

HARFORD COUNTY
MARYLAND
DEPARTMENT OF PUBLIC WORKS
BID NO. 20-073

DECLARATION RUN STREAM RESTORATION
FROM STA.1+20 TO 10+75 AND STA. 36+40 TO 52+28

INDEX OF SHEETS

SHEET NO.	SHEET DESIGNATION	DESCRIPTION
1	T-01	TITLE SHEET
2-4	G-01 TO G-03	STREAM GEOMETRY PLANS
5-9	SR-01 TO SR-05	STREAM PLANS
10-12	PR-01 TO PR-03	STREAM PROFILES
13-14	PR-04 TO PR-05	STEP POOL STORM CONVEYANCE PROFILES
15	DA-01	DRAINAGE AREA MAP
16-20	TD-01 TO TD-05	DETAILS I, II, III, IV & V
21-25	ES-01 TO ES-05	EROSION AND SEDIMENT CONTROL PLANS
26	ES-06	EROSION & SEDIMENT CONTROL LEGEND & SEQUENCE OF CONSTRUCTION
27-29	ES-06 TO ES-08	EROSION & SEDIMENT CONTROL NOTES & DETAILS
30-34	LD-1 TO LD-05	PLANTING PLANS
35	LD-06	PLANTING NOTES & SCHEDULES
36-47	CS-01 TO CS-12	CROSS SECTIONS
48	ST-01	STRUCTURE - SANITARY PIPE PROTECTION SLAB

THESE PLANS HAVE BEEN REVIEWED BY HARFORD COUNTY AND MEET THE TECHNICAL REQUIREMENTS FOR STORMWATER QUANTITY AND/OR QUALITY MANAGEMENT ONLY. HARFORD COUNTY STORMWATER MANAGEMENT BILLING # 97040

REFER TO SHEET 14 FOR INSPECTION AND MAINTENANCE SCHEDULE FOR THE STEP POOL SYSTEMS.

REVIEWED AND APPROVAL RECOMMENDED:

PROJECT ENGINEER

REVIEWED AND APPROVAL RECOMMENDED:

CHIEF ENGINEER

APPROVAL RECOMMENDED:

DEPUTY DIRECTOR OF PUBLIC WORKS

APPROVED:

DIRECTOR OF PUBLIC WORKS

FIELD VERIFICATION CERTIFICATION

"I HEREBY CERTIFY THAT I AND OTHER AECOM STAFF COMPLETED A FIELD VERIFICATION TO THE INFORMATION SHOWN ON THE PLANS ON VARIOUS DATES WITH THE LAST DATE OF 4/29/19. THE INFORMATION SHOWN ON THE PLANS IS IN AGREEMENT WITH THE ACTUAL FIELD CONDITIONS."

DAVID T. MORICONI

PRINTED NAME

SIGNATURE

DATE

DEVELOPER'S / OWNER'S CERTIFICATION

"I/ WE HEREBY CERTIFY THAT ALL PROPOSED WORK SHOWN ON THESE CONSTRUCTION DRAWINGS AND ON THE APPROVED SEDIMENT CONTROL DRAWINGS WILL BE ACCOMPLISHED PURSUANT TO THESE PLANS. I/ WE UNDERSTAND THAT IT IS MY/ OUR RESPONSIBILITY TO HAVE THE CONSTRUCTION SUPERVISED AND CERTIFIED INCLUDING THE SUBMITTAL AND COUNTY APPROVAL OF "AS BUILT" PLANS WITHIN 30 DAYS OF COMPLETION, BY A REGISTERED CERTIFIED PROFESSIONAL ENGINEER."

SIGNATURE: _____ DATE _____

PRINT NAME: _____

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 U.S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE AND/OR THE MARYLAND DEPARTMENT OF NATURAL RESOURCES, WATER RESOURCES ADMINISTRATION"

SIGNATURE: _____ DATE _____

PRINT NAME: DAVID T. MORICONI

P.E. NO. 16156

AS-BUILT CERTIFICATION

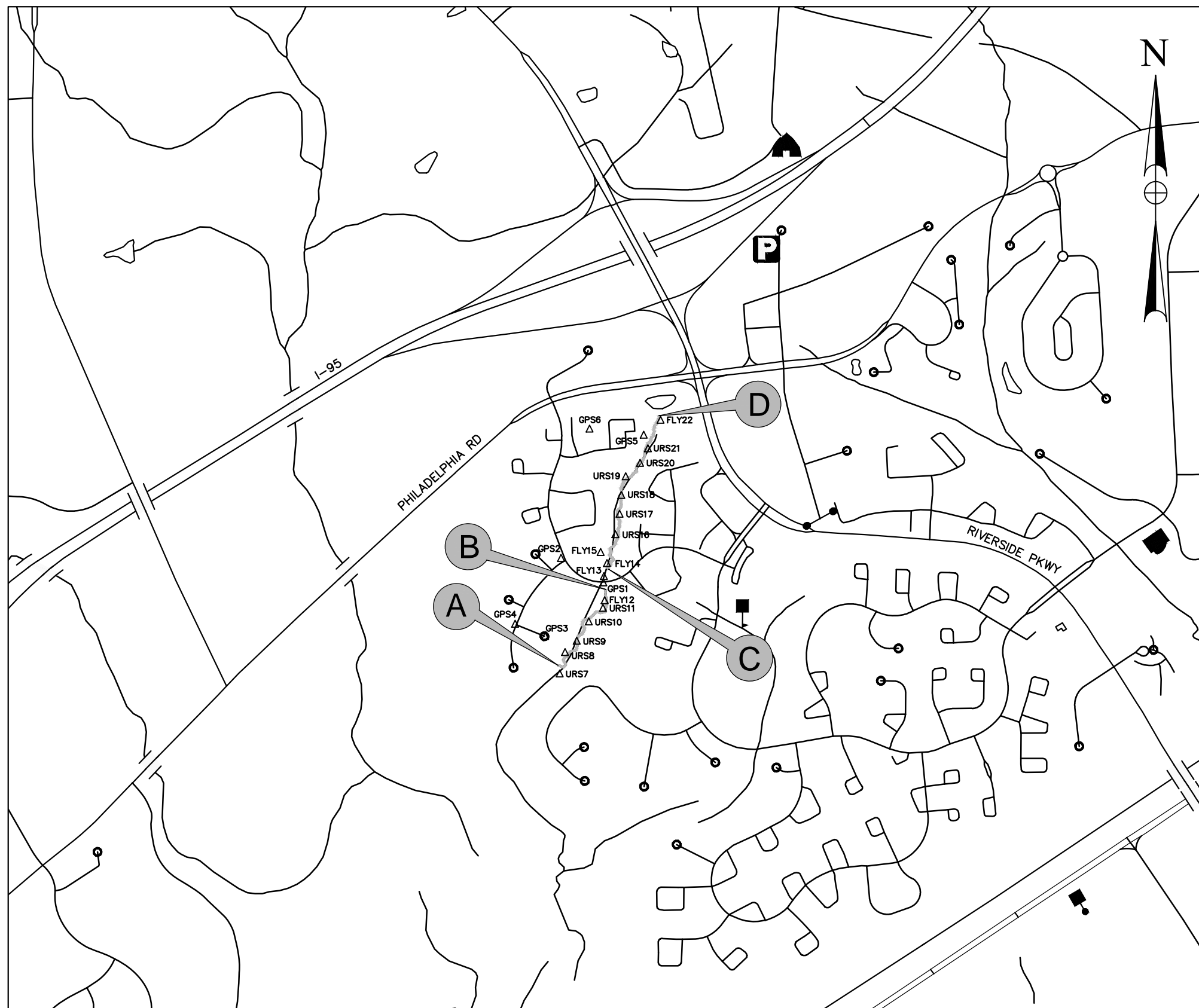
"I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLAN AND MEETS THE APPROVED PLANS AND SPECIFICATION."

SIGNATURE: _____ DATE _____

PRINT NAME: _____

P.E. NO.: _____

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ONSITE 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.



LOCATION MAP

SCALE 1" = 1000'

EROSION AND SEDIMENT CONTROL

PLAN# 59846

RECOMMENDED FOR APPROVAL:

HARFORD COUNTY DPW

TECHNICAL CONCURRENCE:

HARFORD SOIL CONSERVATION DISTRICT

APPROVED:

HARFORD SOIL CONSERVATION DISTRICT

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT 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. 16156, EXPIRATION DATE: 8/28/2022"

AECOM

REVISIONS

HARFORD COUNTY, MARYLAND

DECLARATION RUN STREAM RESTORATION

TITLE SHEET

DRAWN BY : BJK

DESIGNED BY : NJF

REVIEWED BY : DTM

CONTRACT NO : 97040

SCALE : AS SHOWN

SHEET 1 OF 48

DATE : MARCH, 2022

GENERAL NOTES

- SPECIFICATIONS: ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH MARYLAND STATE HIGHWAY ADMINISTRATIONS "SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS" DATED JULY 2019, AND THE MOST RECENT REVISIONS THEREOF AND ADDITIONS THERETO.

THE GENERAL PROVISIONS FOR THIS PROJECT ARE THOSE INCLUDED IN THE "HARFORD COUNTY ROAD CODE" GENERAL PROVISIONS COUNTY FUNDED PROJECTS, SECTIONS 100-110.

- CONTRACTOR SHALL CONTACT HARFORD COUNTY BUREAU OF CONSTRUCTION MANAGEMENT AT 410-638-3217, 48 HOURS IN ADVANCE OF CONSTRUCTION.

- DECLARATION RUN IS A USE I WATERWAY AND SUBJECT TO A STREAM CLOSURE MARCH 1 THROUGH JUNE 15, INCLUSIVE.

- 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 HIM.

- UTILITY RELOCATIONS: UTILITY RELOCATIONS MADE NECESSARY BY THE PROPOSED WORK WILL BE ACCOMPLISHED BY THE UTILITY OWNERS AT NO COST TO THE CONTRACTOR. WHEN SUCH WORK IS NECESSARY, THE CONTRACTOR SHALL NOTIFY APPROPRIATE PERSONNEL AS FOLLOWS:

CONTACT "MISS UTILITY" PHONE 1-800-257-7777, 48 HOURS IN ADVANCE FOR LOCATION OF ANY UTILITIES.

CONTACT HARFORD COUNTY D.P.W. DIVISION OF WATER AND SEWERS PHONE NO. 1-410-638-3289 OR 1-410-612-1612, 72 HOURS IN ADVANCE OF BEGINNING ANY CONSTRUCTION.

CONTACT BALTIMORE GAS & ELECTRIC CO. - PHONE NO. 1-410-291-3119, 48 HOURS IN ADVANCE OF BEGINNING ANY CONSTRUCTION.

- STANDARD DETAILS: REFERENCE MADE TO STANDARDS ARE TAKEN FROM THE HARFORD COUNTY ROAD CODE "SPECIFICATIONS FOR CONSTRUCTION AND MATERIAL. STANDARD DETAILS FOR DESIGN AND CONSTRUCTION" 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. MINIMAL STOCKPILING AND STAGING WILL BE PROVIDED ON SITE. THE CONTRACTOR MUST SECURE AN OFF-SITE AREA AND ANY NECESSARY PERMITS. SOIL STABILIZATION WILL CONFORM TO 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. THE CONTRACTOR WILL OBTAIN APPROVAL OF THE HARFORD COUNTY SOIL CONSERVATION DISTRICT FOR HIS PLANS IN CONTROLLING SEDIMENT EROSION FOR THE BORROW AREA AND DISPOSING OF ANY WASTE EXCAVATION.

- EXISTING MAILBOXES AND EXISTING SIGNS: ALL EXISTING MAILBOXES, SIGNS AND PAPER BOXES 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.

- SURVEYS: COORDINATES SHOWN ON THESE PLANS ARE BASED ON THE MARYLAND COORDINATE SYSTEM (NAD83/2011) AND WERE ESTABLISHED USING A GPS SITE CALIBRATION THROUGH THE FOLLOWING NATIONAL GEODETIC SURVEY (NGS) CONTROL STATIONS:

STATION	VERT	HARFORD AZ MK	ELEV.
JV0387	VERT	P173	179.44
JV6223	VERT	CRANBERRY	42.75
JV6732	HOR VERT	E 1,538,083.954	72.27
JV6794	HOR	LAUREL	658,115.852 E. 1,511,439.792
JV7320	HOR	RIVERSIDE 2	660,367.915 E. 1,524,623.888
JV0458	VERT	P64	41.50
JV6275	VERT	OLD POST	90.76
JV6806	HOR	McCOMAS AZ MK	647,729.827 E. 1,512,861.166

MAXIMUM HORIZONTAL RESIDUAL: 0.059'

MAXIMUM VERTICAL RESIDUAL: 0.058'

THREE-DIMENSIONAL RESIDUAL: 0.072'

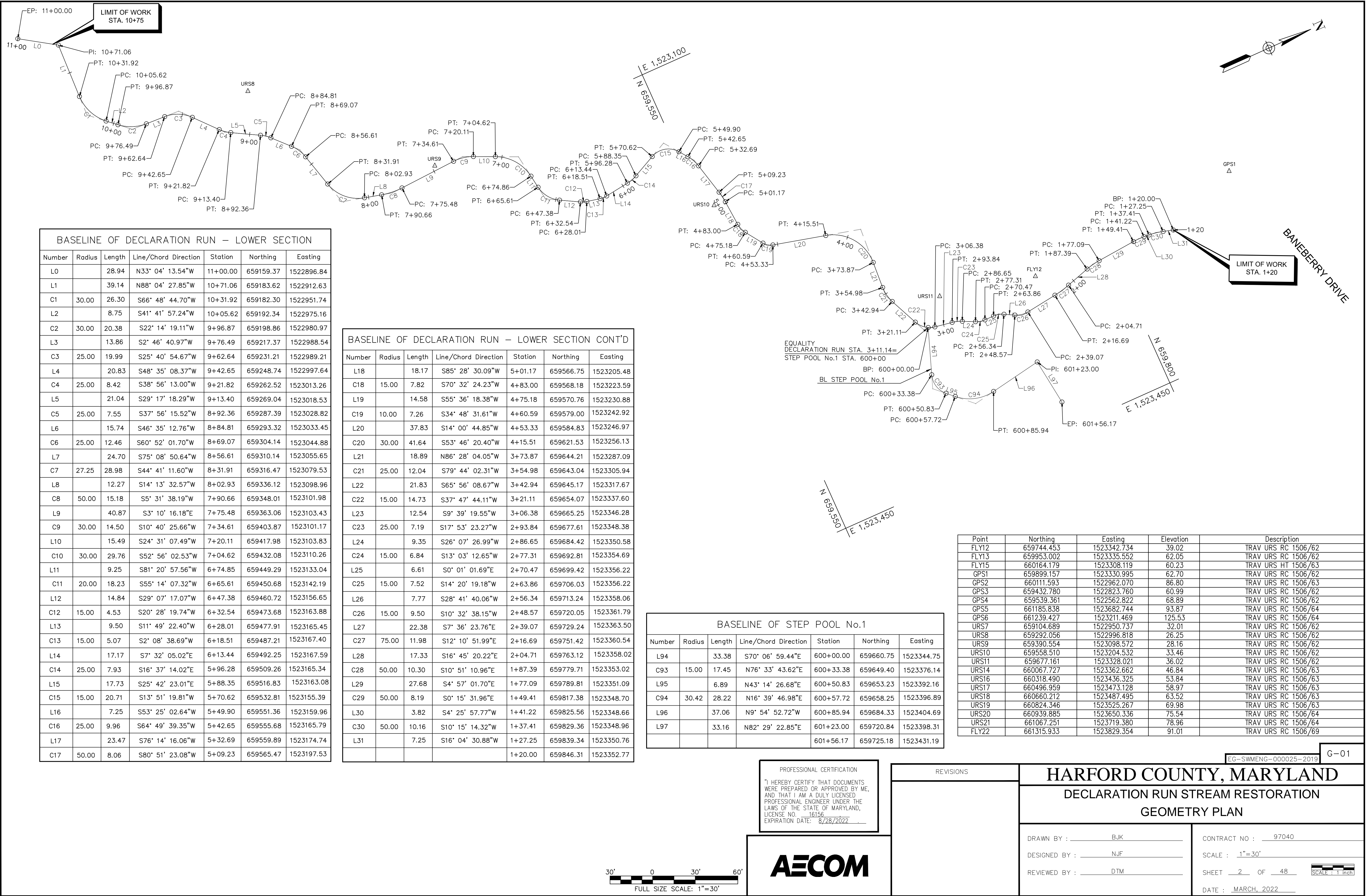
LOCAL ON-SITE CONTROL STATIONS:

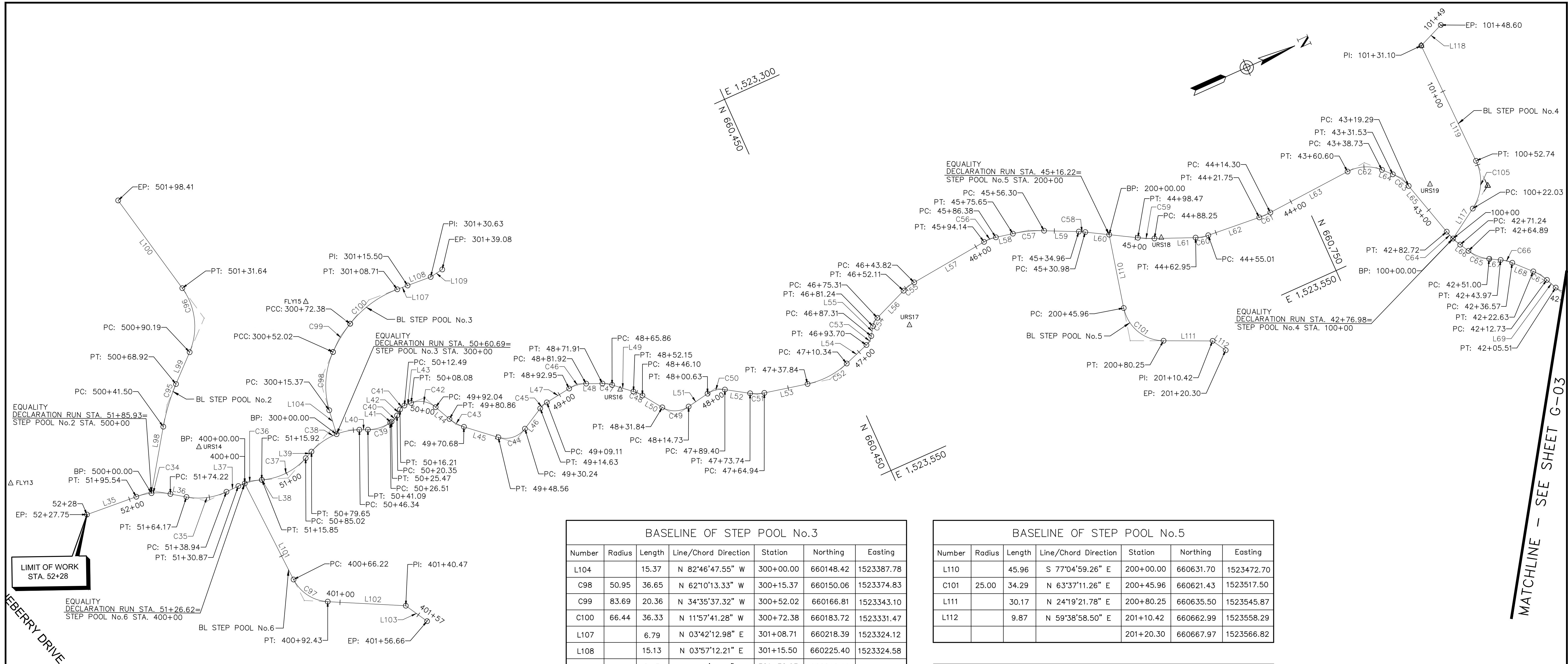
STATION	NORTHING	EASTING	ELEV.	DESC.
GPS1	659899.15700	1523330.99500	62.70	REBAR & CAP
GPS2	660111.59255	1522962.06981	86.80	REBAR & CAP
GPS3	659432.78000	1522823.76000	60.99	REBAR & CAP
GPS4	659539.36118	1522562.82226	68.89	REBAR & CAP
GPS5	661185.83800	1523682.74400	93.88	REBAR & CAP
GPS6	661239.42667	1523211.46860	125.53	REBAR & CAP

COMBINED SCALE FACTOR: (GPS1 - GRID TO GROUND) 0.99999311

VERTICAL DATUM: NAVD88 (GEOID 12B)

- THE CONTRACTORS ATTENTION IS DIRECTED TO THE EXISTENCE OF PROPERTY MARKERS, PIPES, MONUMENTS, ETC. THAT SHALL NOT BE DISTURBED. IN THE EVENT THESE MARKERS ARE REMOVED, DAMAGED, OR DESTROYED BY THE CONTRACTOR, THEY SHALL BE REPLACED IN KIND BY A MARYLAND LICENSED LAND SURVEYOR AT THE CONTRACTORS EXPENSE.





WEBBERRY DRIVE

LIMIT OF WORK
STA. 52+28

BASELINE OF STEP POOL No.2						
Number	Radius	Length	Line/Chord Direction	Station	Northing	Easting
L98		41.50	N 55°45'16.54" W	500+00.00	660029.45	1523376.55
C95	120.00	27.42	N 49°12'29.52" W	500+41.50	660052.81	1523342.24
L99		21.27	N 42°39'42.50" W	500+68.92	660070.69	1523321.52
C96	40.00	41.44	N 72°20'34.92" W	500+90.19	660086.33	1523307.11
L100		66.77	S 77°58'32.67" W	501+31.64	660098.34	1523269.36
				501+98.41	660084.43	1523204.06

BASELINE OF STEP POOL No.3						
Number	Radius	Length	Line/Chord Direction	Station	Northing	Easting
L104		15.37	N 82°46'47.55" W	300+00.00	660148.42	1523387.78
C98	50.95	36.65	N 62°10'13.33" W	300+15.37	660150.06	1523374.83
C99	83.69	20.36	N 34°35'37.32" W	300+52.02	660166.81	1523343.10
C100	66.44	36.33	N 11°57'41.28" W	300+72.38	660183.72	1523331.47
L107		6.79	N 03°42'12.98" E	301+08.71	660218.39	1523324.12
L108		15.13	N 03°57'12.21" E	301+15.50	660225.40	1523324.58
L109		8.45	N 08°58'15.08" W	301+30.63	660240.49	1523325.62
				301+39.08	660248.84	1523324.30

BASELINE OF STEP POOL No.4						
Number	Radius	Length	Line/Chord Direction	Station	Northing	Easting
L117		22.03	N 32°36'34.81" W	100+00.00	660823.64	1523561.47
C105	30.00	30.71	N 61°55'58.94" W	100+22.03	660842.20	1523549.60
L118		17.50	N 88°44'36.93" W	101+31.10	660854.31	1523445.33
L119		78.36	S 22°22'54.02" W	100+52.74	660856.03	1523523.67
				101+48.60	660870.49	1523438.67

BASELINE OF STEP POOL No.5						
Number	Radius	Length	Line/Chord Direction	Station	Northing	Easting
L110		45.96	S 77°04'59.26" E	200+00.00	660631.70	1523472.70
C101	25.00	34.29	N 63°37'11.26" E	200+45.96	660621.43	1523517.50
L111		30.17	N 24°19'21.78" E	200+80.25	660635.50	1523545.87
L112		9.87	N 59°38'58.50" E	201+10.42	660662.99	1523558.29
				201+20.30	660667.97	1523566.82

BASELINE OF STEP POOL No.6						
Number	Radius	Length	Line/Chord Direction	Station	Northing	Easting
L101		66.22	N 87°11'45.18" E	400+00.00	660084.23	1523394.55
C97	25.00	26.21	N 57°09'26.19" E	400+66.22	660087.47	1523460.69
L102		48.03	N 27°07'07.21" E	400+92.43	660101.05	1523481.72
L103		16.20	N 60°09'51.25" E	401+40.47	660143.80	1523503.62
				401+56.66	660151.86	1523517.67

NOTES:
1. FOR BASELINE OF DECLARATION RUN – UPPER SECTION
CURVE AND LINE DATA, SEE SHEET G-03.



PROFESSIONAL CERTIFICATION
"I HEREBY CERTIFY THAT 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. 16156
EXPIRATION DATE: 8/28/2022

AECOM

REVISIONS	

EG-SWMENG-000025-2019

G-02

HARFORD COUNTY, MARYLAND

DECLARATION RUN STREAM RESTORATION

GEOMETRY PLAN

DRAWN BY : BJK

DESIGNED BY : NJF

REVIEWED BY : DTM

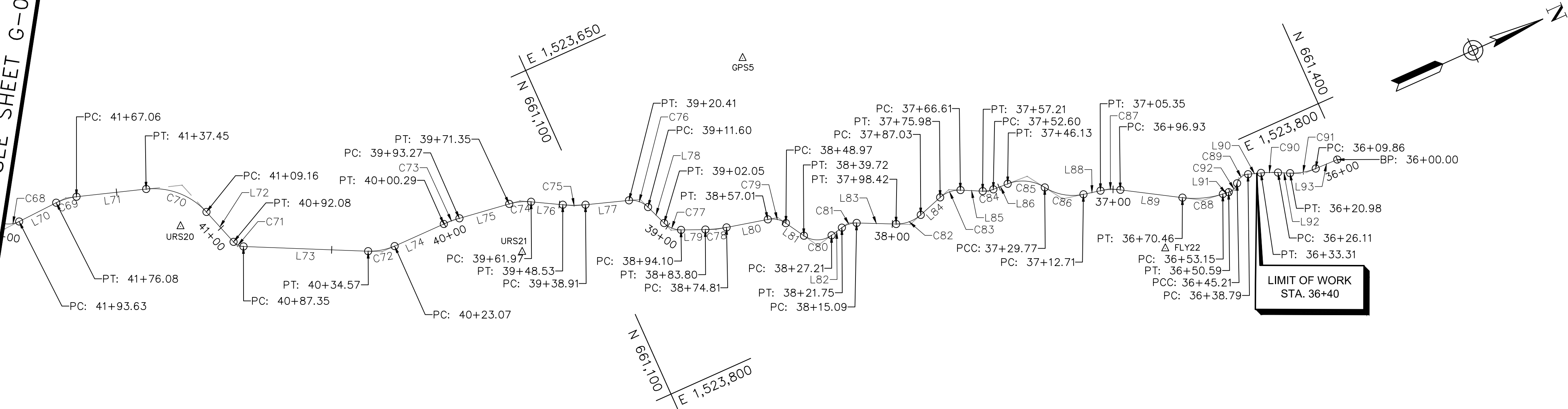
CONTRACT NO : 97040

SCALE : 1"=30'

SHEET 3 OF 48

DATE : MARCH, 2022

MATCHLINE - SEE SHEET G-02



BASELINE OF DECLARATION RUN – UPPER SECTION						
Number	Radius	Length	Line/Chord Direction	Station	Northing	Easting
L35		30.20	S 04°15'49.85" W	52+27.75	659987.93	1523372.30
C34	40.00	21.33	S 19°32'09.23" W	51+95.54	660020.05	1523374.69
L36		10.05	S 34°48'28.61" W	51+74.22	660039.91	1523381.74
C35	39.98	25.23	S 16°43'58.15" W	51+64.17	660048.16	1523387.47
L37		8.08	S 01°20'32.31" E	51+38.94	660071.92	1523394.62
C36	40.15	14.95	S 09°19'18.21" W	51+30.87	660079.99	1523394.43
L38		0.07	S 19°59'08.74" W	51+15.92	660094.65	1523396.83
C37	39.94	30.82	S 02°07'18.93" E	51+15.85	660094.72	1523396.86
L39		5.37	S 24°13'46.61" E	50+85.02	660124.77	1523395.75
C38	40.02	33.31	S 00°23'16.50" E	50+79.65	660129.66	1523393.54
L40		5.25	S 23°27'13.60" W	50+46.34	660162.02	1523393.32
C39	25.00	14.59	S6° 45' 23.07"W	50+41.10	660166.83	1523395.41
L41		1.03	S9° 57' 32.40"E	50+26.51	660181.12	1523397.10
C40	10.00	5.12	S24° 37' 36.88"E	50+25.47	660182.13	1523396.92
L42		4.15	S39° 17' 41.36"E	50+20.35	660186.74	1523394.81
C41	5.00	3.71	S18° 01' 46.50"E	50+16.21	660189.95	1523392.19
L43		4.41	S3° 14' 08.36"W	50+12.49	660193.40	1523391.06
C42	15.00	16.04	S33° 52' 38.07"W	50+08.08	660197.80	1523391.31
L44		11.18	S64° 31' 07.78"W	49+92.04	660210.50	1523399.83
C43	25.00	10.18	S52° 51' 05.01"W	49+80.86	660215.31	1523409.92
L45		22.12	S41° 11' 02.24"W	49+70.68	660221.41	1523417.98
C44	15.00	18.32	S6° 11' 40.23"W	49+48.56	660238.06	1523432.55
L46		15.60	S28° 47' 41.77"E	49+30.24	660255.16	1523434.41
C45	15.00	5.52	S18° 15' 14.28"E	49+14.63	660268.84	1523426.89
L47		16.16	S7° 42' 46.80"E	49+09.11	660274.05	1523425.17

BASELINE OF DECLARATION RUN – UPPER SECTION						
Number	Radius	Length	Line/Chord Direction	Station	Northing	Easting
C46	20.00	11.03	S8° 04' 48.14"W	48+92.95	660290.07	1523423.00
L48		10.01	S23° 52' 23.08"W	48+81.92	660300.85	1523424.53
C47	20.00	6.05	S32° 32' 46.05"W	48+71.91	660310.00	1523428.58
L49		13.71	S41° 13' 09.03"W	48+65.86	660315.08	1523431.83
C48	25.00	6.05	S48° 08' 55.00"W	48+52.15	660325.40	1523440.86
L50		14.26	S55° 04' 40.97"W	48+46.10	660329.42	1523445.36
C49	15.00	17.11	S22° 23' 29.21"W	48+31.84	660337.59	1523457.05
L51		14.10	S10° 17' 42.55"E	48+14.73	660352.57	1523463.22
C50	15.00	11.23	S11° 08' 59.64"W	48+00.63	660366.43	1523460.70
L52		15.67	S32° 35' 41.82"W	47+89.40	660377.20	1523462.82
C51	25.00	8.79	S22° 31' 12.23"W	47+73.74	660390.39	1523471.26
L53		27.10	S12° 26' 42.64"W	47+64.94	660398.47	1523474.61
C52	50.00	27.50	S3° 18' 41.43"E	47+37.84	660424.94	1523480.45
L54		16.64	S19° 04' 05.51"E	47+10.34	660452.05	1523478.88
C53	10.00	6.40	S37° 23' 33.91"E	46+93.70	660467.77	1523473.45
L55		6.07	S55° 43' 02.32"E	46+87.31	660472.77	1523469.63
C54	10.00	5.93	S38° 43' 49.39"E	46+81.24	660476.19	1523464.61
L56		23.20	S21° 44' 36.46"E	46+75.31	660480.75	1523460.95
C55	30.00	8.29	S13° 49' 33.92"E	46+52.11	660502.29	1523452.36
L57		49.67	S5° 54' 31.37"E	46+43.82	660510.32	1523450.39
C56	25.00	7.77	S2° 59' 29.00"W	45+94.14	660559.73	1523445.27
L58		10.73	S11° 53' 29.37"W	45+86.38	660567.45	1523445.68
C57	80.00	19.35	S18° 49' 09.45"W	45+75.65	660577.95	1523447.89
L59		21.34	S25° 44' 49.52"W	45+56.30	660596.22	1523454.11
C58	50.00	3.98	S28° 01' 37.28"W	45+34.96	660615.44	1523463.38
L60		32.51	S30° 18' 25.05"W	45+30.98	660618.96	1523465.25
C59	80.00	10.22	S26° 38' 50.11"W	44+98.47	660647.02	1523481.66
L61		25.30	S22° 59' 15.17"W	44+88.25	660656.15	1523486.24
C60	25.00	7.94	S13° 53' 28.45"W	44+62.95	660679.44	1523496.12
L62		33.26	S4° 47' 41.73"W	44+55.01	660687.11	1523498.02
C61	50.00	7.45	S0° 31' 43.67"W	44+21.75	660720.26	1523500.80

BASELINE OF DECLARATION RUN – UPPER SECTION						
Number	Radius	Length	Line/Chord Direction	Station	Northing	Easting
L63		53.71	S3° 44' 14.39"E	44+14.30	660727.70	1523500.87
C62	25.00	21.87	S21° 19' 33.19"W	43+60.60	660781.29	1523497.37
L64		7.20	S46° 23' 20.77"W	43+38.73	660801.02	1523505.07
C63	25.00	12.23	S60° 24' 30.44"W	43+31.53	660805.99	1523510.28
L65		36.57	S74° 25' 40.12"W	43+19.29	660811.97	1523520.81
C64	50.00	11.48	S67° 51' 09.64"W	42+82.72	660821.79	1523556.05
L66		6.35	S61° 16' 39.15"W	42+71.24	660826.11	1523566.65
C65	25.00	13.89	S45° 21' 34.76"W	42+64.89	660829.16	1523572.22
L67		7.03	S29° 26' 30.36"W	42+51.00	660838.79	1523581.98
C66	25.00	7.41	S37° 55' 55.98"W	42+43.97	660844.91	1523585.43
L68		13.94	S46° 25' 21.61"W	42+36.57	660850.73	1523589.97
C67	30.00	9.90	S55° 52' 35.74"W	42+22.63	660860.34	1523600.07
L69		7.22	S65° 19' 49.88"W	42+12.73	660865.87	1523608.22
C68	10.00	11.88	S31° 17' 35.86"W	42+05.51	660868.88	1523614.78
L70		17.55	S2° 44' 38.17"E	41+93.63	660878.45	1523620.60
C69	25.00	9.02	S7° 35' 30.11"W	41+76.08	660895.98	1523619.76
L71		29.61	S17° 55' 38.39"W	41+67.06	660904.87	1523620.94
C70	30.00	28.29	S44° 56' 24.77"W	41+37.45	660933.04	1523630.06
L72		17.08	S71° 57' 11.15"W	41+09.16	660952.33	1523649.31
C71	5.95	4.73	S49° 09' 24.64"W	40+92.08	660957.62	1523665.55
L73		52.78	S26° 21' 38.13"W	40+87.35	660960.64	1523669.03
C72	25.00	11.50	S13° 10' 49.07"W	40+34.57	661007.93	1523692.47
L74		22.78	S0° 00' 00.00"E	40+23.07	661019.03	1523695.07
C73	50.00	7.01	S4° 01' 07.01"W	40+00.29	661041.81	1523695.07
L75		21.92	S8° 02' 14.03"W	39+93.27	661048.80	1523695.56
C74	25.00	9.37	S18° 46' 43.99"W	39+71.35	661070.51	1523698.63
L76		13.45	S29° 31' 13.96"W	39+61.97	661079.33	1523701.63
C75	50.00	9.62	S24° 00' 27.12"W	39+48.53	661091.03	1523708.25
L77		18.50	S18° 29' 40.29"W	39+38.91	661099.81	1523712.16
C76	10.00	8.81	S43° 44' 13.42"W	39+20.41	661117.35	1523718.03
L78		9.55	S68° 58' 46.55"W	39+11.60	661123.51	1523723.92

BASELINE OF DECLARATION RUN – UPPER SECTION						
Number	Radius	Length	Line/Chord Direction	Station	Northing	Easting
C77	10.00	7.95	S46° 11' 46.99"W	39+02.05	661126.94	1523732.83
L79		10.30	S23° 24' 47.42"W	38+94.10	661132.30	1523738.42
C78	50.00	8.99	S18° 15' 46.53"W	38+83.80	661141.75	1523742.52
L80		17.80	S13° 06' 45.63"W	38+74.81	661150.28	1523745.33
C79	10.00	8.04	S36° 08' 23.94"W	38+57.01	661167.62	1523749.37
L81		9.25	S59° 10' 02.24"W	38+48.97	661173.93	1523753.98
C80	10.00	12.51	S23° 20' 10.00"W	38+39.72	661178.68	1523761.93
L82		5.46	S12° 29' 42.25"E	38+27.21	661189.43	1523766.56
C81	10.00	6.66	S6° 34' 58.99"W	38+21.75	661194.75	1523765.38
L83		16.68	S25° 39' 40.22"W	38+15.09	661201.25	1523766.13
C82	15.00	11.39	S3° 54' 24.13"W	37+98.42	661216.28	1523773.35
L84		11.05	S17° 50' 51.95"E	37+87.03	661227.37	1523774.11
C83	12.00	9.36	S4° 30' 30.08"W	37+75.98	661237.89	1523770.72
L85		9.40	S26° 51' 52.12"W	37+66.61	661246.99	1523771.44
C84	11.00	4.61	S14° 51' 27.69"W	37+57.21	661255.38	1523775.69
L86		6.47	S2° 51' 03.26"W	37+52.60	661259.80	1523776.86
C85	17.28	16.36	S29° 40' 30.42"W	37+46.13	661266.27	1523777.19
C86	22.00	17.06	S34° 17' 15.32"W	37+29.77	661279.97	1523784.99
L88		7.36	S12° 04' 33.05"W	37+12.71	661293.71	1523794.36
C87	25.00	8.42	S21° 43' 14.99"W	37+05.35	661300.91	1523795.90
L89		26.47	S31° 21' 56.93"W	36+96.93	661308.69	1523799.00
C88	40.00	17.31	S18° 58' 16.17"W	36+70.46	661331.29	1523812.78
L91		2.56	S6° 34' 35.40"W	36+53.15	661347.53	1523818.36
C92	5.40	5.38	S21° 58' 45.44"E	36+50.59	661350.08	1523818.66
C89	5.31	6.42	S15° 55' 06.20"E	36+45.21	661354.86	1523816.73
L90		5.48	S18° 41' 53.89"W	36+38.79	661360.67	1523815.07
C90	50.00	7.19	S22° 49' 12.19"W	36+33.31	661365.86	1523816.83
L92		5.14	S26° 56' 30.49"W	36+26.11	661372.49	1523819.62
C91	25.00	11.12	S14° 12' 12.76"W	36+20.98	661377.07	1523821.94
L93		9.86	S1° 27' 55.03"W	36+09.86	661387.75	1523824.65
				36+00.00	661397.61	1523824.90

EG-SWMENG-000025-2019

G-03

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. 16156
EXPIRATION DATE: 8/28/2022

AECOM

REVISIONS

HARFORD COUNTY, MARYLAND

DECLARATION RUN STREAM RESTORATION

GEOMETRY PLAN

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

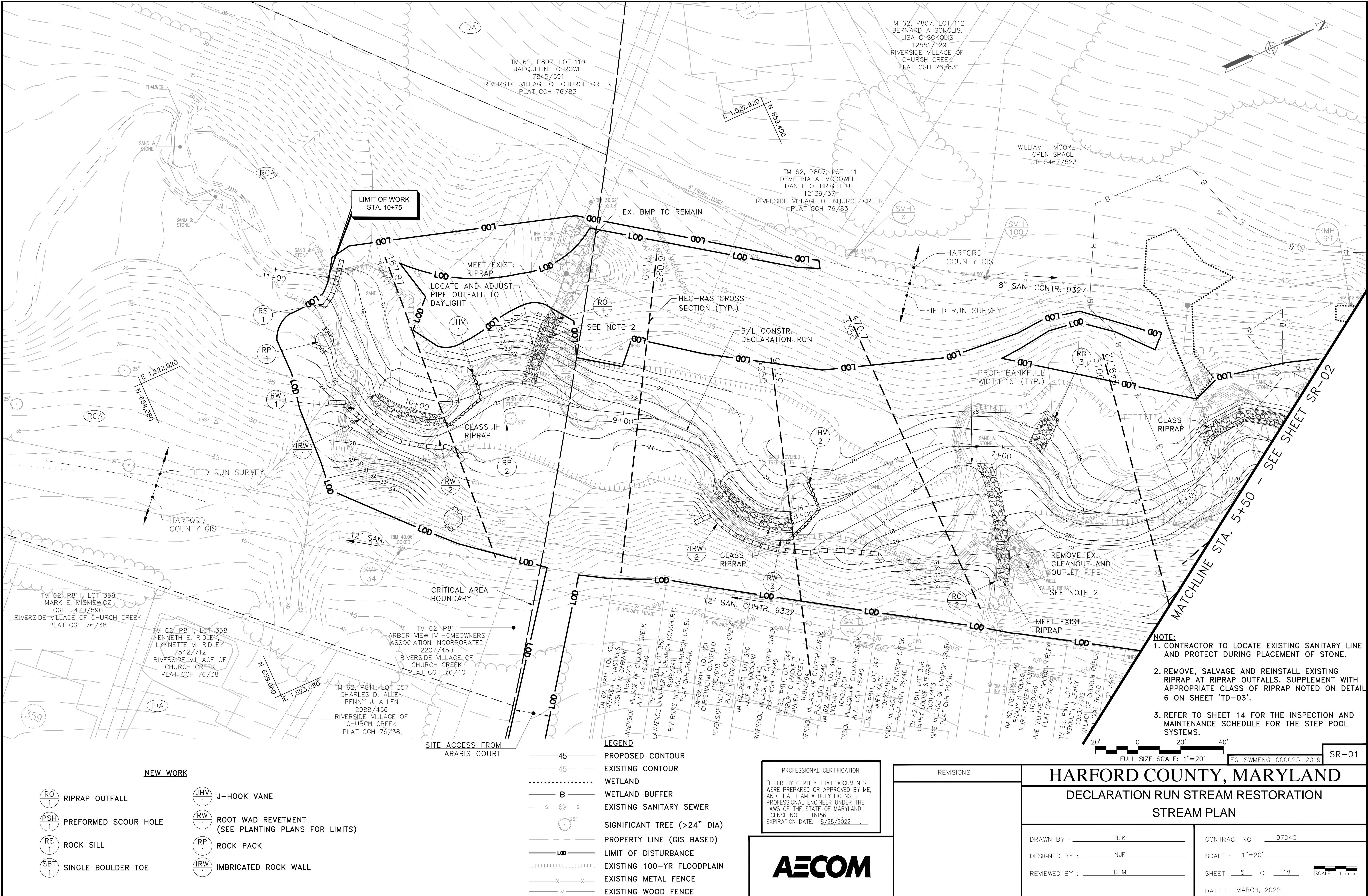
CONTRACT NO : 97040

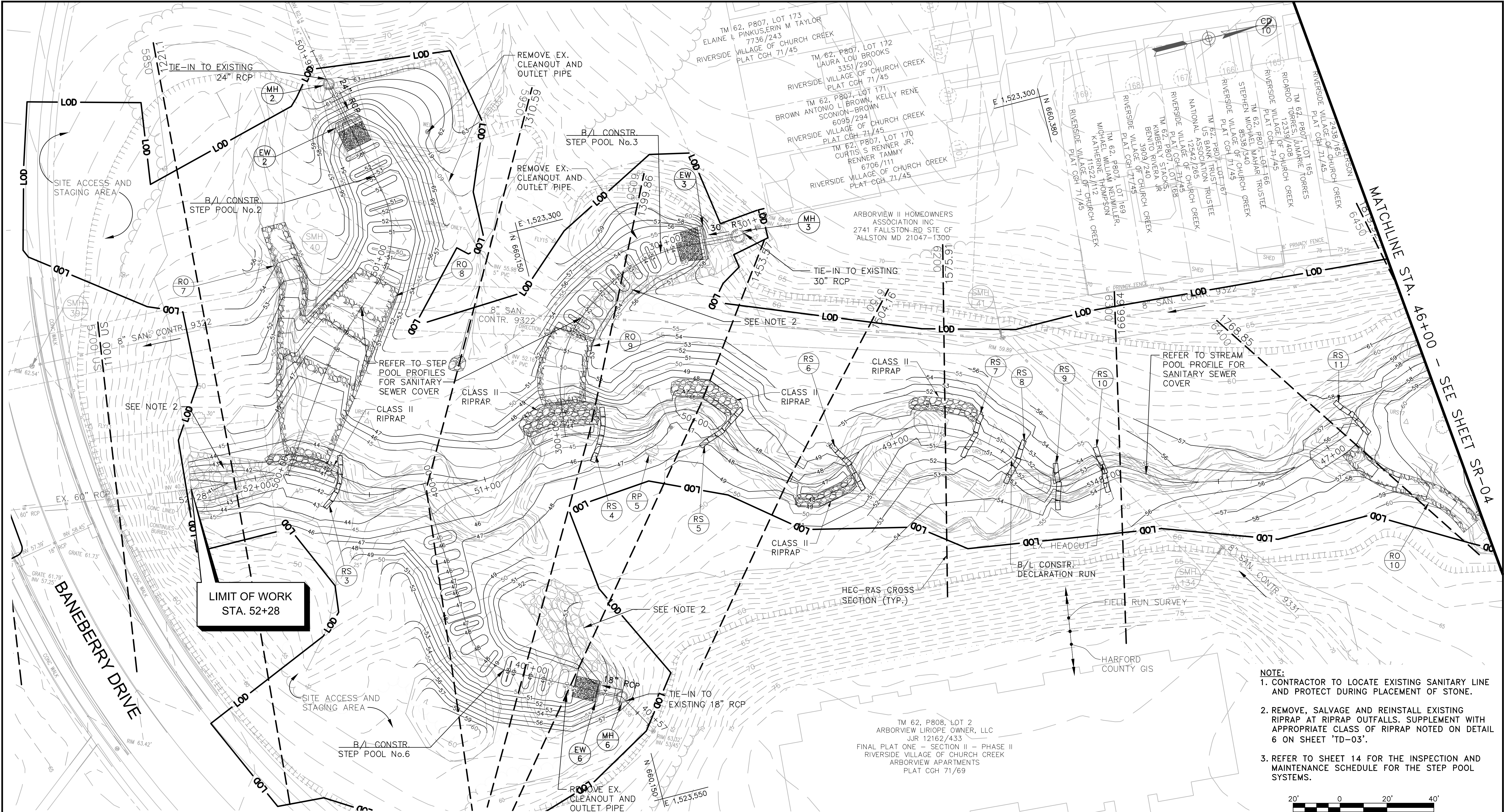
SCALE : 1"=30'

SHEET 4 OF 48

DATE : MARCH, 2022

30' 0 30' 60'
FULL SIZE SCALE: 1"=30'





- NOTE:**
1. CONTRACTOR TO LOCATE EXISTING SANITARY LINE AND PROTECT DURING PLACEMENT OF STONE.
 2. REMOVE, SALVAGE AND REINSTALL EXISTING RIPRAP AT RIPRAP OUTFALLS. SUPPLEMENT WITH APPROPRIATE CLASS OF RIPRAP NOTED ON DETAIL 6 ON SHEET 'TD-03'.
 3. REFER TO SHEET 14 FOR THE INSPECTION AND MAINTENANCE SCHEDULE FOR THE STEP POOL SYSTEMS.



- NEW WORK**
- | | | | |
|---------|----------------------|---------|---|
| (RO 1) | RIPRAP OUTFALL | (JHV 1) | J-HOOK VANE |
| (PSH 1) | PREFORMED SCOUR HOLE | (RW 1) | ROOT WAD REVETMENT
(SEE PLANTING PLANS FOR LIMITS) |
| (RS 1) | ROCK SILL | (RP 1) | ROCK PACK |
| (SBT 1) | SINGLE BOULDER TOE | (IRW 1) | IMBRICATED ROCK WALL |

- LEGEND**
- | | |
|-------|-----------------------------|
| —45— | PROPOSED CONTOUR |
| —45— | EXISTING CONTOUR |
| | WETLAND |
| —B— | WETLAND BUFFER |
| —S—S— | EXISTING SANITARY SEWER |
| (25") | SIGNIFICANT TREE (>24" DIA) |
| --- | PROPERTY LINE (GIS BASED) |
| —LOD— | LIMIT OF DISTURBANCE |
| | EXISTING 100-YR FLOODPLAIN |
| —X—X— | EXISTING METAL FENCE |
| —//— | EXISTING WOOD FENCE |

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT 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. 16156, EXPIRATION DATE: 8/28/2022"

AECOM

REVISIONS

HARFORD COUNTY, MARYLAND

DECLARATION RUN STREAM RESTORATION

STREAM PLAN

DRAWN BY : BJK

DESIGNED BY : NJF

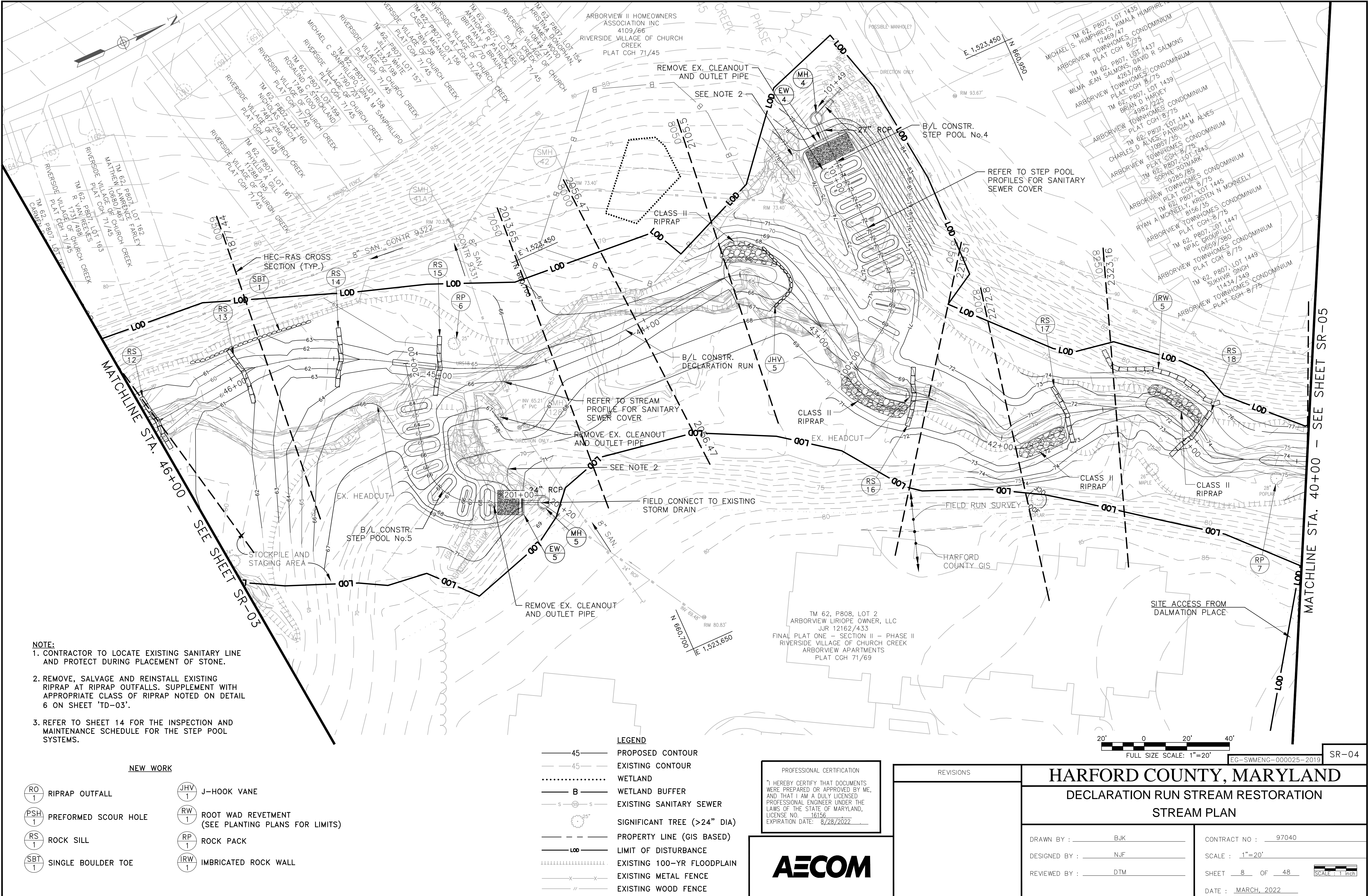
REVIEWED BY : DTM

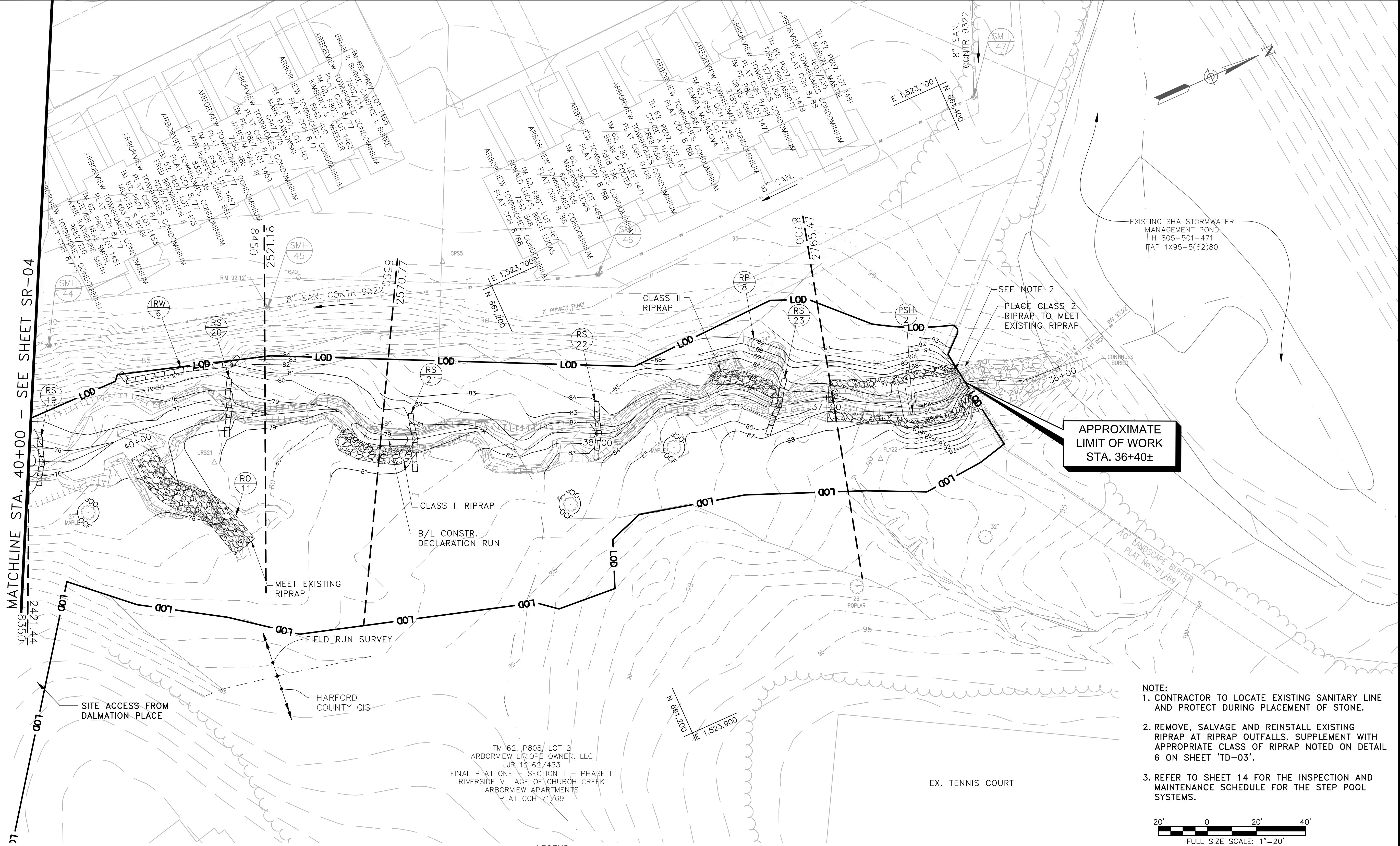
CONTRACT NO : 97040

SCALE : 1"=20'

SHEET 7 OF 48

DATE : MARCH, 2022





- NOTE:**
1. CONTRACTOR TO LOCATE EXISTING SANITARY LINE AND PROTECT DURING PLACEMENT OF STONE.
 2. REMOVE, SALVAGE AND REINSTALL EXISTING RIPRAP AT RIPRAP OUTFALLS. SUPPLEMENT WITH APPROPRIATE CLASS OF RIPRAP NOTED ON DETAIL 6 ON SHEET 'TD-03'.
 3. REFER TO SHEET 14 FOR THE INSPECTION AND MAINTENANCE SCHEDULE FOR THE STEP POOL SYSTEMS.



NEW WORK

- | | |
|-----------------------------------|--|
| RO 1 RIPRAP OUTFALL | JHV 1 J-HOOK VANE |
| PSH 1 PREFORMED SCOUR HOLE | RW 1 ROOT WAD REVETMENT (SEE PLANTING PLANS FOR LIMITS) |
| RS 1 ROCK SILL | RP 1 ROCK PACK |
| SBT 1 SINGLE BOULDER TOE | IRW 1 IMBRICATED ROCK WALL |

- LEGEND**
- | | |
|--|-----------------------------|
| | PROPOSED CONTOUR |
| | EXISTING CONTOUR |
| | WETLAND |
| | WETLAND BUFFER |
| | EXISTING SANITARY SEWER |
| | SIGNIFICANT TREE (>24" DIA) |
| | PROPERTY LINE (GIS BASED) |
| | LIMIT OF DISTURBANCE |
| | EXISTING 100-YR FLOODPLAIN |
| | EXISTING METAL FENCE |
| | EXISTING WOOD FENCE |

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT 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. 16156, EXPIRATION DATE: 8/28/2022"



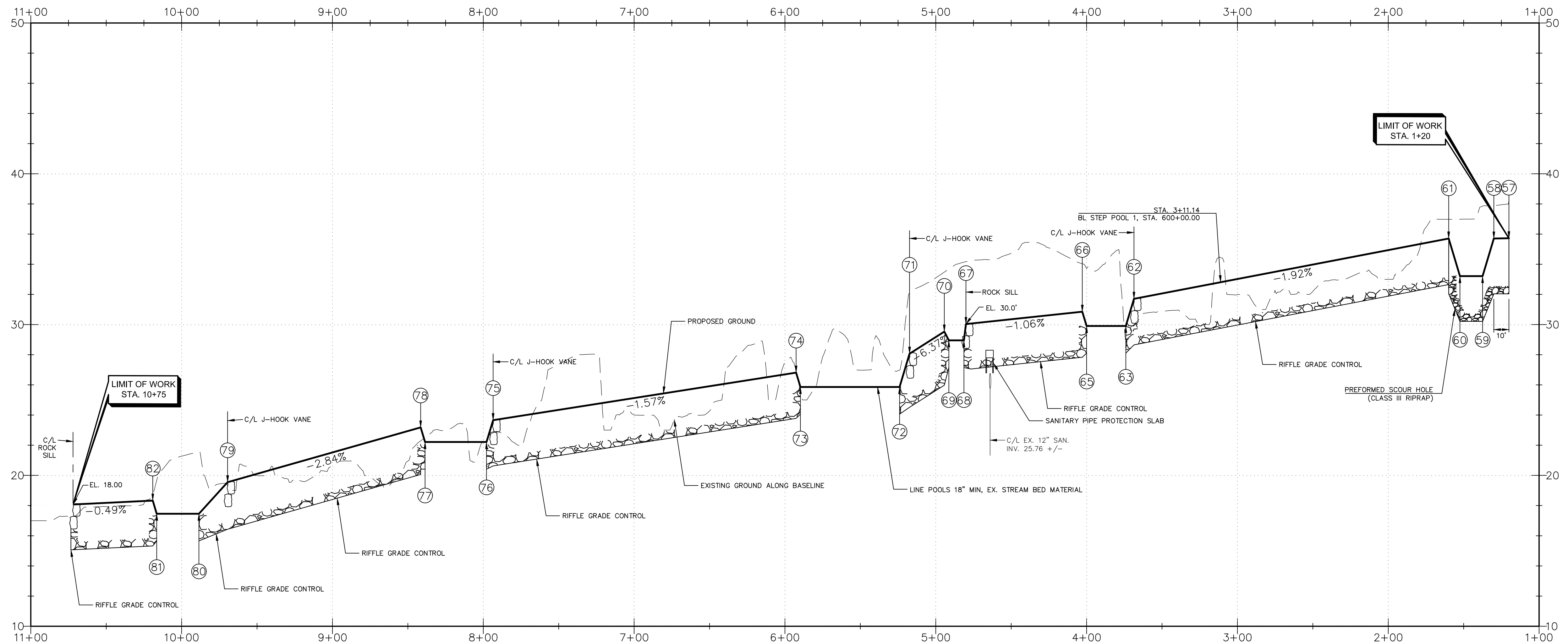
REVISIONS	

HARFORD COUNTY, MARYLAND

DECLARATION RUN STREAM RESTORATION

STREAM PLAN

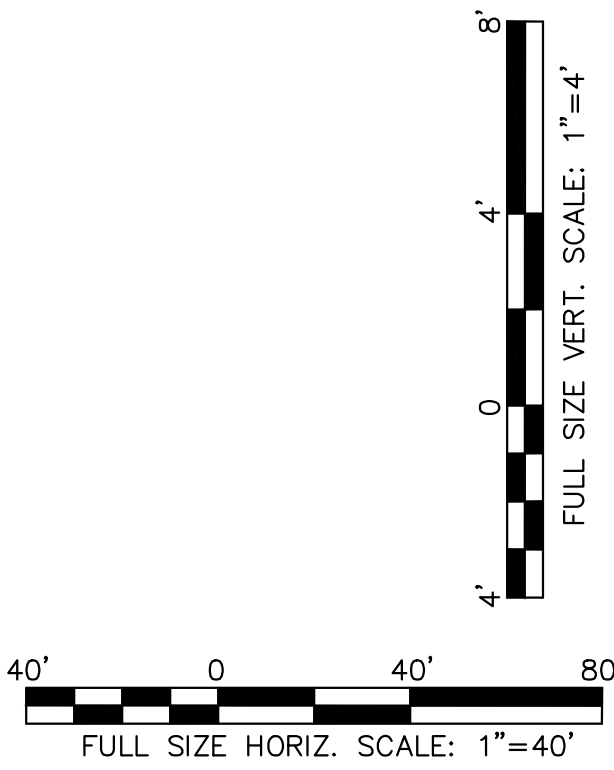
DRAWN BY : <u>BJK</u>	CONTRACT NO : <u>97040</u>
DESIGNED BY : <u>NJF</u>	SCALE : <u>1"=20'</u>
REVIEWED BY : <u>DTM</u>	SHEET <u>9</u> OF <u>48</u>
DATE : <u>MARCH, 2022</u>	



LOWER DECLARATION RUN PROFILE

PVI No.	Sta.	Elev.
57	1+20.00	35.71
58	1+30.69	35.71
59	1+37.46	33.22
60	1+52.49	33.22
61	1+59.59	35.71
62	3+68.60	31.71
63	3+74.00	29.91
65	4+00.00	29.91
66	4+02.84	30.85
67	4+79.98	30.04
68	4+81.36	28.96
69	4+91.36	28.96
70	4+94.36	29.54
71	5+17.37	28.07
72	5+24.00	25.86
73	5+89.75	25.86
74	5+92.62	26.82
75	7+93.51	23.66
76	7+97.86	22.21
77	8+38.64	22.21
78	8+41.54	23.18
79	9+69.53	19.55
80	9+88.53	17.46
81	10+16.54	17.46
82	10+19.16	18.33

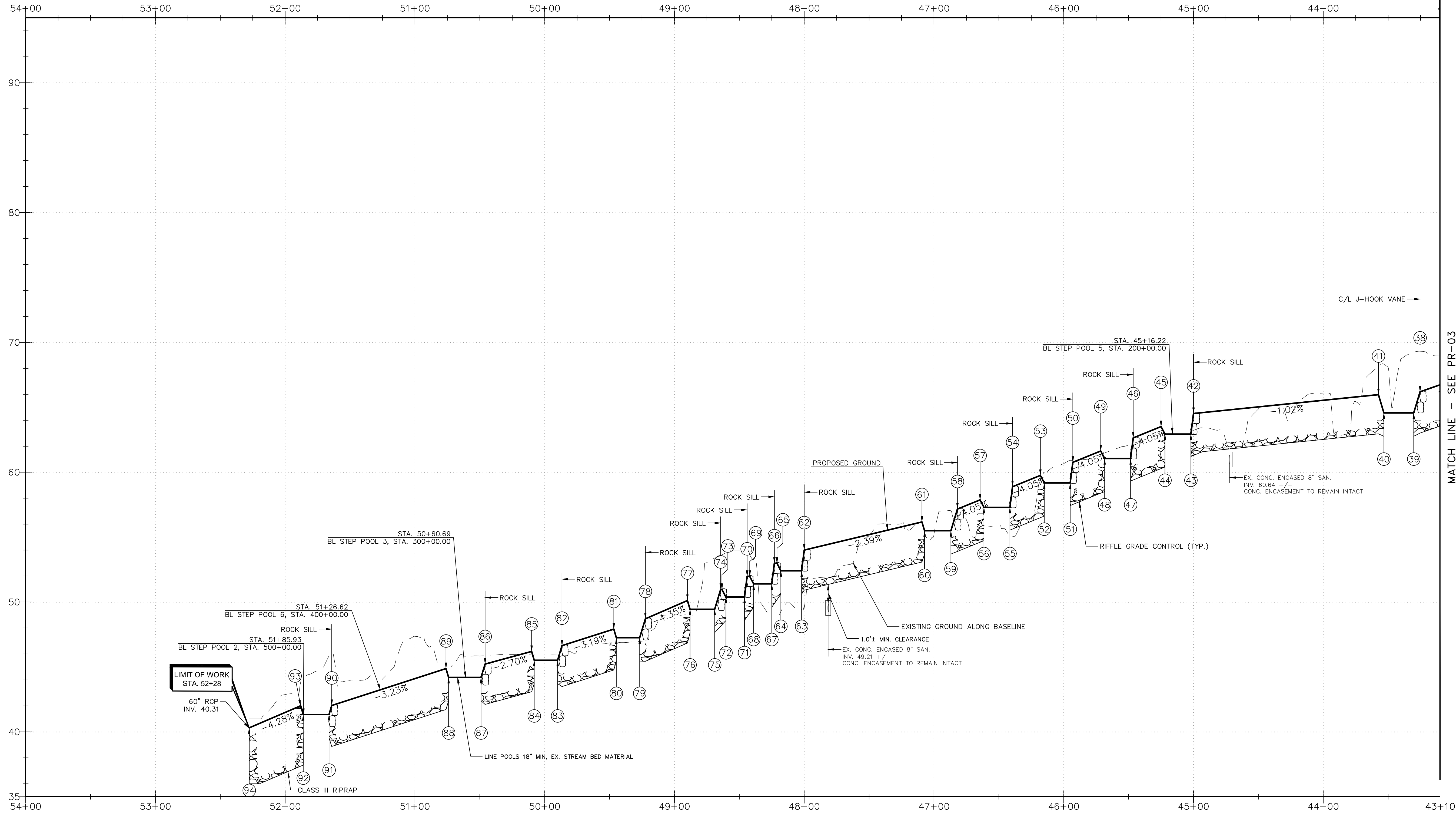
NOTE:
1. CONTRACTOR TO LOCATE EXISTING SANITARY LINE AND PROTECT DURING PLACEMENT OF STONE.



PROFESSIONAL CERTIFICATION
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AECOM

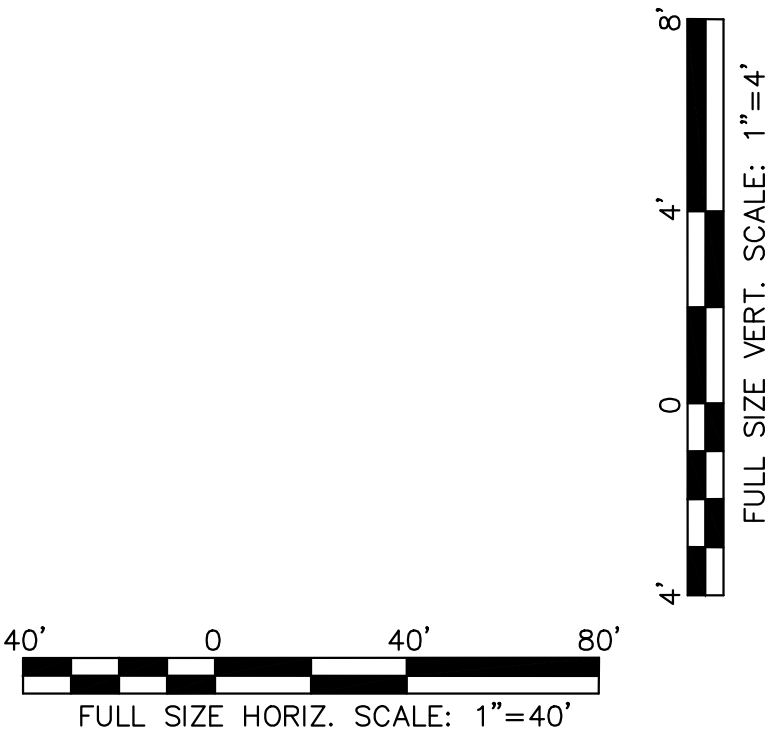
REVISIONS		EG-SWMENG-000025-2019		PR-01
		HARFORD COUNTY, MARYLAND		
		DECLARATION RUN STREAM RESTORATION		
		STREAM PROFILE		
DRAWN BY : BJK		CONTRACT NO : 97040		
DESIGNED BY : NJF		SCALE : 1"=40'		
REVIEWED BY : DTM		SHEET 10 OF 48		
		DATE : MARCH, 2022		



UPPER DECLARATION RUN PROFILE

NOTE:
1. CONTRACTOR TO LOCATE EXISTING SANITARY
LINE AND PROTECT DURING PLACEMENT OF
STONE.

PVI NO.	STA.	ELEV.
38	43+25.41	66.19
39	43+30.28	64.57
40	43+53.28	64.57
41	43+57.49	65.97
42	45+00.00	64.52
43	45+02.00	62.93
44	45+22.00	62.93
45	45+25.00	63.51
46	45+46.50	62.64
47	45+48.50	61.05
48	45+68.50	61.05
49	45+71.50	61.63
50	45+93.00	60.76
51	45+95.00	59.17
52	46+15.00	59.17
53	46+18.00	59.75
54	46+39.50	58.88
55	46+41.50	57.29
56	46+61.50	57.29
57	46+64.50	57.87
58	46+81.93	57.17
59	46+86.94	55.50
60	47+07.29	55.50
61	47+09.31	56.17
62	48+00.00	54.00
63	48+02.00	52.41
64	48+18.00	52.41
65	48+21.00	52.99
66	48+23.00	52.99
67	48+25.00	51.40
68	48+39.00	51.40
69	48+42.00	51.98
70	48+44.00	51.98
71	48+46.00	50.39
72	48+60.34	50.37
73	48+63.42	50.97
74	48+64.42	50.97
75	48+69.00	49.45
76	48+88.00	49.45
77	48+90.01	50.12
78	49+22.43	48.71
79	49+26.79	47.25
80	49+44.79	47.25
81	49+46.78	47.91
82	49+86.70	46.64
83	49+90.07	45.52
84	50+08.07	45.52
85	50+10.11	46.19
86	50+45.97	45.23
87	50+49.06	44.20
88	50+74.06	44.20
89	50+76.10	44.88
90	51+64.15	42.03
91	51+66.23	41.34
92	51+86.08	41.34
93	51+88.09	42.01
94	52+27.75	40.31



PROFESSIONAL CERTIFICATION
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LICENSE NO. 16156
EXPIRATION DATE: 8/28/2022

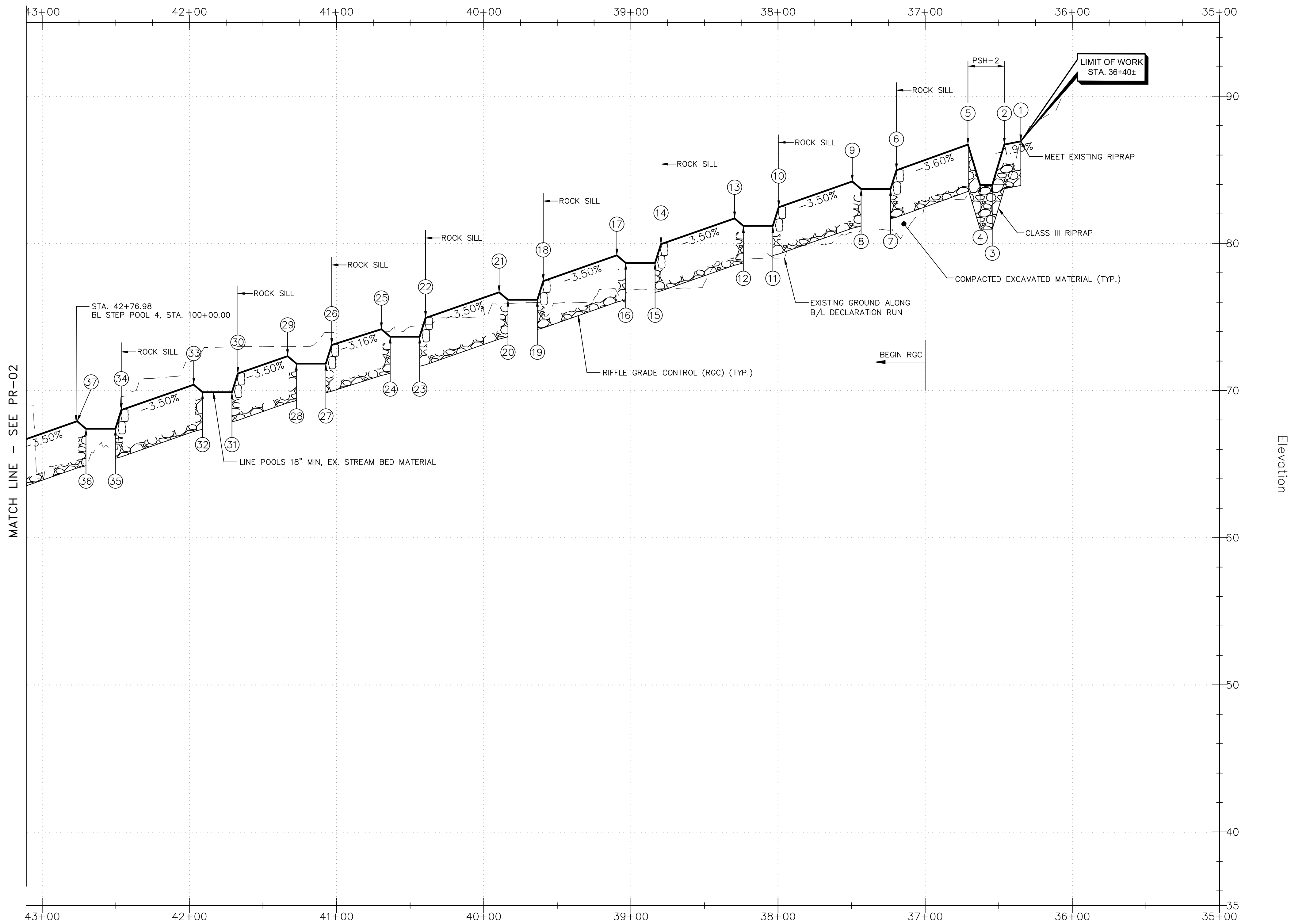
AECOM

REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
STREAM PROFILE

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

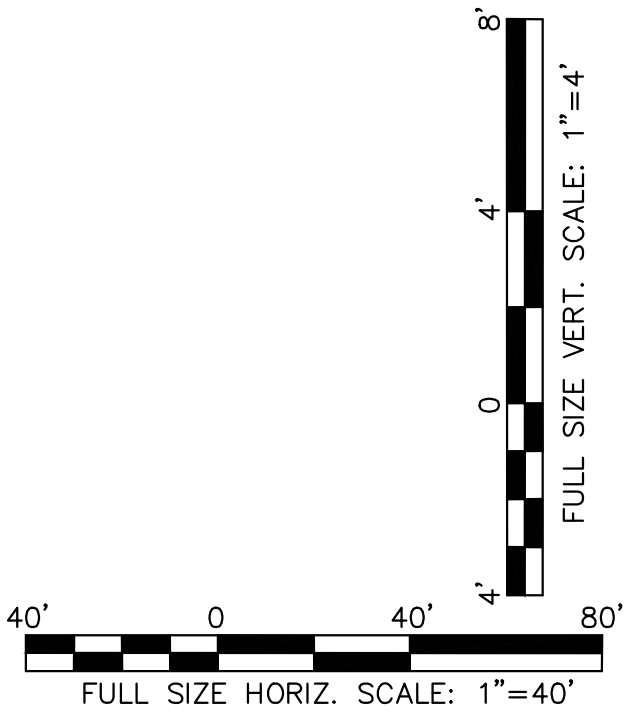
CONTRACT NO : 97040
SCALE : 1"=40'
SHEET 11 OF 48
DATE : MARCH, 2022



PVI NO.	STA.	ELEV.
1	36+34.94	86.93
2	36+46.15	86.71
3	36+54.40	83.96
4	36+62.65	83.96
5	36+70.90	86.71
6	37+19.49	84.96
7	37+23.49	83.69
8	37+43.49	83.69
9	37+49.49	84.20
10	37+99.49	82.45
11	38+03.49	81.18
12	38+23.49	81.18
13	38+29.49	81.69
14	38+79.49	79.94
15	38+83.49	78.67
16	39+03.49	78.67
17	39+09.49	79.18
18	39+59.49	77.43
19	39+63.49	76.16
20	39+83.49	76.16
21	39+89.49	76.67
22	40+39.49	74.92
23	40+43.49	73.65
24	40+63.49	73.65
25	40+69.49	74.16
26	41+03.28	73.10
27	41+07.28	71.83
28	41+27.28	71.83
29	41+33.28	72.34
30	41+67.06	71.15
31	41+71.06	69.88
32	41+91.06	69.88
33	41+97.06	70.39
34	42+46.24	68.67
35	42+50.24	67.40
36	42+70.24	67.40
37	42+76.24	67.91

* FIELD VERIFY

UPPER DECLARATION RUN PROFILE



PROFESSIONAL CERTIFICATION
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LICENSE NO. 16156
EXPIRATION DATE: 8/28/2022

AECOM

REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
STREAM PROFILE

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

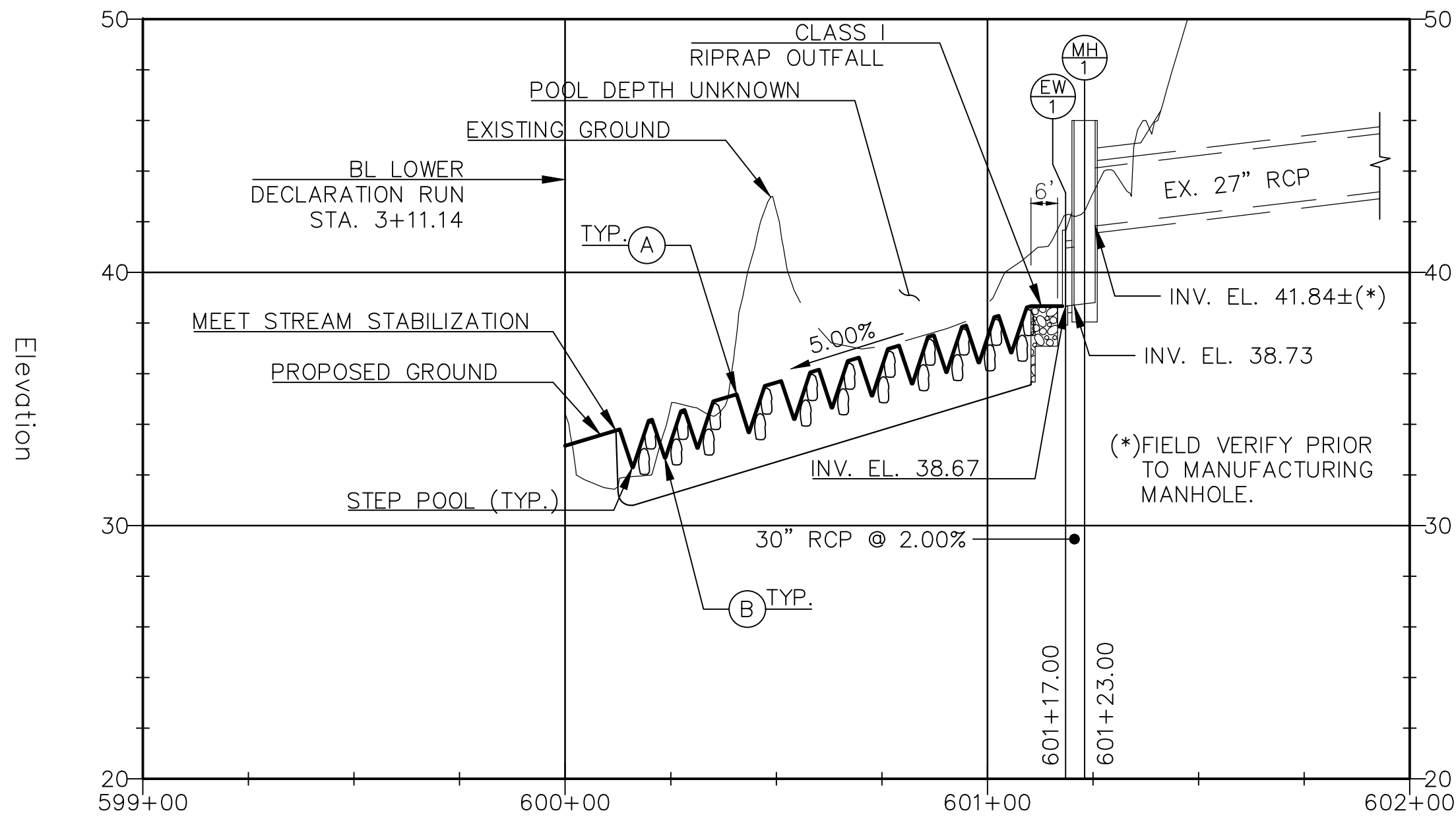
CONTRACT NO : 97040

SCALE : 1"=40'

SHEET 12 OF 48

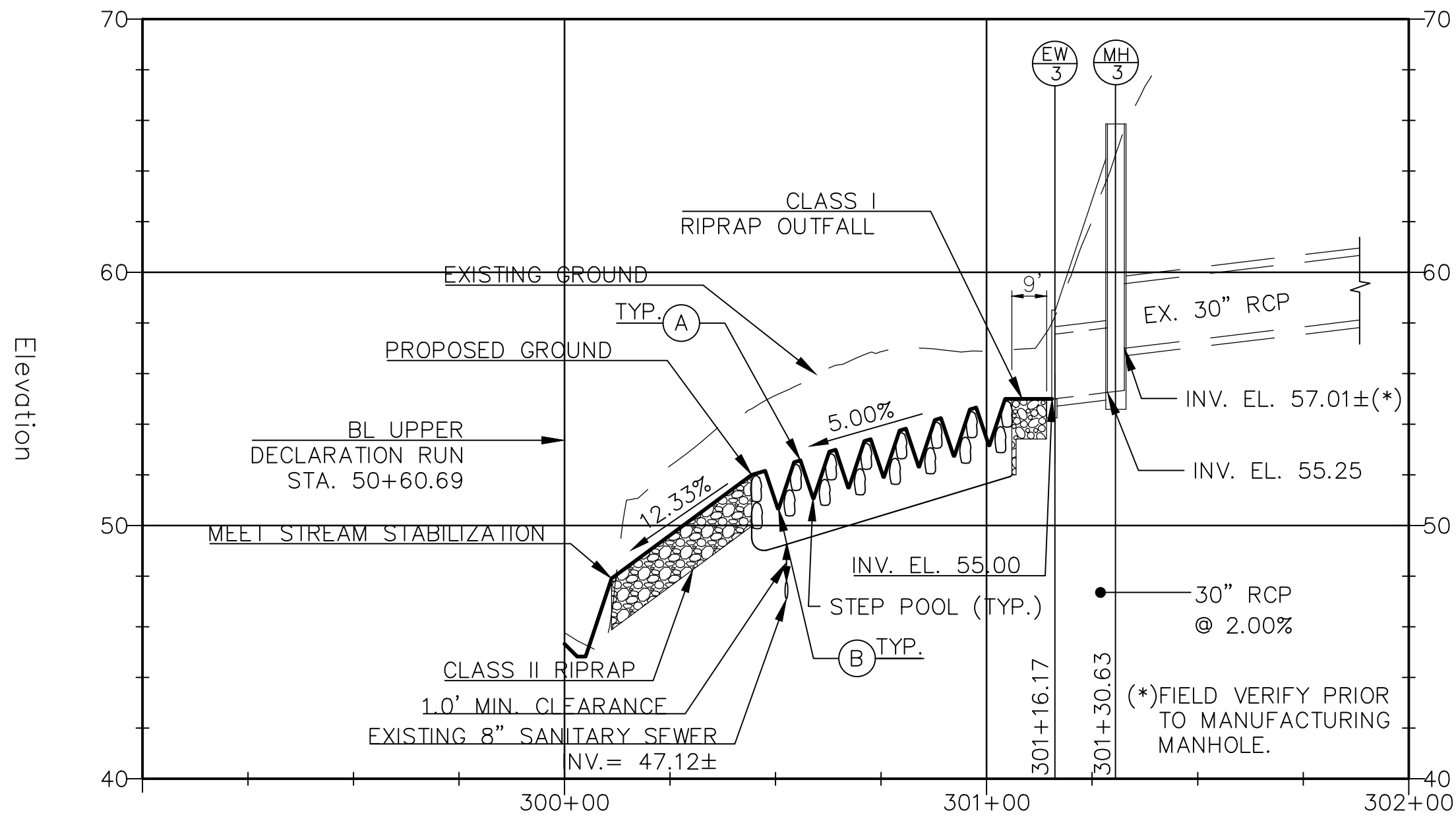
DATE : MARCH, 2022

SCALE : 1"=40'



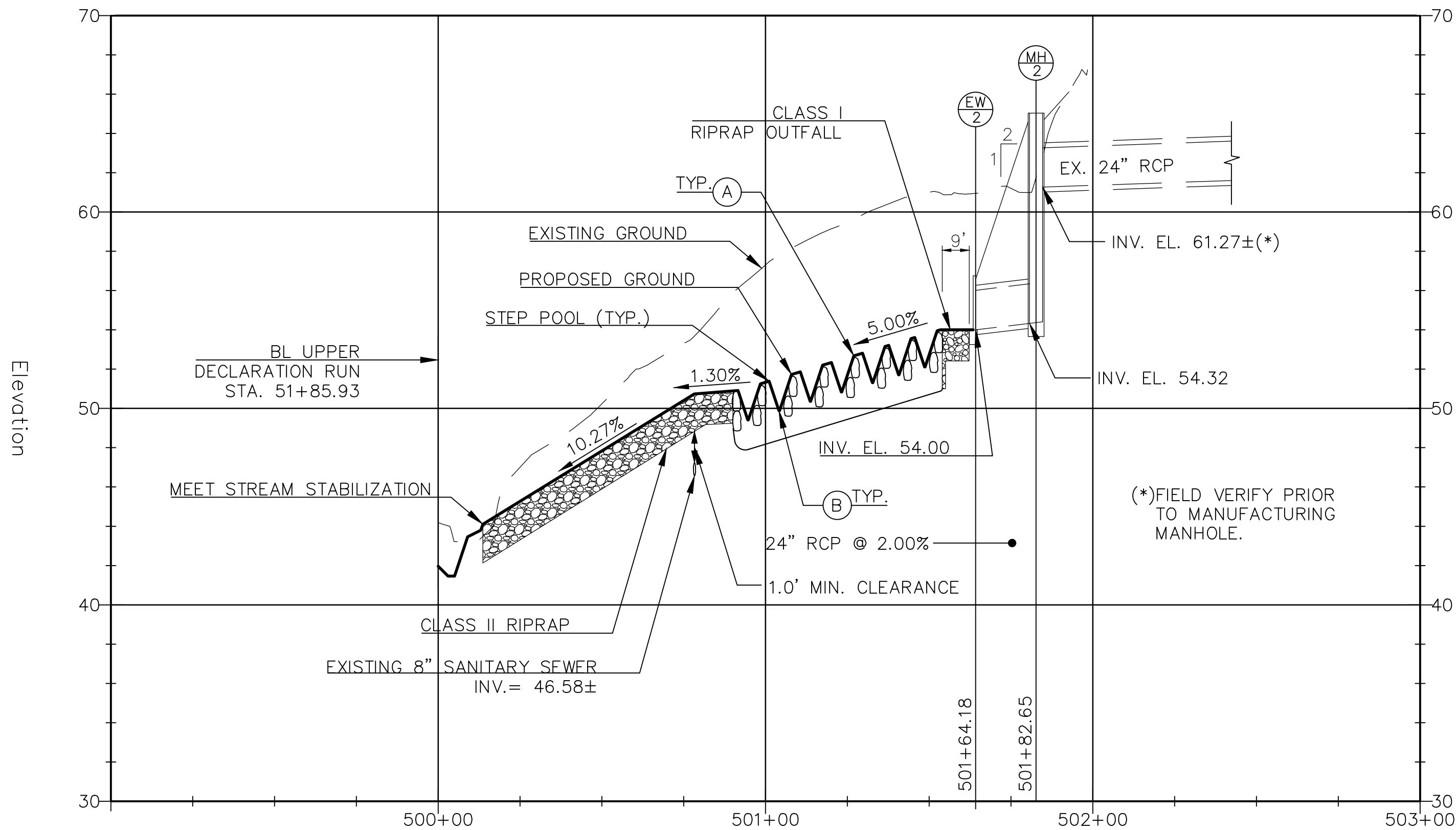
STEP POOL 1 PROFILE

STATION	ELEVATION	WEIR LENGTH Ⓐ (FT)
600+12.92	33.80 Ⓐ	
600+16.00	32.30 Ⓑ	
600+20.17	34.16 Ⓐ	0.8
600+23.67	32.68 Ⓑ	
600+27.84	34.54 Ⓐ	0.8
600+31.33	33.07 Ⓑ	
600+37.85	35.04 Ⓐ	5.5
600+43.50	33.68 Ⓑ	
600+49.22	35.61 Ⓐ	3.9
600+54.26	34.21 Ⓑ	
600+59.07	36.10 Ⓐ	2
600+63.17	34.66 Ⓑ	
600+68.25	36.56 Ⓐ	2.7
600+72.67	35.13 Ⓑ	
600+77.77	37.03 Ⓐ	2.7
600+82.17	35.61 Ⓑ	
600+86.62	37.48 Ⓐ	1.4
600+91.17	36.06 Ⓑ	
600+94.47	37.87 Ⓐ	1
600+98.84	36.44 Ⓑ	
601+02.15	38.26 Ⓐ	1
601+06.50	36.83 Ⓑ	
601+10.03	38.67 Ⓐ	1



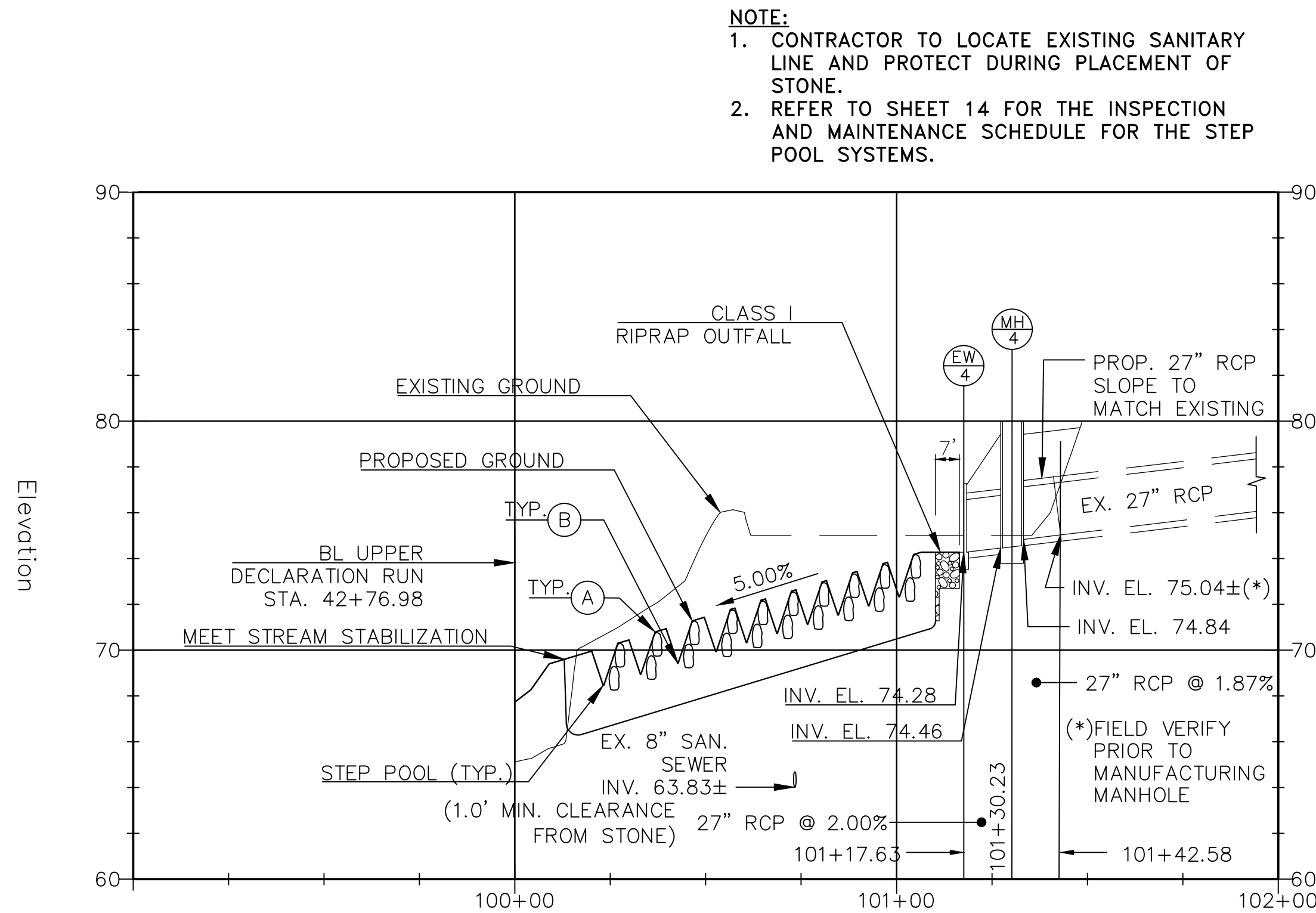
STEP POOL 3 PROFILE

STATION	ELEVATION	WEIR LENGTH Ⓐ (FT)
300+47.08	52.16 Ⓐ	
300+50.15	50.66 Ⓑ	
300+54.65	52.54 Ⓐ	1.50
300+58.48	51.08 Ⓑ	
300+62.92	52.96 Ⓐ	1.50
300+66.81	51.49 Ⓑ	
300+71.25	53.37 Ⓐ	1.50
300+75.14	51.91 Ⓑ	
300+79.57	53.79 Ⓐ	1.50
300+83.47	52.33 Ⓑ	
300+87.91	54.21 Ⓐ	1.50
300+91.80	52.74 Ⓑ	
300+96.24	54.62 Ⓐ	1.50
301+00.13	53.16 Ⓑ	
301+03.81	55.00 Ⓐ	1.50



STEP POOL 2 PROFILE

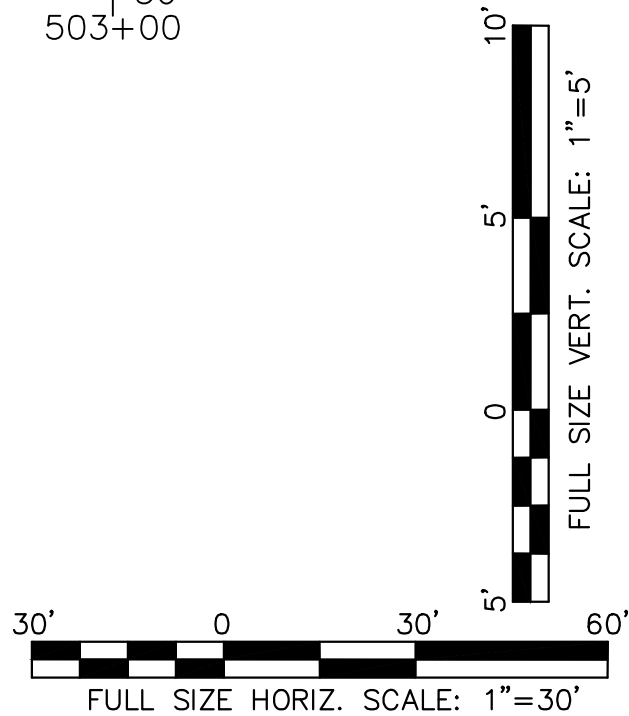
STATION	ELEVATION	WEIR LENGTH Ⓐ (FT)
500+80.65	50.91 Ⓐ	
500+94.68	49.41 Ⓑ	
500+99.78	51.36 Ⓐ	2.70
501+04.19	49.89 Ⓑ	
501+09.29	51.79 Ⓐ	2.70
501+13.70	50.36 Ⓑ	
501+18.80	52.27 Ⓐ	2.70
501+23.21	50.84 Ⓑ	
501+28.31	52.74 Ⓐ	2.70
501+32.72	51.31 Ⓑ	
501+37.05	53.18 Ⓐ	1.10
501+40.70	51.71 Ⓑ	
501+45.03	53.58 Ⓐ	1.10
501+48.68	52.11 Ⓑ	
501+52.94	53.98 Ⓐ	1.60



STEP POOL 4 PROFILE

STATION	ELEVATION	WEIR LENGTH Ⓐ (FT)
100+20.00	69.92 Ⓐ	
100+23.08	68.44 Ⓑ	
100+28.30	70.36 Ⓐ	3.30
100+32.83	68.93 Ⓑ	
100+38.05	70.84 Ⓐ	3.30
100+42.58	69.42 Ⓑ	
100+47.92	71.34 Ⓐ	3.50
100+52.58	69.92 Ⓑ	
100+56.93	71.79 Ⓐ	1.30
100+60.58	70.32 Ⓑ	
100+64.92	72.19 Ⓐ	1.30
100+68.58	70.72 Ⓑ	
100+72.92	72.59 Ⓐ	1.30
100+76.58	71.12 Ⓑ	
100+80.92	72.99 Ⓐ	1.30
100+84.58	71.52 Ⓑ	
100+88.92	73.39 Ⓐ	1.30
100+92.58	71.92 Ⓑ	
100+96.94	73.79 Ⓐ	1.30
101+00.58	72.32 Ⓑ	
101+04.34	74.16 Ⓐ	2.20

- NOTE:
1. CONTRACTOR TO LOCATE EXISTING SANITARY LINE AND PROTECT DURING PLACEMENT OF STONE.
 2. REFER TO SHEET 14 FOR THE INSPECTION AND MAINTENANCE SCHEDULE FOR THE STEP POOL SYSTEMS.



PROFESSIONAL CERTIFICATION
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AECOM

REVISIONS

HARFORD COUNTY, MARYLAND

**DECLARATION RUN STREAM RESTORATION
STEP POOL PROFILE**

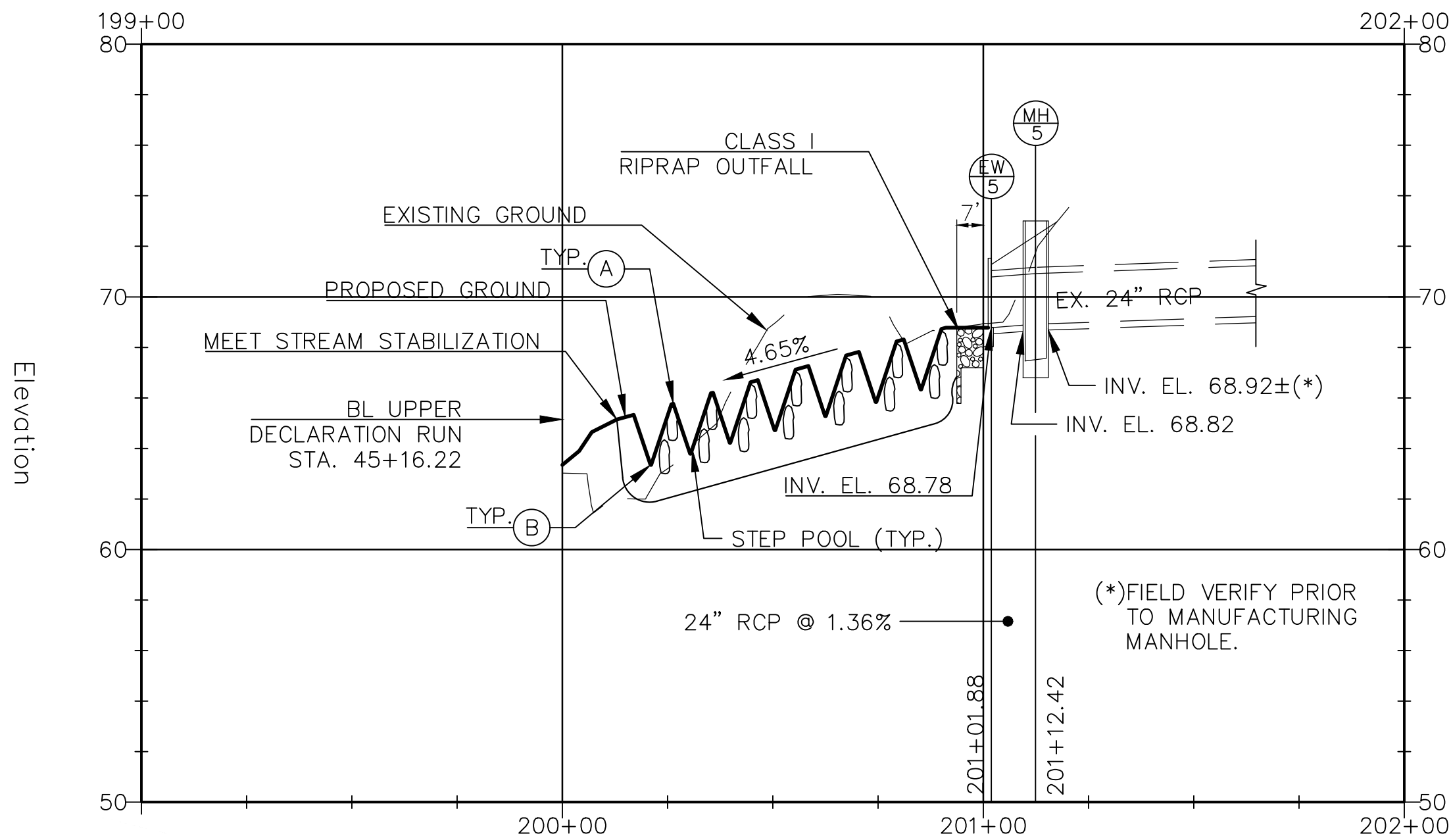
DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

CONTRACT NO : 97040

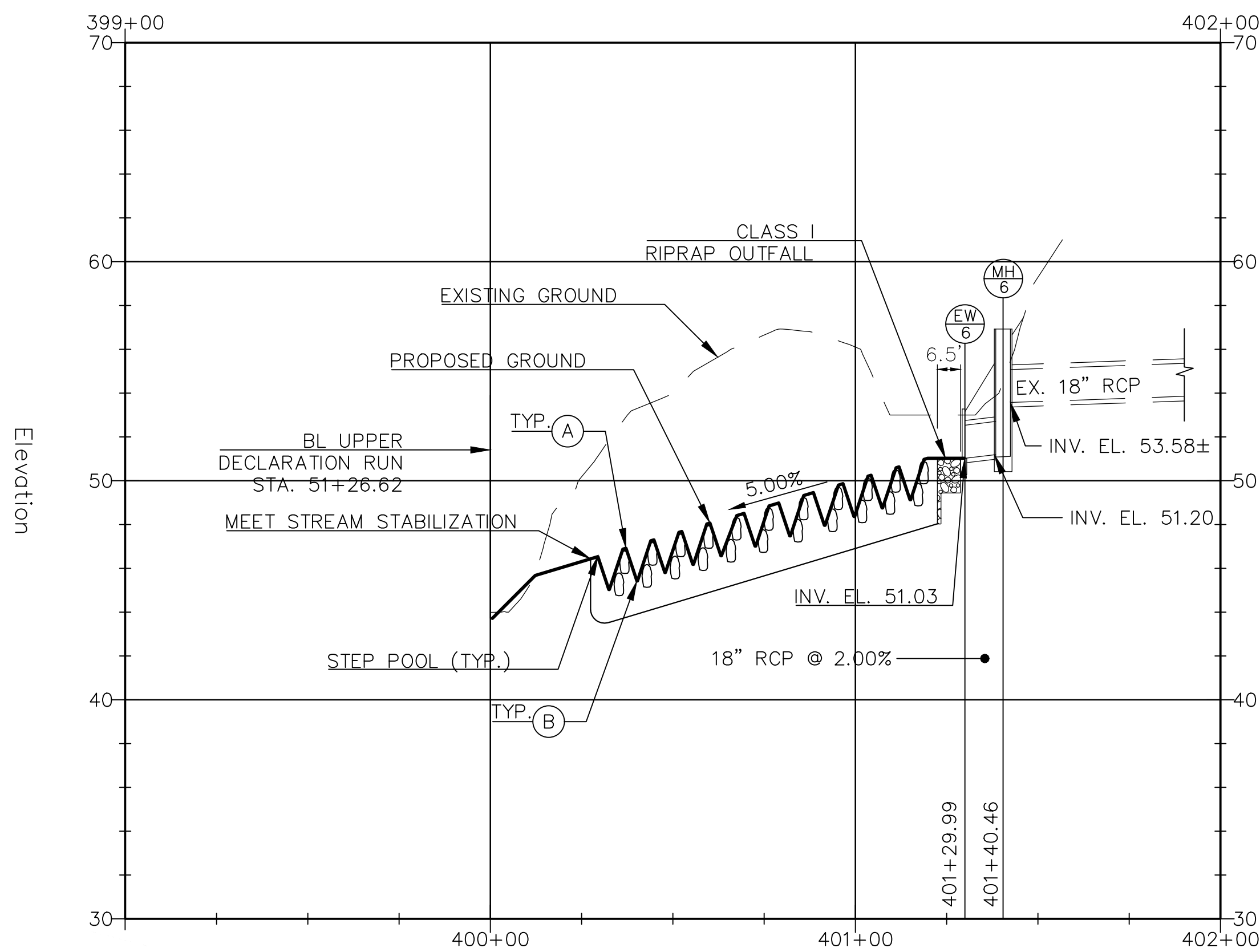
SCALE : 1"=30'

SHEET 13 OF 48

DATE : MARCH, 2022



STATION	ELEVATION	WEIR LENGTH Ⓐ FT
200+16.87	65.33 Ⓐ	
200+21.00	Ⓑ 63.34	
200+26.13	65.76 Ⓐ	0.50
200+30.37	Ⓑ 63.79	
200+35.44	66.20 Ⓐ	0.50
200+39.78	Ⓑ 64.23	
200+45.48	66.66 Ⓐ	1.70
200+50.46	Ⓑ 64.72	
200+56.82	67.19 Ⓐ	3.00
200+62.46	Ⓑ 65.28	
200+68.81	67.75 Ⓐ	3.00
200+74.46	Ⓑ 65.84	
200+80.15	68.27 Ⓐ	1.70
200+85.14	Ⓑ 66.33	
200+91.03	68.78 Ⓐ	3.60



STATION	ELEVATION	WEIR LENGTH Ⓐ FT
400+29.48	46.54 Ⓐ	
400+32.55	Ⓑ 45.04	
400+36.73	46.90 Ⓐ	0.80
400+40.22	Ⓑ 45.43	
400+44.39	47.29 Ⓐ	0.80
400+47.88	Ⓑ 45.81	
400+52.06	47.69 Ⓐ	0.80
400+55.55	Ⓑ 46.19	
400+59.73	48.05 Ⓐ	0.80
400+63.22	Ⓑ 46.58	
400+67.97	48.47 Ⓐ	2.00
400+72.05	Ⓑ 47.02	
400+77.13	48.92 Ⓐ	2.70
400+81.55	Ⓑ 47.49	
400+86.64	49.40 Ⓐ	2.70
400+91.60	Ⓑ 47.97	
400+95.44	49.84 Ⓐ	1.30
400+96.16	Ⓑ 48.37	
401+03.33	50.23 Ⓐ	0.80
401+03.83	Ⓑ 48.76	
401+10.99	50.62 Ⓐ	0.80
401+11.50	Ⓑ 49.14	
401+19.24	51.03 Ⓐ	1.00

MAINTENANCE SCHEDULE FOR EACH STEP POOL SYSTEM

- STEP POOL SYSTEMS SHALL BE INSPECTED EVERY 12 MONTHS.
- CHECK FOR STEP POOL SYSTEM DEWATERING CAPACITY. WATER SHOULD NOT BE STANDING IN THE POOLS AFTER 48 HOURS OF A STORM EVENT. IF INADEQUATE DEWATERING IS NOTED, REMOVE THE COMPOST LAYER WITHIN THE POOL AREA, REMOVE COBBLE FOR REUSE, AND REMOVE/REPLACE 6-INCH MINIMUM OF SAND/WOOD CHIP MIXTURE (80% SAND/20% WOOD CHIPS). REPLACE IMPACTED GEOTEXTILE. RESET COBBLE. REPLACE 4-INCH MINIMUM OF COMPOST.
- CHECK FOR EVIDENCE OF BOULDER MOVEMENTS. RESET BOULDERS THAT MAY HAVE SHIFTED OUT OF PLACE TO THEIR ORIGINAL LOCATION.
- SILT, SEDIMENT, DEBRIS AND TRASH SHALL BE REMOVED FROM THE POOLS WHEN THE POOLS ARE NO LONGER FORMED. WEIRS SHALL BE CLEARED OF DEBRIS AND TRASH.
- CHECK FOR EVIDENCE OF SOIL EROSION AND LACK OF VEGETATIVE COVER. SEED AREAS REQUIRING A VEGETATIVE COVER.

PIPE SCHEDULE						
FROM	TO	DIA.	TYPE	LENGTH	INV. IN ELEV.	INV. OUT ELEV.
MH-1	EW-1	30"	RCP	3.0'	38.73	38.67
MH-2	EW-2	24"	RCP	16.5'	54.32	54.00
MH-3	EW-3	30"	RCP	12.5'	55.25	55.00
MH-4	EW-4	27"	RCP	21'	75.04	74.28
MH-5	EW-5	24"	RCP	8.5'	68.82	68.78
MH-6	EW-6	18"	RCP	8.5'	51.20	51.03

INSPECTION SCHEDULE FOR EACH STEP POOL SYSTEM

ITEM	CHECK	YES/NO	INSPECTOR COMMENTS
Alignment	Does the alignment match the plans?		
Length	Does the length match the length on the plans?		
Elevation Difference	Does the elevation difference from weir to weir match the profile?		
Number of Weirs	Does the number of weirs match the number specified on the plans and profiles?		
Outfall Condition and Tie-In	Is the connecting outfall physically stable with no signs of erosion and is the structure properly tied into the outfall as specified on the plans?		
Pools	Do the number pools match the number specified on the plans? Does the depth of any given pool exceed the minimum required depth as shown on the plans?		
Weir Cross Section	Is the cross section parabolic with adequate depth to match the plans? Are the boulders forming the weir 3 times larger than the D50 for the cobbles and underlined by filter fabric as specified on the plans?		
Cobbles	Does the cobble size meet the D50 requirements? Are the cobbles rounded?		
Sand/Wood Chip Mix	Has the contractor placed the required volume of sand/wood chip mix below the system?		
Geotextile	Has the geotextile been placed		
Plantings	Has the Step Pool System been seeded?		
Maintenance Access	Has vehicular access been provided?		

STRUCTURE SCHEDULE					
STR. NO.	STATION	BASELINE	TOP COVER ELEVATION	INVERTS	HARFORD COUNTY STANDARD NO.
EW-1	601+17.00	STEP POOL 1	—	38.67	STD TYPE 'C' ENDWALL, ROUND PIPE — PLATE D-11
MH-1	601+23.00	STEP POOL 1	46.00	41.84± IN. 38.69 OUT	PRECAST TYPE B MANHOLE — PLATE D-43
EW-2	501+64.18	STEP POOL 2	—	54.00	STD TYPE 'C' ENDWALL, ROUND PIPE — PLATE D-11
MH-2	501+82.65	STEP POOL 2	65.00	61.27± IN. 54.32 OUT	PRECAST TYPE B MANHOLE — PLATE D-43
EW-3	301+16.17	STEP POOL 3	—	55.00	STD TYPE 'C' ENDWALL, ROUND PIPE — PLATE D-11
MH-3	301+30.63	STEP POOL 3	66.00	57.01± IN. 55.25 OUT	PRECAST TYPE B MANHOLE — PLATE D-43
EW-4	101+17.63	STEP POOL 4	—	74.28	STD TYPE 'C' ENDWALL, ROUND PIPE — PLATE D-11
MH-4	101+30.23	STEP POOL 4	80.00	74.84± IN. 74.46 OUT	PRECAST TYPE A MANHOLE — PLATE D-43
EW-5	201+01.88	STEP POOL 5	—	68.78	STD TYPE 'C' ENDWALL, ROUND PIPE — PLATE D-11
MH-5	201+12.42	STEP POOL 5	73.00	68.92± IN. 68.82 OUT	PRECAST TYPE B MANHOLE — PLATE D-43
EW-6	401+29.99	STEP POOL 6	—	51.03	STD TYPE 'C' ENDWALL, ROUND PIPE — PLATE D-11
MH-6	401+40.46	STEP POOL 6	57.00	53.58± IN. 51.20 OUT	PRECAST TYPE B MANHOLE — PLATE D-43

STEP POOL SYSTEM DESIGN DATA

TOTAL SITE AREA: 7.079 AC

TOTAL DISTURBED AREA: 7.079 AC

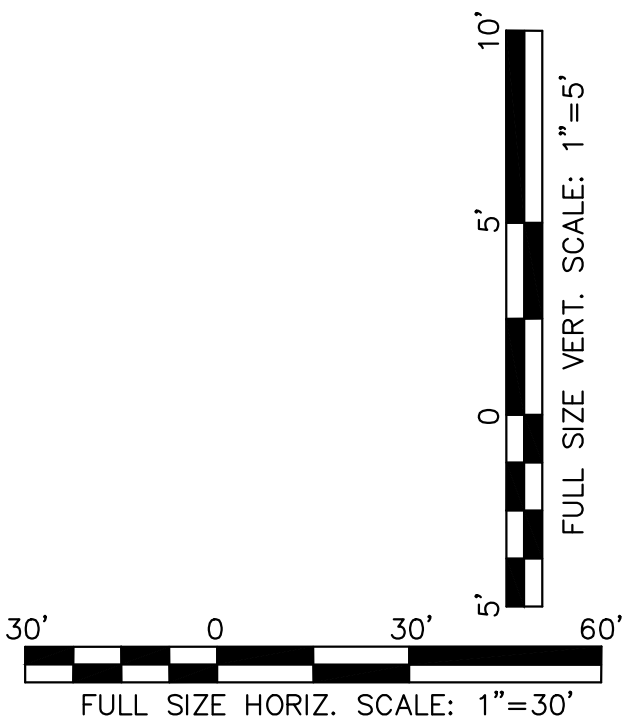
WATERSHED: BUSH RIVER (HUC 02060003)

STEP POOL SYSTEM NO.	DRAINAGE AREA (ACRES)	TOTAL IMPERVIOUS AREA TREATED (ACRES)	UNIFIED SIZING CRITERIA	
			WQV Required (CF)	WQV Provided (CF)
1	7.45	4.30	15,415	15,898
2	8.02	3.60	13,392	7,119*
3	4.28	2.10	7,769	7,248*
4	6.07	4.00	14,323	19,405
5	4.06	3.25	11,496	14,075
6	2.20	1.98	6,868	7,365
TOTALS		19.23	69,263	71,110

*SEE NOTE 2 BELOW

NOTES:

- NO NEW IMPERVIOUS AREA ADDED TO THE PROJECT
- STEP POOL SYSTEMS 4, 5 AND 6 OVERCOMPENSATE FOR THE STEP POOL SYSTEMS 2 AND 3 FALLING SHORT OF THE REQUIRED WATER QUALITY VOLUME. SANITARY SEWER CONFLICTS SHORTENED THE STEP POOL SYSTEMS 2 AND 3. THE OVERALL WATER QUALITY VOLUME TARGET HAS BEEN ACHIEVED.



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AECOM

REVISIONS

HARFORD COUNTY, MARYLAND

DECLARATION RUN STREAM RESTORATION
STEP POOL PROFILE

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

CONTRACT NO : 97040

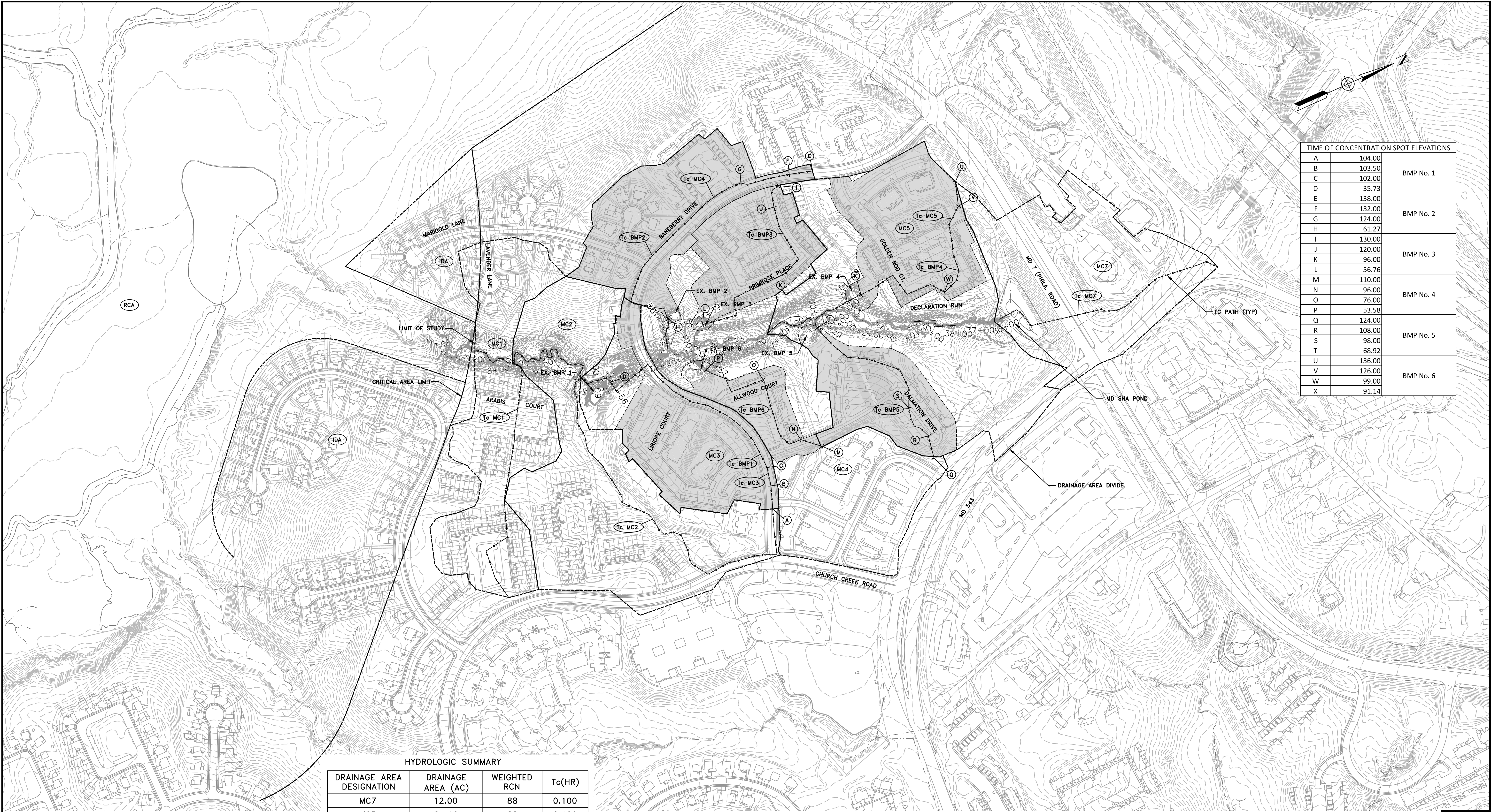
SCALE : 1"=30'

SHEET 14 OF 48

DATE : MARCH, 2022

PR-05

EG-SWMENG-000025-2019



TIME OF CONCENTRATION SPOT ELEVATIONS		
A	104.00	BMP No. 1
B	103.50	
C	102.00	
D	35.73	
E	138.00	BMP No. 2
F	132.00	
G	124.00	
H	61.27	
I	130.00	BMP No. 3
J	120.00	
K	96.00	
L	56.76	
M	110.00	BMP No. 4
N	96.00	
O	76.00	
P	53.58	
Q	124.00	BMP No. 5
R	108.00	
S	98.00	
T	68.92	
U	136.00	BMP No. 6
V	126.00	
W	99.00	
X	91.14	

HYDROLOGIC SUMMARY

DRAINAGE AREA DESIGNATION	DRAINAGE AREA (AC)	WEIGHTED RCN	Tc(HR)
MC7	12.00	88	0.100
MC5	24.16	82	0.100
MC4	27.65	83	0.100
MC3	8.87	87	0.100
MC2	18.77	81	0.103
MC1	10.90	81	0.100
EX. BMP 1	7.45	87	0.100
EX. BMP 2	8.02	75	0.100
EX. BMP 3	4.28	83	0.100
EX. BMP 4	6.07	85	0.100
EX. BMP 5	4.06	90	0.100
EX. BMP 6	2.20	80	0.100

- LEGEND
- DRAINAGE AREA DIVIDE
 - >->->- TIME OF CONCENTRATION (Tc) PATH
 - BMP DRAINAGE DIVIDE
 - MC1 DRAINAGE AREA DESIGNATION



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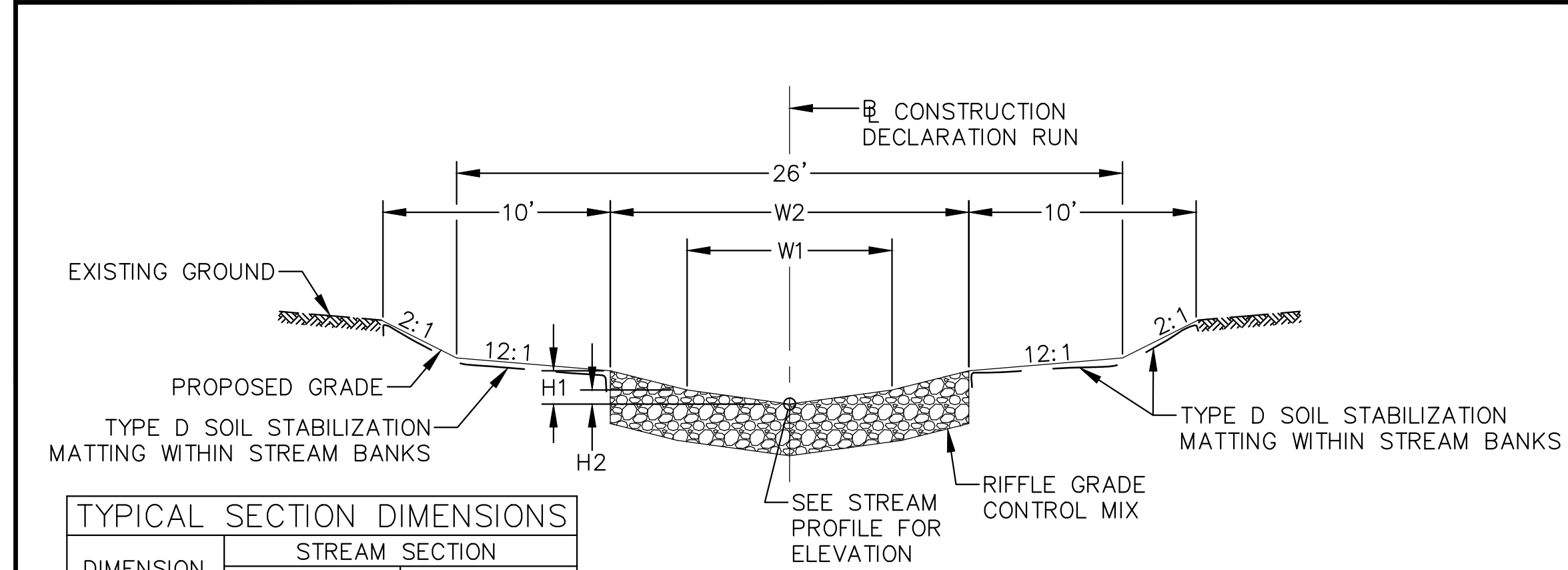
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REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
DRAINAGE AREA MAP

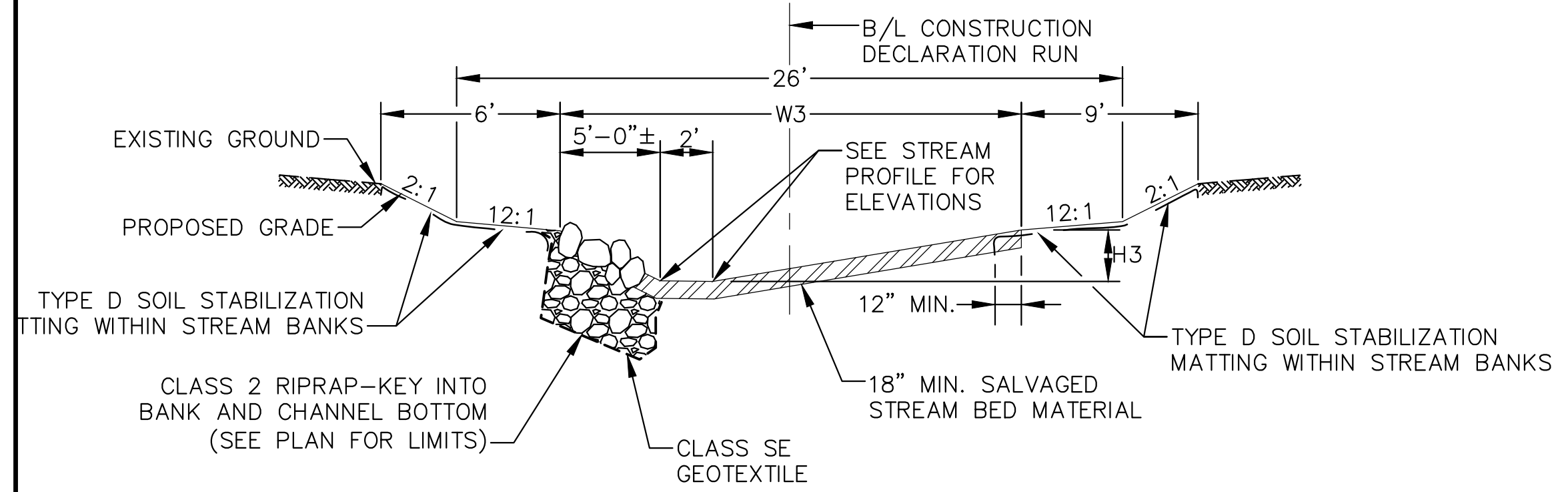
DRAWN BY : CDF
DESIGNED BY : ERF
REVIEWED BY : DTM

CONTRACT NO :
SCALE : 1"=200'
SHEET 15 OF 47
DATE : JUNE, 2020

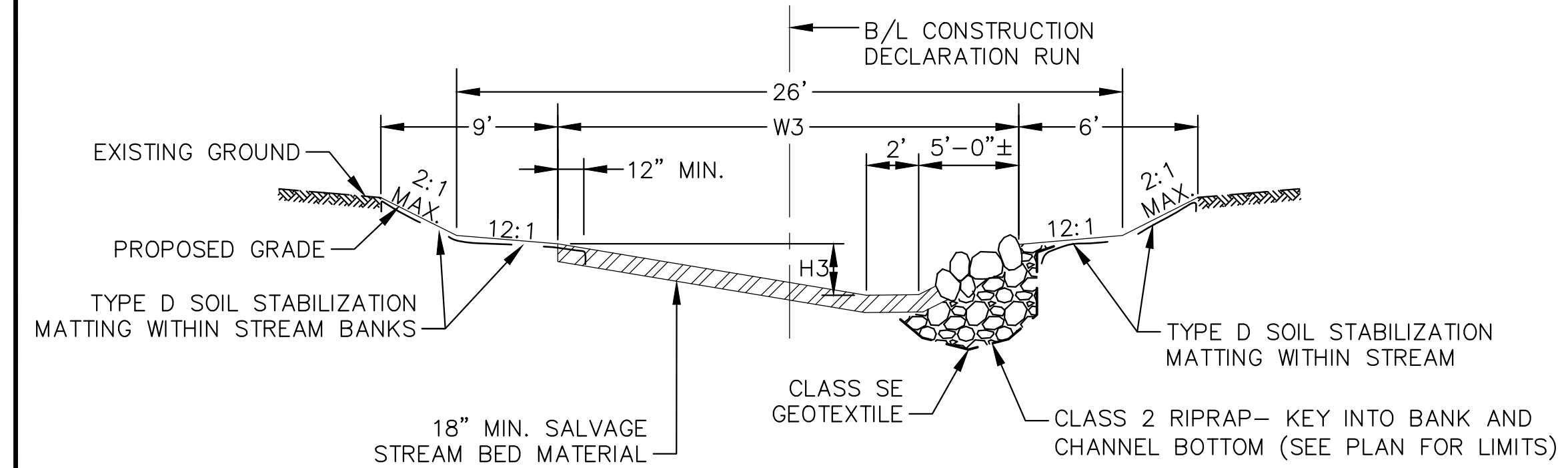


DIMENSION	STREAM SECTION	
	UPPER	LOWER
W1	6.5'	8.0'
W2	14.0'	16.0'
W3	18.0'	19.6'
H1	1.3'	1.5'
H2	0.5'	0.5'
H3	2.0'	2.2'

BANKFULL CHANNEL
REFER TO TD-02 FOR
ADDITIONAL INFORMATION

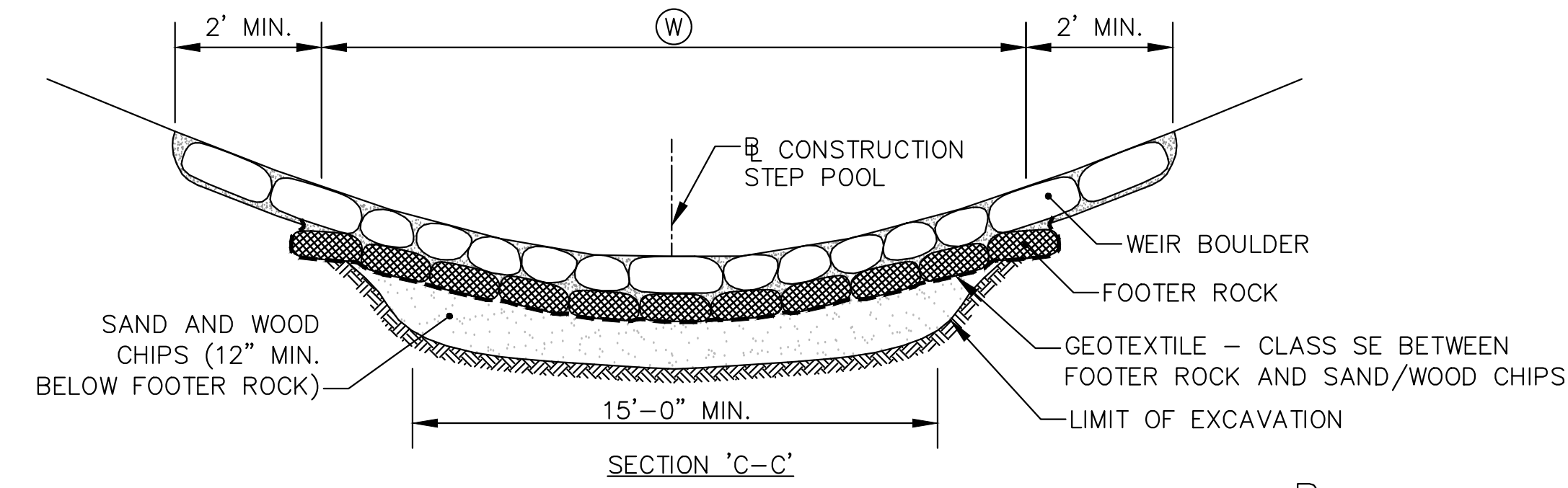
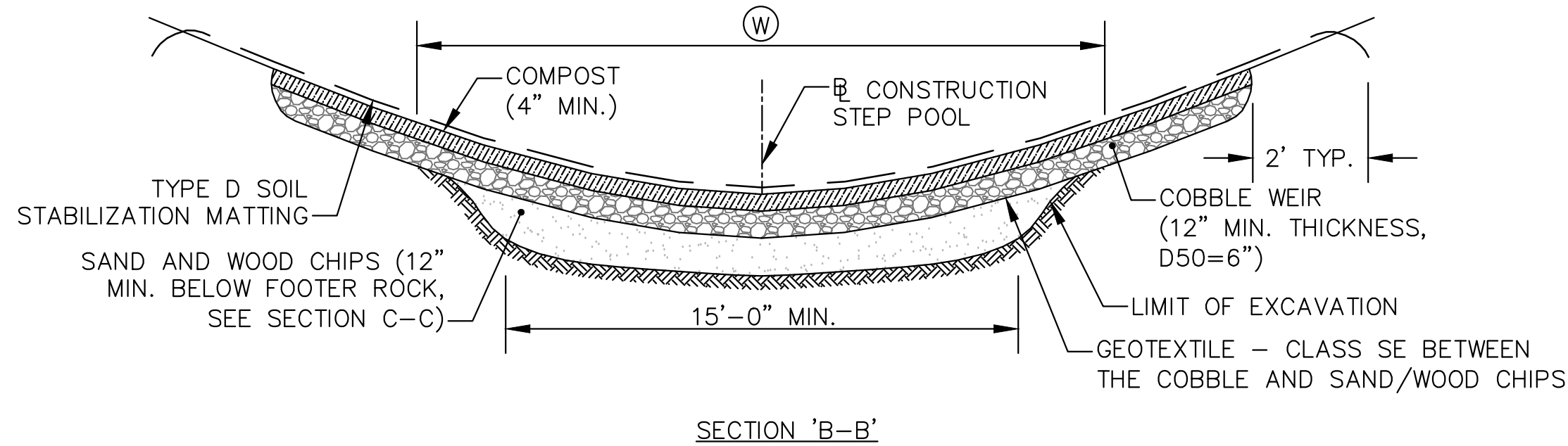
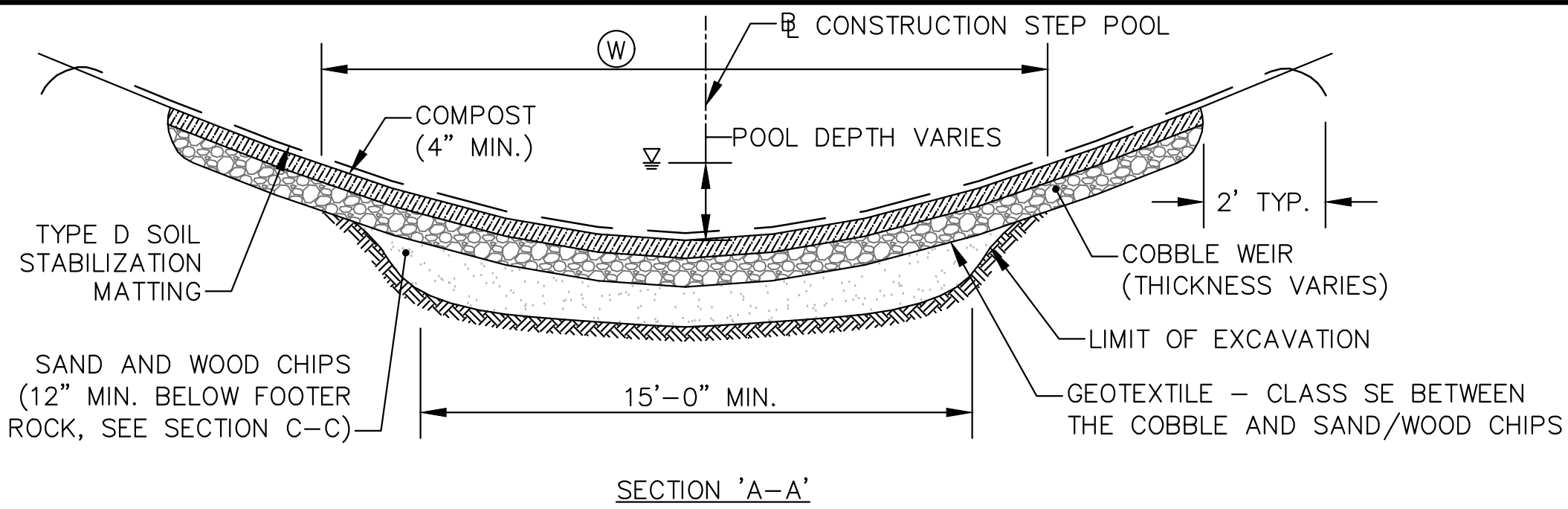


BANKFULL CHANNEL-POL LEFT

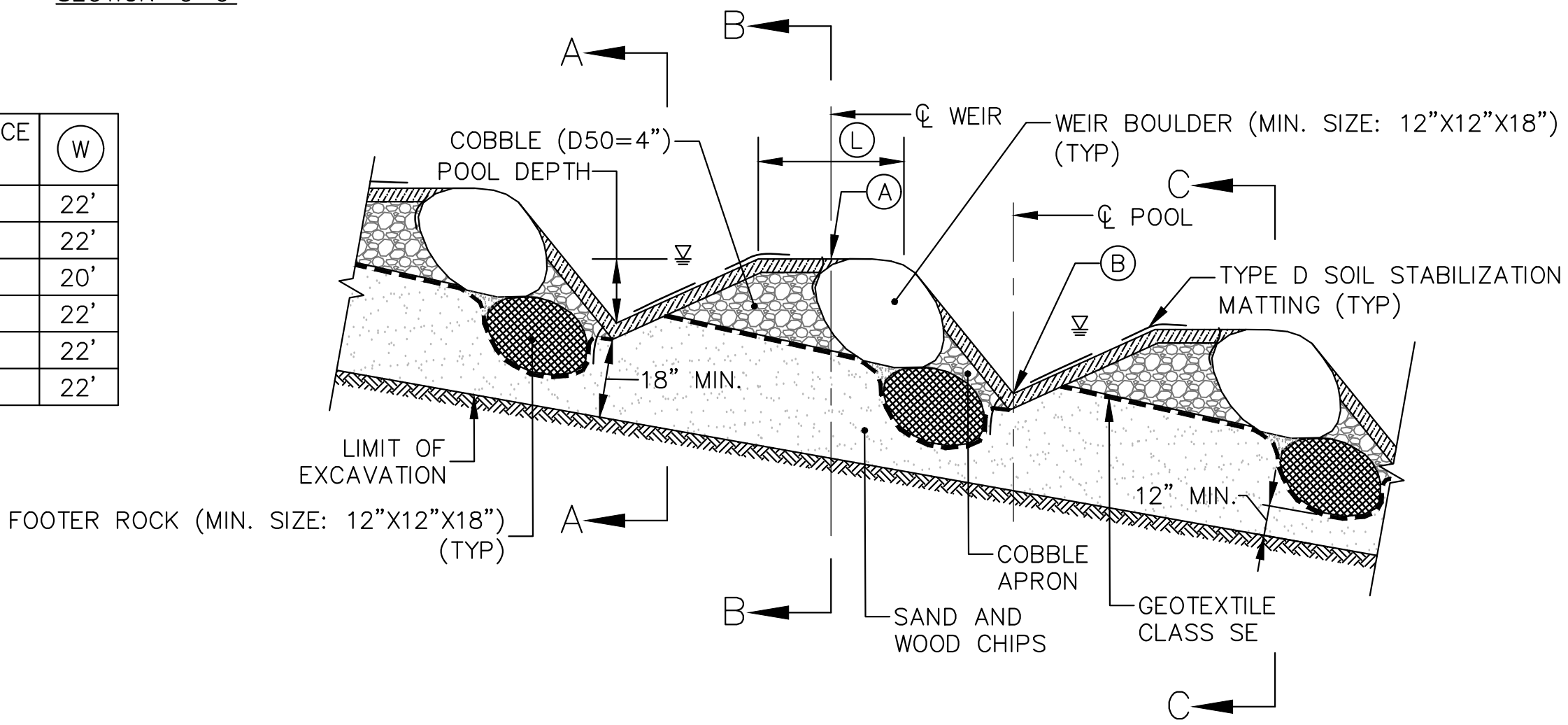


BANKFULL CHANNEL-POL RIGHT

1 CHANNEL TYPICAL SECTIONS
NOT TO SCALE



STEP POOL CONVEYANCE SYSTEM No.	W
1	22'
2	22'
3	20'
4	22'
5	22'
6	22'



TYPICAL ELEVATION

2 STEP POOL STORM CONVEYANCE
NOT TO SCALE

STEP POOL STORM CONVEYANCE SEQUENCE NOTES:

1. SELECTION OF BOULDERS TO BE USED FOR WEIR BOULDERS AND DROP ROCKS AND THE LOCATIONS AT WHICH THEY ARE TO BE INSTALLED SHALL BE COORDINATED WITH THE DESIGNATED SPECIALIST OR ENGINEER PRIOR TO PLACEMENT.
2. STEPS SHALL BE CONSTRUCTED BY EXCAVATING A TRENCH SLIGHTLY LARGER THAN THE DIMENSIONS OF EACH STEP, INCLUDING WEIR BOULDERS AND DROP ROCKS. A SAND AND WOOD CHIP LAYER SHALL BE PLACED TO MINIMUM DEPTH OF 12 INCHES.
3. GEOTEXTILE IS TO BE PLACED ON TOP OF THE SAND AND WOOD CHIP LAYER PRIOR TO PLACING THE FOOTER ROCKS AS DEPICTED ON THE DETAIL, TO PREVENT THE SAND AND WOOD CHIP LAYER FROM MIXING WITH THE COBBLE LAYER. THE GEOTEXTILE SHALL BE KEYED IN TO ENSURE THAT NO FABRIC IS VISIBLE ABOVE THE FINISHED SURFACE.
4. FOOTER ROCKS SHALL BE PLACED ON TOP OF THE GEOTEXTILE AND ANCHORED INTO THE SIDE SLOPE. WEIR BOULDERS ARE TO BE SET ATOP FOOTER ROCKS, CREATING AN OFFSET / SHINGLED EFFECT. THE EDGES OF WEIR BOULDERS AND THEIR FOOTER ROCKS SHALL NOT ALIGN AND THERE SHALL BE NO GAP BETWEEN ADJOINING FOOTER ROCKS OR WEIR BOULDERS. WEIR BOULDERS SHALL BE PLACED A MINIMUM OF 2 FEET BEYOND THE LIMITS OF THE FOOTER ROCKS AS SHOWN ON THE DETAIL.
5. REFERENCE POINT ELEVATIONS HAVE BEEN PROVIDED AT SEVERAL CRITICAL LOCATIONS ALONG EACH STEP POOL STRUCTURE. INDIVIDUAL ROCKS WITHIN THE FINISHED INSTALLATION SHALL BE WITHIN 0.1 FEET OF THE REFERENCE POINT ELEVATIONS, AS SPECIFIED ON THE CONSTRUCTION DRAWING.
6. COBBLE WITH A D50 OF 4 INCHES SHALL BE PLACED TO A MINIMUM DEPTH OF 12 INCHES OVER THE GEOTEXTILE. COBBLE SHALL BE PLACED AND SHAPED SUCH THAT MATERIAL IS PILED HIGHER ON THE SIDES, PRODUCING A DEEPER POOL IN THE MIDDLE OF THE STEP POOL SEQUENCE.
7. THE GAPS IN THE STEPS SHALL BE FILLED WITH COBBLE TO FORM A SLOPED CHANNEL SECTION THAT CONNECTS THE ELEVATION OF THE WEIR BOULDER TO THE MATERIAL LINING THE UPSTREAM POOL. THE LARGEST POSSIBLE ROCK MATERIALS SHALL BE USED FOR THIS TO PROVIDE A TIGHT, NON-MOBILE FIT IN THE GAPS.

NOTE: STATION AND ELEVATION INFORMATION FOR POINTS (A) AND (B) AND LENGTHS FOR DIMENSION (L) ARE PROVIDED ON SHEETS PR-04 AND PR-05 FOR EACH STEP POOL STORM CONVEYANCE SYSTEM.

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EXPIRATION DATE: 8/28/2022

AECOM

REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
TYPICAL DETAILS I

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

CONTRACT NO. : 97040

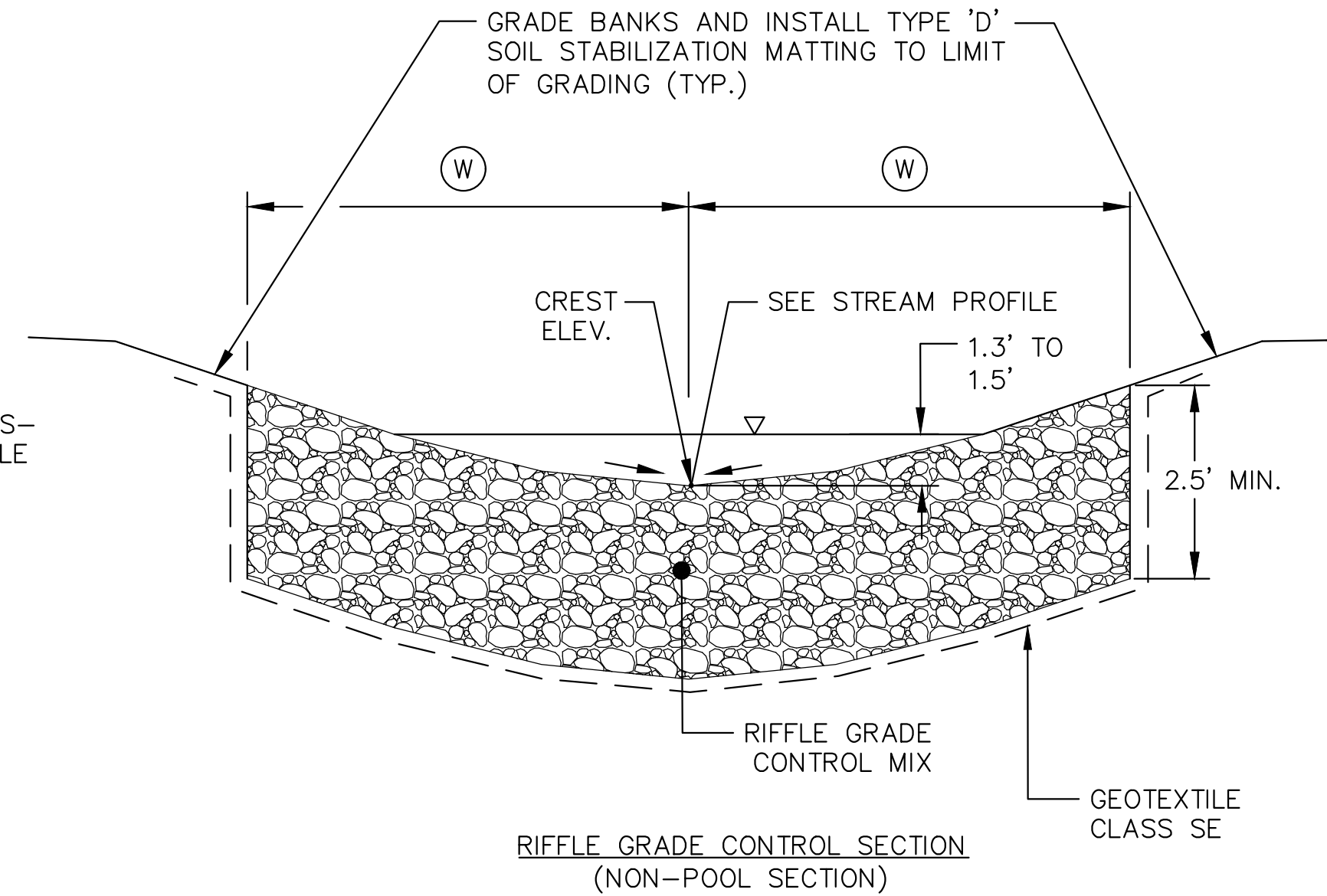
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SHEET 16 OF 48

DATE : MARCH, 2022

TD-01

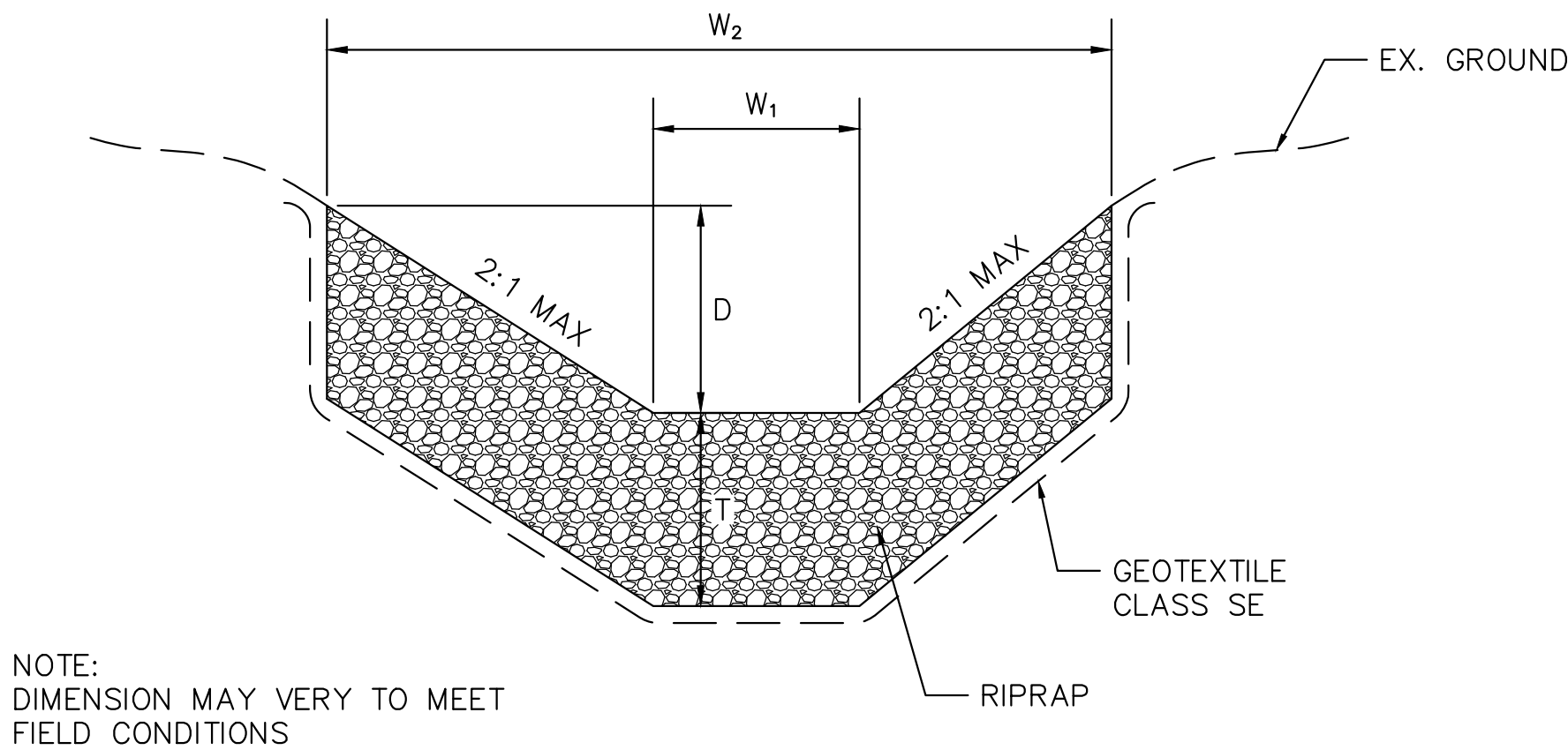
EG-SWMENG-000025-2019



	UPPER REACH	LOWER REACH
W	7'	8'

MIX %	STREAM BED MATERIAL (SBM) MIX	%
	DOUBLE WASHED CONSTRUCTION SAND	30%
	ROUND RIVER ROCK/GRAVEL	30%
	SILICA (ROUND) COBBLE (2" TO 8")	40%

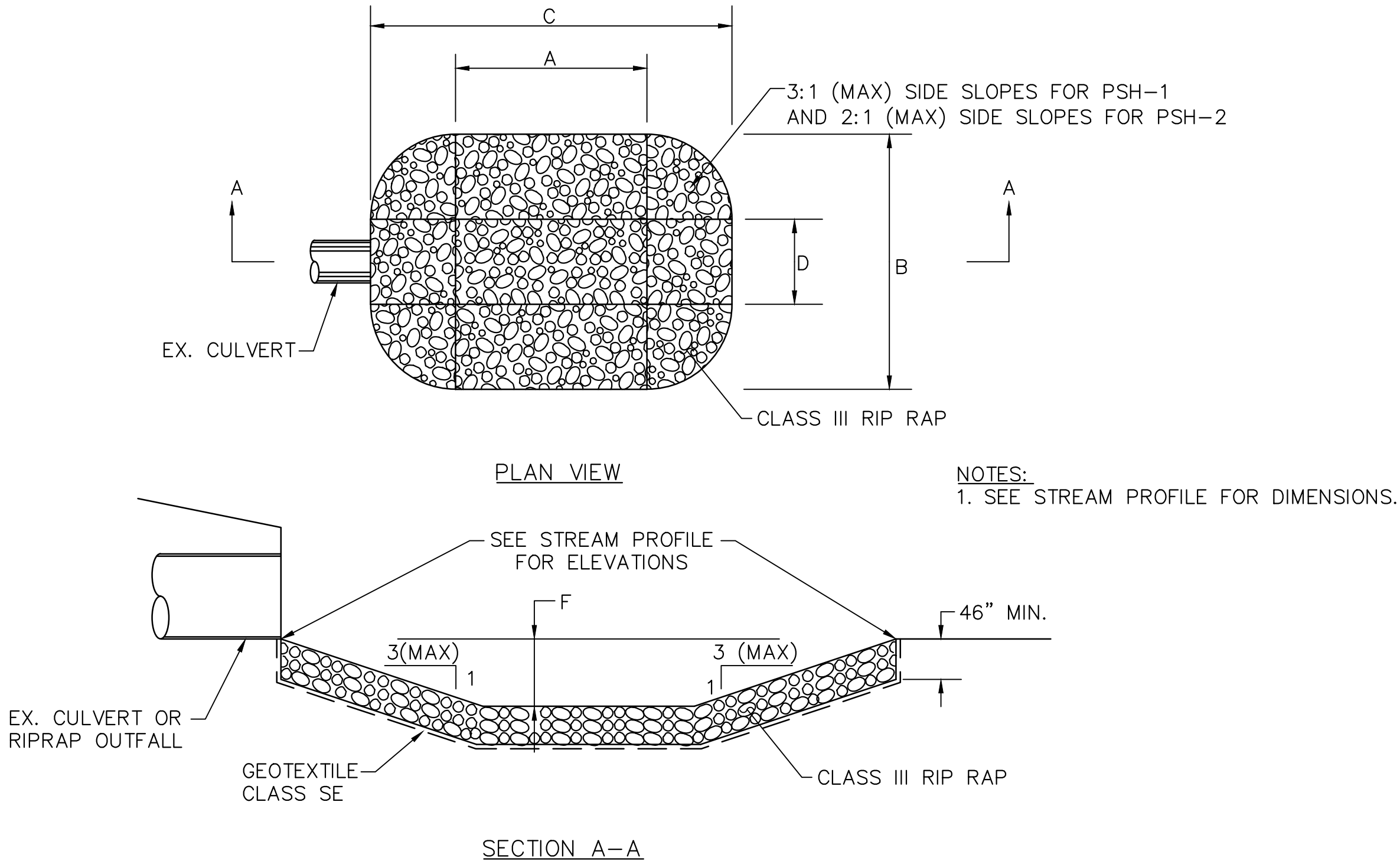




NOTE:
DIMENSION MAY VARY TO MEET
FIELD CONDITIONS

6 RIPRAP OUTFALL PROTECTION
NOT TO SCALE

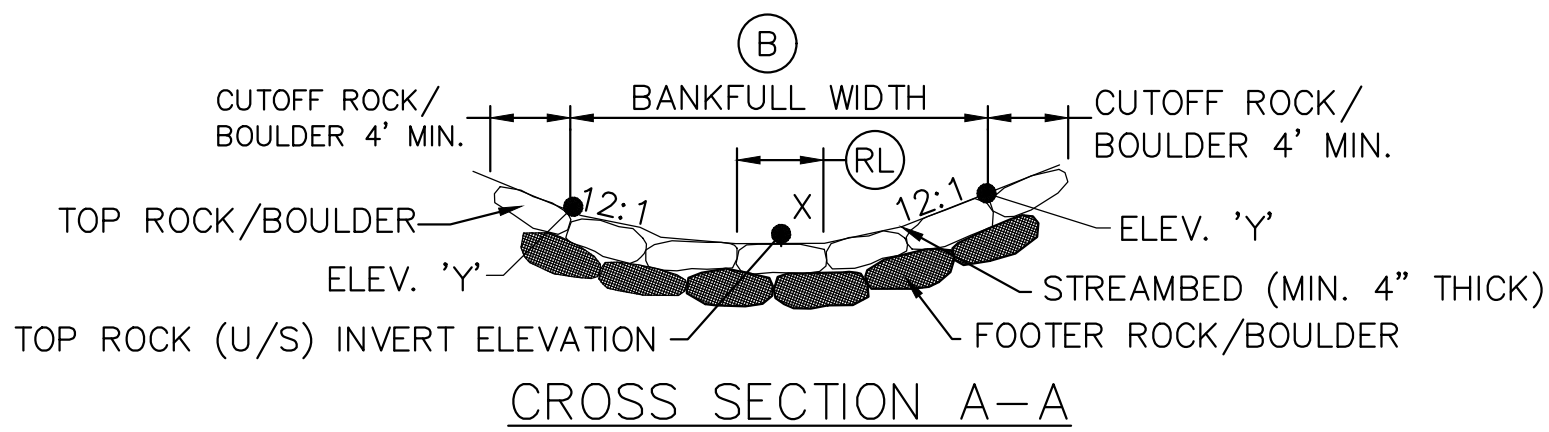
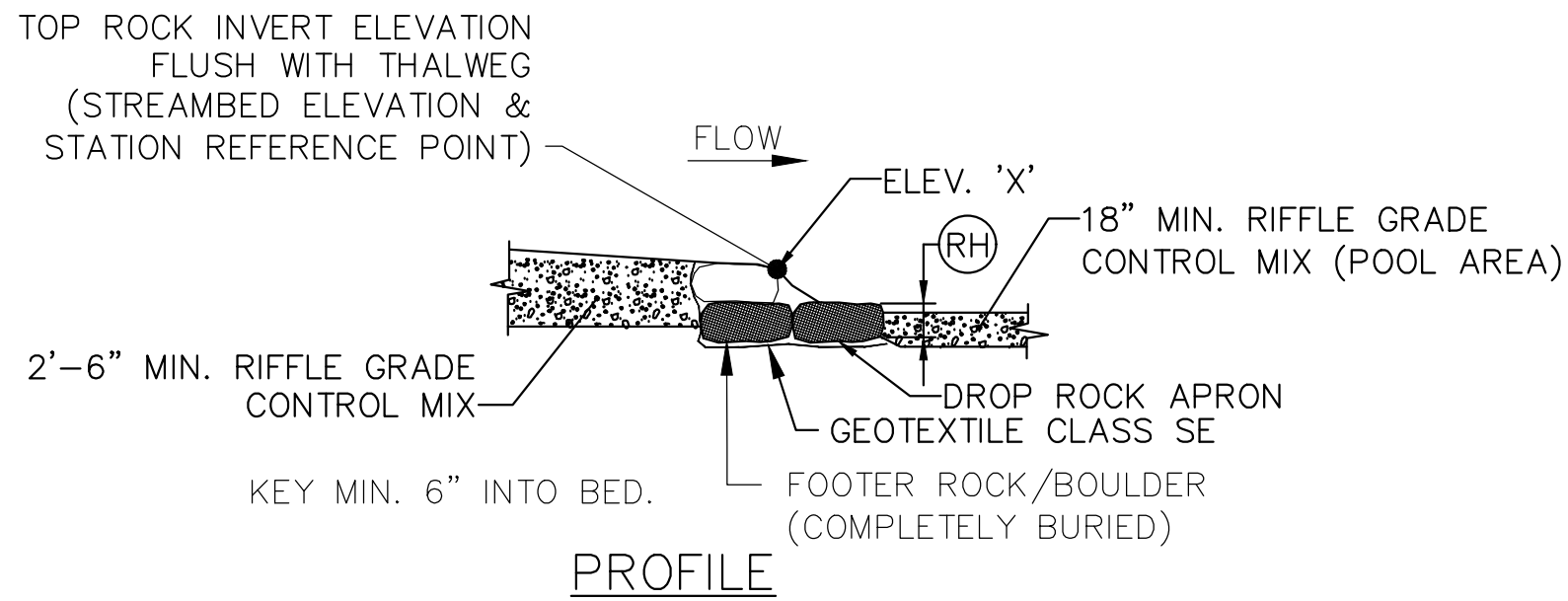
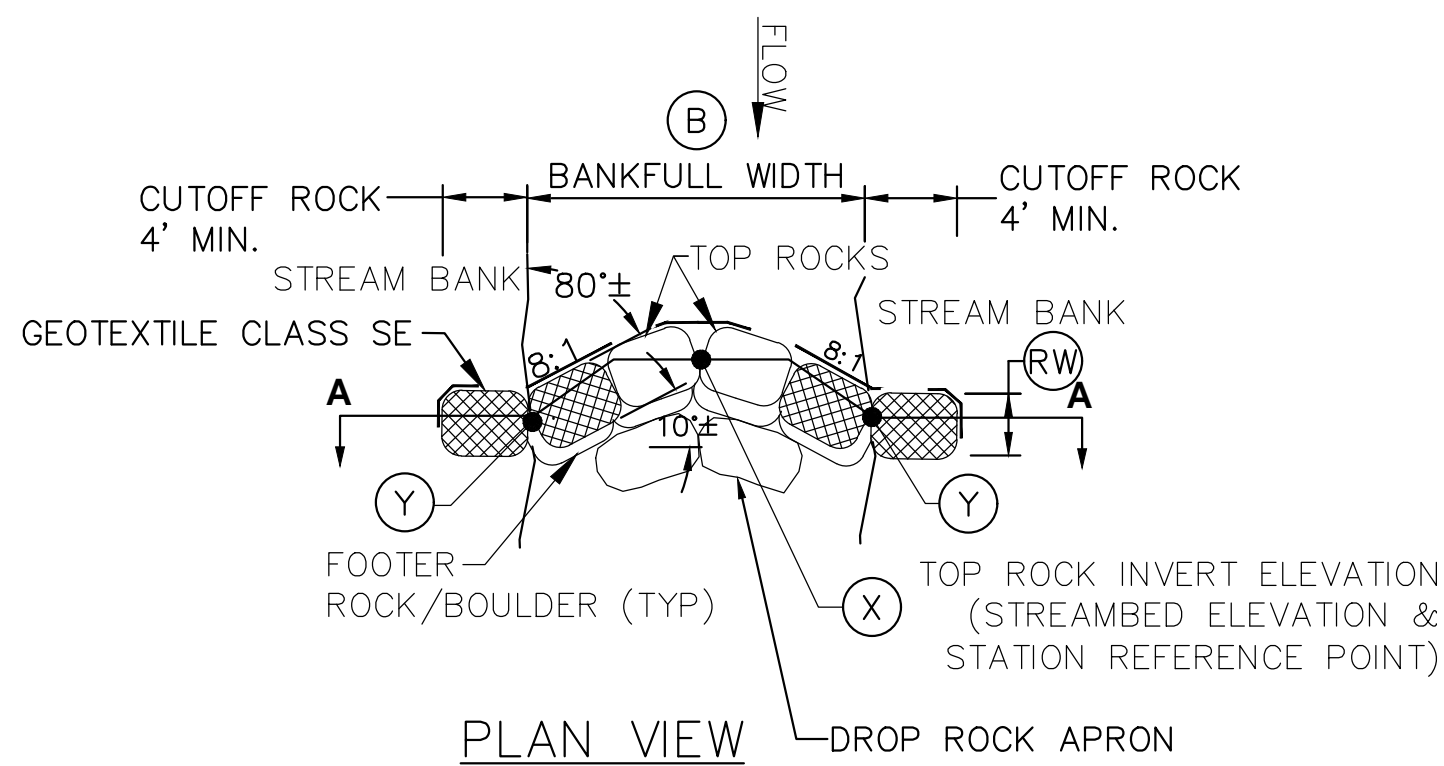
RIPRAP OUTFALL PROTECTION (RO) TABLE								
Structure No.	Begin Station	Offset	End Station	Offset	W ₁ (ft)	D	Riprap Class	T (inches)
RO-1	9+45	34' RT	9+47	1.4' RT	2.0	1	I	19
RO-2	6+60	48' LT	7+08	8' LT	4.0	1	I	19
RO-3	6+88	23' RT	6+87	5.7' RT	3.0	1	I	19
RO-4	3+59.5	18.66 LT	3+61	5.7' LT	5.5	1	I	19
RO-5	3+18.5	73.50 LT	3+45	3.9' LT	5.0	1	II	32
RO-6	3+11.50	66' LT	3+10	48' LT	4.0	1	I	19
RO-7	51+88	106' RT	51+85	55' RT	8.0	1	I	19
RO-8	51+71	91' RT	51+83	8' RT	10.0	2	II	32
RO-9	51+53	45' RT	50+60.5	14' RT	15.0	1.5	II	32
RO-10	46+73	69' LT	46+93	7.5' LT	4.0	1	I	19
RO-11	39+48	54.50' LT	40+00	8.5' LT	4.0	2	I	19



NOTES:
1. SEE STREAM PROFILE FOR DIMENSIONS.

7 PREFORMED SCOUR HOLE
NOT TO SCALE

PREFORMED SCOUR HOLE (PSH) TABLE						
Structure No.	A (ft)	B (ft)	C (ft)	D (ft)	F (ft)	REMARKS
PSH-1	15.00	26.80	38.00	10.30	2.75	'C' dimension includes the 10' level section exiting the existing culvert
PSH-2	8.25	23.00	36.00	5.50	2.75	

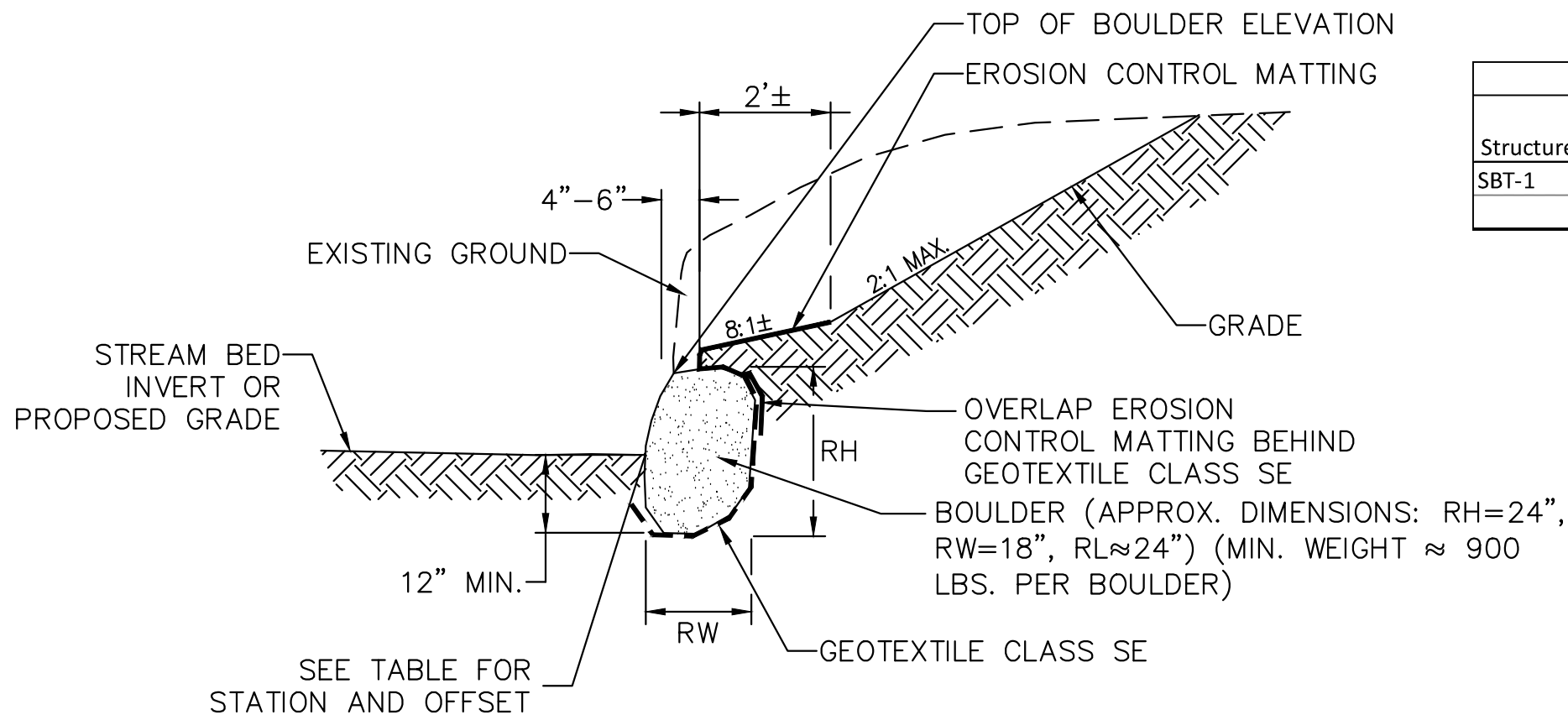


NOTES:

1. ROCK SILL SHALL BE CONSTRUCTED BY EXCAVATING A TRENCH SLIGHTLY LARGER THAN THE SILL DIMENSIONS.
2. TOP ROCKS SHALL BE SUPPORTED BY A FOOTER ROCK AND SHINGLED UPSTREAM AND INTO STREAM BANK. ALL ROCKS SHALL BE INTERLOCKED MINIMIZING OR ELIMINATING GAPS WITH NO VOIDS/GAPS LARGER THAN 4 INCHES.
3. THE MINIMUM VERTICAL ELEVATION DIFFERENCE BETWEEN ELEVATION "X" AND ELEVATION "Y" IS 4-INCHES.
4. PLACE GEOTEXTILE CLASS SE ON UPSTREAM SIDE OF ROCK SILL. FABRIC SHALL COVER THE UPSTREAM FACE OF THE ENTIRE SILL (EXCLUDING CUTOFF SILL) AND SHALL EXTEND A MAXIMUM OF 2 FEET UPSTREAM OF STRUCTURE.
5. DISTURBED STREAMBED SHALL BE BACKFILLED WITH 6" MIN. OF STREAMBED MATERIAL OR RIFFLE GRADE CONTROL MIX TO MEET FINISHED GRADE.
6. STREAM BANK AROUND STRUCTURE SHALL BE BACKFILLED AND HAND COMPACTED.
7. SEE STRUCTURE TABLE (BELOW), STREAM PROFILE, AND PLAN FOR ALL DIMENSIONS AND ELEVATIONS.
8. SILL ROCKS/BOULDERS SHALL BE FLUSH WITH FINISHED GRADE AND CUTOFF ROCKS SHALL EXTEND A MINIMUM OF 4 FEET INTO STREAMBANK.
9. PROVIDE DROP STONE/RIPRAP APRON DOWNSTREAM OF SILL AS DIRECTED.
10. SEE STREAM PROFILE FOR LIMITS OF RGC MIX.

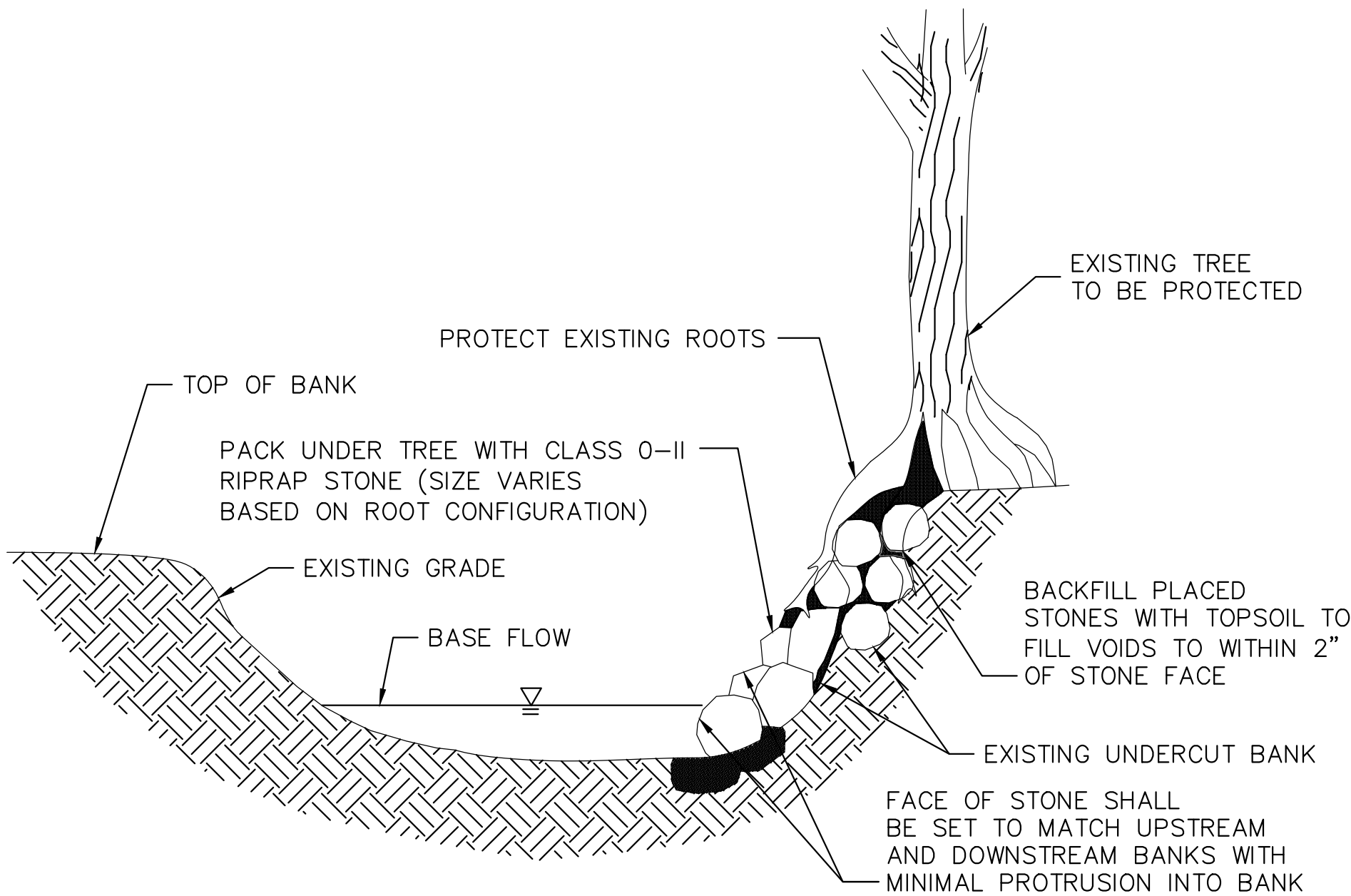
9 ROCK SILL DETAIL
NOT TO SCALE

ROCK SILL (RS) TABLE														
Structure No.	Station	Offset	Elev. X	Bankfull Width (B) (ft)	Elev. Y	Top Rocks (Grade Control) Min. Dimensions.			Drop Rocks Min. Dimensions			Footer Rocks Min. Dimensions		
						Length (RL) (ft)	Height (RH) (ft)	Width (RW) (ft)	Length (RL) (ft)	Height (RH) (ft)	Width (RW) (ft)	Length (RL) (ft)	Height (RH) (ft)	Width (RW) (ft)
RS-1	10+72	0.00	18.00	16.0	18.70	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-2	4+80	0.00	30.00	16.0	30.70	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-3	51+64	0.00	42.00	14.0	42.60	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-4	50+46	0.00	45.25	14.0	45.85	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-5	49+86	0.00	46.65	14.0	47.25	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-6	49+22	0.00	48.70	14.0	49.30	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-7	48+64	0.00	51.00	14.0	51.60	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-8	48+44	0.00	52.00	14.0	52.60	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-9	48+23	0.00	53.00	14.0	53.60	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-10	48+00	0.00	54.00	14.0	54.60	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-11	46+81	0.00	57.20	14.0	57.80	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-12	46+39	0.00	58.90	14.0	59.50	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-13	45+93	0.00	60.80	14.0	61.40	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-14	45+46	0.00	62.65	14.0	63.25	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-15	45+00	0.00	64.50	14.0	65.10	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-16	42+46	0.00	68.70	14.0	69.30	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-17	41+67	0.00	71.15	14.0	71.75	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-18	41+03	0.00	73.10	14.0	73.70	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-19	40+39	0.00	74.90	14.0	75.50	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-20	39+59	0.00	77.40	14.0	78.00	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-21	38+79	0.00	79.95	14.0	80.55	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-22	37+99	0.00	82.45	14.0	83.05	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0
RS-23	37+19	0.00	85.00	14.0	85.60	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	2.0



SINGLE BOULDER TOE (SBT) DETAIL							
Structure No.	Begin Station	Offset	Top of Boulder Elevation	End Station	Offset	Top of Boulder Elevation	Remarks
SBT-1	45+60	17' RT.	63.8	46+13	15.5' RT	61.8	

10 SINGLE BOULDER TOE DETAIL
NOT TO SCALE



NOTES (ROCK PACK DETAIL):

1. CONTRACTOR SHALL USE EXTREME CAUTION WHEN PLACING ROCKS IN AND AROUND EXPOSED ROOTS.
2. DO NOT USE FILTER FABRIC.
3. USE AS DIRECTED BY INSPECTION REPRESENTATIVE.
4. THIS DETAIL SHALL ONLY BE USED WHEN AN EXISTING TREE IS TO REMAIN AND IT IS EXPERIENCING EXPOSED ROOTS THAT REQUIRE PROTECTION.

11 ROCK PACK DETAIL
NOT TO SCALE

PROFESSIONAL CERTIFICATION
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AECOM

REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
TYPICAL DETAILS IV

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

CONTRACT NO : 97040

SCALE : NTS

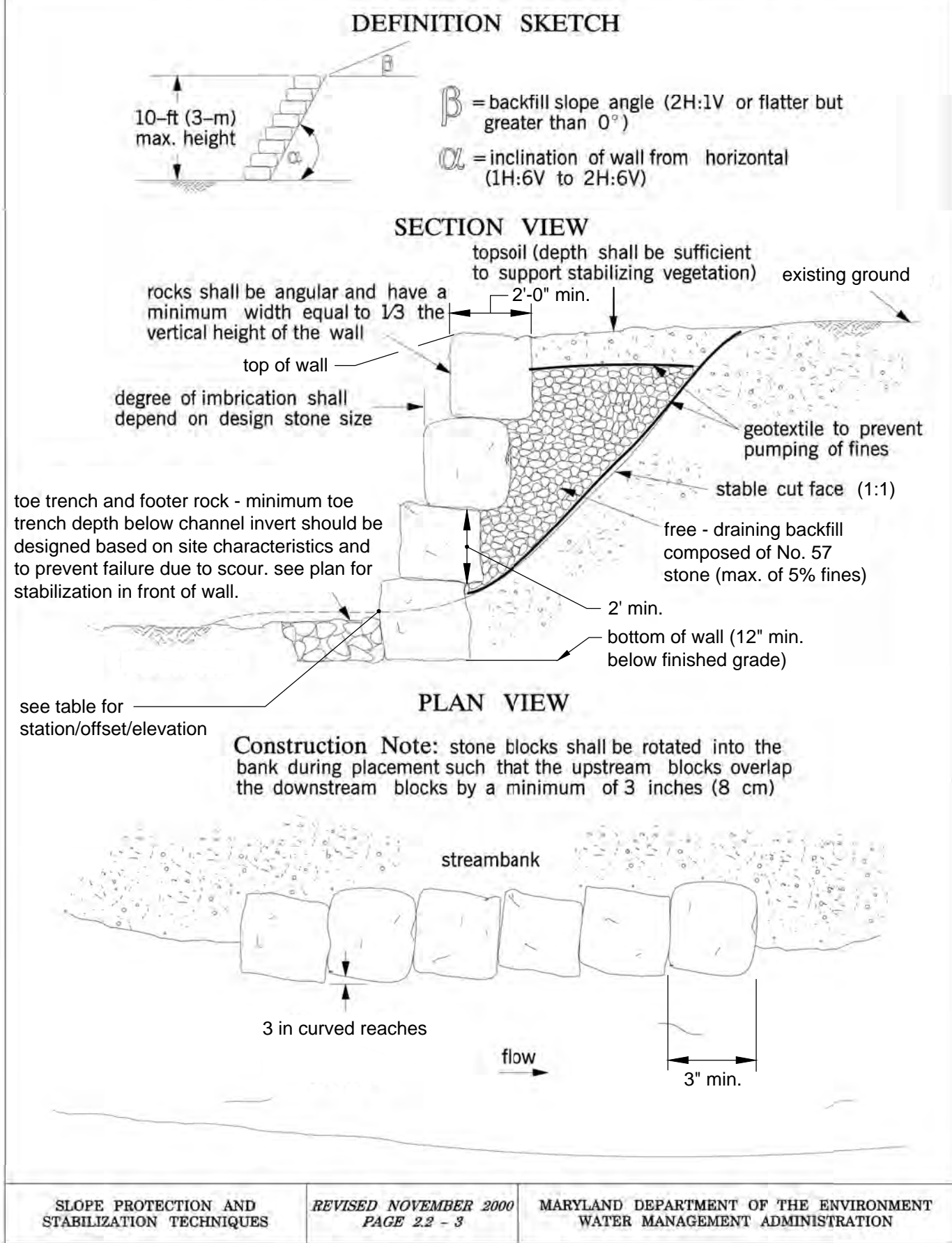
SHEET 19 OF 48

DATE : MARCH, 2022

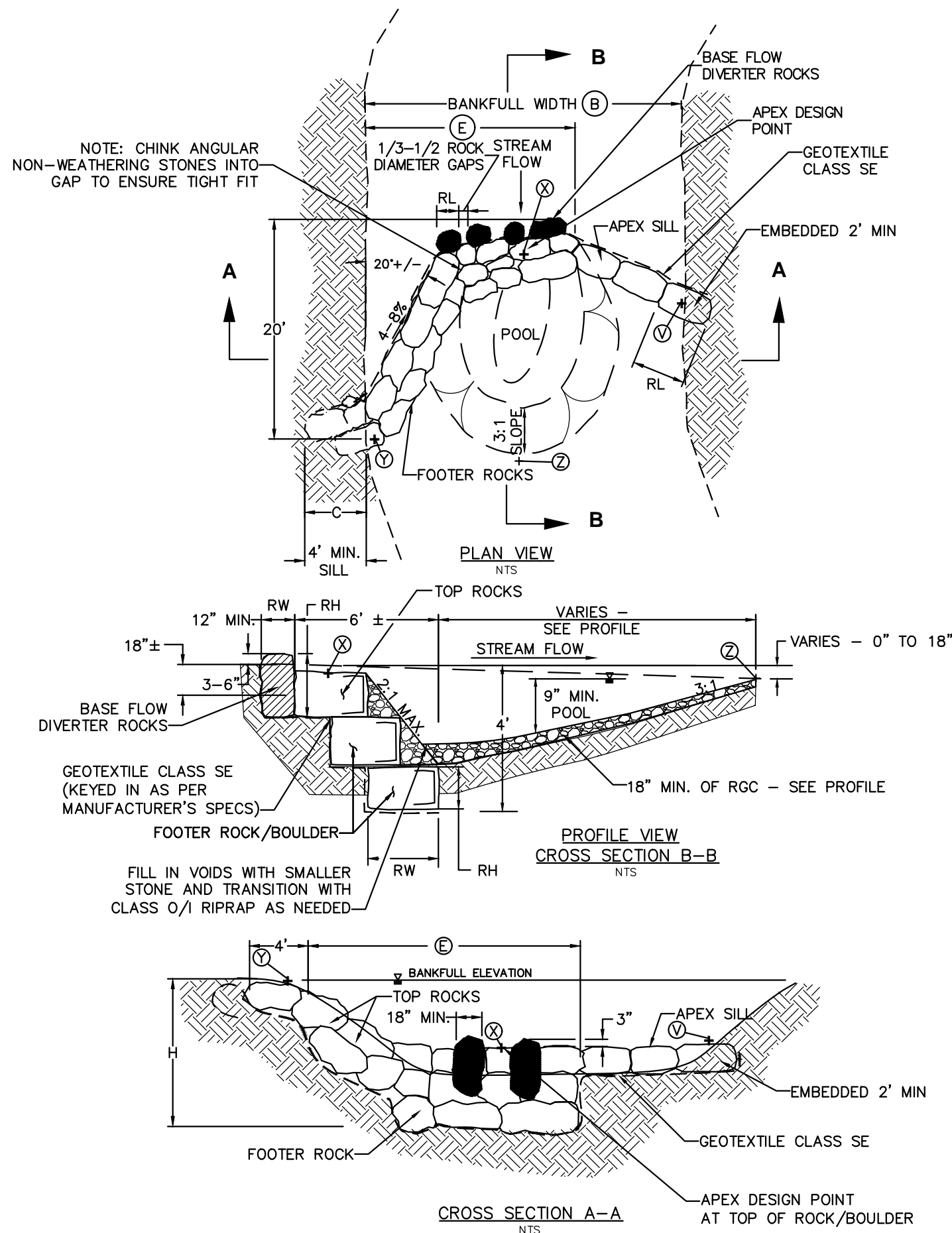
TD-04

EG-SWMENG-000025-2019

Maryland's Guidelines To Waterway Construction
DETAIL 2.2: IMBRICATED RIPRAP



16 IMBRICATED RIPRAP
NOT TO SCALE



17 J-HOOK VANES DETAIL
NOT TO SCALE

J-HOOK VANE (JHV) TABLE																	
Structure No.	Station	Offset	Bankfull Width (B)	Dim. E	Elev. X	Elev. V	Elev. Y	Elev. Z	Top Rocks (Grade Control) Min. Dimensions.			Baseflow Diverter Rocks Min. Dimensions			Footer Rocks Min. Dimensions		
									Length (RL) (ft)	Height (RH) (ft)	Width (RW) (ft)	Length (RL) (ft)	Height (RH) (ft)	Width (RW) (ft)	Length (RL) (ft)	Height (RH) (ft)	Width (RW) (ft)
JHV-1	9+69	0.00	16.0	10.5	19.6	20.1	21.1	18.33	3.0	2.0	2.0	1.5	2.0	1.0	3.0	2.0	2.0
JHV-2	7+93	0.00	14.0	9.5	23.7	24.2	25.2	23.30	3.0	2.0	2.0	1.5	2.0	1.0	3.0	2.0	2.0
JHV-3	5+17	0.00	14.0	9.5	28.1	28.6	29.6	26.80	3.0	2.0	2.0	1.5	2.0	1.0	3.0	2.0	2.0
JHV-4	3+68	0.00	14.0	9.5	31.7	32.2	33.2	30.85	3.0	2.0	2.0	1.5	2.0	1.0	3.0	2.0	2.0
JHV-5	43+25	0.00	14.0	9.5	66.2	66.7	67.7	66.00	3.0	2.0	2.0	1.5	2.0	1.0	3.0	2.0	2.0

(B), (E), (X), ETC. - SEE TABLE THIS SHEET

IMBRICATED ROCK WALL (IRW) TABLE																					
Segment No.	Begin Station	Offset	Bottom Wall Elev.*	Top Wall Elev.	Station	Offset	Bottom Wall Elev.*	Top Wall Elev.	Station	Offset	Bottom Wall Elev.*	Top Wall Elev.	Station	Offset	Bottom Wall Elev.*	Top Wall Elev.	End Station	Offset	Bottom Wall Elev.*	Top Wall Elev.	Remarks
IRW-1	9+83	27.5' LT	22.0	24.0	9+87	21' LT	22.0	24.5	10+00	21' LT	21.0	25.5	10+20	21' LT	22.0	25.5	10+25.00	26.5' LT	24.0	25.0	
IRW-2	7+86	34' LT	27.5	29.5	7+88	28' LT	27.5	29.5	8+00	21' LT	25.0	31.0	8+33	28' LT	25.5	31.0	8+39	25' LT	29.0	30.0	
IRW-3	1+20	11.5' LT	35.0	41.0	1+50	17' LT	36.0	41.0	2+00	21.5' LT	39.0	41.5	-	-	-	-	2+06	21.5' LT	39.0	41.0	
IRW-4	1+20	10' RT	35.0	41.0	-	-	-	-	-	-	-	-	-	-	-	-	1+36	29.5' RT	40.0	42.0	
IRW-5	41+04	20' RT	74.0	77.0	41+08	16' RT	74.0	78.0	41+28	16' RT	74.0	81.0	41+45	19' RT	74.0	78.0	41+49	28' RT	78.0	80.0	
IRW-6	39+56	22' RT	81.0	83.0	39+60	20' RT	80.0	83.0	39+94	20' RT	80.0	83.0	-	-	-	-	39+96	24' RT	81.0	83.0	

* BOTTOM WALL ELEVATION IS FINISHED ELEVATION.
ROCK TO BE EMBEDDED A MIN. OF 12"

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EXPIRATION DATE: 8/28/2022

AECOM

REVISIONS

HARFORD COUNTY, MARYLAND

DECLARATION RUN STREAM RESTORATION
TYPICAL DETAILS V

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

CONTRACT NO : 97040

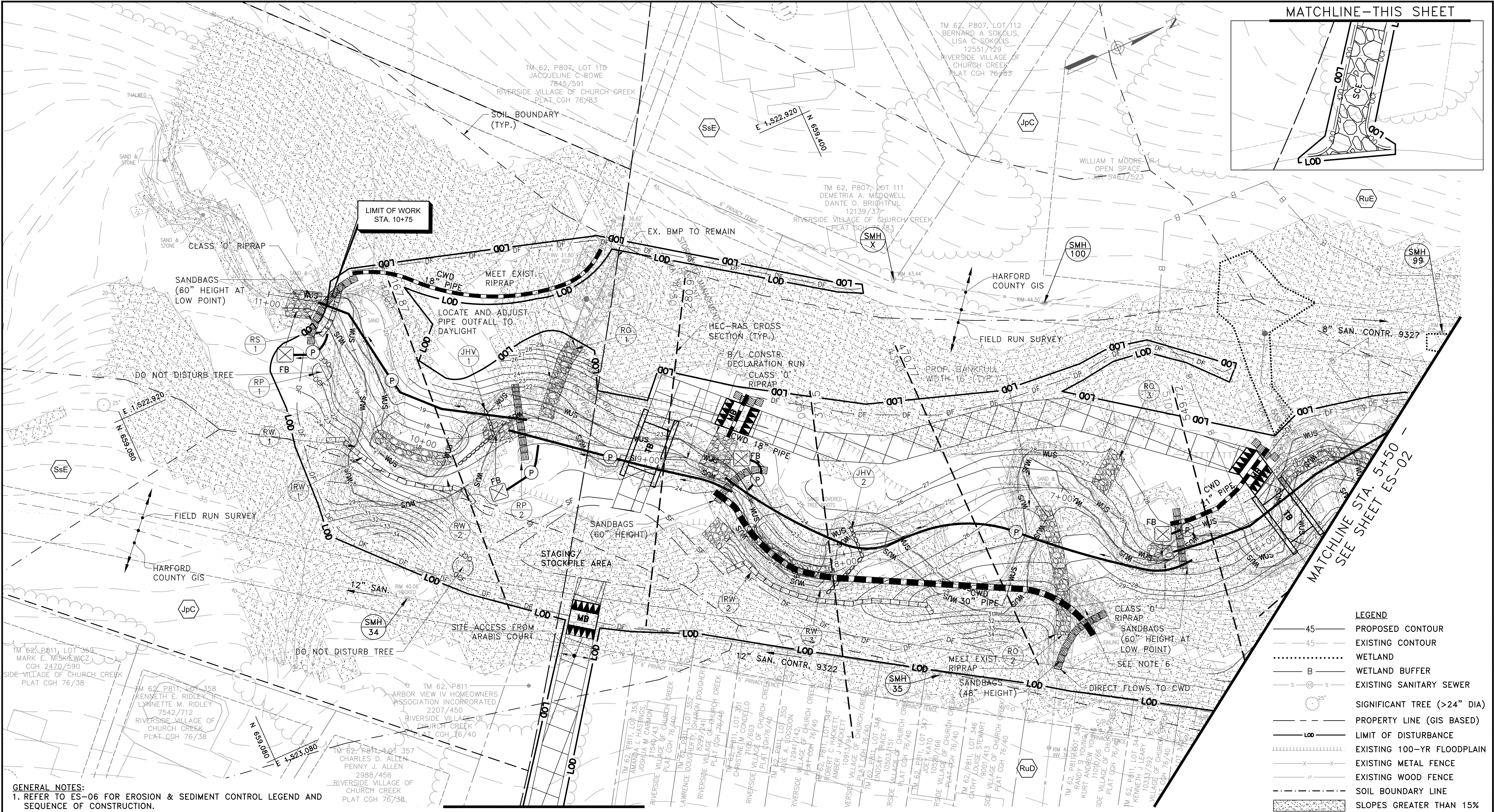
SCALE : NTS

SHEET 20 OF 48

DATE : MARCH, 2022

TD-05

EG-SWMENG-000025-2019



- GENERAL NOTES:**
1. REFER TO ES-06 FOR EROSION & SEDIMENT CONTROL LEGEND AND SEQUENCE OF CONSTRUCTION.
 2. FILTER BAGS ARE SHOWN FOR UPSTREAM CONSTRUCTION SEGMENTS ONLY.
 3. CONTRACTOR SHALL ENSURE POSITIVE FLOW ALONG DIVERSION FENCES.
 4. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED OR TRACKED ONTO ADJACENT ROADWAY.
 5. THE CONTRACTOR SHALL NOT DISTURB MORE THAN CAN BE STABILIZED IN ONE DAY. LIMITS OF MAINTENANCE OF STREAM FLOW MAY BE SHORTER THAN SHOWN TO ACCOMMODATE A ONE DAY WORK TIME FRAME.
 6. REMOVE, SALVAGE AND REINSTALL EXISTING RIPRAP AFTER CLEAR WATER DEVICES ARE IN PLACE. SUPPLEMENT WITH APPROPRIATE CLASS OF RIPRAP NOTED ON DETAIL 6 ON SHEET TD-03.

NO WORK SHALL START UNTIL ALL REQUIRED RESOURCES ARE ON SITE.

SC PLAN #59846
GRADING PERMIT #470-2019



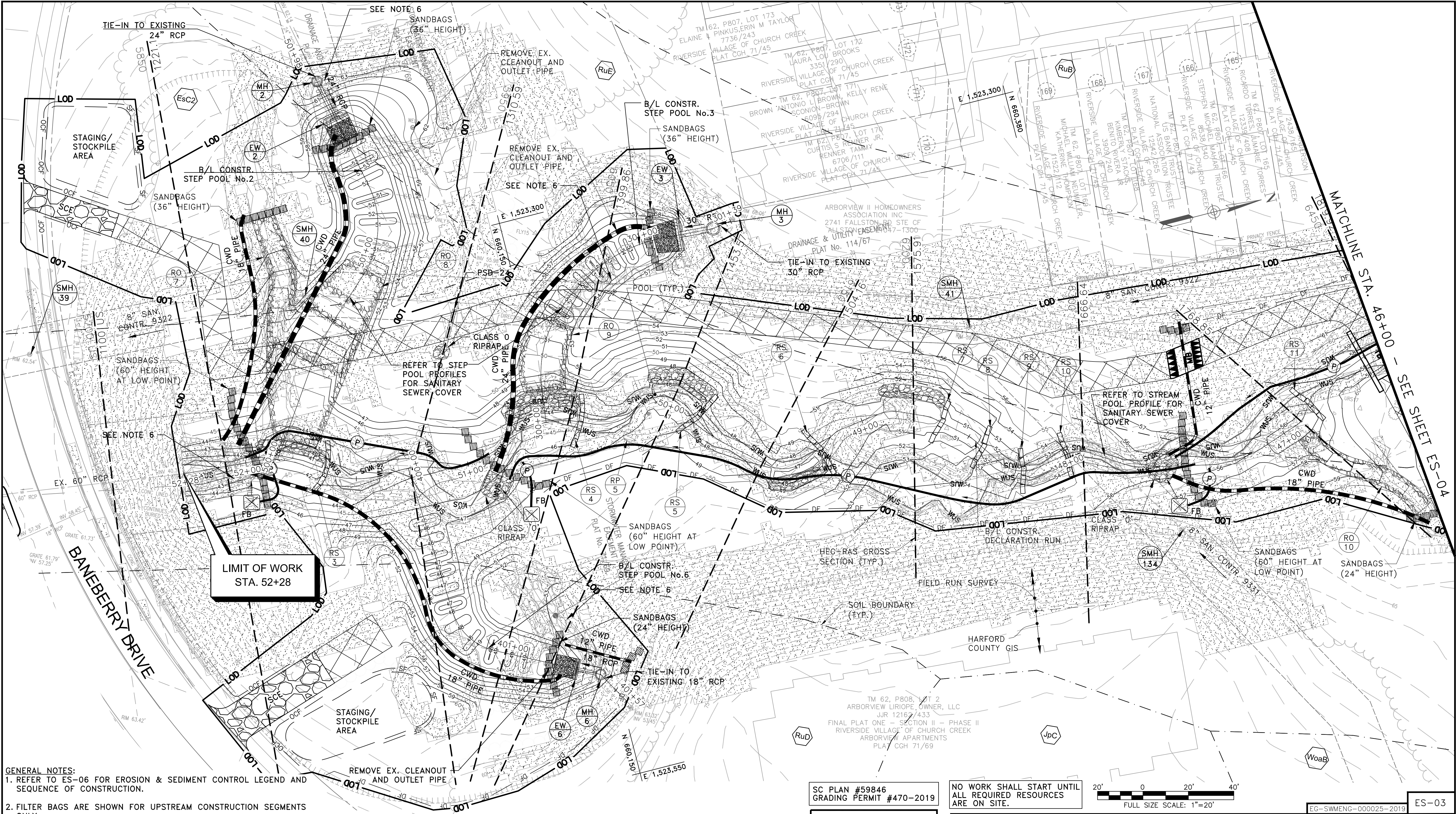
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REVISIONS		HARFORD COUNTY, MARYLAND	
		DECLARATION RUN STREAM RESTORATION EROSION & SEDIMENT CONTROL PLAN	
DRAWN BY : BJK		CONTRACT NO : 97040	
DESIGNED BY : NJF		SCALE : 1"=20'	
REVIEWED BY : DTM		SHEET 21 OF 48	
		DATE : MARCH, 2022	





- GENERAL NOTES:**
1. REFER TO ES-06 FOR EROSION & SEDIMENT CONTROL LEGEND AND SEQUENCE OF CONSTRUCTION.
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LEGEND				
	45	PROPOSED CONTOUR		PROPERTY LINE (GIS BASED)
	45	EXISTING CONTOUR		LIMIT OF DISTURBANCE
		WETLAND		EXISTING 100-YR FLOODPLAIN
	B	WETLAND BUFFER		EXISTING METAL FENCE
	S	EXISTING SANITARY SEWER		EXISTING WOOD FENCE
	25"	SIGNIFICANT TREE (>24" DIA)		SOIL BOUNDARY LINE
				SLOPES GREATER THAN 15%

SC PLAN #59846
GRADING PERMIT #470-2019

PROFESSIONAL CERTIFICATION
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AECOM

NO WORK SHALL START UNTIL ALL REQUIRED RESOURCES ARE ON SITE.

REVISIONS

20' 0 20' 40'
FULL SIZE SCALE: 1"=20'

HARFORD COUNTY, MARYLAND

DECLARATION RUN STREAM RESTORATION

EROSION & SEDIMENT CONTROL PLAN

DRAWN BY : BJK

DESIGNED BY : NJF

REVIEWED BY : DTM

CONTRACT NO : 97040

SCALE : 1"=20'

SHEET 23 OF 48

DATE : MARCH, 2022



- GENERAL NOTES:**
1. REFER TO ES-06 FOR EROSION & SEDIMENT CONTROL LEGEND AND SEQUENCE OF CONSTRUCTION.
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- LEGEND**
- 45 — PROPOSED CONTOUR
 - - - 45 - - - EXISTING CONTOUR
 - WETLAND
 - B - WETLAND BUFFER
 - S - S - EXISTING SANITARY SEWER
 - 25" SIGNIFICANT TREE (>24" DIA)
 - - - - - PROPERTY LINE (GIS BASED)
 - LOD - LIMIT OF DISTURBANCE
 - ||||| EXISTING 100-YR FLOODPLAIN
 - x - EXISTING METAL FENCE
 - // - EXISTING WOOD FENCE
 - - - - - SOIL BOUNDARY LINE
 - SOLOPS GREATER THAN 15%

NO WORK SHALL START UNTIL ALL REQUIRED RESOURCES ARE ON SITE.

SC PLAN #59846
GRADING PERMIT #470-2019

PROFESSIONAL CERTIFICATION
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AECOM



REVISIONS

HARFORD COUNTY, MARYLAND

**DECLARATION RUN STREAM RESTORATION
EROSION & SEDIMENT CONTROL PLAN**

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

CONTRACT NO : 97040

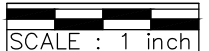
SCALE : 1"=20'

SHEET 24 OF 48

DATE : MARCH, 2022

ES-04

EG-SWMENG-000025-2019





SOIL BOUNDARY (TYP.)

EXISTING SHA STORMWATER
MANAGEMENT POND
H 805-501-471
FAP 1X95-5(62)80

SANDBAGS AT FENCE
(60" HEIGHT AT LOW POINT)
AT THE FENCE LINE

PLACE CLASS 2
RIPRAP TO MEET
EXISTING RIPRAP

APPROXIMATE
LIMIT OF WORK
STA. 36+40±

SEE NOTE 6

REMOVE AND REPLACE CHAIN
LINK FENCE AS NECESSARY TO
ACCOMMODATE CONSTRUCTION

DO NOT DISTURB
TREE

DO NOT DISTURB
TREE

STAGING/STOCKPILE AREA

FIELD RUN SURVEY

HARFORD
COUNTY GIS

SITE ACCESS FROM
DALMATION PLACE

SANDBAGS
(24" MIN. HEIGHT)
MEET EXISTING
RIPRAP

DO NOT DISTURB
TREE

DO NOT DISTURB
TREE

CLASS 0
RIPRAP

SANDBAG
(60" HEIGHT
AT LOW POINT)

MATCHLINE STA. 40+00 - SEE SHEET ES-04

MATCHLINE-THIS SHEET

TM 62, P808/ LOT 2
ARBORVIEW LRIPOPE OWNER, LLC
JLR 12162/433
FINAL PLAT ONE - SECTION II - PHASE II
RIVERSIDE VILLAGE OF CHURCH CREEK
ARBORVIEW APARTMENTS
PLAT CGH-71/69

LEGEND

- 45 PROPOSED CONTOUR
- 45 EXISTING CONTOUR
- WETLAND
- B WETLAND BUFFER
- S-S EXISTING SANITARY SEWER
- 5" SIGNIFICANT TREE (>24" DIA)
- PROPERTY LINE (GIS BASED)
- LOD LIMIT OF DISTURBANCE
- EXISTING 100-YR FLOODPLAIN
- X-X EXISTING METAL FENCE
- // EXISTING WOOD FENCE
- SOIL BOUNDARY LINE
- SLOPES GREATER THAN 15%

NO WORK SHALL START UNTIL
ALL REQUIRED RESOURCES
ARE ON SITE.

SC PLAN #59846
GRADING PERMIT #470-2019

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LICENSE NO. 16156
EXPIRATION DATE: 8/28/2022

AECOM

20' 0 20' 40'
FULL SIZE SCALE: 1"=20'

EG-SWMENG-000025-2019 ES-05

GENERAL NOTES:

- REFER TO ES-06 FOR EROSION & SEDIMENT CONTROL LEGEND AND SEQUENCE OF CONSTRUCTION.
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- CONTRACTOR SHALL ENSURE POSITIVE FLOW ALONG DIVERSION FENCES.
- IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED OR TRACKED ONTO ADJACENT ROADWAY.
- THE CONTRACTOR SHALL NOT DISTURB MORE THAN CAN BE STABILIZED IN ONE DAY. LIMITS OF MAINTENANCE OF STREAM FLOW MAY BE SHORTER THAN SHOWN TO ACCOMMODATE A ONE DAY WORK TIME FRAME.
- REMOVE, SALVAGE AND REINSTALL EXISTING RIPRAP AFTER CLEAR WATER DEVICES ARE IN PLACE. SUPPLEMENT WITH APPROPRIATE CLASS OF RIPRAP NOTED ON DETAIL 6 ON SHEET TD-03.

REVISIONS

HARFORD COUNTY, MARYLAND

DECLARATION RUN STREAM RESTORATION
EROSION & SEDIMENT CONTROL PLAN

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

CONTRACT NO : 97040

SCALE : 1"=20'

SHEET 25 OF 48

DATE : MARCH, 2022

SEQUENCE OF CONSTRUCTION

NOTE THAT SOME SEQUENCE STEPS MAY BE PERFORMED CONCURRENTLY WITH THE APPROVAL OF THE COUNTY INSPECTOR. THE SEQUENCE IS BASED ON THE UPSTREAM SEGMENT (UPSTREAM OF BANEBERRY DRIVE) BEING CONSTRUCTED FIRST, THEN DOWNSTREAM OF BANEBERRY DRIVE. EACH SEGMENT SHOULD BE CONSTRUCTED UPSTREAM TO DOWNSTREAM.

1. CONTACT MISS UTILITY 72 HOURS PRIOR TO THE START OF WORK AT 1-800-257-7777. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REFERENCE AND MAINTAIN UTILITY LOCATION MARKINGS DURING CONSTRUCTION.
2. CONDUCT ON-SITE CONSTRUCTION /EROSION AND SEDIMENT CONTROL MEETING WITH DPW, THE ENGINEER AND MDE INSPECTOR PRIOR TO COMMENCING WORK. REFER TO THE EROSION AND SEDIMENT CONTROL STANDARD NOTES AND DETAILS.
3. INSTALL STABILIZED CONSTRUCTION ENTRANCES (SCE) AT THE LOCATIONS INDICATED. INSTALL ORANGE CONSTRUCTION FENCE AS SHOWN AND AS DIRECTED BY THE COUNTY INSPECTOR.
4. NOTE THAT CLEAR WATER DIVERSION PIPES ARE SHOWN FOR GRAPHICAL PURPOSES ONLY. THE PIPE WILL NEED TO BE SHIFTED AS NECESSARY TO ACCOMMODATE CONSTRUCTION. DURING DRY WEATHER PERIODS, THE PIPES MAY BE MOVED AWAY FROM THE WORK ZONE AND RESET AT THE END OF EACH WORK DAY. PUMP-AROUND PRACTICES SHALL BE USED DURING THE WORK DAY IF FLOWS ARE ENCOUNTERED DURING CONSTRUCTION.
5. BEGIN CLEARING AND GRUBBING FOR THE 12' MINIMUM WIDTH TIMBER MAT ACCESS ROADS, TEMPORARY BRIDGES AND PERIMETER EROSION AND SEDIMENT CONTROL DEVICES BEGINNING AT THE UPSTREAM SEGMENT IN THE RECOMMENDED SEQUENCE. CONSTRUCTION SEGMENTS MAY BE ADJUSTED WITH THE APPROVAL OF THE COUNTY INSPECTOR. ADJUST TEMPORARY BRIDGES TO FACILITATE CONSTRUCTION.
6. THE FOLLOWING SEQUENCE STATION LIMITS MAY BE ADJUSTED BASED ON WORK PROGRESS WITH APPROVAL FROM THE COUNTY INSPECTOR:

a. STATION 36+40± TO 39+95:

- i. INSTALL CLEAR WATER DIVERSION PIPE, SANDBAG DIKES, FILTER BAG, AND INCIDENTALS AS SHOWN ON DETAIL C-6 (CLEAR WATER DIVERSION PIPE).
- ii. INSTALL DIVERSION FENCING (MAINTAIN POSITIVE DRAINAGE). PLACE CLASS 'O' RIPRAP (5' x 5') AT THE OUTFALL OF THE FILTER BAG AT STATION 40+00.
- iii. BEGINNING UPSTREAM TO DOWNSTREAM, BEGIN STREAM GRADING, CONSTRUCTION OF ROCK SILLS, PLACEMENT OF RIFFLE GRADE CONTROL MIX, TOPSOIL, SEED AND MULCH, TYPE 'D' SOIL STABILIZATION, AND PLANTINGS.
- iv. ONCE PERMANENT STABILIZATION MEASURES ARE IN PLACE, REMOVE AND SALVAGE THE CLEAR WATER DIVERSION PIPE FOR LATER USE, REMOVE THE DIVERSION FENCE, REMOVE THE FILTER BAG AND COMPLETE FINAL STABILIZATION.
- v. REMOVE AND STABILIZE AREA USED FOR TIMBER MAT ACCESS ROAD.

b. STATION 39+95 TO 42+50:

- i. MONITOR UPSTREAM SEGMENT FOR CONTINUED STABILITY. RESTABILIZE AREAS AS WARRANTED.
- ii. INSTALL PUMP-AROUND PRACTICE FOR RIPRAP INFLOW CHANNEL, STATION 40+00 LEFT.
- iii. INSTALL CLEAR WATER DIVERSION PIPE, SANDBAG DIKES, FILTER BAG, AND INCIDENTALS AS SHOWN ON DETAIL C-6 (CLEAR WATER DIVERSION PIPE). ADJUST UPSTREAM SANDBAGS AS REQUIRED TO ACCOMMODATE CONSTRUCTION. REMOVE AND SALVAGE THE 30" CLEAR WATER DIVERSION PIPE FOR LATER USE.
- iv. INSTALL DIVERSION FENCING (MAINTAIN POSITIVE DRAINAGE). PLACE CLASS 'O' RIPRAP (5' x 10') AT THE OUTFALL OF THE FILTER BAG AND CWD PIPE AT STATION 42+50.
- v. BEGINNING UPSTREAM TO DOWNSTREAM, BEGIN STREAM GRADING, CONSTRUCTION OF ROCK SILLS, IMBRICATED ROCK WALL, PLACEMENT OF RIFFLE GRADE CONTROL MIX, TOPSOIL, SEED AND MULCH, TYPE 'D' SOIL STABILIZATION, AND PLANTINGS.
- vi. ONCE PERMANENT STABILIZATION MEASURES ARE IN PLACE, REMOVE AND SALVAGE THE CLEAR WATER DIVERSION PIPE FOR LATER USE, REMOVE THE DIVERSION FENCE, REMOVE THE FILTER BAG AND COMPLETE FINAL STABILIZATION.
- vii. REMOVE AND STABILIZE AREA USED FOR TIMBER MAT ACCESS ROAD.

c. STATION 42+50 TO 44+00:

- i. MONITOR RECENTLY COMPLETED UPSTREAM SEGMENTS FOR CONTINUED STABILITY. RESTABILIZE AREAS AS WARRANTED.
- ii. INSTALL CLEAR WATER DIVERSION PIPE, SANDBAG DIKES, FILTER BAG, AND INCIDENTALS AS SHOWN ON DETAIL C-6 (CLEAR WATER DIVERSION PIPE). ADJUST UPSTREAM SANDBAGS AS REQUIRED TO ACCOMMODATE CONSTRUCTION.
- iii. INSTALL DIVERSION FENCING (MAINTAIN POSITIVE DRAINAGE). PLACE CLASS 'O' RIPRAP (5' x 20') AT THE OUTFALL OF THE FILTER BAG AND CWD PIPE AT STATION 44+00.
- iv. BEGINNING UPSTREAM TO DOWNSTREAM, BEGIN STREAM GRADING, CONSTRUCTION OF ROCK SILLS, J-HOOK VANES, PLACEMENT OF RIFFLE GRADE CONTROL MIX, TOPSOIL, SEED AND MULCH, TYPE 'D' SOIL STABILIZATION, AND PLANTINGS.
- v. CONCURRENTLY, CONSTRUCT RIPRAP OUTFALL AT EW-4 WITH EW-4, MH-4 AND CONNECTING PIPE DURING A 3 DAY DRY PERIOD. INSTALL SANDBAGS FOR CLEAR WATER DIVERSION AT OUTFALL OF EW-4.
- vi. BEGINNING UPSTREAM TO DOWNSTREAM, CONSTRUCT THE STEP POOL SYSTEM NO. 4.
- vii. ONCE PERMANENT STABILIZATION MEASURES ARE IN PLACE, REMOVE AND SALVAGE THE CLEAR WATER DIVERSION PIPE FOR LATER USE, REMOVE THE DIVERSION FENCE, REMOVE THE FILTER BAG AND COMPLETE FINAL STABILIZATION.
- viii. REMOVE AND STABILIZE AREA USED FOR TIMBER MAT ACCESS ROAD.

d. STATION 44+00 TO 45+88:

- i. MONITOR RECENTLY COMPLETED UPSTREAM SEGMENTS FOR CONTINUED STABILITY. RESTABILIZE AREAS AS WARRANTED.
- ii. INSTALL CLEAR WATER DIVERSION PIPE, SANDBAG DIKES, FILTER BAG, AND INCIDENTALS AS SHOWN ON DETAIL C-6 (CLEAR WATER DIVERSION PIPE). ADJUST UPSTREAM SANDBAGS AS REQUIRED TO ACCOMMODATE CONSTRUCTION.
- iii. INSTALL DIVERSION FENCING (MAINTAIN POSITIVE DRAINAGE). PLACE CLASS 'O' RIPRAP (5' x 10' x 2 EACH) AT THE OUTFALL OF THE FILTER BAG AND CWD PIPE AT STATION 45+90 +/-.
- iv. BEGINNING UPSTREAM TO DOWNSTREAM, BEGIN STREAM GRADING, CONSTRUCTION OF ROCK SILLS, J-HOOK VANES, PLACEMENT OF RIFFLE GRADE CONTROL MIX, TOPSOIL, SEED AND MULCH, TYPE 'D' SOIL STABILIZATION, AND PLANTINGS.
- v. CONCURRENTLY, CONSTRUCT RIPRAP OUTFALL AT EW-5 WITH EW-5, MH-5 AND CONNECTING PIPE DURING A 3 DAY DRY PERIOD. INSTALL SANDBAGS FOR CLEAR WATER DIVERSION AT OUTFALL OF EW-5.

- vi. BEGINNING UPSTREAM TO DOWNSTREAM, CONSTRUCT THE STEP POOL SYSTEM NO. 5.
- vii. ONCE PERMANENT STABILIZATION MEASURES ARE IN PLACE, REMOVE AND SALVAGE THE CLEAR WATER DIVERSION PIPE FOR LATER USE, REMOVE THE DIVERSION FENCE, REMOVE THE FILTER BAG AND COMPLETE FINAL STABILIZATION.

viii. REMOVE AND STABILIZE AREA USED FOR TIMBER MAT ACCESS ROAD.

e. STATION 45+88 TO 47+50:

- i. MONITOR RECENTLY COMPLETED UPSTREAM SEGMENTS FOR CONTINUED STABILITY. RESTABILIZE AREAS AS WARRANTED.
- ii. INSTALL CLEAR WATER DIVERSION PIPE, SANDBAG DIKES, FILTER BAG, AND INCIDENTALS AS SHOWN ON DETAIL C-6 (CLEAR WATER DIVERSION PIPE). ADJUST UPSTREAM SANDBAGS AS REQUIRED TO ACCOMMODATE CONSTRUCTION.
- iii. INSTALL DIVERSION FENCING (MAINTAIN POSITIVE DRAINAGE). PLACE CLASS 'O' RIPRAP (10' x 10') AT THE OUTFALL OF THE FILTER BAG AND CWD PIPE AT STATION 47+50 +/-.
- iv. BEGINNING UPSTREAM TO DOWNSTREAM, BEGIN STREAM GRADING, CONSTRUCTION OF ROCK SILL, PLACEMENT OF RIFFLE GRADE CONTROL MIX, TOPSOIL, SEED AND MULCH, TYPE 'D' SOIL STABILIZATION, AND PLANTINGS.
- v. CONCURRENTLY, CONSTRUCT RIPRAP OUTFALL AT STATION 47+00 LEFT DURING A 3 DAY DRY PERIOD. INSTALL SANDBAGS FOR CLEAR WATER DIVERSION AT STATION 46+80 LEFT IN THE EVENT FLOWS ARE ENCOUNTERED.
- vi. ONCE PERMANENT STABILIZATION MEASURES ARE IN PLACE, REMOVE AND SALVAGE THE CLEAR WATER DIVERSION PIPE FOR LATER USE, REMOVE THE DIVERSION FENCE, REMOVE THE FILTER BAG AND COMPLETE FINAL STABILIZATION.
- vii. REMOVE AND STABILIZE AREA USED FOR TIMBER MAT ACCESS ROAD.

f. STATION 47+50 TO 50+90 +/-:

- i. MONITOR RECENTLY COMPLETED UPSTREAM SEGMENTS FOR CONTINUED STABILITY. RESTABILIZE AREAS AS WARRANTED.
- ii. INSTALL CLEAR WATER DIVERSION PIPE, SANDBAG DIKES, FILTER BAG, AND INCIDENTALS AS SHOWN ON DETAIL C-6 (CLEAR WATER DIVERSION PIPE). ADJUST UPSTREAM SANDBAGS AS REQUIRED TO ACCOMMODATE CONSTRUCTION.
- iii. INSTALL DIVERSION FENCING (MAINTAIN POSITIVE DRAINAGE). PLACE CLASS 'O' RIPRAP (6' x 12') AT THE OUTFALL OF THE FILTER BAG AND CWD PIPE AT STATION 51+00 +/-.
- iv. BEGINNING UPSTREAM TO DOWNSTREAM, BEGIN STREAM GRADING, CONSTRUCTION OF ROCK SILLS, J-HOOK VANES, PLACEMENT OF RIFFLE GRADE CONTROL MIX, TOPSOIL, SEED AND MULCH, TYPE 'D' SOIL STABILIZATION, AND PLANTINGS.
- v. ONCE PERMANENT STABILIZATION MEASURES ARE IN PLACE, REMOVE AND SALVAGE THE CLEAR WATER DIVERSION PIPE FOR LATER USE, REMOVE THE DIVERSION FENCE, REMOVE THE FILTER BAG AND COMPLETE FINAL STABILIZATION.
- vi. REMOVE AND STABILIZE AREA USED FOR TIMBER MAT ACCESS ROAD EXCEPT AS NEEDED TO CONSTRUCT STEP POOL SYSTEM NO. 3.

g. STATION 50+90 +/- TO 52+28±:

- i. MONITOR RECENTLY COMPLETED UPSTREAM SEGMENTS FOR CONTINUED STABILITY. RESTABILIZE AREAS AS WARRANTED.
- ii. INSTALL CLEAR WATER DIVERSION PIPE, SANDBAG DIKES, FILTER BAG, AND INCIDENTALS AS SHOWN ON DETAIL C-6 (CLEAR WATER DIVERSION PIPE). ADJUST UPSTREAM SANDBAGS AS REQUIRED TO ACCOMMODATE CONSTRUCTION.
- iii. INSTALL DIVERSION FENCING (MAINTAIN POSITIVE DRAINAGE).
- iv. BEGINNING UPSTREAM TO DOWNSTREAM, BEGIN STREAM GRADING, CONSTRUCTION OF ROCK SILLS, J-HOOK VANES, PLACEMENT OF RIFFLE GRADE CONTROL MIX, TOPSOIL, SEED AND MULCH, TYPE 'D' SOIL STABILIZATION, AND PLANTINGS.
- v. CONCURRENTLY, CONSTRUCT RIPRAP OUTFALL AT EW-6 WITH EW-6, MH-6 AND CONNECTING PIPE DURING A 3 DAY DRY PERIOD. INSTALL SANDBAGS FOR CLEAR WATER DIVERSION AT OUTFALL OF EW-6.
- vi. BEGINNING UPSTREAM TO DOWNSTREAM, CONSTRUCT THE STEP POOL SYSTEM NO. 6.
- vii. DURING A 3-DAY DRY PERIOD, INSTALL RIPRAP INFLOW TO EXISTING 60' RCP. USE PUMP-AROUND PRACTICE IF STREAM FLOWS ARE ENCOUNTERED DURING INSTALLATION.
- viii. ONCE PERMANENT STABILIZATION MEASURES ARE IN PLACE, REMOVE AND SALVAGE THE CLEAR WATER DIVERSION PIPE FOR LATER USE, REMOVE THE DIVERSION FENCE, REMOVE THE FILTER BAG AND COMPLETE FINAL STABILIZATION.
- ix. REMOVE AND STABILIZE AREA USED FOR TIMBER MAT ACCESS ROAD EXCEPT AS NEEDED TO CONSTRUCT STEP POOL SYSTEM NO. 2.

h. STEP POOL SYSTEM NO. 2 AND 3:

- i. CONCURRENTLY, CONSTRUCT RIPRAP OUTFALL AT EW-3 WITH EW-3, MH-3 AND CONNECTING PIPE DURING A 3 DAY DRY PERIOD. INSTALL SANDBAGS FOR CLEAR WATER DIVERSION AT OUTFALL OF EW-3.
- ii. BEGINNING UPSTREAM TO DOWNSTREAM, CONSTRUCT THE STEP POOL SYSTEM NO. 3.
- iii. CONCURRENTLY, CONSTRUCT RIPRAP OUTFALL AT EW-2 WITH EW-2, MH-2 AND CONNECTING PIPE DURING A 3 DAY DRY PERIOD. INSTALL SANDBAGS FOR CLEAR WATER DIVERSION AT OUTFALL OF EW-2.
- iv. BEGINNING UPSTREAM TO DOWNSTREAM, CONSTRUCT THE STEP POOL SYSTEM NO. 2.
- v. ONCE THE STEP POOL SYSTEMS ARE STABILIZED, REMOVE CLEAR WATER DIVERSIONS AND COMPLETE FINAL STABILIZATION.
- vi. REMOVE AND RESTABILIZE AREA USED FOR TIMBER MAT ACCESS ROAD AND COMPLETE FINAL STABILIZATION.

7. BEGIN CLEARING AND GRUBBING FOR THE 12' MINIMUM WIDTH TIMBER MAT ACCESS ROADS AND PERIMETER EROSION AND SEDIMENT CONTROL DEVICES BEGINNING AT THE DOWNSTREAM SEGMENT IN THE RECOMMENDED SEQUENCE. CONSTRUCTION SEGMENTS MAY BE ADJUSTED WITH THE APPROVAL OF THE COUNTY INSPECTOR
8. THE FOLLOWING SEQUENCE STATION LIMITS MAY BE ADJUSTED BASED ON WORK PROGRESS WITH THE APPROVAL FROM THE COUNTY INSPECTOR:

a. STATION 1+20 TO 3+25:

- vi. MONITOR RECENTLY COMPLETED UPSTREAM SEGMENTS FOR CONTINUED STABILITY. RESTABILIZE AREAS AS WARRANTED.
- ii. CLEAN ACCUMULATED SEDIMENT WITHIN THE EXISTING 60" RCP.
- iii. INSTALL CLEAR WATER DIVERSION PIPE, SANDBAG DIKES, FILTER BAG, AND INCIDENTALS AS SHOWN ON DETAIL C-6 (CLEAR WATER DIVERSION PIPE). ADJUST UPSTREAM SANDBAGS AS REQUIRED TO ACCOMMODATE CONSTRUCTION.
- iv. INSTALL DIVERSION FENCING (MAINTAIN POSITIVE DRAINAGE). PLACE CLASS 'O' RIPRAP (8' x 15') AT THE OUTFALL OF THE FILTER BAG AND CWD PIPE AT STATION 3+40 +/-.

- v. BEGINNING UPSTREAM TO DOWNSTREAM, BEGIN STREAM GRADING, CONSTRUCTION OF ROCK SILLS, J-HOOK VANES, PLACEMENT OF RIFFLE GRADE CONTROL MIX, TOPSOIL, SEED AND MULCH, TYPE 'D' SOIL STABILIZATION, AND PLANTINGS.
 - vi. CONCURRENTLY, CONSTRUCT RIPRAP OUTFALL AT EW-1, EW-1, MH-1 AND CONNECTING PIPE DURING A 3 DAY DRY PERIOD. INSTALL SANDBAGS FOR CLEAR WATER DIVERSION AT OUTFALL OF EW-1. CONSTRUCT RIPRAP OUTFALL AT STA. 600+40, RT. B/L CONSTR. STEP POOL NO. 1.
 - vii. BEGINNING UPSTREAM TO DOWNSTREAM, CONSTRUCT THE STEP POOL SYSTEM NO. 1.
 - viii. ONCE PERMANENT STABILIZATION MEASURES ARE IN PLACE, REMOVE AND SALVAGE THE CLEAR WATER DIVERSION PIPE FOR LATER USE, REMOVE THE DIVERSION FENCE, REMOVE THE FILTER BAG AND COMPLETE FINAL STABILIZATION.
 - ix. REMOVE AND STABILIZE AREA USED FOR TIMBER MAT ACCESS ROAD.
- b. STATION 3+25 TO 6+35:
- i. MONITOR UPSTREAM SEGMENT FOR CONTINUED STABILITY. RESTABILIZE AREAS AS WARRANTED.
 - ii. INSTALL CLEAR WATER DIVERSION PIPE, SANDBAG DIKES, FILTER BAG, AND INCIDENTALS AS SHOWN ON DETAIL C-6 (CLEAR WATER DIVERSION PIPE). ADJUST UPSTREAM SANDBAGS AS REQUIRED TO ACCOMMODATE CONSTRUCTION. REMOVE AND SALVAGE THE 30" CLEAR WATER DIVERSION PIPE FOR LATER USE.
 - iii. INSTALL DIVERSION FENCING (MAINTAIN POSITIVE DRAINAGE). PLACE CLASS 'O' RIPRAP (5' x 10') AT THE OUTFALL OF THE FILTER BAG AND CWD PIPE AT STATION 6+45 +/-.
 - iv. BEGINNING UPSTREAM TO DOWNSTREAM, BEGIN STREAM GRADING, CONSTRUCTION OF ROCK SILLS, IMBRICATED ROCK WALL, PLACEMENT OF RIFFLE GRADE CONTROL MIX, TOPSOIL, SEED AND MULCH, TYPE 'D' SOIL STABILIZATION, AND PLANTINGS.
 - v. ONCE PERMANENT STABILIZATION MEASURES ARE IN PLACE, REMOVE AND SALVAGE THE CLEAR WATER DIVERSION PIPE FOR LATER USE, REMOVE THE DIVERSION FENCE, REMOVE THE FILTER BAG AND COMPLETE FINAL STABILIZATION.
 - vi. REMOVE AND STABILIZE AREA USED FOR TIMBER MAT ACCESS ROAD.
- c. STATION 6+35 TO 8+55:
- i. MONITOR UPSTREAM SEGMENT FOR CONTINUED STABILITY. RESTABILIZE AREAS AS WARRANTED.
 - ii. INSTALL CLEAR WATER DIVERSION PIPE, SANDBAG DIKES, FILTER BAG, AND INCIDENTALS AS SHOWN ON DETAIL C-6 (CLEAR WATER DIVERSION PIPE). ADJUST UPSTREAM SANDBAGS AS REQUIRED TO ACCOMMODATE CONSTRUCTION. REMOVE AND SALVAGE THE 30" CLEAR WATER DIVERSION PIPE FOR LATER USE.
 - iii. INSTALL DIVERSION FENCING (MAINTAIN POSITIVE DRAINAGE). PLACE CLASS 'O' RIPRAP (5' x 10') AT THE OUTFALL OF THE FILTER BAG AND CWD PIPE AT STATION 8+65 +/-.
 - iv. BEGINNING UPSTREAM TO DOWNSTREAM, BEGIN STREAM GRADING, CONSTRUCTION OF ROCK SILLS, IMBRICATED ROCK WALL, PLACEMENT OF RIFFLE GRADE CONTROL MIX, TOPSOIL, SEED AND MULCH, TYPE 'D' SOIL STABILIZATION, AND PLANTINGS.
 - v. ONCE PERMANENT STABILIZATION MEASURES ARE IN PLACE, REMOVE AND SALVAGE THE CLEAR WATER DIVERSION PIPE FOR LATER USE, REMOVE THE DIVERSION FENCE, REMOVE THE FILTER BAG AND COMPLETE FINAL STABILIZATION.
 - vi. REMOVE AND STABILIZE AREA USED FOR TIMBER MAT ACCESS ROAD.
- d. STATION 8+55 TO 10+75:
- i. MONITOR UPSTREAM SEGMENT FOR CONTINUED STABILITY. RESTABILIZE AREAS AS WARRANTED.
 - ii. INSTALL CLEAR WATER DIVERSION PIPE, SANDBAG DIKES, FILTER BAG, AND INCIDENTALS AS SHOWN ON DETAIL C-6 (CLEAR WATER DIVERSION PIPE). ADJUST UPSTREAM SANDBAGS AS REQUIRED TO ACCOMMODATE CONSTRUCTION. REMOVE AND SALVAGE THE 30" CLEAR WATER DIVERSION PIPE FOR LATER USE.
 - iii. INSTALL DIVERSION FENCING (MAINTAIN POSITIVE DRAINAGE). PLACE CLASS 'O' RIPRAP (10' x 10') AT THE OUTFALL OF THE FILTER BAG AND CWD PIPE AT STATION 10+75 +/-.
 - iv. BEGINNING UPSTREAM TO DOWNSTREAM, BEGIN STREAM GRADING, CONSTRUCTION OF ROCK SILLS, IMBRICATED ROCK WALL, PLACEMENT OF RIFFLE GRADE CONTROL MIX, TOPSOIL, SEED AND MULCH, TYPE 'D' SOIL STABILIZATION, AND PLANTINGS.
 - v. ONCE PERMANENT STABILIZATION MEASURES ARE IN PLACE, REMOVE AND SALVAGE THE CLEAR WATER DIVERSION PIPE FOR LATER USE, REMOVE THE DIVERSION FENCE, REMOVE THE FILTER BAG AND COMPLETE FINAL STABILIZATION.
 - vi. REMOVE AND STABILIZE AREA USED FOR TIMBER MAT ACCESS ROAD.
9. WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, REMOVE ALL REMAINING EROSION AND SEDIMENT CONTROL MEASURES AND DEVICES. COMPLETE FINAL STABILIZATION.

LEGEND

	MOUNTABLE BERM		PROPOSED STORM DRAIN PIPE
	TEMPORARY ACCESS BRIDGE		FLOW DIRECTION
	CONSTRUCTION ACCESS ROAD		EXISTING 100-YEAR FLOOD PLAIN
	PUMP AROUND PRACTICE		PROPOSED CONTOURS
	STABILIZED CONSTRUCTION ENTRANCE		EXISTING CONTOURS
	FILTER BAG W/ HOSE ON MULCH		LIMIT OF FIELD RUN SURVEY
	SANDBAGS		LIMIT OF DISTURBANCE (LOD)
	TREE REMOVAL (SEE PLANTING PLANS)		ORANGE CONSTRUCTION FENCE (OCF)
	TREE TRUNK PROTECTION		SILT FENCE (SF)
	STEEP SLOPES >15%		DIVERSION FENCE (DF)
			TREE ROOT PRUNING
			WATERS OF THE U.S.
			WETLAND
			SOIL BOUNDARY

SC PLAN #59846
GRADING PERMIT #470-2019

PROFESSIONAL CERTIFICATION
"I HEREBY CERTIFY THAT 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. 16156
EXPIRATION DATE: 8/28/2022

AECOM

REVISIONS

HARFORD COUNTY, MARYLAND

DECLARATION RUN STREAM RESTORATION
EROSION & SEDIMENT CONTROL LEGEND &
SEQUENCE OF CONSTRUCTON

DRAWN BY : CDF

DESIGNED BY : NJF

REVIEWED BY : DTM

CONTRACT NO : 97040

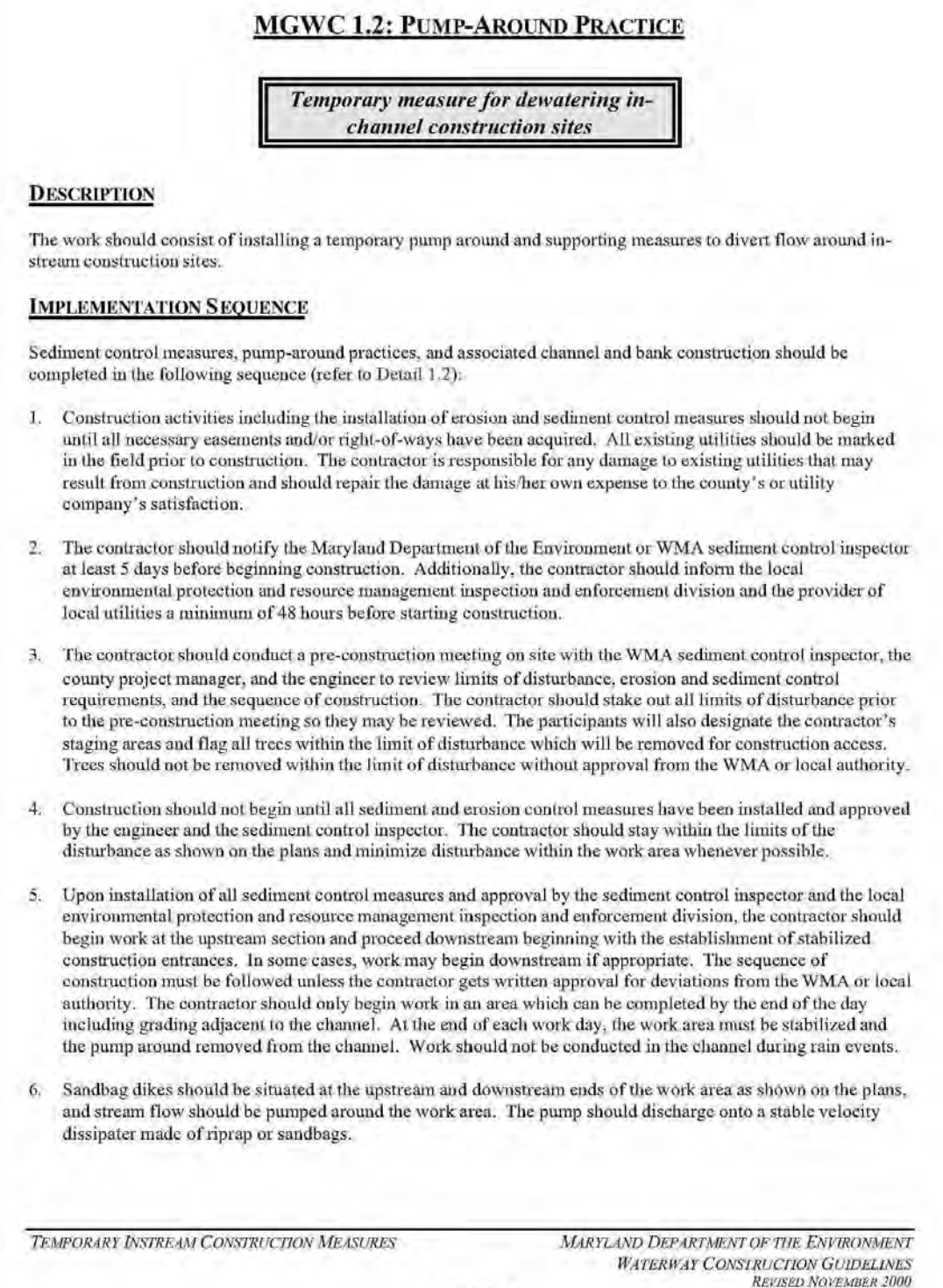
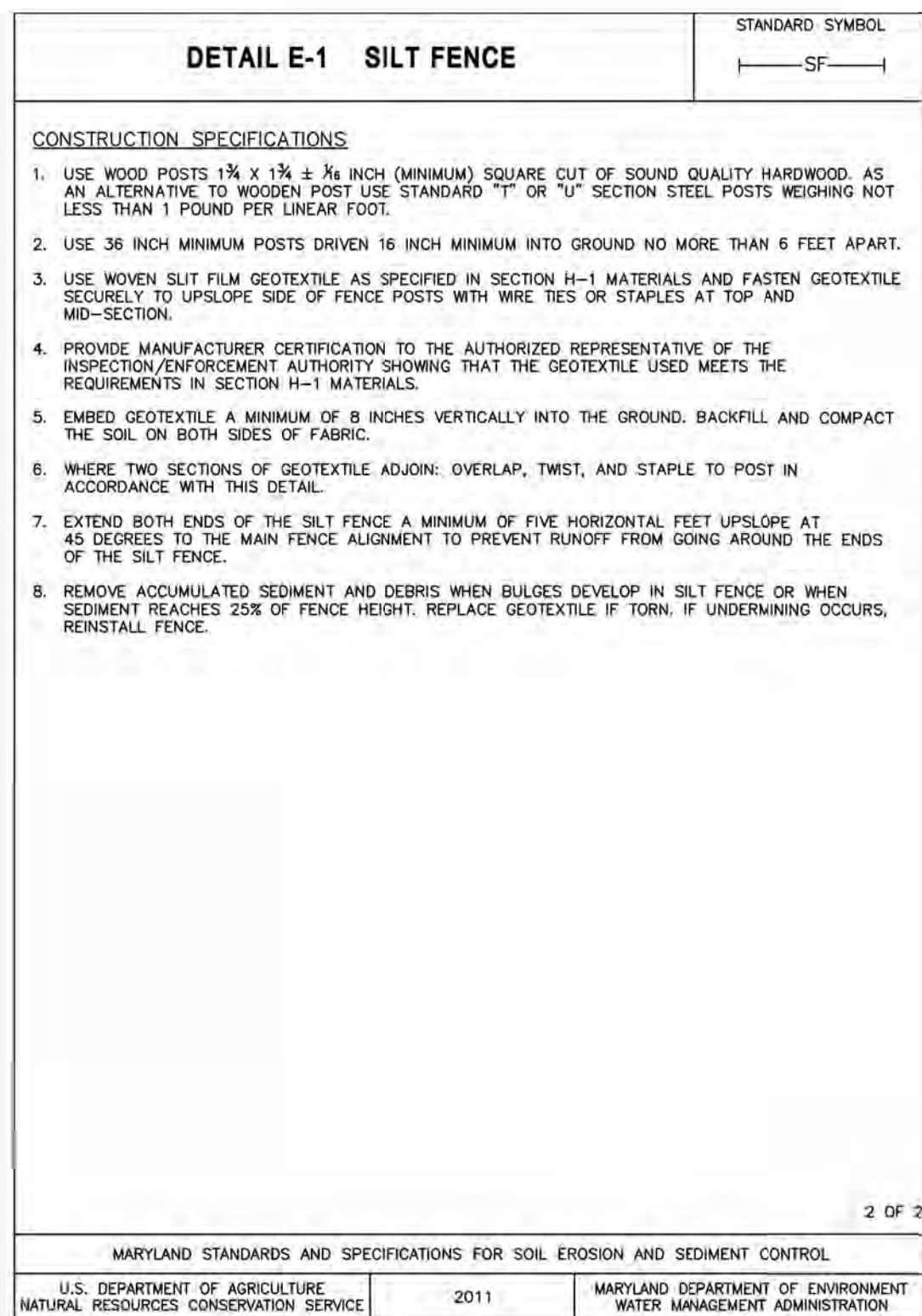
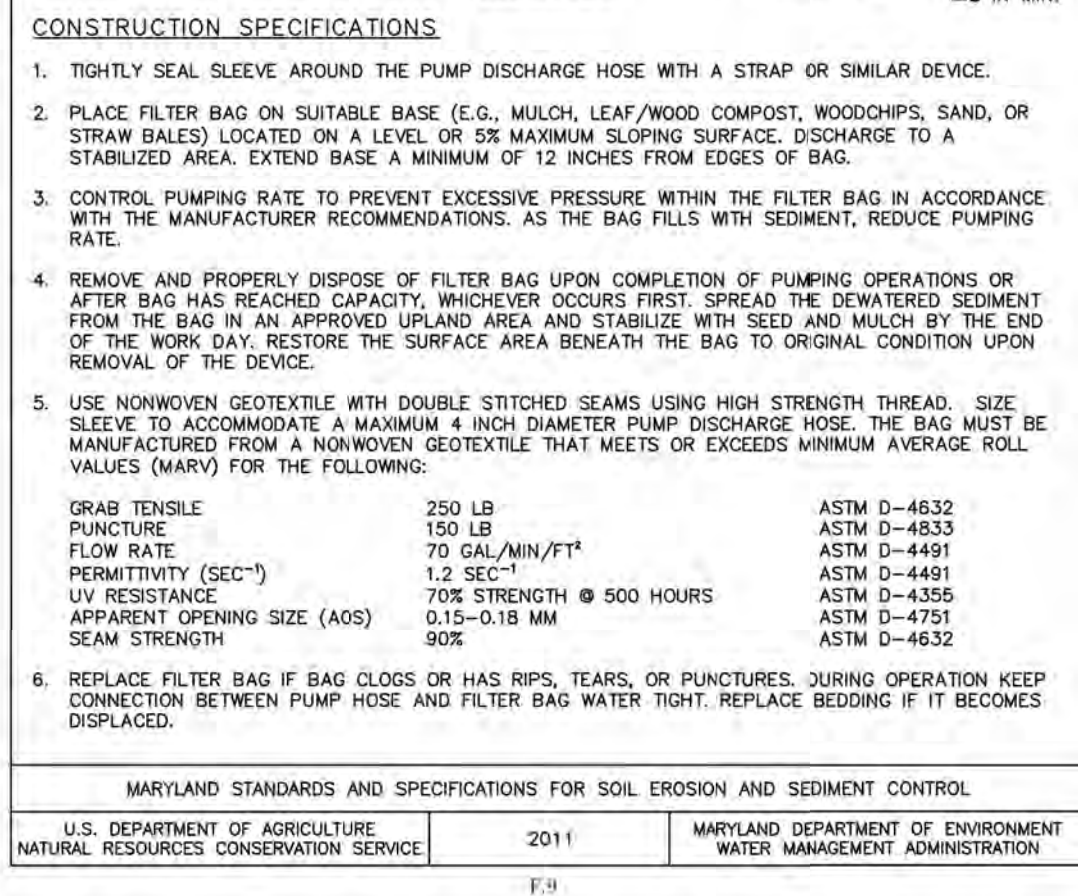
SCALE : NTS

SHEET 26 OF 48

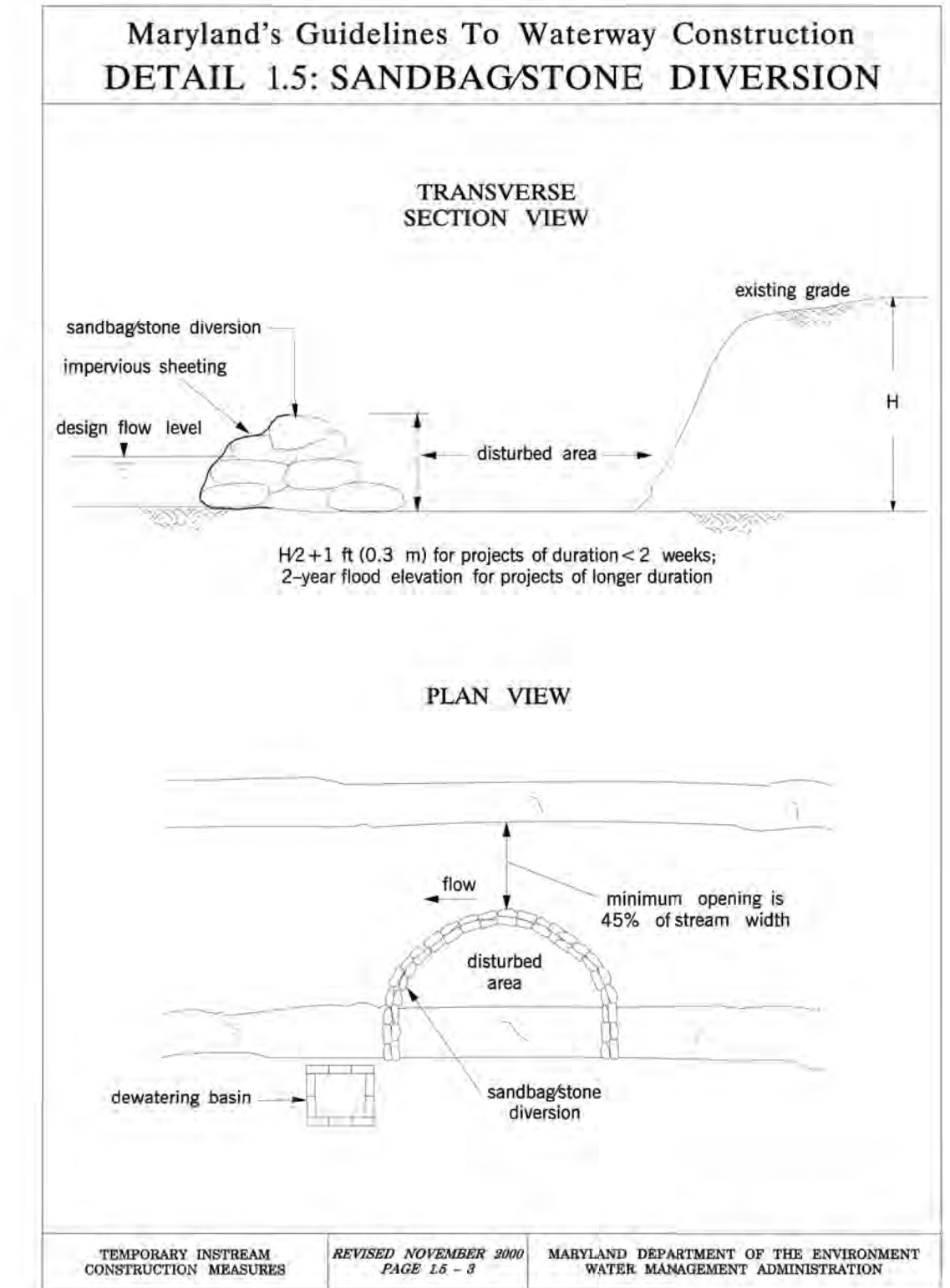
DATE : MARCH, 2022

ES-06

EG-SWMENG-000025-2019



- ## MGWC 1.2: PUMP-AROUND PRACTICE



SC PLAN #59846
GRADING PERMIT #470-2019

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT 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. 16156 EXPIRATION DATE: 8/28/2022

SITE ANALYSIS
(NOT FOR BIDDING PURPOSES)

TOTAL DISTURBED AREA	<u>7.079 ACRES</u>
TOTAL AREA TO BE PAVED	<u>0.00 ACRES</u>
TOTAL CUT	<u>6.950 CU. YD.</u>
TOTAL FILL	<u>4.475 CU. YD.</u>
NPDES I.D. POINT	N 659,846.3063 E 1,523,352.7684

AECOM

REVISIONS

HARFORD COUNTY, MARYLAND

DECLARATION RUN STREAM RESTORATION EROSION & SEDIMENT CONTROL DETAILS

DRAWN BY : _____ CDF

DESIGNED BY : _____ NJF

REVIEWED BY : _____ DTM

CONTRACT NO : 97040

SCALE : NTS

SHEET 27 OF 48

DATE : MARCH, 2022

ES-07

B-4 STANDARDS AND SPECIFICATIONS
FOR
VEGETATIVE STABILIZATION
Definition
Using vegetation as cover to protect exposed soil from erosion.
Purpose
To promote the establishment of vegetation on exposed soil.
Conditions Where Practice Applies
On all disturbed areas not stabilized by other methods. This specification is divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization.
Effects on Water Quality and Quantity

Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas.

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching, and vegetative establishment.

Adequate Vegetative Establishment
Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseeds within the planting season.
1. Adequate vegetative stabilization requires 95 percent groundcover.
2. If an area has less than 40 percent groundcover, reestablish following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.
3. If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.
4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

B-4-1 STANDARDS AND SPECIFICATIONS
FOR
INCREMENTAL STABILIZATION
Definition
Establishment of vegetative cover on cut and fill slopes.
Purpose
To provide timely vegetative cover on cut and fill slopes as work progresses.
Conditions Where Practice Applies
Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.
Criteria

- A. Incremental Stabilization - Cut Slopes
- Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
 - Construction sequence example (Refer to Figure B.1):
 - Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
 - Perform Phase 1 excavation, prepare seedbed, and stabilize.
 - Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
 - Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

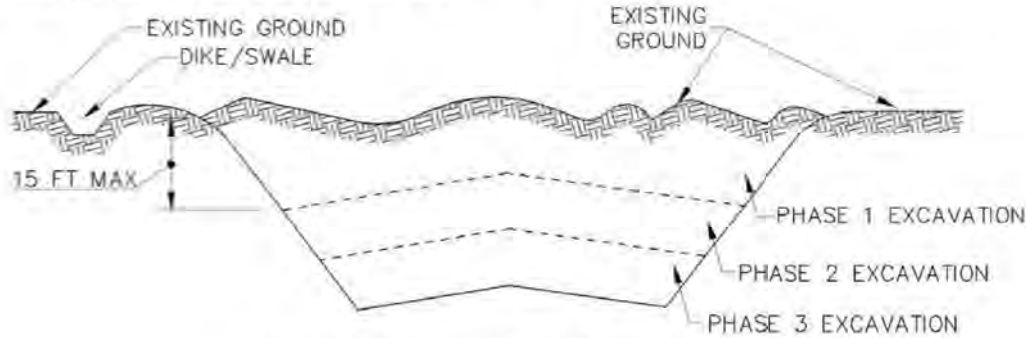


Figure B.1: Incremental Stabilization – Cut

- B. Incremental Stabilization - Fill Slopes
- Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
 - Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
 - At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
 - Construction sequence example (Refer to Figure B.2):
 - Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.
 - At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
 - Place Phase 1 fill, prepare seedbed, and stabilize.
 - Place Phase 2 fill, prepare seedbed, and stabilize.
 - Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

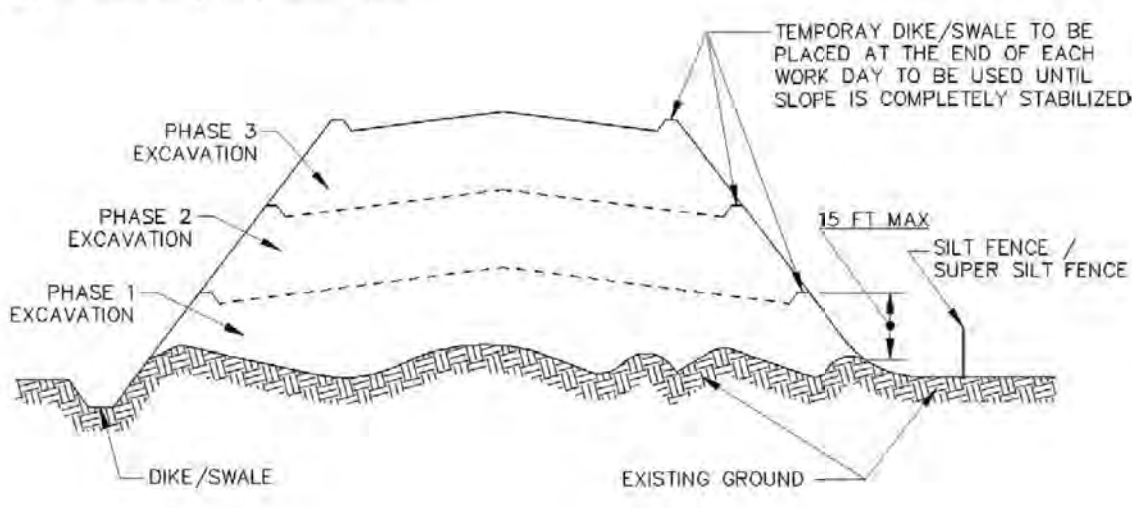


Figure B.2: Incremental Stabilization – Fill

B-4-2 STANDARDS AND SPECIFICATIONS
FOR
SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS
Definition
The process of preparing the soils to sustain adequate vegetative stabilization.
Purpose
To provide a suitable soil medium for vegetative growth.
Conditions Where Practice Applies
Where vegetative stabilization is to be established.
Criteria

- A. Soil Preparation
- Temporary Stabilization
 - Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
 - Apply fertilizer and lime as prescribed on the plans.
 - Incorporate lime and fertilizer into the top 3 to 5 inches of soil by diskimg or other suitable means.
 - Permanent Stabilization
 - A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
 - Soil pH between 6.0 and 7.0.
 - Soluble salts less than 500 parts per million (ppm).
 - Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: If lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
 - Soil contains 1.5 percent minimum organic matter by weight.
 - Soil contains sufficient pore space to permit adequate root penetration.
 - Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
 - Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.

- Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
- Mix soil amendments into the top 3 to 5 inches of soil by diskimg or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

- B. Topsoiling
- Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
 - Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
 - Topsoiling is limited to areas having 2:1 or flatter slopes where:
 - The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
 - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
 - The original soil to be vegetated contains material toxic to plant growth.
 - The soil is so acidic that treatment with limestone is not feasible.
 - Areas having slopes steeper than 2:1 require special consideration and design.
 - Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
 - Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter.
 - Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
 - Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
 - Topsoil Application
 - Erosion and sediment control practices must be maintained when applying topsoil.
 - Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
 - Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

Soil Amendments (Fertilizer and Lime Specifications)

- Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
- Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
- Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.
- Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by diskimg or other suitable means.
- Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

B-4-3 STANDARDS AND SPECIFICATIONS
FOR
SEEDING AND MULCHING
Definition
The application of seed and mulch to establish vegetative cover.
Purpose
To protect disturbed soils from erosion during and at the end of construction.
Conditions Where Practice Applies
To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.
Criteria

- A. Seeding
- Specifications
 - All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
 - Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
 - Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
 - Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phytotoxic materials.

2. Application
- Dry Seeding: This includes use of conventional drop or broadcast spreaders.
 - Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
 - Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
 - Drill or Disk Seeder Seeding: Mechanized seeders that apply and cover seed with soil.
 - Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
 - Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
 - Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
 - If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P₂O₅ (phosphorous), 200 pounds per acre; K₂O (potassium), 200 pounds per acre.
 - Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
 - Mix seed and fertilizer on site and seed immediately and without interruption.
 - When hydroseeding do not incorporate seed into the soil.

- B. Mulching
- Mulch Materials (in order of preference)
 - Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty. **Note: Use only sterile straw mulch in areas where one species of grass is desired.**
 - Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
 - WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
 - WCFM, including dye, must contain no germination or growth inhibiting factors.
 - WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
 - WCFM material must not contain elements or compounds at concentration levels that will be phytotoxic.
 - WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.

2. Application
- Apply mulch to all seeded areas immediately after seeding.
 - When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre.
 - Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
3. Anchoring
- Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard:
 - A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour.
 - Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
 - Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petrosol, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. **Use of asphalt binders is strictly prohibited.**
 - Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000 feet long.

DETAIL C-6 CLEAR WATER DIVERSION PIPE	STANDARD SYMBOL CWD - 12 DESIGNATION CWD-12 REFERS TO 12 INCH CLEAR WATER DIVERSION
CONSTRUCTION SPECIFICATIONS	
1. FLEXIBLE PIPE IS PREFERRED. HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. MAKE ALL JOINTS WATER-TIGHT.	
2. FOR SANDBAGS USE MATERIALS THAT ARE RESISTANT TO ULTRA-VIOLENT RADIATION, TEARING, AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL.	
3. USE 10 MIL OR THICKER, UV RESISTANT, IMPERMEABLE SHEETING OR OTHER APPROVED MATERIAL THAT IS IMPERMEABLE AND RESISTANT TO PUNCTURING AND TEARING.	
4. PLACE IMPERMEABLE SHEETING SUCH THAT UPGRADE PORTION OVERLAPS DOWNGRADE PORTION BY A MINIMUM OF 18 INCHES.	
5. SET HEIGHT OF SANDBAG DIKE AT TWICE THE PIPE DIAMETER. MAINTAIN HEIGHT ALONG LENGTH OF SANDBAG DIKE. PLACE DOUBLE ROW OF SANDBAGS.	
6. AT A MINIMUM, SECURELY ANCHOR DIVERSION PIPE AT EACH DOWNGRADE JOINT.	
7. SET OUTLET END OF DIVERSION PIPE LOWER THAN INLET END.	
8. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.	
9. DEWATER WORK AREA USING AN APPROVED EROSION AND SEDIMENT CONTROL PRACTICE AS SPECIFIED ON APPROVED PLAN.	
10. KEEP POINT OF DISCHARGE FREE OF EROSION. MAINTAIN WATER TIGHT CONNECTIONS AND POSITIVE DRAINAGE. REPLACE SANDBAGS AND IMPERMEABLE SHEETING IF TORN.	
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

B-4-5 STANDARDS AND SPECIFICATIONS

FOR
PERMANENT STABILIZATION

Definition

To stabilize disturbed soils with permanent vegetation.

Purpose

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for 6 months or more.

Criteria

A. Seed Mixtures

1. General Use

- Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
- Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
- For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.
- For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.

2. Turfgrass Mixtures

- Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
- Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
 - Kentucky Bluegrass:** Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
 - Kentucky Bluegrass/Perennial Rye:** Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
 - Tall Fescue/Kentucky Bluegrass:** Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes: Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
- Kentucky Bluegrass/Fine Fescue:** Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes: Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1½ to 3 pounds per 1000 square feet.

Notes:

Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland"

Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line

c. Ideal Times of Seeding for Turf Grass Mixtures

Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)

Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)

Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)

- Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1½ inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.

- If soil moisture is deficient, supply new seedlings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedlings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

Permanent Seeding Summary

Hardiness Zone (from Figure B.3): _____				Fertilizer Rate (10-20-20)			Lime Rate
Seed Mixture (from Table B.3): _____				N	P ₂ O ₅	K ₂ O	
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths			
				¼- ½ in	45 pounds per acre (1.0 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	2 tons/ac (90 lb/ 1000 sf)
				¼- ½ in			
				¼- ½ in			

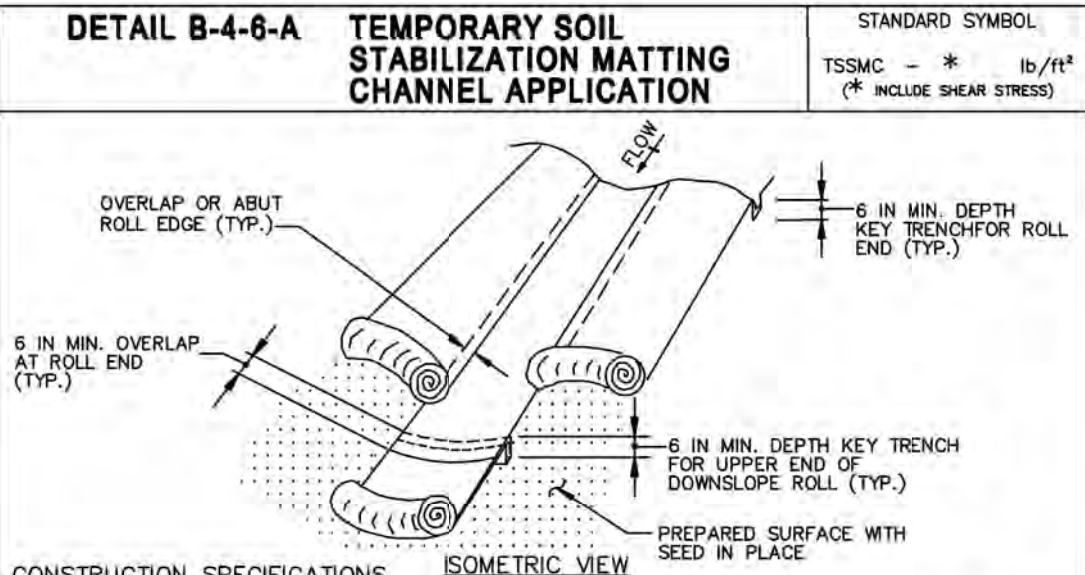
B. Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).

1. General Specifications

- Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
- Sod must be machine cut at a uniform soil thickness of ¾ inch, plus or minus ¼ inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
- Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
- Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
- Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.

2. Sod Installation

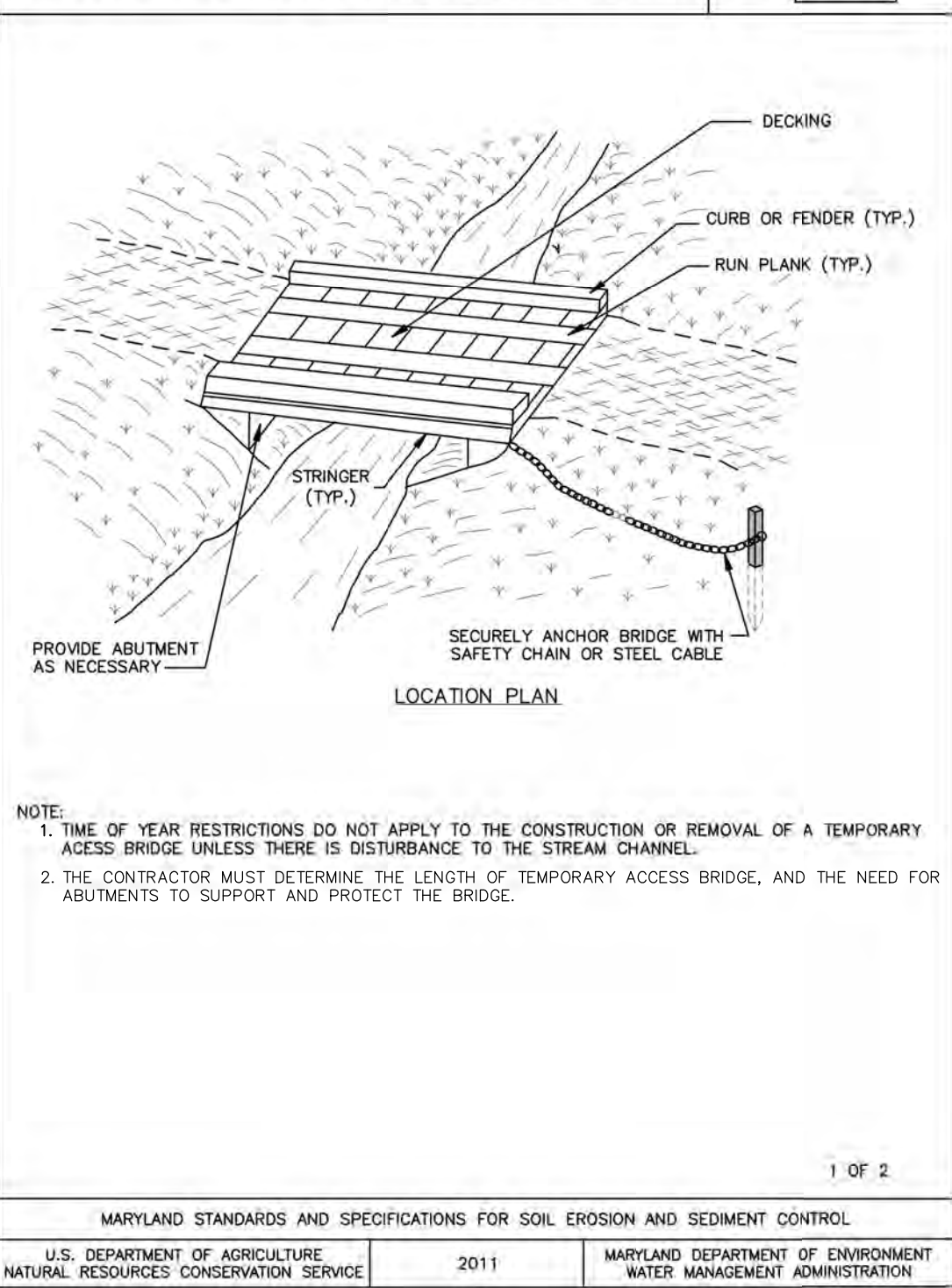
- During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
 - Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
 - Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
 - Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.
3. Sod Maintenance
- In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
 - After the first week, sod watering is required as necessary to maintain adequate moisture content.
 - Do not mow until the sod is firmly rooted. No more than ½ of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.



CONSTRUCTION SPECIFICATIONS

- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
- USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SHOULDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INAJUROUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
- SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1½ INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
- PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
- UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTERLINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDBED SURFACE, AVOID STRETCHING THE MATTING.
- KEY-IN UPSTREAM END OF EACH MAT ROLL BY DIGGING A 6 INCH (MINIMUM) TRENCH AT THE UPSTREAM END OF THE MATTING, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END.
- OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

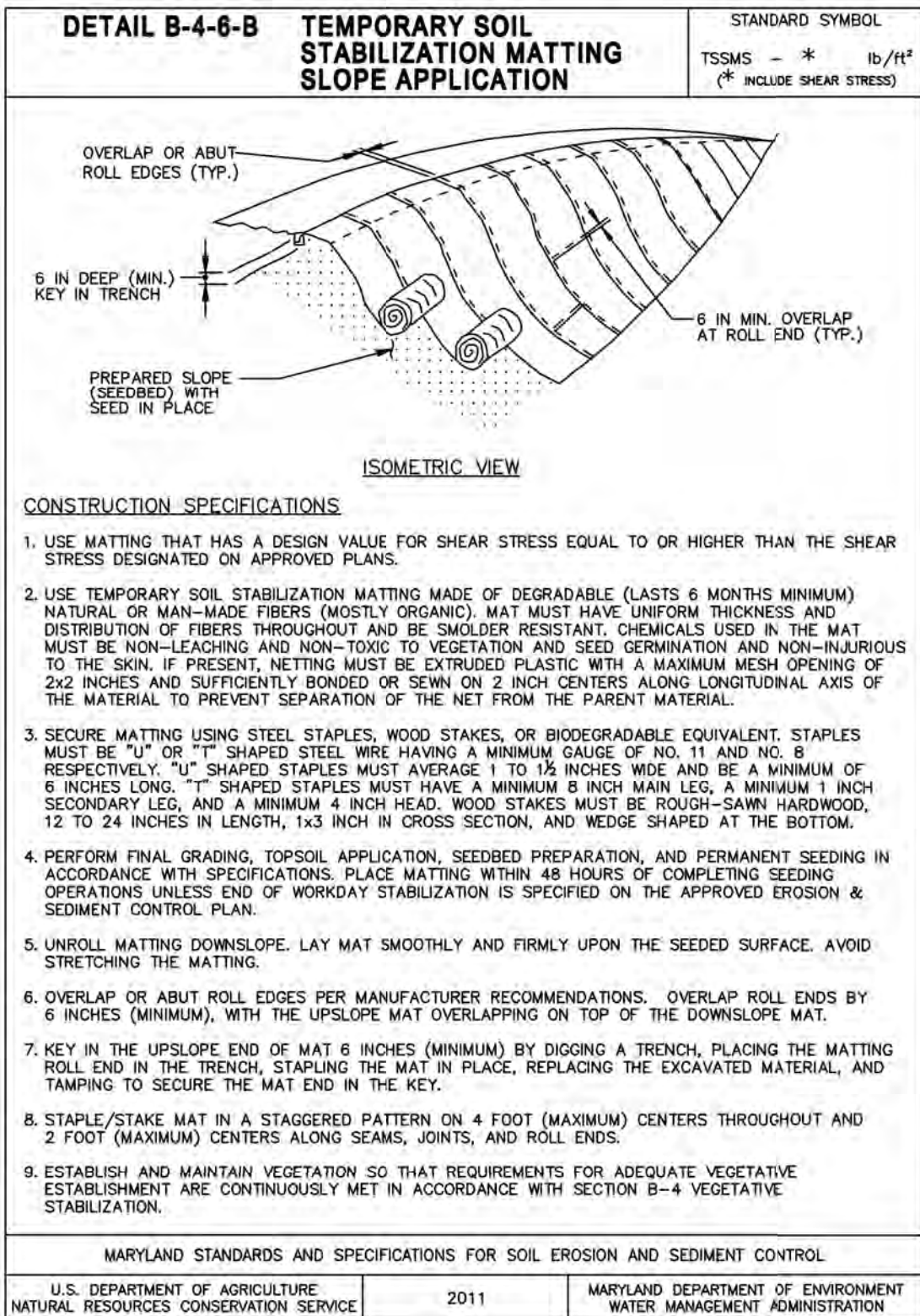
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U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



NOTE:

- TIME OF YEAR RESTRICTIONS DO NOT APPLY TO THE CONSTRUCTION OR REMOVAL OF A TEMPORARY ACCESS BRIDGE UNLESS THERE IS DISTURBANCE TO THE STREAM CHANNEL.
- THE CONTRACTOR MUST DETERMINE THE LENGTH OF TEMPORARY ACCESS BRIDGE, AND THE NEED FOR ABUTMENTS TO SUPPORT AND PROTECT THE BRIDGE.

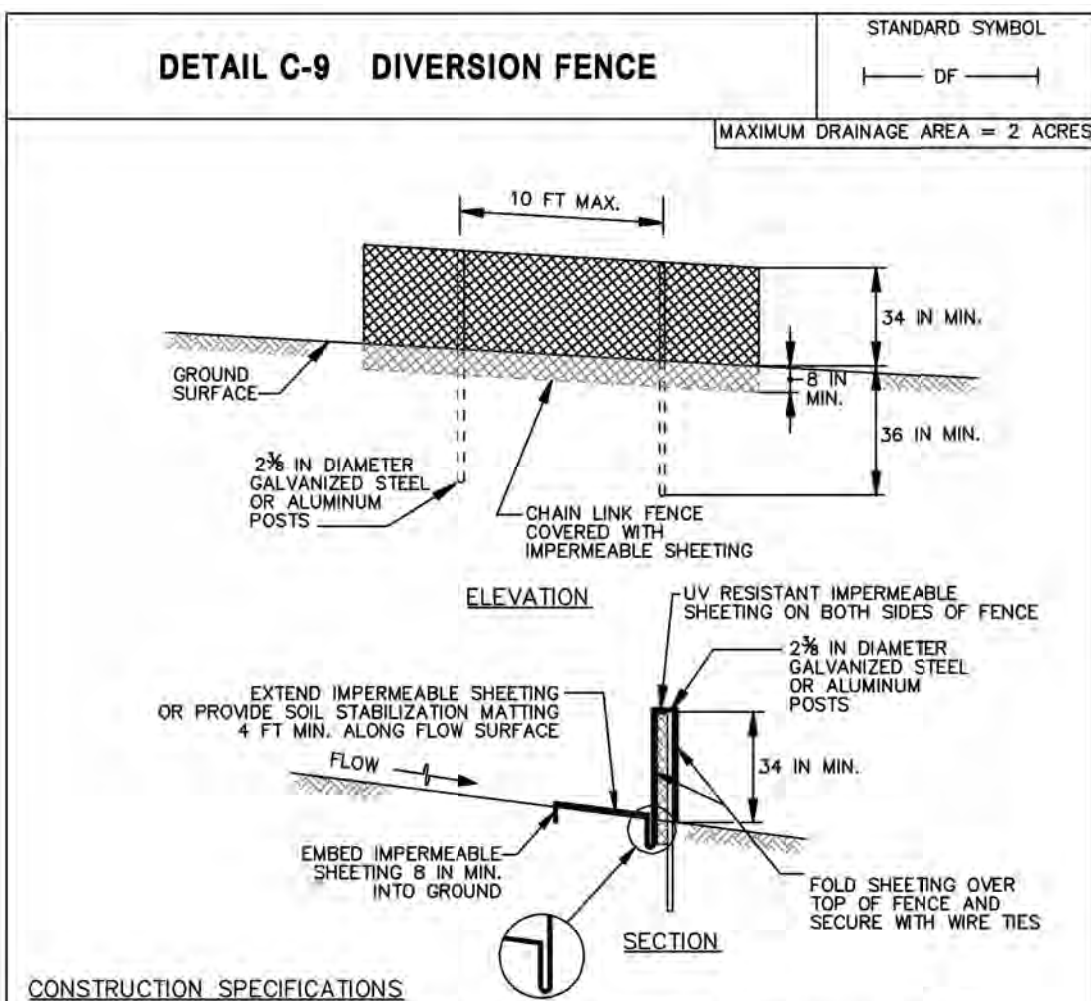
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- SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1½ INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
- PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
- UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDBED SURFACE, AVOID STRETCHING THE MATTING.
- OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
- KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

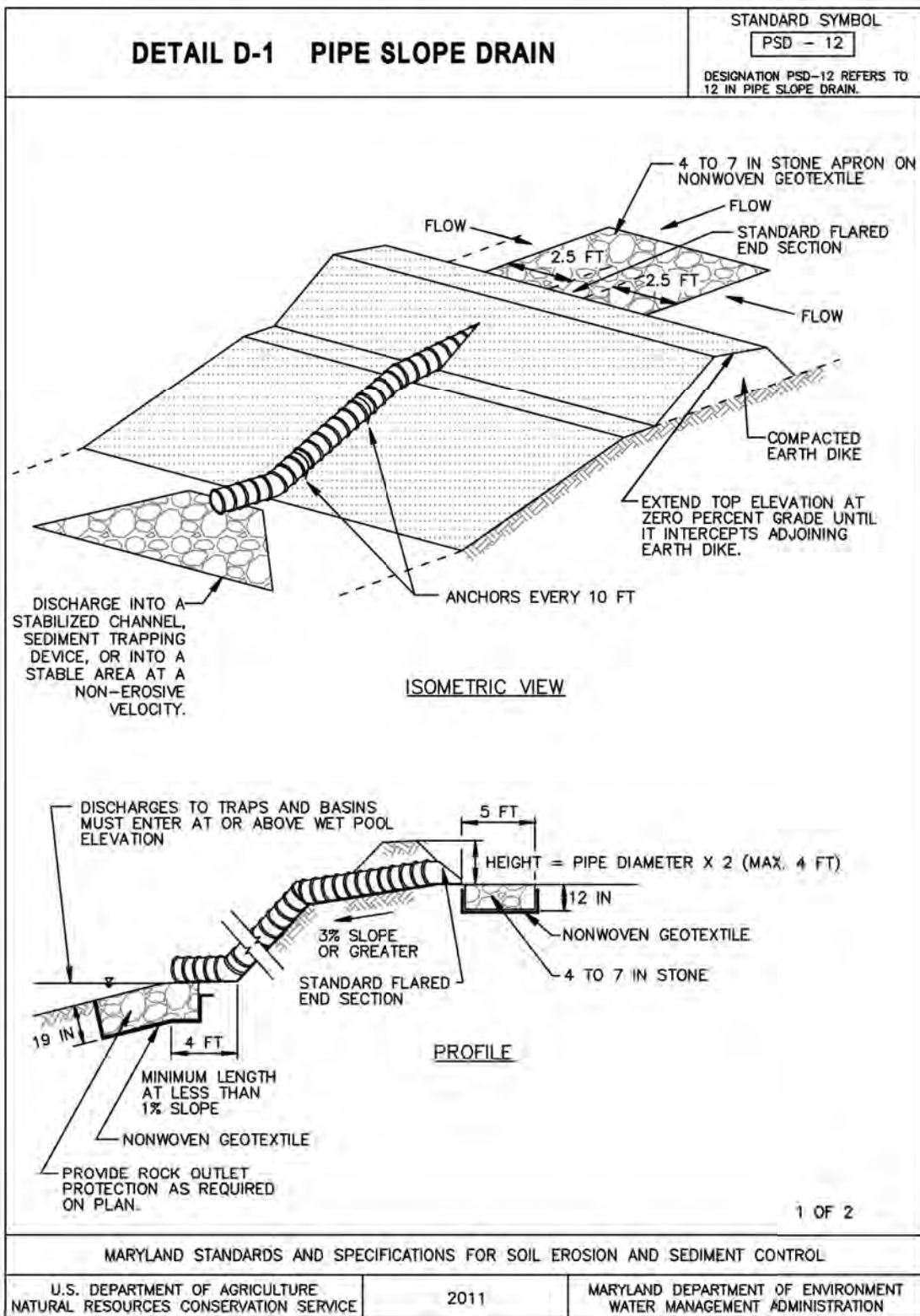
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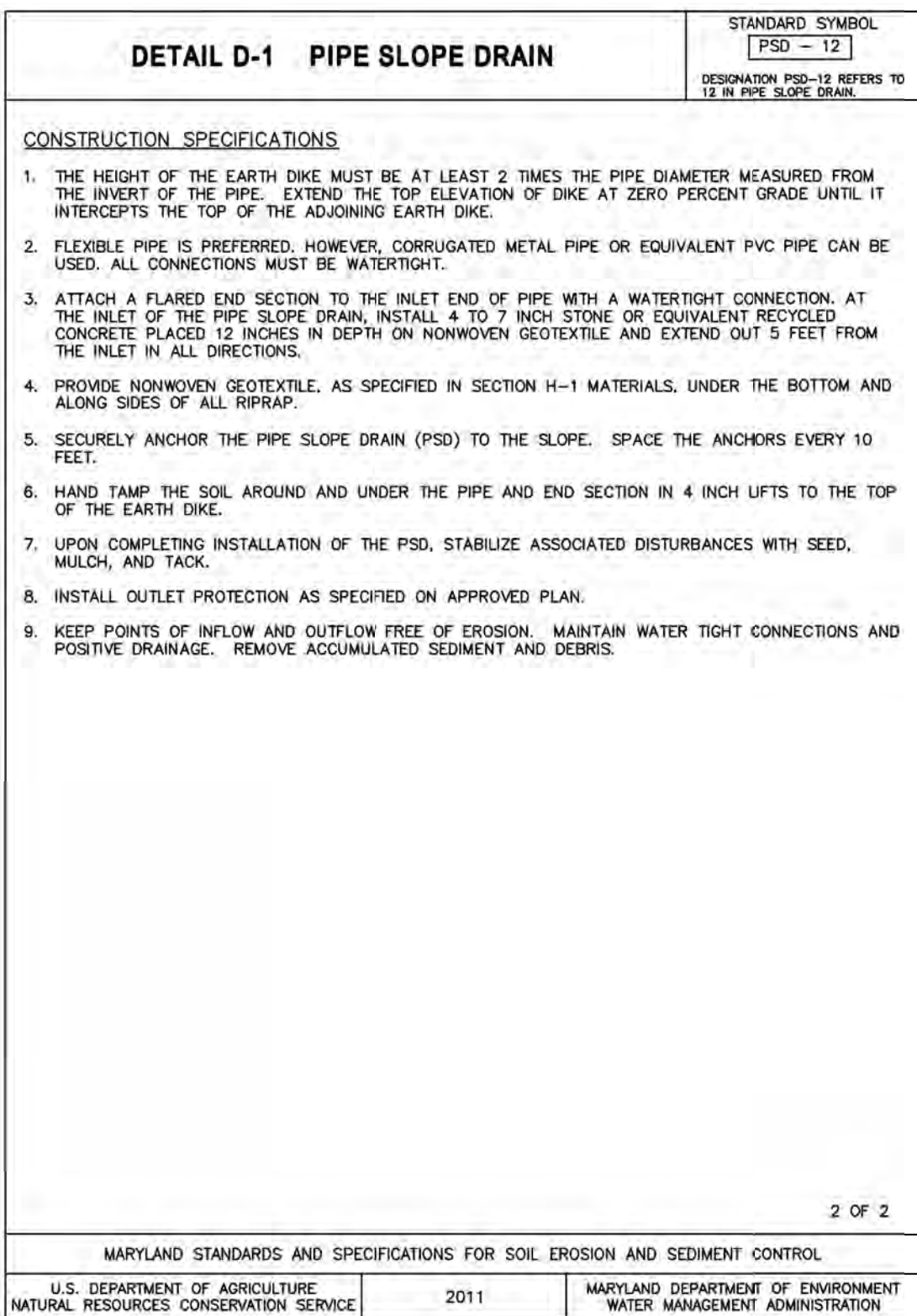
CONSTRUCTION SPECIFICATIONS

- USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2¾ INCH MAXIMUM OPENING).
- USE 2¾ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
- FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.
- SECURE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.
- EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.
- WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE.
- KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

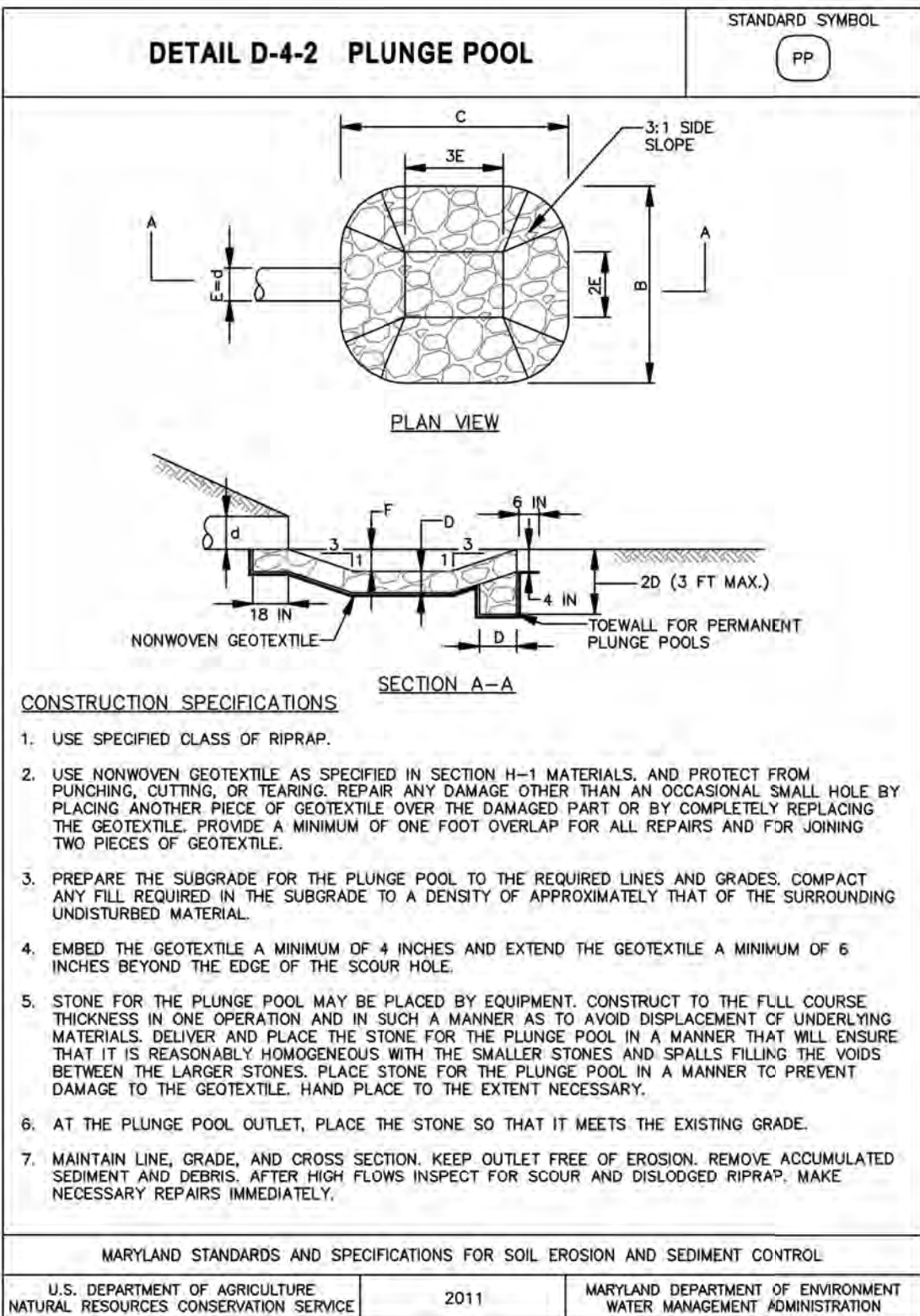
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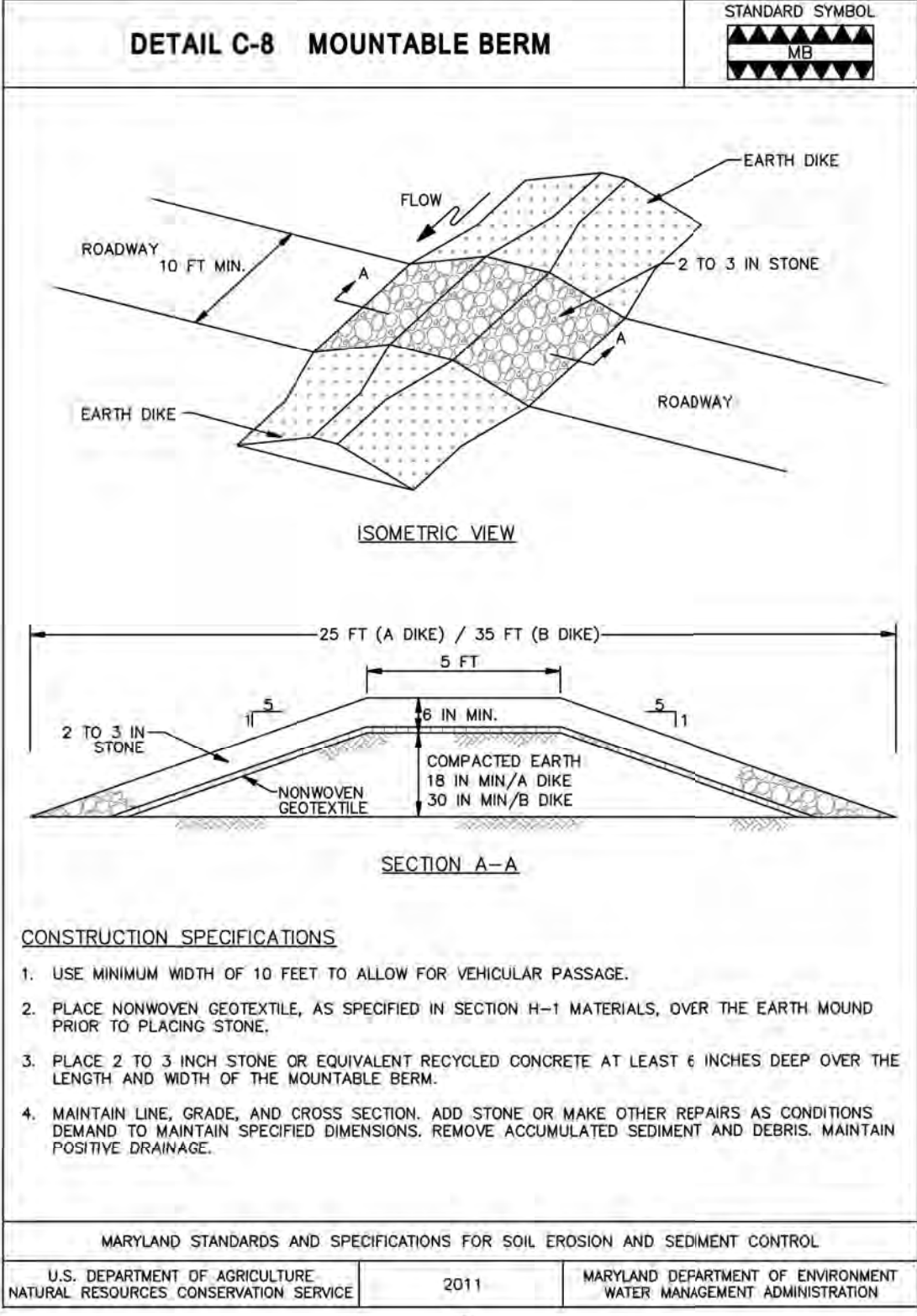
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PROFESSIONAL CERTIFICATION
"I HEREBY CERTIFY THAT DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16156, EXPIRATION DATE: 8/28/2022"

AECOM

SC PLAN #59846
GRADING PERMIT #470-2019

REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
EROSION & SEDIMENT CONTROL DETAILS

DRAWN BY: _____ CDF

DESIGNED BY: _____ NJF

REVIEWED BY: _____ DTM

CONTRACT NO: _____ 97040

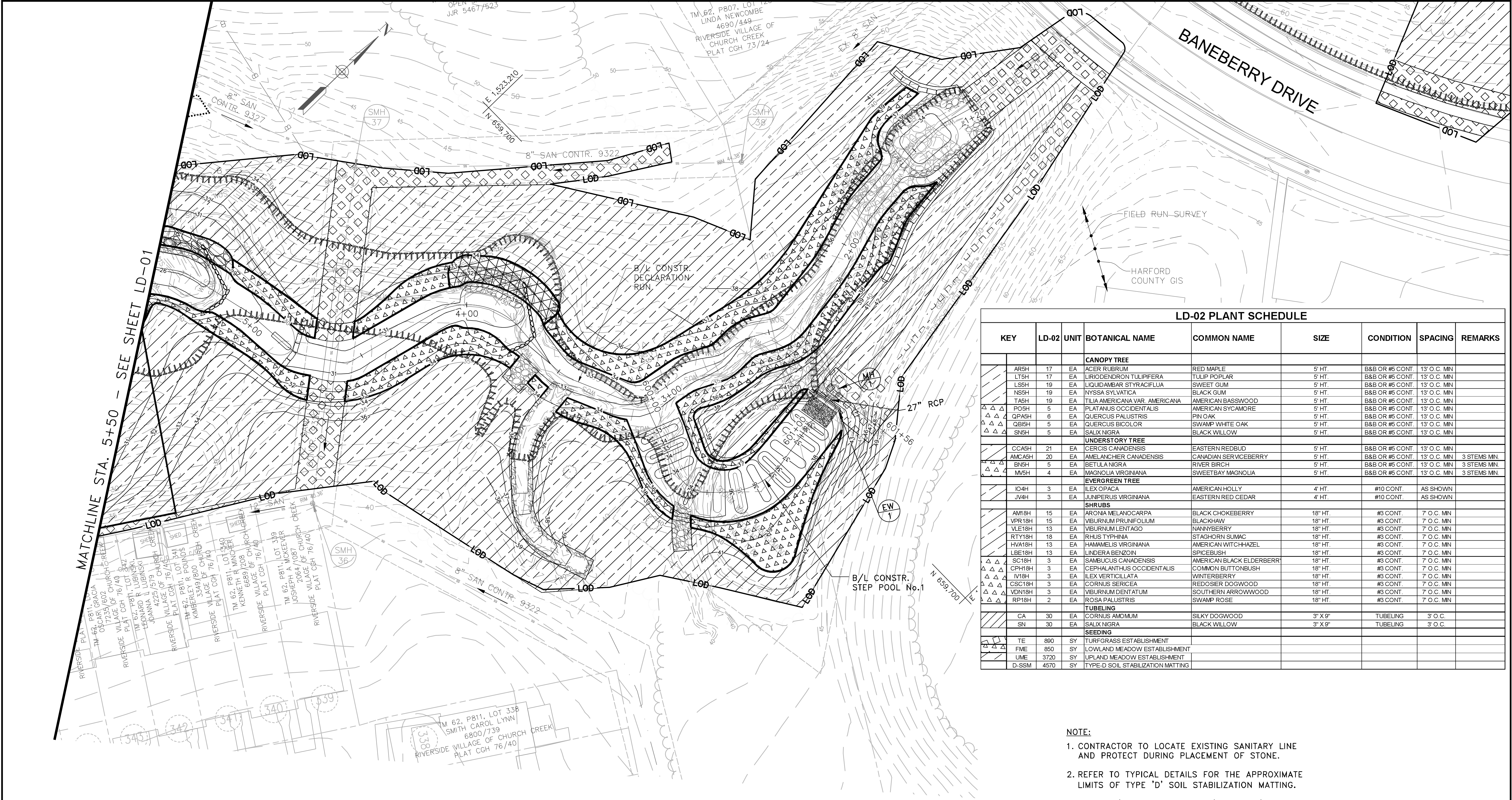
SCALE: _____ NTS

SHEET _____ 29 OF _____ 48

DATE: _____ MARCH, 2022

ES-09

EG-SWMENG-000025-2019



LD-02 PLANT SCHEDULE								
KEY	LD-02	UNIT	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING	REMARKS
CANOPY TREE								
ARSH	17	EA	ACER RUBRUM	RED MAPLE	5' HT.	B&B OR #5 CONT.	13' O.C. MN	
LTSH	17	EA	LIRIODENDRON TULIPIFERA	TULIP POPLAR	5' HT.	B&B OR #5 CONT.	13' O.C. MN	
LSSH	19	EA	LIQUIDAMBAR STYRACIFLUA	SWEET GUM	5' HT.	B&B OR #5 CONT.	13' O.C. MN	
NSSH	19	EA	NYSSA SYLVATICA	BLACK GUM	5' HT.	B&B OR #5 CONT.	13' O.C. MN	
TASH	19	EA	TILIA AMERICANA VAR. AMERICANA	AMERICAN BASSWOOD	5' HT.	B&B OR #5 CONT.	13' O.C. MN	
POSH	5	EA	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	5' HT.	B&B OR #5 CONT.	13' O.C. MN	
QPA5H	6	EA	QUERCUS PALUSTRIS	PIN OAK	5' HT.	B&B OR #5 CONT.	13' O.C. MN	
QBI5H	5	EA	QUERCUS BICOLOR	SWAMP WHITE OAK	5' HT.	B&B OR #5 CONT.	13' O.C. MN	
SN5H	5	EA	SALIX NIGRA	BLACK WILLOW	5' HT.	B&B OR #5 CONT.	13' O.C. MN	
UNDERSTORY TREE								
CCASH	21	EA	CERCIS CANADENSIS	EASTERN REDBUD	5' HT.	B&B OR #5 CONT.	13' O.C. MN	
AMCASH	20	EA	AMELANCHIER CANADENSIS	CANADIAN SERVICEBERRY	5' HT.	B&B OR #5 CONT.	13' O.C. MN	3 STEMS MN.
BN5H	5	EA	BETULA NIGRA	RIVER BIRCH	5' HT.	B&B OR #5 CONT.	13' O.C. MN	3 STEMS MN.
MV5H	4	EA	MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	5' HT.	B&B OR #5 CONT.	13' O.C. MN	3 STEMS MN.
EVERGREEN TREE								
IO4H	3	EA	ILEX OPACA	AMERICAN HOLLY	4' HT.	#10 CONT.	AS SHOWN	
JV4H	3	EA	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	4' HT.	#10 CONT.	AS SHOWN	
SHRUBS								
AM18H	15	EA	ARONIA MELANOCARPA	BLACK CHOKEBERRY	18" HT.	#3 CONT.	7' O.C. MN	
VPR18H	15	EA	VIBURNUM PRUNIFOLIUM	BLACKHAW	18" HT.	#3 CONT.	7' O.C. MN	
VLE18H	13	EA	VIBURNUM LENTAGO	NANNYBERRY	18" HT.	#3 CONT.	7' O.C. MN	
RTY18H	18	EA	RHUS TYPHINA	STAGHORN SUMAC	18" HT.	#3 CONT.	7' O.C. MN	
HVA18H	13	EA	HAMMELIS VIRGINIANA	AMERICAN WITCHHAZEL	18" HT.	#3 CONT.	7' O.C. MN	
LBE18H	13	EA	LINDERA BENZOIN	SPICEBUSH	18" HT.	#3 CONT.	7' O.C. MN	
SC18H	3	EA	SAMBUCUS CANADENSIS	AMERICAN BLACK ELDERBERRY	18" HT.	#3 CONT.	7' O.C. MN	
CPH18H	3	EA	CEPHALANTHUS OCCIDENTALIS	COMMON BUTTONBUSH	18" HT.	#3 CONT.	7' O.C. MN	
W18H	3	EA	ILEX VERTICILLATA	WINTERBERRY	18" HT.	#3 CONT.	7' O.C. MN	
CSC18H	3	EA	CORNUS SERICEA	REDOSIER DOGWOOD	18" HT.	#3 CONT.	7' O.C. MN	
VDN18H	3	EA	VIBURNUM DENTATUM	SOUTHERN ARROWWOOD	18" HT.	#3 CONT.	7' O.C. MN	
RP18H	2	EA	ROSA PALUSTRIS	SWAMP ROSE	18" HT.	#3 CONT.	7' O.C. MN	
TUBELING								
CA	30	EA	CORNUS AMOMUM	SILKY DOGWOOD	3" X 9"	TUBELING	3' O.C.	
SN	30	EA	SALIX NIGRA	BLACK WILLOW	3" X 9"	TUBELING	3' O.C.	
SEEDING								
TE	890	SY	TURFGRASS ESTABLISHMENT					
FME	850	SY	LOWLAND MEADOW ESTABLISHMENT					
UME	3720	SY	UPLAND MEADOW ESTABLISHMENT					
D-SSM	4570	SY	TYPE-D SOIL STABILIZATION MATTING					

- NOTE:
- 1. CONTRACTOR TO LOCATE EXISTING SANITARY LINE AND PROTECT DURING PLACEMENT OF STONE.
 - 2. REFER TO TYPICAL DETAILS FOR THE APPROXIMATE LIMITS OF TYPE 'D' SOIL STABILIZATION MATTING.



PLANTING PLAN LEGEND

- UPLAND TREE AND SHRUB PLANTING + UPLAND MEADOW ESTABLISHMENT (UME)
- LOWLAND TREE AND SHRUB PLANTING + LOWLAND MEADOW ESTABLISHMENT (UME) + TYPE D SOIL STABILIZATION MATTING (DSSM)
- TUBELINGS + TYPE D SOIL STABILIZATION MATTING (DSSM)
- TURFGRASS ESTABLISHMENT

LEGEND

- PROPOSED CONTOUR
- EXISTING CONTOUR
- WETLAND
- WETLAND BUFFER
- EXISTING SANITARY SEWER
- SIGNIFICANT TREE (>24" DIA)
- PROPERTY LINE (GIS BASED)
- LIMIT OF DISTURBANCE
- EXISTING 100-YR FLOODPLAIN
- EXISTING METAL FENCE
- EXISTING WOOD FENCE

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT 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. 16156

EXPIRATION DATE: 8/28/2022

AECOM

REVISIONS

HARFORD COUNTY, MARYLAND

DECLARATION RUN STREAM RESTORATION

PLANTING PLAN

DRAWN BY : TH

DESIGNED BY : TH

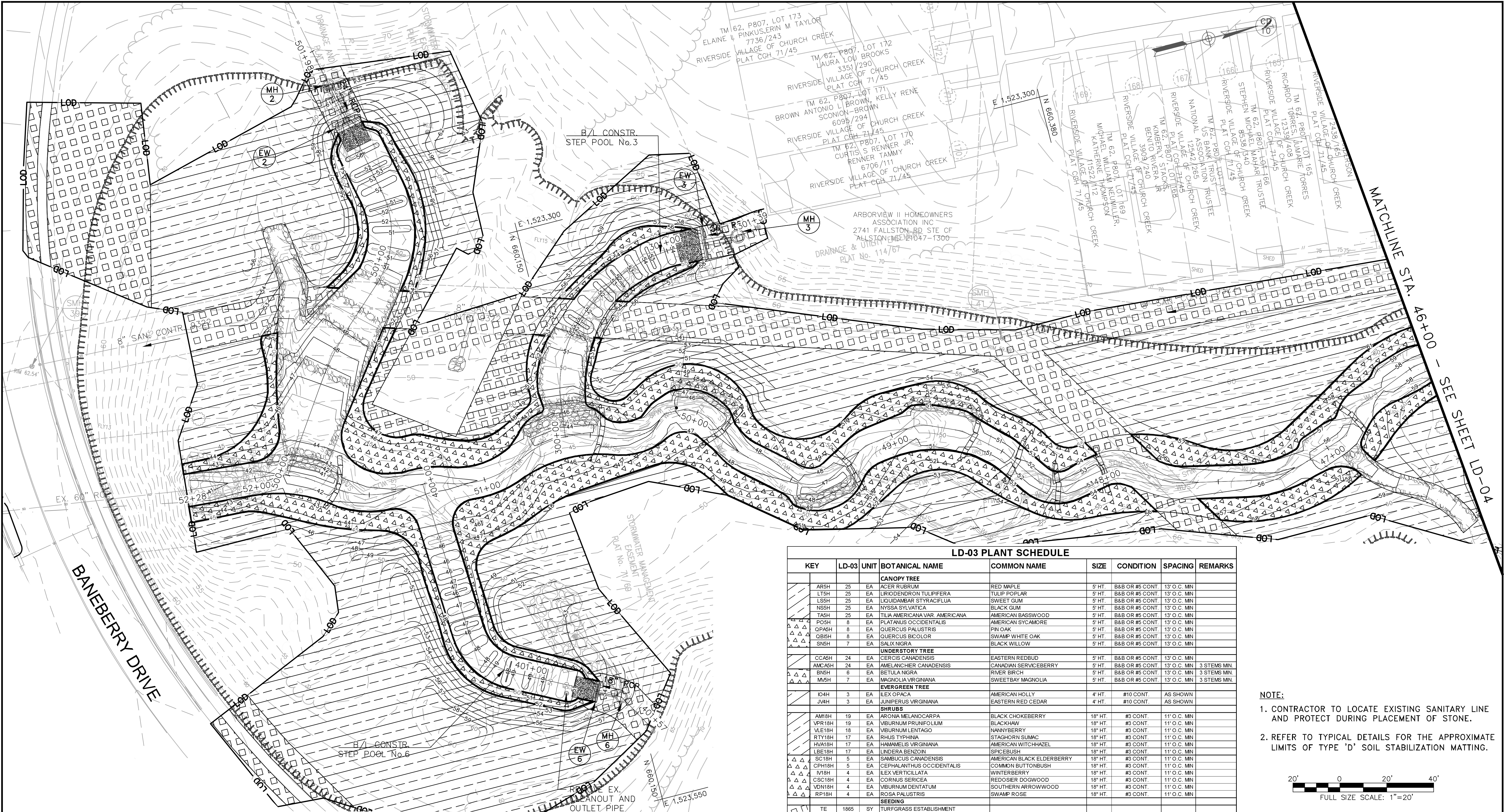
REVIEWED BY : DTM

CONTRACT NO : 97040

SCALE : 1"=20'

SHEET 31 OF 48

DATE : MARCH, 2022



PLANTING PLAN LEGEND

UPLAND TREE AND SHRUB PLANTING + UPLAND MEADOW ESTABLISHMENT (UME)

LOWLAND TREE AND SHRUB PLANTING + LOWLAND MEADOW ESTABLISHMENT (UME) + TYPE D SOIL STABILIZATION MATTING (DSSM)

TUBELINGS + TYPE D SOIL STABILIZATION MATTING (DSSM)

TURFGRASS ESTABLISHMENT

LEGEND

PROPOSED CONTOUR

EXISTING CONTOUR

WETLAND

WETLAND BUFFER

EXISTING SANITARY SEWER

SIGNIFICANT TREE (>24" DIA)

PROPERTY LINE (GIS BASED)

LIMIT OF DISTURBANCE

EXISTING 100-YR FLOODPLAIN

EXISTING METAL FENCE

EXISTING WOOD FENCE

LD-03 PLANT SCHEDULE								
KEY	LD-03	UNIT	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING	REMARKS
<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><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PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT 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. 16156

EXPIRATION DATE: 8/28/2022



REVISIONS

HARFORD COUNTY, MARYLAND

DECLARATION RUN STREAM RESTORATION

PLANTING PLAN

DRAWN BY : TH

DESIGNED BY : TH

REVIEWED BY : DTM

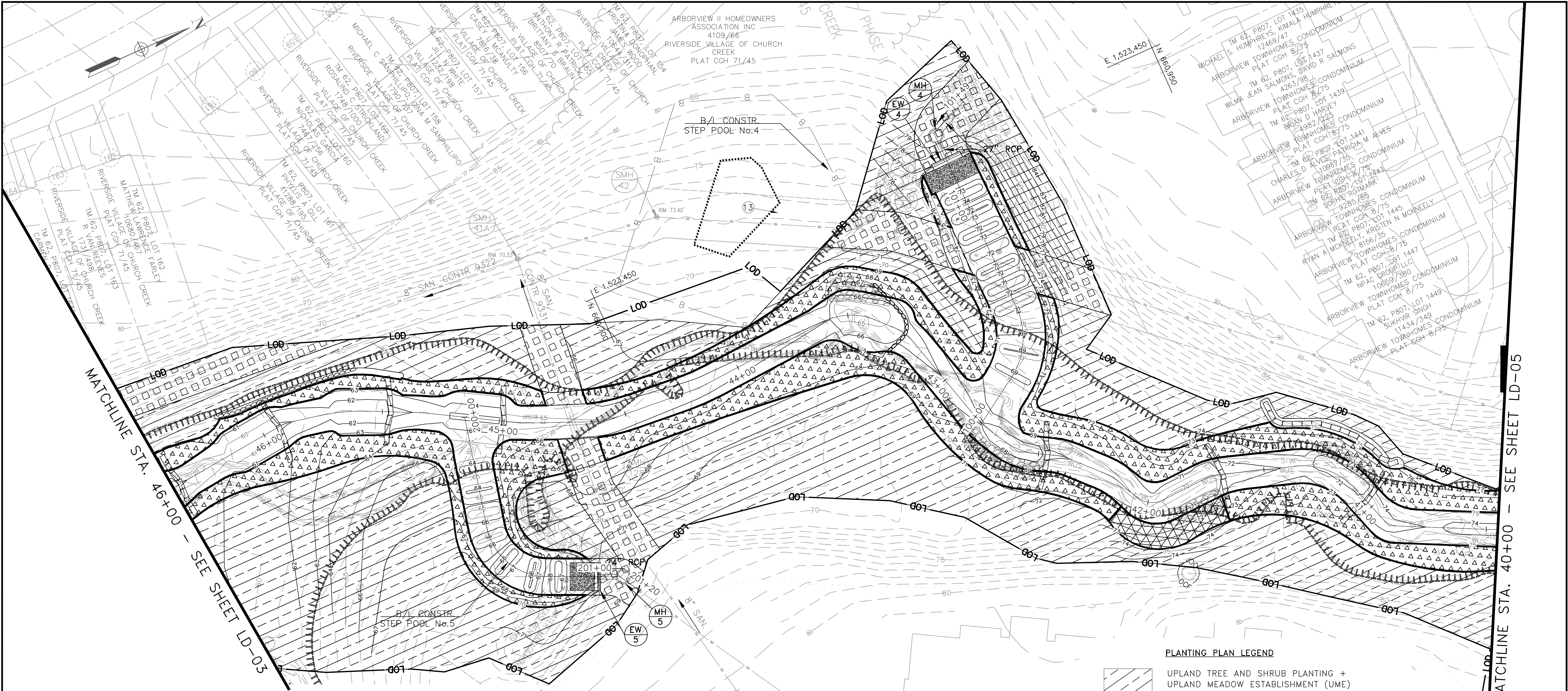
CONTRACT NO : 97040

SCALE : 1"=20'

SHEET 32 OF 48

DATE : MARCH, 2022

SCALE : 1"=20'



LD-04 PLANT SCHEDULE								
KEY	LD-04	UNIT	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING	REMARKS
CANOPY TREE								
	AR5H	15	EA	ACER RUBRUM	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
	LT5H	15	EA	LIRIODENDRON TULIPIFERA	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
	L55H	18	EA	LIQUIDAMBAR STYRACIFLUA	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
	N55H	17	EA	NYSSA SYLVATICA	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
	T55H	17	EA	TILIA AMERICANA VAR. AMERICANA	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
	PO5H	8	EA	PLATANUS OCCIDENTALIS	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
	QPA5H	8	EA	QUERCUS PALUSTRIS	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
	QB5H	8	EA	QUERCUS BICOLOR	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
	SN5H	8	EA	SALIX NIGRA	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
UNDERSTORY TREE								
	CCASH	20	EA	CERCIS CANADENSIS	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
	AMCASH	20	EA	AMELANCHIER CANADENSIS	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	3 STEMS MIN.
	BN5H	7	EA	BETULA NIGRA	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	3 STEMS MIN.
	M5H	6	EA	MAGNOLIA VIRGINIANA	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	3 STEMS MIN.
EVERGREEN TREE								
	IO4H	3	EA	ILEX OPACA	4' HT.	#10 CONT.	AS SHOWN	
	JV4H	3	EA	JUNIPERUS VIRGINIANA	4' HT.	#10 CONT.	AS SHOWN	
SHRUBS								
	AM18H	13	EA	ARONIA MELANOCARPA	18" HT.	#3 CONT.	7' O.C. MIN	
	VPR18H	13	EA	VIBURNUM PRUNIFOLIUM	18" HT.	#3 CONT.	7' O.C. MIN	
	VLE18H	13	EA	VIBURNUM LENTAGO	18" HT.	#3 CONT.	7' O.C. MIN	
	RTY18H	13	EA	RHUS TYPHINIA	18" HT.	#3 CONT.	7' O.C. MIN	
	HVM18H	13	EA	HAMMELIS VIRGINIANA	18" HT.	#3 CONT.	7' O.C. MIN	
	LBE18H	15	EA	LINDERA BENZOIN	18" HT.	#3 CONT.	7' O.C. MIN	
	SC18H	5	EA	SAMBUCUS CANADENSIS	18" HT.	#3 CONT.	7' O.C. MIN	
	CPH18H	5	EA	CEPHALANTHUS OCCIDENTALIS	18" HT.	#3 CONT.	7' O.C. MIN	
	N18H	5	EA	ILEX VERTICILLATA	18" HT.	#3 CONT.	7' O.C. MIN	
	CSC18H	5	EA	CORNUS SERICEA	18" HT.	#3 CONT.	7' O.C. MIN	
	VDN18H	5	EA	VIBURNUM DENTATUM	18" HT.	#3 CONT.	7' O.C. MIN	
	RP18H	2	EA	ROSALALUSTRIS	18" HT.	#3 CONT.	7' O.C. MIN	
TUBELING								
	CA	30	EA	CORNUS AMOMIUM	3" X 9"	TUBELING	3' O.C.	
	SN	30	EA	SALIX NIGRA	3" X 9"	TUBELING	3' O.C.	
SEEDING								
	TE	735	SY	TURF GRASS ESTABLISHMENT				
	FME	1300	SY	LOWLAND MEADOW ESTABLISHMENT				
	UME	3590	SY	UPLAND MEADOW ESTABLISHMENT				
	D-SSM	4890	SY	TYPE-D SOIL STABILIZATION MATTING				

- LEGEND
- 45

PROPOSED CONTOUR

45

EXISTING CONTOUR

.....

WETLAND

B

WETLAND BUFFER

S

EXISTING SANITARY SEWER

25"

SIGNIFICANT TREE (>24" DIA)

PROPERTY LINE (GIS BASED)

LOD

LIMIT OF DISTURBANCE

|||||

EXISTING 100-YR FLOODPLAIN

X-X

EXISTING METAL FENCE

//

EXISTING WOOD FENCE

NOTE:
1. REFER TO TYPICAL DETAILS FOR THE APPROXIMATE LIMITS OF TYPE 'D' SOIL STABILIZATION MATTING.

PROFESSIONAL CERTIFICATION
"I HEREBY CERTIFY THAT 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. 16156
EXPIRATION DATE: 8/28/2022

AECOM

- PLANTING PLAN LEGEND
- UPLAND TREE AND SHRUB PLANTING + UPLAND MEADOW ESTABLISHMENT (UME)
- LOWLAND TREE AND SHRUB PLANTING + LOWLAND MEADOW ESTABLISHMENT (UME) + TYPE D SOIL STABILIZATION MATTING (DSSM)
- TUBELINGS + TYPE D SOIL STABILIZATION MATTING (DSSM)
- TURFGRASS ESTABLISHMENT



REVISIONS

HARFORD COUNTY, MARYLAND

DECLARATION RUN STREAM RESTORATION

PLANTING PLAN

DRAWN BY : _____ TH

DESIGNED BY : _____ TH

REVIEWED BY : _____ DTM

CONTRACT NO : 97040

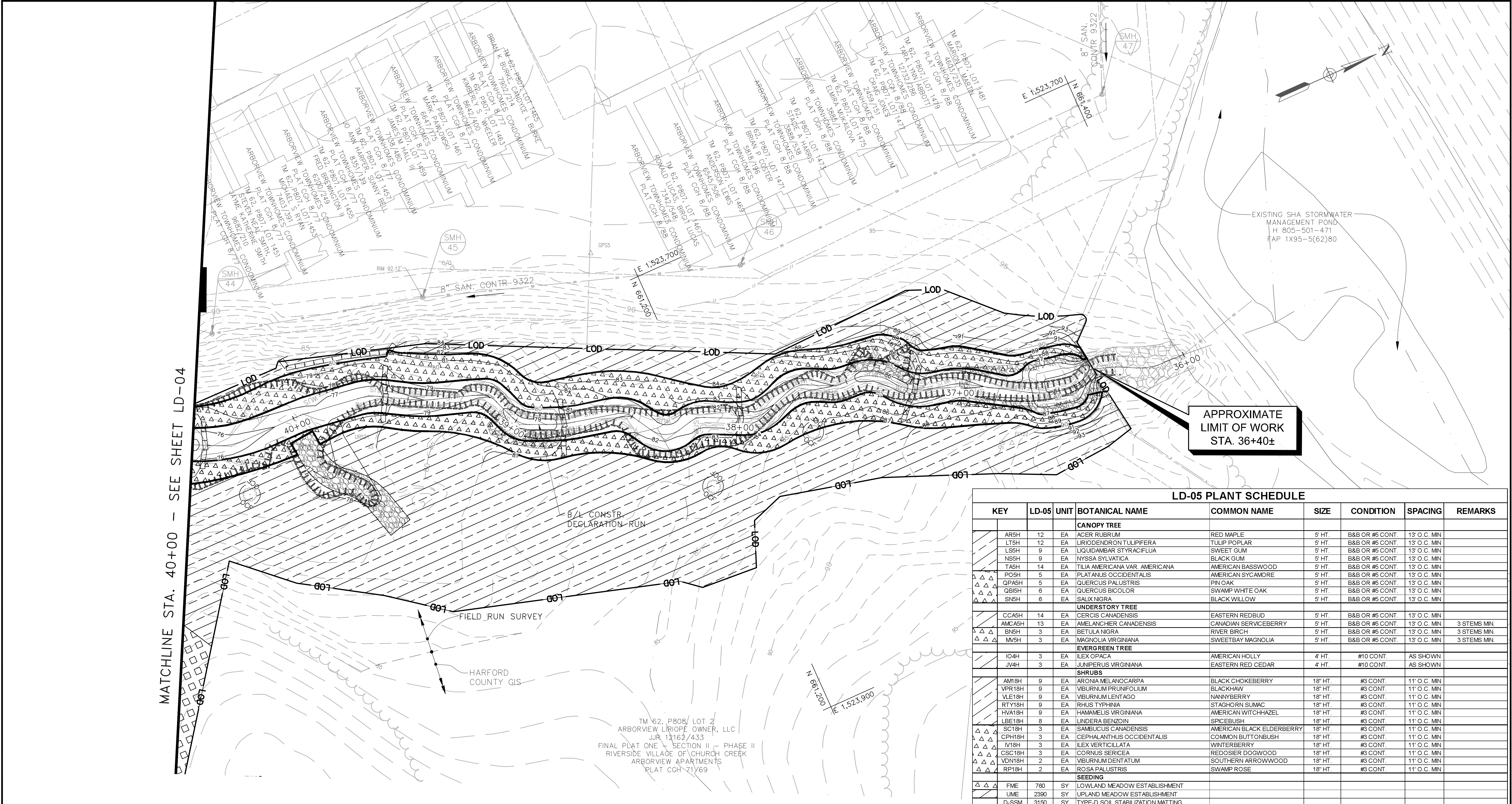
SCALE : 1"=20'

SHEET 33 OF 48

DATE : MARCH, 2022

EG-SWMENG-000025-2019

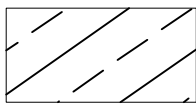
LD-04




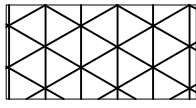
APPROXIMATE
LIMIT OF WORK
STA. 36+40±


LD-05 PLANT SCHEDULE								
KEY	LD-05	UNIT	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING	REMARKS
CANOPY TREE								
/	AR5H	12	EA	ACER RUBRUM	RED MAPLE	5' HT.	B&B OR #5 CONT.	13' O.C. MIN.
	LT5H	12	EA	LIRIODENDRON TULIPIFERA	TULIP POPLAR	5' HT.	B&B OR #5 CONT.	13' O.C. MIN.
	L5SH	9	EA	LIQUIDAMBAR STYRACIFLUA	SWEET GUM	5' HT.	B&B OR #5 CONT.	13' O.C. MIN.
	NS5H	9	EA	NYSSA SYLVATICA	BLACK GUM	5' HT.	B&B OR #5 CONT.	13' O.C. MIN.
	T5SH	14	EA	TILIA AMERICANA VAR. AMERICANA	AMERICAN BASSWOOD	5' HT.	B&B OR #5 CONT.	13' O.C. MIN.
△ △ △	PO5H	5	EA	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	5' HT.	B&B OR #5 CONT.	13' O.C. MIN.
	QP5H	5	EA	QUERCUS PALUSTRIS	PIN OAK	5' HT.	B&B OR #5 CONT.	13' O.C. MIN.
	QB5H	6	EA	QUERCUS BICOLOR	SWAMP WHITE OAK	5' HT.	B&B OR #5 CONT.	13' O.C. MIN.
	SN5H	6	EA	SALIX NIGRA	BLACK WILLOW	5' HT.	B&B OR #5 CONT.	13' O.C. MIN.
UNDERSTORY TREE								
/	CCA5H	14	EA	CERCIS CANADENSIS	EASTERN REDBUD	5' HT.	B&B OR #5 CONT.	13' O.C. MIN.
	AMCA5H	13	EA	AMELANCHIER CANADENSIS	CANADIAN SERVICEBERRY	5' HT.	B&B OR #5 CONT.	13' O.C. MIN. 3 STEMS MIN.
	BN5H	3	EA	BETULA NIGRA	RIVER BIRCH	5' HT.	B&B OR #5 CONT.	13' O.C. MIN. 3 STEMS MIN.
	MV5H	3	EA	MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	5' HT.	B&B OR #5 CONT.	13' O.C. MIN. 3 STEMS MIN.
EVERGREEN TREE								
/	IO4H	3	EA	ILEX OPACA	AMERICAN HOLLY	4' HT.	#10 CONT.	AS SHOWN
	JV4H	3	EA	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	4' HT.	#10 CONT.	AS SHOWN
SHRUBS								
/	AM18H	9	EA	ARONIA MELANOCARPA	BLACK CHOKEBERRY	18" HT.	#3 CONT.	11' O.C. MIN.
	VPR18H	9	EA	VIBURNUM PRUNIFOLIUM	BLACKHAW	18" HT.	#3 CONT.	11' O.C. MIN.
	VLE18H	9	EA	VIBURNUM LENTAGO	NANNYBERRY	18" HT.	#3 CONT.	11' O.C. MIN.
	RTY18H	9	EA	RHUS TYPHINIA	STAGHORN SUMAC	18" HT.	#3 CONT.	11' O.C. MIN.
	HVA18H	9	EA	HAMAMELIS VIRGINIANA	AMERICAN WITCHHAZEL	18" HT.	#3 CONT.	11' O.C. MIN.
	LBE18H	8	EA	LINDERA BENZOIN	SPICEBUSH	18" HT.	#3 CONT.	11' O.C. MIN.
	SC18H	3	EA	SAMBUCUS CANADENSIS	AMERICAN BLACK ELDERBERRY	18" HT.	#3 CONT.	11' O.C. MIN.
	CPH18H	3	EA	CEPHALANTHUS OCCIDENTALIS	COMMON BUTTONBUSH	18" HT.	#3 CONT.	11' O.C. MIN.
△ △ △	IV18H	3	EA	ILEX VERTICILLATA	WINTERBERRY	18" HT.	#3 CONT.	11' O.C. MIN.
	CSC18H	3	EA	CORNUS SERICEA	REDOSIER DOGWOOD	18" HT.	#3 CONT.	11' O.C. MIN.
	VDN18H	2	EA	VIBURNUM DENTATUM	SOUTHERN ARROWWOOD	18" HT.	#3 CONT.	11' O.C. MIN.
	RP18H	2	EA	ROSA PALUSTRIS	SWAMP ROSE	18" HT.	#3 CONT.	11' O.C. MIN.
SEEDING								
△ △ △	FME	760	SY	LOWLAND MEADOW ESTABLISHMENT				
	UME	2390	SY	UPLAND MEADOW ESTABLISHMENT				
	D-SSM	3150	SY	TYPE-D SOIL STABILIZATION MATTING				

PLANTING PLAN LEGEND

- 

UPLAND TREE AND SHRUB PLANTING + UPLAND MEADOW ESTABLISHMENT (UME)
- 

LOWLAND TREE AND SHRUB PLANTING + LOWLAND MEADOW ESTABLISHMENT (UME) + TYPE D SOIL STABILIZATION MATTING (DSSM)
- 

TUBELINGS + TYPE D SOIL STABILIZATION MATTING (DSSM)
- 

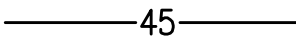
TURFGRASS ESTABLISHMENT


NOTE:

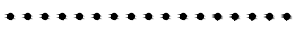
1. REFER TO TYPICAL DETAILS FOR THE APPROXIMATE LIMITS OF TYPE 'D' SOIL STABILIZATION MATTING.

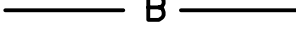



LEGEND


- 

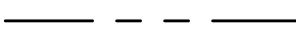
PROPOSED CONTOUR
- 


EXISTING CONTOUR
- 


WETLAND
- 


WETLAND BUFFER
- 

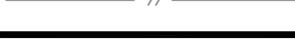
EXISTING SANITARY SEWER
- 

SIGNIFICANT TREE (>24" DIA)
- 

PROPERTY LINE (GIS BASED)
- 

LIMIT OF DISTURBANCE
- 

EXISTING 100-YR FLOODPLAIN
- 

EXISTING METAL FENCE
- 

EXISTING WOOD FENCE

PROFESSIONAL CERTIFICATION
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EXPIRATION DATE: 8/28/2022

AECOM

REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
PLANTING PLAN

DRAWN BY : TH
DESIGNED BY : TH
REVIEWED BY : DTM

CONTRACT NO : 97040

SCALE : 1"=20'

SHEET 34 OF 48

DATE : MARCH, 2022

LD-05

EG-SWMENG-000025-2019

MASTER PLANT SCHEDULE														
KEY	LD-01		LD-02	LD-03	LD-04	LD-05	TOTAL QUANTITY	UNIT	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING	REMARKS
	CBCA	NON- CBCA							CANOPY TREE					
AR5H	5	10	17	25	15	12	84	EA	ACER RUBRUM	RED MAPLE	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
LT5H	5	10	17	25	15	12	84	EA	LIRIODENDRON TULIIFERA	TULIP POPLAR	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
LS5H	5	10	19	25	18	9	86	EA	LIQUIDAMBAR STYRACIFLUA	SWEET GUM	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
NS5H	5	10	19	25	17	9	85	EA	NYSSA SYLVATICA	BLACK GUM	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
TA5H	7	10	19	25	17	14	92	EA	TILIA AMERICANA VAR. AMERICANA	AMERICAN BASSWOOD	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
PO5H	2	5	5	8	8	5	33	EA	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
QPA5H	2	5	6	8	8	5	34	EA	QUERCUS PALUSTRIS	PIN OAK	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
QB15H	2	5	5	8	8	6	34	EA	QUERCUS BICOLOR	SWAMP WHITE OAK	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
SN5H	3	5	5	7	8	6	34	EA	SALIX NIGRA	BLACK WILLOW	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
									UNDERSTORY TREE					
CCA5H	5	10	21	24	20	14	94	EA	CERCIS CANADENSIS	EASTERN REDBUD	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	
AMCA5H	5	10	20	24	20	13	92	EA	AMELANCHIER CANADENSIS	CANADIAN SERVICEBERRY	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	3 STEMS MIN.
BN5H	3	3	5	6	7	3	27	EA	BETULA NIGRA	RIVER BIRCH	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	3 STEMS MIN.
MV5H	3	4	4	7	6	3	27	EA	MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	5' HT.	B&B OR #5 CONT.	13' O.C. MIN	3 STEMS MIN.
									EVERGREEN TREE					
IO4H	5	10	3	3	3	3	27	EA	ILEX OPACA	AMERICAN HOLLY	4' HT.	#10 CONT.	AS SHOWN	
JV4H	5	10	3	3	3	3	27	EA	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	4' HT.	#10 CONT.	AS SHOWN	
									SHRUBS					
AM18H	18	9	15	19	13	9	83	EA	ARONIA MELANOCARPA	BLACK CHOKEBERRY	18" HT.	#3 CONT.	7' O.C. MIN	
VPR18H	18	9	15	19	13	9	83	EA	VIBURNUM PRUNIFOLIUM	BLACKHAW	18" HT.	#3 CONT.	7' O.C. MIN	
VLE18H	18	9	13	18	13	9	80	EA	VIBURNUM LENTAGO	NANNYBERRY	18" HT.	#3 CONT.	7' O.C. MIN	
RTY18H	18	9	18	17	13	9	84	EA	RHUS TYPHINIA	STAGHORN SUMAC	18" HT.	#3 CONT.	7' O.C. MIN	
HVA18H	18	9	13	17	13	9	79	EA	HAMAMELIS VIRGINIANA	AMERICAN WITCHHAZEL	18" HT.	#3 CONT.	7' O.C. MIN	
LBE18H	21	9	13	17	15	8	83	EA	LINDERA BENZOIN	SPICEBUSH	18" HT.	#3 CONT.	7' O.C. MIN	
SC18H	6	3	3	5	5	3	25	EA	SAMBUCUS CANADENSIS	AMERICAN BLACK ELDERBERRY	18" HT.	#3 CONT.	7' O.C. MIN	
CPH18H	6	3	3	5	5	3	25	EA	CEPHALANTHUS OCCIDENTALIS	COMMON BUTTONBUSH	18" HT.	#3 CONT.	7' O.C. MIN	
IV18H	6	3	3	4	5	3	24	EA	ILEX VERTICILLATA	WINTERBERRY	18" HT.	#3 CONT.	7' O.C. MIN	
CSC18H	6	3	3	4	5	3	24	EA	CORNUS SERICEA	REDOSIER DOGWOOD	18" HT.	#3 CONT.	7' O.C. MIN	
VDN18H	6	2	3	4	5	2	22	EA	VIBURNUM DENTATUM	SOUTHERN ARROWWOOD	18" HT.	#3 CONT.	7' O.C. MIN	
RP18H	6	2	2	4	2	2	18	EA	ROSA PALUSTRIS	SWAMP ROSE	18" HT.	#3 CONT.	7' O.C. MIN	
									TUBELING					
CA	60	0	30	0	30	0	120	EA	CORNUS AMOMUM	SILKY DOGWOOD	3" X 9"	TUBELING	3' O.C.	
SN	60	0	30	0	30	0	120	EA	SALIX NIGRA	BLACK WILLOW	3" X 9"	TUBELING	3' O.C.	
									SEEDING					
TE	735	0	890	1865	735	0	4,225	SY	TURFGRASS ESTABLISHMENT					
LME	875	275	850	1,195	1,300	760	5,255	SY	LOWLAND MEADOW ESTABLISHMENT					
UME	2,435	945	3,720	4,805	3,590	2,390	17,885	SY	UPLAND MEADOW ESTABLISHMENT					
D-SSM	3,310	1,220	4,570	6,000	4,890	3,150	23,140	SY	TYPE-D SOIL STABILIZATION MATTING					

LANDSCAPE NOTES:

- LANDSCAPE CONSTRUCTION SHALL CONFORM TO THE LATEST SHA STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS.
- A LAYER OF APPROVED TOPSOIL OF AT LEAST A 4–INCH DEPTH SHALL BE PLACED ON ALL DISTURBED AREAS PRIOR TO SEEDING, UNLESS OTHERWISE SPECIFIED (SEE TYPICAL SECTIONS FOR ADDITIONAL INFORMATION). AREAS WITH SLOPES 2:1 AND STEEPER SHALL RECEIVE 2–INCH DEPTH TOPSOIL.
- TURFGRASS ESTABLISHMENT SHALL BE PERFORMED IN ALL DISTURBED AREAS, OR WITHIN THE AREAS INDICATED IN THE PLANS, IN CONFORMANCE WITH SECTION 705 OF THE SHA STANDARD SPECIFICATIONS.
- MEADOW ESTABLISHMENT SHALL BE PERFORMED IN AREAS AS INDICATED IN THE PLANS, IN CONFORMANCE WITH SECTIONS 706 AND 707 OF THE SHA STANDARD SPECIFICATIONS.
- THE INSTALLATION OF TREES, SHRUBS, PLANTING BEDS AND OTHER LANDSCAPE CONSTRUCTION RELATED TO SECTION 710 OF THE SHA STANDARD SPECIFICATIONS SHALL CONFORM TO THE SHA BOOK OF STANDARDS FOR HIGHWAY & INCIDENTAL STRUCTURES – CATEGORY 7.
- TREES AND OTHER PLANT MATERIAL INSTALLATION. TREES, SHRUBS, PERENNIALS, ANNUALS, BULBS, LANDSCAPE BEDS, BARK MULCH AND SIMILAR MATERIALS SHALL BE INSTALLED IN CONFORMANCE WITH SECTION 710 AND 920 OF THE SHA STANDARD SPECIFICATIONS.

LOWLAND MEADOW ESTABLISHMENT

SPECIES	APPLICATION RATE GRAM PER SY	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTH	FERTILIZER AND LIME
FORBS			SPRING 3/1 TO 4/30 SUMMER 5/1 to 7/31 FALL 8/1 to 10/30	0.5"	NO FERTILIZER OR LIME TO BE APPLIED
COMMON BONESET	0.019	0.2			
COMMON EVENING PRIMROSE	0.019	0.2			
LANCELEAF TICKSEED	0.141	1.5			
NEW ENGLAND ASTER	0.019	0.2			
NEW YORK IRONWEED	0.019	0.2			
BEARDED BEGGARTICKS	0.019	0.2			
SWAMP VERBENA	0.066	0.7			
SPOTTED TRUMPETWEED	0.019	0.2			
SWAMP MILKWEED	0.038	0.4			
GRASSES, SEDGES & RUSHES					
BIG BLUESTEM	0.088	2.0			
EASTERN GAMAGRASS	0.188	2.0			
HARD FESCUE	1.876	20.0			
INDIANGRASS	0.188	2.0			
KENTUCKY BLUEGRASS	0.469	5.0			
SWITCHGRASS	0.094	1.0			
VIRGINIA WILDRYE	0.047	0.5			
	3.309 GRAM/SY	36.3 LB/AC			

UPLAND MEADOW ESTABLISHMENT

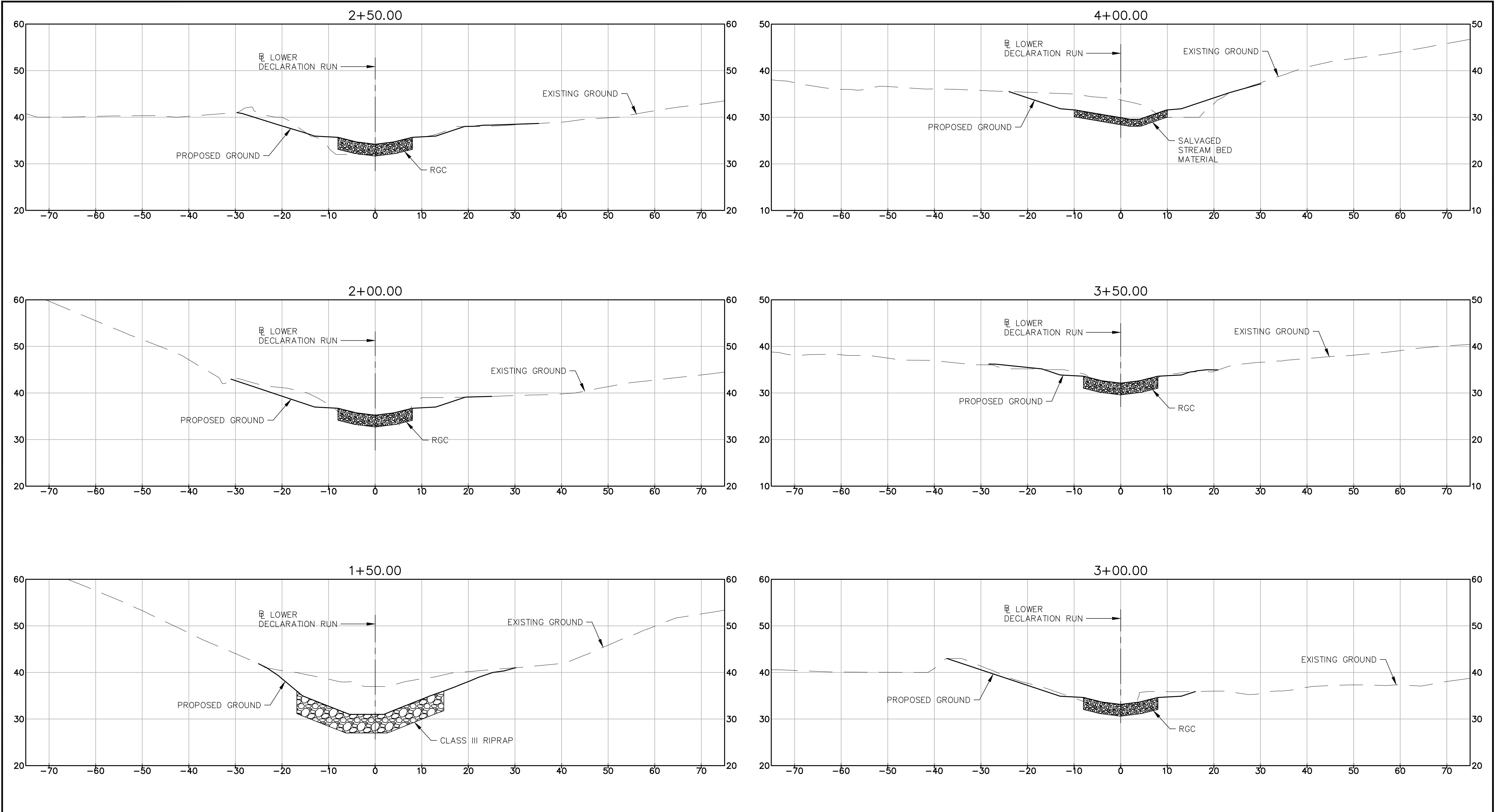
SPECIES	APPLICATION RATE GRAM PER SY	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTH	FERTILIZER AND LIME
FORBS			SPRING 3/1 TO 4/30 SUMMER 5/1 to 7/31 FALL 8/1 to 10/30	0.5"	NO FERTILIZER OR LIME TO BE APPLIED
BLACKEYED SUSAN	0.094	1.0			
EASTERN PURPLE CONEFLOWER	0.094	1.0			
GRAY GOLDENROD	0.038	0.4			
LANCELEAF TICKSEED	0.263	2.8			
MARYLAND SENNA	0.056	0.6			
PARTRIDGE PEA	0.225	2.4			
SMOOTH BLUE ASTER	0.038	0.4			
SUNDIAL LUPINE	0.263	2.8			
BUTTERFLY MILKWEED	0.038	0.4			
NARROWLEAF MOUNTAINMINT	0.094	1.0			
BLANKETFLOWER	0.047	0.5			
GRASSES, SEDGES & RUSHES					
BROOMSEDGE BLUESTEM	0.094	1.0			
DEERTONGUE	0.188	2.0			
HARD FESCUE	1.876	20.0			
LITTLE BLUESTEM	0.188	2.0			
PURPLETOP	0.094	1.0			
VIRGINIA WILDRYE	0.047	0.5			
	3.737 GRAM/SY	39.8 LB/AC			

TURFGRASS ESTABLISHMENT

HARDINESS ZONE: ZONE 6B 0° TO -5°

SEED MIXTURE :

NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTH	FERTILIZER RATE (10-20-20)	LIME RATE
9	TALL FESCUE (LOLIUM ARUNDINACEUM)	60	MAR 1 TO MAY 15 AUG 1 TO OCT 15	0.5"	436 LB/AC (10 LB/1,000 SF)	2 TONS/AC (90 LB/1,000 SF)
	KENTUCKY BLUEGRASS (POA PRATENSIS)	40				
	PERENNIAL RYEGRASS (LOLIUM PERENNE)	20				
		120 LB/AC				



- NOTES:
- CROSS SECTIONS ARE ORIENTED FACING DOWNSTREAM.
 - MAIN CHANNEL IS STABILIZED WITH RIFFLE GRADE CONTROL (RGC) MIX UNLESS NOTED OTHERWISE.

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LAWS OF THE STATE OF MARYLAND,
LICENSE NO. 16156
EXPIRATION DATE: 8/28/2022

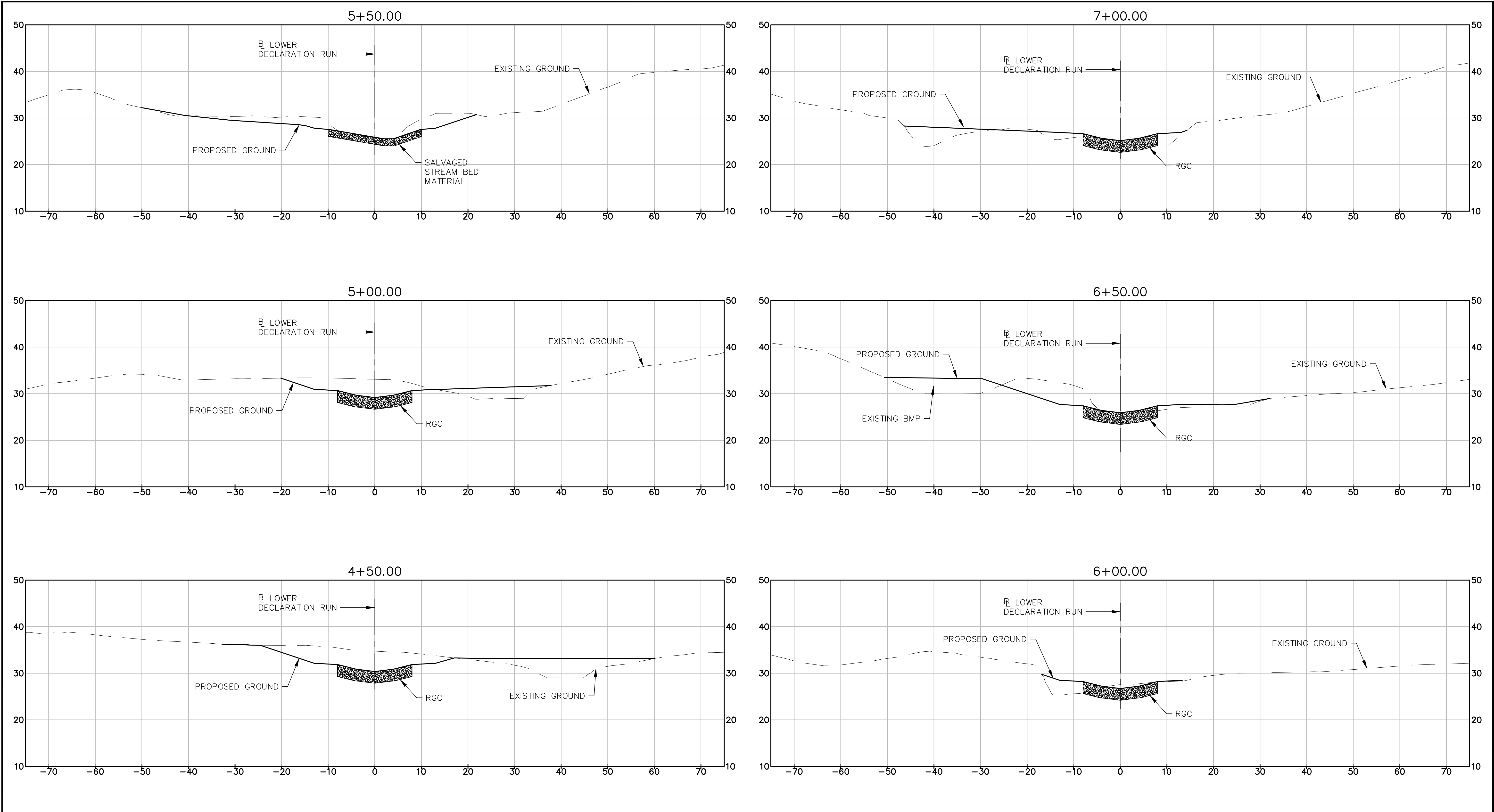
AECOM

REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
CROSS SECTIONS

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

CONTRACT NO : 97040
SCALE : HOR: 1"=10' VERT: 1"=10'
SHEET 36 OF 48
DATE : MARCH, 2022



- NOTES:
- CROSS SECTIONS ARE ORIENTED FACING DOWNSTREAM.
 - MAIN CHANNEL IS STABILIZED WITH RIFFLE GRADE CONTROL (RGC) MIX UNLESS NOTED OTHERWISE.

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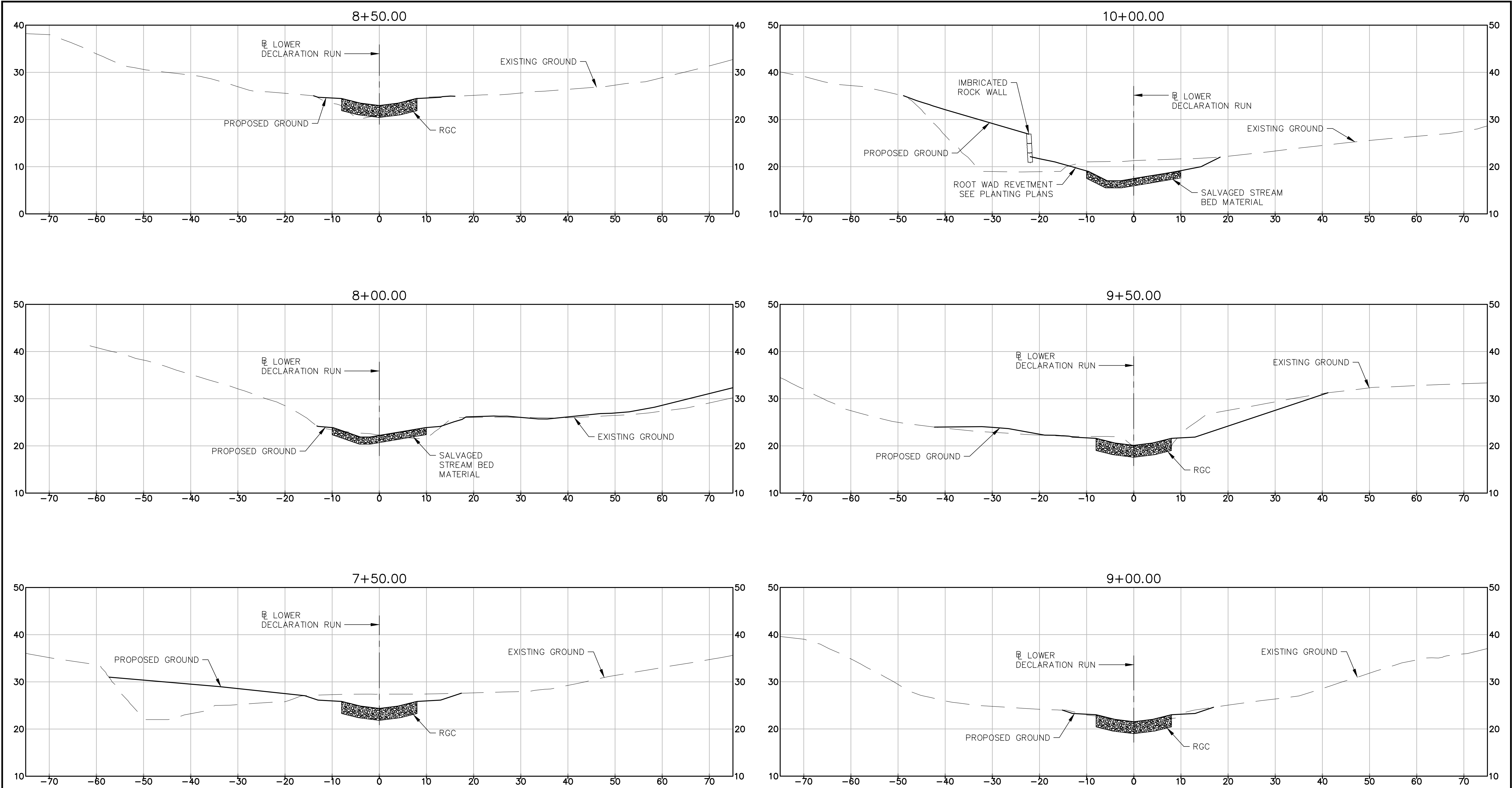
AECOM

REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
CROSS SECTIONS

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

CONTRACT NO : 97040
SCALE : HOR: 1"=10' VERT: 1"=10'
SHEET 37 OF 48
DATE : MARCH, 2022



- NOTES:
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 - 2. MAIN CHANNEL IS STABILIZED WITH RIFFLE GRADE CONTROL (RGC) MIX UNLESS NOTED OTHERWISE.

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EXPIRATION DATE: 8/28/2022

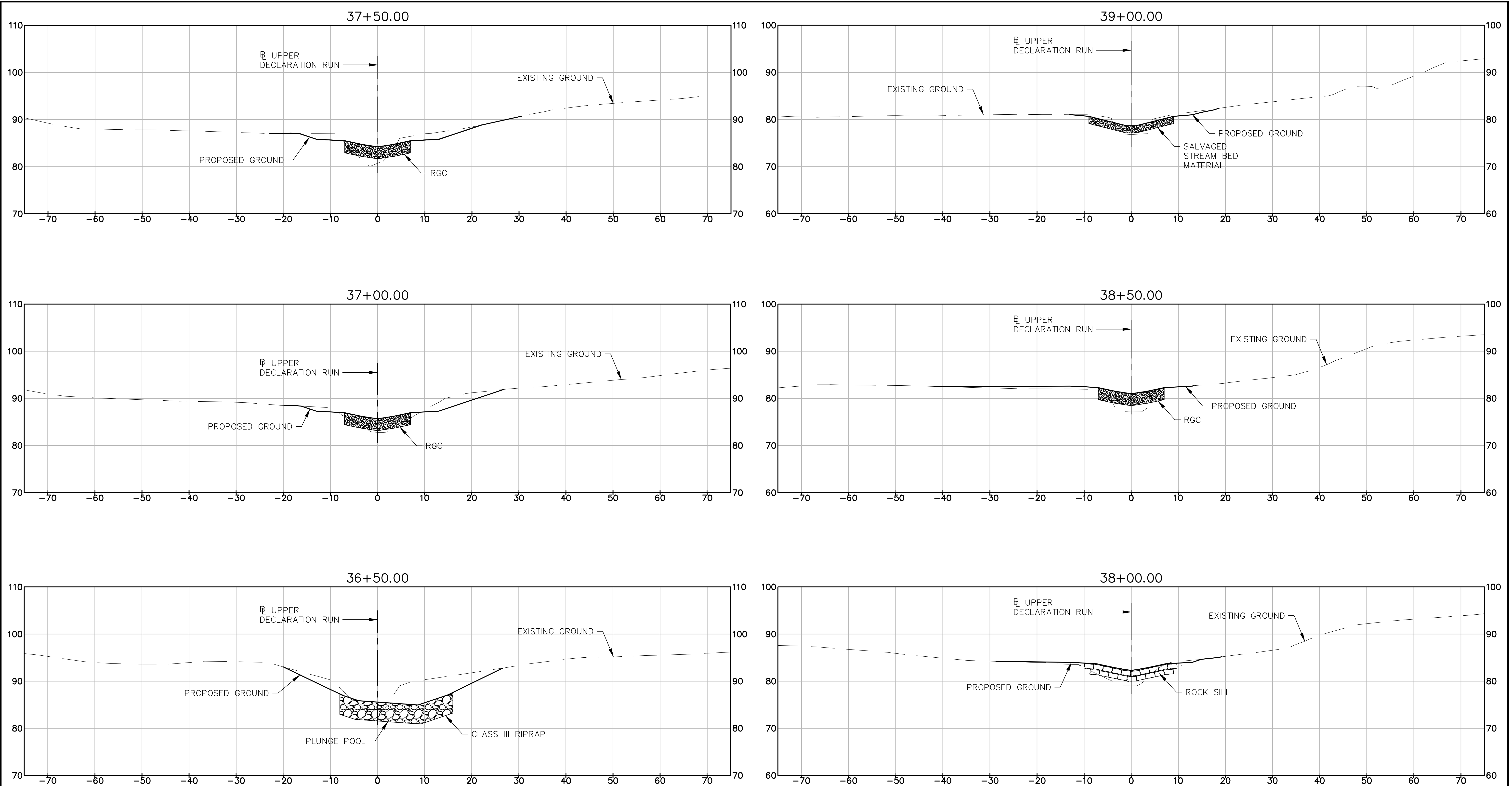
AECOM

REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
CROSS SECTIONS

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

CONTRACT NO : 97040
SCALE : HOR: 1"=10' VERT: 1"=10'
SHEET 38 OF 48
DATE : MARCH, 2022



- NOTES:
- CROSS SECTIONS ARE ORIENTED FACING DOWNSTREAM.
 - MAIN CHANNEL IS STABILIZED WITH RIFFLE GRADE CONTROL (RGC) MIX UNLESS NOTED OTHERWISE.

PROFESSIONAL CERTIFICATION
"I HEREBY CERTIFY THAT 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. 16156
EXPIRATION DATE: 8/28/2022"

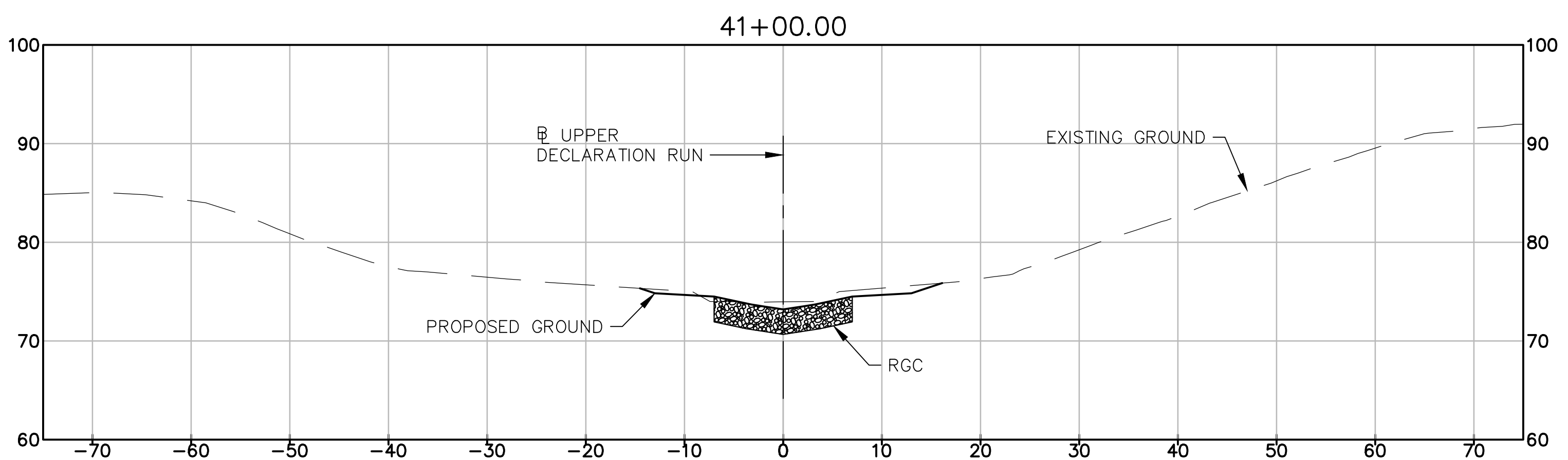
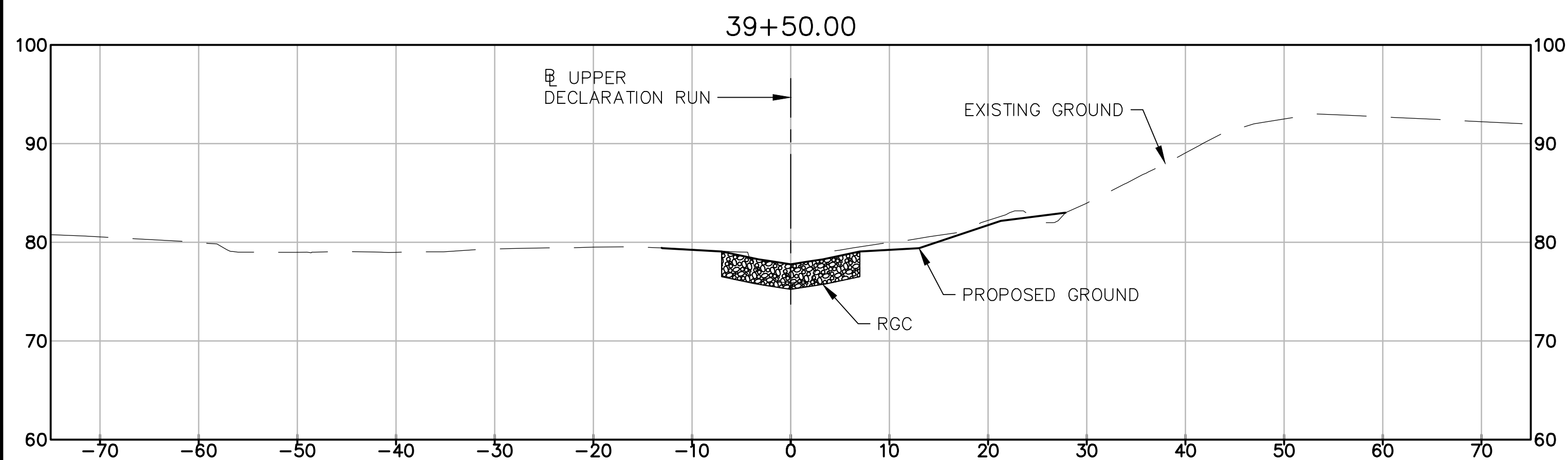
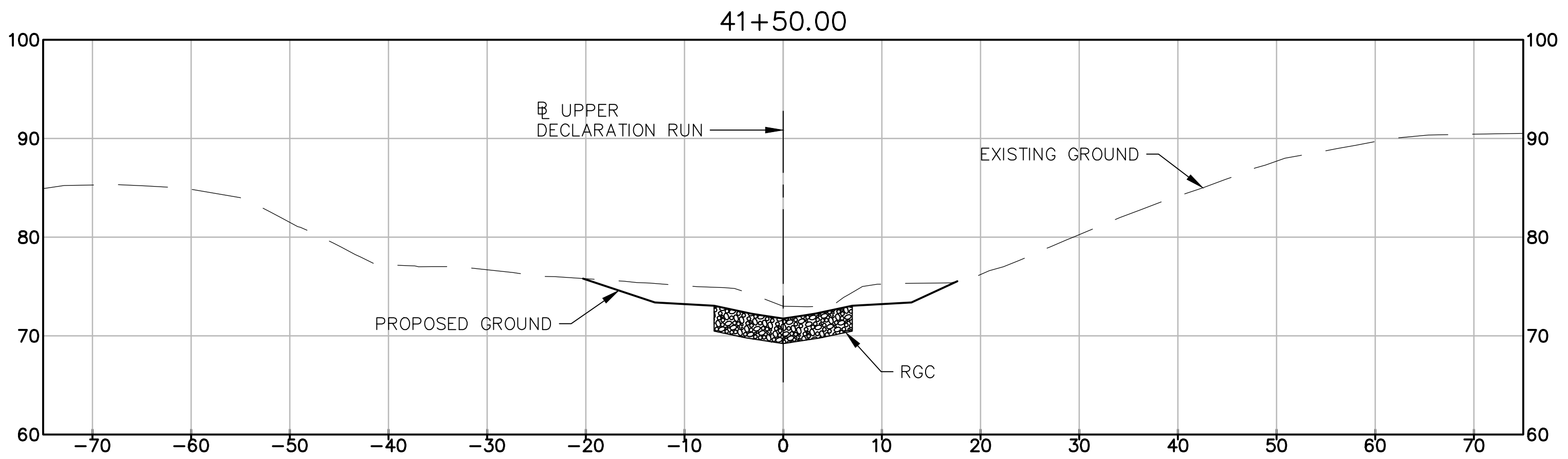
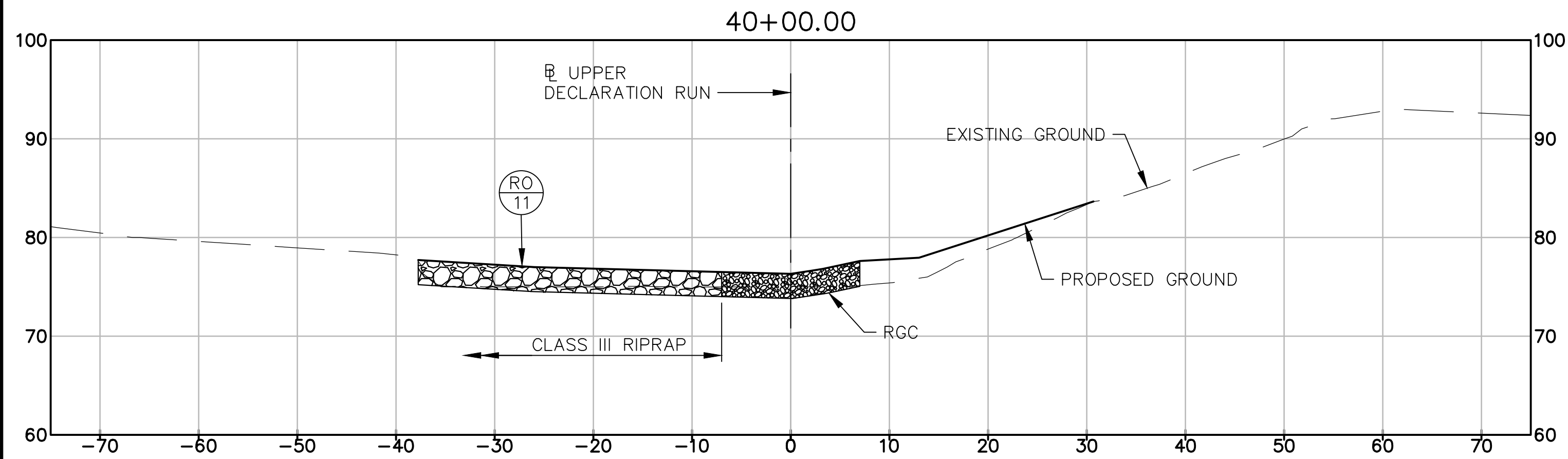
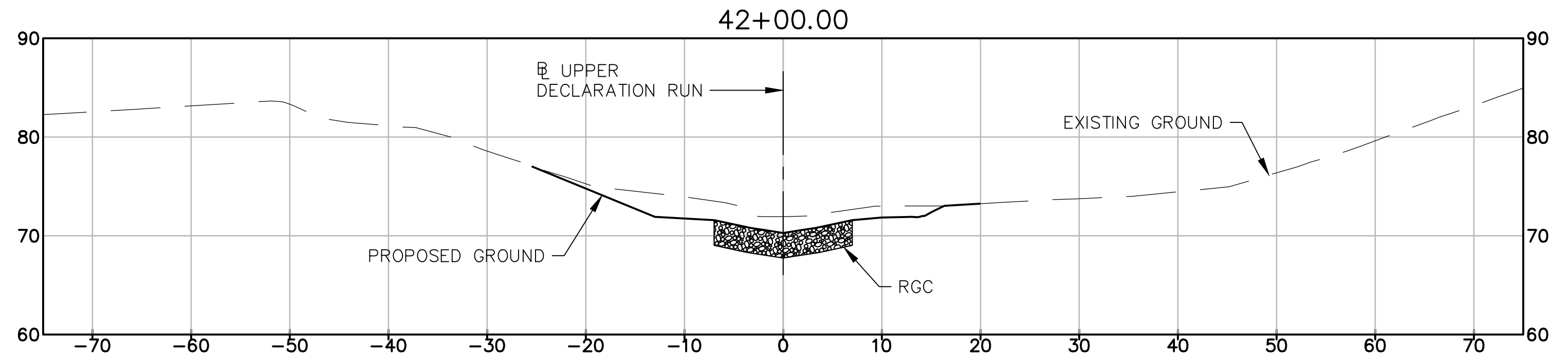
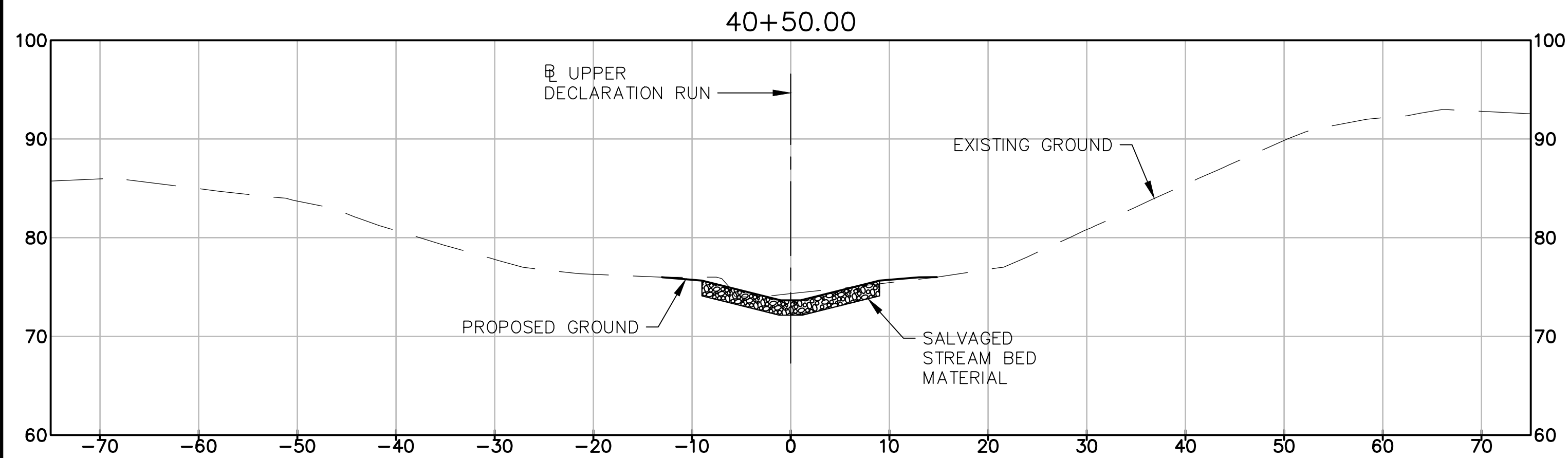
AECOM

REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
CROSS SECTIONS

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

CONTRACT NO : 97040
SCALE : HOR: 1"=10' VERT: 1"=10'
SHEET 39 OF 48
DATE : MARCH, 2022



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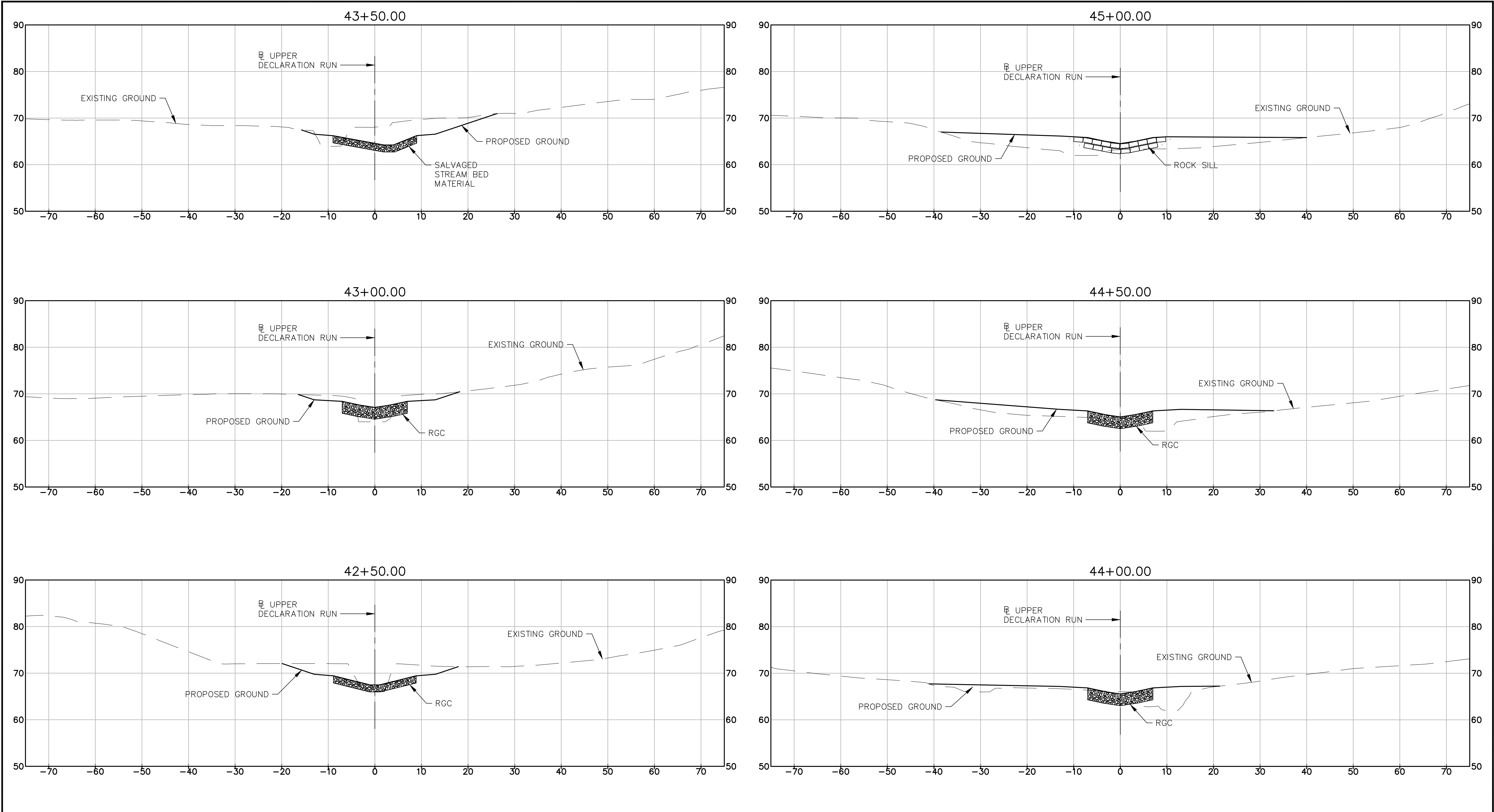
AECOM

REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
CROSS SECTIONS

DRAWN BY : BJK
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SHEET 40 OF 48
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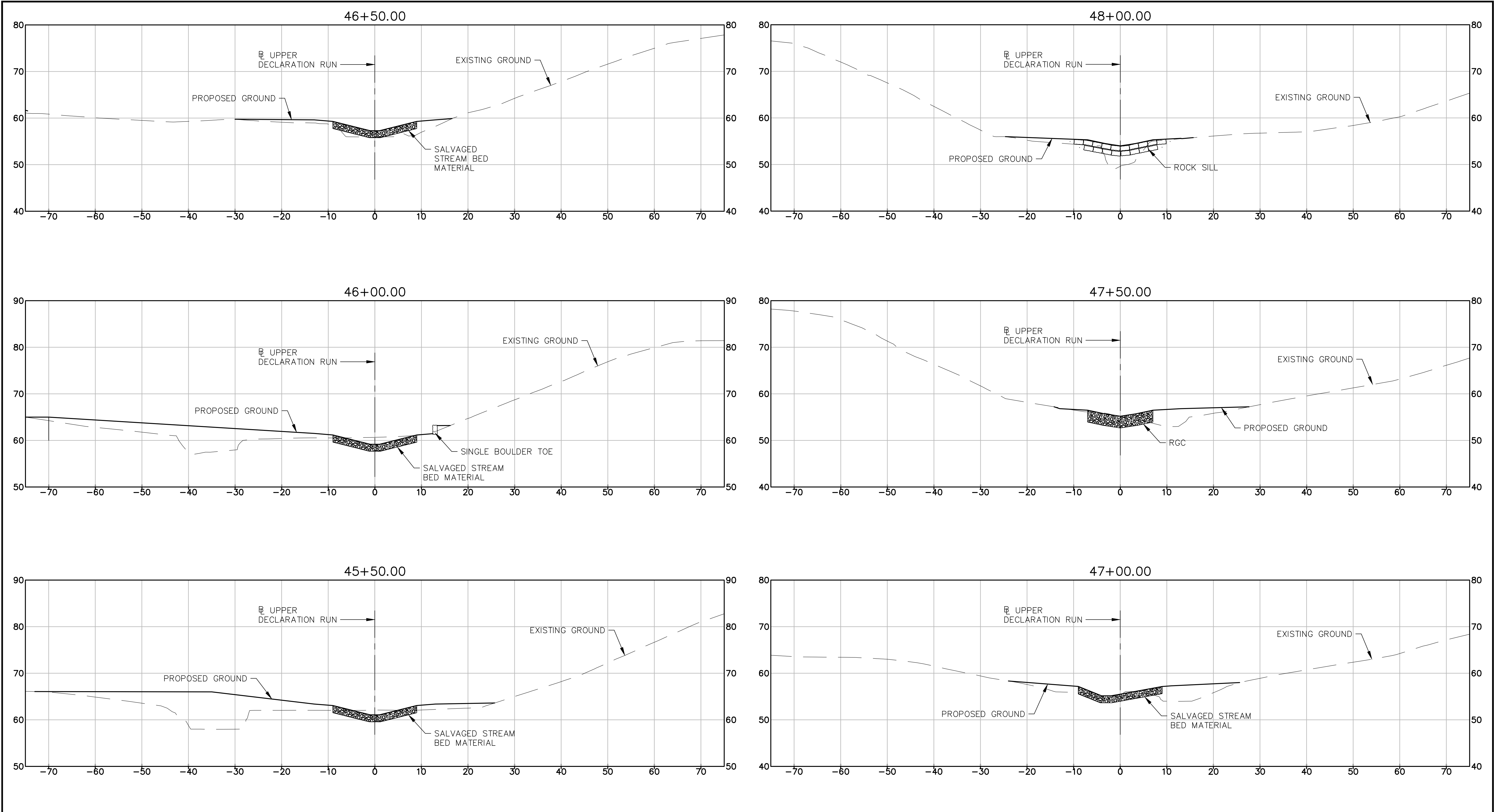
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REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
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DRAWN BY : BJK
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SHEET 41 OF 48
DATE : MARCH, 2022



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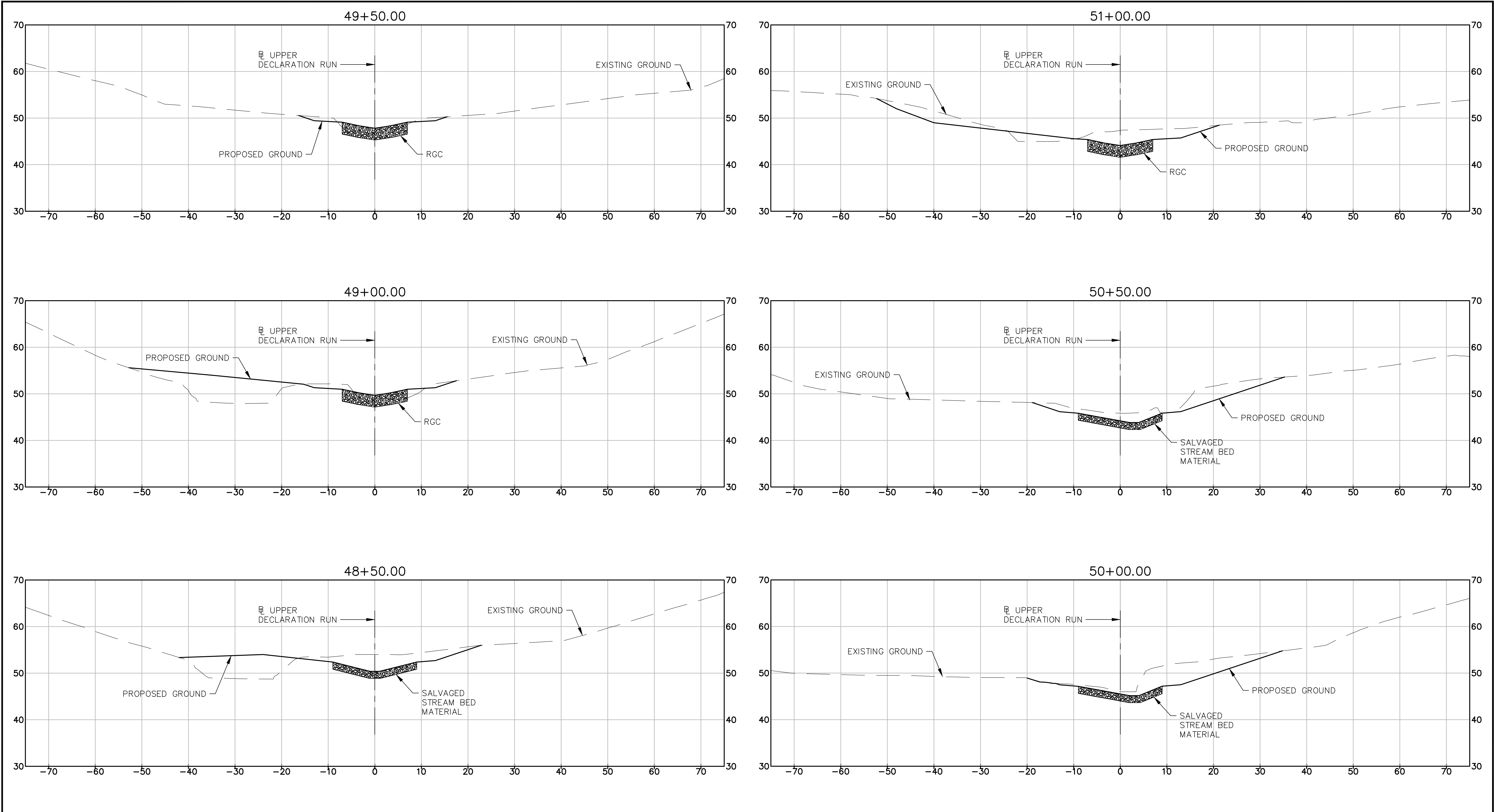
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REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
CROSS SECTIONS

DRAWN BY : BJK
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CONTRACT NO : 97040
SCALE : HOR: 1"=10' VERT: 1"=10'
SHEET 42 OF 48
DATE : MARCH, 2022



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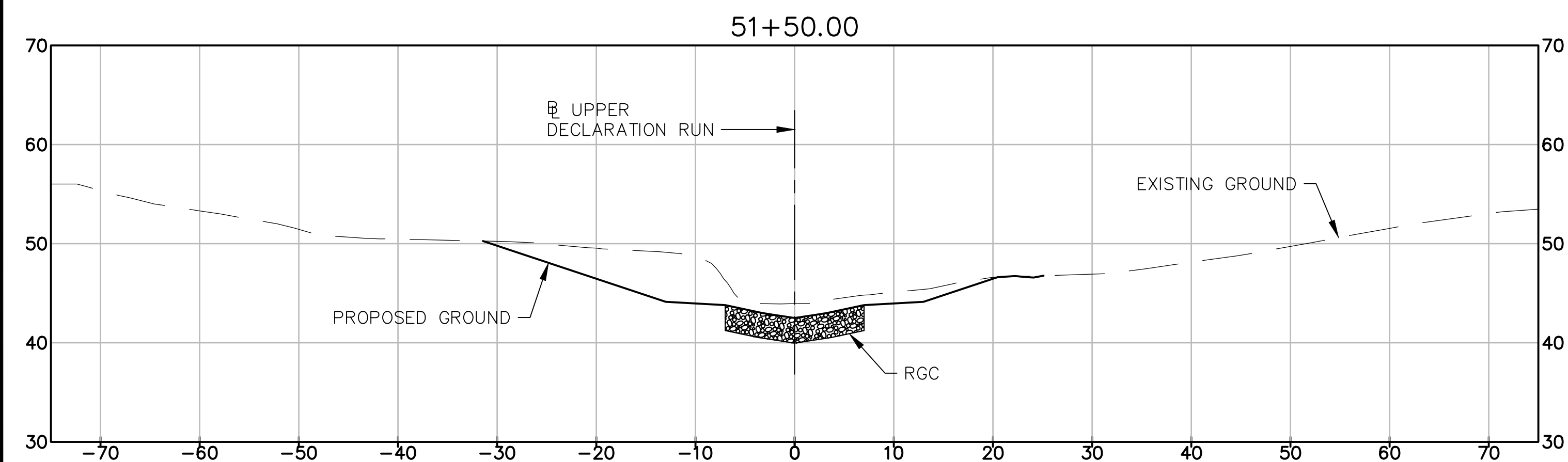
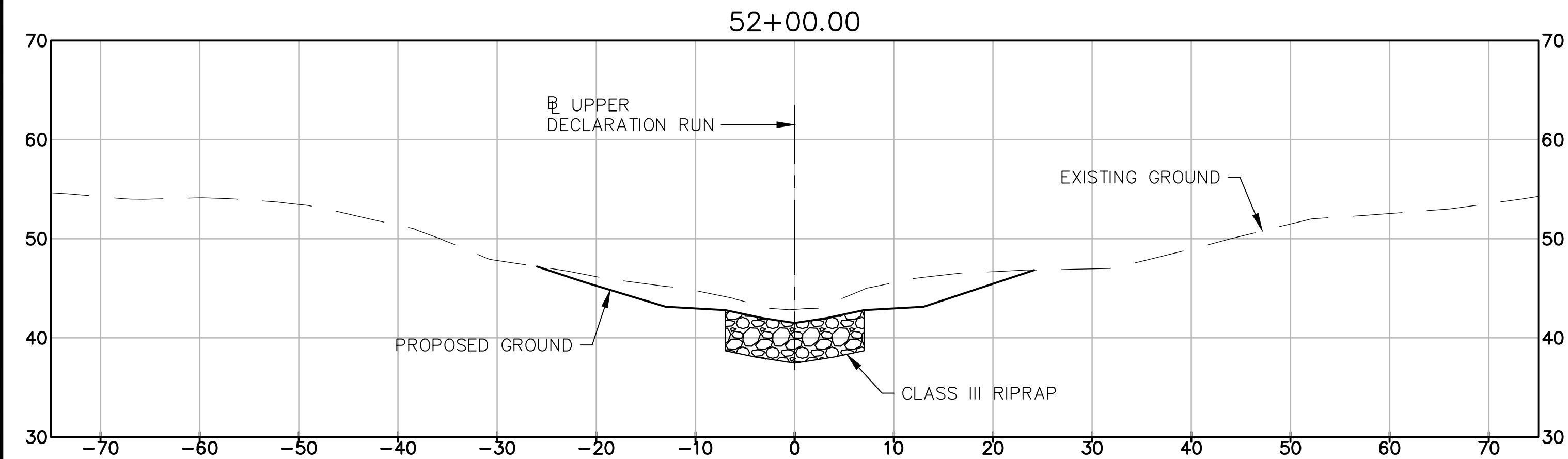
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REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
CROSS SECTIONS

DRAWN BY : BJK
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CONTRACT NO : 97040
SCALE : HOR: 1"=10' VERT: 1"=10'
SHEET 43 OF 48
DATE : MARCH, 2022



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EXPIRATION DATE: 8/28/2022"

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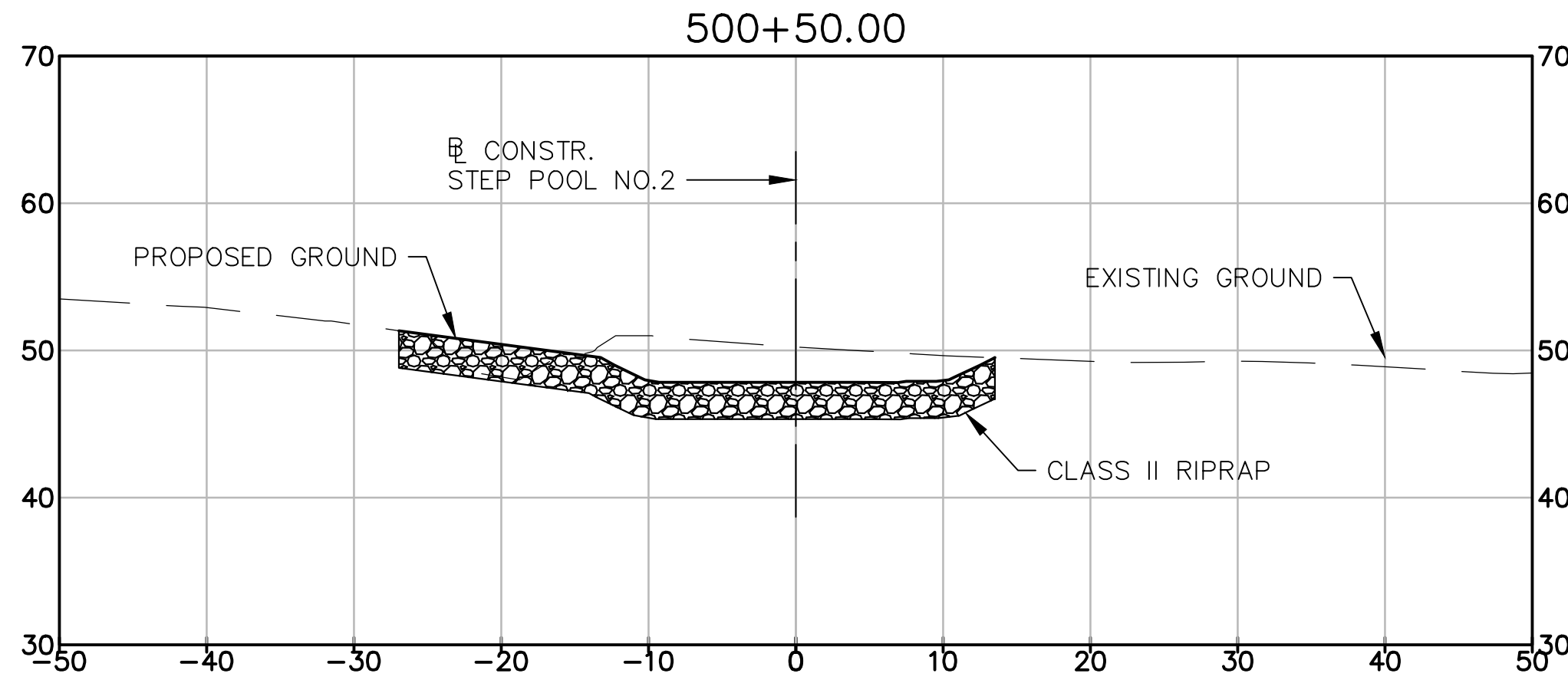
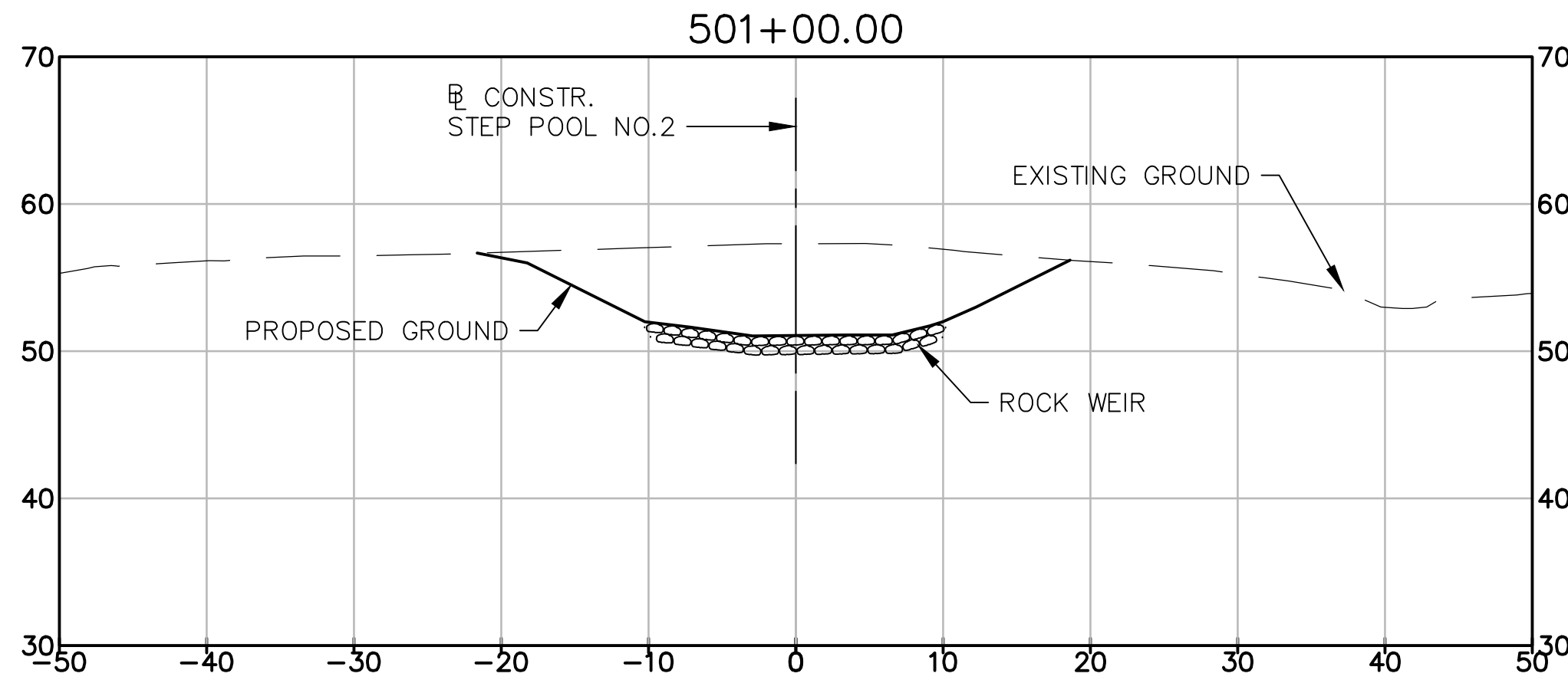
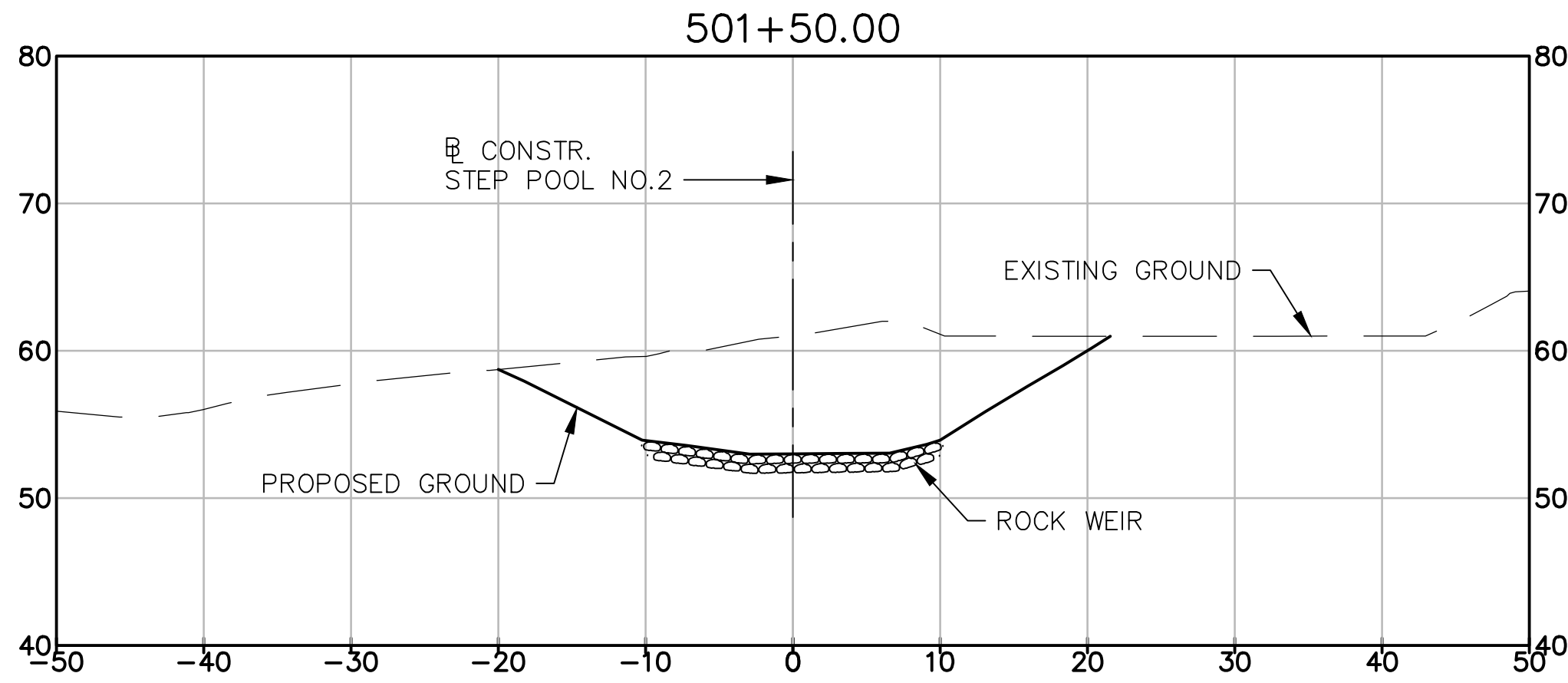
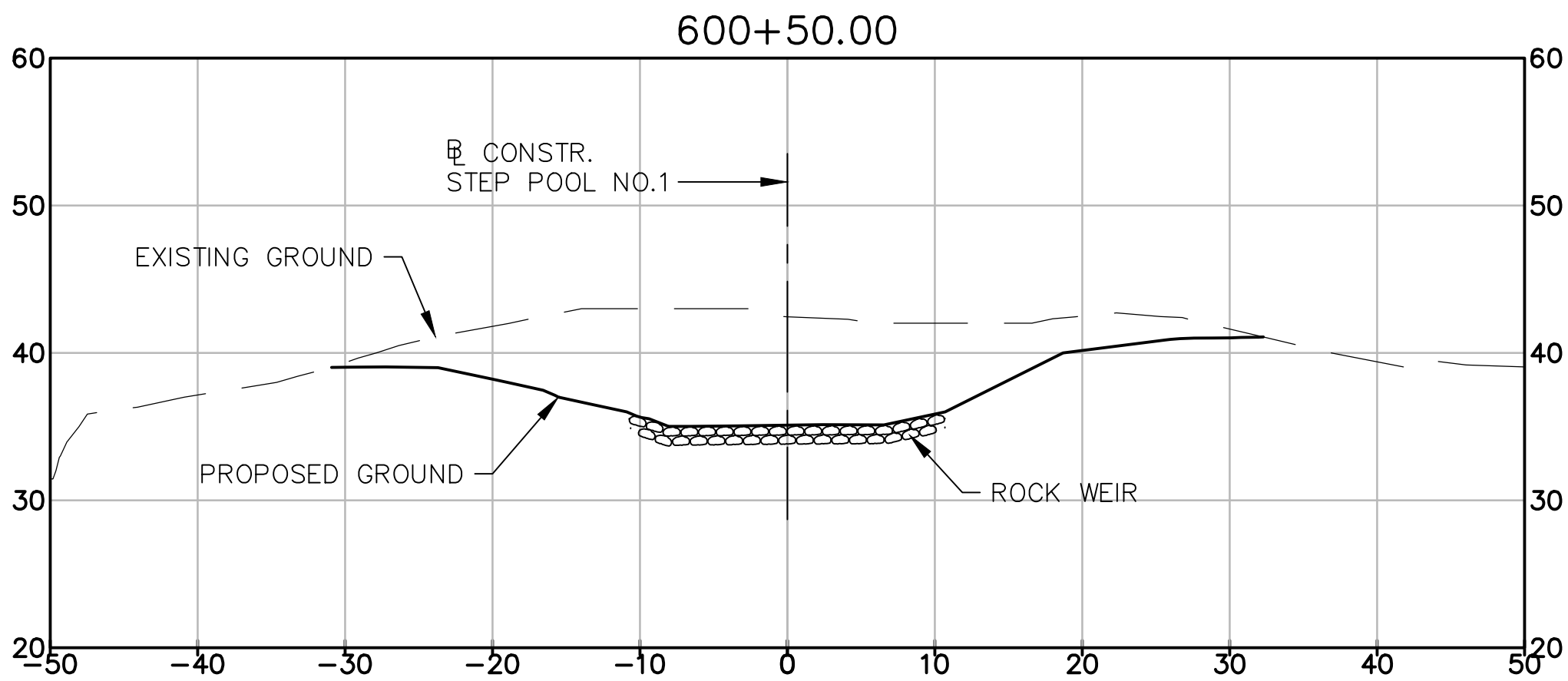
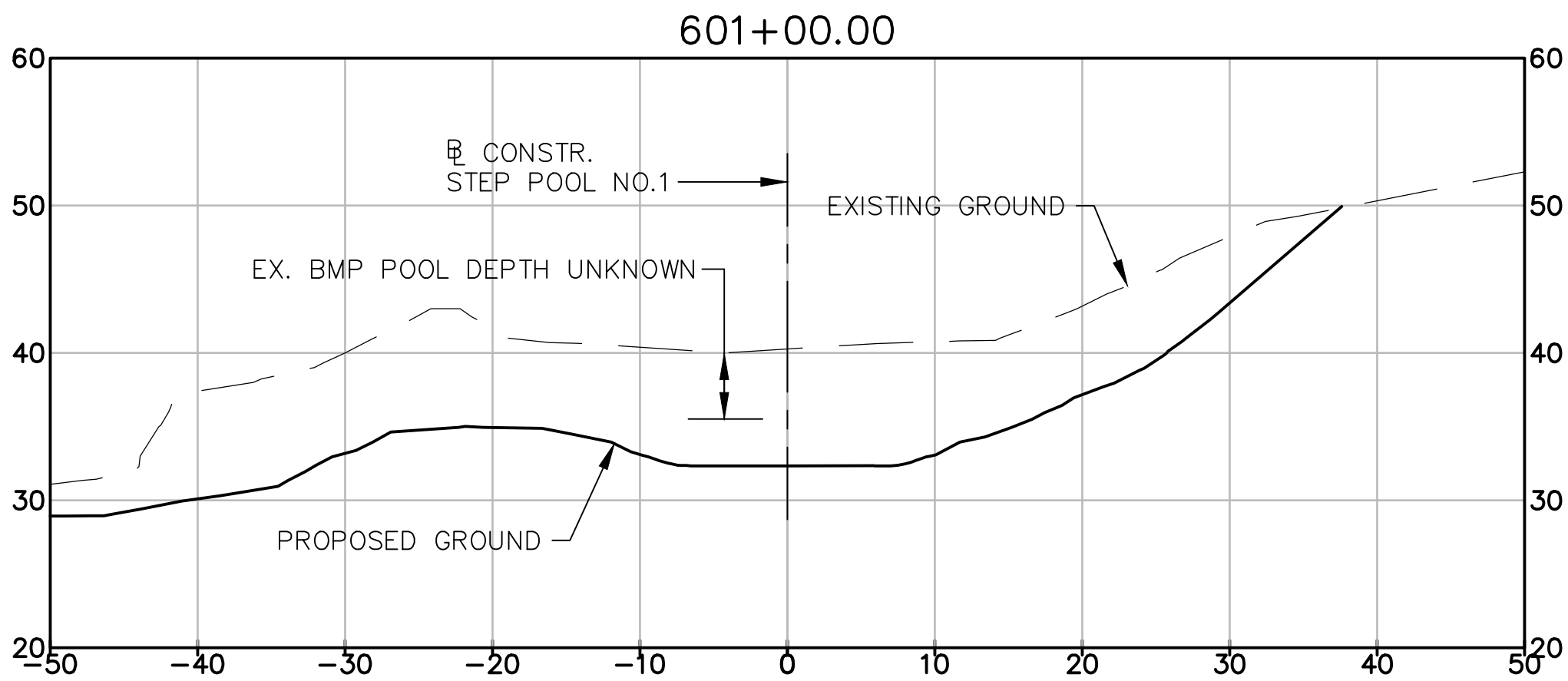
REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
CROSS SECTIONS

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

CONTRACT NO : 97040
SCALE : HOR: 1"=10' VERT: 1"=10'
SHEET 44 OF 48
DATE : MARCH, 2022

CS-09



NOTES:
1. CROSS SECTIONS ARE ORIENTED FACING UPSTREAM.

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EXPIRATION DATE: 8/28/2022

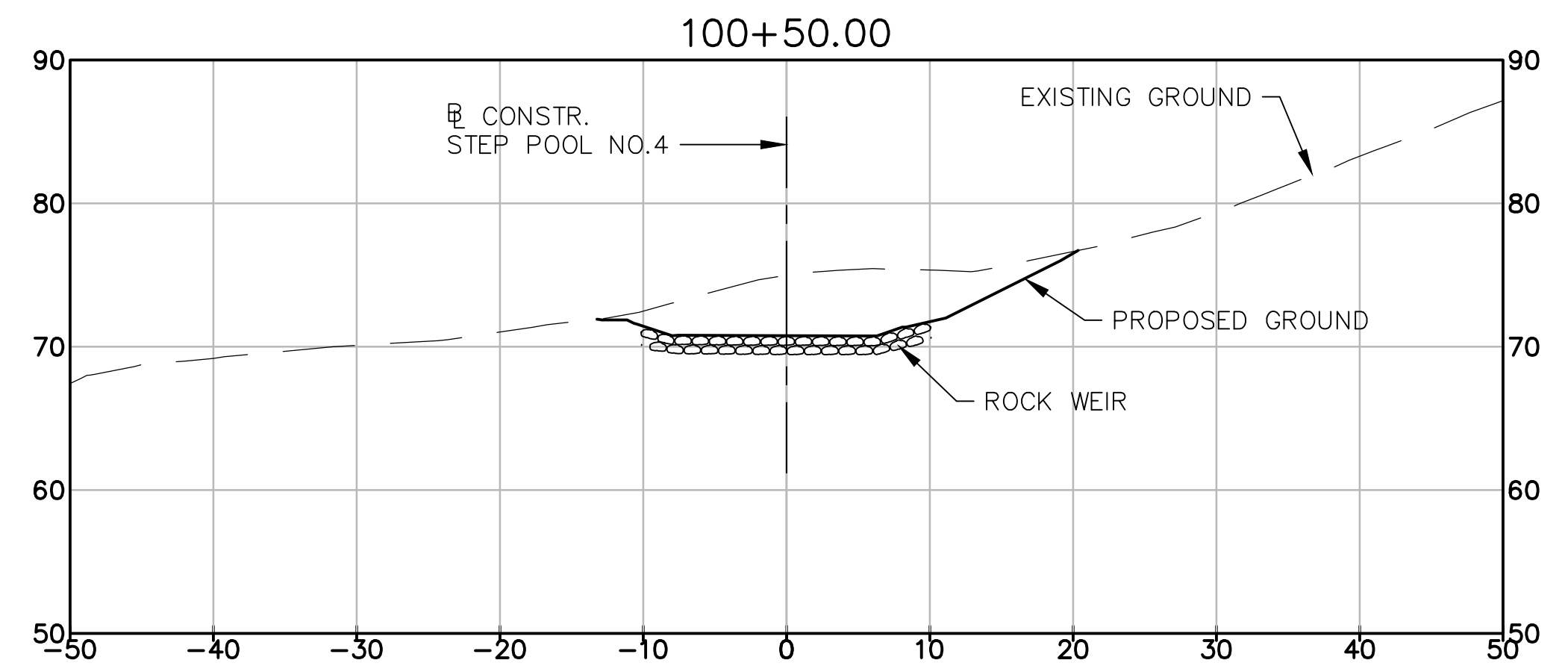
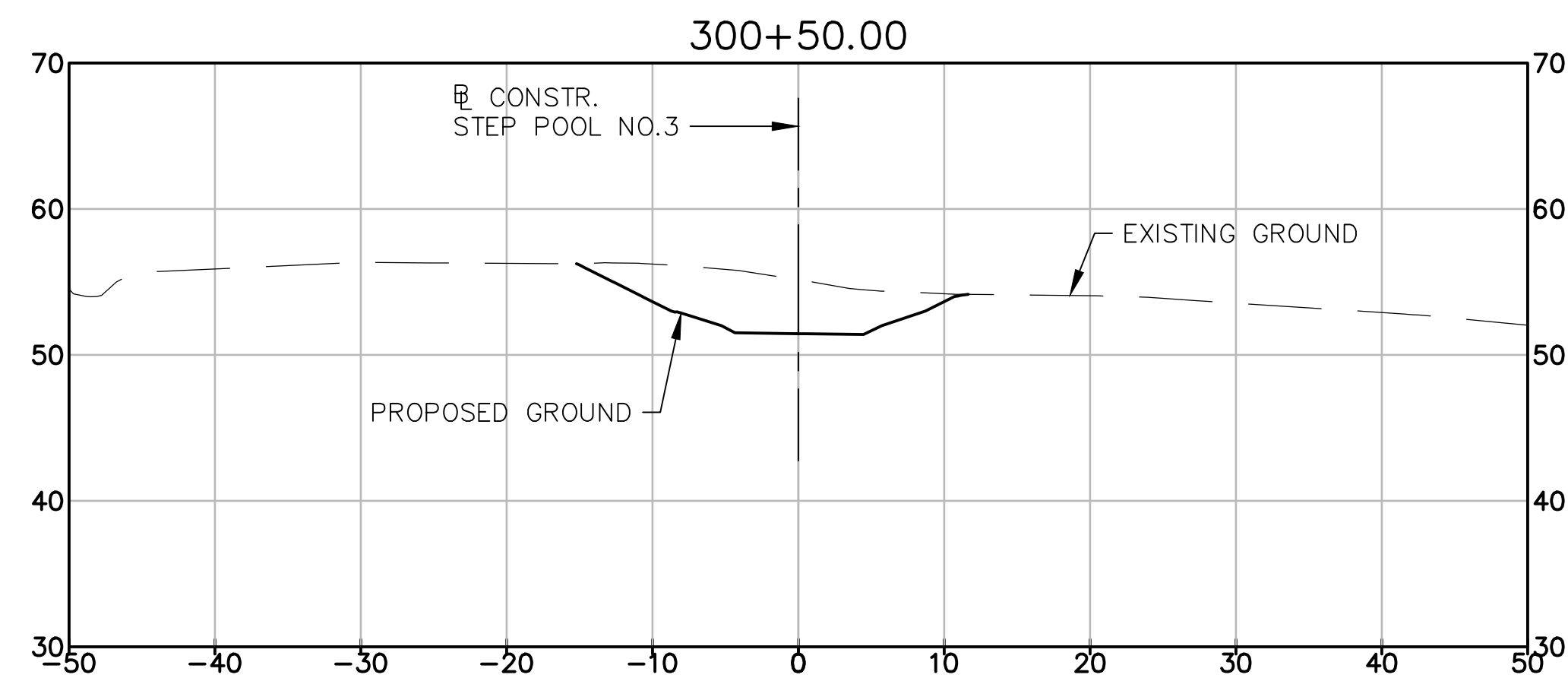
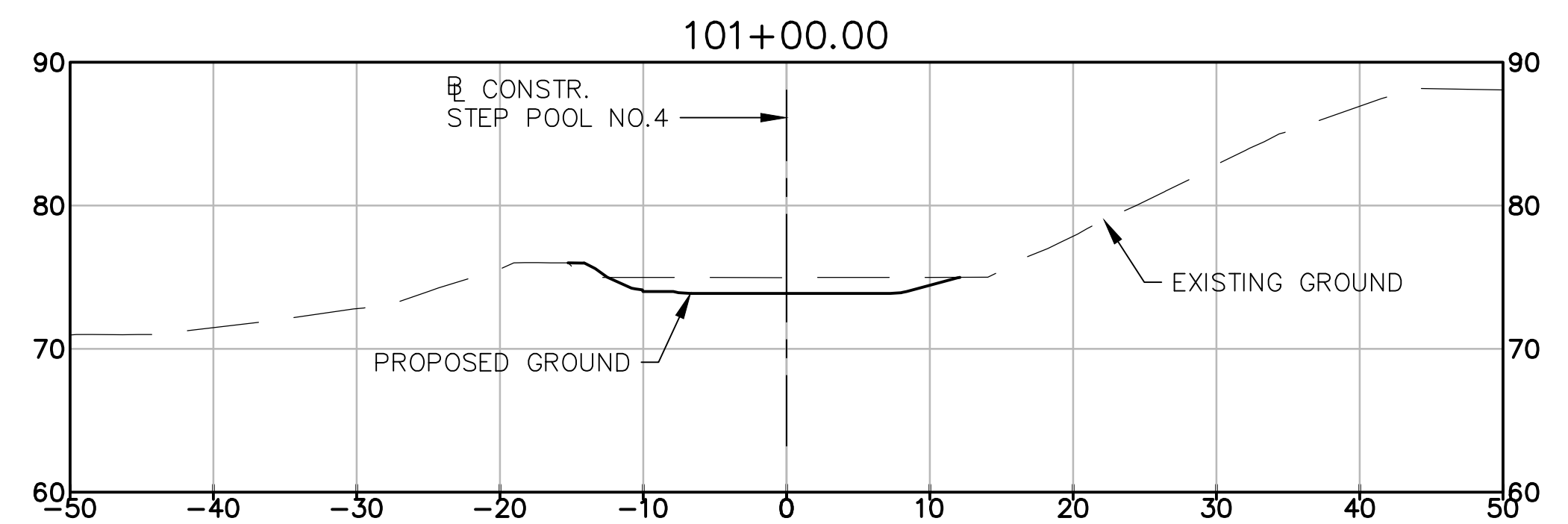
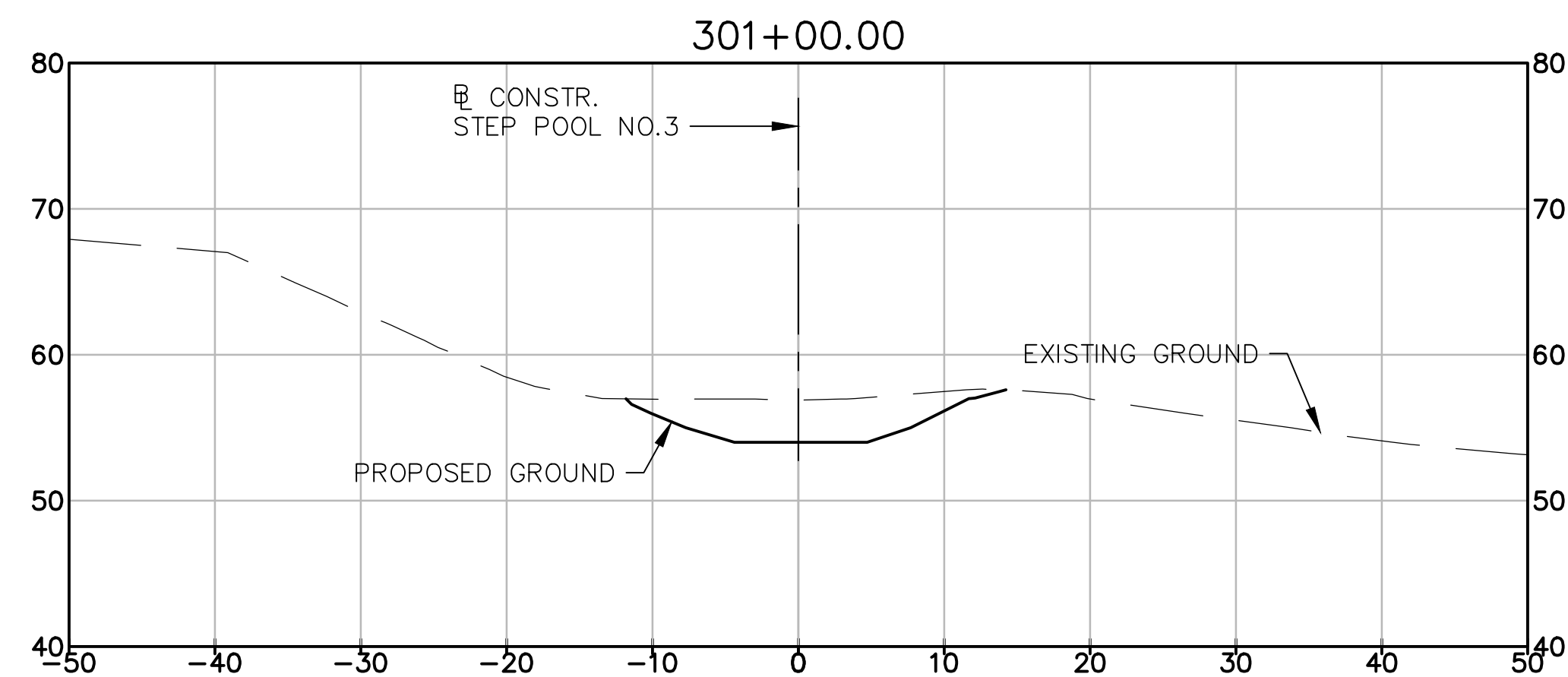
AECOM

REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
CROSS SECTIONS

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

CONTRACT NO : 97040
SCALE : HOR: 1"=10' VERT: 1"=10'
SHEET 45 OF 48
DATE : MARCH, 2022



NOTES:

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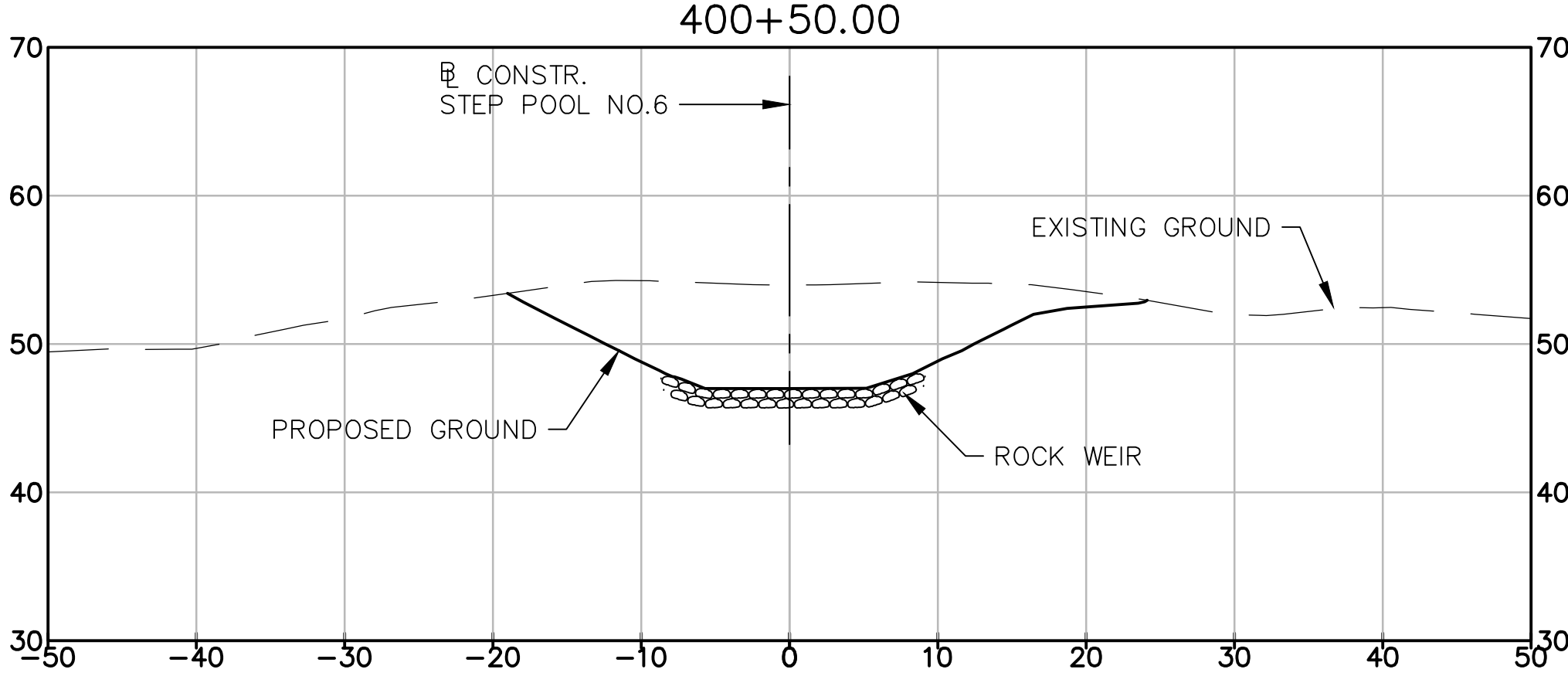
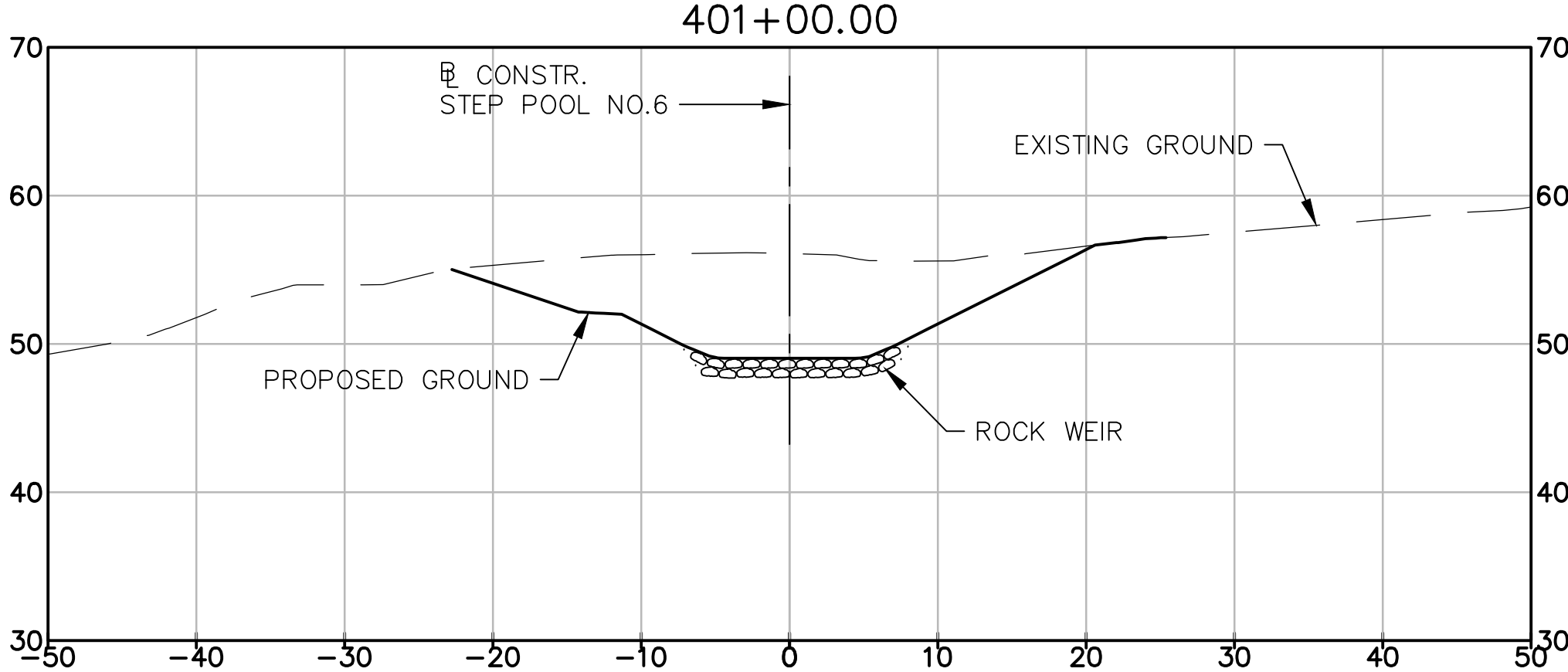
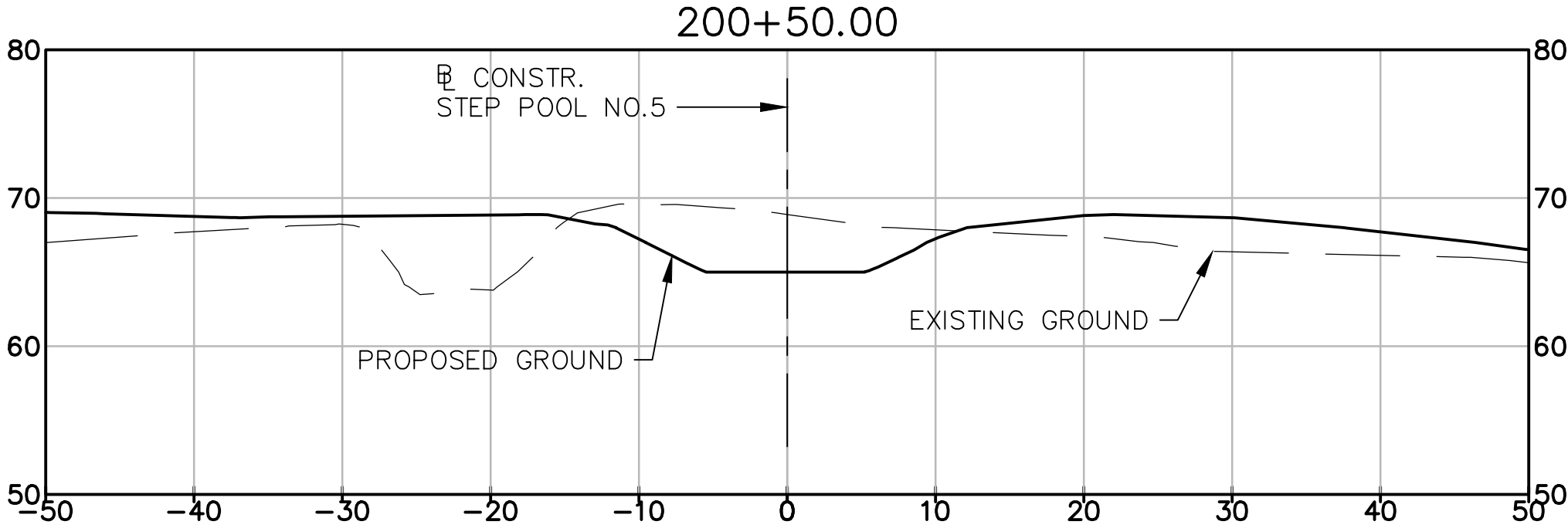
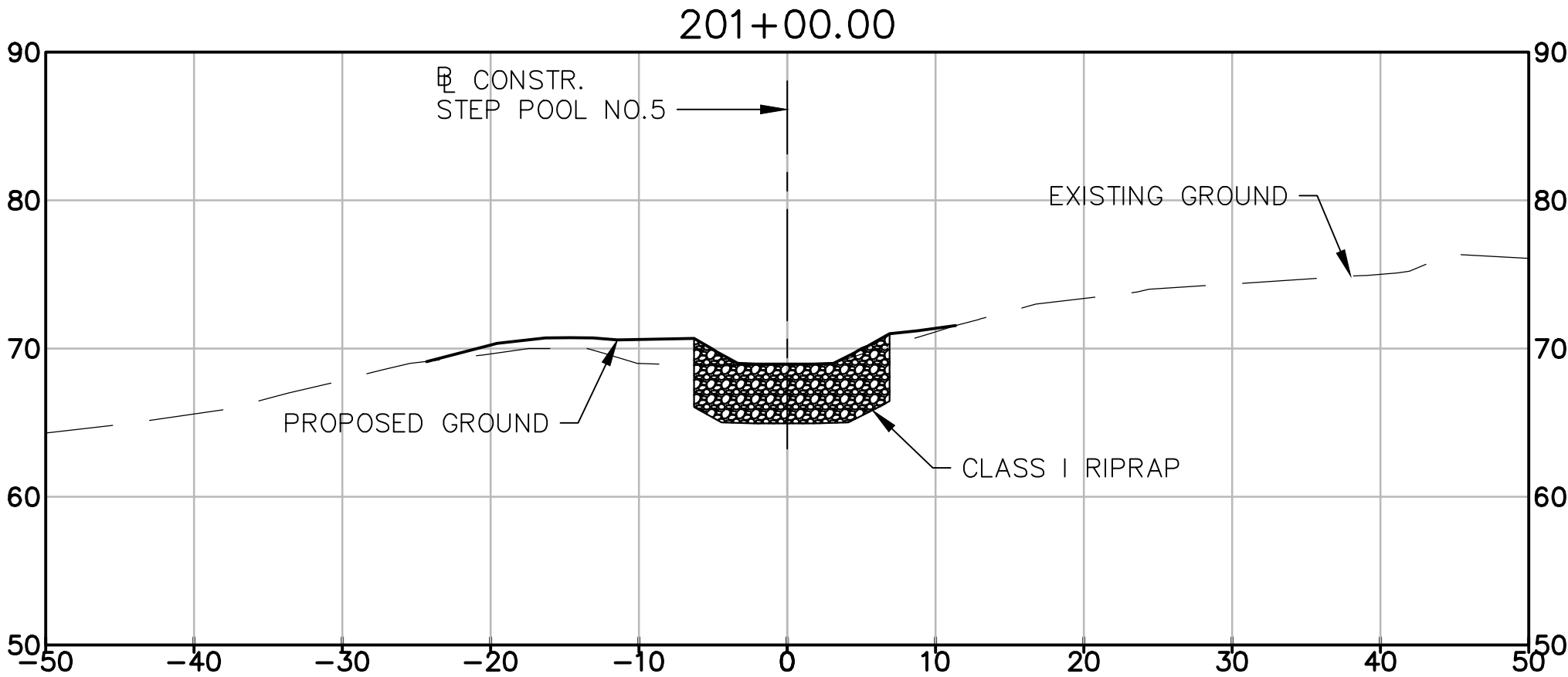
AECOM

REVISIONS

HARFORD COUNTY, MARYLAND
DECLARATION RUN STREAM RESTORATION
CROSS SECTIONS

DRAWN BY : BJK
DESIGNED BY : NJF
REVIEWED BY : DTM

CONTRACT NO : 97040
SCALE : HOR: 1"=10' VERT: 1"=10'
SHEET 46 OF 48
DATE : MARCH, 2022



NOTES:

1. CROSS SECTIONS ARE ORIENTED FACING UPSTREAM.

PROFESSIONAL CERTIFICATION

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AECOM

REVISIONS

HARFORD COUNTY, MARYLAND

DECLARATION RUN STREAM RESTORATION

CROSS SECTIONS

DRAWN BY : BJK

DESIGNED BY : NJF

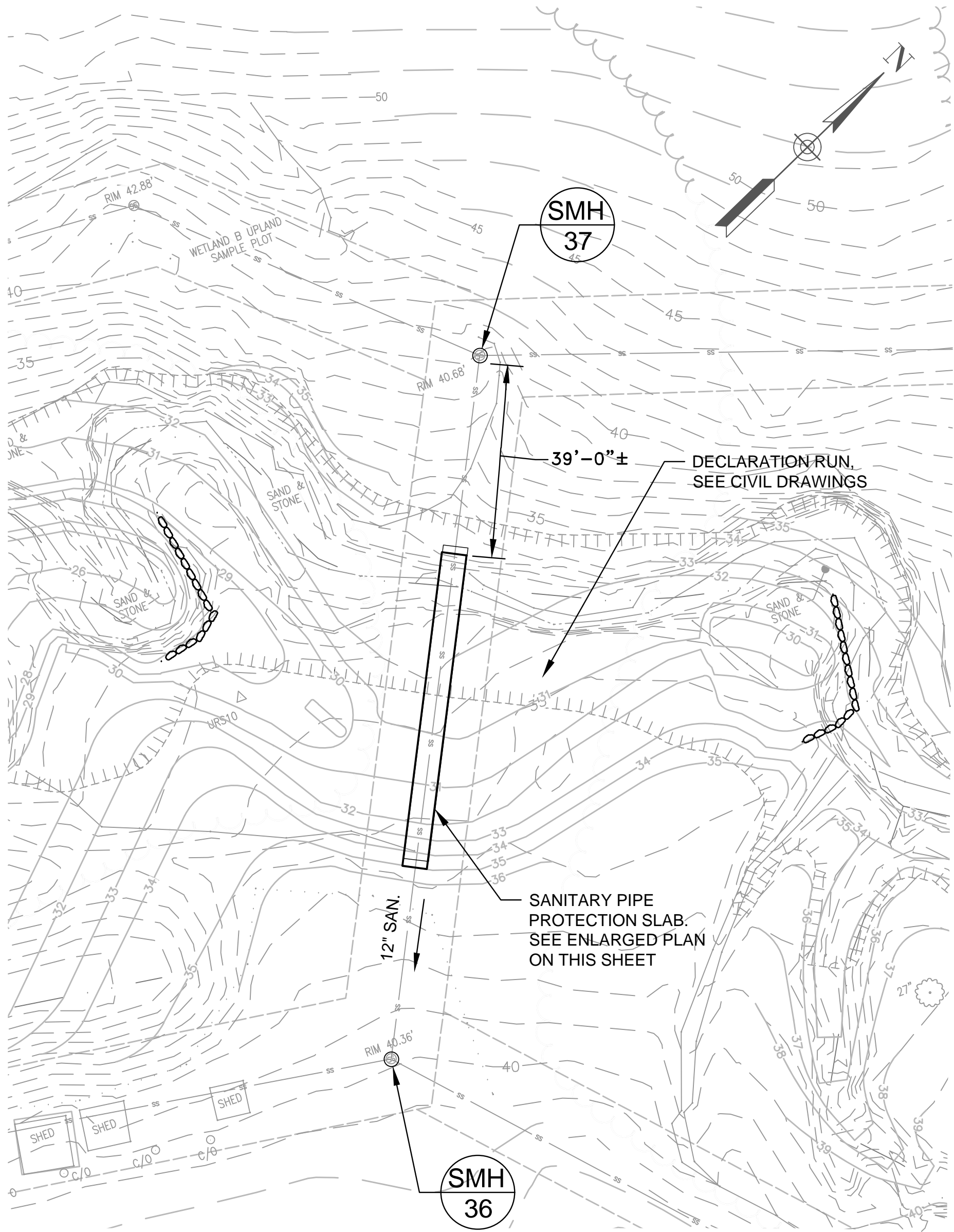
REVIEWED BY : DTM

CONTRACT NO : 97040

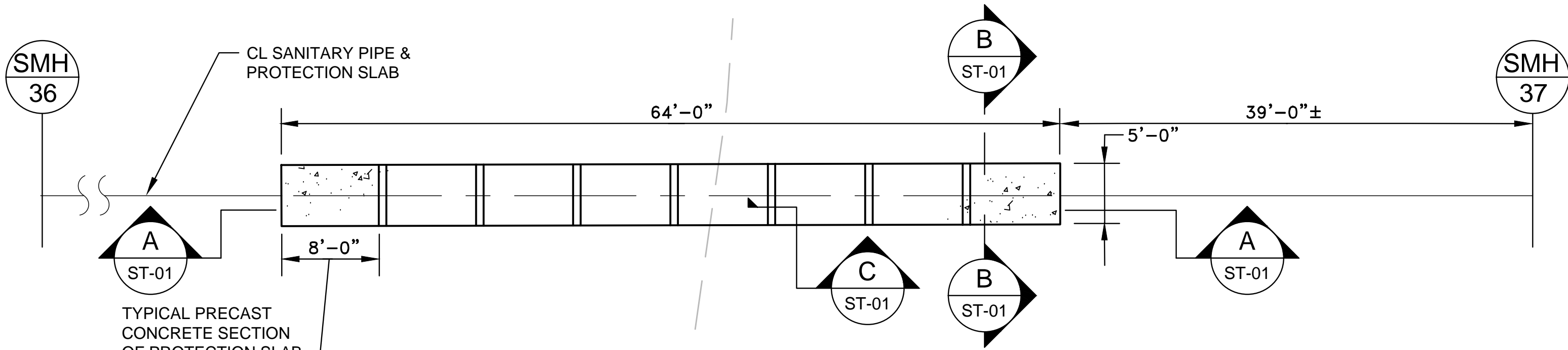
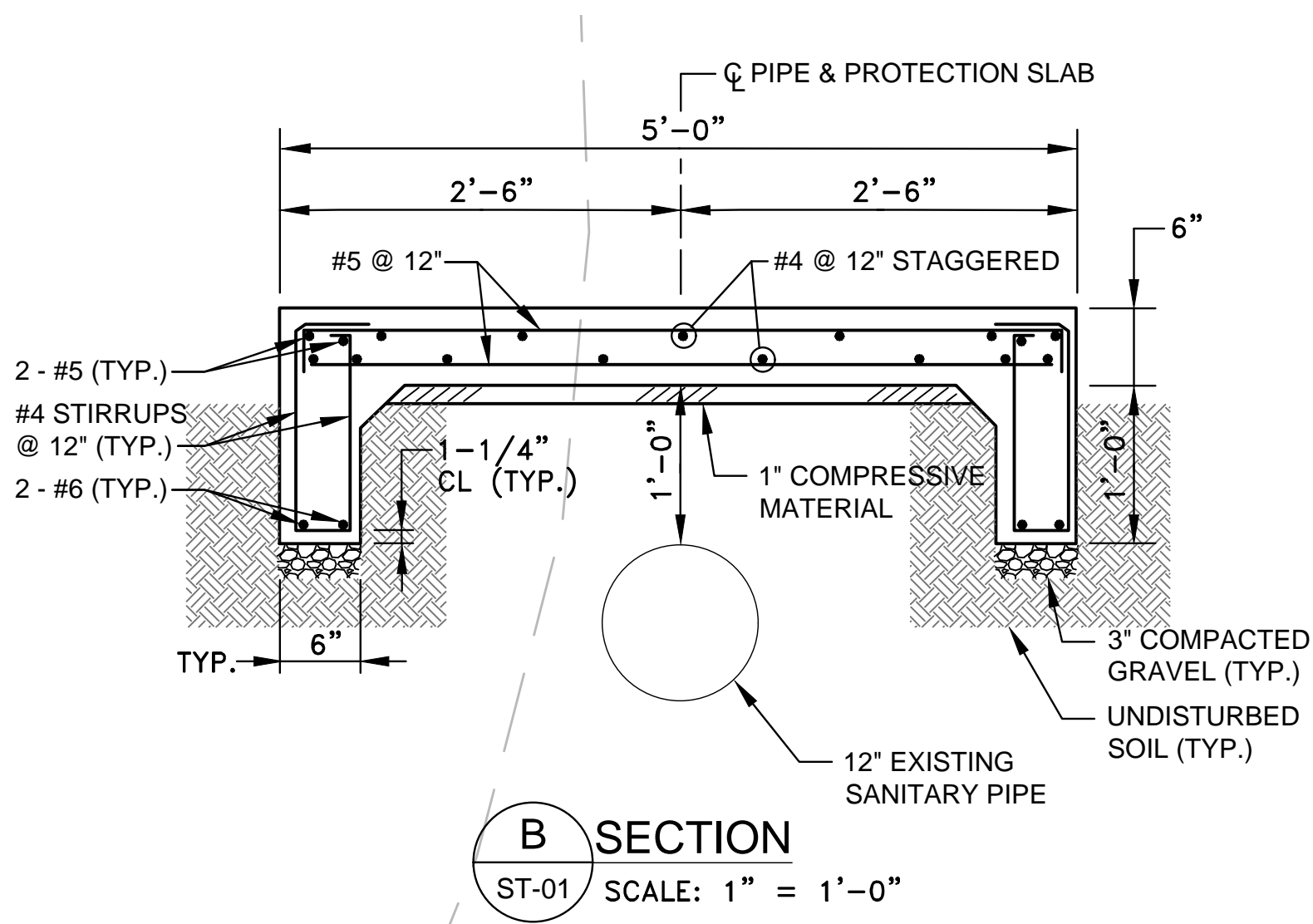
SCALE : HOR: 1"=10' VERT: 1"=10'

SHEET 47 OF 48

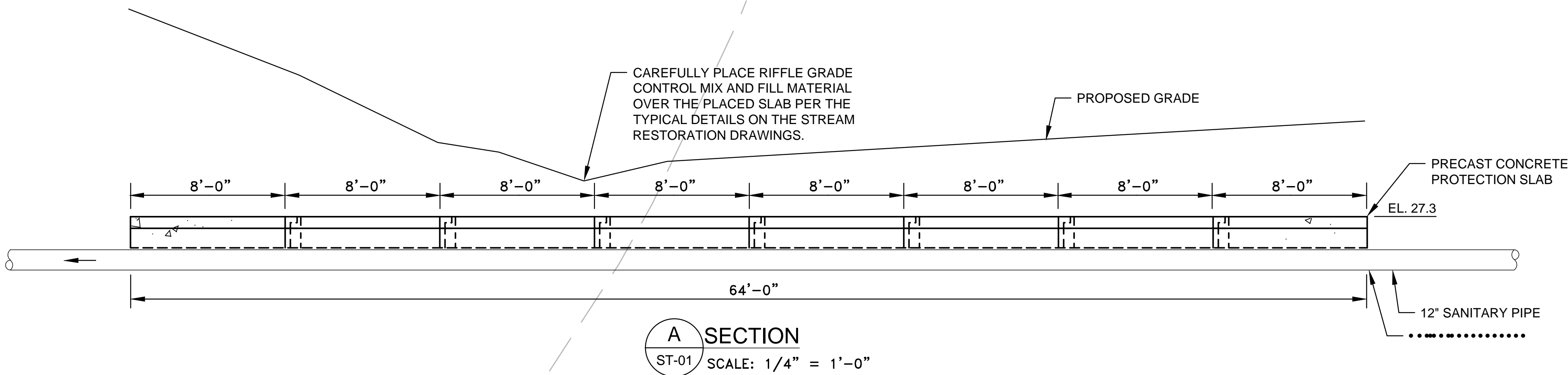
DATE : MARCH, 2022



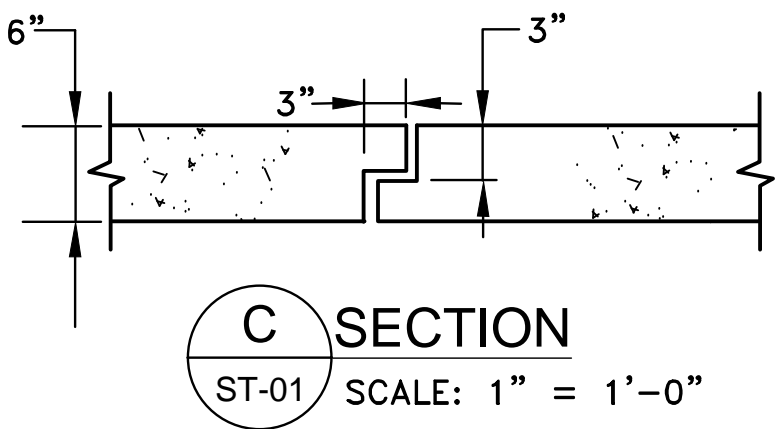
PROTECTION SLAB LOCATION PLAN
SCALE: 1" = 20'



SANITARY PIPE PROTECTION SLAB PLAN
SCALE: 1/8" = 1'-0"



SECTION A
SCALE: 1/4" = 1'-0"



SECTION C
SCALE: 1" = 1'-0"

TYPICAL TONGUE & GROOVE JOINT

DRAWING NOTES:

- CONCRETE FOR PROTECTION SLAB OF THE SEWER PIPE SHALL BE NORMAL WEIGHT PRECAST CONCRETE HAVING STRENGTH 5000 PSI AT 28 DAY.
- REINFORCEMENT SHALL CONFORM TO ASTM A 615 GRADE 60.
- EXCAVATION OVER EXISTING SEWER PIPE FOR PLACING PROTECTION SLAB SHALL NOT DAMAGE THE PIPE.
- EXCAVATION FOR TURNED DOWN PORTION OF PROTECTION SLAB WILL BE EXCAVATED BY LIGHT EQUIPMENT SUCH AS CONDUIT EXCAVATOR OR BY HAND SO THAT PIPE WILL NOT BE DAMAGED.
- EACH SECTION OF PROTECTION SLAB WILL BE JOINED BY TONGUE AND GROOVE JOINT TO OTHER SECTION.
- TOP AREA OF EXCAVATED SOIL FOR PROTECTION SLAB WILL BE PREPARED TO THE REQUIRED ELEVATION. PLACE 1" THICK ASPHALT IMPREGNATED COMPRESSIBLE MATERIAL BETWEEN THE NATURAL GROUND AND PRECAST CONCRETE PROTECTION SLAB AS SHOWN ON DETAIL B.
- LIFTING LUGS IF USED FOR PRECAST SECTION WILL BE FILLED WITH NON-SHRINK, NON-METALLIC GROUT BEFORE PLACING SOIL ON TOP.
- COORDINATE ALL ELEVATIONS AND DISTANCES OF PROTECTION SLAB WITH CIVIL DRAWINGS.
- IF EXCAVATED SOIL OVER THE PIPE FOUND TO BE UNSUITABLE FOR LOAD BEARING THEN REPLACE IT WITH STRUCTURAL BACKFILL.

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EXPIRATION DATE: 8/28/2022

AECOM

REVISIONS	

HARFORD COUNTY, MARYLAND	
DECLARATION RUN STREAM RESTORATION STRUCTURAL - SANITARY PIPE PROTECTION SLAB	
DRAWN BY : LEF	CONTRACT NO : 97040
DESIGNED BY : BJ	SCALE : AS NOTED
REVIEWED BY : JB	SHEET 48 OF 48
DATE : MARCH, 2022	SCALE : 1" = 1'-0"