

POI-1 (DA-1) ULTIMATE ZONING LAND USE DETAILS			
LAND USE	HSG	AREA (AC)	RCN
RESIDENTIAL DISTRICTS ( $\frac{1}{4}$ AC)	B	44.59	75
RESIDENTIAL DISTRICTS ( $\frac{1}{4}$ AC)	D	3.62	87
<b>TOTAL</b>	N/A	48.21	76

POI-2 (DA-2) ULTIMATE ZONING LAND USE DETAILS			
LAND USE	HSG	AREA (AC)	RCN
ROW CROP, STRAIGHT ROW (SR) (GOOD)	B	6.51	78
ROW CROP, STRAIGHT ROW (SR) (GOOD)	D	2.22	89
RESIDENTIAL DISTRICTS ( $\frac{1}{4}$ AC)	A	1.48	61
RESIDENTIAL DISTRICTS ( $\frac{1}{4}$ AC)	B	39.03	75
RESIDENTIAL DISTRICTS ( $\frac{1}{4}$ AC)	D	7.09	87
RESIDENTIAL DISTRICTS ( $\frac{1}{4}$ AC)	B	4.41	70
RESIDENTIAL DISTRICTS ( $\frac{1}{4}$ AC)	D	1.35	85
<b>TOTAL</b>	N/A	62.09	77

POI-3 (DA-3) ULTIMATE ZONING LAND USE DETAILS			
LAND USE	HSG	AREA (AC)	RCN
RESIDENTIAL DISTRICTS ( $\frac{1}{4}$ AC)	A	0.01	61
RESIDENTIAL DISTRICTS ( $\frac{1}{4}$ AC)	B	8.63	75
RESIDENTIAL DISTRICTS ( $\frac{1}{4}$ AC)	D	2.24	87
RESIDENTIAL DISTRICTS ( $\frac{1}{4}$ AC)	B	3.68	70
RESIDENTIAL DISTRICTS ( $\frac{1}{4}$ AC)	D	0.34	85
<b>TOTAL</b>	N/A	14.90	76

POI-1 (DA-1) TIME OF CONCENTRATION - 2-YR 24HR STORM EVENT						
SEGMENT	FLOW TYPE	LENGTH (LF)	SLOPE (FT/FT)	MANNING'S N	VELOCITY (FPS)	TIME (HRS)
A-B	sheet	45	0.018	0.150	-	0.088
B-C	SHALLOW CONC.	793	0.021	-	2.90	0.076
C-D	PIPE	800	-	-	7.00	0.032
D-E	CHANNEL	1136	0.028	0.040	6.23	0.051
TIME OF CONCENTRATION =						0.246

POI-2 (DA-2) TIME OF CONCENTRATION - 2-YR 24HR STORM EVENT						
SEGMENT	FLOW TYPE	LENGTH (LF)	SLOPE (FT/FT)	MANNING'S N	VELOCITY (FPS)	TIME (HRS)
A-B	sheet	100	0.044	0.150	-	0.117
B-C	SHALLOW CONC.	838	0.038	-	3.20	0.073
C-D	CHANNEL	869	0.026	0.040	5.57	0.043
D-E	PIPE	145	-	-	7.00	0.006
E-F	CHANNEL	1708	0.028	0.040	4.48	0.106
TIME OF CONCENTRATION =						0.345

POI-3 (DA-3) TIME OF CONCENTRATION - 2-YR 24HR STORM EVENT						
SEGMENT	FLOW TYPE	LENGTH (LF)	SLOPE (FT/FT)	MANNING'S N	VELOCITY (FPS)	TIME (HRS)
A-B	sheet	100	0.036	0.150	-	0.127
B-C	SHALLOW CONC.	351	0.035	-	3.05	0.032
C-D	CHANNEL	125	0.066	0.040	4.04	0.009
D-E	PIPE	88	-	-	7.00	0.003
E-F	CHANNEL	1098	0.050	0.040	5.11	0.060
TIME OF CONCENTRATION =						0.231

POI-4 (DA-4) ULTIMATE ZONING LAND USE DETAILS			
LAND USE	HSG	AREA (AC)	RCN
RESIDENTIAL DISTRICTS ( $\frac{1}{4}$ AC)	A	1.90	61
RESIDENTIAL DISTRICTS ( $\frac{1}{4}$ AC)	B	6.64	75
RESIDENTIAL DISTRICTS ( $\frac{1}{4}$ AC)	D	0.68	87
<b>TOTAL</b>	N/A	9.22	73

POI-4 (DA-4) TIME OF CONCENTRATION - 2-YR 24HR STORM EVENT						
SEGMENT	FLOW TYPE	LENGTH (LF)	SLOPE (FT/FT)	MANNING'S N	VELOCITY (FPS)	TIME (HRS)
A-B	sheet	12	0.001	0.011	-	0.012
B-C	SHALLOW CONC.	764	0.056	-	4.80	0.044
C-D	PIPE	33	-	-	7.00	0.001
D-E	CHANNEL	199	0.114	0.040	2.71	0.020
TIME OF CONCENTRATION =						0.100

BILLING NO. TBD
EG-SWMENG- TBD
PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND LICENSE NO. 28371, EXPIRATION DATE: 01/01/2027.



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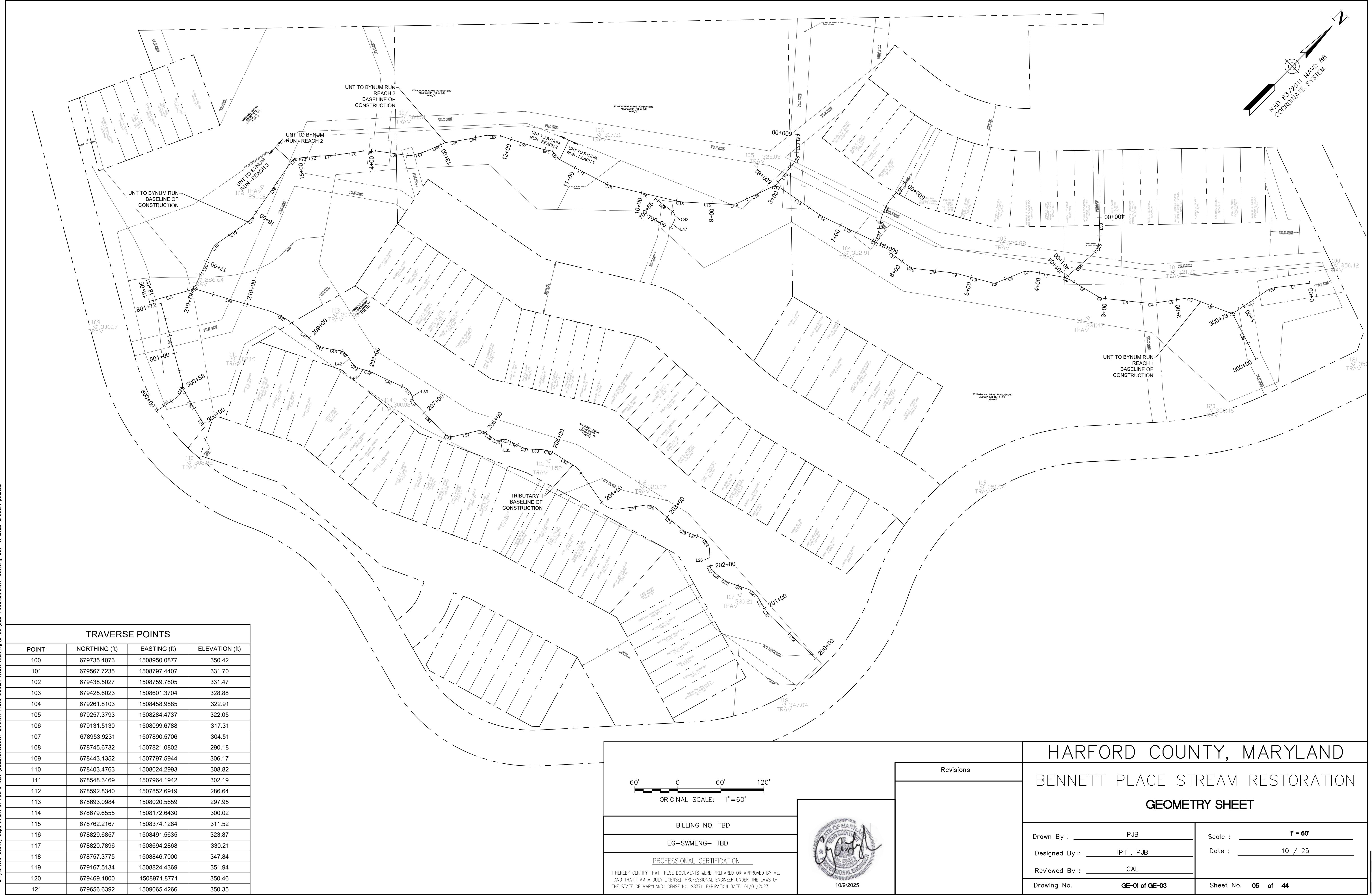
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UNIT to Bynum Run - Reach 1																
POINT ID	PI	PI	PT	PC	LENGTH	RADIUS	Line/Chord Direction	START POINT	END POINT	DELTA	DEGREE	CENTER NORTHING	CENTER EASTING	EXTERNAL TANGENT	CHORD LENGTH	EXTERNAL DISTANCE
L1			0+00.00	0+46.97	46.966		S37° 24' 19.72"W	679691.9261,1508942.2828	679654.6182,1508913.7531							
C1	679648.1730,1508908.8244	0+55.08			15.931	34.105	S24° 01' 24.55"W	679654.6182,1508913.7531	679640.1989,1508907.3261	026° 45' 50.35"	167° 59' 50.84"	679633.90	1508940.8447	8.11	15.79	0.95
L2			0+62.90	1+12.35	49.455		S10° 38' 29.37"W	679640.1989,1508907.3261	679591.5946,1508989.1936							
C2	679584.9341,1508896.9422	1+19.13			12.494	13.000	S38° 10' 30.17"W	679591.5946,1508898.1936	679582.1462,1508890.7651	055° 04' 01.60"	440° 44' 12.36"	679594.00	1508885.4172	6.78	12.02	1.66
L3			1+24.85	1+74.96	50.118		S65° 42' 30.97"W	679582.1462,1508890.7651	679561.5287,1508845.0843							
C3	67959.0743,1508839.6460	1+80.93			11.666	22.551	S50° 53' 20.91"W	679561.5287,1508845.0843	679554.2515,1508836.1332	029° 38' 20.13"	254° 04' 10.25"	679540.97	1508854.3613	5.97	11.54	0.78
L4			1+86.63	2+30.33	43.700		S36° 04' 10.84"W	679554.2515,1508836.1332	679518.9284,1508810.4037	014° 37' 45.77"	127° 08' 15.37"	679545.46	1508773.9768	5.78	11.48	0.37
C4	679514.2525,1508806.9978	2+36.12			11.507	45.066	S43° 23' 03.73"W	679518.9284,1508810.4037	679510.5985,1508802.5213	014° 37' 45.77"	127° 08' 15.37"	679545.46	1508773.9768	5.78	11.48	0.37
L5			2+41.84	3+00.40	58.559		S50° 41' 56.62"W	679510.5985,1508802.5213	679473.4973,1508757.2063							
C5	67949.3223,1508752.1056	3+06.99			12.973	29.749	S63° 11' 32.28"W	679473.4973,1508757.2063	679467.6926,1508745.7188	024° 59' 11.33"	192° 35' 53.19"	679469.52	1508738.3636	6.59	12.87	0.72
L6			3+13.37	3+55.19	41.820		S75° 41' 07.95"W	679467.6926,1508745.7188	679457.3530,1508705.1974							
C6	679455.7748,1508699.0126	3+61.57			12.622	34.297	S65° 08' 34.79"W	679455.7748,1508699.0126	679426.0773,1508693.8096	021° 05' 06.32"	167° 03' 20.08"	679424.12	1508713.6772	6.38	12.55	0.59
L7			3+67.81	4+12.51	44.695		S54° 36' 01.63"W	679426.0773,1508693.8096	679426.1867,1508657.3774							
C7	679422.5220,1508652.2205	4+18.83			12.316	21.866	S38° 27' 51.45"W	679426.1867,1508657.3774	679416.6699,1508649.8171	032° 16' 20.37"	262° 01' 34.03"	679408.36	1508670.0440	6.33	12.15	0.90
L8			4+24.82	4+61.71	36.886		S22° 19' 41.26"W	679416.6699,1508649.8171	679382.5498,1508635.8038							
C8	679378.5927,1508634.1786	4+65.99			8.259	12.855	S40° 44' 02.80"W	679382.5498,1508635.8038	679376.3984,1508630.5064	036° 48' 43.09"	445° 42' 07.97"	679387.43	1508623.9125	4.28	8.12	0.69
L9			4+69.97	5+17.83	47.863		S59° 08' 24.35"W	679376.3984,1508630.5064	679351.8474,1508589.4193							
C9	679348.9739,1508584.6105	5+23.43			11.185	78.989	S55° 05' 00.22"W	679351.8474,1508589.4193	679345.4905,1508580.2553	008° 06' 48.25"	072° 32' 12.63"	679284.04	1508629.9357	5.60	11.18	0.20
L10			5+29.02	5+77.51	48.491		S51° 01' 36.10"W	679345.4905,1508580.2553	679314.9516,1508542.5564							
C10	679310.6188,1508537.2007	5+84.40			13.464	25.812	S65° 58' 10.77"W	679314.9516,1508542.5564	679309.5308,1508530.7393	029° 53' 09.35"	221° 58' 11.28"	679335.02	1508526.3215	6.89	13.31	0.90
L11			5+90.97	6+39.95	48.974		S80° 54' 45.45"W	679309.5308,1508530.7393	679301.7958,1508482.0390							
C11	679300.7308,1508475.3805	6+46.69			13.445	69.859	S75° 23' 57.08"W	679301.7958,1508482.0390	679298.4118,1508469.0486	011° 01' 36.74"	082° 01' 00.63"	679232.81	1508493.0725	6.74	13.42	0.32
L12			6+53.39	7+21.62	68.233		S69° 53' 08.71"W	679298.4118,1508469.0486	679274.9470,1508404.9772							
C12	679272.7876,1508399.0811	7+27.90			12.532	79.572	S74° 23' 51.54"W	679274.9470,1508404.9772	679271.5798,1508392.9193	009° 01' 25.66"	072° 00' 17.98"	679349.67	1508377.6130	6.28	12.52	0.25
L13			7+34.16	7+99.73	65.576		S67° 54' 34.37"W	679271.5798,1508392.9193	679258.9658,1508328.5684							
C13	679257.7866,1508322.5524	8+05.86			11.138	10.723	S49° 09' 12.35"W	679258.9658,1508328.5684	679252.0041,1508320.5164	059° 30' 44.04"	534° 18' 19.23"	679248.44	1508330.6311	6.13	10.64	1.63
L14			8+10.87	8+63.39	52.518		S19° 23' 50.33"W	679252.0041,1508320.5164	679202.4669,1508303.0742							
C14	679196.9956,1508301.1477	8+69.19			11.367	23.166	S33° 27' 16.98"W	679202.4669,1508301.0742	679193.0776,1508296.8703	028° 06' 53.30"	247° 19' 39.01"	679210.16	1508281.2232	5.80	11.25	0.72
L15			8+74.75	9+37.31	62.550		S47° 30' 43.63"W	679193.0776,1508296.8703	679150.8291,1508250.7445							
C15	679146.0015,1508245.4739	9+44.45			14.257	80.419	S52° 35' 27.59"W	679146.0015,1508245.4739	679142.1791,1508239.4345	010° 09' 27.93"	071° 14' 46.82"	679210.13	1508196.4265	7.15	14.24	0.32
L16			9+51.56	10+39.68	88.117		S57° 40' 11.56"W	679142.1791,1508239.4345	679095.0544,1508164.9772							
C16	679091.2808,1508159.0149	10+46.74			14.038	55.932	S64° 51' 36.41"W	679091.2808,1508159.0149	679089.1062,1508152.3022	014° 22' 49.71"	102° 26' 20.56"	679142.32	1508135.0652	7.06	14.00	0.44
L17			10+53.72	11+23.90	70.178		S72° 03' 01.27"W	679089.1062,1508152.3022	679067.4786,1508085.5397							

Tributary 1																
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OUTFALL #1																
POINT ID	PI	PI	PT	PC	LENGTH	RADIUS	Line/Chord Direction	START POINT	END POINT	DELTA	DEGREE	CENTER NORTHING	CENTER EASTING	EXTERNAL TANGENT	CHORD LENGTH	EXTERNAL DISTANCE
L46			300+00.00	300+72.70	72.701		N72° 40' 58.76"W	679564.3203,1508965.0426	679585.9604,1508895.6369							

OUTFALL #2																
POINT ID	PI	PI	PT	PC	LENGTH	RADIUS	Line/Chord Direction	START POINT	END POINT	DELTA	DEGREE	CENTER NORTHING	CENTER EASTING	EXTERNAL TANGENT	CHORD LENGTH	EXTERNAL DISTANCE
L53					400+00.00	400+26.09	26.091	S46° 57' 54.41"E	679547.3675,1508670.7752	679529.5616,1508689.8464						
C45	679518.0667,1508702.1581		400+42.94			31.435	35.332	S21° 28' 36.81"E	679529.5616,1508689.8464	679501.2644,1508700.9798	050° 58' 35.20"	162° 09' 47.91"	679503.74	1508665.7343	16.84	30.41
L54					400+57.53	401+04.25	46.727	S04° 00' 40.80"W	679501.2644,1508700.9798	679454.6517,1508697.7111						

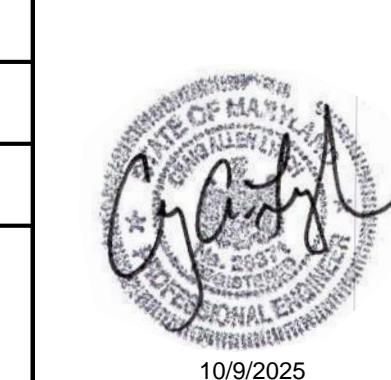
OUTFALL #3																
POINT ID	PI	PI	PT	PC	LENGTH	RADIUS	Line/Chord Direction	START POINT	END POINT	DELTA	DEGREE	CENTER NORTHING	CENTER EASTING	EXTERNAL TANGENT	CHORD LENGTH	EXTERNAL DISTANCE
L55			500+00.00	500+27.02	27.023		S05° 48' 17.84"E	679387.8951,1508445.7088	679361.0103,1508448.4420							
C46	679341.2772,1508450.4481	500+46.86			38.837	77.545	S20° 09' 09.61"E	679361.0103,1508448.4420	679324.9308,1508461.6828	028° 41' 43.53"	073° 53' 12.25"	679368.85	1508525.5898	19.83	38.43	2.50
L56			500+65.86	500+74.00	8.135		S34° 30' 01.37"E	679324.9308,1508461.6828	679318.2265,1508466.2907							
C47	679309.9438,1508471.9833	500+84.05			19.995	79.615	S27° 18' 20.52"E	679318.2265,1508466.2907	679300.5063,1508475.4389	014° 23' 21.71"	071° 57' 56.54"	679273.13	1508400.6778	10.05	19.94	0.63

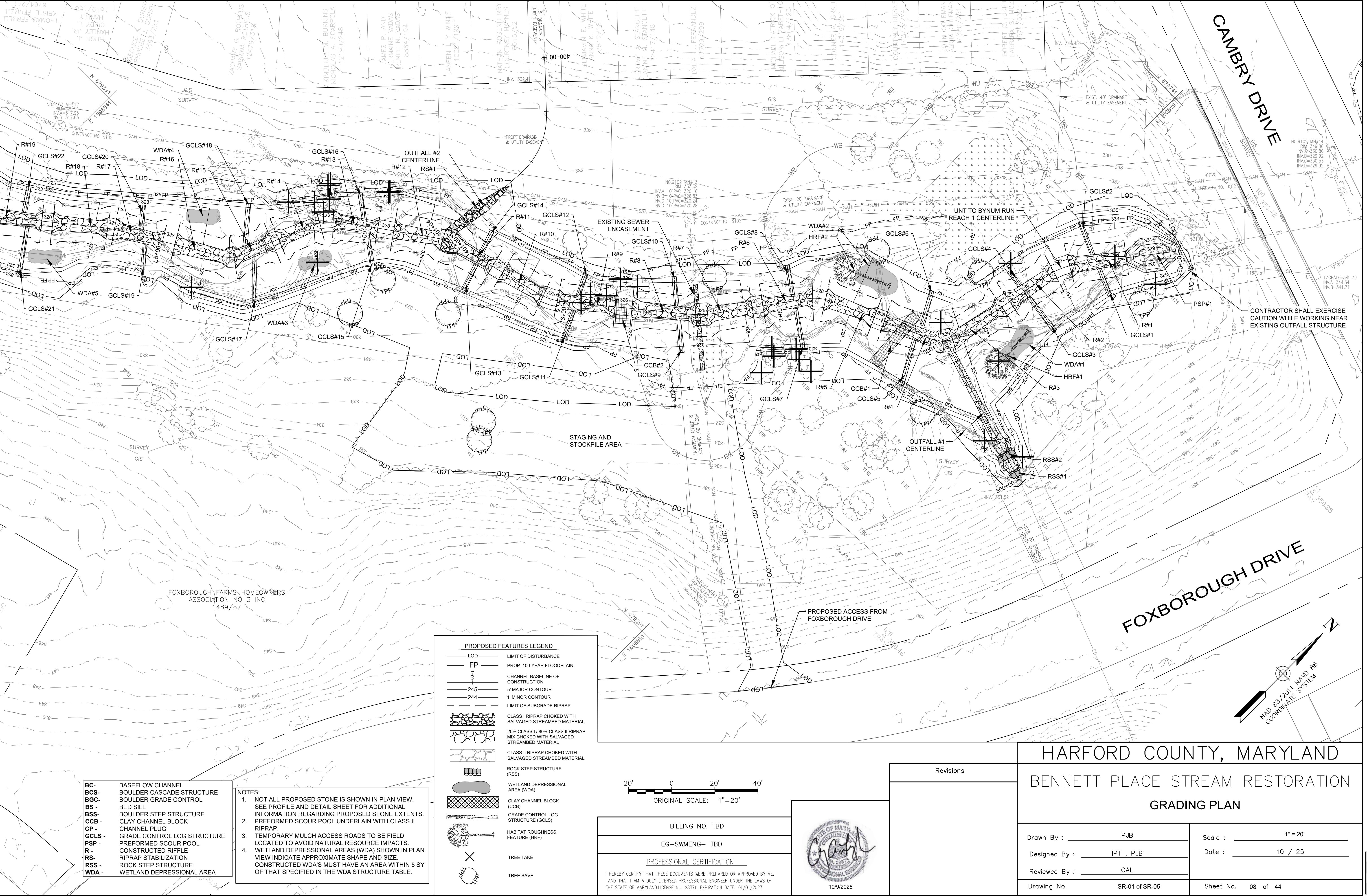
OUTFALL #4																
POINT ID	PI	PI	PT	PC	LENGTH	RADIUS	Line/Chord Direction	START POINT	END POINT	DELTA	DEGREE	CENTER NORTHING	CENTER EASTING	EXTERNAL TANGENT	CHORD LENGTH	EXTERNAL DISTANCE
L57					600+00.00	600+08.65	8.650	S40° 22' 30.96"E	679328.1588,1508292.8145	679321.5690,1508298.4180						
L58					600+08.65	600+25.81	17.160	S45° 37' 49.79"E	679321.5690,1508298.4180	679309.5690,1508310.6850						
C48	679303.0301,1508317.3695	600+35.16				17.958	26.106	S25° 55' 25.34"E	679309.5690,1508310.6850	679293.7341,1508318.3821	039° 24' 48.90"	219° 28' 13.96"	679290.91	1508292.4293	9.35	17.61
L59					600+43.77	600+82.24	38.471	S06° 13' 00.89"E	679293.7341,1508318.3821	679255.4896,1508322.5483						

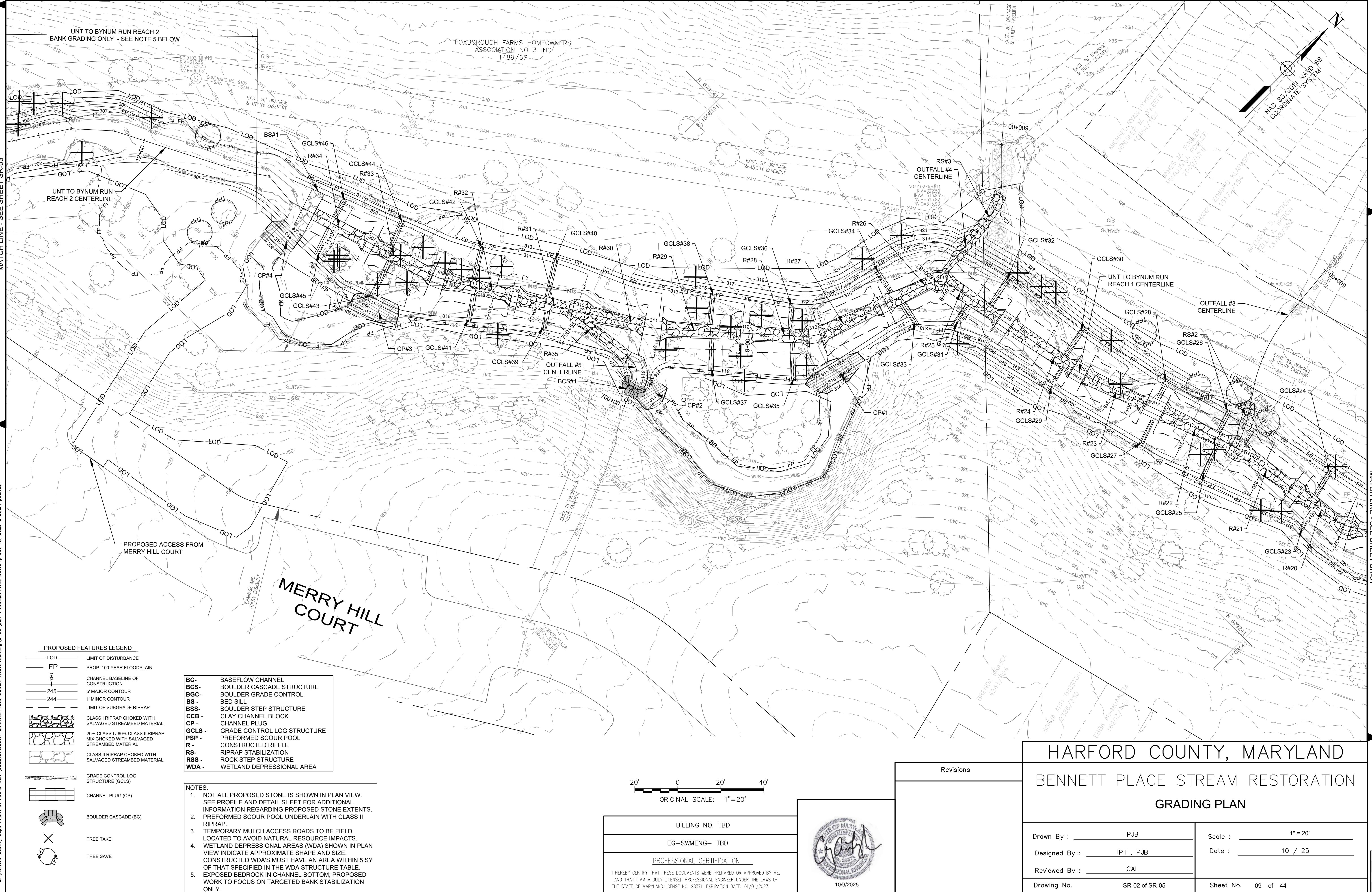
OUTFALL #5																
POINT ID	PI	PI	PT	PC	LENGTH	RADIUS	Line/Chord Direction	START POINT	END POINT	DELTA	DEGREE	CENTER NORTHING	CENTER EASTING	EXTERNAL TANGENT	CHORD LENGTH	EXTERNAL DISTANCE
L47			700+00.00	700+11.33	11.333		N19° 25' 04.92"W	679111.2099,1508261.9003	679121.8986,1508258.1324							
C43	679129.9043,1508255.3103	700+19.82			14.225	10.366	N58° 43' 50.62"W	679121.8986,1508258.1324	679128.7166,1508246.9053	078° 37' 31.42"	552° 42' 51.95"	679118.45	1508248.3558	8.49	13.14	3.03
L48			700+25.56	700+55.08	29.518		S81° 57' 23.67"W	679128.7166,1508246.9053	679124.5863,1508217.6781							

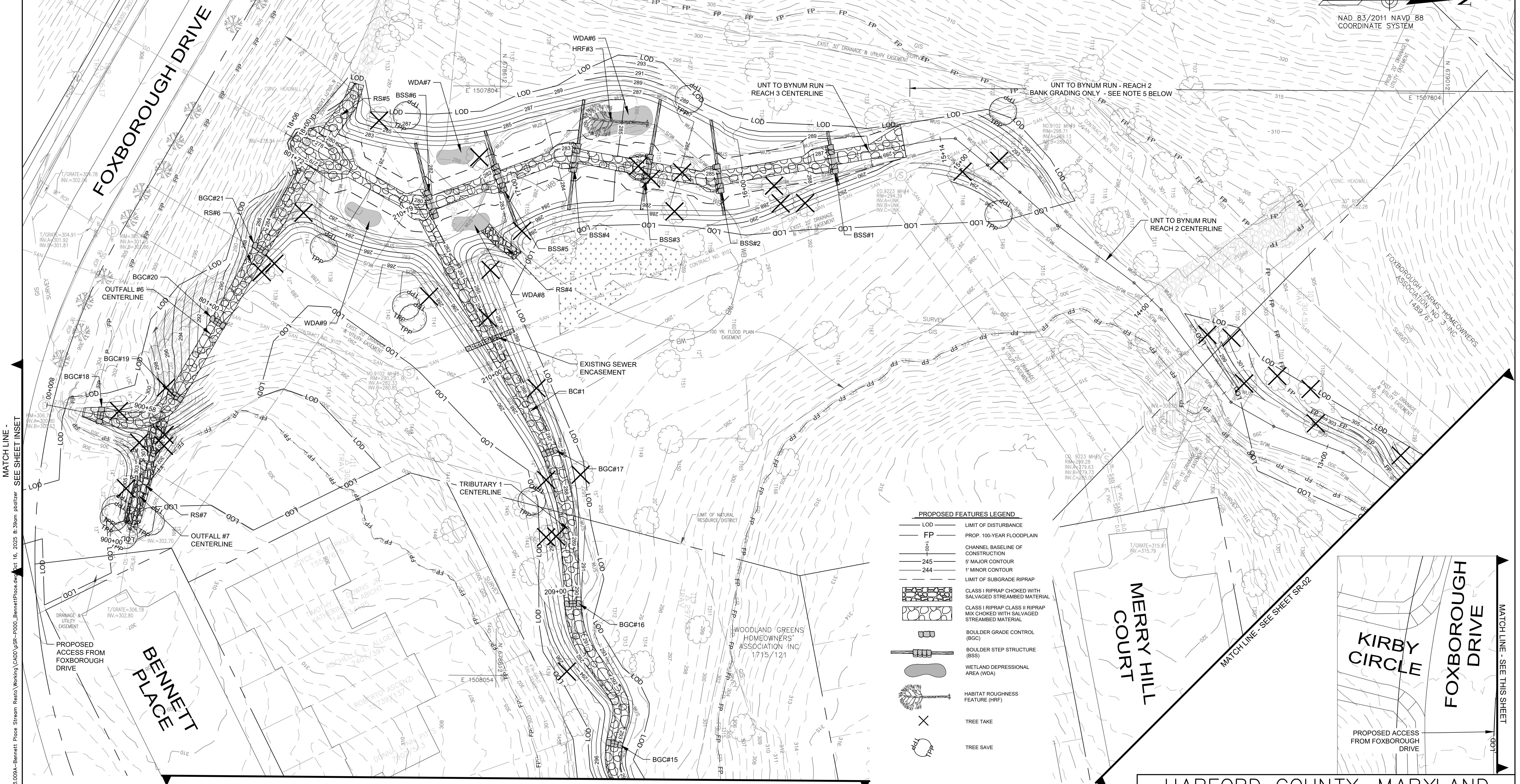
OUTFALL #6																
POINT ID	PI	PI	PT	PC	LENGTH	RADIUS	Line/Chord Direction	START POINT	END POINT	DELTA	DEGREE	CENTER NORTHING	CENTER EASTING	EXTERNAL TANGENT	CHORD LENGTH	EXTERNAL DISTANCE
L49					800+00.00	800+33.27	33.270	N10° 39' 42.78"E	678420.7521,1507940.6493	678453.4482,1507946.8048						
C44	678467.6512,1507949.4787	800+47.72				25.098	20.228	N24° 52' 58.06"W	678453.4482,1507946.8048	678474.7839,1507936.9089	071° 05' 21.68"	283° 14' 41.37"	678475.19	1507926.9257	14.45	23.52
L50					800+58.37	801+71.92	113.548	N60° 25' 38.90"W	678474.7839,1507936.9089	678530.8229,1507838.1522						

BILLING NO. TBD  
EG-SWMENG- TBD  
PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME,  
AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF  
THE STATE OF MARYLAND LICENSE NO. 28371, EXPIRATION DATE: 01/01/2025.

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NOTES:

1. NOT ALL PROPOSED STONE IS SHOWN IN PLAN VIEW. SEE PROFILE AND DETAIL SHEET FOR ADDITIONAL INFORMATION REGARDING PROPOSED STONE EXTENTS.
2. PREFORMED SCOUR POOL UNDERLAIN WITH CLASS II RIPRAP.
3. TEMPORARY MULCH ACCESS ROADS TO BE FIELD LOCATED TO AVOID NATURAL RESOURCE IMPACTS.
4. WETLAND DEPRESSIVE AREA (WDA) SHOWN IN PLAN VIEW INDICATE APPROXIMATE SHAPE AND SIZE. CONSTRUCTED WDAS MUST HAVE AN AREA WITHIN 5% OF THAT SPECIFIED IN THE WDA STRUCTURE TABLE.
5. EXPOSED BEDROCK IN CHANNEL BOTTOM; PROPOSED WORK TO FOCUS ON TARGETED BANK STABILIZATION ONLY.

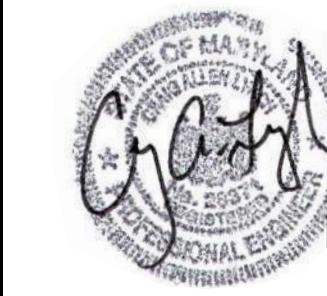
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BCS-  
BGC-  
BS-  
BSS-  
CCB-  
CP-  
GCLS-  
PSP-  
R-  
RS-  
RSS-  
WDA -

BASEFLOW CHANNEL  
BOULDER CASCADE STRUCTURE  
BOULDER GRADE CONTROL  
BED SILL  
BOULDER STEP STRUCTURE  
CLAY CHANNEL BLOCK  
CHANNEL PLUG  
GRADE CONTROL LOG STRUCTURE  
PREFORMED SCOUR POOL  
CONSTRUCTED RIFFLE  
RIPRAP STABILIZATION  
ROCK STEP STRUCTURE  
WETLAND DEPRESSIVE AREA

MATCH LINE - SEE SHEET SR-04

20' 0 20' 40'  
ORIGINAL SCALE: 1"=20'

BILLING NO. TBD	
EG-SWMENG- TBD	
PROFESSIONAL CERTIFICATION	
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 28371, EXPIRATION DATE: 01/01/2027.	



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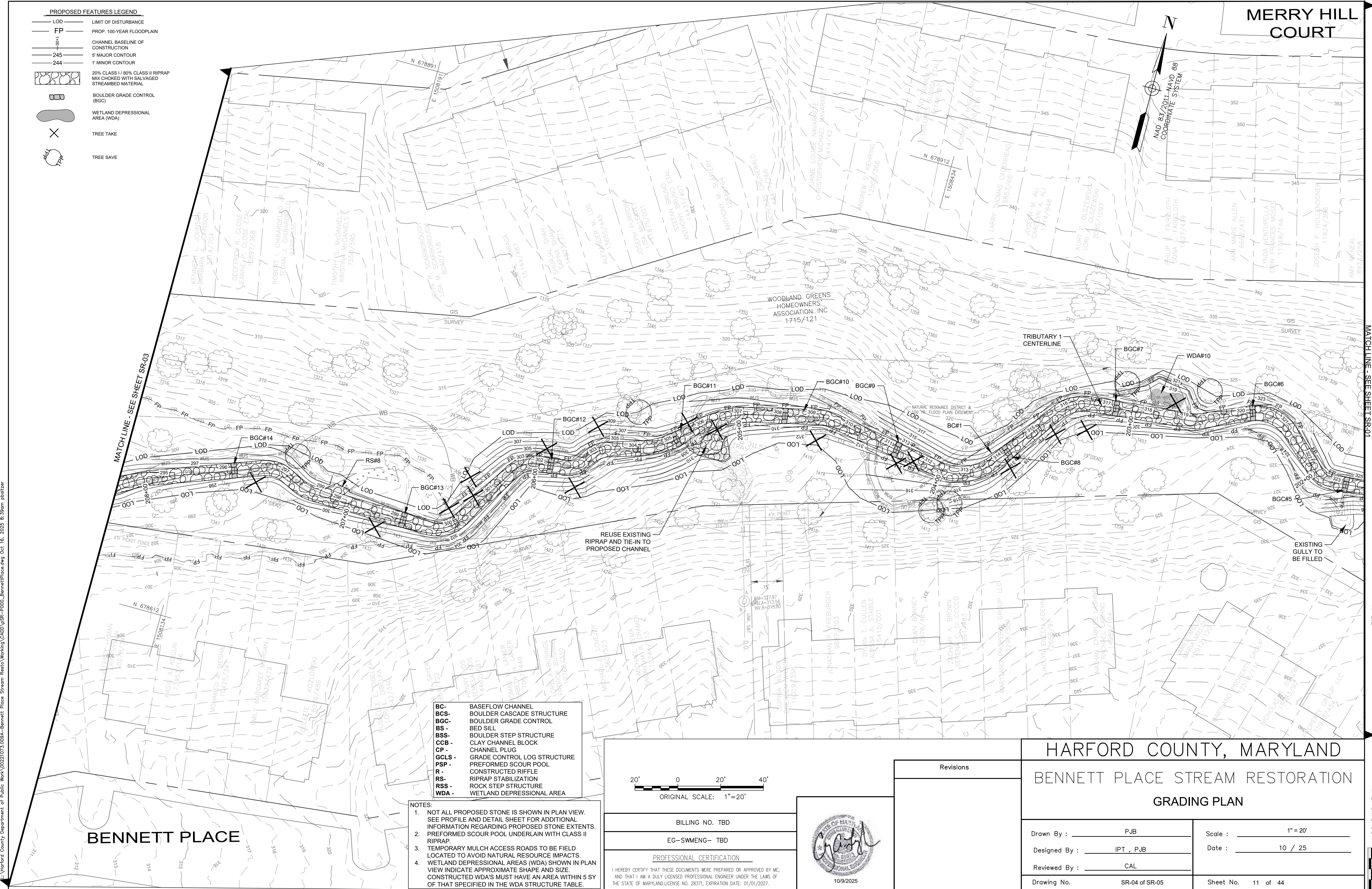
Revisions

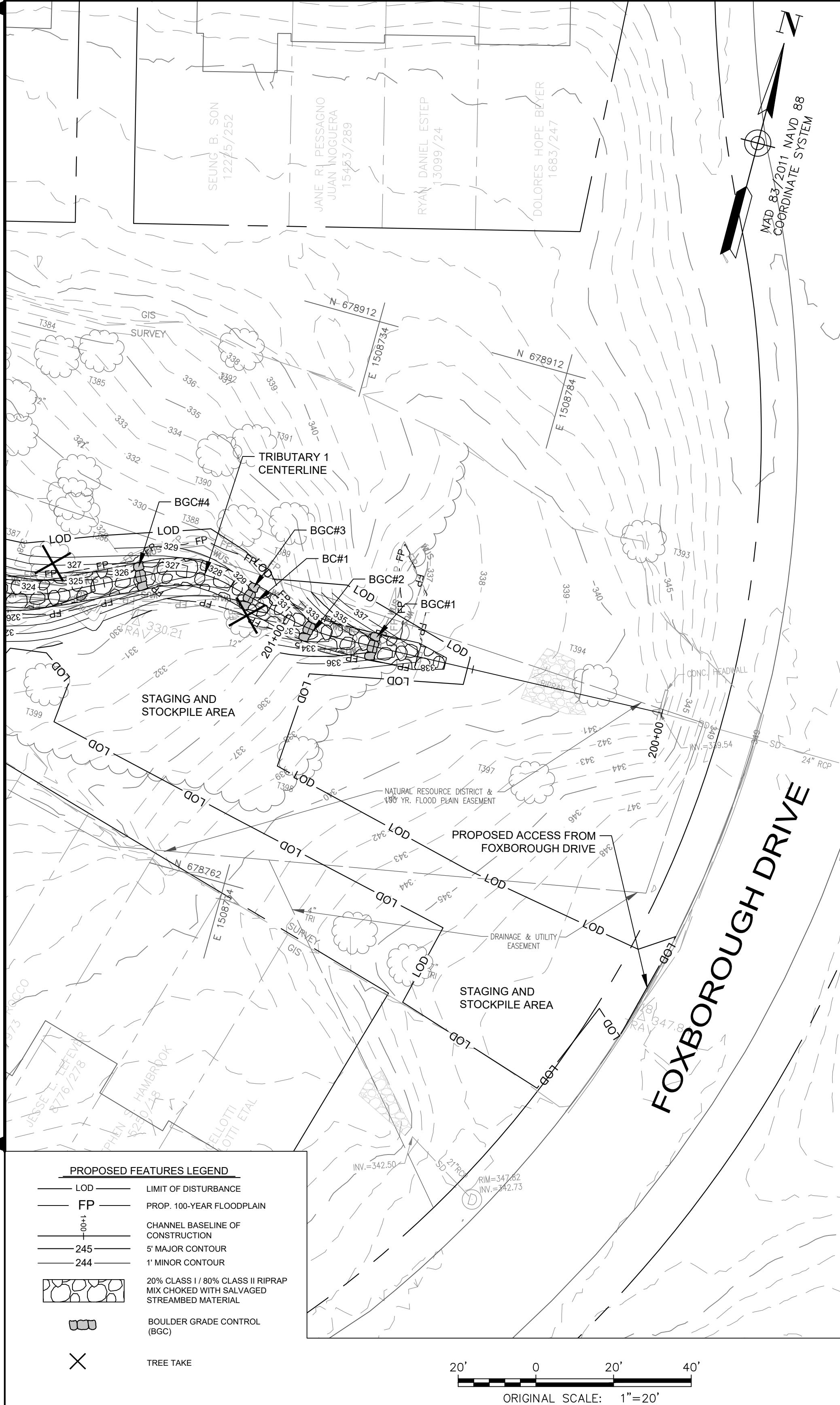
Drawn By : <u>PJB</u>	Scale : 1" = 20'
Designed By : <u>IPT, PJB</u>	Date : 10 / 25
Reviewed By : <u>CAL</u>	
Drawing No. SR-03 of SR-05	Sheet No. 10 of 44

## HARFORD COUNTY, MARYLAND

### BENNETT PLACE STREAM RESTORATION

#### GRADING PLAN





**NOTES:**

1. NOT ALL PROPOSED STONE IS SHOWN IN PLAN VIEW. SEE PROFILE AND DETAIL SHEET FOR ADDITIONAL INFORMATION REGARDING PROPOSED STONE EXTENTS.
2. TEMPORARY MULCH ACCESS ROADS TO BE FIELD LOCATED TO AVOID NATURAL RESOURCE IMPACTS.

BC-	BASEFLOW CHANNEL
BGS-	BOULDER CASCADE STRUCTURE
BGC-	BOULDER GRADE CONTROL
BS-	BED SILL
BSS-	BOULDER STEP STRUCTURE
CCB-	CLAY CHANNEL BLOCK
CP-	CHANNEL PLUG
GCLS-	GRADE CONTROL LOG STRUCTURE
PSP-	PREFORMED SCOUR POOL
R-	CONSTRUCTED RIFLE
RS-	RIPRAP STABILIZATION
RSS-	ROCK STEP STRUCTURE
WDA-	WETLAND DEPRESSIVE AREA

CONSTRUCTED RIFLE (R)				
R#	GLIDE STA FROM	RIFLE STA FROM	RIFLE STA TO	RUN STA TO
1	N/A	0+24.44	0+46.97	0+50.97
2	0+58.90	0+62.90	0+78.74	0+82.74
3	0+88.53	0+91.53	1+12.35	1+15.35
4	1+21.85	1+24.85	1+44.86	1+48.86
5	1+53.86	1+57.86	1+76.96	1+77.96
6	1+83.63	1+86.63	2+04.01	2+07.01
7	2+11.98	2+14.98	2+30.33	2+33.33
8	2+38.86	2+41.86	2+64.56	2+68.56
9	2+76.37	2+80.37	3+00.40	3+03.40
10	3+10.37	3+13.37	3+29.12	3+32.12
11	3+37.82	3+40.82	3+55.19	3+59.19
12	3+63.81	3+67.81	3+84.02	3+87.02
13	3+94.51	3+97.51	4+12.51	4+15.51
14	4+21.82	4+24.82	4+39.39	4+42.39
15	4+45.71	4+48.71	4+61.71	4+64.71
16	4+66.97	4+69.97	4+88.91	4+92.91
17	4+98.83	5+02.83	5+17.83	5+21.83
18	5+25.02	5+29.02	5+47.70	5+50.70

HABITAT ROUGHNESS FEATURE (HRF)				
HRF#	STA FROM	OFFSET	STA TO	OFFSET
1	0+83.96	15.9 L	1+08.08	22.0 L
2	1+52.11	16.4 R	1+76.11	17.1 R

WETLAND DEPRESSIVE AREA (WDA)					
WDA #	AREA (SY)	PSP #	STA FROM	STA TO	
1	18	1	0+00.70	0+24.44	
2	23				
3	10				
4	10				
5	10				

RIPRAP STABILIZATION (RS)				
RS#	STA FROM	STA TO	OFFSET	DEPTH
1	400+66.18	400+98.37		
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

CLAY CHANNEL BLOCK (CCB)				
CCB#	STA FROM	OFFSET	STA TO	OFFSET
1	1+46.51	20.2 L	1+36.13	8.0 R
2	2+73.11	7.5 R	2+73.63	3.8 R

ROCK STEP STRUCTURE (RSS)				
RSS#	WEIR STA.	WEIR ELEV.	STA FROM	STA TO
1	300+00.95	331.52		
2	300+10.84	330.52		

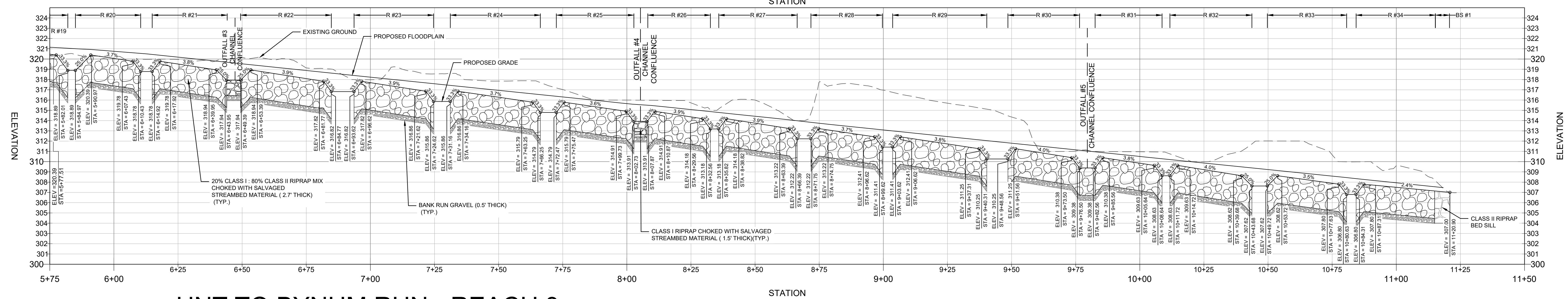
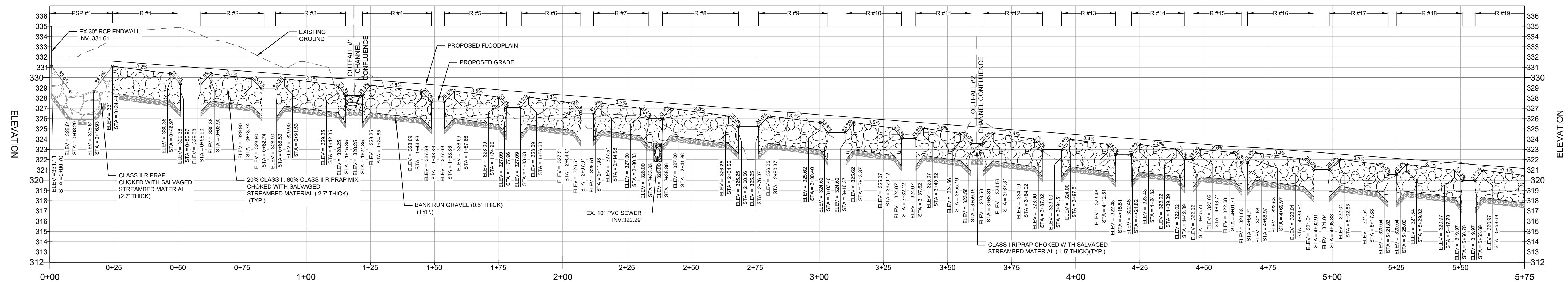
GRADE CONTROL LOG STRUCTURE (GCLS)				
GCLS #	STA FROM	OFFSET	STA TO	OFFSET
1	0+37.50	3.4 L	0+34.17	16.5 L
2	0+39.67	3.4 R	0+43.41	19.2 R
3	0+75.00	3.3 L	0+73.97	23.1 L
4	0+75.55	3.3 R	0+75.77	15.4 R
5	1+32.86	3.3 L	1+30.80	24.9 L
6	1+31.61	3.3 R	1+33.27	21.1 R
7	1+92.50	3.2 L	1+91.98	22.5 L
8	1+92.97	3.2 R	1+93.25	16.9 R
9	2+46.43	3.2 L	2+43.68	18.1 L
10	2+48.01	3.3 R	2+50.84	16.9 R
11	2+95.37	3.4 L	2+98.68	16.9 L
12	2+94.01	3.4 R	2+91.47	14.0 R
13	3+44.55	3.2 L	3+43.57	17.7 L
14	3+45.47	3.2 R	3+46.11	14.2 R
15	3+98.75	3.0 L	3+94.20	17.2 L
16	4+01.43	3.2 R	4+05.39	14.8 R
17	4+56.06	3.2 L	4+62.45	22.5 L
18	4+57.96	3.2 R	4+46.87	20.8 L
19	5+06.36	3.2 L	5+04.57	15.1 L
20	5+09.77	3.2 R	5+12.18	17.5 R
21	5+62.16	3.2 L	5+63.52	24.8 L
22	5+64.17	3.2 R	5+63.36	15.3 R

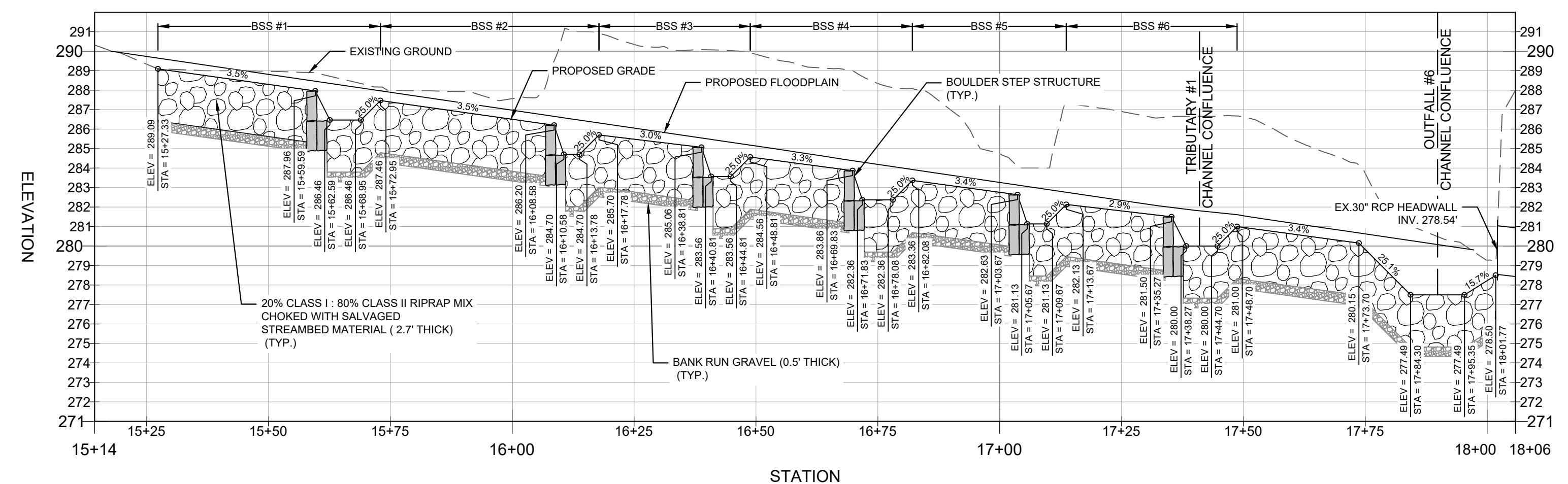
BED SILL (BS)				
BS#	STA FROM	OFFSET	STA TO	OFFSET
1	11+11.83	11.8 L	10.3 R	11+17.70

BOULDER GRADE CONTROL (BGC)		
BGC#	WEIR STA.	WEIR ELEV.
15	208+29.08	293
16	208+94.46	290
17	209+59.76	287
18	800+23.08	300
19	800+59.03	295
20	800+94.99	290
21	801+30.95	285</td

# UNT TO BYNUM RUN - REACH 1



# UNT TO BYNUM RUN - REACH 3



NOTE: BANK GRADING ONLY IN UNT TO BYNUM RUN REACH 2: NO PROPOSED PROFILE FOR THIS REACH INCLUDED IN PLANS.

HARFORD COUNTY, MARYLAND

BENNETT PLACE STREAM RESTORATION

PROFILE SHEET

Revisions

BILLING NO. TBD
EG-SWMENG- TBD
PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME,  
AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF  
THE STATE OF MARYLAND LICENSE NO. 28371, EXPIRATION DATE: 01/01/2025.

10/9/2025



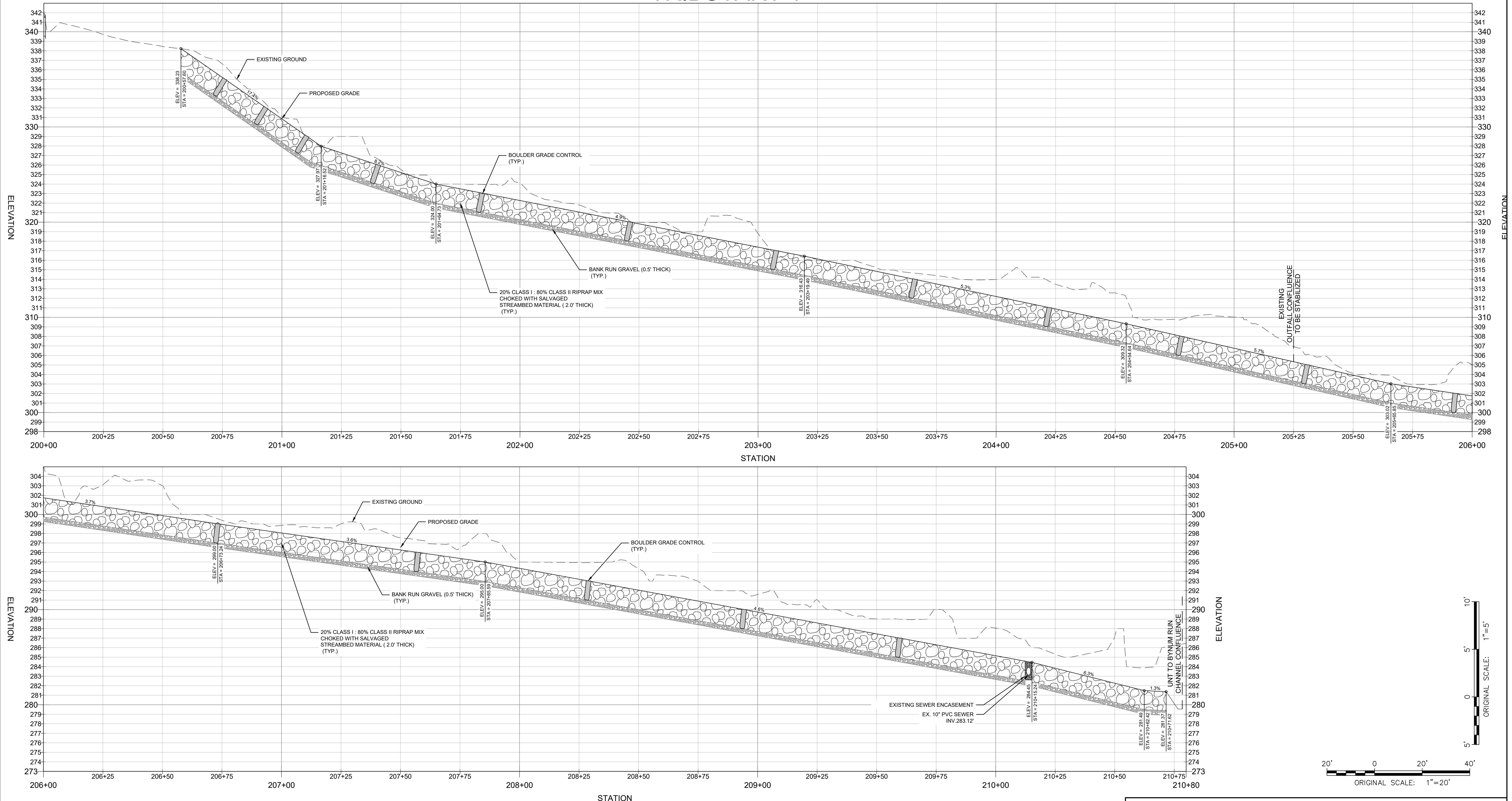
Drawn By : PJB	Scale : AS SHOWN
Designed By : IPT, PJB	Date : 10 / 25
Reviewed By : CAL	
Drawing No. PR-01 of PR-03	Sheet No. 13 of 44

ORIGINAL SCALE: 1"=20'

10' 5' 0' 5' 10'

BID No.:

# TRIBUTARY 1



## HARFORD COUNTY, MARYLAND

### BENNETT PLACE STREAM RESTORATION

#### PROFILE SHEET

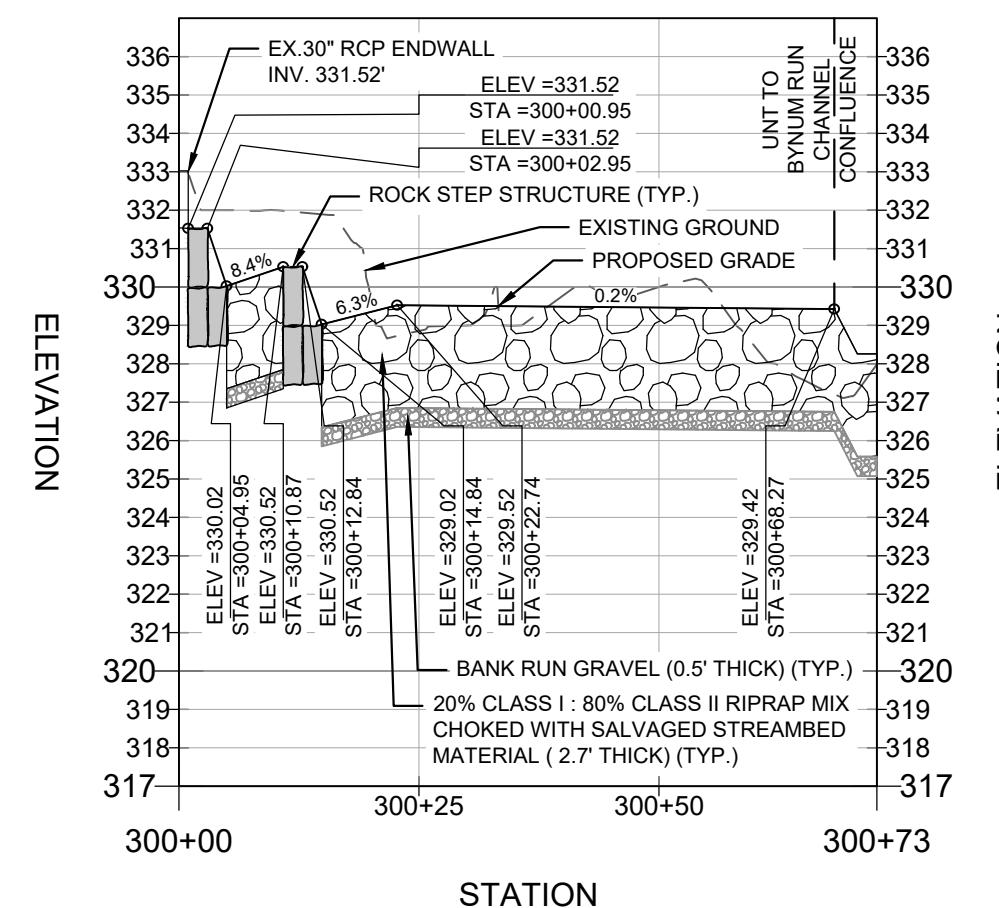
##### Revisions

Drawn By : <u>PJB</u>	Scale : <u>AS SHOWN</u>
Designed By : <u>IPT , PJB</u>	Date : <u>10 / 25</u>
Reviewed By : <u>CAL</u>	
Drawing No. <u>PR-02 of PR-03</u>	Sheet No. <u>14 of 44</u>

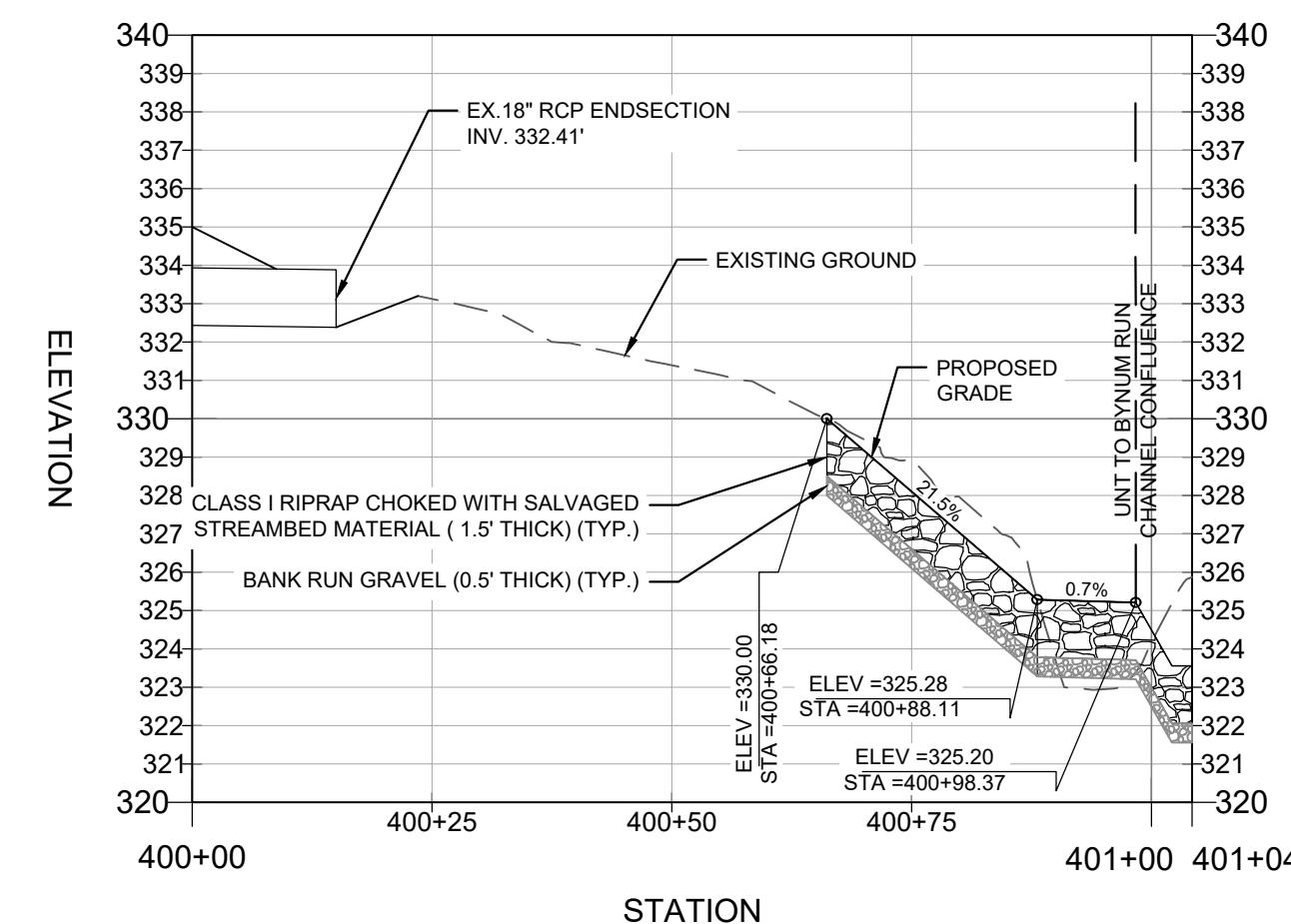
BILLING NO. TBD	
EG-SWMENG- TBD	
PROFESSIONAL CERTIFICATION	
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10/9/2025

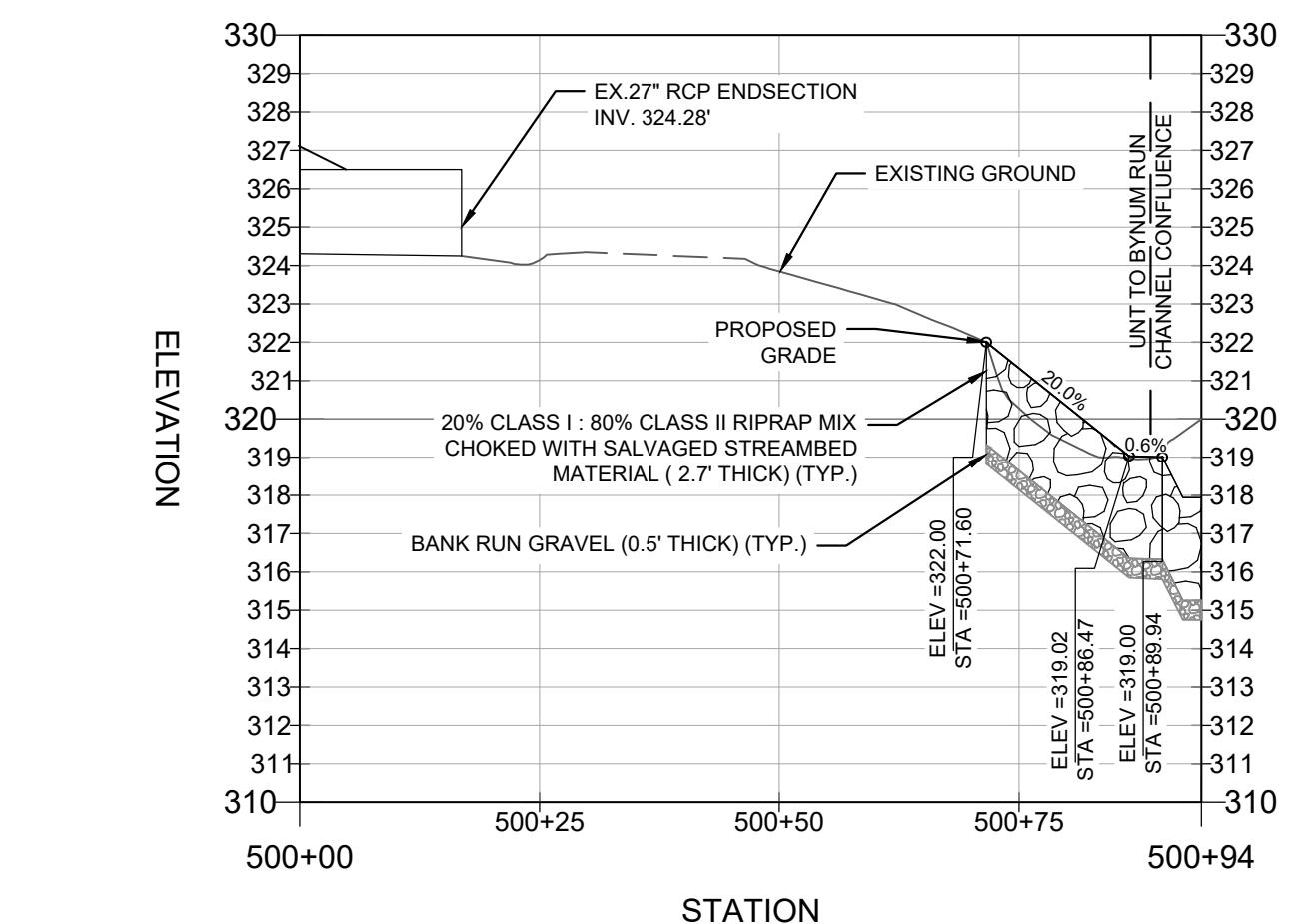
## OUTFALL #1



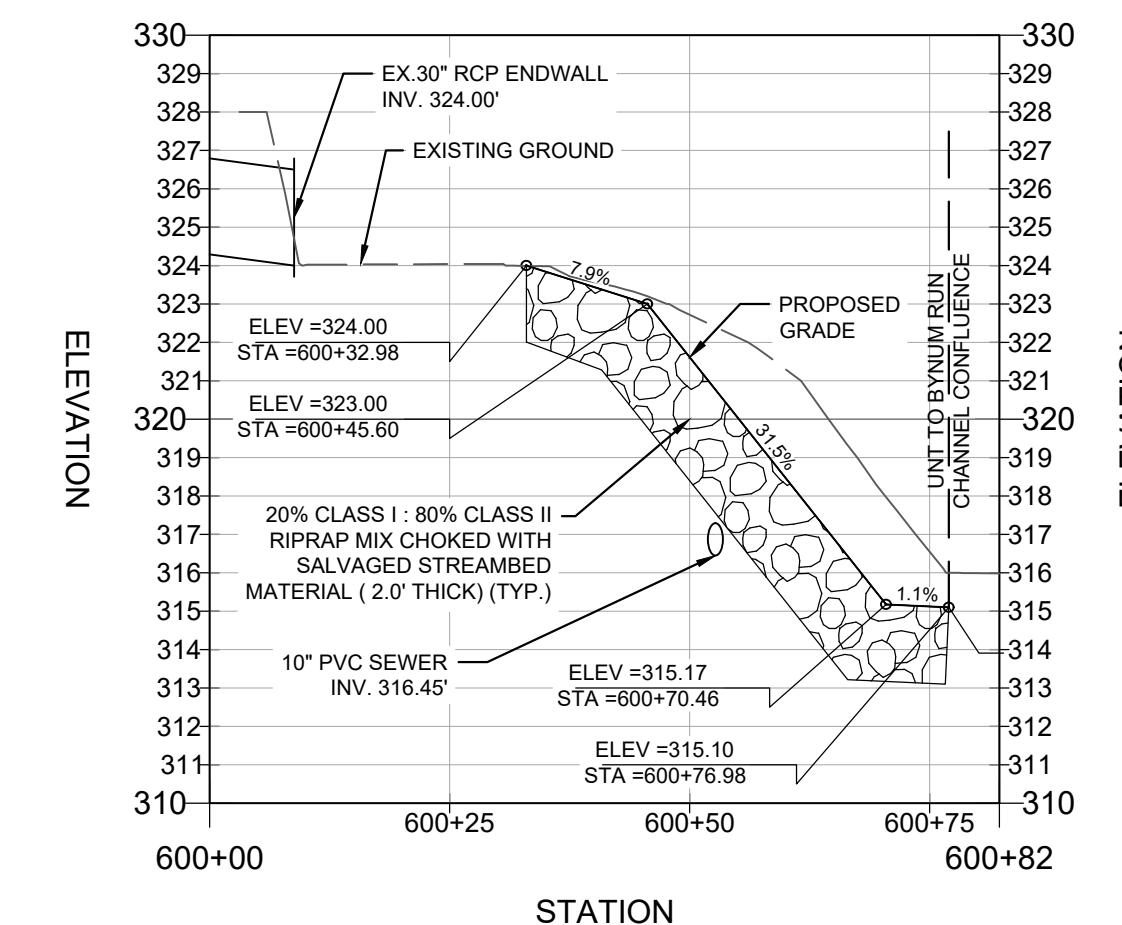
## OUTFALL #2



## OUTFALL #3

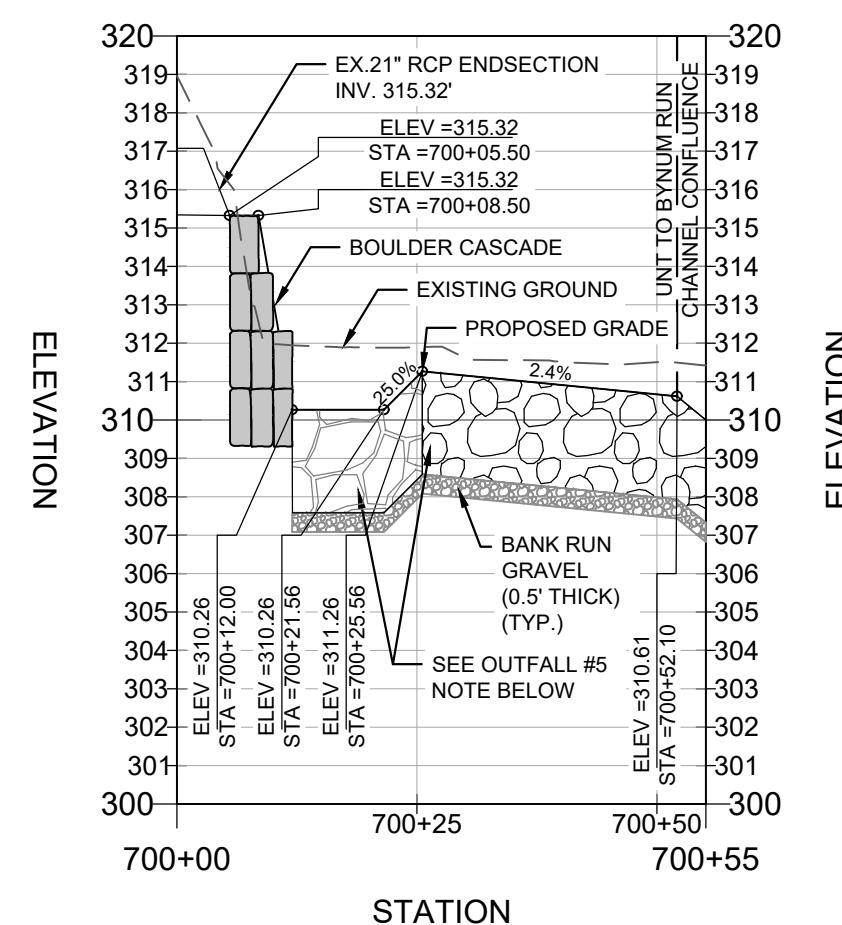


## OUTFALL #4



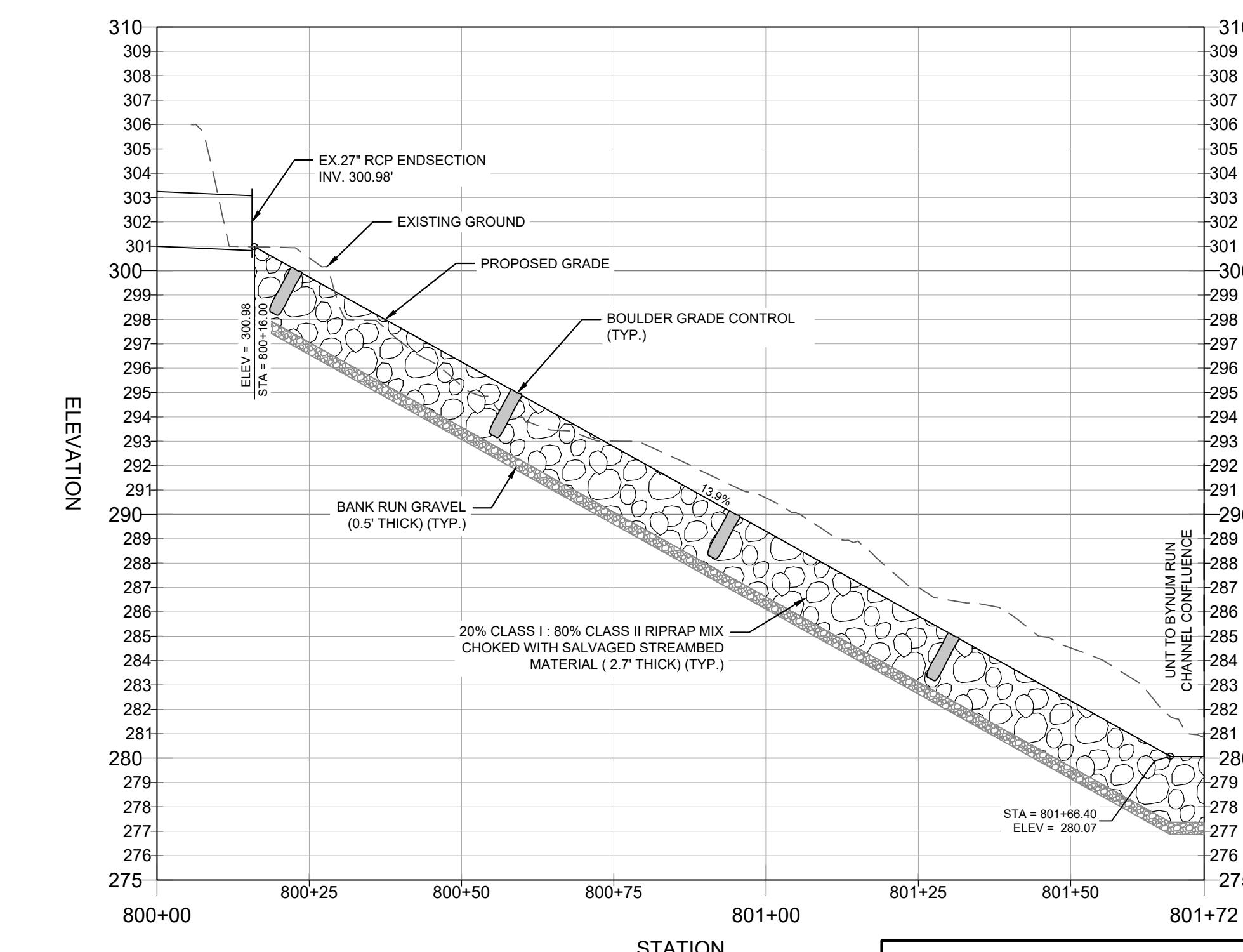
OUTFALL #4 NOTE:  
GEOTEXTILE CLASS SE NONWOVEN IS TO  
BE USED IN PLACE OF BANK RUN GRAVEL  
ALONG OUTFALL #4 DUE TO PROXIMITY TO  
THE SEWER LINE.

## OUTFALL #5

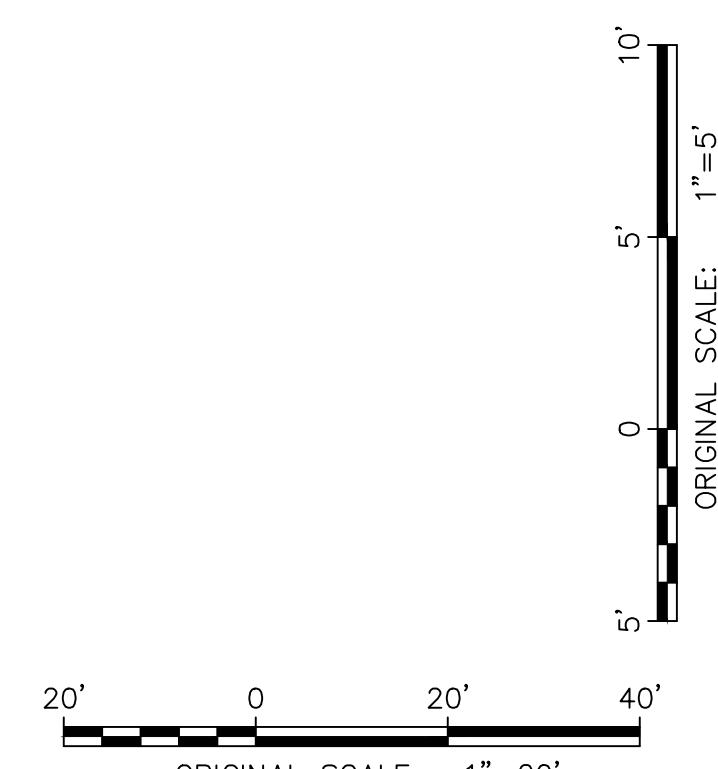
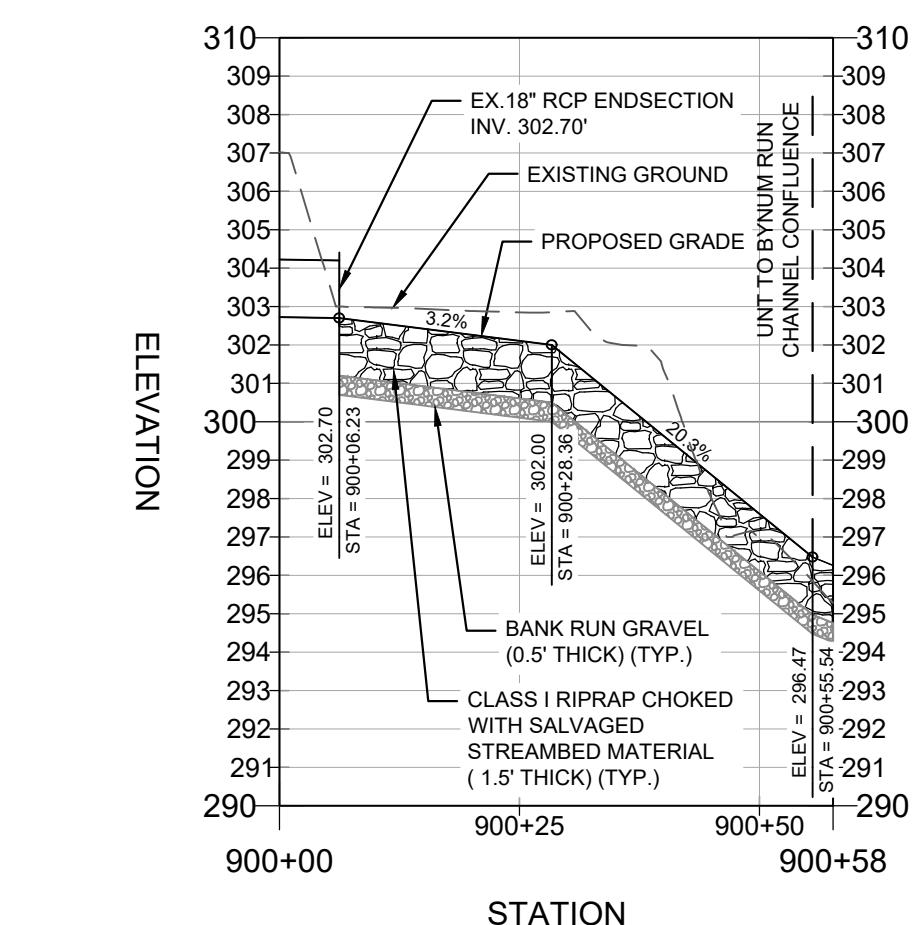


OUTFALL #5 NOTE:  
BED MATERIALS FOR OUTFALL #5 CHANNEL ARE AS FOLLOWS:  
STA.700+12.00 - STA.700+25.56 CLASS II RIPRAP CHOKED WITH SALVAGED STREAMBED MATERIAL (2.7 THICK)  
STA.700+25.56 - STA.700+52.10 20% CLASS I RIPRAP - 80% CLASS II RIPRAP CHOKED WITH SALVAGED STREAMBED MATERIAL (2.7 THICK)

## OUTFALL #6



## OUTFALL #7



HARFORD COUNTY, MARYLAND  
BENNETT PLACE STREAM RESTORATION  
PROFILE SHEET

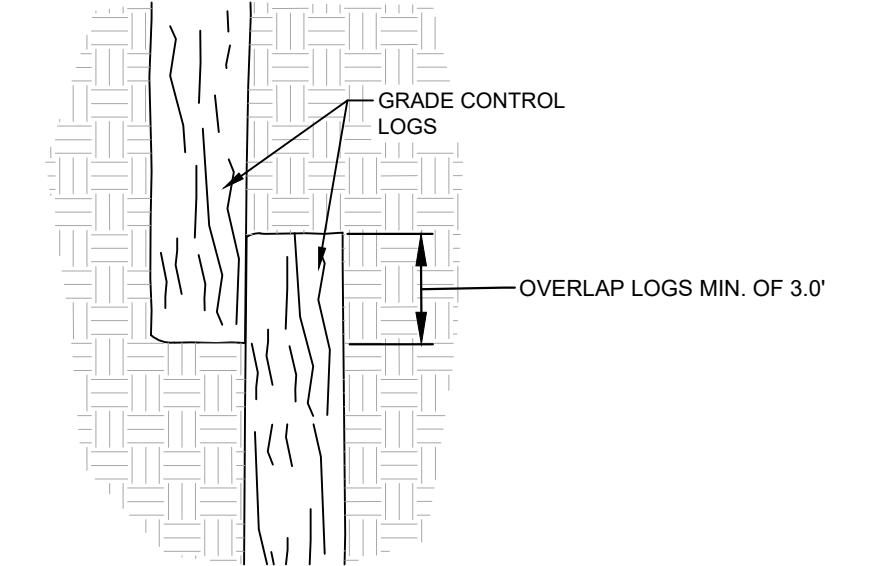
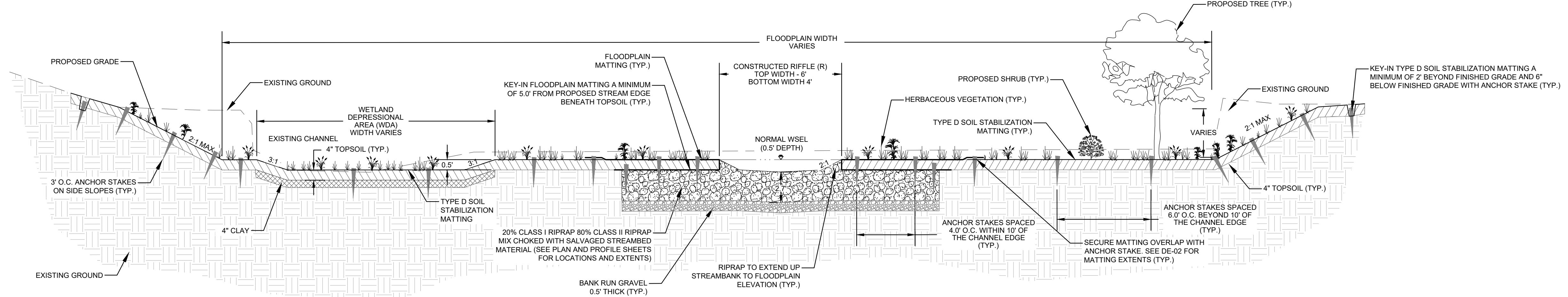
Revisions



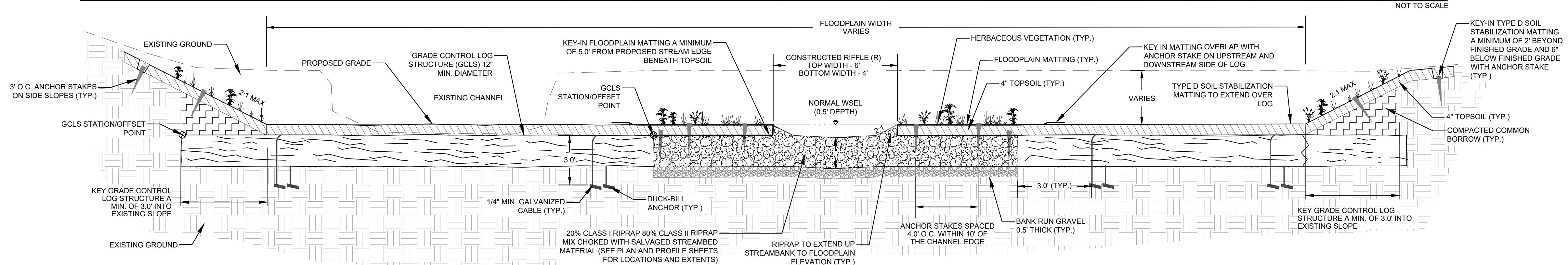
Drawn By : <u>PJB</u>	Scale : AS SHOWN
Designed By : <u>IPT , PJB</u>	Date : 10 / 25
Reviewed By : <u>CAL</u>	
Drawing No. PR-03 of PR-03	Sheet No. 15 of 44

BILLING NO. TBD  
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PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME,  
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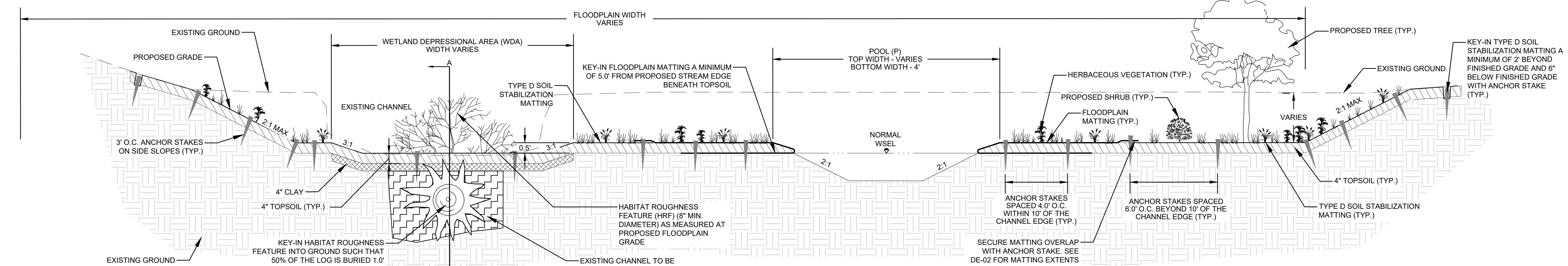
# FLOODPLAIN RESTORATION DETAILS - UNT TO BYNUM RUN (REACH 1)



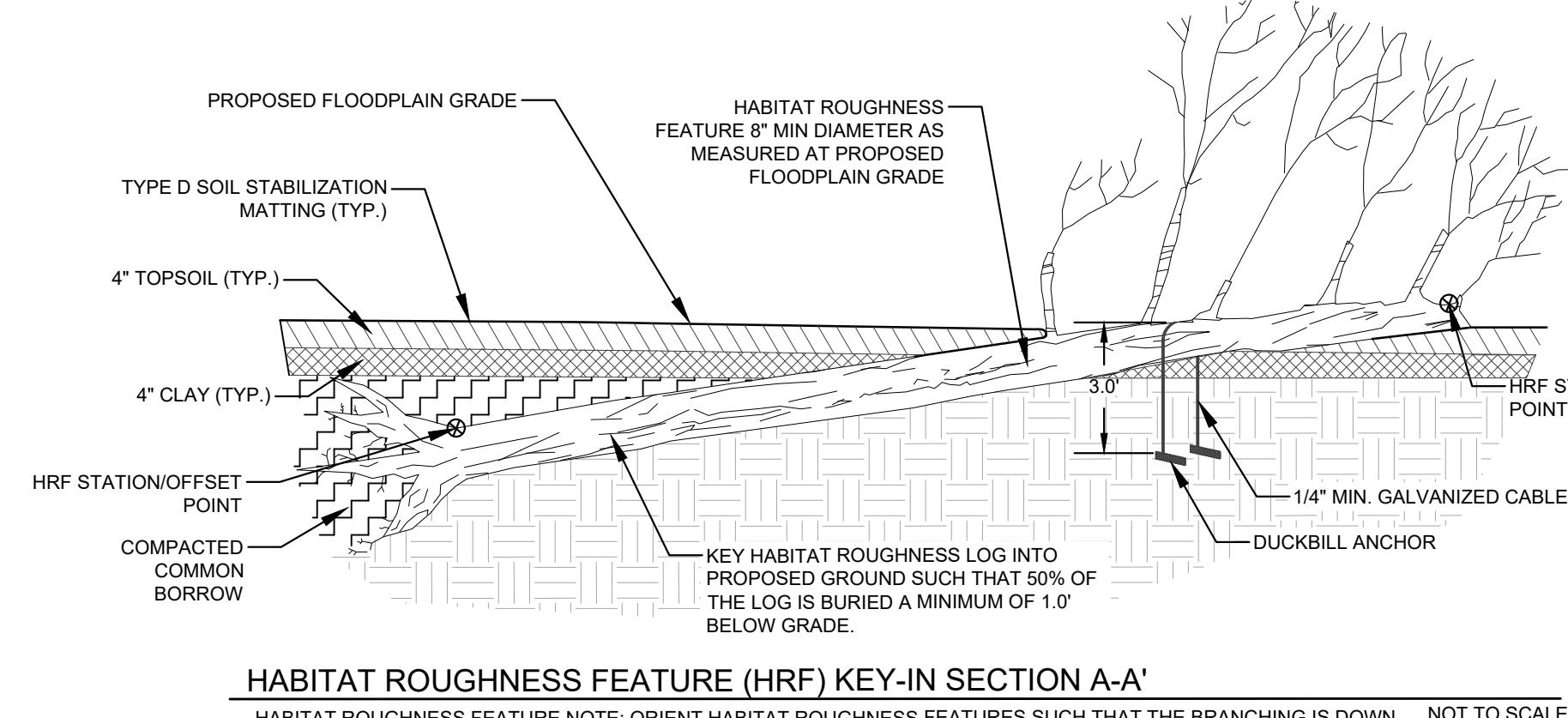
FLOODPLAIN RESTORATION WITH CONSTRUCTED RIFFLE (R) & WETLAND DEPRESSONAL AREA (WDA) - UNT TO BYNUM RUN REACH 1 - TYPICAL SECTION VIEW



FLOODPLAIN RESTORATION WITH CONSTRUCTED RIFFLE (R) & GRADE CONTROL LOG STRUCTURE (GCLS) - UNT TO BYNUM RUN REACH 1 - TYPICAL SECTION VIEW



FLOODPLAIN RESTORATION WITH POOL AND WETLAND DEPRESSONAL AREA (WDA) - UNT TO BYNUM RUN REACH 1 - TYPICAL SECTION VIEW



NOTES:

- ANCHOR STAKES SHALL BE SPACED 4.0' O.C. WITHIN 10' OF CHANNEL EDGE, OVER SUBGRADE RIPRAP, AND 2.0' O.C. ALONG ALL SEAMS. ANCHOR STAKES SHALL BE SPACED 6.0' O.C. THROUGHOUT THE REST OF THE FLOODPLAIN AND 3.0' O.C. ON SIDE SLOPES.
- WHERE MORE THAN ONE LOG IS NEEDED FOR GRADE CONTROL LOG STRUCTURES, OVERLAP LOGS A MINIMUM OF 3.0' AT OVERLAPPING JOINT.
- SEEDING MUST OCCUR PRIOR TO PLACEMENT OF TYPE D SOIL STABILIZATION MATTING AND/OR FLOODPLAIN MATTING.
- ALL MATTING SHALL OVERLAP IN A DOWN VALLEY OR DOWNSTREAM DIRECTION.
- GRADE CONTROL LOG STRUCTURES (GCLS) ARE TO BE PLACED PERPENDICULAR TO THE VALLEY AS SHOWN ON THE PLAN AND AT THE DIRECTION OF THE ENGINEER.
- WHEN PLACING RIPRAP MIX, SMALL AND LARGE STONES MUST BE MIXED TO MINIMIZE VOID SPACE AND PROMOTE INTERLOCKING. SALVAGED STREAMBED MATERIAL SHALL BE WASHED INTO THE RIPRAP MIX TO ENSURE ALL INTERSTITIAL Voids ARE FILLED AND SURFACE FLOW IS ACHIEVED. DUMPING OF STONE WILL NOT BE PERMITTED.
- STATION/OFFSET POINTS REFER TO GRADE CONTROL LOG STRUCTURE AND HABITAT ROUGHNESS FEATURE.

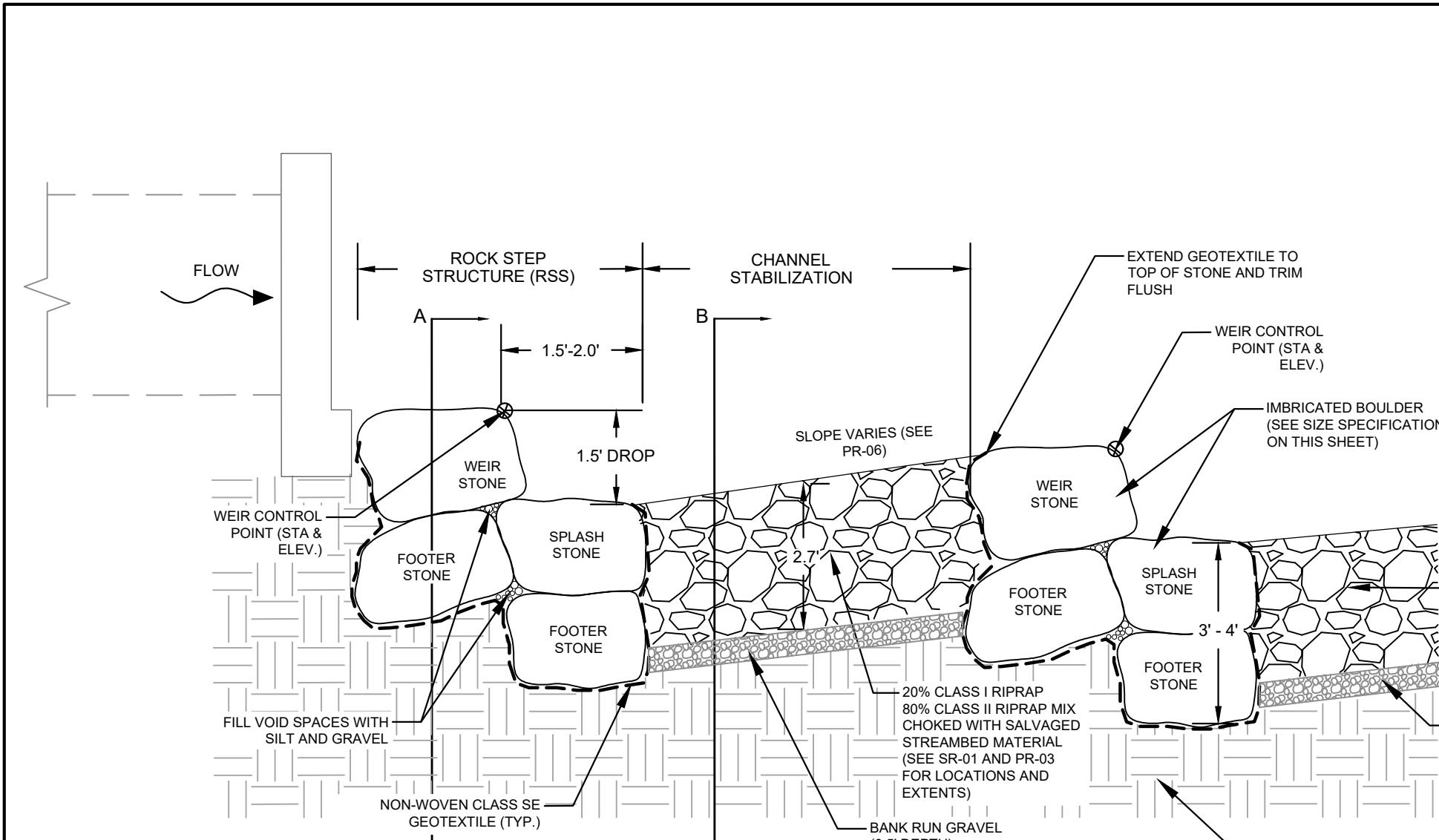
BILLING NO. TBD
EG-SWMENG- TBD
PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 28371, EXPIRATION DATE: 01/01/2027.



## HARFORD COUNTY, MARYLAND BENNETT PLACE STREAM RESTORATION DETAIL SHEET

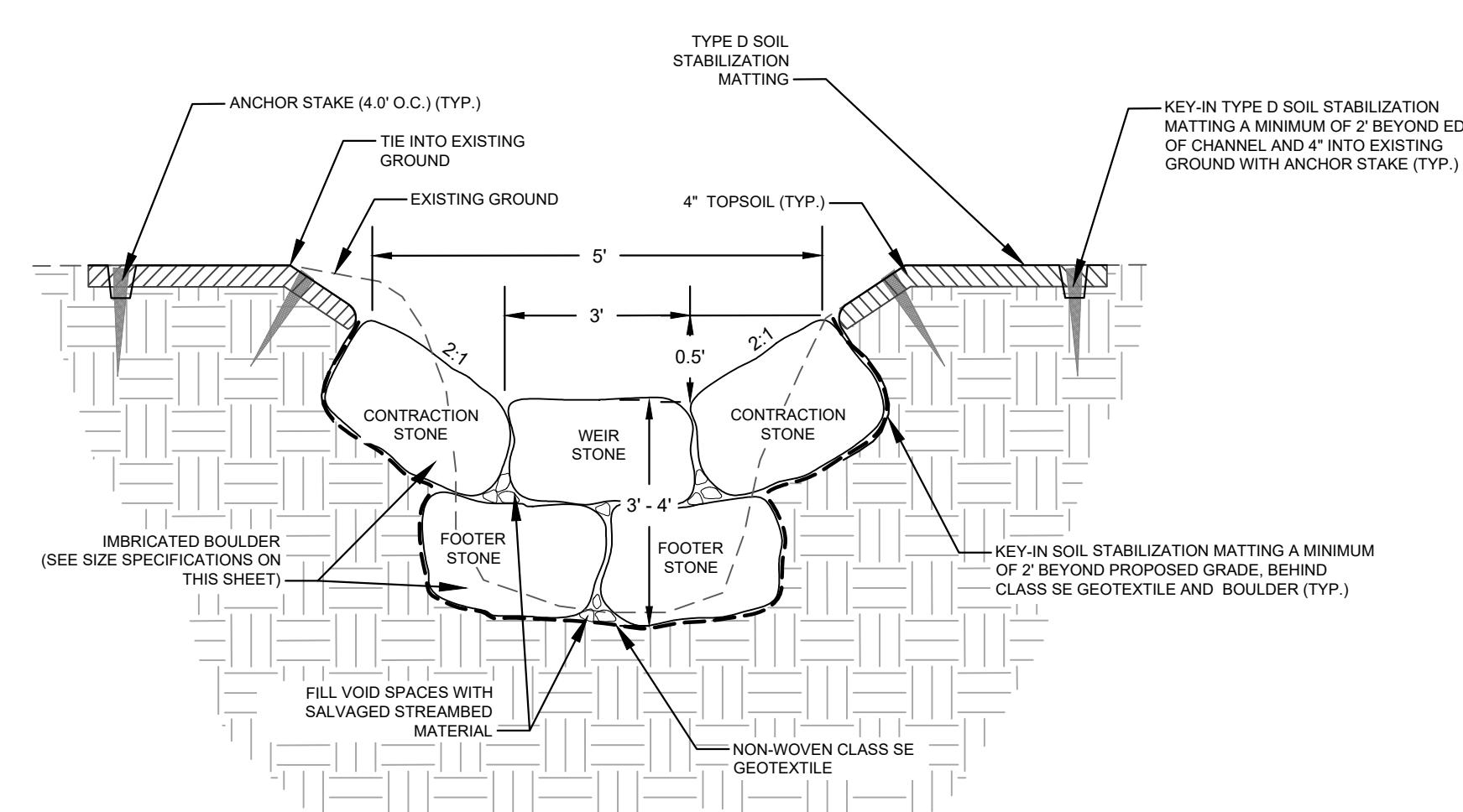
Drawn By : PJB	Scale : N/A
Designed By : IPT, PJB	Date : 10 / 25
Reviewed By : CAL	
Drawing No. DE-01 of DE-06	Sheet No. 16 of 44



**ROCK STEP STRUCTURE (RSS) - PROFILE VIEW**

NOTE: REFER TO GRADING PLAN SHEETS (SR-01) FOR LOCATIONS OF ROCK STEP STRUCTURES.

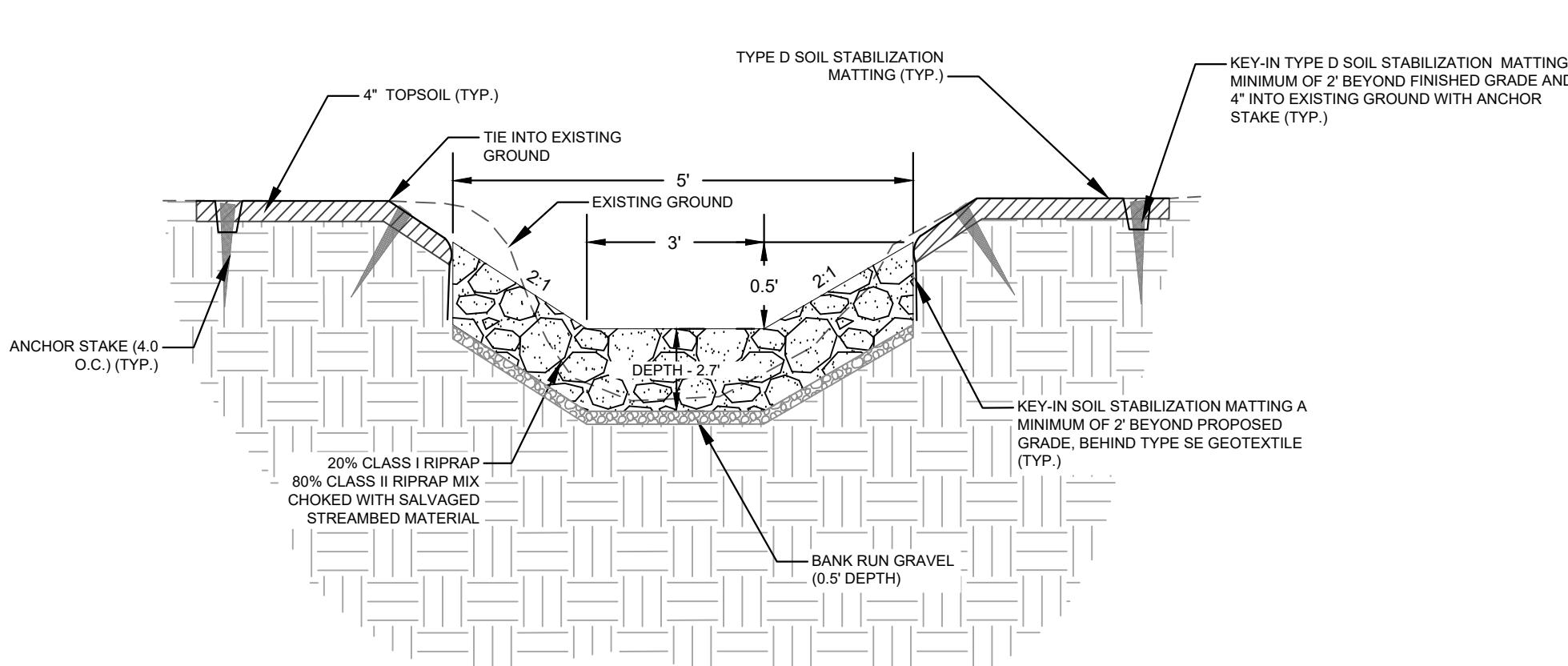
NOT TO SCALE



**ROCK STEP STRUCTURE (RSS) - WEIR / SPLASH STONE (SECTION A-A')**

NOTE: REFER TO GRADING PLAN SHEETS (SR-01) FOR LOCATIONS OF ROCK STEP STRUCTURES.

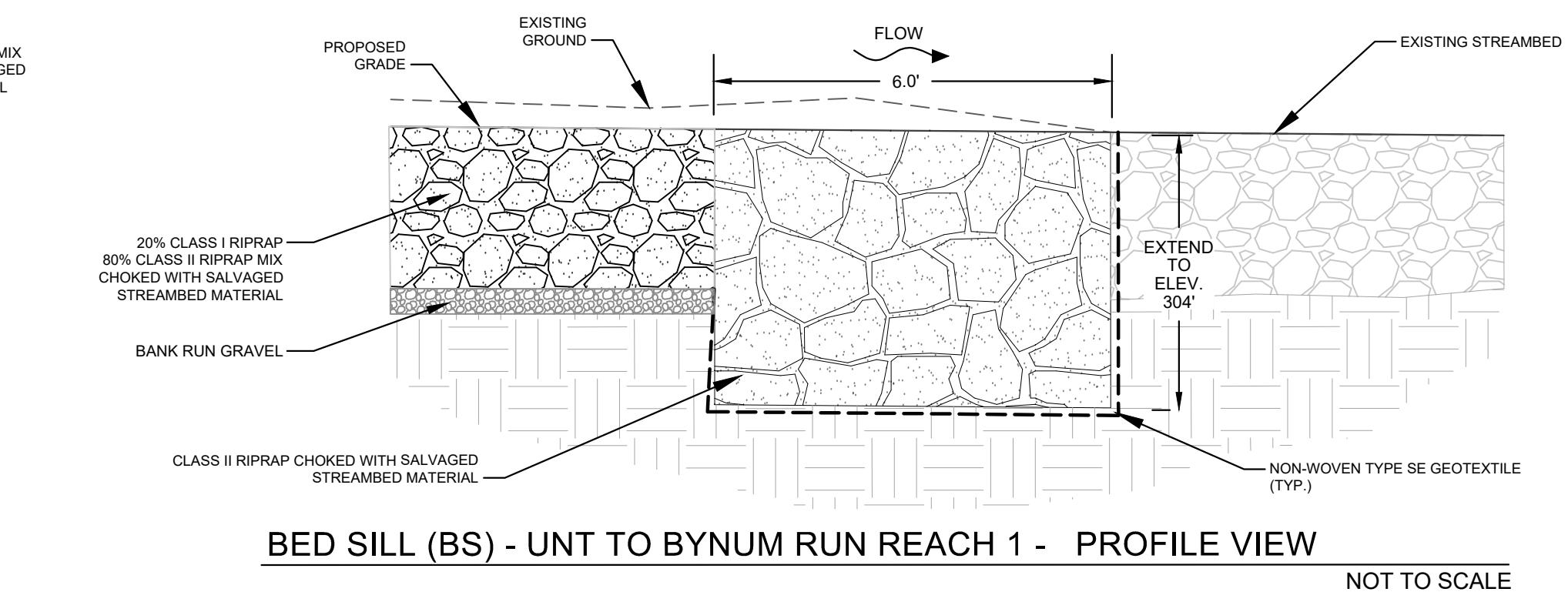
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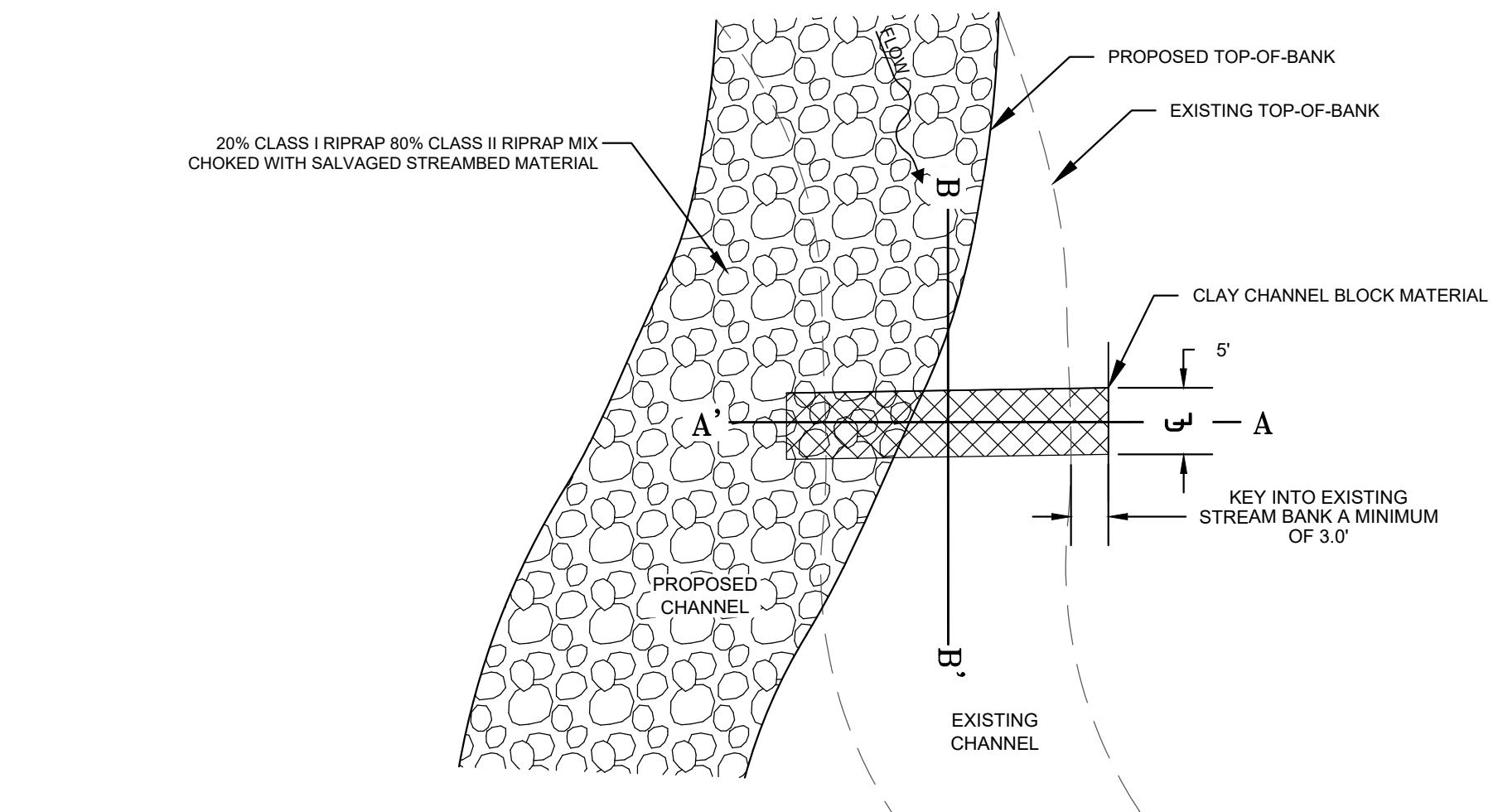
**ROCK STEP STRUCTURE (RSS) - CHANNEL STABILIZATION (SECTION B-B')**

NOTE: CHANNEL TO TRANSITION TO 0.5' BANK HEIGHTS ALONG FLOODPLAIN.

NOT TO SCALE



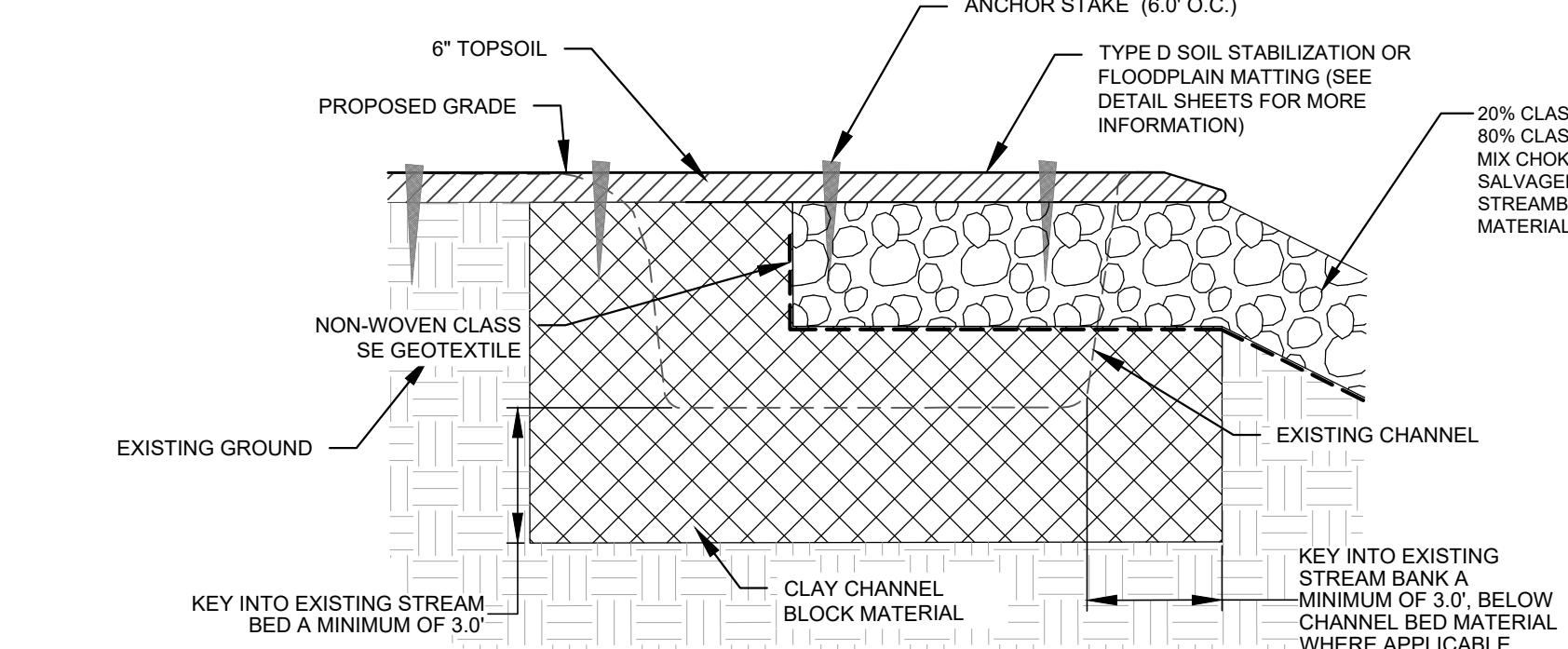
**BED SILL (BS) - UNT TO BYNUM RUN REACH 1 - PROFILE VIEW**



**CLAY CHANNEL BLOCK (CCB) - PLAN VIEW**

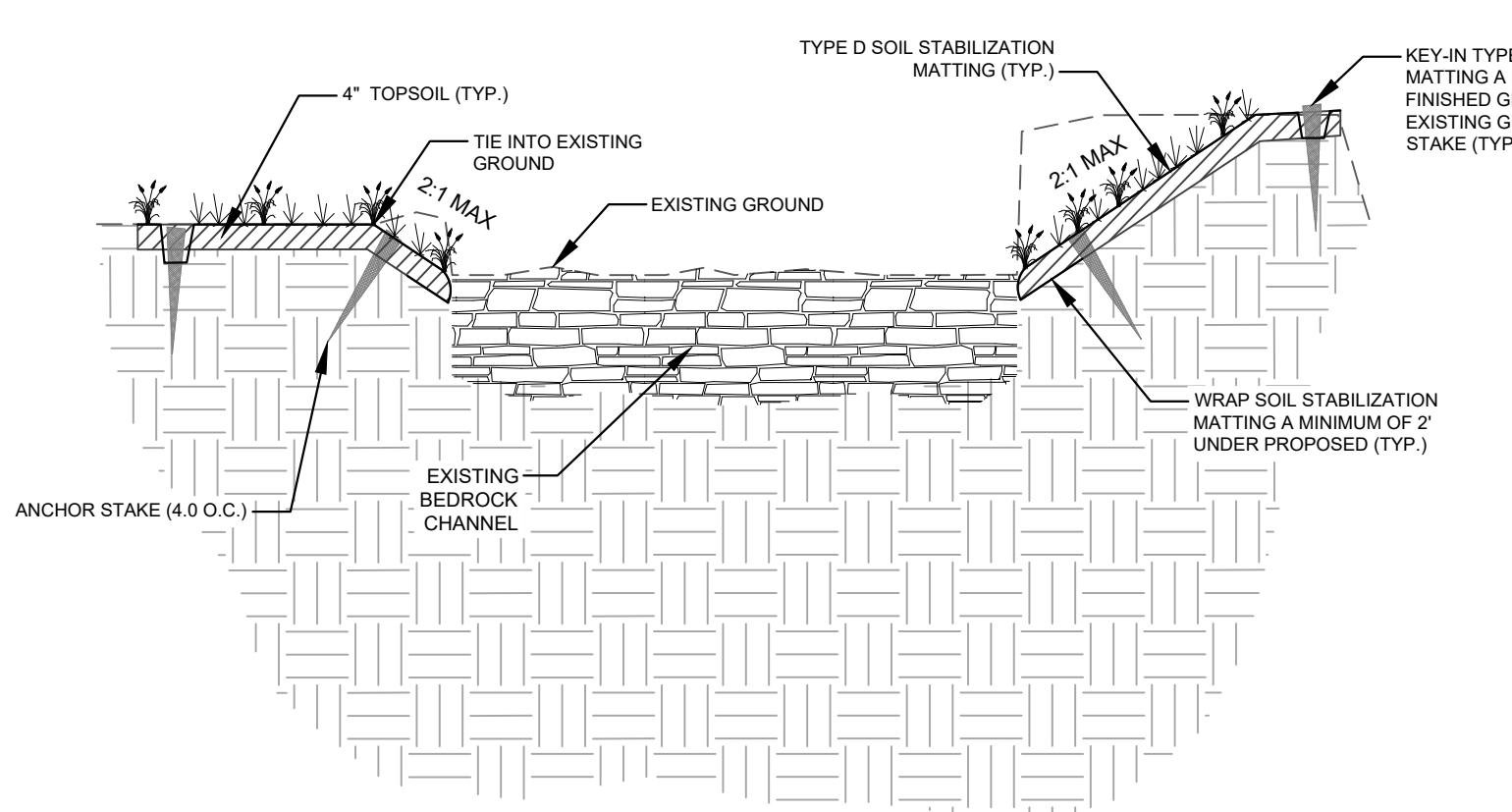
NOTE: SEE CLAY CHANNEL BLOCK CROSS-SECTION DETAILS ON THIS SHEET FOR ADDITIONAL INFORMATION REGARDING SUBGRADE CONSTRUCTION.

NOT TO SCALE



**CLAY CHANNEL BLOCK (CCB) - CROSS SECTION A-A'**

NOT TO SCALE



**BANK STABILIZATION ONLY ALONG BEDROCK CHANNEL UNT TO BYNUM RUN REACH 2 - TYPICAL SECTION**

NOT TO SCALE

NOTES:

1. ALL TYPICAL SECTIONS ARE AS VIEWED FACING DOWNSTREAM
2. ANCHOR STAKES SHALL BE SPACED 4.0' O.C. WITHIN 10' OF CHANNEL EDGE, OVER SUBGRADE RIPRAP, AND ALONG ALL SEAMS. ANCHOR STAKES SHALL BE SPACED 6.0' O.C. IN ALL OTHER LOCATIONS.
3. SEEDING MUST OCCUR PRIOR TO PLACEMENT OF TYPE D SOIL STABILIZATION MATTING AND/OR FLOODPLAIN MATTING.
4. WHEN PLACING RIPRAP MIX, SMALL AND LARGE STONES MUST BE MIXED TO MINIMIZE VOID SPACE AND PROMOTE INTERLOCKING. SALVAGED STREAMBED MATERIAL SHALL BE WASHING INTO THE RIPRAP TO ENSURE ALL INTERSTITIAL Voids ARE FILLED AND SURFACE FLOW IS ACHIEVED. DUMPING OF STONE WILL NOT BE PERMITTED.

## HARFORD COUNTY, MARYLAND

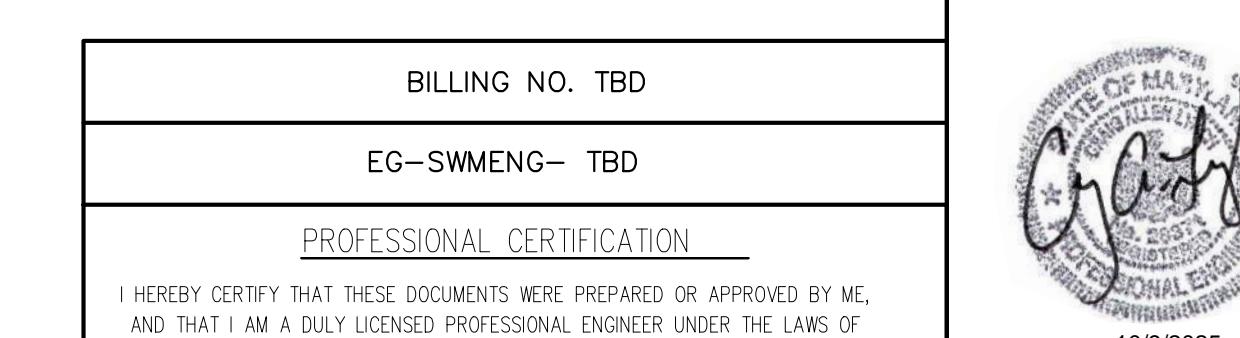
### BENNETT PLACE STREAM RESTORATION

#### DETAIL SHEET

Revisions	
Drawn By : <u>PJB</u>	Scale : <u>N/A</u>

Designed By : <u>IPT , PJB</u>
Reviewed By : <u>CAL</u>
Drawing No. <u>DE-02 of DE-06</u>

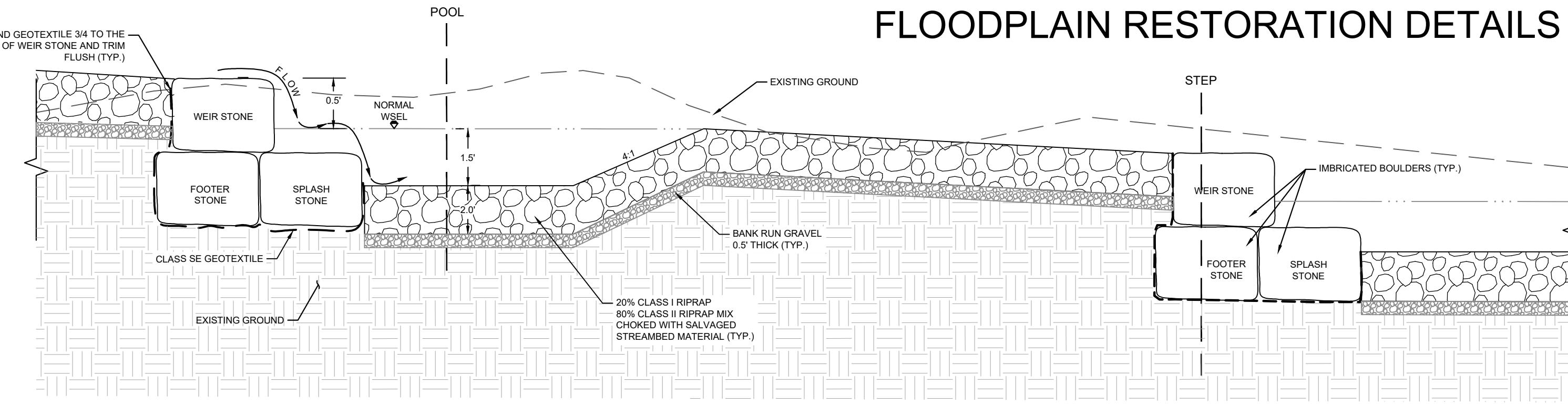
Scale : <u>N/A</u>
Date : <u>10 / 25</u>
Drawing No. <u>DE-02 of DE-06</u>



PROFESSIONAL CERTIFICATION

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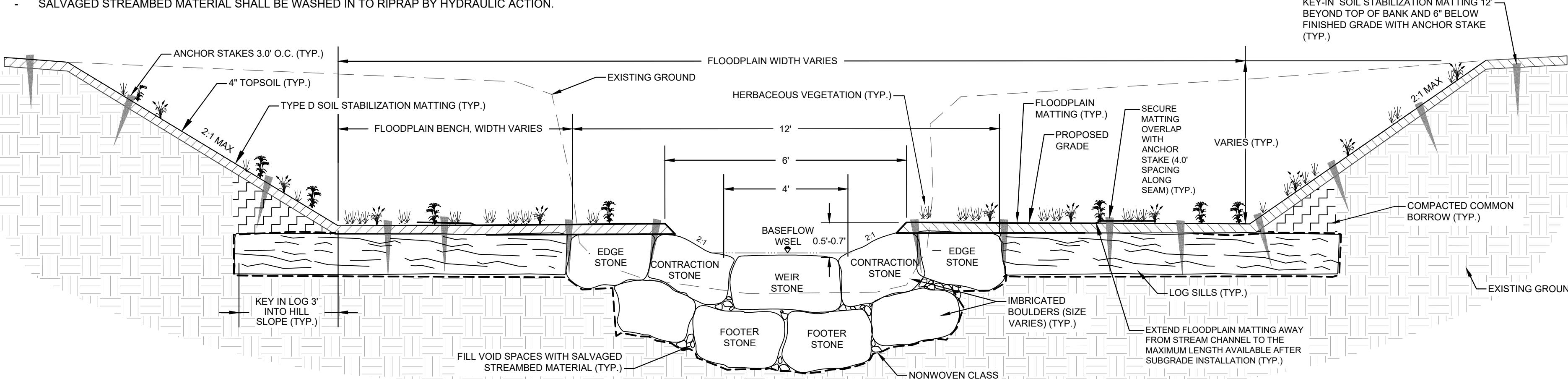
# FLOODPLAIN RESTORATION DETAILS - UNT TO BYNUM RUN (REACH 3)



BOULDER STEP STRUCTURE (BSS) - UNT TO BYNUM RUN REACH 3 - PROFILE VIEW A-A'

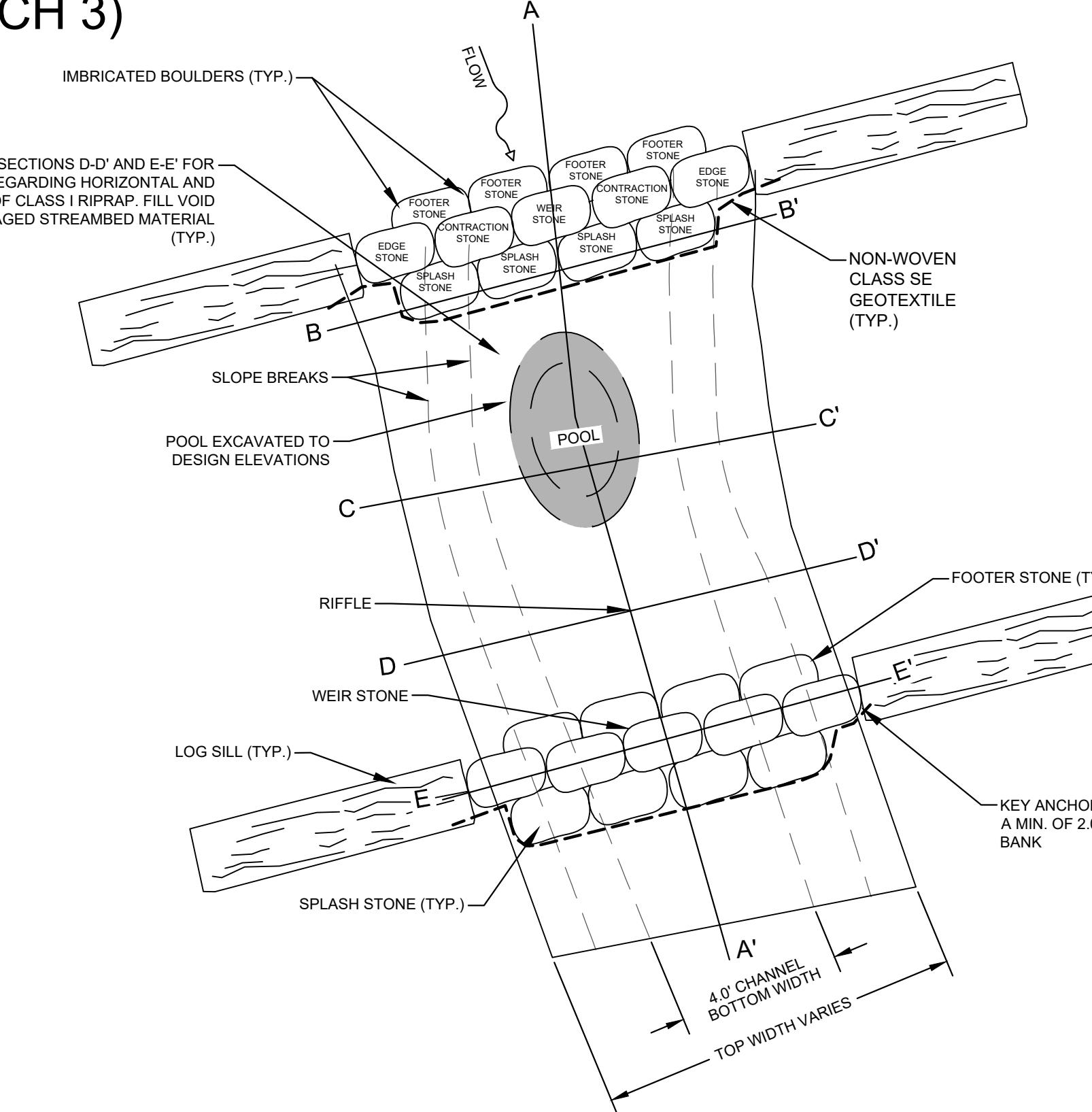
NOTES:  
 - SEE PLAN AND PROFILE SHEETS FOR EXACT ELEVATIONS, GRADES, AND STRUCTURE LOCATIONS.  
 - SALVAGED STREAMBED MATERIAL SHALL BE WASHED IN TO RIPRAP BY HYDRAULIC ACTION.

NOT TO SCALE



BOULDER STEP STRUCTURE (BSS) - UNT TO BYNUM RUN REACH 3 - SECTION VIEW E-E' (STEP)

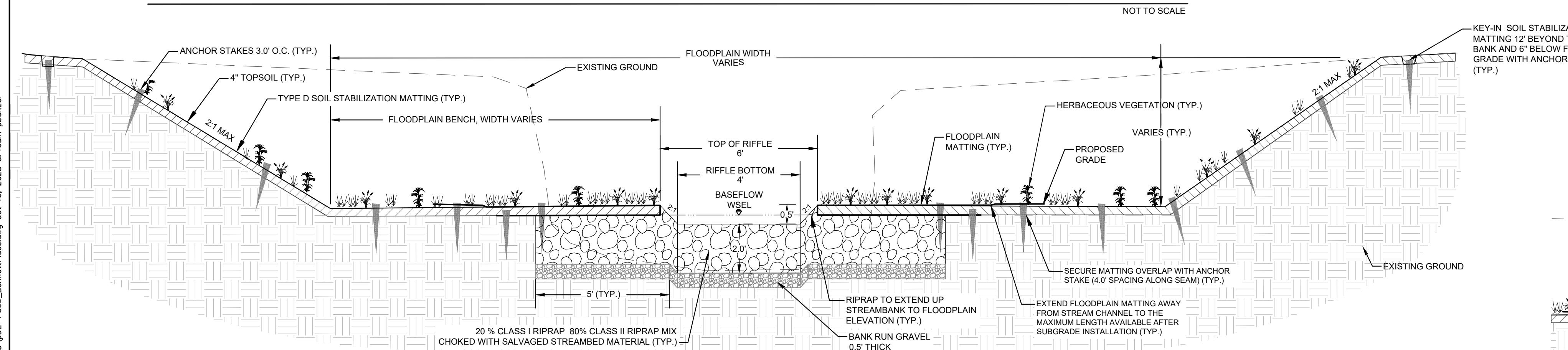
KEY IN SOIL STABILIZATION MATTING 12' BEYOND TOP OF BANK AND 6' BELOW FINISHED GRADE WITH ANCHOR STAKE (TYP.)



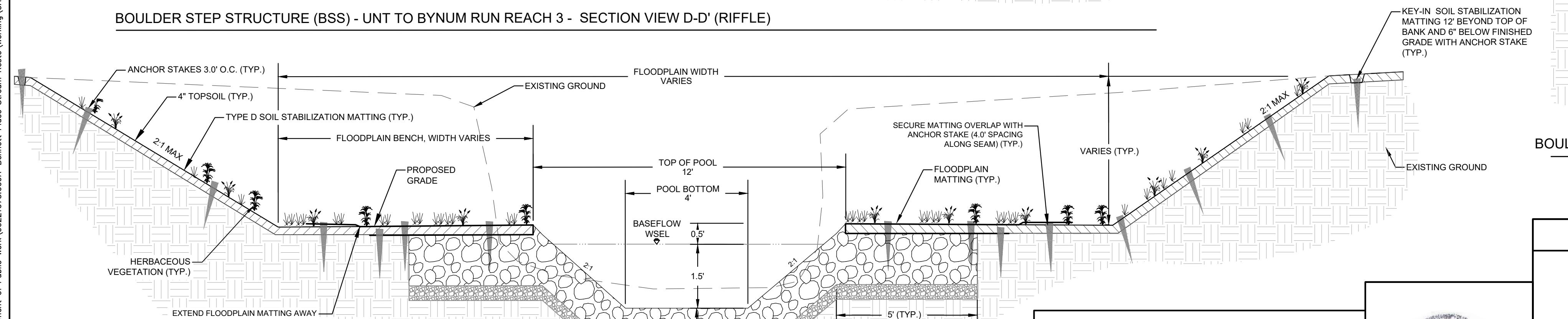
BOULDER STEP STRUCTURES (BSS) - UNT TO BYNUM RUN REACH 3 - PLAN VIEW

NOTE: SEE PLAN AND PROFILE SHEETS FOR EXACT ELEVATIONS, GRADES, AND STRUCTURE LOCATIONS

NOT TO SCALE

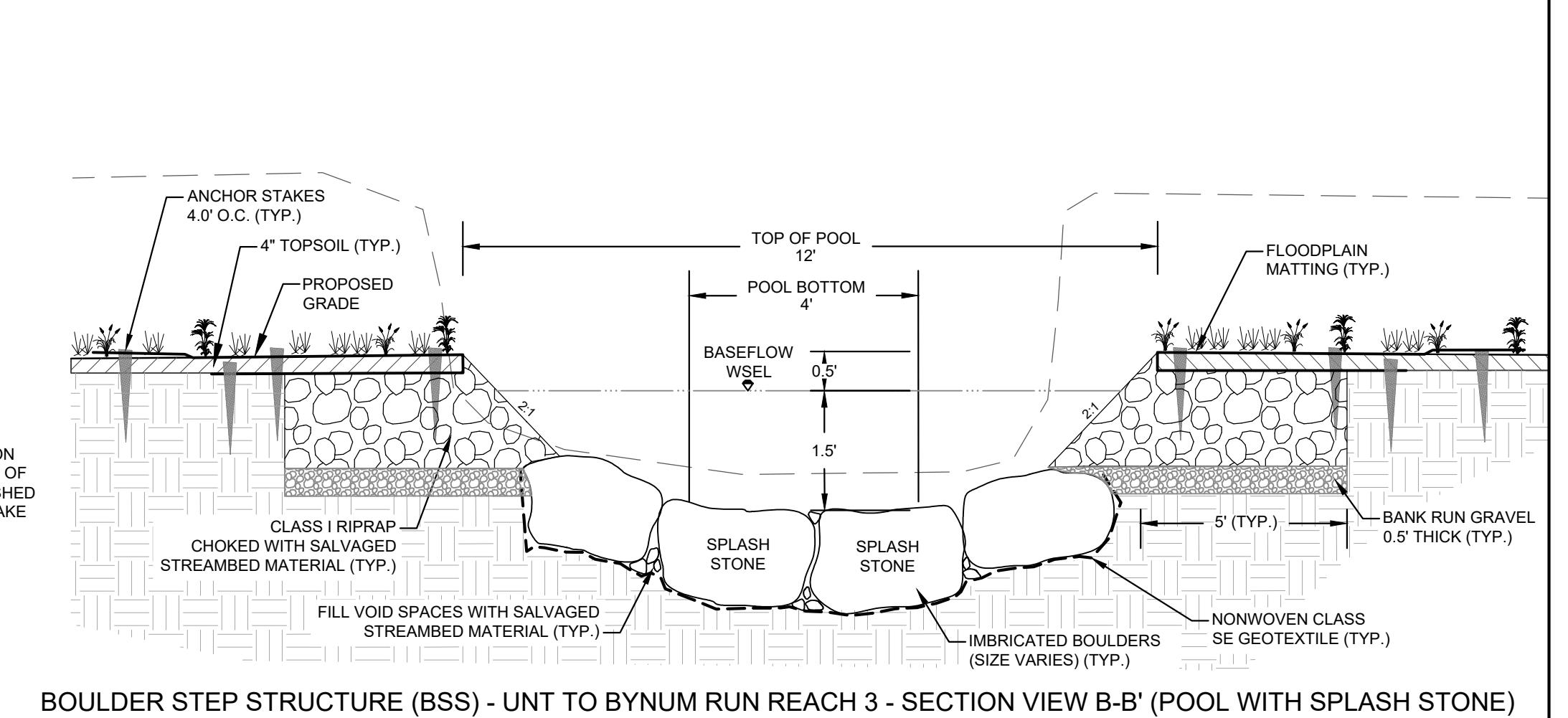


BOULDER STEP STRUCTURE (BSS) - UNT TO BYNUM RUN REACH 3 - SECTION VIEW D-D' (RIFFLE)



BOULDER STEP STRUCTURE (BSS) - UNT TO BYNUM RUN REACH 3 - SECTION VIEW C-C' (POOL)

NOT TO SCALE



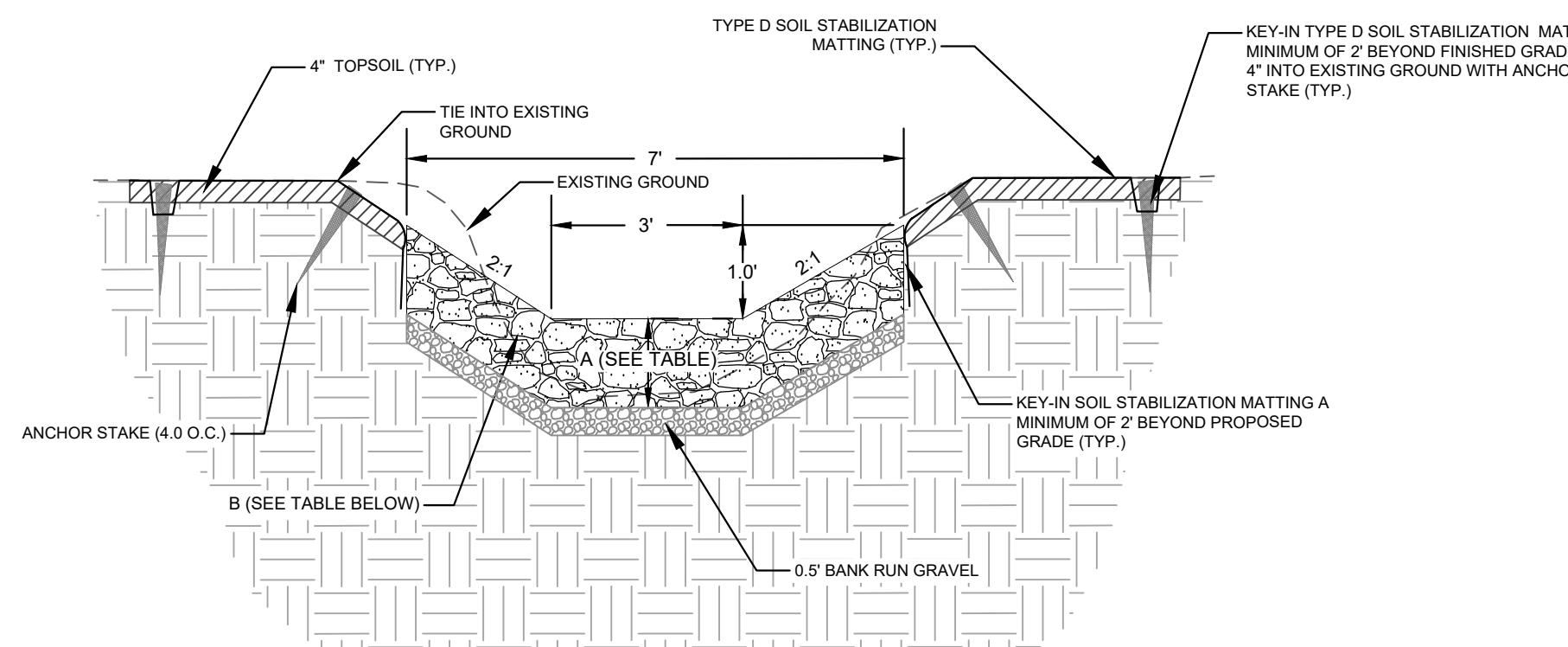
BOULDER STEP STRUCTURE (BSS) - UNT TO BYNUM RUN REACH 3 - SECTION VIEW B-B' (POOL WITH SPLASH STONE)

NOT TO SCALE

HARFORD COUNTY, MARYLAND	
BENNETT PLACE STREAM RESTORATION	
DETAIL SHEET	
Revisions	
BILLING NO. TBD	
EG-SWMENG- TBD	
PROFESSIONAL CERTIFICATION	
 10/9/2025	
Drawn By : PJB	Scale : N/A
Designed By : IPT, PJB	Date : 10 / 25
Reviewed By : CAL	
Drawing No. DE-03 of DE-06	Sheet No. 18 of 44

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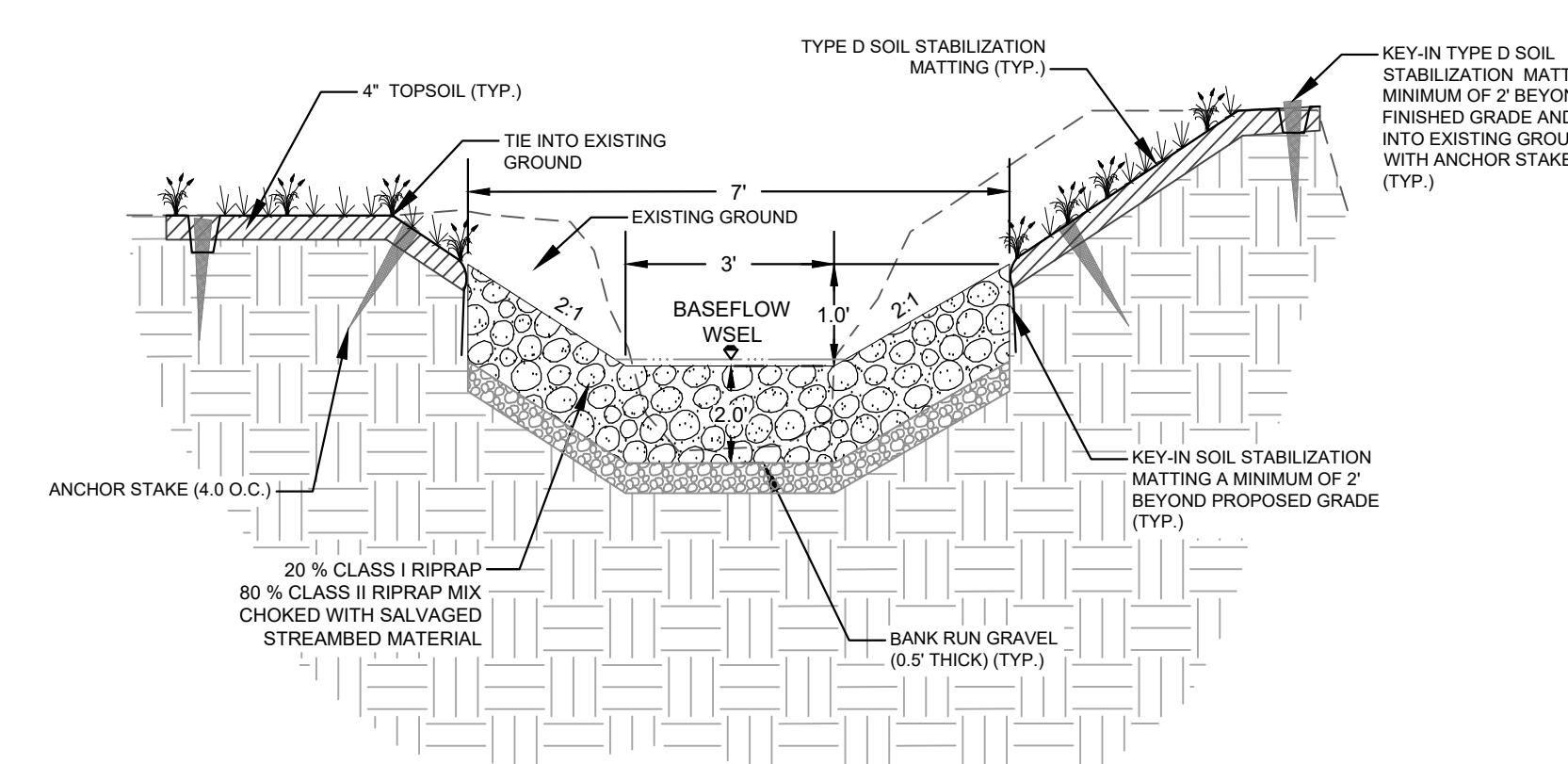
10/9/2025



RIPRAP STABILIZATION (RS) - SLOPE SECTION

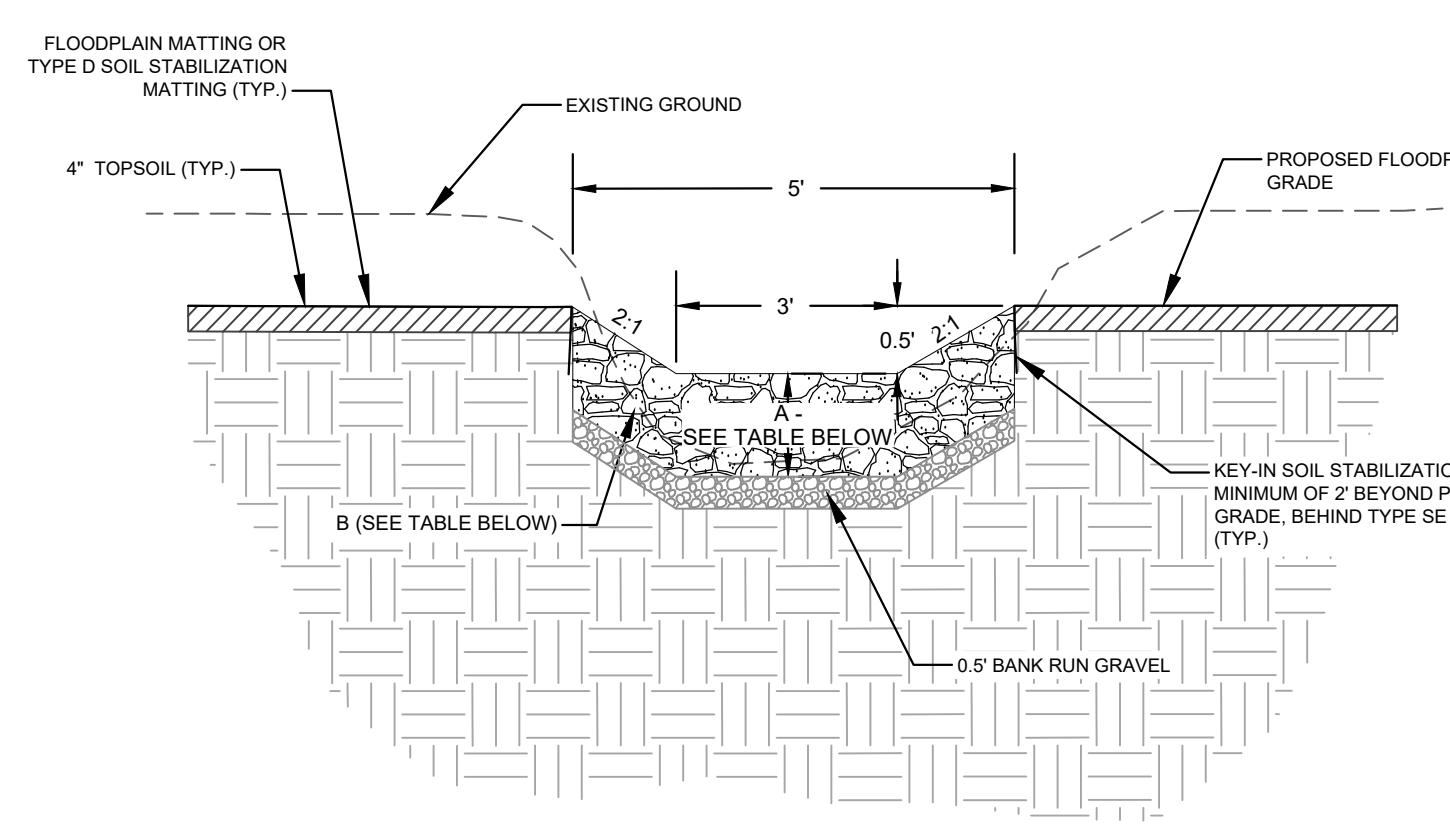
NOTE: RS#3 ON OUTFALL #4 TO HAVE TYPE SE GEOTEXTILE IN PLACE OF BANK RUN GRAVEL.

NOT TO SCALE



BASEFLOW CHANNEL (BC) - TRIBUTARY 1 - TYPICAL SECTION

NOT TO SCALE

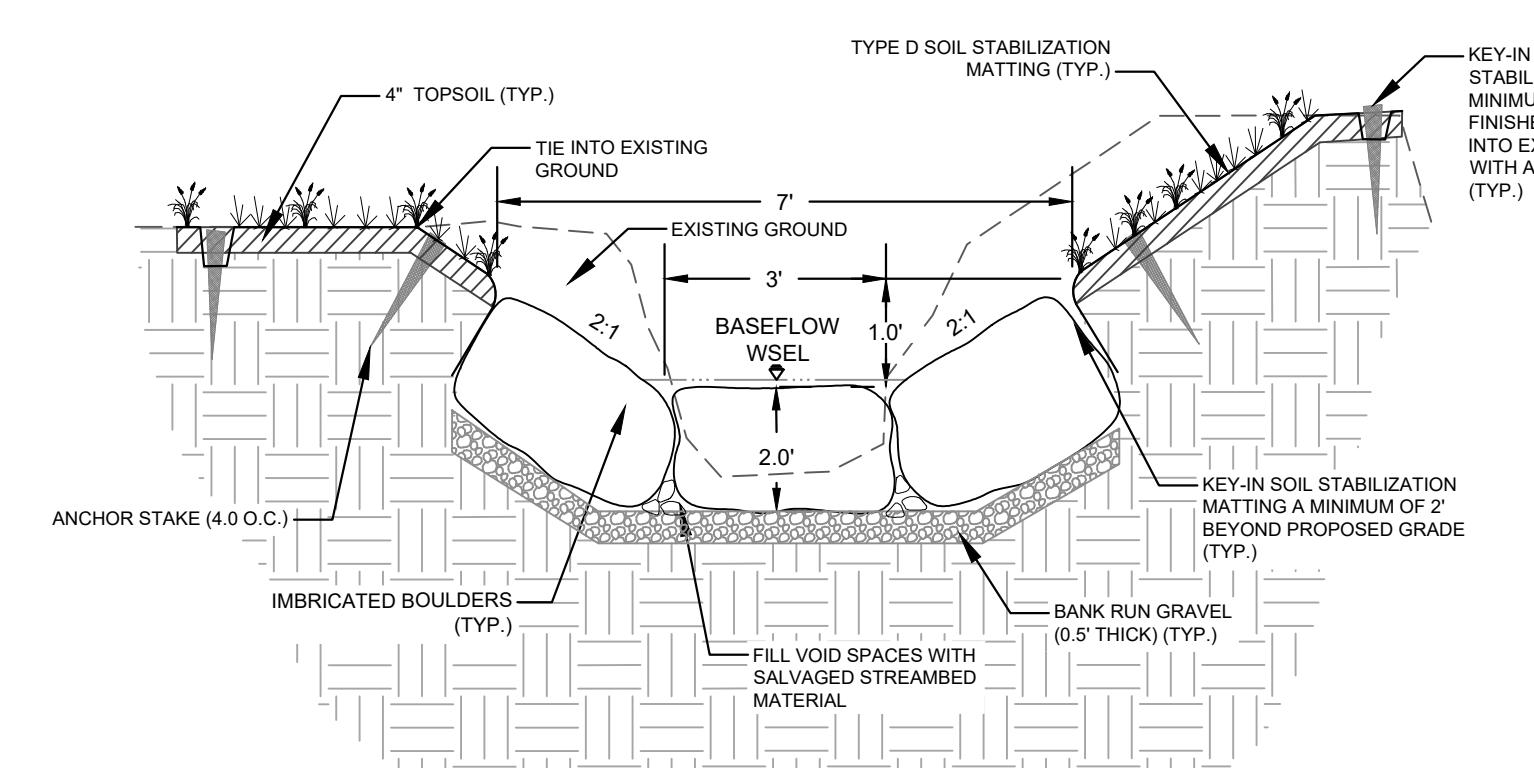


RIPRAP STABILIZATION (RS) - RECEIVING CHANNEL SECTION

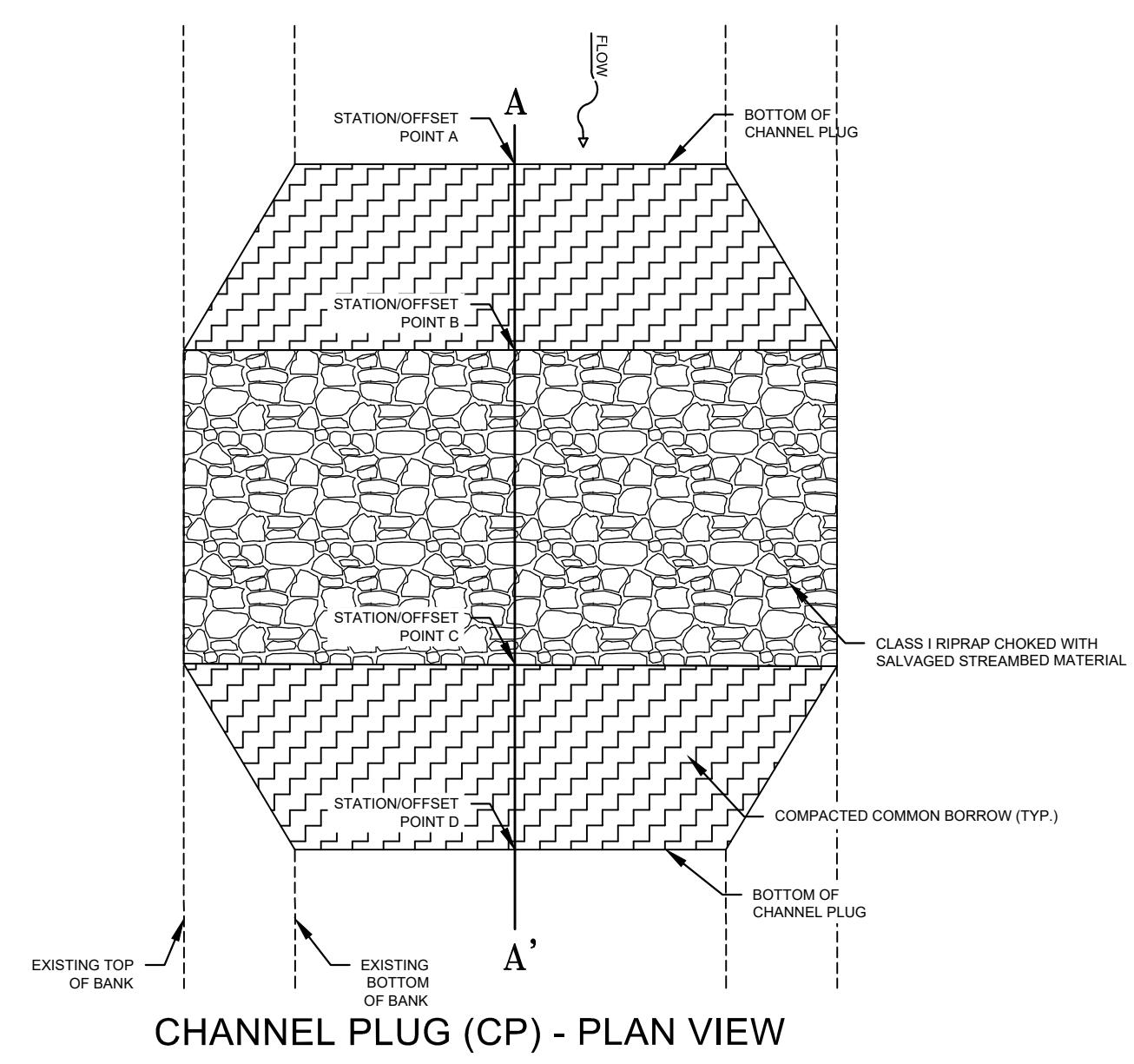
NOTE: RS#3 ON OUTFALL #4 TO HAVE TYPE SE GEOTEXTILE IN PLACE OF BANK RUN GRAVEL.

NOT TO SCALE

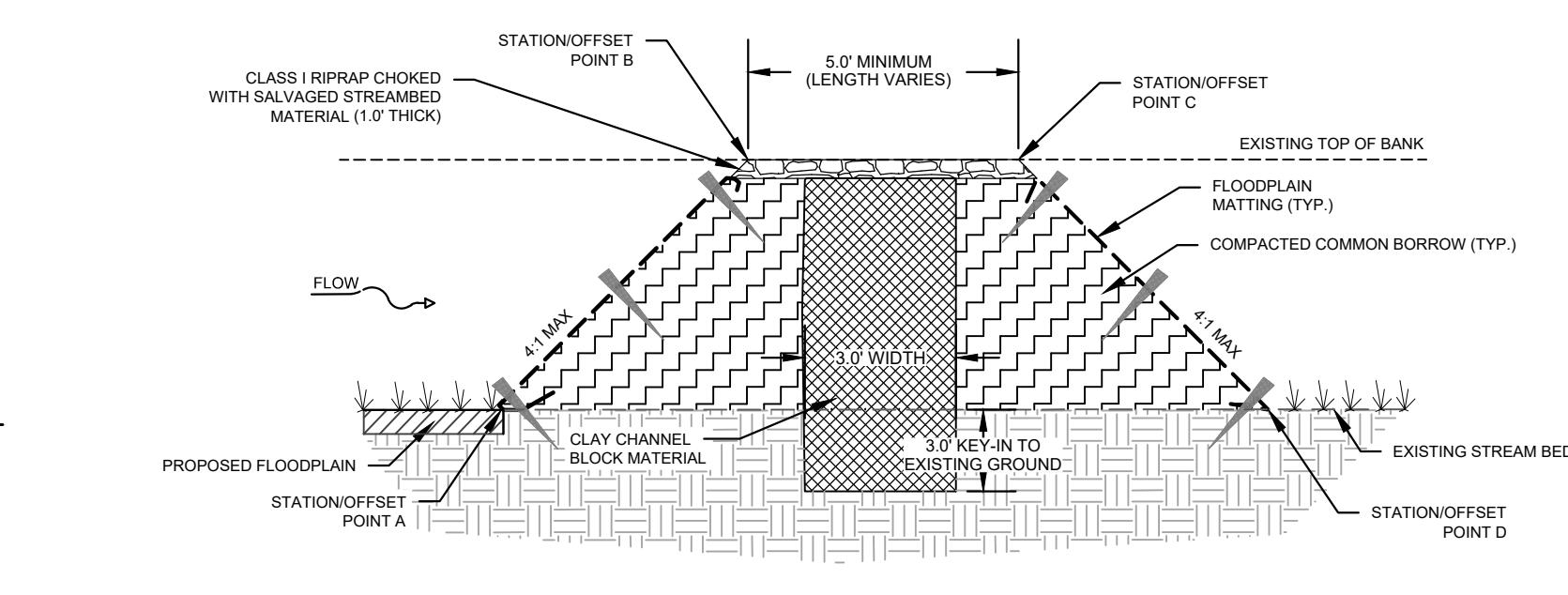
BOULDER GRADE CONTROL (BGC) - TRIBUTARY 1 TYPICAL SECTION



NOT TO SCALE



CHANNEL PLUG (CP) - PLAN VIEW



CHANNEL PLUG (CP) - CROSS SECTION A-A'

CHANNEL PLUG SEQUENCE OF CONSTRUCTION:  
 1) EXCAVATE EXISTING STREAM BED TO INSTALL THE CLAY CHANNEL BLOCK MATERIAL.  
 2) BACKFILL OVER THE CLAY CHANNEL BLOCK MATERIAL WITH COMPACTED COMMON BORROW.  
 3) INSTALL SOIL STABILIZATION MATTING AND CHANNEL BED MATERIAL AS SHOWN.

NOTES:  
 1) STATION OFFSET POINTS A & D TIE-IN TO THE EXISTING STREAMBED AND TOE OF SLOPE.  
 2) STATION OFFSET POINTS B & C TIE-IN TO THE TOP OF BANK.  
 3) CLAY CHANNEL BLOCK MATERIAL TO EXTEND THE FILL LENGTH OF THE TOP OF THE CHANNEL PLUG, FROM TOP OF BANK TO TOP OF BANK.  
 4) SHAPE/DIMENSIONS OF THE CHANNEL PLUG VARY WITH THE EXISTING CHANNEL CONTOURS.  
 5) FLOW ARROW DEPICTED REFLECTS CHANNEL PLUGS #1 & #3, FOR CHANNEL PLUGS #2 & #4 FLOW WOULD BE THE OPPOSITE DIRECTION.

BOULDER GRADE CONTROL (BGC) - OUTFALL #6 TYPICAL SECTION

NOTES: DEPTH OF RIPRAP MIX IS DEPENDANT ON THE HEIGHT OF THE IMBRICTED BOULDER (SEE IMBRICTED BOULDER SPECIFICATION ON SHEET DE-06 FOR ACCEPTABLE RANGE OF BOULDER HEIGHTS). TOTAL DEPTH BGC & RIPRAP MIX TO TOTAL 2.7'

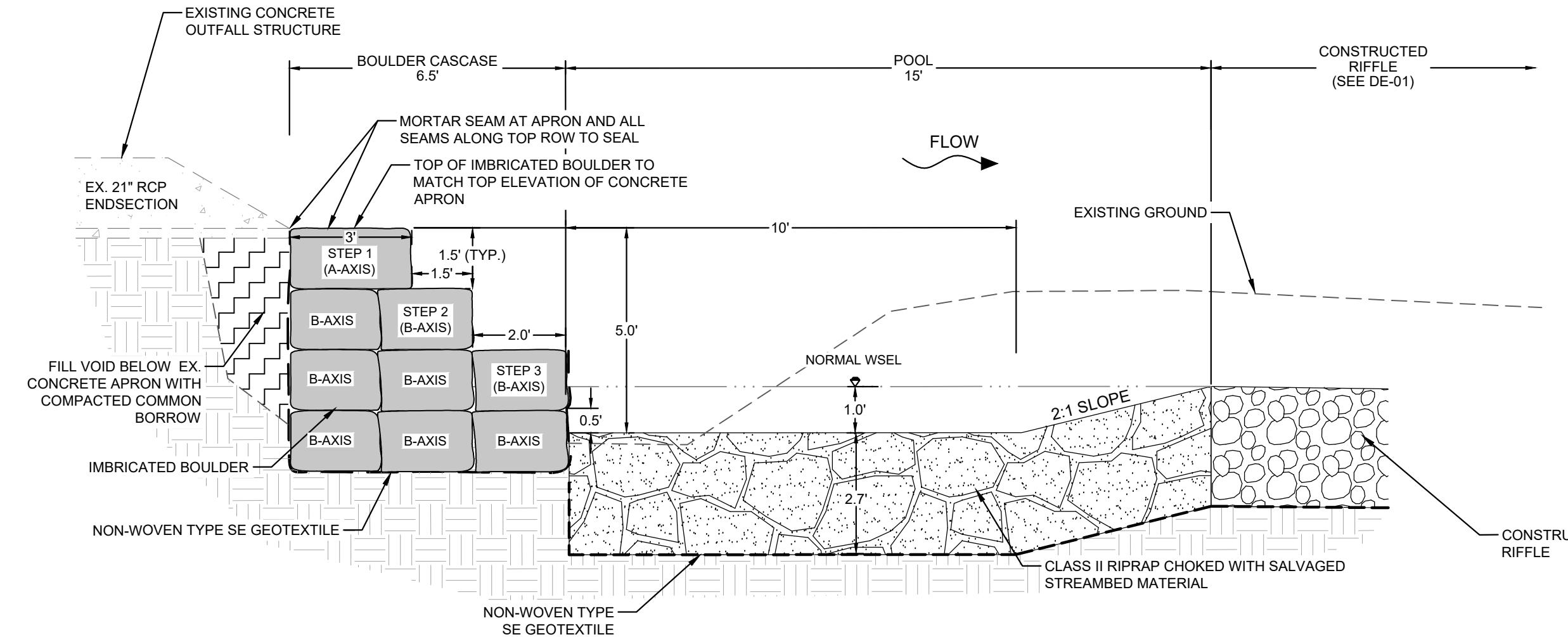
NOT TO SCALE

RIPRAP STABILIZATION MATERIALS		
CHANNEL	DEPTH (A)	RIPRAP (B)
OUTFALL #2	1.5'	CLASS I
OUTFALL #3	2.7'	20% CLASS I : 80% CLASS II MIX
OUTFALL #4	2.0'	20% CLASS I : 80% CLASS II MIX
OUTFALL #6	2.7'	20% CLASS I : 80% CLASS II MIX
OUTFALL #7	1.5'	CLASS I

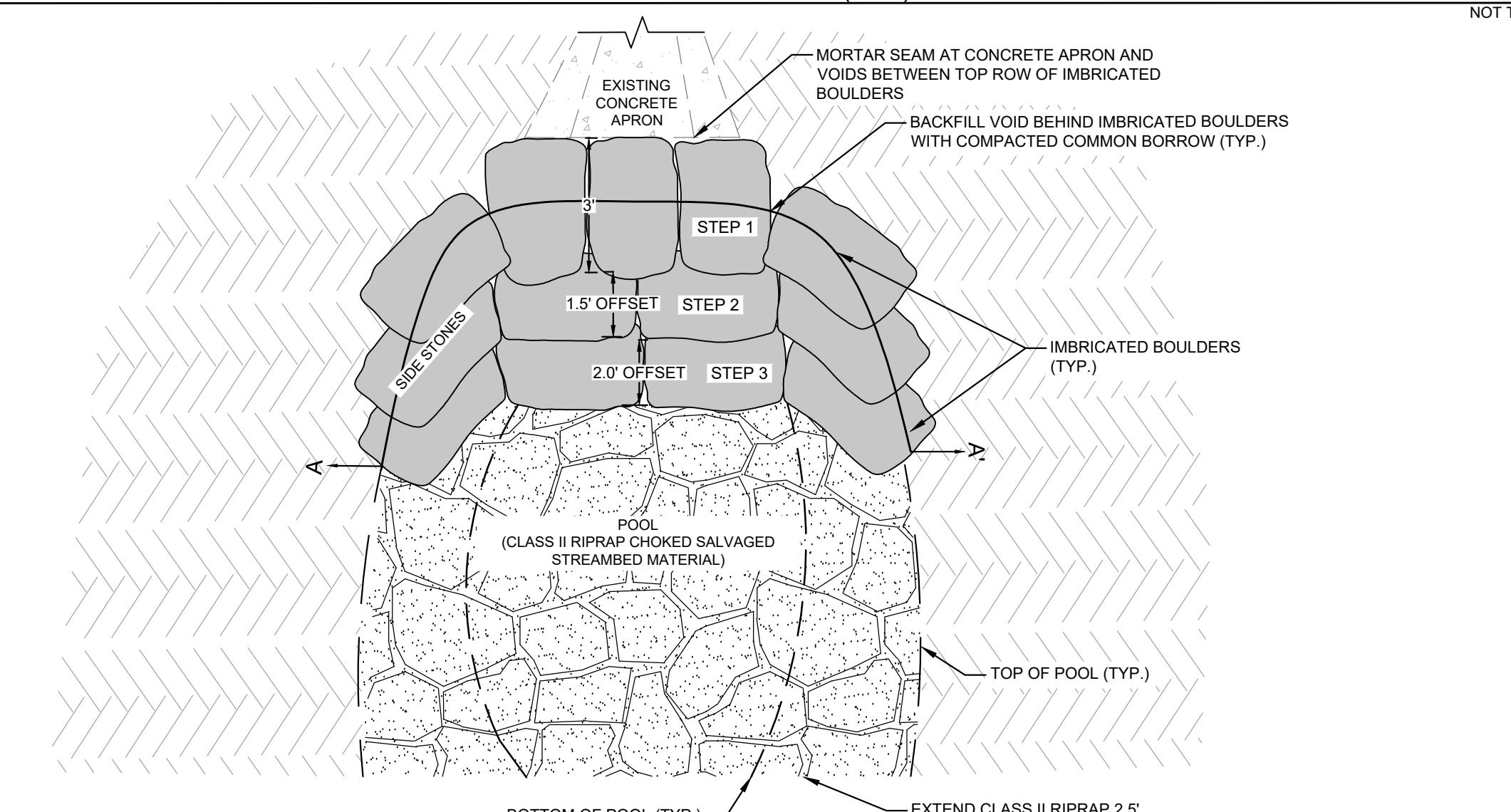
NOTES: ALL RIPRAP TO BE CHOKED WITH SALVAGED STREAMBED MATERIAL

BILLING NO. TBD	
EG-SWMENG- TBD	
PROFESSIONAL CERTIFICATION	
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 28371, EXPIRATION DATE: 01/01/2025.	
10/9/2025	

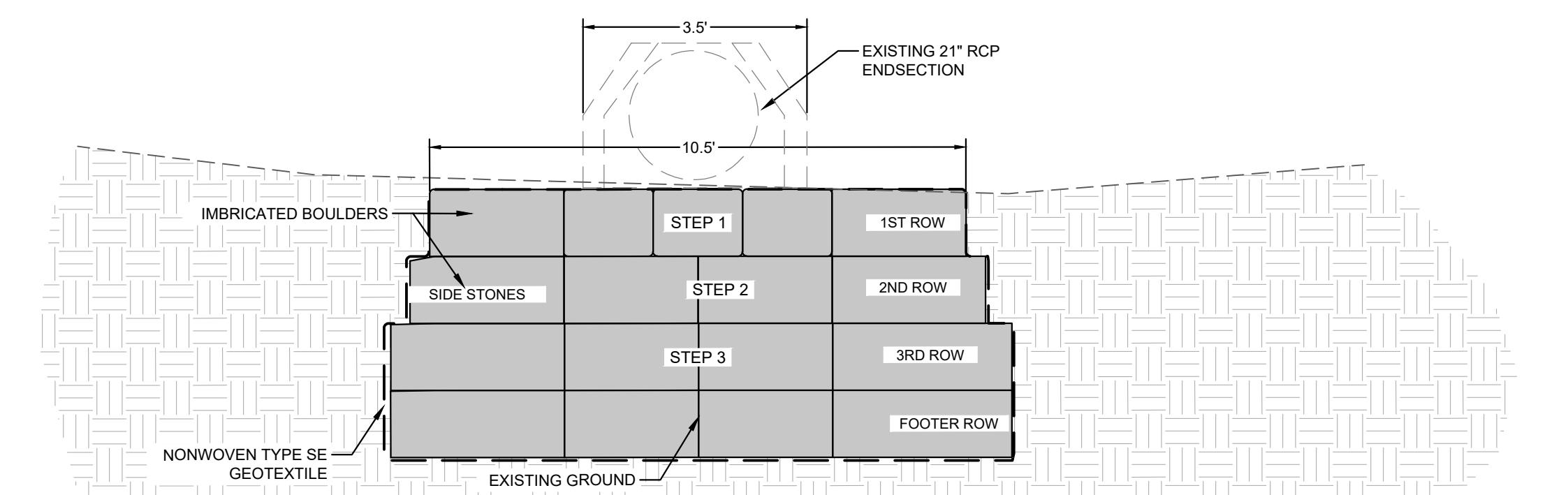
HARFORD COUNTY, MARYLAND	
BENNETT PLACE STREAM RESTORATION	
DETAIL SHEET	
Revisions	
Drawn By : <u>PJB</u>	Scale : N/A
Designed By : <u>IPT, PJB</u>	Date : 10 / 25
Reviewed By : <u>CAL</u>	
Drawing No. DE-04 of DE-06	Sheet No. 19 of 44



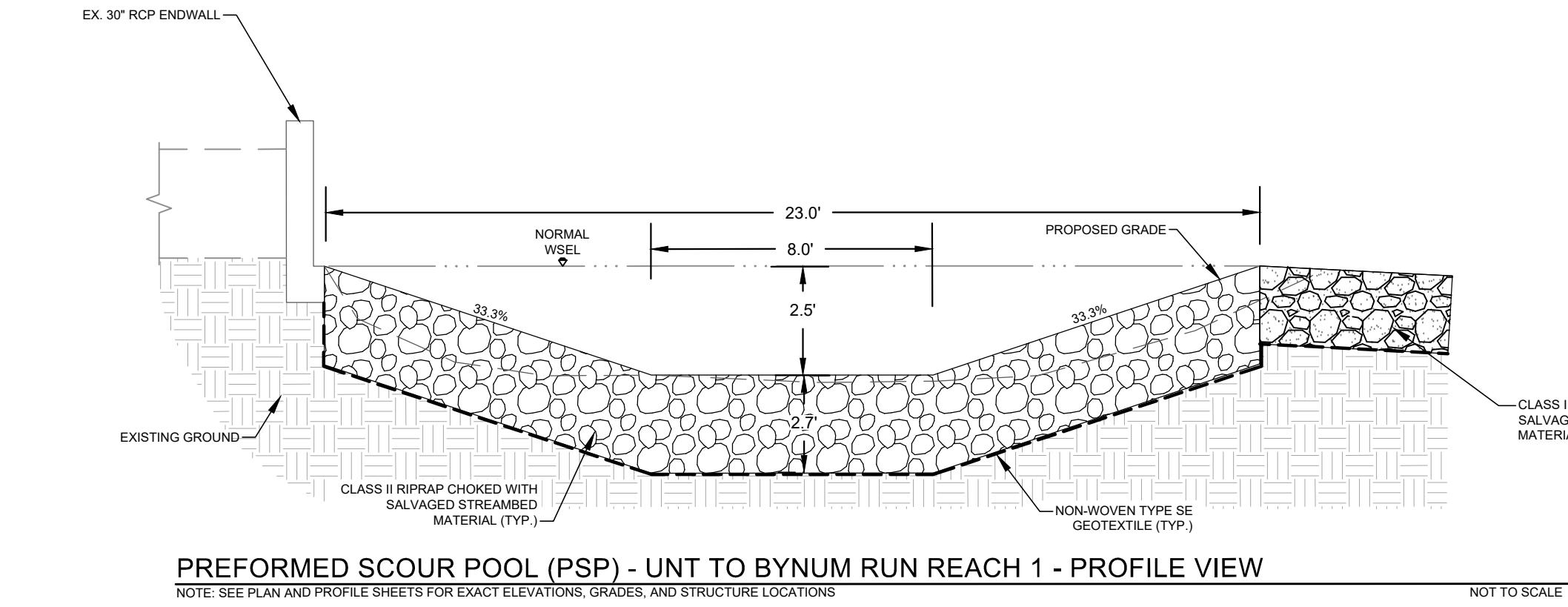
OUTFALL #5 TO UNT TO BYNUM RUN REACH 1 - BOULDER CASCADE STRUCTURE (BCS) - PROFILE VIEW



OUTFALL #5 TO UNT TO BYNUM RUN REACH 1 - BOULDER CASCADE STRUCTURE (BCS) - PLAN VIEW



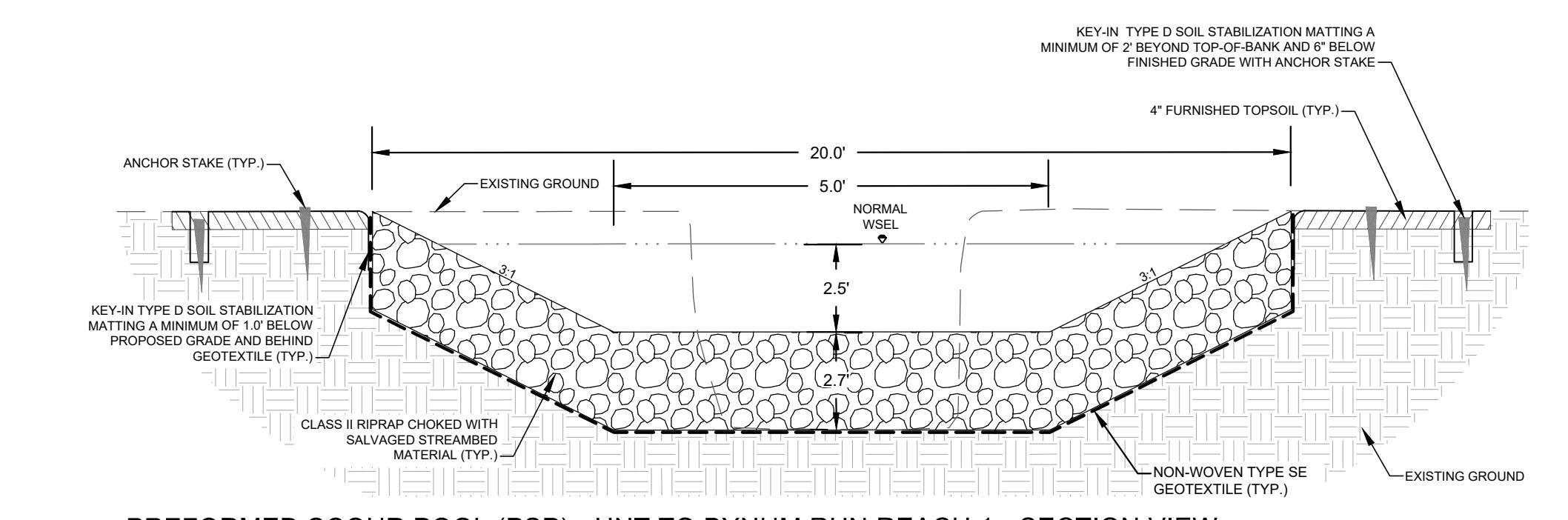
OUTFALL #5 TO UNT TO BYNUM RUN REACH 1 - BOULDER CASCADE STRUCTURE (BCS) - SECTION VIEW A-A'



PREFORMED SCOUR POOL (PSP) - UNT TO BYNUM RUN REACH 1 - PROFILE VIEW

NOTE: SEE PLAN AND PROFILE SHEETS FOR EXACT ELEVATIONS, GRADES, AND STRUCTURE LOCATIONS

NOT TO SCALE



PREFORMED SCOUR POOL (PSP) - UNT TO BYNUM RUN REACH 1 - SECTION VIEW

NOTE: SEE PLAN AND PROFILE SHEETS FOR EXACT ELEVATIONS, GRADES, AND STRUCTURE LOCATIONS

NOT TO SCALE

## HARFORD COUNTY, MARYLAND

### BENNETT PLACE STREAM RESTORATION

#### DETAIL SHEET

##### Revisions



Drawn By : <u>PJB</u>	Scale : <u>N/A</u>
Designed By : <u>IPT , PJB</u>	Date : <u>10 / 25</u>
Reviewed By : <u>CAL</u>	
Drawing No. <u>DE-05 of DE-06</u>	Sheet No. <u>20 of 44</u>

BILLING NO. TBD

EG-SWMENG- TBD

PROFESSIONAL CERTIFICATION

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AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF  
THE STATE OF MARYLAND, LICENSE NO. 28371, EXPIRATION DATE: 01/01/2027.

# MATERIAL SPECIFICATIONS

## RIPRAP (FURNISHED STONE)

MD SHA STANDARD RIPRAP SIZE CLASSES				
MD SHA RIPRAP	D <sub>50</sub>	D <sub>100</sub>	WEIGHT	% OF TOTAL BY WEIGHT
CLASS I	9.5 in.	15 in.	> 150 IB	0
			> 40 IB	50
			< 2 IB	10 MAX
CLASS II	16 in.	24 in.	> 700 IB	0
			> 200 IB	50
			< 20 IB	10 MAX

NOTE: OPTIMUM GRADATION IS 50% OF THE STONE BEING ABOVE AND 50% BELOW THE MIDSIZE.

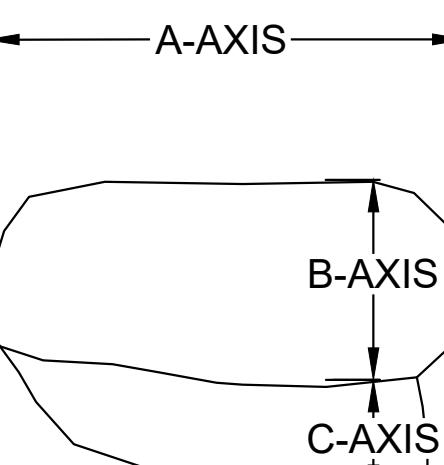
## FURNISHED STONE NOTES:

- STONE MUST MEET THE ABOVE REQUIREMENTS AND BE APPROVED BY THE ENGINEER.
- ALL FURNISHED STONE USED MUST HAVE A MINIMUM DENSITY GREATER THAN 160 LBS/FT<sup>3</sup> AND BE BROWN OR GRAY IN COLOR. NO WHITE STONE WILL BE ALLOWED. THE STONE SHALL NOT DISINTEGRATE FROM THE ACTION OF AIR, WATER, OR HANDLING AND PLACING GRANULAR SEDIMENTARY STONE (I.E. LIMESTONE) WILL GENERALLY BE UNACCEPTABLE.
- FURNISHED STONE SHALL BE COMPOSED OF ANGULAR QUARRY STONE. NO ROUND STONE WILL BE PERMITTED.
- CONCRETE WILL NOT BE CONSIDERED AS AN ALTERNATIVE FOR STONE.

## IMBRICATED BOULDER SIZE SPECIFICATIONS

	A AXIS (LONG)	B AXIS (INTERMEDIATE)	C AXIS (SHORT)	WEIGHT
MINIMUM SIZE	2.5 FT.	2.0 FT.	1.5 FT.	1200 LBS.
MAXIMUM SIZE	4.0 FT.	3.0 FT.	2.0 FT.	3840 LBS.

IMBRICATED BOULDERS SHALL HAVE A MINIMUM DENSITY GREATER THAN 160 LBS/FT<sup>3</sup> AND BE BROWN OR GRAY IN COLOR. NO WHITE STONE WILL BE ALLOWED. THE STONE SHALL NOT DISINTEGRATE FROM THE ACTION OF AIR, WATER, OR HANDLING AND PLACING. GRANULAR SEDIMENTARY STONE WILL GENERALLY BE UNACCEPTABLE. CONCRETE WILL NOT BE CONSIDERED AS AN ALTERNATIVE FOR STONE.



IMBRICATED BOULDER DETAIL - TYPICAL DETAIL

NOT TO SCALE

SILT AND GRAVEL	
% PARTICLE SIZE LESS THAN	PARTICLE DIAMETER PASSING THROUGH SIEVE (IN) OR SIEVE NO.
100	2.5 in.
85	1 in.
50	0.5 in.
30	No. 40
16	No. 200

## SILT AND GRAVEL NOTES:

- THE USE OF SILT AND GRAVEL FROM WITHIN THE EXISTING CHANNEL IS PREFERRED OVER FURNISHED MATERIAL. IF SUFFICIENT SALVAGEABLE SILT AND GRAVEL IS AVAILABLE AND APPROVED BY THE ENGINEER, THIS MATERIAL IS TO BE USED PRIOR TO FURNISHED SILT AND GRAVEL.
- SILT AND GRAVEL SHALL CONSIST OF A MIXTURE OF STONES, SAND, AND OTHER FINE SEDIMENTS (I.E. CLAY, SILT, ETC.). BANK RUN GRAVEL OR SIMILAR MAY BE USED AS FURNISHED SILT AND GRAVEL IF MATERIAL REQUIREMENTS ARE MET.
- THE ENGINEER SHALL APPROVE THE SIZE AND COMPOSITION MATERIAL TO BE USED AS SILT AND GRAVEL.
- SILT AND GRAVEL SHALL NOT BE COMPOSED OF RIPRAP OR WASHED STONE. NO LIMESTONE SHALL BE ACCEPTED.
- STONE SHALL BE BROWN OR GRAY IN COLOR. NO WHITE STONE WILL BE ALLOWED.

## STRUCTURE CONSTRUCTION NOTES:

- EXCAVATE THE BED AND BANKS ACCORDING TO THE PLANS TO OBTAIN THE NECESSARY SUBGRADE. PLACE NONWOVEN GEOTEXTILE CLASS SE AS ILLUSTRATED ON THE CONTRACT DOCUMENTS. GEOTEXTILE TORN OR DAMAGED SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. GEOTEXTILE SHALL BE KEYED-IN AND TRIMMED TO AVOID EXPOSED EDGES UPON COMPLETION OF CONSTRUCTION.
- RIPRAP SHALL BE PLACED SO THAT SMALL AND LARGE STONES ARE MIXED TO MINIMIZE VOID SPACE AND PROMOTE INTERLOCKING. SILT AND GRAVEL SHALL BE WASHED INTO THE FURNISHED STONE TO ENSURE ALL INTERSTITIAL Voids ARE FILLED AND SURFACE FLOW IS ACHIEVED. SURFACE FLOW MUST BE APPROVED BY THE ENGINEER.
- PLACED MATERIAL NOT CONFORMING TO THE SPECIFIED LIMITS SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST. A DEFINED THALWEG MUST BE ACHIEVED AND APPROVED.

## GRADE CONTROL LOG STRUCTURE

LOGS: GRADE CONTROL LOG STRUCTURES SHALL CONSIST OF HARDWOOD LOGS WITH A MINIMUM 12 INCH DIAMETER. LOGS SHALL BE FROM WITHIN THE LIMIT OF DISTURBANCE.

DUCK BILL ANCHOR: THE DUCK BILL ANCHOR SHALL BE DUCKBILL 88-DB1 OR SIMILAR WITH A MINIMUM HOLDING STRENGTH OF 3,000 IBS AND A 1/2 INCH GALVANIZED WIRE WITH A MINIMUM BREAKING STRENGTH OF 3,000 IBS. DUCKBILL ANCHORS ARE TO BE INSTALLED 3 FEET FROM ENDS OF LOG AND 3 FEET BELOW GRADE. GALVANIZED WIRE, AND ANY BOLT OR COUPLING NECESSARY IS INCIDENTAL TO THE GRADE CONTROL LOG STRUCTURE.

## COMMON BORROW

COMMON BORROW SHALL BE PER MDOT MSHA 916.01 COMMON BORROW. COMMON BORROW SHALL BE A NATURAL, FRIABLE SUBSURFACE SOIL UNIFORM IN TEXTURE AND FREE FROM ANY PARTS OF NON-NATIVE INVASIVE SPECIES. MATERIAL SHALL BE FREE OF ROOTS, CONCRETE, AND STONES LARGER THAN 3 INCHES. FROZEN MATERIAL WILL NOT BE APPROVED FOR USE AS COMMON BORROW.

PLACING, SPREADING, AND COMPACTION COMMON BORROW. COMMON BORROW SHALL BE PLACED, SPREAD, AND COMPAKTED IN MAXIMUM LAYERS OF 8 IN. TO PRODUCE A UNIFORM FIRM LAYER OF COMMON BORROW. THE COMPLETED WORK SHALL BE IN CONFORMANCE WITH THE THICKNESS, LINES, GRADES, AND ELEVATIONS SPECIFIED IN THE CONTRACT DOCUMENTS. STONES AND OTHER FOREIGN MATERIAL LARGER THAN 4 IN. SHALL BE REMOVED AND DISPOSED BY THE CONTRACTOR. SLOPES 4:1 TO 2:1 SHALL BE TRACKED WITH CLEATED TRACT TYPE EQUIPMENT OPERATING PERPENDICULAR TO THE SLOPE.

COMMON BORROW SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION CAN BE OBTAINED WITH THE EQUIPMENT USED. THE "REQUIRED DEGREE OF COMPACTION" SHALL BE UNDERSTOOD TO MEAN THAT, IF THE COMMON BORROW IS FORMED INTO A BALL IT SHALL NOT CRUMBLE AND SHALL NOT BE SO WET THAT WATER MAY BE SQUEEZED FROM THE MATERIAL.

## TOPSOIL

FURNISHED TOPSOIL- FURNISHED TOPSOIL SHALL BE PER MDOT SHA 920.01.02.

## SALVAGING TOPSOIL-

SALVAGING TOPSOIL SHALL BE PER MDOT SHA 701.03.03 AND MDOT SHA 920.01.01. REMOVE EXISTING VEGETATION, BRUSH, AND OTHER DEBRIS FROM AREAS WHERE TOPSOIL IS TO BE. REMOVE TOPSOIL TO A MAXIMUM DEPTH OF 18 INCHES OR AS DIRECTED BY THE ENGINEER. PREFERENCE SHOULD BE GIVEN TO SOIL BETWEEN 12 AND 18 INCHES. INSPECT TOPSOIL FOR WEEDS AND SEPARATE AS NECESSARY TO ENSURE INVASIVE WEEDS ARE NOT INCLUDED IN STOCKPILED TOPSOIL. TESTING OF TOPSOIL MAY BE REQUESTED AT THE DIRECTION OF THE ENGINEER AND/OR HARFORD COUNTY. FURNISHED TOPSOIL IS ONLY TO BE INSTALLED WHEN THERE IS NO ADEQUATE TOPSOIL ON SITE AND MUST BE APPROVED BY HARFORD COUNTY PRIOR TO INSTALLATION.

## PLACING TOPSOIL-

THE PLACEMENT OF TOPSOIL SHALL BE PER MDOT SHA 701.03.05 PLACING TOPSOIL.

## MEASUREMENT AND PAYMENT-

SALVAGING TOPSOIL WILL NOT BE MEASURED BUT WILL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PER FOR CLASS 5 EXCAVATION. SEPARATING, STOCKPILING, AND DISPOSAL OF OVERBURDEN AND SOIL CONTAINING PROHIBITED WEEDS SHALL BE INCIDENTAL TO SALVAGING TOPSOIL.

PLACING TOPSOIL WILL BE MEASURED AND PAID AT THE CONTRACT UNIT PRICE FOR THE SPECIFIED DEPTH PER SQUARE YARD. THE PAYMENT WILL INCLUDE ALL WORK AND INCIDENTALS REQUIRED TO REMOVE SOIL FROM STOCKPILES AND PLACE TO THE SPECIFIED DEPTH PER THE CONTRACT DOCUMENTS. EXCAVATION TO ACHIEVE THE PROPER SUBGRADE FOR THE PLACEMENT OF THE SPECIFIED DEPTH OF TOPSOIL WILL BE PAID AS CLASS 5 CHANNEL OR STREAM CHANGE EXCAVATION.

## CLAY CHANNEL BLOCK MATERIAL

CLAY MATERIAL USED FOR THE CLAY CHANNEL BLOCKS, CHANNEL PLUGS, AND AS A LINER BELOW THE WETLAND DEPRESSIVE AREAS MUST BE UNIFIED SOIL CLASSIFICATION SC OR CL-ML AND SHALL PASS A MINIMUM OF 35% COMPONENTS THROUGH THE #200 SIEVE.

PLACE CLAY CHANNEL BLOCK MATERIAL IN MAXIMUM 8-INCH THICK PRE-COMPACTION LAYERS. EACH LAYER OF FILL SHALL BE COMPAKTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ENSURE MAXIMUM COMPACTION AND MINIMUM PERMEABILITY AND WILL BE APPROVED BY THE ENGINEER.

## TYPE D SOIL STABILIZATION MATTING

Type D Soil Stabilization Matting. Matting for the bank treatment areas shall consist of a machine produced mat of degradable natural fibers and shall meet the following minimum specifications:

Material:	Woven coir fiber yarn or twine
Thickness:	0.25 in.
Elongation (Dry/Wet):	25%/35%
Weight:	20 oz/SY
Open Area:	50%
Size:	6 ft. wide X 150 ft in length (100 SY per roll)
Flow Velocity:	8 ft./sec.
Life Expectancy:	3 years

## FLOODPLAIN MATTING

FLOODPLAIN MATTING SHALL BE NEDIA KOIRWRAP 1000 OR SIMILAR AND CONSISTS OF A DOUBLE LAYERED FABRIC CONSISTING OF AN OUTER LAYER OF HIGH STRENGTH COIR FABRIC AND AN INNER LAYER OF LIGHTWEIGHT JUTE FABRIC TIED TOGETHER AT REGULAR INTERVALS. THE OUTER COIR FABRIC LAYER SHALL MEET THE SPECIFICATIONS FOR TYPE D SOIL STABILIZATION MATTING SHOWN ABOVE. THE INNER JUTE FABRIC LAYER SHALL CONSIST OF 100 PERCENT COCONUT NON-WOVEN FIBER MATRIX STITCHED BETWEEN BIODEGRADABLE COTTON NETTING, OR SIMILAR. SUPPLY A MINIMUM OF 8 FT WIDTH BY 100 FT LONG ROLLS. THE FLOODPLAIN MATTING WILL MEET THE FOLLOWING MINIMUM SPECIFICATIONS:

PROPERTY	TEST METHOD	MINIMUM VALUE - MAXIMUM VALUE*
MASS PER UNIT AREA	ASTM D 6475	11.0 oz/sq yd
THICKNESS	ASTM D 6525	0.31 in
TENSILE STRENGTH (MD x TD)	ASTM D 6818	240 x 164 lb/ft
ELONGATION (MD x TD)	ASTM D 6818	*10.9 % x 16 %*
LIGHT PENETRATION	ASTM D 6567	10 %
WATER ABSORPTION	ASTM D 1117	255 %
UNVEGETATED SHEAR STRESS	ASTM D 6460	2.25 lb/sq ft
UNVEGETATED VELOCITY	ASTM D 6460	9.0 ft/s

NOTE: ALL REFERENCES TO MDOT SHA REFER TO THE MD SHA STANDARDS AND SPECIFICATIONS FOR CONSTRUCTION MATERIALS, 2025, AND ALL SUBSEQUENT REVISIONS.

## GEOTEXTILE:

Class	Type of Geotextile	Grab Strength (lb) D4632	Puncture Strength (lb) D6241	Permeability (cc/min) D4491	Apparent Opening Size (mm) D4751	Trapezoid Tear Strength (lb) D4533
SE	Nonwoven	160	310	0.20	0.30	80

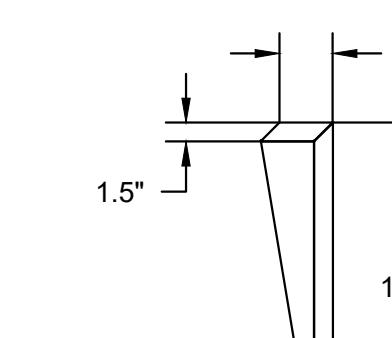
NOTE 1: ALL PROPERTY VALUES IN THE ABOVE TABLE ARE BASED ON MINIMUM AVERAGE ROLL VALUES IN THE WEAKEST PRINCIPLE DIRECTION EXCEPT FOR APPARENT OPENING SIZE.  
NOTE 2: THE ULTRAVIOLET STABILITY SHALL BE 50 PERCENT AFTER 500 HRS OF EXPOSURE FOR ALL CLASSES, EXCEPT CLASS F, WHICH SHALL BE 70 PERCENT (D 435).

\*15% ELONGATION FOR SILT FENCE AND MONOFILAMENT WOVEN GEOTEXTILE IN MACHINE DIRECTION

\*\*THIS IS A MINIMUM APPARENT OPENING SIZE, NOT A MAXIMUM.

\*\*\*MACHINE DIRECTION

MEASUREMENT AND PAYMENT: GEOTEXTILE FABRIC IS INCIDENTAL TO THE APPLICABLE STRUCTURE OR UNIT PRICE OF THE APPLICABLE FURNISHED STONE ITEM.



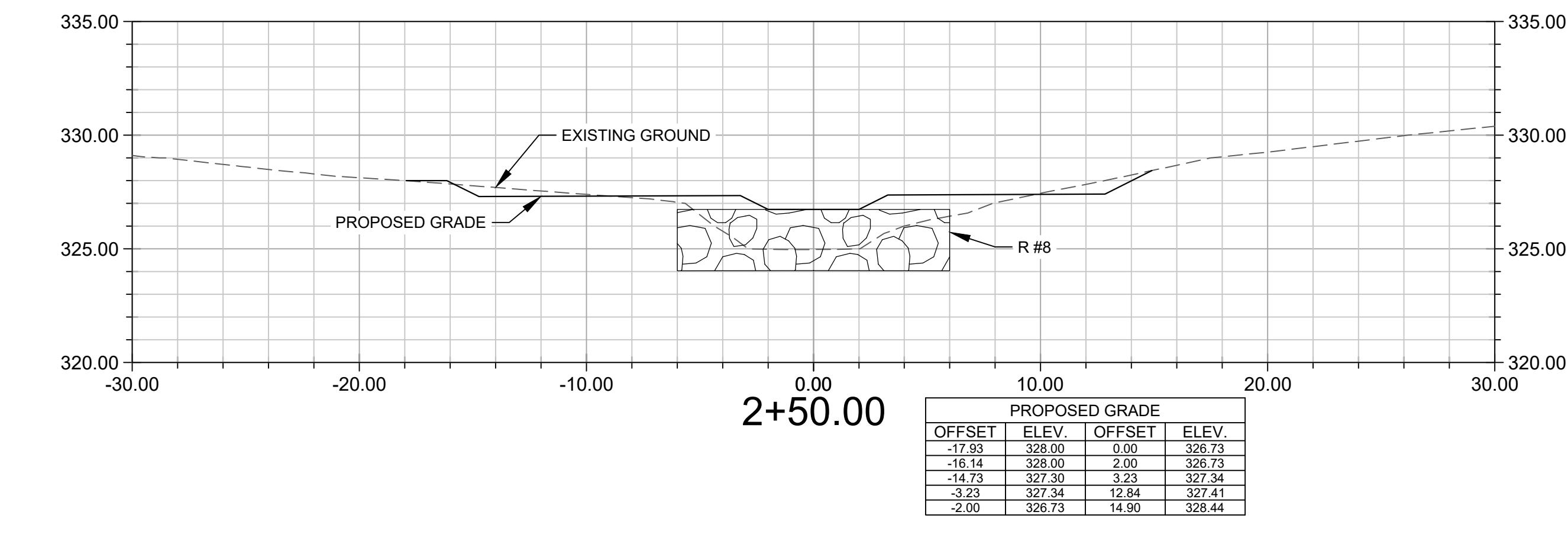
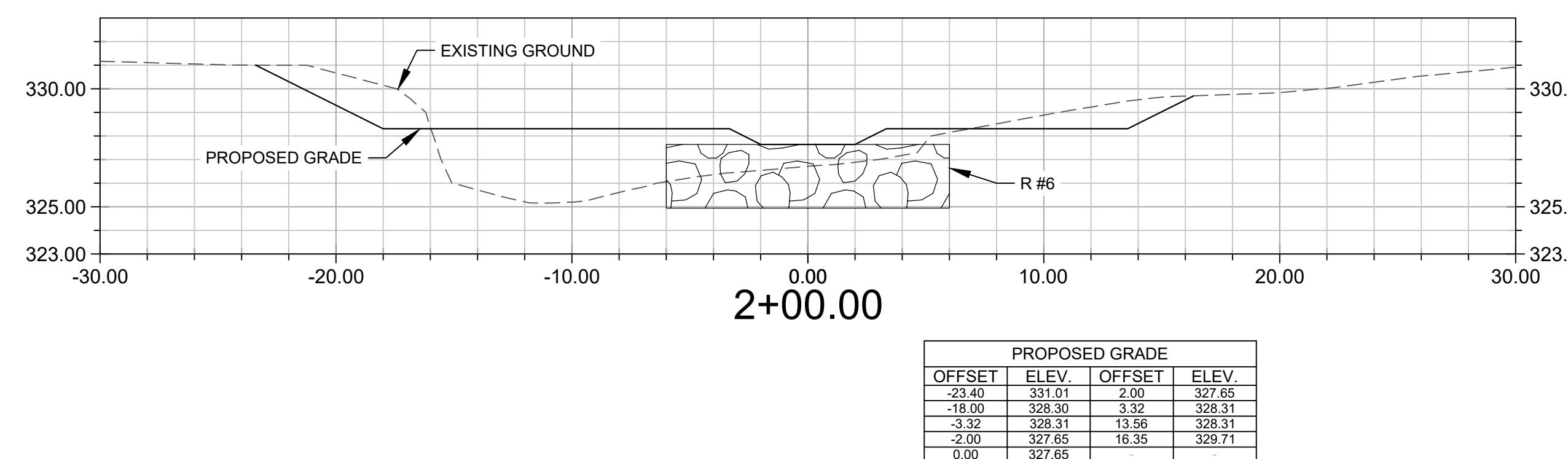
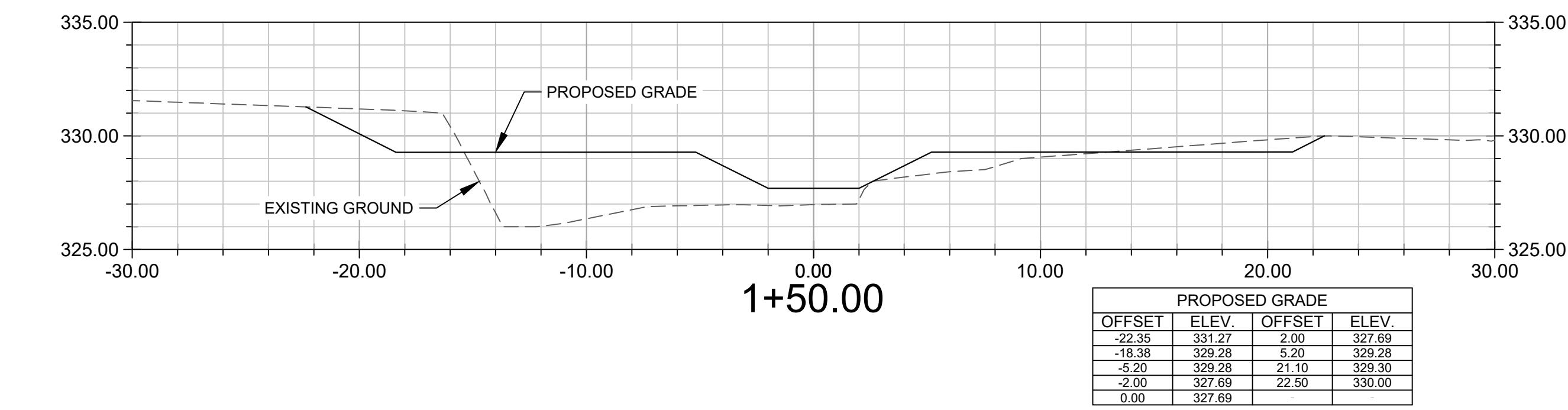
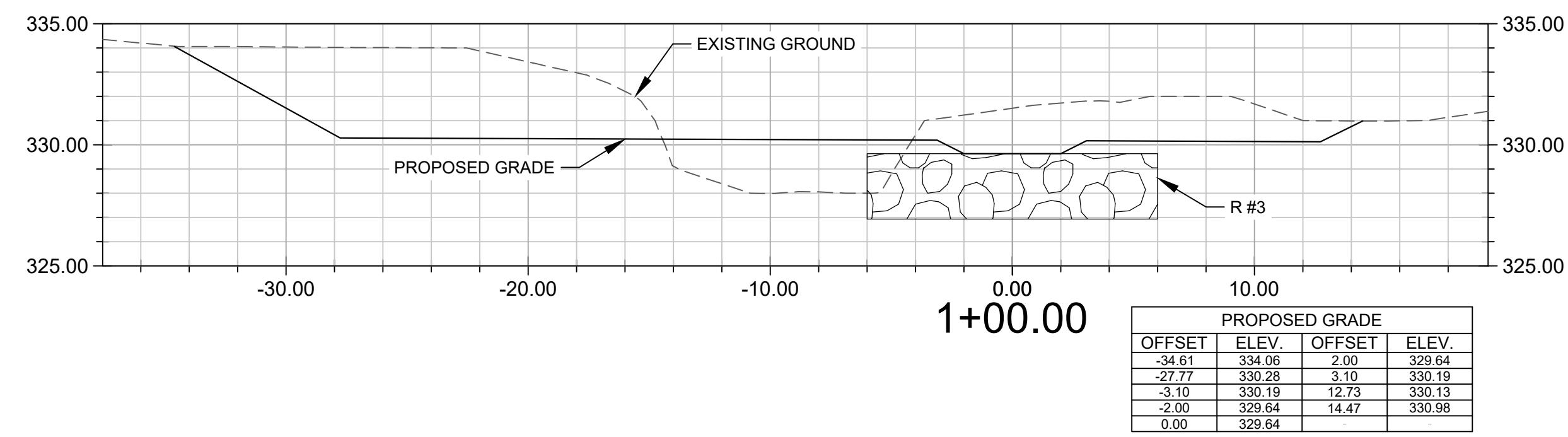
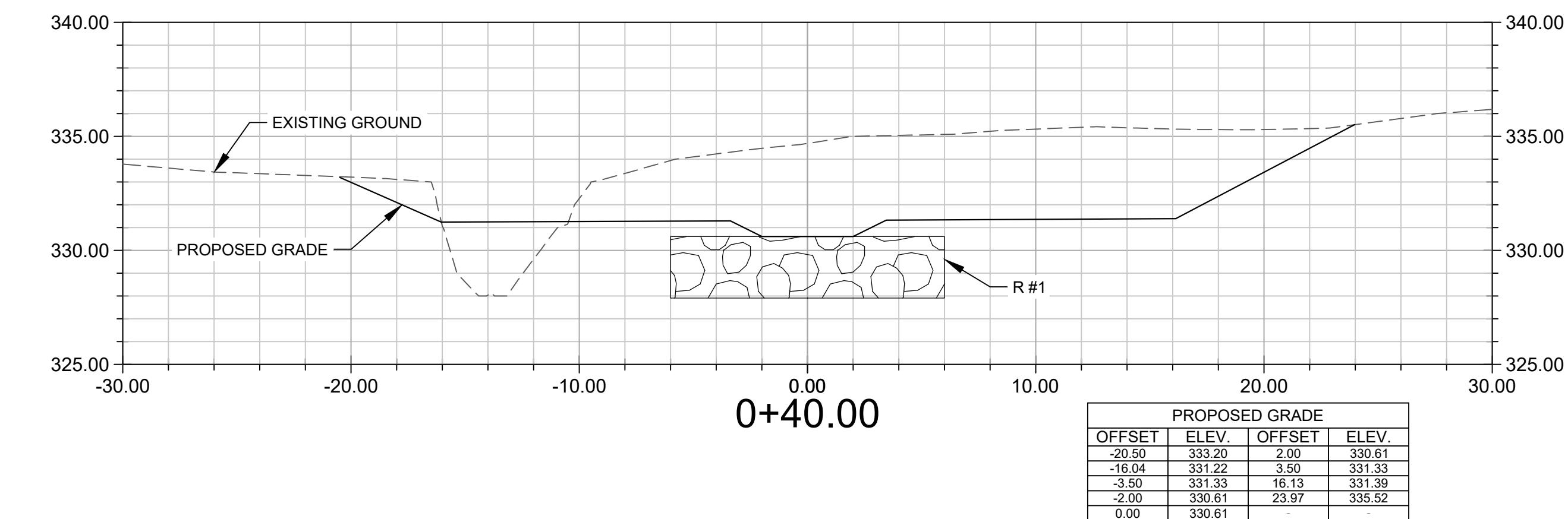
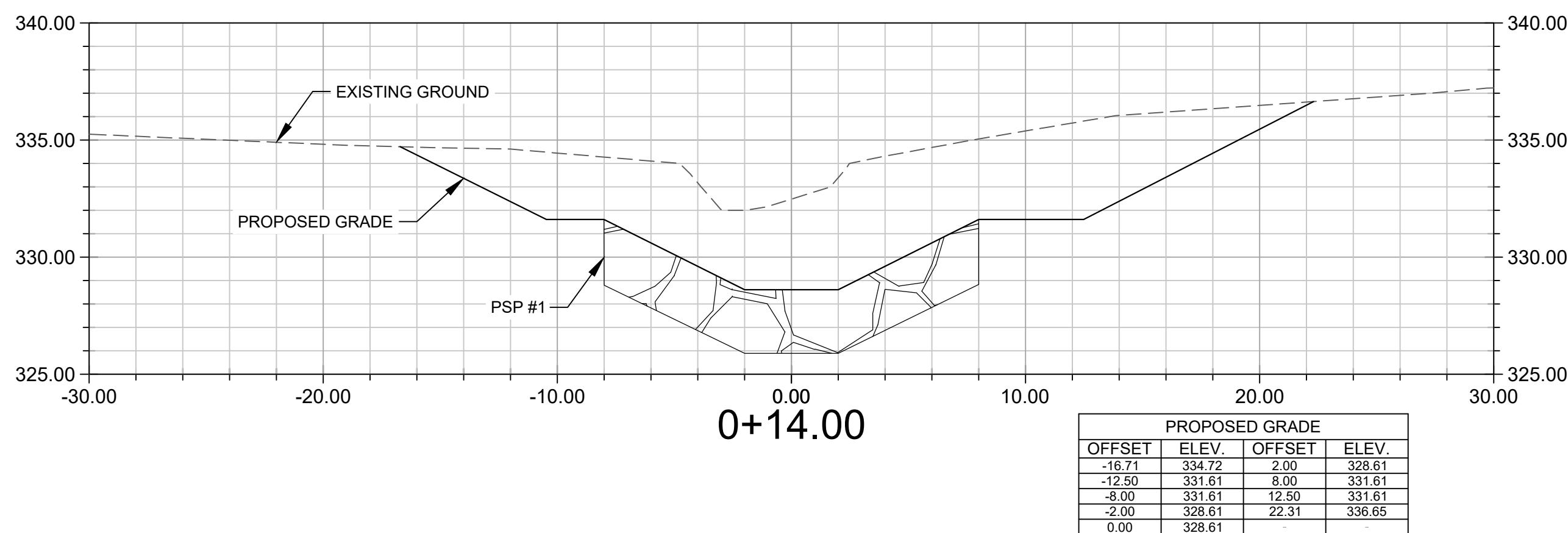
ANCHOR STAKE DETAIL  
NOT TO SCALE

NOTE:

- ANCHOR STAKES SHALL BE TAPERED WOODEN STAKES CONSISTING OF STANDARD 2" X 4" WOODEN BOARDS CUT DIAGONALLY.
- ANCHOR STAKES SHALL BE INSTALLED AT THE MINIMUM SPACING SPECIFIED ON DETAIL SHEETS DE-01 TO DE-06 AND AT ANY LOCATION CRITICAL TO SECURING THE STABILIZATION MATTING.

Revisions		HARFORD COUNTY, MARYLAND	
		BENNETT PLACE STREAM RESTORATION	
<p>BILLING NO. TBD</p> <p>EG-SWMENG- TBD</p> <p>PROFESSIONAL CERTIFICATION</p> <p>I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 28371, EXPIRATION DATE: 01/01/2025.</p> <p>10/9/2025</p>		DETAIL SHEET	
		Drawn By : PJB	
		Designed By : IPT , PJB	
		Reviewed By : CAL	
		Drawing No. DE-06 of DE-06	
		Sheet No. 21 of 44	

**UNT TO BYNUM RUN - REACH 1**  
**CROSS-SECTIONS**



ORIGINAL SCALE: 1"=5'  
20' 0' 20' 40'

BID No.:

HCG DWG ID No.:

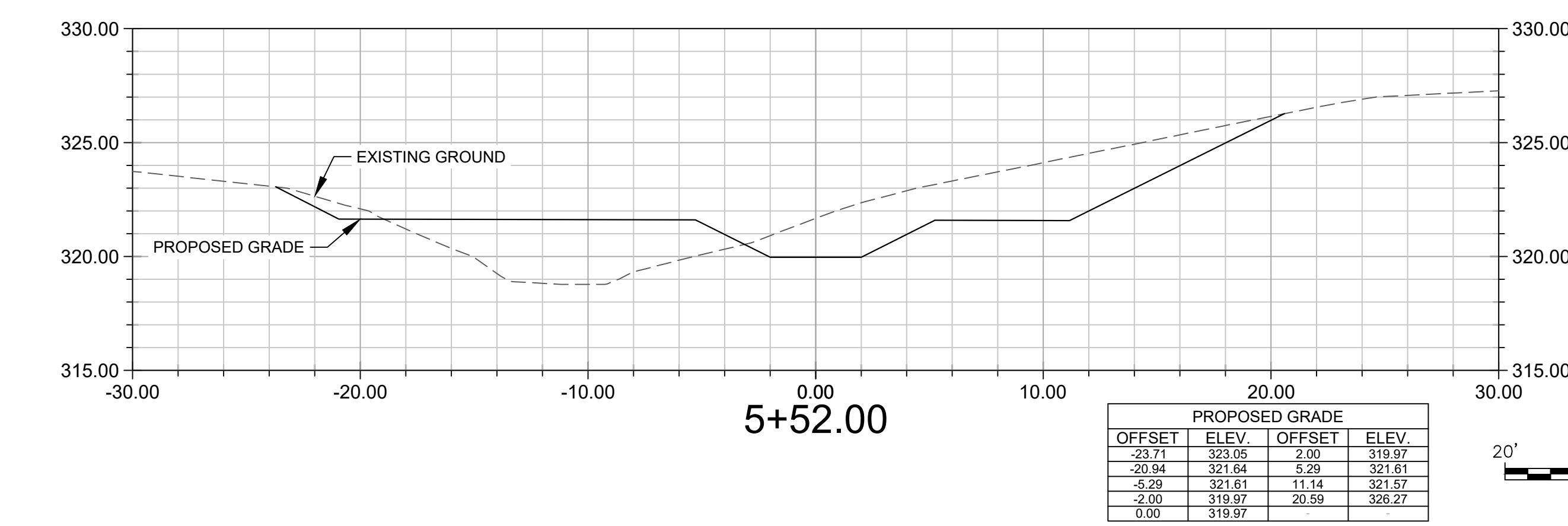
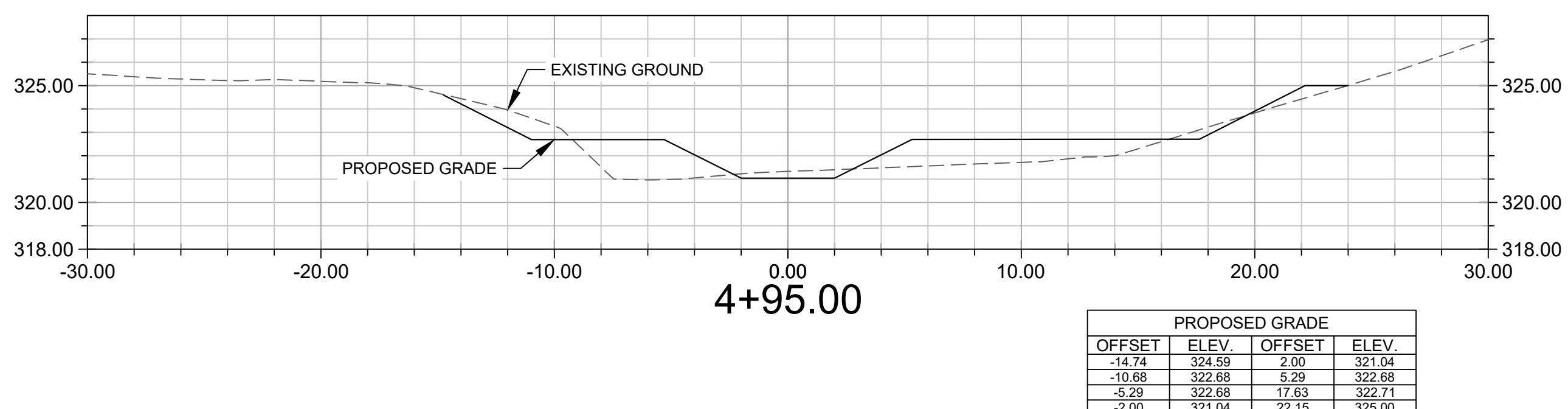
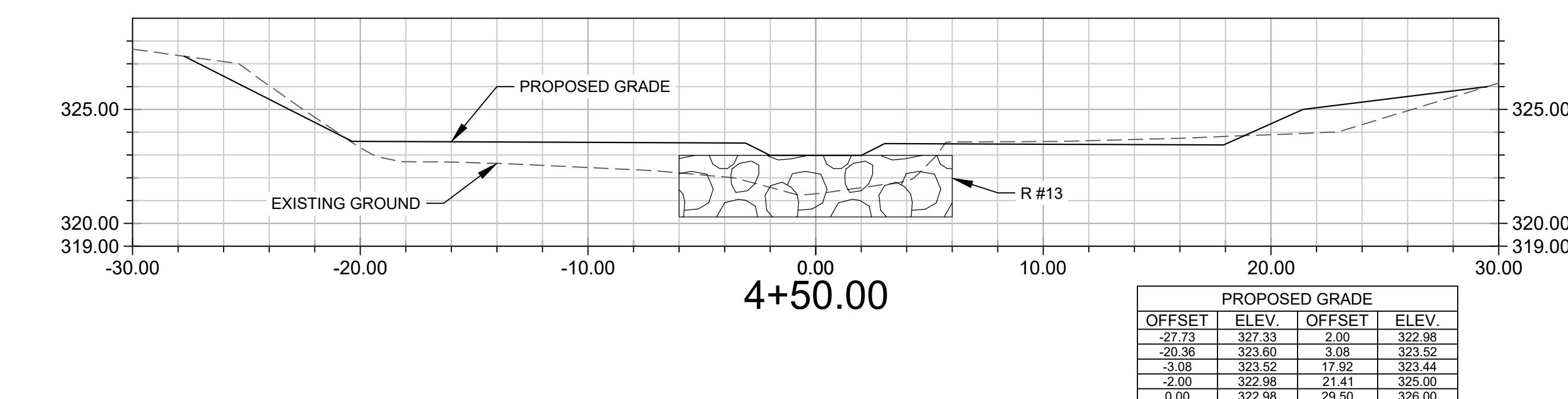
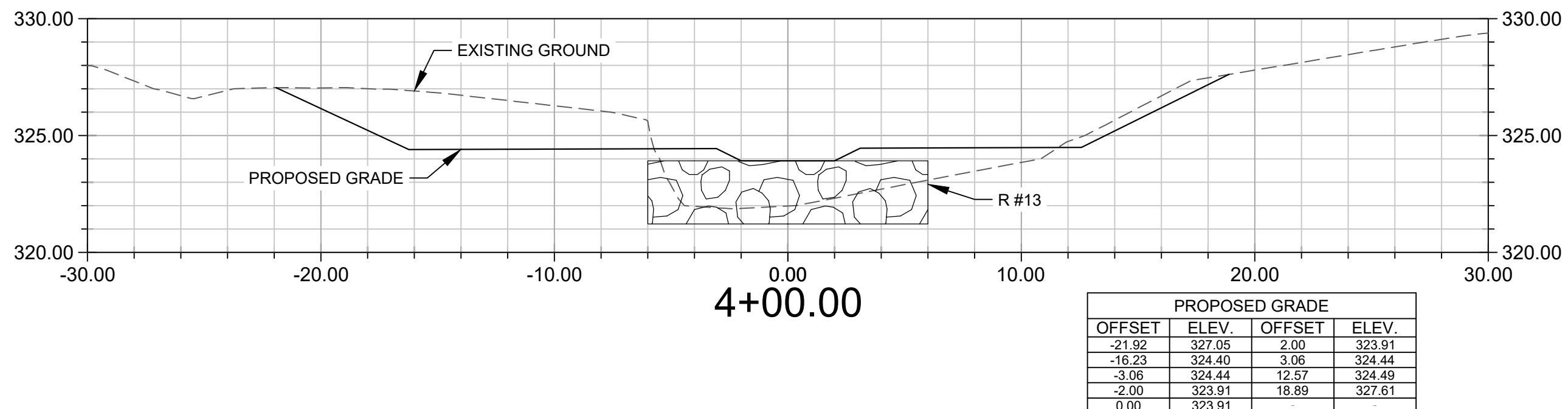
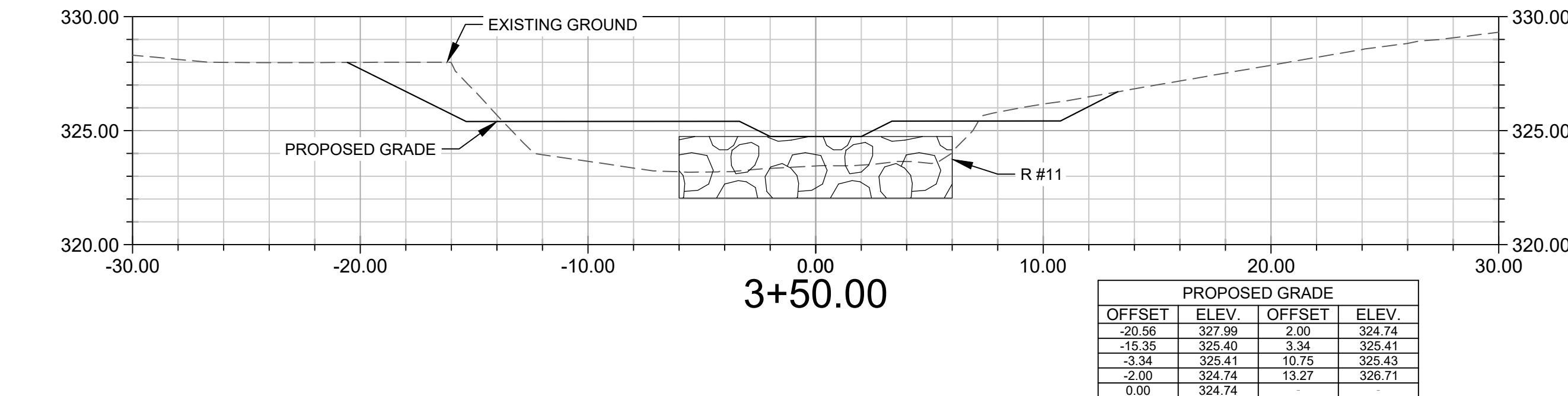
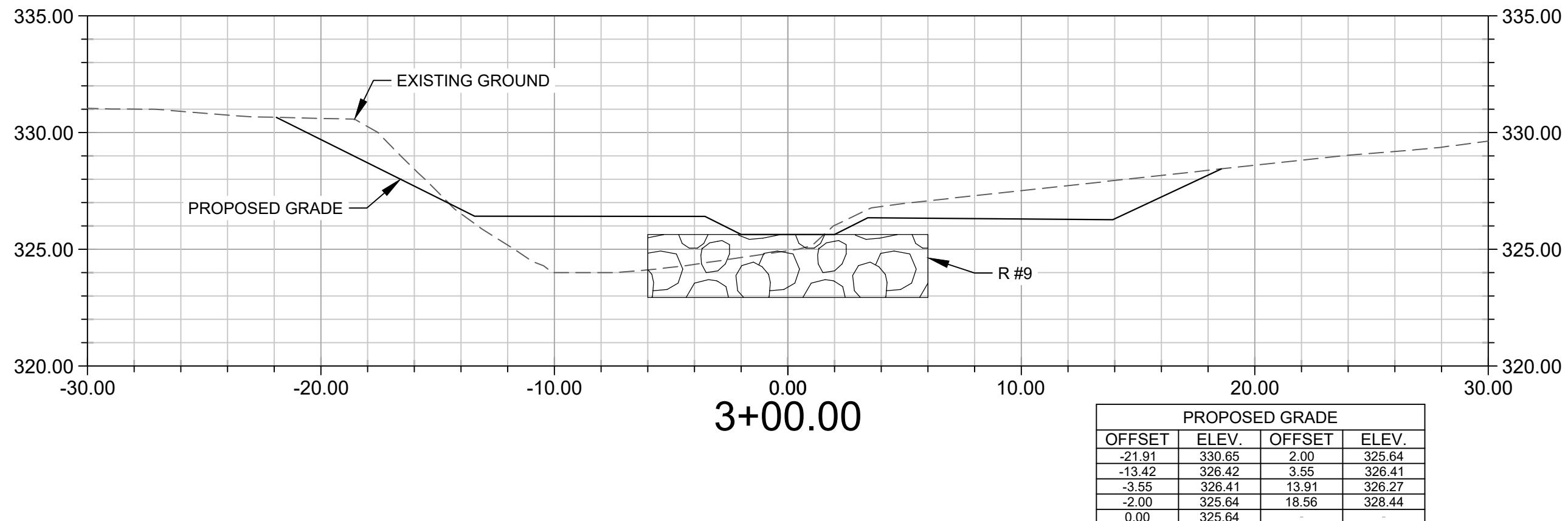
SCALE: 1"

HARFORD COUNTY, MARYLAND	
BENNETT PLACE STREAM RESTORATION	
CROSS-SECTION SHEET	
Revisions	
Drawn By : <u>PJB</u>	Scale : AS SHOWN
Designed By : <u>IPT, PJB</u>	Date : 10 / 25
Reviewed By : <u>CAL</u>	
Drawing No. CS-01 of CS-08	Sheet No. 22 of 44

BILLING NO. TBD  
EG-SWMENG- TBD  
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10/9/2025

**UNT TO BYNUM RUN - REACH 1**  
**CROSS-SECTIONS**



ORIGINAL SCALE: 1'=5'

BID No.:

HCG DWG ID No.:

SCALE: 1"=20'

**HARFORD COUNTY, MARYLAND**  
**BENNETT PLACE STREAM RESTORATION**  
**CROSS-SECTION SHEET**

Revisions

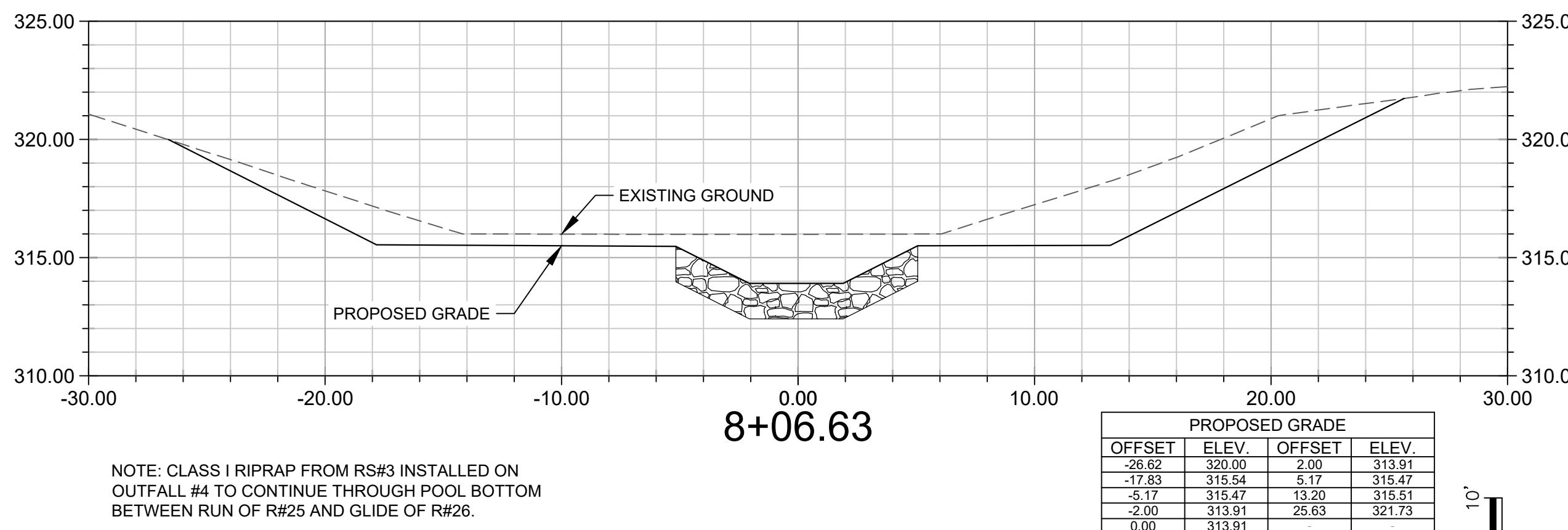
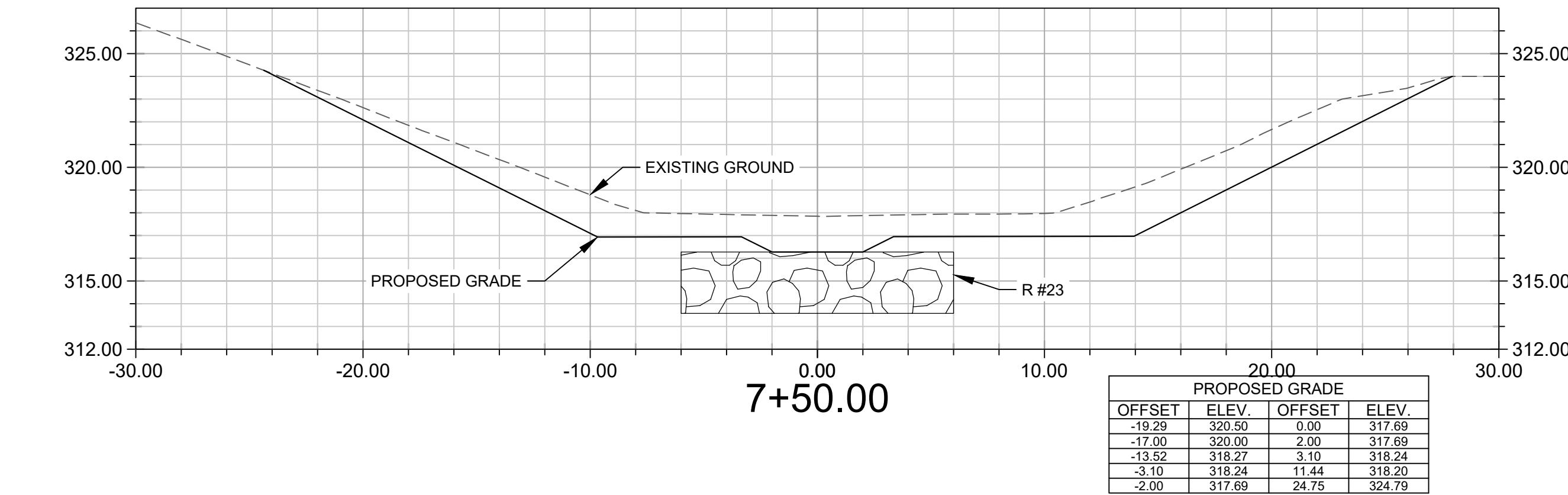
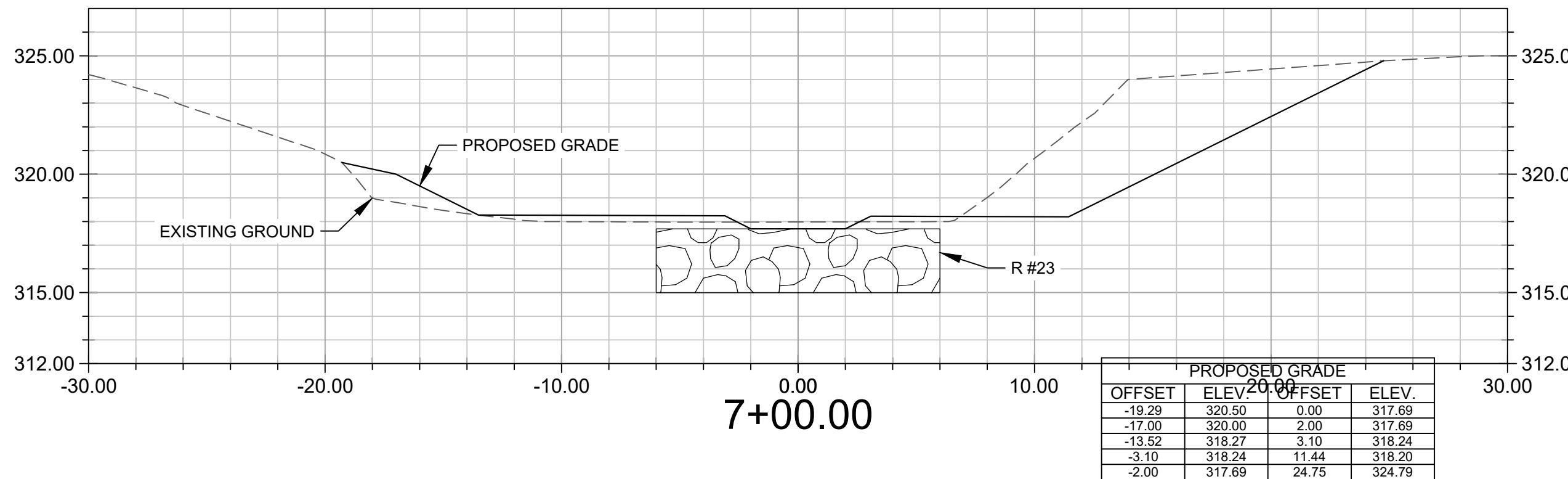
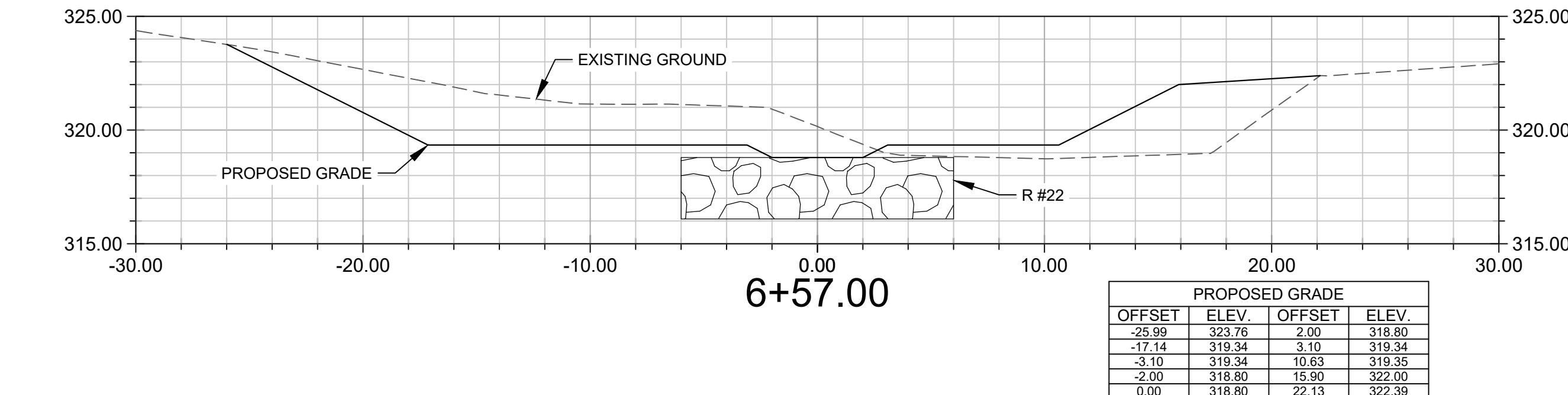
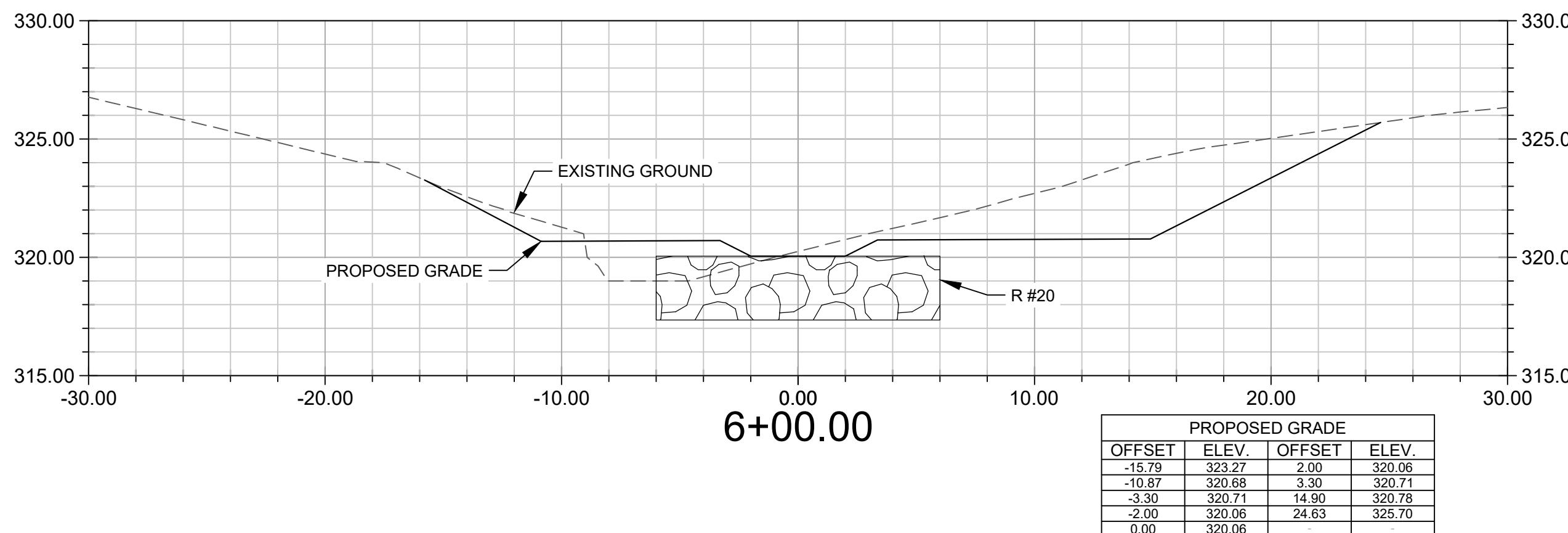
BILLING NO. TBD
EG-SWMENG- TBD
PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 28371, EXPIRATION DATE: 01/01/2027.

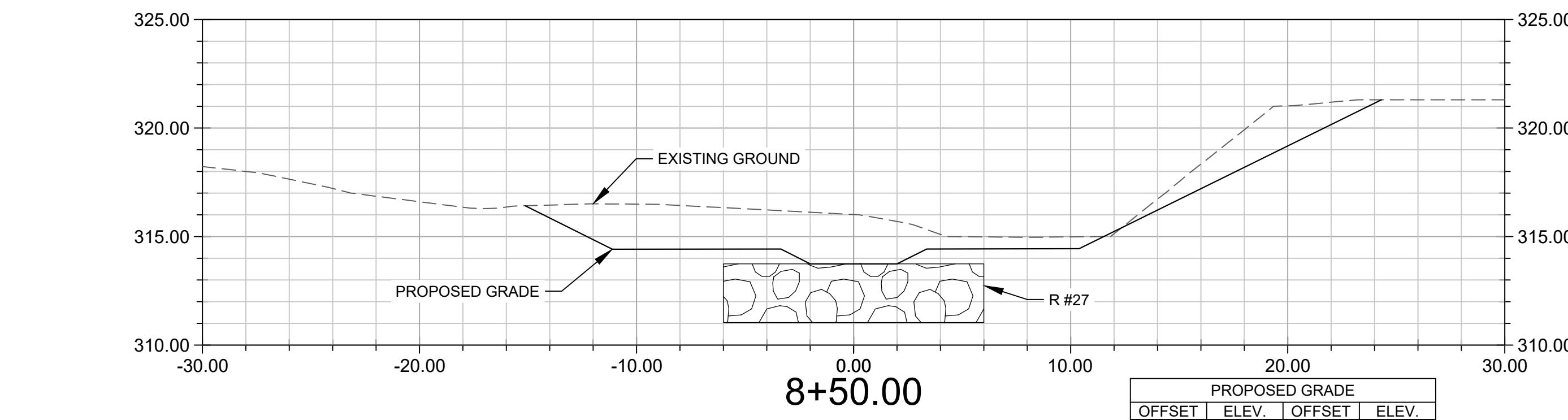
10/9/2025

Drawn By : <u>PJB</u>	Scale : AS SHOWN
Designed By : <u>IPT , PJB</u>	Date : 10 / 25
Reviewed By : <u>CAL</u>	
Drawing No. CS-02 of CS-08	Sheet No. 23 of 44

**UNT TO BYNUM RUN - REACH 1**  
**CROSS-SECTIONS**



ORIGINAL SCALE: 1"=20'



**HARFORD COUNTY, MARYLAND**  
**BENNETT PLACE STREAM RESTORATION**  
**CROSS-SECTION SHEET**

Drawn By : <u>PJB</u>	Scale : <u>AS SHOWN</u>
Designed By : <u>IPT, PJB</u>	Date : <u>10 / 25</u>
Reviewed By : <u>CAL</u>	
Drawing No. <u>CS-03 of CS-08</u>	Sheet No. <u>24 of 44</u>

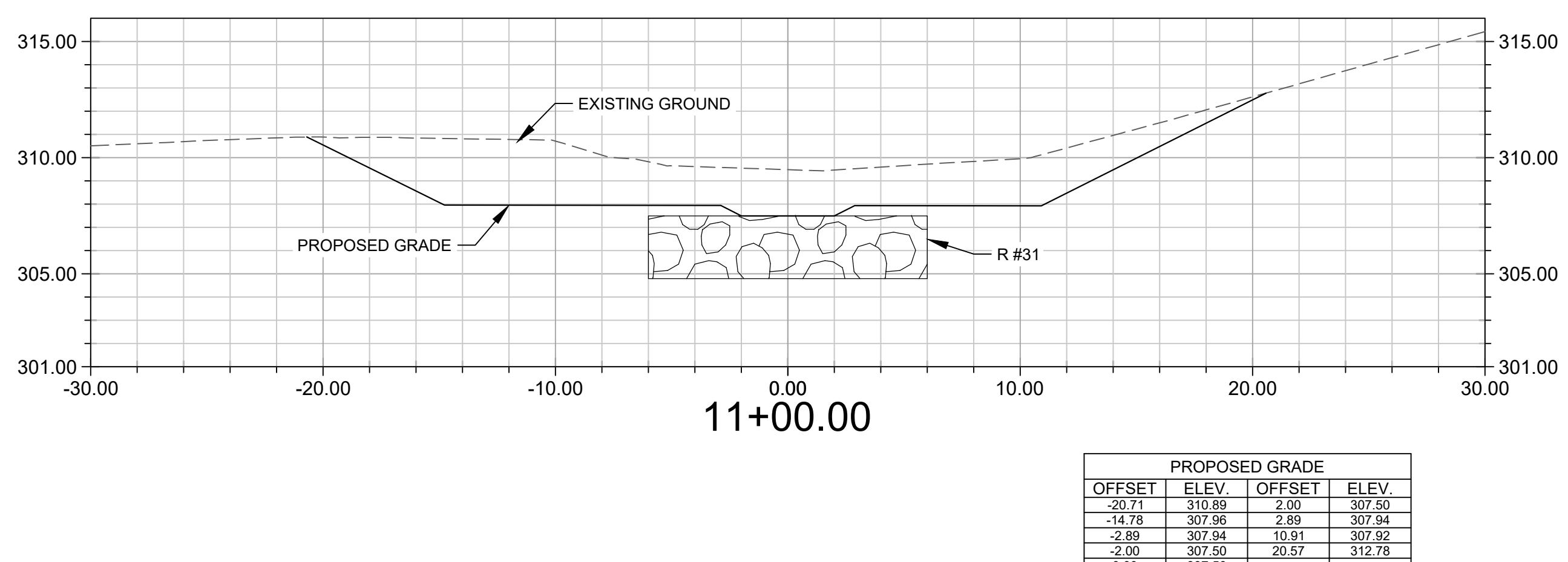
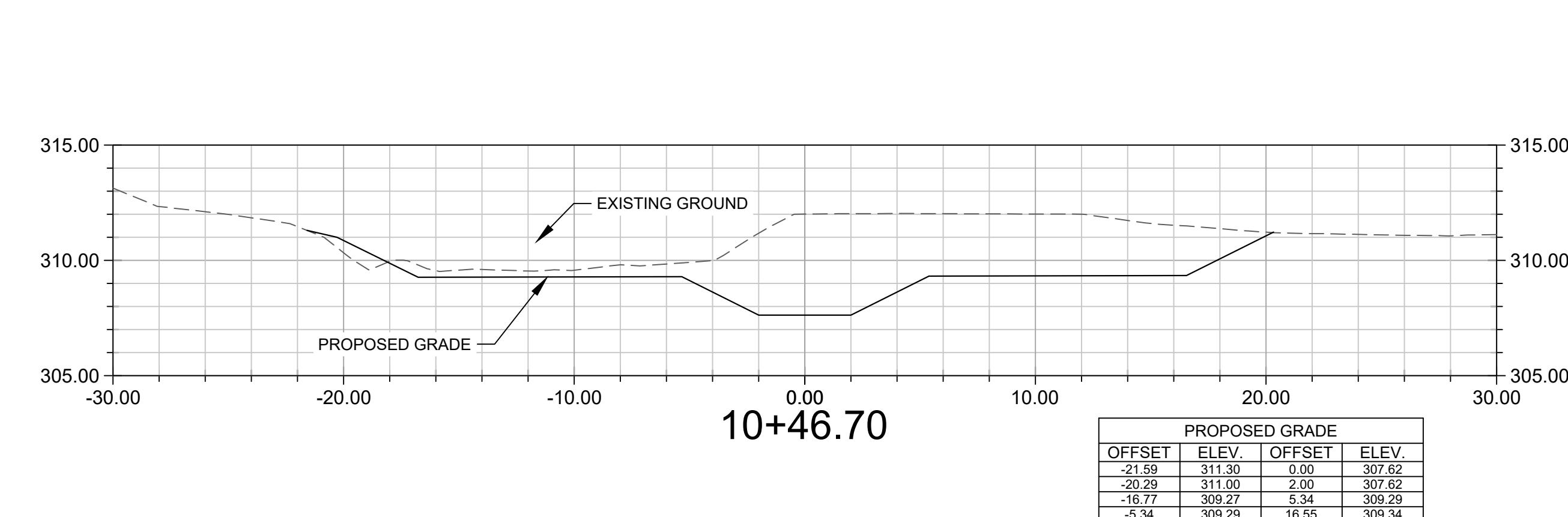
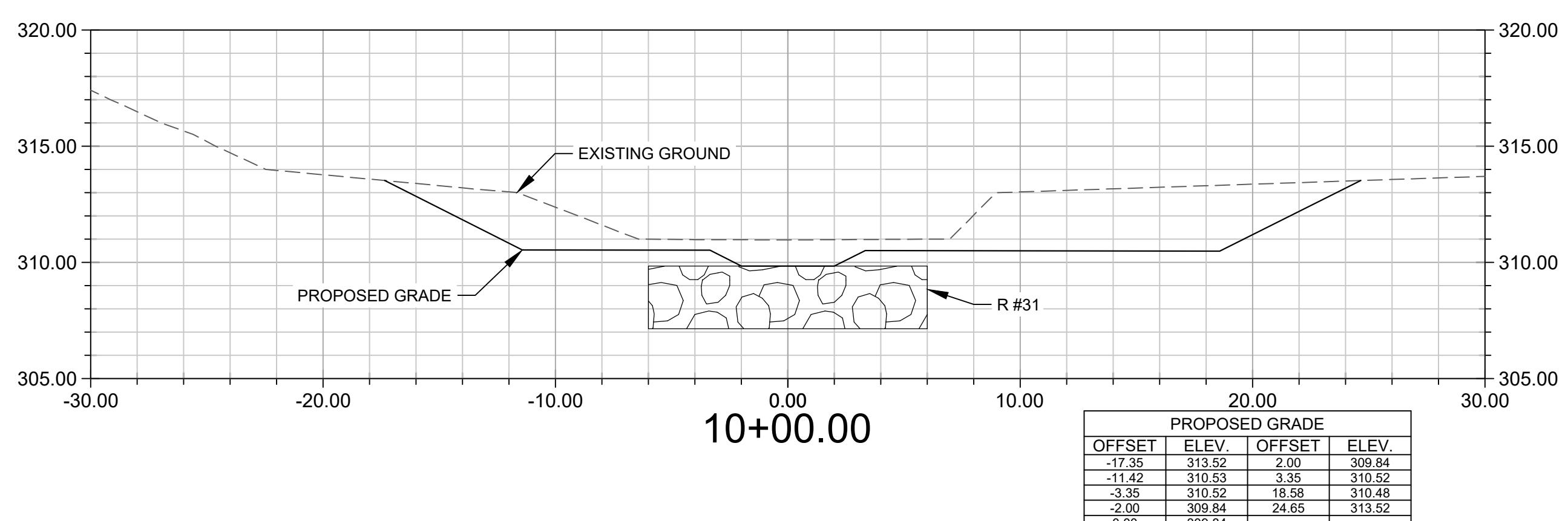
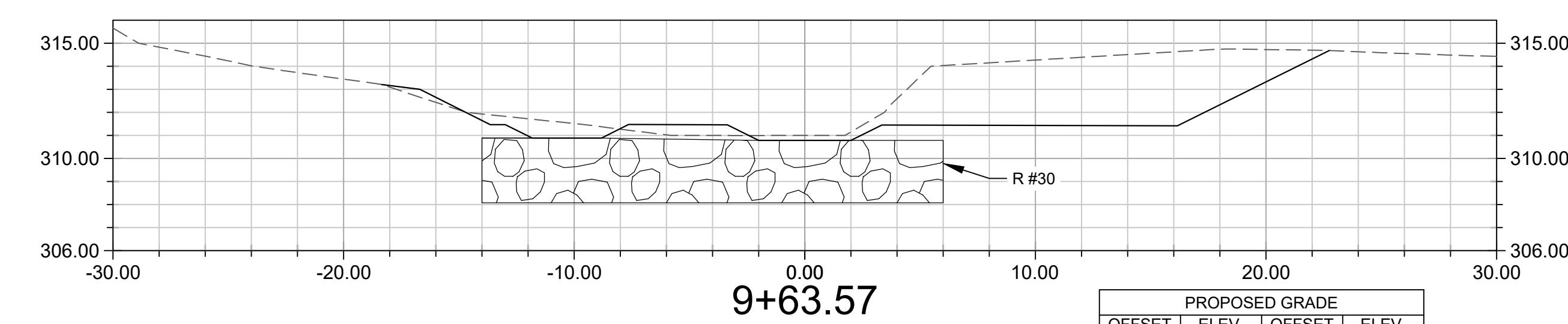
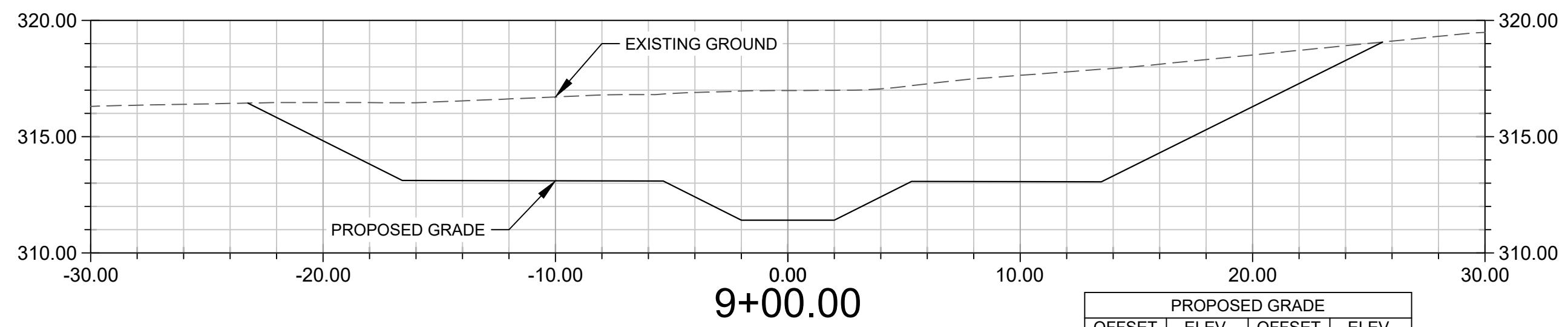


BILLING NO. TBD  
EG-SWMENG- TBD  
PROFESSIONAL CERTIFICATION

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# UNT TO BYNUM RUN - REACH 1

## CROSS-SECTIONS



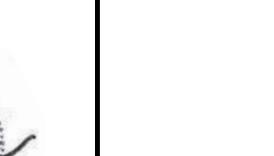
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# HARFORD COUNTY, MARYLAND

## BENNETT PLACE STREAM RESTORATION

### CROSS-SECTION SHEET

BILLING NO. TBD											
EG-SWMENG- TBD											
<p><u>PROFESSIONAL CERTIFICATION</u></p> <p>I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 28371, EXPIRATION DATE: 01/01/2027.</p>											
 10/9/2025		<p><b>CROSS SECTION SHEET</b></p> <table border="1"> <tr> <td>Drawn By : PJB</td> <td>Scale : AS SHOWN</td> </tr> <tr> <td>Designed By : IPT , PJB</td> <td>Date : 10 / 25</td> </tr> <tr> <td>Reviewed By : CAL</td> <td></td> </tr> <tr> <td>Drawing No. CS-04 of CS-08</td> <td>Sheet No. 25 of 44</td> </tr> </table>		Drawn By : PJB	Scale : AS SHOWN	Designed By : IPT , PJB	Date : 10 / 25	Reviewed By : CAL		Drawing No. CS-04 of CS-08	Sheet No. 25 of 44
Drawn By : PJB	Scale : AS SHOWN										
Designed By : IPT , PJB	Date : 10 / 25										
Reviewed By : CAL											
Drawing No. CS-04 of CS-08	Sheet No. 25 of 44										

L:\Harford County Department of Public Works\Working\CADD\pCS-P000\_BennettPlace.dwg Oct 16, 2025 8:41am pbaltzer

ORIGINAL SCALE: 1"

3

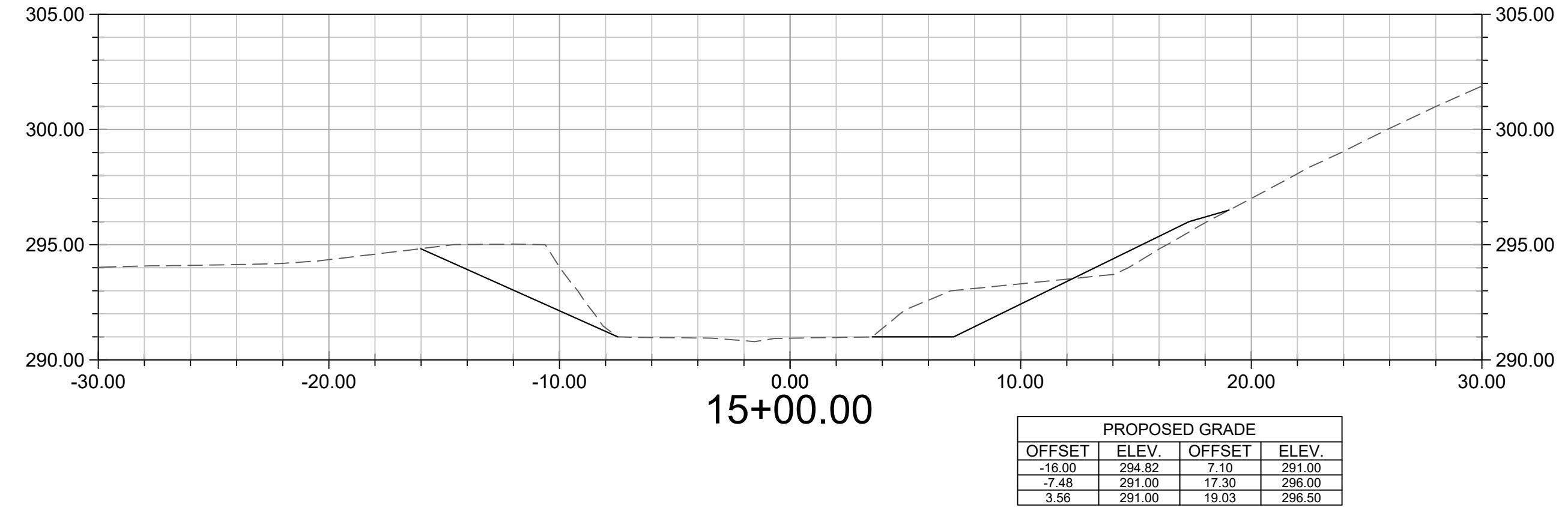
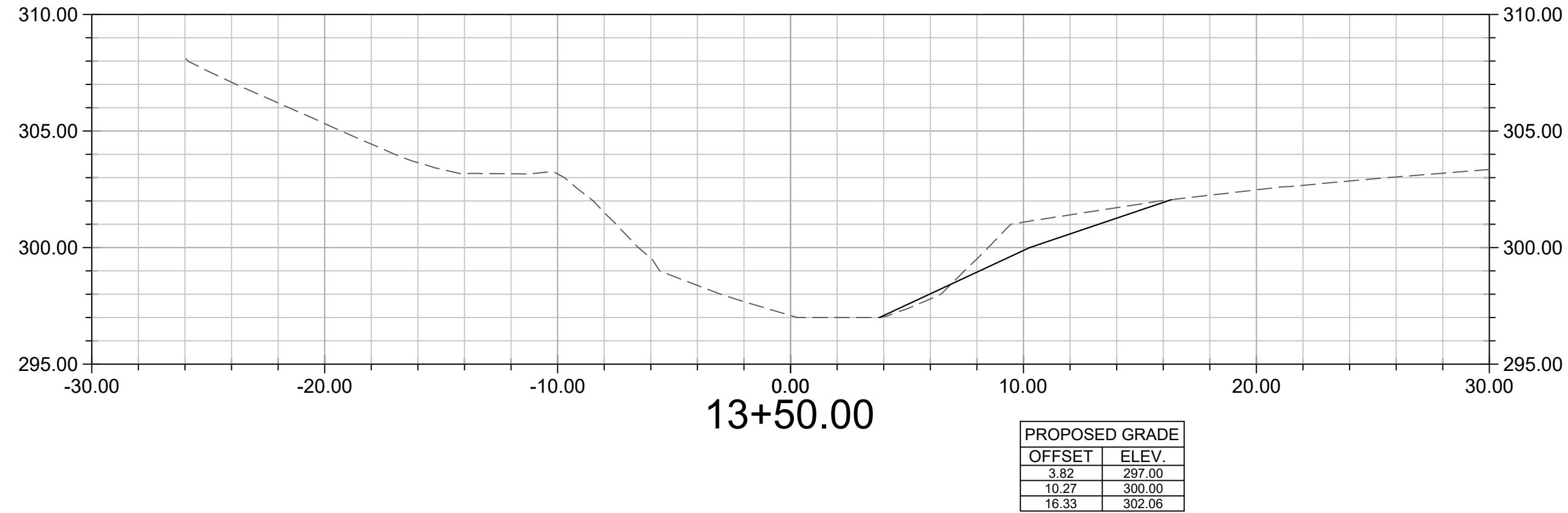
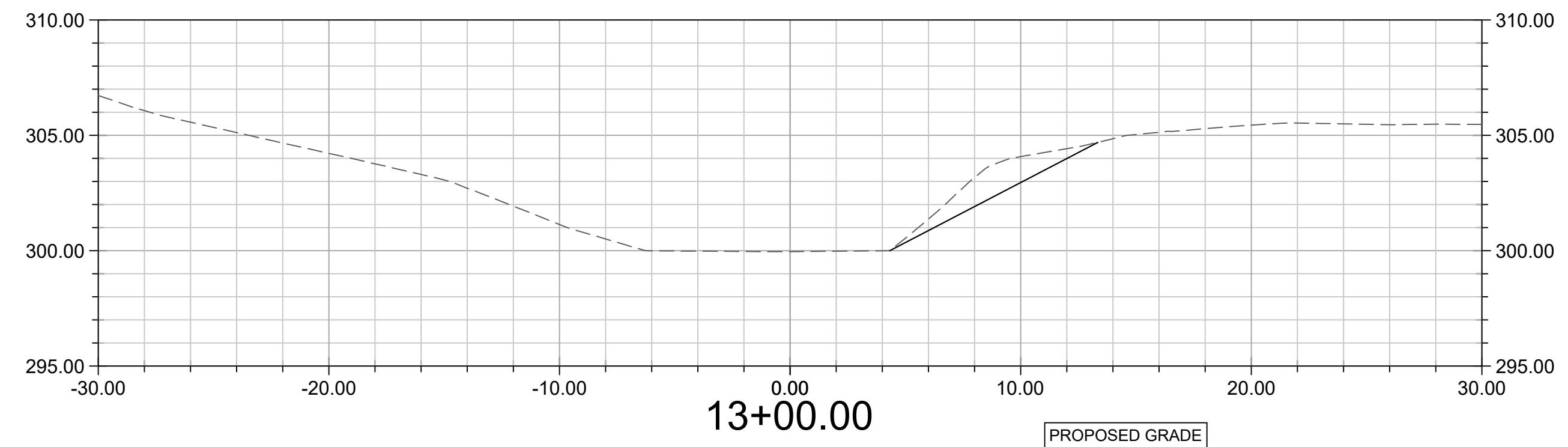
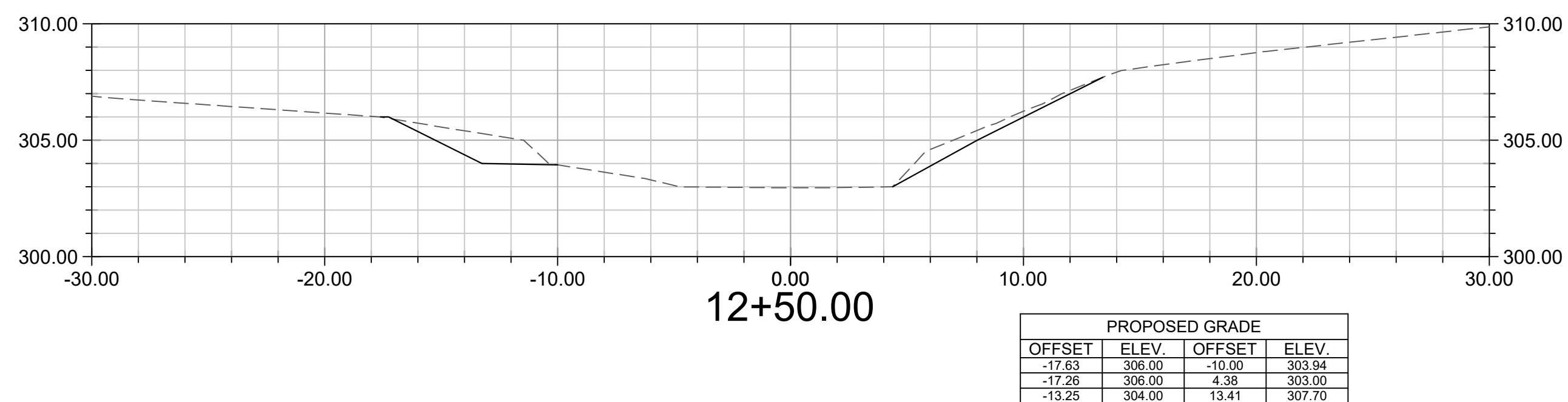
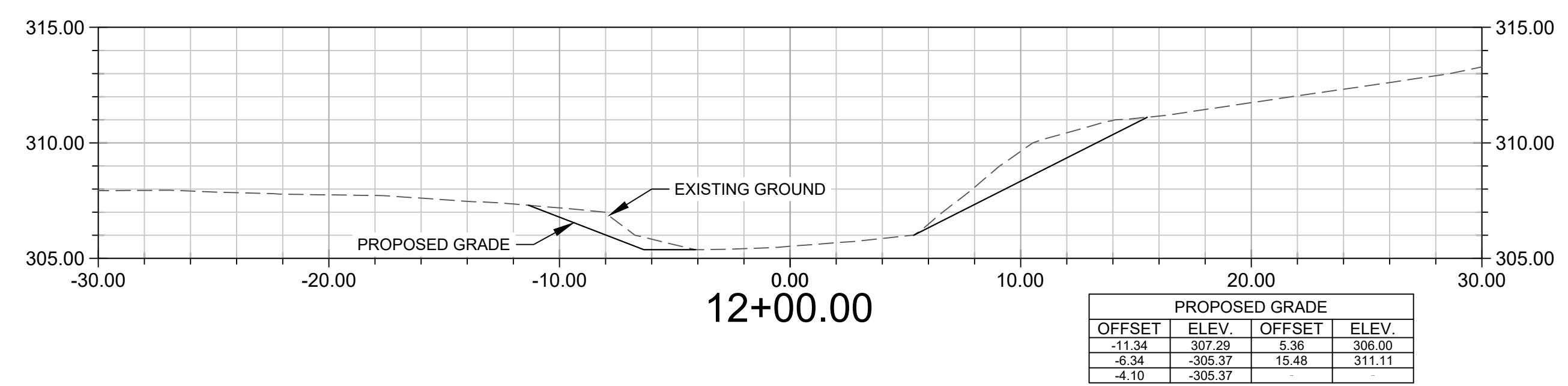
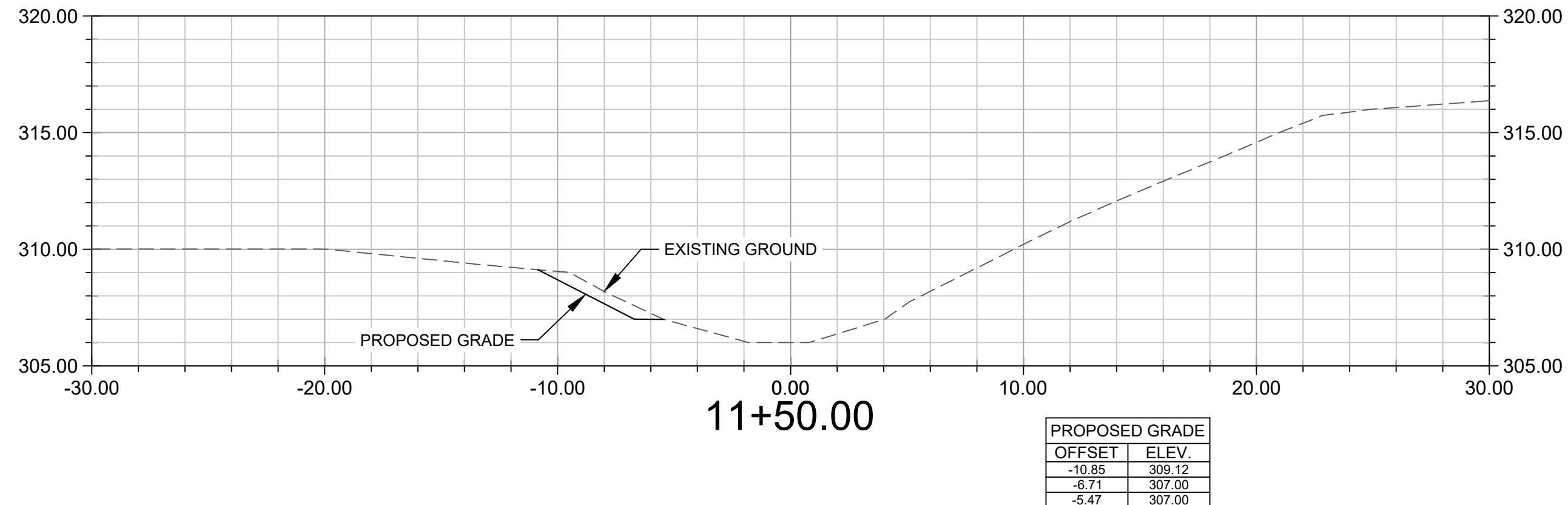
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0

BID No.:

BID No.:

**UNT TO BYNUM RUN - REACH 2**  
**CROSS-SECTIONS**



ORIGINAL SCALE: 1"=5'  
0' 5' 10' 15' 20' 25' 30' 35' 40'

BID No.:

SCALE: 1"=10'

**HARFORD COUNTY, MARYLAND**  
**BENNETT PLACE STREAM RESTORATION**  
**CROSS-SECTION SHEET**

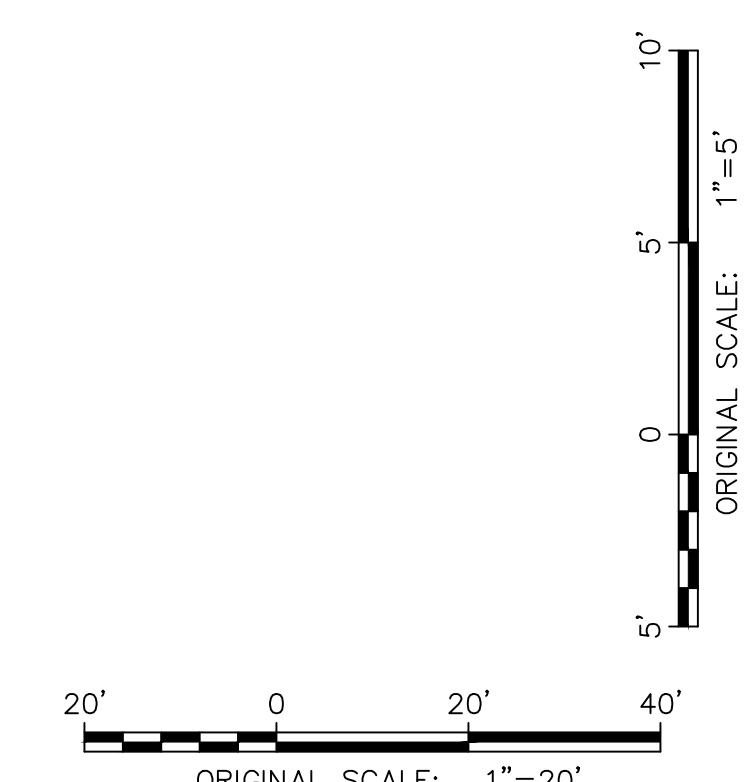
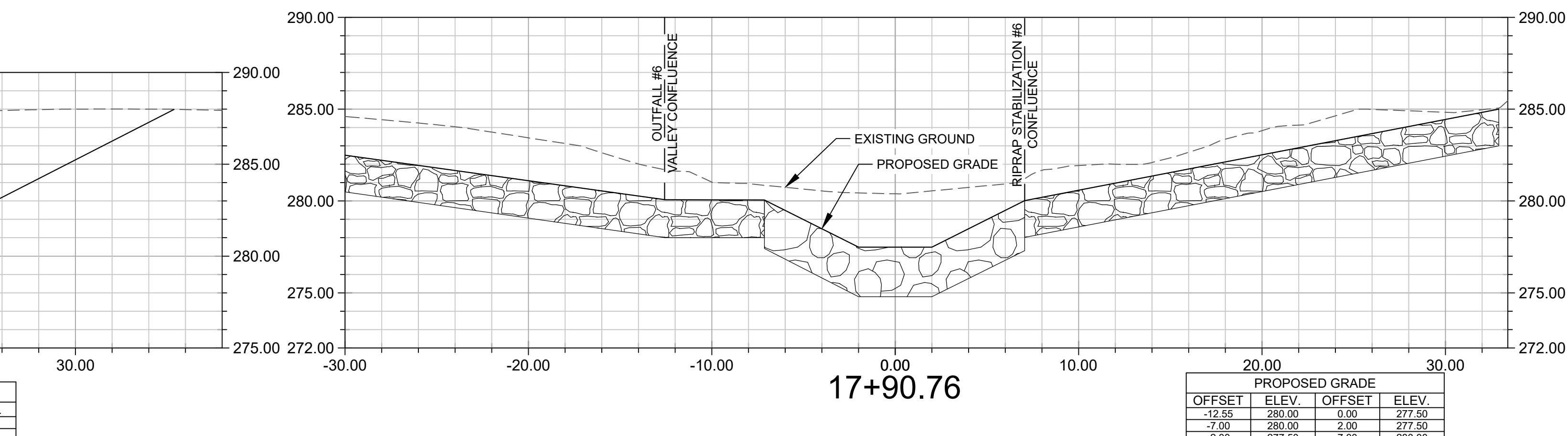
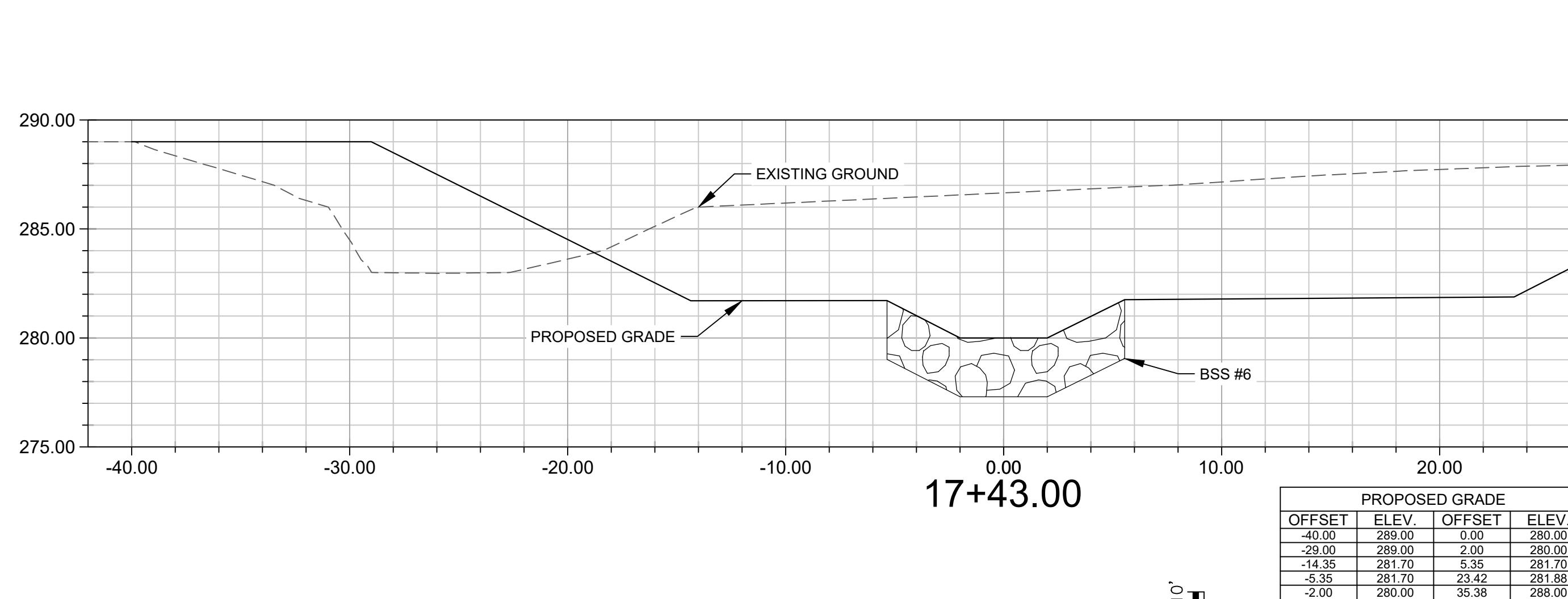
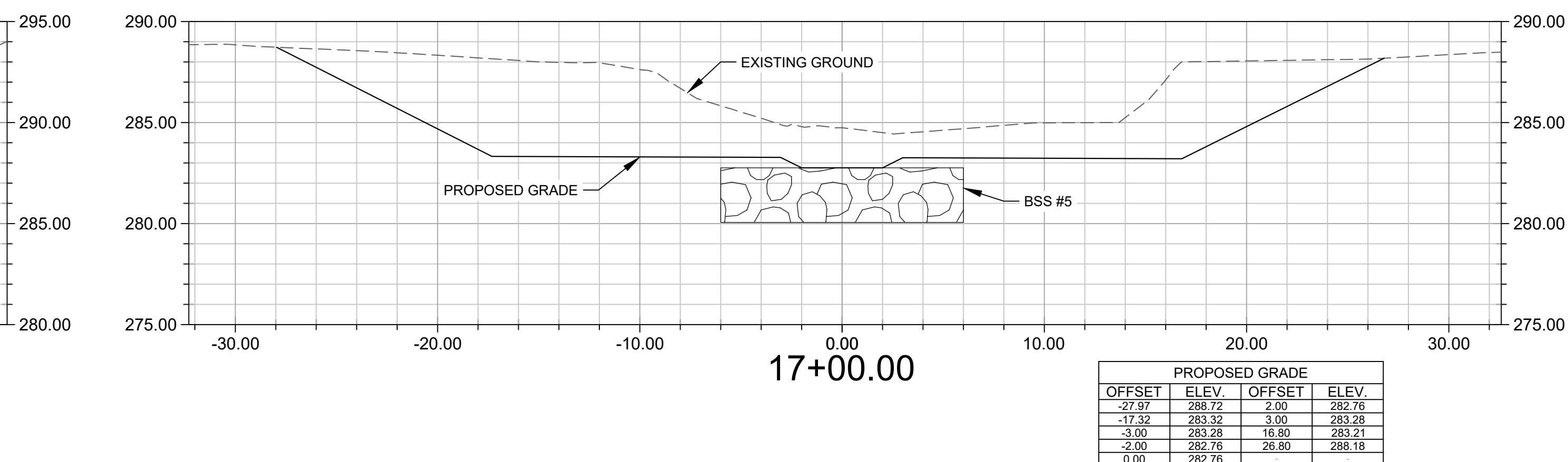
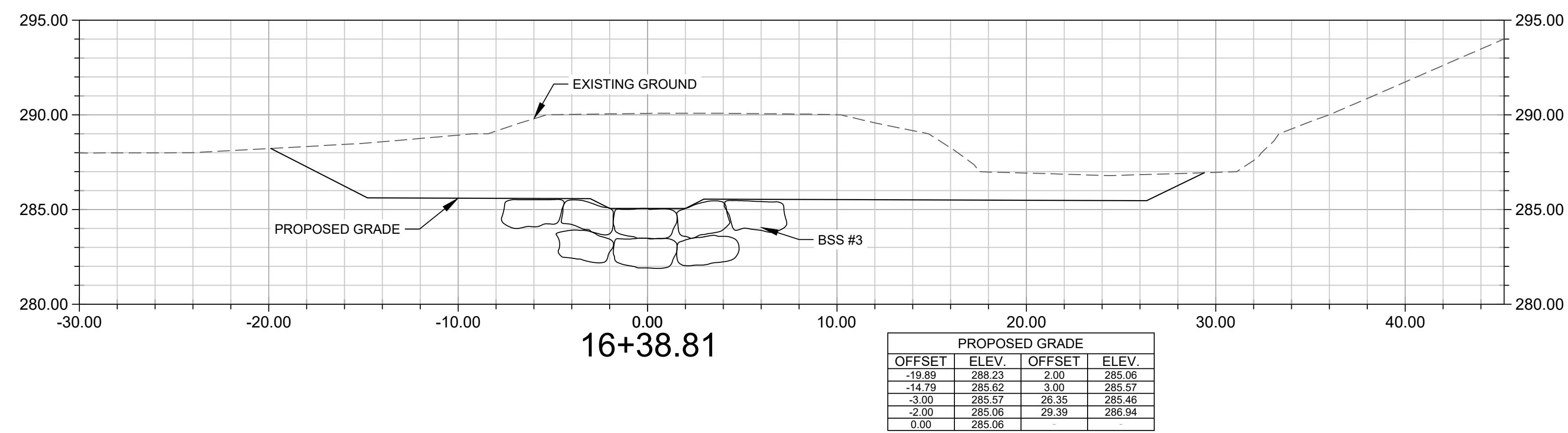
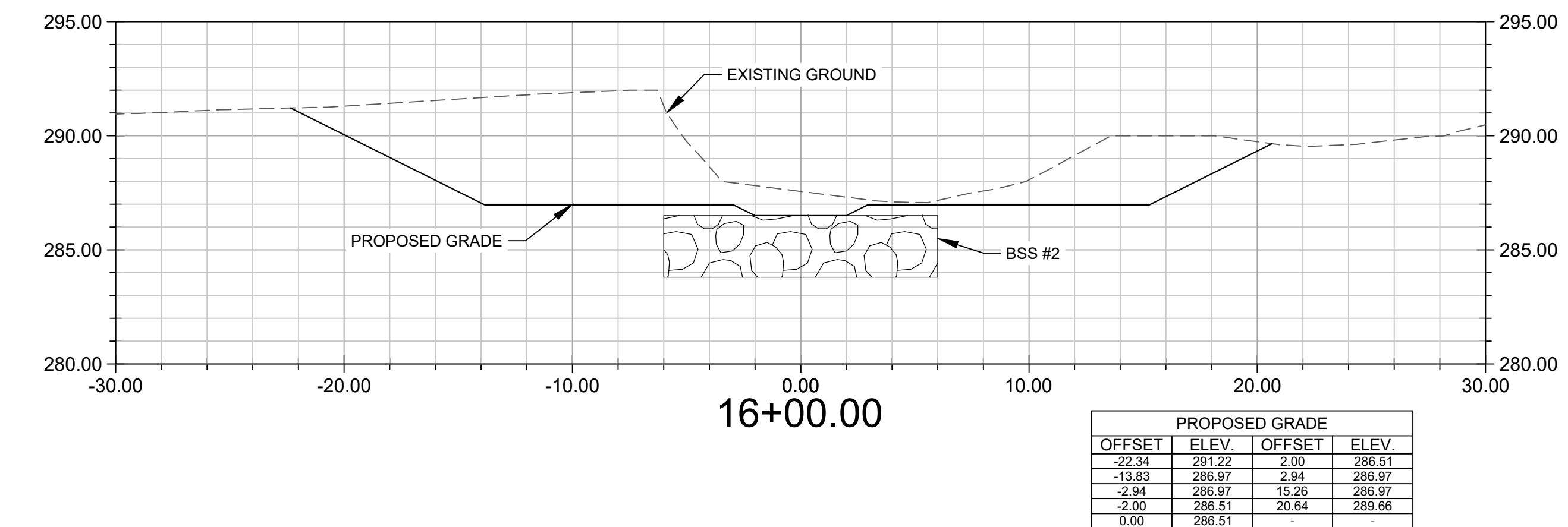
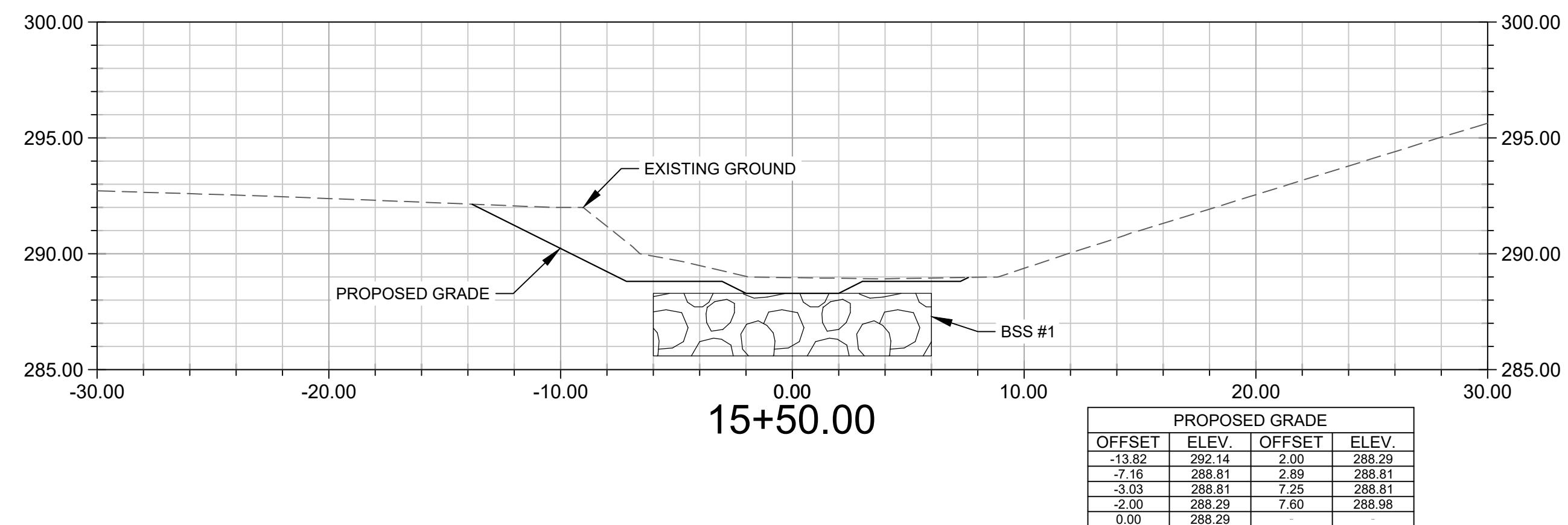
Revisions

BILLING NO. TBD  
EG-SWMENG- TBD  
PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME,  
AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF  
THE STATE OF MARYLAND LICENSE NO. 28371, EXPIRATION DATE: 01/01/2027.

10/9/2025

Drawn By : <u>PJB</u>	Scale : <u>AS SHOWN</u>
Designed By : <u>IPT , PJB</u>	Date : <u>10 / 25</u>
Reviewed By : <u>CAL</u>	
Drawing No. <u>CS-05 of CS-08</u>	Sheet No. <u>26 of 44</u>

**UNT TO BYNUM RUN - REACH 3**  
**CROSS-SECTIONS**



BILLING NO. TBD  
EG-SWMENG- TBD

PROFESSIONAL CERTIFICATION

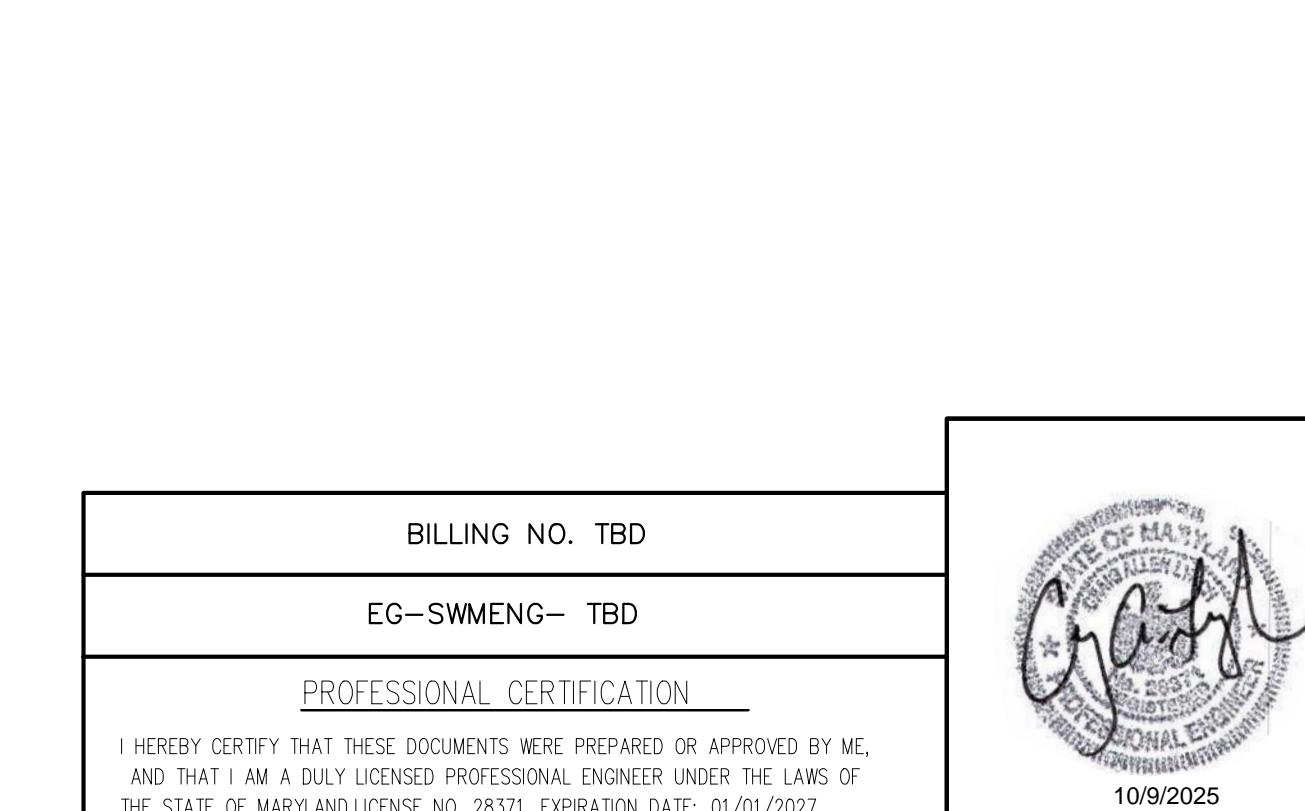
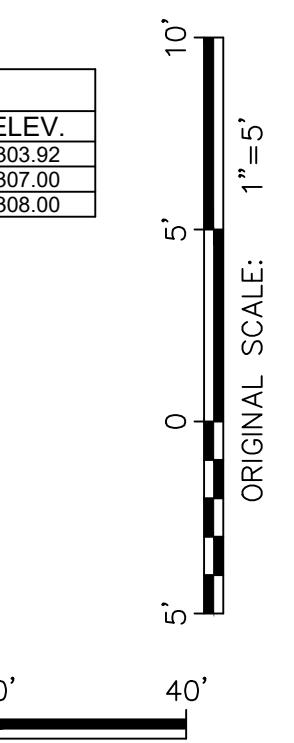
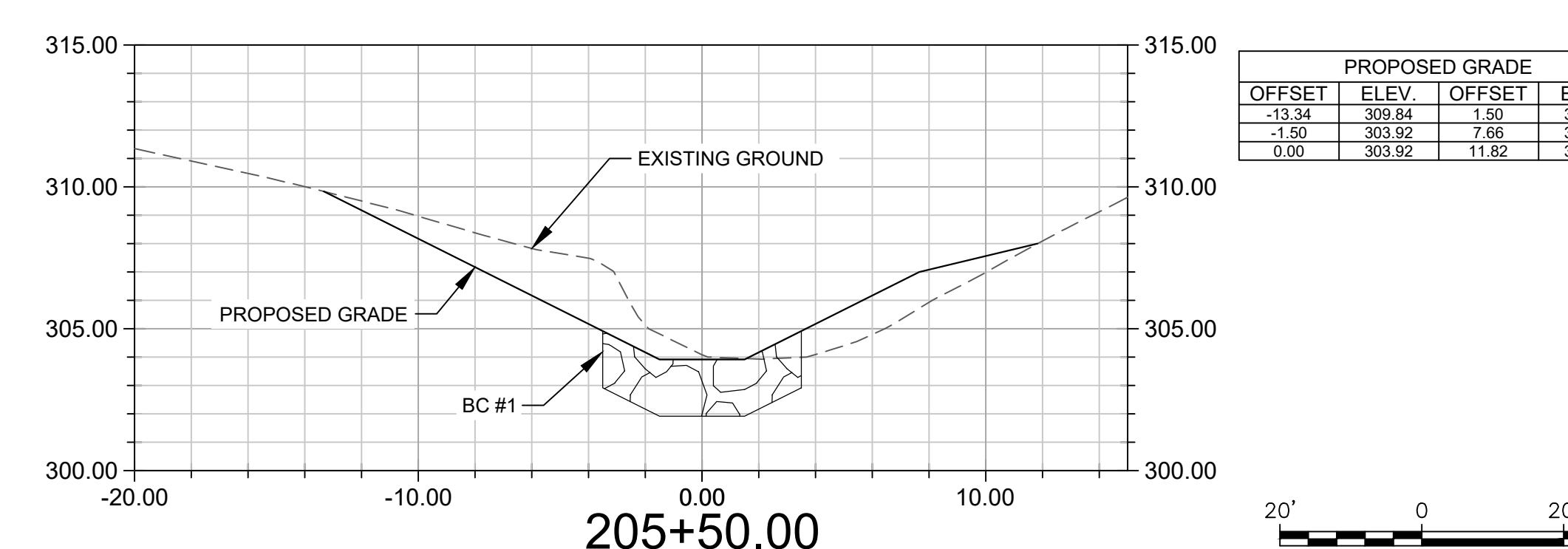
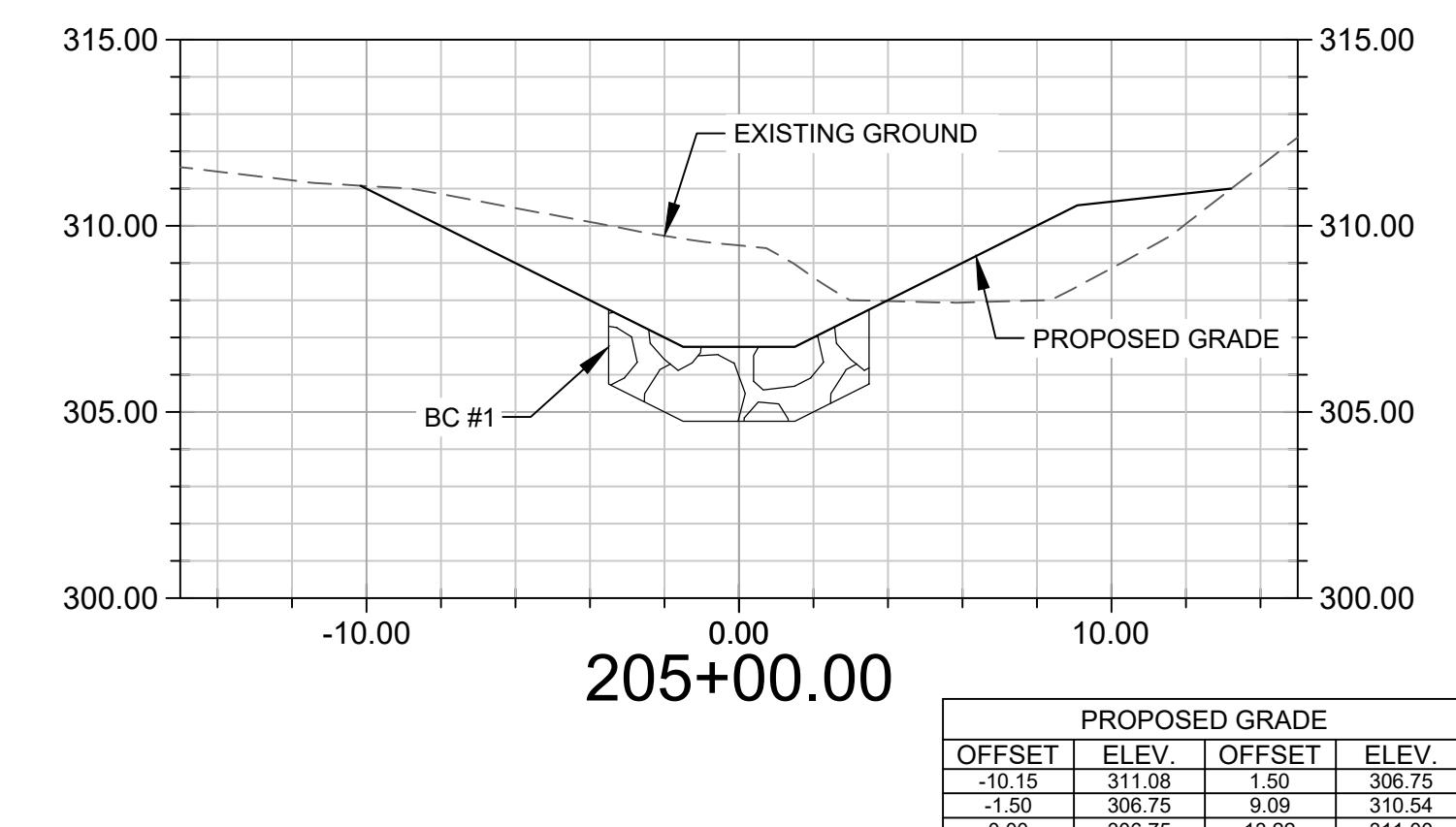
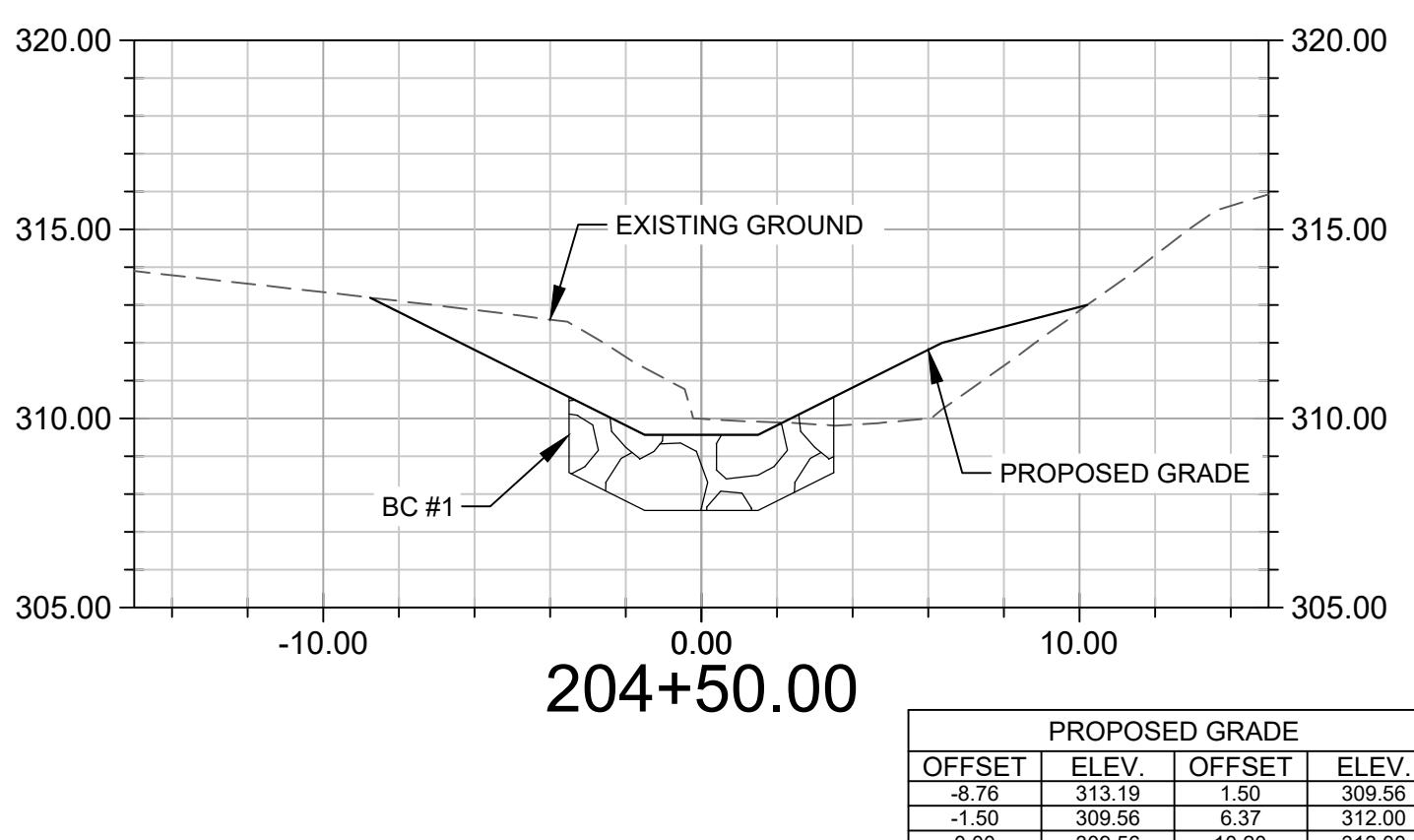
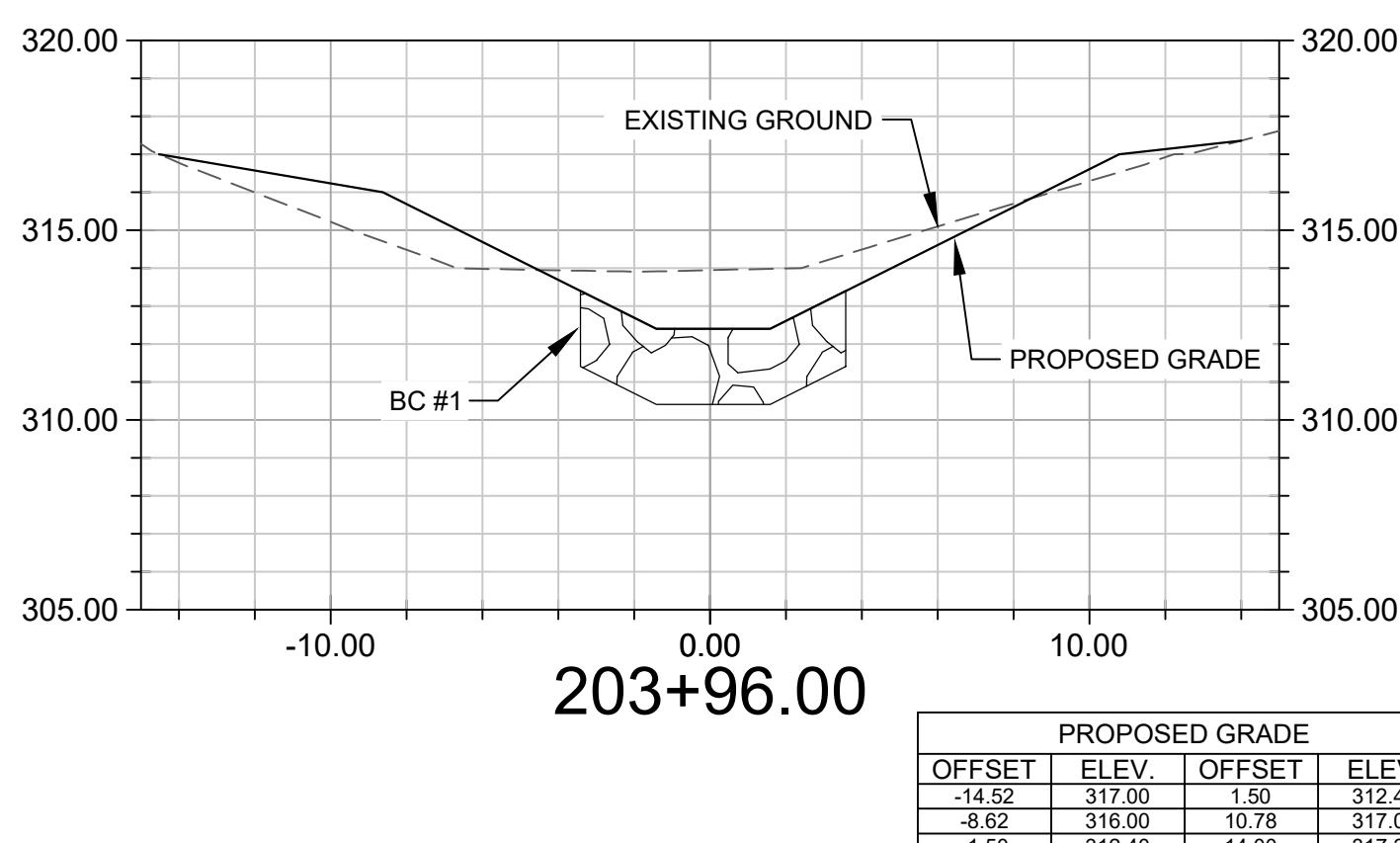
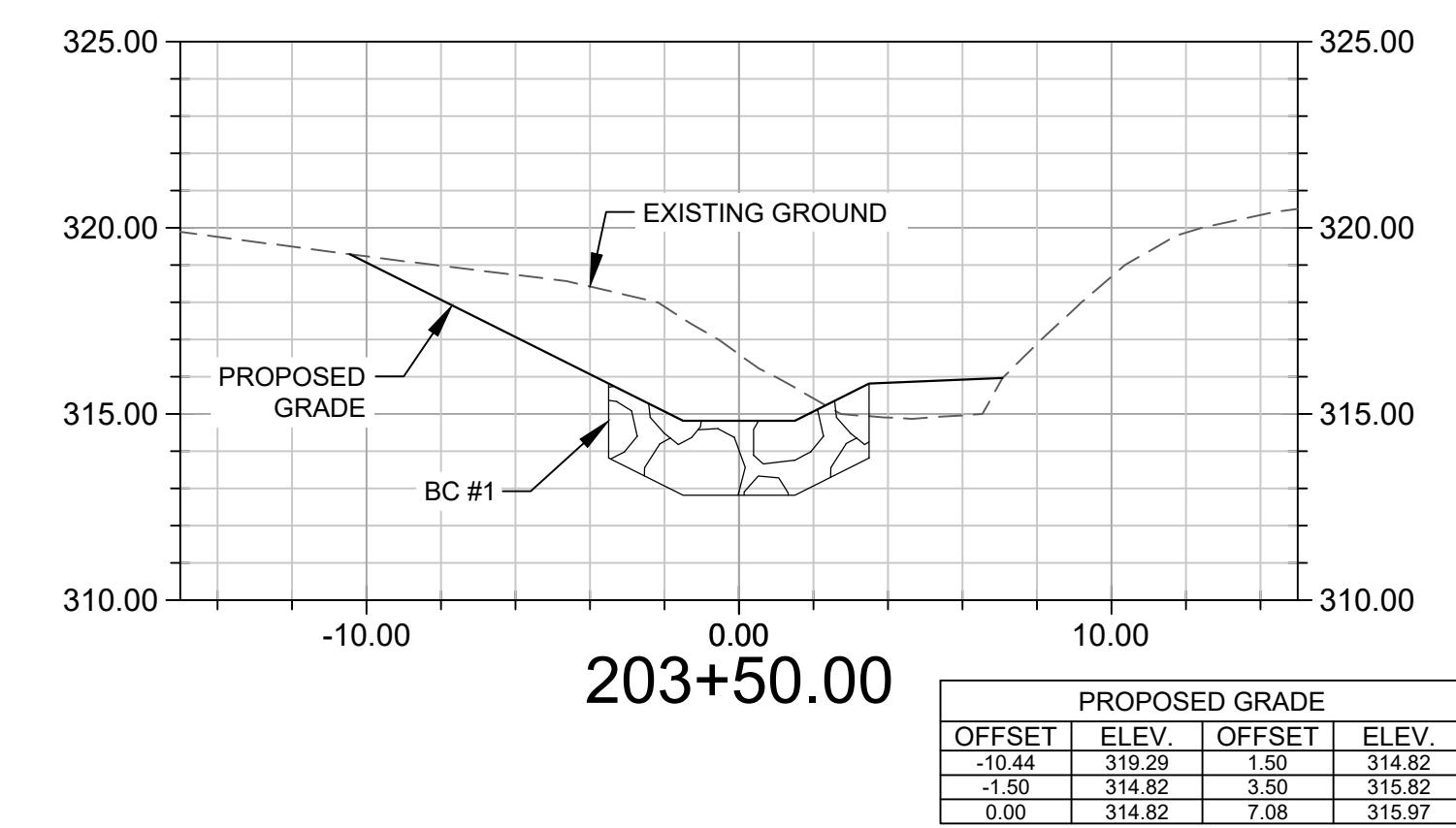
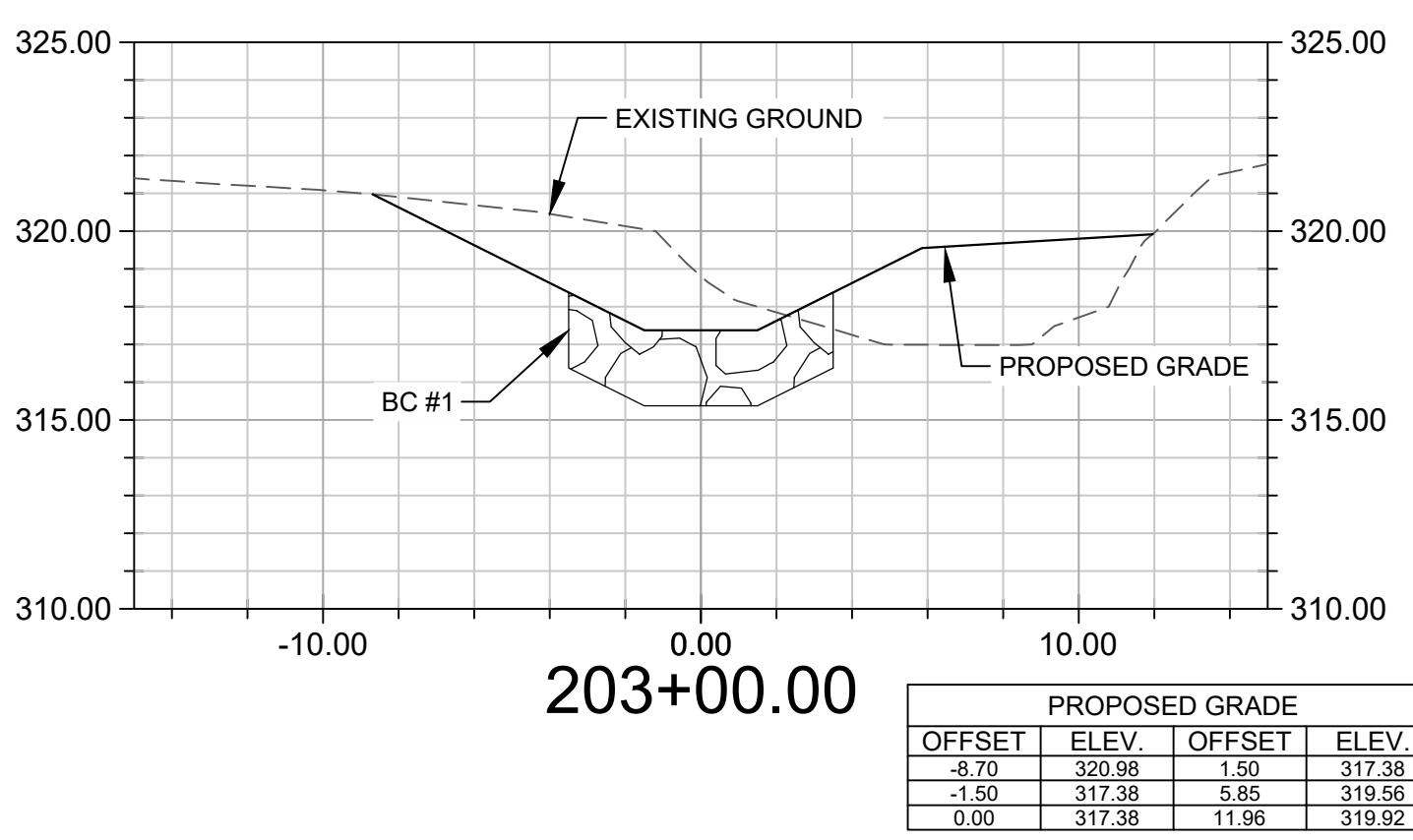
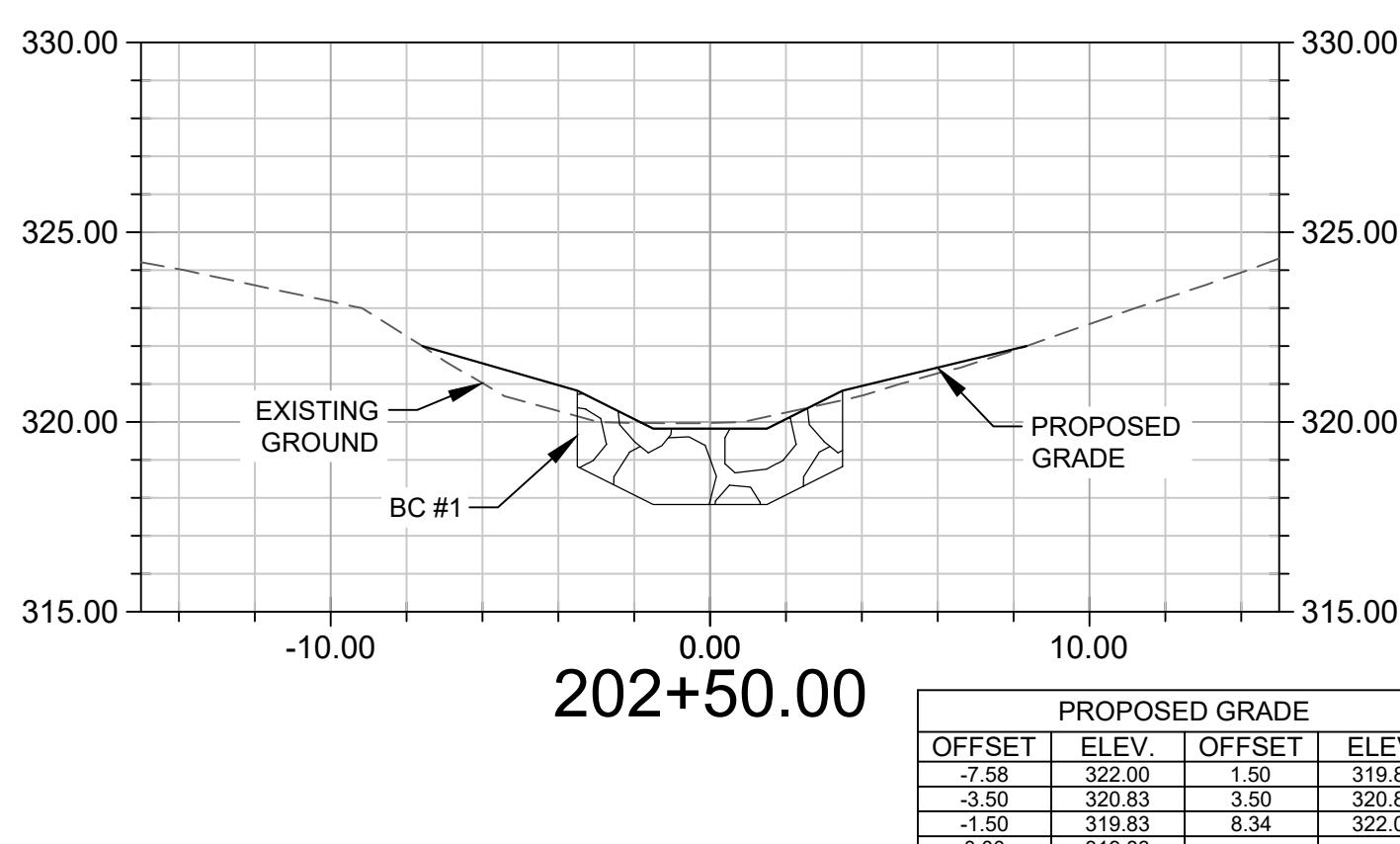
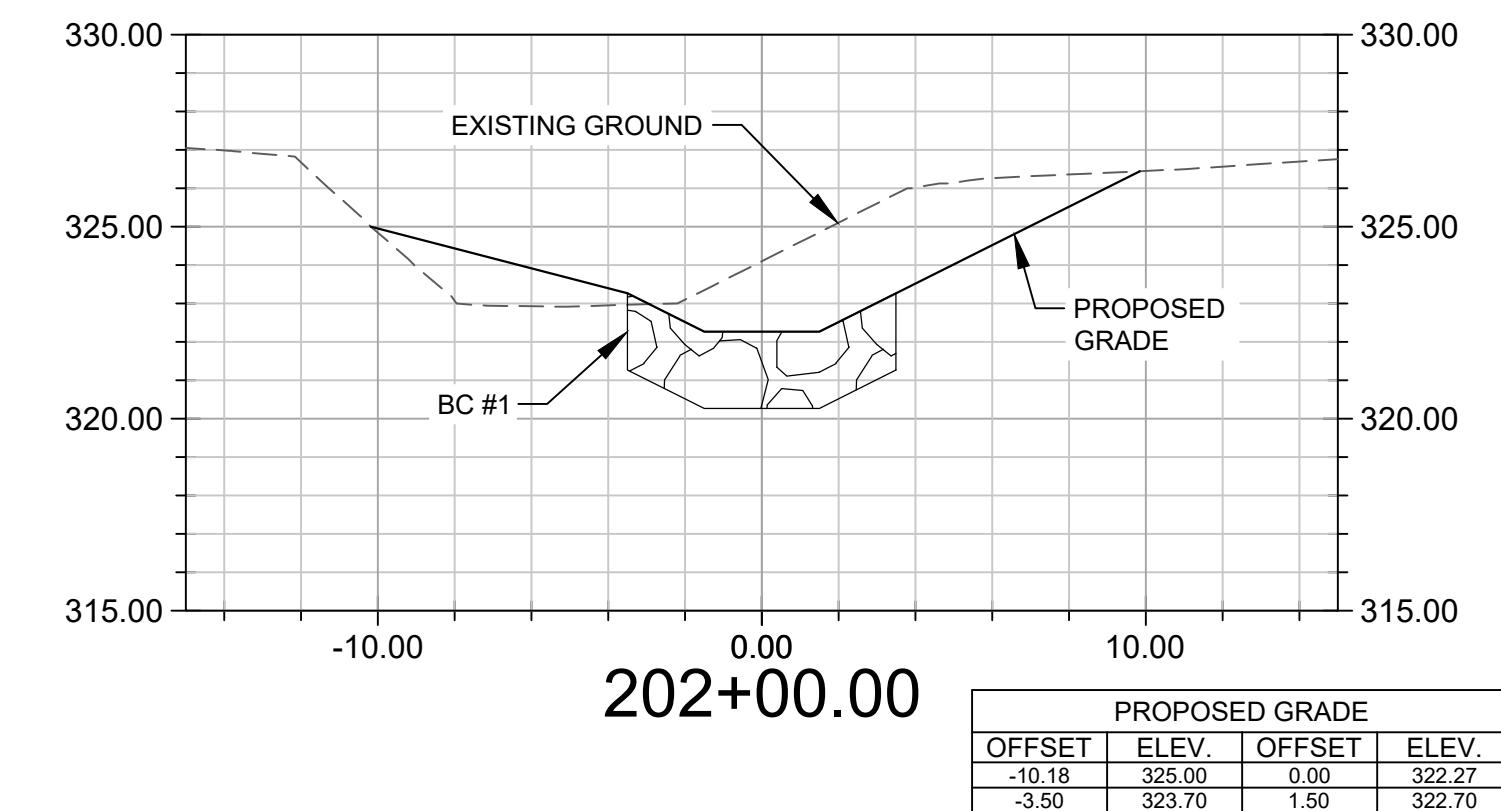
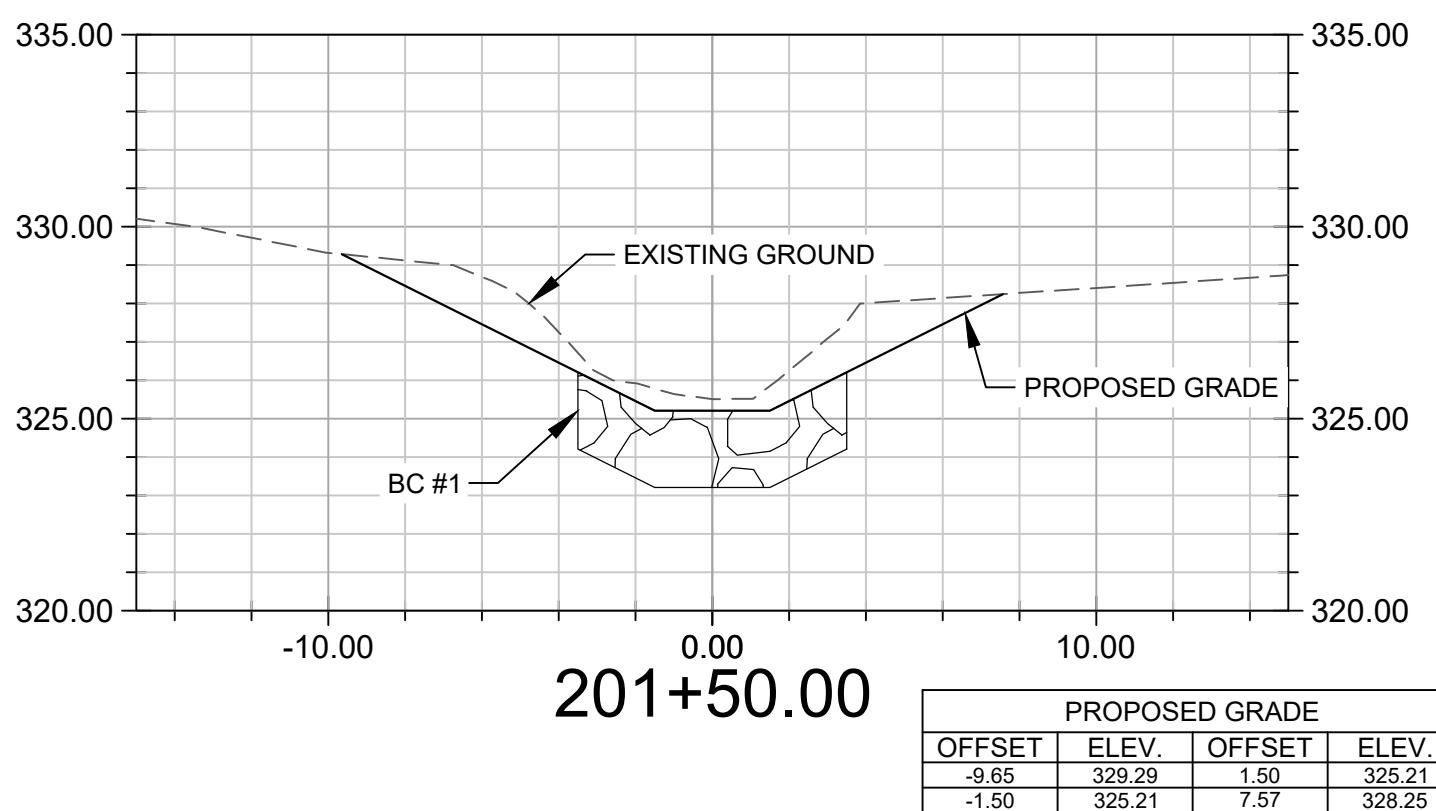
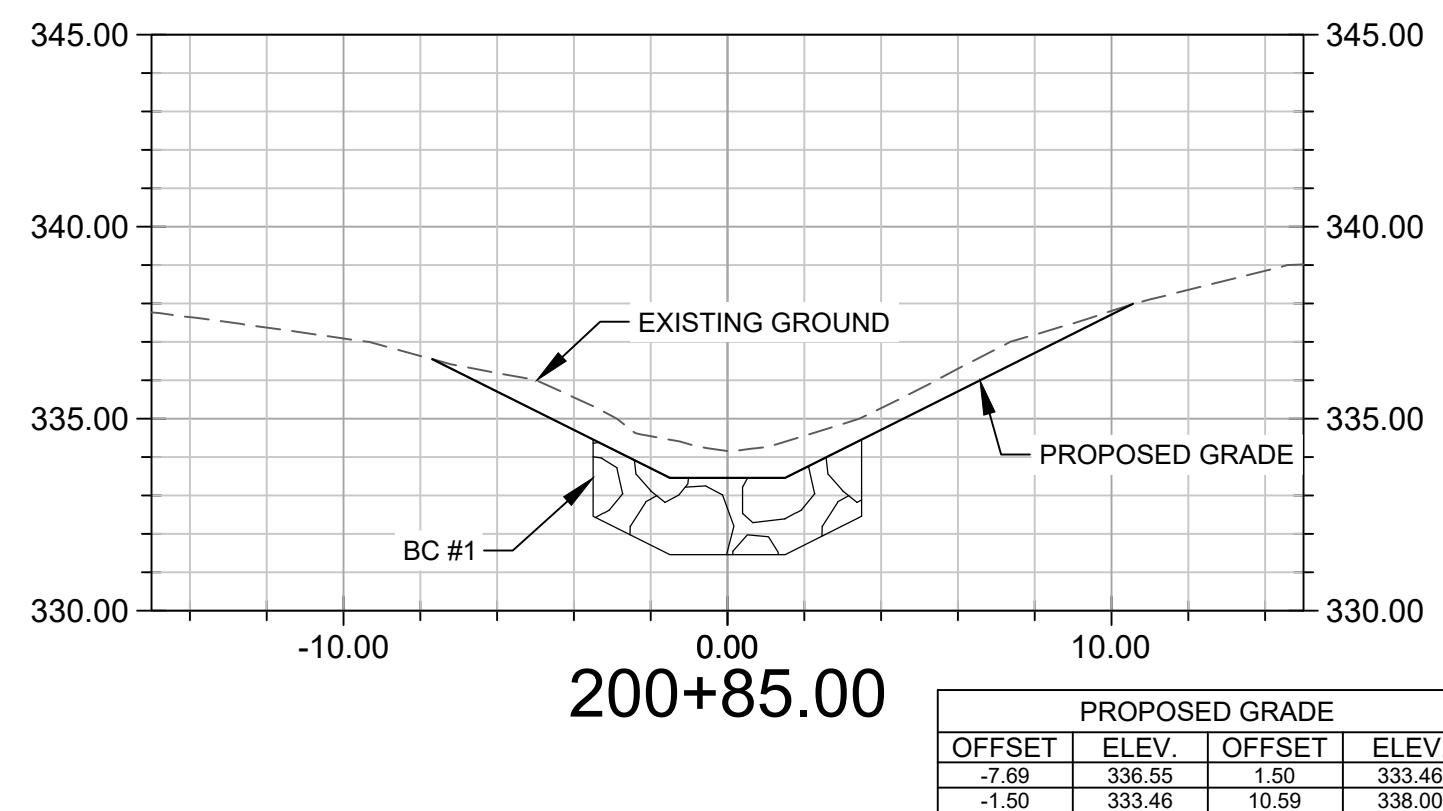
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Revisions

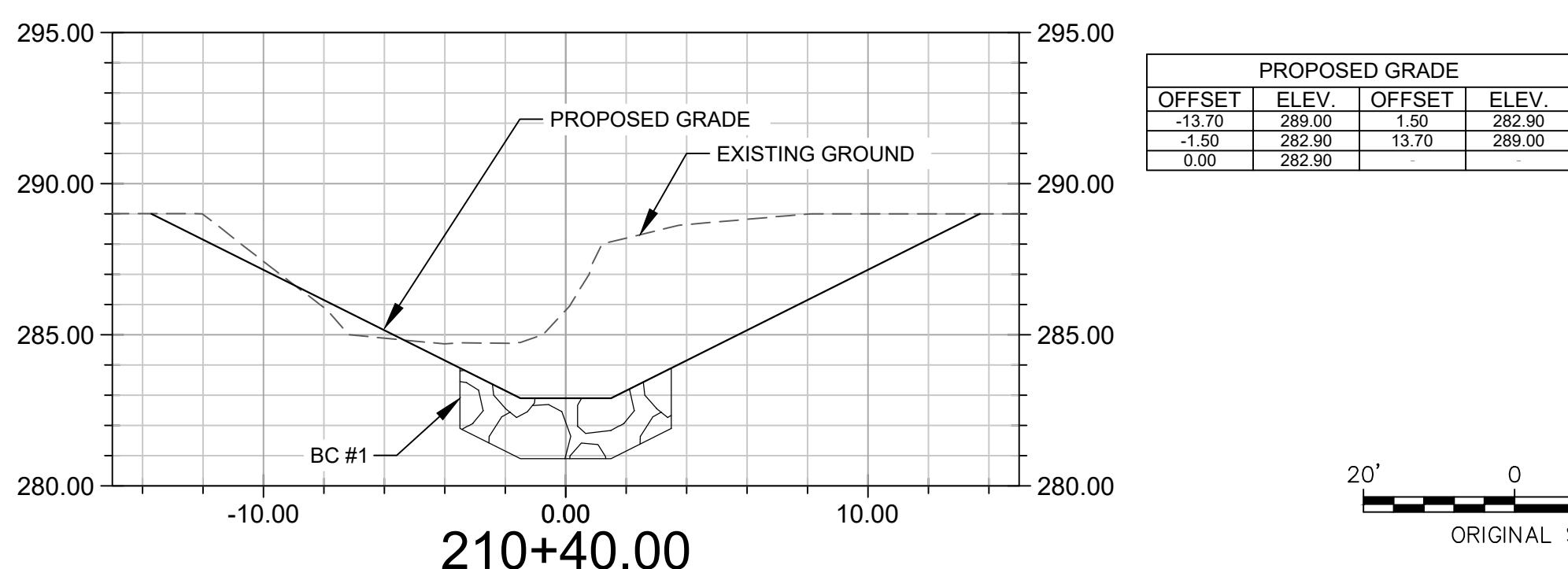
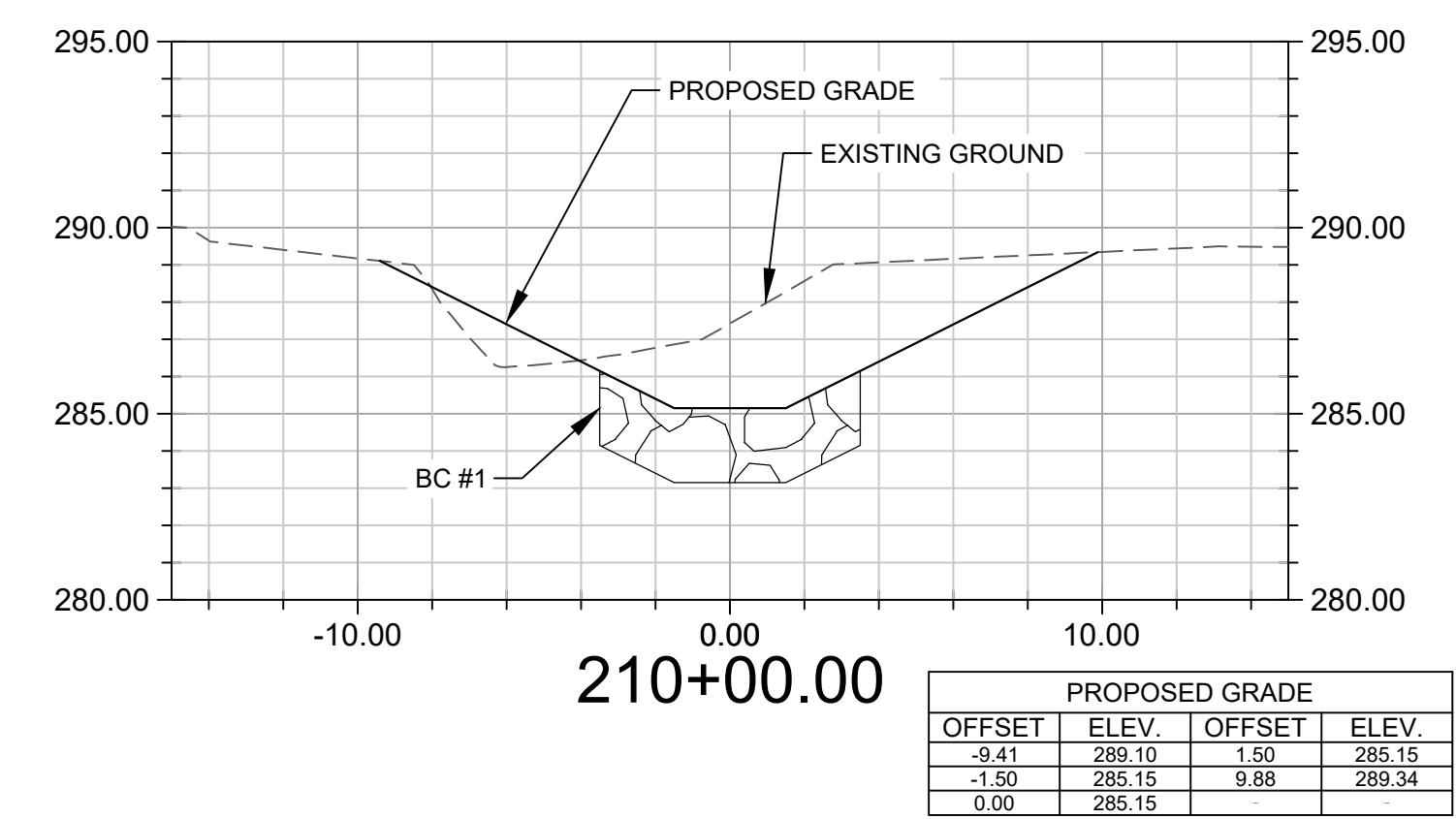
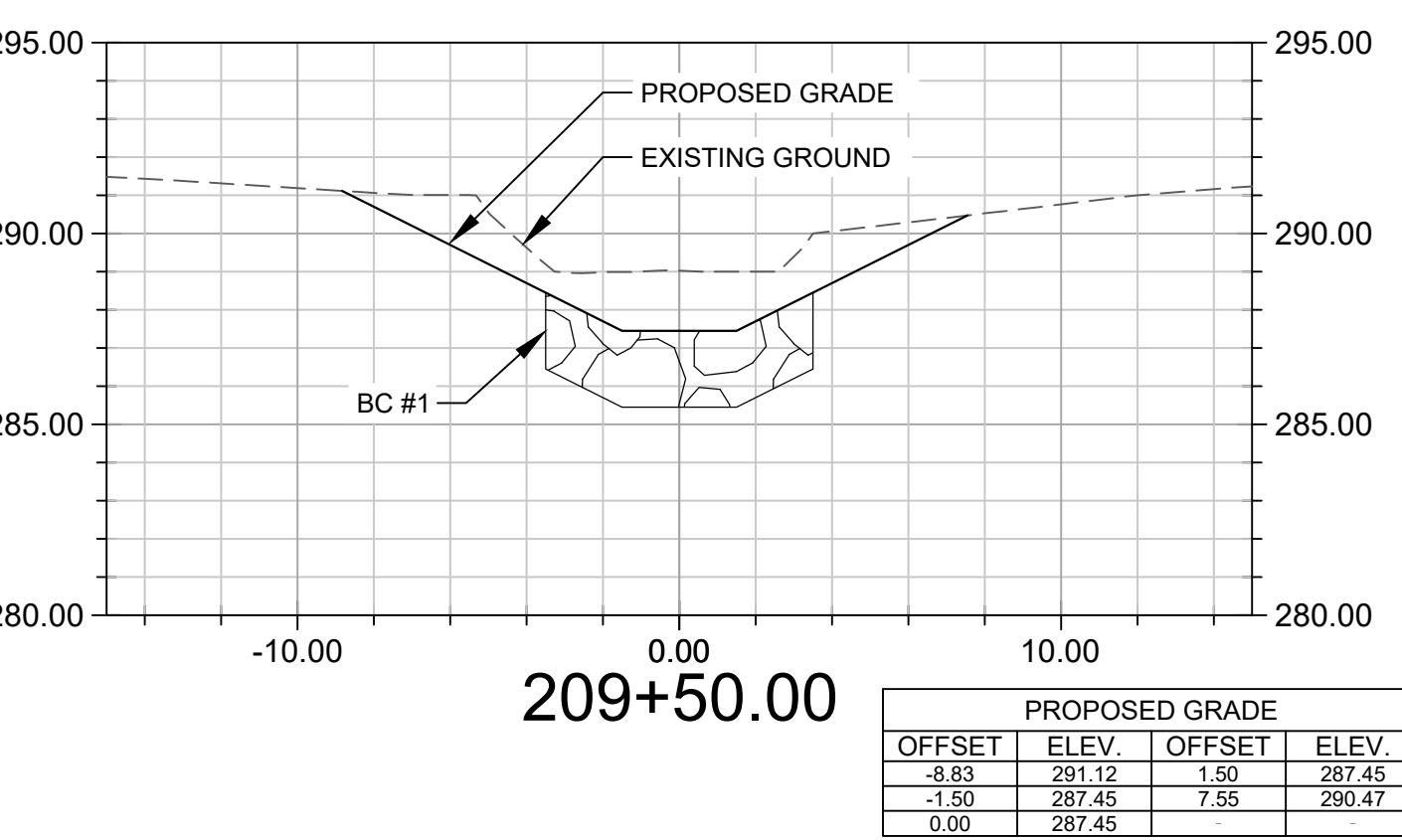
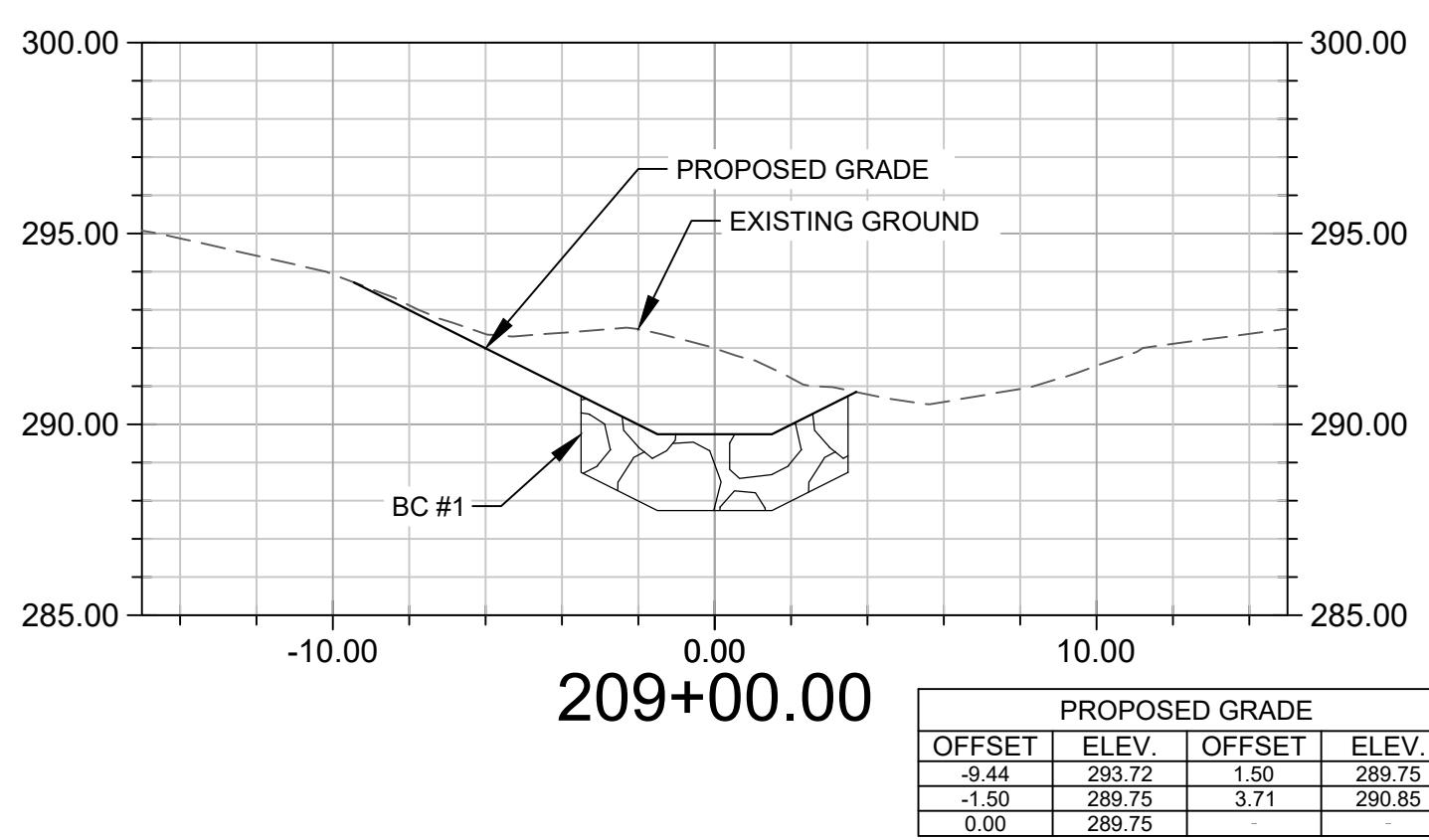
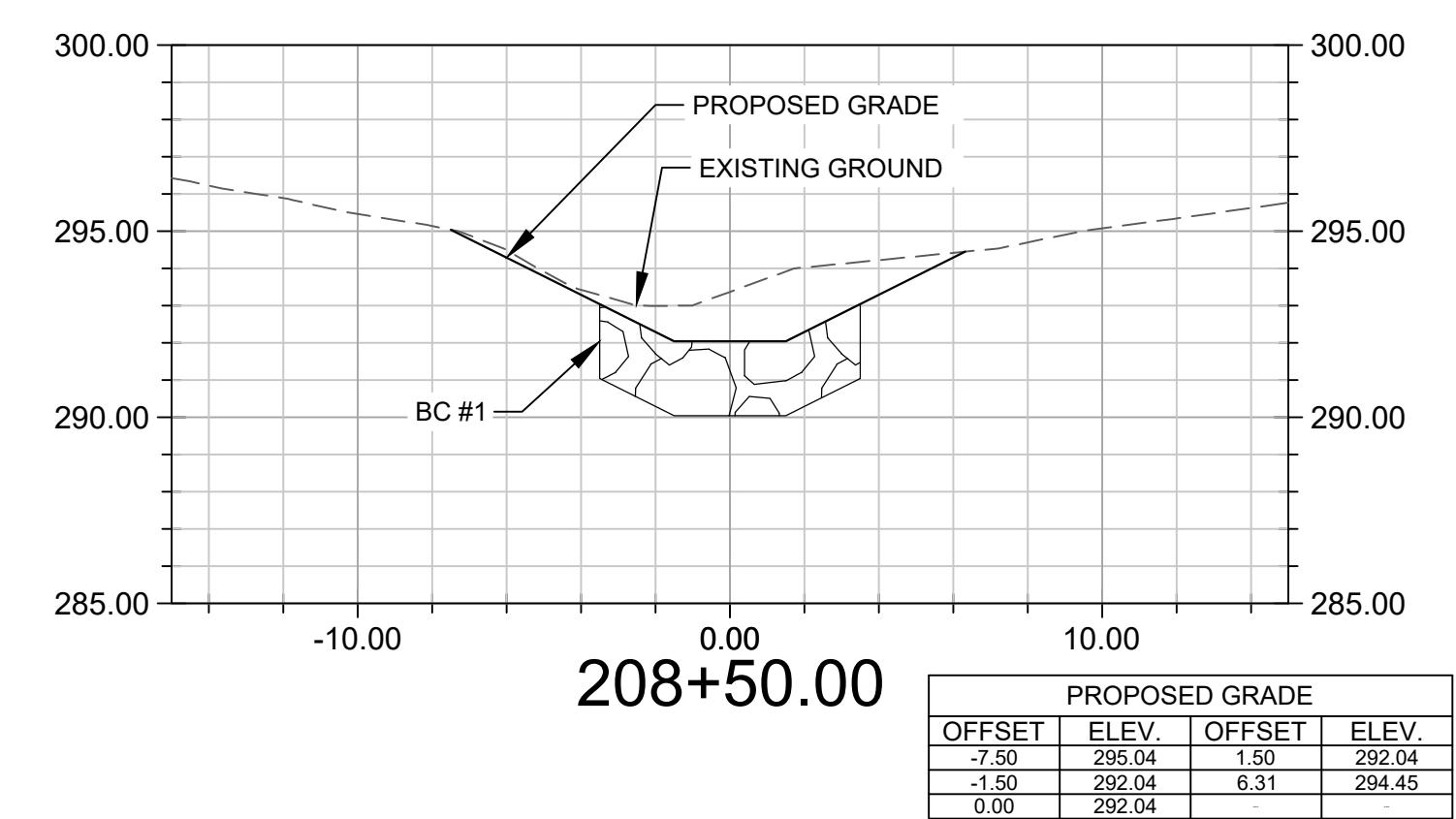
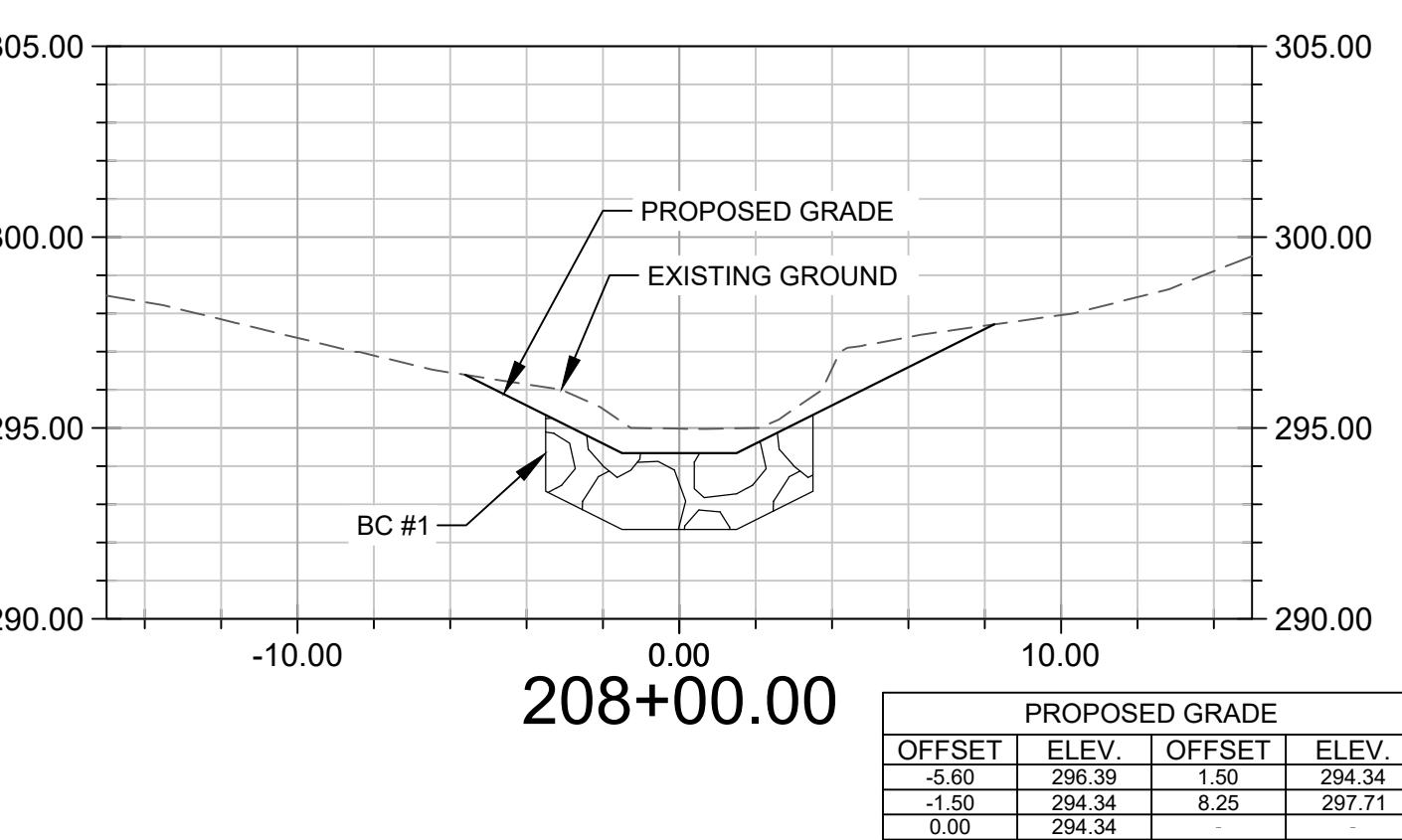
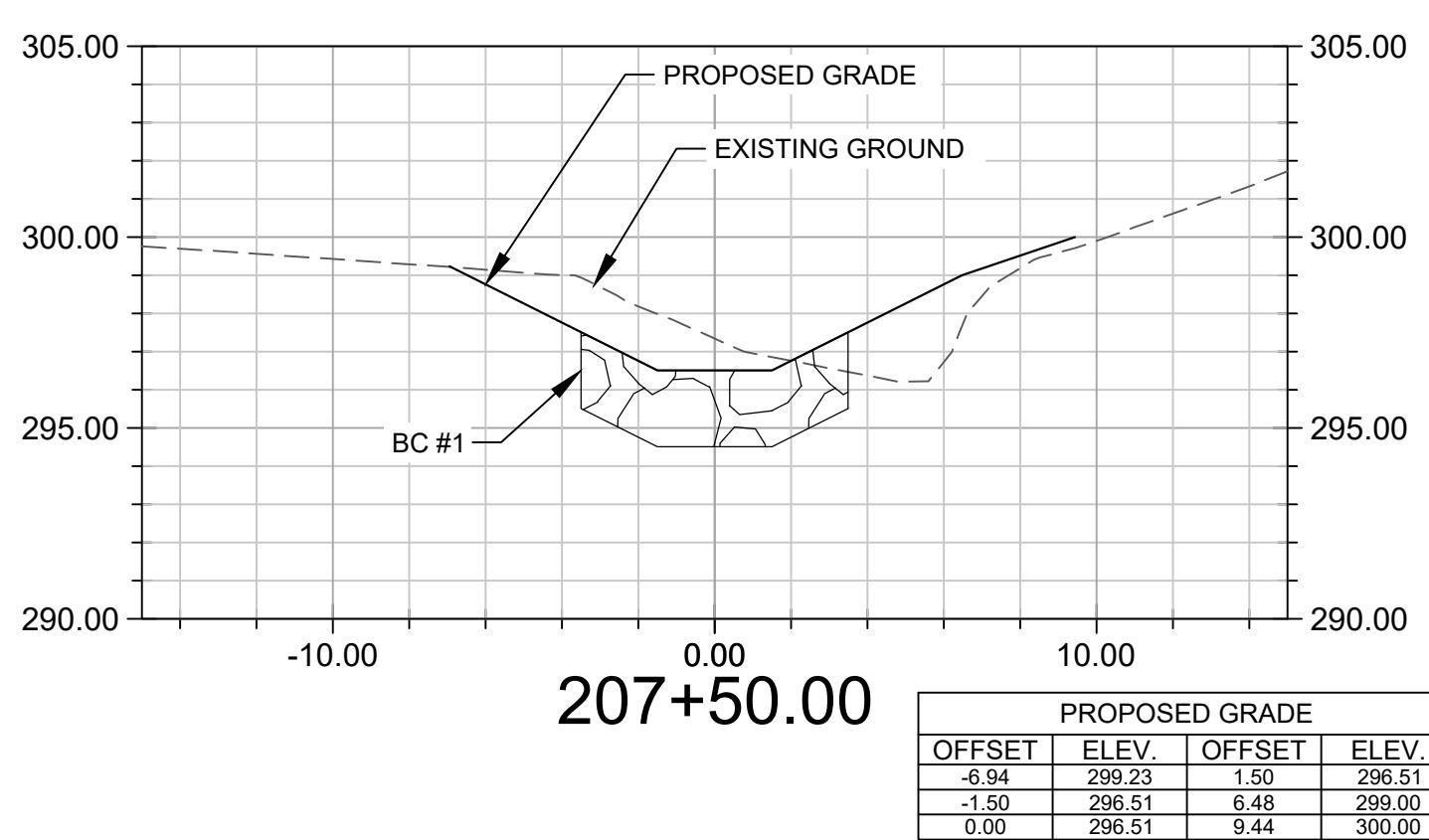
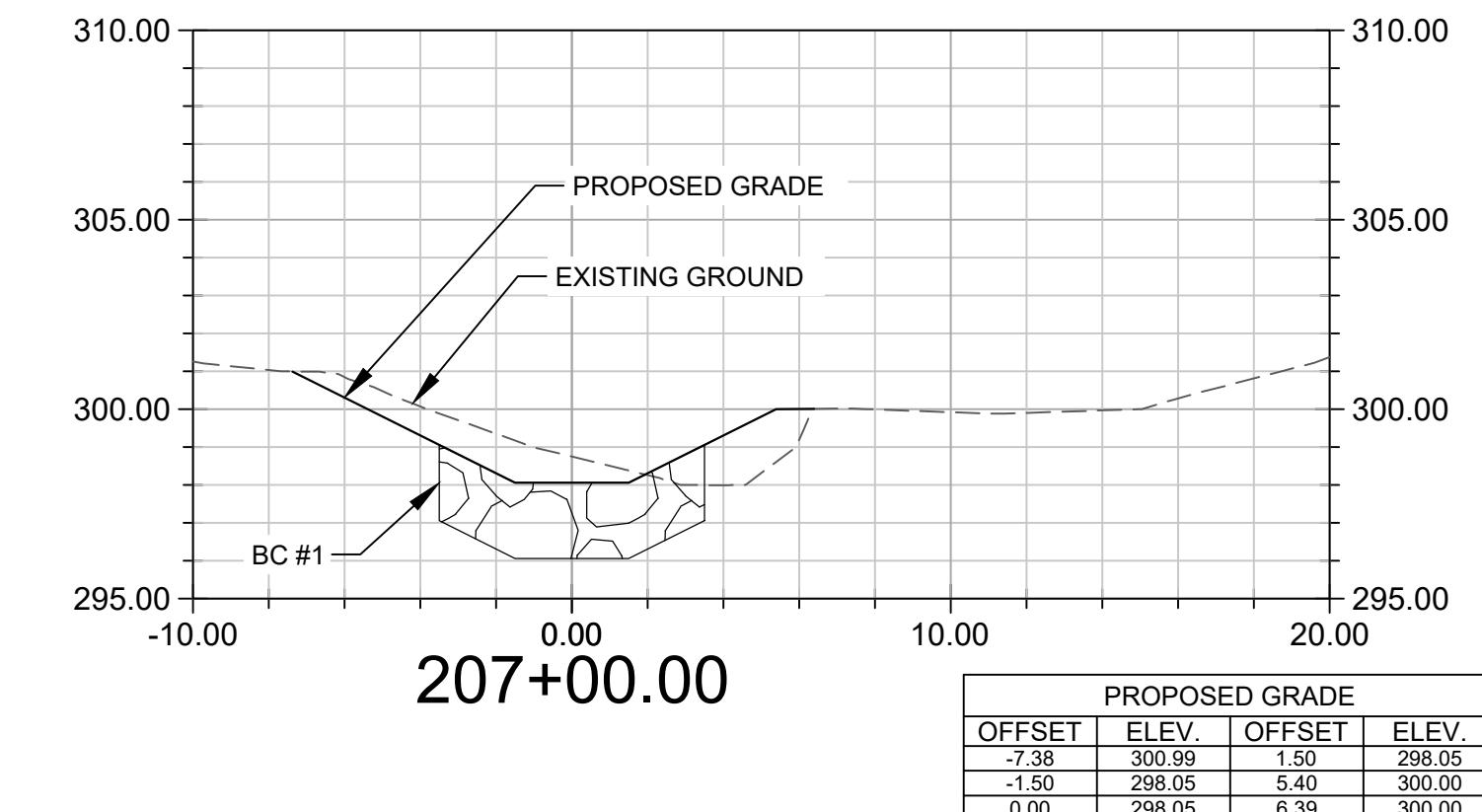
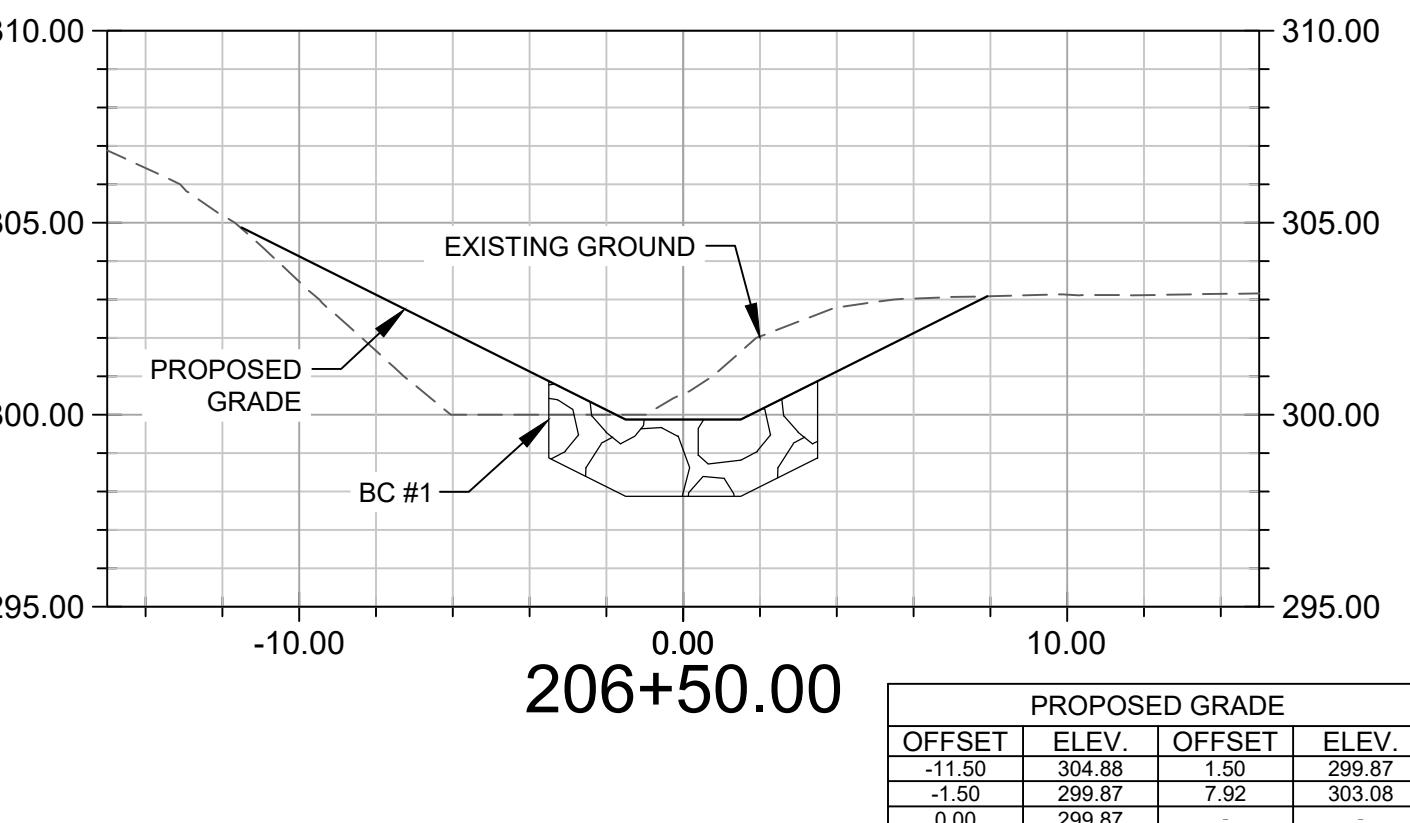
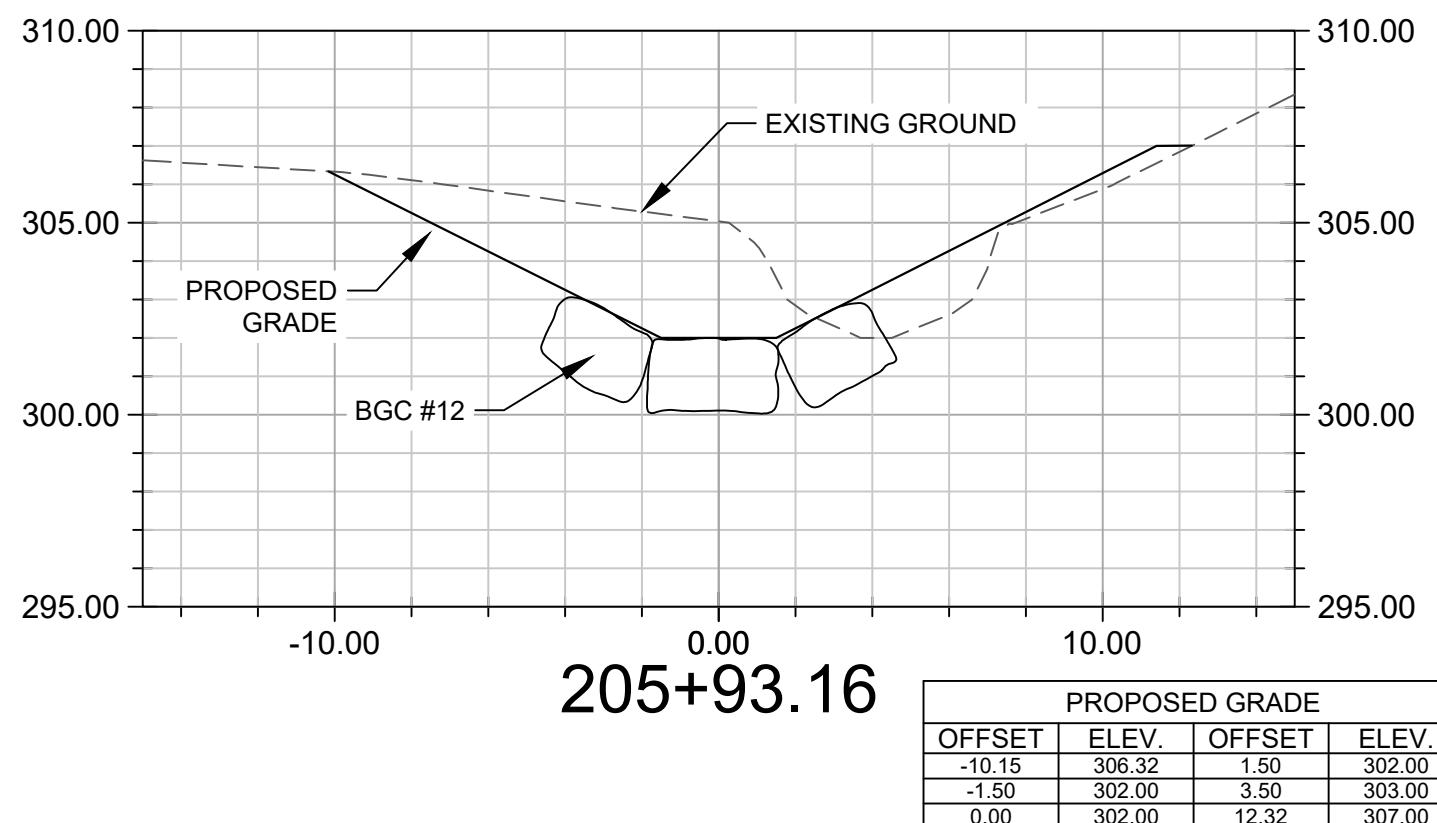
Drawn By : <u>PJB</u>	Scale : <u>AS SHOWN</u>
Designed By : <u>IPT, PJB</u>	Date : <u>10 / 25</u>
Reviewed By : <u>CAL</u>	
Drawing No. <u>CS-06 of CS-08</u>	Sheet No. <u>27 of 44</u>

### TRIBUTARY 1 CROSS-SECTIONS



HARFORD COUNTY, MARYLAND	
BENNETT PLACE STREAM RESTORATION	
CROSS-SECTION SHEET	
Drawn By : PJB	Scale : AS SHOWN
Designed By : IPT, PJB	Date : 10 / 25
Reviewed By : CAL	
Drawing No. CS-07 of CS-08	Sheet No. 28 of 44

### TRIBUTARY 1 CROSS-SECTIONS



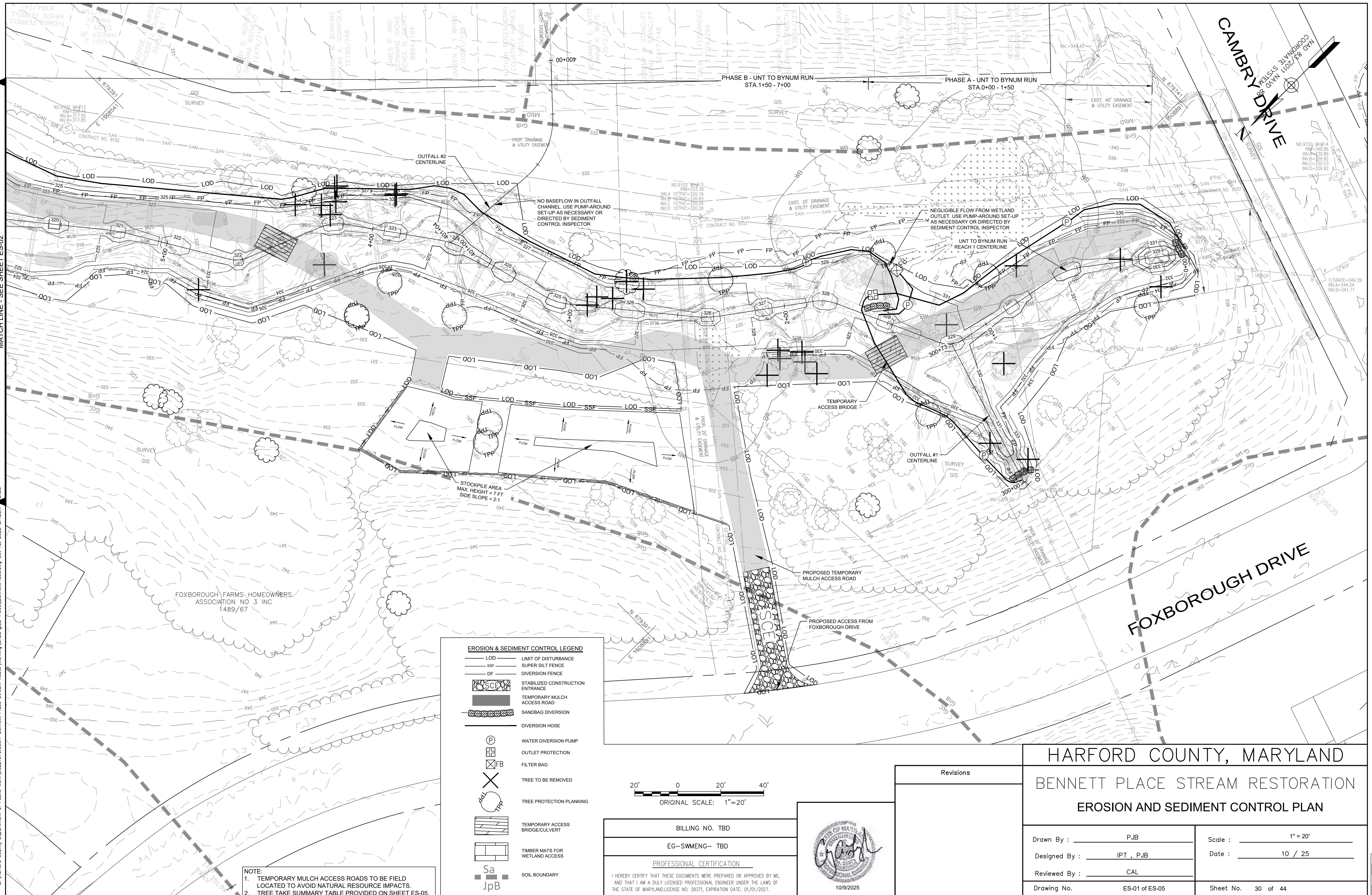
10'  
5'  
0'  
5'  
10'  
ORIGINAL SCALE: 1"=20'  
20' 0' 20' 40'

BILLING NO. TBD  
EG-SWMENG- TBD  
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10/9/2025

**HARFORD COUNTY, MARYLAND**  
**BENNETT PLACE STREAM RESTORATION**  
**CROSS-SECTION SHEET**

Revisions	
Drawn By : PJB	Scale : AS SHOWN
Designed By : IPT, PJB	Date : 10 / 25
Reviewed By : CAL	
Drawing No. CS-08 of CS-08	Sheet No. 29 of 44



\Harford County Department of Public Work\00221073.009A-Bennett Place Stream Resto\Working\CADD\pES-P000\_BennettPlace.dwg Oct 16, 2025 8:42am pbaltzer

**MATCH LINE - SEE SHEET ES-03**

315  
PHASE B - UNT TO BYNUM RUN  
STA.11+54 - 13+90  
-311 -312 -313  
NO.9102 MH#10  
RIM=316.55  
GIS  
FOXBOROUGH FARMS HOME  
ASSOCIATION NO 3 INC  
1489/67

<u>EROSION &amp; SEDIMENT CONTROL LEGEND</u>	
— LOD —	LIMIT OF DISTURBANCE
— SSF —	SUPER SILT FENCE
— DF —	DIVERSION FENCE
	STABILIZED CONSTRUCTION ENTRANCE
	TEMPORARY MULCH ACCESS ROAD
	SANDBAG DIVERSION
—	DIVERSION HOSE
	WATER DIVERSION PUMP
	OUTLET PROTECTION
	FILTER BAG
	TREE TO BE REMOVED
	TREE PROTECTION PLANKING
	TEMPORARY ACCESS BRIDGE/CULVERT
	TIMBER MATS FOR WETLAND ACCESS
	SOIL BOUNDARY

NOTE:

1. TEMPORARY MULCH ACCESS ROADS TO BE FIELD LOCATED TO AVOID NATURAL RESOURCE IMPACTS.
2. TREE TAKE SUMMARY TABLE PROVIDED ON SHEET ES-05

A horizontal scale bar with tick marks at 0, 20', and 40'. The distance between 0 and 20' is labeled '20''. The distance between 20' and 40' is also labeled '20''. The total length of the scale bar is 40'. Below the scale bar, the text 'ORIGINAL SCALE: 1"=20'' is centered.

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BILLING NO. TBD

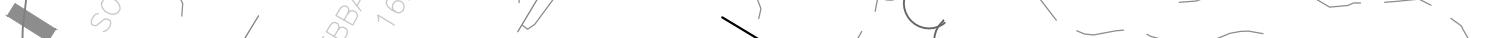
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PROFESSIONAL CERTIFICATION

A circular stamp with the words "STATE OF MARYLAND" at the top and bottom. In the center, there is a signature that appears to be "Gandy". The stamp is surrounded by a decorative border.

— 10 —



# HARFORD COUNTY, MARYLAND

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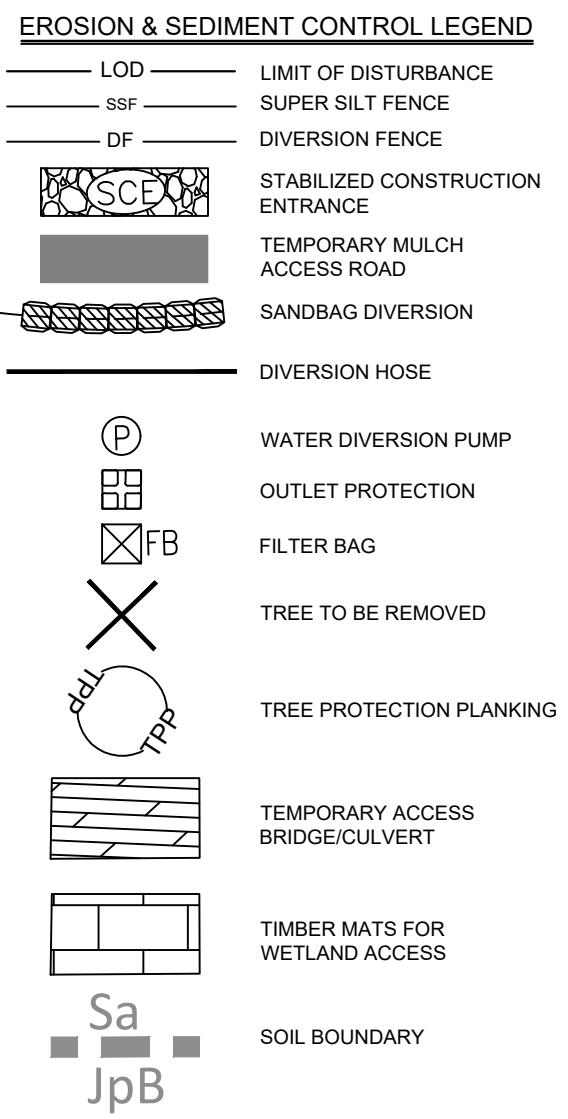
## BENNETT PLACE STREAM RESTORATION

### EROSION AND SEDIMENT CONTROL PLAN

Drawn By : <u>PJB</u>	Scale : <u>1" = 20'</u>
Designed By : <u>IPT , PJB</u>	Date : <u>10 / 25</u>
Reviewed By : <u>CAL</u>	
Drawing No. <u>ES-02 of ES-05</u>	Sheet No. <u>31</u> of <u>44</u>



# MERRY HILL COURT



MATCH LINE - SEE SHEET ES-03

BENNETT PLACE

NOTE:  
1. TEMPORARY MULCH ACCESS ROADS TO BE FIELD LOCATED TO AVOID NATURAL RESOURCE IMPACTS.  
2. TREE TAKE SUMMARY TABLE PROVIDED ON SHEET ES-05.

20' 0 20' 40'  
ORIGINAL SCALE: 1"=20'

BILLING NO. TBD

EG-SWMENG- TBD

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HARFORD COUNTY, MARYLAND

BENNETT PLACE STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN

Revisions

Drawn By: PJB

Designed By: IPT, PJB

Reviewed By: CAL

Drawing No. ES-04 of ES-05

Scale: 1" = 20'

Date: 10 / 25

MAP LINE - SEE SHEET ES-03

BID No.:

SCALE: 1"=20'



## HARFORD COUNTY SEDIMENT CONTROL NOTES

- THE OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS. FURTHER, NO CONSTRUCTION ACTIVITY SHALL TAKE PLACE UNTIL ALL REQUIRED PERMITS HAVE BEEN OBTAINED.
- THE LIMITS OF DISTURBANCE SHALL BE CLEARLY MARKED IN THE FIELD PRIOR TO GRADING OF THE SITE. THE FOREST RETENTION AREA WITH APPROVED LOGS, ALL FOREST RETENTION AREAS WILL BE DELINEATED WITH BLAZE ORANGE FENCE AS WELL AS ANY SWM INFILTRATION PRACTICE PRIOR TO ANY CLEARING, WORK BEYOND THE LIMITS OF DISTURBANCE AND IN ANY AREA INSIDE THE FOREST RETENTION AND SWM INFILTRATION AREA IS CONSIDERED TO BE A VIOLATION OF THIS PLAN.
- ALL SEDIMENT CONTROL PRACTICES MUST BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY. UPON COMPLETION OF THE INSTALLATION OF PERIMETER SEDIMENT CONTROL PRACTICES THE SITE MUST BE INSPECTED BY THE DEPARTMENT OF PUBLIC WORKS (DPW). NO ADDITIONAL CONSTRUCTION ACTIVITY WILL BE AUTHORIZED WITHOUT THE APPROVAL FROM DPW.
- ALL CONSTRUCTION AREAS AND AREAS TO BE PROTECTED TO PREVENT TRACKING OF MUD INTO PUBLIC WAYS DURING CONSTRUCTION, EVERY MEANS WILL BE TAKEN TO CONTROL SOIL EROSION AND SILTATION. IF NECESSARY A WASH RACK MAY NEED TO BE ESTABLISHED.
- EROSION DIKES, SEDIMENT TRAPS, ETC. WILL BE LOCATED AS SHOWN ON THESE DRAWINGS. FIELD CHANGES AND MINOR ADJUSTMENTS ARE PERMISSIBLE AS LONG AS THE INSTALLATION FUNCTIONS AND CONFORMS TO SPECIFICATIONS. THE SITE INSPECTOR PRIOR TO INSTALLATION MUST APPROVE ALL SUCH CHANGES. MAJOR CHANGES TO THE APPROVED PLAN WILL REQUIRE RE-APPROVAL BY THE HARFORD SOIL CONSERVATION DISTRICT.
- INSTALL INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
  - THREE CALENDAR DAYS ON SLOPES GREATER THAN 3:1, ALL WATERWAYS AND TO THE SURFACE OF ALL PERIMETER CONTROLS.
  - SEVEN CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS OF THE PROJECT SITE.
- DUST CONTROL MUST BE MANAGED AS PART OF ALL SEDIMENT CONTROL PLANS. FAILURE TO DO SO IS A VIOLATION OF THIS PLAN.
- SEDIMENT BASINS MUST BE BUILT TO DESIGN SPECIFICATIONS SHOWN ON THE PLAN. IF THE BASIN IS TO BE USED AS A FLOWDOWN SWM FACILITY, THE BASIN WILL BE BUILT IN ACCORDANCE WITH THE LATEST MD-378 STANDARDS AND SPECIFICATIONS. SPECIFIED MATERIALS MUST BE USED. NO CHANGES OR MODIFICATIONS WILL BE MADE WITHOUT WRITTEN AUTHORIZATION OF THE HARFORD SOIL CONSERVATION DISTRICT.
- TEMPORARY FENCING SHALL BE PLACED AROUND ALL SEDIMENT BASINS, TRAPS, AND PONDS DURING CONSTRUCTION AND SITE GRADING.
- AT THE END OF EACH WORKING DAY ALL SEDIMENT CONTROL PRACTICES WILL BE INSPECTED AND LEFT OPERATIONAL. A WEEKLY LOG WILL BE KEPT IN ACCORDANCE WITH NOIN/PDPS REGULATIONS. A COPY OF THE APPROVED SEDIMENT CONTROL PLANS SHALL BE AVAILABLE AT THE SITE AT ALL TIMES.
- ENSURE POSITIVE DRAINAGE TO ALL ROAD INLETS DURING ALL PHASES OF ROAD CONSTRUCTION TO ENSURE POSITIVE DRAINAGE TO ALL ROAD INLETS.
- CUT AND/OR FILL SHALL BE DONE IN CONFORMANCE WITH 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS FOR LAND GRADING.
- SURFACE FLOWS OVER CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER REDIRECTING FLOWS FROM TRaversing THE SLOPES OR BY INSTALLING MECHANICAL DEVICES TO SAFELY CONVEY WATER DOWN SLOPES WITHOUT CAUSING EROSION.
- OFF-SITE WASTE OR BORROW AREAS SHALL HAVE AN APPROVED EROSION AND SEDIMENT CONTROL PLAN PRIOR TO THE IMPORT OR EXPORT OF MATERIAL TO/FROM THE PROJECT SITE.
- ALL MATERIAL ORIGINATING FROM THE DEVELOPMENT OF THE PROPERTY AND DEPOSITED ON THE PUBLIC ROADS SHALL BE REMOVED.
- STORM DRAIN INLETS AND OUTLETS SHALL BE PROTECTED PER 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.
- TOPSOIL, LIMING, FERTILIZING, SEEDING, MULCHING, SOD, ETC. ARE ALL ESSENTIAL PARTS OF THE SEDIMENT CONTROL PLAN AND MUST BE COMPLETED ALONG WITH ALL OTHER PRACTICES.
- TRAPS TO BE REMOVED SHALL BE DEWATERED AS PER THE 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.
- PRIOR TO REMOVAL OF TRAPS OR CONVERSION OF SEDIMENT BASINS TO SWM FACILITIES, THE STORM DRAINS WILL BE FLUSHED.
- SEDIMENT CONTROL PRACTICES WILL BE MAINTAINED UNTIL ALL DISTURBED AREAS FOR WHICH THE PRACTICES WERE INSTALLED HAVE BEEN STABILIZED. SEDIMENT CONTROL PRACTICES MAY BE REMOVED ONLY WITH THE AUTHORIZATION OF THE DPW INSPECTOR. ALL DISTURBED AREAS RESULTING FROM THE REMOVAL OF SEDIMENT CONTROL DEVICES SHALL BE STABILIZED IMMEDIATELY. REMOVAL PRIOR TO INSPECTOR'S APPROVAL CONSTITUTES A VIOLATION.

Revised July 2019

## TEMPORARY VEGETATION STABILIZATION NOTES

- SEEDBED PREPARATION:**  
Loosen a minimum of three inches along upper soil by discing, raking or other acceptable means.
- SOIL AMENDMENTS:**  
Incorporate 436 lbs. per acre of 10-20-20 fertilizer and two (2) tons per acre of lime by discing or other acceptable means.
- SEEDING:**  
FOR PERIODS OF MARCH 1 TO APRIL 30 AND AUGUST 15 TO NOVEMBER 15: Seed with 2.5 bu. per acre of Cereal Rye or 40 lbs. per acre of Annual Ryegrass.
- GENERAL PERIOD OF MAY 1 TO AUGUST 14:** Seed with 3 lbs. per acre of Weeping Lovegrass or 30 lbs. per acre of Pearl or Foxtail Millet.
- FOR THE PERIOD OF NOVEMBER 16 TO FEBRUARY 28:** Protect the site by applying two (2) tons per acre of well anchored straw mulch and seed as soon as possible in the spring.
- MULCHING SPECIFICATIONS:**  
Mulch shall be applied to all seeded areas immediately after seeding.
- Apply two (2) tons per acre of straw over all seeded areas. If a mulch anchoring tool is to be used, the rate shall be increased to 2.5 tons per acre.\*\*
- Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind and water. The type of mulch anchoring used must comply with the 2011 MARYLAND STANDARD AND SPECIFICATIONS.

\*IF OTHER SEED MIXES ARE TO BE SUBSTITUTED, THEY MUST COMPLY WITH THE 2011 MARYLAND STANDARD AND SPECIFICATIONS, B-4-4: "TEMPORARY SEEDING", TABLE B-1 (PAGE B-20).

\*\*IF A DIFFERENT TYPE OF MULCH IS TO BE USED, IT MUST COMPLY WITH THE 2011 MARYLAND STANDARD AND SPECIFICATION, B-4-3: "SEEDING AND MULCHING" (PAGES B-15 - B-17).

Revised: 9/27/22

## PERMANENT VEGETATION STABILIZATION NOTES

- ALL DISTURBED AREAS, WHICH ARE NOT TO BE PAVED, SHALL BE PERMANENTLY STABILIZED AS FOLLOWS:**
  - SEEDBED PREPARATION:**  
Loosen a minimum of three inches along upper soil by raking, discing, or other acceptable means after spreading four inches of topsoil.
  - SOIL AMENDMENTS:**  
Incorporate 225 lbs. per acre of 10-20-20 fertilizer and two tons per acre of lime by discing or other acceptable means.
  - SEEDING:**  
FOR PERIODS OF MARCH 1 TO MAY 15 AND AUGUST 15 TO OCTOBER 15: Seed with 60 lbs. per acre of Tall Fescue, 40 lbs. per acre of Kentucky Bluegrass, and 20 lbs. per acre of Perennial Ryegrass.
  - FOR PERIOD OF MAY 16 TO AUGUST 14:** Seed with 100 lbs. per acre of Tall Fescue and 3 lbs. per acre of Weeping Lovegrass or 3 lbs. per acre of Pearl or Foxtail Millet.
  - FOR PERIOD OF OCTOBER 16 TO FEBRUARY 28:**
    - Option 1: Protect the site by applying two (2) tons per acre of well anchored straw mulch and seed as soon as possible in the spring.
    - Option 2: Use sod, provided the ground is suitable and thawed; comply with the 2011 MARYLAND STANDARD AND SPECIFICATION addressing "SOD" (pages B-23 & B-24).
- MULCHING SPECIFICATIONS:**  
Mulch shall be applied to all seeded areas immediately after seeding.
- Apply two (2) tons per acre of straw over all seeded areas. If a mulch anchoring tool is to be used, the rate shall be increased to 2.5 tons per acre.
- \*\* Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind and water. The type of mulch anchoring used must comply with the 2011 MARYLAND STANDARD AND SPECIFICATIONS.

\*IF OTHER SEED MIXES ARE TO BE SUBSTITUTED, THEY MUST COMPLY WITH THE 2011 MARYLAND STANDARD AND SPECIFICATIONS, B-4-5: "PERMANENT SEEDING", TABLE B-3 (PAGES B-26 TO B-31).

\*\* IF A DIFFERENT TYPE OF MULCH IS TO BE USED, IT MUST COMPLY WITH THE 2011 MARYLAND STANDARD AND SPECIFICATION, B-4-3: "SEEDING AND MULCHING" (PAGES B-15 - B-17).

Revised: 9/27/22

## SEQUENCE OF CONSTRUCTION

- 72 HOURS PRIOR TO THE PRE-CONSTRUCTION MEETING, THE CONTRACTOR SHALL HAVE ALL LIMITS OF DISTURBANCE (LOD) AND EROSION AND SEDIMENT CONTROL (ESC) DEVICES STAKED OUT IN THE FIELD FOR REVIEW AND APPROVAL BY THE COUNTY. CLEARING LIMITS SHALL BE ROUGH STAKED IN ORDER TO FACILITATE LOCATION FOR TRENCHING AND FENCING INSTALLATION. CONTACT MISS UTILITY AND HARFORD COUNTY TO HAVE ALL UTILITIES MARKED. THIS STREAM HAS BEEN DESIGNATED AS A MARYLAND USE CLASS III AND IS THEREFORE SUBJECT TO STREAM CLOSURE FROM OCTOBER 1 TO APRIL 30, INCLUSIVE, DURING ANY YEAR. NO IN-STREAM WORK CAN BE PERFORMED DURING THIS PERIOD.
- PRIOR TO ANY CLEARING, GRADING, OR INSTALLATION OF EROSION SEDIMENT CONTROL MEASURES, THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION MEETING ON-SITE WITH THE A REPRESENTATIVE FROM HARFORD COUNTY OFFICE OF WATERSHED PROTECTION TO APPROVE THE APPROVAL FROM DPW.
- ONLY TREES 12" DBH (DIAMETER AT BREAST HEIGHT) OR GREATER ARE SHOWN ON THE ESC PLANS. CONTRACTOR IS TO CONDUCT A SITE SURVEY AND IDENTIFY THE ACTIVE WORK AREAS TO DETERMINE WHICH TREES ARE TO BE SAVED AND TREES TO BE REMOVED. IF ANY TREE MARKED TO BE SAVED IS DEAD OR DYING, NOTIFY THE DESIGN ENGINEER PRIOR TO INSTALLATION OF PLANNING. CONTRACTOR SHALL MARK TREES TO BE SALVAGED DURING THE CLEARING PROCESS FOR USE IN GRADE CONTROL STRUCTURES AND LOG SILLS. CONTRACTOR MUST ENSURE ENOUGH TREES ARE SALVAGED DURING THE CLEARING PROCESS TO BUILD STRUCTURES REQUIRING E-H. ANY AREAS DISTURBED BY REMOVING THE ESC DEVICES SHALL BE STABILIZED IMMEDIATELY.

### GENERAL SITE PREPARATION (UNT TO BYNUM RUN REACHES 1 & 2)

- MANUALLY INSTALL HIGH VISIBILITY ORANGE CONSTRUCTION FENCE ALONG THE LIMITS OF DISTURBANCE AND TREE PROTECTION PLANNING (TPP) FOR PHASES A-D CONSTRUCTION.
- CLEAR FOR AND INSTALL THE TEMPORARY MULCH ACCESS ROADS, STABILIZED CONSTRUCTION ENTRANCES, SUPER SILT FENCE, DIVERSION FENCE, TEMPORARY ACCESS BRIDGE/CULVERTS, AND STOCKPILE AREAS REQUIRED FOR PHASES A-D CONSTRUCTION. PERFORM ROOT PRUNING PER THE CONTRACT DOCUMENTS AND BRANCH PRUNING AS NECESSARY.

### PHASE A

- INSTALL SANDBAG DIKES AND PUMP AROUND PRACTICE TO PERFORM IN STREAM WORK ON OUTFALL #6, FROM STATIONS 800+00 TO 801+72, AND OUTFALL #7, WORKING FROM DOWNSTREAM TO UPSTREAM. PERFORM ONLY THE NECESSARY CLEARING AND GRUBBING OPERATIONS REQUIRED FOR PHASE A CONSTRUCTION.
- CONSTRUCT THE SCOUR POOL, STREAM CHANNEL, AND ASSOCIATED FLOODPLAIN BETWEEN STATIONS 800+00 TO 1+50, WORKING FROM UPSTREAM TO DOWNSTREAM ON UNT TO BYNUM RUN. AS CONSTRUCTION PROGRESSES, CONSTRUCT THE OUTFALL #1 CHANNEL.
- REMOVE TEMPORARY MULCH ACCESS ROAD AS NECESSARY AS CONSTRUCTION PROGRESSES DOWNSTREAM.
- PERMANENTLY STABILIZE WITH TOPSOIL, SEED/MULCH, AND STABILIZATION MATTING. UPON COMPLETION AND STABILIZATION OF PHASE A, PROCEED TO PHASE B.

### PHASE B

- GRADE STREAM BANKS BETWEEN STATIONS 13+90 TO 11+24, WORKING FROM DOWNSTREAM TO UPSTREAM ON UNT TO BYNUM RUN.
- REMOVE TEMPORARY MULCH ACCESS ROAD AS NECESSARY AS CONSTRUCTION PROGRESSES DOWNSTREAM.
- PERMANENTLY STABILIZE WITH TOPSOIL, SEED/MULCH, AND STABILIZATION MATTING. UPON COMPLETION AND ACCEPTANCE OF PHASE B, PROCEED TO PHASE C.

### PHASE C

- INSTALL SANDBAG DIKES AND PUMP AROUND PRACTICE AS NECESSARY TO PERFORM IN STREAM WORK ON UNT TO BYNUM RUN FROM STATIONS 7+00 TO 11+24, OUTFALL #4, AND OUTFALL #5, WORKING FROM DOWNSTREAM TO UPSTREAM. PERFORM ONLY THE NECESSARY CLEARING AND GRUBBING OPERATIONS REQUIRED FOR PHASE C CONSTRUCTION.
- CONSTRUCT THE STREAM CHANNEL, AND ASSOCIATED FLOODPLAIN BETWEEN STATIONS 7+00 TO 11+24, WORKING FROM DOWNSTREAM TO UPSTREAM ON UNT TO BYNUM RUN. AS CONSTRUCTION PROGRESSES, CONSTRUCT THE OUTFALL #4 RIPRAP STABILIZATION AND OUTFALL #5 CHANNEL.
- UPON COMPLETION OF THE STREAM CHANNEL AND FLOODPLAIN CONSTRUCTION, REMOVE TEMPORARY MULCH ACCESS ROAD.
- PERMANENTLY STABILIZE WITH TOPSOIL, SEED/MULCH, AND STABILIZATION MATTING. UPON COMPLETION AND ACCEPTANCE OF PHASE C, PROCEED TO PHASE D.

### PHASE D

- INSTALL SANDBAG DIKES AND PUMP AROUND PRACTICE AS NECESSARY TO PERFORM IN STREAM WORK ON UNT TO BYNUM RUN FROM STATIONS 1+50 TO 7+00 AND OUTFALL #2 & OUTFALL #3, WORKING FROM DOWNSTREAM TO UPSTREAM. PERFORM ONLY THE NECESSARY CLEARING AND GRUBBING OPERATIONS REQUIRED FOR PHASE D CONSTRUCTION.
- CONSTRUCT THE STREAM CHANNEL, AND ASSOCIATED FLOODPLAIN BETWEEN STATIONS 1+50 TO 7+00, WORKING FROM DOWNSTREAM TO UPSTREAM ON UNT TO BYNUM RUN. AS CONSTRUCTION PROGRESSES, CONSTRUCT THE OUTFALL #2 & OUTFALL #3 RIPRAP STABILIZATION.
- UPON COMPLETION OF THE STREAM CHANNEL AND FLOODPLAIN CONSTRUCTION, REMOVE TEMPORARY MULCH ACCESS ROAD. REMOVE MAIN STAGING AND STOCKPILE AREA ASSOCIATED WITH PHASES A-D CONSTRUCTION.
- PERMANENTLY STABILIZE WITH TOPSOIL, SEED/MULCH, AND STABILIZATION MATTING.
- UPON COMPLETION OF GRADING AND STRUCTURE INSTALLATION IN PHASES A-D, AND WITH APPROVAL FROM THE COUNTY INSPECTOR, DESIGN ENGINEER, AND COUNTY PROJECT MANAGER, THE CONTRACTOR MAY REMOVE ESC MEASURES. ANY AREAS DISTURBED BY REMOVING THE ESC DEVICES SHALL BE STABILIZED IMMEDIATELY. UPON COMPLETION AND ACCEPTANCE OF PHASE D, PROCEED TO PHASE E.

### GENERAL SITE PREPARATION (UNT TO BYNUM RUN REACH 3 & TRIBUTARY 1)

- MANUALLY INSTALL HIGH VISIBILITY ORANGE CONSTRUCTION FENCE ALONG THE LIMITS OF DISTURBANCE AND TREE PROTECTION PLANNING (TPP) FOR PHASES E - H CONSTRUCTION.
- CLEAR FOR AND INSTALL THE TEMPORARY MULCH ACCESS ROADS (EXCLUDING THE IN-CHANNEL ACCESS ROAD ON TRIBUTARY 1), SUPER SILT FENCE, TEMPORARY ACCESS BRIDGES, AND STOCKPILE AREAS REQUIRED FOR PHASES E - H CONSTRUCTION. PERFORM ROOT PRUNING PER THE CONTRACT DOCUMENTS AND BRANCH PRUNING AS NECESSARY.

### PHASE E

- ROUGH GRADE THE TRIBUTARY 1 VALLEY CORRIDOR AS NEEDED TO FACILITATE INSTALLATION OF THE TEMPORARY MULCH ACCESS ROAD FROM STA. 200+00 TO 205+40 WORKING FROM UPSTREAM TO DOWNSTREAM.
- INSTALL SANDBAG DIKES AND PUMP AROUND PRACTICE NECESSARY TO PERFORM IN STREAM WORK ALONG TRIBUTARY 1, FROM STATIONS 200+00 TO 205+40 WORKING FROM UPSTREAM TO DOWNSTREAM. PERFORM ONLY THE NECESSARY CLEARING AND GRUBBING OPERATIONS REQUIRED FOR PHASE E CONSTRUCTION.
- CONSTRUCT THE STREAM CHANNEL BETWEEN STATIONS 200+00 TO 205+40 WORKING FROM DOWNSTREAM TO UPSTREAM ON TRIBUTARY 1. AS CONSTRUCTION PROGRESSES UPSTREAM, CONCURRENTLY REMOVE HAUL ROAD TO FACILITATE CONSTRUCTION.
- PERMANENTLY STABILIZE WITH TOPSOIL, SEED/MULCH, AND STABILIZATION MATTING.
- UPON COMPLETION AND STABILIZATION OF PHASE E, REMOVE STAGING AND STOCKPILE AREA AT THE TRIBUTARY 1 STABILIZED CONSTRUCTION ENTRANCE AND PROCEED TO PHASE F.

### PHASE F

- ROUGH GRADE THE TRIBUTARY 1 VALLEY CORRIDOR AS NEEDED TO FACILITATE INSTALLATION OF THE TEMPORARY MULCH ACCESS ROAD FROM STA. 205+40 TO 210+00 WORKING FROM DOWNSTREAM TO UPSTREAM.
- INSTALL SANDBAG DIKES AND PUMP AROUND PRACTICE NECESSARY TO PERFORM IN STREAM WORK ALONG TRIBUTARY 1, FROM STATIONS 205+40 TO 210+00 WORKING FROM DOWNSTREAM TO UPSTREAM. PERFORM ONLY THE NECESSARY CLEARING AND GRUBBING OPERATIONS REQUIRED FOR PHASE F CONSTRUCTION.

- CONSTRUCT THE STREAM CHANNEL BETWEEN STATIONS 205+40 TO 210+00 WORKING FROM UPSTREAM TO DOWNSTREAM ON TRIBUTARY 1. AS CONSTRUCTION PROGRESSES DOWNSTREAM, CONCURRENTLY REMOVE HAUL ROAD TO FACILITATE CONSTRUCTION.
- PERMANENTLY STABILIZE WITH TOPSOIL, SEED/MULCH, AND STABILIZATION MATTING.

- UPON COMPLETION AND STABILIZATION OF PHASE F, PROCEED TO PHASE G.

### PHASE G

- INSTALL SANDBAG DIKES AND PUMP AROUND PRACTICE NECESSARY TO PERFORM IN STREAM WORK ALONG UNT TO BYNUM RUN, FROM STATIONS 14+90 TO 18+00, AND TRIBUTARY 1, FROM STA. 210+00 TO 210+86, WORKING FROM UPSTREAM TO DOWNSTREAM. PERFORM ONLY THE NECESSARY CLEARING AND GRUBBING OPERATIONS REQUIRED FOR PHASE G CONSTRUCTION.
- CONSTRUCT THE BOULDER STEP STRUCTURES, STREAM CHANNEL, STREAM BANKS AND ASSOCIATED FLOODPLAIN BETWEEN STATIONS 14+90 TO 18+00, WORKING FROM UPSTREAM TO DOWNSTREAM ALONG THE UNT TO BYNUM RUN. AS CONSTRUCTION PROGRESSES, CONSTRUCT TRIBUTARY 1 STREAM CHANNEL AND ASSOCIATED VALLEY FROM STA. 210+00 TO 210+86 FROM UPSTREAM TO DOWNSTREAM.
- UPON COMPLETION OF THE STREAM AND FLOODPLAIN CONSTRUCTION, REMOVE STAGING AND STOCKPILE AREA ASSOCIATED WITH PHASE G CONSTRUCTION. REMOVE TEMPORARY MULCH ACCESS ROAD AND TEMPORARY ACCESS BRIDGE ASSOCIATED WITH PHASE G CONSTRUCTION.
- PERMANENTLY STABILIZE WITH TOPSOIL, SEED/MULCH, STABILIZATION MATTING. UPON COMPLETION AND STABILIZATION OF PHASE G, PROCEED TO PHASE H.

- MULCH shall be applied to all seeded areas immediately after seeding.

- Apply two (2) tons per acre of straw over all seeded areas. If a mulch anchoring tool is to be used, the rate shall be increased to 2.5 tons per acre.

- \*\* Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind and water. The type of mulch anchoring used must comply with the 2011 MARYLAND STANDARD AND SPECIFICATIONS.

### PHASE H

- INSTALL SANDBAG DIKES AND PUMP AROUND PRACTICE TO PERFORM IN STREAM WORK ON OUTFALL #6, FROM STATIONS 800+00 TO 801+72, AND OUTFALL #7, WORKING FROM DOWNSTREAM TO UPSTREAM. PERFORM ONLY THE NECESSARY CLEARING AND GRUBBING OPERATIONS REQUIRED FOR PHASE H CONSTRUCTION.
- CONSTRUCT THE PROPOSED RIPRAP STABILIZATION BETWEEN STATIONS 800+00 TO 801+72, WORKING FROM DOWNSTREAM TO UPSTREAM ON OUTFALL #6. AS CONSTRUCTION PROGRESSES, CONSTRUCT OUTFALL #7 RIPRAP STABILIZATION.
- UPON COMPLETION OF THE STREAM CONSTRUCTION, REMOVE MAIN STAGING AND STOCKPILE AREAS ASSOCIATED WITH PHASES G & H CONSTRUCTION.
- PERMANENTLY STABILIZE WITH TOPSOIL, SEED/MULCH, STABILIZATION MATTING.
- UPON COMPLETION OF GRADING AND STRUCTURE INSTALLATION IN PHASE H, AND WITH APPROVAL FROM THE COUNTY INSPECTOR, DESIGN ENGINEER, AND COUNTY PROJECT MANAGER, THE CONTRACTOR MAY REMOVE REMAINING ESC MEASURES WITHIN PHASES E - H. ANY AREAS DISTURBED BY REMOVING THE ESC DEVICES SHALL BE STABILIZED IMMEDIATELY.

### PROJECT COMPLETION

- COMPLETE IN-KIND RESTORATION OF ANY DAMAGE TO EXISTING INFRASTRUCTURE EITHER ON-SITE OR OFF-SITE. THIS INCLUDES BUT IS NOT LIMITED TO: SIDEWALK, CURB AND GUTTER, PAVEMENT, UTILITY APPURTENANCES, TREES, SIGNS, ETC.
- COMPLETE FINAL PERMANENT VEGETATIVE STABILIZATION AND PLANTING OF SITE PER THE LANDSCAPE PLAN.
- CONDUCT A PUNCH LIST WALK-THROUGH WITH THE COUNTY PROJECT MANAGER, THE DESIGN ENGINEER, AND THE COUNTY INSPECTOR.
- CORRECT ANY OUTSTANDING ITEMS FOLLOWING THE PUNCH LIST WALK-THROUGH.
- WITH WRITTEN APPROVAL FROM THE COUNTY INSPECTOR, DESIGN ENGINEER, AND COUNTY PROJECT MANAGER, REMOVE ANY REMAINING SEDIMENT CONTROL DEVICES.

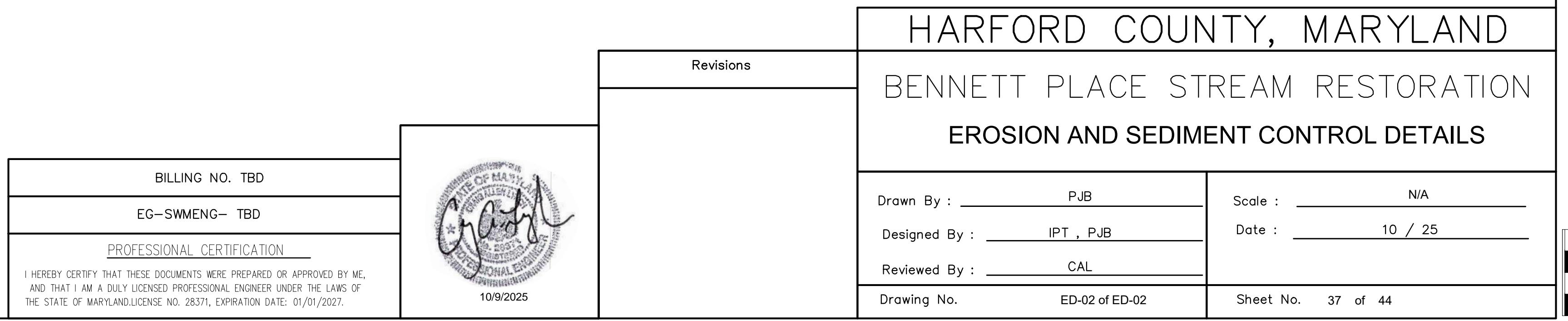
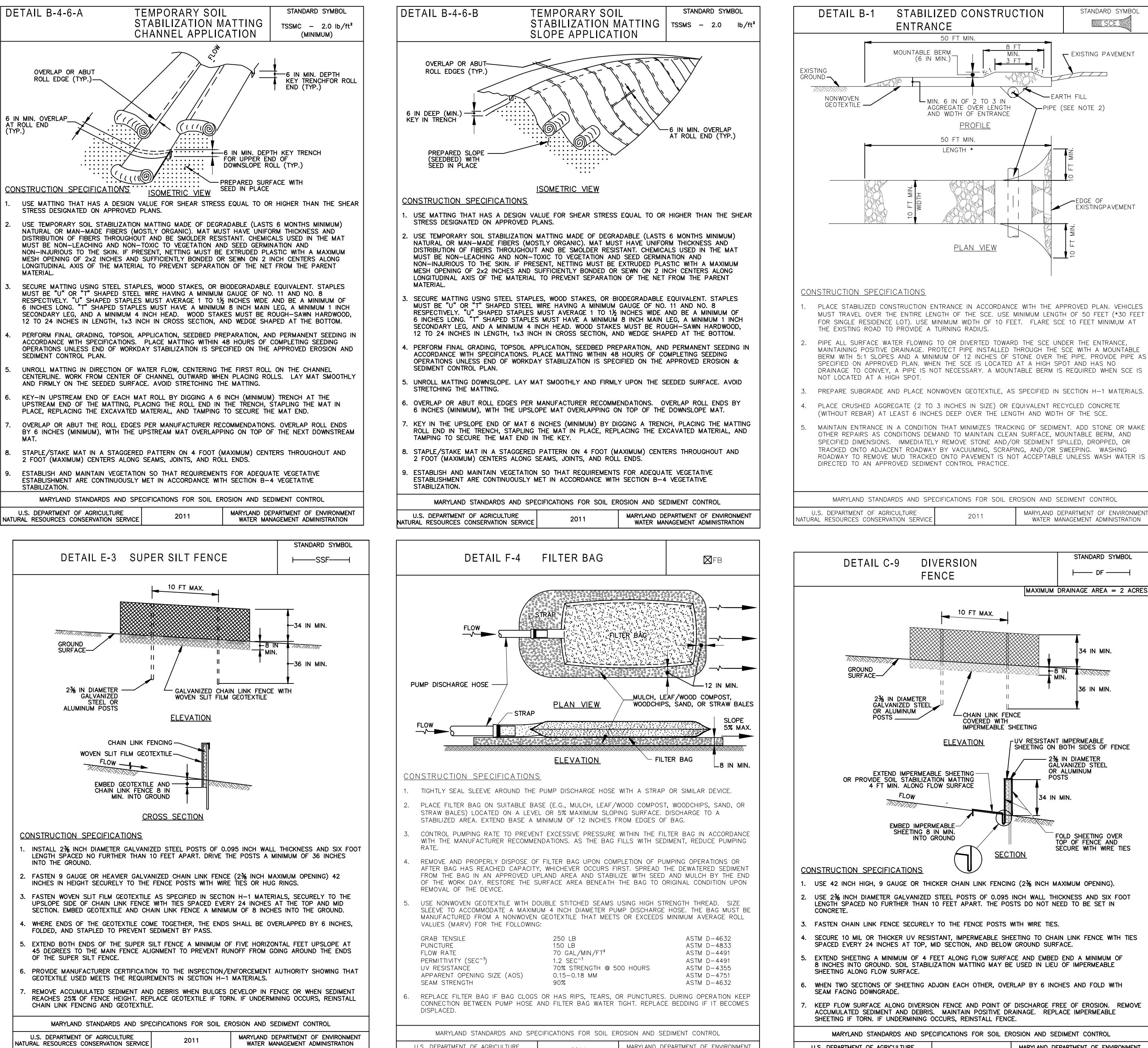
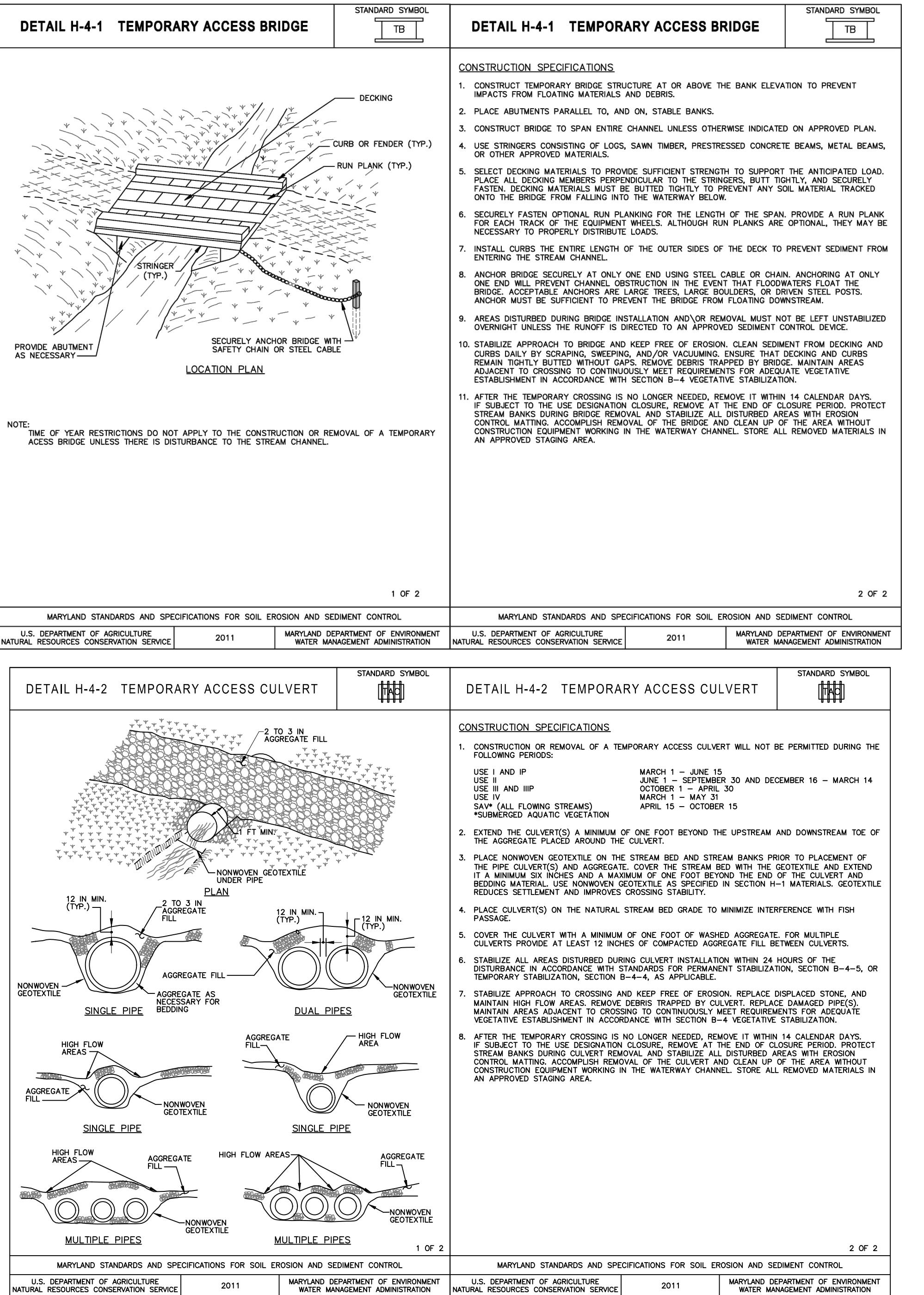
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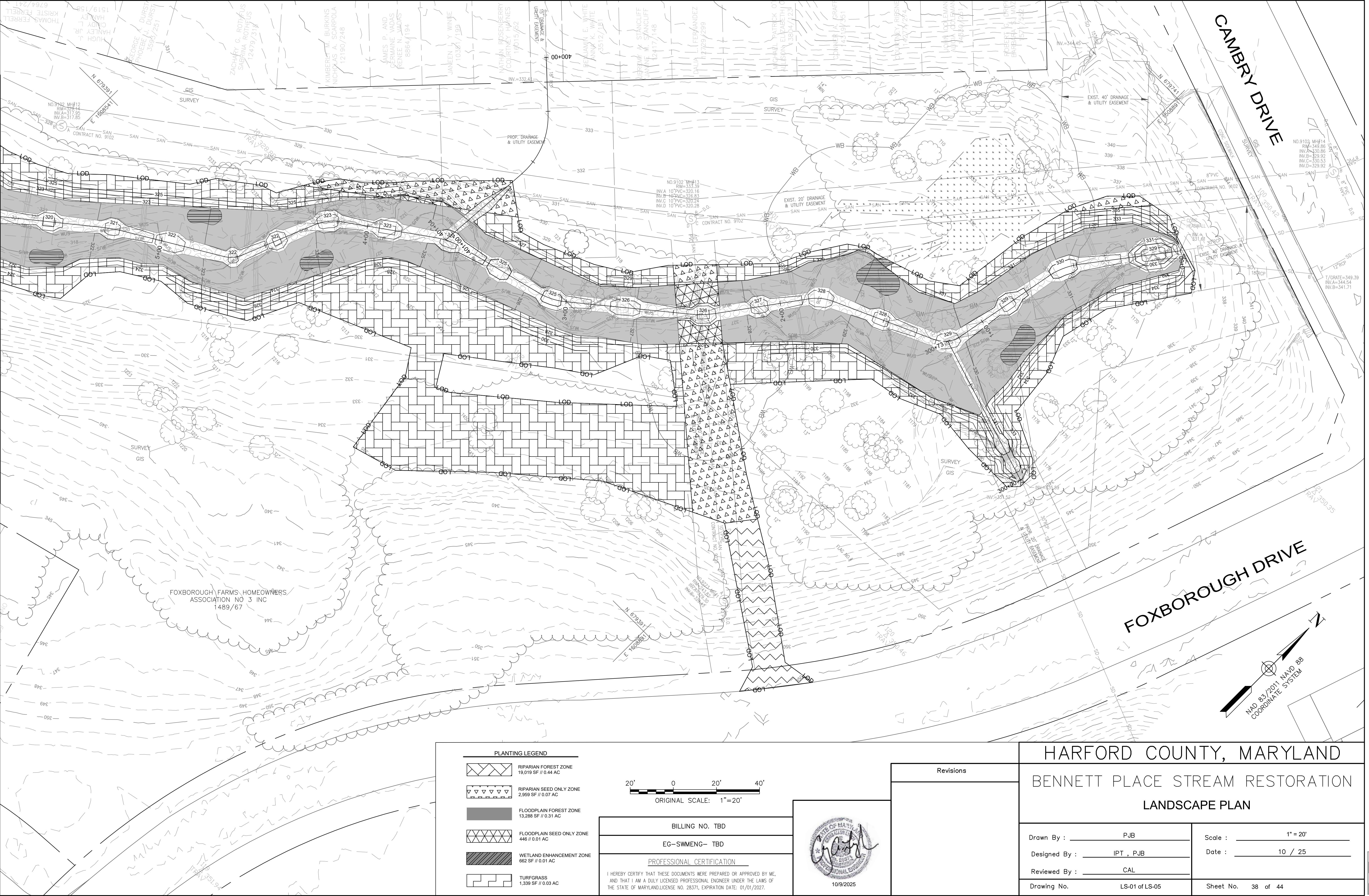
- CONTRACTOR MAY WORK MULTIPLE PHASES SIMULTANEOUSLY IN NON-CONTIGUOUS ORDER WITH WRITTEN APPROVAL FROM THE COUNTY PROJECT MANAGER AND DESIGN ENGINEER. CONTRACTOR MUST ENSURE CLEAN WATER IS DIVERTED AROUND ALL ACTIVE WORK AREAS AND SEDIMENTATION.
- CONSTRUCTION SHALL BE PERFORMED SUCH THAT ANY AREA OF DISTURBANCE CAN BE STABILIZED AT THE END OF EACH WORKING DAY, ENSURING POSITIVE DRAINAGE IS MAINTAINED FROM THE PROPOSED CHANNEL TO THE EXISTING CHANNEL. THIS SHALL BE COMPLETED THROUGH TEMPORARY GRADING AND TEMPORARY STABILIZATION WITH CLASS I RIPRAP OR IMPERMEABLE SHEETING AS NECESSARY.

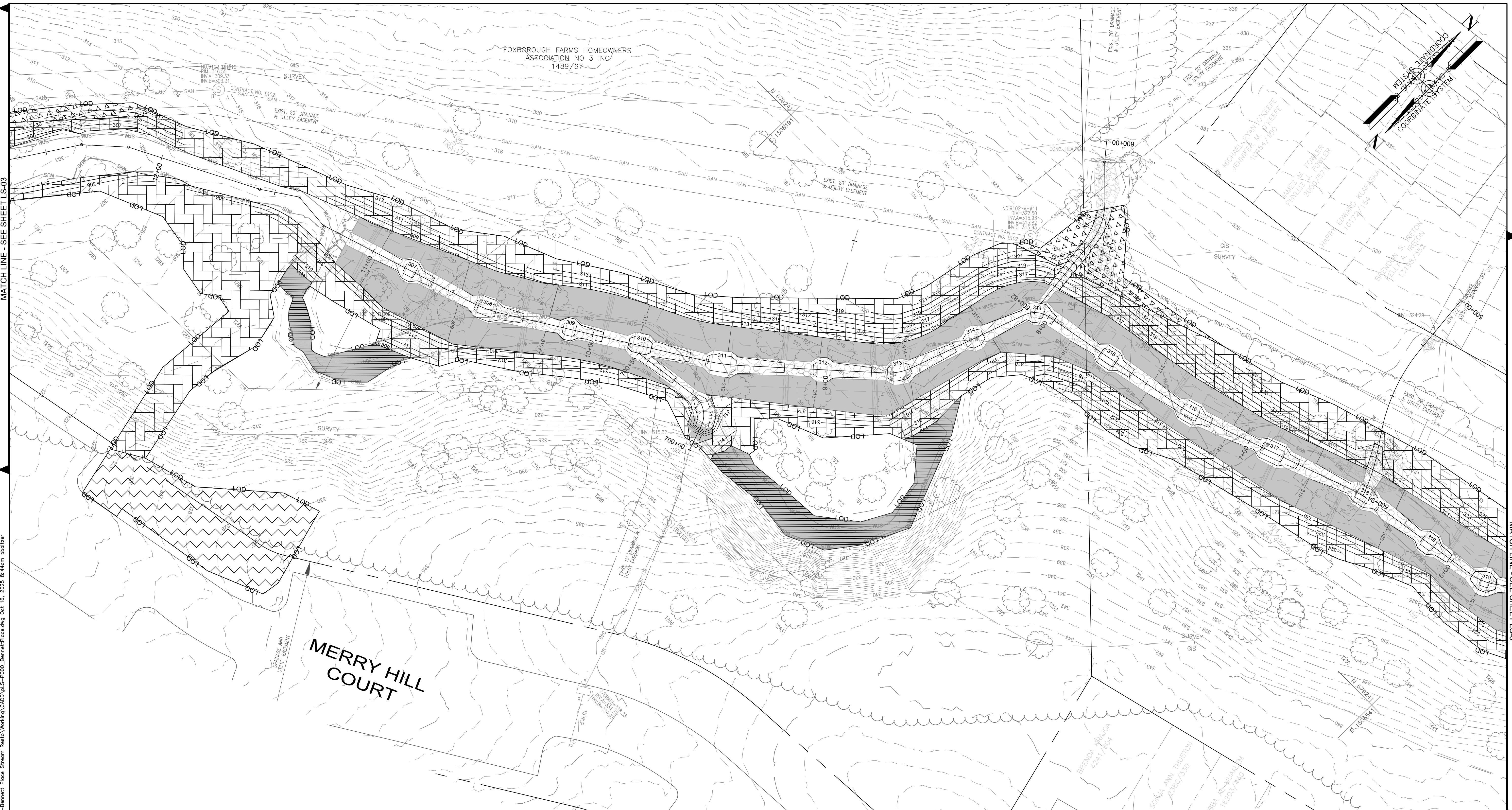
### PHASE B

- INSTALL SANDBAG DIKES AND PUMP AROUND PRACTICE TO PERFORM IN STREAM WORK









# HARFORD COUNTY MARYI AND

# BFNNFTT PLACE STREAM RESTORATION

## LANDSCAPE PLAN

Drawn By : <u>PJB</u>	Scale : <u>1" = 20'</u>
Designed By : <u>IPT , PJB</u>	Date : <u>10 / 25</u>
Reviewed By : <u>CAL</u>	
Drawing No. <u>LS-02 of LS-05</u>	Sheet No. <u>39 of 44</u>

PLANTING LEGEND	
	RIPARIAN FOREST ZONE 18,892 SF // 0.43 AC
	RIPARIAN SEED ONLY 1,285 SF // 0.03 AC
	FLOODPLAIN FOREST 10,618 SF // 0.24 AC
	WETLAND ENHANCEMENT 2,208 SF // 0.05 AC
	TURFGRASS 2,877 SF // 0.07 AC

ORIGINAL SCALE:  $1'' = 20'$

BILLING NO. TBD

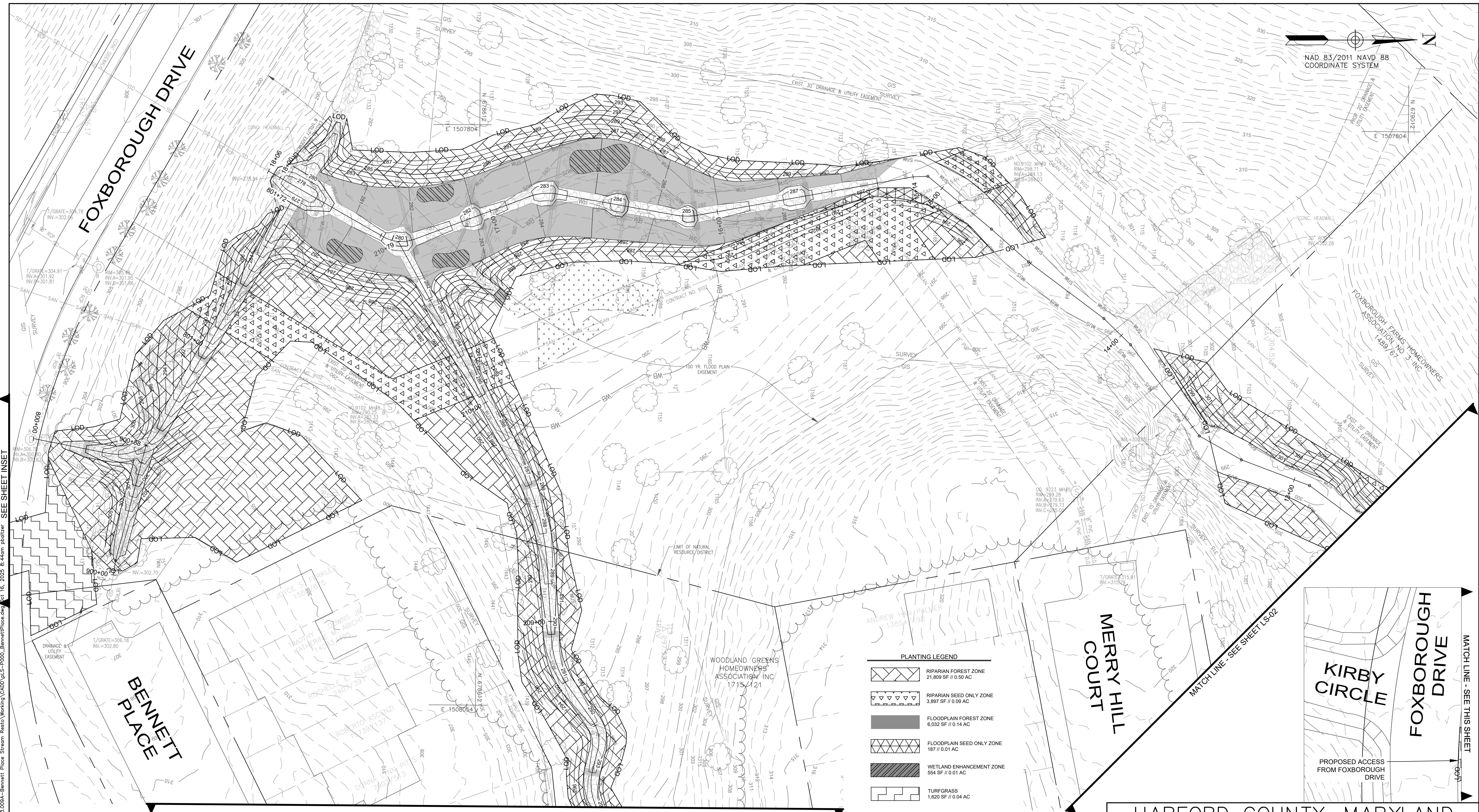
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PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY  
AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAW  
THE STATE OF MARYLAND. LICENSE NO. 28371, EXPIRATION DATE: 01/01/2027

A circular stamp with a double-line border. The outer ring contains the words 'STATE OF MAINE' at the top, 'PROFESSIONAL' on the left, 'ENGINEERS' on the right, 'REGISTRATION' at the bottom right, and 'BOARD' at the bottom left. The center of the stamp contains the text 'REGISTRATION NO. 20374' and a handwritten signature that appears to read 'Crabtree'.



## HARFORD COUNTY, MARYLAND

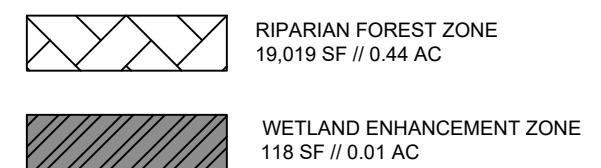
### BENNETT PLACE STREAM RESTORATION

#### LANDSCAPE PLAN

Drawn By : <u>PJB</u>	Scale : <u>1" = 20'</u>
Designed By : <u>IPT, PJB</u>	Date : <u>10 / 25</u>
Reviewed By : <u>CAL</u>	
Drawing No. <u>LS-03 of LS-05</u>	Sheet No. <u>40 of 44</u>

MERRY HILL  
COURT

PLANTING LEGEND



MATCH LINE - SEE SHEET LS-03

BENNETT PLACE

20' 0 20' 40'  
ORIGINAL SCALE: 1"=20'

BILLING NO. TBD

EG-SWMENG- TBD

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME,  
AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF  
THE STATE OF MARYLAND, LICENSE NO. 28371, EXPIRATION DATE: 01/01/2027.



Revisions

HARFORD COUNTY, MARYLAND  
BENNETT PLACE STREAM RESTORATION  
LANDSCAPE PLAN

Drawn By : PJB

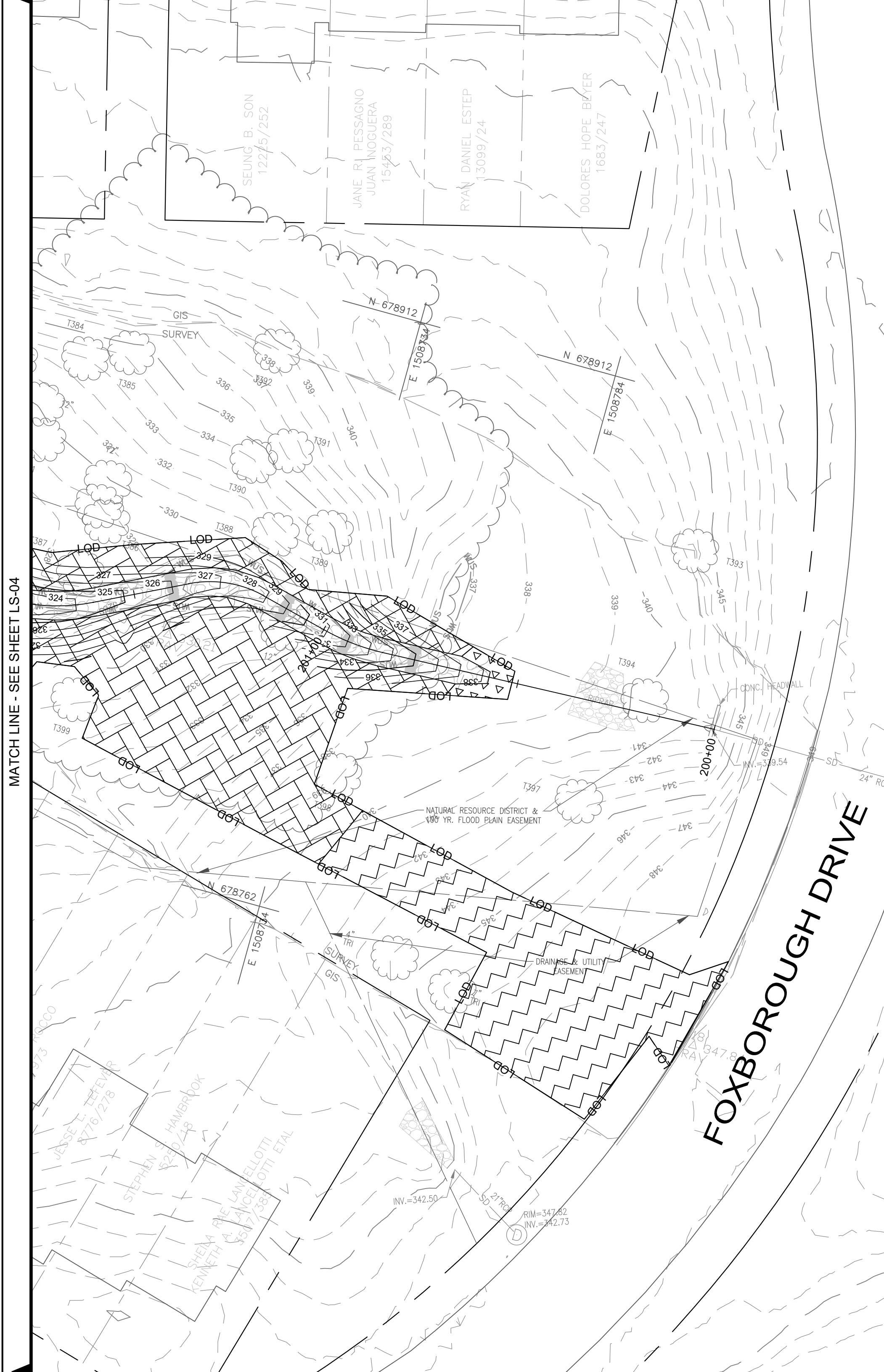
Designed By : IPT, PJB

Reviewed By : CAL

Drawing No. LS-04 of LS-05

Scale : 1" = 20'

Date : 10 / 25



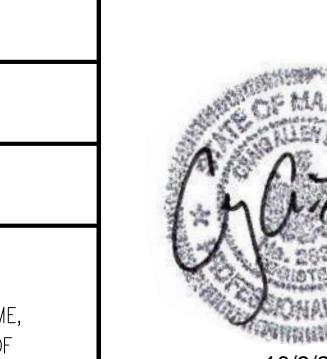
20' 0 20' 40'  
ORIGINAL SCALE: 1"=20'

BILLING NO. TBD

EG-SWMENG- TBD

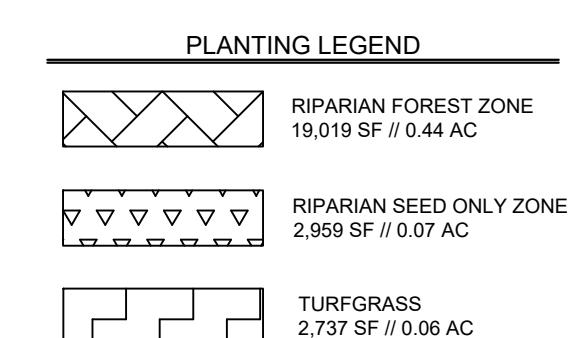
PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME,  
AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF  
THE STATE OF MARYLAND. LICENSE NO. 28371, EXPIRATION DATE: 01/01/2027.



Revisions

Drawn By : <u>PJB</u>	Scale : <u>1" = 20'</u>
Designed By : <u>IPT, PJB</u>	Date : <u>10 / 25</u>
Reviewed By : <u>CAL</u>	
Drawing No. <u>LS-05 of LS-05</u>	Sheet No. <u>42 of 44</u>



BID No.:

HCG DWG ID No.:

SCALE : 1"=20'

10/9/2025



