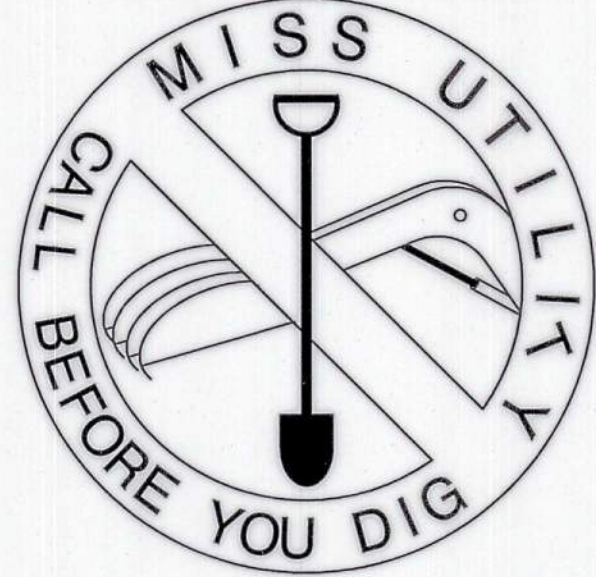


LOWER WHEEL CREEK STREAM RESTORATION REPAIRS

BEFORE YOU DIG CALL
1-800-257-7777 OR DIAL 811



EROSION AND SEDIMENT CONTROL PLAN WATERSHED PROTECTION AND RESTORATION OFFICE HARFORD COUNTY, MARYLAND

GENERAL NOTES

- THIS PROJECT IS INTENDED TO REPAIR OR REPLACE FAILING BANK PROTECTION AND STREAM RESTORATION MEASURES FROM THE PREVIOUSLY COMPLETED LOWER WHEEL CREEK STREAM RESTORATION PROJECT. SHEETS 2 AND 3 OF THIS PLANSET USE THE APPROVED LOWER WHEEL CREEK STREAM RESTORATION EROSION AND SEDIMENT CONTROL PLANS (S/C PLAN #59801 WITH APPROVED REVISION DATED 1/20/2016) WITH BLUE LINED MARKUPS FOR THE PROPOSED 2024 REPAIRS.
- SPECIFICATIONS: ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH MARYLAND STATE HIGHWAY ADMINISTRATIONS STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS LATEST EDITION AND ANY ADDENDA THERETO.
- 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/HER.
- CONTACT "MISS UTILITY" PHONE 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THERE SHOULD BE NO EXCAVATION UNTIL THE LOCATIONS OF UNDERGROUND UTILITIES HAVE BEEN DETERMINED.
- STANDARD DETAILS: REFERENCE MADE TO STANDARDS ARE TAKEN FROM THE HARFORD COUNTY ROAD CODE "BOOK OF STANDARD DETAILS" AND FROM "THE MARYLAND STATE HIGHWAY ADMINISTRATION'S BOOK OF STANDARDS-HIGHWAY AND INCIDENTAL STRUCTURES". IT WILL BE THE CONTRACTOR'S RESPONSIBILITY THAT THE STANDARD DRAWINGS IN HIS/HER 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 WERE BASED ON BEST AVAILABLE PLAT AND DEED RECORDS AND HARFORD COUNTY CADASTRAL GIS DATA. NO BOUNDARY SURVEY WAS COMPLETED. THEREFORE, 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. STOCKPILING AND STAGING WILL NOT BE ALLOWED ON SITE. THE CONTRACTOR MUST SECURE AN OFF-SITE AREA AND ANY NECESSARY PERMITS. SOIL STABILIZATION WILL CONFORM TO 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. THE CONTRACTOR WILL OBTAIN APPROVAL OF THE HARFORD COUNTY SOIL CONSERVATION DISTRICT FOR HIS/HER 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:
TOPOGRAPHIC SURVEY PERFORMED BY BAYLAND CONSULTANTS AND DESIGNERS, INC. FROM 3/7/2011 TO 3/26/2011. HORIZONTAL CONTROL ESTABLISHED FROM GLOBAL POSITIONING SYSTEM (GPS) CONTROL POINTS REFERENCED INTO HARFORD COUNTY SURVEY CONTROL MONUMENTS AND OPEN LOOP TRAVERSE. TRAVERSE POINTS ARE IRON REBAR UNLESS OTHERWISE SPECIFIED.
COORDINATES AND BEARINGS SHOWN HEREON ARE REFERRED TO THE MARYLAND COORDINATE SYSTEM (NAD83/1991) AND ARE BASED ON THE FOLLOWING HARFORD COUNTY SURVEY CONTROL MONUMENTS:
MALL N 677,491.95 E 1,494,171.14
MALL AZ MK. N 676,060.02 E 1,492,980.45
ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD'88) WITH LOCAL REFERENCE TO THE FOLLOWING HARFORD COUNTY SURVEY CONTROL MONUMENTS:
MALL ELEV. 363.62
MALL AZ MK. ELEV. 348.37
ADDITIONAL SURVEY WAS PERFORMED IN APRIL 2023 BY BAYLAND TO VERIFY CURRENT CONDITIONS IN AREAS OF SPOT REPAIR. HORIZONTAL AND VERTICAL CONTROL ESTABLISHED FROM REAL TIME KINEMATIC (RTK) GLOBAL POSITIONING SYSTEM (GPS) CONTROL POINTS. TRAVERSE POINTS ARE IRON REBAR UNLESS OTHERWISE SPECIFIED. COORDINATES AND BEARINGS SHOWN HEREON ARE REFERRED TO THE MARYLAND COORDINATE SYSTEM (NAD83/1991). ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD'88).

INT	NORTHING	EASTING	ELEVATION	DESCRIPTION
TP512	663,103.13	1,499,999.31	188.01	REBAR W/ NO CAP
TP561	664,751.10	1,500,263.29	222.60	REBAR W/ NO CAP
TP563	662,369.98	1,499,546.91	175.97	HUB & TACK ADJUSTED
TP5700	662,184.01	1,499,337.85	173.69	DISK ADJUSTED
TP5701	662,268.61	1,499,000.80	155.30	REBAR W/ YELLOW CAP
TP5702	662,135.73	1,498,742.42	145.38	REBAR W/ YELLOW CAP
TP5703	662,135.73	1,498,749.26	135.25	REBAR W/ YELLOW CAP

ONLY THOSE CONTROL POINTS SHOWN ON THESE PLANS ARE TO BE USED FOR THE CONSTRUCTION OF THIS PROJECT.

- THE EXISTING UTILITIES, GRADES, AND OBSTRUCTIONS SHOWN ARE FROM THE BEST AVAILABLE RECORDS AND SHALL BE VERIFIED BY THE CONTRACTOR TO HIS SATISFACTION PRIOR TO CONSTRUCTION. NECESSARY PRECAUTIONS SHALL BE TAKEN BY THE CONTRACTOR TO PROTECT EXISTING SERVICES AND MAINS AND ANY DAMAGE TO THEM SHALL BE REPAIRED IMMEDIATELY AT HIS OWN EXPENSE. MISS UTILITY SHALL BE CONTACTED 48 HOURS IN ADVANCE.

- ALL WORK PERFORMED ON THIS PROJECT SHALL BE IN ACCORDANCE WITH THE LATEST HARFORD COUNTY ROAD CODE "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS" AND "ROADWAY AND STORMWATER DESIGN STANDARDS."

- CONTOURS SHOWN OUTSIDE OF LIMIT OF WORK ARE BASED ON HARFORD COUNTY 2008 AERIAL TOPOGRAPHY.
- PROPERTY LINES SHOWN ARE BASED ON HARFORD COUNTY 2013 CADASTRAL DATA.

- ONLY TREES WITH A 10" DIAMETER OR GREATER THAT ARE WITHIN THE LIMIT OF WORK, WERE FIELD LOCATED IN 2011. OF THESE, ONLY TREES THAT ARE 30" IN DIAMETER OR GREATER ARE SHOWN ON THE PLANS.

- WETLAND DELINEATION WAS PERFORMED BY BAYLAND IN MARCH 2011.

- THE 100-YEAR FEMA FLOODPLAIN SHOWN IS FROM FEMA FIRM 24025C0252D EFFECTIVE JANUARY 7th 2000. THE REVISED PR. 100-YR FLOODPLAIN SHOWN IS DELINEATED BY BAYLAND IN 2023.

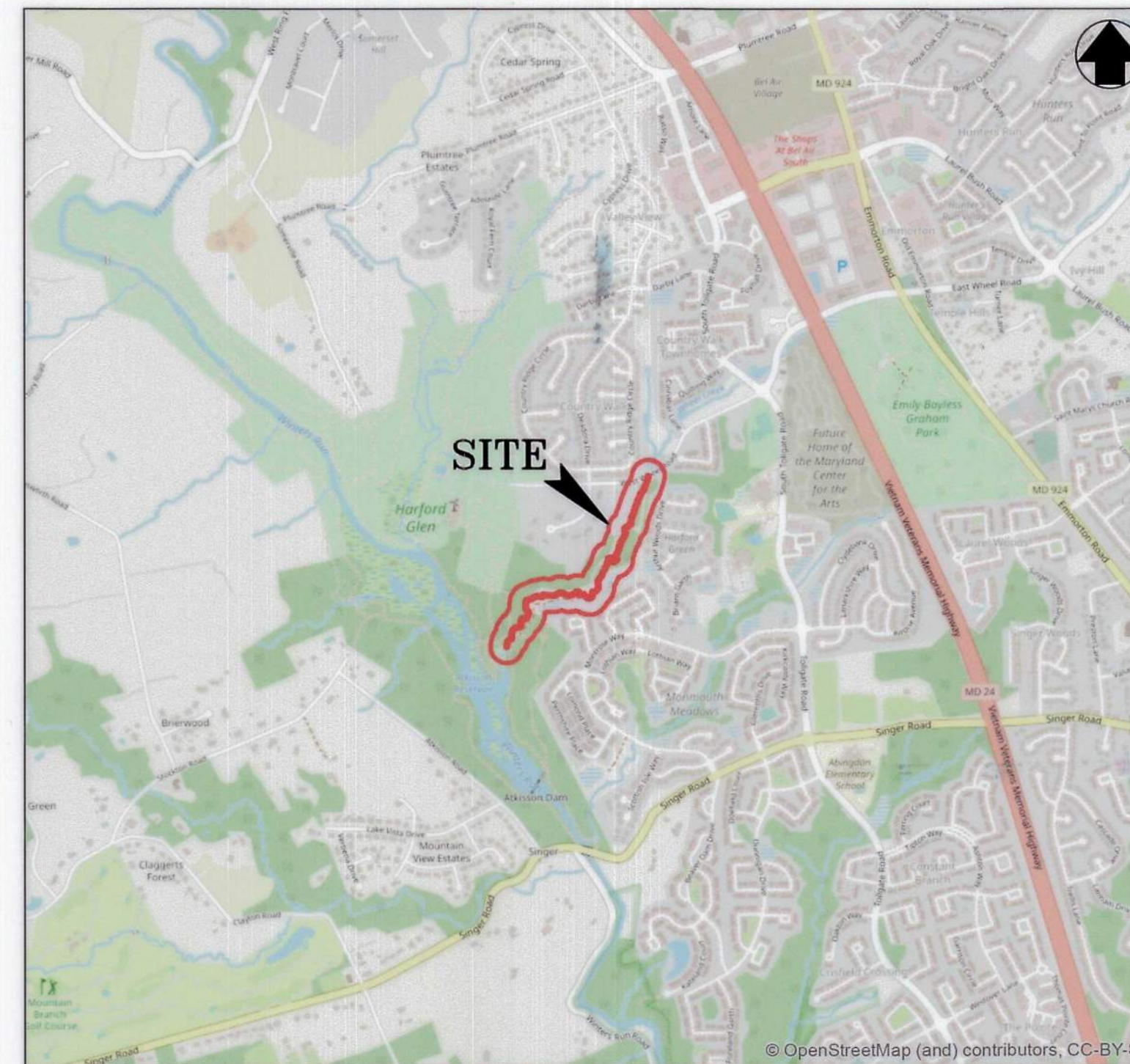
- WHEEL CREEK IS A USE I-P STREAM WITH A STREAM CLOSURE PERIOD FROM MARCH 1ST THROUGH JUNE 15TH.

INDEX OF SHEETS

NO.	DESCRIPTION	SHEET NAME
1	TITLE SHEET	GN-01
2	ESC PLANS	ES-01
3	ESC PLANS	ES-02
4	ESC DETAILS	ED-01
5	ESC DETAILS	ED-02

ABBREVIATION KEY

RTB	RIGHT TOP OF BANK
LTB	LEFT TOP OF BANK
EW	EDGE OF WATER
BF	BANKFULL
FP	FLOOD PRONE AREA
TOT	TOP OF BANK (PROPOSED)
MMS#	MIDDLE MAINSTEM (REACH REFERENCE)
LMS#	LOWER MAINSTEM (REACH REFERENCE)
MB#	MIDDLE BRANCH (REACH REFERENCE)
XS	CROSS SECTION
STA	STATION
EX	EXISTING
INV	INVERT
RCP	REINFORCED CONCRETE PIPE
PP	PLASTIC PIPE
EL	ELEVATION
POP	POPLAR (TREE)
MAP	MAPLE (TREE)
SYC	SYCAMORE (TREE)
CED	CEDAR (TREE)
BEE	BEECH (TREE)
OAK	OAK (TREE)
WOAK	WHITE OAK (TREE)
CL	CENTERLINE
WQV	WATER QUALITY



LOCATION MAP
SCALE: 1"=2000'

S/C PLAN #59801 LEGEND

TRAVERSE POINT	EX. UTILITY POLE	PR. STREAM C/L
EX. PROPERTY BOUNDARY	EX. TREE	PR. BANKFULL
EX. MINOR CONTOUR	EX. SANITARY MANHOLE	PR. TOP OF BANK
EX. MAJOR CONTOUR	PR. LOG BOULDER STEP POOL	PR. EOW AND STREAM FEATURES
EX. ROAD	PR. BOULDER STEP POOL	PR. OUTFALL PROTECTION
EX. TREELINE	PR. LOG BOULDER J-HOOK	PR. STREAM FILL
EX. FENCE	PR. HOOK LOG RUN	PR. RIFFLE
EX. FOREST CONSERVATION EASEMENT	PR. CROSS VANE	PR. CONTOUR
EX. OVER HEAD LINES	PR. TOE WOOD	PR. LIMIT OF CLEARING
EX. WATER MAIN	PR. POOL	PR. SPLIT RAIL FENCE
EX. SANITARY SEWER	PR. LOG STEP/PLUNGE POOL	PR. LIMIT OF DISTURBANCE
EX. STORMDRAIN		PR. SUPER SILT FENCE
EX. LEFT TOP OF BANK		PR. SILT FENCE
EX. RIGHT TOP OF BANK		PR. ORANGE SAFETY FENCE
EX. 100-YR FEMA FLOODPLAIN		PR. DIVERSION PIPE
EX. 15' NON-TIDAL WETLAND BUFFER		PR. FILTERBAG
EX. NON-TIDAL WETLANDS		PR. STABILIZED CONSTRUCTION ACCESS
EX. STREAM WATER SURFACE		PR. CONSTRUCTION ACCESS
EX. RIPRAP		
EX. FIRE HYDRANT		

NOTE: REDLINES SHOWN WERE PART OF REVISIONS TO THE S/C PLAN #59801 COMPLETED 1/20/2016. THE 2023 REPAIR PROJECT IS DEPICTED IN BLUE LINE REVISIONS.

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 200966, EXPIRATION DATE: 01/16/2025.

EROSION AND SEDIMENT CONTROL PLAN #: 59900
TECHNICAL REVIEW BY: <i>[Signature]</i> 7/11/24 HARFORD SOIL CONSERVATION DISTRICT
APPROVED BY: <i>[Signature]</i> 7/11/24 HARFORD SOIL CONSERVATION DISTRICT

DEVELOPER'S/LANDOWNER'S CERTIFICATION

I/WE CERTIFY THAT ALL PROPOSED WORK SHOWN ON THESE CONSTRUCTION DRAWING(S) WILL BE ACCOMPLISHED PURSUANT TO THESE PLANS. I/WE ALSO UNDERSTAND THAT IT IS MY/OUR RESPONSIBILITY TO HAVE THE CONSTRUCTION SUPERVISED AND CERTIFIED, INCLUDING THE SUBMITTAL OF "AS-BUILT" PLANS WITHIN 30 DAYS OF COMPLETION, BY A REGISTERED PROFESSIONAL ENGINEER.

[Signature] SIGNED
6-10-24 DATE
JOSEPH J. SIGMER, PE DIRECTOR OF PUBLIC WORKS
PRINTED NAME

ENGINEER'S CERTIFICATION

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL AND STORM WATER MANAGEMENT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED WITH THE 2011 MARYLAND STANDARD AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

[Signature] ENGINEER
5/30/2024 DATE

FIELD VERIFICATION

I HEREBY CERTIFY THAT I COMPLETED A FIELD VERIFICATION TO THE INFORMATION SHOWN ON THE PLANS APRIL 12, 2023 AND THAT THE INFORMATION SHOWN ON THE PLANS IS IN AGREEMENT WITH THE ACTUAL FIELD CONDITIONS.

[Signature] ENGINEER'S SIGNATURE
5/30/2024 DATE
SEAN CRAWFORD 200966
PRINTED NAME MD PE REGISTRATION NO.

HARFORD COUNTY, MARYLAND

LOWER WHEEL CREEK STREAM RESTORATION REPAIRS EROSION AND SEDIMENT CONTROL PLAN TITLE SHEET

DRAWN BY : MJG	SCALE : AS SHOWN
DESIGNED BY : MKS	DATE : 06/05/24
REVIEWED BY : CMS/SMC	
DRAWING NO. GN-01 OF GN-01	SHEET NO. 1 OF 5

Owner:

HARFORD COUNTY DEPARTMENT OF PUBLIC
WORKS DIVISION OF HIGHWAYS AND
STORMWATER MANAGEMENT
212 SOUTH BOND STREET, 3RD FLOOR
BELL AIR, MARYLAND 21014
CONTACT: ELIZABETH COLLINS
PH: (410) 638-3545 EXT 1394

Prepared By :

BAYLAND CONSULTANTS & DESIGNERS, INC.
7455 NEW RIDGE ROAD, SUITE T
HANOVER, MARYLAND 21076
PH: 410-694-9401



Consultants & Designers, Inc.

"Integrating Engineering and Environment"

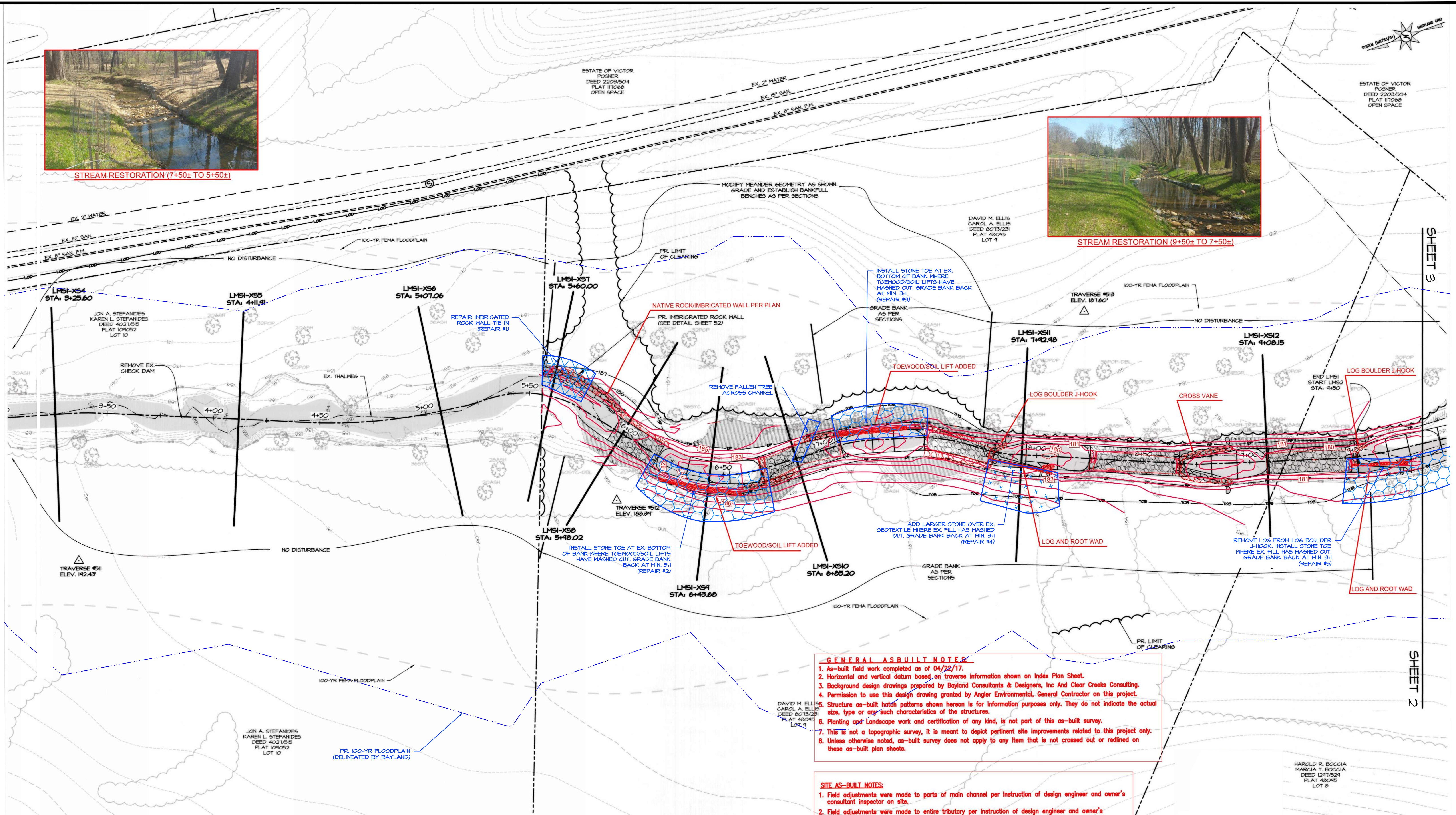
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_4601



STREAM RESTORATION (7+50± TO 5+50±)



STREAM RESTORATION (9+50± TO 7+50±)



GENERAL AS-BUILT NOTES:

1. As-built field work completed as of 04/22/17.
2. Horizontal and vertical datum based on traverse information shown on Index Plan Sheet.
3. Background design drawings prepared by Bayland Consultants & Designers, Inc And Clear Creeks Consulting.
4. Permission to use this design drawing granted by Angler Environmental, General Contractor on this project.
5. Structure as-built hatch patterns shown hereon is for information purposes only. They do not indicate the actual size, type or any such characteristics of the structures.
6. Planting and Landscape work and certification of any kind, is not part of this as-built survey.
7. This is not a topographic survey, it is meant to depict pertinent site improvements related to this project only.
8. Unless otherwise noted, as-built survey does not apply to any item that is not crossed out or redlined on these as-built plan sheets.

SITE AS-BUILT NOTES:

1. Field adjustments were made to parts of main channel per instruction of design engineer and owner's consultant inspector on site.
2. Field adjustments were made to entire tributary per instruction of design engineer and owner's consultant inspector on site.
3. Pools were filled with washed Back Run Gravel and Cobble Mix as reflected in details.

NOTE: NO DISTURBANCE ON JON A. AND KAREN L. STEFANIDES PROPERTY

STREAM RESTORATION AS-BUILT SURVEY PREPARED BY

CADED Consulting Corporation
11809 Summer Oak Drive
Germantown, MD 20874
Tel.: 240-812-2084
Fax: 240-801-9777
Email: charles.a@cadecorp.com
http://www.cadedcorp.com/
Surveying, Engineering, Drafting, GIS, Consulting

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Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_4601

BILLING NO. XXXXXX
EG-SWMENG- XXXXXX-XXXX #XXXX

PROFESSIONAL CERTIFICATION

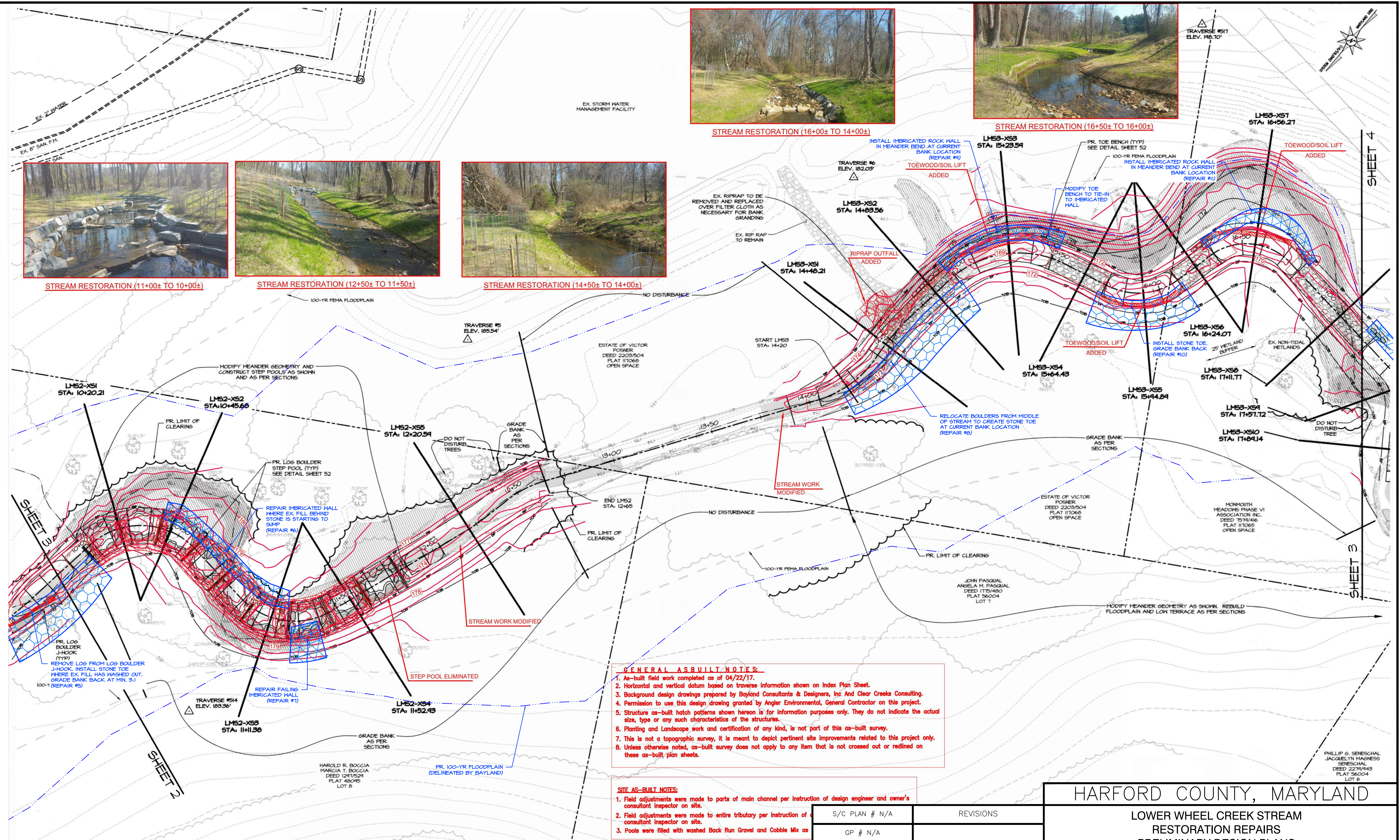
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S/C PLAN # N/A	REVISIONS
GP # N/A	

HARFORD COUNTY, MARYLAND

LOWER WHEEL CREEK STREAM RESTORATION REPAIRS PRELIMINARY DESIGN PLANS PLAN

DRAWN BY : MJC	SCALE : 1" = 20'
DESIGNED BY : MKS	DATE : 12/29/23
REVIEWED BY : CMS/SMC	
DRAWING NO. SR-01 OF SR-04	SHEET NO. 2 OF 10



STREAM RESTORATION AS-BUILT SURVEY
PREPARED BY

CADED Consulting Corporation
11809 Summer Oak Drive
Germantown, MD 20874
Tel.: 240-812-2084
Fax: 240-801-9777
Email: charles.a@codedcorp.com
<http://www.codedcorp.com/>

Surveying, Engineering, Drafting, GIS, Consulting

Surveying, Engineering, Drafting, GIS, Consulting

DRAWING COLOR CODES
DARK / GRAY - DESIGN INFORMATION
GREEN - ASBUILT INFORMATION

BayLand
Consultants & Designers, Inc.
"Integrating Engineering and Environment"

7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105

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BAYLAND JOB NO. 4_4601

GENERAL ASBUILT NOTES:

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SITE AS-BUILT NOTES:

1. Field adjustments were made to parts of main channel per instruction of design engineer and owner's consultant inspector on site.
2. Field adjustments were made to entire tributary per instruction of design engineer and owner's consultant inspector on site.
3. Pools were filled with washed Back Run Gravel and Cobble Mix as specified.
- S/C PLAN # N/A
- CP # N/A

BILLING NO. XXXXXX

EG-SWMENG- XXXXXX-XXXX #XXXX

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME,
AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF
THE STATE OF MARYLAND. LICENSE NO. 200966, EXPIRATION DATE: 01/16/2025.

S/C PLAN # N/A

GP # N/A

REVISIONS

HARFORD COUNTY, MARYLAND

LOWER WHEEL CREEK STREAM
RESTORATION REPAIRS
PRELIMINARY DESIGN PLANS
PLAN

DRAWN BY : MJG

SCALE : 1" = 20'

DESIGNED BY : MKS

DATE : 12/29/23

REVIEWED BY : CMS/SMC

DRAWING NO.	SR-02 OF SR-04	SHEET NO.	3 OF 10
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Z:\4 2511 LOWER WHEEL CRK STREAM REST REPAIRS\CAD Files\Sheet Files\4 2511 AB02.dwg



STREAM RESTORATION (17+50± TO 17+00±)



STREAM RESTORATION (23+00± TO 21+50±)



STREAM RESTORATION (24+50± TO 23+00±)



TRIBUTARY (1+90± TO 1+00±)



STREAM RESTORATION (17+50± TO 18+50±)



TRIBUTARY (0+00± TO 1+00±)

GENERAL AS-BUILT NOTES:

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- Field adjustments were made to entire tributary per instruction of design engineer and owner's consultant inspector on site.
- Pools were filled with washed Back Run Gravel and Cobble Mix as reflected in details.

STREAM RESTORATION AS-BUILT SURVEY
PREPARED BY



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BAYLAND JOB NO. 4_4601

DRAWING COLOR CODES
DARK / GRAY - DESIGN INFORMATION
GREEN - AS-BUILT INFORMATION

BILLING NO. XXXXXX
EG-SWMENG- XXXXXX-XXXX #XXXX
PROFESSIONAL CERTIFICATION
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THE STATE OF MARYLAND. LICENSE NO. 200966, EXPIRATION DATE: 01/16/2025.

S/C PLAN # N/A	REVISIONS
GP # N/A	

HARFORD COUNTY, MARYLAND			
LOWER WHEEL CREEK STREAM RESTORATION REPAIRS PRELIMINARY DESIGN PLANS PLAN			
DRAWN BY : MJC	SCALE : 1" = 20'		
DESIGNED BY : MKS	DATE : 12/29/23		
REVIEWED BY : CMS/SMC			
DRAWING NO. SR-03 OF SR-04	SHEET NO. 4 OF 10		



STREAM RESTORATION (26+50± TO 25+00±)



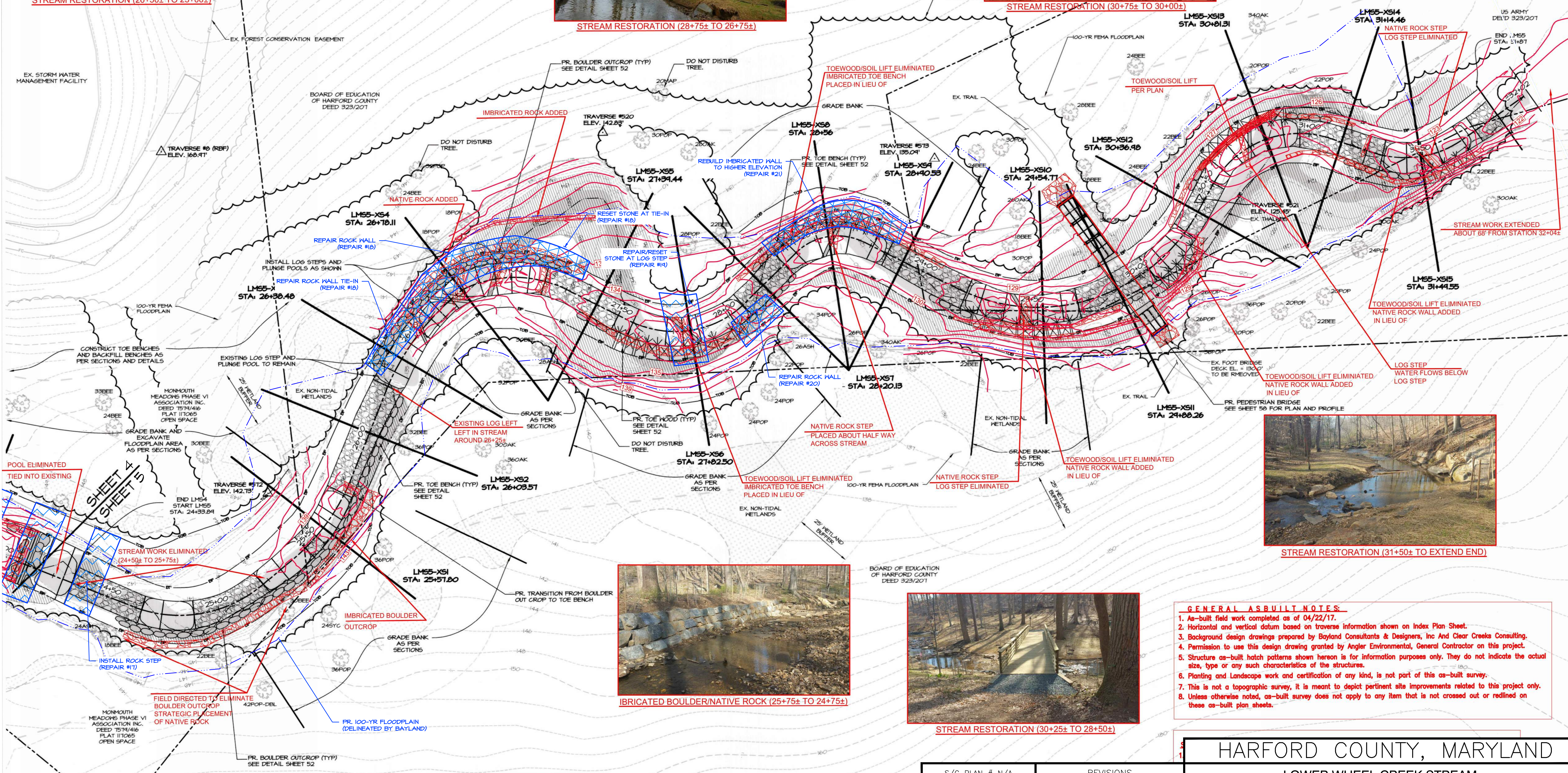
STREAM RESTORATION (28+75± TO 26+75±)



STREAM RESTORATION (30+75± TO 30+00±)



STREAM RESTORATION (30+50± TO 31+25±)



STREAM RESTORATION (31+50± TO EXTEND END)



IMBRICATED BOULDER/NATIVE ROCK (25+75± TO 24+75±)



STREAM RESTORATION (30+25± TO 28+50±)

- GENERAL AS-BUILT NOTES:**
- As-built field work completed as of 04/22/17.
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STREAM RESTORATION AS-BUILT SURVEY PREPARED BY

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11809 Summer Oak Drive
Germantown, MD 20874
Tel: 240-812-2084
Fax: 240-801-9777
Email: charles.a@cadecorp.com
http://www.cadedcorp.com/
Surveying, Engineering, Drafting, GIS, Consulting

NOTE
THE CONTRACTOR SHALL CONTACT USGS REPRESENTATIVE ED DOHNEY AT (443) 498-5535 TO RELOCATE THE USGS GAUGE STATION PRIOR TO THE START OF CONSTRUCTION.

Bayland Consultants & Designers, Inc.
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7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
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BAYLAND JOB NO. 4_4601

S/C PLAN # N/A	REVISIONS
GP # N/A	
BILLING NO. XXXXXX	
EG-SWMENG- XXXXXX-XXXX #XXXX	
PROFESSIONAL CERTIFICATION	
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 200966, EXPIRATION DATE: 01/16/2025.	

HARFORD COUNTY, MARYLAND

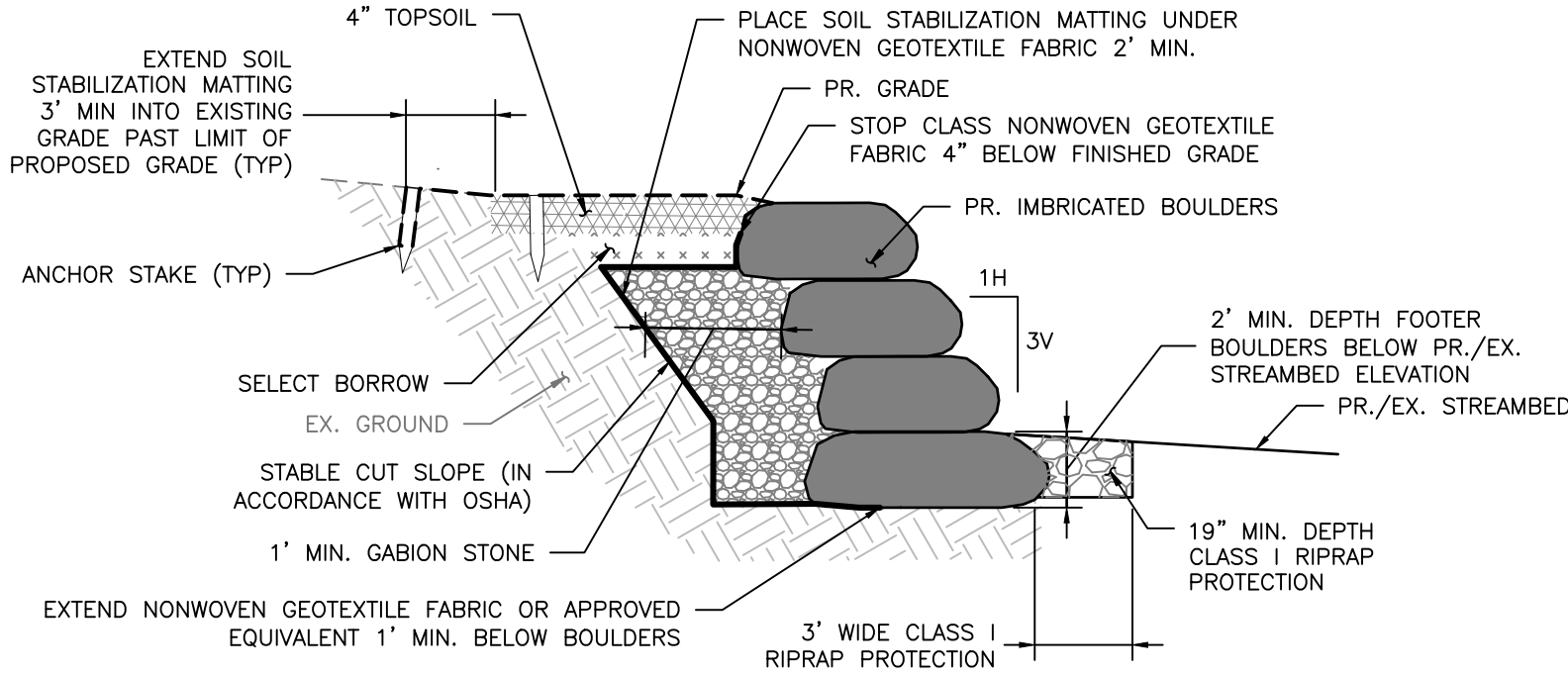
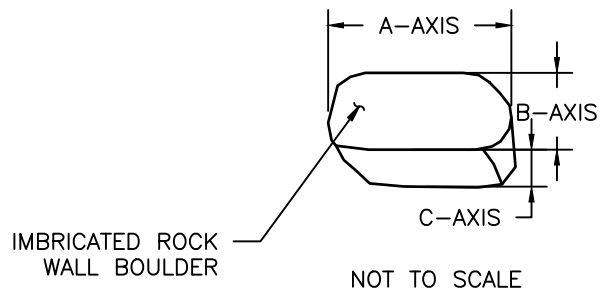
LOWER WHEEL CREEK STREAM RESTORATION REPAIRS PRELIMINARY DESIGN PLANS PLAN

DRAWN BY : MJC	SCALE : 1" = 20'
DESIGNED BY : MKS	DATE : 12/29/23
REVIEWED BY : CMS/SMC	
DRAWING NO. SR-04 OF SR-04	SHEET NO. 5 OF 10

BID NO.:
HCG DWG ID NO.:
SCALE: 1"=20'

IMBRICATED BOULDER SIZE

A-AXIS (LONG)	B-AXIS (INTERMEDIATE)	C-AXIS (SHORT)	PERCENT OF MIX
2.5 FT TO 4.0 FT	1.5 FT TO 3.0 FT	1.0 FT TO 2.0 FT	80
LESS THAN 2.5 FT	LESS THAN 1.5 FT	LESS THAN 1.0 FT	10
GREATER THAN 4.0 FT	GREATER THAN 3.0 FT	GREATER THAN 2.0 FT	10



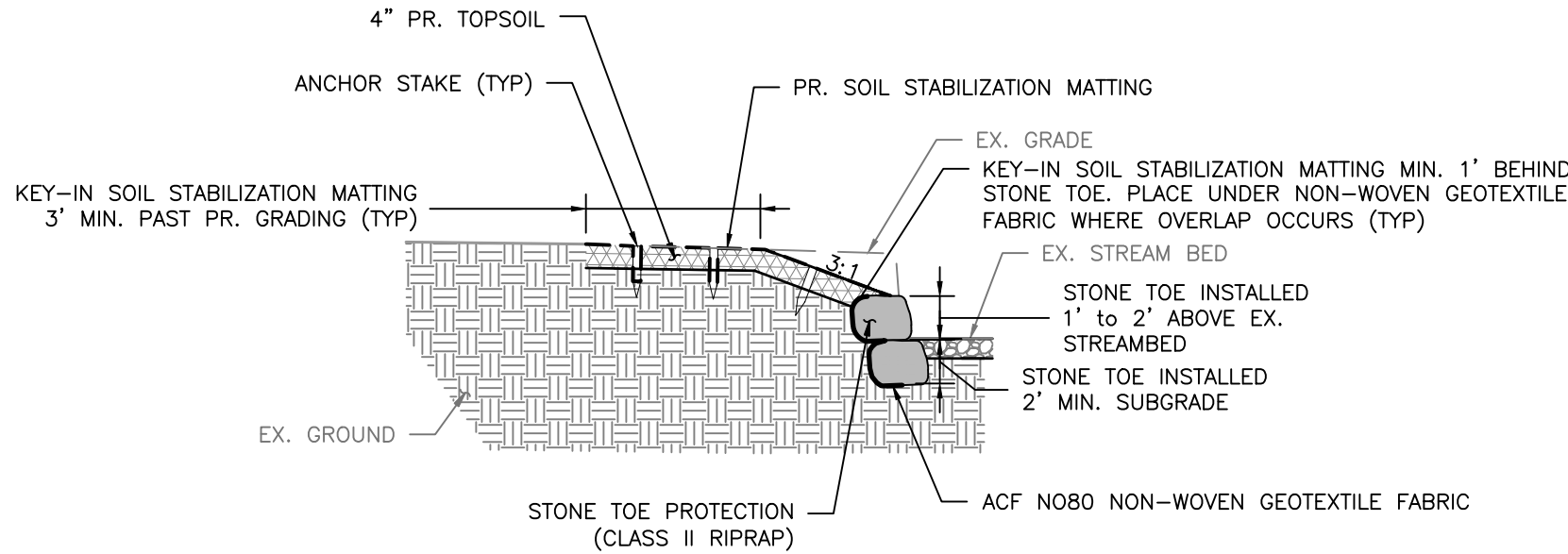
IMBRICATED ROCK WALL SECTION VIEW X-X'
NOT TO SCALE

IMBRICATED ROCK WALL DETAIL

NOT TO SCALE

IMBRICATED ROCK WALL NOTES:

1. ALL MATERIALS SHALL BE UNDERLAIN BY NONWOVEN GEOTEXTILE FABRIC. REFER TO THE CONTRACT DOCUMENTS FOR SPECIFICATIONS.
2. WHEN BACKFILLING, ALL MATERIAL SHALL BE COMPACTED FIRMLY IN ALL VOIDS TO SECURE STONE. ALL SOIL SHALL BE COMPACTED TO MD-378 STANDARDS.
3. IMBRICATED ROCK WALL SHALL BE CONSTRUCTED SUCH THAT ALL BOULDERS SECURELY INTERLOCK AND SHALL NOT ROTATE IN PLACE.
4. IMBRICATED ROCK SHALL BE OBLONG AND FLAT IN APPEARANCE WITH A MINIMUM OF TWO PARALLEL FACES, AND SHALL BE STACKABLE.
5. ALL ROCK SHALL BE GRANITE ROCK THAT IS TAN, DARK BROWN, OR DARK GRAY IN COLOR. ROCKS NOT MEETING SPECIFICATIONS SHALL BE REMOVED AND REPLACED AT NO COST TO THE CITY.
6. SMALLER ROCK WILL BE UTILIZED TO FILL VOID SPACES BETWEEN THE IMBRICATED ROCKS TO THE SATISFACTION OF THE COUNTY.
7. THE MINIMUM DRY UNIT WEIGHT FOR ROCK SHALL BE 160 PCF.
8. STAGGER IMBRICATED ROCK LENGTHWISE, WITH MIN. 1' OVERLAP. GAPS BETWEEN IMBRICATED ROCK SHALL NOT BE COINCIDENT ABOVE AND BELOW.
9. EXISTING IMBRICATED ROCK WALLS THAT ARE MARKED TO BE REPAIRED SHALL CONSIST OF REMOVING STONES, BACKFILLING WITH GABION STONE AND SUITABLE FILL (AS NEEDED) AS SHOWN IN THESE DETAILS, AND REINSTALLING STONES. AREAS OF REPAIR EXHIBITED SLUMPING AND WASHOUT DUE TO POOR COMPACTION AND UNSUITABLE MATERIAL FOR USE IN IMBRICATED WALLS.
10. EXISTING IMBRICATED ROCK WALLS THAT ARE TO BE BUILT TO A HIGHER ELEVATION, SHALL CONSIST OF REMOVING STONES, BACKFILLING WITH GABION STONE AND SUITABLE FILL (AS NEEDED) AS SHOWN IN THESE DETAILS, AND REINSTALLING STONES. THE IMBRICATED ROCK WALL SHALL BE BUILT TO THE ELEVATION WHERE EROSION IS OCCURRING ABOVE THE EXISTING IMBRICATED ROCK WALL.



STONE TOE PROTECTION

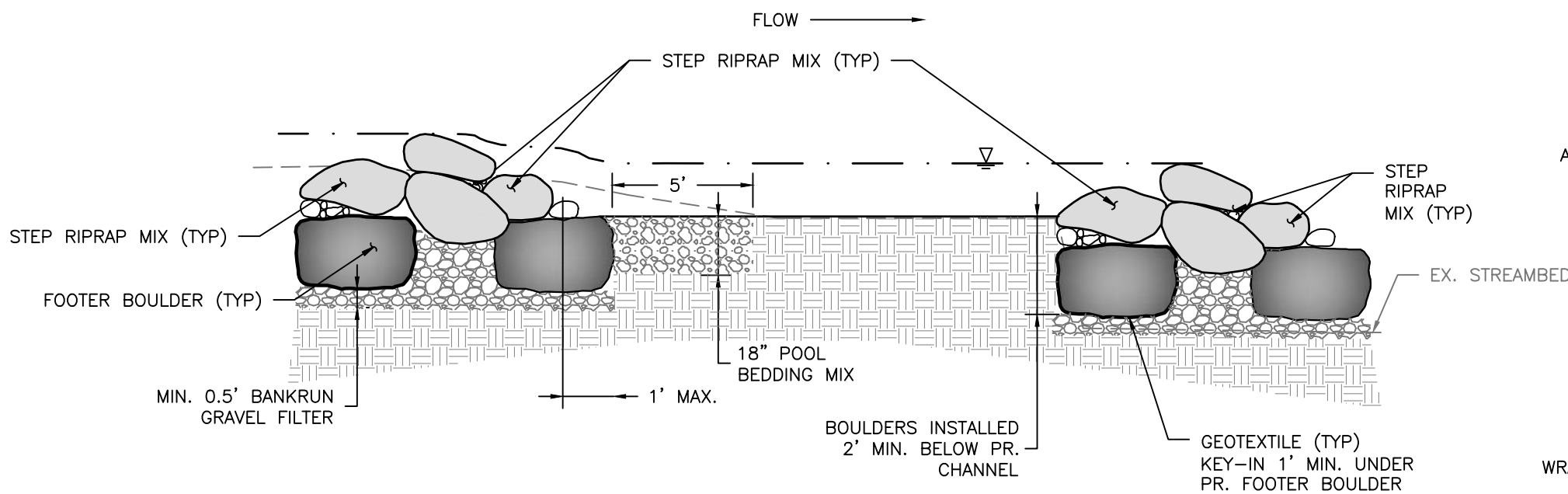
NOT TO SCALE

STONE TOE PROTECTION NOTES:

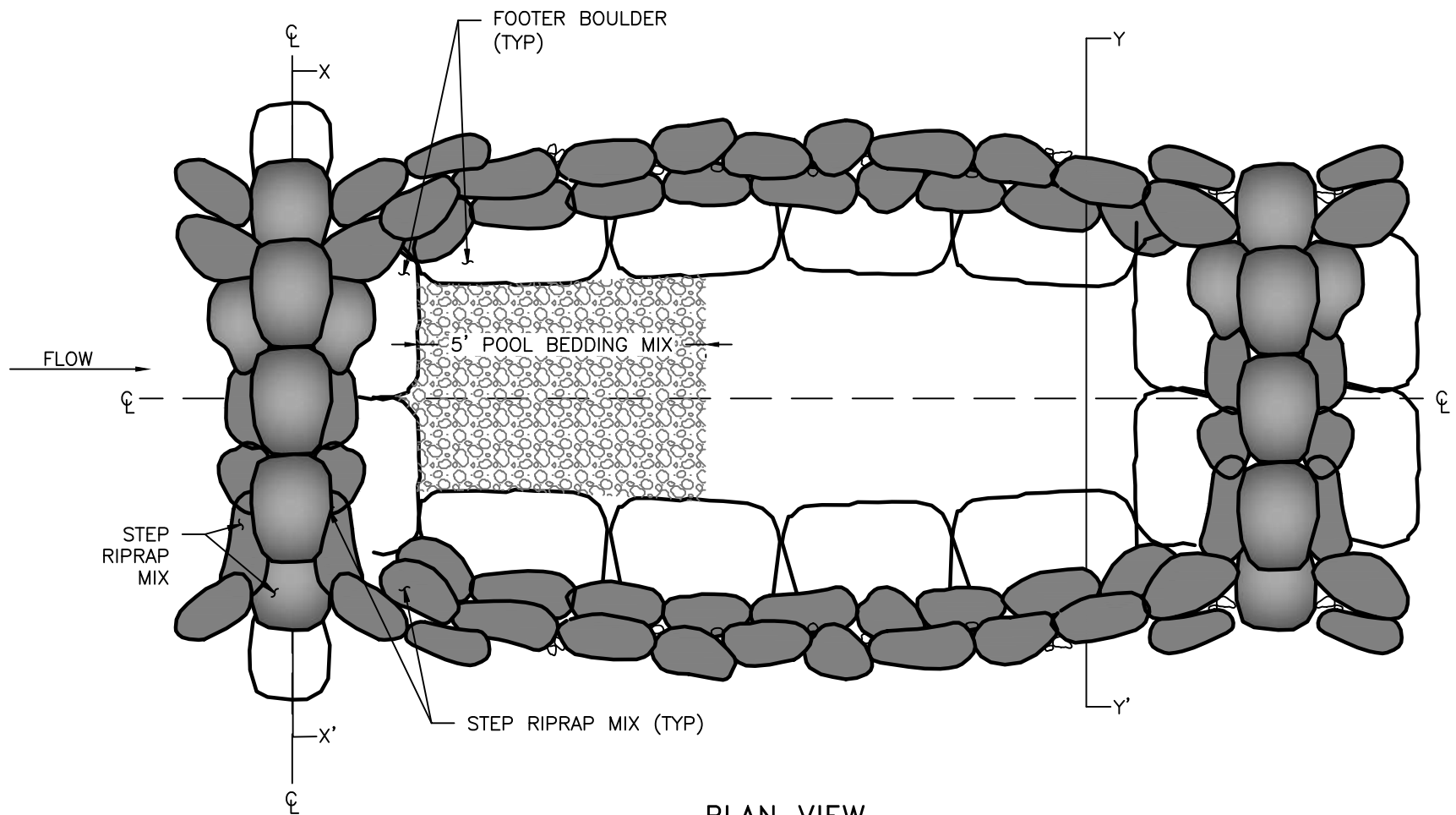
1. STONE SHALL BE UNDERLAIN BY NONWOVEN GEOTEXTILE FABRIC.
2. WHEN BACKFILLING, ALL MATERIAL SHALL BE COMPACTED FIRMLY IN ALL VOIDS TO SECURE STONE. ALL SOIL SHALL BE COMPACTED TO MD-378 STANDARDS.
3. STONE TOE PROTECTION SHALL BE CONSTRUCTED SUCH THAT ALL STONES SECURELY INTERLOCK AND SHALL NOT ROTATE IN PLACE.
4. ALL ROCK SHALL BE GRANITE ROCK THAT IS TAN, DARK BROWN, OR DARK GRAY IN COLOR. ROCKS NOT MEETING SPECIFICATIONS SHALL BE REMOVED AND REPLACED AT NO COST TO THE CITY.
5. SMALLER ROCK WILL BE UTILIZED TO FILL VOID SPACES BETWEEN STONE TO THE SATISFACTION OF THE COUNTY.
6. THE MINIMUM DRY UNIT WEIGHT FOR ROCK SHALL BE 160 PCF.

STONE TOE MIX

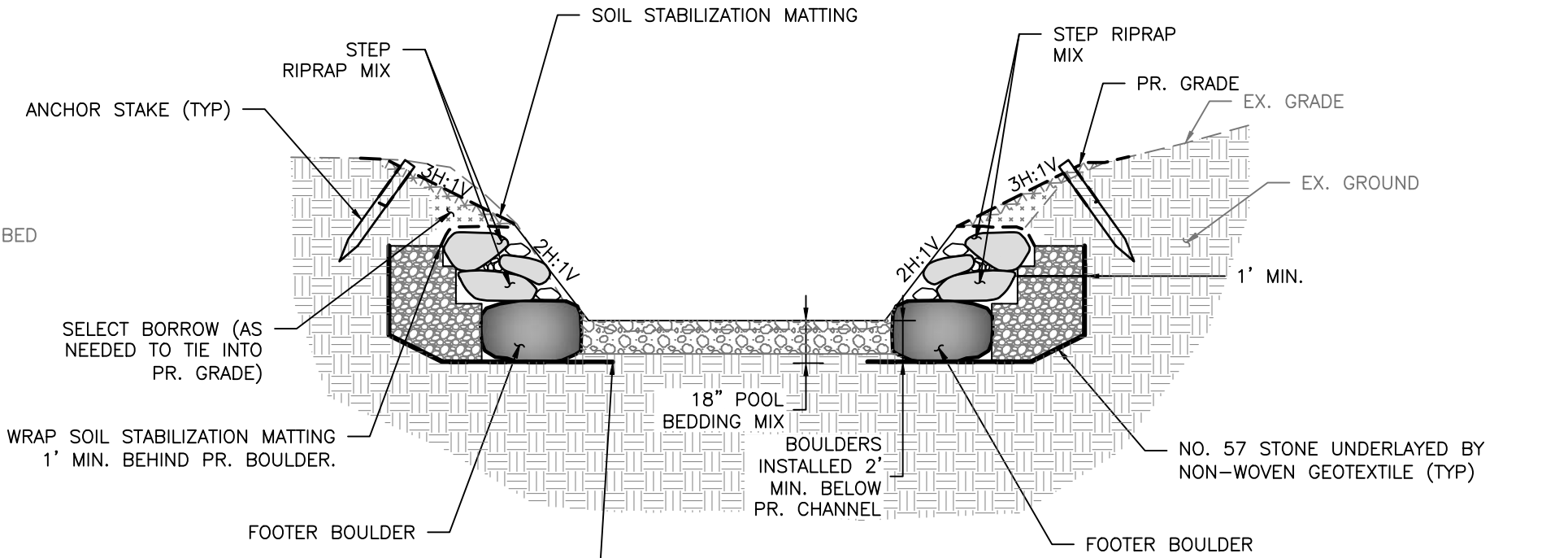
ROCK	ROCK SIZE	PERCENT OF MIX
CLASS 0 RIPRAP	D50 = 6"	10%
CLASS I RIPRAP	D50 = 9.5"	10%
CLASS II RIPRAP	D50 = 16"	80%



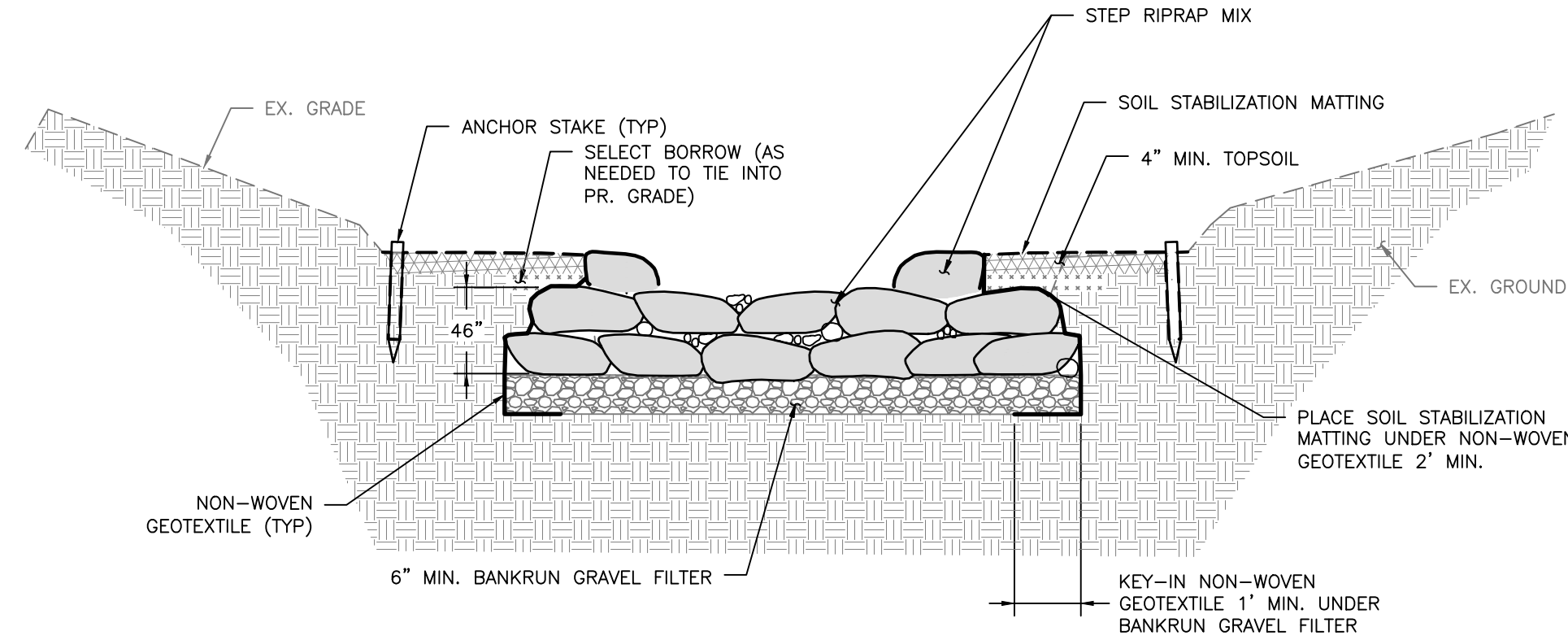
PROFILE VIEW
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PLAN VIEW
NOT TO SCALE



SECTION VIEW Y-Y'
NOT TO SCALE



SECTION VIEW X-X'
NOT TO SCALE

ROCK STEP POOL DETAIL

ROCK STEP POOL NOTES:

1. SMALL STONES SHALL BE USED TO MINIMIZE VOID SPACE.
2. ROCK SHALL BE GRANITE AND TAN, BROWN, OR GREY IN COLOR. NO WHITE STONE SHALL BE USED.
3. FOOTER BOULDERS SHALL BE OBLONG AND FLAT IN APPEARANCE, SHALL BE STACKABLE, AND SHALL HAVE A MINIMUM OF TWO PARALLEL FACES.
4. IF BEDROCK IS ENCOUNTERED, DO NOT DISTURB BEDROCK. COORDINATE WITH THE ENGINEER.

POOL BEDDING MIX

ROCK	ROCK SIZE	PERCENT OF MIX
GRAVEL	0.5 TO 2.5 INCHES	15%
CLASS 0 RIPRAP	D50 = 6"	15%
CLASS I RIPRAP	D50 = 9.5"	70%

STEP RIPRAP MIX

ROCK	ROCK SIZE	PERCENT OF MIX
CLASS 0 RIPRAP	D50 = 6"	15%
CLASS I RIPRAP	D50 = 9.5"	15%
CLASS III RIPRAP	D50 = 23"	70%

NOTES:

1. ONSITE SALVAGED STONE MAY BE USED IF IT MEETS SIZING REQUIREMENTS IN THE POOL BEDDING MIX AND STEP RIPRAP MIX TABLES.

HARFORD COUNTY, MARYLAND

LOWER WHEEL CREEK STREAM
RESTORATION REPAIRS
PRELIMINARY DESIGN PLANS
DETAILS

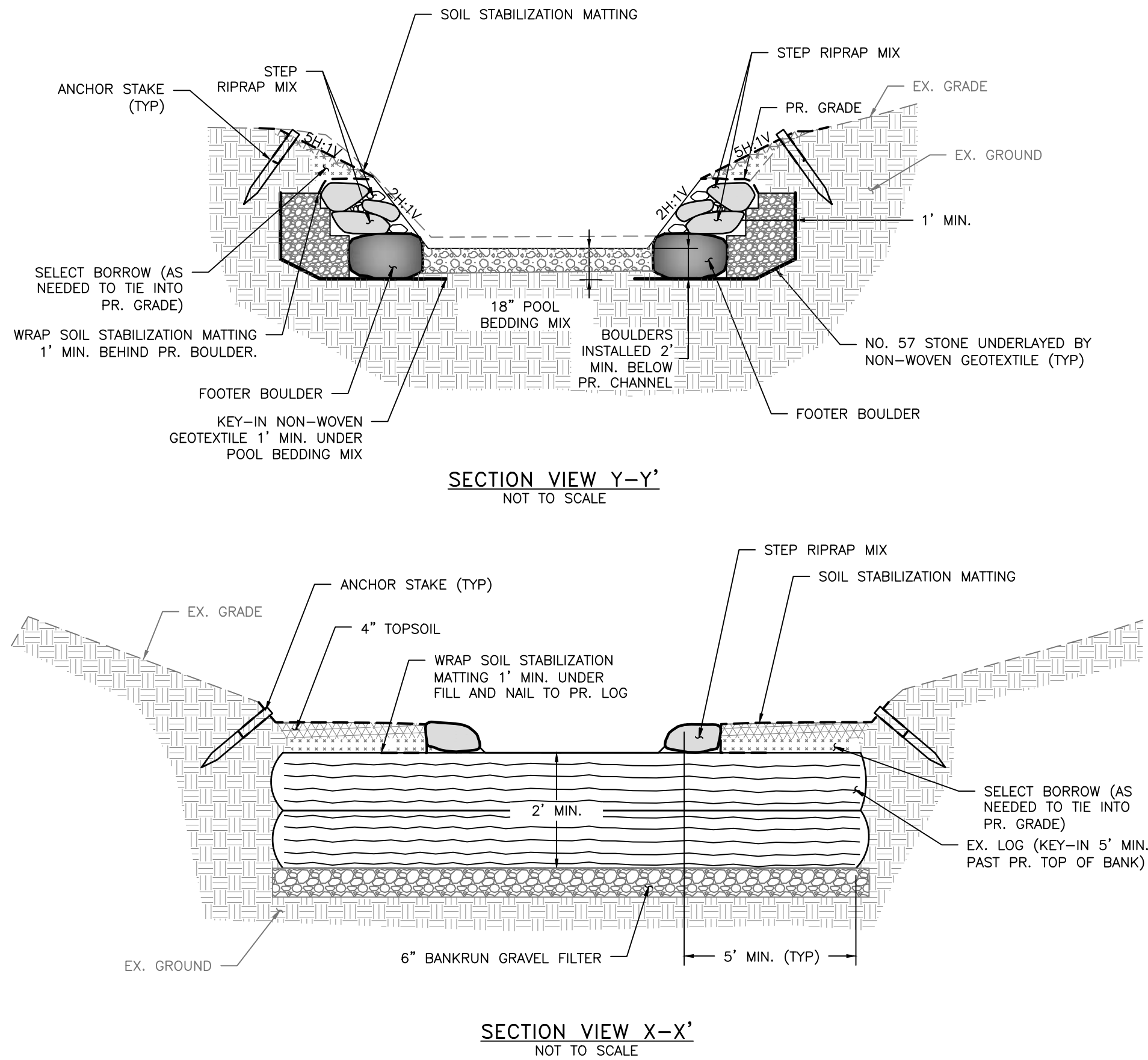
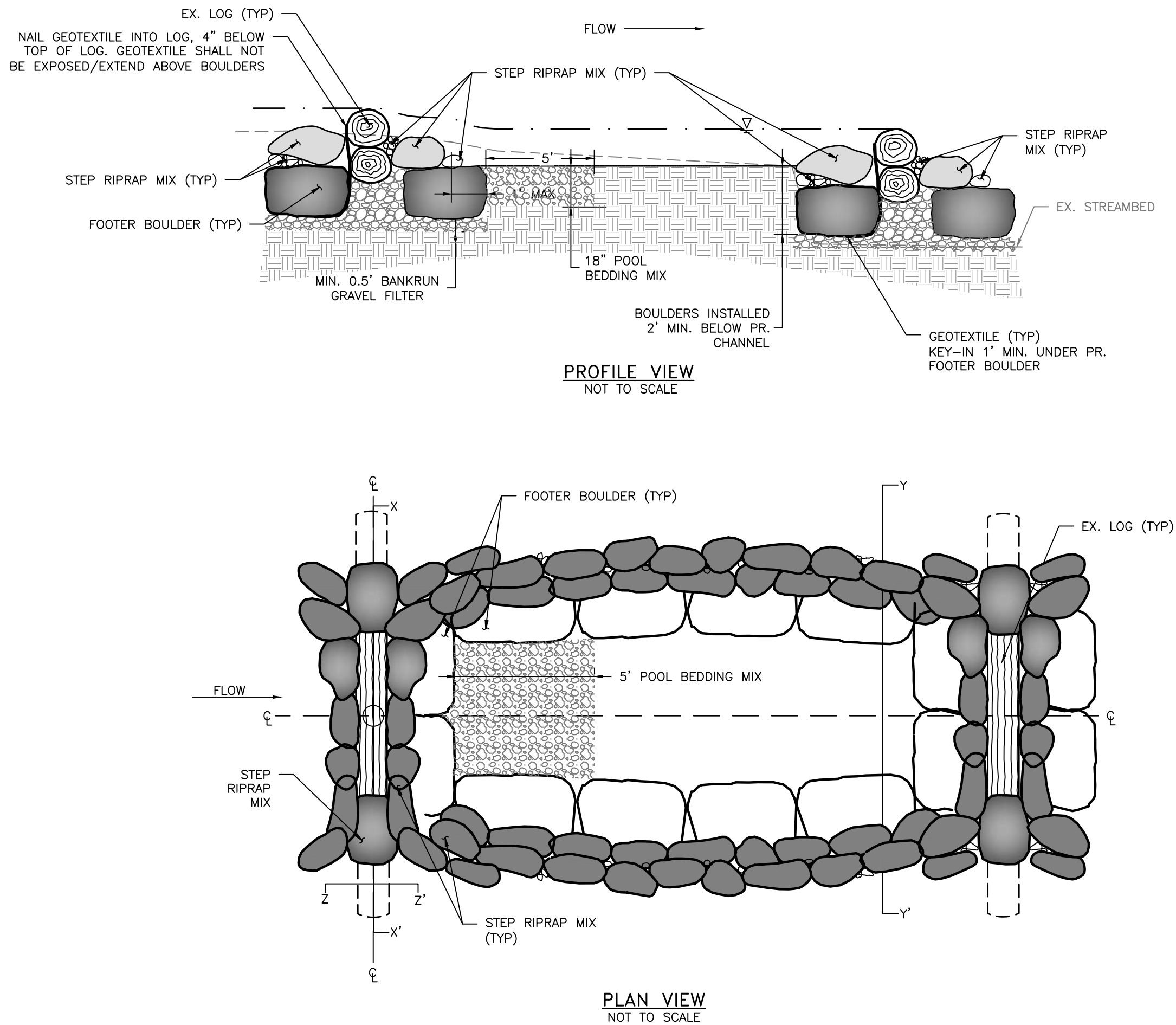
DRAWN BY : <u>MJG</u>	SCALE : <u>AS SHOWN</u>
DESIGNED BY : <u>MKS</u>	DATE : <u>12/29/23</u>
REVIEWED BY : <u>CMS/SMC</u>	
DRAWING NO. <u>DE-01</u> OF <u>DE-02</u>	SHEET NO. <u>6</u> OF <u>10</u>

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BILLING NO. XXXXXX
EG-SWMENG- XXXXXX-XXXX #XXXX
PROFESSIONAL CERTIFICATION I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 200966, EXPIRATION DATE: 01/16/2025.

S/C PLAN # N/A	REVISIONS
GP # N/A	



LOG STEP POOL DETAIL

- LOG STEP POOL NOTES:
1. SMALL STONES SHALL BE USED TO MINIMIZE VOID SPACE.
 2. ROCK SHALL BE GRANITE AND TAN, BROWN, OR GREY IN COLOR. NO WHITE STONE SHALL BE USED.
 3. FOOTER BOULDERS SHALL BE OBLONG AND FLAT IN APPEARANCE, SHALL BE STACKABLE, AND SHALL HAVE A MINIMUM OF TWO PARALLEL FACES.
 4. SEE SHEET 6 FOR ROCK AND POOL BEDDING MIX SIZING.
 5. NO NEW LOG STEPS ARE PROPOSED FOR THE SPOT REPAIRS. THESE DETAILS ARE INTENDED TO CONVEY THE REPAIRS TO THE EXISTING LOG STEPS. NO NEW LOGS ARE REQUIRED FOR THE REPAIRS.

REPAIR DESCRIPTION TABLE

REPAIR NUMBER	DESCRIPTION OF REPAIR
1	BACKFILL WITH 1' MINIMUM GABION STONE AND SELECT BORROW AS NEEDED.
2	STONE TOE IS TO BE INSTALLED AT EXISTING BOTTOM OF BANK LOCATION WHERE TOEWOOD AND SOIL LIFTS HAVE WASHED OUT AND BANK IS ERODING. BOTTOM OF BANK ELEVATION IS AT APPROX. 182.4. LENGTH OF STONE TOE TO BE INSTALLED IS APPROX. 49 LF. BANK SHOULD BE CUT BACK AT A MINIMUM 3:1 SLOPE ABOVE STONE TOE.
3	STONE TOE IS TO BE INSTALLED AT EXISTING BOTTOM OF BANK LOCATION WHERE TOEWOOD AND SOIL LIFTS HAVE WASHED OUT AND BANK IS ERODING. BOTTOM OF BANK ELEVATION IS AT APPROX. 181.5. LENGTH OF STONE TOE TO BE INSTALLED IS APPROX. 27 LF. BANK SHOULD BE CUT BACK AT A MINIMUM 3:1 SLOPE ABOVE STONE TOE (TREES SHOULD NOT BE IMPACTED DURING GRADING)
4	PLACE LARGE STONE OVER EXPOSED GEOTEXTILE BEHIND LOG FOR APPROX. 13 LF. CUT ERODING BANK BACK AT A MINIMUM 3:1 SLOPE.
5	REMOVE LOG FROM LOG J-HOOK. STONE TOE IS TO BE INSTALLED AT EXISTING BOTTOM OF BANK LOCATION WHERE STONE HAS WASHED OUT AND BANK IS ERODING. BOTTOM OF BANK ELEVATION IS AT APPROX. 178.7. LENGTH OF STONE TOE TO BE INSTALLED IS APPROX. 45 LF. BANK SHOULD BE CUT BACK AT A MINIMUM 3:1 SLOPE ABOVE STONE TOE.
6	REMOVE IMBRICATED WALL AND BACKFILL WITH MINIMUM 1' GABION STONE AND SELECT BORROW AS NEEDED. RESET IMBRICATED ROCK WALL TO SAME ELEVATIONS.
7	REMOVE STONES WHERE IMBRICATED WALL IS FAILING AND BACKFILL WITH MINIMUM 1' GABION STONE AND SELECT BORROW AS NEEDED. RESET IMBRICATED ROCK WALL TO SAME ELEVATIONS.
8	RELOCATE STONE FROM MIDDLE OF CHANNEL TO EXISTING BOTTOM OF BANK LOCATION. BOTTOM OF BANK ELEVATION IS AT APPROX. 172.0. LENGTH OF STONE TOE TO BE INSTALLED IS APPROX. 67 LF. FOOTER FOR STONE TOE TO BE FURNISHED. BANK SHOULD BE CUT BACK AT A MINIMUM 3:1 SLOPE ABOVE STONE TOE.
9	IMBRICATED ROCK WALL IS TO BE INSTALLED AT EXISTING BOTTOM OF BANK LOCATION WHERE TOEWOOD AND SOIL LIFTS HAVE WASHED OUT AND BANK IS ERODING. LENGTH OF IMBRICATED ROCK WALL TO BE INSTALLED IS APPROX. 62 LF WITH A HEIGHT OF 3 FT. TOE BENCH TIE-IN SHALL BE RESET TO TIE-IN TO IMBRICATED ROCK WALL.
10	STONE TOE IS TO BE INSTALLED AT EXISTING BOTTOM OF BANK LOCATION WHERE TOEWOOD AND SOIL LIFTS HAVE WASHED OUT AND BANK IS ERODING. BOTTOM OF BANK ELEVATION IS AT APPROX. 169.1. LENGTH OF STONE TOE TO BE INSTALLED IS APPROX. 67 LF. BANK SHOULD BE CUT BACK AT A MINIMUM 3:1 SLOPE ABOVE STONE TOE.
11	IMBRICATED ROCK WALL IS TO BE INSTALLED AT EXISTING BOTTOM OF BANK LOCATION WHERE TOEWOOD AND SOIL LIFTS HAVE WASHED OUT AND BANK IS ERODING. LENGTH OF IMBRICATED ROCK WALL TO BE INSTALLED IS APPROX. 59 LF WITH A HEIGHT OF 3 FT. TOE BENCH TIE-IN SHALL BE RESET TO TIE-IN TO IMBRICATED ROCK WALL.
12	IMBRICATED ROCK WALL IS TO BE INSTALLED AT EXISTING BOTTOM OF BANK LOCATION WHERE TOEWOOD AND SOIL LIFTS HAVE WASHED OUT AND BANK IS ERODING. LENGTH OF IMBRICATED ROCK WALL TO BE INSTALLED IS APPROX. 53 LF WITH A HEIGHT OF 2.5 FT. TOE BENCH TIE-IN SHALL BE RESET TO TIE-IN TO IMBRICATED ROCK WALL.
13	STONE TOE IS TO BE INSTALLED AT EXISTING BOTTOM OF BANK LOCATION WHERE BANK IS ERODING. PRUNE TREE ROOTS AS NEEDED. LENGTH OF STONE TOE TO BE INSTALLED IS APPROX. 16 LF.
14	REMOVE FALLEN TREES ACROSS CHANNEL AND LOG STEPS. RESET IMBRICATED STONES THAT HAVE BEEN DISPLACED TO ORIGINAL ELEVATION.
15	RESET IMBRICATED STONES THAT HAVE BEEN DISPLACED TO ORIGINAL ELEVATIONS.
16	REBUILD ROCK STEP AT INVERT 143.6
17	INSTALL ROCK STEP AT INVERT 142.6
18	RESET FAILING STONE AND ADD ADDITIONAL STONE TO MIN. ELEVATION 138.1. BACKFILL WITH SELECT BORROW AS NEEDED. RESET STONE AT DOWNSTREAM TIE-IN AT NEW BANK LOCATION.
19	BACKFILL WITH SELECT BORROW WHERE EROSION HAS OCCURRED ON LEFT BANK OF LOG STEP. RESET STONE AS NEEDED.
20	REMOVE STONES WHERE ROCK WALL IS FAILING AND BACKFILL WITH MINIMUM 1' GABION STONE AND SELECT BORROW AS NEEDED. RESET ROCK WALL TO SAME ELEVATIONS.
21	REBUILD IMBRICATED ROCK WALL TO HEIGHT OF 4' BEGINNING AT APPROX. STA 28+55 (APPROX. 60 LF). BACKFILL IMBRICATED ROCK WALL WITH MINIMUM 1' GABION STONE AND SELECT BORROW AS NEEDED.



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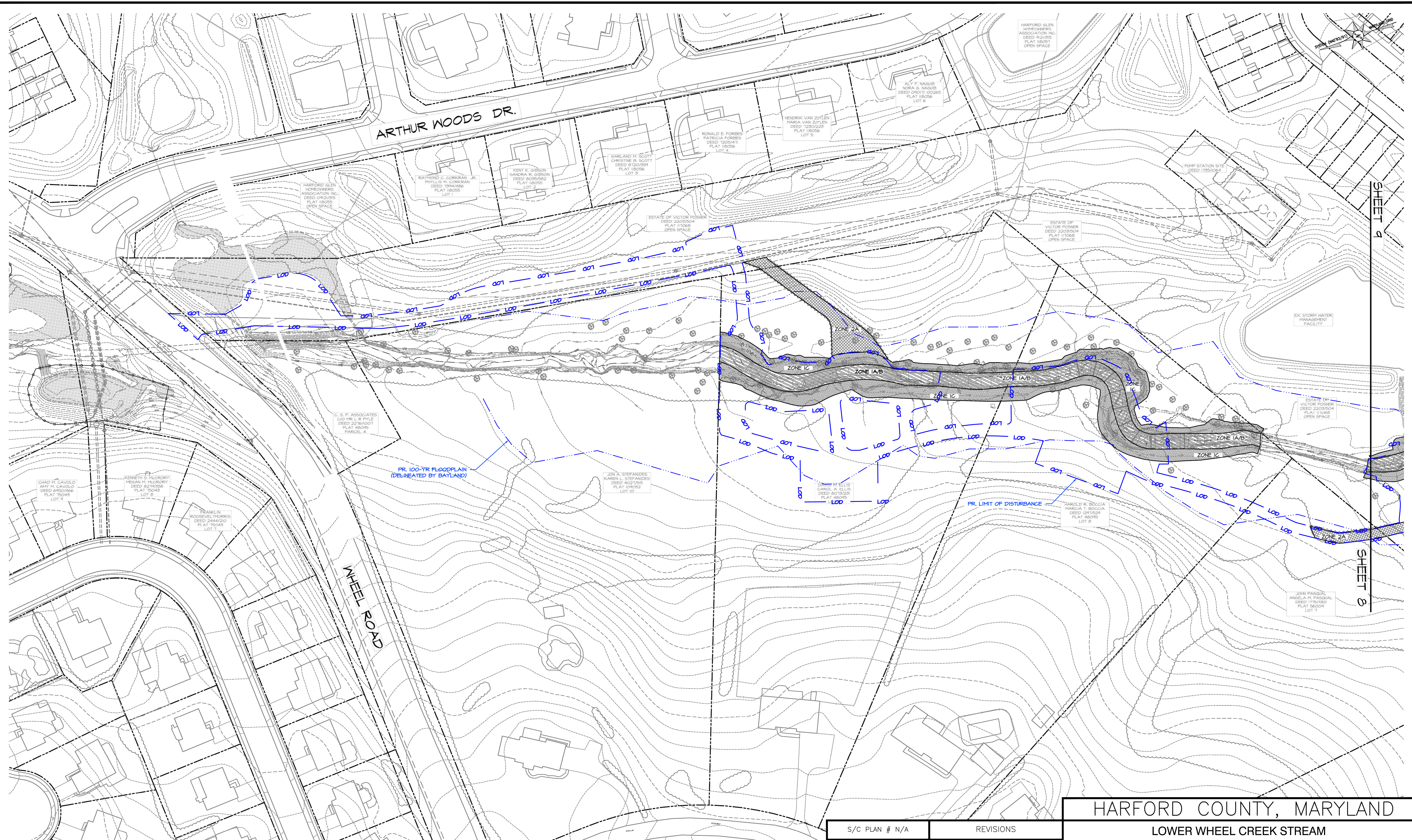
BAYLAND JOB NO. 4_4601

BILLING NO. XXXXXX
EG-SWMENG- XXXXXX-XXXX #XXXX
PROFESSIONAL CERTIFICATION
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S/C PLAN # N/A	REVISIONS
GP # N/A	

HARFORD COUNTY, MARYLAND			
LOWER WHEEL CREEK STREAM RESTORATION REPAIRS PRELIMINARY DESIGN PLANS DETAILS			
DRAWN BY : MJC	SCALE : AS SHOWN		
DESIGNED BY : MKS	DATE : 12/29/23		
REVIEWED BY : CMS/SMC			
DRAWING NO. DE-02 OF DE-02	SHEET NO. 7 OF 10		

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100

STEEL

BID No.:

HCG DWG ID No.:

SCALE : 1 inch

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THE STATE OF MARYLAND. LICENSE NO. 200966, EXPIRATION DATE: 01/16/2025.

S/C PLAN # N/A

GP # N/A

REVISIONS

HARFORD COUNTY, MARYLAND

LOWER WHEEL CREEK STREAM
RESTORATION REPAIRS
PRELIMINARY DESIGN PLANS
LANDSCAPING PLAN

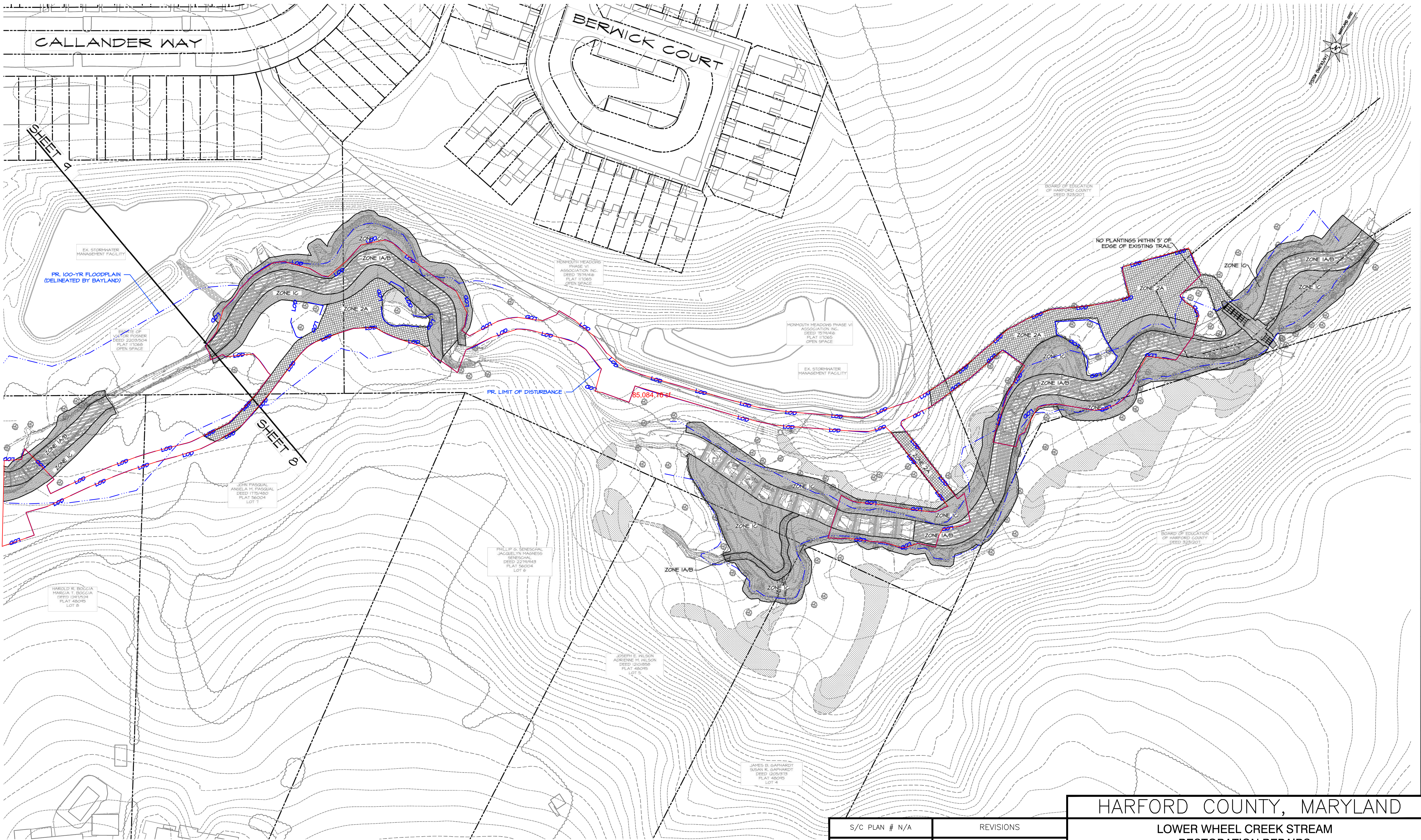
DRAWN BY : MJG
DESIGNED BY : MKS
REVIEWED BY : CMS/SMC

SCALE : 1" = 50'

DATE : 12/29/23

DRAWING NO.	LP-01 OF LP-02	SHEET NO. 8 OF 10
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S/C PLAN # N/A	REVISIONS
GP # N/A	

HARFORD COUNTY, MARYLAND	
LOWER WHEEL CREEK STREAM RESTORATION REPAIRS PRELIMINARY DESIGN PLANS LANDSCAPING PLAN	
DRAWN BY : MJC	SCALE : 1" = 50'
DESIGNED BY : MKS	DATE : 12/29/23
REVIEWED BY : CMS/SMC	
DRAWING NO. LP-02 OF LP-02	SHEET NO. 9 OF 10

PLANT MATERIALS AND PLANTING METHODS

PLANT MATERIALS

THE LANDSCAPE CONTRACTOR SHALL FURNISH AND INSTALL ALL OF THE PLANT MATERIALS CALLED FOR ON DRAWINGS AND/OR LISTED IN THE PLANT SCHEDULE.

1. PLANT NAMES
- PLANT NAMES USED IN THE PLANT SCHEDULE SHALL CONFORM TO "STANDARDIZED PLANT NAMES", LATEST EDITION.
2. PLANT STANDARDS
- A. ALL PLANTS SHALL BE NURSERY GROWN AND SHALL HAVE BEEN GROWN UNDER THE SAME CLIMATE AS THE LOCATION OF THIS PROJECT FOR AT LEAST TWO YEARS BEFORE PLANTING. NEITHER HEELED IN PLANTS NOR PLANTS FROM COLD STORAGE WILL BE ACCEPTED

3. PLANT IDENTIFICATION
- LEGIBLE LABELS SHALL BE ATTACHED TO ALL SHADE TREES, MINOR TREES, SPECIMEN SHRUBS AND BUNDLES OR BOXES OF OTHER PLANT MATERIAL GIVING THE BOTANICAL AND COMMON NAMES, SIZE AND QUANTITY OF EACH. EACH SHIPMENT OF PLANTS SHALL BEAR CERTIFICATES OF INSPECTION AS REQUIRED BY FEDERAL, STATE AND COUNTY AUTHORITIES.

PLANTING METHODS

4. PLANTING SEASONS ARE DESCRIBED AS FOLLOWS:
- ALL PROPOSED PLANT MATERIAL ARE TO BE PLANTED IN ACCORDANCE WITH THE FOLLOWING PLANTING METHODS DURING THE PROPER PLANTING SEASONS AS DESCRIBED IN THE FOLLOWING:
- A. PLANTING SEASONS THE PLANTING OF DECIDUOUS TREES, SHRUBS AND VINES SHALL BE FROM MARCH 1ST TO JUNE 15TH AND FROM SEPTEMBER 15TH TO DECEMBER 15TH. PLANTING OF DECIDUOUS MATERIAL MAY BE CONTINUED DURING THE WINTER MONTHS PROVIDING THERE IS NO FROST IN THE GROUND AND FROST FREE TOPSOIL PLANTING MIXTURES ARE USED. THE PLANTING OF EVERGREEN MATERIAL SHALL BE FROM MARCH 15TH TO JUNE 15TH AND FROM AUGUST 15TH TO DECEMBER 1ST. NO PLANTING SHALL BE DONE WHEN GROUND IS FROZEN OR EXCESSIVELY MOIST. NO FROZEN OR WET TOPSOIL SHALL BE USED AT ANY TIME.
5. EXCAVATION OF PLANT PITS
- A. LOCATIONS OF ALL PROPOSED PLANT MATERIAL SHALL BE STAKED AND APPROVED IN THE FIELD BY THE LANDSCAPE ARCHITECT BEFORE ANY OF THE PROPOSED PLANT MATERIAL IS INSTALLED BY THE LANDSCAPE CONTRACTOR.
- B. BALL PITS SHALL BE GENERALLY CIRCULAR IN OUTLINE, VERTICAL SIDES; DEPTH SHALL NOT BE LESS THAN 6" DEEPER THAN THE ROOT BALL. DIAMETER SHALL NOT BE LESS THAN 1.25 TIMES THE DIAMETER OF THE ROOT BALL AS SET FORTH IN THE FOLLOWING SCHEDULE.

7. PLANT GUARANTEE
- ALL PLANT MATERIAL SHALL BE GUARANTEED FOR THE DURATION OF ONE FULL GROWING SEASON, AFTER FINAL INSPECTION AND ACCEPTANCE OF THE WORK IN THE PLANTING PROJECT. PLANTS SHALL BE ALIVE AND IN SATISFACTORY GROWING CONDITION AT THE END OF THE GUARANTEE PERIOD.

- A. FOR THIS PURPOSE, THE "GROWING SEASON" SHALL BE THAT PERIOD BETWEEN THE END OF THE "SPRING" PLANTING SEASON, AND THE COMMENCEMENT OF THE "FALL" PLANTING SEASON.
- B. THE GUARANTEE FOR PLANTING PERFORMED AFTER THE SPECIFIED END OF THE "SPRING" PLANTING SEASON, SHALL BE EXTENDED THROUGH THE END OF THE NEXT FOLLOWING "SPRING" PLANTING SEASON.

PERMANENT SEEDING SUMMARY									
HARDINESS ZONE (FROM FIGURE B.3): 7a SEED MIXTURE (FROM TABLE B.3)					FERTILIZER RATE (10-20-20)				
NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS	N	P ₂ O ₅	K ₂ O	LIME RATE	
1	SWITCHGRASS CREeping RED FESCUE BUSH CLOVER	10 15 2	2/15 - 4/30 5/1 - 5/31	1" - 1 1/2"	45 lb/ac (1.0 lb/1000 sf)	90 lb/ac (2.0 lb/1000 sf)	90 lb/ac (2.0 lb/1000 sf)	2	tons/ac (80 lb/1000 sf)
6	TALL FESCUE PERENNIAL RYEGRASS WHITE CLOVER	40 25 5	2/15 - 4/30 8/15 - 10/31	1" - 1 1/2"					

TEMPORARY SEEDING SUMMARY									
HARDINESS ZONE (FROM FIGURE B.3): 7a SEED MIXTURE (FROM TABLE B.1)					FERTILIZER RATE (10-20-20)				
NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS	LIME RATE				
1	ANNUAL RYEGRASS	40 (1lb/1000 sf)	2/15 - 4/30 8/15 - 11/30	0.5"	436 lb/ac (10 lb/1000 sf)	2	tons/ac (80 lb/1000 sf)		
2	FOXTAIL MILLET	30 (0.7lb/1000 sf)	5/1 - 8/14	0.5"					

- NOTES:
1. SEEDING RATES FOR THE WARM-SEASON GRASSES ARE IN POUNDS OF PURE LIVE SEED (PLS). ACTUAL PLANTING RATES SHALL BE ADJUSTED TO REFLECT PERCENT SEED GERMINATION AND PURITY, AS TESTED. ADJUSTMENTS ARE USUALLY NOT NEEDED FOR THE COOL-SEASON GRASSES. SEEDING RATES LISTED ABOVE ARE FOR TEMPORARY SEEDINGS. WHEN PLANTED ALONE. WHEN PLANTED AS A NURSE CROP WITH PERMANENT SEED MIXES, USE 1/3 OF THE SEEDING RATE LISTED ABOVE FOR BARLEY, OATS, AND WHEAT. FOR SMALLER-SEEDED GRASSES (ANNUAL RYEGRASS, PEARL MILLET, FOXTAIL MILLET), DO NOT EXCEED MORE THAN 5% (BY WEIGHT) OF THE OVERALL PERMANENT SEEDING MIX. CEREAL RYE GENERALLY SHOULD NOT BE USED AS A NURSE CROP, UNLESS PLANTING WILL OCCUR IN VERY LATE FALL BEYOND THE SEEDING DATES FOR OTHER TEMPORARY SEEDINGS. CEREAL RYE HAS ALLELOPATHIC PROPERTIES THAT INHIBIT THE GERMINATION AND GROWTH OF OTHER PLANTS. IF IT MUST BE USED AS A NURSE CROP, SEED AT 1/3 OF THE RATE LISTED ABOVE. OATS ARE THE RECOMMENDED NURSE CROP FOR WARM-SEASON GRASSES.
2. FOR SANDY SOILS, PLANT SEEDS AT TWICE THE DEPTH LISTED ABOVE.
3. THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE AND MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONE.

PLANTING SCHEDULES

THE LIMIT OF DISTURBANCE SHALL BE REPLANTED IN ACCORDANCE WITH THE ZONES SHOWN ON SHEETS 8 AND 9. PLANTING QUANTITIES SHOWN IN PLANTING SCHEDULES ON THIS SHEET WERE CALCULATED FROM PLANTING DENSITIES FROM THE APPROVED LOWER WHEEL CREEK STREAM RESTORATION CONSTRUCTION DRAWINGS (DATED 3/20/2014). ANY AREAS WITHIN THE LIMIT OF DISTURBANCE NOT SHOWN WITH A PLANTING ZONE SHALL BE PERMANENTLY SEEDDED IN ACCORDANCE WITH THE PERMANENT SEEDING TABLE ON THIS SHEET.

ZONE 1 - STREAM BANKS

1B - BENCHES AND LOWER BANKS

ALL BENCHES AND GRADED BANKS WILL BE STABILIZED WITH COIR MATTING AND LIVE STAKES (ONE FOOT ABOVE WATER SURFACE TO BACK OF BENCH AND BANKFULL). LIVE STAKES SHALL BE INSTALLED IN TWO STAGGERED ROWS WITH STAKES SPACED 1.5 FEET APART. LIVE BRANCH CUTTINGS FOR LIVE STAKES SHALL BE ONE-HALF TO ONE AND ONE-HALF INCHES (0.5" TO 1.5") IN DIAMETER AND BETWEEN TWO AND THREE FEET (2' TO 3') LONG.

PERCENT	QUANTITY	BOTANICAL / COMMON NAME	SIZE	SPACING
20	716	CORNUS AMOMUM SILKY DOGWOOD	LIVE STAKE	RANDOM 1.5' O/C
20	716	SALIX DISCOLOR PUSSY WILLOW	LIVE STAKE	RANDOM 1.5' O/C
20	716	SAMBUCUS CANADENSIS AMERICAN ELDERBERRY	LIVE STAKE	RANDOM 1.5' O/C
20	716	SALIX NIGRA BLACK WILLOW*	LIVE STAKE	RANDOM 1.5' O/C
20	716	SALIX SERICEA SILKY WILLOW	LIVE STAKE	RANDOM 1.5' O/C

*BLACK WILLOW HAS BEEN SUBSTITUTED FOR BLACKHAW FOR THE PROPOSED SPOT REPAIRS PLANTING.

1C - UPPER BANK AND FLOODPLAIN

THE CONTAINER GROWN MATERIAL LISTED BELOW WILL BE INSTALLED ALONG THE GRADED/RECONSTRUCTED BANKS FROM BANKFULL TO A POINT SIX FEET BACK FROM TOP OF BANK.

PERCENT	QUANTITY	BOTANICAL / COMMON NAME	SIZE	SPACING
N/A	57	CORYLUS AMERICANA HAZELNUT	1.5-3'	RANDOM 12' O/C
N/A	57	AMELANCHIER CANADENSIS SERVICEBERRY	1.5-3'	RANDOM 12' O/C
N/A	57	CORNUS AMOMUM SILKY DOGWOOD	1.5-3'	RANDOM 12' O/C
N/A	57	HAMAMELIS VIRGINIANA WITCH HAZEL	1.5-3'	RANDOM 12' O/C
N/A	57	PHYSOCARPUS OPULIFOLIUS NINEBARK	1.5-3'	RANDOM 12' O/C

ZONE 2 - RIPARIAN BUFFER AREAS

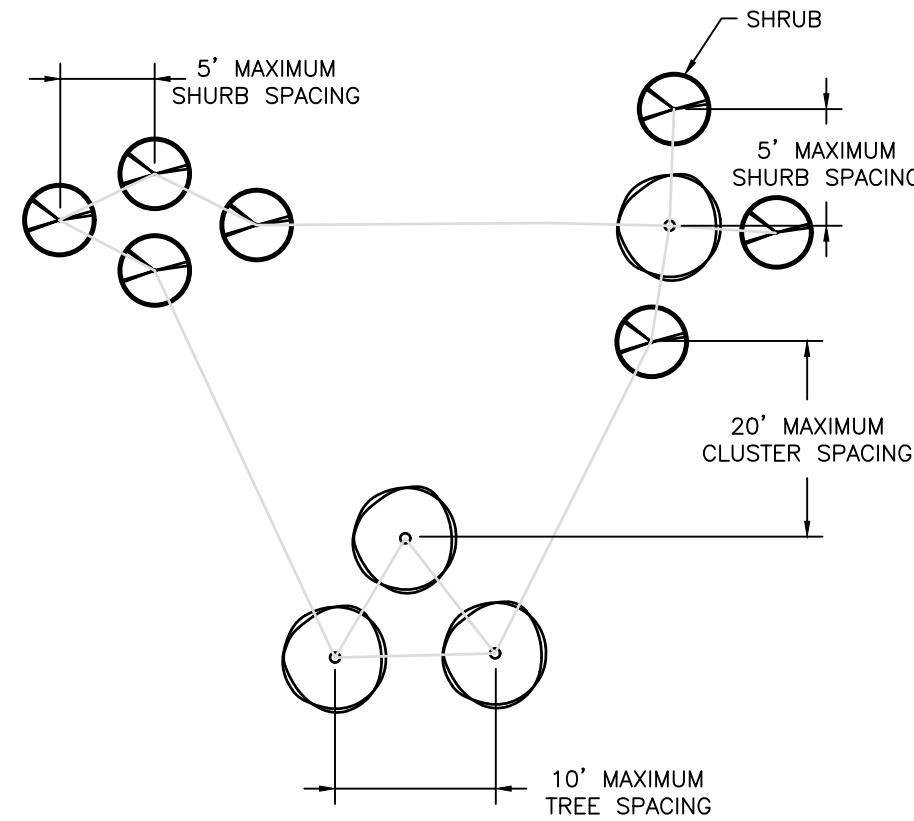
ZONE 2A - DISTURBED FOREST AREAS

GRADING ALONG SOME BANKS WILL REQUIRE CLEARING OF EXISTING TREES IN FORESTED AREAS. THESE AREAS WILL BE REPLANTED WITH TREES AND SHRUBS LISTED BELOW.

PERCENT	QUANTITY	BOTANICAL / COMMON NAME	SIZE	SPACING
N/A	32	PLATANUS OCCIDENTALIS SYCAMORE	4-6'	CLUSTER SEE DETAIL
N/A	32	ACER SACCHARINUM SILVER MAPLE	4-6'	CLUSTER SEE DETAIL
N/A	32	LIRIODENDRON TULIPIFERA YELLOW POPLAR	4-6'	CLUSTER SEE DETAIL
N/A	85	VIBURNUM PRUNIFOLIUM BLACKHAW	18-24"	CLUSTER SEE DETAIL
N/A	85	HAMAMELIS VIRGINIANA WITCH HAZEL	18-24"	CLUSTER SEE DETAIL

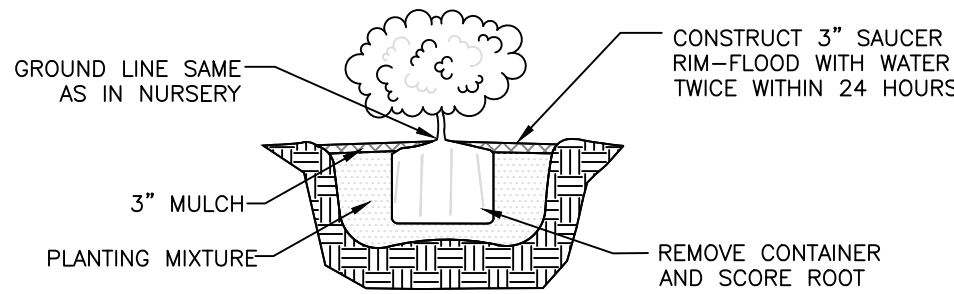
GENERAL PLANTING NOTES

- ALL PLANT MATERIALS SHALL BE NURSERY GROWN AND SHALL CONFORM TO AMERICAN ASSOCIATION OF NURSERYMEN, INC. STANDARDS.
- CONTRACTOR IS RESPONSIBLE TO VERIFY ALL UTILITY LOCATIONS PRIOR TO PLANTING MATERIAL. IF CONFLICTS ARISE, THE ENGINEER MUST BE NOTIFIED PRIOR TO ANY GROUND BREAKING.
- WETLAND PLANTING WILL BE ACCOMPLISHED BETWEEN MARCH 15TH AND MAY 15TH (SPRING PLANTING SEASON) OR SEPTEMBER 15TH AND NOVEMBER 15TH (FALL PLANTING SEASON).
- TREES AND SHRUBS SHALL BE PLANTED FROM MARCH 1 TO JUNE 15 AND FROM SEPTEMBER 15 TO DECEMBER 15. PLANTING MAY BE CONTINUED DURING THE WINTER MONTHS PROVIDING THERE IS NO FROST IN THE GROUND AND FROST FREE TOPSOIL PLANTING MIXTURES ARE USED. HERBACEOUS PLUGS AND QUARTS SHALL BE PLANTED BETWEEN MARCH 15 AND MAY 15 OR BETWEEN SEPTEMBER 15 AND NOVEMBER 15, UNLESS OTHERWISE DIRECTED BY THE COUNTY.
- NO CONTAINER-GROWN MATERIAL SHALL BE PLANTED IF NOT ACCLIMATED TO THE CURRENT WEATHER CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR GENERAL MAINTENANCE INCLUDING WATERING.
- ALL DISTURBED AREAS NOT EXPLICITLY HATCHED FOR REPLANTING SHALL BE STABILIZED IN ACCORDANCE WITH STANDARD PERMANENT STABILIZATION METHODS.



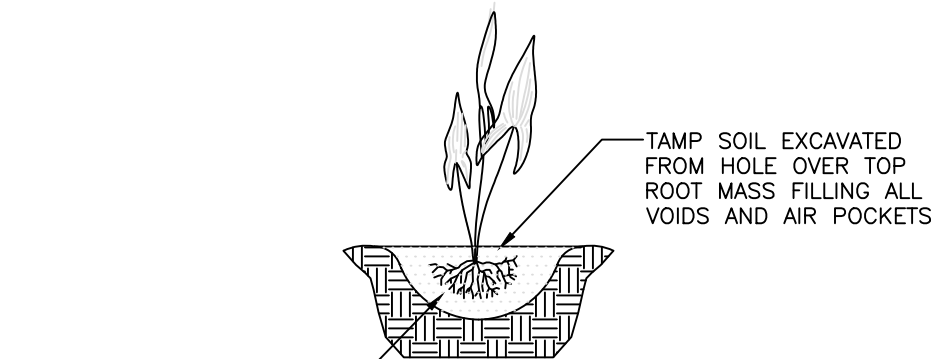
RIPIARIAN BUFFER PLANTING DETAIL

NOT TO SCALE



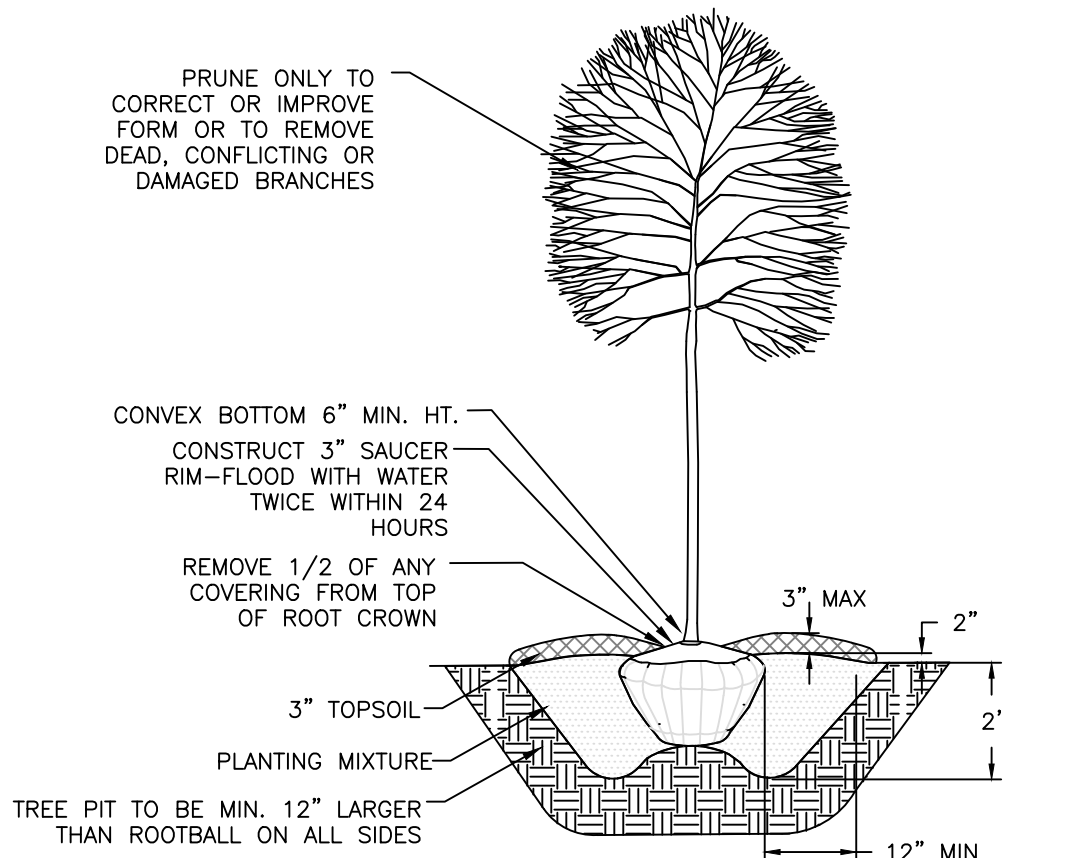
SHRUB PLANTING DETAIL

NOT TO SCALE



EMERGENT PLANTING DETAIL

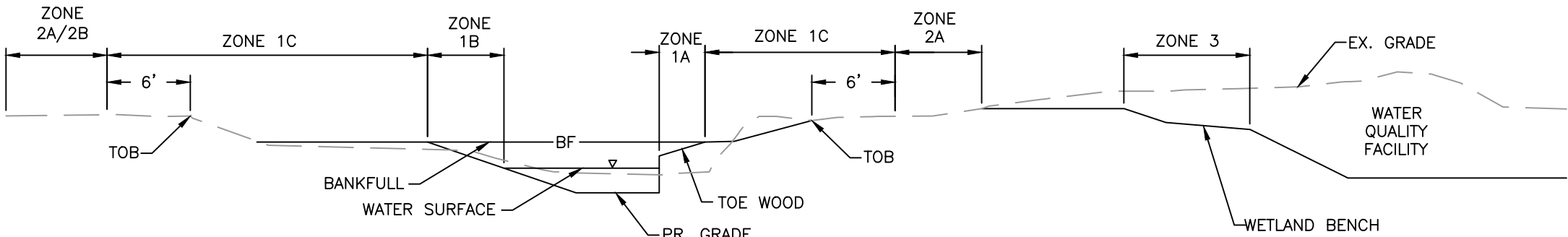
NOT TO SCALE



- NOTES:
- CONTRACTOR TO REGRADE, SOD OR HYDROSEED AND STRAW MULCH ALL AREAS DISTURBED AS A RESULT OF THEIR WORK.
 - SPRAY WITH WILT-PROOF ACCORDING TO MANUFACTURES STANDARD.

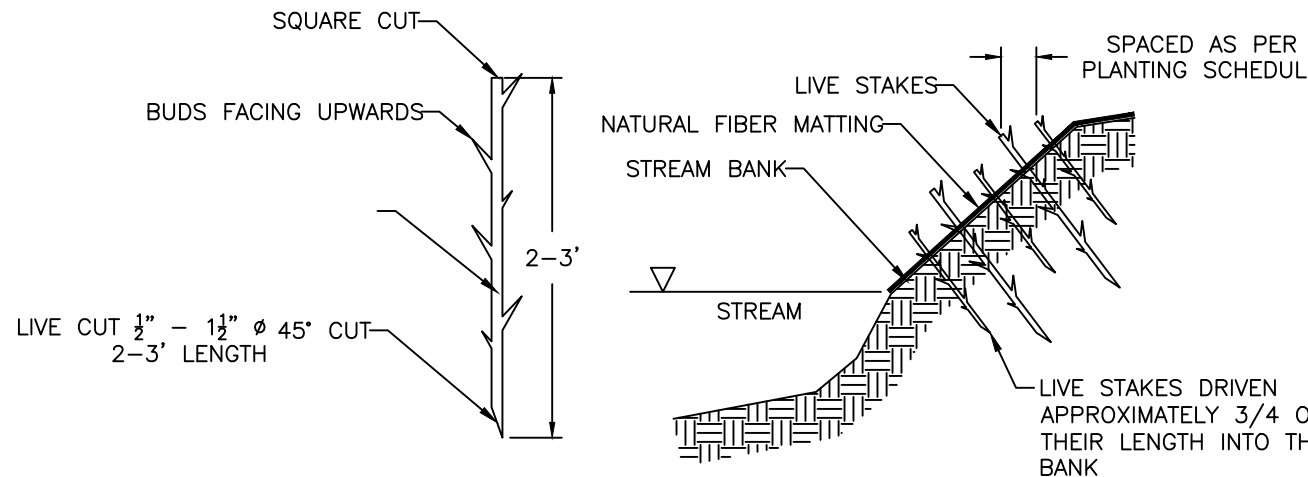
TREE PLANTING DETAIL

NOT TO SCALE



TYPICAL PLANTING ZONE SECTION

NOT TO SCALE



LIVE STAKE DETAIL

NOT TO SCALE

HARFORD COUNTY, MARYLAND

LOWER WHEEL CREEK STREAM RESTORATION REPAIRS PRELIMINARY DESIGN PLANS LANDSCAPING DETAILS

DRAWN BY : MJC
DESIGNED BY : MKS
REVIEWED BY : CMS/SMC
SCALE : AS SHOWN
DATE : 12/29/23

DRAWING NO. LD-01 OF LD-01 SHEET NO. 10 OF 10

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BAYLAND JOB NO. 4_4601

BILLING NO. XXXXXX

EG-SWMENG- XXXXXX-XXXX #XXXX

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 200966, EXPIRATION DATE: 01/16/2025.

AS-BUILT RECORDS INDICATE THAT ALL OF UTILITIES WERE CONSTRUCTED WITHIN THE EASEMENT WERE CONSTRUCTED WITH A MINIMUM OF 3.5- FEET OF COVER. THE HARFORD COUNTY DIVISION OF WATER AND SEWER NOTES THE FOLLOWING REQUIREMENTS FOR THE REQUESTED USE OF THE ACCESS EASEMENT BY THE CONTRACTOR:

1. CONSTRUCTION IS MANAGED IN SUCH A WAY AS TO PREVENT EROSION OR RUTTING OF THE SOILS OVER THE UTILITIES; AND
2. THE DISTURBED AREA IS RESTORED AND REVEGETATED UPON COMPLETION OF CONSTRUCTION.

DETAIL E-8 FILTER LOG

CONSTRUCTION SPECIFICATIONS

1. PRIOR TO INSTALLATION, CLEAN ALL STRUCTURES INCLUDING ROOF, CURB, AND STEPS EXCEPT THOSE NOT TO BE ALTERED, WITH COMPLETE FUNCTION OF FILTER LOG.
2. FILL LOG NETTING MATERIAL WITH COMPACTED SAND ACCORDING WITH SECTION F-1 MATERIALS. IF OTHER MATERIALS POSSIBLE, AND TO EXCEED LEVELS SHOWN THAT LOGS DO NOT DEFORM.
3. INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE BARGE. PLACE LOGS UNDER WATER TO THE LOGS INSTALLATION POINTING SURFACE BY THE BARGE GROUND A 7'.
4. FOR UNDEVELOPED INSTALLATION BOLD OR HAND PLACES MEDIUM OR COARSE ON UPLINE SIDE OF THE BARGE BARGE.
5. STAKE FILTER LOGS ABOUT 4 FEET OR CLOSER TOGETHER END-TO-END OF LOGS OR THROUGH LOGS AND STAKE A MINIMUM OF 4 LOGS AND STAKE LONG ENOUGH TO SET IN CURB.
6. USE STAKES WITH A MINIMUM NAIL CROSS SECTION OF 1/2" X 3/4" AND OF SUFFICIENT LENGTH TO ATTAIN A MINIMUM OF 2' TOGETHET INTO LOGS AND 2' INTO FIBER INSULATED LOGS.
7. WHEN ONE MORE THAN ONE IS REQUIRED, OVERLAY FIRST IS BOWED FORWARD AND STAKE.
8. REMOVE REMAIND WHEN IT HAS ACCUMULATED TO A DEPTH OF 8" OR DEPTHER THEREOF OF LOGS AND DISCARDING LOGS. REPLACE LOGS TOGETHET FILTER LOGS FOR PERMANENT ALTERNATIVE. ESTABLISH AND MAINTAIN A MINIMUM OF 4' TO 6' OF WATER DEPTH AROUND LOGS TO MAINTAIN ADEQUATE FLOW THROUGH LOGS.

SECTION E-8 - RESERVING JUNCTION

NOTE: NO DISTURBANCE ON JON A. AND
KAREN L. STEFANIDES PROPERTY

1. ALL CONSTRUCTION ACCESS ROAD ALIGNMENTS SHALL BE FIELD LOCATED AND CONSTRUCTED TO MINIMIZE THE AMOUNT OF TREES TO BE CLEARED.
2. ANY TREES OUTSIDE OF THE LOD THAT HAVE THE POTENTIAL TO BE DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE PROTECTED, ANY TREES WITHIN THE LOD THAT ARE NOT NEEDED TO BE REMOVED OR FOR FUEL SHALL BE PROTECTED.
3. ALL STAGING AND STOCKPILE AREAS SHALL BE STABILIZED WITH A MINIMUM OF 4" OF WOOD MULCH.
4. CONTRACTOR SHALL ENSURE THAT ALL SEDIMENT CONTROLS ARE IN WORKING CONDITION AT THE END OF EACH WORKING DAY TO ENSURE THAT NO SEDIMENT LADEN MATERIAL DISCHARGES FROM THE WORK AREA.
5. FOR EACH PHASE, INSTREAM WORK SHALL NOT COMMENCE UNTIL ALL NEEDED RESOURCES ARE ON SITE.
6. STAGING/STOCKPILE AREAS MAY BE FULLY OR PARTIALLY LOCATED WITHIN THE 100-YEAR FLOODPLAIN, THEREFORE, EROSIONAL MATERIAL OR MATERIAL DEEMED HAZARDOUS TO THE ENVIRONMENT, SUCH AS, EXCAVATED SEDIMENT OR FUEL, MAY NOT BE STOCKPILED WITHIN THE 100-YEAR FLOODPLAIN.

WITH EROSION AND SEDIMENT CONTROL INSPECTORS APPROVAL, EROSION AND FILTER LOG (FL-18) MAY BE SUBSTITUTED FOR SSF FOR STOCKPILE AREAS IF EARTH IS DISTURBED AND THE STOCKPILE AREAS ARE ONLY USED FOR STOCKPILING MATERIALS OTHER THAN SOIL.

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AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF
THE STATE OF MARYLAND. LICENSE NO. 200966, EXPIRATION DATE: 01/16/2025.

GP # GRA-001081-2024

REVISIONS



HARFORD COUNTY, MARYLAND

LOWER WHEEL CREEK STREAM
RESTORATION REPAIRS
EROSION AND SEDIMENT CONTROL PLAN
PLANS

REVIEWED BY : CMS/SMC

DRAWING NO.

ES-01 OF

SHEET NO. 2 OF 5

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BID No.:

SCALE : 1 inch

STANDARDS AND SPECIFICATIONS
FOR SOIL PREPARATION,
TOPSOILING, AND SOIL AMENDMENTS

- A. SOIL PREPARATION
1. TEMPORARY STABILIZATION
 - a. SEEDED 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 PLOW OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENEED, 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.
 - b. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
 - c. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
 2. PERMANENT STABILIZATION
 - a. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
 - i. SOIL PH BETWEEN 6.0 AND 7.0.
 - ii. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
 - iii. 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.
 - iv. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.
 - v. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
 - b. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.
 - c. GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENEED TO A DEPTH OF 3 TO 5 INCHES.
 - d. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.
 - e. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING 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 SEEDED 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. SEEDED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.
- B. TOPSOILING
1. 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.
 2. 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.
 3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
 - a. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
 - b. 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.
 - c. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
 - d. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
 4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.
 5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
 - a. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND. SOIL MAY BE 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, TRASH, OR OTHER MATERIALS LARGER THAN 1½ INCHES IN DIAMETER.
 - b. 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.
 - c. 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.
 6. TOPSOIL APPLICATION
 - a. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.
 - b. 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.
 - c. 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 CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDED PREPARATION.
 7. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)
 - a. 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.
 - b. 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.
 - c. 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.
 - d. LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
 - e. 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.

NOTE (MODIFICATION OF STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS 6b): IRREGULARITIES IN THE SURFACE SHALL BE ALLOWED WITHIN REAS DESIGNATED FOR FLOODPLAIN MICROTOPOGRAPHY.

STANDARDS AND SPECIFICATIONS
FOR SEEDING AND MULCHING

- A. SEEDING
1. SPECIFICATIONS
 - a. 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 8.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE AND MUST BE PRESENTED TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.
 - b. 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.
 - c. 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.
 - d. 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 PHYTO-TOXIC MATERIALS.
 2. APPLICATION
 - a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.
 - i. 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.
 - ii. 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.
 - b. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
 - i. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDED MUST BE FIRM AFTER PLANTING.
 - ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.
 - c. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).
 - d. 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; P205 (PHOSPHOROUS), 200 POUNDS PER ACRE; K20 (POTASSIUM), 200 POUNDS PER ACRE.
 - e. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS PER ACRE ARE REQUIRED 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.
 - f. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.
 - g. 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 1.8 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.
 3. ANCHORING
 - a. 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:
 - i. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPELMENT 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.
 - ii. 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.
 - iii. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DC-70, PETROSET, TERRA TAX II, TERRATACK 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.
 - iv. 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.

HARFORD COUNTY
SEDIMENT CONTROL NOTES

1. THE CONTRACTOR/OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS. FURTHER, NO CONSTRUCTION ACTIVITY SHALL TAKE PLACE UNTIL ALL REQUIRED PERMITS HAVE BEEN OBTAINED.
2. THE LIMITS OF DISTURBANCE SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO GRADING OF THE SITE TO ENSURE COMPLIANCE WITH APPROVED PLANS. ALL FOREST RETENTION AREAS WILL BE DELINEATED WITH BLAZE ORANGE FENCE AS WELL AS ANY SWM INFILTRATION PRACTICE PRIOR TO ANY CLEARING WORK BEYOND THE LIMITS OF DISTURBANCE AND IN ANY AREA INSIDE THE FOREST RETENTION AND SWM INFILTRATION AREA IS CONSIDERED TO BE A VIOLATION OF THIS PLAN.
3. ALL SEDIMENT CONTROL PRACTICES MUST BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY. UPON COMPLETION OF THE INSTALLATION OF PERIMETER SEDIMENT CONTROL PRACTICES THE SITE MUST BE INSPECTED BY THE DEPARTMENT OF PUBLIC WORKS (DPW). NO ADDITIONAL CONSTRUCTION ACTIVITY WILL BE AUTHORIZED WITHOUT THE APPROVAL OF DPW.
4. ALL POINTS OF INGRESS AND EGRESS SHALL BE PROTECTED TO PREVENT TRACKING OF MUD INTO PUBLIC WARS. DURING CONSTRUCTION, EVERY MEANS WILL BE TAKEN TO CONTROL SOIL EROSION AND SILTATION. IF NECESSARY A WASH RACK MAY NEED TO BE ESTABLISHED.
5. EARTH DIKES, SEDIMENT TRAPS, ETC. WILL BE LOCATED AS SHOWN ON THESE DRAWINGS. FIELD CHANGES AND MINOR ADJUSTMENT ARE PERMISSIBLE AS LONG AS THE INSTALLATION FUNCTIONS AND CONFORMS TO SPECIFICATIONS. THE SITE INSPECTOR PRIOR TO INSTALLATION MUST APPROVE ALL SUCH CHANGES. MAJOR CHANGES TO THE APPROVED PLAN WILL REQUIRE RE-APPROVAL BY THE HARFORD SOIL CONSERVATION DISTRICT.
6. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
 - A. THREE CALENDAR DAYS ON SLOPES GREATER THAN 3:1, ALL WATERWAYS AND TO THE SURFACE OF ALL PERIMETER CONTROLS.
 - B. SEVEN CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS OF THE PROJECT SITE.
7. DUST CONTROL MUST BE MANAGED AS PART OF ALL SEDIMENT CONTROL PLANS. FAILURE TO DO SO IS A VIOLATION OF THIS PLAN.
8. SEDIMENT BASINS MUST BE BUILT TO DESIGN SPECIFICATIONS SHOWN ON THE PLAN. IF THE BASIN IS TO BE USED AS A FUTURE SWM FACILITY, THE BASIN WILL BE BUILT IN ACCORDANCE WITH THE LATEST MD-378 STANDARDS AND SPECIFICATIONS. SPECIFIED MATERIALS MUST BE USED. NO CHANGES OR MODIFICATIONS WILL BE MADE WITHOUT WRITTEN AUTHORIZATION OF THE HARFORD SOIL CONSERVATION DISTRICT.
9. TEMPORARY FENCING SHALL BE PLACED AROUND ALL SEDIMENT BASINS, TRAPS, AND PONDS DURING CONSTRUCTION AND SITE GRADING.
10. AT THE END OF EACH WORKING DAY ALL SEDIMENT CONTROL PRACTICES WILL BE INSPECTED AND LEFT OPERATIONAL. A WEEKLY LOG WILL BE KEPT IN ACCORDANCE WITH NO/NPDES REGULATIONS. A COPY OF THE APPROVED SEDIMENT CONTROL PLANS SHALL BE AVAILABLE AT THE SITE AT ALL TIMES.
11. ENSURE POSITIVE DRAINAGE TO ALL ROAD INLETS DURING ALL PHASES OF ROAD CONSTRUCTION TO ENSURE POSITIVE FLOW TO TRAPS AND OR BASINS.
12. CUT AND/OR FILL SHALL BE DONE IN CONFORMANCE WITH 2020 EROSION AND SEDIMENT CONTROL STANDARD AND SPECIFICATIONS FOR LAND GRADING.
13. SURFACE FLOWS OVER CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER REDIRECTING FLOWS FROM TRAVERSING THE SLOPES OR BY INSTALLING MECHANICAL DEVICES TO SAFELY CONVEY WATER DOWN SLOPES WITHOUT CAUSING EROSION.
14. OFF-SITE WASTE OR BORROW AREAS SHALL HAVE AN APPROVED EROSION AND SEDIMENT CONTROL PLAN PRIOR TO THE IMPORT OR EXPORT OF MATERIAL TO/FROM THE PROJECT SITE.
15. ALL MATERIAL ORIGINATING FROM THE DEVELOPMENT OF THE PROPERTY AND DEPOSITED ON THE PUBLIC RIGHT-OF-WAY SHALL BE IMMEDIATELY REMOVED.
16. STORM DRAIN INLETS AND OUTLETS SHALL BE PROTECTED PER 2020 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.
17. TOPSOIL, LIMING, FERTILIZING, SEEDING, MULCHING, SOD, ETC. ARE ALL AN ESSENTIAL PART OF THE SEDIMENT CONTROL PLAN AND MUST BE COMPLETED ALONG WITH ALL OTHER PRACTICES.
18. TRAPS TO BE REMOVED SHALL BE DEWATERED AS PER THE 2020 EROSION AND SEDIMENT AND EROSION CONTROL STANDARDS AND SPECIFICATIONS.
19. PRIOR TO REMOVAL OF TRAPS OR CONVERSION OF SEDIMENT BASINS TO SWM FACILITIES, THE STORM DRAINS WILL BE FLUSHED.
20. SEDIMENT CONTROL PRACTICES WILL BE MAINTAINED UNTIL ALL DISTURBED AREAS FOR WHICH THE SEDIMENT CONTROL PRACTICES HAVE BEEN STABILIZED. SEDIMENT CONTROL PRACTICES MAY BE REMOVED ONLY WITH THE AUTHORIZATION OF THE DPW INSPECTOR. ALL DISTURBED AREAS RESULTING FROM THE REMOVAL OF SEDIMENT CONTROL DEVICES SHALL BE STABILIZED IMMEDIATELY. REMOVAL PRIOR TO INSPECTOR'S APPROVAL CONSTITUTES A VIOLATION.

SITE ANALYSIS (NOT FOR BIDDING PURPOSES)

TOTAL AREA TO BE STABILIZED	=	3.36 AC.
TOTAL DISTURBED AREA	=	3.36 AC.
TOTAL AREA TO BE PAVED	=	0.00 AC.
TOTAL CUT	=	12 CY
TOTAL FILL	=	7 CY
NPDES ID POINT:	39-487119, -76.334057	

BEST MANAGEMENT PRACTICES FOR WORKING IN NON TIDAL WETLANDS,
WETLAND BUFFERS, WATERWAYS AND 100 YEAR FLOOD PLAINS

1. NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NON TIDAL WETLANDS, NON TIDAL WETLAND BUFFERS, WATERWAYS OR THE 100-YEAR FLOODPLAIN.
2. PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NON TIDAL WETLANDS, NON TIDAL WETLAND BUFFERS, WATERWAYS OR THE 100 YEAR FLOODPLAIN.
3. DO NOT USE EXCAVATED MATERIAL AS BACK FILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACK FILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.
4. PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NON TIDAL WETLANDS, NON TIDAL WETLAND BUFFERS, OR WATERWAYS OR THE 100 YEAR FLOODPLAIN.
5. REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NON TIDAL WETLANDS, NON TIDAL WETLAND BUFFERS, OR WATERWAYS, OR PERMANENT MODIFICATION OF THE 100 YEAR FLOODPLAIN IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.
6. RECTIFY ANY NON TIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS OR 100 YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
7. ALL STABILIZATION IN THE NON TIDAL WETLAND AND NON TIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES: ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNIOLEA SP.), AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NON TIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION.
8. AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED, AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
9. TO PROTECT AQUATIC SPECIES, IN STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM:
 - 9.1. USE I-P WATERS: IN STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
10. STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
11. CULVERTS SHALL BE CONSTRUCTED AND ANY RIP RAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

HARFORD COUNTY
PERMANENT VEGETATIVE
STABILIZATION

ALL DISTURBED AREAS WHICH ARE NOT TO BE PAVED, SHALL BE PERMANENTLY STABILIZED AS FOLLOWS:

- A). SEED BED PREPARATION:
LOOSEN UPPER THREE INCH BY RAKING, DISCING, OR OTHER ACCEPTABLE MEANS AFTER SPREADING FOUR INCHES OF TOP SOIL.
 - B). SOIL AMENDMENTS:
APPLY 500 LBS. PER ACRE OF 10-10-10 FERTILIZER AND TWO TONS PER ACRE OF LIME.
 - C). SEEDING:*
FOR PERIODS MARCH 1 TO MAY 15 AND AUGUST 15 TO OCTOBER 15, SEED WITH 125 LBS. PER ACRE OF TALL FESCUE, 15 LBS. PER ACRE OF PERENNIAL RYEGRASS, AND 10 LBS. PER ACRE OF KENTUCKY BLUEGRASS.
FOR PERIOD OF MARCH 16 TO AUGUST 14, SEED WITH 110 LBS. PER ACRE OF TALL FESCUE AND 3 LBS. PER ACRE OF WEEPING LOVEGRASS.
FOR PERIOD OF OCTOBER 16 TO FEBRUARY 28, PROTECT SITE BY: OPTIONS (1) 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, (2) USE SOD OR (3) SEED WITH 80 LBS. PER ACRE OF TALL FESCUE AND MULCH WITH 2 TONS PER ACRE OF WELL ANCHORED STRAW. NOTE: FOR QUICK COVER WITH TALL FESCUE, ADD 2 LBS. OF SMALL GRAIN PER 1,000 SQ. FT.
 - D). MULCHING SPECIFICATIONS:
MULCH SHALL BE APPLIED TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING, APPLY 2 TONS PER ACRE OF STRAW OVER ALL SEEDED AREAS. IF A MULCH ANCHORING TOOL IS TO BE USED, THE RATE SHALL BE INCREASED TO 2.5 TONS PER ACRE.**
MULCH ANCHORING SHALL BE PERFORMED IMMEDIATELY FOLLOWING MULCH APPLICATION TO MINIMIZE LOSS BY WIND AND WATER. THE TYPE OF MULCH ANCHORING USED MUST COMPLY WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS.
* IF OTHER SEED MIXES ARE TO BE SUBSTITUTED, THEY MUST COMPLY WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS, CHAPTER 20, TABLE 25.
** IF A DIFFERENT TYPE OF MULCH IS TO BE USED, IT MUST COMPLY WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS, CHAPTER 20.
- A). SEED BED PREPARATION:
LOOSEN UPPER THREE INCHES BY DISCING, RAKING OR OTHER ACCEPTABLE MEANS.
 - B). SOIL AMENDMENTS:
APPLY 600 LBS. PER ACRE OF 10-10-10 FERTILIZER AND TWO TONS PER ACRE OF LIME.
 - C). SEEDING:
FOR PERIOD OF MARCH 11 TO APRIL 30 AND AUGUST 15 TO NOVEMBER 15, SEED WITH 2.5 BU PER ACRE OF CEREAL RYE PLUS 30 LBS. PER ACRE OF TALL FESCUE OR 5 LBS. PER ACRE OF REDTOP OR 20 LBS. PER ACRE OF PERENNIAL RYEGRASS.
FOR PERIODS OF MAY 1 TO AUGUST 14, SEED WITH 3 LBS. PER ACRE OF WEEPING LOVEGRASS OR 40 LBS. PER ACRE OF JAPANESE OR FOXTAIL MILLET.
FOR PERIODS OF NOVEMBER 16 TO FEBRUARY 28, PROTECT THE SITE BY APPLYING TWO TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.
 - D). MULCHING SPECIFICATIONS:
MULCH SHALL BE APPLIED TO ALL SEEDED AREAS. IMMEDIATELY AFTER SEEDING, APPLY TWO TONS PER ACRE OF STRAW OVER ALL SEEDED AREAS. IF A MULCH ANCHORING TOOL IS TO BE USED, THE RATE SHALL BE INCREASED TO 2.5 TONS PER ACRE.**
MULCH ANCHORING SHALL BE PERFORMED IMMEDIATELY FOLLOWING MULCH APPLICATION TO MINIMIZE LOSS BY WIND AND WATER. THE MULCH ANCHORING TOOL MUST COMPLY WITH THE 1994 MARYLAND STANDARDS SPECIFICATIONS.
* IF OTHER SEED MIXES ARE TO BE SUBSTITUTED, THEY MUST COMPLY WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS, CHAPTER 20, TABLE 25.
** IF A DIFFERENT TYPE OF MULCH IS TO BE USED, IT MUST COMPLY WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS, CHAPTER 20.

SEQUENCE OF CONSTRUCTION

NOTES:

- STREAM CLOSURE PERIOD IS MARCH 1 TO JUNE 15.
- TREE FELLING AND REMOVAL SHALL NOT IMPACT TREES THAT ARE TO REMAIN.
- EROSION AND SEDIMENT PRACTICES, AND THE SITE IN GENERAL, MUST BE INSPECTED WEEKLY, OR AS REQUIRED BY PERMIT, AND AFTER EACH RAINFALL EVENT, BY THE CONTRACTOR OR OTHER RESPONSIBLE PERSON, AND ANY NEEDED MAINTENANCE PERFORMED IMMEDIATELY.
- EXISTING TOPSOIL, RIPRAP, STREAMBED MATERIAL, AND SPOIL MATERIAL SHALL BE SALVAGED AND STOCKPILED SEPARATELY ON SITE. UNSUITABLE MATERIALS SHALL BE DISPOSED OF BY THE CONTRACTOR.
- ANY MATERIAL TAKEN OFF SITE MUST GO TO A SITE WITH AN ACTIVE AND APPROVED SEDIMENT AND EROSION CONTROL PLAN.
- THE SITE MUST BE GRADED IN SUCH A MANNER THAT THE APPROVED DRAINAGE DIVIDES ARE MAINTAINED THROUGHOUT SITE CONSTRUCTION.
- WORK SHALL BE LIMITED TO AREAS THAT CAN BE COMPLETED AND STABILIZED AT THE END OF EACH WORKING DAY. NO UNSTABILIZED AREAS SHALL BE LEFT OVERNIGHT.
- STOCKPILE AREAS NOT TO EXCEED 15 FT IN HEIGHT OR HAVE SIDE SLOPES STEEPER THAN 2:1. IF ADDITIONAL STOCKPILE AREAS ARE NEEDED WITHIN THE EXISTING LIMIT OF DISTURBANCE, THE CONTRACTOR MUST GET APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR AND WRAP THE STOCKPILES WITH A PERIMETER CONTROL SUITABLE FOR THE APPLICATION (FILTER LOSS, SILT FENCE, ETC.).
- THE SEQUENCE OF CONSTRUCTION IS INTENDED TO CONVEY THE INSTALLATION OF SEDIMENT CONTROLS AND GENERAL INSTRUCTION TO THE CONTRACTOR. THE SEQUENCE MAY BE ADJUSTED IN THE FIELD WITH THE SEDIMENT CONTROL INSPECTOR'S PERMISSION TO ACCOMMODATE CONTRACTOR'S MEANS AND METHODS. ANY CHANGES TO THE PLANS MUST BE APPROVED BY HARFORD COUNTY SOD.
- CLEAR WATER PUMP AROUND DIVERSION PRACTICE AND DEWATERING PRACTICE INCLUDING PUMPS, PUMPS, SAND BAG DIKES, FILTER BAGS AND ROCK OUTLET PROTECTION ARE SHOWN TO ILLUSTRATE POTENTIAL PLACEMENT ONLY AND SHALL BE RELOCATED AS NEEDED TO COMPLY WITH PROPOSED WORK. CHANGES MUST BE APPROVED BY SEDIMENT CONTROL INSPECTOR IN THE FIELD. SLUMP PITS MAY BE REQUIRED TO ADEQUATELY DEWATER THE WORK AREA AT NO ADDITIONAL COST.
- THE CONSTRUCTION ACCESS ROAD ILLUSTRATES POTENTIAL ALIGNMENT ONLY. THE TEMPORARY ROAD MAY BE FIELD ADJUSTED WITHIN THE LIMITS OF DISTURBANCE WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR.
- THE CONTRACTOR MUST PROTECT AND REPAIR/REPLACE EXISTING INFRASTRUCTURE IN-KIND IF DAMAGED DURING CONSTRUCTION AT NO ADDITIONAL EXPENSE TO THE COUNTY.
- AREAS OUTSIDE OF THE LOD SHALL NOT BE DISTURBED DURING PLACEMENT OF DIVERSION PIPE. NO MECHANICAL EQUIPMENT SHALL BE USED FOR PLACEMENT OF DIVERSION PIPE.
- SEDIMENT AND EROSION CONTROLS CANNOT BE REMOVED UNTIL THE SITE HAS ADEQUATE STABILIZATION. ONCE VEGETATION IS ESTABLISHED, THE SITE SHALL HAVE 95% GROUNDCOVER TO BE CONSIDERED ADEQUATELY STABILIZED AND THE SEDIMENT CONTROL INSPECTOR HAS APPROVED SUCH REMOVAL.
- REMOVE ALL DEBRIS RESULTING FROM CONSTRUCTION SUCH AS BOTTLES AND TRASH, DAILY.
- THE CONTRACTOR SHALL CONTACT THE MARYLAND DEPARTMENT OF THE ENVIRONMENT COMPLIANCE PROGRAM AT 301-665-2850 AT LEAST 5 DAYS IN ADVANCE OF THE PRE-CONSTRUCTION MEETING.
- THE CONTRACTOR SHALL NOTIFY MISS UTILITY AT (800)-257-7777 OR 811, AT LEAST 48 HOURS PRIOR TO ANY LAND DISTURBING ACTIVITIES.
- THE CONTRACTOR SHALL NOTIFY THE HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS (DPW) PROJECT MANAGER, THE DPW SEDIMENT CONTROL INSPECTOR, THE MDE SEDIMENT CONTROL INSPECTOR, AND THE DESIGN ENGINEER AT LEAST 48 HOURS PRIOR TO COMMENCING ANY LAND DISTURBING ACTIVITIES TO SCHEDULE A PRE-CONSTRUCTION MEETING AT THE PROJECT SITE. THE LOCATIONS OF THE LOD, HIGH VISIBILITY FENCE, TREE PROTECTION, PERIMETER CONTROLS, AND TREES DESIGNATED FOR REMOVAL SHALL BE CLEARLY MARKED PRIOR TO SCHEDULING THE PRE-CONSTRUCTION MEETING. AT THE PRE-CONSTRUCTION MEETING THE CONTRACTOR MUST PROVIDE THE NAME OF THE PERSON ON SITE WHO IS RESPONSIBLE FOR INSPECTION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES, AND A COPY OF THEIR GREEN CARD TO THE SEDIMENT CONTROL INSPECTOR.
- STAGES 1 TO 5 CAN BE CONSTRUCTED IN ANY ORDER, SEPARATELY AND/OR CONCURRENTLY, AT THE DISCRETION OF THE CONTRACTOR.

	APPROXIMATE DAYS
1. CLEAR AND GRUB AS NECESSARY AND INSTALL STABILIZED CONSTRUCTION ENTRANCE, CONSTRUCTION ACCESS ROAD, TEMPORARY STOCKPILE AREAS, AND ASSOCIATED SEDIMENT AND EROSION CONTROL DEVICES.	5
2. INSTALL TREE PROTECTION MEASURES, HIGH VISIBILITY FENCE, TEMPORARY TRAFFIC CONTROL SIGNS, AND PRUNE AS NEEDED TO COMPLETE PROPOSED WORK.	5
STAGE 1 – STATION 26+15 TO STATION 29+00	STAGE 1 APPROXIMATE DAYS
1. INSTALL CLEAR WATER PUMP AROUND DIVERSION INCLUDING SAND BAG DIKES, PUMPS AND DIVERSION PIPES. CLEAR WATER PUMP AROUND DIVERSION SHALL BE USED FOR BASEFLOW ONLY. INSTALL DEWATERING PRACTICE TO DEWATER SITE OF SEDIMENT LADEN RUNOFF INCLUDING PIPE, FILTER BAG, AND IF NEEDED SUMP PIT. USE AND RELOCATE AS NEEDED FOR DEWATERING.	2
2. ONCE APPROVAL HAS BEEN OBTAINED FROM THE SEDIMENT CONTROL INSPECTOR, BEGIN WORK IN THE STAGE 1 AREA. REPAIR THE ROCK WALLS, IMBERICATED ROCK WALL, STONE TOE, AND LOG STEP IN ACCORDANCE WITH THE PLANS AND AS DIRECTED IN THE FIELD.	9
3. AFTER THE WORK AREA HAS BEEN STABILIZED AND WITH APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR, SHUTDOWN AND REMOVE/RELOCATE PUMP AROUND AND DEWATERING PRACTICES AS NEEDED TO COMPLETE NEXT STAGE OF WORK.	1
STAGE 2 – STATION 23+40 TO STATION 24+60	STAGE 2 APPROXIMATE DAYS
1. INSTALL CLEAR WATER PUMP AROUND DIVERSION INCLUDING SAND BAG DIKES, PUMPS AND DIVERSION PIPES. CLEAR WATER PUMP AROUND DIVERSION SHALL BE USED FOR BASEFLOW ONLY. INSTALL DEWATERING PRACTICE TO DEWATER SITE OF SEDIMENT LADEN RUNOFF INCLUDING PIPE, FILTER BAG, AND IF NEEDED SUMP PIT. USE AND RELOCATE AS NEEDED FOR DEWATERING.	2
2. ONCE APPROVAL HAS BEEN OBTAINED FROM THE SEDIMENT CONTROL INSPECTOR, BEGIN WORK IN THE STAGE 2 AREA. REPAIR THE ROCK STEPS AND INSTALL NEW ROCK STEP IN ACCORDANCE WITH THE PLANS AND AS DIRECTED IN THE FIELD.	4
3. AFTER THE WORK AREA HAS BEEN STABILIZED AND WITH APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR, SHUTDOWN AND REMOVE/RELOCATE PUMP AROUND AND DEWATERING PRACTICES AS NEEDED TO COMPLETE NEXT STAGE OF WORK.	1
STAGE 3 – STATION 14+05 TO STATION 18+30	STAGE 3 APPROXIMATE DAYS
1. INSTALL CLEAR WATER PUMP AROUND DIVERSION INCLUDING SAND BAG DIKES, PUMPS AND DIVERSION PIPES. CLEAR WATER PUMP AROUND DIVERSION SHALL BE USED FOR BASEFLOW ONLY. INSTALL DEWATERING PRACTICE TO DEWATER SITE OF SEDIMENT LADEN RUNOFF INCLUDING PIPE, FILTER BAG, AND IF NEEDED SUMP PIT. USE AND RELOCATE AS NEEDED FOR DEWATERING.	2
2. ONCE APPROVAL HAS BEEN OBTAINED FROM THE SEDIMENT CONTROL INSPECTOR, BEGIN WORK IN THE STAGE 3 AREA. REPAIR AND/OR INSTALL STONE TOE AND INSTALL IMBERICATED ROCK WALLS IN ACCORDANCE WITH THE PLANS AND AS DIRECTED IN THE FIELD.	13
3. AFTER THE WORK AREA HAS BEEN STABILIZED AND WITH APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR, SHUTDOWN AND REMOVE/RELOCATE PUMP AROUND AND DEWATERING PRACTICES AS NEEDED TO COMPLETE NEXT STAGE OF WORK.	1
STAGE 4 – STATION 9+25 TO STATION 11+50	STAGE 4 APPROXIMATE DAYS
1. INSTALL CLEAR WATER PUMP AROUND DIVERSION INCLUDING SAND BAG DIKES, PUMPS AND DIVERSION PIPES. CLEAR WATER PUMP AROUND DIVERSION SHALL BE USED FOR BASEFLOW ONLY. INSTALL DEWATERING PRACTICE TO DEWATER SITE OF SEDIMENT LADEN RUNOFF INCLUDING PIPE, FILTER BAG, AND IF NEEDED SUMP PIT. USE AND RELOCATE AS NEEDED FOR DEWATERING.	2
2. ONCE APPROVAL HAS BEEN OBTAINED FROM THE SEDIMENT CONTROL INSPECTOR, BEGIN WORK IN THE STAGE 4 AREA. COMPLETE PROPOSED REPAIRS TO EXISTING STRUCTURES, INSTALL STONE TOE, AND REPAIR IMBERICATED ROCK WALLS IN ACCORDANCE WITH THE PLANS AND AS DIRECTED IN THE FIELD.	7
3. AFTER THE WORK AREA HAS BEEN STABILIZED AND WITH APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR, SHUTDOWN AND REMOVE/RELOCATE PUMP AROUND AND DEWATERING PRACTICES AS NEEDED TO COMPLETE NEXT STAGE OF WORK.	1
STAGE 5 – STATION 5+60 TO STATION 8+30	STAGE 5 APPROXIMATE DAYS
1. INSTALL CLEAR WATER PUMP AROUND DIVERSION INCLUDING SAND BAG DIKES, PUMPS AND DIVERSION PIPES. CLEAR WATER PUMP AROUND DIVERSION SHALL BE USED FOR BASEFLOW ONLY. INSTALL DEWATERING PRACTICE TO DEWATER SITE OF SEDIMENT LADEN RUNOFF INCLUDING PIPE, FILTER BAG, AND IF NEEDED SUMP PIT. USE AND RELOCATE AS NEEDED FOR DEWATERING.	2
2. ONCE APPROVAL HAS BEEN OBTAINED FROM THE SEDIMENT CONTROL INSPECTOR, BEGIN WORK IN THE STAGE 5 AREA. COMPLETE PROPOSED REPAIRS TO EXISTING STRUCTURES, REPAIR IMBERICATED ROCK WALL TIE-IN, INSTALL STONE TOE, REMOVE DEBRIS, AND COMPLETE BANK GRADING IN ACCORDANCE WITH THE PLANS AND AS DIRECTED IN THE FIELD.	8
3. AFTER THE WORK AREA HAS BEEN STABILIZED AND WITH APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR, SHUTDOWN AND REMOVE/RELOCATE PUMP AROUND AND DEWATERING PRACTICES AS NEEDED TO COMPLETE NEXT STAGE OF WORK.	1
STAGE 6	STAGE 6 APPROXIMATE DAYS
1. REMOVE THE CONSTRUCTION ACCESS ROAD AND COMPLETE REMAINING PERMANENT STABILIZATION IN ACCORDANCE WITH THE PLANS.	5
2. ONCE AREA IS 95% STABILIZED AND WITH SEDIMENT CONTROL INSPECTOR APPROVAL, REMOVE ANY REMAINING EROSION AND SEDIMENT CONTROLS AND STABILIZE ANY AREAS DISTURBED. REMOVE STABILIZED CONSTRUCTION ENTRANCE. RESTORE PAVEMENT TO EQUAL TIE-IN OR BETTER THAN PRE-CONSTRUCTION CONDITIONS.	2
3. INSTALL PLANT MATERIAL AS INDICATED ON THE PLANTING PLAN.	8
	STAGE 6 SUBTOTAL DAYS: 10
	TOTAL APPROXIMATE DAYS: 76

HARFORD COUNTY, MARYLAND

LOWER WHEEL CREEK STREAM
RESTORATION REPAIRS
EROSION AND SEDIMENT CONTROL PLAN
DETAILS

DRAWN BY : M J G	SCALE : AS SHOWN
DESIGNED BY : M K S	DATE : 06/05/24
REVIEWED BY : C M S / S M C	
DRAWING NO. ED-01 OF ED-02	SHEET NO. 4 OF 5

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BAYLAND JOB NO. 4_4601

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 200966, EXPIRATION DATE: 01/16/2025.



SCALE: 1"=100'
HCG DWG ID NO.:
BID NO.:

