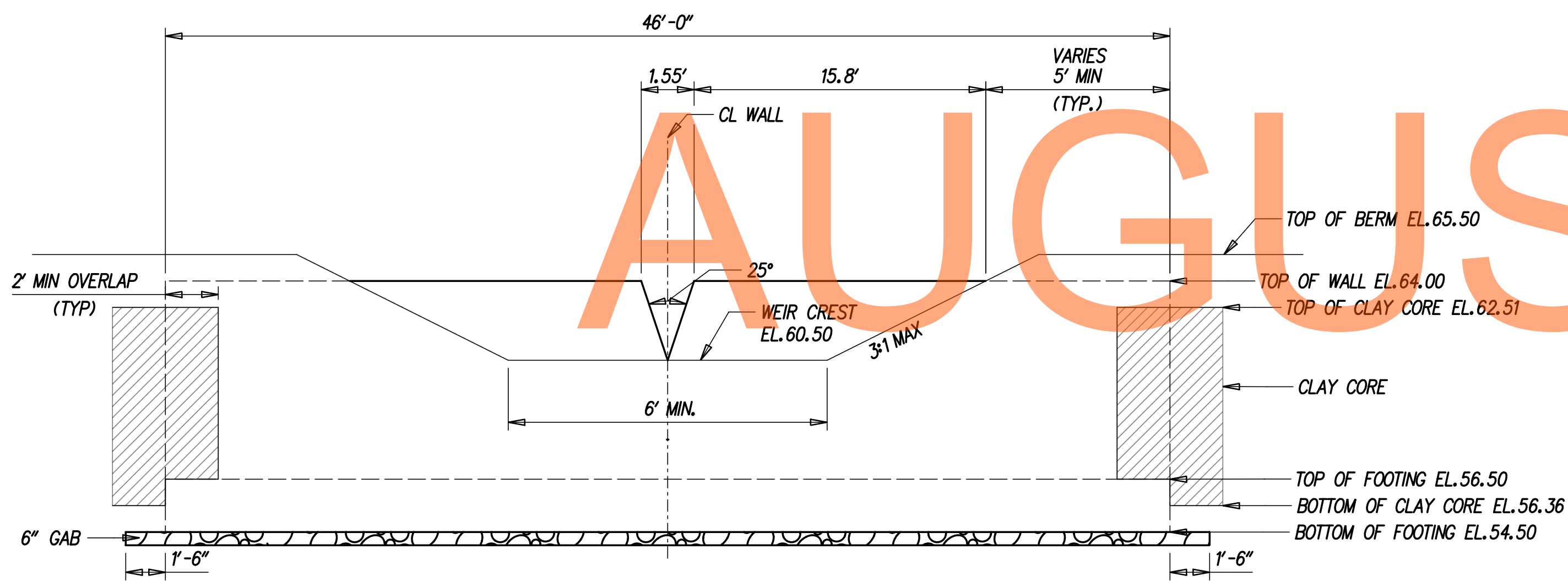
**OPENING DETAILS**  
SCALE: NONE



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



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



**WEIR WALL  
INTERIOR ELEVATION**  
SCALE: NONE

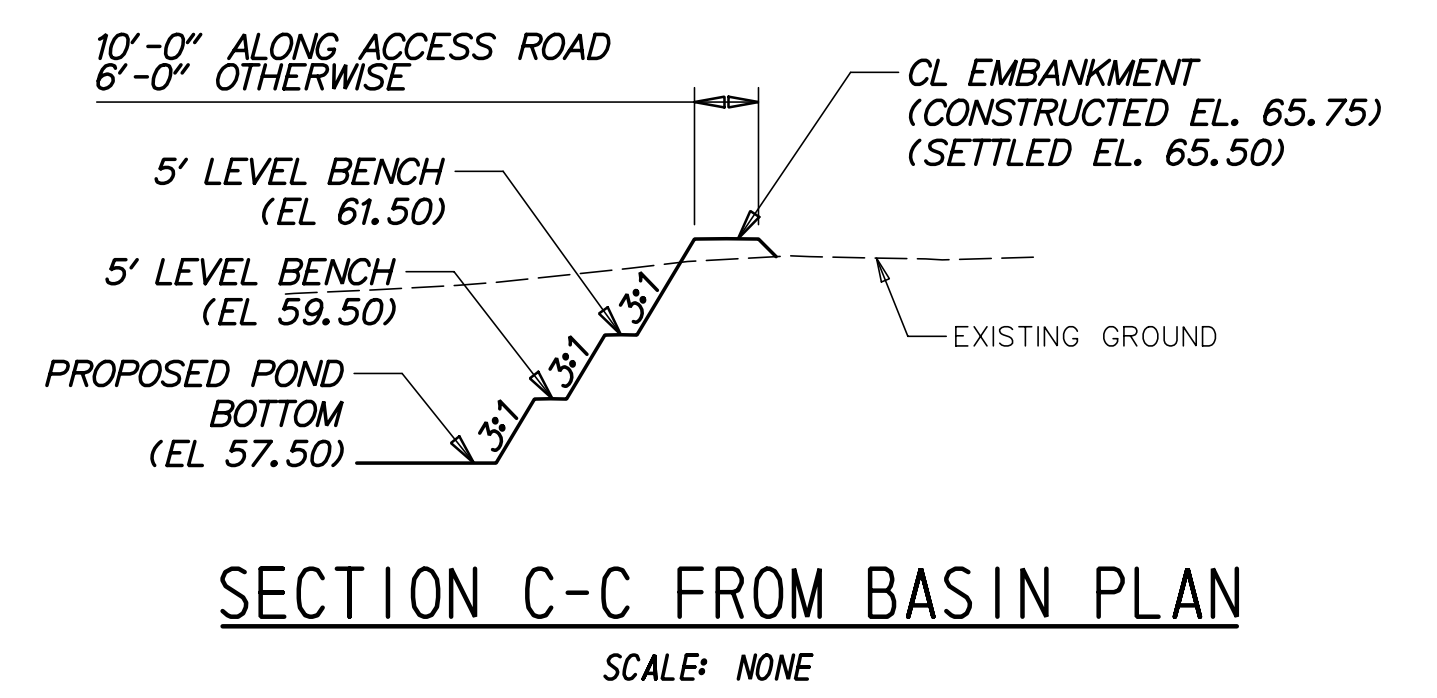
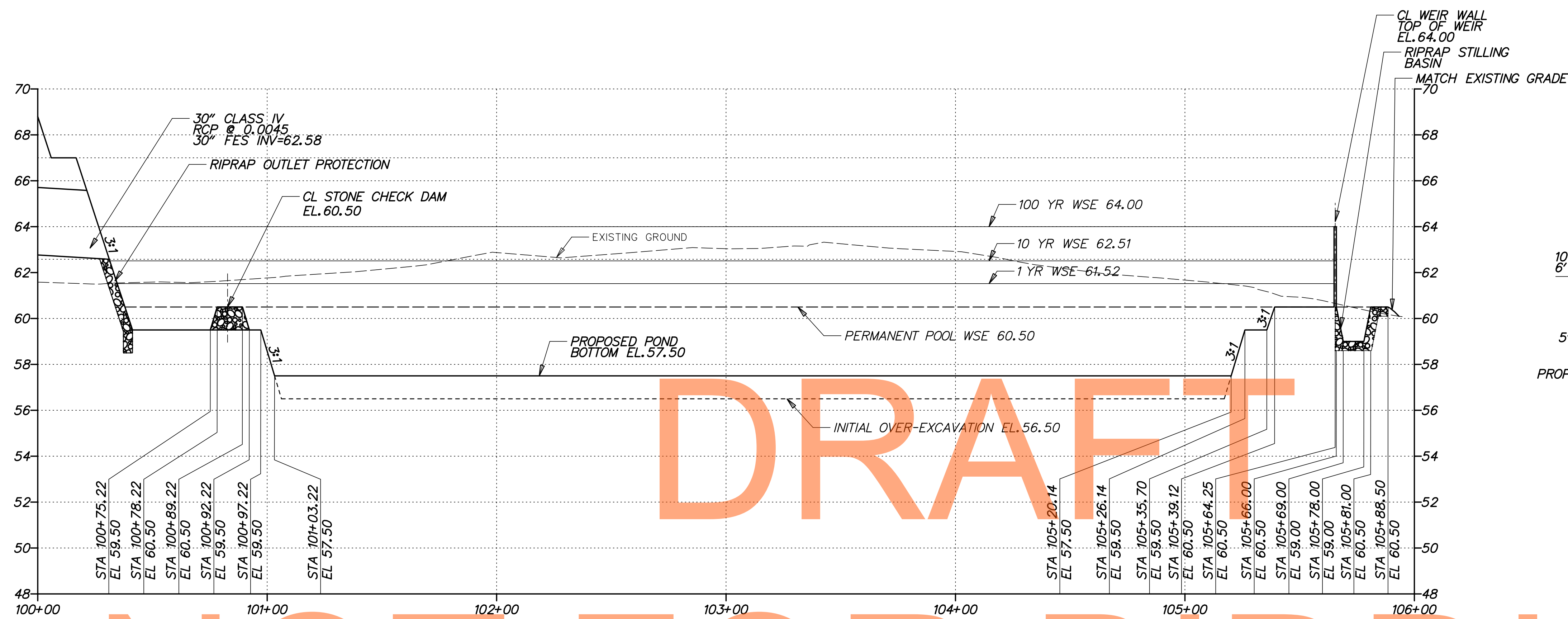
**GENERAL NOTES**

- 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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	ADDENDUMS / REVISIONS		AS SHOWN	US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT	BRIDGE NO.	<b>STORMWATER MANAGEMENT DETAILS BMP 666 (BASIN 7)</b>	SW-54
					T20091303			DESIGNED BY: DB
					COUNTY	CHECKED BY: JZ	TOTAL SHTS. 1256	
					NEW CASTLE			

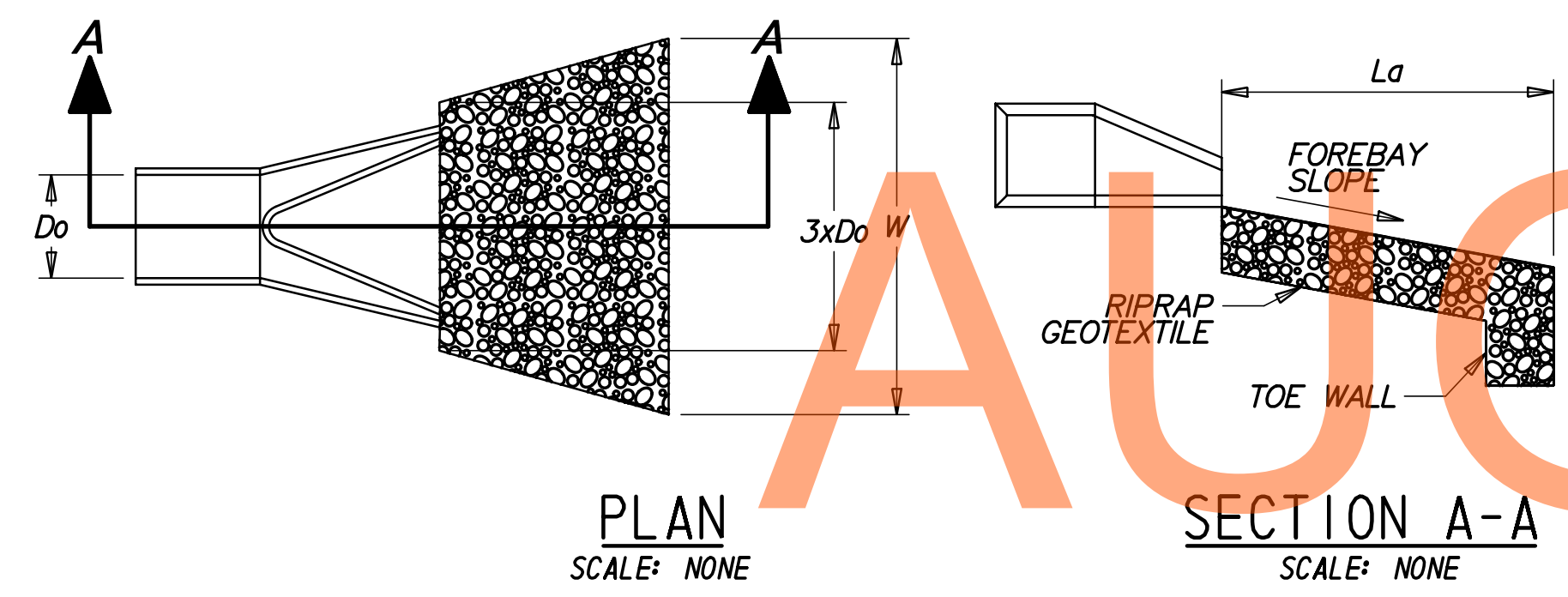
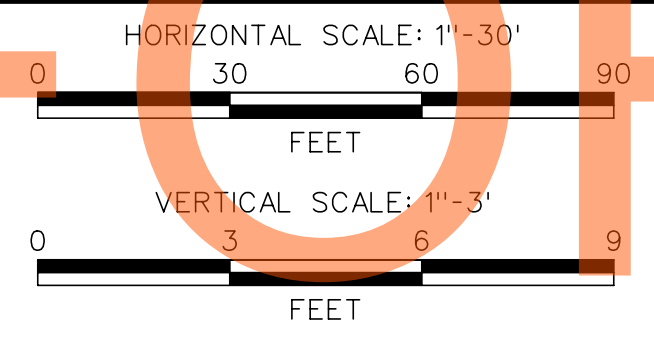


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AUGUST 2015

SPILLWAY PROFILE - BMP 666 (BASIN 7)



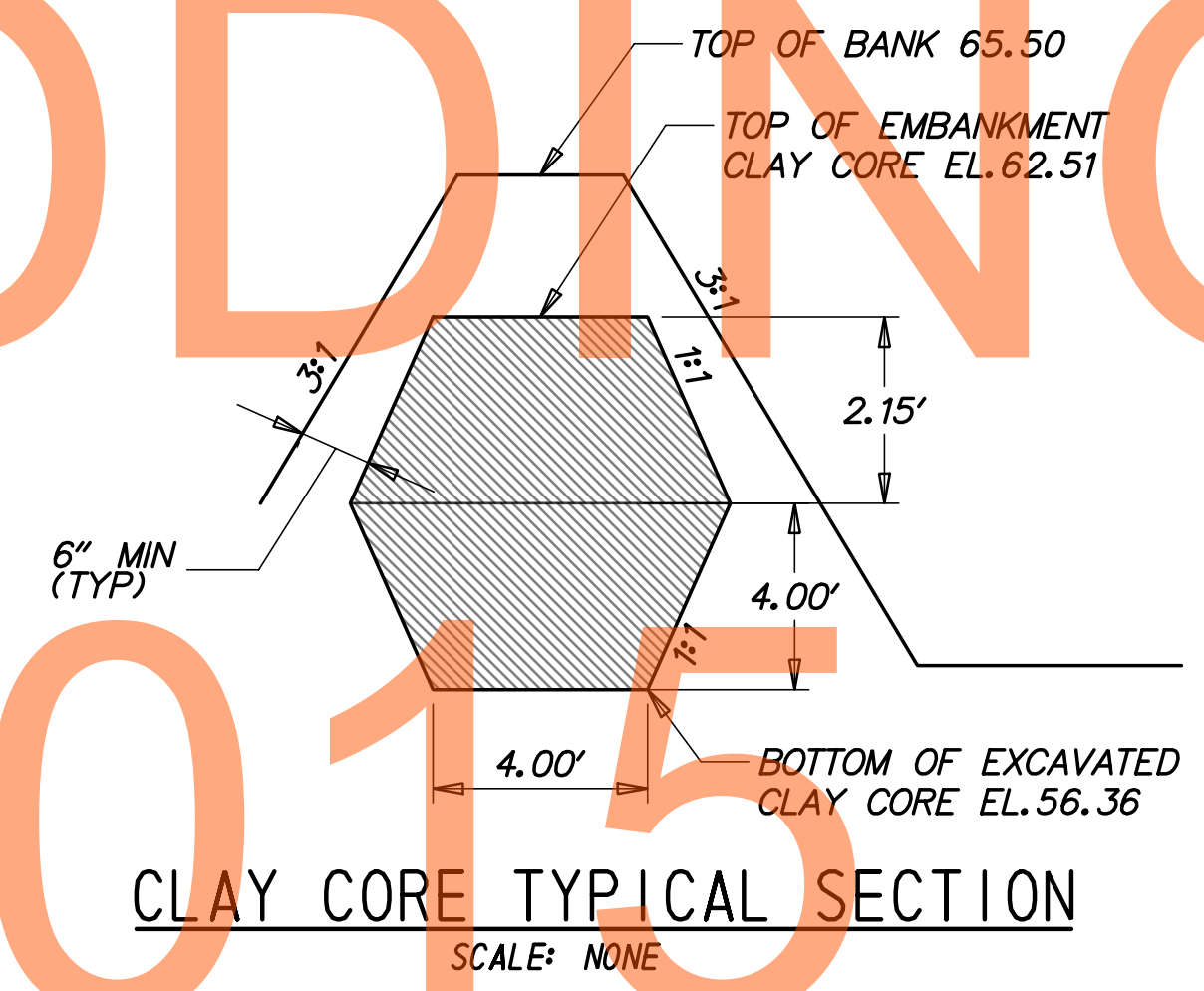
**DATA**

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

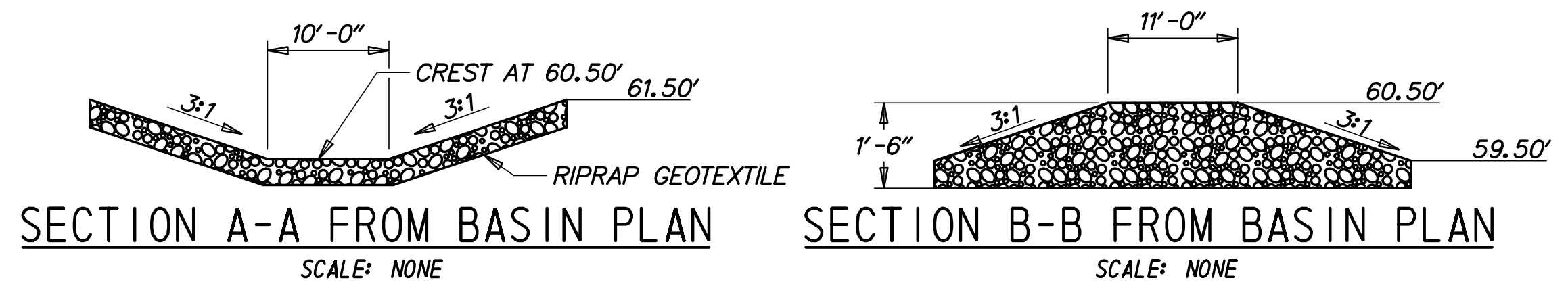
FES ID	Do	La	W	R No.
28	1.5'	9.2'	12.0'	R-4
29	2.5'	4.7'	15.0'	R-4
30	2.5'	9.3'	16.0'	R-4

FOREBAY RIPRAP OUTLET PROTECTION

- 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.



CLAY CORE TYPICAL SECTION



SECTION A-A FROM BASIN PLAN      SECTION B-B FROM BASIN PLAN

STONE CHECK DAM

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

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ADDENDUMS / REVISIONS

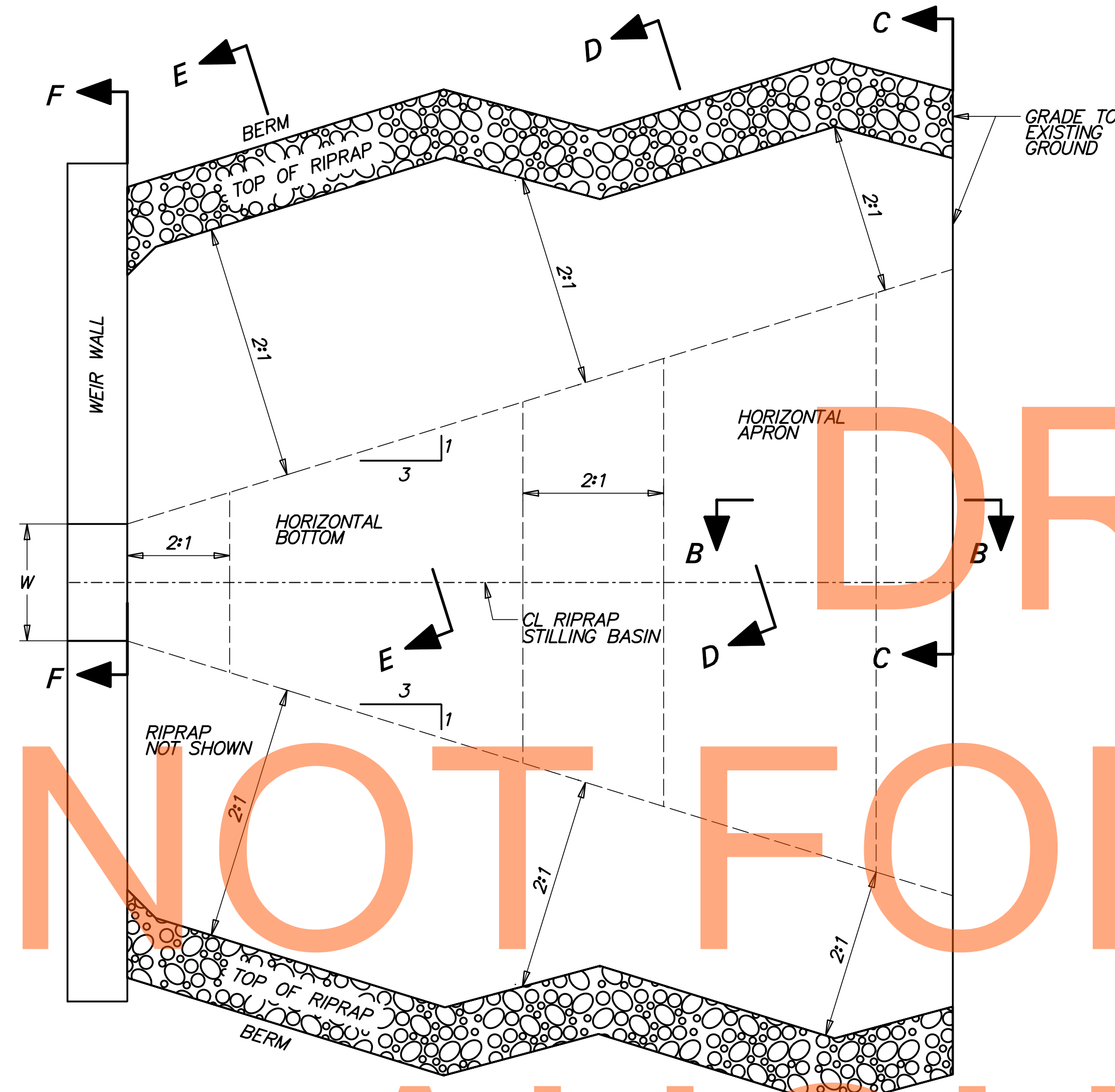
AS SHOWN

**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 666 (BASIN 7)**

SW-55
SHEET NO.
740
TOTAL SHTS.
1256



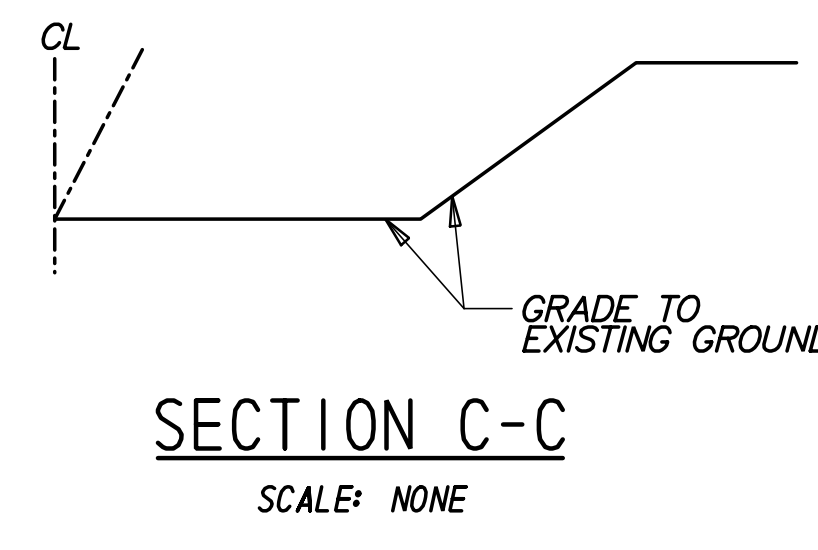
**PLAN**  
SCALE: NONE

**DATA**

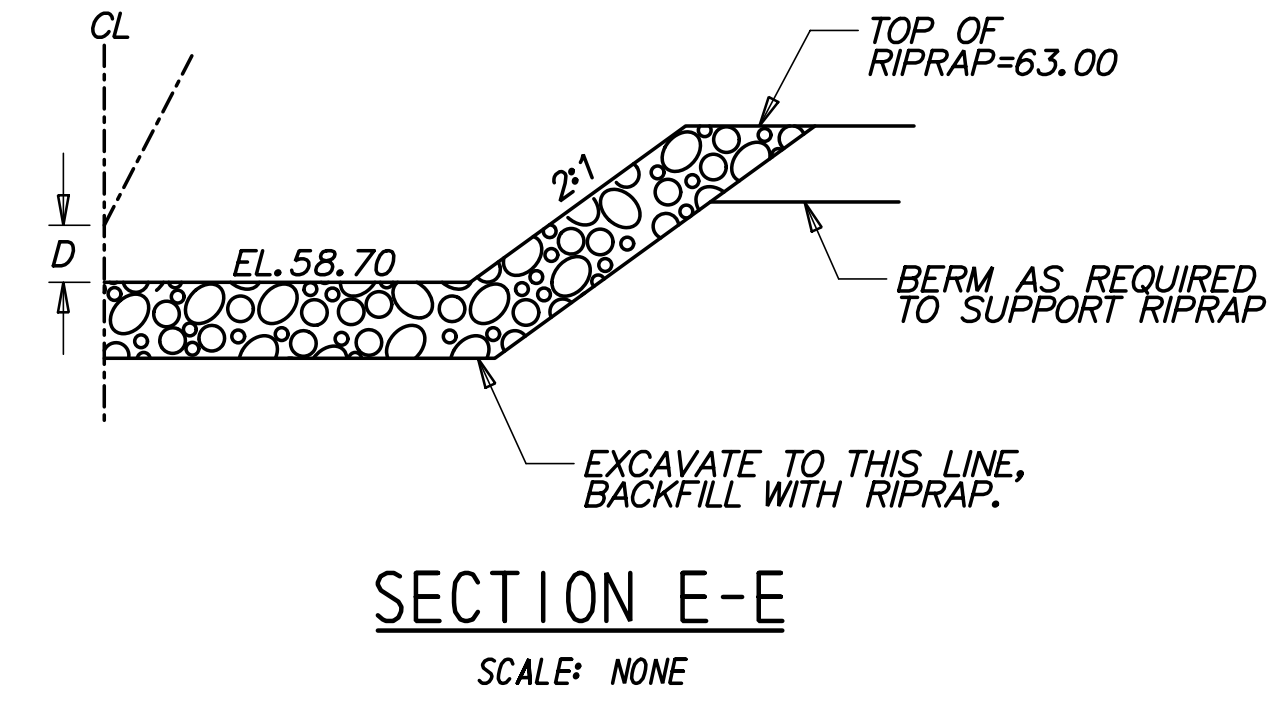
TOP OF V-NOTCH WEIR WIDTH  $W = 1.55'$   
 DEPTH OF BASIN FROM WEIR CREST  $D = 1.50'$   
 RIPRAP SIZE (R No.) = R-5 WITH NO. 57 STONE

- NOTES:
1. RIPRAP ITEM# 712006.
  2. GEOTEXTILES, RIPRAP ITEM# 713003
  3. DELAWARE NO. 57 STONE ITEM# 302017
  4. SEE STANDARD NO. E-10 FOR RIPRAP DEPTH AND GEOTEXTILE PLACEMENT.

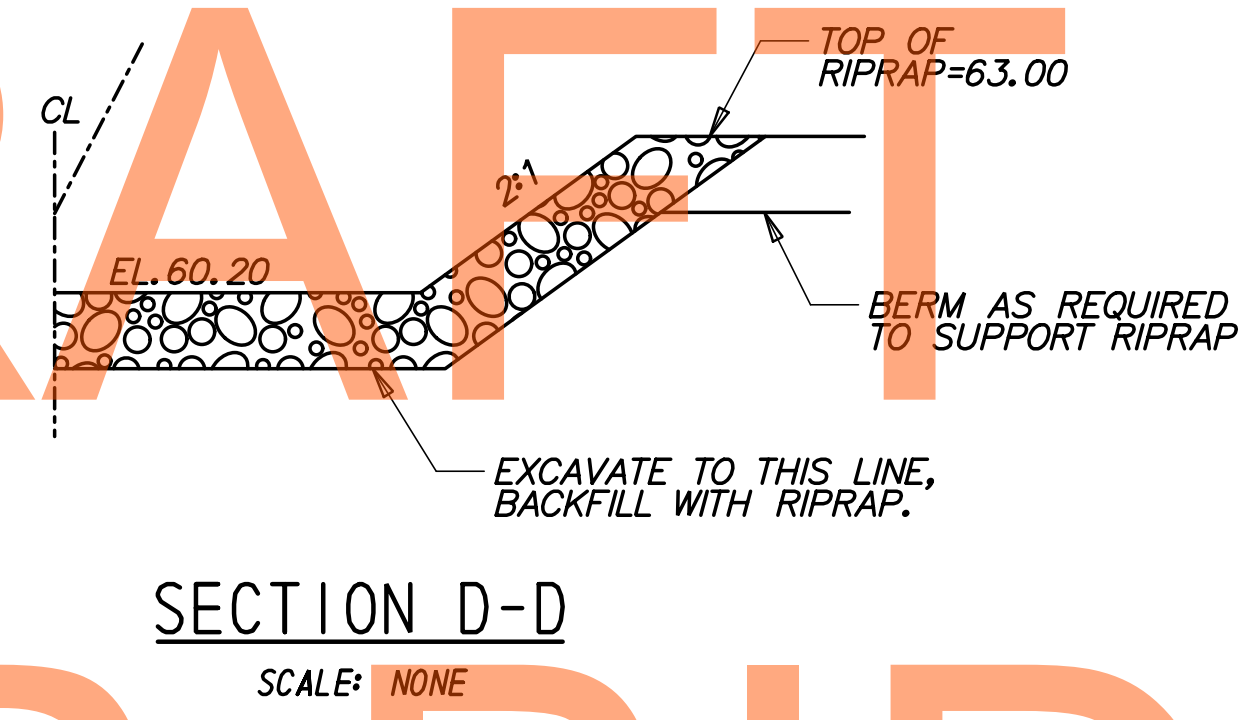
**RIPRAP STILLING BASIN**  
SCALE: NONE



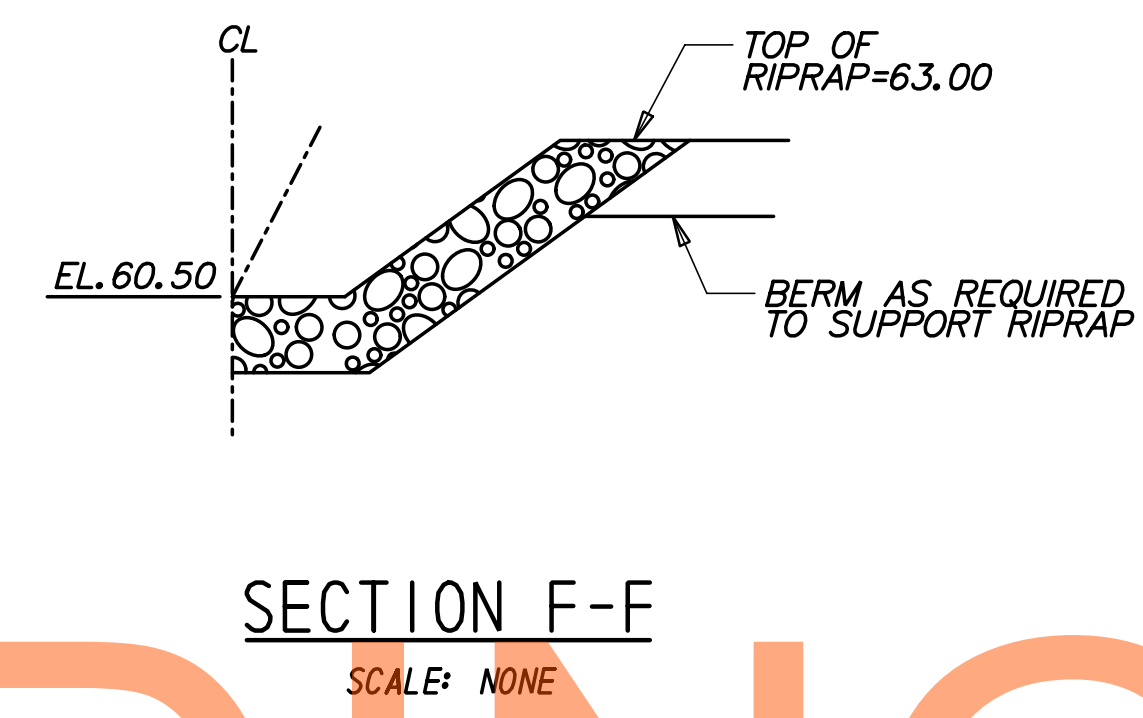
**SECTION C-C**  
SCALE: NONE



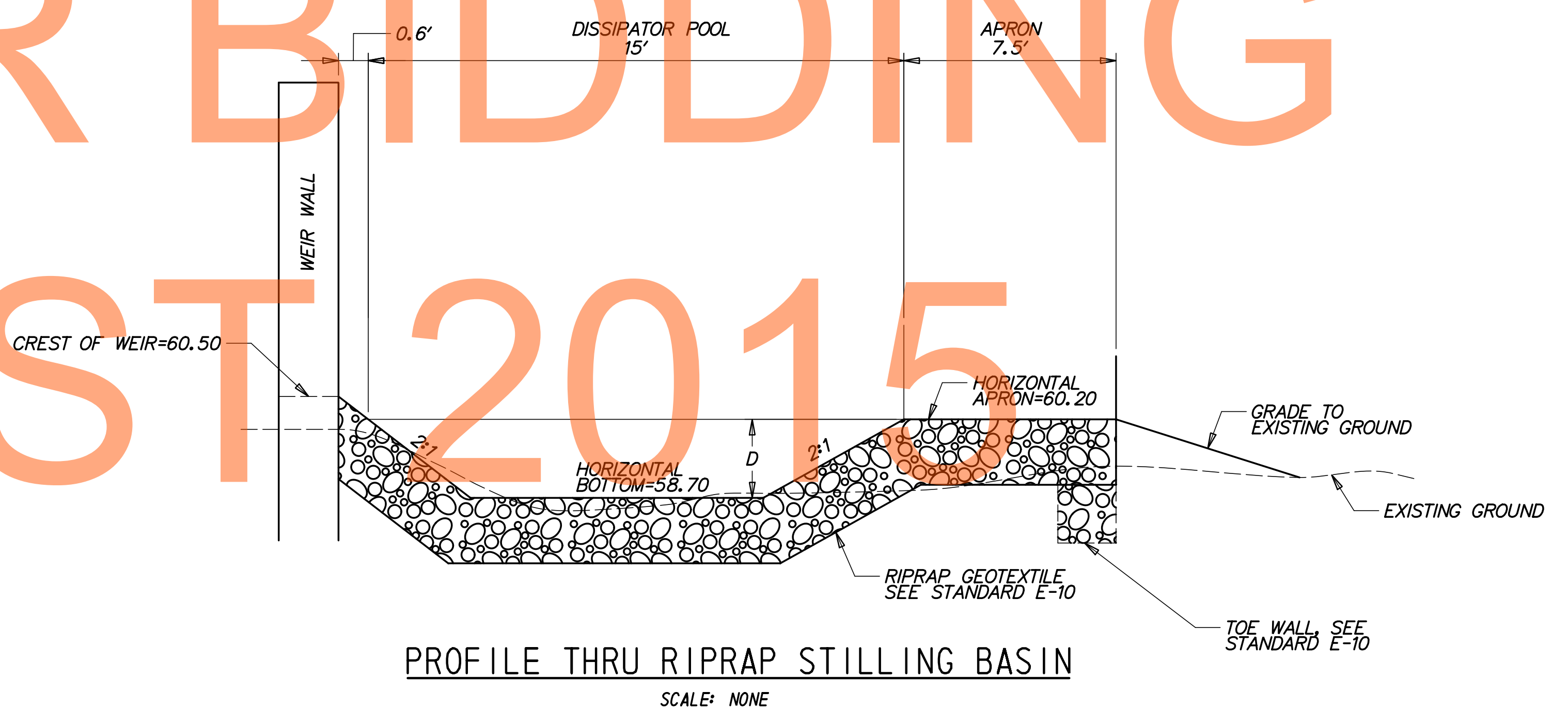
**SECTION E-E**  
SCALE: NONE



**SECTION D-D**  
SCALE: NONE



**SECTION F-F**  
SCALE: NONE



**PROFILE THRU RIPRAP STILLING BASIN**  
SCALE: NONE

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AUGUST 2015

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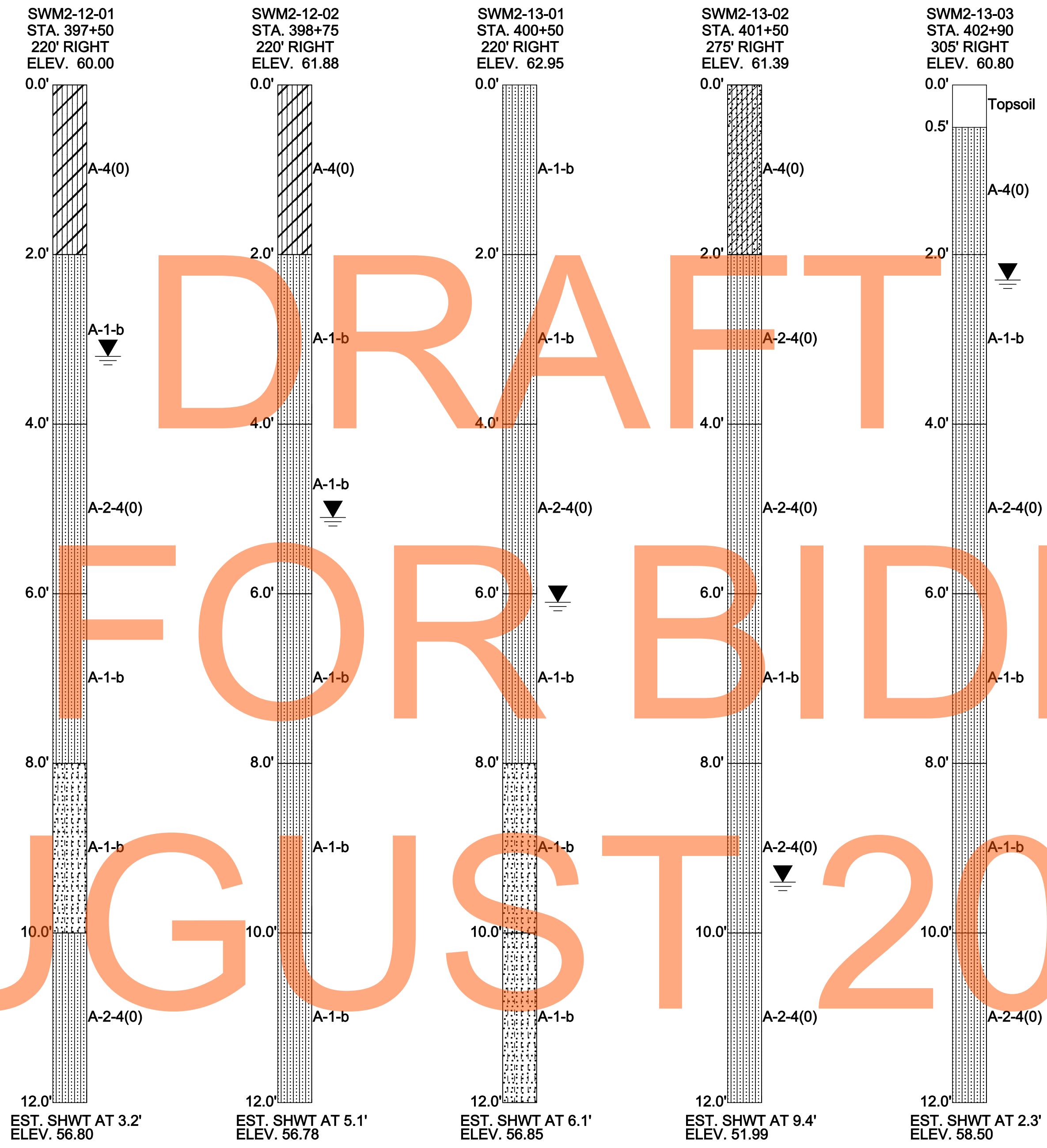
ADDENDUMS / REVISIONS	

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

SW-56
SHEET NO.
741
TOTAL SHTS.
1256

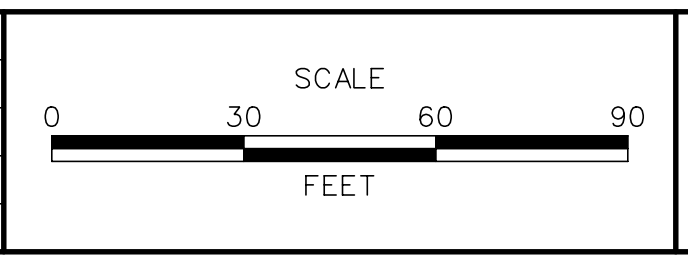


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NOT FOR BIDDING  
AUGUST 2015



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ADDENDUMS / REVISIONS	

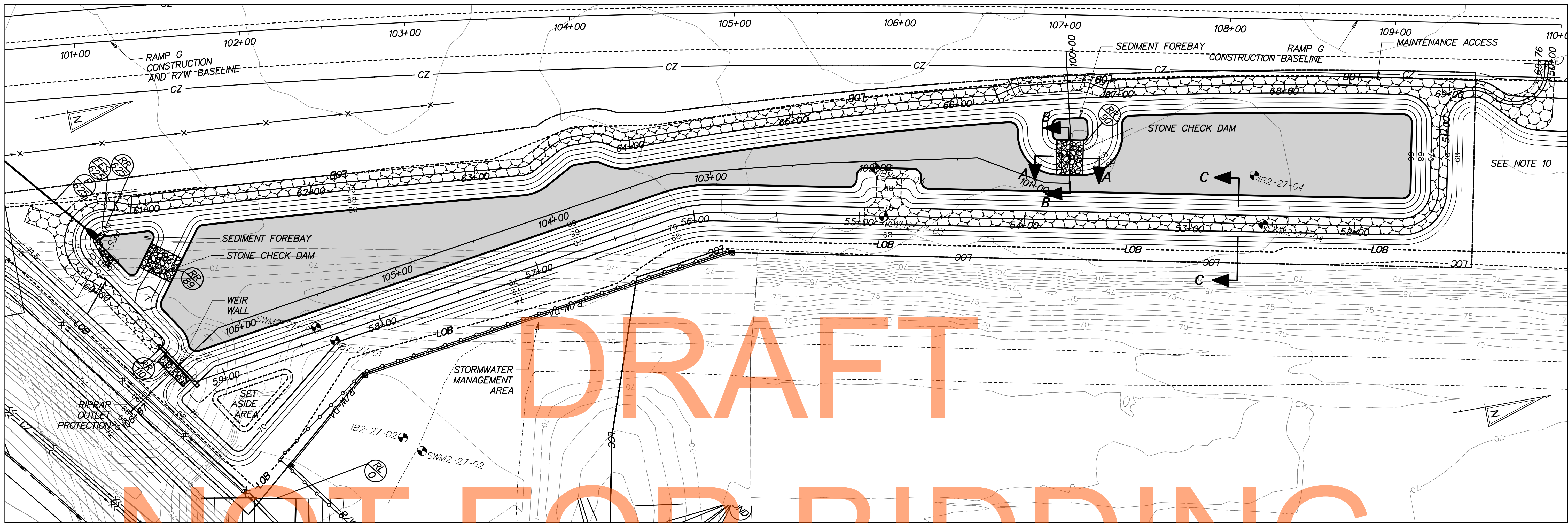


**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

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

**STORMWATER  
MANAGEMENT DETAILS  
BMP 666 (BASIN 7)**

SW-57
SHEET NO. 742
TOTAL SHTS. 1256



**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.
- TEMPORARY GRADING AND RIPRAP TO BE REMOVED IN FUTURE PHASE OF CONSTRUCTION. EMBANKMENT TO BE GRADED TO FULL HEIGHT.

**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 ABOVE BASIN BOTTOM ELEVATION 66.00.

**PLAN - BMP 670 (BASIN 9A)**

RIPRAP SCHEDULE		
NO.	TYPE	AREA (SY)
110	R-5	16
89	R-4	38
90	R-4	38
625	R-4	11

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)	7.04	0.00	66.28	0.212
10 - YEAR	22.15	0.00	67.55	1.239
100 - YEAR	49.11	0.85	68.46	2.110

DRAINAGE AREA TO FACILITY: 6.83 ACRES

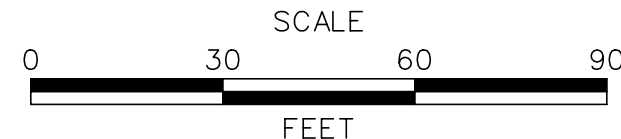
MANAGEMENT PROVIDED BY FACILITY: WATER QUALITY BY INFILTRATION OF 1 YEAR STORM RUNOFF, WATER QUANTITY FOR 10 AND 100 YEAR STORMS.

POND QUANTITIES			
ITEM NO.	ITEM	QTY.	UNITS.
202000	EXCAVATION AND EMBANKMENT	7991	CY
272501	POND OUTLET STRUCTURE, 11, SPECIAL	1	EACH
302011	DELAWARE NO. 3 STONE	538	TON
302012	DELAWARE NO. 57 STONE	4	TON
712005	R-4 RIPRAP	11	SY
712006	R-5 RIPRAP	16	SY
712020	R-4 RIPRAP	56	TON
713001	GEOTEXTILES, STABILIZATION	3630	SY
713003	GEOTEXTILES, RIPRAP	135	SY
733002	TOPSOILING, 6" DEPTH	12232	SY
734013	PERMANENT GRASS SEEDING, DRY GROUND	11234	SY
734015	PERMANENT GRASS SEEDING, WET GROUND	4288	SY

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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 670 (BASIN 9A)**

SW-58
SHEET NO.
743
TOTAL SHTS.
1256