

HARFORD COMMUNITY COLLEGE STREAM RESTORATION

INDEX OF SHEETS

NO.	DESCRIPTION	SHEET NAME
1	TITLE SHEET	GN-01
2	KEY SHEET	KS-01
3-4	GEOMETRY SHEET	GS-01 TO GS-02
5-8	EXISTING CONDITIONS	EX-01 TO EX-04
9-12	DESIGN PLAN	SR-01 TO SR-04
13-16	PROFILE	PR-01 TO PR-04
17	TYPICAL SECTIONS	TS-01
18-22	STREAM DETAILS	DE-01 TO DE-05
23	EROSION AND SEDIMENT CONTROL NOTES	ES-01
24	LANDSCAPING DETAILS	LD-01
25	DRAINAGE AREA MAP	DA-01

30% PRELIMINARY DESIGN

BID NO. XXXXX

WATERSHED PROTECTION AND RESTORATION OFFICE

HARFORD COUNTY, MARYLAND

PROJECT SUMMARY

TOTAL LENGTH OF EXISTING STREAM RESTORED: 2,600 LINEAR FEET
TOTAL LENGTH OF PROPOSED STREAM RESTORED: 2,600 LINEAR FEET
STREAM USE CLASS: IV-P
STREAM CLOSURE PERIOD: MARCH 1st - JUNE 15th
LOAD REDUCTIONS AND IA CREDIT SUMMARY:

IA CREDIT	TSS REDUCTION	TN REDUCTION	TP REDUCTION
108.31 AC	538.24 TON/YR	714.29 LB/YR	338.14 LB/YR

NOTE: CREDIT CALCULATED VIA PROTOCOL 1 BANCS METHODOLOGY, PROTOCOL 5, AND THE 2021 MOE WASTELOAD ALLOCATIONS DOCUMENT.

SITE ANALYSIS

1. TOTAL SITE AREA:	5.87 AC
2. TOTAL DISTURBED AREA:	5.87 AC
3. TOTAL IMPERVIOUS AREA WITHIN THE LOD:	0.01 AC
4. TOTAL AREA TO BE VEGETATIVELY STABILIZED:	5.48 AC
5. PROPOSED IMPERVIOUS AREA:	0 AC
6. IMPERVIOUS AREA TREATED (MS4 CREDIT):	108.31
7. ESTIMATED CUT:	5,490 CY
8. ESTIMATED FILL:	1,060 CY
9. NET EXPORT:	4,430 CY

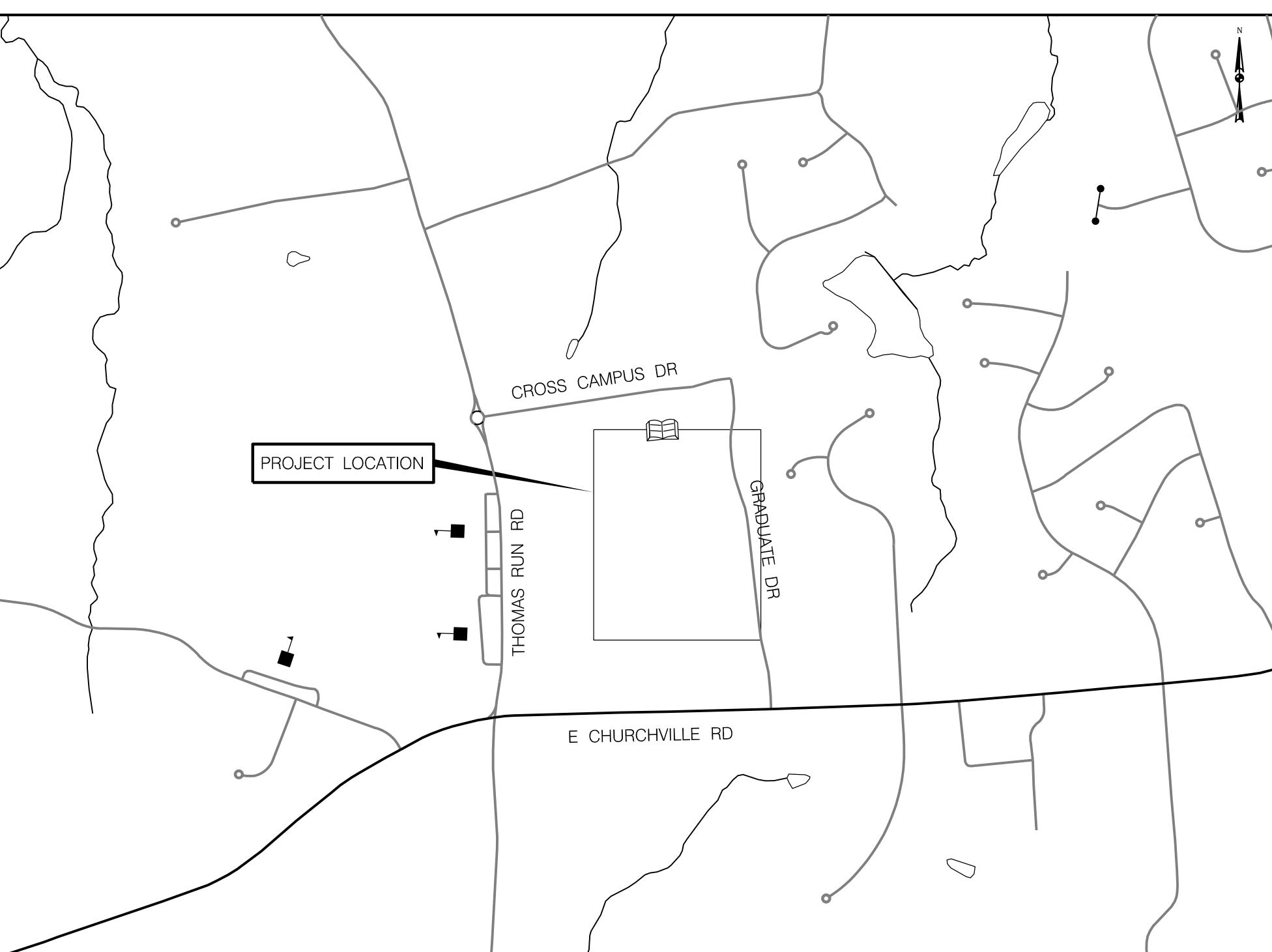
AS-BUILT CERTIFICATION

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

SIGNATURE

DATE

PRINTED NAME



LOCATION MAP

SCALE 1" = 1,000'

OWNER: HARFORD COUNTY
212 SOUTH BOND STREET,
1ST FLOOR
BEL AIR, MD 21014
(410) 638 - 3217

Prepared By :

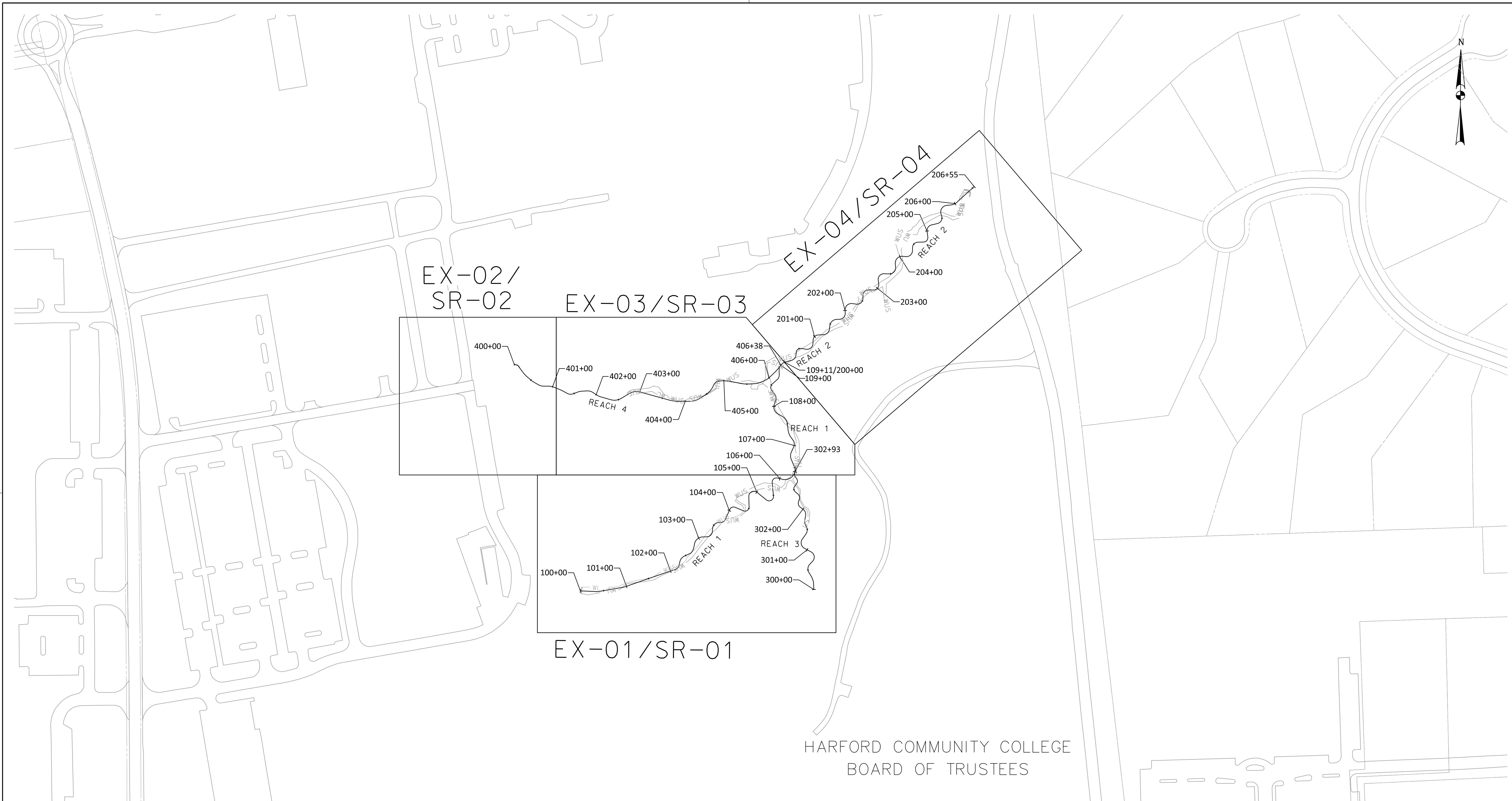


P: 410.728.2900
700 E. Pratt Street, Suite 500 | Baltimore, MD 21202
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

PROFESSIONAL CERTIFICATION

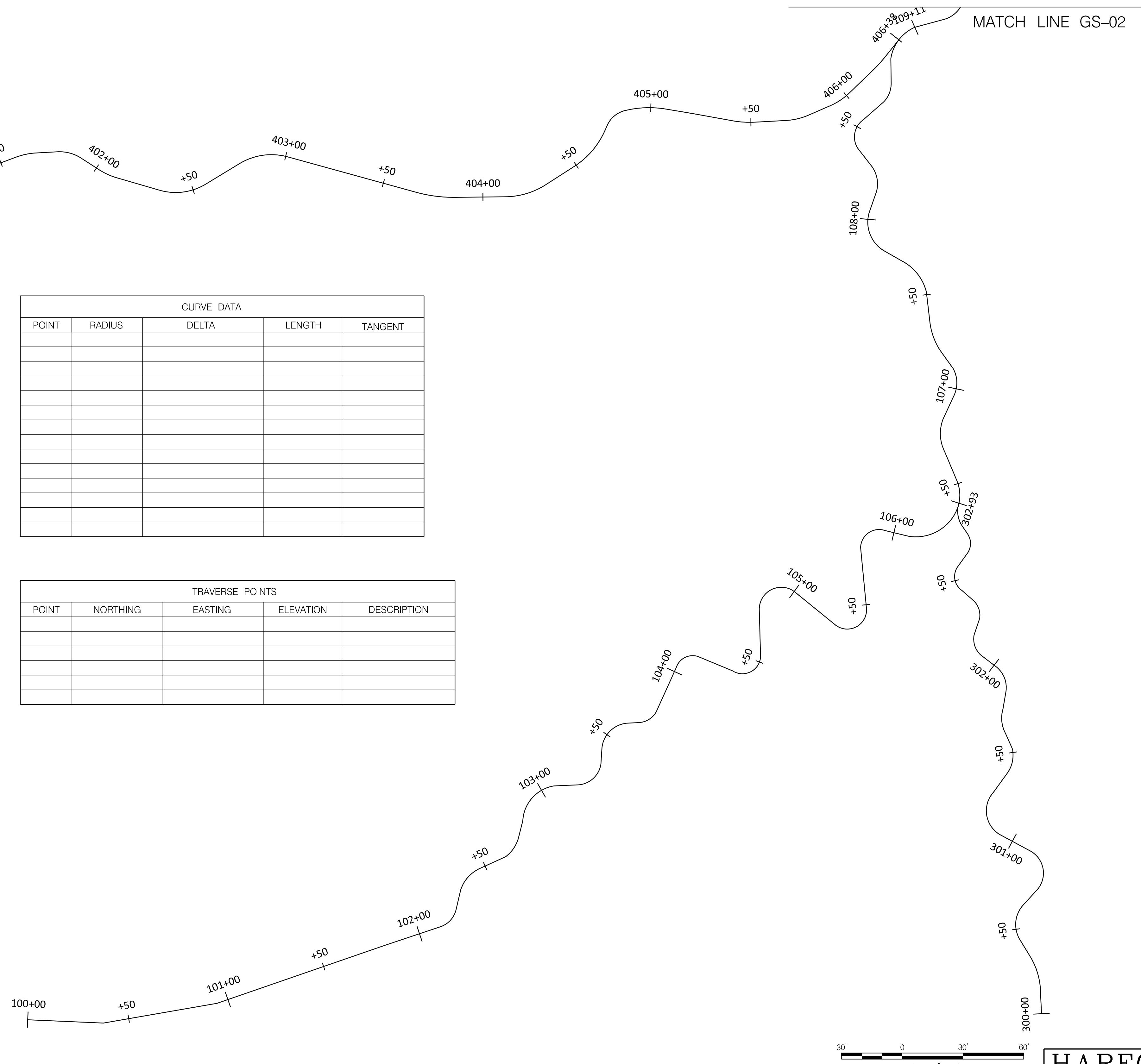
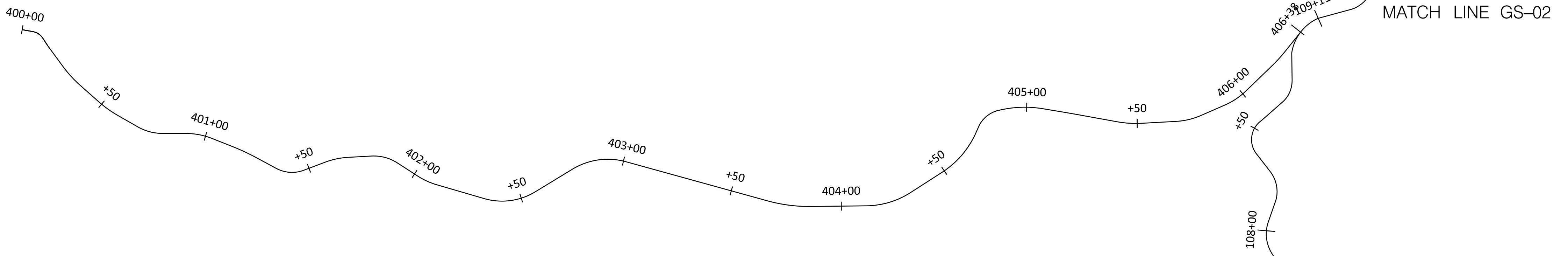
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 200370, EXPIRATION DATE: 2025/03/19.

PROJECT CONTRACT: 21-097 TO #25	Revisions	HARFORD COUNTY, MARYLAND	
GP #XXXX-XXXXXX-XXXX	HARFORD COMMUNITY COLLEGE STREAM RESTORATION		TITLE SHEET
SIGN AND SEAL		DRAWN BY : NH, MK DESIGNED BY : JZ REVIEWED BY : RO DRAWING NO. GN-01 OF GN-01	
		SCALE : N/A DATE : MAY 2025	Sheet No. 1 of 25



HARFORD COUNTY, MARYLAND
HARFORD COMMUNITY COLLEGE
STREAM RESTORATION
KEY SHEET

PROJECT CONTRACT: 21-097 TO #25	Revisions
GP #XXX-XXXXXX-XXXX	
SIGN AND SEAL	
Drawn By : NH, MK	Scale : 1"=100'
Designed By : JZ	Date : MAY 2025
Reviewed By : RO	
Drawing No. KS-01 of KS-01	Sheet No. 2 of 25



HARFORD COUNTY, MARYLAND

HARFORD COMMUNITY COLLEGE STREAM RESTORATION GEOMETRY SHEET

PROJECT CONTRACT: 21-097 TO #25	Revisions	HARFORD COMMUNITY COLLEGE STREAM RESTORATION GEOMETRY SHEET	
GP #XXX-XXXXXX-XXXX		Drawn By : <u>NH, MK</u>	Scale : <u>1"=30'</u>
SIGN AND SEAL		Designed By : <u>JZ</u>	Date : <u>MAY 2025</u>
		Reviewed By : <u>RO</u>	
		Drawing No. <u>GS-01</u> of <u>GS-02</u>	Sheet No. <u>3</u> of <u>25</u>



BY: jzebley -

FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 025_Harford Community College Stream Restoration\CADD\30%\Plans\03 - pGS-0001_HCC

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. 200370, EXPIRATION DATE: 2025/03/19.

BID No.:

SCALE : 1 inch

MATCH LINE GS-01

A horizontal scale bar with three black segments and two white segments, representing 30' increments. The segments are labeled '30'' at both ends. The center white segment is labeled '0'. Below the bar, the text 'SCALE: 1" = 30'' is written.

PROFESSIONAL CERTIFICATION

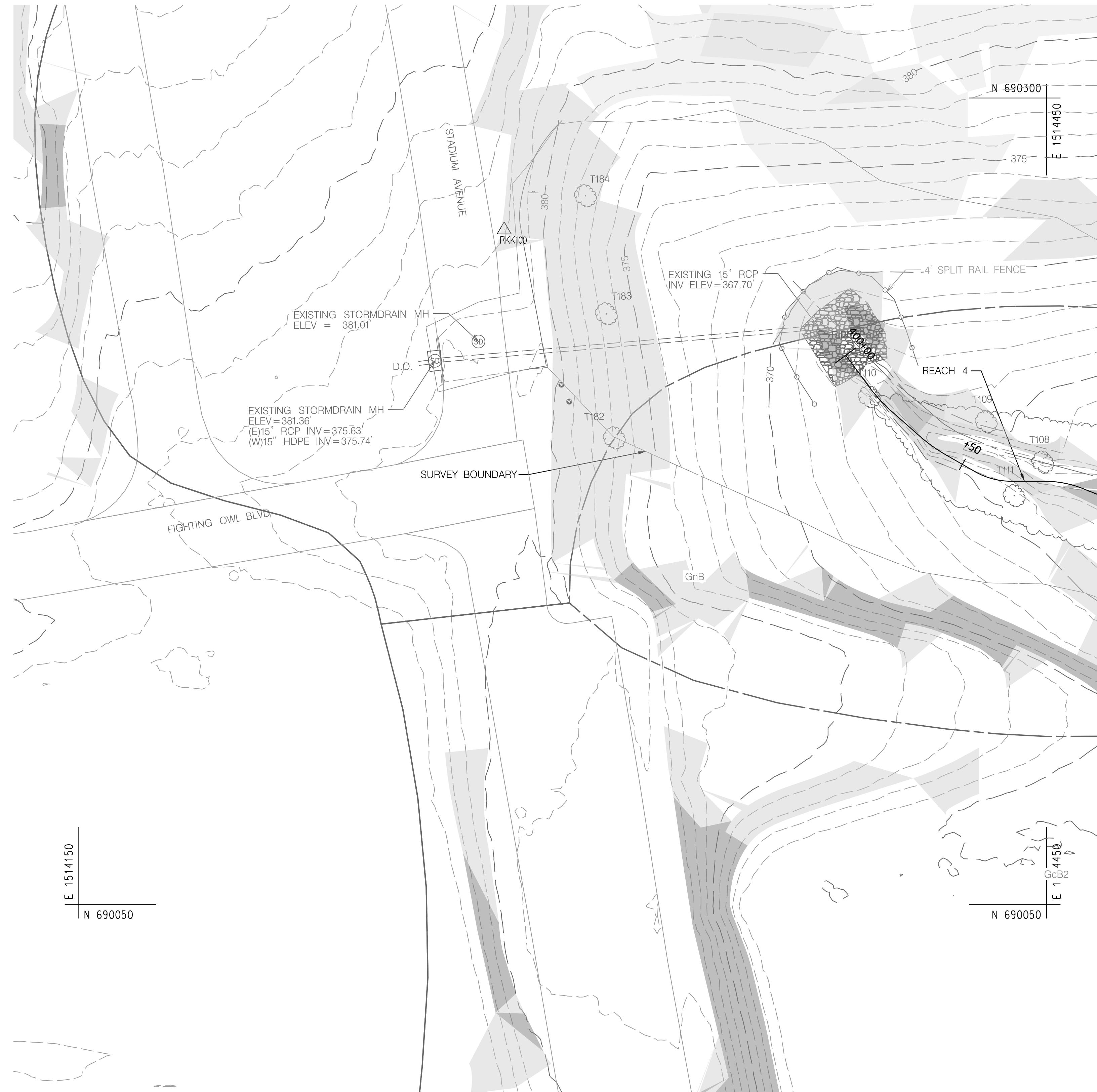
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME,
AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF
THE STATE OF MARYLAND. LICENSE NO.200370, EXPIRATION DATE: 2025/03/19.

HARFORD COUNTY, MARYLAND

HARFORD COMMUNITY COLLEGE STREAM RESTORATION GEOMETRY SHEET

Drawn By : <u>NH, MK</u>	Scale : <u>1''=30'</u>
Designed By : <u>JZ</u>	Date : <u>MAY 2025</u>
Reviewed By : <u>RO</u>	
Drawing No. <u>GS-02</u> of <u>GS-02</u>	Sheet No. <u>4</u> of <u>25</u>





LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING STREAM CENTERLINE
- EXISTING STORMDRAIN
- EXISTING TREE
- EXISTING TREELINE
- TRAVERSE POINT
- 15% TO 25% SLOPES
- 25%+ SLOPES
- EXISTING RIPRAP
- EXISTING WETLAND
- EXISTING WETLAND BUFFER
- SOIL BOUNDARY

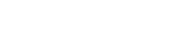
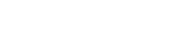















<img alt="Soil boundary symbol: a dashed line with a small triangle." data-bbox="365



LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING STREAM CENTERLINE
- EXISTING STORMDRAIN
- EXISTING TREE
- EXISTING TREELINE
- TRAVERSE POINT
- 15% TO 25% SLOPES
- 25%+ SLOPES
- EXISTING RIPRAP
- EXISTING WETLAND
- EXISTING WETLAND BUFFER
- SOIL BOUNDARY

MATCH LINE EX-01

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

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. 200370, EXPIRATION DATE: 2025/03/19.

PROJECT CONTRACT:
21-097 TO #25

GP #XXXX-XXXXXX-XXXX

SIGN AND SEAL

Revisions

HARFORD COUNTY, MARYLAND

HARFORD COMMUNITY COLLEGE
STREAM RESTORATION
EXISTING CONDITIONS

Drawn By : NH, MK

Scale : 1"=20'

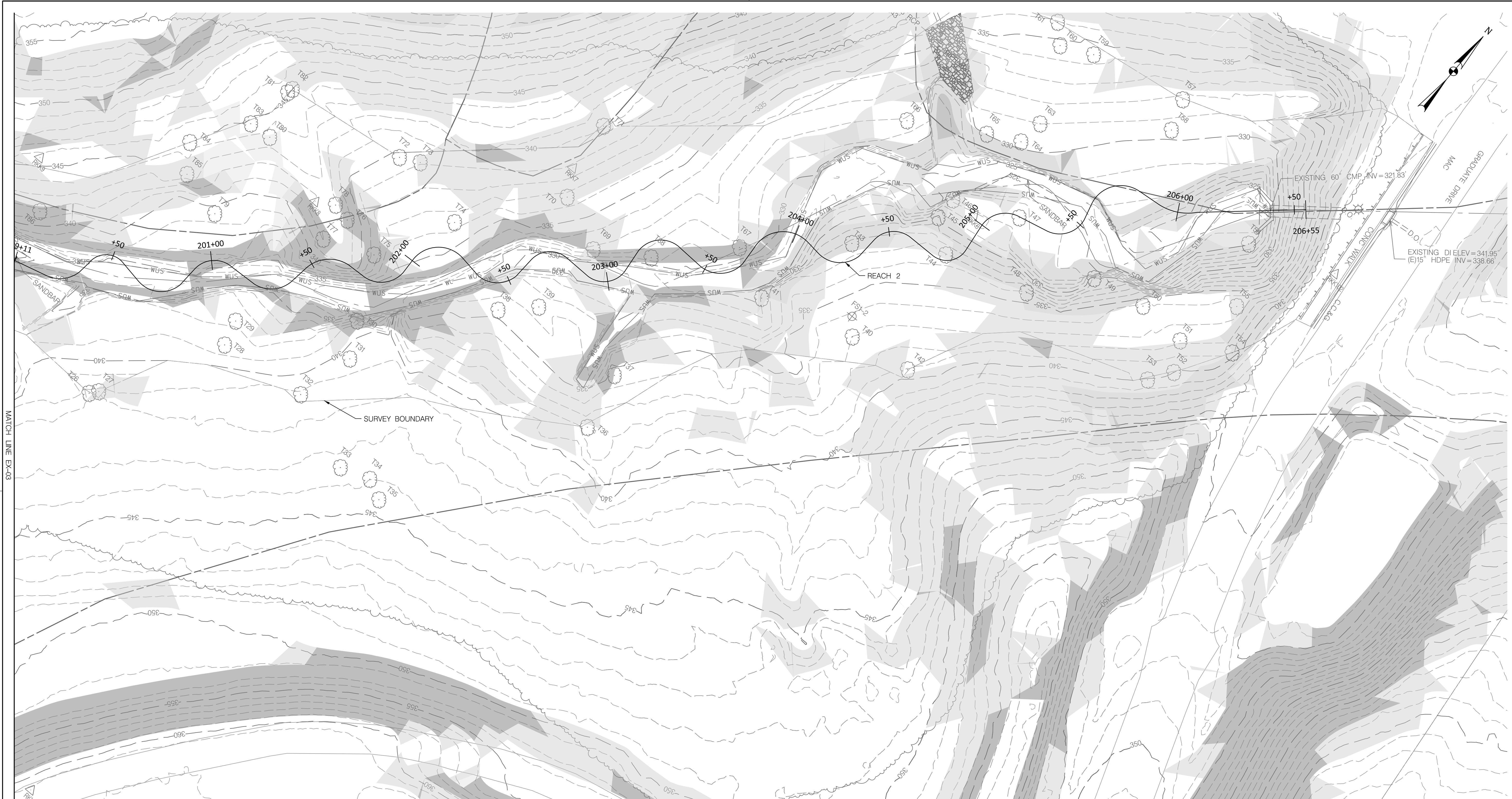
Designed By : JZ

Date : MAY 2025

Reviewed By : RO

Drawing No. EX-03 of EX-04

Sheet No. 7 of 25


LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING STREAM CENTERLINE
- EXISTING STORMDRAIN
- EXISTING TREE
- EXISTING TREELINE
- TRAVERSE POINT
- 15% TO 25% SLOPES
- 25%+ SLOPES
- EXISTING RIPRAP
- EXISTING WETLAND
- EXISTING WETLAND BUFFER
- SOIL BOUNDARY



P: 410.728.2900
700 E. Pratt Street, Suite 500 | Baltimore, MD 21202

Engineers | Construction Managers | Planners | Scientists
www.rk.com
Responsive People | Creative Solutions

BY: zabley

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

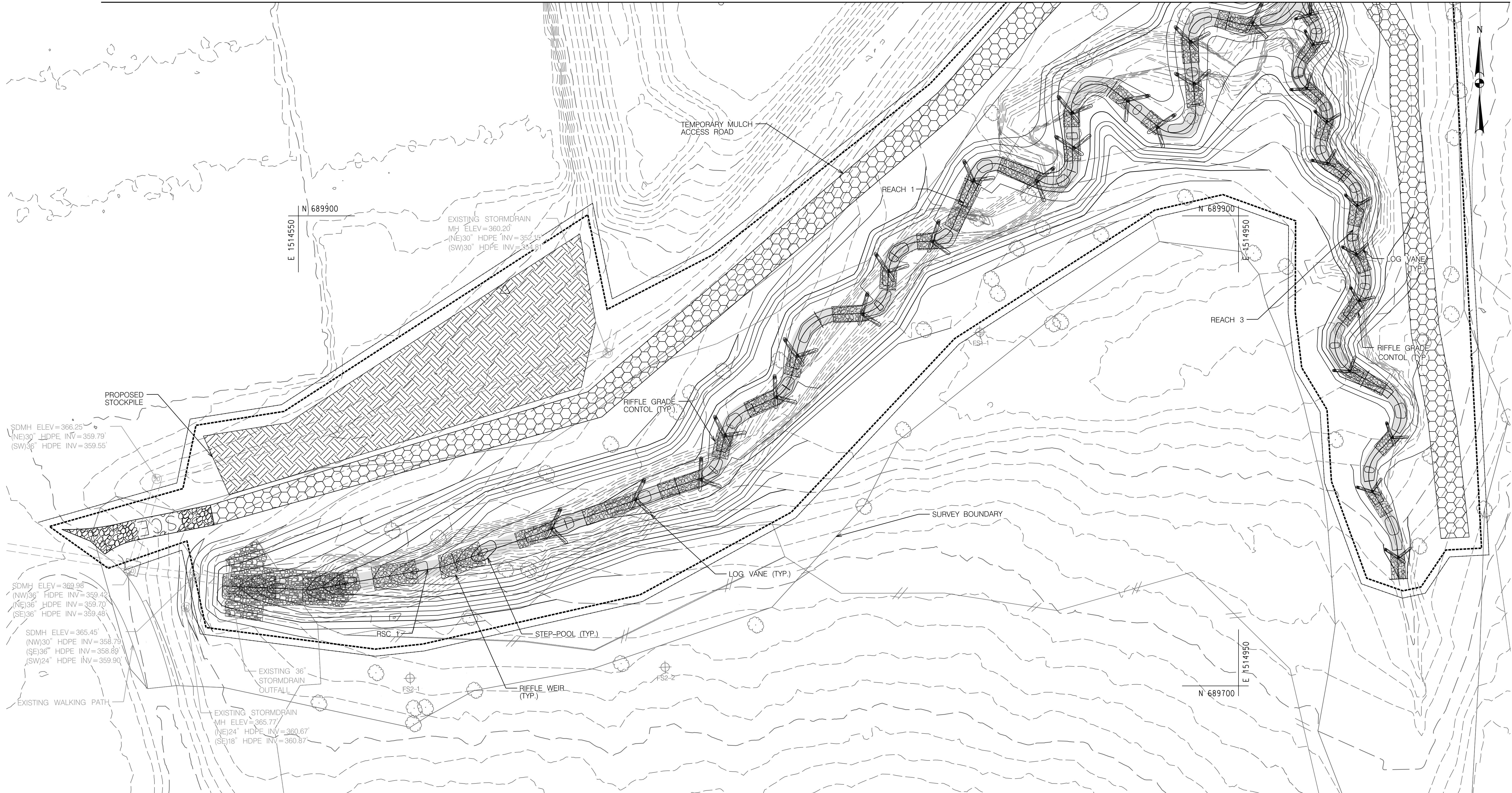
PROFESSIONAL CERTIFICATION

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. 200370, EXPIRATION DATE: 2025/03/19.

PROJECT CONTRACT: 21-097 TO #25	Revisions
GP #XXXX-XXXXXX-XXXX	
SIGN AND SEAL	
Drawn By : NH, MK	Scale : 1"=20'
Designed By : JZ	Date : MAY 2025
Reviewed By : RO	
Drawing No. EX-04 of EX-04	Sheet No. 8 of 25

HARFORD COUNTY, MARYLAND

HARFORD COMMUNITY COLLEGE STREAM RESTORATION EXISTING CONDITIONS



LEGEND

EXISTING MAJOR CONTOUR	—	EXISTING RIPRAP	████████	PROPOSED STOCKPILE	████████
EXISTING MINOR CONTOUR	— — —	EXISTING WETLAND	████████	PROPOSED RIFFLE WEIR	○○○○
EXISTING STREAM CENTERLINE	— — — —	EXISTING WETLAND BUFFER	— — — —	IMBRICATED RIPRAP FOR CASCADE WEIR	○○○○
EXISTING STORMDRAIN	○○	SOIL BOUNDARY	— — — —	WETLAND ENHANCEMENT	— — — —
EXISTING TREE	○○○○	EXISTING WATERS OF THE US	— — — —		
EXISTING TREELINE	— — — —	PROPOSED RIFFLE GRADE CONTROL MIX	████████		
TRAVERSE POINT	△	PROPOSED LOG VANE	████████		
PROPOSED CHANNEL BOTTOM	█	PROPOSED MAJOR CONTOUR	— — — —		
PROPOSED ACCESS ROAD	████████	PROPOSED MINOR CONTOUR	— — — —		

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. 200370, EXPIRATION DATE: 2025/03/19.

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

PROJECT CONTRACT:
21-097 TO #25
GP #XXX-XXXXXX-XXXX
SIGN AND SEAL

Revisions

Drawn By : NH, MK	Scale : 1"=20'
Designed By : JZ	Date : MAY 2025
Reviewed By : RO	
Drawing No. SR-01 of SR-04	Sheet No. 9 of 25



HARFORD COUNTY, MARYLAND

HARFORD COMMUNITY COLLEGE STREAM RESTORATION DESIGN PLAN

PROJECT CONTRACT: 21-097 TO #25	Revisions	HARFORD COMMUNITY COLLEGE STREAM RESTORATION DESIGN PLAN	
GP #XXX-XXXXXX-XXXX			
SIGN AND SEAL		Drawn By : <u>NH, MK</u> Designed By : <u>JZ</u> Reviewed By : <u>RO</u>	Scale : <u>1" = 20'</u> Date : <u>MAY 2025</u>
		Drawing No. <u>SR-02</u> of <u>SR-04</u>	Sheet No. <u>10</u> of <u>25</u>

PROFESSIONAL CERTIFICATION

The image contains the RKK logo in blue and grey, followed by the text 'P: 410.728.2900' and '700 E. Pratt Street, Suite 500 | Baltimore, MD 21202' in black, and the text 'Engineers | Construction Managers | Planners | Scientists' and 'www.rkk.com' in white on a dark blue background. Below this is a white bar with the text 'Responsive People | Creative Solutions' in black.

Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCC
PLOTTED: 5/30/2025

1



HARFORD COUNTY, MARYLAND

HARFORD COMMUNITY COLLEGE STREAM RESTORATION DESIGN PLAN

PROJECT CONTRACT: 21-097 TO #25	Revisions	HARFORD COMMUNITY COLLEGE STREAM RESTORATION DESIGN PLAN	
GP #XXX-XXXXXX-XXXX			
SIGN AND SEAL		Drawn By : <u>NH, MK</u> Designed By : <u>JZ</u> Reviewed By : <u>RO</u>	Scale : <u>1" = 20'</u> Date : <u>MAY 2025</u>
		Drawing No. <u>SR-03</u> of <u>SR-04</u>	Sheet No. <u>11</u> of <u>25</u>

The image contains the RKK logo in blue and grey at the top left. Below it is a list of contact information: a phone number (410.728.2900), an address (700 E. Pratt Street, Suite 500, Baltimore, MD 21202), and a website (www.rkk.com). The bottom section features the tagline 'Responsive People | Creative Solutions'.

MATCH LINE SR-01

PROPOSED STOCKPILE

PROPOSED RIFFLE WEIR

IMBRICATED RIPRAP FOR CASCADE WEIR

WETLAND ENHANCEMENT

WUS

MIX

20' 0 20' 40'

SCALE: 1"=20'

PROFESSIONAL CERTIFICATION

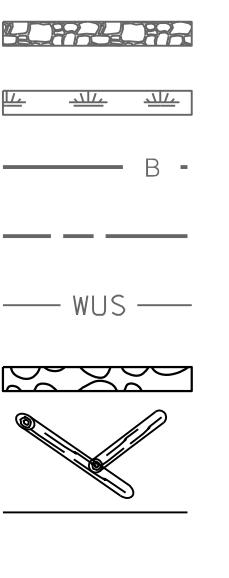
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE

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.200370, EXPIRATION DATE: 2025/03/19.


LEGEND

EXISTING MAJOR CONTOUR	—	EXISTING RIPRAP	████████
EXISTING MINOR CONTOUR	—	EXISTING WETLAND	████████
EXISTING STREAM CENTERLINE	—	EXISTING WETLAND BUFFER	—B—
EXISTING STORMDRAIN	—	SOIL BOUNDARY	—
EXISTING TREE	○	EXISTING WATERS OF THE US	—WUS—
EXISTING TREELINE	—	PROPOSED RIFFLE GRADE CONTROL MIX	████████
TRaverse POINT	△	PROPOSED LOG VANE	████████
PROPOSED CHANNEL BOTTOM	—	PROPOSED MAJOR CONTOUR	—
PROPOSED ACCESS ROAD	████████	PROPOSED MINOR CONTOUR	—


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. 200370, EXPIRATION DATE: 2025/03/19.

PROJECT CONTRACT:
21-097 TO #25
GP #XXXX-XXXXXX-XXXX

Revisions

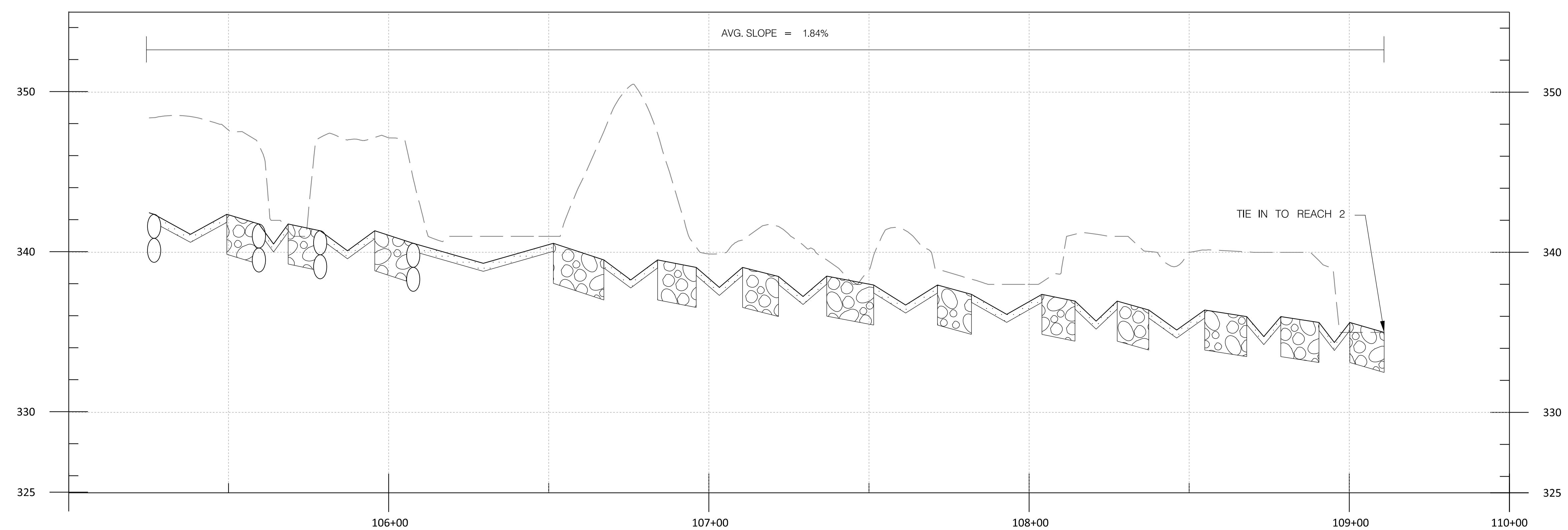
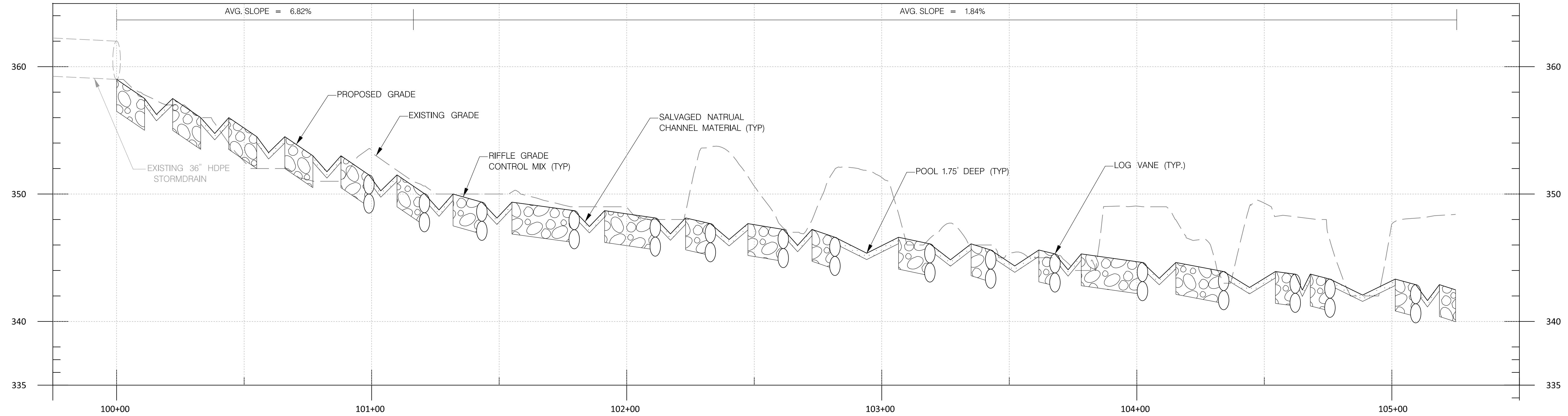
SIGN AND SEAL

Drawn By : NH, MK	Scale : 1"=20'
Designed By : JZ	Date : MAY 2025
Reviewed By : RO	
Drawing No. SR-04 of SR-04	Sheet No. 12 of 25



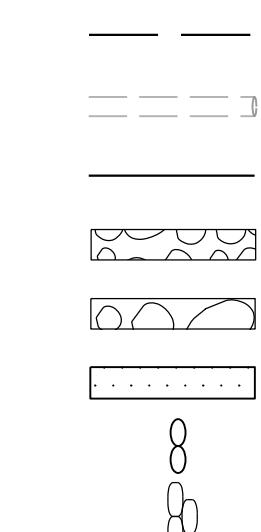
P: 410.728.2900
700 E. Pratt Street, Suite 500 | Baltimore, MD 21202

Engineers | Construction Managers | Planners | Scientists
www.rk.com
Responsive People | Creative Solutions



LEGEND

- EXISTING GROUND SURFACE
- EXISTING PIPE
- PROPOSED GROUND SURFACE
- PROPOSED RIFFLE GRADE CONTROL
- PROPOSED CLASS 1 RIPRAP
- SALVAGED NATURAL CHANNEL MATERIAL
- PROPOSED LOG VANE
- PROPOSED CASCADE WEIR



STREAM PROFILE: REACH 1

SCALE
HORIZONTAL 1" = 20
VERTICAL 1" = 4'

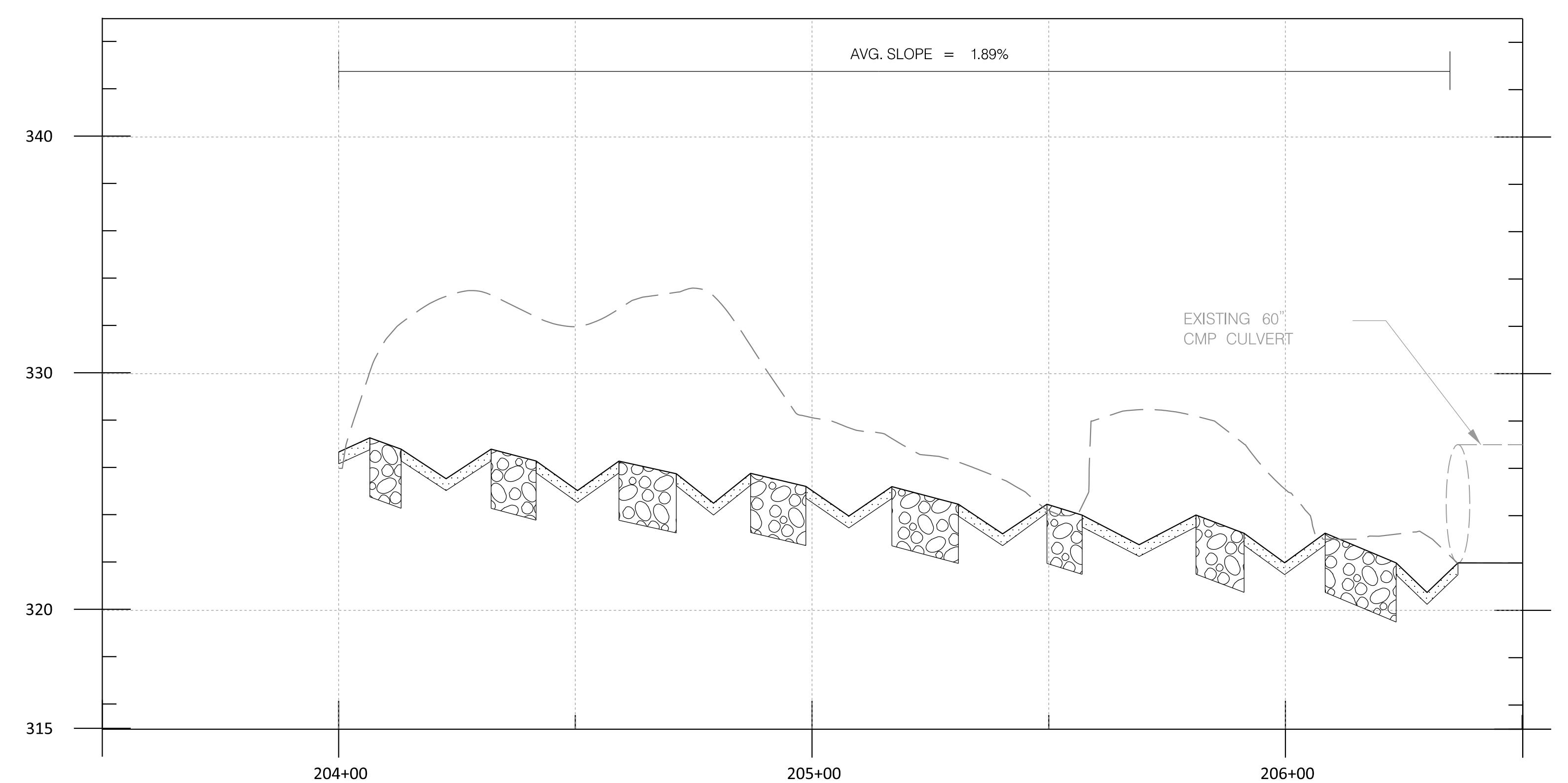
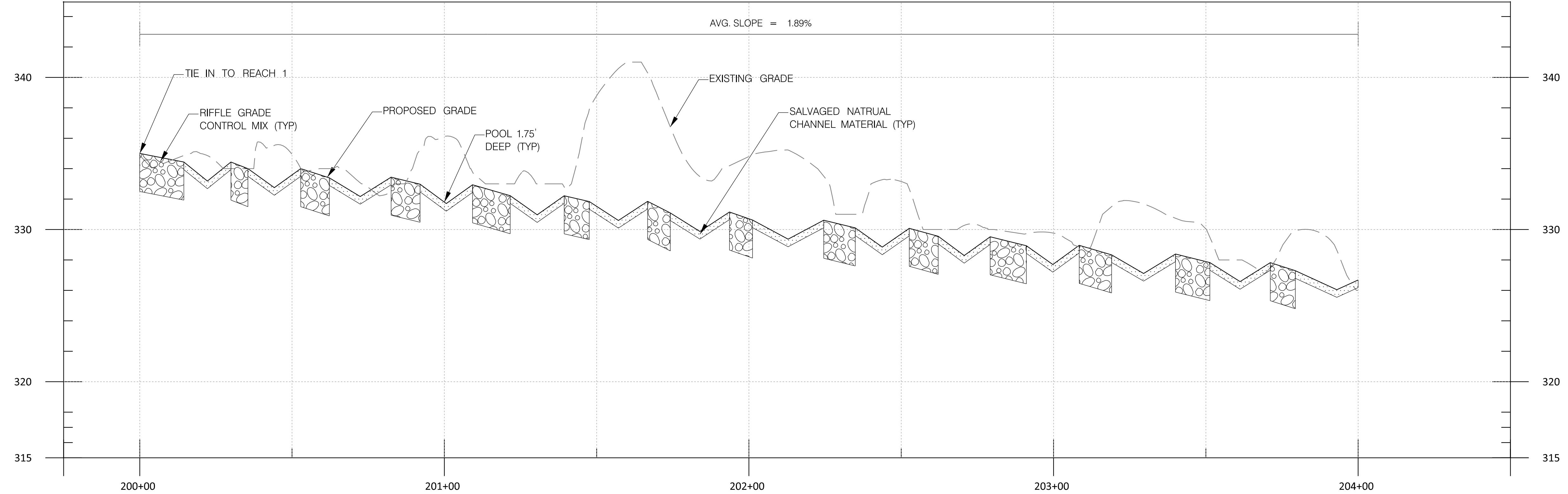
PROFESSIONAL CERTIFICATION

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. 200370, EXPIRATION DATE: 2025/03/19.

PROJECT CONTRACT:
21-097 TO #25
GP #XXX-XXXXXX-XXXX

Revisions
SIGN AND SEAL

Drawn By : <u>NH, MK</u>	Scale : <u>1"=20'</u>
Designed By : <u>JZ</u>	Date : <u>MAY 2025</u>
Reviewed By : <u>RO</u>	
Drawing No. <u>PR-01</u> of <u>PR-04</u>	Sheet No. <u>13</u> of <u>25</u>



STREAM PROFILE: REACH 2

SCALE
HORIZONTAL 1" = 20'
VERTICAL 1" = 4'

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. 200370, EXPIRATION DATE: 2025/03/19.

PROJECT CONTRACT:
21-097 TO #25

GP #XXX-XXXXXX-XXXX

SIGN AND SEAL

Revisions

HARFORD COUNTY, MARYLAND
HARFORD COMMUNITY COLLEGE
STREAM RESTORATION
PROFILE

Drawn By : NH, MK

Scale : 1"=20'

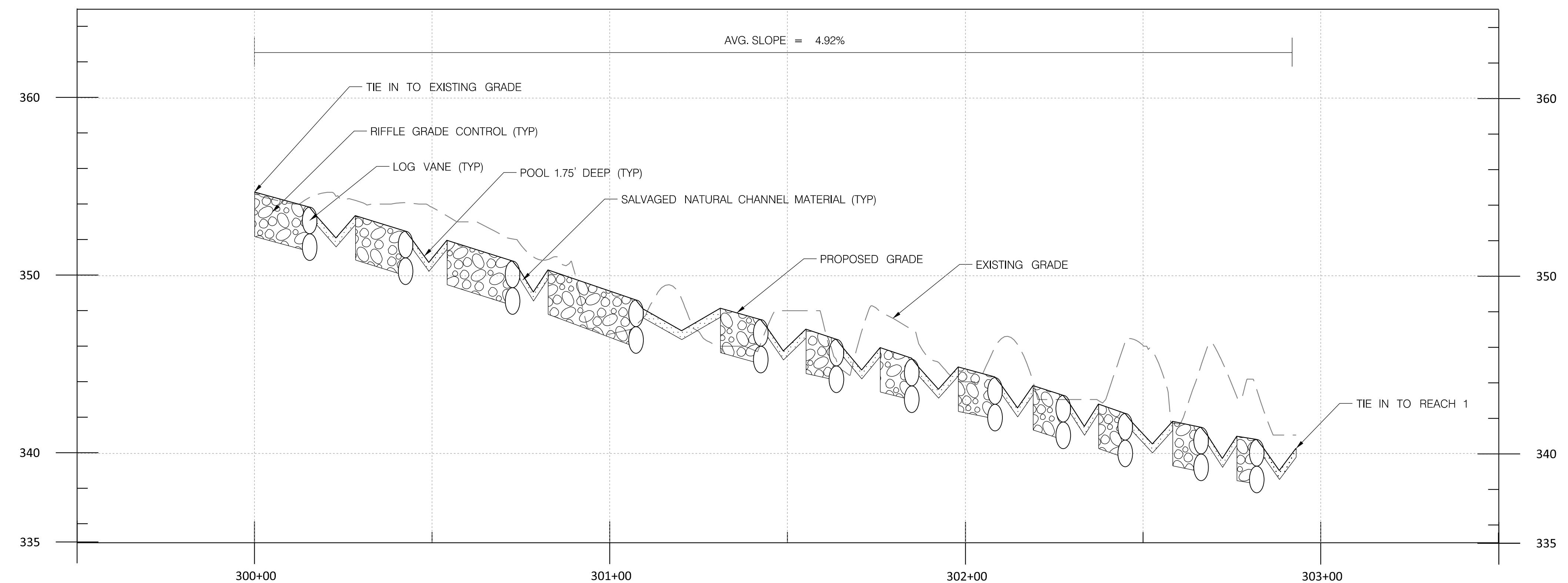
Designed By : JZ

Date : MAY 2025

Reviewed By : RO

Sheet No. 14 of 25

Drawing No. PR-02 of PR-04



STREAM PROFILE: REACH 3

SCALE:
HORIZONTAL 1" = 20'
VERTICAL 1" = 4'

LEGEND	
EXISTING GROUND SURFACE	— — —
EXISTING PIPE	— — — —
PROPOSED GROUND SURFACE	— — — — —
PROPOSED RIFLE GRADE CONTROL	— — — — — —
PROPOSED CLASS I RIPRAP	— — — — — — —
SALVAGED NATURAL CHANNEL MATERIAL	— — — — — — — —
PROPOSED LOG VANE	— — — — — — — — —
PROPOSED CASCADE WEIR	— — — — — — — — — —

HARFORD COUNTY, MARYLAND

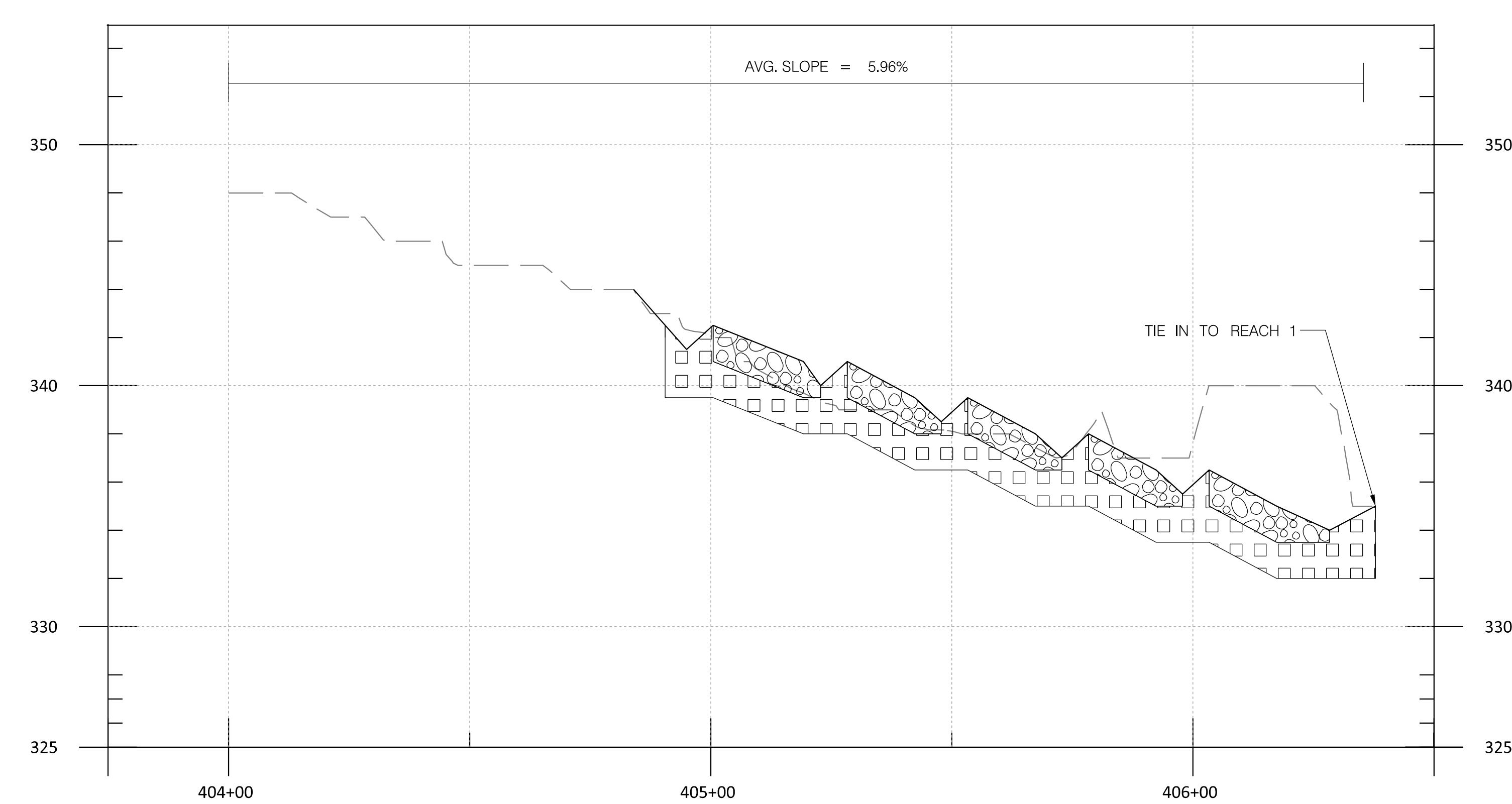
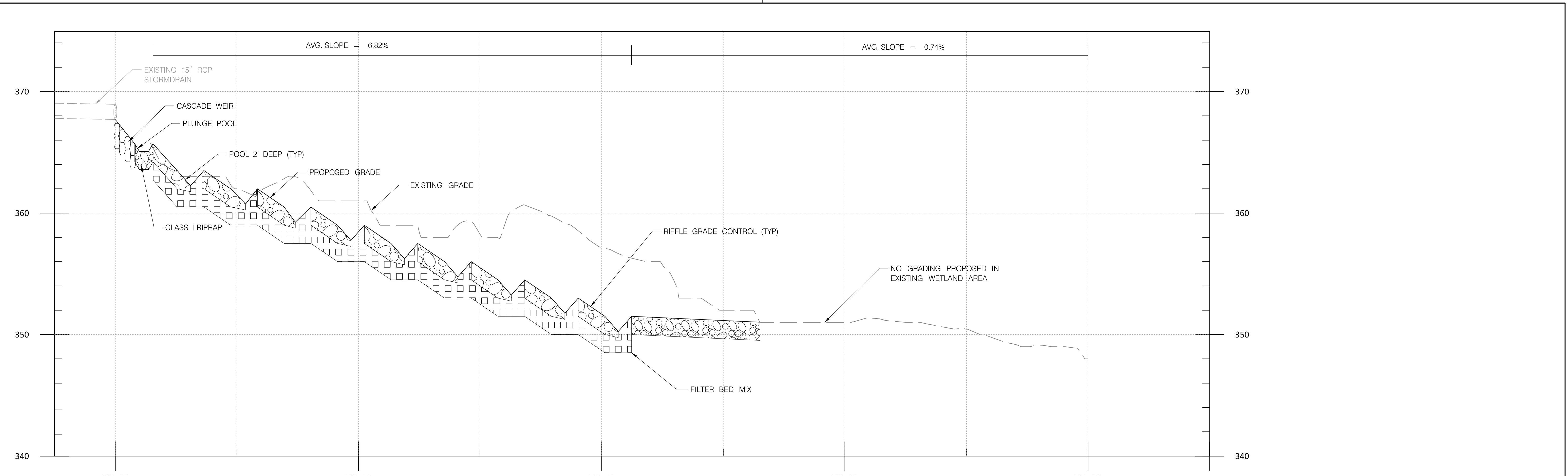
HARFORD COMMUNITY COLLEGE STREAM RESTORATION PROFILE

PROJECT CONTRACT: 21-097 TO #25	Revisions
GP #XXX-XXXXXX-XXXX	
SIGN AND SEAL	

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. 200370, EXPIRATION DATE: 2025/03/19.

Drawn By : <u>NH, MK</u>	Scale : <u>1"=20'</u>
Designed By : <u>JZ</u>	Date : <u>MAY 2025</u>
Reviewed By : <u>RO</u>	
Drawing No. <u>PR-03</u> of <u>PR-04</u>	Sheet No. <u>15</u> of <u>25</u>



STREAM PROFILE: REACH 4

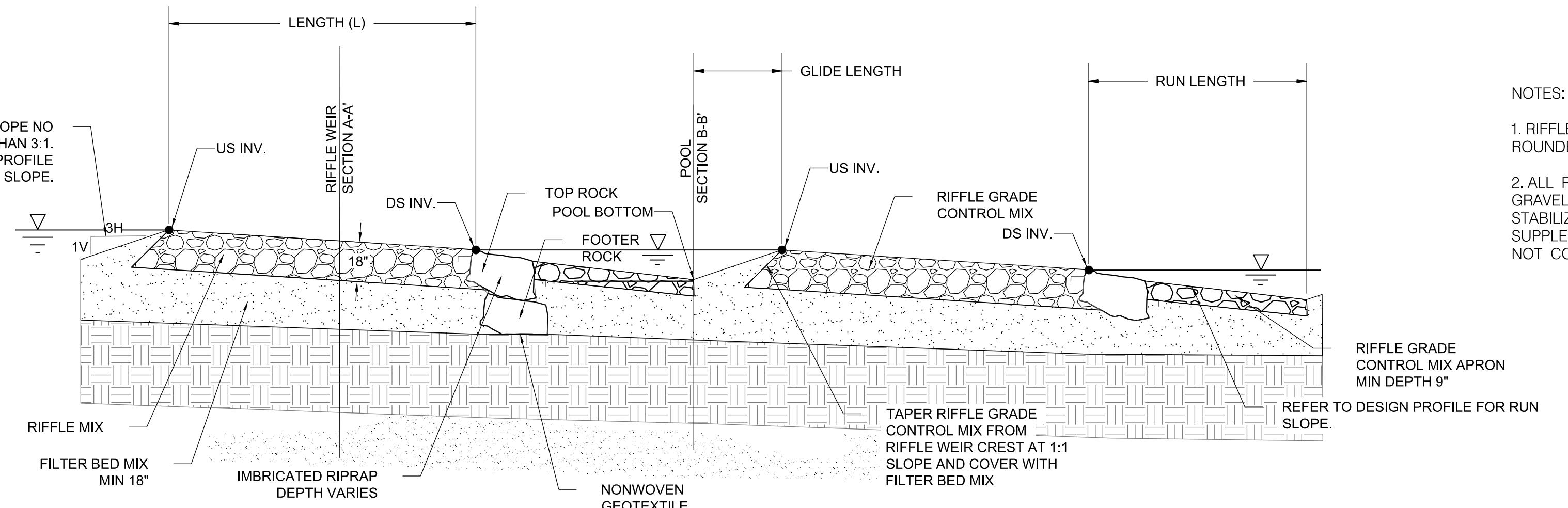
SCALE:
HORIZONTAL 1' = 20'
VERTICAL 1" = 4'

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. 200370, EXPIRATION DATE: 2025/03/19.

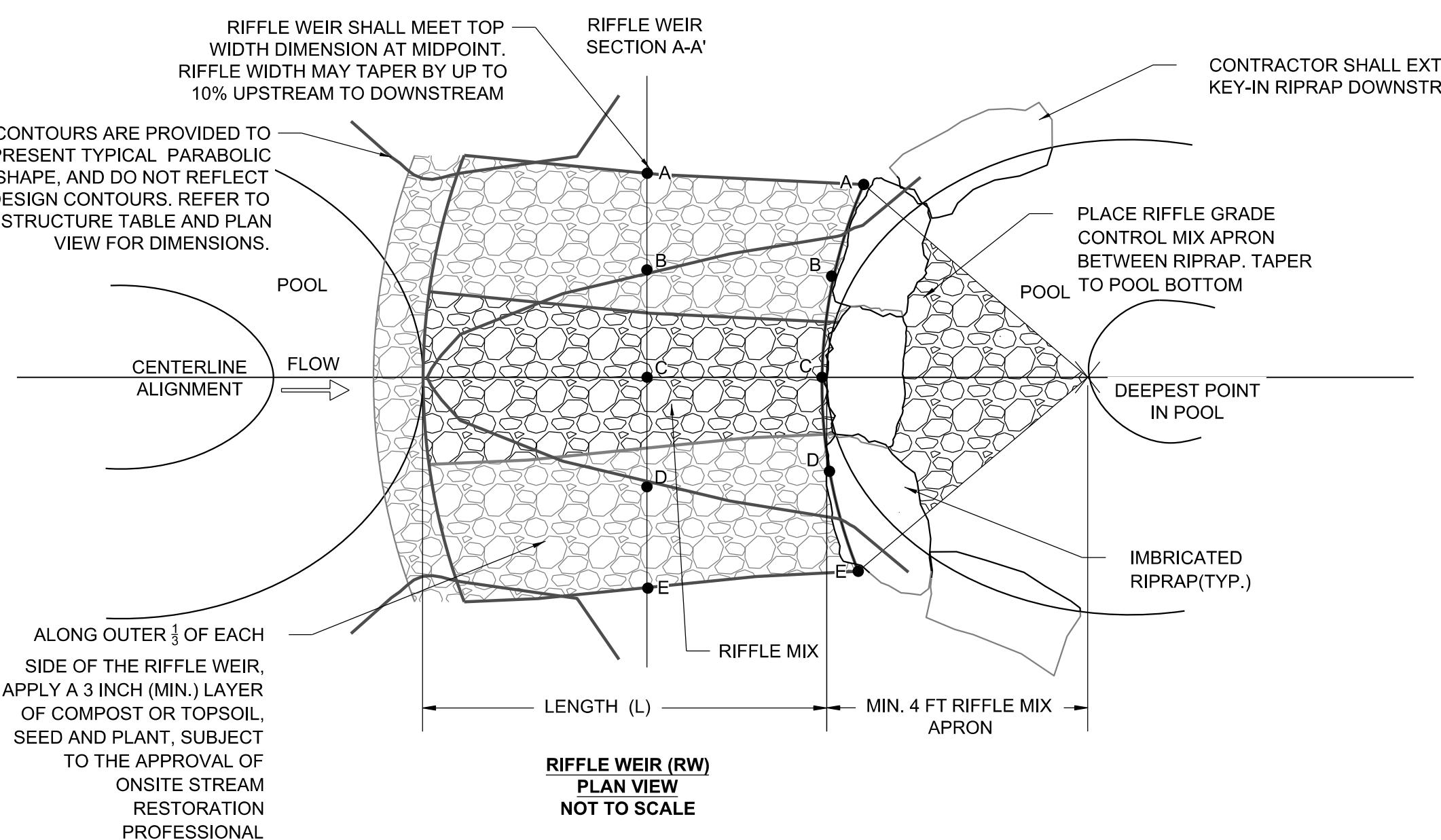
PROJECT CONTRACT: 21-097 TO #25	Revisions
GP #XXX-XXXXXX-XXXX	
SIGN AND SEAL	
Drawn By : NH, MK	Scale : 1"=20'
Designed By : JZ	Date : MAY 2025
Reviewed By : RO	
Drawing No. PR-04 of PR-04	Sheet No. 16 of 25

HARFORD COUNTY, MARYLAND
HARFORD COMMUNITY COLLEGE
STREAM RESTORATION
PROFILE



NOTES:

1. RIFFLE GRADE CONTROL MIX SHALL BE RIPRAP RANGING FROM ROUNDED TO SUB-ANGULAR SHAPE.
2. ALL RIFFLE GRADE CONTROL MIX SHALL BE WASHED WITH PEA GRAVEL AND CLEAN SAND TO CHOKE VOIDS PRIOR TO FINAL STABILIZATION. THE PEA GRAVEL AND SAND ARE AN INCIDENTAL SUPPLEMENT TO THE RIFFLE MIX FOR NATURALIZATION AND ARE NOT CONSIDERED PART OF THE MIX WHEN CALCULATING D50.



FILTER BED MIX (BY VOLUME)	
CLEAN SAND	80%
WOODCHIPS	20%

RIFFLE MIX	
SHA RIPRAP	MIX %
CLASS 0	35%
CLASS I	55%
CLASS II	10%

RIFFLE MIX $d50 = 9"$

STANDARD RSC STABILIZATION NOTES

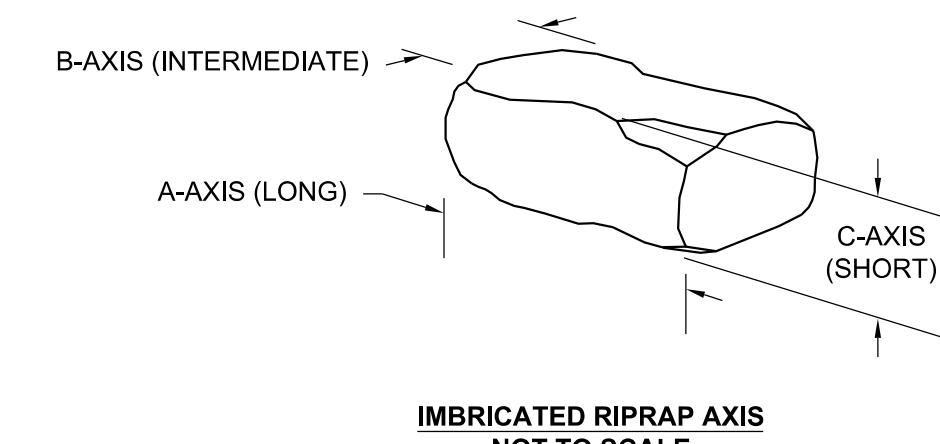
PERMANENT STABILIZATION FOR AN AREA OF EARTH DISTURBANCE OF A RSC SHALL BE CONSIDERED ACHIEVED WHEN THE BANKS AND FLOODPLAIN ARE COVERED WITH FULLY BIODEGRADABLE STABILIZATION MATTING INSTALLED PER MANUFACTURER'S INSTRUCTIONS. PERMANENT STABILIZATION SHOULD BE FOLLOWED BY IMPLEMENTATION OF THE APPROVED PLANTING PLAN IN ACCORDANCE WITH THE SEQUENCE OF CONSTRUCTION.

RIFFLE WEIR DIMENSION TABLE									
NAME	US STA.	DS STA.	US INV.	DS INV.	L (FT)	W (FT)	H (FT)	D (FT)	DOFFSET (FT)

*RIFFLE WEIR HEIGHT (H) IS EQUAL TO THE UPSTREAM INVERT MINUS THE DOWNSTREAM INVERT

RIFFLE WEIR NOTES :

1. THE CROSS SECTION SHALL BE CONSTRUCTED IN A PARABOLIC SHAPE BETWEEN GIVEN NODES.
2. NATURAL CHANNEL MATERIAL MAY BE HARVESTED ON-SITE PRIOR TO INSTALLATION OF RIFFLE WEIR IF IT MEETS THE SPECIFICATIONS FOR USE AS WASH-IN OR RIFFLE MIX.
3. THE NUMBER OF BOULDERS VARIES DEPENDING ON TYPICAL SECTION WIDTH AND BOULDER DIMENSIONS.
4. THE BOULDERS SHALL BE TILTED DOWNSTREAM AS SHOWN ON THE DETAIL AND NOT STACKED.
5. TIE-OUT BOULDER SHALL EXTEND PAST THE DOWNSTREAM CORNER NODES A & E A MIN. OF ONE BOULDER LENGTH (B-AXIS) INTO EXISTING BANK. WHERE THIS CONFLICTS WITH EXISTING TREE ROOTS OR BEDROCK, TIE-OUT BOULDER MAY BE ELIMINATED OR ADJUSTED AT DIRECTION OF ENGINEER.
6. CHANNEL WASH-IN MATERIAL SHALL BE REPEATEDLY WORKED INTO FULL DEPTH OF THE RIFFLE MIX TO FILL VOIDS.
7. TRIM ALL GEOTEXTILE AT OR BELOW FINISHED GRADE, IF USED.
8. ONCE RIFFLE WEIR IS CONSTRUCTED, STABILIZE ALL DISTURBED LOCATIONS AS SPECIFIED.
9. CONTOURS ARE PROVIDED TO REPRESENT TYPICAL PARABOLIC SHAPE, AND DO NOT REFLECT DESIGN CONTOURS. REFER TO STRUCTURE TABLE AND PLAN VIEW FOR DIMENSIONS.



IMBRICATED RIFFLE WEIR
NOT TO SCALE

NOTES:

1. THE MEDIAN A-AXIS DIMENSION AVERAGED ACROSS THE FULL STRUCTURE SHALL EQUAL A MINIMUM OF 30".
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SELECT MATERIAL THAT IS APPROPRIATELY SIZED TO ALLOW FOR ECONOMICAL CONSTRUCTION OF CASCADE WEIR STRUCTURES MEETING THE DESIGN DIMENSIONS DESCRIBED IN THIS PLAN.

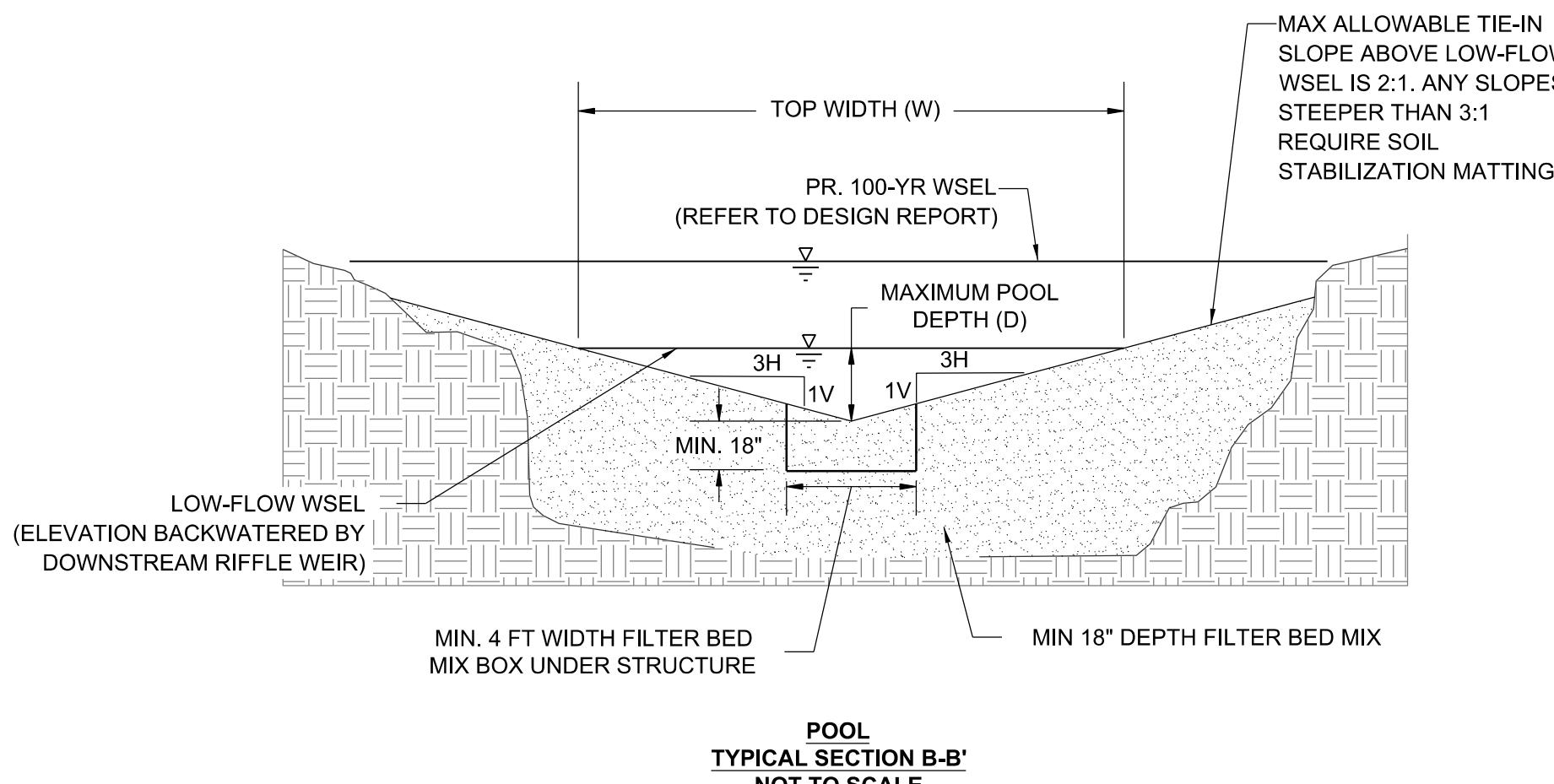
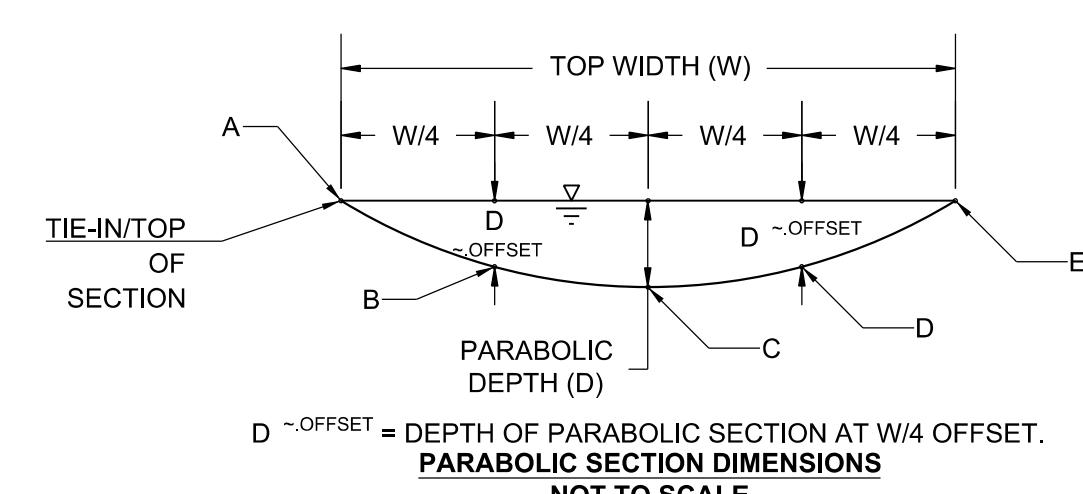
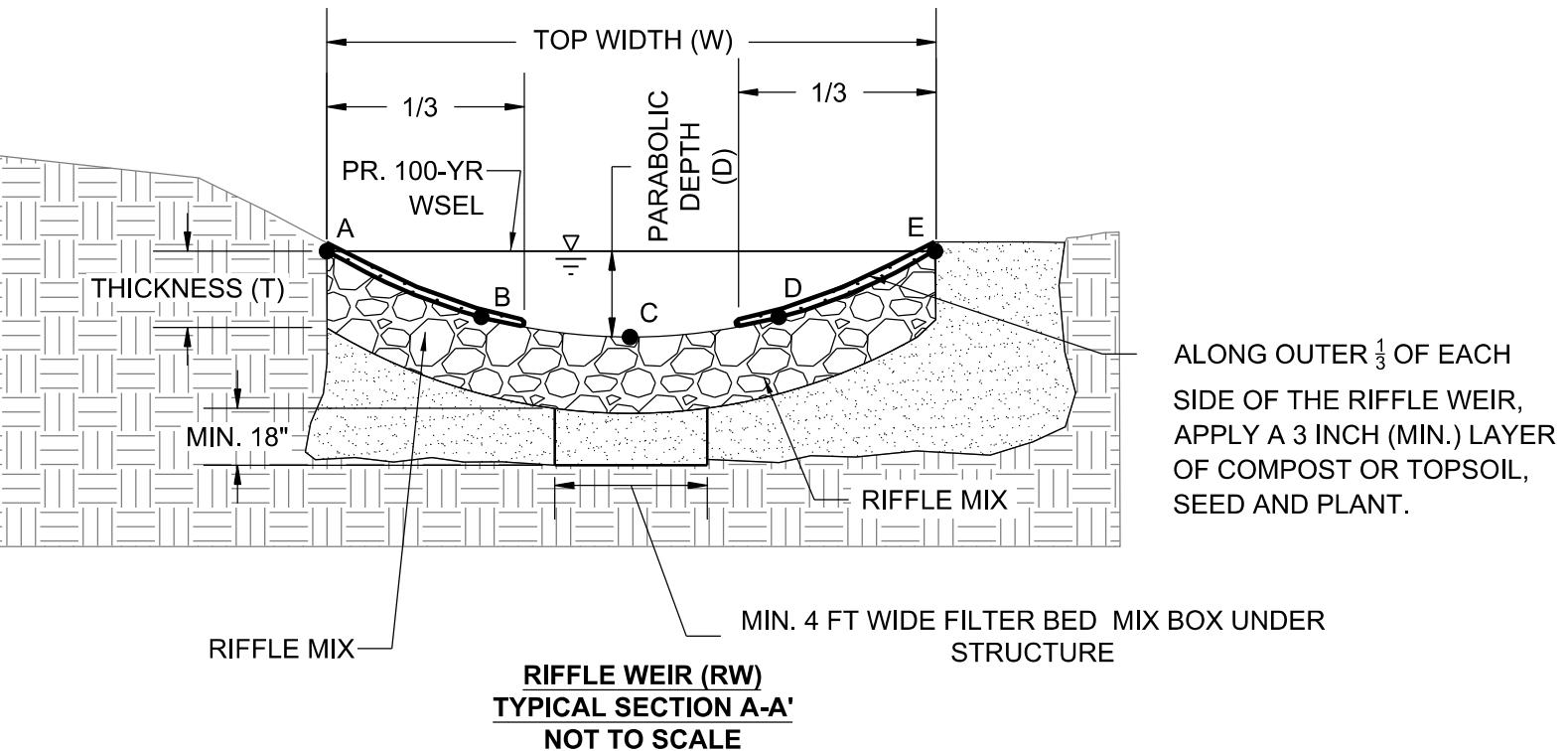
IMBRICATED RIFFLE WEIR DIMENSIONS (IN)				
	A-AXIS	B-AXIS	C-AXIS	UNIT WEIGHT, LBS/FT ³ *
TOP ROCKS	24-36"	24-36"	12-24"	
FOOTER ROCKS	24-36"	24-36"	12-24"	

*DESIGNER TO PROVIDE ALLOWABLE UNIT WEIGHT. TYPICAL UNIT WEIGHT FOR GRANITE IS 165 LBS/FT³, AND SANDSTONE IS 145 LBS/FT³

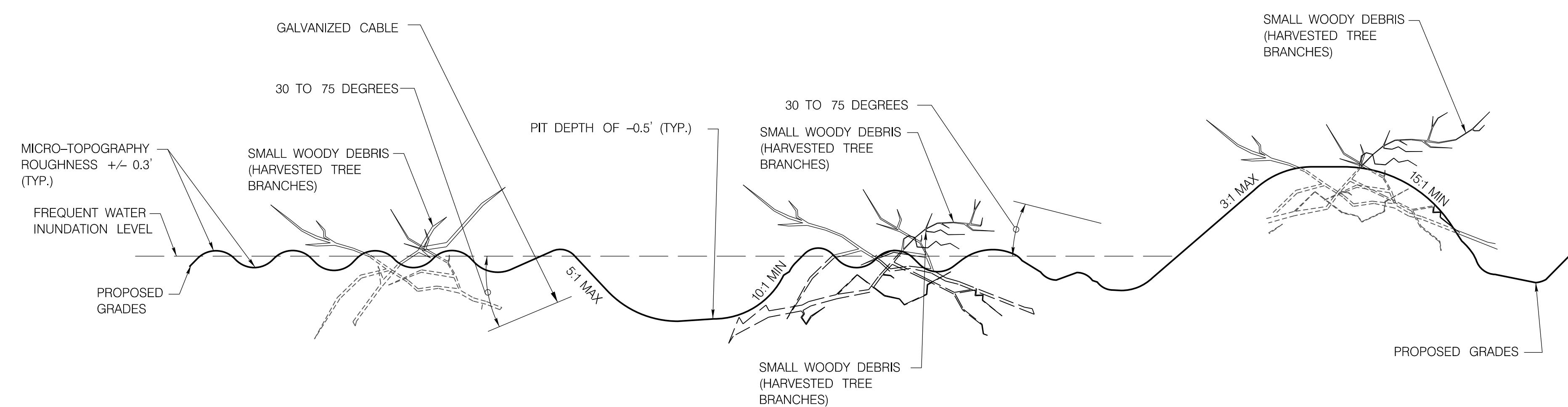
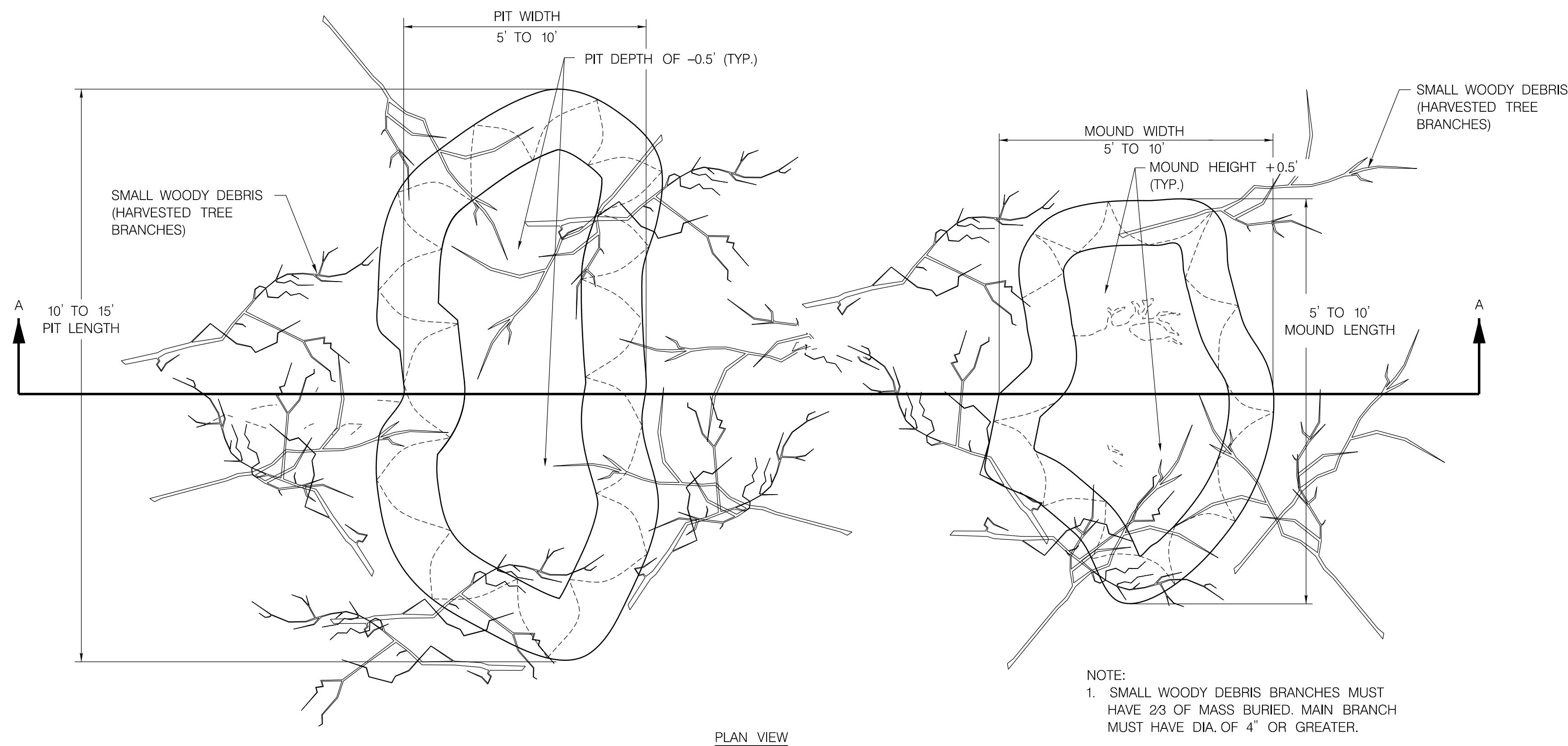
PROJECT CONTRACT: 21-097 TO #25	Revisions
GP #XXXX-XXXXXX-XXXX	
SIGN AND SEAL	

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. 200370, EXPIRATION DATE: 2025/03/19.



Drawn By : NH, MK	Scale : NOT TO SCALE
Designed By : JZ	Date : MAY 2025
Reviewed By : RO	
Drawing No. DE-01 of DE-05	Sheet No. 18 of 25



WETLAND ENHANCEMENT DETAIL

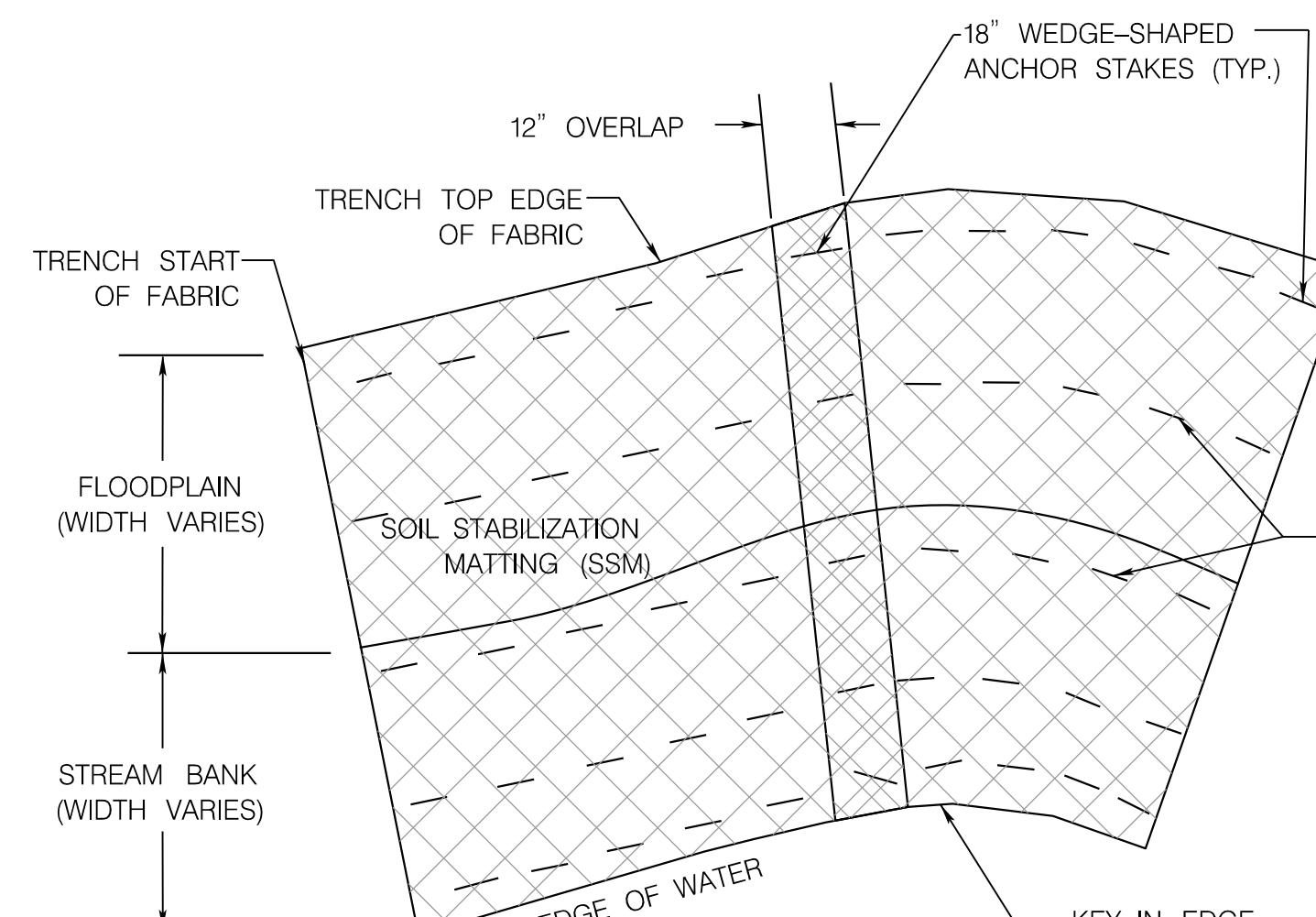
NOT TO SCALE



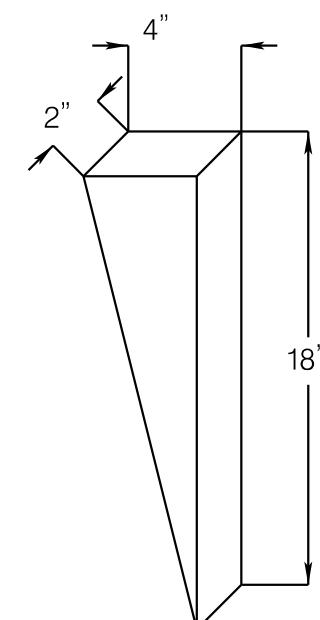
PROFESSIONAL CERTIFICATION

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. 200370, EXPIRATION DATE: 2025/03/19.

PROJECT CONTRACT: 21-097 TO #25	Revisions	HARFORD COUNTY, MARYLAND	
GP #XXXX-XXXXXX-XXXX		HARFORD COMMUNITY COLLEGE STREAM RESTORATION	
SIGN AND SEAL	STREAM DETAILS		
Drawn By : NH, MK	Scale : NOT TO SCALE		
Designed By : JZ	Date : MAY 2025		
Reviewed By : RO			
Drawing No. DE-03 of DE-05	Sheet No. 20 of 25		



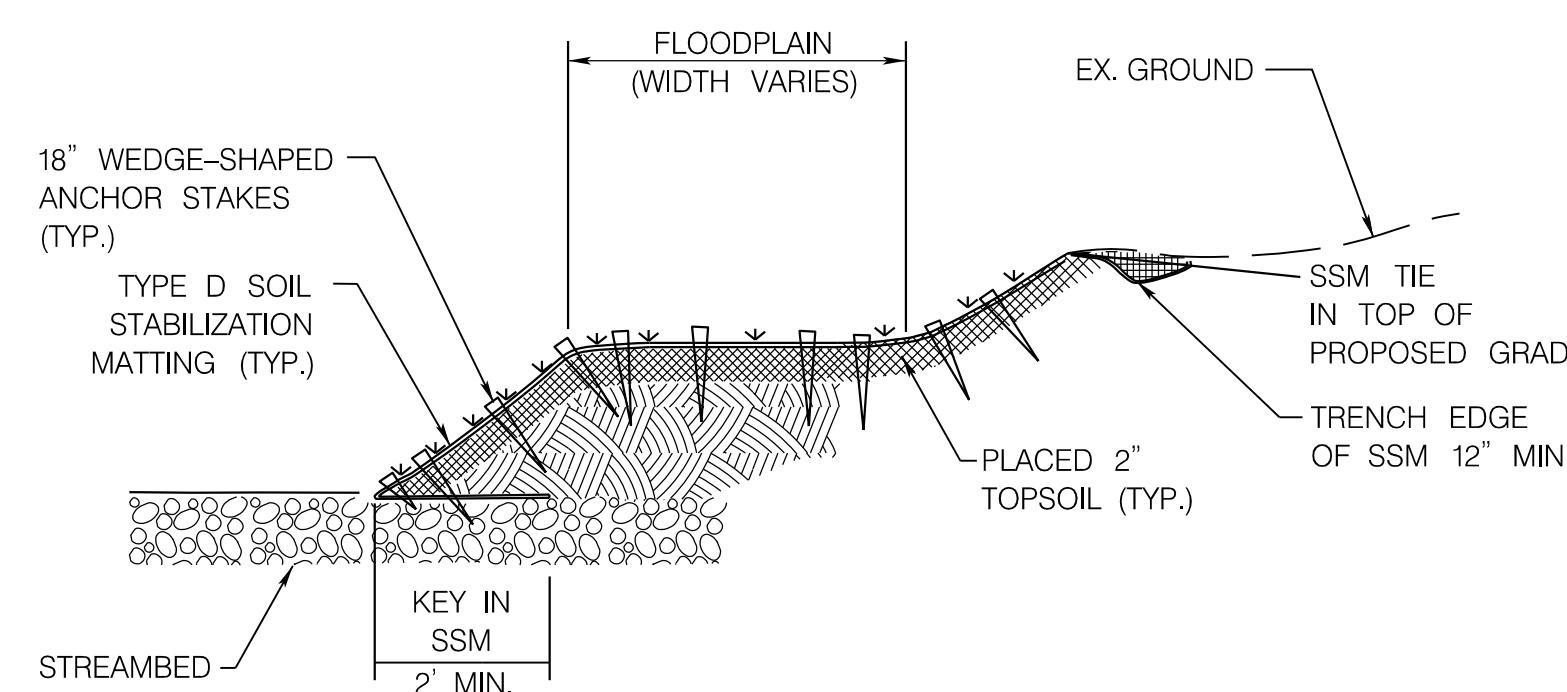
SOIL STABILIZATION MATTING PLAN



ANCHOR STAKE

NOTES:

1. STAKES SHALL BE INSTALLED 24-INCHES APART ALONG THE UPSTREAM AND DOWNSTREAM EDGES OF MATTING WITH THE KEY-IN TRENCH AT THE TOP OF SLOPE, AND ON VERTICAL AND HORIZONTAL OVERLAPPING EDGES.
2. ON SLOPES 2:1 OR STEEPER, STAKES SHALL BE INSTALLED 3-FOOT ON CENTER.
3. ON SLOPES 3:1 OF GENTLER, STAKES SHALL BE INSTALLED 4-FOOT ON CENTER.

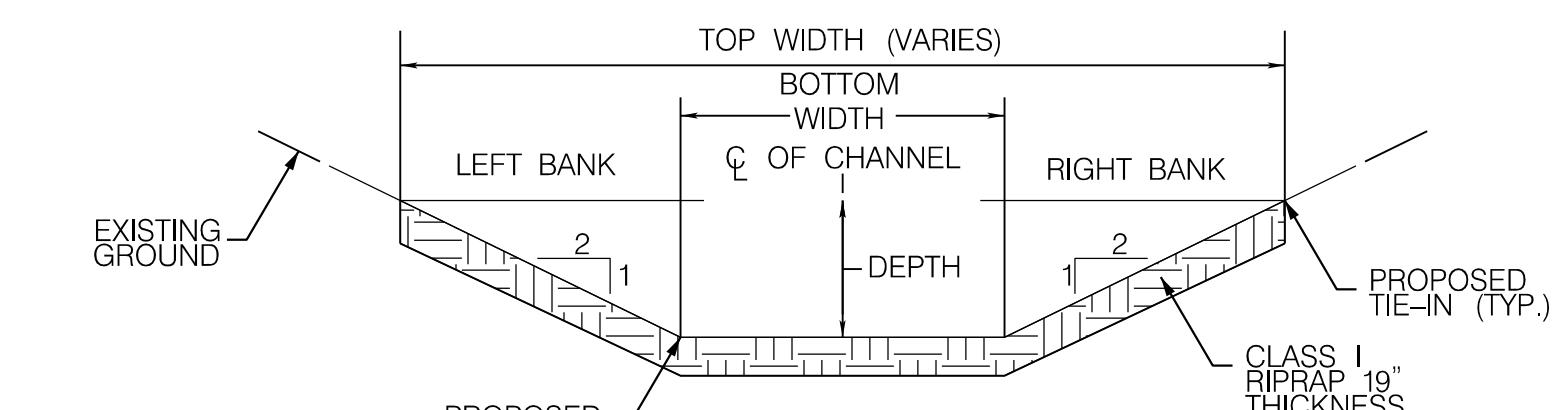


SOIL STABILIZATION MATTING SECTION

SOIL STABILIZATION DETAILS

NOT TO SCALE

SOIL STABILIZATION MATTING DETAIL			
REACH	SSM (SY)	2" TOPSOIL (SY)	4" TOPSOIL (SY)
1			
2			
3			
4			



CONVEYANCE SWALE TYPICAL SECTION

NOT TO SCALE

CONVEYANCE DITCH DESIGN									
REACH	START STA.	END STA.	LENGTH (FT)	DEPTH (FT)	BOTTOM WIDTH (FT)	SLOPE	shear stress (LB/FT ²)	RIPRAP D ₅₀ (IN)	Q (CFS)
SW-01									
SW-02									

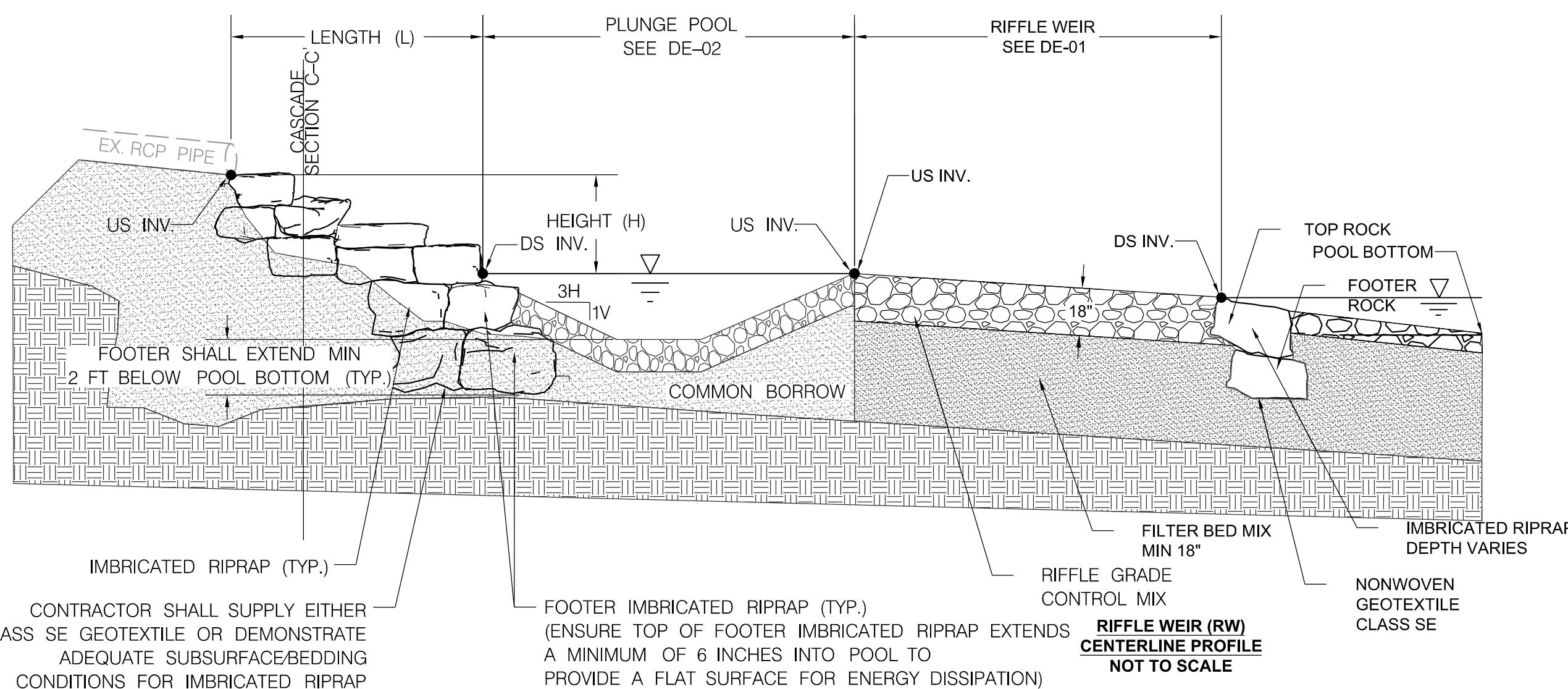
HARFORD COUNTY, MARYLAND

**HARFORD COMMUNITY COLLEGE
STREAM RESTORATION
STREAM DETAILS**

PROJECT CONTRACT: 21-097 TO #25	Revisions
GP #XXXX-XXXXXX-XXXX	
SIGN AND SEAL	
Drawn By : NH, MK	Scale : NOT TO SCALE
Designed By : JZ	Date : MAY 2025
Reviewed By : RO	
Drawing No. DE-04 of DE-05	Sheet No. 21 of 25

PROFESSIONAL CERTIFICATION

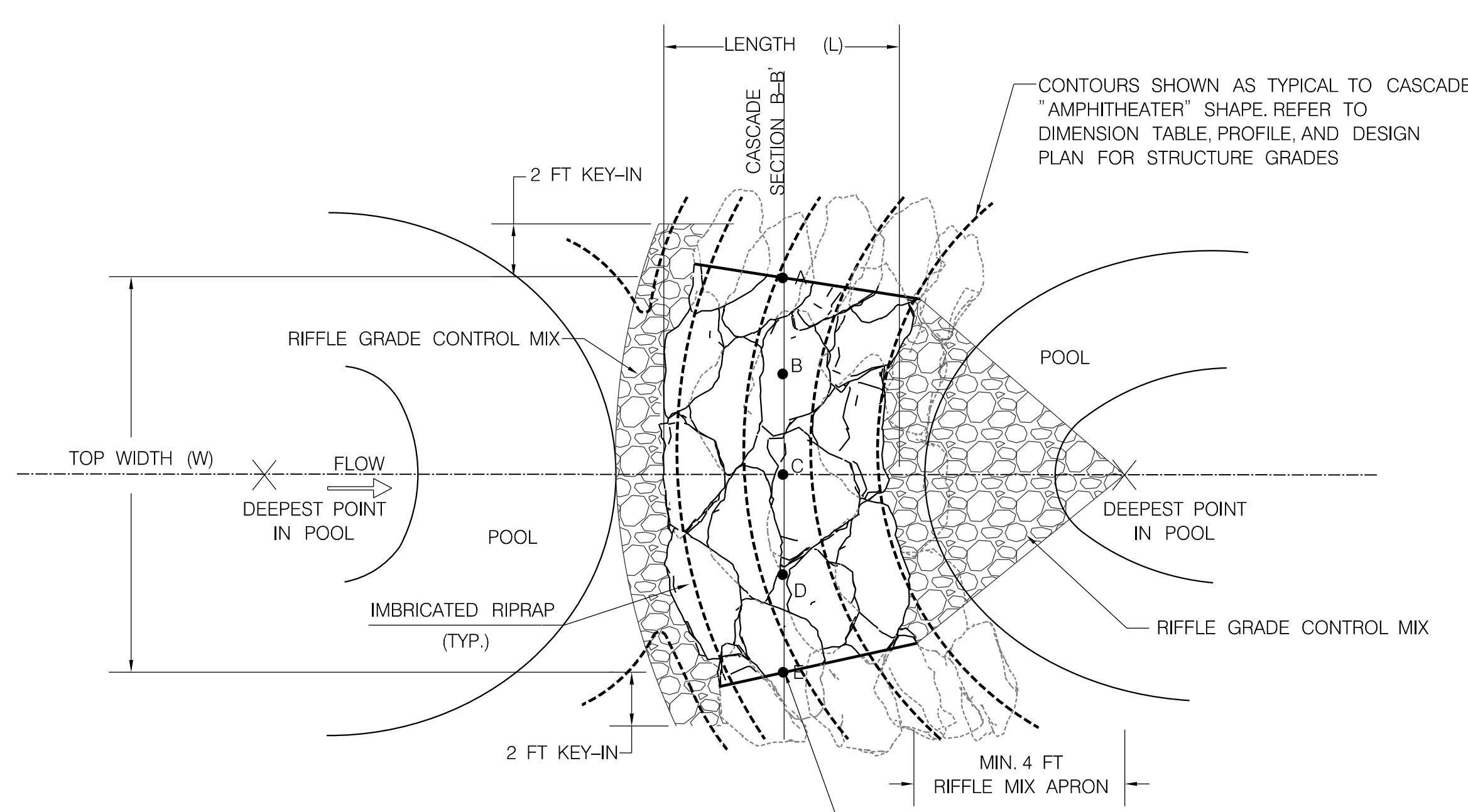
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 200370, EXPIRATION DATE: 2025/03/19.



RIFFLE CASCADE WEIR
CENTERLINE PROFILE

NOT TO SCALE

NOTES:
1. SEE STREAM PROFILE PR-01 FOR RUN LENGTH AND GLIDE LENGTH.



RIFFLE CASCADE WEIR
PLAN VIEW

NOT TO SCALE

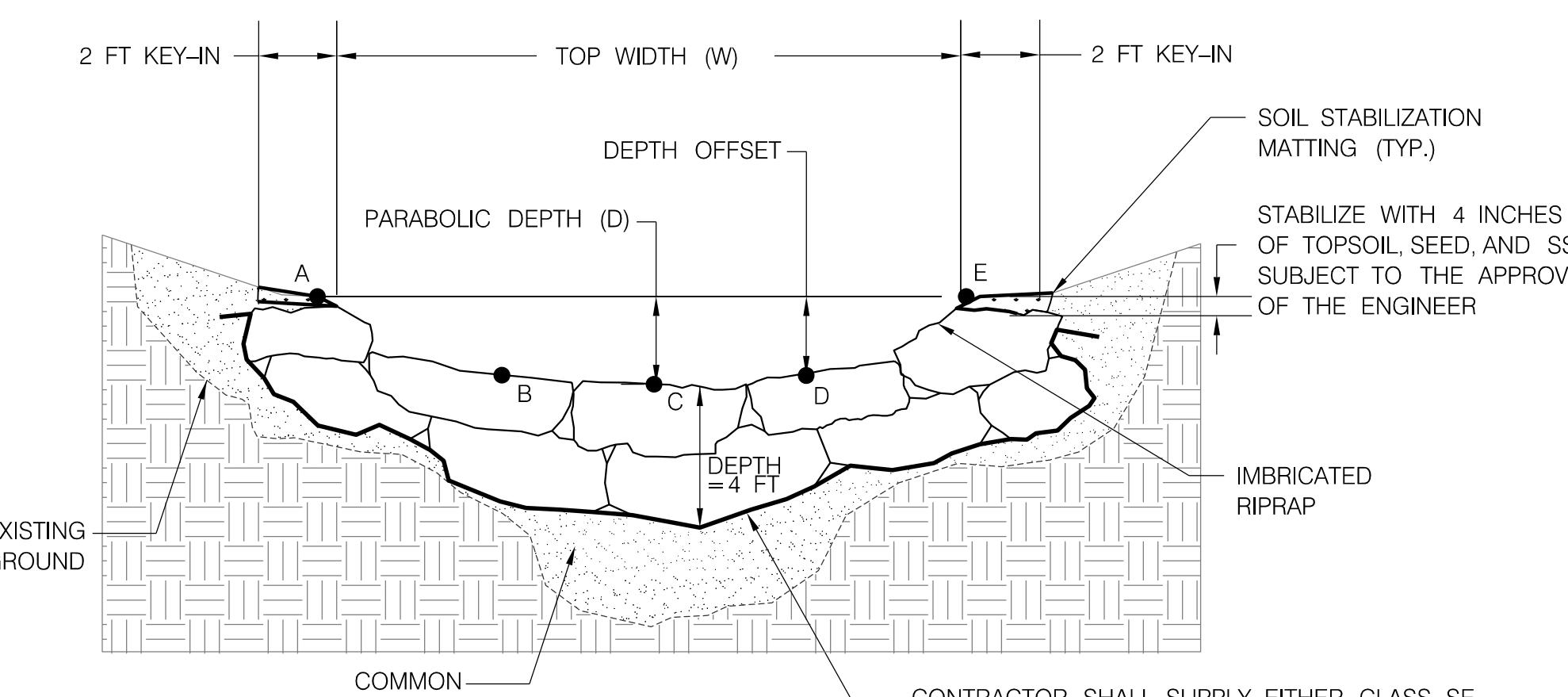
RIFFLE CASCADE WEIR

NOT TO SCALE

RIFFLE CASCADE WEIR DIMENSION TABLE											
NAME	US STA.	DS STA.	US INV.	DS INV.	L (FT)	W (FT)	H (FT)	D (FT)	OFFSET (FT)	IMBRICATED RIPRAP (TON)	RIFFLE GRADE CONTROL MIX (SY)
CW-01											

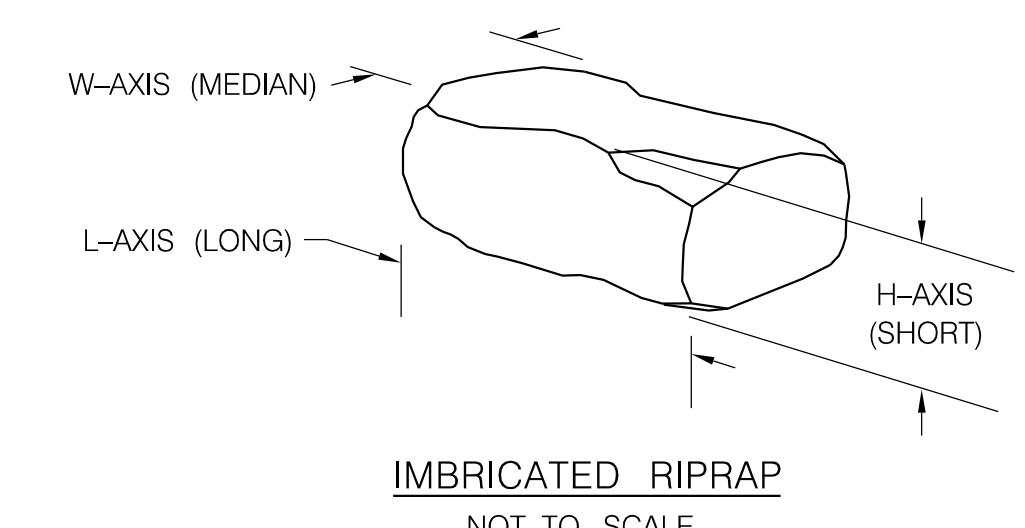
RIFFLE CASCADE WEIR CONSTRUCTION NOTES

- IMBRICATED RIPRAP AS DISPLAYED REFLECT VARIABILITY IN STONE DIMENSIONS WITHIN THE MINIMUM SIZE REQUIREMENTS. THE CONTRACTOR IS RESPONSIBLE FOR SELECTING APPROPRIATE MATERIAL TO MEET THE LENGTH, WIDTH, DEPTH, AND SLOPE REQUIREMENTS AS OUTLINED ON THIS SHEET. THE NUMBER OF STONES AND THEIR CONFIGURATION MAY VARY FROM THIS PLAN.
- ALL IMBRICATED RIPRAP SHALL BE PLACED WITH EDGES ALIGNED TIGHTLY TO MINIMIZE VOID SPACE.
- IF VOIDS ARE ENCOUNTERED, FILL WITH CLASS I RIPRAP.



RIFFLE CASCADE WEIR
TYPICAL SECTION C-C'

NOT TO SCALE



IMBRICATED RIPRAP DIMENSIONS					
L-AXIS		W-AXIS		H-AXIS	
MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
1.5'	3.0'	1.5'	2.5'	1.0'	2.0'

NOTE:

- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SELECT MATERIAL THAT IS APPROPRIATELY SIZED TO ALLOW FOR ECONOMICAL CONSTRUCTION OF RIFFLE CASCADE STRUCTURES MEETING THE DESIGN DIMENSIONS DESCRIBED ON THIS PLAN.

HARFORD COUNTY, MARYLAND

HARFORD COMMUNITY COLLEGE
STREAM RESTORATION
STREAM DETAILS

PROJECT CONTRACT: 21-097 TO #25	Revisions
GP #XXXX-XXXXXX-XXXX	
SIGN AND SEAL	
Drawn By : NH, MK	Scale : NOT TO SCALE
Designed By : JZ	Date : MAY 2025
Reviewed By : RO	
Drawing No. DE-05 of DE-05	Sheet No. 22 of 25

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

DEFINITION
TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

PURPOSE
TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS. CONDITIONS WHERE PRACTICE APPLIES EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

CRITERIA
1. SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3), AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONG WITH APPLICATION RATES, SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLAN AND COMPLETED, THEN TABLE B.1 PLUS FERTILIZER AND LIME RATES MUST BE PUT ON THE PLAN.
2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING.
3. WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3.A.1.B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

TEMPORARY SEEDING SUMMARY

HARDINESS ZONE (FROM FIGURE B.3): 7A SEED MIXTURE (FROM TABLE B.1)					FERTILIZER RATE (10-20-20)	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		
	ANNUAL RYEGRASS	40 LB/ACRE	2/15 - 4/30 8/15 - 11/30	1/2*	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
	FOXTAIL MILLET	30 LB/ACRE	5/1 - 8/14	1/2*		

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

A. 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.
B. 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.
C. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
D. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3.5 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

A. AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.

B. 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.

I. 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.
II. 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.
III. 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.
IV. 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: 1* 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)

D. 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 1.5 INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.

E. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (0.5 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.



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. 200370, EXPIRATION DATE: 2025/03/19.

PERMANENT SEEDING SUMMARY

HARDINESS ZONE (FROM FIGURE B.3): 7A SEED MIXTURE (FROM TABLE B.3): 7					FERTILIZER RATE (10-20-20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P205	K20	
7	CREEPING RED FESCUE KENTUCKY BLUEGRASS	60 15	2/15 - 4/30 8/15 - 10/31 11/1 - 11/30+	1/4* - 1/2*	45 LB/AC (1.0 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
-	SOD	-	2/15 - 4/30 5/1 - 9/30* 10/1 - 12/1**	1/4* - 1/2*	45 LB/AC (1.0 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)

NOTE:

1. THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE. THESE DATES MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONES. WHEN SEEDING TOWARD THE END OF THE LISTED PLANTING DATES, OR WHEN CONDITIONS ARE EXPECTED TO BE LESS THAN OPTIMAL, SELECT AN APPROPRIATE NURSE CROP FROM TABLE B.1 TEMPORARY SEEDING FOR SITE STABILIZATION AND PLANT TOGETHER WITH THE PERMANENT SEEDING MIX.

2. WHEN PLANTED DURING THE GROWING SEASON, MOST OF THESE MATERIALS MUST BE PURCHASED AND KEPT IN A DORMANT CONDITION UNTIL PLANTING. BARE-ROOT GRASSES ARE THE EXCEPTION - THEY MAY BE SUPPLIED AS GROWING (NON-DORMANT) PLANTS.

+ ADDITIONAL PLANTING DATES FOR THE LOWER COASTAL PLAIN, DEPENDENT ON ANNUAL RAINFALL AND TEMPERATURE TRENDS. RECOMMEND ADDING A NURSE CROP, AS NOTED ABOVE, IF PLANTING DURING THIS PERIOD.

* ADDITIONAL PLANTING DATES DURING WHICH SUPPLEMENTAL WATERING MAY BE NEEDED TO ENSURE PLANT ESTABLISHMENT.

**FREQUENT FREEZING AND THAWING OF WET SOILS MAY RESULT IN FROST-HEAVING OF MATERIALS PLANTED IN THE LATE FALL. IF PLANTS HAVE NOT SUFFICIENTLY ROOTED IN PLACE, SOD USUALLY NEEDS 4 TO 6 WEEKS TO BECOME SUFFICIENTLY ROOTED. LARGE CONTAINERIZED AND BALLED-AND-BURLAPPED STOCK MAY BE PLANTED INTO THE WINTER MONTHS AS LONG AS THE GROUND IS NOT FROZEN AND SOIL MOISTURE IS ADEQUATE.

B. SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).

1. GENERAL SPECIFICATIONS

A. A CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.

B. SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF *INCH, PLUS OR MINUS *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.

C. 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.

D. SOD MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.

E. 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

A. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.

B. 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.

C. 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.

D. 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

A. 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.

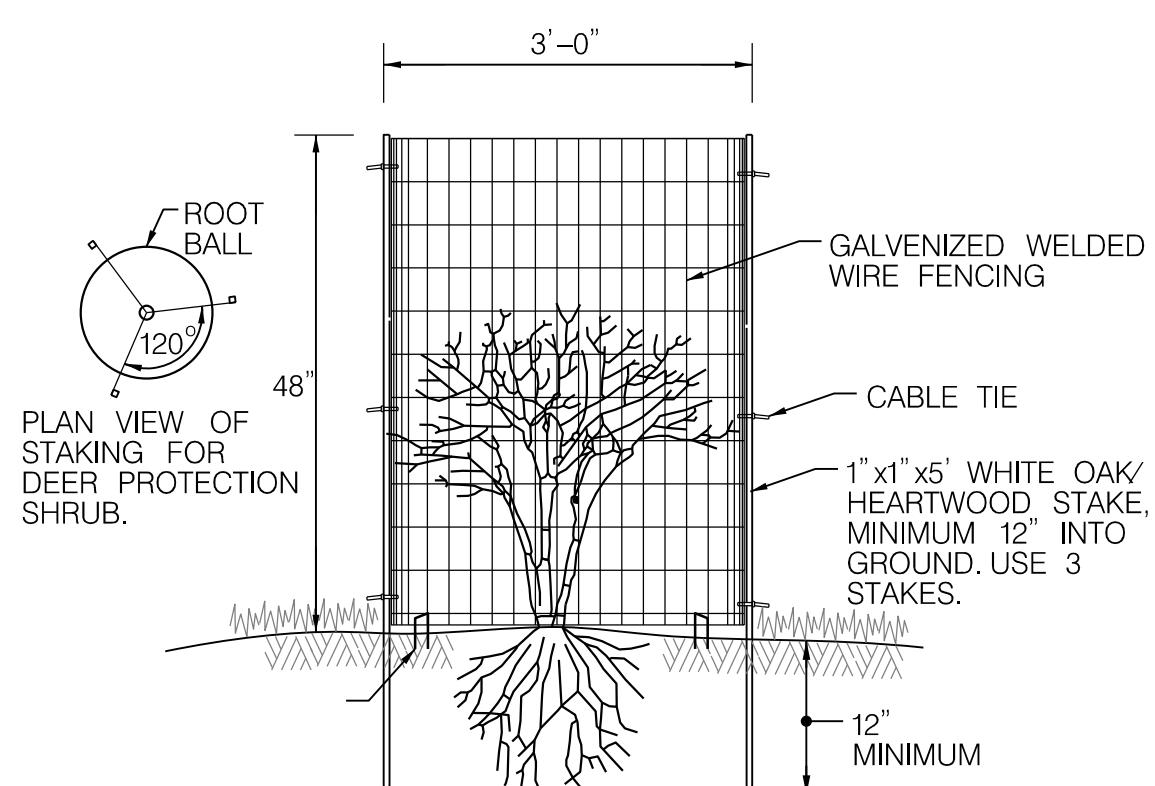
B. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.

C. DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN 1/3 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.

HARFORD COUNTY, MARYLAND

**HARFORD COMMUNITY COLLEGE
STREAM RESTORATION
EROSION AND SEDIMENT CONTROL
NOTES**

PROJECT CONTRACT: 21-097 TO #25	Revisions	
GP #XXXX-XXXXXX-XXXX		
SIGN AND SEAL		
Drawn By : NH, MK	Scale : NOT TO SCALE	
Designed By : JZ	Date : MAY 2025	
Reviewed By : RO		
Drawing No. ES-01 of ES-01	Sheet No. 23 of 25	

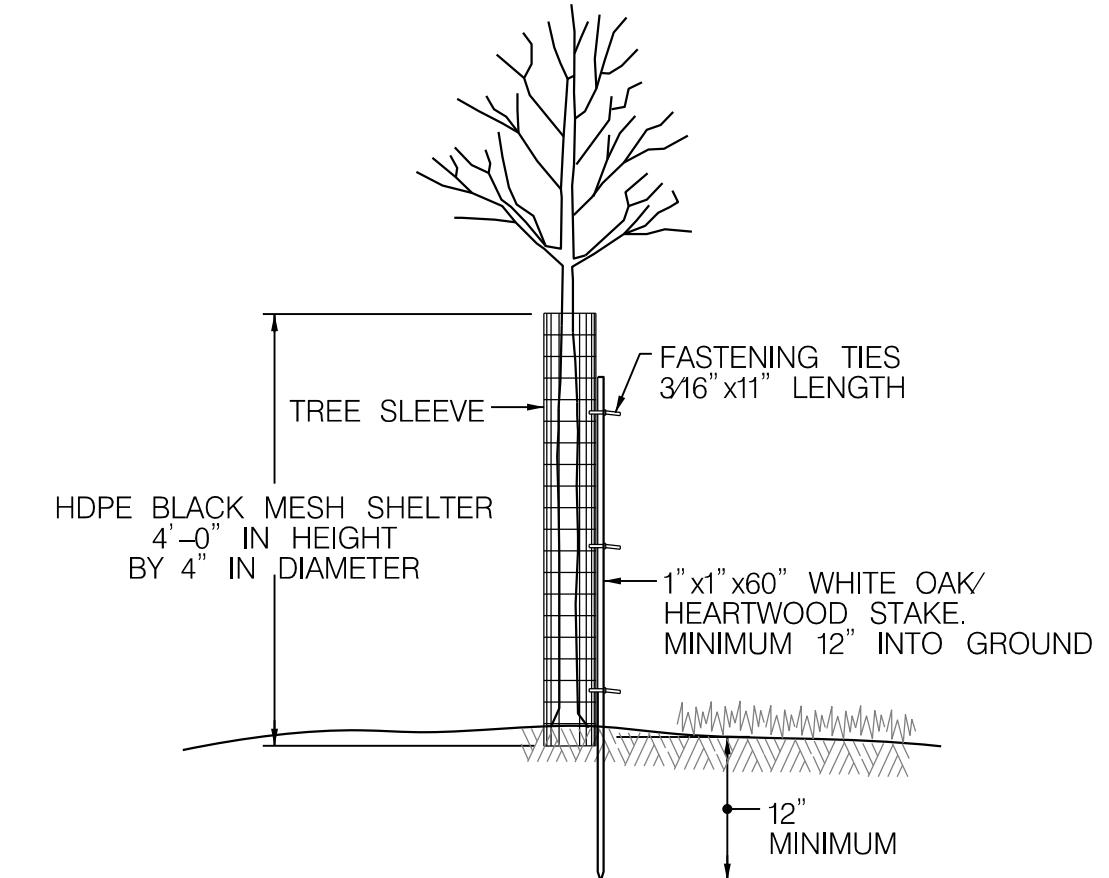


DEER PROTECTION - SHRUB

NOT TO SCALE

NOTES:

1. REFER TO DEER PROTECTION SPECIFICATION FOR ADDITIONAL INFORMATION.

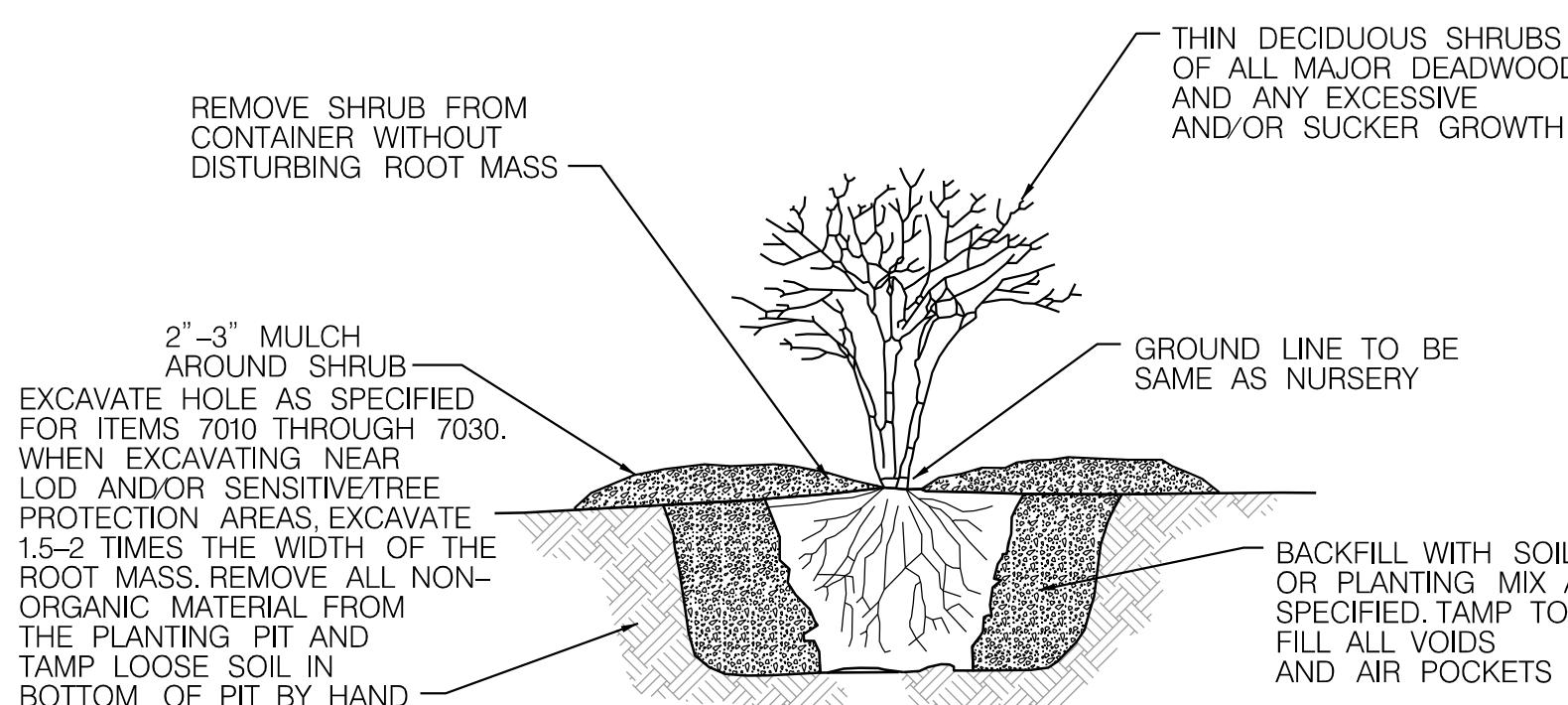


DEER PROTECTION - TREE SLEEVES

NOT TO SCALE

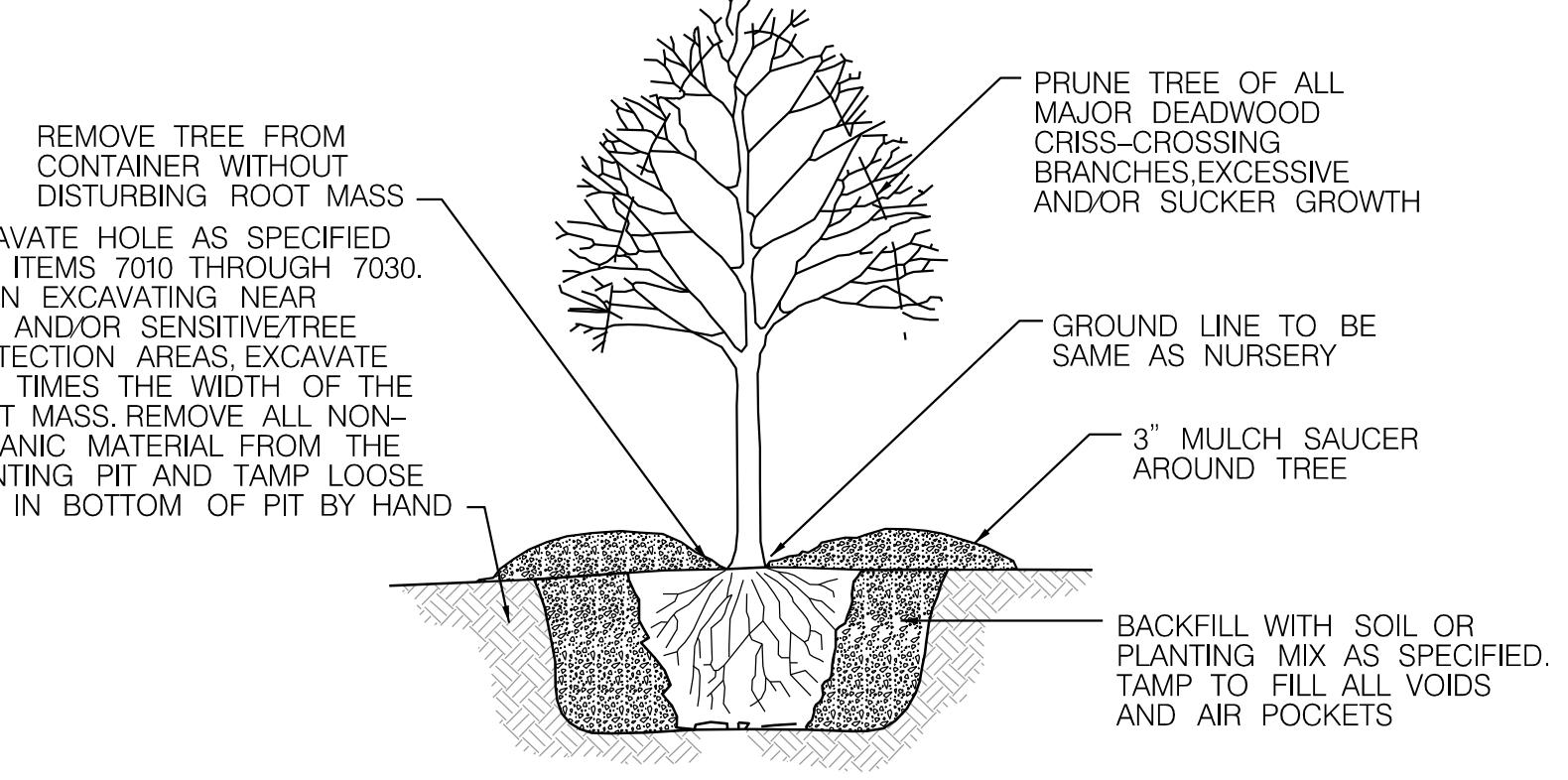
NOTES:

1. REFER TO DEER PROTECTION SPECIFICATION FOR ADDITIONAL INFORMATION.



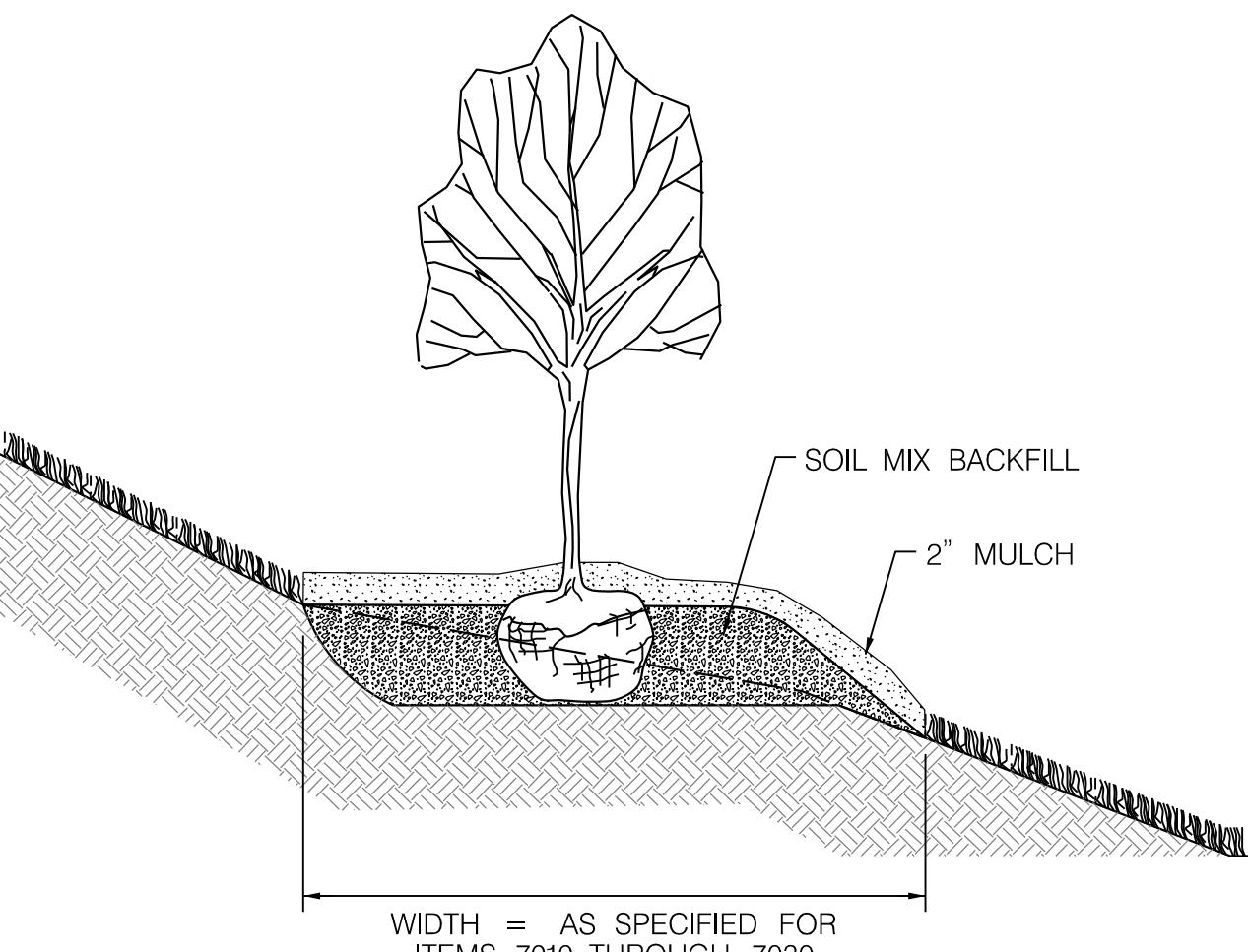
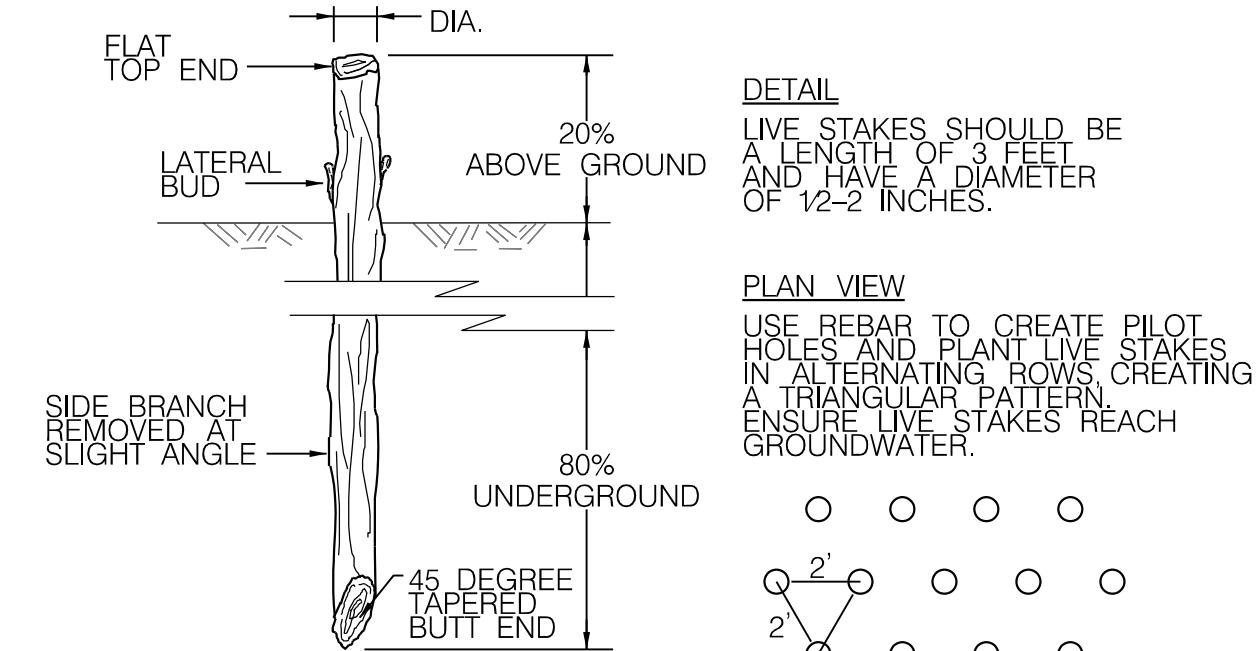
SHRUB PLANTING - CONTAINER

NOT TO SCALE



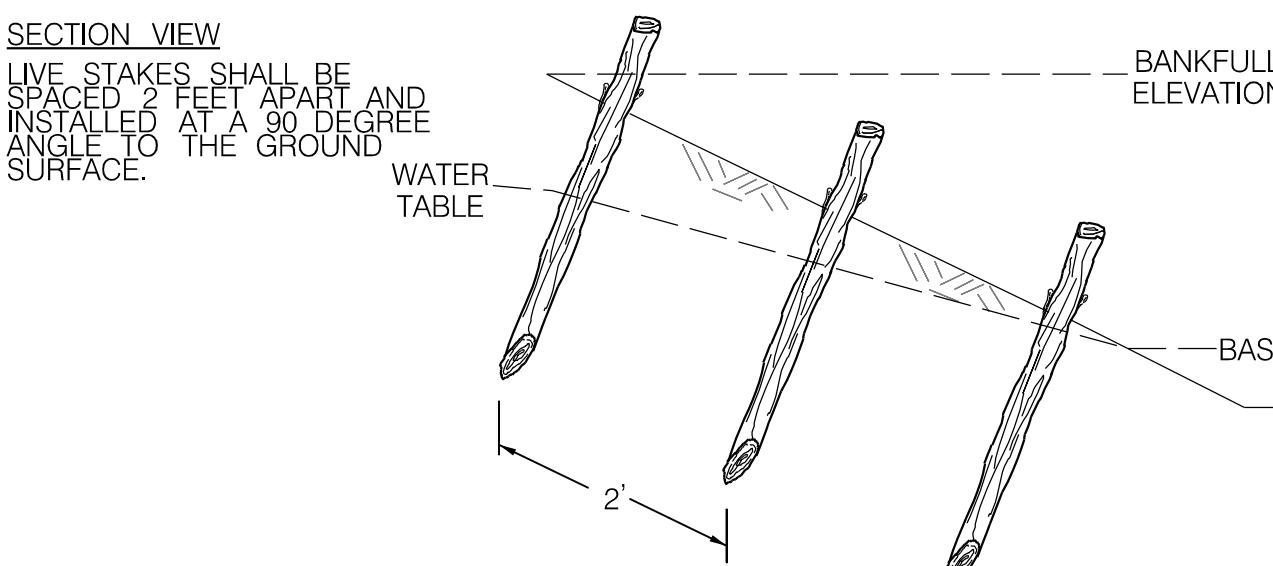
TREE/SHRUB PLANTING - CONTAINER GROWN

NOT TO SCALE



PLANTING ON SLOPE

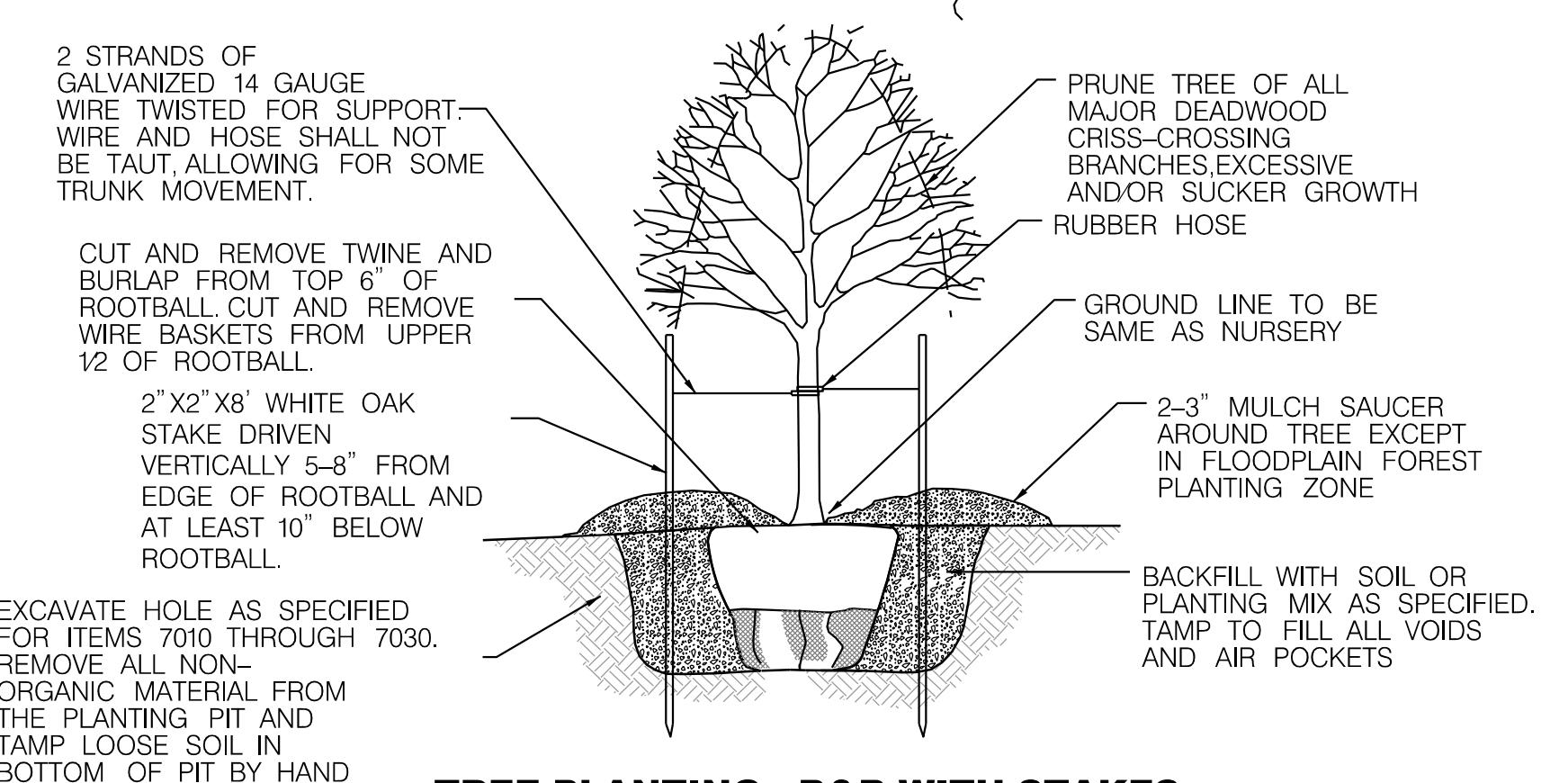
NOT TO SCALE



LIVE STAKES DETAIL

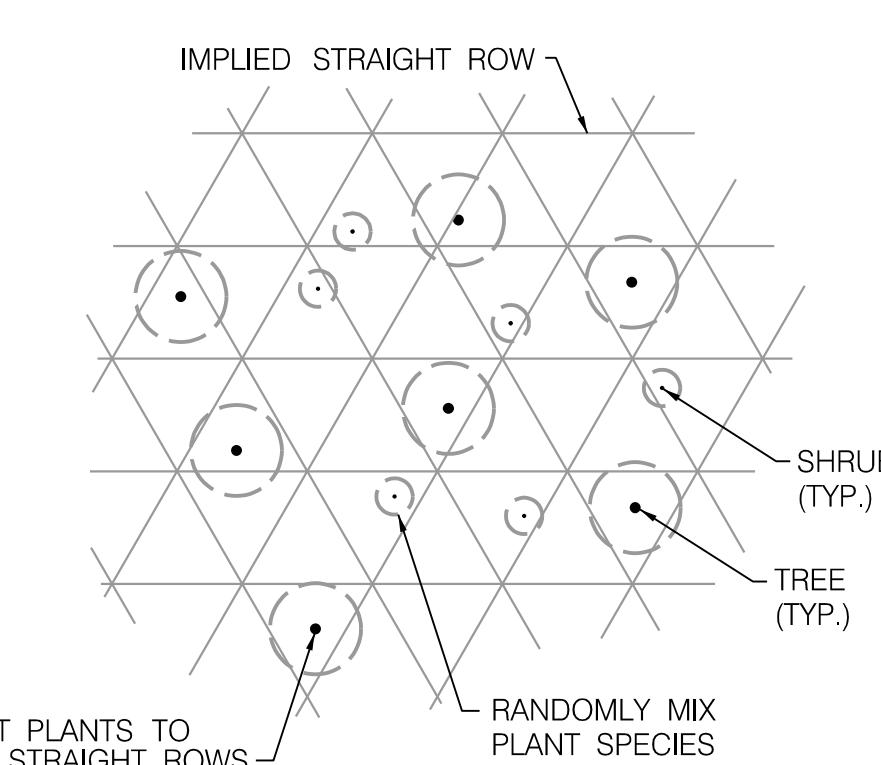
NOT TO SCALE

Source: Adapted from USDA-SCS (1994)



TREE PLANTING - B&B WITH STAKES

NOT TO SCALE



NATURALIZED PLANT SPACING

NOT TO SCALE

NOTES:

1. TREE AND SHRUB SPACING SHALL BE INDICATED ON PLANTING SCHEDULE.

2. USE RANDOM, NATURALIZED SPACING. AVOID PLANTING IN STRAIGHT ROWS.

UPLAND FOREST PLANTING AREAS

Vegetation Strata/Species Name	Common Name	Indicator Status	Size	Type	Placement
Canopy Trees					
<i>Acer rubrum</i>	Red maple	FAC	1/2" Caliper 5' ht.	Container grown #3	12' O.C. naturalized spacing
<i>Liriodendron tulipifera</i>	Tulip poplar	FACU	1/2" Caliper 5' ht.	Container grown #3	12' O.C. naturalized spacing
<i>Liquidambar styraciflua</i>	Sweetgum	FAC	1/2" Caliper 5' ht.	Container grown #3	12' O.C. naturalized spacing
<i>Quercus alba</i>	White oak	FACU	1/2" Caliper 5' ht.	Container grown #3	12' O.C. naturalized spacing
<i>Quercus rubra</i>	Northern red oak	FACU	1/2" Caliper 5' ht.	Container grown #3	12' O.C. naturalized spacing
<i>Prunus serotina</i>	Black cherry	FACU	1/2" Caliper 5' ht.	Container grown #3	12' O.C. naturalized spacing
Understory Trees					
<i>Cercis canadensis</i>	Eastern redbud	FACU	5' ht.	Container grown #5	12' O.C. naturalized spacing
<i>Ilex opaca</i>	American holly	FACU	5' ht.	Container grown #5	12' O.C. naturalized spacing
<i>Hamamelis virginiana</i>	Witch hazel	FACU	5' ht.	Container grown #5	12' O.C. naturalized spacing
<i>Rhus typhina</i>	Staghorn Sumac	UPL	5' ht.	Container grown #5	12' O.C. naturalized spacing
<i>Viburnum prunifolium</i>	Blackhaw	FACU	5' ht.	Container grown #5	12' O.C. naturalized spacing

Note: Upland Forest Planting zones will be seeded with Ernst's Maryland Upland Mix (ERNMX-172) at a rate of 15lb per acre. A cover crop will also be applied as specified by the ERNMX-172 seed mix specification.

FLOODPLAIN FOREST PLANTING AREAS

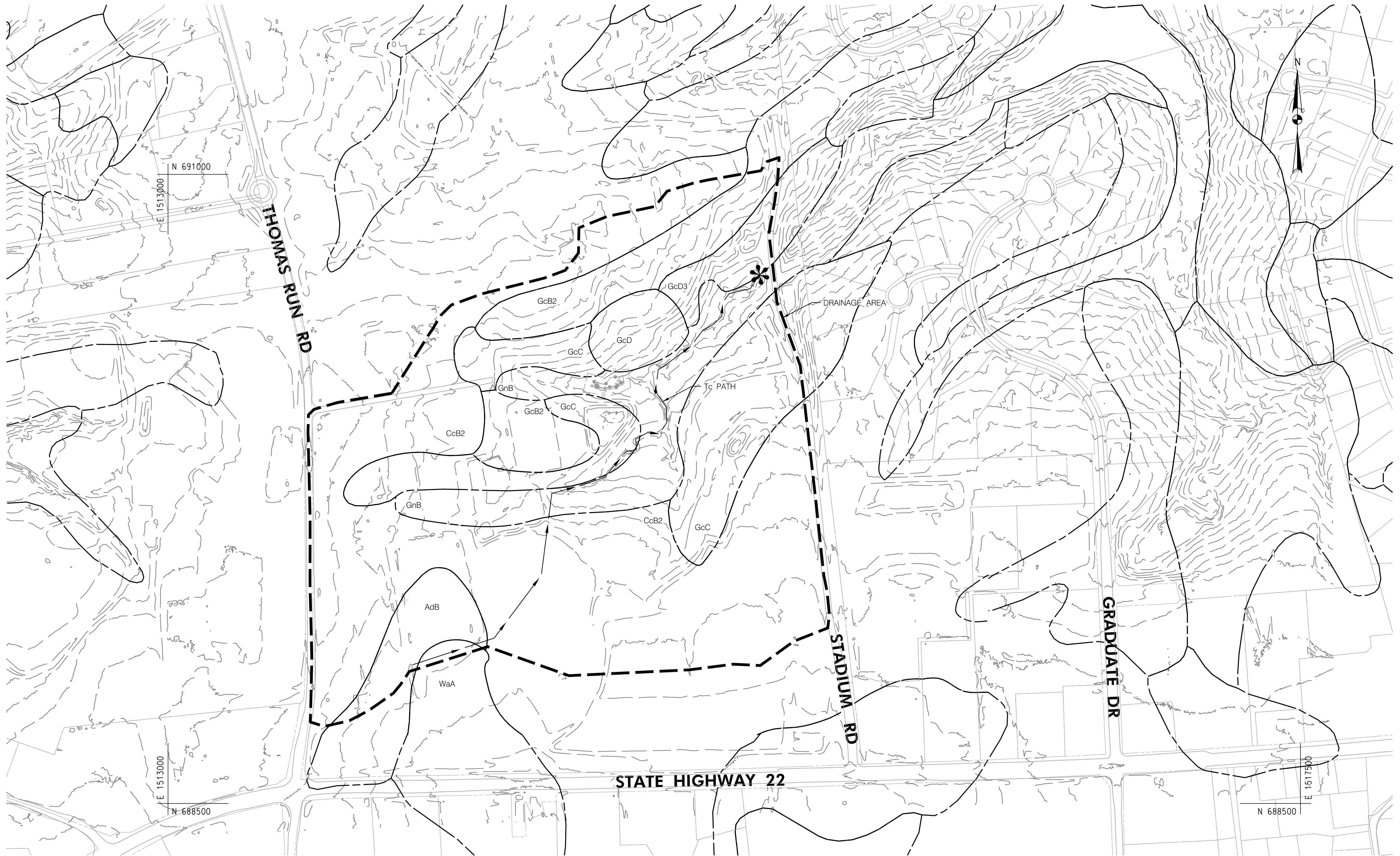
Vegetation Strata/Species Name	Common Name	Indicator Status	Size	Type	Placement
Canopy Trees					
<i>Acer rubrum</i>	Red maple	FAC	1/2" Caliper 5' ht.	Container grown #3	12' O.C. naturalized spacing
<i>Acer saccharinum</i>	Silver maple	FACW	1/2" Caliper 5' ht.	Container grown #3	12' O.C. naturalized spacing
<i>Platanus occidentalis</i>	American sycamore	FACW	1/2" Caliper 5' ht.	Container grown #3	12' O.C. naturalized spacing
<i>Quercus bicolor</i>	Swamp white oak	FACW	1/2" Caliper 5' ht.	Container grown #3	12' O.C. naturalized spacing
<i>Quercus palustris</i>	Pin oak	FACW	1/2" Caliper 5' ht.	Container grown #3	12' O.C. naturalized spacing
<i>Salix nigra</i>	Black willow	OBL	1/2" Caliper 5' ht.	Container grown #3	12' O.C. naturalized spacing
Understory Trees					
<i>Alnus serrulata</i>	Smooth alder	OBL	3' ht.	Container grown #5	Groups of 3 or 5 @ 6' OC
<i>Cephalanthus occidentalis</i>	Buttonbush	OBL	3' ht.	Container grown #5	Groups of 3 or 5 @ 6' OC
<i>Clethra alnifolia</i>	Sweet pepperbush	FACW	3' ht.	Container grown #5	Groups of 3 or 5 @ 6' OC
<i>Ilex verticillata</i>	Winterberry	FACW	3' ht.	Container grown #5	Groups of 3 or 5 @ 6' OC
<i>Salix exigua</i>	Sandbar willow	FACW	3' ht.	Container grown #5	Groups of 3 or 5 @ 6' OC
<i>Salix sericea</i>	Silky willow	OBL	3' ht.	Container grown #5	Groups of 3 or 5 @ 6' OC

Note: Floodplain Forest Planting zones will be seeded with Ernst's FACW Wetland Meadow Mix (ERNMX-122) at a rate of 20lb per acre. A cover crop will also be applied as specified by the ERNMX-122 seed mix specification.

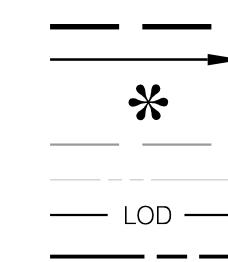
HARFORD COUNTY, MARYLAND

HARFORD COMMUNITY COLLEGE STREAM RESTORATION LANDSCAPING DETAILS

PROJECT CONTRACT: 21-097 TO #25	Revisions
GP #XXXX-XXXXXX-XXXX	
SIGN AND SEAL	
Drawn By : NH, MK	Scale : NOT TO SCALE
Designed By : JZ	Date : MAY 2025
Reviewed By : RO	
Drawing No. LD-01 of LD-01	Sheet No. 24 of 25


LEGEND

DRAINAGE AREA TO POI
 Tc PATH
 POI
 EXISTING MAJOR CONTOUR
 PROPERTY BOUNDARY
 LIMIT OF DISTURBANCE
 SOIL BOUNDARY



RUNOFF CONDITIONS	
	POI1
DRAINAGE AREA (AC)	71.82
IMPERVIOUS AREA (AC)	21.25
TIME OF CONCENTRATION (HR)	0.41
CURVE NUMBER	73



BY: jzabey

 FILE PATH: https://ad.rk.com/Cloud/Projects/2021/21155_HARCO/Task 025_Harford Community College Stream Restoration/CADD30%Plans25 - pDA-0001_HCC.dgn

PLOTTED: 5/30/2025

PROJECT CONTRACT: 21-097 TO #25	Revisions	HARFORD COUNTY, MARYLAND			
GP #XXX-XXXXXX-XXXX	HARFORD COMMUNITY COLLEGE STREAM RESTORATION DRAINAGE AREA MAP		SCALE : 1" = 200'		
SIGN AND SEAL			Scale : 1" = 200' Date : MAY 2025		
Drawn By : NH, MK Designed By : JZ Reviewed By : RO			Drawn By : NH, MK Designed By : JZ Reviewed By : RO		
Drawing No. DA-01 of DA-01			Sheet No. 25 of 25		

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. 200370, EXPIRATION DATE: 2025/03/19.