ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

100% FINAL DESIGN

INDEX OF SHEETS

PROJECT SUMMARY

TOTAL LENGTH OF EXISTING STREAM RESTORED: 560 LINEAR FEET
TOTAL LENGTH OF PROPOSED STREAM RESTORED: 530 LINEAR FEET
STREAM USE CLASS: I
STREAM CLOSURE PERIOD: MARCH 1" - JUNE 15"
LOAD REDUCTIONS AND IA CREDIT SUMMARY:

IA CREDIT	TSS REDUCTION	TN REDUCTION	TP REDUCTION
12.04 AC	62 TONS/YR	243 LBS/YR	16 LBS/YR

NOTE: CREDIT CALCULATED VIA PROTOCOL 1 BANCS METHODOLOGY. PROTOCOL 2. AND THE 2021 MDE WASTELOAD ALLOCATIONS DOCUMENT.

SITE ANALYSIS

1.	TOTAL SITE AREA:	50.21 AC
2.	TOTAL DISTURBED AREA:	0.70 AC
3.	TOTAL IMPERVIOUS AREA WITHIN THE LOD:	0.05 AC
4.	TOTAL AREA TO BE VEGETATIVELY STABILIZED:	0.65 AC
5.	PROPOSED IMPERVIOUS AREA:	0 AC
6.	IMPERVIOUS AREA TREATED (MS4 CREDIT):	12.04 AC
7.	ESTIMATED CUT:	178 CY
8.	ESTIMATED FILL:	974 CY
9.	NET EXPORT:	-836 CY

AS-BUILT CERTIFICATION

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

SIGNATURE _____ DATE _____

PRINTED NAME _____

BID NO. 25-190

WATERSHED PROTECTION AND RESTORATION OFFICE

HARFORD COUNTY, MARYLAND

LOCATION MAP

SCALE 1" = 600'

GENERAL NOTES

1. SPECIFICATIONS: ALL WORK IS TO BE PERFORMED IN ACCORDANCE MARYLAND STATE HIGHWAY ADMINISTRATIONS STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS DATED JULY 2024 AND THE MOST RECENT REVISIONS THEREOF AND ADDITIONS THERETO.

2. UTILITIES: UTILITY LOCATIONS SHOWN ON THE PLANS ARE BASED ON SURVEY 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 THEM.

   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.

3. 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 THEIR POSSESSION ARE THE LATEST REVISED STANDARDS UP TO AND INCLUDING THE DATE OF THE ADVERTISEMENT OF THIS CONTRACT.

4. RIGHT-OF-WAY LINES: RIGHT-OF-WAY LINES SHOWN ON THESE PLANS DO NOT INCLUDE EASEMENTS. THEY ARE FOR ASSISTANCE IN INTERPRETING THE PLANS ONLY. THESE LINES DO NOT REPRESENT THE OFFICIAL PROPERTY ACQUISITION LINES. FOR OFFICIAL FEE RIGHT-OF-WAY AND EASEMENT INFORMATION, SEE THE APPROPRIATE RIGHT-OF-WAY PLATS.

5. SOIL CONSERVATION: THE CONTRACTOR SHALL NOT DISTURB THE EXISTING VEGETATION OUTSIDE THE LIMITS OF DISTURBANCE. SOIL STABILIZATION WILL CONFORM TO 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. THE CONTRACTOR WILL OBTAIN APPROVAL OF THE HARFORD COUNTY SOIL CONSERVATION DISTRICT FOR THEIR PLANS IN CONTROLLING SEDIMENT EROSION FOR THE BORROW AREA AND DISPOSING OF ANY WASTE EXCAVATION.

6. 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.

7. SURVEYS:

   HORIZONTAL CONTROL - COORDINATES SHOWN ON THE PLANS ARE BASED ON NAD83/91.

   VERTICAL CONTROL - ELEVATIONS SHOWN ON THE PLANS ARE BASED ON NAVD88.

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

   SURVEY IS TIED TO LOCAL CONTROL NATIONAL GEODETIC SURVEY (NGS) POINTS JV6806, JV6311, AND JV6275.

   NOTE: TOPOGRAPHIC MAPPING PRODUCED BASED ON FEBRUARY 2023 SURVEY CONDUCTED BY CEM.

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

Prepared By : RK&K
P: 410.728.2900
700 E. Pratt Street, Suite 500 | Baltimore, MD 21202
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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: 2027/03/19.

STATE OF MARYLAND · LUCIA NEWMAN · 200370 · PROFESSIONAL ENGINEER

PROJECT CONTRACT # 59905

GP #GRA-006189-2024

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

TITLE SHEET

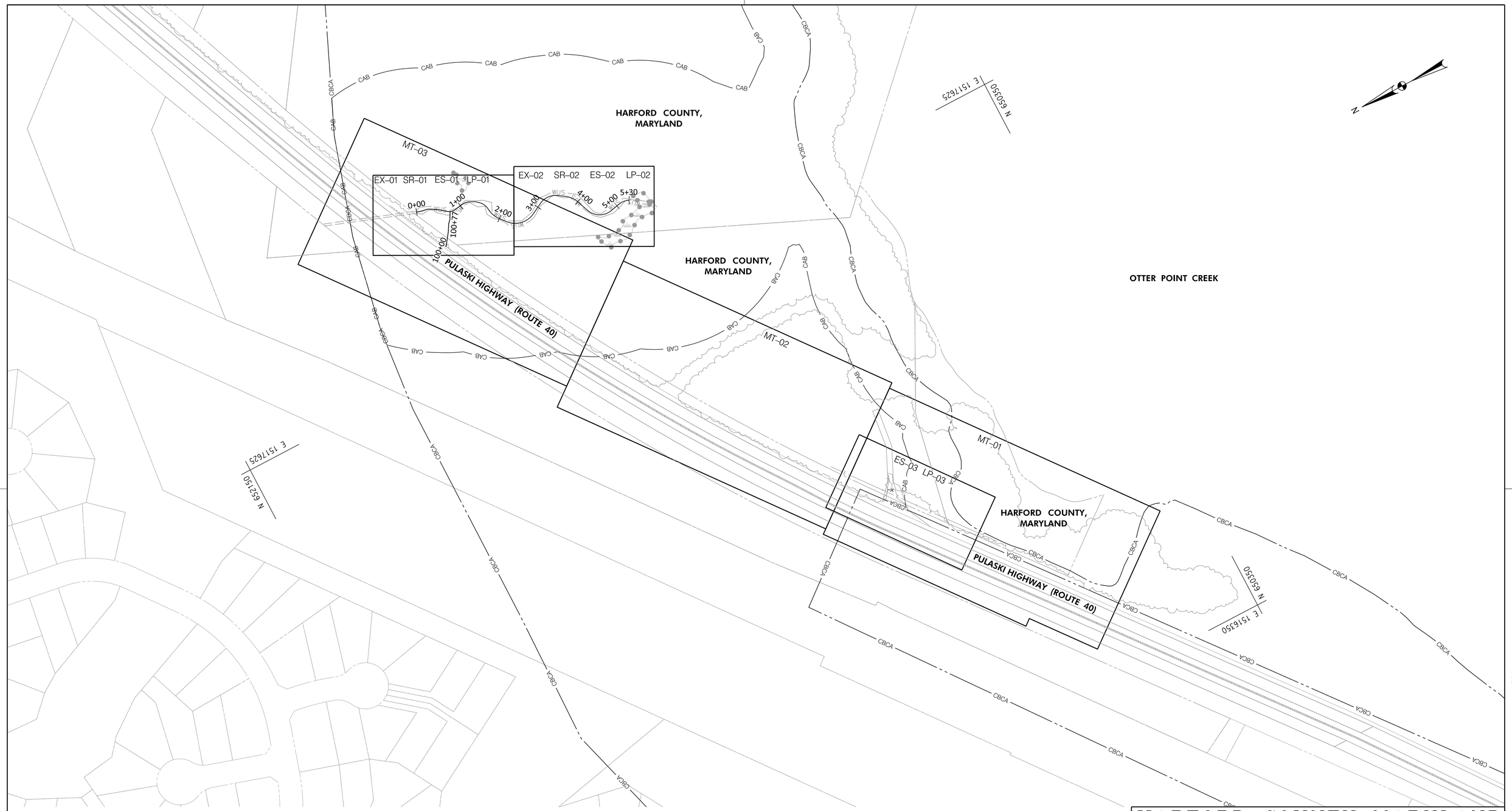
Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. GN-01 of GN-01

Scale : N/A
Date : APRIL 2025
Sheet No. 1 of 34

BID NO.:
HCG DWG ID No.: GN-01
SCALE 1" = 1' WHEN PLOTTED AT FULL SIZE

BY: sbazan -

FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\01 - pGN-0000_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025



100′ 0 100′ 200′

SCALE: 1″=100′

PROJECT CONTRACT #59905	Revisions
GP #GRA-006189-2024	

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

KEY SHEET

Drawn By : SB	Scale : 1″ = 100′
Designed By : SB/BA	Date : APRIL 2025
Reviewed By : RO	
Drawing No. KS-01 of KS-01	Sheet No. 2 of 34

BID No.:

HCG DWG ID No.: KS-01

SCALE: 1" = 1 inch

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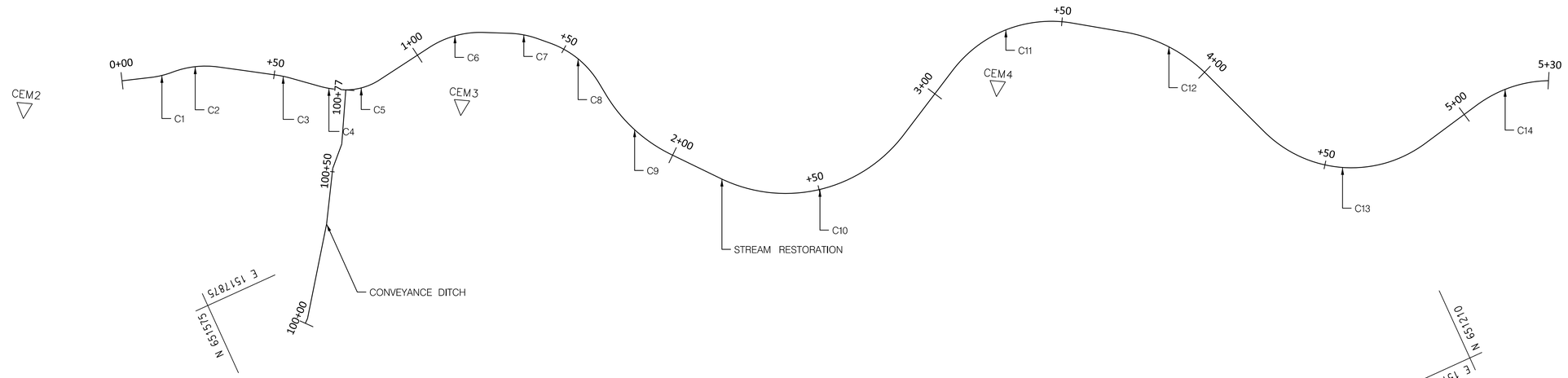
PLOTTED: 4/28/2025



STREAM RESTORATION BASELINE DATA			
POINT	STATION	NORTHING	EASTING
POB	0+00.00	651570.0841	1517952.803
PC	0+09.37	651561.1658	1517949.929
PI	0+13.07	651557.6475	1517948.796
PT	0+16.73	651553.9592	1517948.550
PC	0+16.74	651553.9411	1517948.549
PI	0+24.40	651546.3066	1517948.040
PT	0+31.73	651539.8482	1517943.938
PI	0+40.49	651532.4481	1517939.237
PC	0+50.99	651523.5970	1517933.591
PI	0+52.97	651521.9296	1517932.527
PT	0+54.94	651520.4163	1517931.254
PC	0+65.34	651512.4629	1517924.563
PI	0+68.31	651510.1882	1517922.649
PT	0+71.26	651507.5822	1517921.219
PC	0+72.33	651506.6421	1517920.703
PI	0+79.10	651500.7114	1517917.449
PT	0+85.38	651494.0228	1517918.463
PC	1+04.61	651475.0111	1517921.344
PI	1+14.06	651465.6634	1517922.761
PT	1+22.93	651457.1923	1517918.563
PC	1+31.53	651449.4838	1517914.742
PI	1+36.24	651445.2633	1517912.650

STREAM RESTORATION BASELINE DATA			
POINT	STATION	NORTHING	EASTING
PT	1+40.88	651441.8870	1517909.366
PC	1+45.35	651438.6828	1517906.249
PI	1+56.01	651431.0399	1517898.813
PT	1+65.84	651429.8043	1517888.222
PC	1+70.73	651429.2373	1517883.362
PI	1+85.53	651427.5224	1517868.662
PT	1+99.51	651418.0828	1517857.264
PC	2+17.38	651406.6846	1517843.501
PI	2+56.66	651381.6276	1517813.245
PT	2+83.22	651347.0145	1517831.825
PC	3+09.72	651323.6686	1517844.356
PI	3+33.93	651302.3323	1517855.809
PT	3+53.27	651282.2932	1517842.214
PC	3+70.38	651268.1305	1517832.605
PI	3+86.26	651254.9883	1517823.689
PT	4+01.14	651249.3999	1517808.823
PC	4+27.34	651240.1806	1517784.298
PI	4+61.76	651228.0665	1517752.073
PT	4+84.19	651194.3967	1517759.253
PC	5+05.20	651173.8504	1517763.635
PI	5+17.60	651161.5146	1517764.314
PT	5+30.00	651149.5598	1517761.197

CURVE DATA				
POINT	RADIUS	DELTA	LENGTH	TANGENT
C1	30.00	14°02'55.1171"	7.36	3.70
C2	30.00	28°36'57.6642"	14.98	7.65
C3	30.00	7°32'35.5039"	3.95	1.98
C4	30.00	11°19'03.3314"	5.93	2.97
C5	20.00	37°22'35.0865"	13.05	6.77
C6	30.00	34°59'03.9164"	18.32	9.45
C7	30.00	17°50'48.9789"	9.34	4.71
C8	30.00	39°08'02.9730"	20.49	10.66
C9	50.00	32°58'34.9614"	28.78	14.80
C10	48.00	78°35'44.3354"	65.84	39.28
C11	40.00	62°22'52.0067"	43.55	24.22
C12	50.00	35°14'33.6903"	30.76	15.88
C13	40.00	81°26'06.8004"	56.85	34.43
C14	40.00	29°47'46.1625"	20.80	10.64

CONVEYANCE DITCH BASELINE DATA			
POINT	STATION	NORTHING	EASTING
POB	100+00.00	651548.6346	1517856.6654
PI	100+01.73	651547.3345	1517857.8006
PI	100+32.92	651529.0236	1517883.0574
PI	100+51.09	651519.7328	1517898.6672
PI	100+59.49	651513.7995	1517904.6143
POE	100+77.09	651505.3287	1517920.0440

TRAVERSE POINTS				
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
CEM2	651602.6100	1517957.8500	45.64	REBAR & CAP
CEM3	651473.2800	1517899.9300	24.17	REBAR & CAP
CEM4	651312.7800	1517833.5800	16.08	REBAR & CAP
CEM5	651148.5100	1517716.8000	9.85	REBAR & CAP
CEM6	651303.4700	1517661.0500	52.01	REBAR & CAP
CEM7	651500.7000	1517789.1800	57.81	REBAR & CAP

NOTE:
SURVEY IS TIED TO LOCAL CONTROL NATIONAL GEODETIC SURVEY (NGS) POINTS JV6806, JV6311, AND JV6275.

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

PROFESSIONAL CERTIFICATION

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PROJECT CONTRACT #59905

GP #GRA-006189-2024

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

GEOMETRY SHEET

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. GE-01 of GE-01

Scale : 1" = 20'
Date : APRIL 2025
Sheet No. 3 of 34

BID No.:
HCG DWG ID No.: GE-01

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PLOTTED: 4/28/2025

LEGEND

EXISTING MAJOR CONTOUR		EXISTING WETLAND BOUNDARY	
EXISTING MINOR CONTOUR		EXISTING WETLAND PATTERN	
EXISTING RIPRAP		EXISTING WETLAND BUFFER	B
EXISTING STREAM CENTERLINE		EXISTING 100-YEAR FLOODPLAIN	
EXISTING STORMDRAIN		WETLAND DATA POINT	WC-WET
ELECTRIC POLE		EXISTING TREE LINE	
GAS VALVE	G	WATERS OF THE U.S.	WUS
TRAFFIC RAIL BARRIER		FLOW ARROW	
TRAVERSE POINT		FOREST STAND BOUNDARY	
15% TO 25% SLOPES		FOREST STAND LABEL	FS1
25%+ SLOPES		EXISTING TREE	

10' 0 10' 20'
SCALE: 1" = 10'

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PROJECT CONTRACT #59905

GP #GRA-006189-2024

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

EXISTING CONDITIONS

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Scale : 1" = 10'
Date : APRIL 2025
Drawing No. EX-01 of EX-02
Sheet No. 4 of 34

BID No.:
HCG DWG ID No.: EX-01
SCALE: 1 inch

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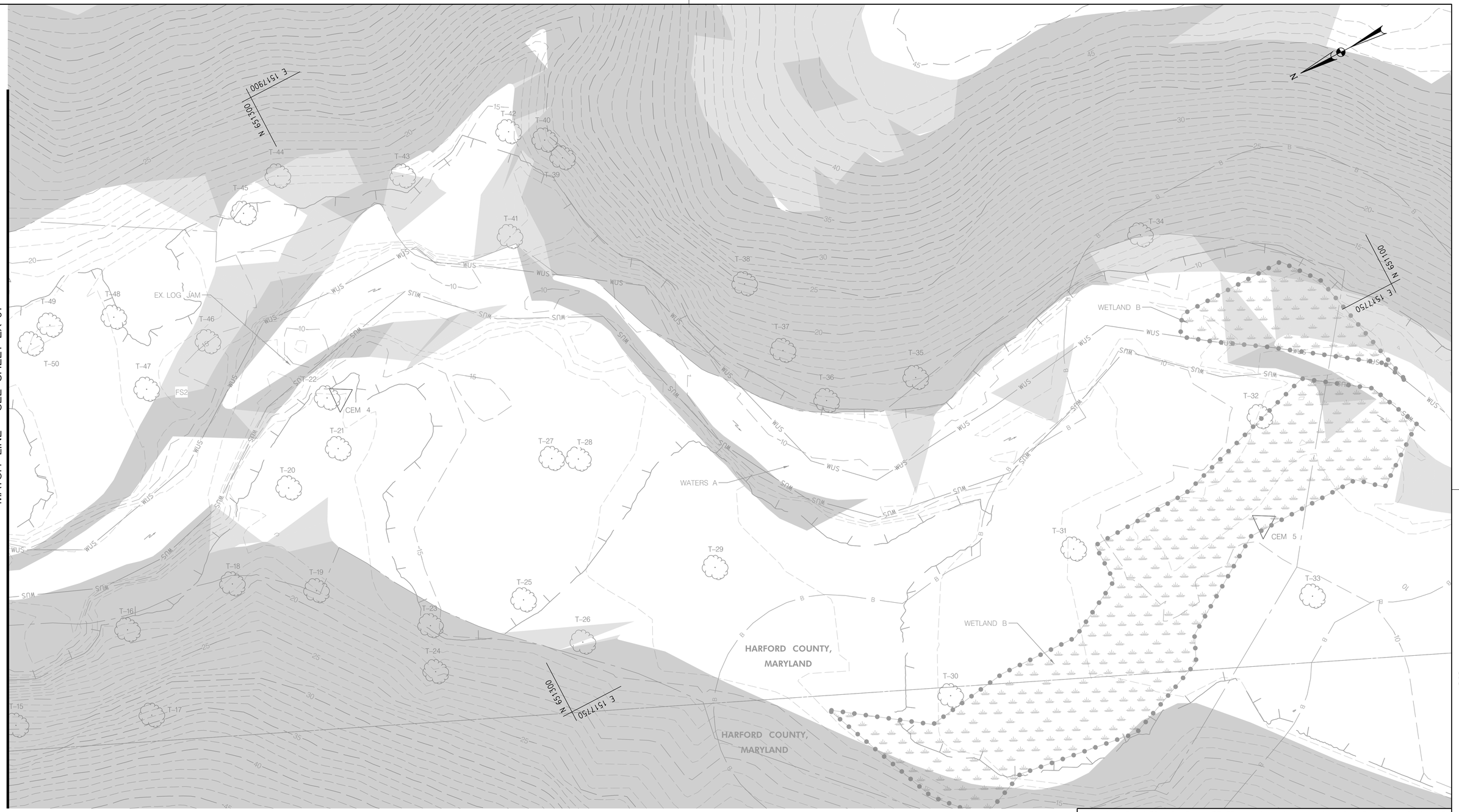
PLOTTED: 4/28/2025

MATCH LINE – SEE SHEET EX-01



LEGEND

EXISTING MAJOR CONTOUR	EXISTING WETLAND BOUNDARY
EXISTING MINOR CONTOUR	EXISTING WETLAND PATTERN
EXISTING RIPRAP	EXISTING WETLAND BUFFER
EXISTING STREAM CENTERLINE	EXISTING 100-YEAR FLOODPLAIN
EXISTING STORMDRAIN	WETLAND DATA POINT
ELECTRIC POLE	EXISTING TREE LINE
GAS VALVE	WATERS OF THE U.S.
TRAFFIC RAIL BARRIER	FLOW ARROW
TRAVERSE POINT	FOREST STAND BOUNDARY
15% TO 25% SLOPES	FOREST STAND LABEL
25%+ SLOPES	EXISTING TREE

10' 0 10' 20'
SCALE: 1" = 10'

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PROJECT CONTRACT #59905	Revisions
GP #GRA-006189-2024	

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HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

EXISTING CONDITIONS

Drawn By : SB	Scale : 1" = 10'
Designed By : SB/BA	Date : APRIL 2025
Reviewed By : RO	
Drawing No. EX-02 of EX-02	Sheet No. 5 of 34

BID No.:

HCG DWG ID No.: EX-02

SCALE: 1" = 10'

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PLOTTED: 4/28/2025

INVENTORIED TREES

Tree ID	Scientific Name	Common name	DBH	Condition	Removal	Comments	Salvageable
T-1	*Liquidambar styraciflua*	Sweetgum	18	Fair		Heavy vines. Eroded banks.	
T-2	*Liriodendron tulipifera*	Tulip poplar	14	Good/Fair		Heavy vines.	
T-3	*Liriodendron tulipifera*	Tulip poplar	18	Fair/Poor	X	Heavy vines. Large crack. Hardwood decay.	
T-4	*Fagus grandifolia*	American beech	18	Good		-	
T-5	*Acer rubrum*	Red maple	15	Good/Fair		Vines.	
T-6	*Quercus rubra*	Northern red oak	23	Good/Fair	X	Vines.	X
T-7	*Acer rubrum*	Red maple	14	Good/Fair		Broken branch.	
T-8	*Liquidambar styraciflua*	Sweetgum	12	Good		-	
T-9	*Liquidambar styraciflua*	Sweetgum	16	Good		-	
T-10	*Acer rubrum*	Red maple	16	Good		-	
T-11	*Acer rubrum*	Red maple	13	Good		-	
T-12	*Liquidambar styraciflua*	Sweetgum	16	Fair	X	Trunk cavity & hardwood decay. Healthy besides decay.	X
T-13	*Liquidambar styraciflua*	Sweetgum	13	Fair	X	Undercut by stream. Vines.	X
T-14	*Liquidambar styraciflua*	Sweetgum	12	Fair	X	Undercut by stream. Vines.	X
T-15	*Fagus grandifolia*	American beech	22	Good		Undercutting.	
T-16	*Quercus prinus*	Chestnut oak	16	Good/Fair		Dead branches.	
T-17	*Fagus grandifolia*	American beech	20	Good		-	
T-18	*Fagus grandifolia*	American beech	22	Fair		Significant trunk cavity. Hardwood decay. Somewhat healthy.	
T-19	*Liquidambar styraciflua*	Sweetgum	20	Good/Fair		Splits below DBH.	
T-20	*Platanus occidentalis*	American sycamore	19	Good/Fair		Undercutting.	
T-21	*Liquidambar styraciflua*	Sweetgum	16	Good/Fair		Vines.	
T-22	*Acer rubrum*	Red maple	19	Fair		Lean and undercutting.	
T-23*	*Liriodendron tulipifera*	Tulip poplar	37	Good		-	
T-24	*Fagus grandifolia*	American beech	12	Good		-	
T-25	*Liquidambar styraciflua*	Sweetgum	12	Good/Fair		Water sprouts.	
T-26	*Liquidambar styraciflua*	Sweetgum	19	Good/Fair		Vines.	
T-27	*Acer rubrum*	Red maple	18	Good		Vines.	
T-28	*Liquidambar styraciflua*	Sweetgum	17	Good		-	
T-29	*Liriodendron tulipifera*	Tulip poplar	22	Good		-	
T-30	*Platanus occidentalis*	American sycamore	21	Fair		Unusual growth form. Lean.	
T-31	*Liquidambar styraciflua*	Sweetgum	13	Good		-	
T-32*	*Liriodendron tulipifera*	Tulip poplar	31	Good		Splits above DBH.	
T-33	*Liquidambar styraciflua*	Sweetgum	25	Good		-	
T-34	*Liquidambar styraciflua*	Sweetgum	15	Good/Fair		Minor undercutting.	
T-35	*Liquidambar styraciflua*	Sweetgum	12	Fair		Heavy lean. Unusual growth form.	
T-36	*Quercus prinus*	Chestnut oak	13	Good	X	-	X
T-37	*Quercus prinus*	Chestnut oak	17	Good/Fair		Unusual growth form.	
T-38	*Quercus prinus*	Chestnut oak	21	Good/Fair		Lean.	
T-39	*Liquidambar styraciflua*	Sweetgum	15	Fair		Significant dead branches.	
T-40	*Acer rubrum*	Red maple	15	Good		-	
T-41	*Liquidambar styraciflua*	Sweetgum	14	Good		-	
T-42	*Liquidambar styraciflua*	Sweetgum	17	Good		-	
T-43	*Acer rubrum*	Red maple	16	Good		-	
T-44	*Liquidambar styraciflua*	Sweetgum	18	Good		-	
T-45	*Acer rubrum*	Red maple	18	Good		-	
T-46	*Acer rubrum*	Red maple	17	Fair	X	Lean. Undercutting.	X
T-47	*Platanus occidentalis*	American sycamore	15	Good		Vines.	
T-48	*Liquidambar styraciflua*	Sweetgum	21	Good		Vines.	
T-49	*Fagus grandifolia*	American beech	17	Good/Fair		Lean.	
T-50	*Fagus grandifolia*	American beech	13	Good/Fair		Minor trunk cavity.	
T-51	*Liquidambar styraciflua*	Sweetgum	16	Good		-	
T-52	*Liquidambar styraciflua*	Sweetgum	15	Good		-	
T-53	*Platanus occidentalis*	American sycamore	12	Fair		Vines, heavy lean. undercutting.	
T-54	*Liquidambar styraciflua*	Sweetgum	12	Fair		Undercutting.	
T-55	*Acer rubrum*	Red maple	12	Good/Fair		Vines.	
T-56	*Liquidambar styraciflua*	Sweetgum	12	Good		Vines.	
T-57	*Acer rubrum*	Red maple	19	Poor		Two dead leaders. Mostly dead.	
T-58	*Acer rubrum*	Red maple	12	Good		-	
T-59	*Liquidambar styraciflua*	Sweetgum	22	Good		-	
T-60	*Acer rubrum*	Red maple	14	Good/Fair		Lean.	
T-61	*Liquidambar styraciflua*	Sweetgum	14	Good		-	
T-62	*Liquidambar styraciflua*	Sweetgum	13	Good		-	
T-63	*Liriodendron tulipifera*	Tulip poplar	21	Good/Fair	X	Undercutting.	X
T-64	*Liriodendron tulipifera*	Tulip poplar	29	Good		-	
T-65	*Quercus alba*	White oak	13	Good		-	
T-66	*Liquidambar styraciflua*	Sweetgum	13	Good	X	-	X
T-67	*Liquidambar styraciflua*	Sweetgum	14	Fair/Poor	X	Severe lean. Vines exposed roots.	
T-68	*Liquidambar styraciflua*	Sweetgum	16	Good/Fair		Heavy vines.	
T-69	*Quercus prinus*	Chestnut oak	23	Good		-	
T-70	*Acer rubrum*	Red maple	15	Good		-	
T-71	*Ulmus americana*	American elm	22	Fair		Splits below DBH. Twin trunk. Heavy vines.	
T-72	*Catalpa speciosa*	Northern catalpa	14	Good/Fair		Heavy Vines	
T-73	*Juniperus virginiana*	Eastern red cedar	6	Good		-	
T-74	*Juniperus virginiana*	Eastern red cedar	5	Good		-	
* Indicates specimen tree (≥30" DBH)							

NOTE:
TREES MARKED AS SALVAGEABLE SHOULD BE USED FOR LOG SILLS AND LOG GRADE CONTROL STRUCTURES IF PROVIDED SPECIFICATIONS ARE MET.

NOTES:

1. THE PROJECT INVOLVES THE RESTORATION OF AN EXISTING STREAM WITHIN ANITA C. LEIGHT PARK. THE NRI/FSD PLANS WERE PREPARED BY RICH LEFEBURE, QP, AND THE FIELD WORK WAS CONDUCTED BY RICH LEFEBRE AND CHRISTINA KUNDRAT ON MAY 24 AND MAY 25, 2023.
2. TREE DIAMETERS WERE MEASURED AT DBH USING A FORESTRY DIAMETER TAPE.
3. A TOTAL OF TWO SPECIMEN TREES WERE IDENTIFIED WITHIN THE PROJECT STUDY AREA. NO STATE/COUNTY CHAMPION TREES, OR TREES 75% OF THE STATE CHAMPIONS WERE IDENTIFIED ON SITE.
4. TWO FOREST STANDS (FS–1 AND FS–2) WERE IDENTIFIED WITHIN THE PROJECT STUDY AREA. THE FOREST STANDS CONSIST OF ONE MATURE SUCCESSIONAL NORTHERN RED OAK ASSOCIATION AND ONE MID SUCCESSIONAL RED MAPLE ASSOCIATION. BOTH STANDS ARE IN GOOD CONDITION BASED ON THE HEALTHY CANOPY TREES, STRONG CANOPY COVER, LOW INVASIVE SPECIES PRESENCE, AND HIGH RETENTION VALUE.
5. ONE PALUSTRINE EMERGENT WETLAND (PEM), ONE PALUSTRINE SCRUB–SHRUB WETLAND (PSS) AND ONE PERENNIAL WATERWAY WERE IDENTIFIED WITHIN THE PROJECT STUDY AREA DURING THE FIELD INVESTIGATION. FEMA 100–YEAR FLOODPLAINS DO NOT EXIST WITHIN THE PROJECT STUDY AREA ACCORDING TO FLOODPLAIN DATA OBTAINED FROM FEMA/FIRM MAPPING. THE FEMA 100–YEAR FLOODPLAIN IS LOCATED APPROXIMATELY 300 LINEAR FEET DOWNSTREAM OF THE END OF PROPOSED STREAM LIMITS.
6. SOILS DATA WERE OBTAINED FROM THE USDA NRCS SOIL SURVEY (SSURGO) GEOGRAPHIC DATABASE FOR HARFORD COUNTY, MARYLAND.
7. STEEP SLOPES (15%+) ARE FOUND THROUGHOUT THE MAJORITY OF THE PROJECT STUDY AREA.
8. THE ENTIRE PROJECT AREA IS IDENTIFIED AS FOREST INTERIOR DWELLING SPECIES (FIDS) HABITAT.
9. THE PROJECT STUDY AREA IS LOCATED ENTIRELY WITHIN THE CHESAPEAKE BAY CRITICAL AREA, CLASSIFIED AS RESOURCE CONSERVATION AREA (RCA), AND THE CRITICAL AREA BUFFER.
10. AN RTE INFORMATION REQUEST LETTER WAS SUBMITTED TO MDNR–WH ON MAY 25, 2023. IN A RESPONSE LETTER DATED JUNE 30, 2023, MDNR–WH STATED THAT THE PROJECT IS LOCATED WITHIN A HABITAT PROTECTION AREA DUE TO RECORDS OF MARYLAND BUR MARIGOLD (BIDENS BIDENTOIDES) AND SPONGY ARROWHEAD (SAGITTARIA SPATULATA). ADDITIONAL COORDINATION WITH DNR WAS COMPLETED AND IN AN EMAIL DATED SEPTEMBER 7, 2023, DNR INDICATED THAT THE TWO RARE PLANT SPECIES ARE NOT LOCATED WITHIN THE PROJECT AREA.
11. A REQUEST FOR INFORMATION REGARDING THE PRESENCE OF HISTORIC, CULTURAL, ARCHITECTURAL, OR ARCHAEOLOGICAL RESOURCES WITHIN THE PROJECT STUDY AREA WAS SENT TO MHT ON JUNE 6, 2023. ON OCTOBER 16, 2023, MHT DETERMINED THAT THERE ARE NO HISTORIC PROPERTIES AFFECTED BY THIS UNDERTAKING.
12. THE PROJECT STUDY AREA IS LOCATED WITHIN THE BUSH RIVER (02130701) MD 8–DIGIT WATERSHED AND IS CLASSIFIED AS USE CLASS I.

TREE CONDITION ASSESSMENT GUIDELINES:

EXCELLENT: HEALTHY TREE WITH EXCEPTIONAL GROWTH FORM; NO VISIBLE DEFECTS; WELL–FORMED CROWN; FEW MINOR DEAD BRANCHES ACCEPTABLE; THIS TREE CONDITION IS RARE.

GOOD: HEALTHY TREE; VERY MINOR DEFECTS/DECAY ACCEPTABLE WITH CALLOUS FORMING/COMPLETE; WELL–FORMED CROWN; MINOR LEANS AND/OR FEW MINOR/MAJOR DEAD BRANCHES ACCEPTABLE; VINES MAY BE GROWING ALONG TRUNK BUT NOT PRESENT IN CROWN.

FAIR: HEALTH QUESTIONABLE/STRESS EVIDENT; STRUCTURALLY SOUND TREE; DEFECTS PRESENT THAT DO NOT AFFECT STRUCTURAL INTEGRITY; MODERATE LEAN; MINOR/MAJOR DEAD BRANCHES MAY BE PRESENT; CROWN NOT BROKEN OUT BUT NOT NECESSARILY WELL FORMED OR EVEN; VINES MAY BE GROWING ALONG TRUNK AND WITHIN CROWN.

POOR: SIGNIFICANT HEALTH PROBLEMS; MAY BE STRUCTURALLY UNSOUND; MAY BE DEAD OR DYING; MAY CONTAIN SIGNIFICANT DECAY; MAY HAVE BROKEN OR MISSING TOP/CROWN; MAY HAVE HEAVY LEAN; VINES MAY BE SIGNIFICANTLY AFFECTING TREE HEALTH.

NOTE: THESE GUIDELINES WERE DEVELOPED BY RK&K BASED ON THE PROFESSIONAL JUDGEMENT OF OUR CERTIFIED ARBORISTS AND OTHER SENIOR ENVIRONMENTAL STAFF.

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STATE OF MARYLAND · LUCIA NOELLE BAUER · 200370 · PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905

GP #GRA-006189-2024

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

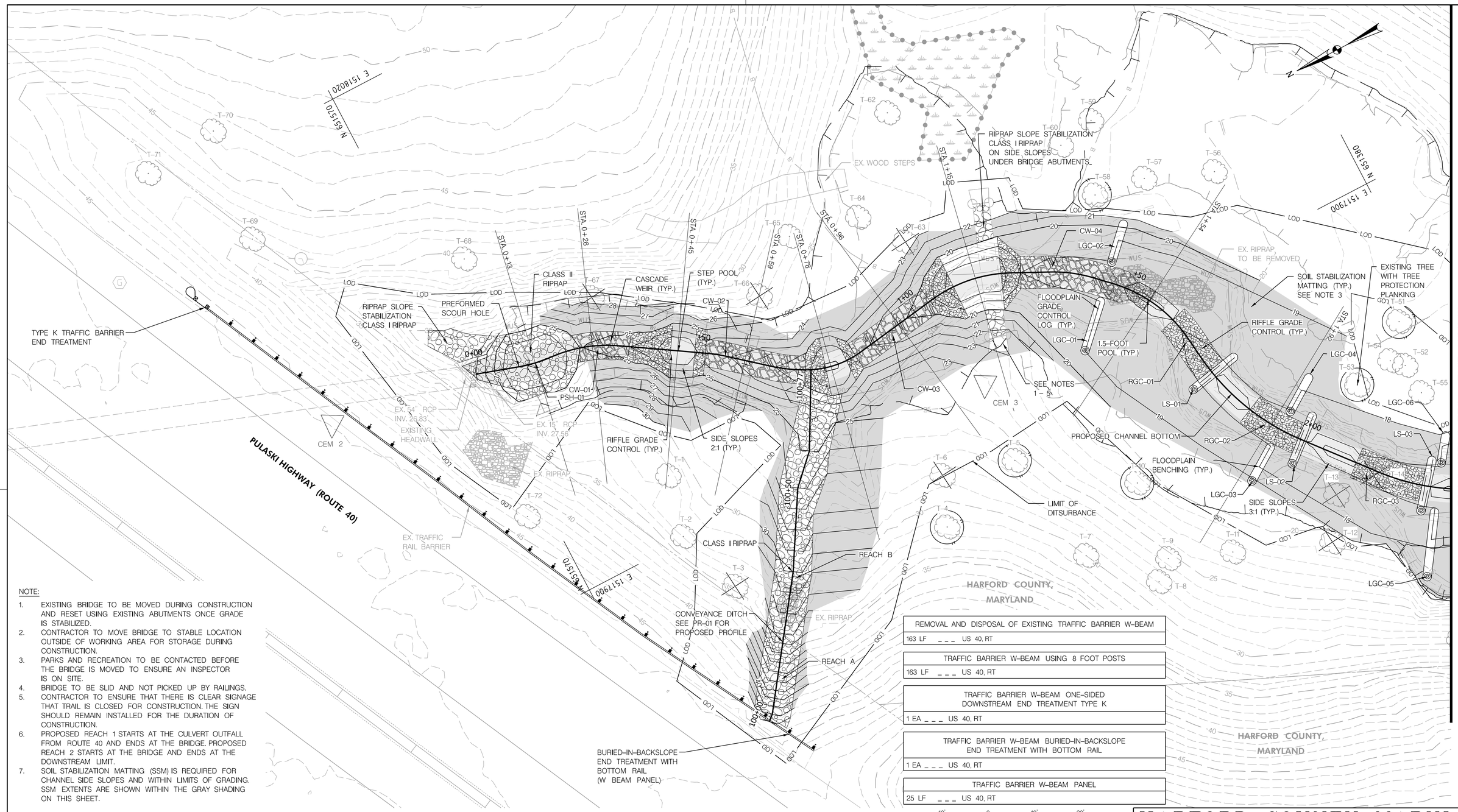
TREE INVENTORY AND REMOVALS

Drawn By : SB
Designed By : SB/BA
Reviewed By : RD
Drawing No. TI-01 of TI-01

Scale : N/A
Date : APRIL 2025
Sheet No. 6 of 34

BID No.:
HCG DWG ID No.: TI-01

BY: sbazan -
FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\06 - pTI-0001_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025



NOTE:

1. EXISTING BRIDGE TO BE MOVED DURING CONSTRUCTION AND RESET USING EXISTING ABUTMENTS ONCE GRADE IS STABILIZED.
2. CONTRACTOR TO MOVE BRIDGE TO STABLE LOCATION OUTSIDE OF WORKING AREA FOR STORAGE DURING CONSTRUCTION.
3. PARKS AND RECREATION TO BE CONTACTED BEFORE THE BRIDGE IS MOVED TO ENSURE AN INSPECTOR IS ON SITE.
4. BRIDGE TO BE SLID AND NOT PICKED UP BY RAILINGS.
5. CONTRACTOR TO ENSURE THAT THERE IS CLEAR SIGNAGE THAT TRAIL IS CLOSED FOR CONSTRUCTION. THE SIGN SHOULD REMAIN INSTALLED FOR THE DURATION OF CONSTRUCTION.
6. PROPOSED REACH 1 STARTS AT THE CULVERT OUTFALL FROM ROUTE 40 AND ENDS AT THE BRIDGE. PROPOSED REACH 2 STARTS AT THE BRIDGE AND ENDS AT THE DOWNSTREAM LIMIT.
7. SOIL STABILIZATION MATTING (SSM) IS REQUIRED FOR CHANNEL SIDE SLOPES AND WITHIN LIMITS OF GRADING. SSM EXTENTS ARE SHOWN WITHIN THE GRAY SHADING ON THIS SHEET.

REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W-BEAM
163 LF _ _ _ US 40, RT

TRAFFIC BARRIER W-BEAM USING 8 FOOT POSTS
163 LF _ _ _ US 40, RT

TRAFFIC BARRIER W-BEAM ONE-SIDED DOWNSTREAM END TREATMENT TYPE K
1 EA _ _ _ US 40, RT

TRAFFIC BARRIER W-BEAM BURIED-IN-BACKSLOPE END TREATMENT WITH BOTTOM RAIL
1 EA _ _ _ US 40, RT

TRAFFIC BARRIER W-BEAM PANEL
25 LF _ _ _ US 40, RT

10' 0 10' 20'
SCALE: 1" = 10'

LEGEND

EXISTING MAJOR CONTOUR	PROPOSED MAJOR CONTOUR
EXISTING MINOR CONTOUR	PROPOSED MINOR CONTOUR
EXISTING RIPRAP	PROPOSED CASCADE WEIR
WATERS OF THE U.S.	PROPOSED RIFFLE GRADE CONTROL MIX
EXISTING STORMDRAIN	PROPOSED RIPRAP
ELECTRIC POLE	PROPOSED LOG SILL
GAS VALVE	PROPOSED FLOODPLAIN GRADE CONTROL LOG
TRAFFIC RAIL BARRIER	PROPOSED CHANNEL BOTTOM
TRAVERSE POINT	PROPOSED LIMIT OF DISTURBANCE
EXISTING WETLAND BOUNDARY	PROPOSED 100-YEAR FLOODPLAIN
EXISTING WETLAND BUFFER	SOIL STABILIZATION MATTING
EXISTING WETLAND PATTERN	EXISTING TREE TO BE REMOVED
EXISTING TREE	EXISTING TREE WITH TREE PROTECTION PLANKING

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STATE OF MARYLAND · LUCIA NOVELLI · 200370 · PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905

GP #GRA-006189-2024

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

DESIGN PLAN

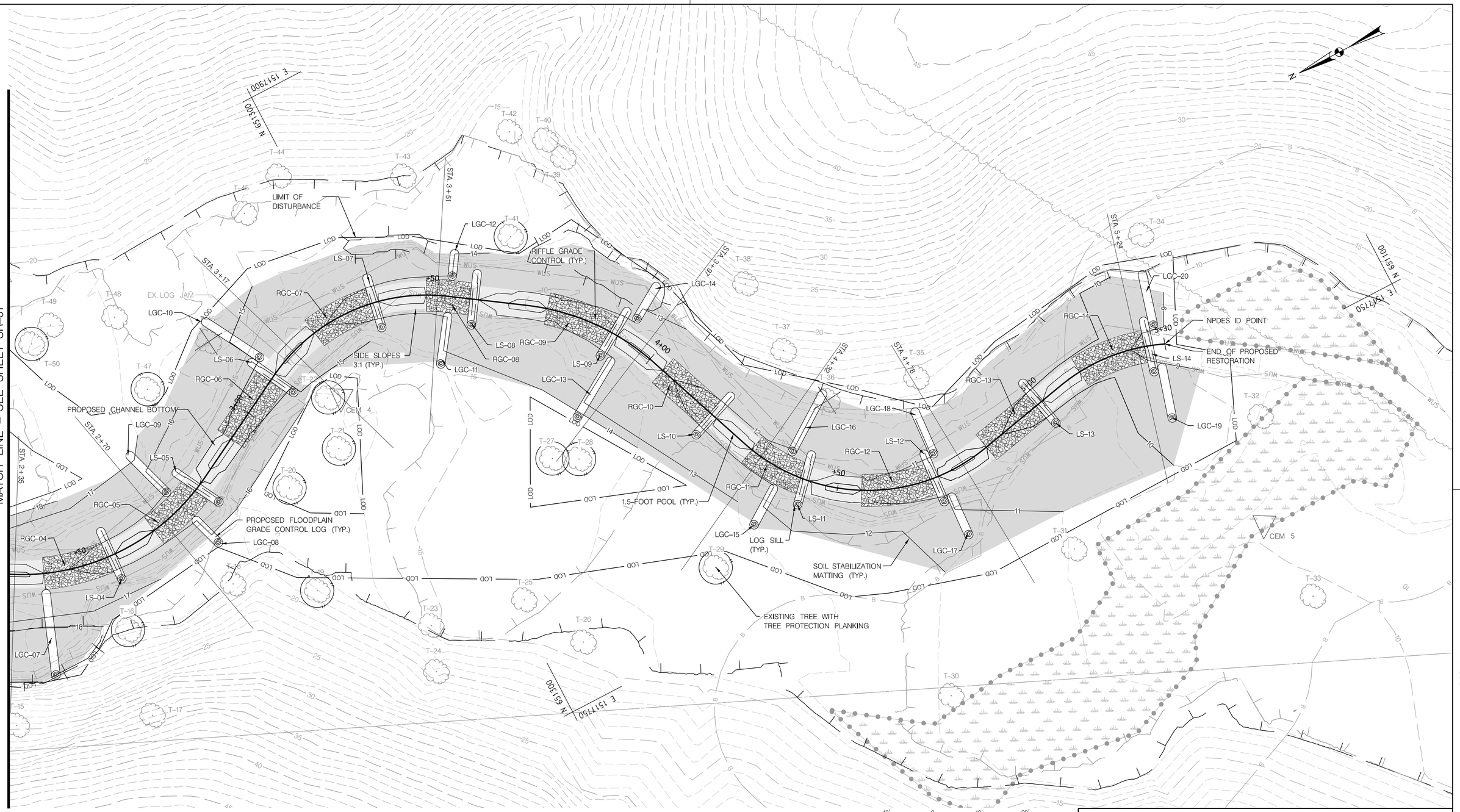
Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. SR-01 of SR-02

Scale : 1" = 10'
Date : APRIL 2025
Sheet No. 7 of 34

BID No.:
HCG DWG ID No.: SR-01
SCALE: 1"=10'

BY: sbazan -
FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\211155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\07 - pSR-0001_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025

MATCH LINE – SEE SHEET SR-01



LEGEND

EXISTING MAJOR CONTOUR	PROPOSED MAJOR CONTOUR
EXISTING MINOR CONTOUR	PROPOSED MINOR CONTOUR
EXISTING RIPRAP	PROPOSED CASCADE WEIR
WATERS OF THE U.S.	PROPOSED RIFFLE GRADE CONTROL MIX
EXISTING STORMDRAIN	PROPOSED RIPRAP
ELECTRIC POLE	PROPOSED LOG SILL
GAS VALVE	PROPOSED FLOODPLAIN GRADE CONTROL LOG
TRAFFIC RAIL BARRIER	PROPOSED CHANNEL BOTTOM
TRAVERSE POINT	PROPOSED LIMIT OF DISTURBANCE
EXISTING WETLAND BOUNDARY	PROPOSED 100-YEAR FLOODPLAIN
EXISTING WETLAND BUFFER	SOIL STABILIZATION MATTING
EXISTING WETLAND PATTERN	EXISTING TREE TO BE REMOVED
EXISTING TREE	EXISTING TREE WITH TREE PROTECTION PLANKING

NOTE:

1. EXISTING WETLAND AT END OF RESTORATION TO BE PROTECTED DURING CONSTRUCTION.
2. PROPOSED REACH 1 STARTS AT THE CULVERT OUTFALL FROM ROUTE 40 AND ENDS AT THE BRIDGE. PROPOSED REACH 2 STARTS AT THE BRIDGE AND ENDS AT THE DOWNSTREAM LIMIT.
3. SOIL STABILIZATION MATTING (SSM) IS REQUIRED FOR CHANNEL SIDE SLOPES AND WITHIN LIMITS OF GRADING. SSM EXTENTS ARE SHOWN WITHIN THE GRAY SHADING ON THIS SHEET.

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STATE OF MARYLAND — LUCIA A. BARBA — 20037O — PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905

GP #GRA-006189-2024

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

DESIGN PLAN

Drawn By : SB

Designed By : SB/BA

Reviewed By : RO

Drawing No. SR-02 of SR-02

Scale : 1" = 10'

Date : APRIL 2025

Sheet No. 8 of 34

BID No.:

HCG DWG ID No.: SR-02

SCALE: 1 inch

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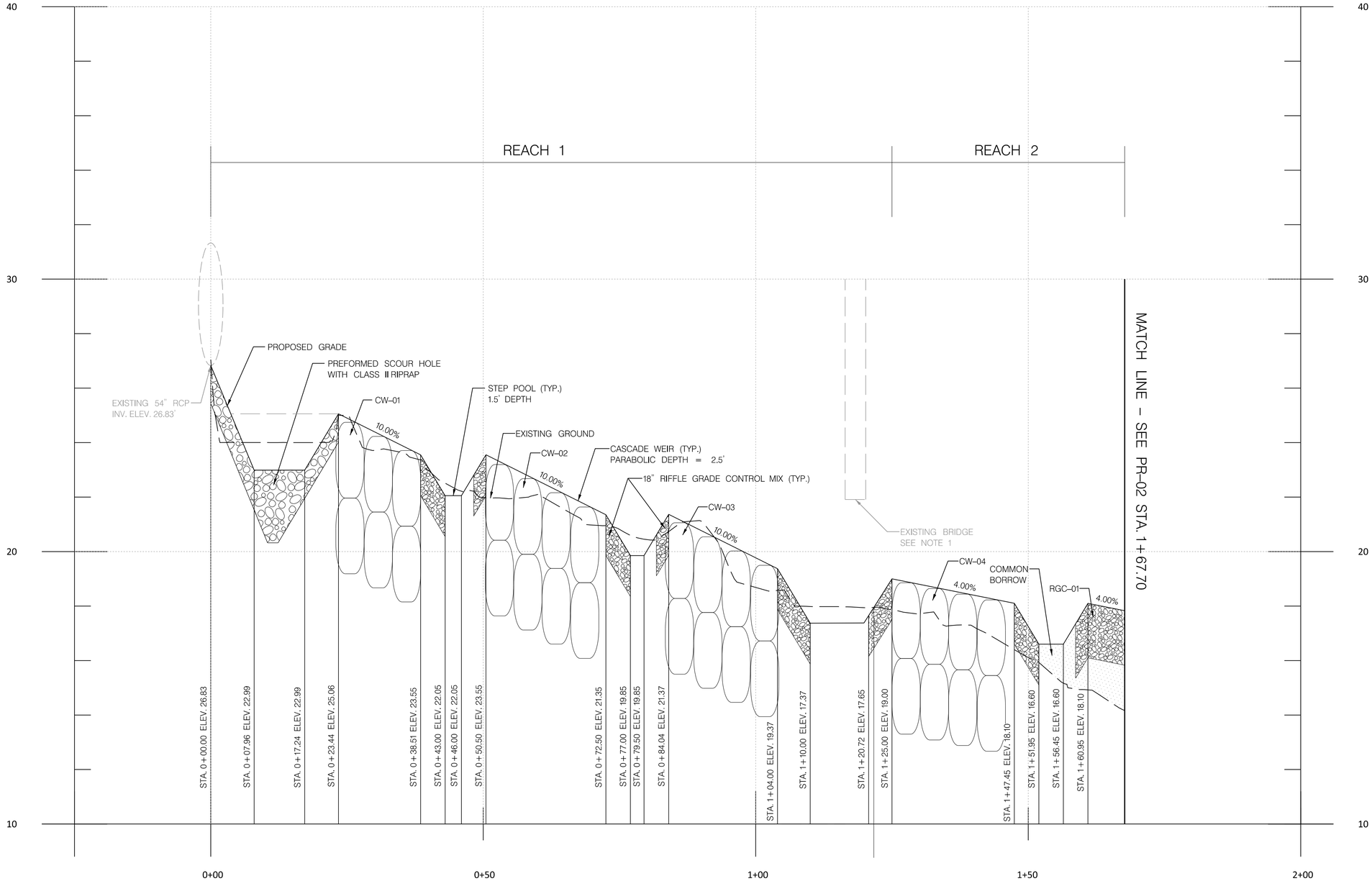
PLOTTED: 4/28/2025



STREAM PROFILE

SCALE:
HORIZONTAL 1" = 10'
VERTICAL 1" = 2'

LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- CLASS II RIPRAP
- RIFFLE GRADE CONTROL MIX
- IMBRICATED RIPRAP
- COMMON BORROW

NOTE:

1. EXISTING BRIDGE TO BE MOVED DURING CONSTRUCTION AND RESET USING EXISTING ABUTMENTS ONCE GRADE IS STABILIZED.
2. CONTRACTOR TO MOVE BRIDGE TO STABLE LOCATION OUTSIDE OF WORKING AREA FOR STORAGE DURING CONSTRUCTION.
3. PARKS AND RECREATION TO BE CONTACTED BEFORE THE BRIDGE IS MOVED TO ENSURE AN INSPECTOR IS ON SITE.
4. BRIDGE TO BE SLID AND NOT PICKED UP BY RAILINGS.

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PROJECT CONTRACT #59905	Revisions
GP #GRA-006189-2024	

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

STREAM PROFILE

Drawn By : SB	Scale : N/A
Designed By : SB/BA	Date : APRIL 2025
Reviewed By : RO	
Drawing No. PR-01 of PR-04	Sheet No. 9 of 34

BID No.:

HCG DWG ID No.: PR-01

SCALE: 1 INCH

BY: sbazan -

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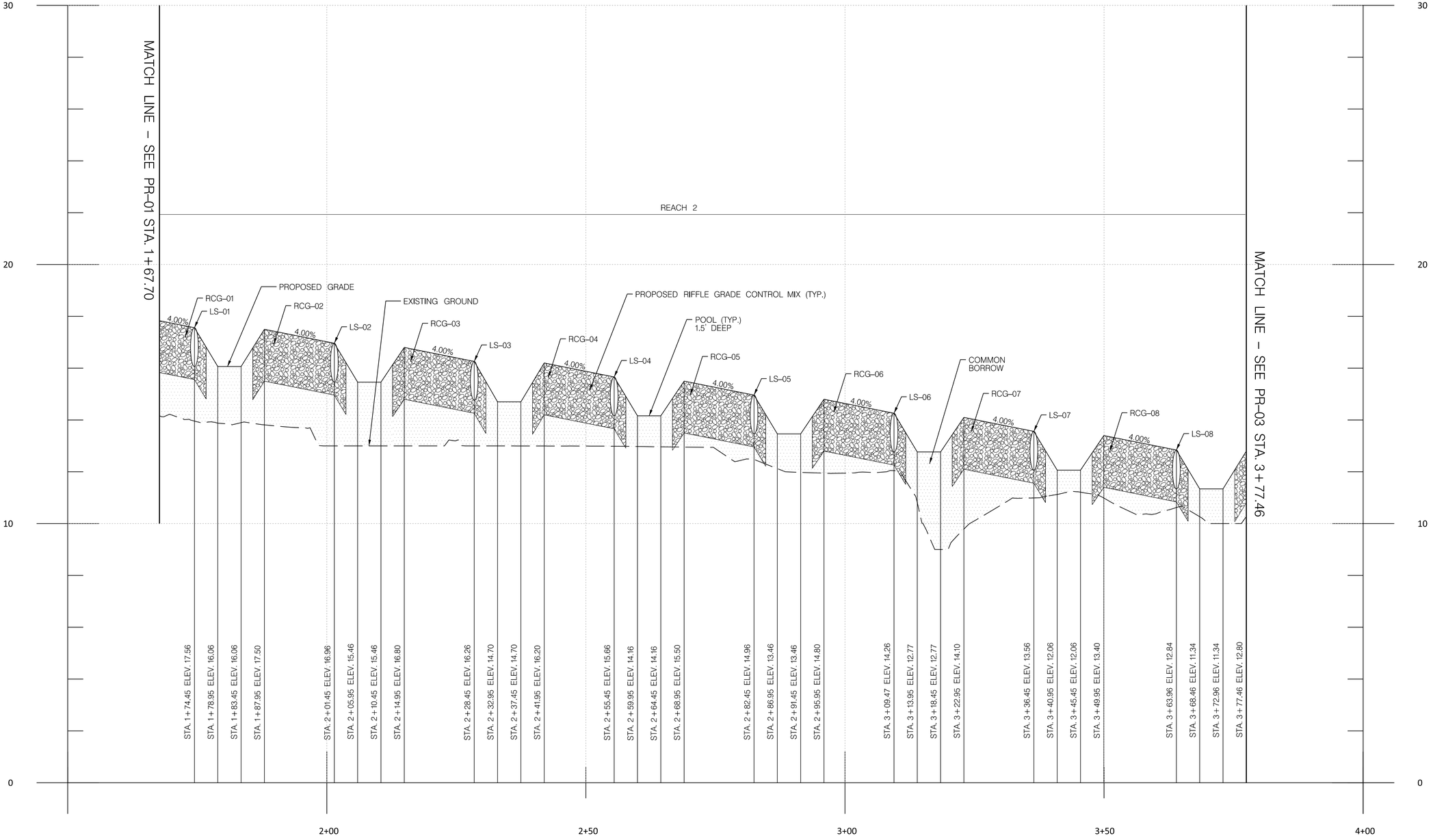
PLOTTED: 4/28/2025



STREAM PROFILE

SCALE:
HORIZONTAL 1" = 10'
VERTICAL 1" = 2'

LEGEND

EXISTING GROUND	
PROPOSED GRADE	
RIFFLE GRADE CONTROL MIX	
LOG SILL	
COMMON BORROW	

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PROJECT CONTRACT #59905

GP #GRA-006189-2024

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

STREAM PROFILE

Drawn By : SB
Designed By : SB/BA
Reviewed By : RD
Drawing No. PR-02 of PR-04

Scale : N/A
Date : APRIL 2025
Sheet No. 10 of 34

BID No.:
PR-02
HCG DWG ID No.:
SCALE 1" = 10'

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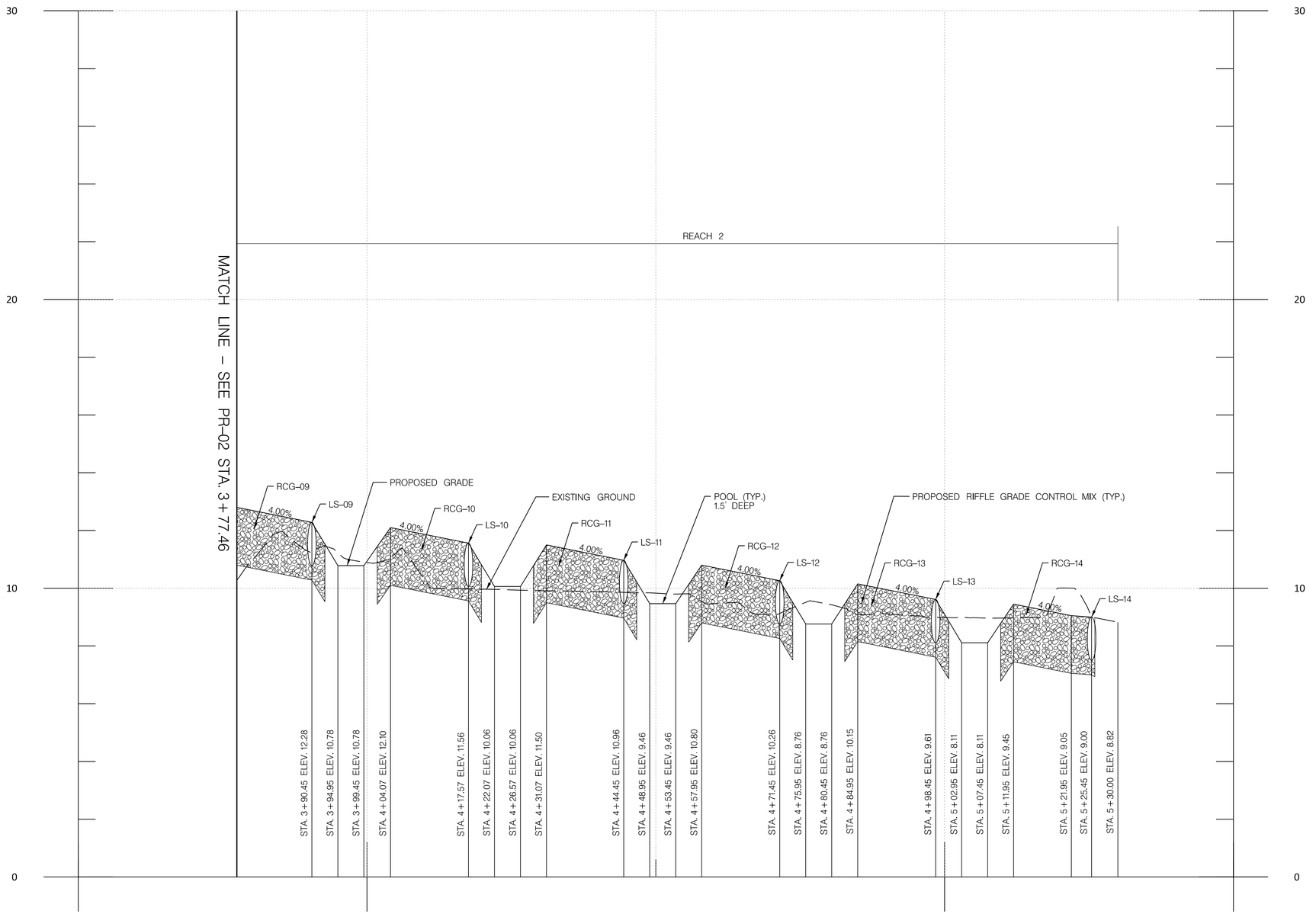
PLOTTED: 4/28/2025



STREAM PROFILE

SCALE:
HORIZONTAL 1" = 10'
VERTICAL 1" = 2'

LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- RIFFLE GRADE CONTROL MIX
- LOG SILL
- COMMON BORROW

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PROJECT CONTRACT #59905	Revisions
GP #GRA-006189-2024	

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

STREAM PROFILE

Drawn By : SB	Scale : N/A
Designed By : SB/BA	Date : APRIL 2025
Reviewed By : RO	
Drawing No. PR-03 of PR-04	Sheet No. 11 of 34

BID No.:
PR-03
HCG DWG ID No.:
SCALE: 1" = 10'

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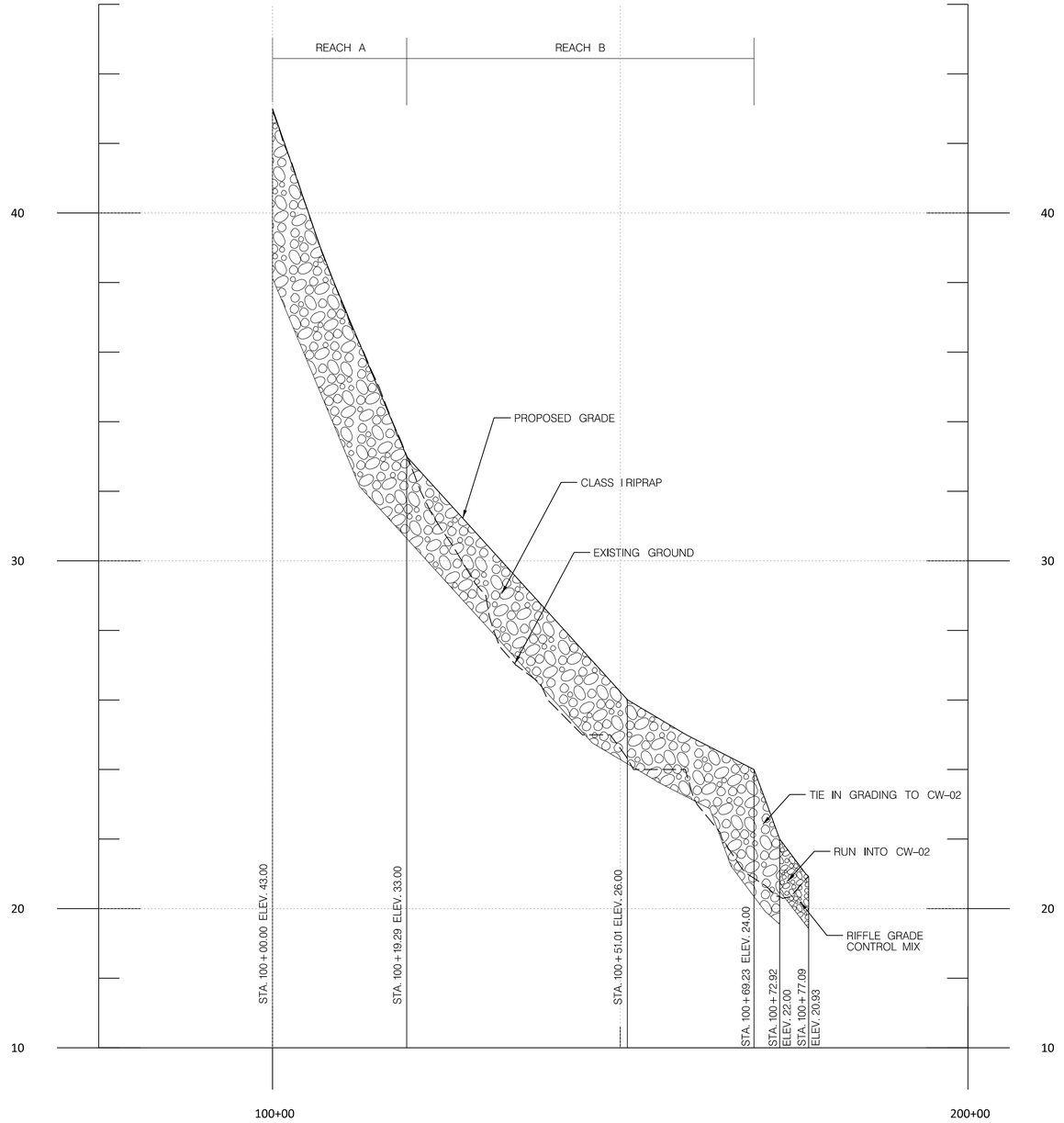
PLOTTED: 4/28/2025



CONVEYANCE DITCH PROFILE

SCALE:
HORIZONTAL 1" = 10'
VERTICAL 1" = 2'

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PROJECT CONTRACT #59905

GP #GRA-006189-2024

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Revisions

HARFORD COUNTY, MARYLAND

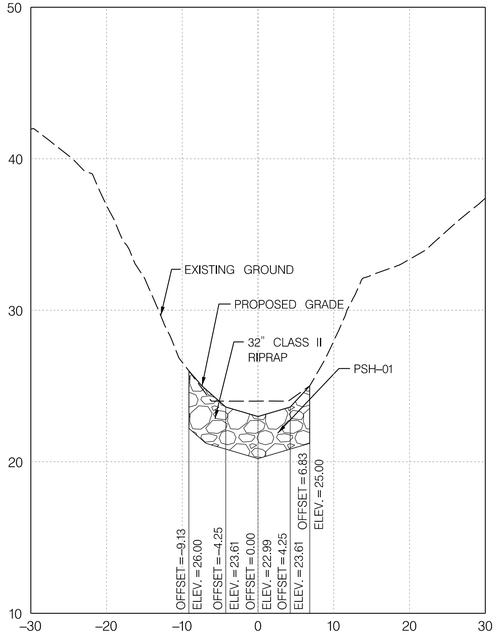
ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

STREAM PROFILE

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. PR-04 of PR-04

Scale : N/A
Date : APRIL 2025
Sheet No. 12 of 34

BID No.:
PR-04
HCG DWG ID No.:
SCALE 1" = 10'



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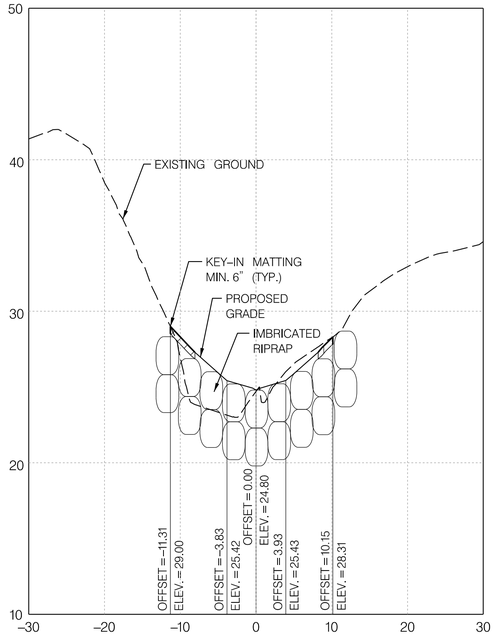

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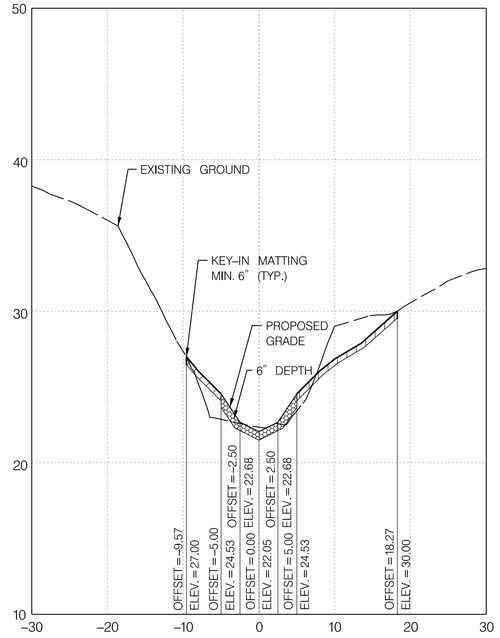

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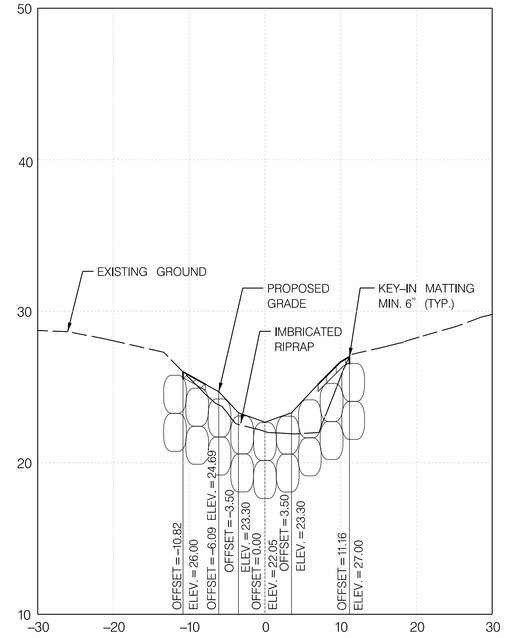

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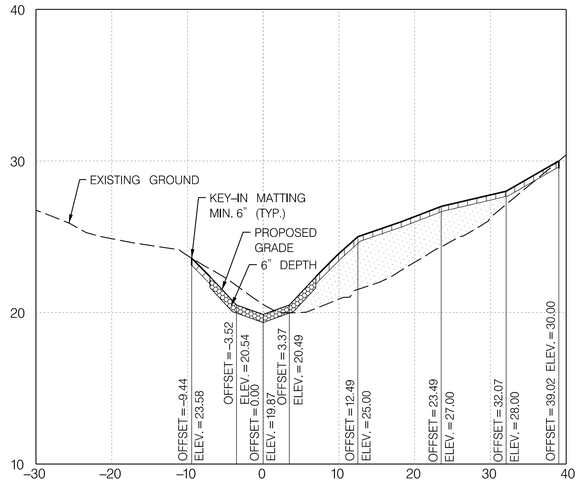

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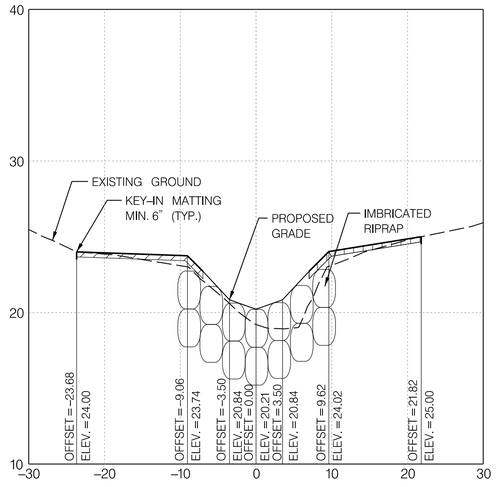

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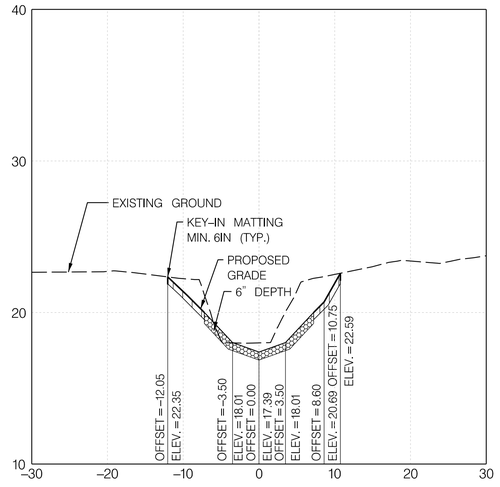
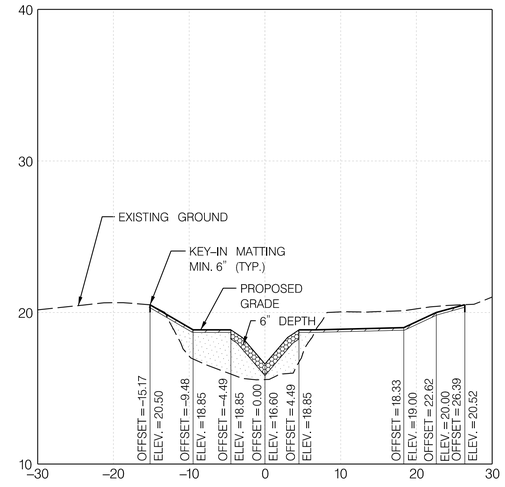


STA. 1+15



STA. 1+54

SCALE:
HORIZONTAL: 1" = 10'
VERTICAL: 1" = 5'

5' 0 5' 10'
SCALE: 1" = 5'

10' 0 10' 20'
SCALE: 1" = 10'

LEGEND

- PROPOSED GRADE
- EXISTING GROUND
- SOIL STABILIZATION MATTING
- RIFFLE GRADE CONTROL MIX (RGC)
- RIRPAP
- COMMON BORROW
- TOPSOIL
- SALVAGED NATURAL CHANNEL MATERIAL
- IMBRICATED RIPRAP

NOTE:
1. ALL STREAM SECTIONS TAKEN ALONG BASELINE OF CONSTRUCTION.

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STATE OF MARYLAND — LUCIA NICOLE BARBA — 200370 — PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905	Revisions
GP #GRA-006189-2024	

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

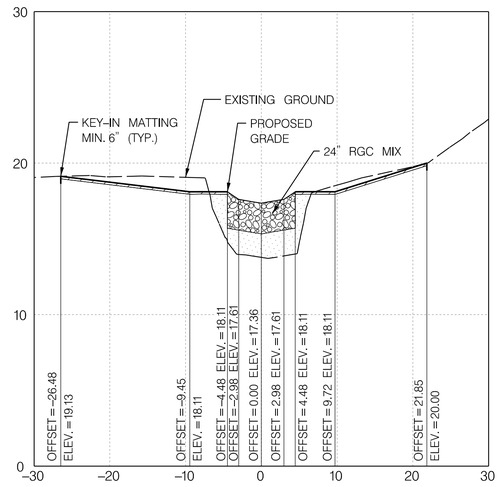
STREAM CROSS SECTIONS

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. XS-01 of XS-02

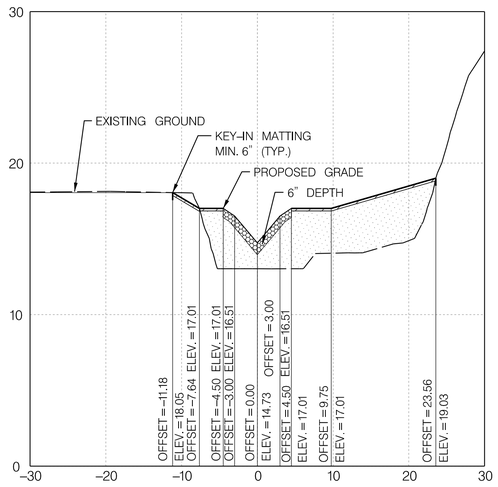
Scale : AS NOTED
Date : APRIL 2025
Sheet No. 13 of 34

BID No.:
HCG DWG ID No.: XS-01
SCALE: 1" = 10'

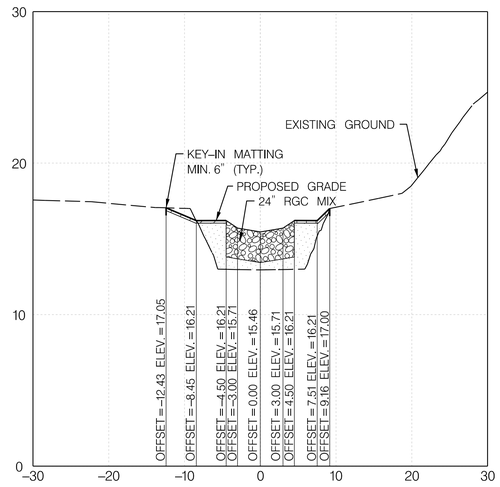
FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\13 - pXS-0001_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025
BY: sbazan -



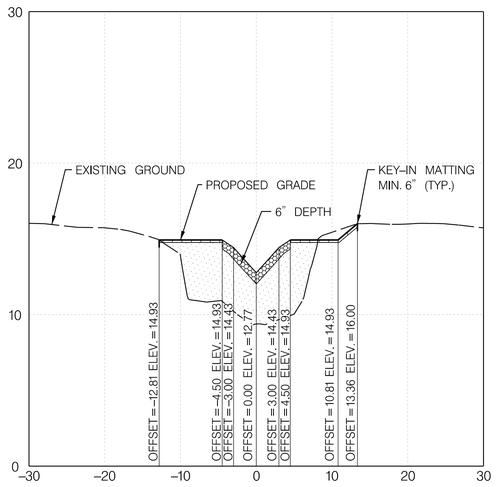
STA. 1+92



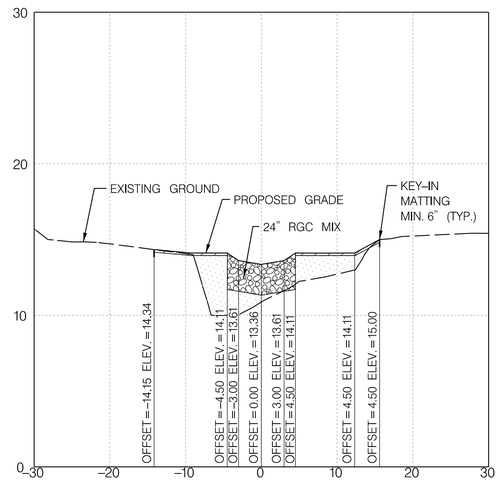
STA. 2+35



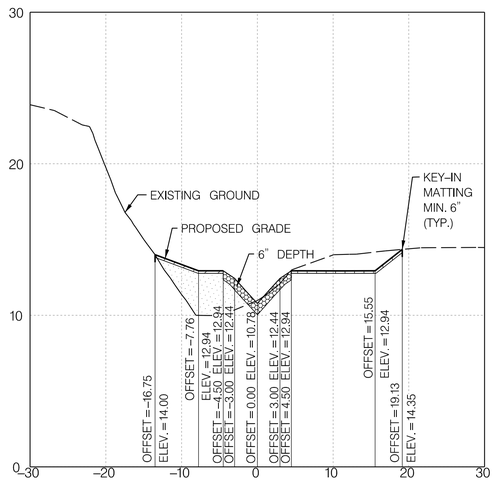
STA. 2+70



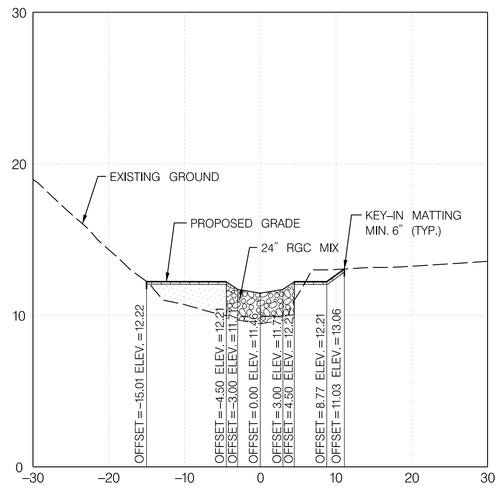
STA. 3+17



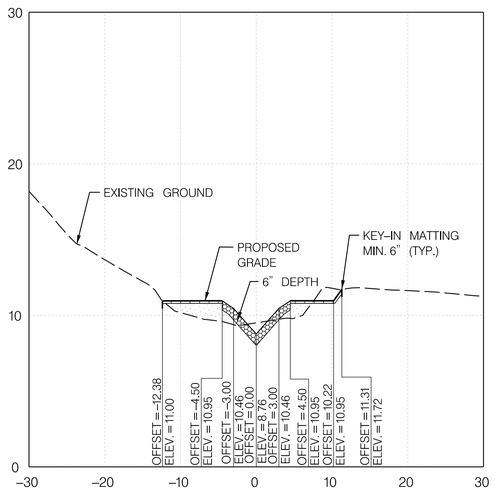
STA. 3+51



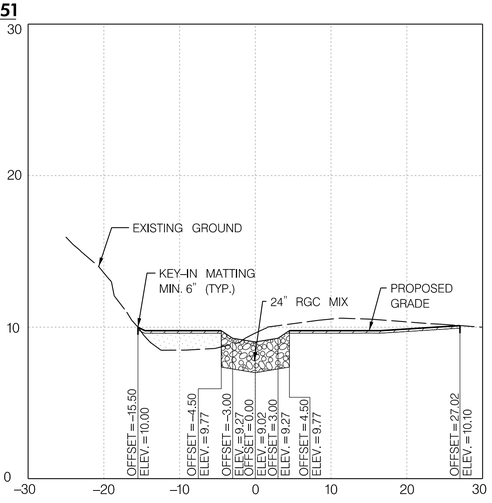
STA. 3+97



STA. 4+32



STA. 4+78



STA. 5+24

SCALE:
HORIZONTAL: 1" = 10'
VERTICAL: 1" = 5'

LEGEND

- PROPOSED GRADE
- EXISTING GROUND
- SOIL STABILIZATION MATTING
- RIFFLE GRADE CONTROL MIX (RGC)
- RIRPAP
- COMMON BORROW
- TOPSOIL
- SALVAGED NATURAL CHANNEL MATERIAL
- IMBRICATED RIPRAP

NOTE:
1. ALL STREAM SECTIONS TAKEN ALONG BASELINE OF CONSTRUCTION.

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STATE OF MARYLAND · LUCIA NARDI · 200370 · PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905

GP #GRA-006189-2024

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

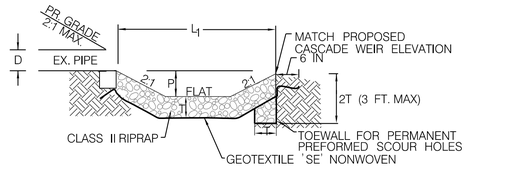
STREAM CROSS SECTIONS

Drawn By : SB
Designed By : SB/BA
Reviewed By : RD
Drawing No. XS-02 of XS-02

Scale : AS NOTED
Date : APRIL 2025
Sheet No. 14 of 34

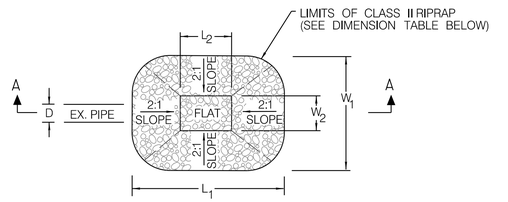
BID No.:
HCG DWG ID No.: XS-02
SCALE: 1:100

BY: sbazan -
FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\14 - pXS-0002_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025



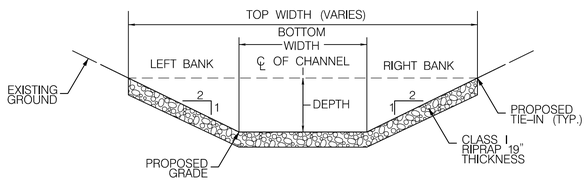
*NOTE: T (STONE THICKNESS) = 2 X D50 (MEDIAN DIAMETER OF RIPRAP)

SECTION A–A
NOT TO SCALE



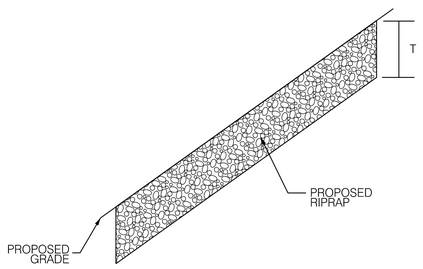
I.D.	D (IN.)	L_1 (FT.)	L_2 (FT.)	W_1 (FT.)	W_2 (FT.)	P (FT.)	D50 (IN.)	T (IN.)	CLASS II RIPRAP (SY)
PSH–01	54	19.8	9.3	14.2	0.14	2.0	16.0	32	29

PREFORMED SCOUR HOLE CONSTRUCTION DETAILS
NOT TO SCALE



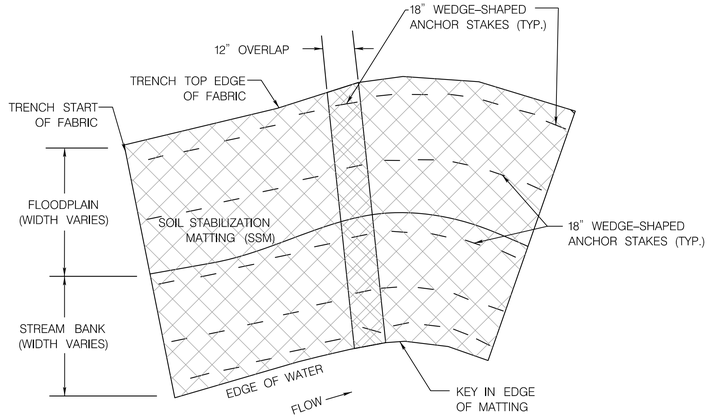
CONVEYANCE DITCH TYPICAL SECTION
NOT TO SCALE

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)	V (FPS)	CLASS I RIPRAP (SY)
A	100+00.00	100+19.29	19.29	1.00	4.00	51.73%	3.23	9.5	2.83	6.48	16.38
B	100+19.29	100+69.23	49.94	1.00	4.00	18.69%	1.56	9.5	2.83	4.56	49.38

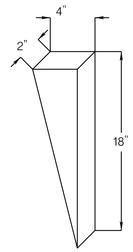


START STA.	END STA.	START OFFSET	END OFFSET	CLASS	T (IN.)	QUANTITY (SY)
–0+09.27	0+06.00	0+03.10	0+10.81	I	19.0	7.9
1+17.09	1+20.06	0+15.71	0+07.79	I	19.0	3.2
1+13.88	1+20.51	0+13.04	0+07.27	I	19.0	2.3

RIPRAP SLOPE STABILIZATION
NOT TO SCALE



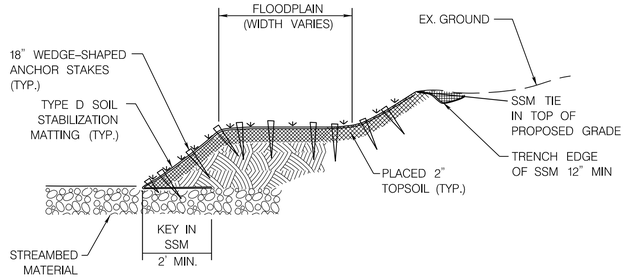
SOIL STABILIZATION MATTING PLAN



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	163.4	–	163.4
2	1030.4	1030.4	–
CONVEYANCE DITCH	75.0	75.0	–

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BY: sbazan -

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STATE OF MARYLAND · LUCIA NICOLE BAZAN · 200370 · PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905	Revisions
GP #GRA-006189-2024	

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

STREAM DETAILS

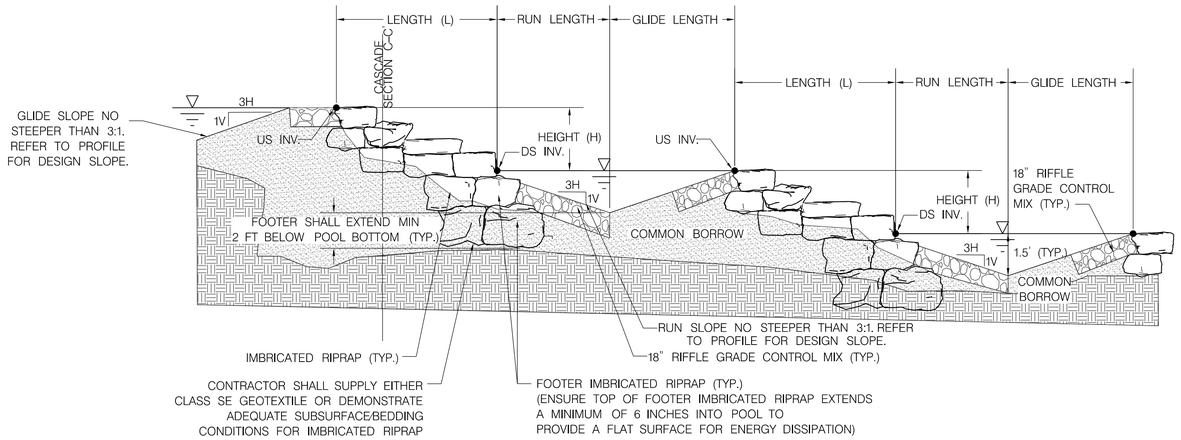
Drawn By : SB	Scale : N/A
Designed By : SB/BA	Date : APRIL 2025
Reviewed By : RO	
Drawing No. DE-01 of DE-03	Sheet No. 15 of 34

BID No.:

HCG DWG ID No.: DE-01

SCALE: 1" = 1'-0"

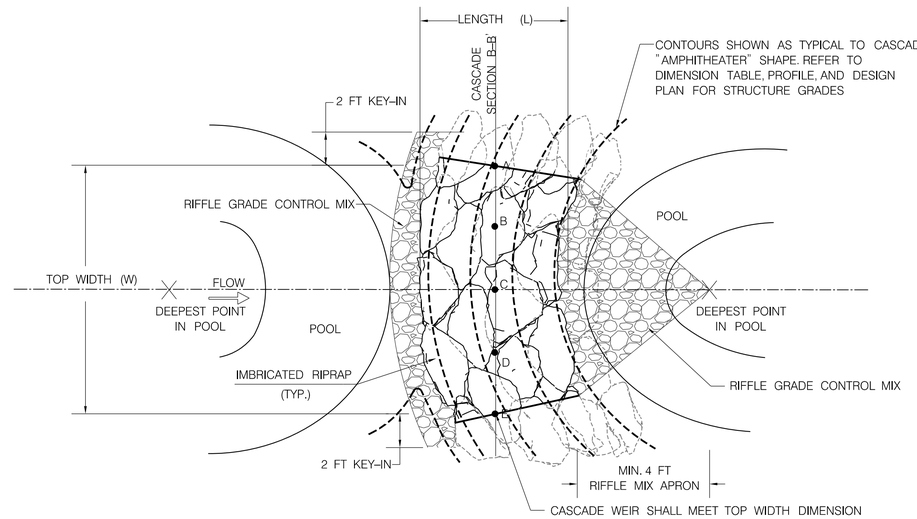
FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\15 - pDE_0001_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025



RIFFLE CASCADE WEIR
CENTERLINE PROFILE
NOT TO SCALE

NOTES:

1. SEE STREAM PROFILE PR–01 FOR RUN LENGTH AND GLIDE LENGTH.

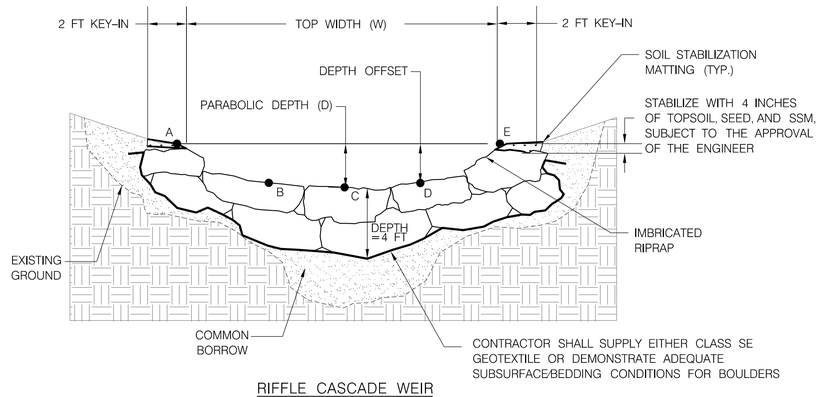


RIFFLE CASCADE WEIR
PLAN VIEW
NOT TO SCALE

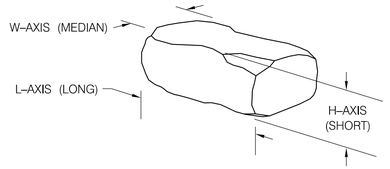
RIFFLE CASCADE WEIR DIMENSION TABLE											
NAME	US STA.	DS STA.	US INV.	DS INV.	L (FT)	W (FT)	H (FT)	D (FT)	D_{OFFSET} (FT)	IMBRICATED RIPRAP (TON)	RIFFLE GRADE CONTROL MIX (SY)
CW–01	0+23.44	0+38.51	25.06	23.55	15.1	16.3	1.51	2.50	1.88	101	10.6
CW–02	0+50.50	0+72.50	23.55	21.35	22.0	14.8	2.20	2.50	1.88	134	7.3
CW–03	0+84.04	1+04.00	21.37	19.37	20.0	14.0	2.00	2.50	1.88	116	13.1
CW–04	1+25.00	1+47.45	19.00	18.10	22.5	8.98	0.90	0.75	0.56	84	2.7

RIFFLE CASCADE WEIR CONSTRUCTION NOTES

1. 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.
2. ALL IMBRICATED RIPRAP SHALL BE PLACED WITH EDGES ALIGNED TIGHTLY TO MINIMIZE VOID SPACE.
3. IF VOIDS ARE ENCOUNTERED, FILL WITH CLASS I RIPRAP.



RIFFLE CASCADE WEIR
TYPICAL SECTION C–C'
NOT TO SCALE



IMBRICATED RIPRAP
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:

1. 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.

RIFFLE CASCADE WEIR
NOT TO SCALE

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STATE OF MARYLAND — LUCIA WEIGHT — 200370 — PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905

GP #GRA-006189-2024

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

STREAM DETAILS

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. DE-02 of DE-03

Scale : N/A
Date : APRIL 2025
Sheet No. 16 of 34

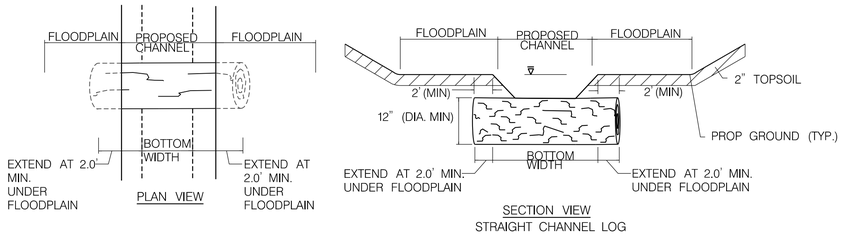
BID No.:
HCG DWG ID No.: DE-02
SCALE: 1" = 1'-0"

BY: sbazan -
FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\16 - pDE_0002_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025

LOG SILL CONSTRUCTION NOTES:

1. LOGS BURIED IN THE CHANNEL SHALL HAVE A MIN. DIAMETER OF 12". LOGS SHALL BE HARVESTED FROM TREES TO BE REMOVED WITHIN THE PERMITTED LIMIT OF DISTURBANCE. FURNISHED LOGS SHALL BE BROUGHT ONSITE IF NEEDED.

2. BURIED CHANNEL LOGS SHALL BE PLACED PERPENDICULAR TO THE CHANNEL PER PLAN.



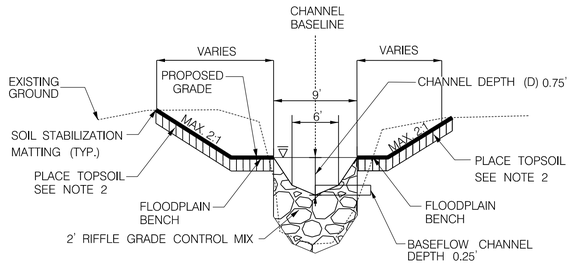
LOG SILL DETAILS
NOT TO SCALE

LOG SILL TABLE							
		LEFT END OF LOG		RIGHT END OF LOG			
STR #	STATION	NORTHING	EASTING	NORTHING	EASTING	LOG ELEV.	TOTAL LENGTH (FT)
LS-01	1+74.45	651422.1	1517880.2	651434.8	1517877.6	17.56	13
LS-02	2+01.45	651413.1	1517861.4	651423.0	1517853.0	16.96	13
LS-03	2+28.45	651394.7	1517841.1	651402.9	1517831.0	16.26	13
LS-04	2+55.45	651372.4	1517832.8	651373.2	1517819.8	15.66	13
LS-05	2+82.45	651352.5	1517836.4	651346.4	1517824.9	14.96	13
LS-06	3+09.47	651321.0	1517838.4	651327.0	1517849.9	14.26	13
LS-07	3+36.45	651295.7	1517854.7	651298.3	1517841.9	13.56	13
LS-08	3+63.96	651273.8	1517844.3	651281.2	1517833.6	12.84	13
LS-09	3+90.45	651248.7	1517821.8	651259.8	1517815.0	12.28	13
LS-10	4+17.57	651237.3	1517795.1	651249.4	1517790.4	11.56	13
LS-11	4+44.45	651227.8	1517776.0	651236.7	1517766.5	10.96	13
LS-12	4+71.45	651206.7	1517765.1	651207.7	1517752.1	10.26	13
LS-13	4+98.45	651181.0	1517768.8	651178.1	1517756.1	9.61	13
LS-14	5+25.45	651151.1	1517768.6	651154.6	1517756.1	9.00	13

RIFFLE GRADE CONTROL SCHEDULE						
STR #	START STA.	END STA.	CREST ELEV.	TAIL ELEV.	RGC MIX (SY)	SNCM* (SY)
RGC-01	1+60.95	1+74.45	18.10	17.56	10.60	1.06
RGC-02	1+87.95	2+01.45	17.50	16.96	9.50	0.95
RGC-03	2+14.95	2+28.45	16.80	16.26	11.73	1.17
RGC-04	2+41.95	2+55.45	16.20	15.66	11.06	1.11
RGC-05	2+68.95	2+82.45	15.50	14.96	9.59	0.96
RGC-06	2+95.95	3+09.47	14.80	14.26	11.77	1.18
RGC-07	3+22.95	3+36.45	14.10	13.56	10.62	1.06
RGC-08	3+49.95	3+63.96	13.40	12.84	7.38	0.74
RGC-09	3+77.46	3+90.45	12.80	12.28	11.23	1.12
RGC-10	4+04.07	4+17.57	12.10	11.56	10.64	1.06
RGC-11	4+31.07	4+44.45	11.50	10.96	9.50	0.95
RGC-12	4+57.95	4+71.45	10.80	10.26	11.76	1.18
RGC-13	4+84.95	4+98.45	10.15	9.61	10.86	1.09
RGC-14	5+11.95	5+25.45	9.45	9.00	11.76	1.18

* SALVAGED NATURAL CHANNEL MATERIAL

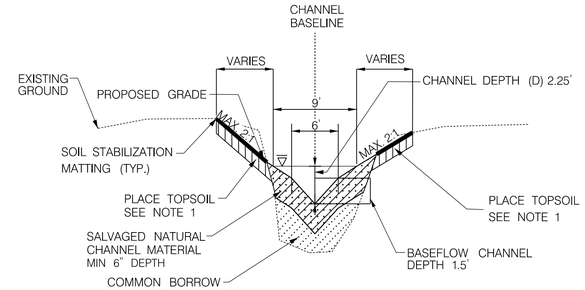
RIFFLE GRADE CONTROL MIX		
% MIX	SHA CLASS 0	5%
	SHA CLASS I	25%
	SHA CLASS II	70%



TYPICAL SECTION REACH 2 – RIFFLE
NOT TO SCALE

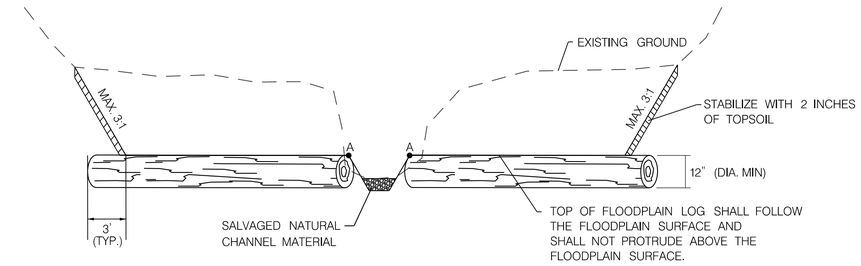
1. THE RIFFLE GRADE CONTROL MIX SHALL BE PLACED SO IT SHINGLES IN A DOWNSTREAM DIRECTION. SMALL AND LARGE STONES MUST BE MIXED TO MINIMIZE VOID SPACE AND PROMOTE INTERLOCKING. NATURAL CHANNEL BED MATERIAL SHALL BE WASHED INTO THE MIX TO ENSURE ALL INTERSTITIAL VOIDS ARE FILLED AND SUBSURFACE FLOW IS ACHIEVED. DUMPING OF STONE WILL NOT BE PERMITTED.

2. PLACE 2" OF TOPSOIL ON SIDE SLOPES AND FLOODPLAIN.



TYPICAL SECTION REACH 2 – POOL
NOT TO SCALE

1. PLACE 2" OF TOPSOIL ON SIDE SLOPES AND FLOODPLAIN.

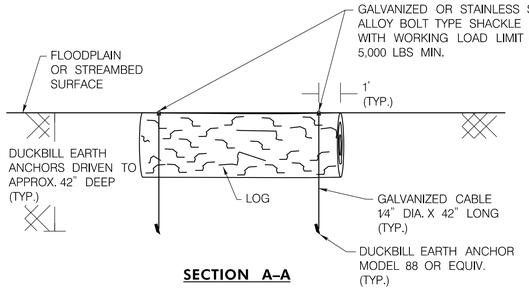


FLOODPLAIN GRADE CONTROL LOG DETAIL
NOT TO SCALE

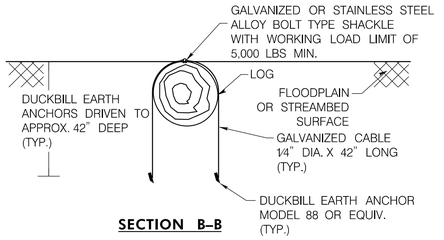
NOTE:
1. SOIL STABILIZATION MATTING TO BE PLACED OVER LOG AFTER ANCHORS.
2. BURIED GRADE CONTROL LOGS SHALL BE PLACED PERPENDICULAR TO THE CHANNEL PER PLAN.

FLOODPLAIN GRADE CONTROL LOG TABLE							
		LEFT END OF LOG		RIGHT END OF LOG			
STR #	STATION	NORTHING	EASTING	NORTHING	EASTING	LOG ELEV.*	LENGTH (FT)
LGC-01	1+43	651441.9	1517904.7	651451.4	1517895.5	19.0	13.0
LGC-02	1+43	651430.1	1517909.9	651437.5	1517909.9	19.0	10.5
LGC-03	1+93	651424.2	1517859.6	651432.6	1517853.9	18.0	10.0
LGC-04	1+93	651409.9	1517869.1	651418.3	1517863.4	18.0	10.0
LGC-05	2+30	651399.4	1517830.9	651408.3	1517817.7	17.0	16.0
LGC-06	2+30	651389.5	1517844.3	651394.3	1517838.2	17.0	8.0
LGC-07	2+40	651388.7	1517826.3	651395.7	1517808.0	17.0	20.0
LGC-08	2+74	651353.3	1517825.3	651350.7	1517817.1	16.0	9.0
LGC-09	2+74	651359.5	1517844.3	651355.5	1517831.9	16.0	13.0
LGC-10	3+10	651331.8	1517862.3	651324.1	1517848.5	15.0	15.8
LGC-11	3+53	651283.8	1517839.1	651291.0	1517829.2	14.0	12.0
LGC-12	3+53	651276.2	1517850.4	651280.0	1517844.9	14.0	7.0
LGC-13	3+92	651256.8	1517813.9	651270.3	1517805.5	13.0	16.0
LGC-14	3+92	651240.6	1517823.7	651249.0	1517818.4	13.0	10.0
LGC-15	4+37	651238.4	1517773.2	651247.2	1517767.1	12.0	11.0
LGC-16	4+37	651219.5	1517786.4	651232.6	1517777.4	12.0	16.0
LGC-17	4+72	651205.7	1517754.1	651206.4	1517743.4	11.0	11.0
LGC-18	4+72	651204.2	1517774.1	651205.0	1517762.4	11.0	12.0
LGC-19	5+27	651152.1	1517757.8	651155.9	1517745.4	9.0	13.0
LGC-20	5+27	651146.7	1517777.6	651150.1	1517765.1	9.0	13.0

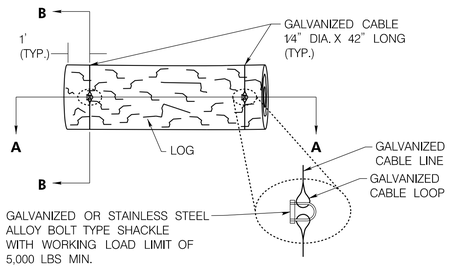
* SEE POINT A ON FLOODPLAIN GRADE CONTROL LOG DETAIL FOR ELEVATION.



SECTION A–A



SECTION B–B



PLAN VIEW

LOG ANCHOR DETAIL
NOT TO SCALE

POOL MATERIAL TABLE		
START STA.	END STA.	SALVAGED NATURAL CHANNEL MATERIAL (SY)
0+43.00	0+46.00	6.9
0+77.00	1+79.50	6.8
1+10.00	1+19.86	20.3
1+51.95	1+56.45	13.5
1+78.95	1+83.45	13.5
2+05.95	2+10.45	13.5
2+32.95	2+37.45	13.5
2+59.95	2+64.45	13.5
2+86.95	2+91.45	13.5
3+13.95	3+18.45	13.5
3+40.95	3+45.45	13.5
3+68.46	3+72.96	13.5
3+94.95	3+99.45	13.5
4+22.07	4+26.57	13.5
4+48.95	4+53.45	13.5
4+75.95	4+80.45	13.5
5+02.95	5+07.45	13.5

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BY: sbazan -

FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\17 - pDE_0003_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025

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: 2027/03/19.

STATE OF MARYLAND · LUCIA NAN · 200370 · PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905	Revisions
GP #GRA-006189-2024	

HARFORD COUNTY, MARYLAND

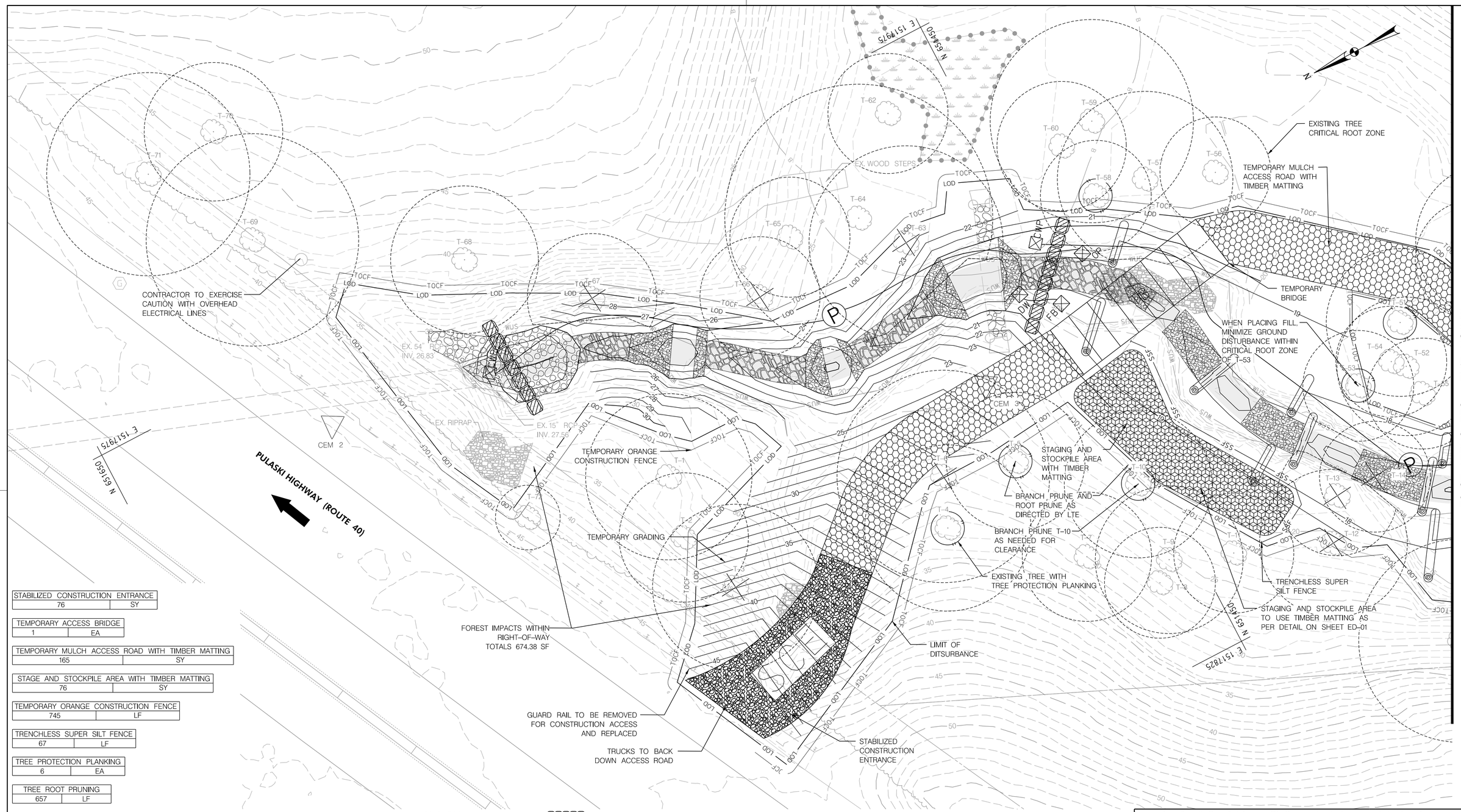
ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

STREAM DETAILS

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. DE-03 of DE-03

Scale : N/A
Date : APRIL 2025
Sheet No. 17 of 34

BID No.:
HCG DWG ID No.: DE-03
SCALE: 1 INCH



MATCH LINE – SEE SHEET ES-02

STABILIZED CONSTRUCTION ENTRANCE	
76	SY

TEMPORARY ACCESS BRIDGE	
1	EA

TEMPORARY MULCH ACCESS ROAD WITH TIMBER MATTING	
165	SY

STAGE AND STOCKPILE AREA WITH TIMBER MATTING	
76	SY

TEMPORARY ORANGE CONSTRUCTION FENCE	
745	LF

TRENCHLESS SUPER SILT FENCE	
67	LF

TREE PROTECTION PLANKING	
6	EA

TREE ROOT PRUNING	
657	LF

LEGEND

EXISTING MAJOR CONTOUR	
EXISTING MINOR CONTOUR	
PROPOSED MAJOR CONTOUR	25
PROPOSED MINOR CONTOUR	24
TRAVERSE POINT	▽
EXISTING TREE LINE	
LIMIT OF DISTURBANCE	LOD
ACCESS ROAD	
STAGE AND STOCKPILE AREA	
EXISTING TREE	
EXISTING TREE CRITICAL ROOT ZONE	
EXISTING TREE WITH TREE PROTECTION PLANKING	
EXISTING TREE TO BE REMOVED	X
TEMPORARY ACCESS BRIDGE	TB1
STABILIZED CONSTRUCTION ENTRANCE	SCE-1

SAND BAG	
TRENCHLESS SUPER SILT FENCE	SSF
PUMP	P
FILTER BAG	FB
OUTLET PROTECTION	OP
DIRTY WATER	DW
CLEAN WATER PUMP	CWP
TEMPORARY ORANGE CONSTRUCTION FENCE	TOCF

NOTES:

1. TEMPORARY ORANGE CONSTRUCTION FENCE IS OFFSET FROM LOD FOR VISUAL PURPOSES ONLY.
2. BRANCH PRUNE ALONG LIMITS OF LOD AND ROOT PRUNE ALONG LIMITS OF GRADING AS DIRECTED BY ON-SITE LICENSED TREE EXPERT (LTE).
3. CONTRACTOR TO EXERCISE CAUTION WITH OVERHEAD ELECTRICAL LINES.

10′ 0 10′ 20′
SCALE: 1″=10′

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STATE OF MARYLAND · LUCIA A. RUSSO · 200370 · PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905

GP #GRA-006189-2024

Revisions

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HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

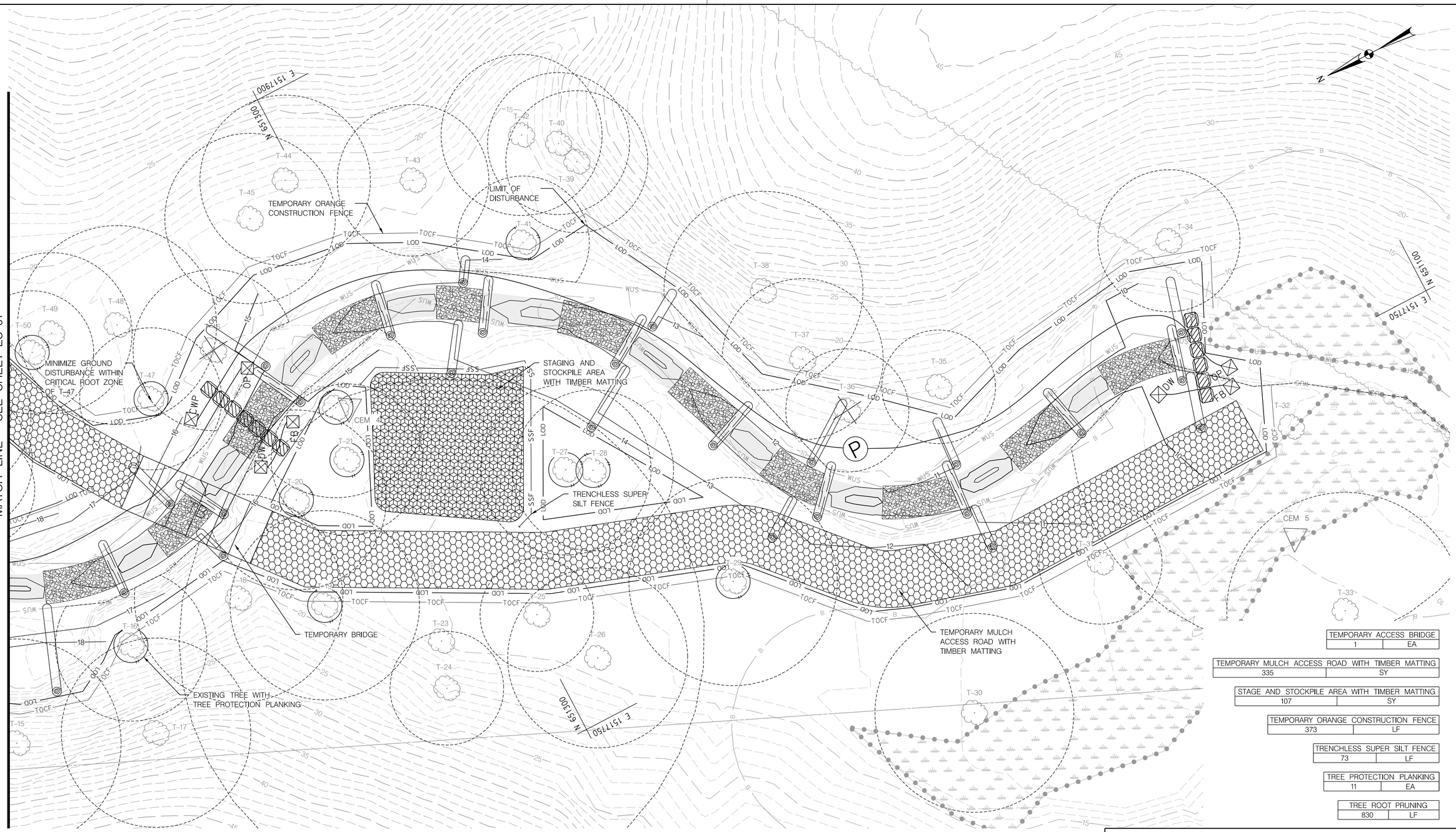
EROSION AND SEDIMENT CONTROL PLAN

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. ES-01 of ES-03

Scale : 1″ = 10′
Date : APRIL 2025
Sheet No. 18 of 34

BID No.:
HCG DWG ID No.: ES-01

BY: sbazam -
FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\18 - pES-0001_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025



TEMPORARY ACCESS BRIDGE	
1	EA
TEMPORARY MULCH ACCESS ROAD WITH TIMBER MATTING	
335	SY
STAGE AND STOCKPILE AREA WITH TIMBER MATTING	
107	SY
TEMPORARY ORANGE CONSTRUCTION FENCE	
373	LF
TRENCHLESS SUPER SILT FENCE	
73	LF
TREE PROTECTION PLANKING	
11	EA
TREE ROOT PRUNING	
830	LF

LEGEND

EXISTING MAJOR CONTOUR	
EXISTING MINOR CONTOUR	
PROPOSED MAJOR CONTOUR	25
PROPOSED MINOR CONTOUR	24
TRAVERSE POINT	▽
EXISTING TREE LINE	
LIMIT OF DISTURBANCE	LOD
ACCESS ROAD	
STAGE AND STOCKPILE AREA	
EXISTING TREE	
EXISTING TREE CRITICAL ROOT ZONE	
EXISTING TREE WITH TREE PROTECTION PLANKING	
EXISTING TREE TO BE REMOVED	
TEMPORARY ACCESS BRIDGE	TB
STABILIZED CONSTRUCTION ENTRANCE	SCE
SAND BAG	
TRENCHLESS SUPER SILT FENCE	SSF
PUMP	Ⓟ
FILTER BAG	FB⊠
OUTLET PROTECTION	OP⊠
DIRTY WATER	DW⊠
CLEAN WATER PUMP	CWP⊠
TEMPORARY ORANGE CONSTRUCTION FENCE	TOCF

NOTES:

1. TEMPORARY ORANGE CONSTRUCTION FENCE IS OFFSET FROM LOD FOR VISUAL PURPOSES ONLY.
2. BRANCH PRUNE ALONG LIMITS OF LOD AND ROOT PRUNE ALONG LIMITS OF GRADING AS DIRECTED BY ON-SITE LICENSED TREE EXPERT (LTE).

10' 0 10' 20'
SCALE: 1" = 10'

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STATE OF MARYLAND · LUCIA NOVAK · 200370 · PROFESSIONAL ENGINEER

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PROJECT CONTRACT #59905	Revisions
GP #GRA-006189-2024	

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN

Drawn By : SB	Scale : 1" = 10'
Designed By : SB/BA	Date : APRIL 2025
Reviewed By : RO	
Drawing No. ES-02 of ES-03	Sheet No. 19 of 34

BID No.:

HCG DWG ID No.: ES-02

SCALE: 1:100

BY: sbazan -

FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\19 - pES-0002_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025

HARFORD COUNTY, MARYLAND

HARFORD COUNTY, MARYLAND

N 650875
E 1516975

N

GRAVEL PARKING AREA

CONTRACTOR TO ALLOW HARFORD COUNTY DEPARTMENT OF PARKS AND RECREATION ACCESS THROUGH GATE

EXISTING GATE

STABILIZED CONSTRUCTION ENTRANCE

TRENCHLESS SUPER SILT FENCE

STAGE AND STOCKPILE AREA WITH TIMBER MATTING

T-74

T-73

CONTRACTOR TO EXERCISE CAUTION WITH OVERHEAD ELECTRICAL LINE

LIMIT OF DISTURBANCE

TEMPORARY ORANGE CONSTRUCTION FENCE

SHA ROW

E 1516975
N 651025

N 650875
E 1516775

PULASKI HWY (ROUTE 40)

STABILIZED CONSTRUCTION ENTRANCE	
42	SY

STAGE AND STOCKPILE AREA WITH TIMBER MATTING	
233	SY

TEMPORARY ORANGE CONSTRUCTION FENCE	
80	LF

TRENCHLESS SUPER SILT FENCE	
88	LF

LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR — 25
- PROPOSED MINOR CONTOUR — 24
- OVERHEAD ELECTRIC — E
- EXISTING TREE LINE
- LIMIT OF DISTURBANCE — LOD
- TRENCHLESS SUPER SILT FENCE — SSF
- TEMPORARY ORANGE CONSTRUCTION FENCE — TOCF
- STAGE AND STOCKPILE AREA

NOTES:

1. TEMPORARY ORANGE CONSTRUCTION FENCE AND SUPER SILT FENCE IS OFFSET FROM LOD FOR VISUAL PURPOSES ONLY.
2. STAGING AND STOCKPILING AREA SHALL BE SET ON TOP OF TIMBER MATTING. THERE SHALL BE NO GROUND DISTURBANCE ASSOCIATED WITH THE STAGING AND STOCKPILING AREA.
3. CONTRACTOR TO EXERCISE CAUTION WITH OVERHEAD ELECTRICAL LINE AND EXISTING GATE.

10' 0 10' 20'
SCALE: 1" = 10'

PROFESSIONAL CERTIFICATION

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STATE OF MARYLAND · LUCIA A. BAILEY · 200370 · PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905

GP #GRA-006189-2024

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. ES-03 of ES-03

Scale : 1" = 10'
Date : APRIL 2025
Sheet No. 20 of 34

BID No.:
HCG DWG ID No.: ES-03

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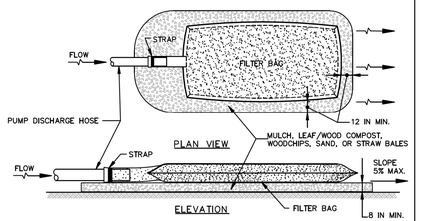
PLOTTED: 4/28/2025

DETAIL F-4 FILTER BAG

STANDARD SYMBOL: ⊠FB



CONSTRUCTION SPECIFICATIONS

1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN./FT²	ASTM D-4491
PERMITTIVITY (SEC⁻¹)	1.2 SEC⁻¹	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15–0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

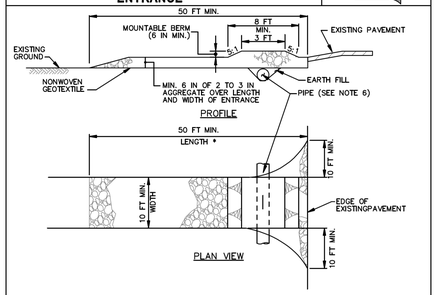
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

F.9

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

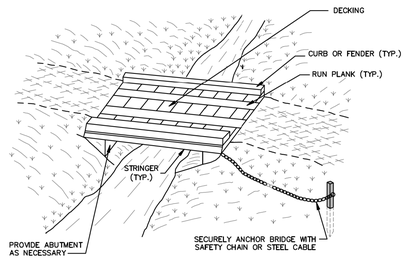
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

B.2

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE

STANDARD SYMBOL: TB



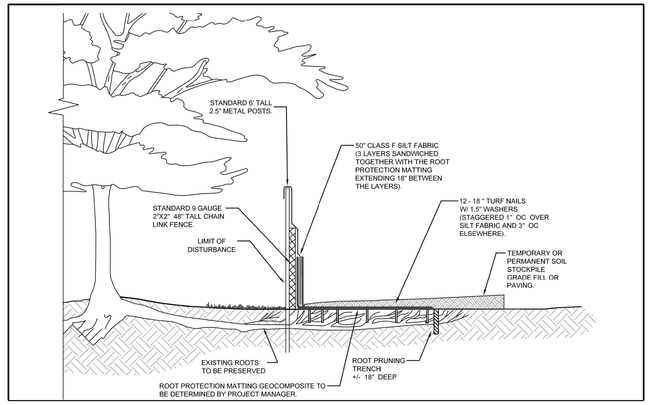
LOCATION PLAN

NOTE:
TIME OF YEAR RESTRICTIONS DO NOT APPLY TO THE CONSTRUCTION OR REMOVAL OF A TEMPORARY ACESS BRIDGE UNLESS THERE IS DISTURBANCE TO THE STREAM CHANNEL.

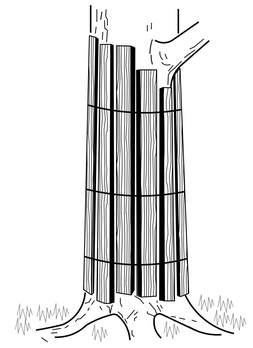
1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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



TRENCHLESS SUPER SILT FENCE



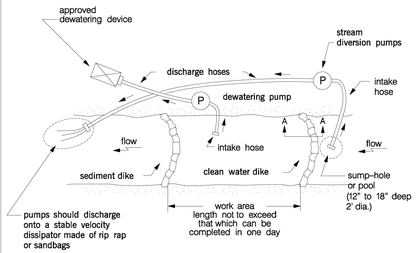
BOARDS OR POLES LASHED WITH ROPE IN AN UPRIGHT POSITION AGAINST THE TREE TRUNK.

TREE PROTECTION PLANKING

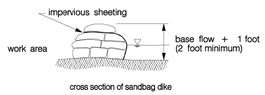
NOT TO SCALE

Maryland's Guidelines To Waterway Construction
DETAIL 1.2: PUMP–AROUND PRACTICE

PLAN VIEW

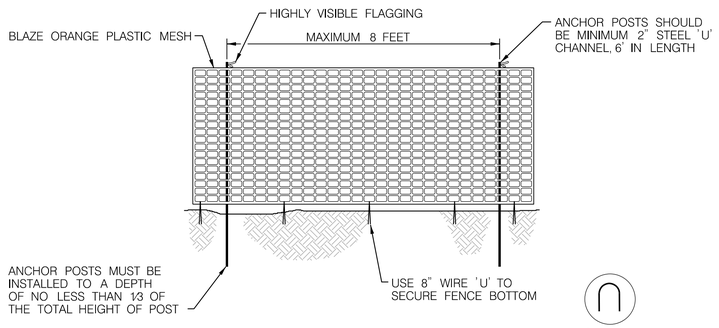


SECTION A–A



cross section of sandbag dike

TEMPORARY INSTREAM CONSTRUCTION MEASURES	*REVISED NOVEMBER 2000 PAGE 1.2 – 9*	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

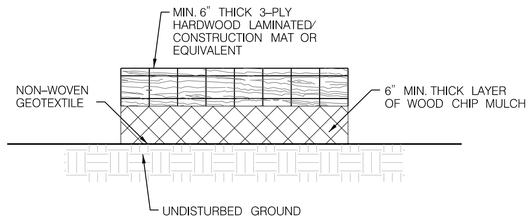


NOTES:

1. THE LOCATION OF TEMPORARY ORANGE CONSTRUCTION FENCING (TOCF) SHALL BE STAKED AND FLAGGED PRIOR TO INSTALLING THE TOCF. ALL AREAS OUTSIDE OF THE TOCF SHALL BE DESIGNATED AS TREE PRESERVATION AREA (TPA). NO DISTURBANCE SHALL OCCUR WITHIN TPA.
2. ROOT DAMAGE SHOULD BE AVOIDED.
3. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

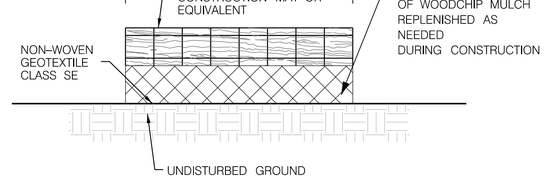
TEMPORARY ORANGE CONSTRUCTION FENCE

NOT TO SCALE



TIMBER MATTING FOR STOCKPILES

NOT TO SCALE



TEMPORARY MULCH ACCESS ROAD WITH TIMBER MATTING

NOT TO SCALE

NOTES:

1. ACCESS ROUTES TO BE VERIFIED BY THE ENGINEER AT PRE–CONSTRUCTION MEETING.
2. REVISIONS TO THE ALIGNMENT THAT MINIMIZE TREE DISTURBANCE ARE ENCOURAGED AND REQUIRE REVIEW AND APPROVAL OF THE ENGINEER.
3. GEOTEXTILE CLASS SE SHALL BE PLACED WITH SEAMS PARALLEL TO THE FLOW OF TRAFFIC. OVERLAP FABRIC BY 18" MIN. AT SEAMS.
4. CONTRACTOR SHALL MAINTAIN TEMPORARY ACCESS ROAD THROUGHOUT CONSTRUCTION PERIOD.
5. MULCH AND GEOTEXTILE PLACEMENT IS NOT REQUIRED IF THE ACCESS ROAD HAS EXISTING GRAVEL COVERAGE.

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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: 2027/03/19.

STATE OF MARYLAND — LUCIA A. OLIVER — 200370 — PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905	Revisions
GP #GRA-006189-2024	

HARFORD COUNTY, MARYLAND

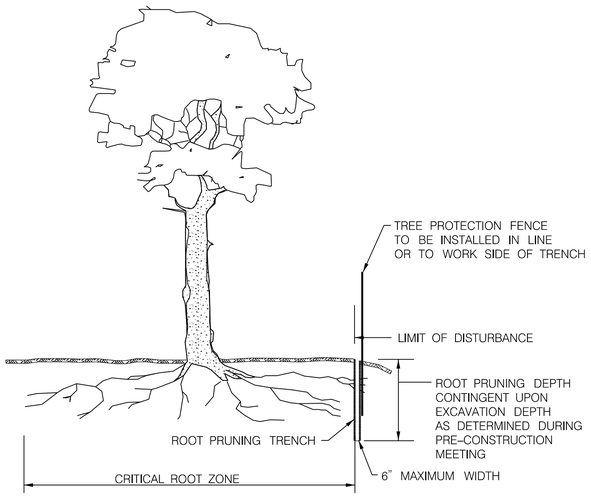
ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION EROSION AND SEDIMENT CONTROL DETAILS

Drawn By : SB	Scale : N/A
Designed By : SB/BA	Date : APRIL 2025
Reviewed By : RO	
Drawing No. ED-01 of ED-02	Sheet No. 21 of 34

BID No.:
HCG DWG ID No.: ED-01
SCALE: 1" = 1'-0"

BY: sbazan -

FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\21 - pED-0001_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025



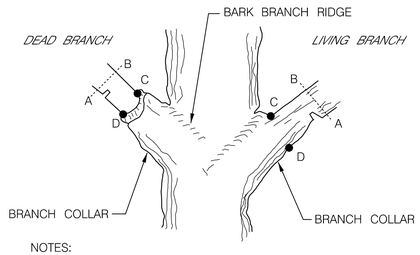
NOTES:

1. RETENTION AREAS TO BE ESTABLISHED AS PART OF THE FOREST CONSERVATION PLAN REVIEW PROCESS.
2. BOUNDARIES OF RETENTION AREAS TO BE STAKED, FLAGGED AND/OR FENCED PRIOR TO TRENCHING.
3. EXACT LOCATION OF TRENCH SHOULD BE IDENTIFIED.
4. TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR ORGANIC SOIL.
5. ROOTS SHOULD BE CLEANLY CUT USING VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT.
6. IN SOME INSTANCES, IT MAY BE BENEFICIAL TO PERFORM ROOT PRUNING AT THE EDGE OF EXCAVATION RATHER THAN AT THE LOD, PROVIDED THE ROOTS BETWEEN THE EXCAVATON AND THE LOD ARE PROTECTED DURING CONSTRUCTION.

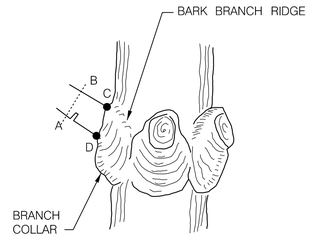
ROOT PRUNING DETAIL

NOT TO SCALE

HARDWOODS



CONIFERS–FOR LIVING OR DEAD BRANCH

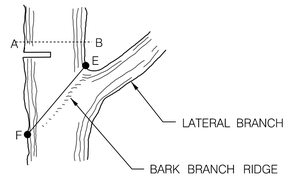


NOTES:

1. REMOVE BRANCH WEIGHT BY UNDERCUTTING AT A AND REMOVE LIMB BY CUTTING THROUGH AB.
2. REMOVE STUB AT CD (LINE BETWEEN BRANCH BARK RIDGE AND OUTER EDGE OF BRANCH COLLAR).
3. IF D IS DIFFICULT TO FIND ON HARDWOODS, ANGLE OF CD TO TRUNK SHOULD BE THE REFLECTIVE ANGLE OF THE BARK BRANCH RIDGE TO THE TRUNK.
4. ONLY PRUNE AT SPECIFIED TIMES.
5. REMOVE NO MORE THAN 30% OF CROWN AT ONE TIME.

PRUNING A BRANCH

NOT TO SCALE



NOTES:

1. REMOVE TOP WEIGHT BY UNDERCUTTING AT A AND REMOVE LIMB BY CUTTING THROUGH AB.
2. REMOVE STUB AT EF PARALLEL TO THE BARK BRANCH RIDGE.
3. ONLY PRUNE AT SPECIFIED TIMES.
4. NO MORE THAN 30% OF THE CROWN TO BE REMOVED AT ONE TIME.
5. DIAMETER OF LATERAL BRANCH SHOULD BE NO LESS THAN 30% OF THE DIAMETER OF THE LEADER.

PRUNING A LEADER TO REDUCE SIZE

NOT TO SCALE

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PROJECT CONTRACT #59905

GP #GRA-006189-2024

STATE OF MARYLAND · LUCIA NOVAK · 20037O · PROFESSIONAL ENGINEER

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION EROSION AND SEDIMENT CONTROL DETAILS

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. ED-02 of ED-02

Scale : N/A
Date : APRIL 2025
Sheet No. 22 of 34

BID No.:
HCG DWG ID No.: ED-02
SCALE: 1 INCH

BY: sbazan -

FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\22 - pED-0002_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025

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 WAYS. 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 ADJUSTMENTS ARE PERMISSIBLE AS LONG AS THE INSTALLATION FUNCTIONS AND CONFORMS TO SPECIFICATIONS. THE SITE INSPECTOR PRIOR TO INSTALLATION MUST APPROVE ALL SUCH CHANGES. MAJOR CHANGES TO THE APPROVED PLAN WILL REQUIRE RE-APPROVAL BY THE HARFORD SOIL CONSERVATION DISTRICT.

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 NOI/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 PRACTICES WERE INSTALLED HAVE BEEN STABILIZED. SEDIMENT CONTROL PRACTICES MAY BE REMOVED ONLY WITH THE AUTHORIZATION OF THE DPW INSPECTOR. ALL DISTURBED AREAS RESULTING FROM THE REMOVAL OF SEDIMENT CONTROL DEVICES SHALL BE STABILIZED IMMEDIATELY. REMOVAL PRIOR TO INSPECTOR'S APPROVAL CONSTITUTES A VIOLATION.

SITE ANALYSIS

TOTAL AREA TO BE STABILIZED	= 0.70 AC
TOTAL DISTURBED AREA	= 0.70 AC
TOTAL AREA TO BE PAVED	= 0 AC
TOTAL CUT	= 178 CY
TOTAL FILL	= 974 CY
NPDES ID POINT:	N: 651149.5598
	E: 1517761.1971

PERMANENT VEGETATIVE STABILIZATION

ALL DISTURBED AREAS WHICH ARE NOT TO BE PAVED SHALL BE PERMANENTLY STABILIZED. THE FOLLOWING SPECIFICATIONS SHALL APPLY TO TURFGRASS SEEDING ONLY.

A). SEED 2011 MARYLAND STANDARDS AND SPECIFICATIONS, CHAPTER 20.

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 MEADOW SEED MIXES SEE SHEET LT-01 AND SPECIFICATIONS FOR ITEMS 7050 - 7070. TURFGRASS SEED MIX SHALL CONFORM TO THE FOLLOWING. FOR PERIODS MARCH 1 TO MAY 15 AND AUGUST 15 TO OCTOBER 15. SEED WITH 125LBS. PER ACRE OF TALL FESCUE, 15 LBS. PER ACRE OF PERENNIAL RYEGRASS, AND 10 LBS. 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 60LBS. 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 MUCH 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

TEMPORARY VEGETATIVE STABILIZATION

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 LOF MAY1 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 ACREA OF STRAW OVER ALL SEEDED AREAS. IF A MULCH ANCHORING TOOL IS TO BE USED, THE RATE SHALL BE INCREASED TO 25 TONS PER ACRE.**
MULCH ANCHORING SHALL BE PERFORMED IMMEDIATELY FOLLOWING MULCH APPLICATION TO MINIMIZE LOSS BY WIND AND AETER. 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 MAYLAND STANDARDS AND SPECIFICATIONS, CHAPTER 20.

EROSION AND SEDIMENT CONTROL PLAN #: _____
TECHNICAL REVIEW BY: _____ HARFORD SOIL CONSERVATION DISTRICT
APPROVED BY: _____ HARFORD SOIL CONSERVATION DISTRICT

SEQUENCE OF CONSTRUCTION

1. THE CONTRACTOR SHALL NOTIFY HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS DPW S/C INSPECTOR AT (410-638-3127 X2434) AT LEAST SEVEN (7) DAYS BEFORE COMMENCING ANY LAND DISTURBING ACTIVITY AND, UNLESS WAIVED, SHALL BE REQUIRED TO HOLD A PRE-CONSTRUCTION MEETING BETWEEN PROJECT REPRESENTATIVES AND A REPRESENTATIVE OF HARFORD COUNTY.

2. LIMIT OF DISTURBANCE, ACCESS ROUTES, AND STAGING AREAS SHALL BE STAKED AND REVIEWED IN THE FIELD WITH THE ENGINEER PRIOR TO CONSTRUCTION TO ALLOW FOR ADJUSTMENTS. TREE TAKES AND TREE PROTECTION PLANKING SHALL BE REVIEWED IN THE FIELD WITH THE ENGINEER. ANY ADJUSTMENTS MUST BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.

3. TEMPORARY ORANGE CONSTRUCTION FENCE (TOCF) SHALL BE INSTALLED ALONG THE LIMITS OF DISTURBANCE (LOD) WHERE THE LOD IS ADJACENT TO FOREST TO PROTECT TREES FROM ACCIDENTAL ENCROACHMENT AND IMPACT. APPROVAL BY THE ENGINEER IS REQUIRED IN ORDER TO INSTALL TOCF. INSTALL TOCF IMMEDIATELY AFTER CONSTRUCTION PHASE LOD STAKEOUT AND PRIOR TO THE INSTALLATION OF SEDIMENT AND EROSION CONTROLS.

4. CONTRACTOR TO INSTALL ALL TREE PROTECTION MEASURES PRIOR TO CLEARING AND GRUBBING IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND THE APPROVED TREE PRESERVATION PROGRAM UNDER SUPERVISION OF CONTRACTOR'S LICENSED TREE EXPERT (LTE). FOR LOCATIONS OF TREE PROTECTION PLANKING REFER TO THE EROSION AND SEDIMENT CONTROL PLANS (DWGS. ES-01-ES-03).

5. CLEAR AND GRUB FOR THE AREA REQUIRED FOR INSTALLATION OF THE STABILIZED CONSTRUCTION ENTRANCES (SCE), SANDBAG DIVERSION (SD), DIRTY WATER PUMP (DWP), CLEAN WATER PUMP (CWP), OUTFALL PROTECTION (OP), TEMPORARY MULCH ACCESS ROAD WITH TIMBER MATTING (MAR), AND PERIMETER CONTROLS. NO GRUBBING SHALL BE PERFORMED FOR THE INSTALLATION OF THE TRENCHLESS SUPER SILT FENCE. CONTRACTOR TO SALVAGE AND STOCKPILE ALL SALVAGEABLE LOGS, DURING CLEARING AND GRUBBING. CONTRACTOR TO INSTALL ALL TREE PROTECTION MEASURES PRIOR TO CLEARING AND GRUBBING.

6. INSTALL SCE, STAGING AND STOCKPILE AREA WITH TIMBER MATTING, MAR, TRENCHLESS SUPER SILT FENCE & PERIMETER CONTROLS PRIOR TO ADDITIONAL CLEARING AND GRUBBING.

7. SANDBAG DIVERSION SHALL BE INSTALLED AT THE BEGINNING OF EACH WORK DAY ONLY WITHIN THE CONSTRUCTION AREA(S) BEING WORKED AND REMOVED AT THE COMPLETION OF EACH WORK DAY. THE EXACT LOCATIONS MAY BE MODIFIED IN THE FIELD BASED ON EXISTING CONDITIONS. ANY ADJUSTMENTS MUST BE APPROVED BY THE ENGINEER.

8. OUTFALL PROTECTION, DIRTY WATER PUMPS AND CLEAN WATER PUMPS TO BE INSTALLED AT THE BEGINNING OF EACH WORK DAY AND REMOVED DAILY. NO IN-STREAM WORK ALLOWED DURING RUNOFF PRODUCING PRECIPITATION EVENTS THAT EXCEEDS PUMPING CAPACITY. THE EXACT LOCATIONS MAY BE MODIFIED IN THE FIELD BASED ON EXISTING CONDITIONS. ANY ADJUSTMENTS MUST BE APPROVED BY THE ENGINEER.

9. THE ACCESS ROAD, STOCKPILE AREAS, OUTFALL PROTECTION AND SANDBAG DIVERSION WILL BE REMOVED AT THE COMPLETION OF EACH CONSTRUCTION PHASE AND IN CONJUNCTION WITH THE FLOODPLAIN GRADING UNLESS OTHERWISE NOTED OR AT THE IN-FIELD DIRECTION OF THE ENGINEER.

10. UPON COMPLETION OF ALL CONSTRUCTION, INSTALL PERMANENT PLANTINGS PER THE LANDSCAPE SCHEDULE AND PLANS. COMPLETE SAME DAY STABILIZATION FOR ANY DISTURBANCE.

11. UPON APPROVAL OF THE INSPECTOR, REMOVE REMAINING EROSION AND SEDIMENT CONTROL MEASURES AND STABILIZE ANY AREAS DISTURBED BY THEIR REMOVAL.

CONSTRUCTION NOTES

1. BEFORE MATERIAL CAN LEAVE THE SITE, ALL OFF-SITE STOCKPILING MUST BE APPROVED BY THE HARFORD COUNTY SOIL CONSERVATION DISTRICT.

2. WHEN THE SANDBAG DIVERSIONS AND DIRTY WATER PUMPS ARE USED, THE LOCATION OF THE HOSES AND FILTER BAGS MAY BE MODIFIED IN THE FIELD BASED ON EXISTING CONDITIONS.

ENGINEER'S CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED BY ME, OR UNDER MY SUPERVISTION, AND MEETS THE MINIMUM STANDARDS OF THE HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS AND/OR UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, AND/OR THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION.

Lucia Noya — ENGINEER'S SIGNATURE

04/28/2025 — DATE

LUCIA NOYA — PRINTED NAME

200370 — MD PE REGISTRATION NO.

3. AT THE END OF EACH WORK DAY THE CONTRACTOR SHALL STABILIZE ANY DISTURBED AREA NOT DIRECTED TO AN EROSION AND SEDIMENT CONTROL DEVICE AND AS NOTED NEEDING SAME DAY STABILIZATION.

4. PUMP AROUND PRACTICES, INCLUDING NECESSARY SANDBAGS, SHALL BE IN PLACE AND FUNCTIONAL PRIOR TO BEGINNING INSTREAM ACTIVITIES EACH DAY. AT THE END OF EACH WORK DAY, THE SANDBAG DIVERSION SHALL BE REMOVED TO RE-ESTABLISH BASEFLOW AND PROVIDE A FLOW PATH DURING STORM FLOWS FOR ALL TIMES WHEN THE PUMP AROUND IS NOT ACTIVE.

5. THERE SHALL BE NO LIME, FERTILIZER, OR OTHER AMENDMENTS WHEN SEED IS APPLIED FOR STABILIZATION.

6. STOCKPILE SHALL HAVE A MAXIMUM HEIGHT OF 20' AND A SIDE SLOPE NOT GREATER THAN 2:1. ALL STAGING AND STOCKPILE AREAS HAVE TRENCHLESS SUPER SILT FENCE ON DOWNSTREAM SIDE AS INDICATED ON PLANS.

STREAM CONSTRUCTION

1. INSTALL STABILIZED CONSTRUCTION ENTRANCE, TEMPORARY ORANGE CONSTRUCTION FENCE, MULCH ACCESS ROAD WITH TIMBER MATTING, TREE PROTECTION PLANKING, TRENCHLESS SUPER SILT FENCE, AND STAGING AND STOCKPILE AREA AS INDICATED ON PLANS. CONTRACTOR TO PLACE TEMPORARY GRADING FOR COMPLETION OF ACCESS ROAD WITHIN THE LOD.

2. INSTALL SANDBAG DIVERSION, CLEAN WATER PUMP, DIRTY WATER PUMP, FILTER BAG, DIVERSION HOSE, AND OUTFALL PROTECTION. SEE DWG. ES-01 TO ES-03 FOR APPROXIMATE LOCATIONS. CONTRACTOR TO HAND PLACE SAND BAGS.

3. PRIOR TO ANY INSTREAM OR BANK WORK, PUMP AROUND THE WORK AREA BEHIND UPSTREAM SANDBAG DIVERSION USING CLEAN WATER PUMP AND DEWATER ANY SITTING WATER BETWEEN THE TWO SANDBAG DIVERSIONS USING DIRTY WATER PUMP AND FILTER BAG.

4. CONTRACTOR TO ENSURE THAT THERE IS CLEAR SIGNAGE THAT TRAIL IS CLOSED FOR CONSTRUCTION.

5. REMOVE EXISTING BRIDGE. CONTRACTOR TO MOVE BRIDGE TO STABLE LOCATION OUTSIDE OF WORKING AREA FOR STORAGE DURING CONSTRUCTION. HARFORD COUNTY DEPARTMENT OF PARKS AND RECREATION TO BE CONTACTED BEFORE THE BRIDGE IS MOVED TO ENSURE AN INSPECTOR IS ON SITE. BRIDGE TO BE SLID AND NOT PICKED UP BY RAILINGS.

6. COMPLETE IN-STREAM WORK FROM STATION 0+00 TO APPROXIMATELY STATION 1+22 FROM UPSTREAM TO DOWNSTREAM. TIE INTO EXISTING GRADE, THEN COMPLETE STREAMWORK FROM STATION 5+30 TO 1+22 WORKING FROM DOWNSTREAM TO UPSTREAM. DO NOT DISTURB MORE THAN CAN BE BROUGHT TO FINISHED GRADE AND STABILIZED IN A DAY.

7. PLACE PERMANENT AND TEMPORARY SEED AS INDICATED PRIOR TO THE PLACEMENT OF ANY STABILIZATION MATTING OR MULCH.

8. CONTRACTOR TO RESET BRIDGE USING EXISTING ABUTMENTS ONCE GRADE IS STABILIZED.

9. PERMANENTLY STABILIZE THE WORK AREA AS SHOWN ON PLANS. TEMPORARILY STABILIZE STREAM CHANNEL WITH ROCK AT THE END OF EACH DAY. CONTRACTOR TO PLACE STRAW MULCH UNDER TEMPORARY MATTING AND ALL NON STREAMBED DISTURBED AREAS.

10. CONSTRUCTION TO BE COORDINATED SO THAT FINAL GRADING IN THE ACCESS ROAD LOCATION IS COMPLETED CONCURRENT WITH THE REMOVAL OF ACCESS ROAD.

11. AFTER CONSTRUCTION IS COMPLETE AND AREAS HAVE BEEN STABILIZED, REMOVE EROSION AND SEDIMENT CONTROLS WITH THE APPROVAL OF THE HARFORD COUNTY SCD INSPECTOR AND STABILIZE THE AREAS THAT ARE DISTURBED BY REMOVAL OF SEDIMENT CONTROLS.

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.

SIGNED — DATE

PRINTED NAME

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BY: sbazan -

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: 2027/03/19.

PROJECT CONTRACT #59905

GP #GRA-006189-2024

STATE OF MARYLAND — LUCIA NOYA — 200370 — PROFESSIONAL ENGINEER

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION EROSION AND SEDIMENT CONTROL NOTES

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. EN-01 of EN-02

Scale : N/A
Date : APRIL 2025
Sheet No. 23 of 34

BID No.:
HCG DWG ID No.: EN-01
SCALE: 1" = 100'

FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\23 - pEN-0001_AnitaLeighCenter.dgn
PLOTTED: 4/28/2025

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

1. NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.

2. PLACE MATERIALS IN A LOCATION AND MANNER THAT DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.

3. DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR OTHER DELETERIOUS SUBSTANCE.

4. PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.

5. REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS, NONTIDAL 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 NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN TEMPORARY IMPACTED BY ANY CONSTRUCTION.

7. ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES: ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNIOLA 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 NONTIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.

8. 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:
USE III WATERS. IN-STREAM WORK MAY NOT BE CONDUCTED DURING THE PERIOD OCTOBER 1 THROUGH APRIL 30, 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 RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

TREE REMOVAL TABLE

Tree ID	Scientific Name	Common name	DBH	Condition	Removal	Comments	Salvageable
T-1	*Liquidambar styraciflua*	Sweetgum	18	Fair		Heavy vines. Eroded banks.	
T-2	*Liriodendron tulipifera*	Tulip poplar	14	Good/Fair		Heavy vines.	
T-3	*Liriodendron tulipifera*	Tulip poplar	18	Fair/Poor	X	Heavy vines. Large crack. Hardwood decay.	
T-4	*Fagus grandifolia*	American beech	18	Good		-	
T-5	*Acer rubrum*	Red maple	15	Good/Fair		Vines.	
T-6	*Quercus rubra*	Northern red oak	23	Good/Fair	X	Vines.	X
T-7	*Acer rubrum*	Red maple	14	Good/Fair		Broken branch.	
T-8	*Liquidambar styraciflua*	Sweetgum	12	Good		-	
T-9	*Liquidambar styraciflua*	Sweetgum	16	Good		-	
T-10	*Acer rubrum*	Red maple	16	Good		-	
T-11	*Acer rubrum*	Red maple	13	Good		-	
T-12	*Liquidambar styraciflua*	Sweetgum	16	Fair	X	Trunk cavity & hardwood decay. Healthy besides decay.	X
T-13	*Liquidambar styraciflua*	Sweetgum	13	Fair	X	Undercut by stream. Vines.	X
T-14	*Liquidambar styraciflua*	Sweetgum	12	Fair	X	Undercut by stream. Vines.	X
T-15	*Fagus grandifolia*	American beech	22	Good		Undercutting.	
T-16	*Quercus prinus*	Chestnut oak	16	Good/Fair		Dead branches.	
T-17	*Fagus grandifolia*	American beech	20	Good		-	
T-18	*Fagus grandifolia*	American beech	22	Fair		Significant trunk cavity. Hardwood decay. Somewhat healthy.	
T-19	*Liquidambar styraciflua*	Sweetgum	20	Good/Fair		Splits below DBH.	
T-20	*Platanus occidentalis*	American sycamore	19	Good/Fair		Undercutting.	
T-21	*Liquidambar styraciflua*	Sweetgum	16	Good/Fair		Vines.	
T-22	*Acer rubrum*	Red maple	19	Fair		Lean and undercutting.	
T-23*	*Liriodendron tulipifera*	Tulip poplar	37	Good		-	
T-24	*Fagus grandifolia*	American beech	12	Good		-	
T-25	*Liquidambar styraciflua*	Sweetgum	12	Good/Fair		Water sprouts.	
T-26	*Liquidambar styraciflua*	Sweetgum	19	Good/Fair		Vines.	
T-27	*Acer rubrum*	Red maple	18	Good		Vines.	
T-28	*Liquidambar styraciflua*	Sweetgum	17	Good		-	
T-29	*Liriodendron tulipifera*	Tulip poplar	22	Good		-	
T-30	*Platanus occidentalis*	American sycamore	21	Fair		Unusual growth form. Lean.	
T-31	*Liquidambar styraciflua*	Sweetgum	13	Good		-	
T-32*	*Liriodendron tulipifera*	Tulip poplar	31	Good		Splits above DBH.	
T-33	*Liquidambar styraciflua*	Sweetgum	25	Good		-	
T-34	*Liquidambar styraciflua*	Sweetgum	15	Good/Fair		Minor undercutting.	
T-35	*Liquidambar styraciflua*	Sweetgum	12	Fair		Heavy lean. Unusual growth form.	
T-36	*Quercus prinus*	Chestnut oak	13	Good	X	-	X
T-37	*Quercus prinus*	Chestnut oak	17	Good/Fair		Unusual growth form.	
T-38	*Quercus prinus*	Chestnut oak	21	Good/Fair		Lean.	
T-39	*Liquidambar styraciflua*	Sweetgum	15	Fair		Significant dead branches.	
T-40	*Acer rubrum*	Red maple	15	Good		-	
T-41	*Liquidambar styraciflua*	Sweetgum	14	Good		-	
T-42	*Liquidambar styraciflua*	Sweetgum	17	Good		-	
T-43	*Acer rubrum*	Red maple	16	Good		-	
T-44	*Liquidambar styraciflua*	Sweetgum	18	Good		-	
T-45	*Acer rubrum*	Red maple	18	Good		-	
T-46	*Acer rubrum*	Red maple	17	Fair	X	Lean. Undercutting.	X
T-47	*Platanus occidentalis*	American sycamore	15	Good		Vines.	
T-48	*Liquidambar styraciflua*	Sweetgum	21	Good		Vines.	
T-49	*Fagus grandifolia*	American beech	17	Good/Fair		Lean.	
T-50	*Fagus grandifolia*	American beech	13	Good/Fair		Minor trunk cavity.	
T-51	*Liquidambar styraciflua*	Sweetgum	16	Good		-	
T-52	*Liquidambar styraciflua*	Sweetgum	15	Good		-	
T-53	*Platanus occidentalis*	American sycamore	12	Fair		Vines, heavy lean. undercutting.	
T-54	*Liquidambar styraciflua*	Sweetgum	12	Fair		Undercutting.	
T-55	*Acer rubrum*	Red maple	12	Good/Fair		Vines.	
T-56	*Liquidambar styraciflua*	Sweetgum	12	Good		Vines.	
T-57	*Acer rubrum*	Red maple	19	Poor		Two dead leaders. Mostly dead.	
T-58	*Acer rubrum*	Red maple	12	Good		-	
T-59	*Liquidambar styraciflua*	Sweetgum	22	Good		-	
T-60	*Acer rubrum*	Red maple	14	Good/Fair		Lean.	
T-61	*Liquidambar styraciflua*	Sweetgum	14	Good		-	
T-62	*Liquidambar styraciflua*	Sweetgum	13	Good		-	
T-63	*Liriodendron tulipifera*	Tulip poplar	21	Good/Fair	X	Undercutting.	X
T-64	*Liriodendron tulipifera*	Tulip poplar	29	Good		-	
T-65	*Quercus alba*	White oak	13	Good		-	
T-66	*Liquidambar styraciflua*	Sweetgum	13	Good	X	-	X
T-67	*Liquidambar styraciflua*	Sweetgum	14	Fair/Poor	X	Severe lean. Vines exposed roots.	
T-68	*Liquidambar styraciflua*	Sweetgum	16	Good/Fair		Heavy vines.	
T-69	*Quercus prinus*	Chestnut oak	23	Good		-	
T-70	*Acer rubrum*	Red maple	15	Good		-	
T-71	*Ulmus americana*	American elm	22	Fair		Splits below DBH. Twin trunk. Heavy vines.	
T-72	*Catalpa speciosa*	Northern catalpa	14	Good/Fair		Heavy Vines	
T-73	*Juniperus virginiana*	Eastern red cedar	6	Good		-	
T-74	*Juniperus virginiana*	Eastern red cedar	5	Good		-	

* Indicates specimen tree (≥30" DBH)

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BY: sbazan -

PROFESSIONAL CERTIFICATION

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PROJECT CONTRACT #59905

GP #GRA-006189-2024

STATE OF MARYLAND · LUCIA N. BAZAN · 200370 · PROFESSIONAL ENGINEER

Revisions

HARFORD COUNTY, MARYLAND

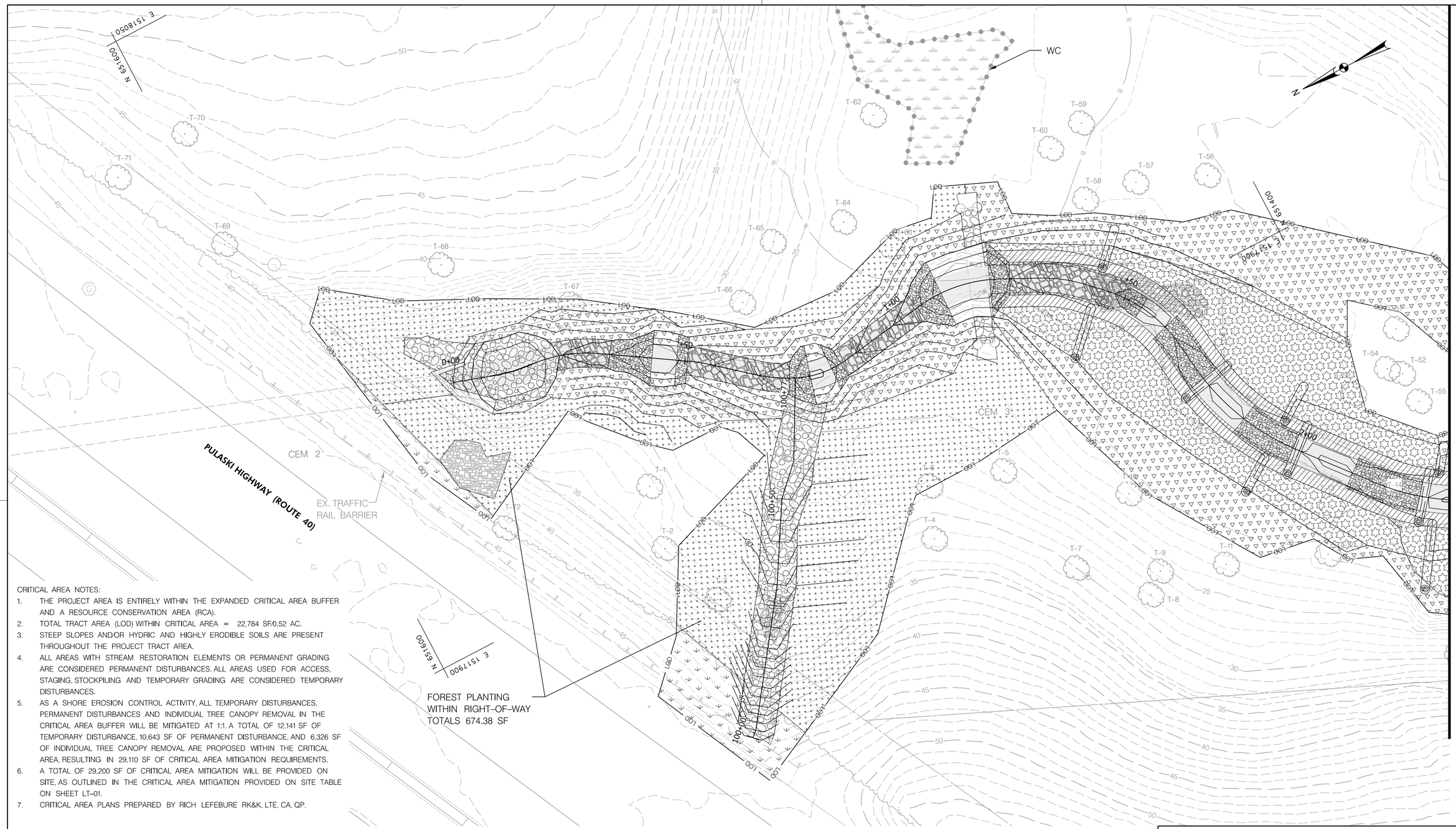
ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION EROSION AND SEDIMENT CONTROL NOTES

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. EN-02 of EN-02

Scale : N/A
Date : APRIL 2025
Sheet No. 24 of 34

BID No.:
HCG DWG ID No.: EN-02
SCALE 1 inch

FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\24 - pEN-0002_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025



CRITICAL AREA NOTES:

1. THE PROJECT AREA IS ENTIRELY WITHIN THE EXPANDED CRITICAL AREA BUFFER AND A RESOURCE CONSERVATION AREA (RCA).
2. TOTAL TRACT AREA (LOD) WITHIN CRITICAL AREA = 22,784 SF/0.52 AC.
3. STEEP SLOPES AND/OR HYDRIC AND HIGHLY ERODIBLE SOILS ARE PRESENT THROUGHOUT THE PROJECT TRACT AREA.
4. ALL AREAS WITH STREAM RESTORATION ELEMENTS OR PERMANENT GRADING ARE CONSIDERED PERMANENT DISTURBANCES. ALL AREAS USED FOR ACCESS, STAGING, STOCKPILING AND TEMPORARY GRADING ARE CONSIDERED TEMPORARY DISTURBANCES.
5. AS A SHORE EROSION CONTROL ACTIVITY, ALL TEMPORARY DISTURBANCES, PERMANENT DISTURBANCES AND INDIVIDUAL TREE CANOPY REMOVAL IN THE CRITICAL AREA BUFFER WILL BE MITIGATED AT 1:1. A TOTAL OF 12,141 SF OF TEMPORARY DISTURBANCE, 10,643 SF OF PERMANENT DISTURBANCE, AND 6,326 SF OF INDIVIDUAL TREE CANOPY REMOVAL ARE PROPOSED WITHIN THE CRITICAL AREA, RESULTING IN 29,110 SF OF CRITICAL AREA MITIGATION REQUIREMENTS.
6. A TOTAL OF 29,200 SF OF CRITICAL AREA MITIGATION WILL BE PROVIDED ON SITE, AS OUTLINED IN THE CRITICAL AREA MITIGATION PROVIDED ON SITE TABLE ON SHEET LT-01.
7. CRITICAL AREA PLANS PREPARED BY RICH LEFEBURE RK&K, LTE, CA, QP.

LEGEND

EXISTING MAJOR CONTOUR	
EXISTING MINOR CONTOUR	
EXISTING RIPRAP	
WATERS OF THE U.S.	WUS
EXISTING STORMDRAIN	
PROPERTY LINE	
ELECTRIC POLE	
GAS VALVE	G
TRAFFIC RAIL BARRIER	
EXISTING WETLAND BOUNDARY	
EXISTING WETLAND BUFFER	B
EXISTING WETLAND PATTERN	
EXISTING TREE	

PROPOSED MAJOR CONTOUR	25
PROPOSED MINOR CONTOUR	24
PROPOSED IMBRICATED RIPRAP	
PROPOSED RIFFLE GRADE CONTROL MIX	
PROPOSED RIPRAP	
PROPOSED LOG SILL	
PROPOSED FLOODPLAIN GRADE CONTROL LOG	
PROPOSED CHANNEL BOTTOM	
PROPOSED LIMIT OF DISTURBANCE	LOD
CHESAPEAKE BAY CRITICAL AREA	
EXPANDED CRITICAL AREA BUFFER	
UPLAND FOREST	
RIPARIAN FOREST	
FLOODPLAIN FOREST	
LIVE STAKES	
TURFGRASS ESTABLISHMENT	

10' 0 10' 20'
SCALE: 1" = 10'

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STATE OF MARYLAND — LUCIA NICOLE BEFURE — 200370 — PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905

GP #GRA-006189-2024

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PLOTTED: 4/28/2025

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

CBCA BUFFER MANAGEMENT PLAN

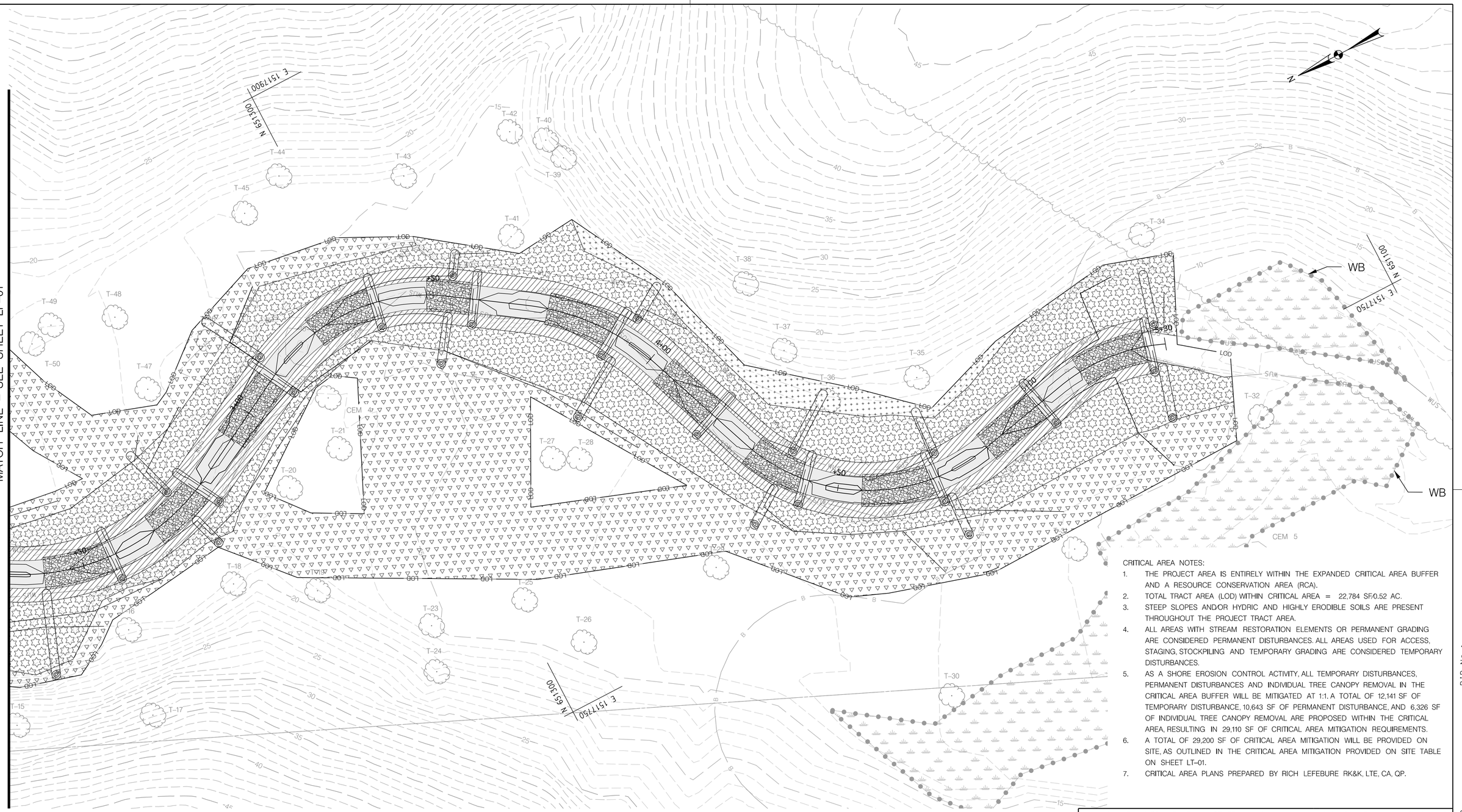
Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. LP-01 of LP-03

Scale : 1" = 10'
Date : APRIL 2025
Sheet No. 25 of 34

MATCH LINE – SEE SHEET LP-02

BID No.:
HCG DWG ID No.: LP-01
SCALE: 1" = 10'

MATCH LINE – SEE SHEET LP–01



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7. CRITICAL AREA PLANS PREPARED BY RICH LEFEBURE RK&K, LTE, CA, QP.

LEGEND

EXISTING MAJOR CONTOUR	PROPOSED MAJOR CONTOUR
EXISTING MINOR CONTOUR	PROPOSED MINOR CONTOUR
EXISTING RIPRAP	PROPOSED IMBRICATED RIPRAP
WATERS OF THE U.S.	PROPOSED RIFFLE GRADE CONTROL MIX
EXISTING STORMDRAIN	PROPOSED RIPRAP
PROPERTY LINE	PROPOSED LOG SILL
ELECTRIC POLE	PROPOSED FLOODPLAIN GRADE CONTROL LOG
GAS VALVE	PROPOSED CHANNEL BOTTOM
TRAFFIC RAIL BARRIER	PROPOSED LIMIT OF DISTURBANCE
EXISTING WETLAND BOUNDARY	CHESAPEAKE BAY CRITICAL AREA
EXISTING WETLAND BUFFER	EXPANDED CRITICAL AREA BUFFER
EXISTING WETLAND PATTERN	UPLAND FOREST
EXISTING TREE	RIPARIAN FOREST
	FLOODPLAIN FOREST
	LIVE STAKES
	TURFGRASS ESTABLISHMENT

10' 0 10' 20'
SCALE: 1" = 10'

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STATE OF MARYLAND — RICHARD LEFEBURE — 200370 — PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905

GP #GRA-006189-2024

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

CBCA BUFFER MANAGEMENT PLAN

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. LP-02 of LP-03

Scale : 1" = 10'
Date : APRIL 2025
Sheet No. 26 of 34

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PLOTTED: 4/28/2025

BID No.:
HCG DWG ID No.: LP-02
SCALE: 1" = 10'

LEGEND

EXISTING MAJOR CONTOUR	PROPOSED LIMIT OF DISTURBANCE — LOD —
EXISTING MINOR CONTOUR	CHESAPEAKE BAY CRITICAL AREA
EXISTING RIPRAP	EXPANDED CRITICAL AREA BUFFER
WATERS OF THE U.S. — WUS —	UPLAND FOREST
EXISTING STORMDRAIN	RIPARIAN FOREST
PROPERTY LINE	FLOODPLAIN FOREST
ELECTRIC POLE	LIVE STAKES
GAS VALVE	TURFGRASS ESTABLISHMENT
TRAFFIC RAIL BARRIER	
EXISTING WETLAND BOUNDARY	
EXISTING WETLAND BUFFER — B —	
EXISTING WETLAND PATTERN	
EXISTING TREE	

10' 0 10' 20'
SCALE: 1" = 10'

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PLOTTED: 4/28/2025

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PROJECT CONTRACT #59905

GP #GRA-006189-2024

STATE OF MARYLAND · LUCIA N. BAZAN · 200370 · PROFESSIONAL ENGINEER

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

CBCA BUFFER MANAGEMENT PLAN

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. LP-03 of LP-03

Scale : 1" = 10'
Date : APRIL 2025
Sheet No. 27 of 34

BID No.:
HCG DWG ID No.: LP-03
SCALE: 1"=10'

ANITA C. LEIGHT CENTER STREAM RESTORATION - PLANTING ZONE 1 - UPLAND FOREST									
TREES									
Acreage	**0.10**	**Proposed Trees per Acre**	**400**						
Quantity	**Scientific Name**	**Common Name**	**Stratum**	**Indicator Status**	**Min. Size**	**Min. Container Size**	**Form**	**Deer Protection**	**Placement**
6	*Liriodendron tulipifera*	Tulip poplar	Canopy tree	FACU	2" Cal	B&B	Single Stem	HDPE Shelter	Naturalized ~10' O.C.
6	*Tilia americana*	American basswood	Canopy tree	FACU	2" Cal	B&B	Single Stem	HDPE Shelter	Naturalized ~10' O.C.
6	*Quercus velutina*	Black oak	Canopy tree	UPL	3/4" Cal	#7 Container	Single Stem	HDPE Shelter	Naturalized ~10' O.C.
6	*Quercus montana*	Chestnut oak	Canopy tree	UPL	3/4" Cal	#7 Container	Single Stem	HDPE Shelter	Naturalized ~10' O.C.
6	*Ostrya virginiana*	Hophornbeam	Understory tree	FACU	3/4" Cal	#7 Container	Single Stem	HDPE Shelter	Naturalized ~10' O.C.
6	*Cornus florida 'Appalachian Spring'*	Flowering dogwood 'Appalachian Spring'	Understory tree	FACU	3/4" Cal	#7 Container	Single Stem	HDPE Shelter	Naturalized ~10' O.C.
4	*Chionanthus virginicus*	White fringetree	Understory tree	FACU	3/4" Cal	#7 Container	Single Stem	HDPE Shelter	Naturalized ~10' O.C.
40	=total								
SHRUBS									
		Proposed Shrubs per Acre	**250**						
Quantity	**Scientific Name**	**Common Name**	**Stratum**	**Indicator Status**	**Min. Size**	**Min. Container Size**	**Form**	**Deer Protection**	**Placement**
6	*Corylus americana*	Hazelnut	Large shrub	FACU	3' Height	#5 Container	Multistem	Cage	Naturalized ~14' O.C.
6	*Kalmia latifolia*	Mountain laurel	Large shrub	FACU	3' Height	#5 Container	Multistem	Cage	Naturalized ~14' O.C.
6	*Hamamelis virginiana*	Witch hazel	Large shrub	FACU	3' Height	#5 Container	Multistem	Cage	Naturalized ~14' O.C.
6	*Viburnum prunifolium*	Blackhaw	Large shrub	FACU	3' Height	#5 Container	Multistem	Cage	Naturalized ~14' O.C.
24	=total								
SEEDING									
Quantity (SY)	**Mix**								
484	Native Steep Slopes with Grain Oats or Grain Rye Mix or Equivalent (see seed mixes for application rates)								

ANITA C. LEIGHT CENTER STREAM RESTORATION - PLANTING ZONE 2 - RIPARIAN FOREST									
TREES									
Acreage	**0.21**	**Proposed Trees per Acre**	**400**						
Quantity	**Scientific Name**	**Common Name**		**Indicator Status**	**Min. Size**	**Min. Container Size**	**Form**	**Deer Protection**	**Placement**
13	*Acer rubrum*	Red maple	Canopy tree	FAC	2" Cal	B&B	Single Stem	HDPE Shelter	Naturalized ~10' O.C.
13	*Liquidambar styraciflua*	Sweetgum	Canopy tree	FAC	2" Cal	B&B	Single Stem	HDPE Shelter	Naturalized ~10' O.C.
13	*Populus deltoides*	Eastern cottonwood	Canopy tree	FAC	3/4" Cal	#7 Container	Single Stem	HDPE Shelter	Naturalized ~10' O.C.
13	*Quercus phellos*	Willow oak	Canopy tree	FACW	3/4" Cal	#7 Container	Single Stem	HDPE Shelter	Naturalized ~10' O.C.
13	*Diospyros virginiana*	Persimmon	Understory tree	FAC	3/4" Cal	#7 Container	Single Stem	HDPE Shelter	Naturalized ~10' O.C.
13	*Asimina triloba*	Pawpaw	Understory tree	FAC	3/4" Cal	#7 Container	Single Stem	HDPE Shelter	Naturalized ~10' O.C.
8	*Amelanchier canadensis*	Canadian serviceberry	Understory tree	FAC	3/4" Cal	#7 Container	Single Stem	HDPE Shelter	Naturalized ~10' O.C.
86	=total								
SHRUBS									
		Number of Tree and Shrub Clumps*	**10**						
Quantity	**Scientific Name**	**Common Name**	**Stratum**	**Indicator Status**	**Min. Size**	**Min. Container Size**	**Form**	**Deer Protection**	**Placement**
13	*Viburnum dentatum*	Southern arrowwood	Large shrub	FAC	3' Height	#5 Container	Multistem	Shrub Clump	Clump ~50' O.C.
13	*Clethra alnifolia*	Sweet pepperbush	Large shrub	FACW	3' Height	#5 Container	Multistem	Shrub Clump	Clump ~50' O.C.
13	*Lindera benzoin*	Spicebush	Large shrub	FACW	3' Height	#5 Container	Multistem	Shrub Clump	Clump ~50' O.C.
13	*Physocarpus opulifolius*	Ninebark	Large shrub	FAC	3' Height	#5 Container	Multistem	Shrub Clump	Clump ~50' O.C.
52	=total								
SEEDING									
Quantity (SY)	**Mix**								
1016	MD Coastal Plain Riparian Mix or Equivalent with cover crop (see seed mixes for application rates)								

**All shrubs in riparian zone to be planted using using tree/shrub clumps with fencing 1' off the ground.*

ANITA C. LEIGHT CENTER STREAM RESTORATION - PLANTING ZONE 3 - FLOODPLAIN FOREST									
TREES									
Acreage	**0.14**	**Proposed Trees per Acre**	**400**						
Quantity	**Scientific Name**	**Common Name**		**Indicator Status**	**Min. Size**	**Min. Container Size**	**Form**	**Deer Protection**	**Placement**
9	*Betula nigra*	River birch	Canopy tree	FACW	2" Cal	B&B	Single Stem	None	Naturalized ~10' O.C.
9	*Platanus occidentalis*	American sycamore	Canopy tree	FACW	2" Cal	B&B	Single Stem	None	Naturalized ~10' O.C.
9	*Quercus bicolor*	Swamp white oak	Canopy tree	FACW	3/4" Cal	#7 Container	Single Stem	None	Naturalized ~10' O.C.
9	*Taxodium distichum*	Bald cypress	Canopy tree	OBL	3/4" Cal	#7 Container	Single Stem	None	Naturalized ~10' O.C.
9	*Magnolia virginiana*	Sweetbay magnolia	Understory tree	FACW	3/4" Cal	#7 Container	Single Stem	None	Naturalized ~10' O.C.
9	*Salix nigra*	Black willow	Understory tree	OBL	3/4" Cal	#7 Container	Single Stem	None	Naturalized ~10' O.C.
6	*Alnus serrulata*	Smooth alder	Understory tree	FACW	3/4" Cal	#7 Container	Multistem	None	Naturalized ~10' O.C.
60	=total								
SHRUBS									
		Proposed Shrubs per Acre	**250**						
Quantity	**Scientific Name**	**Common Name**		**Indicator Status**	**Min. Size**	**Min. Container Size**	**Form**	**Deer Protection**	**Placement**
9	*Cephalanthus occidentalis*	Buttonbush	Large shrub	OBL	3' Height	#5 Container	Multistem	None	Naturalized ~14' O.C.
9	*Rosa palustris*	Swamp rose	Large shrub	OBL	3' Height	#5 Container	Multistem	None	Naturalized ~14' O.C.
9	*Cornus amomum*	Silky dogwood	Large shrub	FACW	3' Height	#5 Container	Multistem	None	Naturalized ~14' O.C.
9	*Ilex verticillata*	Winterberry	Large shrub	FACW	3' Height	#5 Container	Multistem	None	Naturalized ~14' O.C.
36	=total								
SEEDING									
Quantity (SY)	**Mix**								
678	MD Lower Midland FACW Mix or Equivalent with cover crop (see seed mixes for application rates)								

ANITA C. LEIGHT CENTER STREAM RESTORATION - PLANTING ZONE 4 - LIVE STAKES									
LIVE STAKES									
Acreage	**0.06**	**Proposed Live Stakes per Acre**	**12500**						
Quantity	**Scientific Name**	**Common Name**		**Indicator Status**	**Diameter**	**Length**	**Form**	**Deer Protection**	**Placement**
300	*Salix nigra*	Black willow	Live Stake	OBL	0.5" - 2" Cal	2-3'	Single Stem	None	2' O.C. - See Detail
225	*Cornus amomum*	Silky dogwood	Live Stake	FACW	0.5" - 2" Cal	2-3'	Single Stem	None	2' O.C. - See Detail
225	*Cephalanthus occidentalis*	Buttonbush	Live Stake	OBL	0.5" - 2" Cal	2-3'	Single Stem	None	2' O.C. - See Detail
750	=total								

Acreage	0.10	Application Rate	75 lbs/acre	
Percentage	**Species Name**	**Common Name**	**Wetland Indicator Status**	**Lifespan**
	ERNST SEED MIX 181-1 or 181-2 - NATIVE STEEP SLOPES WITH GRAIN OATS OR GRAIN RYE MIX or equivalent*			
40.0	*Avena sativa* or *Secale cereale**	Oats or Rye, variety not stated*	UPL	Perennial
20.8	*Sorghastrum nutans, PA Ecotype*	Indiangrass, PA Ecotype	FACU	Perennial
11.2	*Andropogon gerardii, 'Niagra'*	Big bluestem 'Niagra'	FAC	Perennial
8.0	*Elymus canadensis*	Canada wildrye	FACU	Perennial
5.6	*Elymus virginicus, PA Ecotype*	Virginia wildrye, PA Ecotype	FACW	Perennial
3.2	*Agrostis perennans, Albany Pine Bush-NY Ecotype*	Autumn bentgrass, Albany Pine Bush-NY Ecotype	FACU	Perennial
3.1	*Panicum virgatum 'Shawnee'*	Switchgrass 'Shawnee'	FAC	Perennial
2.4	*Panicum clandestinum, 'Tioga'*	Deertongue, 'Tioga'	FAC	Perennial
1.2	*Echinacea purpurea*	Purple coneflower	UPL	Perennial
1.1	*Chamaecrista fasciculata, PA Ecotype*	Partridge pea, PA Ecotype	FACU	Short Lived Perennial
0.9	*Heliopsis helianthoides, PA Ecotype*	Oxeye sunflower, PA Ecotype	FACU	Short Lived Perennial
0.8	*Coreopsis lanceolata*	Lanceleaf coreopsis	FACU	Perennial
0.8	*Rudbeckia hirta*	Blackeyed susan	FACU	Short Lived Perennial
0.3	*Monarda fistulosa, Fort Indiantown Gap-PA Ecotype*	Wild bergamot, Fort Indiantown Gap-PA Ecotype	UPL	Perennial
0.2	*Asclepias syriaca*	Common milkweed	FACU	Perennial
0.2	*Solidago rugosa, PA Ecotype*	Wrinkleleaf goldenrod, PA Ecotype	FAC	Perennial
0.1	*Aster lateriflorus*	Calico aster	UPL	Perennial
0.1	*Aster pilosus, PA Ecotype*	Heath aster, PA Ecotype	UPL	Perennial
100.0	**=total**			

Apply Ernst Seed Mix 181-1 or 181-2 or equivalent at 75 lbs/acre.
*If seeding February 16 through July 31, use Mix 181-1. If seeding August 1 through February 15, use Mix 181-2.

Acreage	0.14	Application Rate	20 lbs/acre	
Percentage	**Species Name**	**Common Name**	**Wetland Indicator Status**	**Lifespan**
	ERNST SEED MIX ERNMX-723 - MD LOWER MIDLAND FACW MIX or equivalent			
21.8	*Carex vulpinoidea, PA Ecotype*	Fox Sedge, PA Ecotype		
20.0	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype	FAC	Perennial
17.5	*Panicum rigidulum, PA Ecotype*	Redtop Panicgrass, PA Ecotype	FACW	Perennial
15.7	*Carex lurida, PA Ecotype*	Lurid sedge, PA Ecotype	OBL	Perennial
8.0	*Carex scoparia, PA Ecotype*	Blunt Broom Sedge, PA Ecotype	FACW	Perennial
4.0	*Verbena hastata, PA Ecotype*	Blue Vervain, PA Ecotype	FAC	Perennial
3.0	*Juncus effusus*	Soft Rush	OBL	Perennial
1.2	*Asclepias incarnata, PA Ecotype*	Swamp Milkweed, PA Ecotype	OBL	Perennial
1.0	*Bidens cernua, PA Ecotype*	Nodding Bur Marigold, PA Ecotype	OBL	Annual
1.0	*Juncus tenuis, PA Ecotype*	Path Rush, PA Ecotype	FAC	Perennial
0.9	*Aster novae-angliae, PA Ecotype*	New England Aster, PA Ecotype	FACW	Perennial
0.9	*Aster prenanthoides, PA Ecotype*	Zigzag Aster, PA Ecotype	FAC	Perennial
0.7	*Vernonia noveboracensis, PA Ecotype*	New York Ironweed, PA Ecotype	FACW	Perennial
0.7	*Zizia aurea, PA Ecotype*	Golden Alexanders, PA Ecotype	FAC	Perennial
0.5	*Carex crinita, PA Ecotype*	Fringed Sedge, PA Ecotype	FACW	Perennial
0.5	*Eupatorium perfoliatum, PA Ecotype*	Boneset, PA Ecotype	FACW	Perennial
0.5	*Glyceria striata, PA Ecotype*	Fowl Mannagrass, PA Ecotype	OBL	Perennial
0.5	*Helenium autumnale, Northern VA Ecotype*	Common Sneezeweed, Northern VA Ecotype	FACW	Perennial
0.4	*Aster puniceus, PA Ecotype*	Purplestem Aster, PA Ecotype	NI	Perennial
0.4	*Solidago rugosa, PA Ecotype*	Wrinkleleaf Goldenrod, PA Ecotype	FAC	Perennial
0.3	*Lobelia siphilitica, PA Ecotype*	Great Blue Lobelia, PA Ecotype	OBL	Perennial
0.3	*Scirpus cyperinus, PA Ecotype*	Woolgrass, PA Ecotype	OBL	Perennial
0.2	*Mimulus ringens, PA Ecotype*	Square Stemmed Monkeyflower, PA Ecotype	OBL	Perennial
100.0	**=total**			

Apply Ernst Seed Mix ERNMX-723 or equivalent at 20 lbs/acre with cover crop. For cover crop, use either grain rye (30 lbs/acre; 1 Sep to 30 Apr) or Japanese Millet (10 lbs/acre; 1 May to 31 Aug).

Acreage	0.21	Application Rate	20 lbs/acre	
Percentage	**Species Name**	**Common Name**	**Wetland Indicator Status**	**Lifespan**
	ERNST SEED MIX ERNMX-732 - MD COASTAL PLAIN RIPARIAN MIX or equivalent			
39.7	*Sorghastrum nutans, PA Ecotype*	Indiangrass, PA Ecotype	FACU	Perennial
20.0	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype	FAC	Perennial
18.0	*Panicum virgatum , NJ Ecotype*	Switchgrass, NJ Ecotype	FAC	Perennial
10.0	*Panicum rigidulum, PA Ecotype*	Redtop Panicgrass, PA Ecotype	FACW	Perennial
3.0	*Chamaecrista fasciculata, PA Ecotype*	Partridge pea, PA Ecotype	FACU	Annual
3.0	*Rudbekia hirta*	Blackeyed susan	FACU	Short Lived Perennial
2.0	*Heliopsis helianthoides, PA Ecotype*	Oxeye sunflower, PA Ecotype	FACU	Short Lived Perennial
1.0	*Asclepias incarnata, PA Ecotype*	Swamp Milkweed, PA Ecotype	OBL	Perennial
0.9	*Vernonia noveboracensis, PA Ecotype*	New York Ironweed, PA Ecotype	FACW	Perennial
0.8	*Eupatorium perfoliatum, PA Ecotype*	Boneset, PA Ecotype	FACW	Perennial
0.8	*Helianthus angustifolius, Coastal Plain NC Ecotype*	Narrowleaf Sunflower, Coastal Plain NC Ecotype	FACW	Perennial
0.8	*Solidago rugosa, PA Ecotype*	Wrinkleleaf Goldenrod, PA Ecotype	FAC	Perennial
100.0	**=total**			

Apply Ernst Seed Mix ERNMX-732 or equivalent at 20 lbs/acre with cover crop. For cover crop, use either grain rye (30 lbs/acre; 1 Sep to 30 Apr) or Japanese Millet (10 lbs/acre; 1 May to 31 Aug).

Seed Mix	Area (SY)
Turfgrass Establishment*	231

*SEE SHEET EN-01 FOR TURFGRASS SEED MIX

Critical Area Mitigation Requirements

Disturbance		Mitigation Requirements		
Type	Square Feet	Activity Type	Mitigation Ratio	Requirement (SF)
Temporary	12,141	Shore Erosion Control	1:1	12,141
Permanent	10,643	Shore Erosion Control	1:1	10,643
Canopy	6,326	Canopy Removal	1:1	6,326
Total	29,110		Total	29,110

Critical Area Mitigation Provided On-Site

Planting Type	Quantity	Credit Allowed (SF)	Total Credit
Canopy Tree (2" cal)	56	200	11,200
Canopy Tree (3/4" cal)	46	100	4,600
Understory Tree (3/4" cal)	74	75	5,550
Large Shrub (3' ht)	82	50	4,100
Planting Cluster (1 Canopy Tree and 3 Large Shrubs)*	10	300	3,000
Live Stakes	750	1	750
		Grand Total Credit	29,200

**The 1 canopy tree and 3 large shrubs used for planting clusters are counted for credit as cluster plantings and are not being double counted for credit under a separate planting type. Since the plans call for 5 large shrubs per cluster, the remaining 2 large shrubs are still counted for credit as individual plantings.*

Canopy Removal by Individual Tree

T#	DBH (Inch)	Canopy (SF)
T-3	18	763
T-6	23	1246
T-12	16	603
T-13	13	398
T-14	12	339
T-36	13	398
T-46	17	681
T-63	21	1039
T-66	13	398
T-67	14	462
Total Canopy Removal		6326

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FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\28 - pLT-0001_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025

PROJECT CONTRACT #59905

GP #GRA-006189-2024

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.200370. EXPIRATION DATE: 2027/03/19.

STATE OF MARYLAND · LUCIA NEE · 200370 · PROFESSIONAL ENGINEER

HARFORD COUNTY, MARYLAND

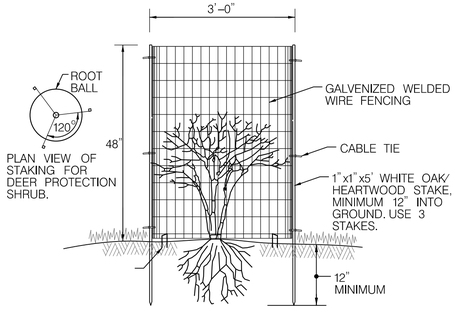
ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

LANDSCAPING TABLES

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. LT-01 of LT-01

Scale : N/A
Date : APRIL 2025
Sheet No. 28 of 34

BID No.:
HCG DWG ID No.: LT-01
SCALE: 1 INCH

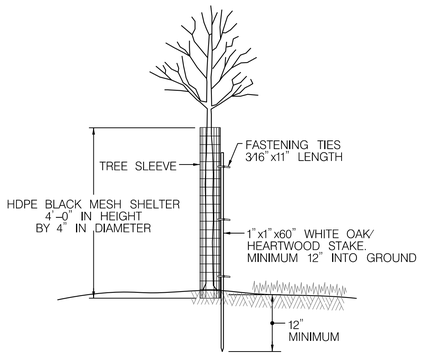


DEER PROTECTION - SHRUB

NOT TO SCALE

NOTES:

1. REFER TO DEER PROTECTION SPECIFICATION FOR ADDITIONAL INFORMATION.

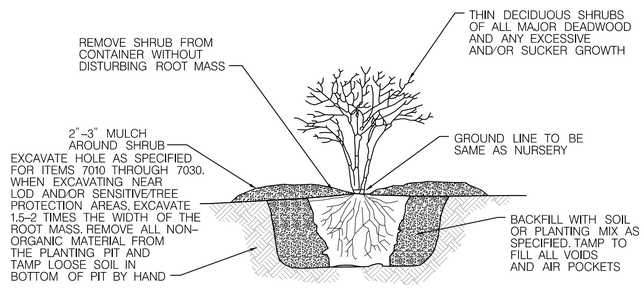


DEER PROTECTION - TREE SLEEVES

NOT TO SCALE

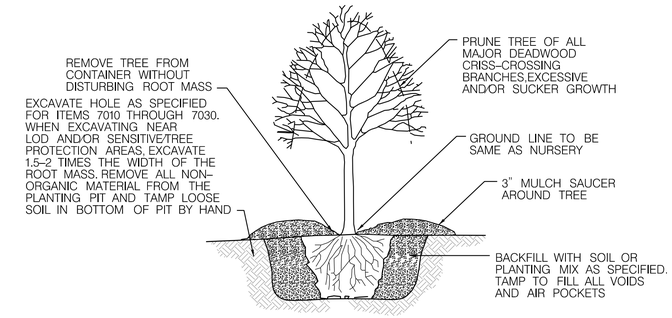
NOTES:

1. REFER TO DEER PROTECTION SPECIFICATION FOR ADDITIONAL INFORMATION.



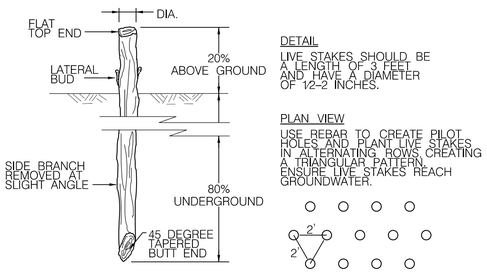
SHRUB PLANTING - CONTAINER

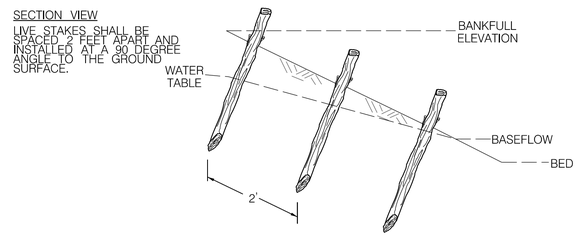
NOT TO SCALE



TREE/SHRUB PLANTING - CONTAINER GROWN

NOT TO SCALE

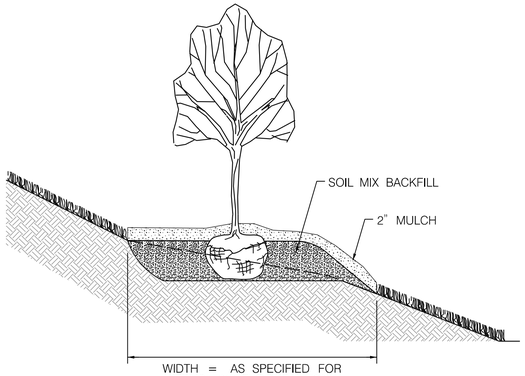




LIVE STAKES DETAIL

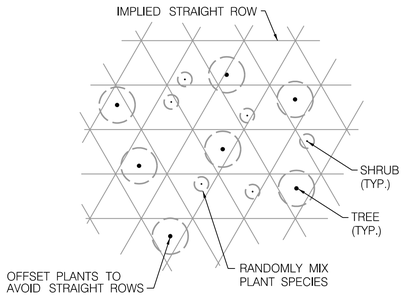
NOT TO SCALE

Source: Adapted from USDA-SCS (1994)



PLANTING ON SLOPE

NOT TO SCALE



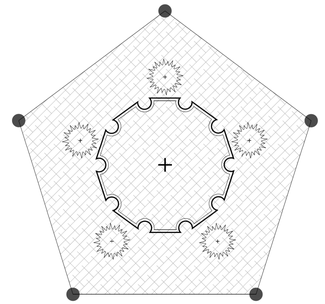
NATURALIZED PLANT SPACING

NOT TO SCALE

NOTES:

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

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



LEGEND

(1) 3/4" CALIPER CANOPY TREE

(5) SHRUB

FENCE POSTS

3" SHREDDED HARDWOOD MULCH

NOTES:

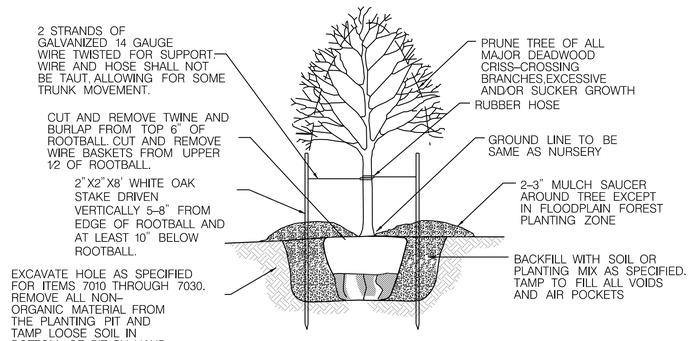
1. FENCING SHALL BE 4' HIGH, 14 GUAGE WELDED WIRE FENCE SECURED TO 6' T-POSTS DRIVEN 2' INTO THE GROUND. PLACE FENCING 1' ABOVE THE GROUND ELEVATION TO ALLOW FLOOD FLOWS AND DEBRIS TO PASS UNDER THE FENCING.

2. ALL SHRUBS SHALL BE PLACED 2' FROM THE CENTRAL TREE AND 3' APART FROM THE ADJACENT SHRUBS. THE FENCE SHALL BE 2' OFF THE EDGE OF ALL PLANTINGS.

3. ALL FIVE SHRUBS WITHIN A CLUMP SHALL BE THE SAME SPECIES. A 3/4" CALIPER CANOPY TREE SHALL BE CHOSEN AT RANDOM FROM THE ZONE 2 PLANTING SCHEDULE.

TREE AND SHRUB CLUMP DETAIL

NOT TO SCALE



TREE PLANTING - B&B WITH STAKES

NOT TO SCALE

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PLOTTED: 4/28/2025

PROJECT CONTRACT #59905	Revisions
GP #GRA-006189-2024	

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: 2027/03/19.

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

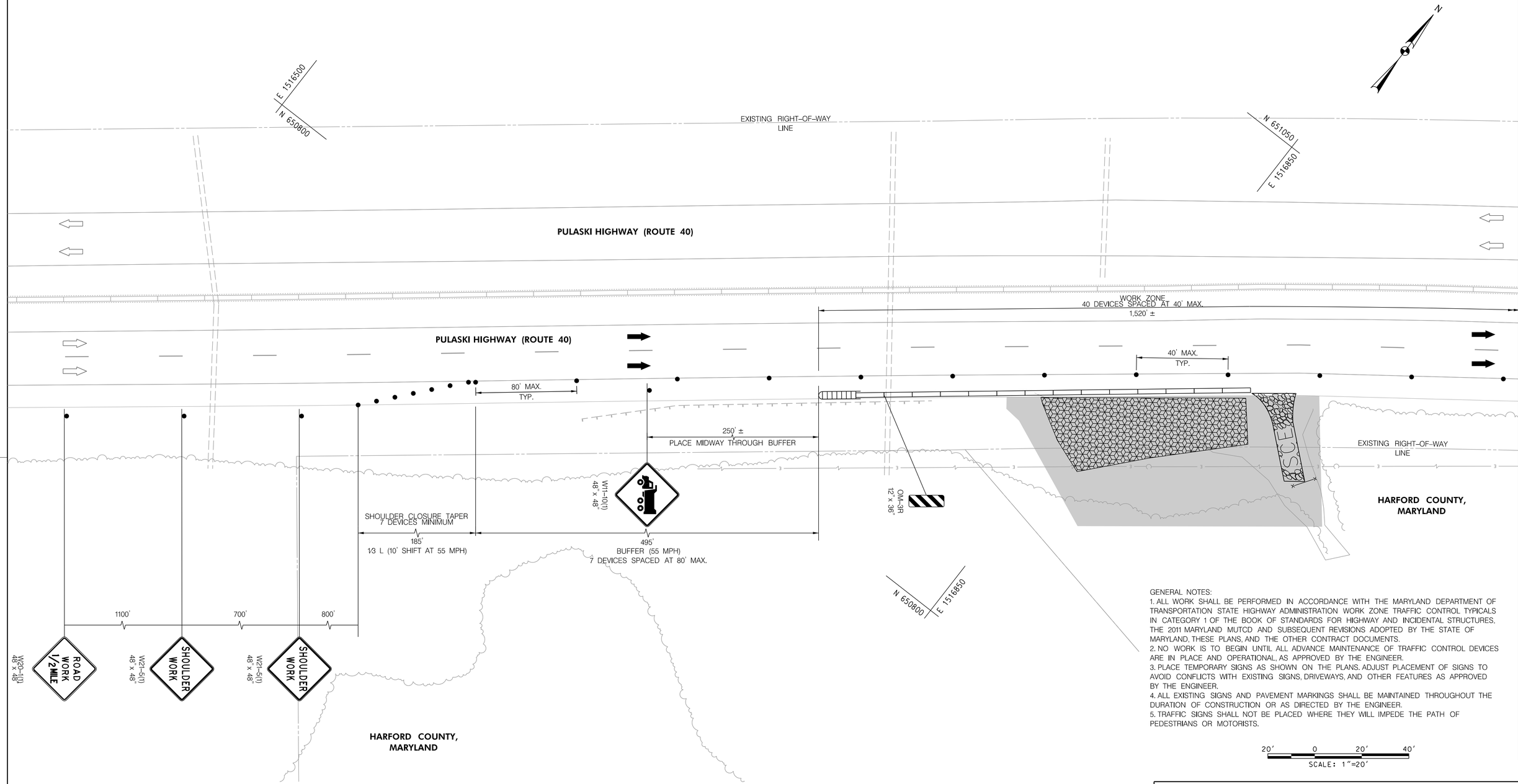
LANDSCAPING DETAILS

Drawn By : SB	Scale : N/A
Designed By : SB/BA	Date : APRIL 2025
Reviewed By : RO	
Drawing No. LD-01 of LD-01	Sheet No. 29 of 34

BID No.:

HCG DWG ID No.: LD-01

SCALE: 1 INCH



MATCH LINE – SEE SHEET MT-02

GENERAL NOTES:

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION WORK ZONE TRAFFIC CONTROL TYPICALS IN CATEGORY 1 OF THE BOOK OF STANDARDS FOR HIGHWAY AND INCIDENTAL STRUCTURES, THE 2011 MARYLAND MUTCD AND SUBSEQUENT REVISIONS ADOPTED BY THE STATE OF MARYLAND, THESE PLANS, AND THE OTHER CONTRACT DOCUMENTS.
2. NO WORK IS TO BEGIN UNTIL ALL ADVANCE MAINTENANCE OF TRAFFIC CONTROL DEVICES ARE IN PLACE AND OPERATIONAL, AS APPROVED BY THE ENGINEER.
3. PLACE TEMPORARY SIGNS AS SHOWN ON THE PLANS. ADJUST PLACEMENT OF SIGNS TO AVOID CONFLICTS WITH EXISTING SIGNS, DRIVEWAYS, AND OTHER FEATURES AS APPROVED BY THE ENGINEER.
4. ALL EXISTING SIGNS AND PAVEMENT MARKINGS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION OR AS DIRECTED BY THE ENGINEER.
5. TRAFFIC SIGNS SHALL NOT BE PLACED WHERE THEY WILL IMPEDE THE PATH OF PEDESTRIANS OR MOTORISTS.

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

LEGEND

- CURRENT PHASE WORK AREA
- DRUM FOR MAINTENANCE OF TRAFFIC
- TEMPORARY CONC. BARRIER FOR MOT
- TRAFFIC FLOW ARROW
- SIGN
- EXISTING RIPRAP
- EXISTING STORMDRAIN
- ELECTRIC POLE
- GAS VALVE
- TRAFFIC RAIL BARRIER
- EXISTING TREE LINE

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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: 2027/03/19.

STATE OF MARYLAND · LUCIA NICOLE BAKER · 200370 · PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905	Revisions
GP #GRA-006189-2024	

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

MAINTENANCE OF TRAFFIC

Drawn By : SB	Scale : 1" = 20'
Designed By : SB/BA	Date : APRIL 2025
Reviewed By : RD	
Drawing No. MT-01 of MT-03	Sheet No. 30 of 34

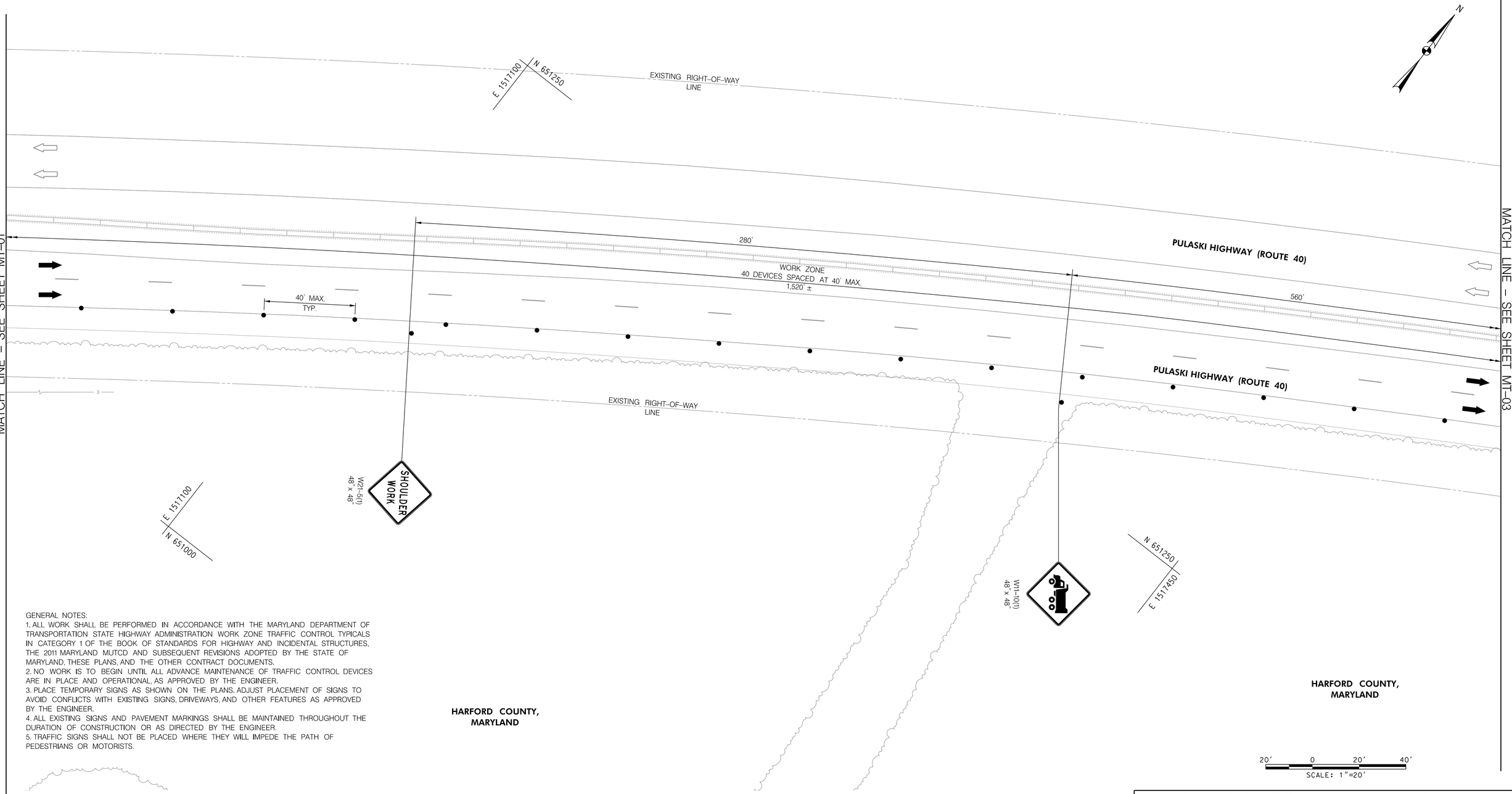
BID No.:

HCG DWG ID No.: MT-01

SCALE: 1"=20'

BY: sbazan -

FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\30 - pMT-0001_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025



GENERAL NOTES:

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION WORK ZONE TRAFFIC CONTROL TYPICALS IN CATEGORY 1 OF THE BOOK OF STANDARDS FOR HIGHWAY AND INCIDENTAL STRUCTURES, THE 2011 MARYLAND MUTCD AND SUBSEQUENT REVISIONS ADOPTED BY THE STATE OF MARYLAND, THESE PLANS, AND THE OTHER CONTRACT DOCUMENTS.
2. NO WORK IS TO BEGIN UNTIL ALL ADVANCE MAINTENANCE OF TRAFFIC CONTROL DEVICES ARE IN PLACE AND OPERATIONAL, AS APPROVED BY THE ENGINEER.
3. PLACE TEMPORARY SIGNS AS SHOWN ON THE PLANS. ADJUST PLACEMENT OF SIGNS TO AVOID CONFLICTS WITH EXISTING SIGNS, DRIVEWAYS, AND OTHER FEATURES AS APPROVED BY THE ENGINEER.
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HARFORD COUNTY, MARYLAND

HARFORD COUNTY, MARYLAND

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

LEGEND

- CURRENT PHASE WORK AREA
- DRUM FOR MAINTENANCE OF TRAFFIC
- TEMPORARY CONC. BARRIER FOR MOT
- TRAFFIC FLOW ARROW
- SIGN
- EXISTING RIPRAP
- EXISTING STORMDRAIN
- ELECTRIC POLE
- GAS VALVE
- TRAFFIC RAIL BARRIER
- EXISTING TREE LINE

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STATE OF MARYLAND — LUCIA NOVAK — 200370 — PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905	Revisions
GP #GRA-006189-2024	

HARFORD COUNTY, MARYLAND

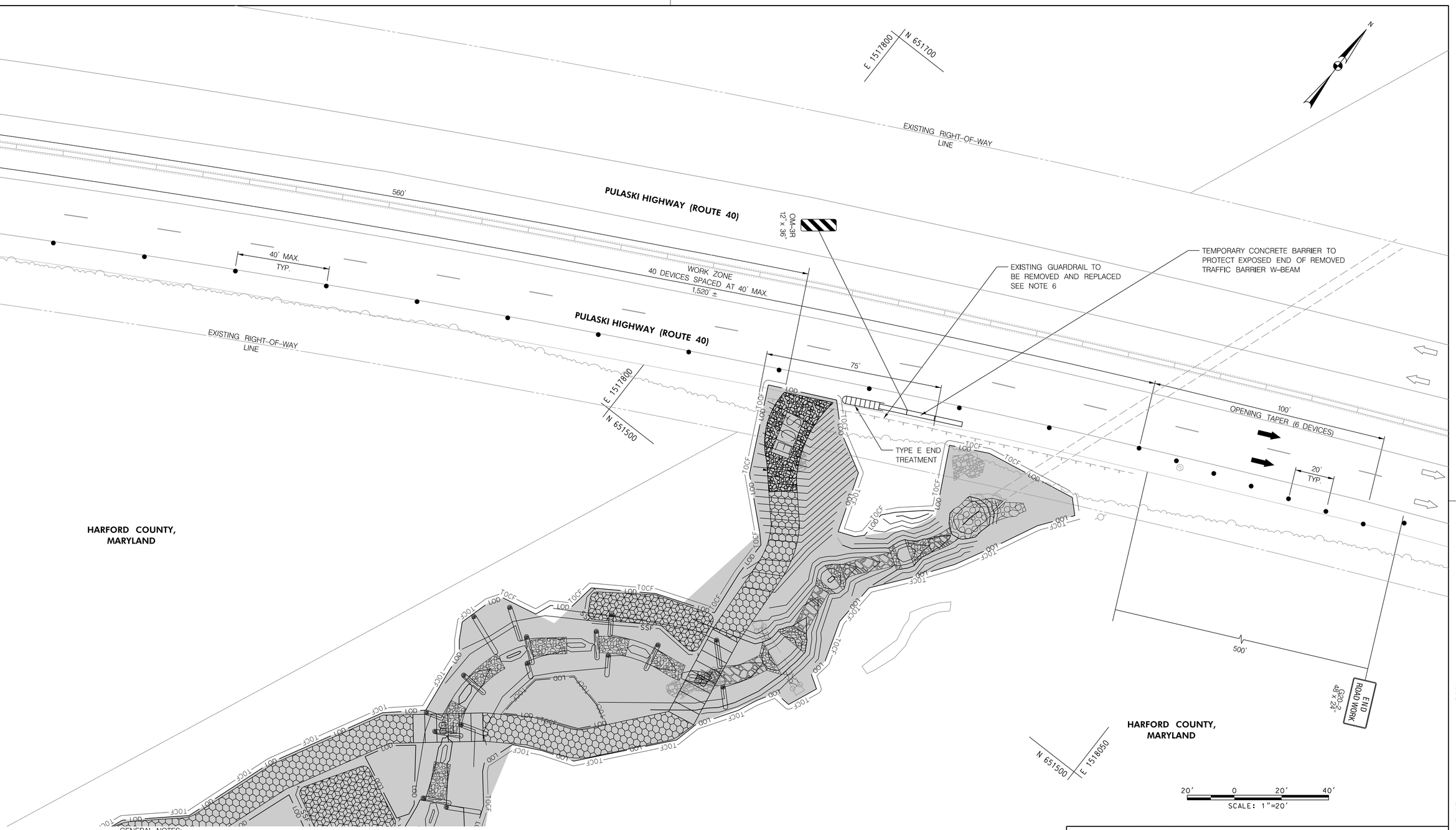
ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

MAINTENANCE OF TRAFFIC

Drawn By : SB	Scale : 1" = 20'
Designed By : SB/BA	Date : APRIL 2025
Reviewed By : RO	
Drawing No. MT-02 of MT-03	Sheet No. 31 of 34

BID No.:
HCG DWG ID No.: MT-02
SCALE: 1"=20'

BY: sbazam -
FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\31 - pMT-0002_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025



GENERAL NOTES:

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION WORK ZONE TRAFFIC CONTROL TYPICALS IN CATEGORY 1 OF THE BOOK OF STANDARDS FOR HIGHWAY AND INCIDENTAL STRUCTURES, THE 2011 MARYLAND MUTCD AND SUBSEQUENT REVISIONS ADOPTED BY THE STATE OF MARYLAND, THESE PLANS, AND THE OTHER CONTRACT DOCUMENTS.
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4. ALL EXISTING SIGNS AND PAVEMENT MARKINGS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION OR AS DIRECTED BY THE ENGINEER.
5. TRAFFIC SIGNS SHALL NOT BE PLACED WHERE THEY WILL IMPEDE THE PATH OF PEDESTRIANS OR MOTORISTS.
6. THE FIRST 75' OF THE GUARDRAIL RUN IS TO BE REMOVED PRIOR TO SCE OPERATION AND BE PROTECTED BY THE TEMP. CONCRETE BARRIER. AFTER WORK HAS BEEN COMPLETED THE REMAINING GUARD RAIL IS TO BE REMOVED AND THE ENTIRE RUN REPLACED WITH COMPLIANT GUARDRAIL.

LEGEND

- CURRENT PHASE WORK AREA
- DRUM FOR MAINTENANCE OF TRAFFIC
- TEMPORARY CONC. BARRIER FOR MOT
- TRAFFIC FLOW ARROW
- SIGN

PROFESSIONAL CERTIFICATION

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STATE OF MARYLAND · LUCIA NAPOLI · 200370 · PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905

GP #GRA-006189-2024

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

MAINTENANCE OF TRAFFIC

Drawn By : SB

Designed By : SB/BA

Reviewed By : RO

Drawing No. MT-03 of MT-03

Scale : 1" = 20'

Date : APRIL 2025

Sheet No. 32 of 34

BID No.:

MT-03

HCG DWG ID No.:

SCALE: 1" = 20'

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BY: sbazan -

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PLOTTED: 4/28/2025

WORK ZONE TRAFFIC CONTROL PLAN GENERAL NOTES /WORK RESTRICTIONS

1. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST VERSION OF THE MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION'S (MDOT SHA) BOOK OF STANDARDS FOR HIGHWAY AND INCIDENTAL STRUCTURES, THE MDOT SHA STANDARD SIGN BOOK AND MDOT SHA'S MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MDMUTCD) 2011 EDITION.

2. EXISTING TRAFFIC SIGNS IN CONFLICT WITH THE WORK ZONE TRAFFIC CONTROL PLANS SHALL BE COVERED, RELOCATED, OR TAKEN DOWN, STORED, AND REPLACED AS DIRECTED IN ACCORDANCE WITH THE APPROVED PLANS. TEMPORARY TRAFFIC SIGNS SHALL BE INSTALLED ONLY AS NECESSARY.

3. EXISTING WARNING AND REGULATORY SIGNS ALONG ROADS WITHIN THE PROJECT LIMIT THAT ARE NOT IN CONFLICT WITH THE TRAFFIC CONTROL PLANS SHALL BE MAINTAINED DURING CONSTRUCTION.

4. THE CONTRACTOR SHALL NOT STORE EQUIPMENT AND MATERIAL WITHIN THE TRAVELED PORTION OF THE ROADWAY. ALSO, EQUIPMENT AND MATERIALS SHALL NOT BE STORED IN SUCH A MANNER AS TO OBSTRUCT SIGHT DISTANCE AT ANY INTERSECTING ROAD, NOR BE LOCATED WITHIN THE 30' CLEAR ZONE WITHOUT POSITIVE PROTECTION.

5. END TREATMENTS MUST BE ADEQUATE FOR AT LEAST A 65 MPH DESIGN SPEED ON US 40.

6. THE CONTRACTOR SHALL COORDINATE MOT ACTIVITIES WITH ANY ADJACENT PROJECTS IN CONSTRUCTION PRIOR TO INSTALLING ANY TEMPORARY TRAFFIC CONTROL DEVICES.

7. THE CONTRACTOR SHALL FOLLOW STD. NO. MD 104.04-05 FOR DAILY LANE CLOSURES DURING OFF PEAK HOURS.

8. THE CONTRACTOR SHALL NOTIFY MDOT SHA AT LEAST 48 HOURS PRIOR TO BEGINNING WORK ALONG MDOT SHA ROADWAYS TO SCHEDULE A FIELD MEETING TO PRE-SPOT TRAFFIC CONTROL DEVICE LOCATIONS.

9. WORK SHALL BE PERFORMED DURING OFF-PEAK TIMES (9 AM – 3 PM) AS APPROVED BY MDOT SHA. IF WORK IS EXPECTED TO EXCEED THE OFF-PEAK TIME WINDOW, PEAK TIME PERMITS OR WEEKEND WORK TIMES SHALL BE COORDINATED WITH MDOT SHA.

10. THE FOLLOWING TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATIONS (TTCTA) FROM THE MODT SHA BOOK OF STANDARDS ARE TO BE FOLLOWED AS APPROPRIATE:

    MD 104.04-01 – SHOULDER WORK, DIVIDED UNCONTROLLED, GREATER THAN 40 MPH
    MD 104.04-05 – RIGHT LANE CLOSURE, DIVIDED UNCONTROLLED, GREATER THAN 40 MPH

11. WHEN CLOSING OR OPENING A LANE OR SHOULDER ON ROADWAY WITH POSTED SPEED LIMIT OF 55 MPH OR GREATER, ENSURE THAT THE WORK VEHICLE USED FOR CLOSING OR OPENING THE LANE/SHOULDER IS CLOSELY FOLLOWED BY A PROTECTION VEHICLE DURING THE INSTALLATION AND REMOVAL OF TEMPORARY TRAFFIC CONTROL DEVICES.

12. IF PERSONNEL AND/OR EQUIPMENT ARE EXPECTED TO BE WITHIN 15 FEET FROM THE EDGE OF TRAVEL OR WITHIN 2 FEET FROM FACE OF CURB FOR A PERIOD LONGER THAN 15 MINUTES AT A SINGLE LOCATION (THIS INCLUDES ACTIVITIES SUCH AS MOWING AND LITTER COLLECTION), FOLLOW THE RECOMMENDATION LISTED UNDER WORK ADJACENT TO ROAD. A PROTECTION VEHICLE IS NOT REQUIRED IF PERSONNEL AND EQUIPMENT ARE POSITIONED BEHIND POSITIVE PROTECTION FOR THE ENTIRE WORK DURATION.

MAINTENANCE OF TRAFFIC
SEQUENCE OF CONSTRUCTION

1. CLOSE THE SHOULDER BY INSTALLING TEMPORARY TRAFFIC CONTROL DEVICES AND SIGNS AS SHOWN ON THE PLANS. ALL SIGNS ARE TO BE INSTALLED ON TWO 4"X4" POSTS WITH 7 FEET OF CLEARANCE FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE.

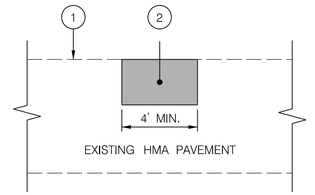
2. IMPLEMENT DAILY LANE CLOSURE IN ACCORDANCE WITH STD. MD 104.04-05. BEGIN THE STREAM RESTORATION USING STABILIZED CONSTRUCTION ENTRANCES.

3. COMPLETE STREAM RESTORATION WORK.

4. IF THE ROADWAY IS DAMAGED BY CONSTRUCTION VEHICLES OR TRAFFIC CONTROL DEVICES, PERFORM ANY ROADWAY PATCHING WHILE THE SHOULDER CLOSURE IS STILL IN EFFECT TO RESTORE THE PAVEMENT CONDITION AS DIRECTED BY THE ENGINEER

6. REMOVE STABILIZED CONSTRUCTION ENTRANCES AND ANY REMAINING CONSTRUCTION EQUIPMENT AND MATERIALS.

7. REMOVE TEMPORARY TRAFFIC CONTROL DEVICES AND SIGNS AND RETURN ROADWAY TO NORMAL OPERATION.



PARTIAL DEPTH PATCHING
US-40

LEGEND

1. TOP OF EXISITNG PAVEMENT
2. 8" HOT MIX ASPHALT SUPERPAVE 19.0 MM FOR PARTIAL DEPTH PATCH, PG 64S-22, LEVEL-2 (TWO 4" LIFTS)

NOTES

1. ALL COSTS FOR SAW CUTS, TRENCH EXCAVATION, PAVEMENT REMOVAL, PATCHING, END TREATMENT REMOVAL, MATERIALS, TOOLS, LABOR, AND INCIDENTALS SHALL BE INCLUDED IN THE PRICE OF THE TYPE E END TREATMENT.
2. PARTIAL-DEPTH PATCHING SHALL BE DONE IN LOCATIONS AS DIRECTED BY THE ENGINEER.
3. THE ESTIMATED DEPTH OF PATCHING IS 8" BASED ON THE FOUNDATION OF A TYPE E CRASH CUSHION.

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BY: sbazan -

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STATE OF MARYLAND · LUCIA NOVAK · 200370 · PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905

GP #GRA-006189-2024

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

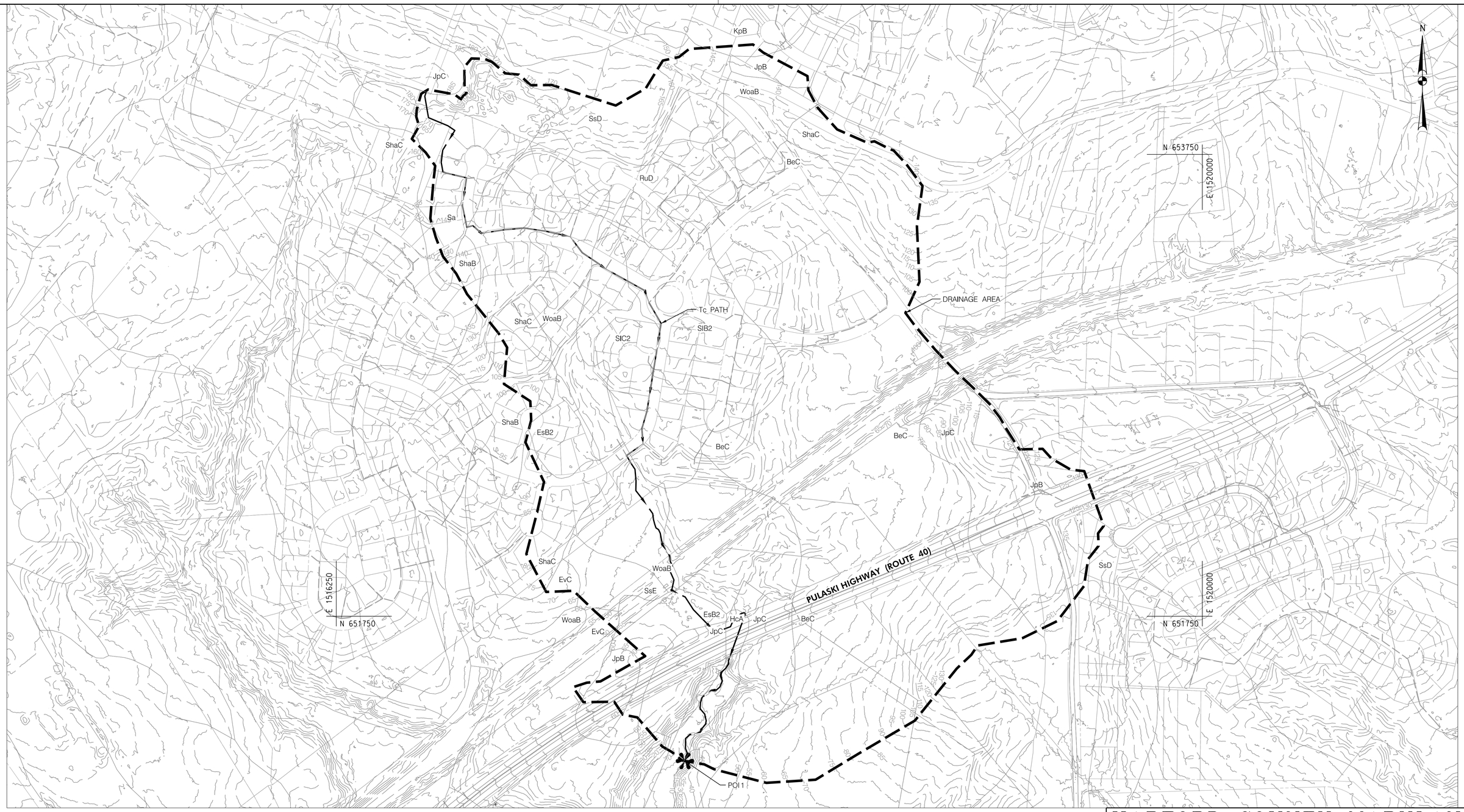
MAINTENANCE OF TRAFFIC NOTES

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. MN-01 of MN-01

Scale : 1" = 20'
Date : APRIL 2025
Sheet No. 33 of 34

BID No.:
HCG DWG ID No.: MN-01
SCALE: 1 INCH

FILE PATH: \\ad.rkk.com\fs\Cloud\Projects\2021\21155_HARCO\Task 012_Anita Leight Center Stream Restoration\CADD\Plans\100% Design\33 - pMN-0001_AnitaLeightCenter.dgn
PLOTTED: 4/28/2025



LEGEND

- DRAINAGE AREA TO POI
- Tc PATH
- POI
- EXISTING MAJOR CONTOUR
- EXISTING STORM DRAIN PIPE
- PROPERTY BOUNDARY
- LIMIT OF DISTURBANCE (LOD)
- PROPOSED HORIZONTAL ALIGMENT
- SOIL BOUNDARY

RUNOFF CONDITIONS	
	POI 1
DRAINAGE AREA (AC)	133.09
IMPERVIOUS AREA (AC)	25.72
TIME OF CONCENTRATION (HR)	0.43
CURVE NUMBER	66

200′ 0 200′ 400′
SCALE: 1″=200′

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STATE OF MARYLAND · LUCIAN BOGDAN · 20037O · PROFESSIONAL ENGINEER

PROJECT CONTRACT #59905

GP #GRA-006189-2024

Revisions

HARFORD COUNTY, MARYLAND

ANITA C. LEIGHT ESTUARY CENTER STREAM RESTORATION

DRAINAGE AREA MAP

Drawn By : SB
Designed By : SB/BA
Reviewed By : RO
Drawing No. DA-01 of DA-01

Scale : 1″ = 200′
Date : APRIL 2025
Sheet No. 34 of 34

BID No.:
HCG DWG ID No.: DA-01

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PLOTTED: 4/28/2025