

BENNETT PLACE STREAM RESTORATION
BID NO. TBD
OFFICE OF WATERSHED PROTECTION AND RESTORATION
HARFORD COUNTY, MARYLAND
30% DESIGN PLANS – NOT FOR CONSTRUCTION

PROJECT OVERVIEW:
THE SCOPE OF THIS PROJECT IS THE RESTORATION OF TWO STREAMS, AN UNNAMED TRIBUTARY (UNT) TO BYNUM RUN & AN ADDITIONAL TRIBUTARY (TRIBUTARY 1), TOTALING APPROXIMATELY 3,164 LINEAR FEET. THE PRIMARY GOAL OF THIS PROJECT IS TO REDUCE STREAM BED AND BANK EROSION AND ASSOCIATED NITROGEN AND PHOSPHORUS INPUTS TO ASSIST THE COUNTY IN MEETING MS4/TMDL REQUIREMENTS. A SECONDARY GOAL FOCUSES ON CREATING OPPORTUNITIES FOR ECOLOGICAL UPLIFT VIA FLOODPLAIN RECONNECTION AND HYPORHEIC EXCHANGE. THE PROJECT CONSISTS OF TWO STREAM SEGMENTS AND WILL EMPLOY A COMBINATION OF NATURAL CHANNEL DESIGN AND FLOODPLAIN/VALLEY RESTORATION TECHNIQUES TO REDUCE STREAM BANK EROSION, NUTRIENT INPUTS, AND IMPROVING ECOLOGICAL AND GEOMORPHIC FUNCTION. THE UNT TO BYNUM RUN BEGINS AT AN ENDWALL CONSISTING OF A 30" RCP WHILE TRIBUTARY 1 ORIGINATES DOWNSTREAM OF AN ENDWALL CONSISTING OF A 27" RCP. BOTH STREAMS ARE ALMOST ENTIRELY LOCATED ON PRIVATE PROPERTIES OWNED BY THE FOXBOROUGH FARMS HOMEOWNERS ASSOCIATION AND THE WOODLAND GREENS HOMEOWNERS ASSOCIATION.

PROJECT SUMMARY

TOTAL LENGTH OF STREAM RESTORED: 3,164 LF
STREAM USE CLASS: USE III
STREAM CLOSURE PERIOD: OCTOBER 1 – APRIL 30
LOAD REDUCTIONS:

STREAM	TSS REDUCTION	TN REDUCTION	TP REDUCTION
UNT TO BYNUM RUN	313 TONS/YR	358 LBS/YR	107 LBS/YR
TRIBUTARY 1	91 TONS/YR	81 LBS/YR	31 LBS/YR
TOTAL	404 TONS/YR	439 LBS/YR	138 LBS/YR

CREDIT TOTALS CALCULATED USING PROTOCOLS 1, 2, AND 3 METHODOLOGIES

IA CREDIT SUMMARY:

STREAM	DA	IA	PE REQ.	PE PROV.	IA CREDIT
UNT TO BYNUM RUN	119.52 AC	36.47 AC	N/A IN	N/A IN	48.47 AC
TRIBUTARY 1	14.90 AC	3.37 AC	N/A IN	N/A IN	13.71 AC

IMPERVIOUS ACRE CREDITS CALCULATED USING EQUIVALENT IMPERVIOUS ACRE METHODOLOGY

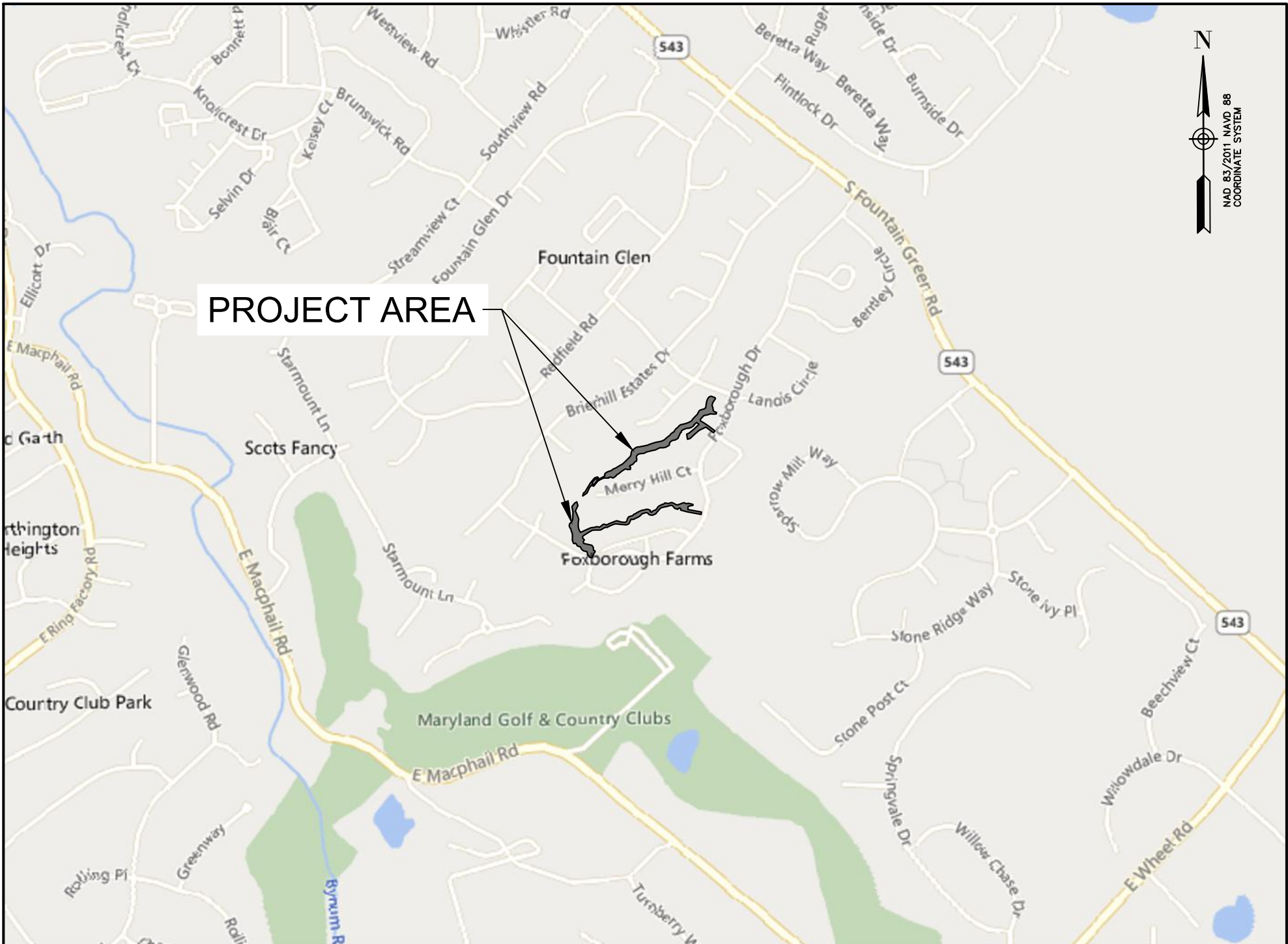
INDEX OF SHEETS

SHEET NO.	DESCRIPTION	TITLE
1	GN-01	TITLE SHEET
2	OV-01	OVERVIEW SHEET
3 - 4	DA-01 - DA-02	DRAINAGE AREA MAP
5 - 6	GE-01 - GE-02	GEOMETRY SHEETS
7 - 11	SR-01 - SR-05	GRADING PLAN
12 - 14	PR-01 - PR-03	PROFILE SHEETS
15 - 19	DE-01 - DE-05	DETAIL SHEETS

STANDARD SYMBOLS

	EX. TRAVERSE POINT
	EX. FENCE
	EX. PROPERTY BOUNDARY
	EX. EASEMENT
	EX. TREELINE
	EX. TREE
	EX. WATERS OF THE U.S.
	EX. STRUCTURE
	EX. RIPRAP
	EX. EDGE OF PAVEMENT
	EX. 5' MAJOR CONTOUR
	EX. 1' MAJOR CONTOUR
	EX. WETLAND
	EX. WETLAND BUFFER
	EX. 100-YR FLOODPLAIN
	EX. SANITARY SEWER LINE
	EX. STORM DRAIN LINE
	TOPOGRAPHIC SURVEY BOUNDARY

SEE PLAN SHEETS FOR PROPOSED FEATURES LEGEND



LOCATION MAP

SCALE 1" = 1,000'



PROPERTY OWNERS:

FOXBOROUGH FARMS HOMEOWNERS ASSOCIATION
L:1489 F:67 ; MAP 49, GRID 2F, PARCEL 289
L:1489 F:67 ; MAP 49, GRID 2F, PARCEL 291

WOODLAND GREENS HOMEOWNERS ASSOCIATION
L:1715 F:121 ; MAP 49, GRID 3F, PARCEL 324
L:1715 F:121 ; MAP 49, GRID 3F, PARCEL 309

OVERALL LIMIT OF DISTURBANCE:
128,505 SQ. FT // 2.95 AC.

FIELD VERIFICATION CERTIFICATION

I HEREBY CERTIFY THAT I COMPLETED A FIELD VERIFICATION TO THE INFORMATION SHOWN ON THE PLANS ON 5/21/25, AND THAT THE INFORMATION SHOWN ON THE PLANS IS IN AGREEMENT WITH THE ACTUAL FIELD CONDITIONS.

Ian Turner
PRINTED NAME

7/22/25

SIGNED

DATE

CONTRACTOR SHALL NOTIFY MISS UTILITY AT LEAST 48 HOURS BEFORE STARTING WORK SHOWN ON THESE DRAWINGS: MISS UTILITY - (800) 257-7777

S/C PLAN # TBD

Revisions

GP # TBD



7/23/25

BILLING NO. XXXXXX

EG-SWMENG- XXXXXX-XXXX #XXXX

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.

GENERAL NOTES

- SPECIFICATIONS: ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH MARYLAND STATE HIGHWAY ADMINISTRATIONS STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS DATED JULY 2023 AND THE MOST RECENT REVISIONS THEREOF AND ADDITIONS THERETO UNLESS OTHERWISE NOTED.
- UTILITIES: UTILITY LOCATIONS SHOWN ON THE PLANS ARE BASED ON LIMITED INFORMATION AVAILABLE. HOWEVER, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF THIS INFORMATION. THE COST OF REPAIR OR REPLACEMENT OF ANY SUCH FACILITIES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE BORNE BY THE CONTRACTOR.
CONTACT "MISS UTILITY PHONE 1-800-257-7777, 48 HOURS PRIOR TO THE START OF THE WORK. THERE SHOULD BE NO EXCAVATION UNTIL THE LOCATIONS OF UNDERGROUND UTILITIES HAVE BEEN DETERMINED.
- STANDARD DETAILS: REFERENCE MADE TO STANDARDS ARE TAKEN FROM THE HARFORD COUNTY ROAD CODE "BOOK OF STANDARD DETAILS" AND FROM "THE MARYLAND STATE HIGHWAY ADMINISTRATION'S BOOK OF STANDARDS-HIGHWAY AND INCIDENTAL STRUCTURES". IT WILL BE THE CONTRACTOR'S RESPONSIBILITY THAT THE STANDARD DRAWINGS IN HIS POSSESSION ARE THE LATEST REVISED STANDARDS UP TO AND INCLUDING THE DATE OF THE ADVERTISEMENT OF THIS CONTRACT.
- RIGHT-OF-WAY LINES: RIGHT-OF-WAY LINES SHOWN ON THESE PLANS DO NOT INCLUDE EASEMENTS. THEY ARE FOR ASSISTANCE IN INTERPRETING THE PLANS ONLY. THESE LINES DO NOT REPRESENT THE OFFICIAL PROPERTY ACQUISITION LINES. FOR OFFICIAL FEE RIGHT-OF-WAY AND EASEMENT INFORMATION, SEE THE APPROPRIATE RIGHT-OF-WAY PLATS.
- SOIL CONSERVATION: THE CONTRACTOR SHALL NOT DISTURB THE EXISTING VEGETATION OUTSIDE THE LIMITS OF DISTURBANCE. SOIL STABILIZATION WILL CONFORM TO 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. THE CONTRACTOR WILL OBTAIN APPROVAL OF THE HARFORD COUNTY SOIL CONSERVATION DISTRICT FOR THESE PLANS IN CONTROLLING SEDIMENT EROSION FOR THE BORROW AREA AND DISPOSING OF ANY WASTE EXCAVATION.
- EXISTING SIGNS: ALL SIGNS DISTURBED DURING CONSTRUCTION SHALL BE TEMPORARILY RESET IMMEDIATELY AND PERMANENTLY RESET AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE INCIDENTAL TO ALL OTHER ITEMS IN THE CONTRACT.
- TOPOGRAPHIC SURVEY PERFORMED BY CENTURY ENGINEERING, LLC. IN SURVEYS:

HORIZONTAL CONTROLS – COORDINATES SHOWN ON THE PLANS ARE BASED ON MCS NAD83 ((2011)) VIA GPS AND TIED TO THE FOLLOWING LEICA SMARTNET NETWORK STATION:

MDBR-0377
N 682404.8029 E 1500518.7327 ELEV. 340.9939

VERTICAL CONTROLS – ELEVATIONS SHOWN ON THE PLANS ARE BASED ON MCS NAVD88.

DEVELOPER'S/LANDOWNER'S CERTIFICATION

I/We hereby certify that all proposed work shown on these construction drawing(s) will be I/We also understand that it is my/our responsibility to accomplished pursuant to these drawings supervised and certified, including the submittal of "As-Built" plans within 30 days of completion, by a Registered Professional Engineer.

ENGINEER'S CERTIFICATION

I hereby certify that this plan has been prepared by me, or under my supervision, and meets the minimum standards of the Harford County Department of Public Works and/or the United States Department of Agriculture, Soil Conservation Service, and/or the Maryland Department of the Environment, Water Management Administration.

AS-BUILT CERTIFICATION

I hereby certify that the facility shown on this plan was constructed as shown on the "As-Built" plans and meets the approved plans and specifications.

Certify means to state or declare a professional opinion based upon on-site inspections and material tests which are conducted during construction. The on-site inspections and material tests are those inspections and tests deemed sufficient and appropriate by commonly accepted engineering standards. Certify does not mean or imply a guarantee by the engineer nor does an engineer's certification relieve any other party from meeting requirements imposed by contract, employment, or other means, including meeting commonly accepted industry practices.

OWNER / DEVELOPER:

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
OFFICE OF WATERSHED PROTECTION AND RESTORATION
212 S BOND ST. 1ST FLOOR, BEL AIR, MD 21014

CONTACT: LINDSEY SNYDER
EMAIL: LOSNYDER@HARFORDCOUNTYMD.GOV

PREPARED BY :



HARFORD COUNTY, MARYLAND

BENNETT PLACE STREAM RESTORATION

Drawn By : PJB

Scale : _____

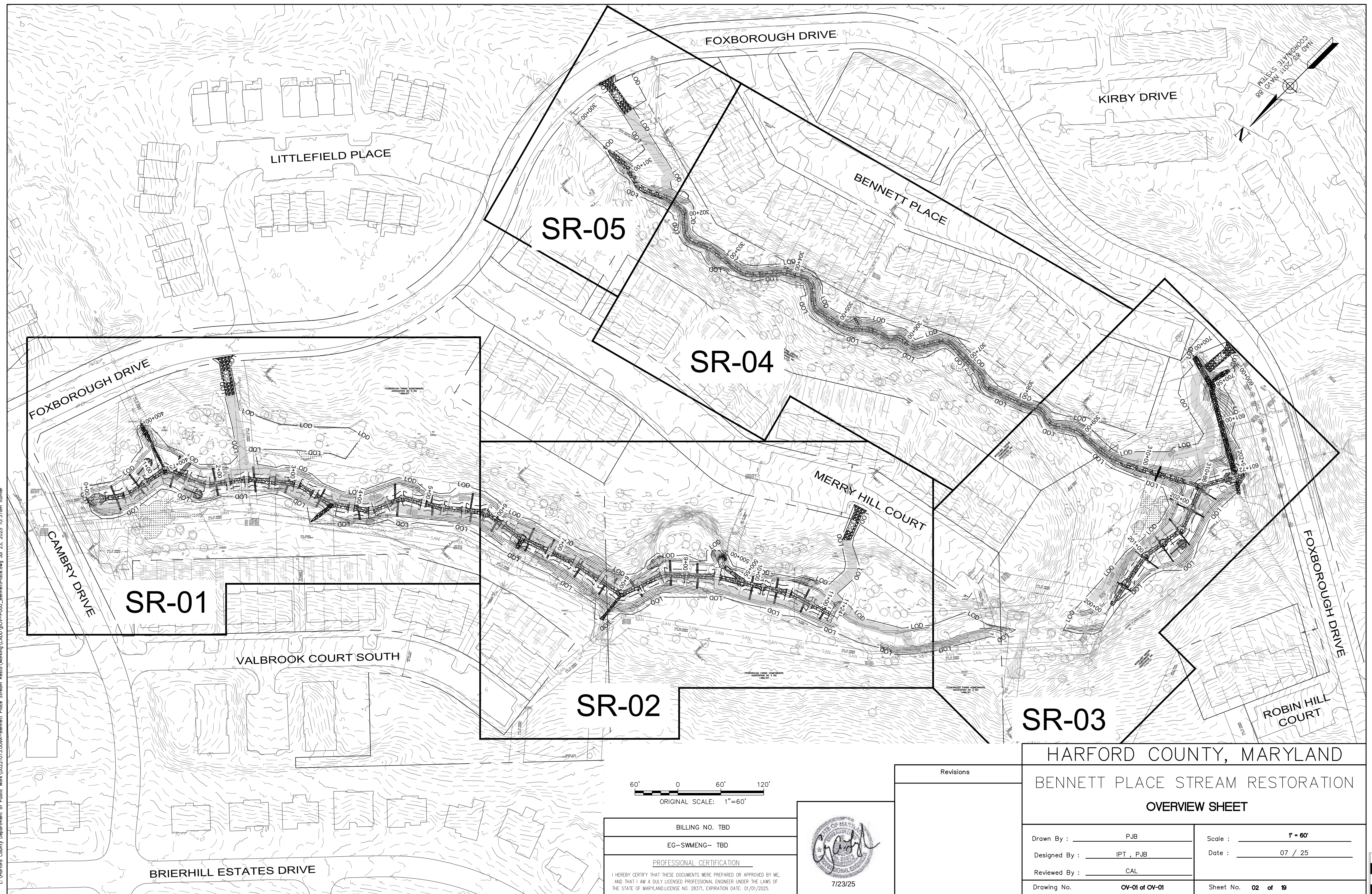
Designed By : IPT, PJB

Date : 07 / 25

Reviewed By : CAL

Drawing No. GN-01 of GN-01

Sheet No. 01 of 19



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POI-1 (DA-1) ULTIMATE ZONING LAND USE DETAILS			
LAND USE	HSG	AREA (AC)	RCN
RESIDENTIAL DISTRICTS (¼ AC)	B	44.59	75
RESIDENTIAL DISTRICTS (¼ AC)	D	3.62	87
TOTAL	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 (¼ AC)	A	1.48	61
RESIDENTIAL DISTRICTS (¼ AC)	B	39.03	75
RESIDENTIAL DISTRICTS (¼ AC)	D	7.09	87
RESIDENTIAL DISTRICTS (½ AC)	B	4.41	70
RESIDENTIAL DISTRICTS (½ AC)	D	1.35	85
TOTAL	N/A	62.09	77

POI-3 (DA-3) ULTIMATE ZONING LAND USE DETAILS			
LAND USE	HSG	AREA (AC)	RCN
RESIDENTIAL DISTRICTS (¼ AC)	A	0.01	61
RESIDENTIAL DISTRICTS (¼ AC)	B	8.63	75
RESIDENTIAL DISTRICTS (¼ AC)	D	2.24	87
RESIDENTIAL DISTRICTS (½ AC)	B	3.68	70
RESIDENTIAL DISTRICTS (½ AC)	D	0.34	85
TOTAL	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 (¼ AC)	A	1.90	61
RESIDENTIAL DISTRICTS (¼ AC)	B	6.64	75
RESIDENTIAL DISTRICTS (¼ AC)	D	0.68	87
TOTAL	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: 01/01/2025.



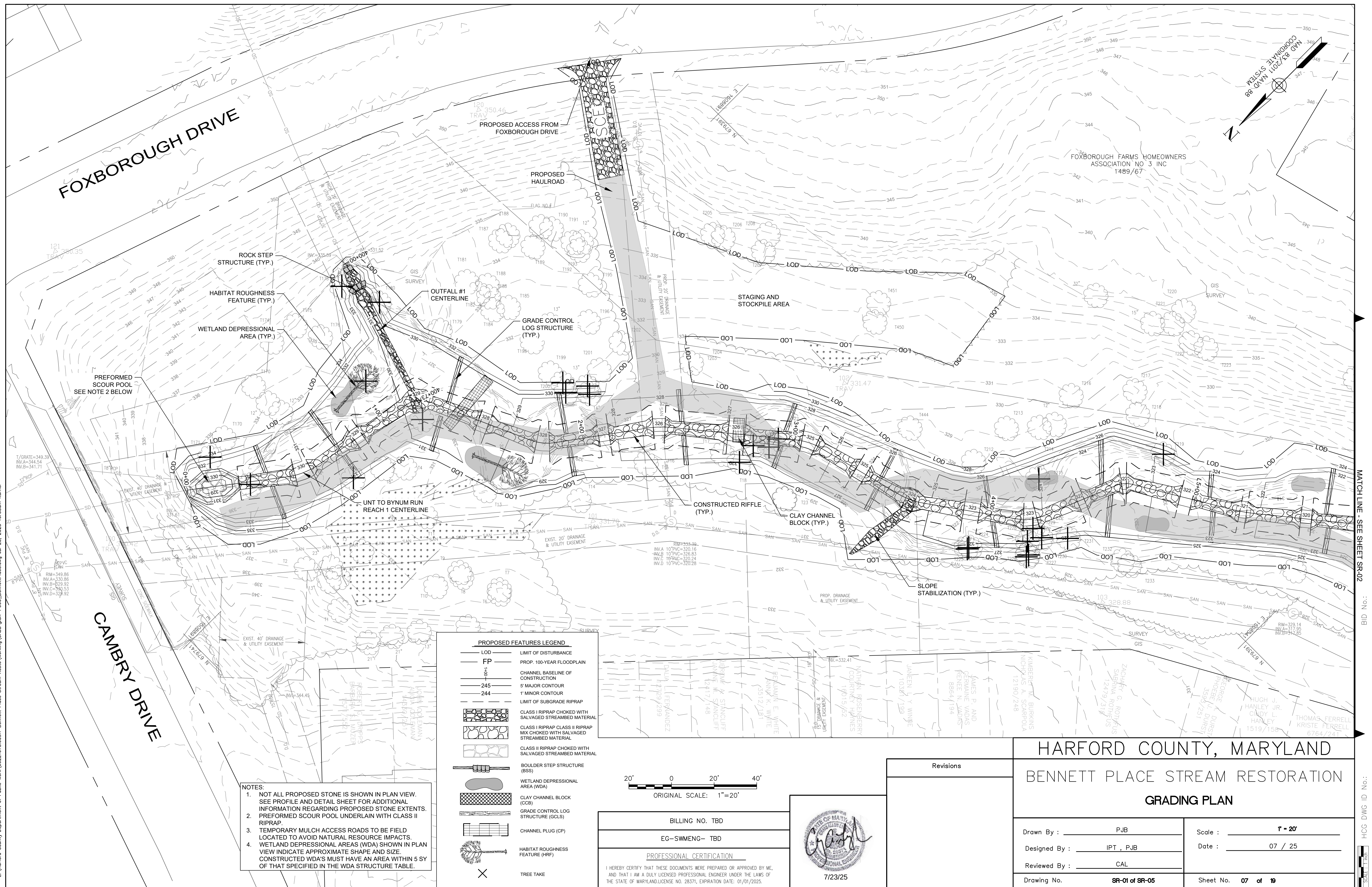
Revisions

HARFORD COUNTY, MARYLAND	
BENNETT PLACE STREAM RESTORATION	
DRAINAGE AREA MAP - ULTIMATE CONDITIONS	
Drawn By : <u>PJB</u>	Scale : <u>N/A</u>
Designed By : <u>IPT , PJB</u>	Date : <u>07 / 25</u>
Reviewed By : <u>CAL</u>	
Drawing No. DA-02 of DA-02	Sheet No. 04 of 19

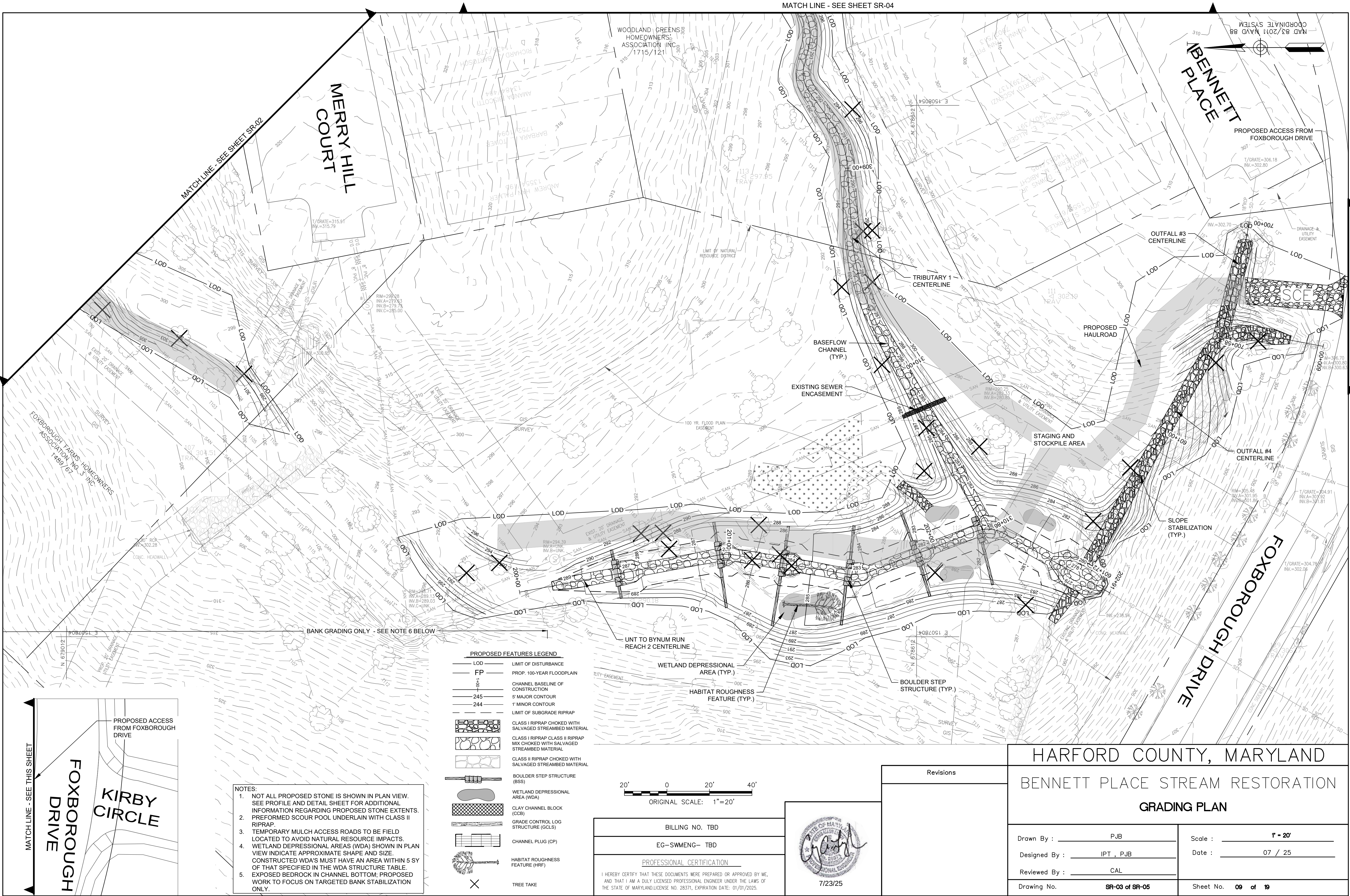
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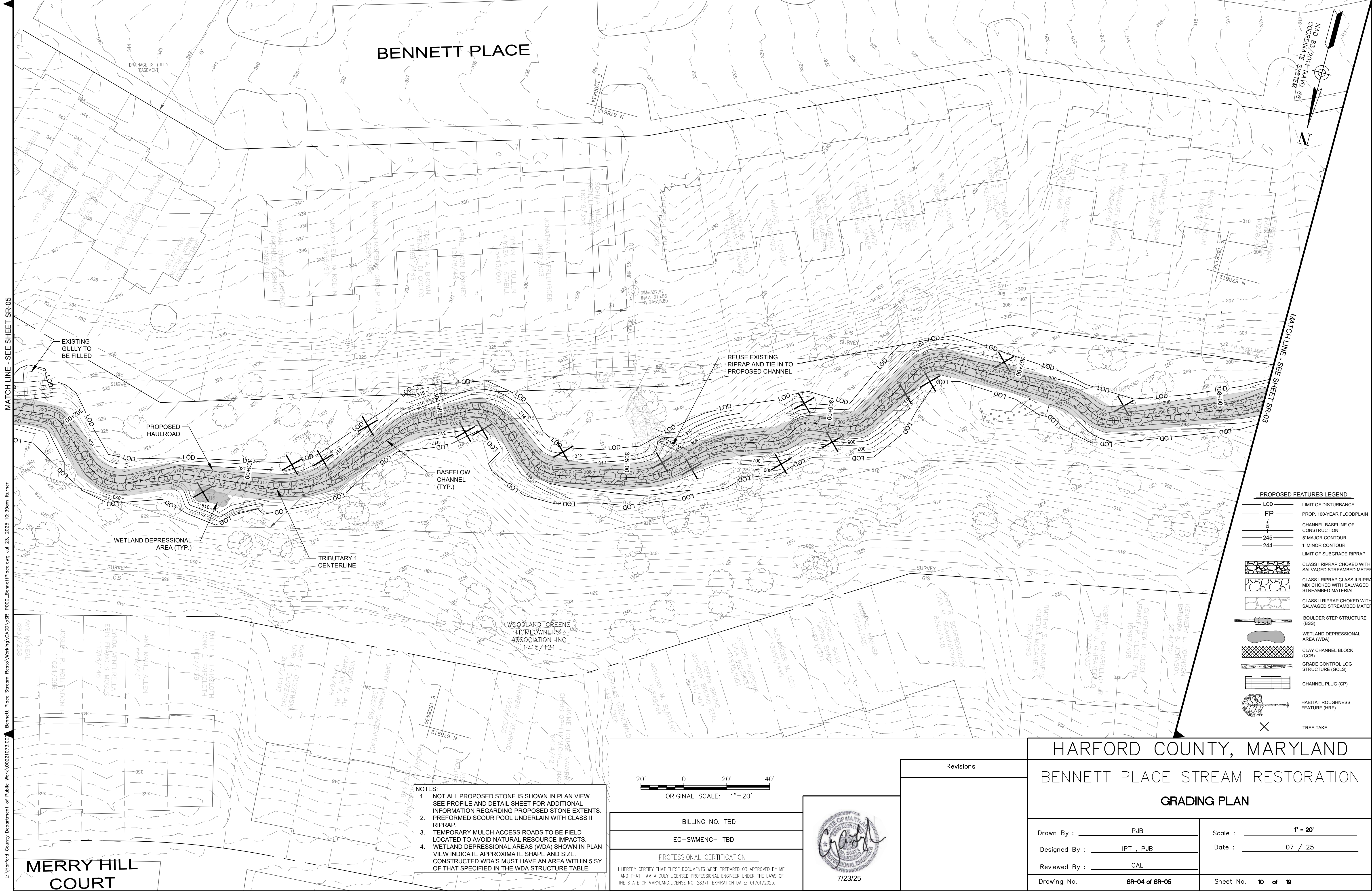
UNT to Bynum Run - Reach 1																
POINT ID	PI	PI	PT	PC	LENGTH	RADIUS	Line/Chord Direction	START POINT	END POINT	DELTA	DEGREE	CENTER NORTHING	CENTER EASTING	EXTERNAL TANGENT	CHORD LENGTH	EXTERNAL DISTANCE
L1			0+00.00	0+46.97	46.966		S37° 24' 19.72"W	679691.9262,1508942.2828	679654.6182,1508913.7531							
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	679591.5946,1508898.1936							
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	679559.0743,1508839.6460	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							
C4	679514.2525,1508806.9978	2+36.12			11.507	45.066	S43° 23' 03.73"W	679518.9284,1508810.4037	679510.5885,1508802.5213	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	679510.5885,1508802.5213	679473.4973,1508757.2063							
C5	679469.3223,1508752.1056	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"	679496.52	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	679457.3530,1508705.1974	679452.0773,1508693.8096	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	679452.0773,1508693.8096	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	679345.4505,1508580.2553	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	679345.4505,1508580.2553	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	679309.5308,1508530.3983	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	679309.5308,1508530.3983	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		S78° 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	679202.4669,1508303.0742	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	679150.8291,1508250.7445	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	679095.0544,1508164.9772	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																
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
L22			300+00.00	300+84.27	84.267		S87° 35' 53.30"W	678834.1738,1508830.9078	678830.6423,1508746.7148							
C20	678830.3135,1508738.8739	300+92.11			15.589	54.591	N84° 13' 16.37"W	678830.6423,1508746.7148	678832.2066,1508731.2578	016° 21' 40.66"	104° 57' 16.61"	678885.19	1508744.4270	7.85	15.54	0.56
L23			300+99.86	301+16.96	17.109		N76° 02' 26.04"W	678832.2066,1508731.2578	678836.3339,1508714.6541							
C21	678838.7543,1508704.9170	301+27.00			19.230	27.297	S83° 46' 40.10"W	678836.3339,1508714.6541	678834.2925,1508695.9303	040° 21' 47.73"	209° 53' 52.34"	678809.84	1508708.0691	10.03	18.83	1.79
L24			301+36.19	301+60.33	24.135		S63° 35' 46.23"W	678834.2925,1508695.9303	678823.5596,1508674.3126							
C22	678819.8351,1508666.8109	301+68.71			16.583	47.872	S73° 31' 11.21"W	678823.5596,1508674.3126	678818.8788,1508658.4903	019° 50' 49.96"	119° 41' 04.41"	678866.44	1508653.0240	8.38	16.50	0.73
L25			301+76.91	301+90.67	13.757		S83° 26' 36.19"W	678818.8788,1508658.4903	678817.3080,1508644.8235							
C23	678816.7137,1508639.6531	301+95.87			9.776	11.513	N72° 13' 50.81"W	678817.3080,1508644.8235	678820.2025,1508635.7913	048° 39' 06.00"	497° 40' 31.05"	678828.75	1508643.5089	5.20	9.48	1.12
L26			302+00.45	302+22.42	21.971		N47° 54' 17.81"W	678820.2025,1508635.7913	678834.9312,1508619.4880							
C24	678843.2340,1508610.2975	302+34.80			21.935	18.927	N81° 06' 19.10"W	678834.9312,1508619.4880	678838.1360,1508599.0097	066° 24' 02.59"	302° 43' 19.97"	678820.89	1508606.8001	12.39	20.73	3.69
L27			302+44.35	302+68.06	23.704		S65° 41' 39.60"W	678838.1360,1508599.0097	678828.3793,1508577.4068							
C25	678827.7083,1508575.9211	302+69.69			3.233	10.128	S74° 50' 17.83"W	678828.3793,1508577.4068	678827.5374,1508574.2999	018° 17' 16.46"	565° 43' 07.89"	678837.61	1508573.2381	1.63	3.22	0.13
L28			302+71.29	303+12.97	41.679		S83° 58' 56.06"W	678827.5374,1508574.2999	678823.1680,1508532.8509							
C26	678821.4697,1508516.7410	303+29.17			30.851	40.952	S62° 24' 00.53"W	678823.1680,1508532.8509	678809.2104,1508506.1523	043° 09' 51.06"	139° 54' 37.15"	678782.44	1508537.1441	16.20	30.13	3.09
L29			303+43.82	303+80.70	36.886		S40° 49' 05.00"W	678809.2104,1508506.1523	678781.2958,1508482.0417							
C27	678778.2228,1508479.3875	303+84.76			8.034	22.459	S51° 03' 58.97"W	678781.2958,1508482.0417	678776.2738,1508475.8253	020° 29' 47.94"	255° 06' 52.77"	678795.98	1508465.0451	4.06	7.99	0.36
L30			303+88.74	304+12.90	24.158		S61° 18' 52.94"W	678776.2738,1508475.8253	678764.6778,1508454.6319							
C28	678759.0510,1508444.3481	304+24.62			20.427	16.646	N83° 31' 54.23"W	678764.6778,1508454.6319	678766.8372,1508435.5850	070° 18' 25.66"	344° 11' 42.99"	678779.28	1508446.6417	11.72	19.17	3.71
L31			304+33.32	304+50.65	17.327		N48° 22' 41.40"W	678766.8372,1508435.5850	678778.3459,1508422.6324							
C29	678785.1529,1508414.9714	304+60.90			18.893	19.650	N75° 55' 18.13"W	678778.3459,1508422.6324	678782.7665,1508405.0049	055° 05' 13.45"	291° 34' 39.78"	678763.66	1508409.5805	10.25	18.17	2.51
L32			304+69.54	305+01.07	31.527		S76° 32' 05.14"W	678782.7665,1508405.0049	678775.4252,1508374.3442							
C30	678772.7057,1508362.9864	305+12.75			22.837	44.251	S61° 45' 01.18"W	678775.4252,1508374.3442	678764.7358,1508354.4499	029° 34' 07.93"	129° 28' 44.19"	678732.39	1508384.6483	11.68	22.58	1.52
L33			305+23.91	305+37.22	13.310		S46° 57' 57.21"W	678764.7358,1508354.4499	678755.6529,1508344.7213							
C31	678749.5988,1508338.2369	305+46.09			17.449	39.204	S59° 42' 58.33"W	678755.6529,1508344.7213	678746.9262,1508329.7777	025° 30' 02.24"	146° 08' 46.89"	678784.31	1508317.9669	8.87	17.31	0.99
L34			305+54.66	305+70.61	15.941		S72° 27' 59.45"W	678746.9262,1508329.7777	678742.1238,1508314.5772							
C32	678740.5227,1508309.5095	305+75.92			10.159	14.003	S51° 40' 58.57"W	678742.1238,1508314.5772	678735.9623,1508306.7803	041° 34' 01.76"	409° 10' 04.39"	678728.77	1508318.7958	5.31	9.94	0.97
L35			305+80.76	305+83.75	2.985		S30° 53' 57.69"W	678735.9623,1508306.7803	678733.4010,1508305.2474							
C33	678729.5208,1508302.9252	305+88.27			8.444	9.522	S56° 18' 10.66"W	678733.4010,1508305.2474	678728.8685,1508298.4504	050° 48' 25.94"	601° 43' 26.96"	678738.29	1508297.0769	4.52	8.17	1.02
L36			305+92.19	306+06.79	14.595		S81° 42' 23.63"W	678728.8685,1508298.4504	678726.7632,1508284.0076							
C34	678725.8542,1508277.7719	306+13.09			12.779	13.480	S56° 39' 03.12"W	678726.7632,1508284.0076	678720.4867,1508274.4704	050° 06' 41.02"	425° 03' 23.44"	678713.42	1508285.9519	6.30	11.42	1.40
L37			306+18.58	306+51.35	31.783		S31° 35' 42.61"W	678720.4867,1508274.4704	678692.5714,1508257.5000							
C35	678684.5962,1508252.3946	306+60.71			17.021	16.433	S61° 16' 05.93"W	678692.5714,1508257.5000	678684.7500,1508243.0328	059° 20' 46.64"	348° 39' 38.34"	678701.18	1508243.3028	9.36	16.27	2.48
L38			306+68.37	307+23.90	55.525		N89° 03' 30.75"W	678684.7500,1508243.0328	678685.6623,1508187.5155							
C36	678685.7316,1508183.3010	307+28.11			8.299	19.211	N76° 40' 59.57"W	678685.6623,1508187.5155	678687.5590,1508179.5027	024° 45' 02.36"	298° 15' 02.01"	678704.87	1508187.8312	4.22	8.23	0.46
L39			307+32.20	307+39.03	6.832		N64° 18' 28.39"W	678687.5590,1508179.5027	678690.5211,1508173.3458							
C37	678693.2149,1508167.7465	307+45.24			11.746	14.568	N87° 24' 25.82"W	678690.5211,1508173.3458	678691.0382,1508161.9267	046° 11' 54.87"	393° 17' 56.88"	678677.39	1508167.0300	6.21	11.43	1.27
L40			307+50.77	308+02.11	51.335		S69° 29' 36.74"W	678691.0382,1508161.9267	678673.0548,1508113.8444							
C38	678671.0194,1508108.4026	308+07.92			11.584	60.533	S64° 00' 39.88"W	678673.0548,1508113.8444	678667.9862,1508103.4472	010° 57' 53.72"	094° 39' 06.62"	678616.36	1508135.0499	5.81	11.57	0.28
L41			308+13.69	308+18.56	4.869		S58° 31' 43.03"W	678667.9862,1508103.4472	678665.4442,1508099.2943							
C39	678660.3991,1508091.0522	308+28.23			18.312	23.183	S81° 09' 26.28"W	678665.4442,1508099.2943	678662.7019,1508081.6670	045° 15' 26.52"	247° 09' 01.45"	678685.22	1508087.1913	9.66	17.84	1.93
L42			308+36.88	308+46.31	9.439		N76° 12' 50.46"W	678662.7019,1508081.6670	678664.9511,1508072.5002							
C40	678666.5614,1508065.9371	308+53.07			12.654	14.565	S78° 53' 47.35"W	678664.9511,1508072.5002	678662.5900,1508060.4694	049° 48' 44.39"	393° 22' 15.29"	678650.81	1508069.0293	6.76	12.26	1.49
L43			308+58.97	308+77.12	18.149		S54° 00' 25.15"W	678662.5900,1508060.4694	678651.9243,1508045.7856							
C41	678645.3910,1508036.7910	308+88.23			21.649	38.620	S70° 03' 56.10"W	678651.9243,1508045.7856	678644.6395,1508025.6994	032° 07' 01.89"	148° 21' 23.07"	678683.17	1508023.0889	11.12	21.37	1.57
L44			308+98.77	309+30.31	31.544		S86° 07' 27.04"W	678644.6395,1508025.6994	678642.5073,1507994.2274							
C42	678640.8239,1507969.3794	309+55.22			49.012	111.977	S73° 39' 06.02"W	678642.5073,1507994.2274	678628.7672,1507947.5874	025° 04' 42.04"	051° 10' 03.16"	678530.79	1508001.7984	24.90	48.62	2.74
L45			309+79.32	310+85.63	106.304		S61° 02' 45.00"W	678628.7672,1507947.5874	678577.3042,1507854.5703							



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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 DEPRESSIONAL AREAS (WDA) SHOWN IN PLAN VIEW INDICATE APPROXIMATE SHAPE AND SIZE. CONSTRUCTED WDA'S MUST HAVE AN AREA WITHIN 5 SY OF THAT SPECIFIED IN THE WDA STRUCTURE TABLE.

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: 01/01/2025.

7/23/25

HARFORD COUNTY, MARYLAND

BENNETT PLACE STREAM RESTORATION

GRADING PLAN

Revisions

Drawn By : PJB

Designed By : IPT , PJB

Reviewed By : CAL

Drawing No. SR-04 of SR-05

Scale : 1" = 20'

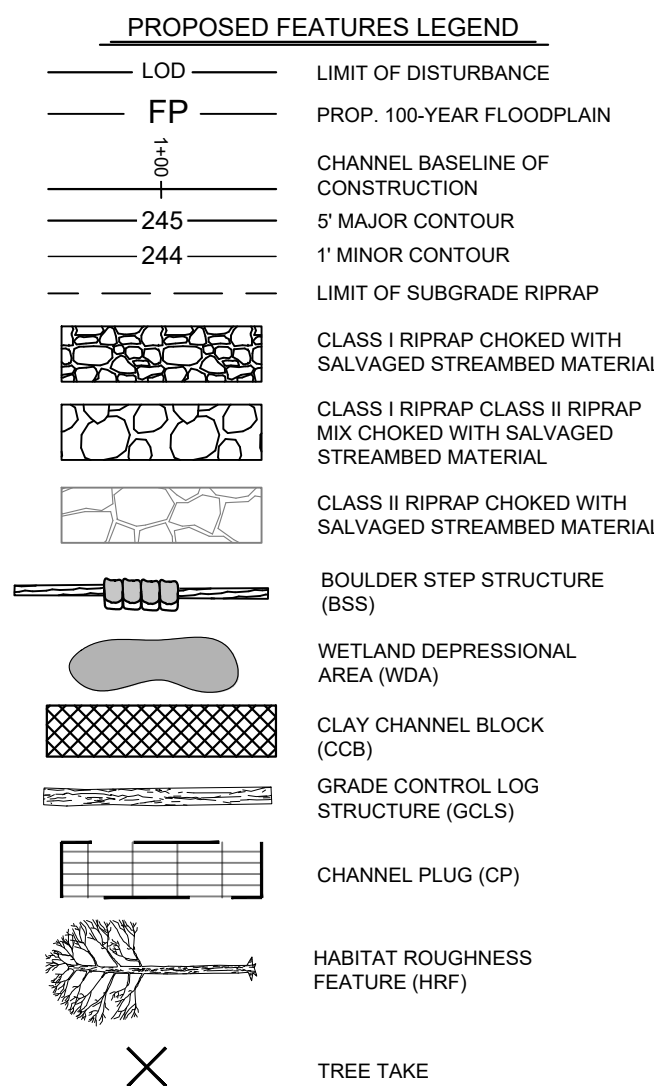
Date : 07 / 25

Sheet No. 10 of 19

PROPOSED FEATURES LEGEND

- LOD LIMIT OF DISTURBANCE
- FP PROP. 100-YEAR FLOODPLAIN
- Channel Baseline of Construction
- 245 5' MAJOR CONTOUR
- 244 1' MINOR CONTOUR
- LIMIT OF SUBGRADE RIPRAP
- CLASS I RIPRAP CHOKED WITH SALVAGED STREAMBED MATERIAL
- CLASS I RIPRAP CLASS II RIPRAP MIX CHOKED WITH SALVAGED STREAMBED MATERIAL
- CLASS II RIPRAP CHOKED WITH SALVAGED STREAMBED MATERIAL
- BOULDER STEP STRUCTURE (BSS)
- WETLAND DEPRESSIONAL AREA (WDA)
- CLAY CHANNEL BLOCK (CCB)
- GRADE CONTROL LOG STRUCTURE (GCLS)
- CHANNEL PLUG (CP)
- HABITAT ROUGHNESS FEATURE (HRF)
- TREE TAKE

BID No.: HCG DWG ID No.: SHEET 10 OF 19



- NOTES:
1. NOT ALL PROPOSED STONE IS SHOWN IN PLAN VIEW. SEE PROFILE AND DETAIL SHEET FOR ADDITIONAL INFORMATION REGARDING PROPOSED STONE EXTENTS.
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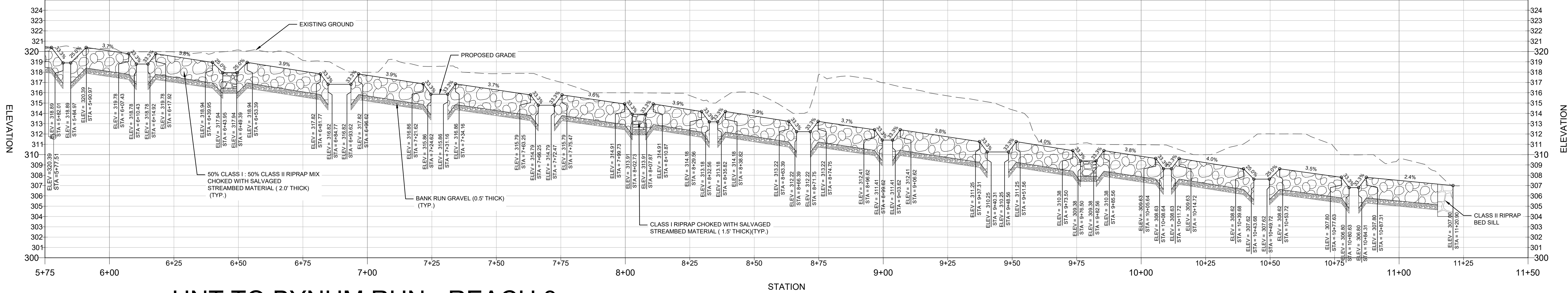
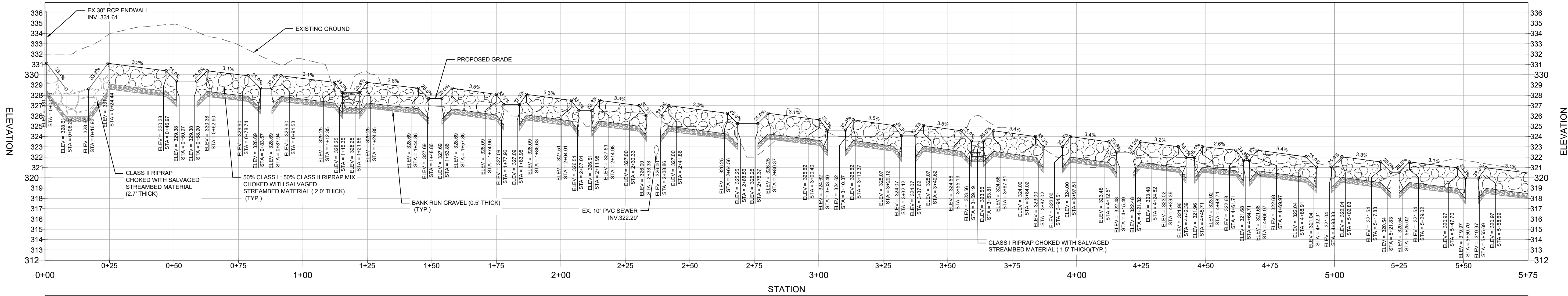
BILLING NO. TBD	
EG-SWMENG- TBD	
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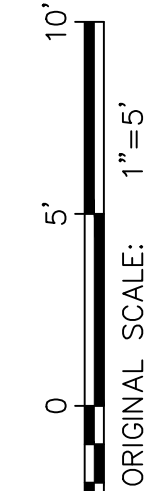
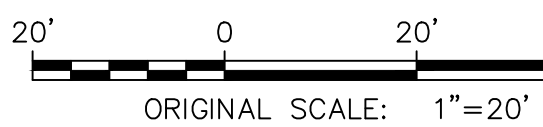
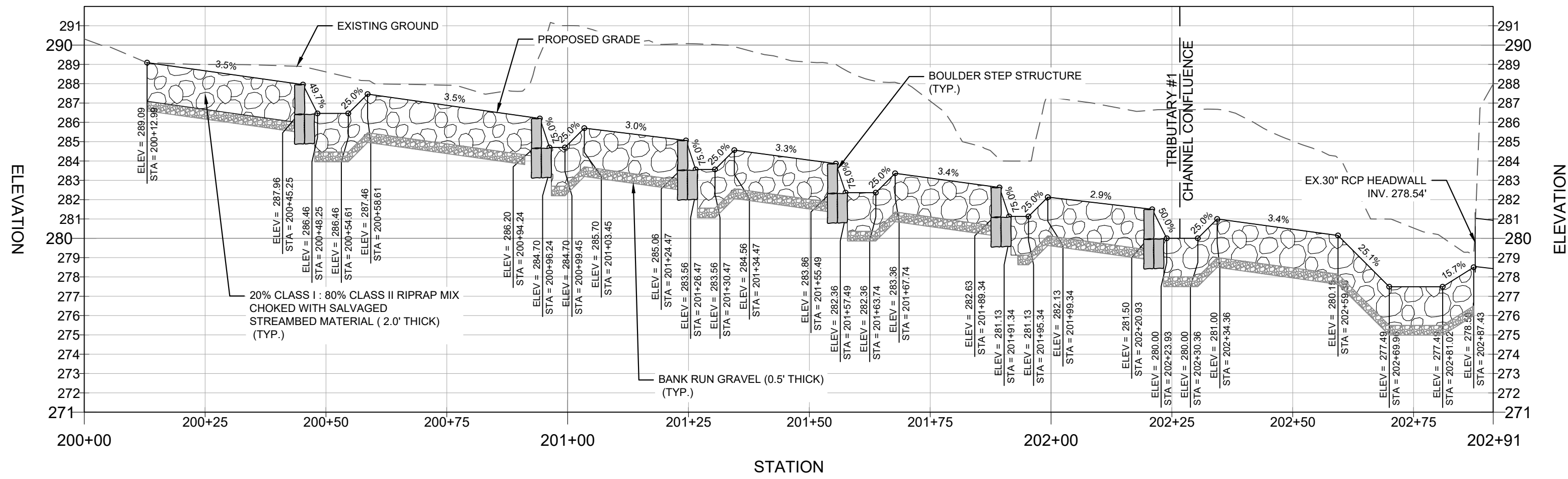
Revisions	BENNETT PLACE STREAM RESTORATION	
	GRADING PLAN	
	Drawn By : <u>PJB</u> Designed By : <u>IPT , PJB</u> Reviewed By : <u>CAL</u>	Scale : <u>1" = 20'</u> Date : <u>07 / 25</u>
	Drawing No. SR-05 of SR-05	Sheet No. 11 of 19

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UNT TO BYNUM RUN - REACH 1



UNT TO BYNUM RUN - REACH 3



HARFORD COUNTY, MARYLAND

BENNETT PLACE STREAM RESTORATION

PROFILE SHEET

Revisions

Drawn By : PJB
Designed By : IPT, PJB
Reviewed By : CAL

Scale : AS SHOWN
Date : 07 / 25

Drawing No. **PR-01 of PR-03**

Sheet No. **12 of 19**

BILLING NO. TBD

EG-SWMENG- TBD

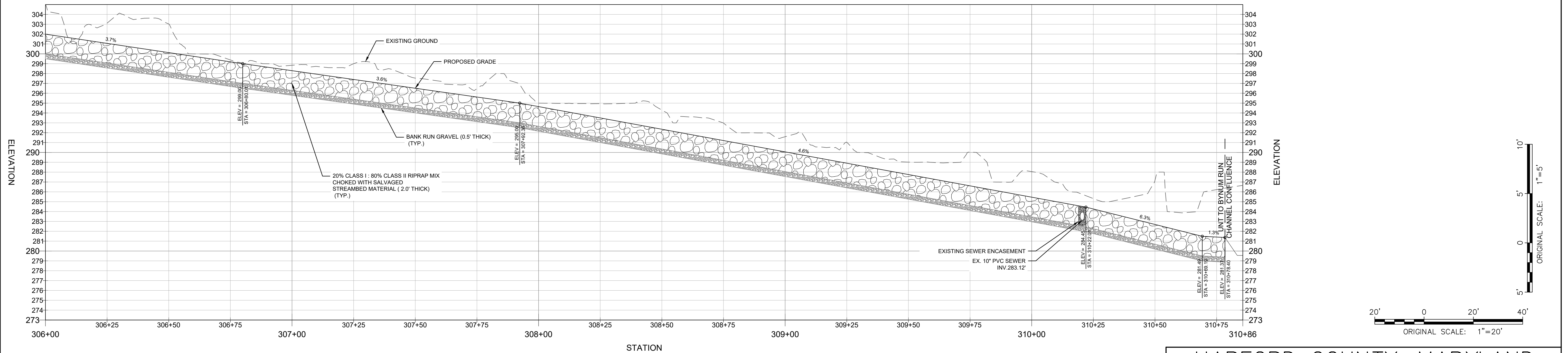
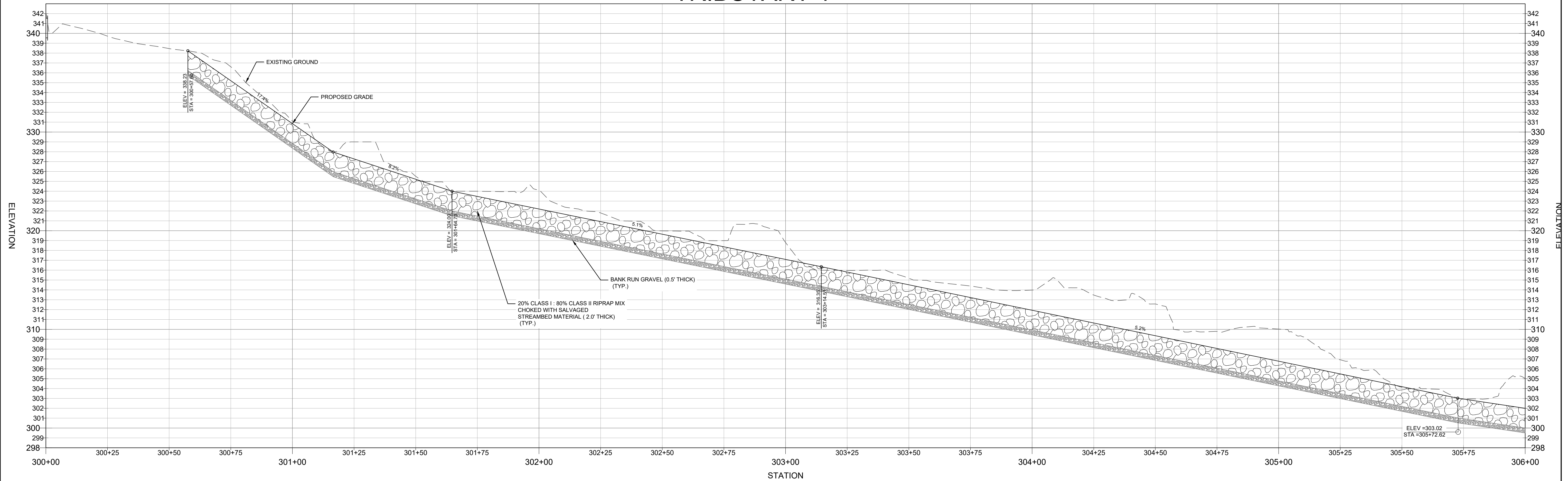
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THE STATE OF MARYLAND LICENSE NO. 28371, EXPIRATION DATE: 01/01/2025.



7/23/25

TRIBUTARY 1



BILLING NO. TBD	
EG-SWMENG- TBD	
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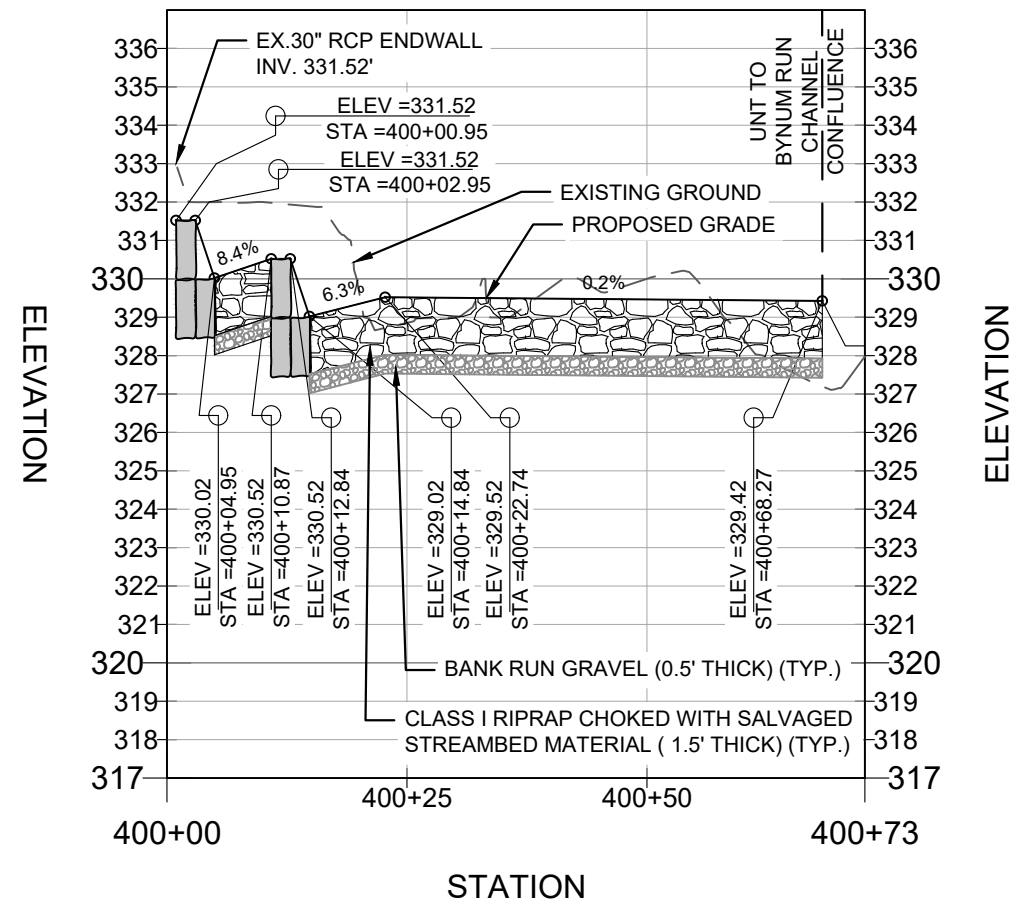
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HARFORD COUNTY, MARYLAND
BENNETT PLACE STREAM RESTORATION
PROFILE SHEET

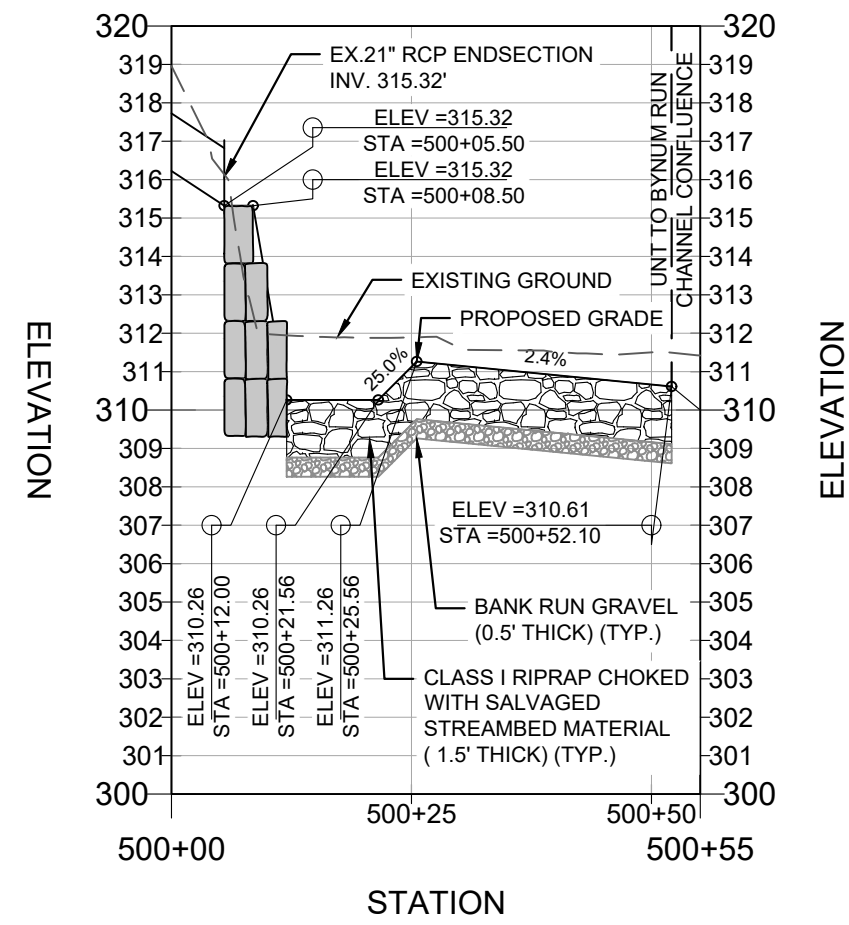
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Drawing No. PR-02 of PR-03	Sheet No. 13 of 19

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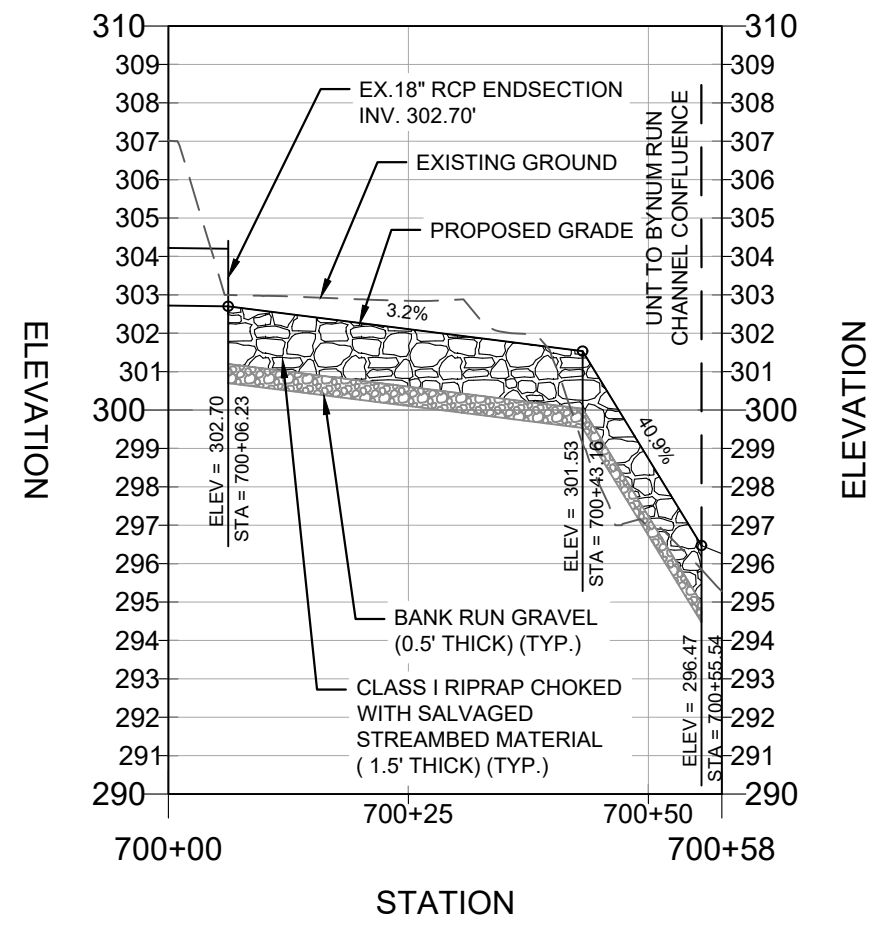
OUTFALL #1



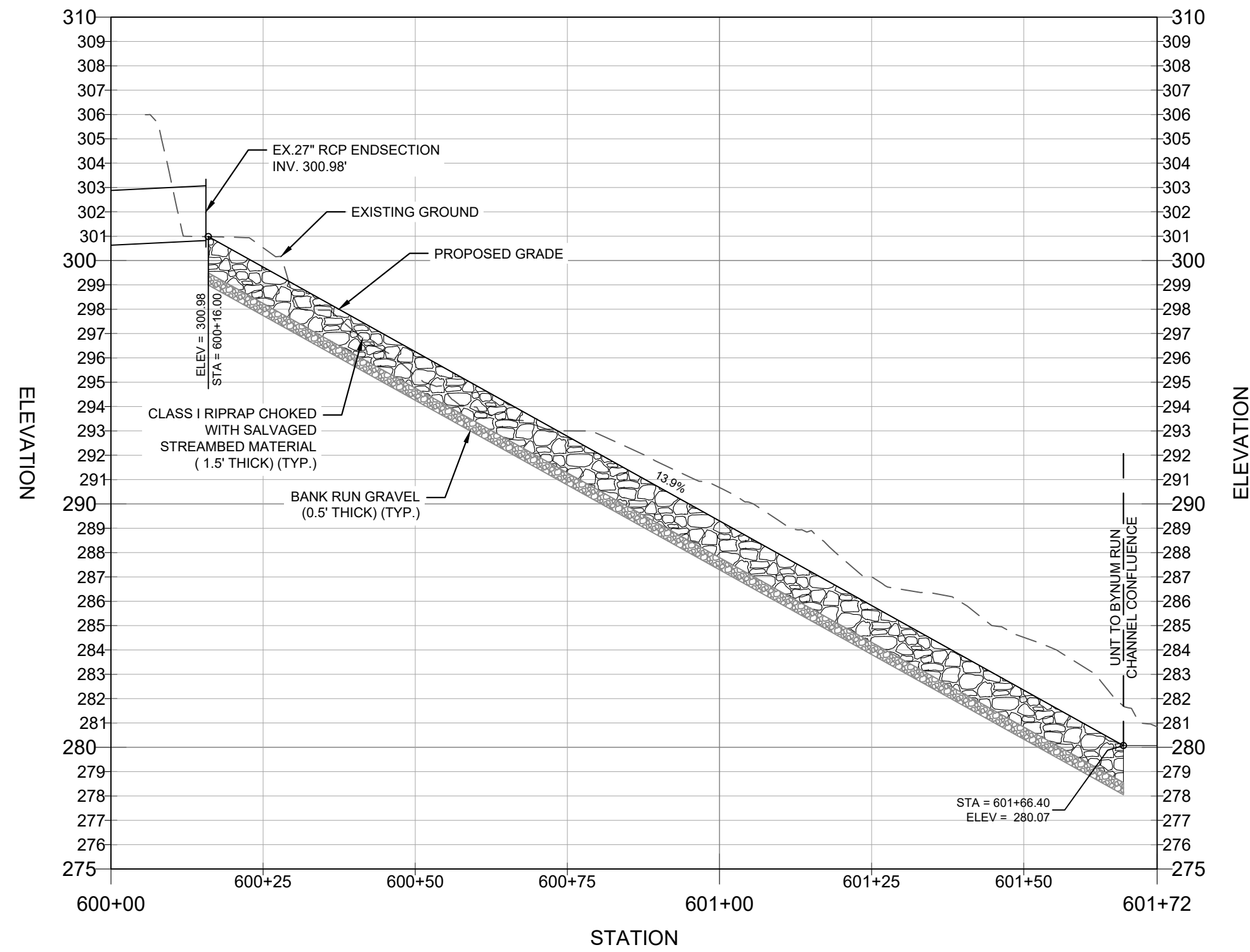
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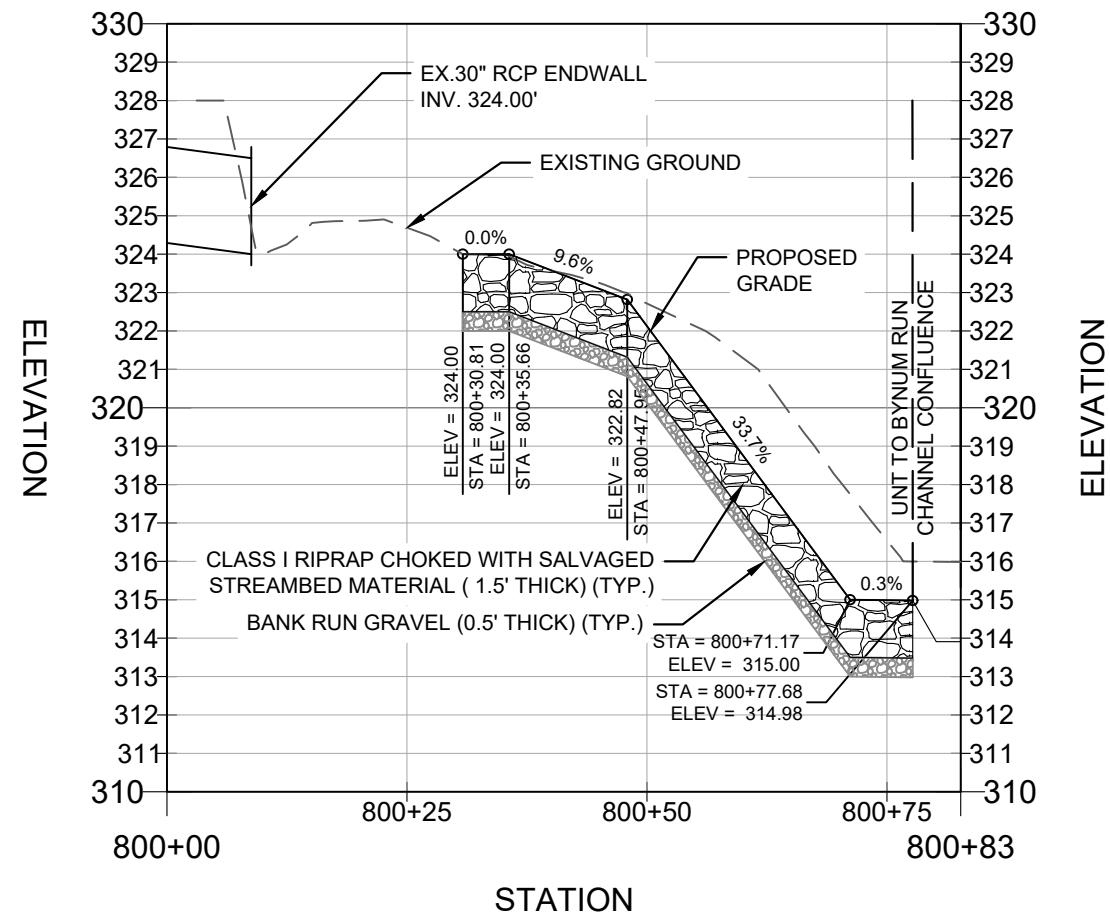
OUTFALL #3



OUTFALL #4



SLOPE STABILIZATION #1



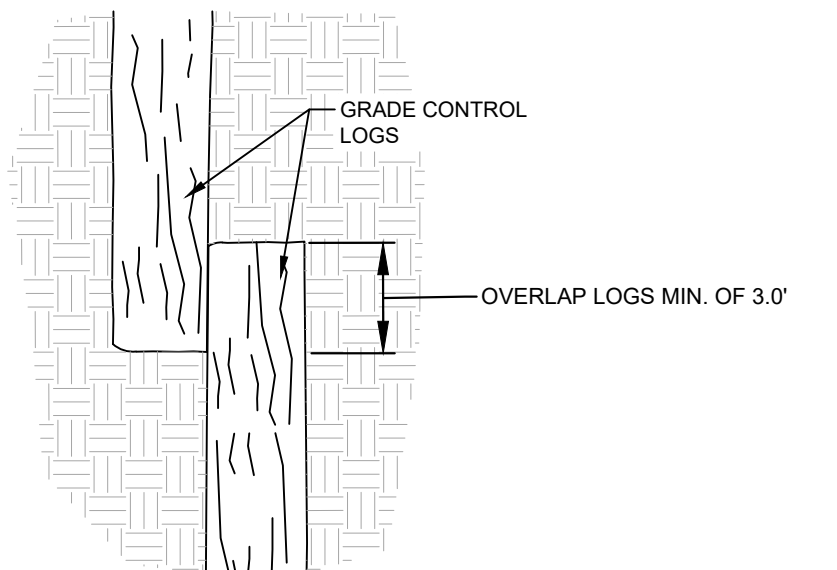
BILLING NO. TBD
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7/23/25

Revisions	
HARFORD COUNTY, MARYLAND	
BENNETT PLACE STREAM RESTORATION	
PROFILE SHEET	
Drawn By : PJB	Scale : AS SHOWN
Designed By : IPT , PJB	Date : 07 / 25
Reviewed By : CAL	
Drawing No. PR-03 of PR-03	Sheet No. 14 of 19

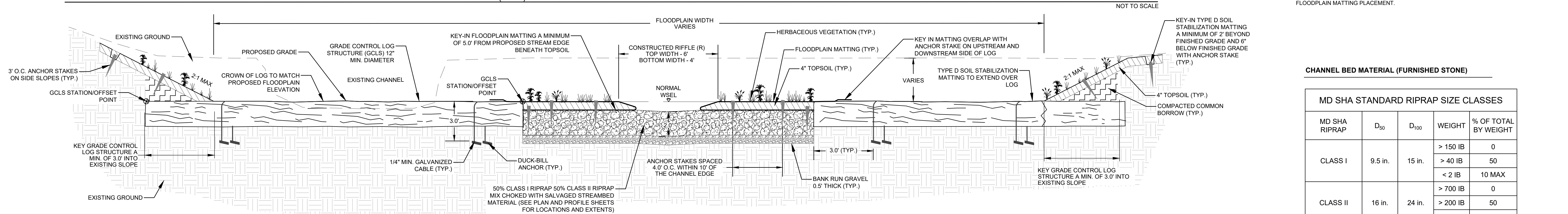
FLOODPLAIN RESTORATION DETAILS - UNT TO BYNUM RUN (REACH 1)



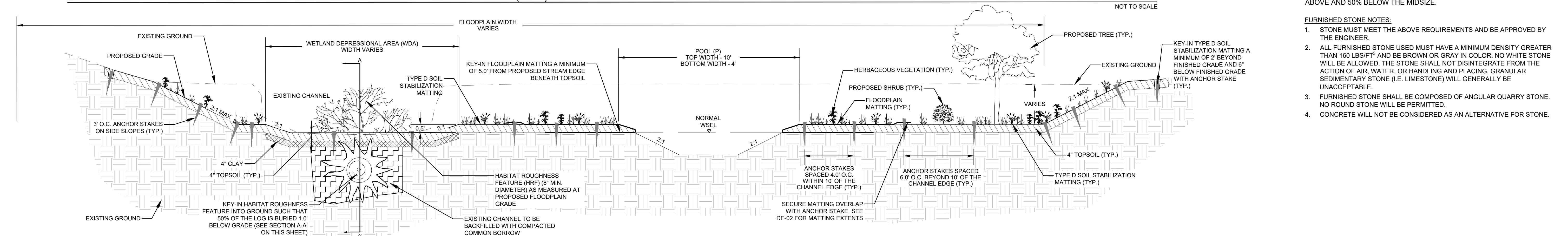
GRADE CONTROL LOG OVERLAP - PLAN VIEW

NOTE: SEE TYPICAL SECTION DE-01 FOR INFORMATION ON TOPSOIL AND FLOODPLAIN MATTING PLACEMENT.

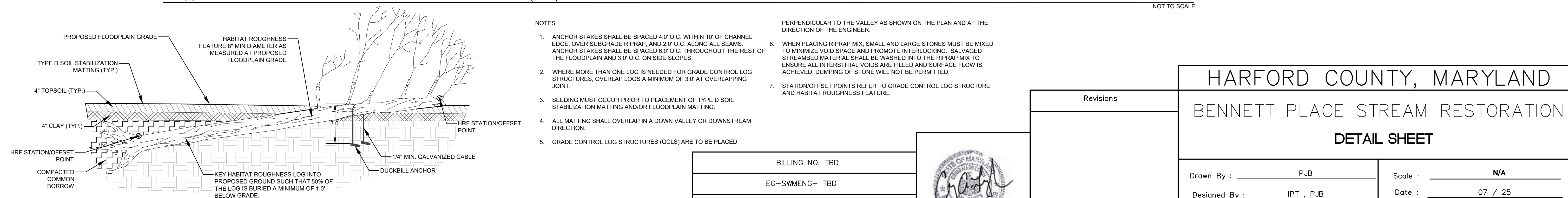
FLOODPLAIN RESTORATION WITH CONSTRUCTED RIFFLE & WETLAND DEPRESSIONAL AREA (WDA) - UNT TO BYNUM RUN REACH 1 - TYPICAL SECTION VIEW



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



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



HABITAT ROUGHNESS FEATURE (HRF) KEY-IN SECTION A-A'

HABITAT ROUGHNESS FEATURE NOTE: ORIENT HABITAT ROUGHNESS FEATURES SUCH THAT THE BRANCHING IS DOWN VALLEY OF THE ROOTWAD. SEE PLAN SHEETS FOR HRF LOCATIONS.

NOTES:

1. 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.
2. WHERE MORE THAN ONE LOG IS NEEDED FOR GRADE CONTROL LOG STRUCTURES, OVERLAP LOGS A MINIMUM OF 3.0' AT OVERLAPPING JOINT.
3. SEEDING MUST OCCUR PRIOR TO PLACEMENT OF TYPE D SOIL STABILIZATION MATTING AND/OR FLOODPLAIN MATTING.
4. ALL MATTING SHALL OVERLAP IN A DOWN VALLEY OR DOWNSTREAM DIRECTION.
5. 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.

6. WHEN PLACING RIPRAP MIX, SMALL AND LARGE STONES MUST BE MIXED TO MINIMIZE VOID SPACE AND PROMOTE INTERLOCKING. SALVAGED STONES MUST BE WASHED TO REMOVE SHALE. RIPRAP MIX MUST BE PLACED IN LAYERS TO ENSURE ALL INTERSTITIAL VOIDS ARE FILLED AND SURFACE FLOW IS ACHIEVED. DUMPING OF STONE WILL NOT BE PERMITTED.
7. STATION/OFFSET POINTS REFER TO GRADE CONTROL LOG STRUCTURE AND HABITAT ROUGHNESS FEATURE.

BILLING NO. TBD

EG-SWMENG- TBD

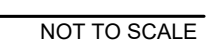
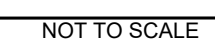
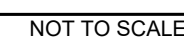
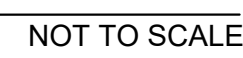
PROFESSIONAL CERTIFICATION

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: 01/01/2025.



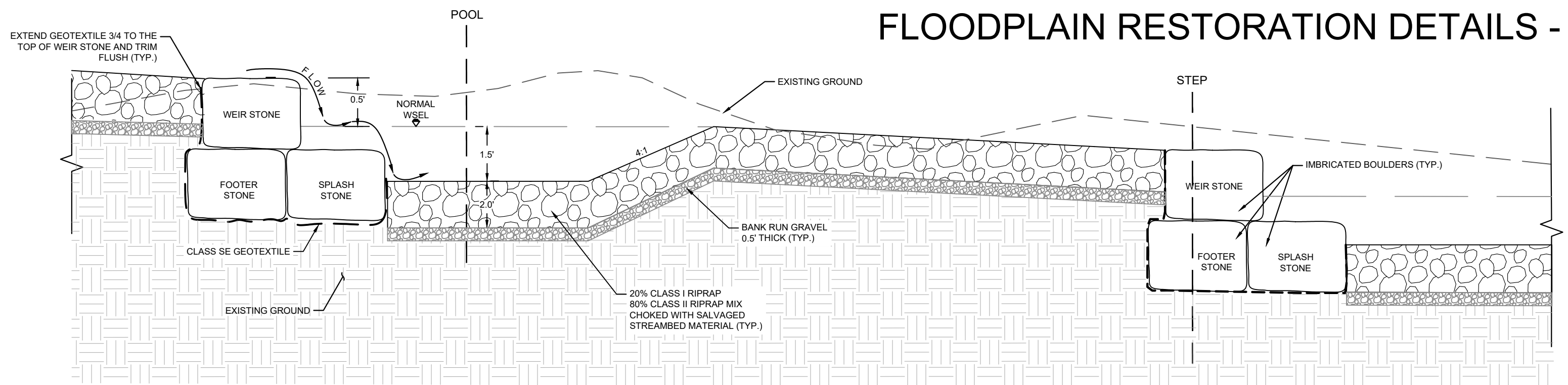
7/23/25

Revisions	BENNETT PLACE STREAM RESTORATION DETAIL SHEET	
	Drawn By : <u>PJB</u>	Scale : <u>N/A</u>
	Designed By : <u>IPT , PJB</u>	Date : <u>07 / 25</u>
	Reviewed By : <u>CAL</u>	
	Drawing No. DE-01 of DE-05	Sheet No. 15 of 19



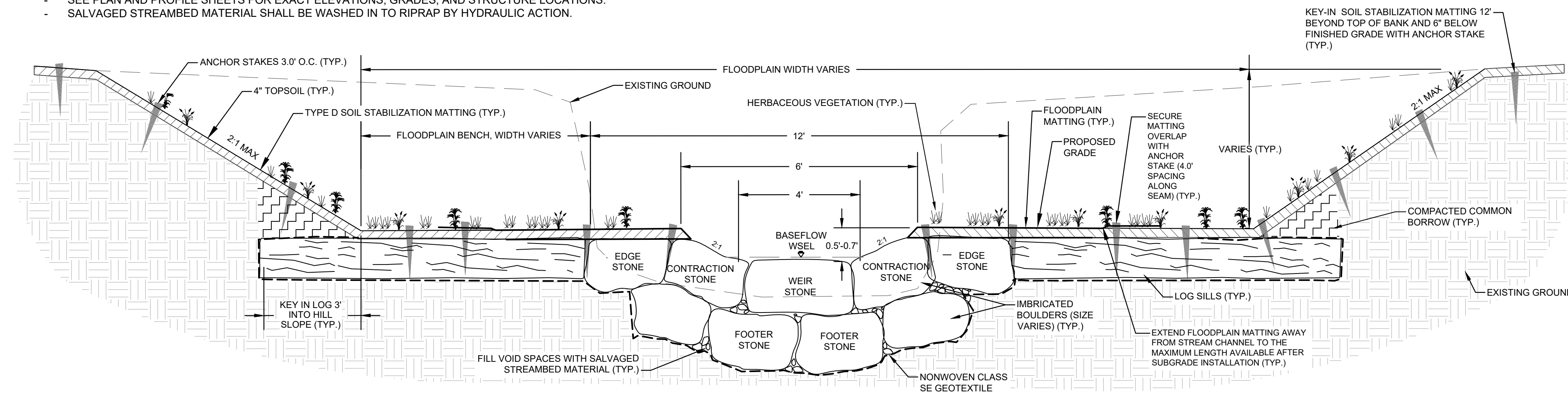
BILLING NO. TBD EG-SWMENG- TBD PROFESSIONAL CERTIFICATION I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.LICENSE NO. 28371, EXPIRATION DATE: 01/01/2025.  7/23/25		Revisions	HARFORD COUNTY, MARYLAND	
			BENNETT PLACE STREAM RESTORATION DETAIL SHEET	
		Drawn By : PJB	Scale : N/A	
		Designed By : IPT , PJB	Date : 07 / 25	
		Reviewed By : CAL		
		Drawing No. DE-02 of DE-05	Sheet No. 16 of 19	

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

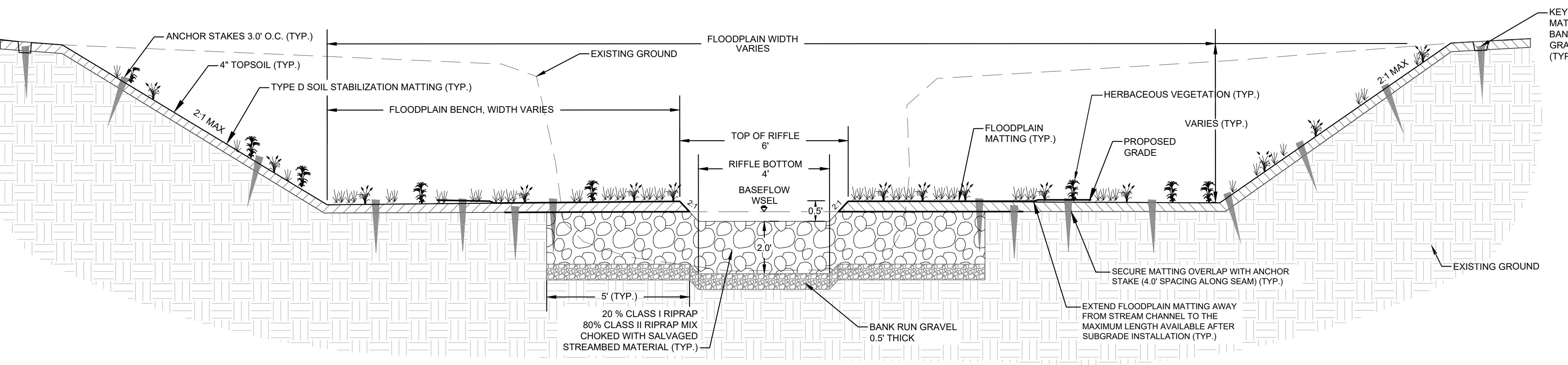


BOULDER STEP STRUCTURE (BSS) - UNT TO BYNUM RUN REACH 3 - PROFILE VIEW A-A'

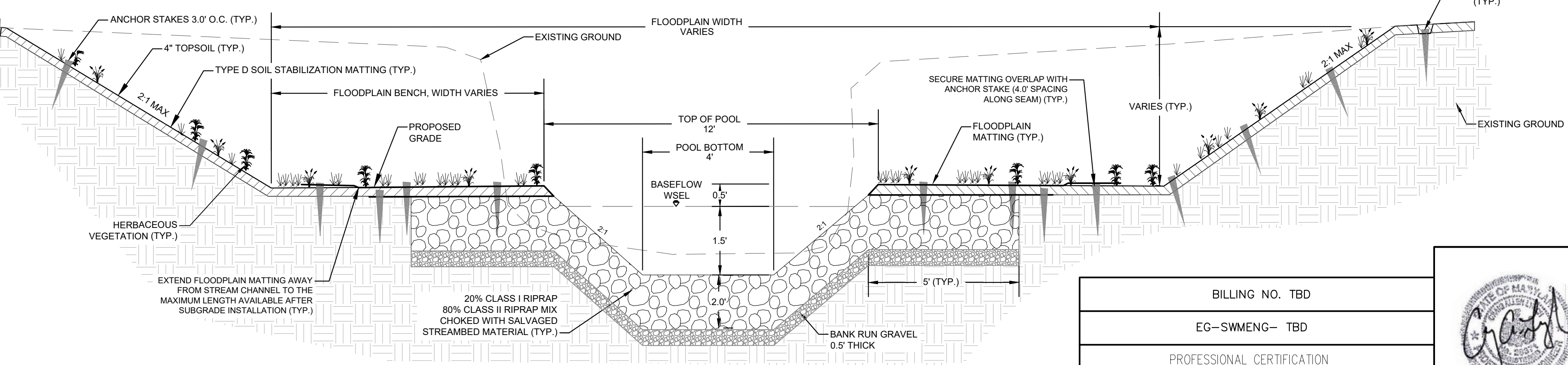
- NOTES:
- SEE PLAN AND PROFILE SHEETS FOR EXACT ELEVATIONS, GRADES, AND STRUCTURE LOCATIONS.
 - SALVAGED STREAMBED MATERIAL SHALL BE WASHED IN TO RIPRAP BY HYDRAULIC ACTION.



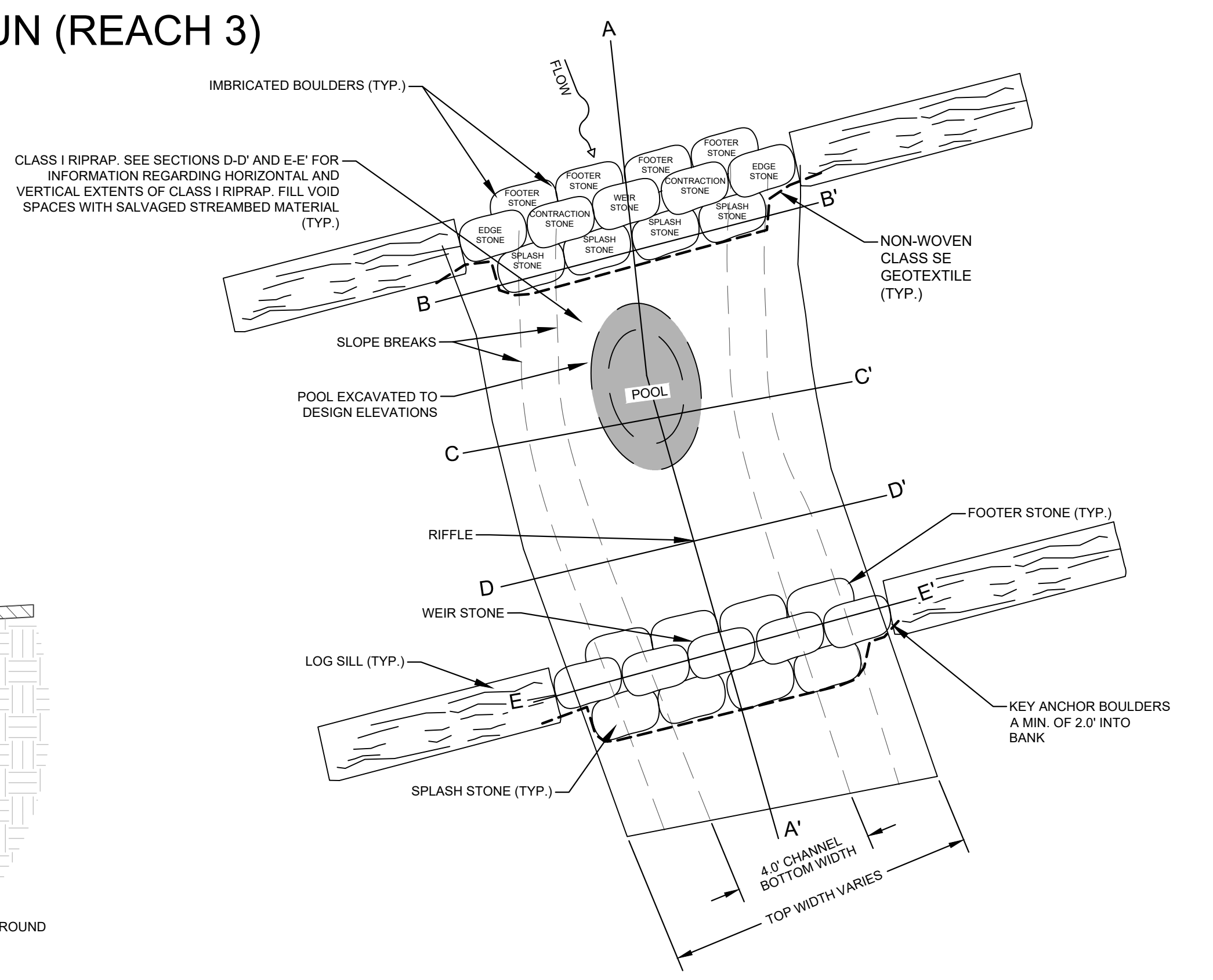
BOULDER STEP STRUCTURE (BSS) - UNT TO BYNUM RUN REACH 3 - SECTION VIEW E-E' (STEP)



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

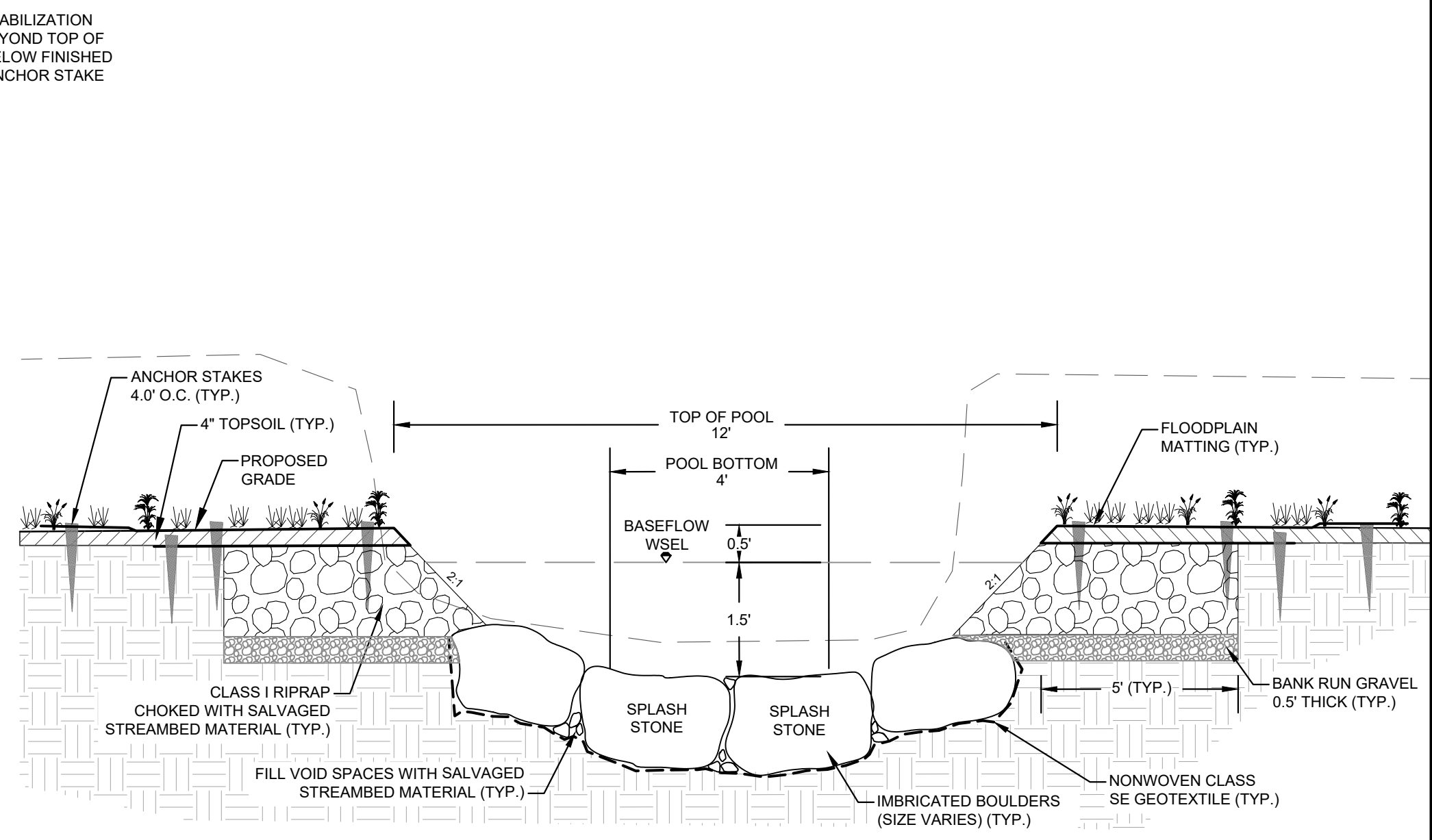


BOULDER STEP STRUCTURE (BSS) - UNT TO BYNUM RUN REACH 3 - SECTION VIEW C-C' (POOL)



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



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

HARFORD COUNTY, MARYLAND

BENNETT PLACE STREAM RESTORATION

DETAIL SHEET

Drawn By : <u>PJB</u>	Scale : <u>N/A</u>
Designed By : <u>IPT, PJB</u>	Date : <u>07 / 25</u>
Reviewed By : <u>CAL</u>	
Drawing No. <u>DE-03 of DE-05</u>	Sheet No. <u>17 of 19</u>

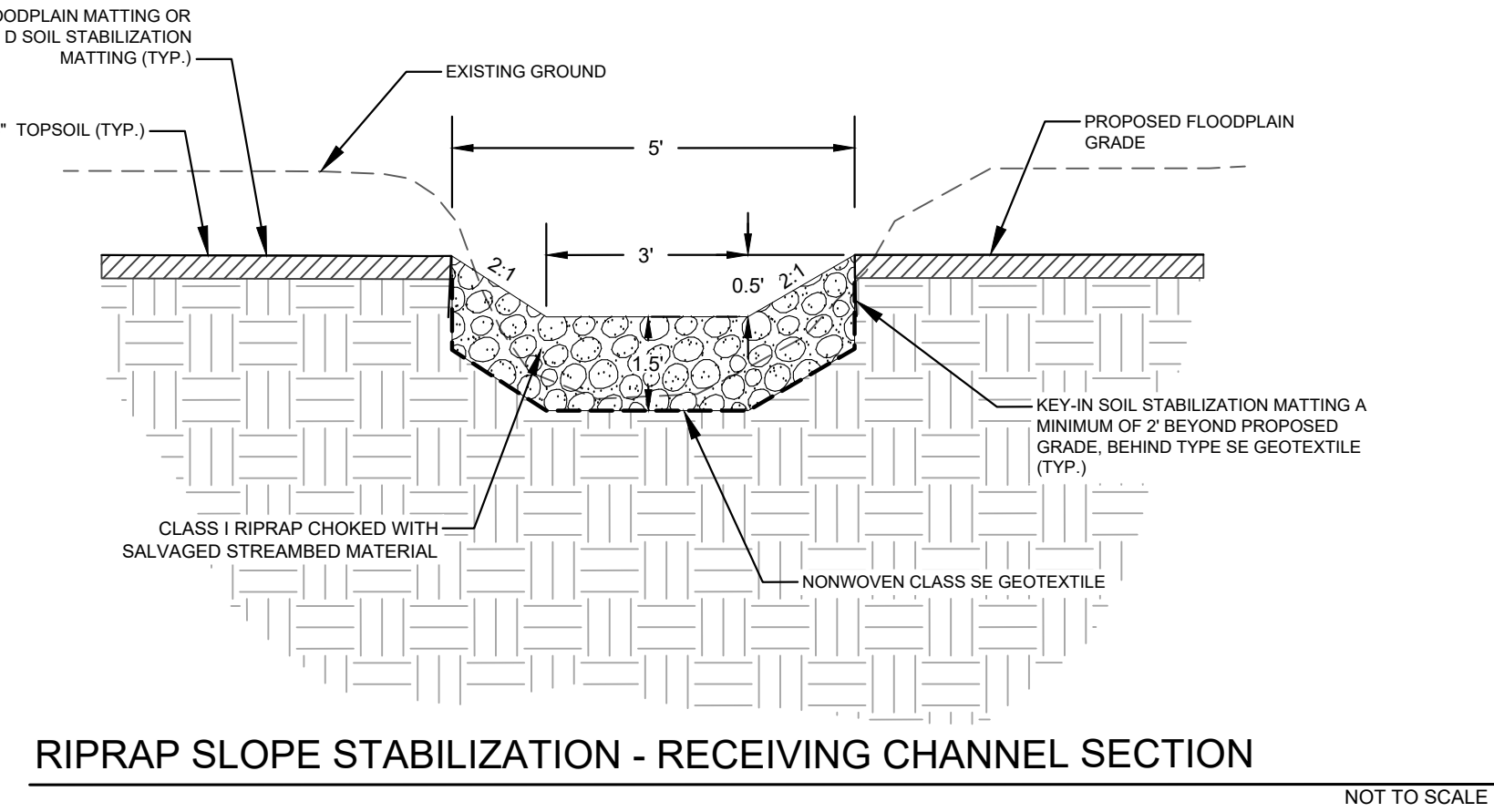
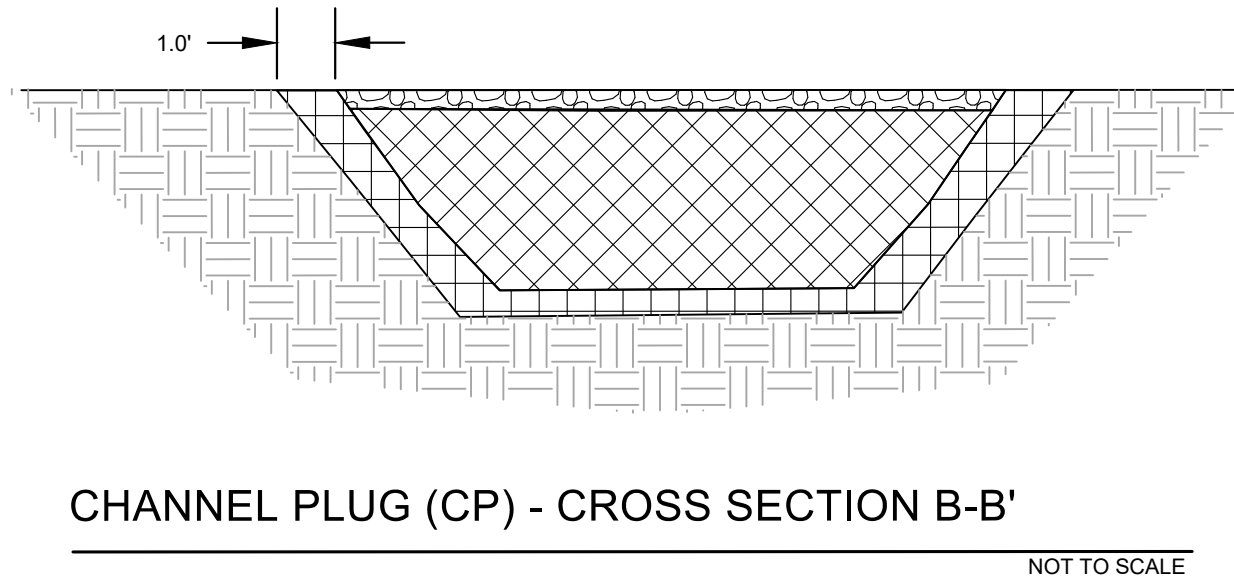
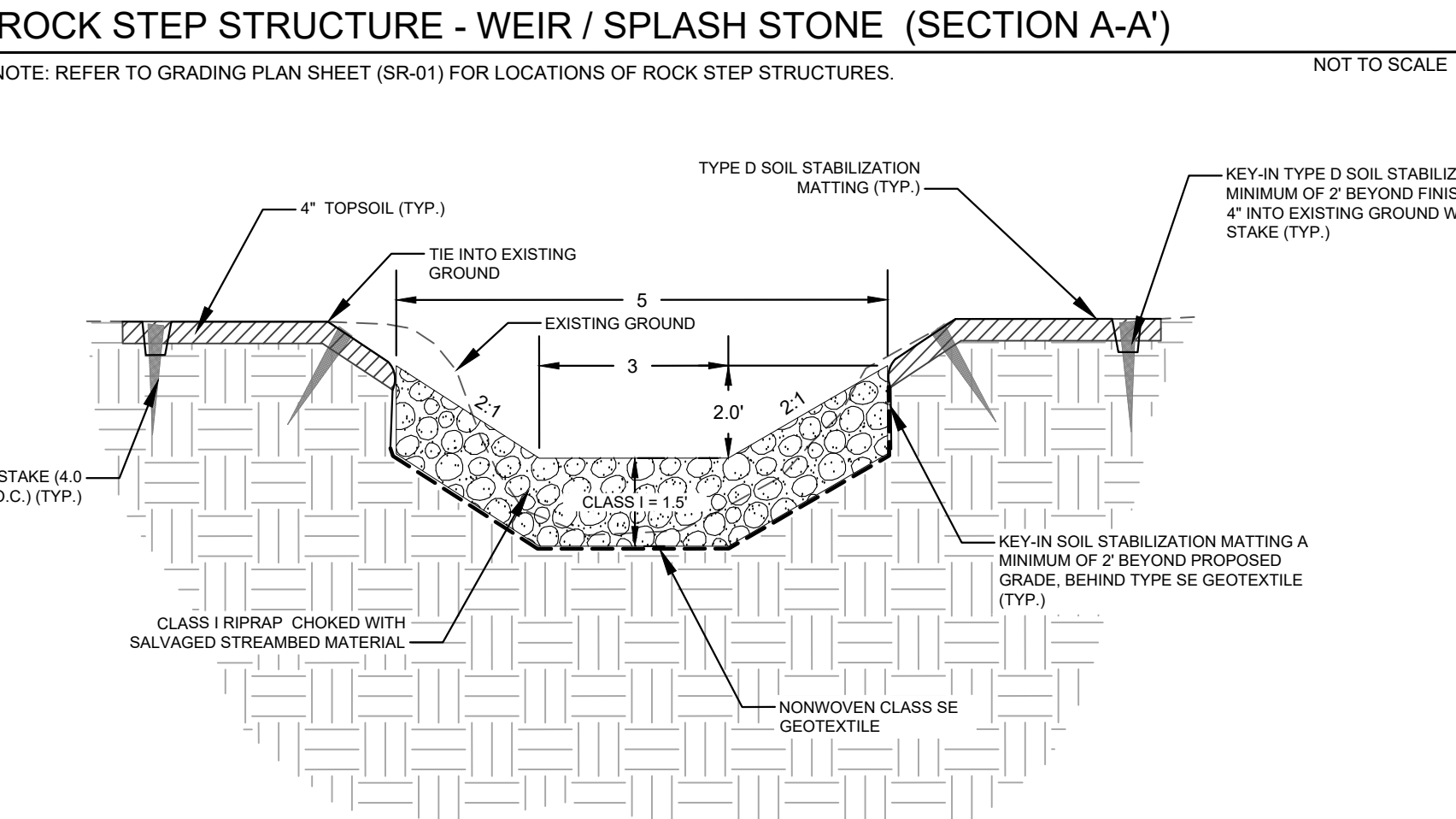
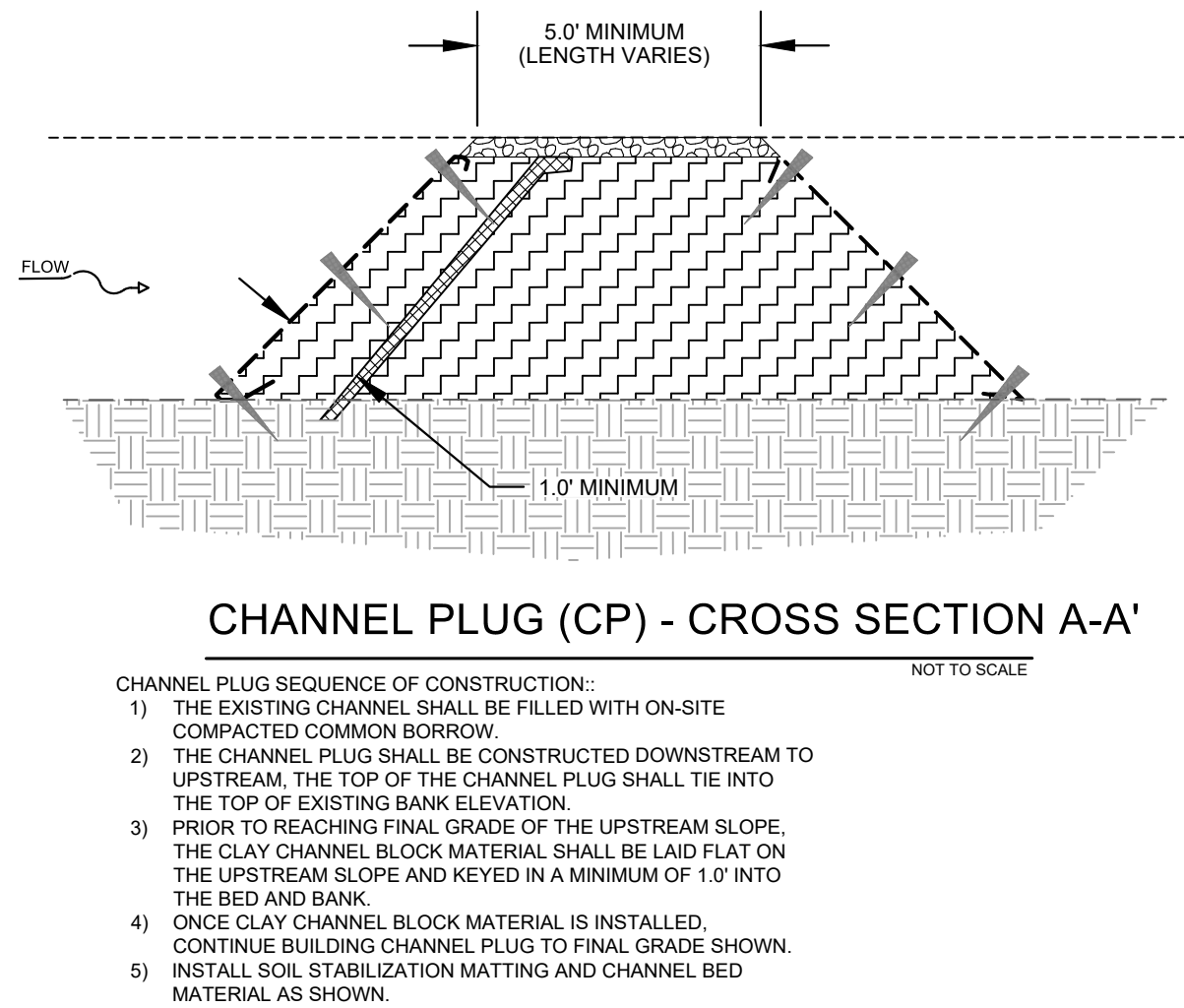
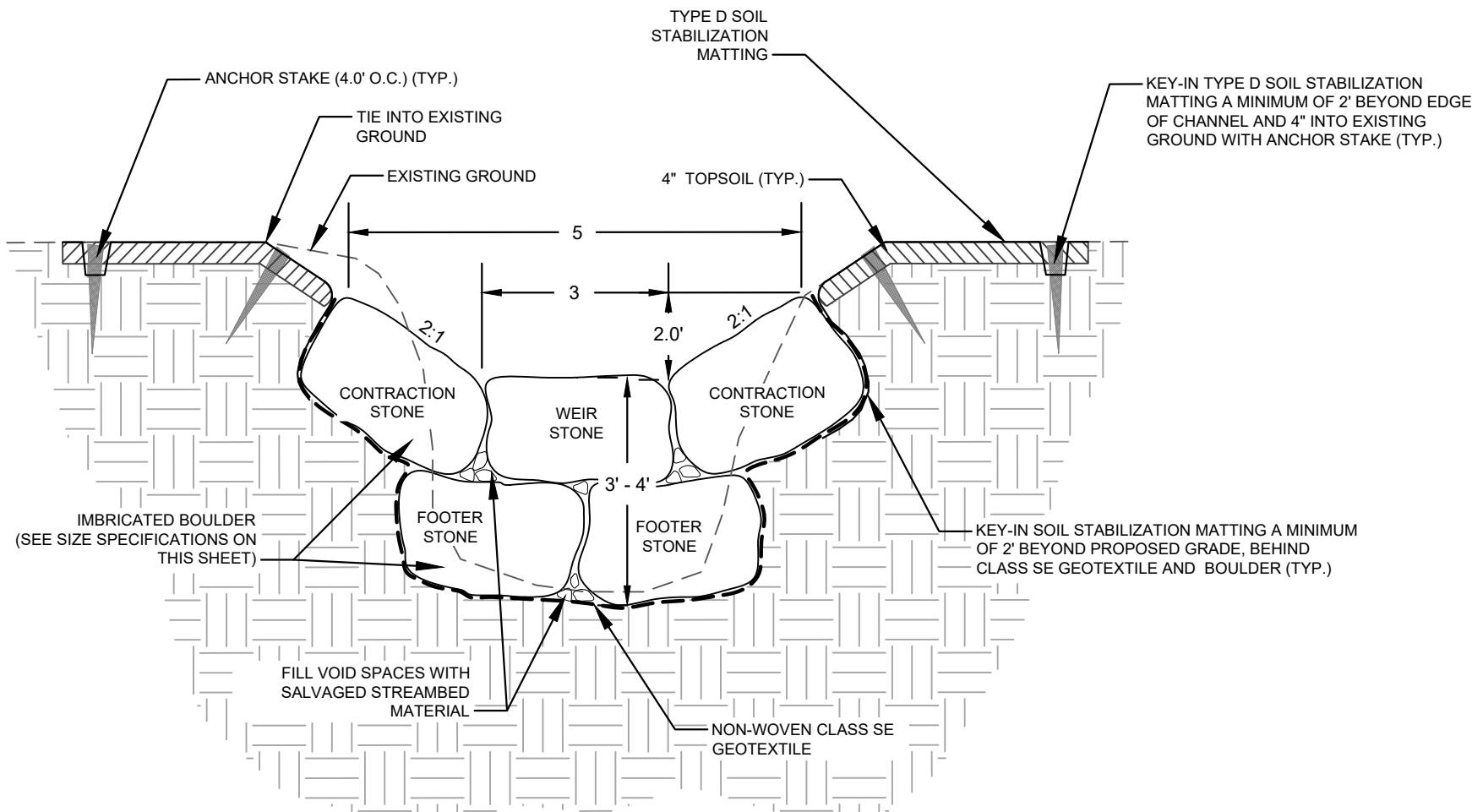
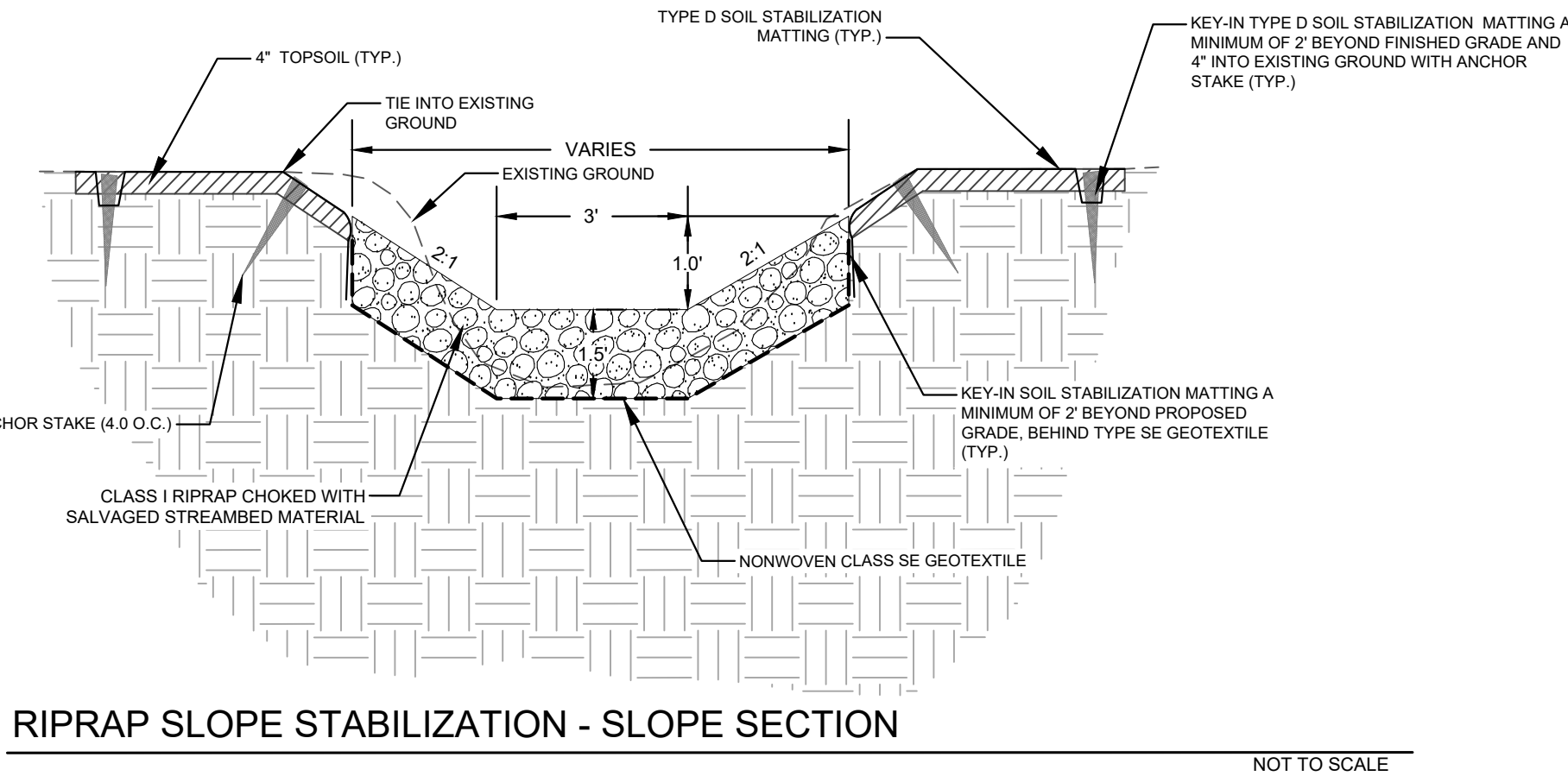
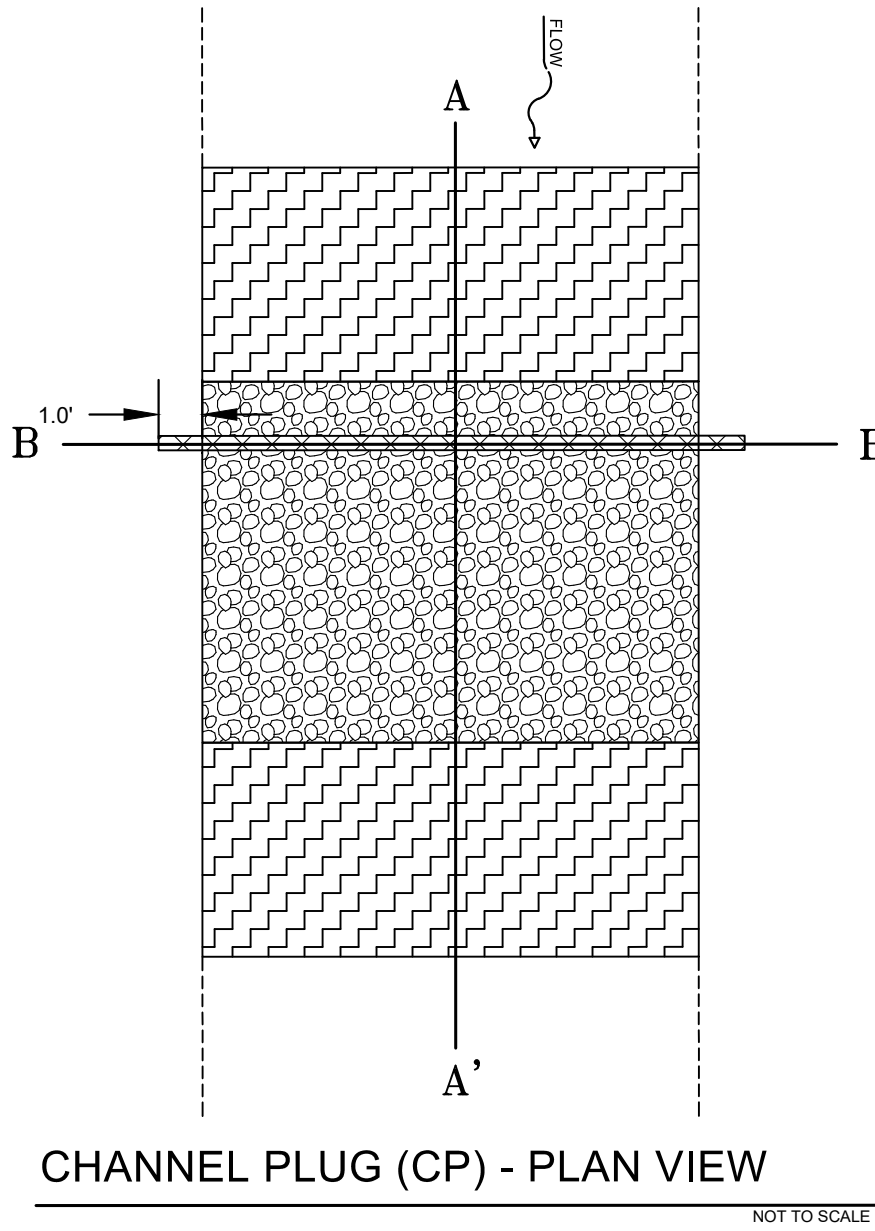
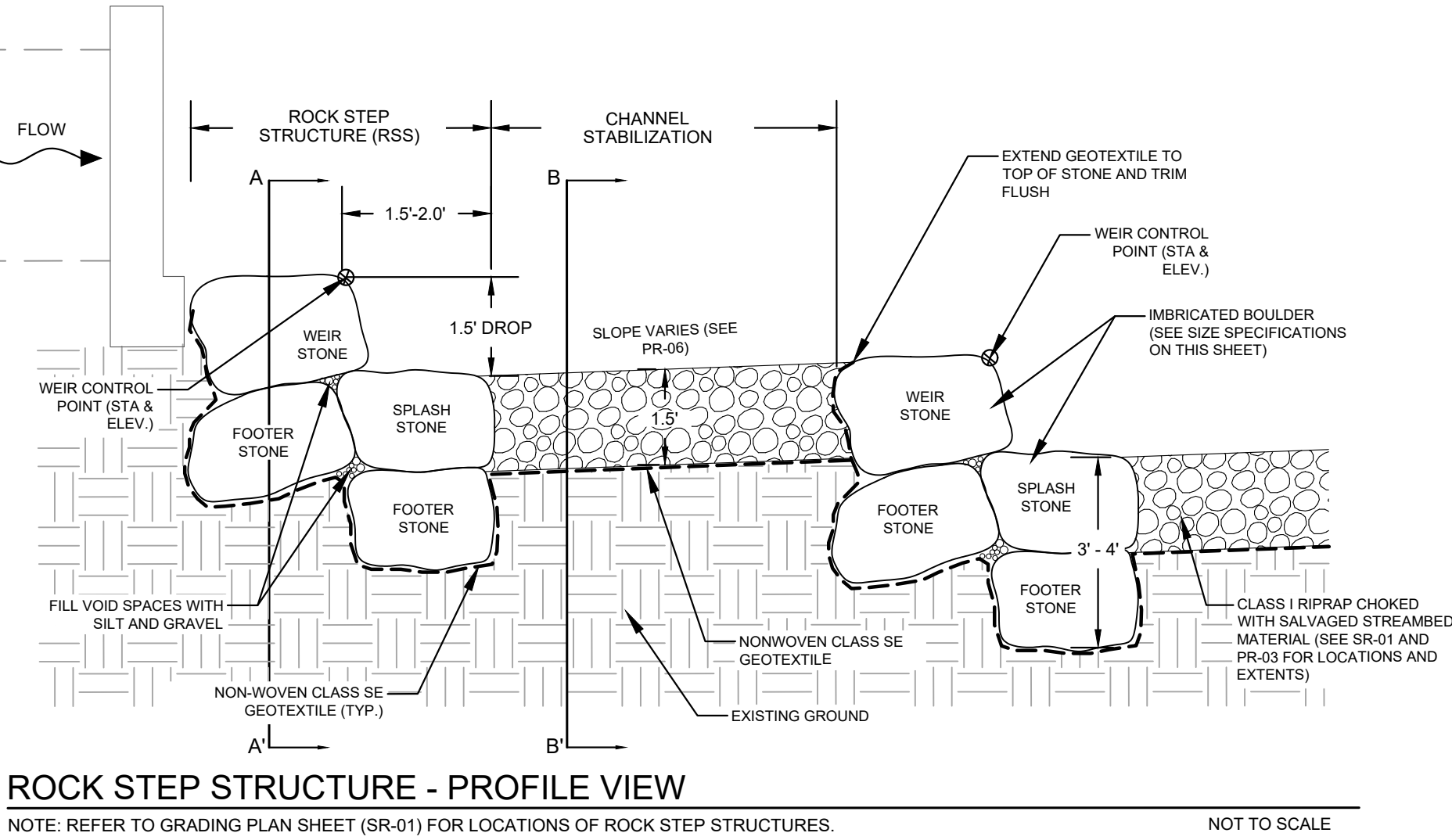
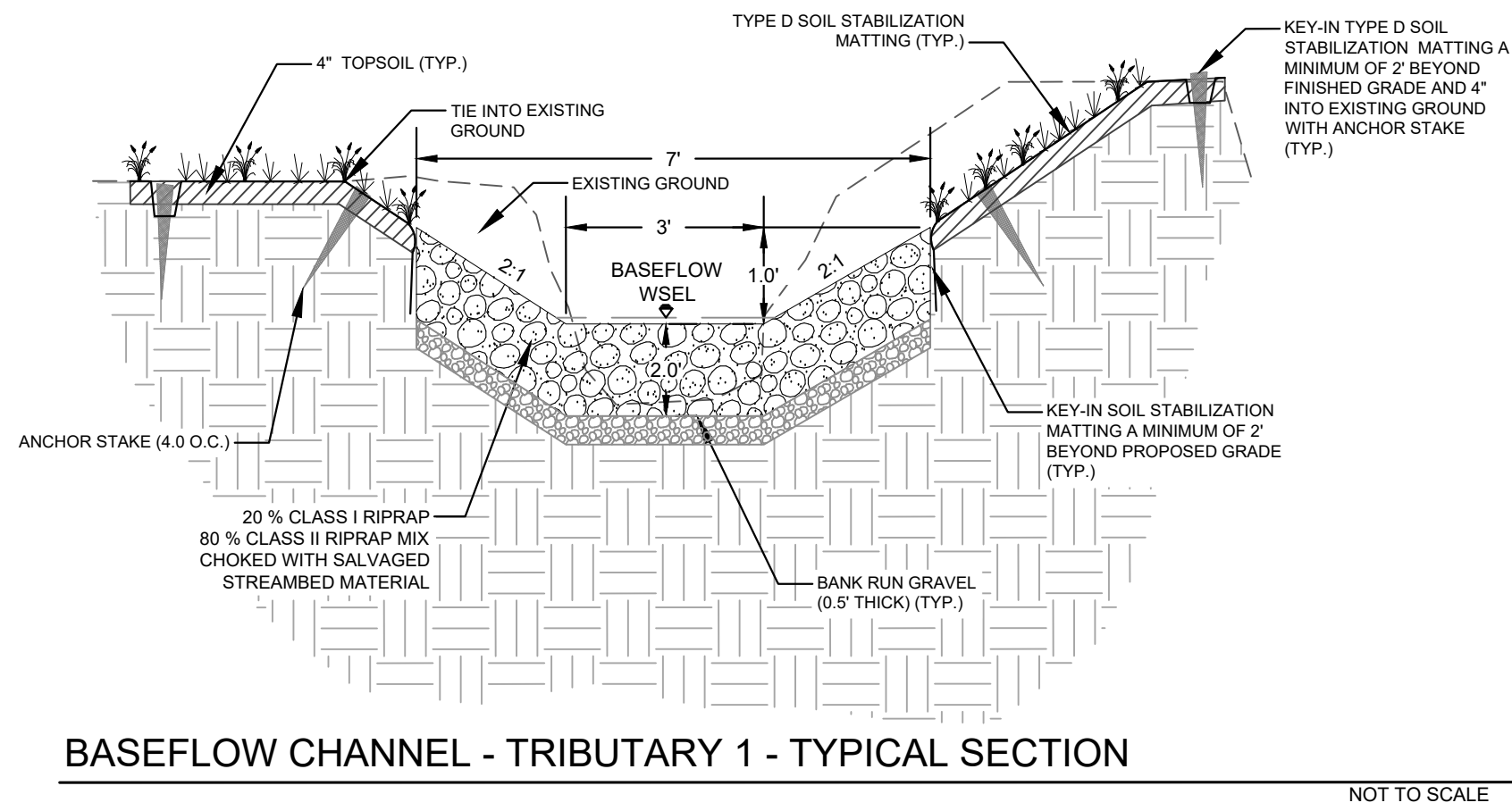
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BID No.: HCG DWG ID No.: SHEET 17 OF 19

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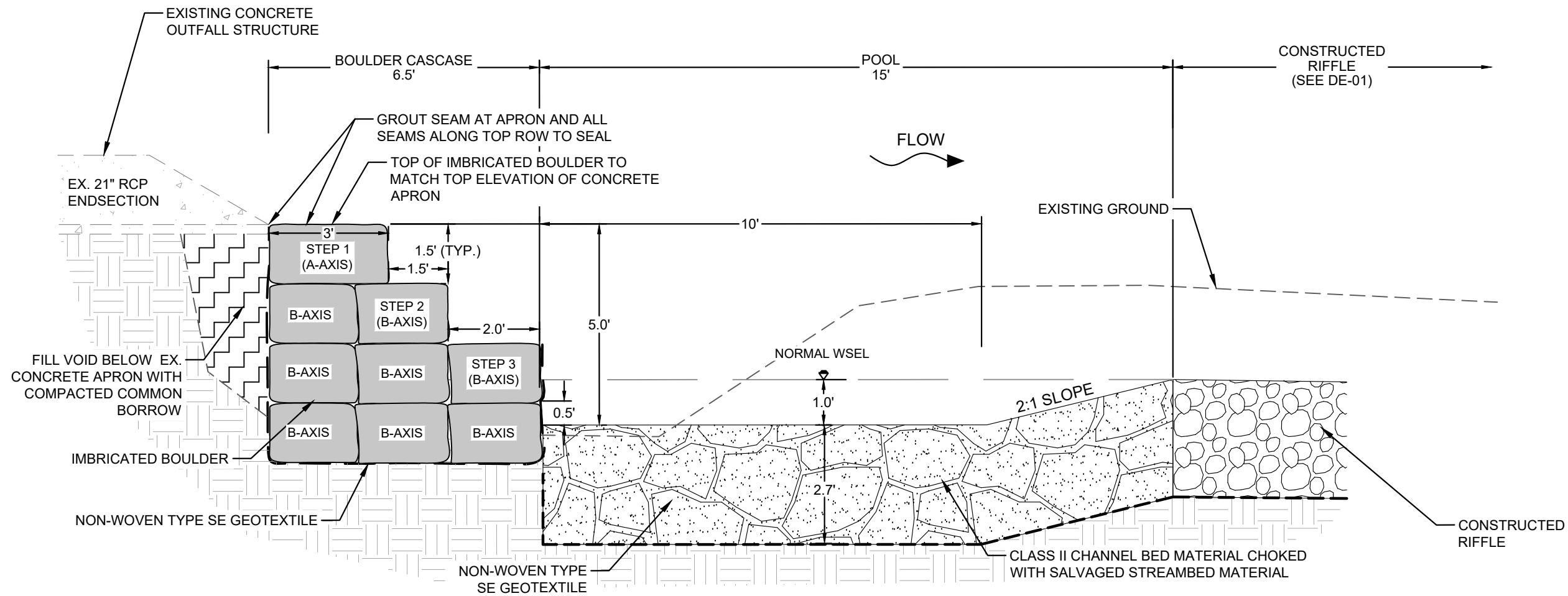
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Revisions

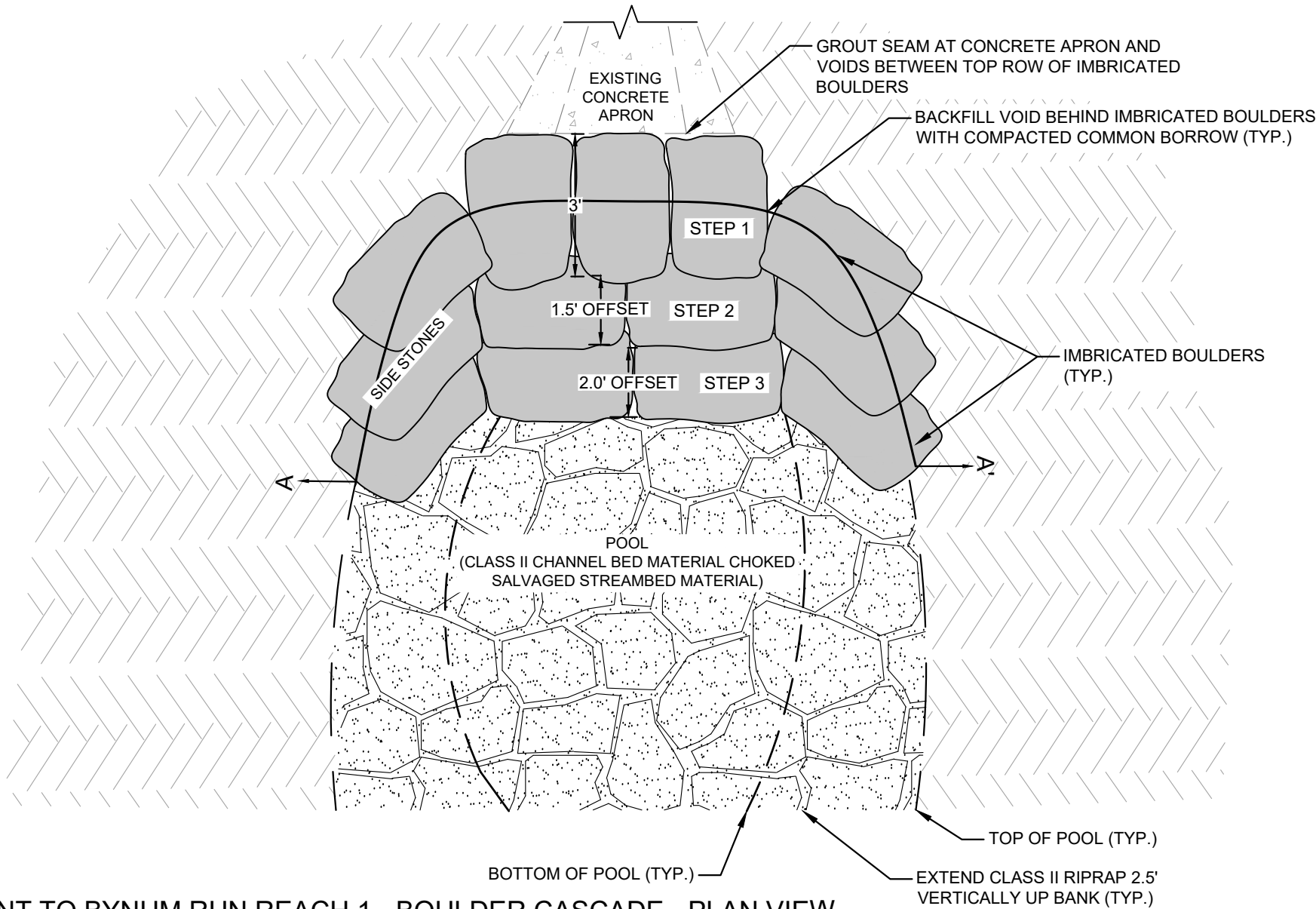
HARFORD COUNTY, MARYLAND			
BENNETT PLACE STREAM RESTORATION			
DETAIL SHEET			
Drawn By : PJB	Scale : N/A		
Designed By : IPT, PJB	Date : 07 / 25		
Reviewed By : CAL			
Drawing No. DE-04 of DE-05	Sheet No. 18 of 19		

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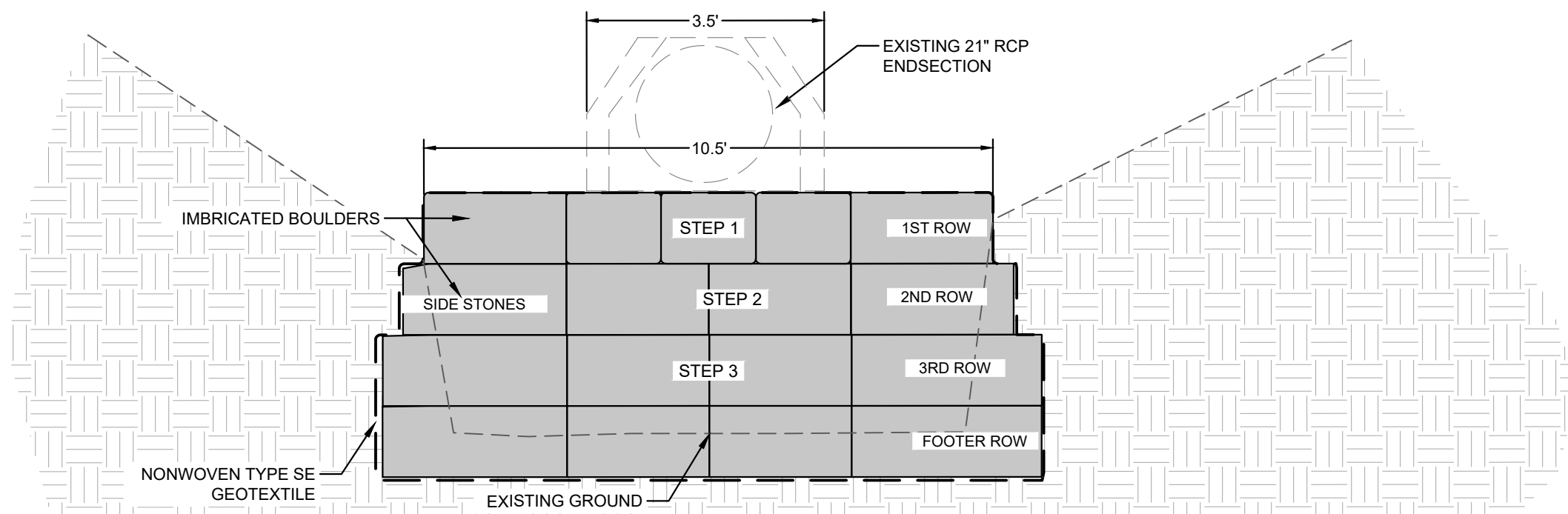
OUTFALL #2 TO UNT TO BYNUM RUN REACH 1 - BOULDER CASCADE- PROFILE VIEW

NOT TO SCALE



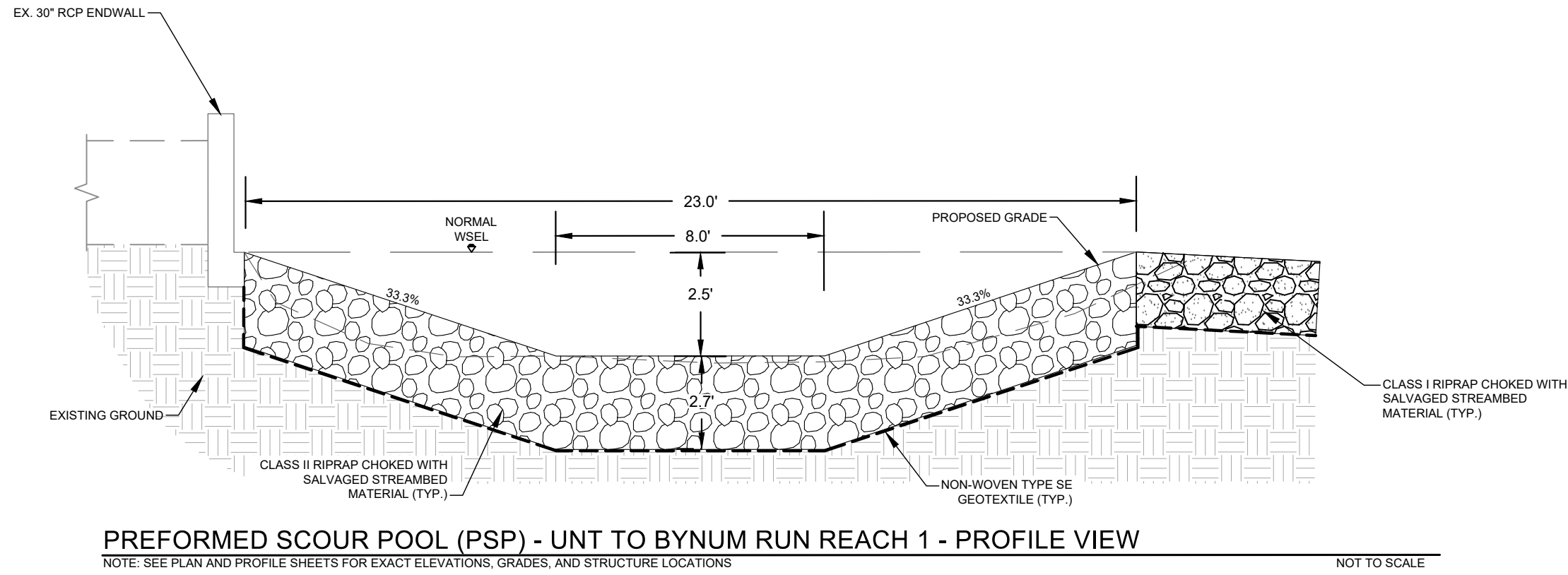
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NOT TO SCALE



OUTFALL #2 TO UNT TO BYNUM RUN REACH 1 - BOULDER CASCADE - SECTION VIEW A-A'

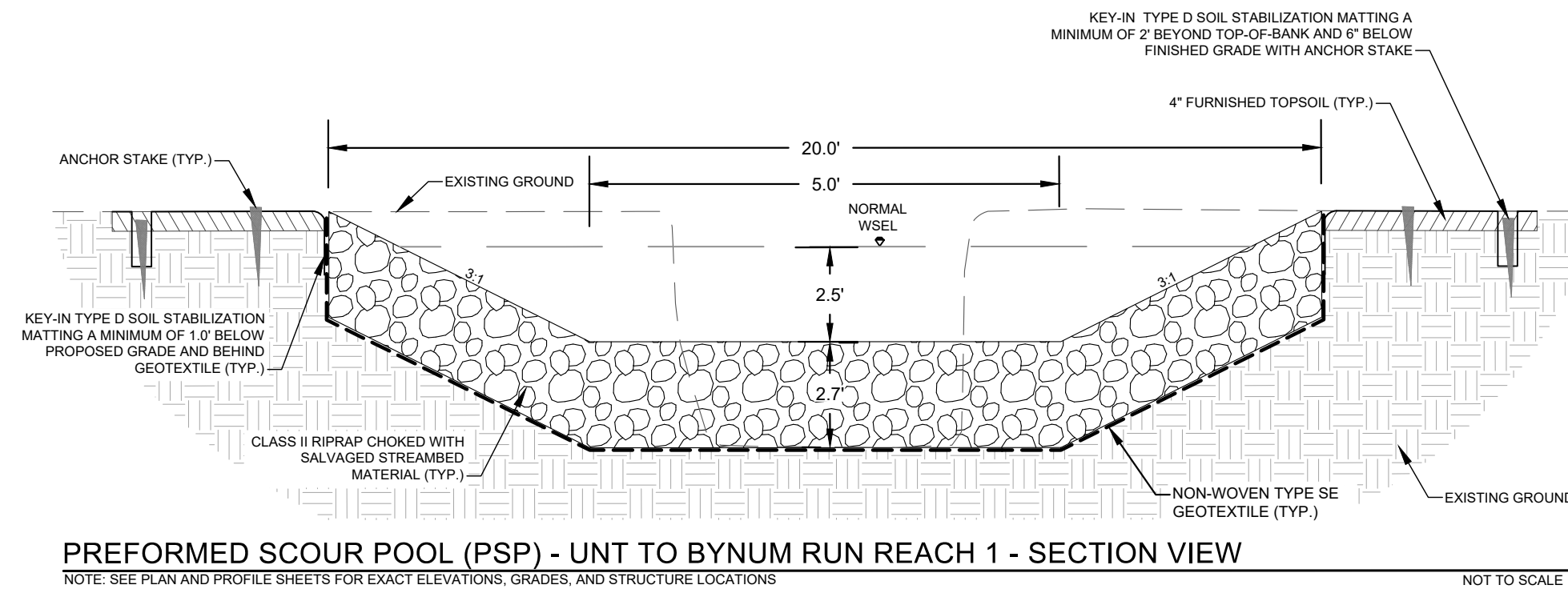
NOT TO SCALE



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



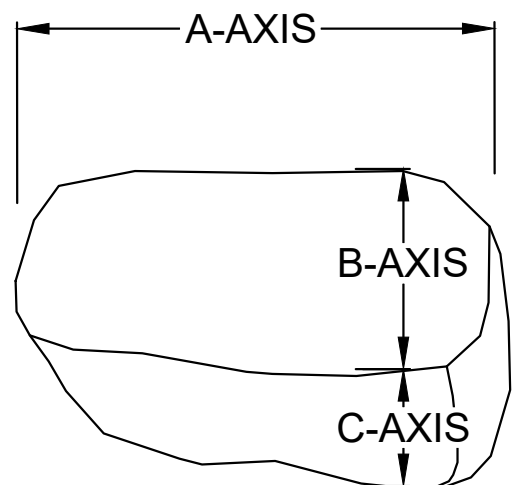
PREFORMED SCOUR POOL (PSP) - UNT TO BYNUM RUN REACH 1 - SECTION VIEW

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

NOT TO SCALE

IMBRICATED BOULDER SIZE SPECIFICATIONS				
	A AXIS (LONG)	B AXIS (INTERMEDIATE)	C AXIS (SHORT)	WEIGHT
MINIMUM SIZE	2.5 FT.	2.0 FT.	2.0 FT.	1600 LBS.
MAXIMUM SIZE	4.0 FT.	3.0 FT.	2.0 FT.	3840 LBS.

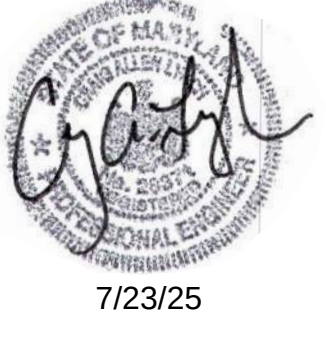
IMBRICATED BOULDERS SHALL HAVE A MINIMUM DENSITY GREATER THAN 150 LBS/FT³ AND BE BROWN OR GRAY IN COLOR. NO WHITE STONE WILL BE ALLOWED. THE STONE SHALL NOT DISINTEGRATE FROM THE ACTION OF AIR, WATER, OR HANDLING AND PLACING. GRANULAR SEDIMENTARY STONE WILL GENERALLY BE UNACCEPTABLE. CONCRETE WILL NOT BE CONSIDERED AS AN ALTERNATIVE FOR STONE.



IMBRICATED BOULDER DETAIL - TYPICAL DETAIL

NOT TO SCALE

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Revisions

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BENNETT PLACE STREAM RESTORATION	
DETAIL SHEET	
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Designed By : IPT , PJB	Date : 07 / 25
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Drawing No. DE-05 of DE-05	Sheet No. 19 of 19

BID No.:

HCG DWG ID No.:

SHEET 19 OF 19