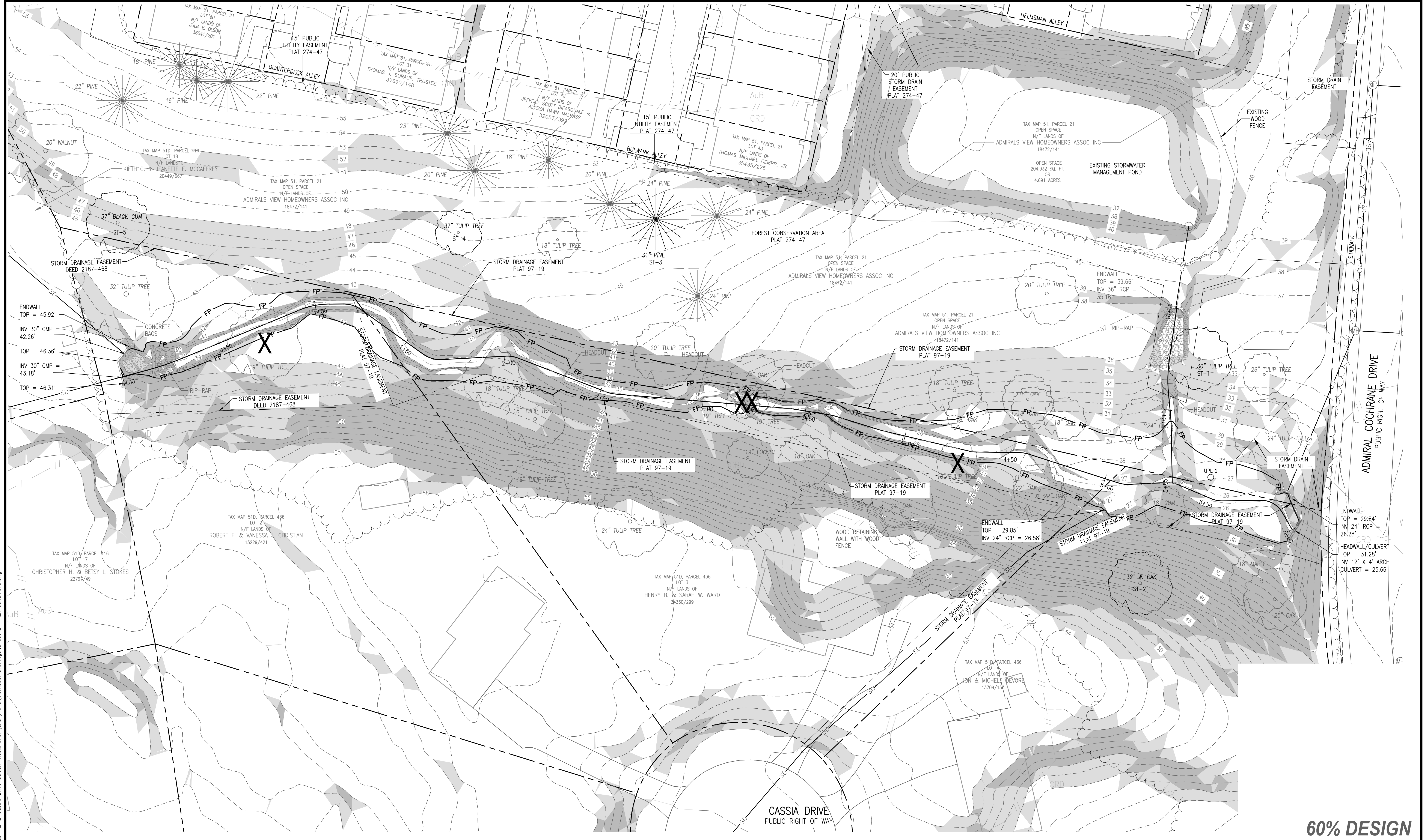



June 2026 FILE: T:\NEWPROJ\2025\2025-42-2_Cassia Drive Stream Restoration\CAD\Plans\Individual Drawings\Sheet 2 - Ex. Conditions.dwg



60% DESIGN

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NO.	BY	DATE

Prepared for:

P.O. Box 760
Edgewater, MD 21037


Prepared by:
 **Environmental Systems Analysis, Inc.**
 Natural Resources Management
 Ecological Restoration
 2141 Priest Bridge Drive, Suite 1
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EXISTING CONDITIONS
CASSIA DRIVE STREAM RESTORATION
 MAP 051D, GRID 0015, PARCEL 0436, SUBDIVISION 280

SECOND ELECTION DISTRICT, ANNE ARUNDEL COUNTY, MD

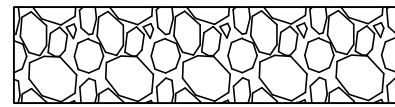

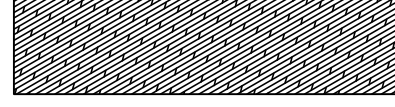
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DATE: JUNE 2026
 ESA PROJECT NO.: 2025-42-2 Cassia Drive Stream Restoration\CAD\Plans\Individual Drawings
 SHEET: 2 of 12

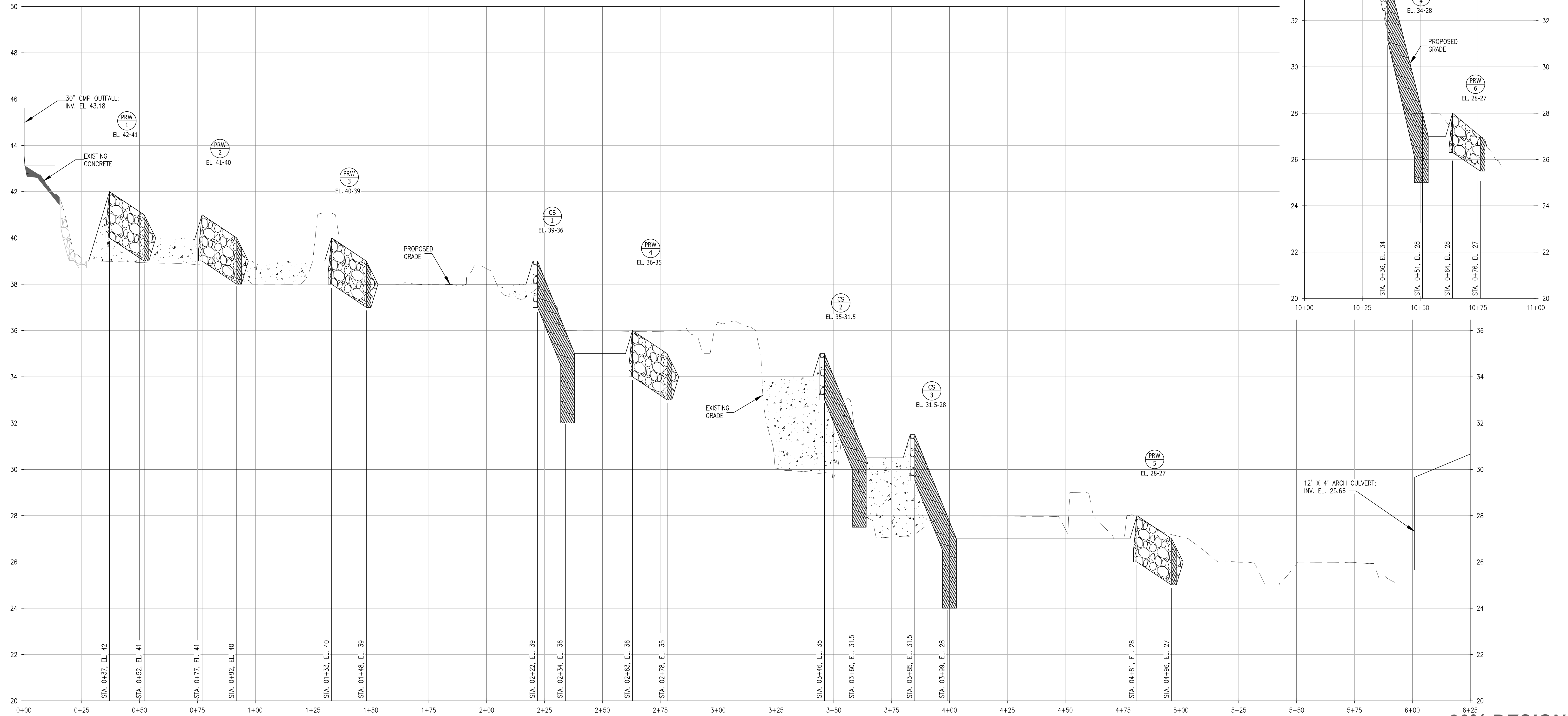


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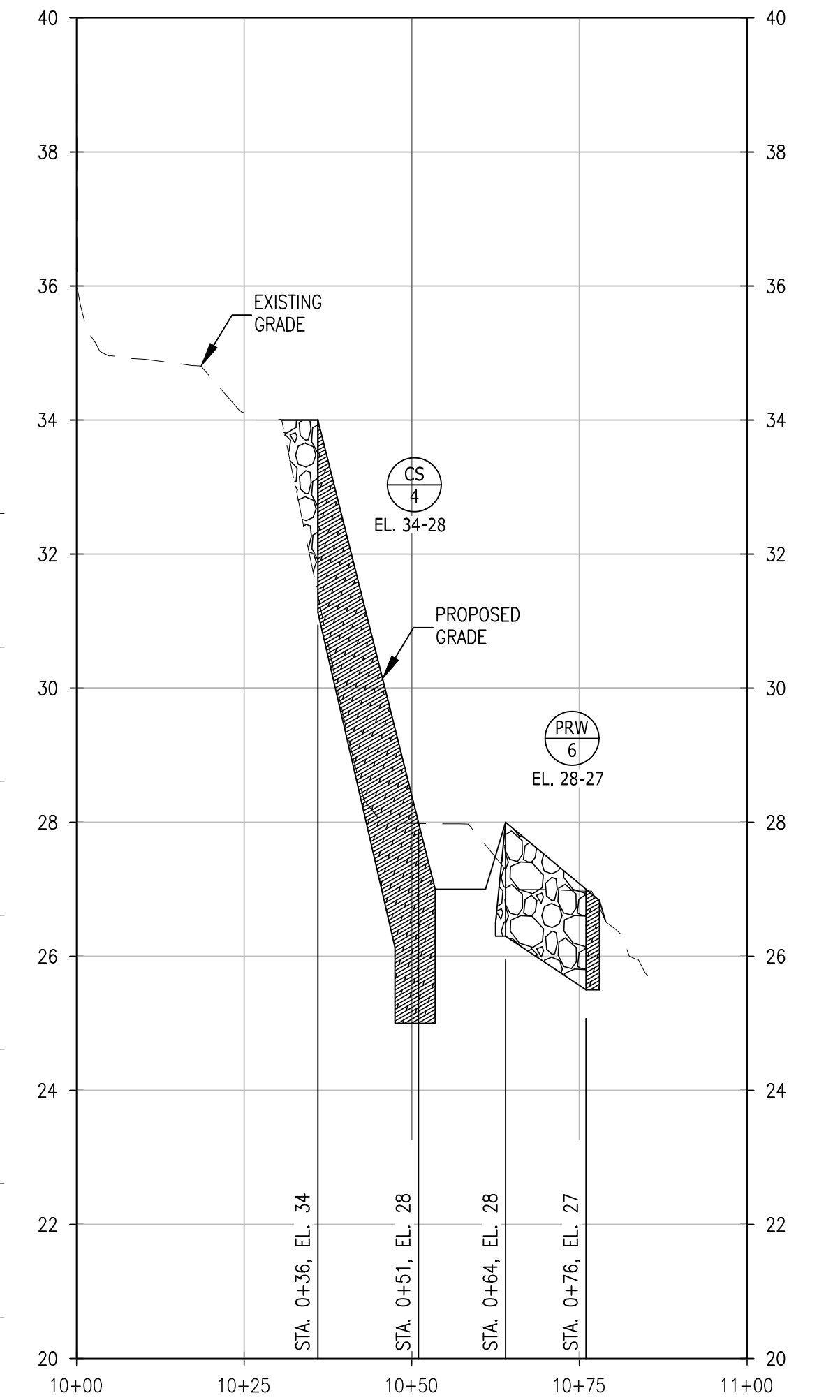
LEGEND

-  RIFFLE MIX
-  SANDY FILL
-  BOULDERS / CLASS III STONE

MAIN STEM PROFILE




SWM TRIBUTARY PROFILE



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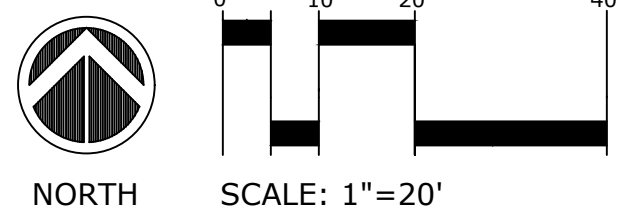
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PROFILE
CASSIA DRIVE STREAM RESTORATION
MAP 051D, GRID 0015, PARCEL 0436, SUBDIVISION 280

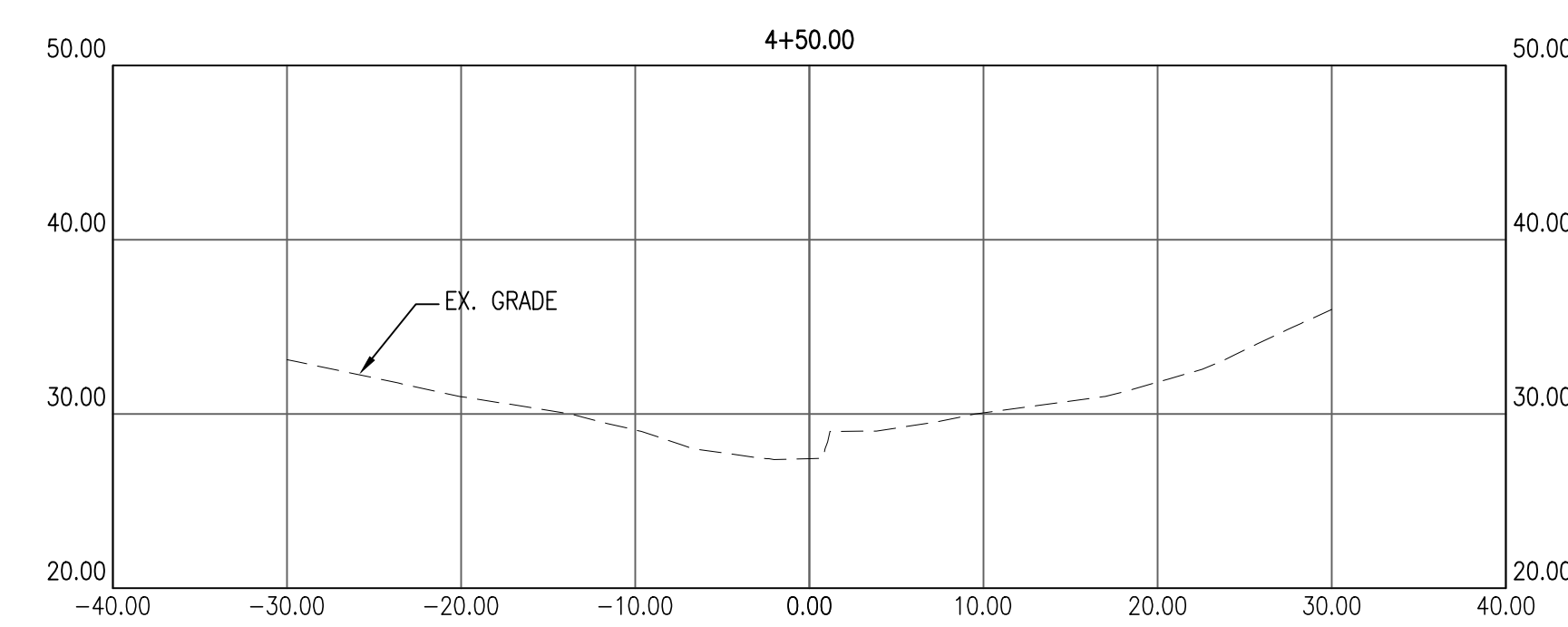
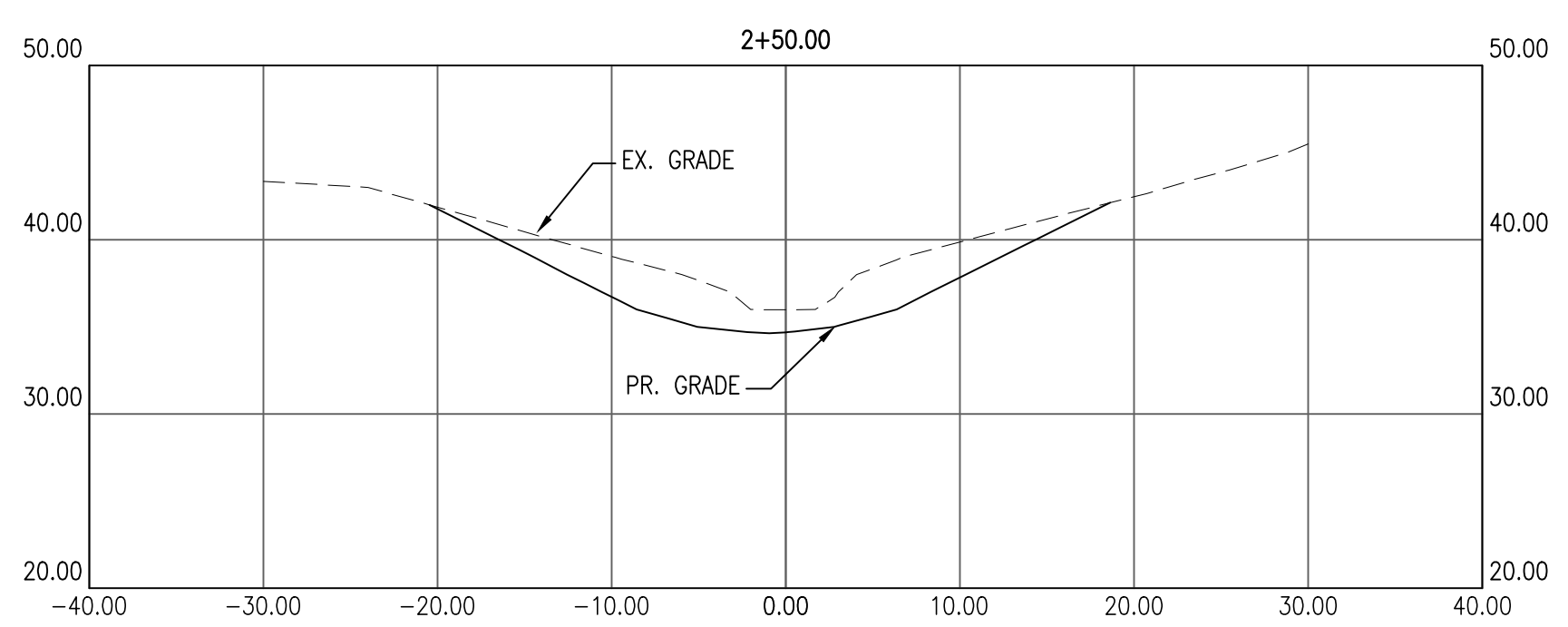
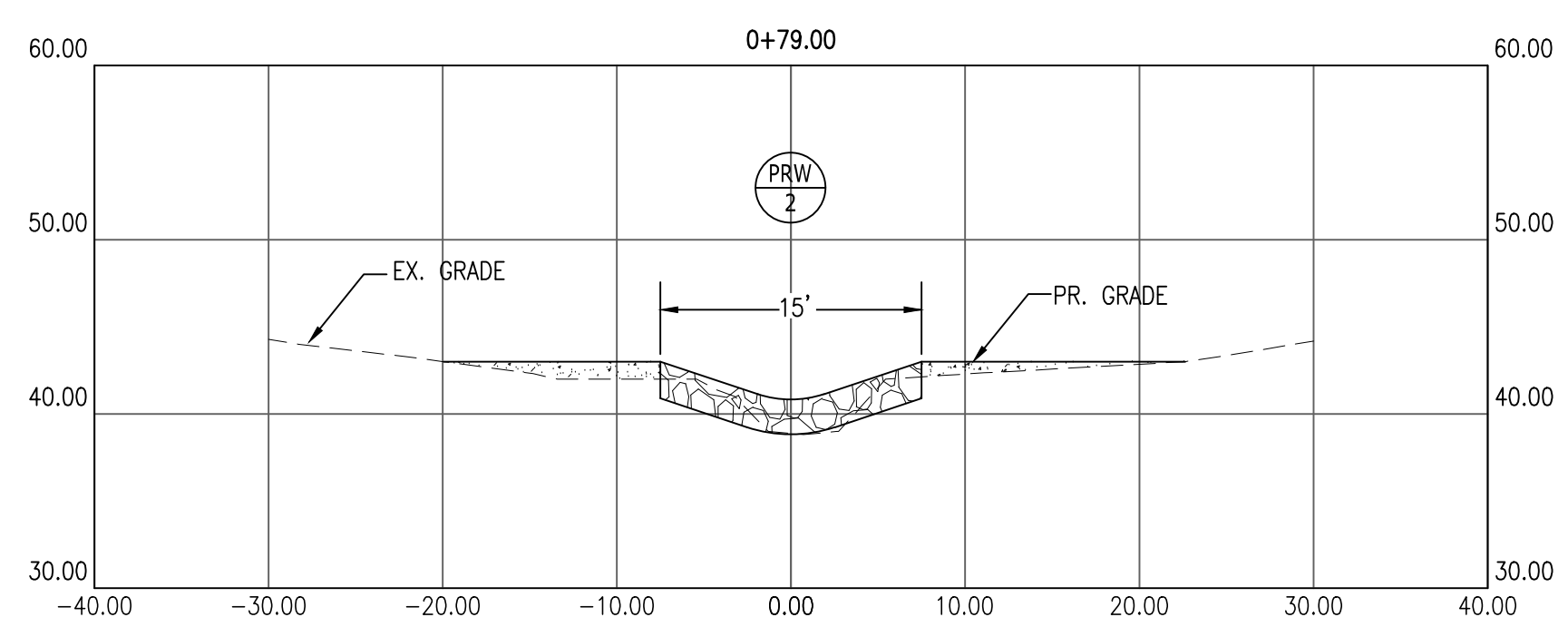
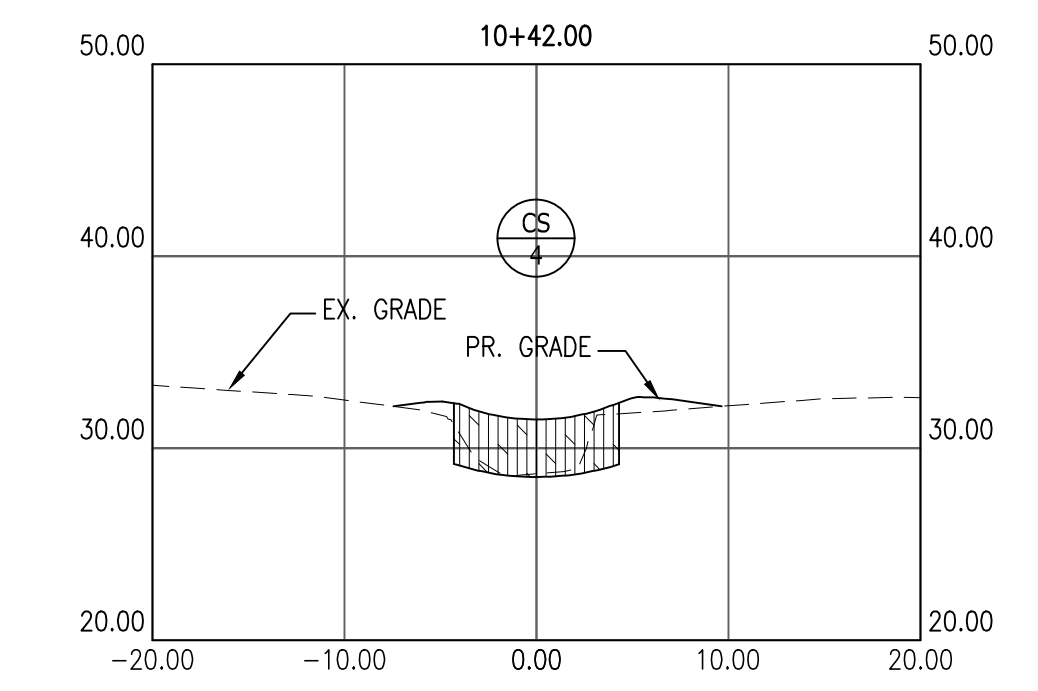
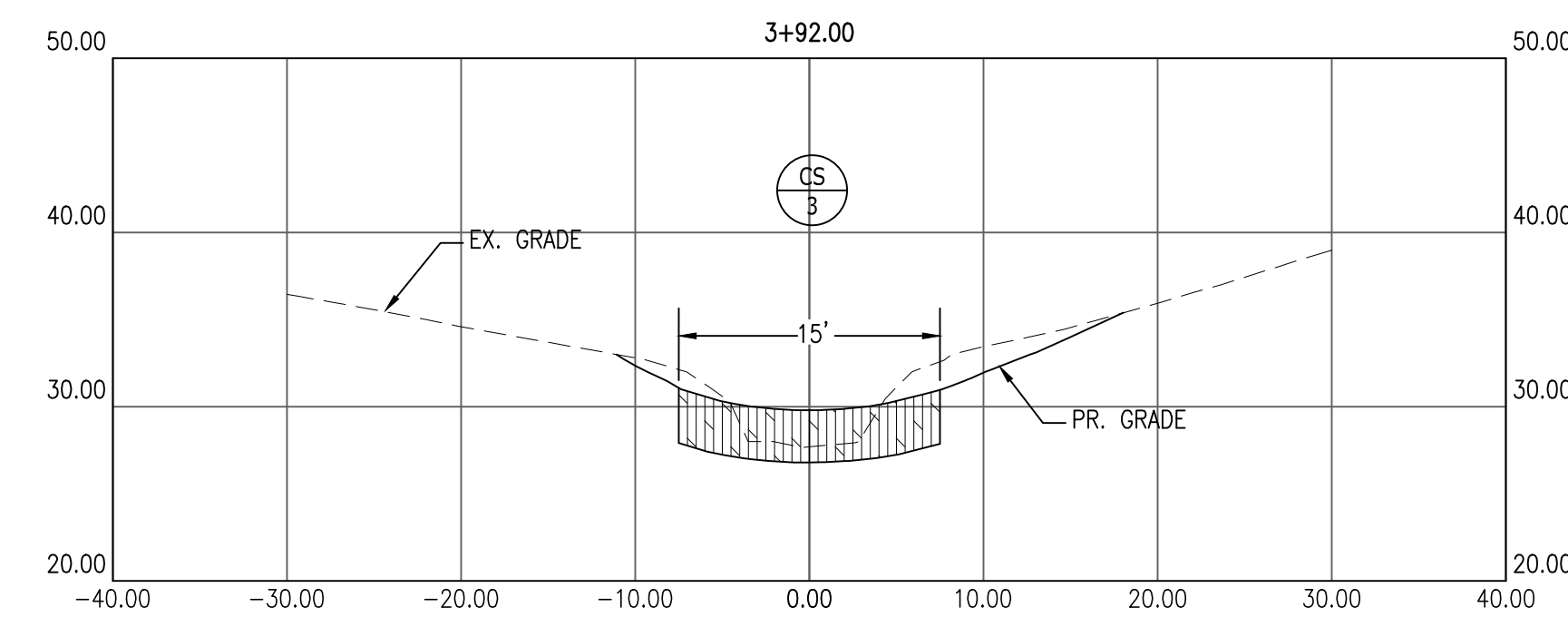
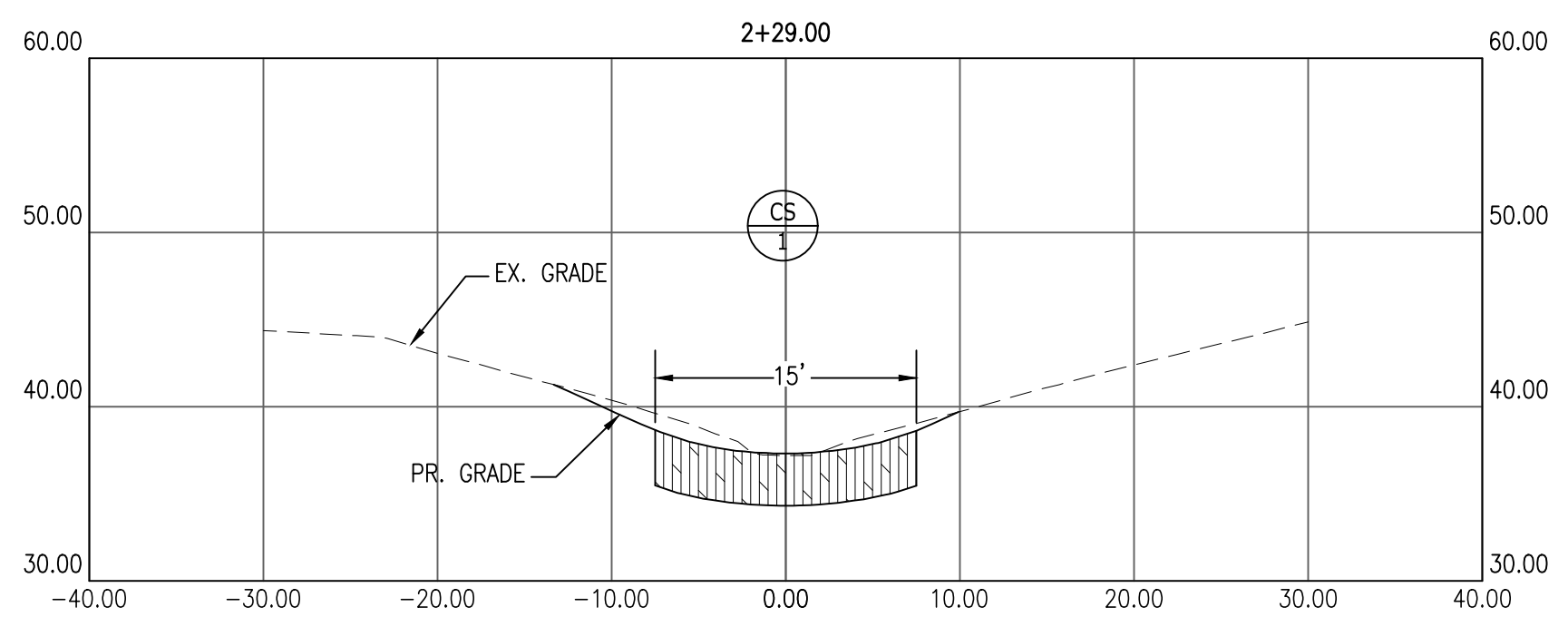
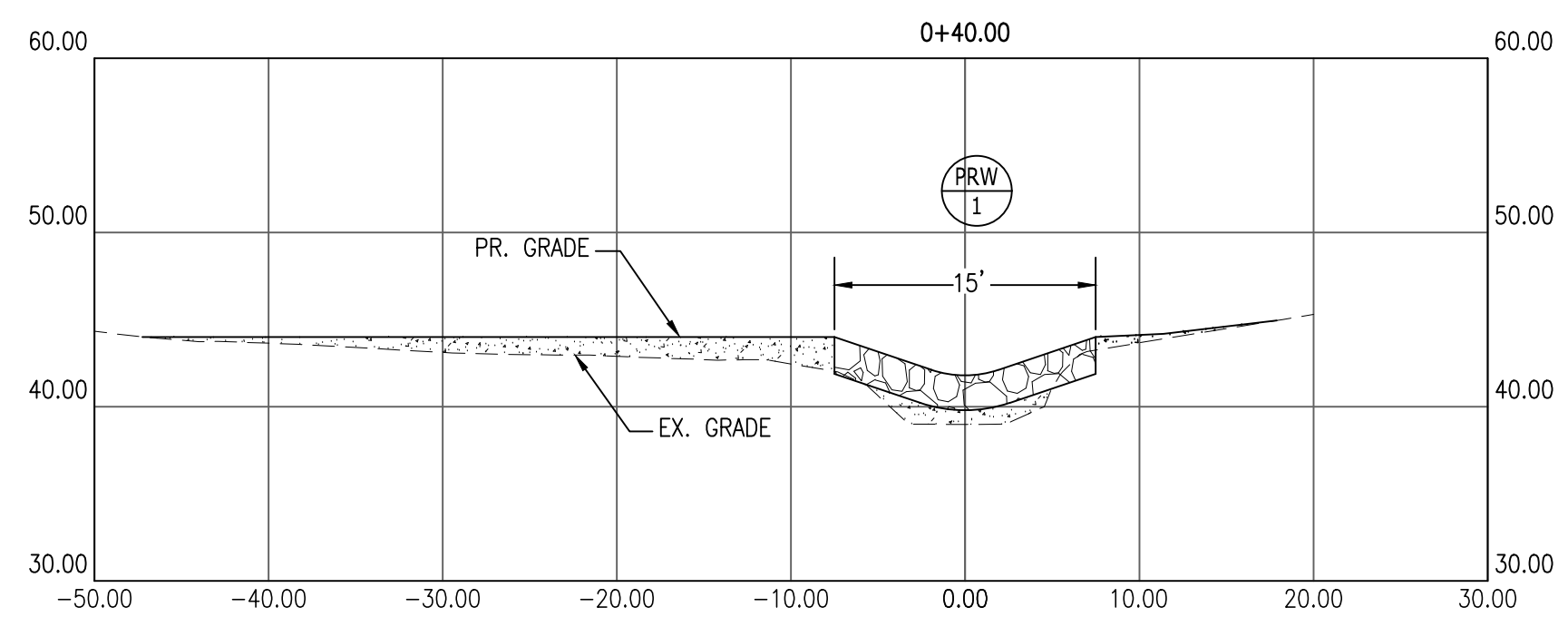
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SCALE: H: 1" = 20' V: 1" = 2'

DATE: JUNE 2026
ESA PROJECT NO.: 2025-42-2 Cassia Drive Stream Restoration\CAD\Plans\Individual Drawings
SHEET: 4 of 12

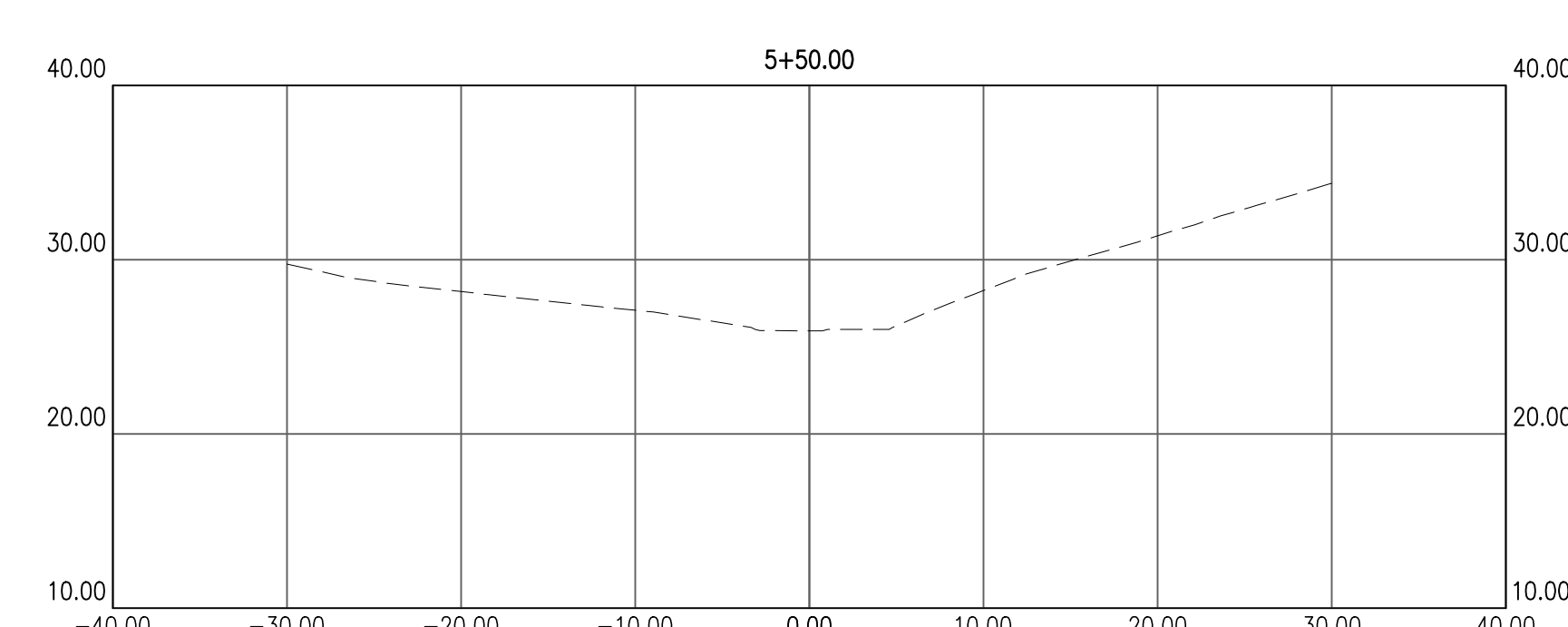
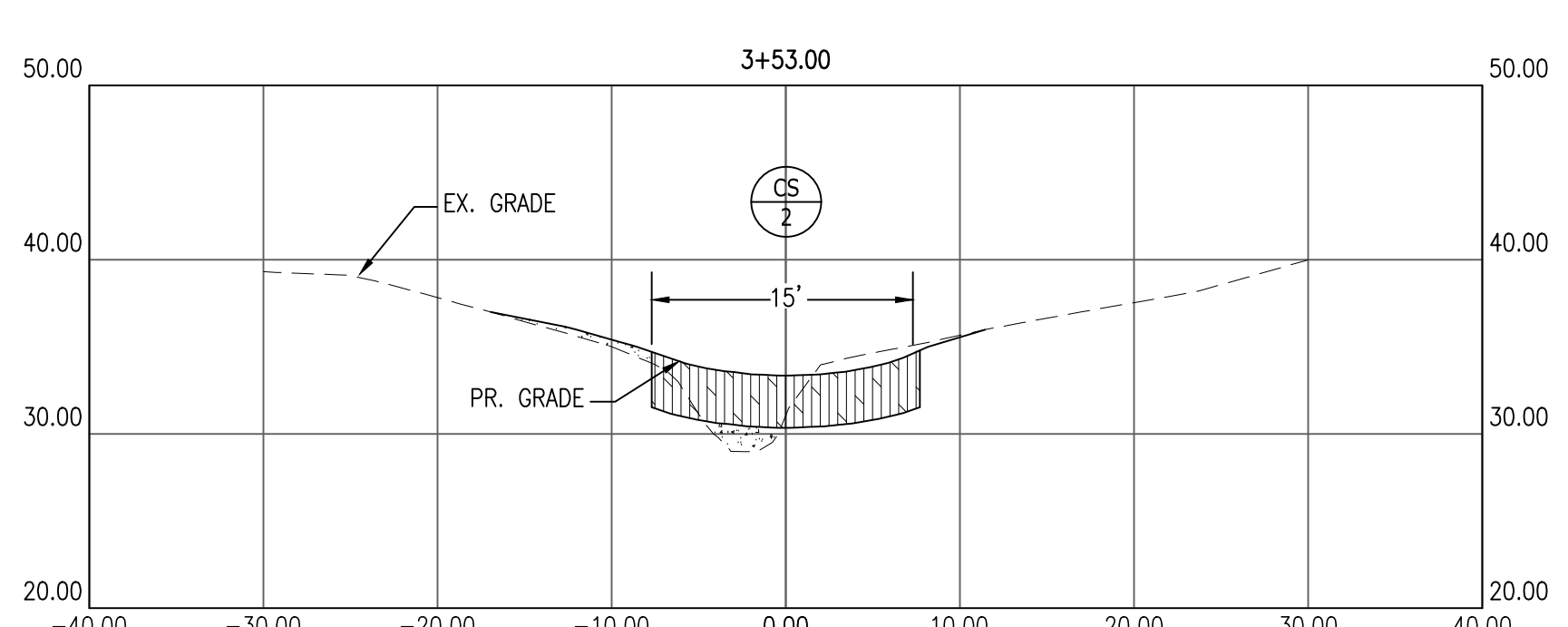
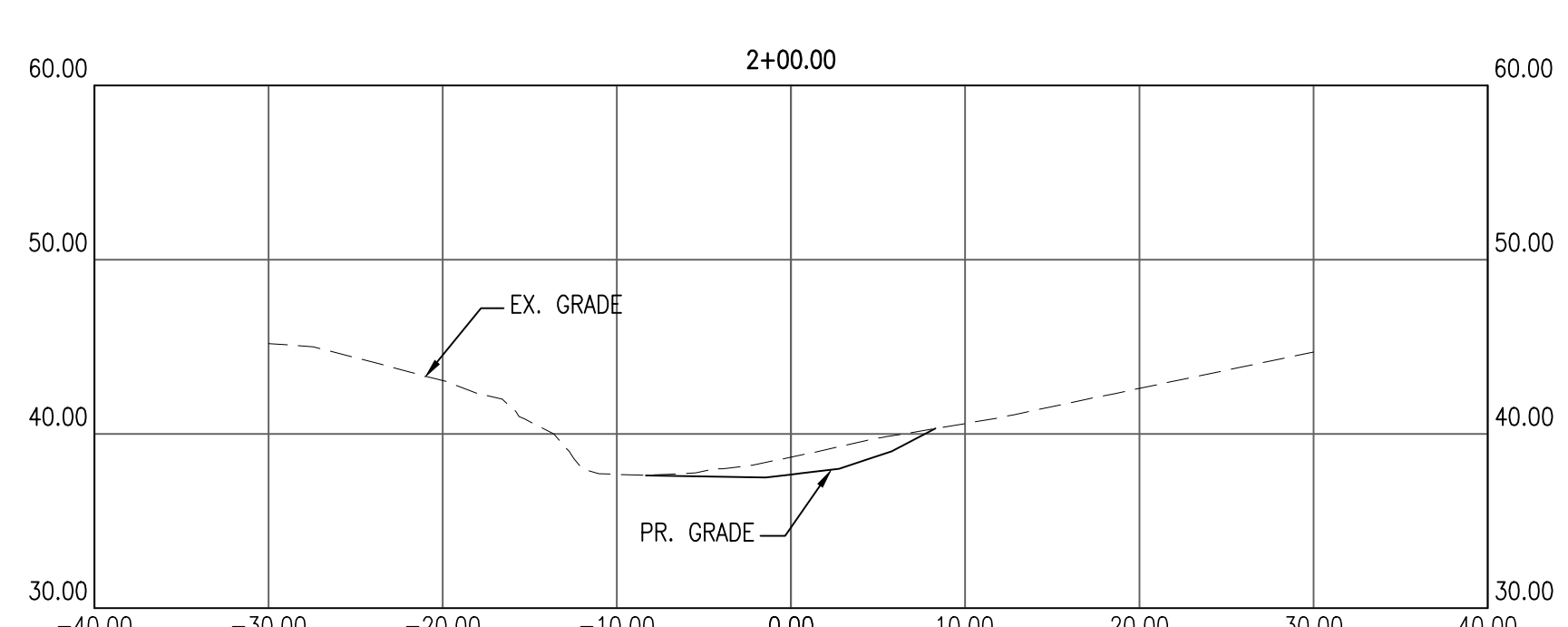
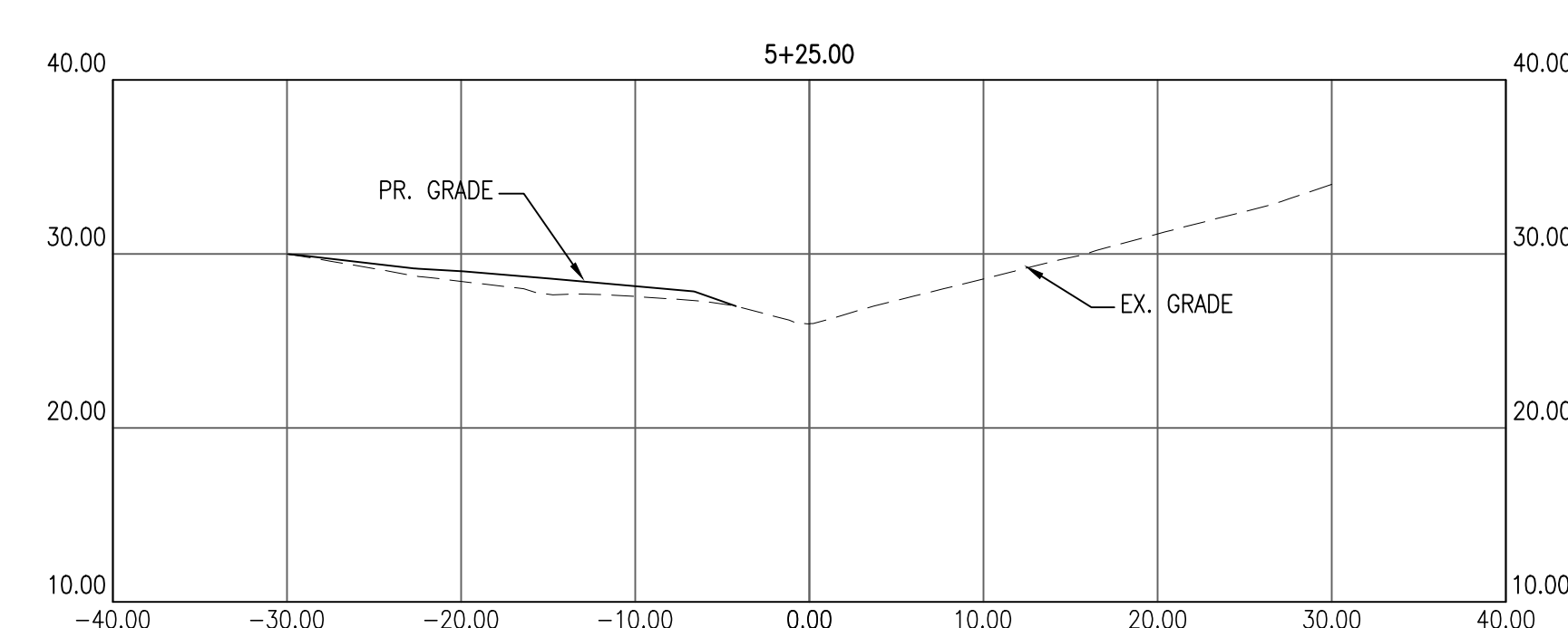
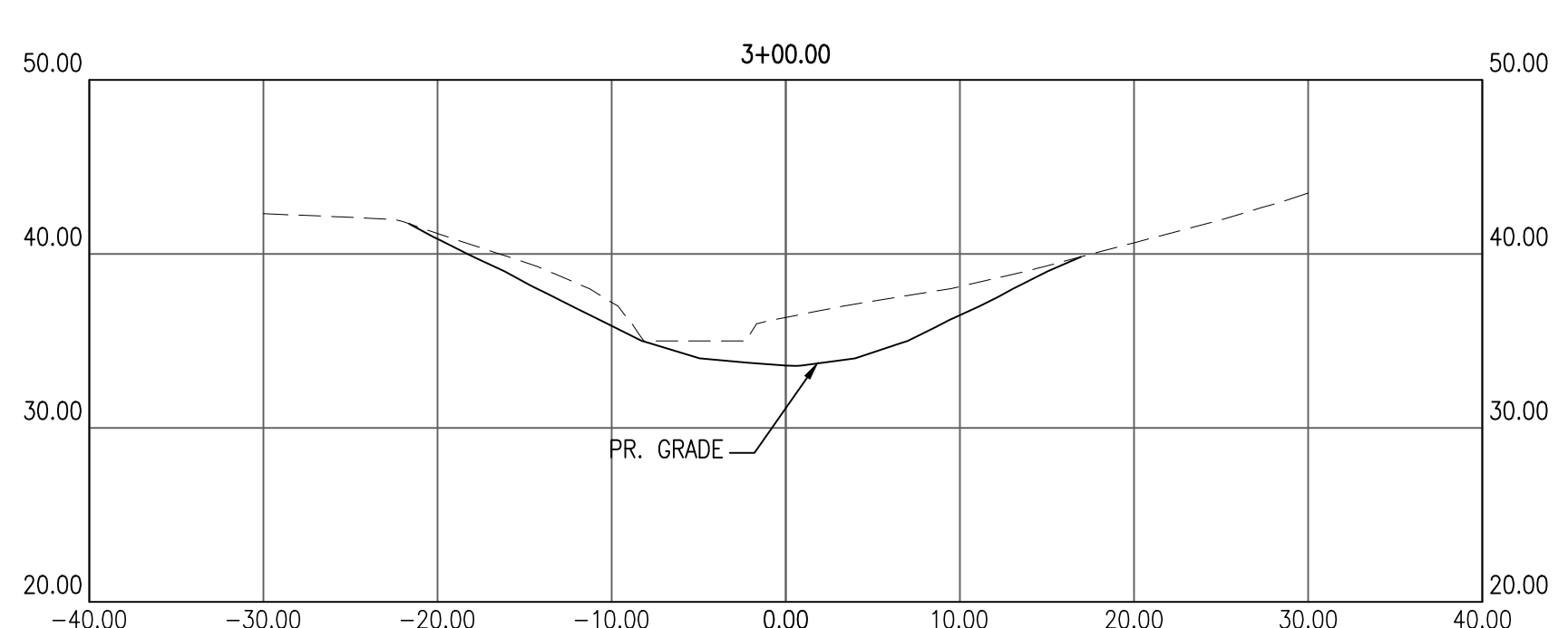
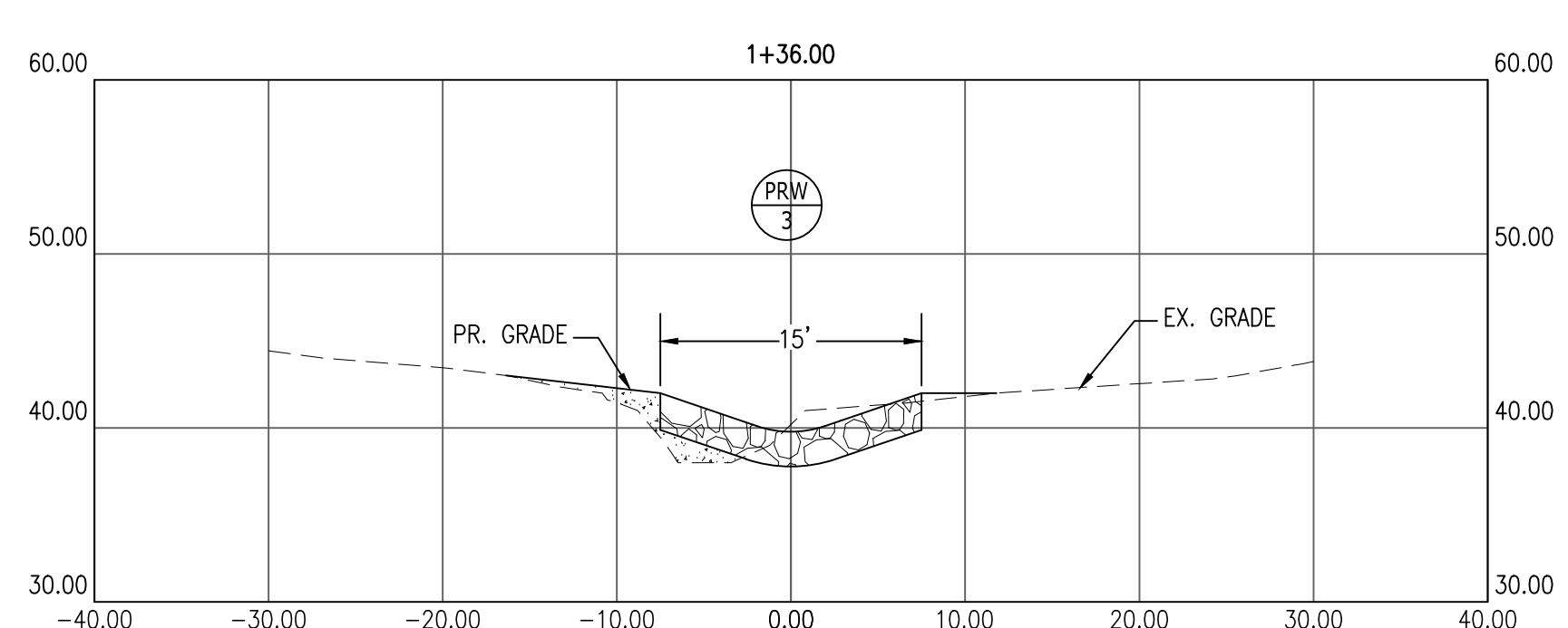
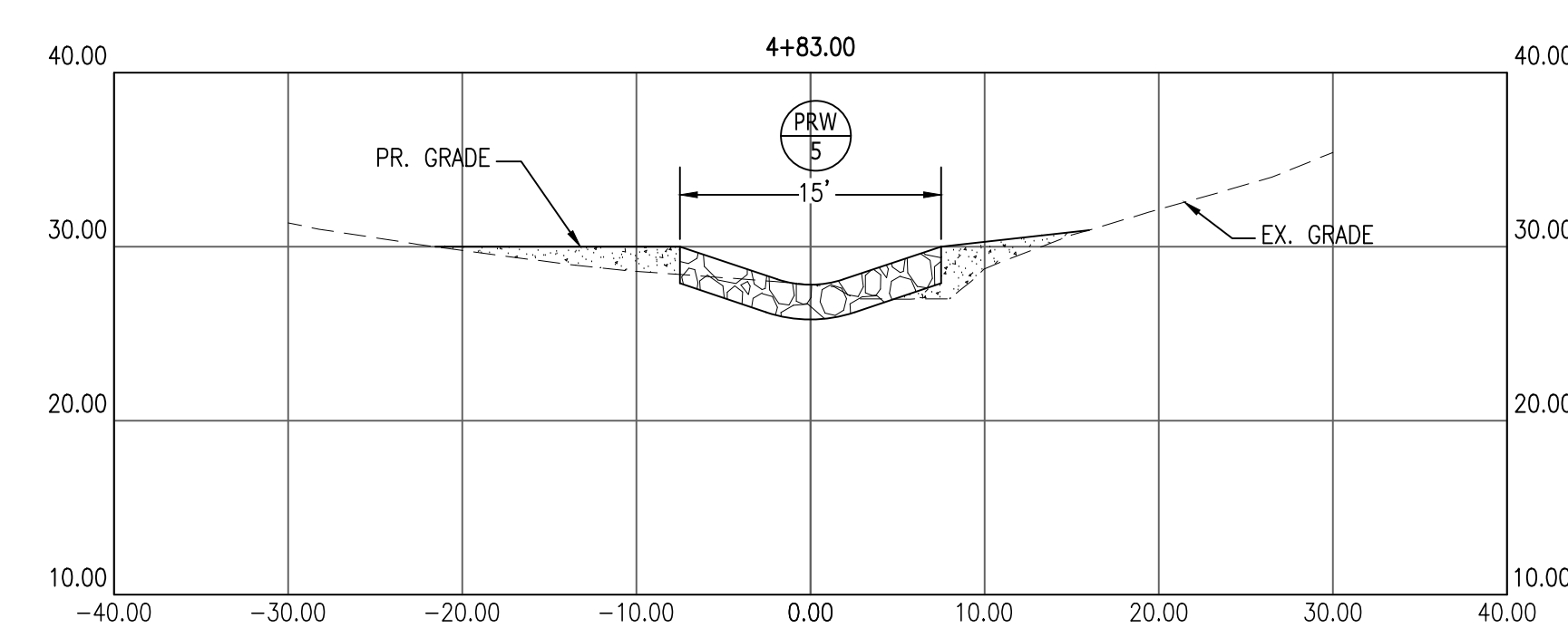
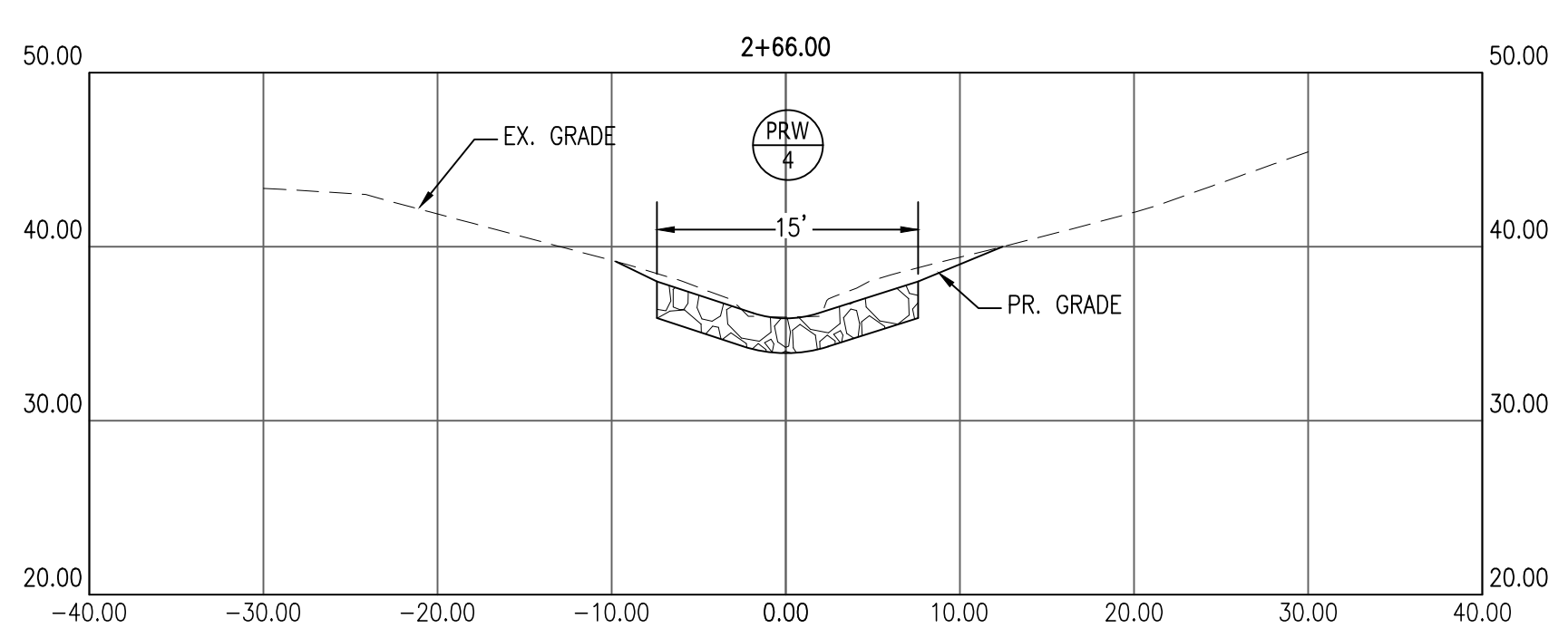
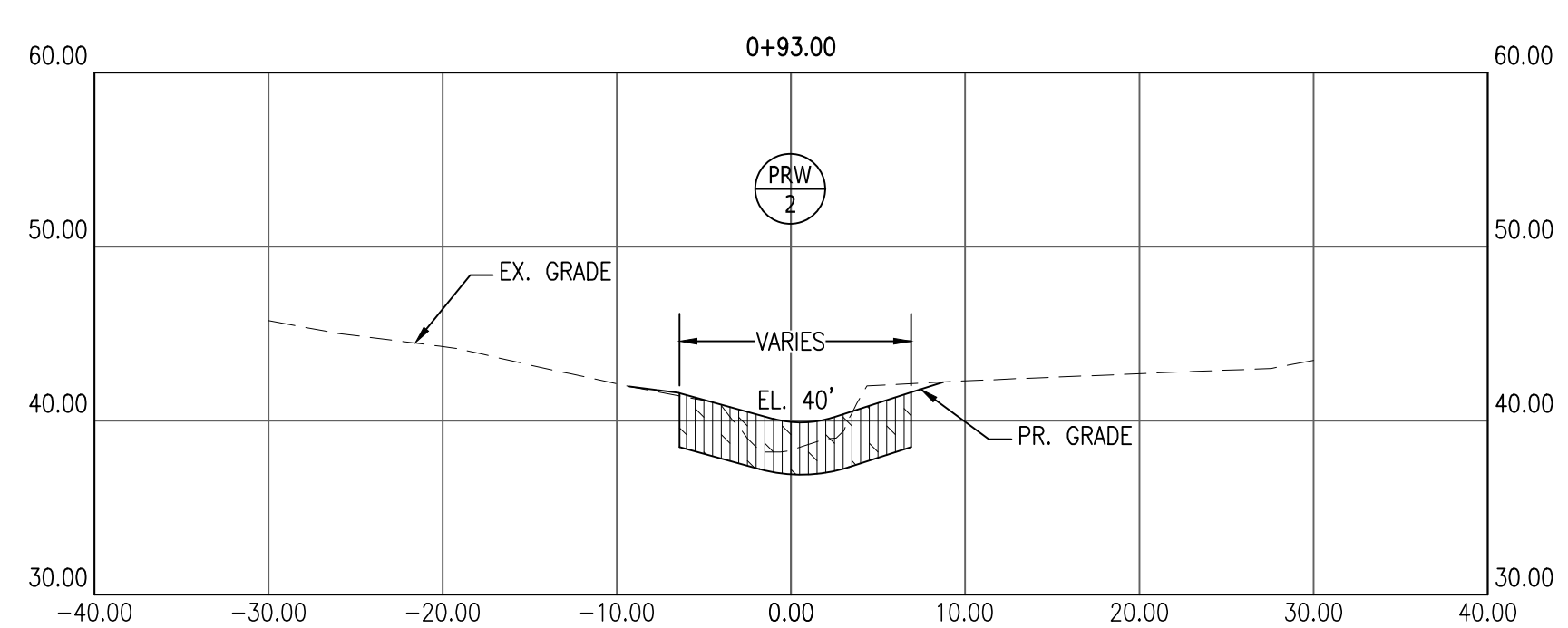


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LEGEND

- RIFFLE MIX
- SANDY FILL
- BOULDERS / CLASS III STONE



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 Ecological Restoration
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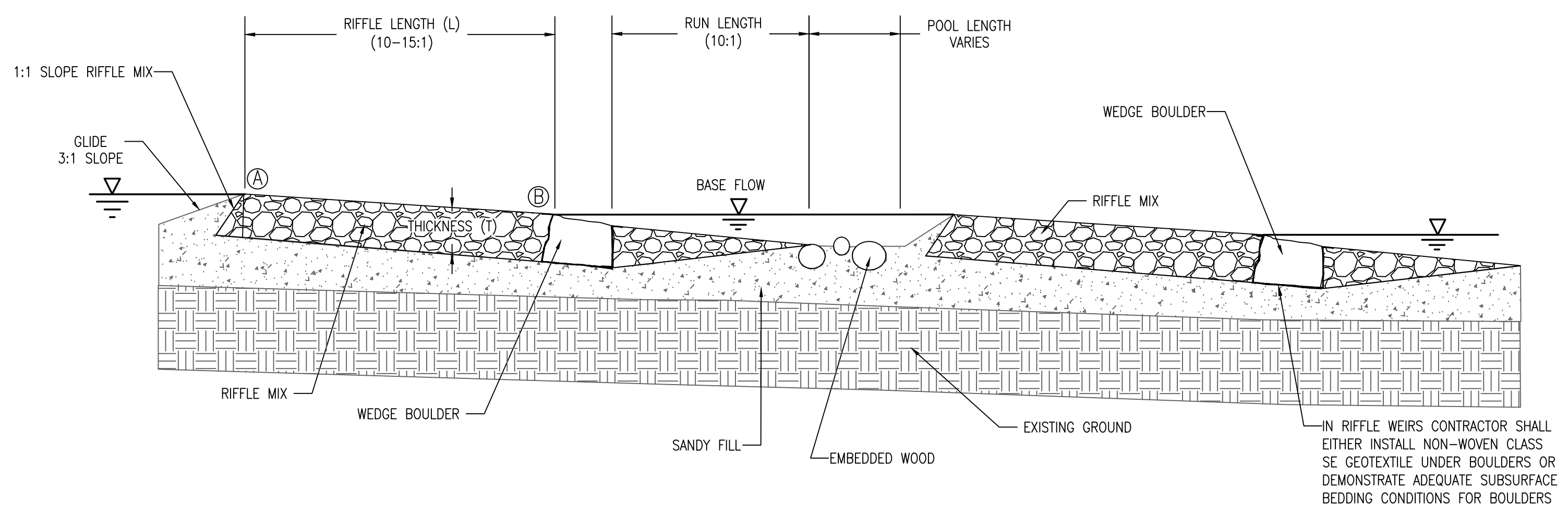
CROSS SECTIONS
CASSIA DRIVE STREAM RESTORATION
 MAP 051D, GRID 0015, PARCEL 0436, SUBDIVISION 280

SECOND ELECTION DISTRICT, ANNE ARUNDEL COUNTY, MD

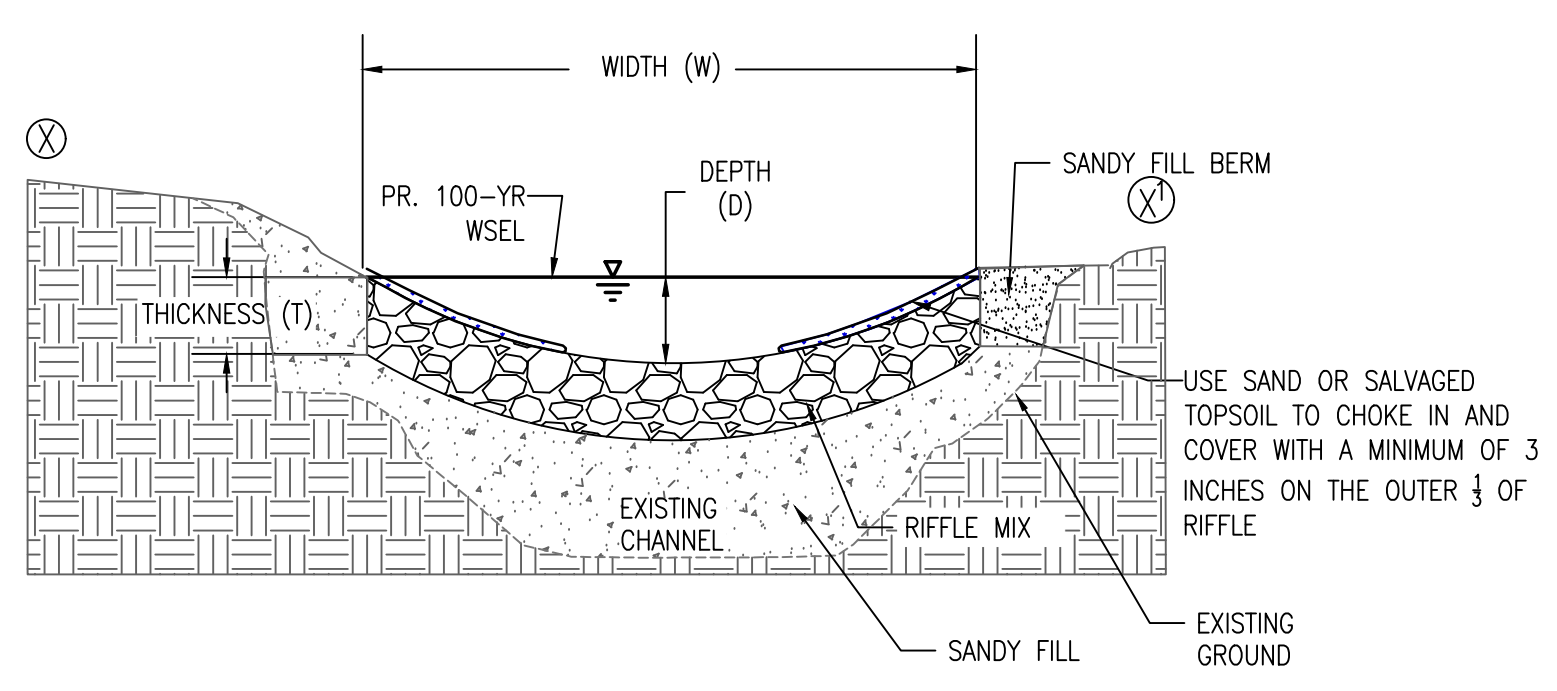
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DATE: JUNE 2026
 ESA PROJECT NO.: 2025-42-2 Cassia Drive Stream Restoration\CAD\Plans\Individual Drawings
 SHEET: 5 of 12

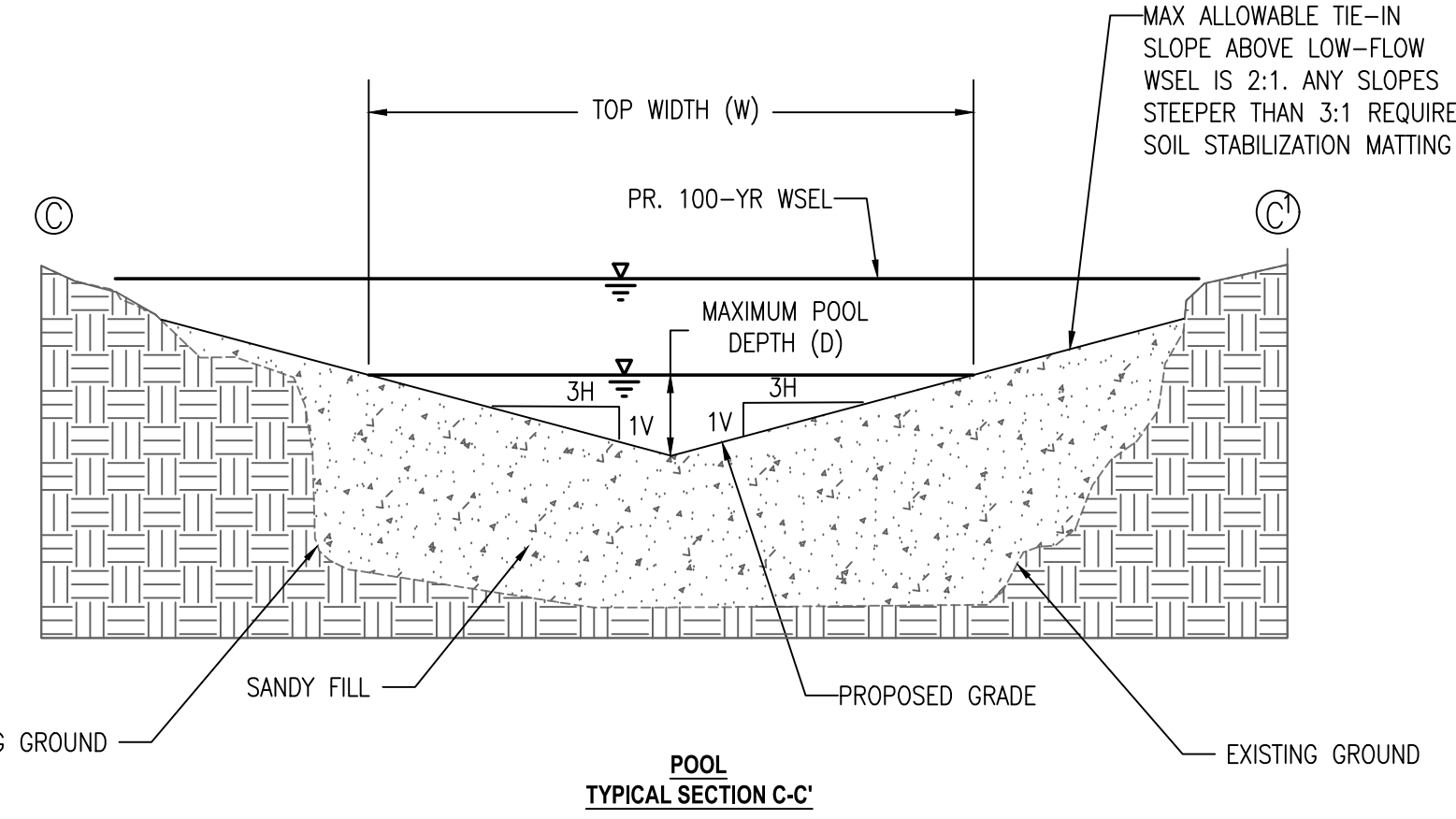
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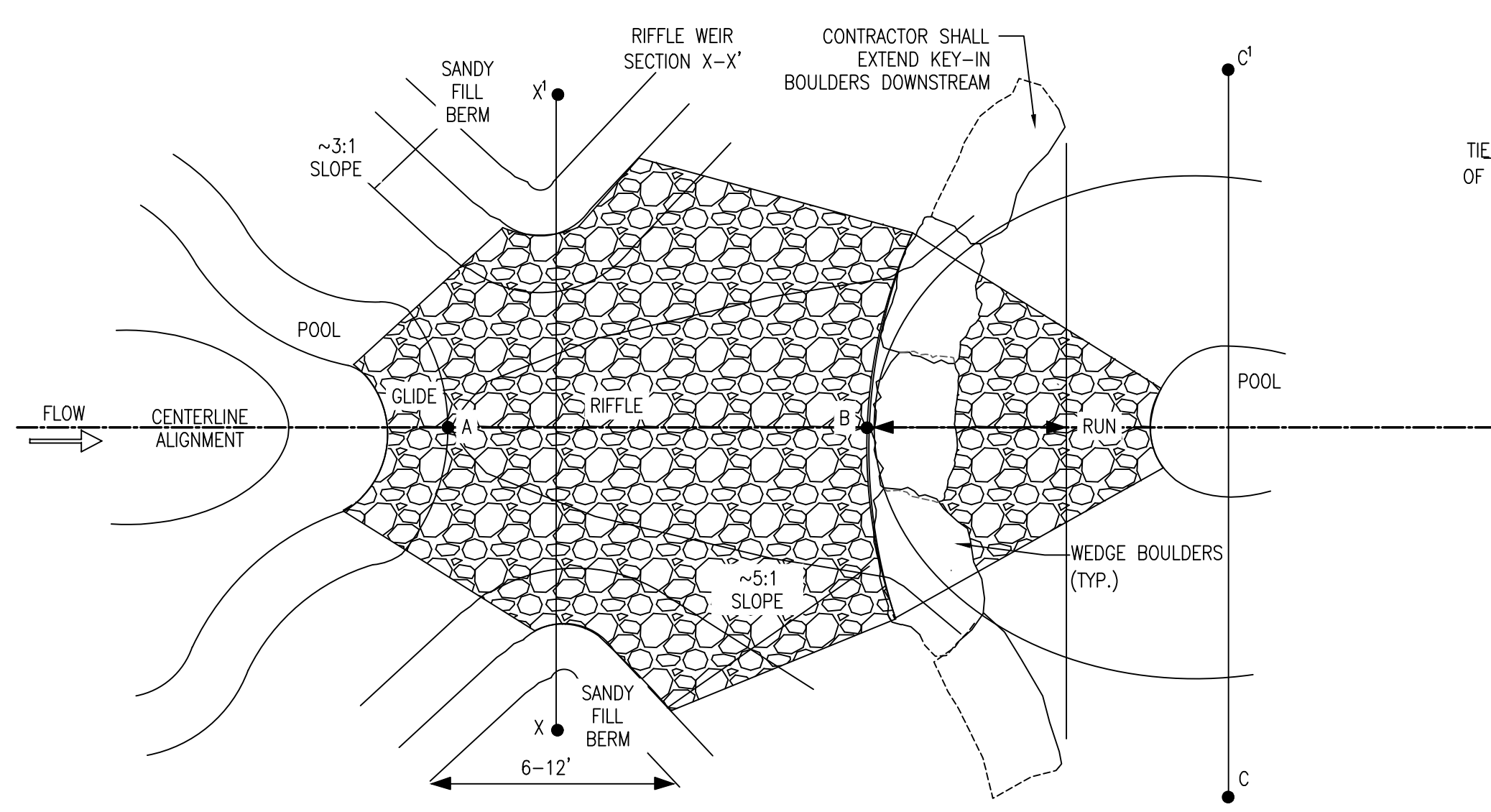
PARABOLIC RIFFLE WEIR CENTERLINE PROFILE



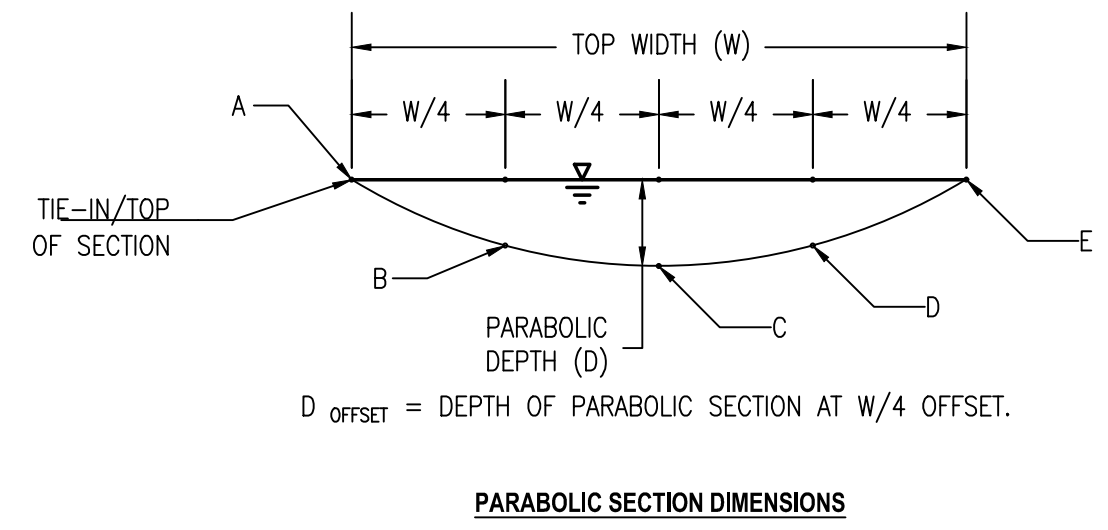
PARABOLIC RIFFLE WEIR TYPICAL SECTION X-X'



POOL TYPICAL SECTION C-C'



PARABOLIC RIFFLE WEIR PLAN VIEW



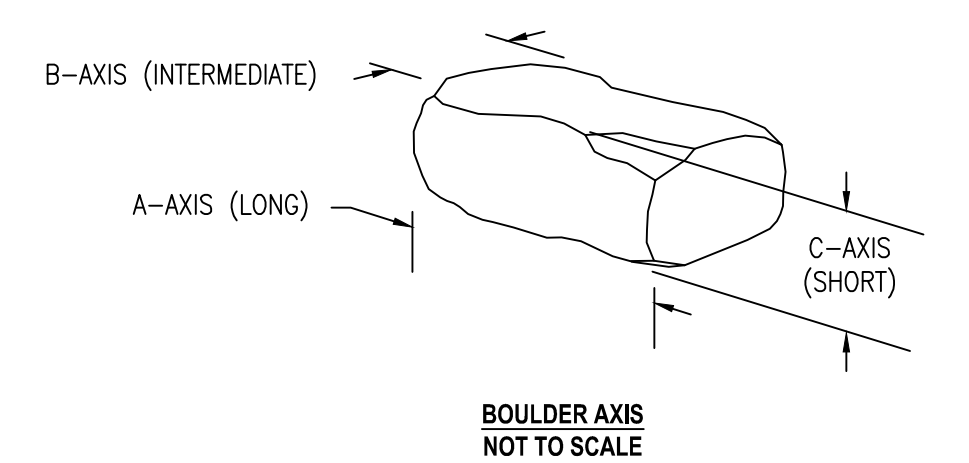
PARABOLIC SECTION DIMENSIONS

D50 MEDIAN STONE SIZE (INCHES)	% OF MATERIAL SMALLER THAN TYPICAL STONE	TYPICAL STONE EQUIVALENT DIAMETER (INCHES)	TYPICAL STONE WEIGHT (POUNDS)*
9	70 - 100	15	160
	50 - 70	12	85
	35 - 50	9	35
	2 - 10	3	1.3
12	70 - 100	21	440
	50 - 70	18	275
	35 - 50	12	85
	2 - 10	4	3

*ASSUMED UNIT WEIGHT OF 165 LBS/FT³

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

- SANDY FILL:**
- SHALL BE A NATURAL PRODUCT AND CONSIST OF INTERMIXED BROWN SILTY SAND AND CLAYEY SAND. THE PARTICLE SIZE SHALL RANGE FROM 0.3 MM TO 2.0 MM. SOME TRACE GRAVEL CONTENT IS OK. DIABASE, GREYSTONE, CALCAREOUS OR DOLOMITIC SAND AND MANUFACTURED SAND OR STONE DUST ARE NOT ACCEPTABLE.



BOULDER AXIS NOT TO SCALE

	A-AXIS	B-AXIS	C-AXIS	UNIT WEIGHT, LBS/FT ³ *
WEDGE BOULDERS & CASCADE BOULDERS	24-36"	24-36"	12-24"	
FOOTER AND ENERGY DISSIPATION BOULDERS	24-36"	24-36"	12-24"	

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

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

US STA.	DS STA.	US INV.	DS INV.	L (FT)	W (FT)	H (FT)*	D (FT)	D _{OFFSET} (FT)	D50 (IN)	T (IN)
PRW-1	0+37	42	41	15	15	1	2	0.5	12	24
PRW-2	0+77	41	40	15	15	1	2	0.5	12	24
PRW-3	1+33	40	39	15	15	1	2	0.5	12	24
CS-1	2+22	39	36	12	15	3	1.5	0.38	12	24
PRW-4	2+63	36	35	15	15	1	2	0.5	12	24
CS-2	3+46	35	31.5	14	15	2.5	1.5		12	24
CS-3	3+85	31.5	28	14	15	2.5	1.5		12	24
PRW-5	4+81	28	27	15	15	1	2	0.5	12	24
CS-4	10+34	34	28	18	8	6	1		12	24
PRW-6	10+66	28	27	10	8	1	1	0.25	9	18

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

60% DESIGN

NO.	BY	DATE	DESCRIPTION

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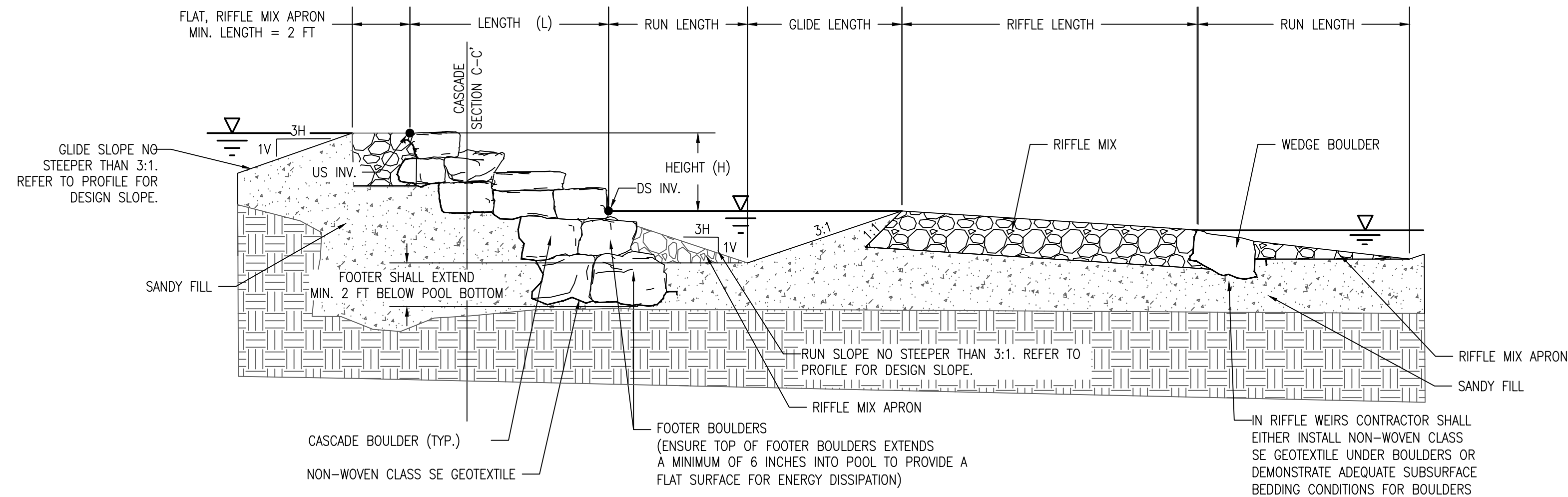
**P.O. Box 760
Edgewater, MD 21037**

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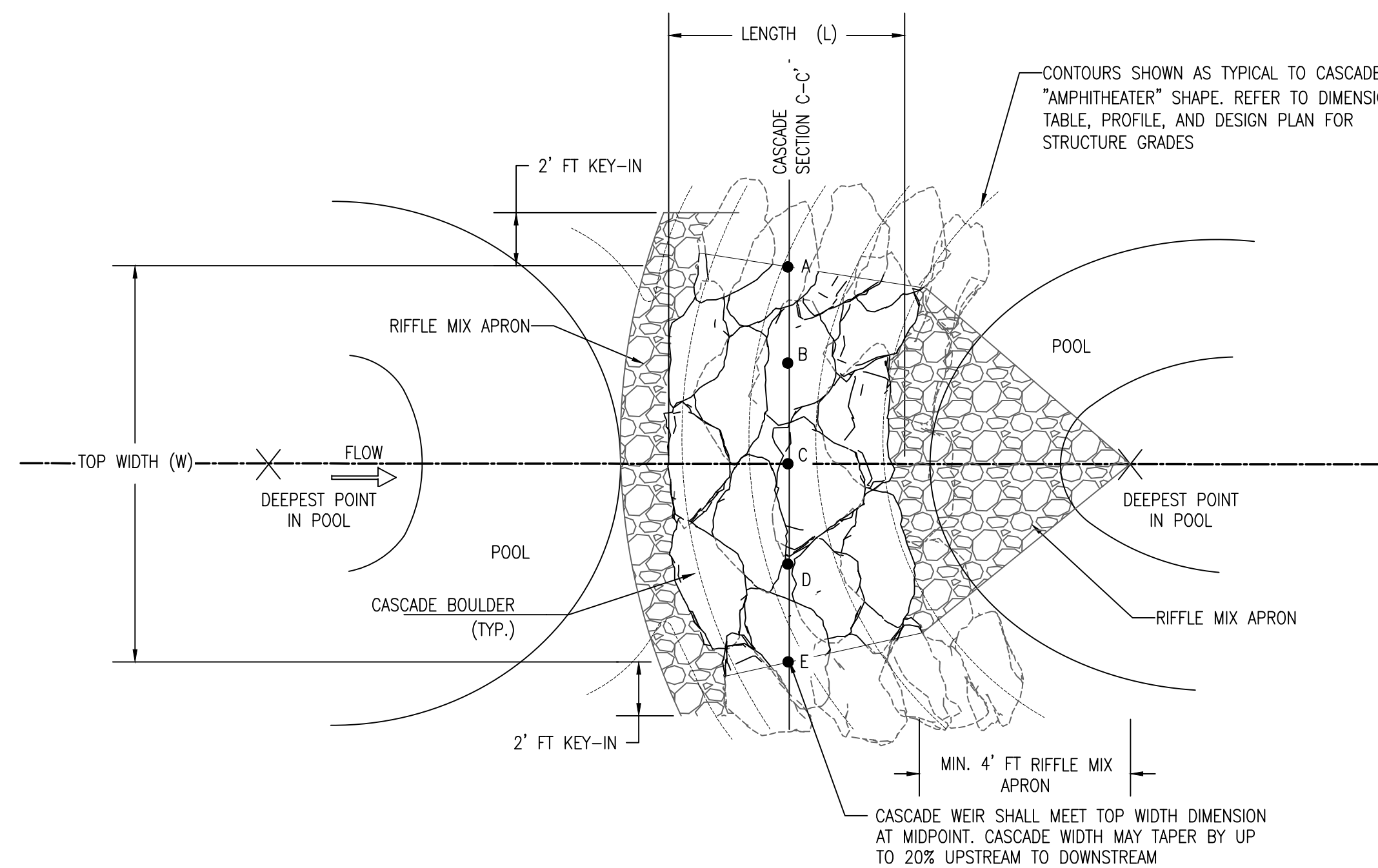
Environmental Systems Analysis, Inc.
Natural Resources Management
Ecological Restoration
2141 Priest Bridge Drive, Suite 1
Crofton, Maryland 21114

CONSTRUCTION DETAILS
CASSIA DRIVE STREAM RESTORATION
MAP 051D, GRID 0015, PARCEL 0436, SUBDIVISION 280
SECOND ELECTION DISTRICT, ANNE ARUNDEL COUNTY, MD

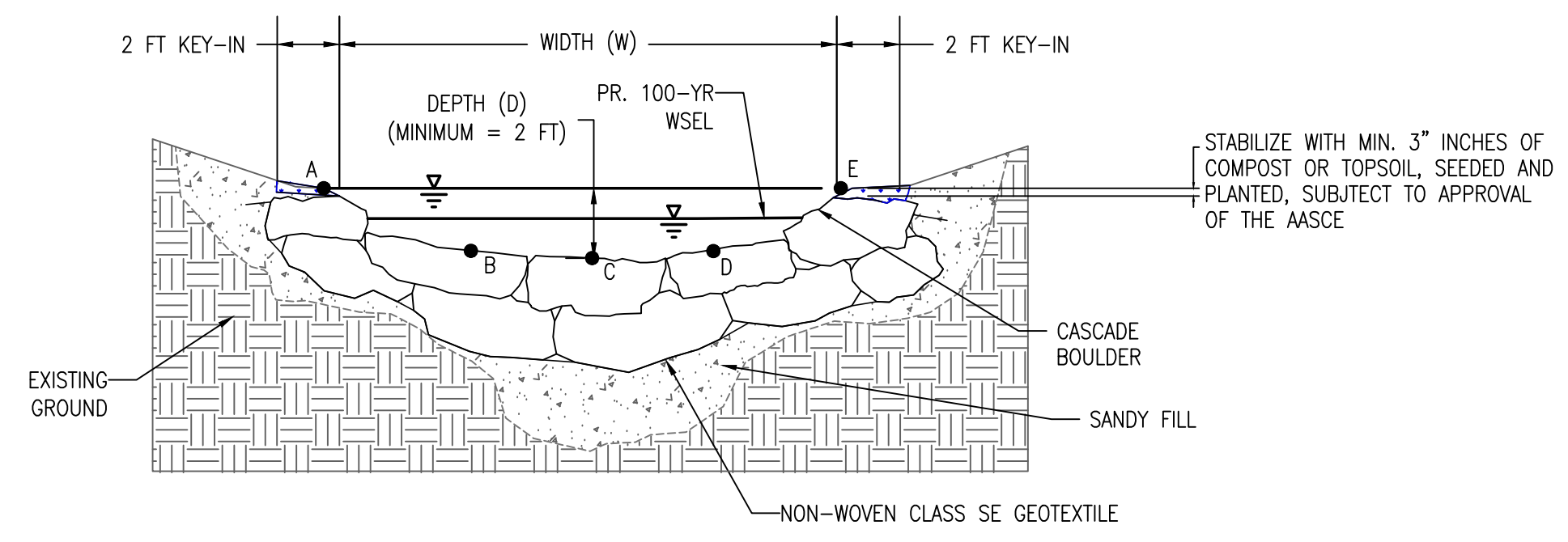
SCALE:
DATE: JUNE 2026
ESA PROJECT NO.: 2025-42-2 Cassia Drive Stream Restoration\CAD\Plans\Individual Drawings
SHEET: 6 of 12



CASCADWEIR CENTERLINE PROFILE



CASCADWEIR PLANVIEW

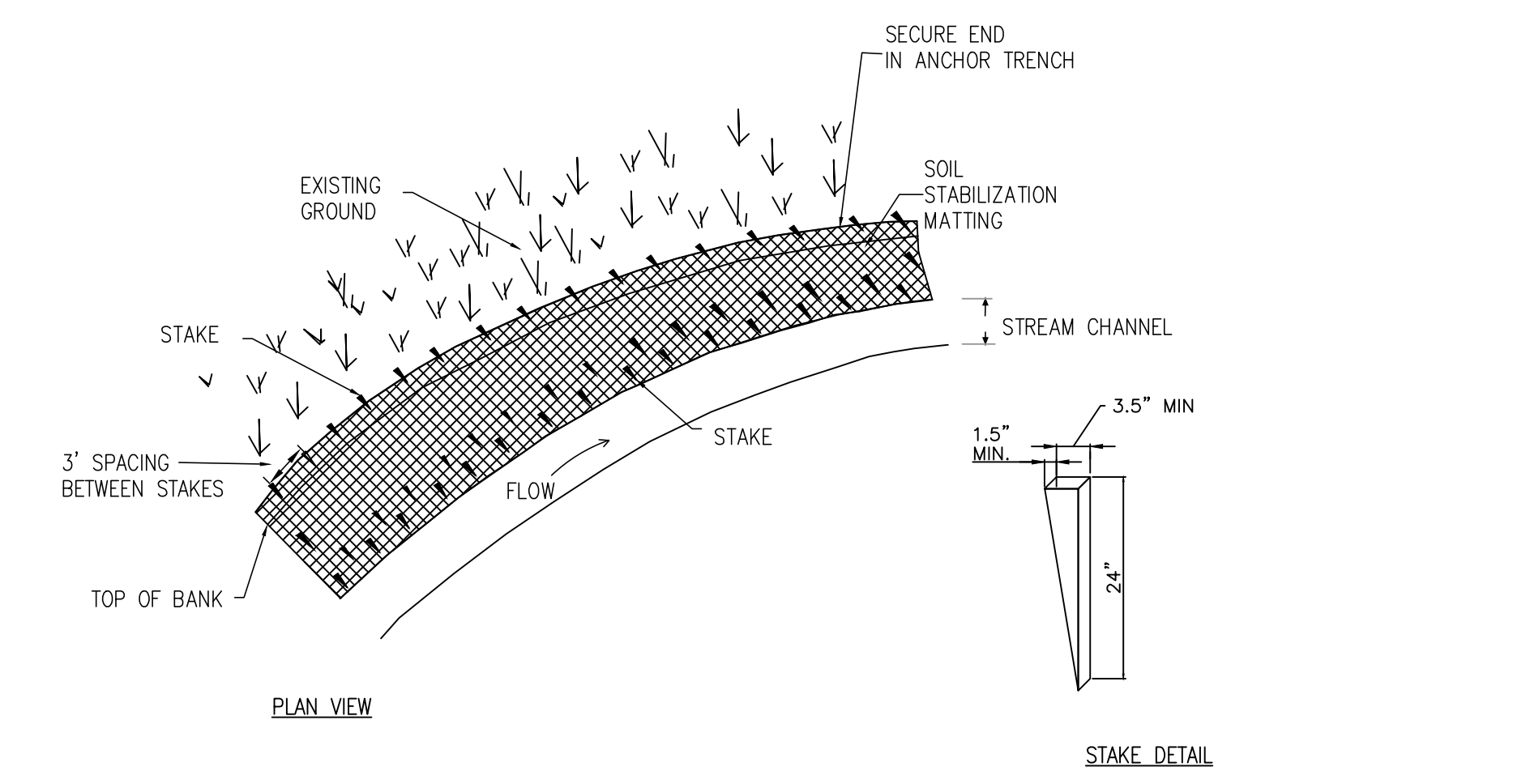


CASCADWEIR TYPICAL SECTION C-C

CS CASCADWEIR

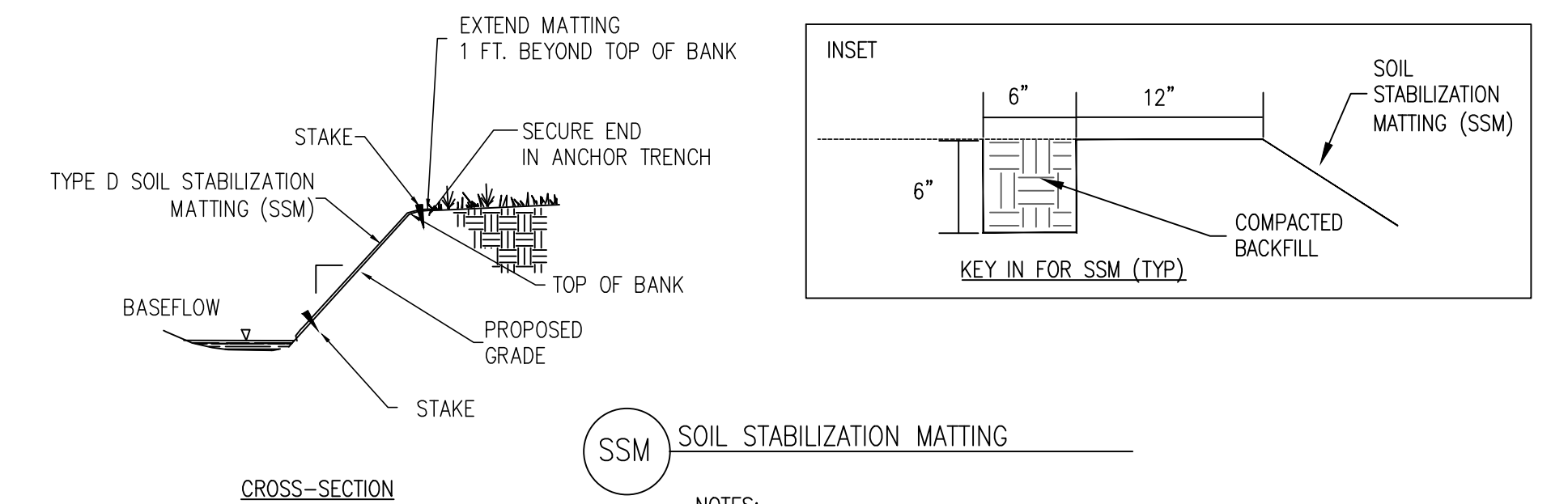
CONSTRUCTION NOTES:
 1. SEE SHEET 6 FOR RIFFLE MIX AND WASH-IN NOTES AND SPECIFICATIONS.
 2. SEE SHEET 6 FOR SANDY FILL SPECIFICATIONS.

CASCADWEIR NOTES:
 1. BOULDERS AS DISPLAYED REFLECT VARIABILITY IN STONE DIMENSION 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 BOULDERS AND THEIR CONFIGURATION MAY VARY FROM THIS PLAN.
 2. ALL BOULDERS SHALL BE PLACED WITH EDGES ALIGNED TIGHTLY TO MINIMIZE VOID SPACE.



PLAN VIEW

STAKE DETAIL



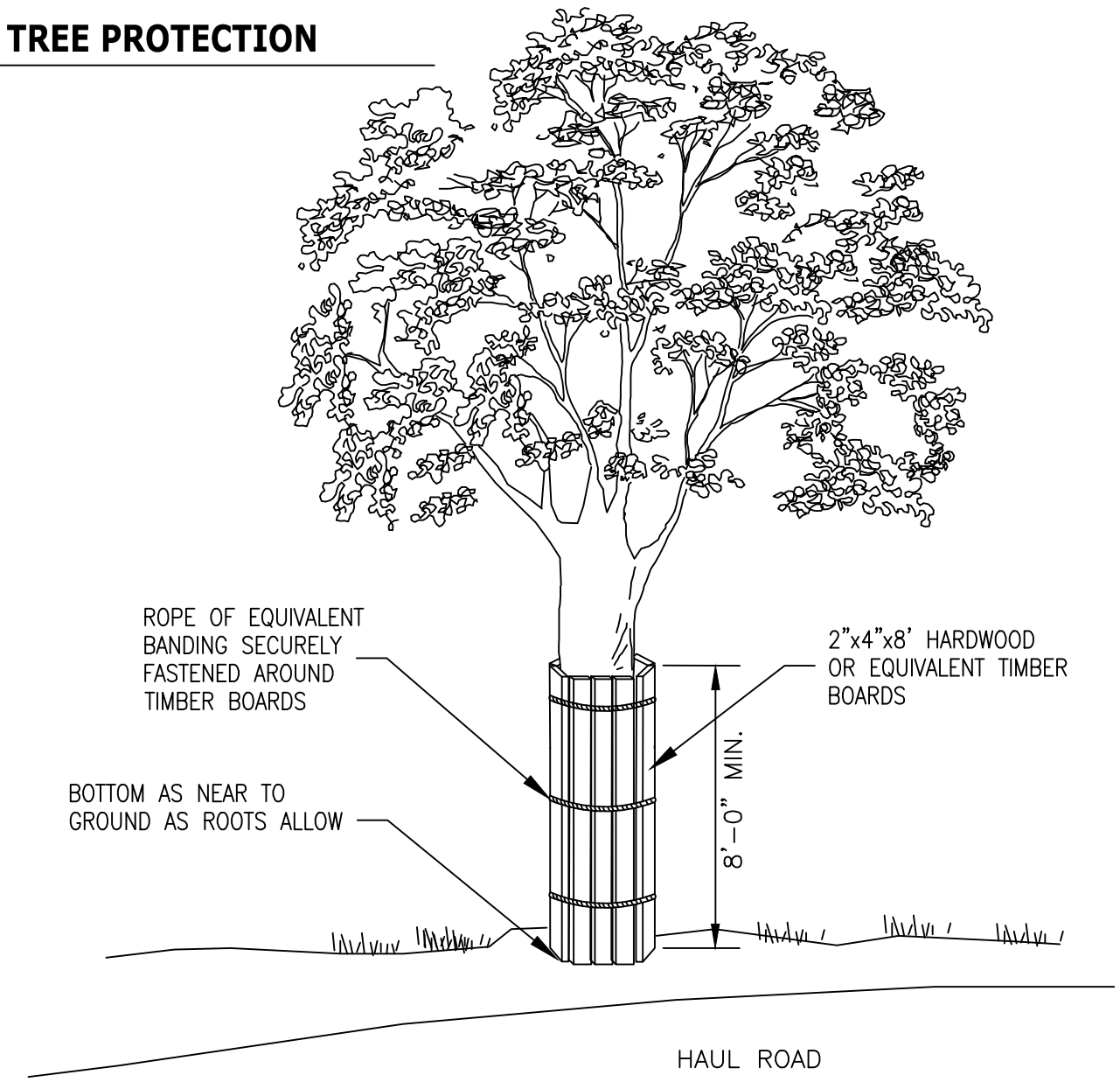
CROSS-SECTION

SSM SOIL STABILIZATION MATTING

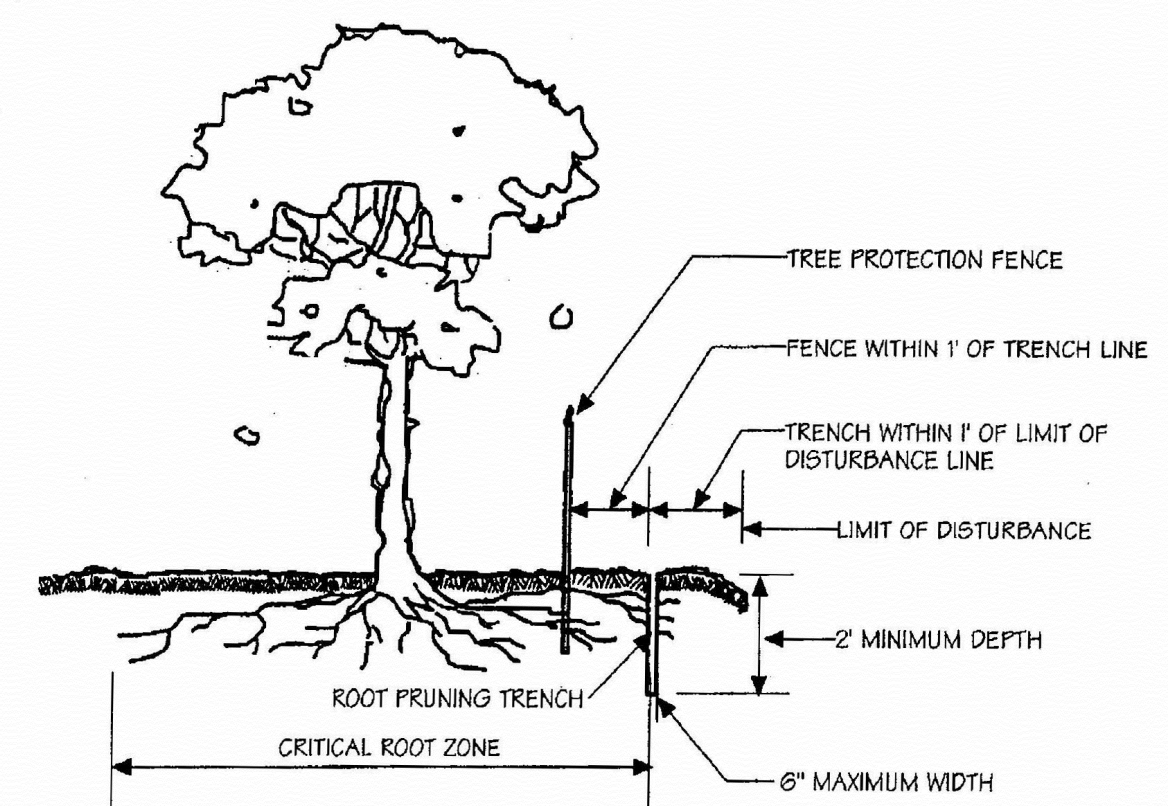
NOTES:
 1. INSTALL SOIL STABILIZATION MATTING ON SLOPES STEEPER THAN 3:1 AND GREATER THAN 3 FT. HIGH.
 2. SOIL STABILIZATION MATTING: THE MATTING SHALL BE TYPE D AND CONSIST OF 100% HIGH STRENGTH COCONUT FIBER WHICH IS TWISTED AND WOVEN IN A GRID WITH AN OPEN AREA OF 50% (+/- 2%); NO SYNTHETIC FIBERS ARE PERMISSIBLE. THE THICKNESS OF THE MATTING SHALL BE 0.35 INCH WITH A DRY WEIGHT OF 23 OZ/SY. AN EXAMPLE OF AN ACCEPTABLE PRODUCT IS ROLANKA BIOD-MAT-70.

WOOD PLANK TREE PROTECTION

Not To Scale



ROOT PRUNING DETAIL



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.

Source: Adapted from Steve Clark & Associates/ACRT, Inc. and Forest Conservation Manual, 1991

60% DESIGN

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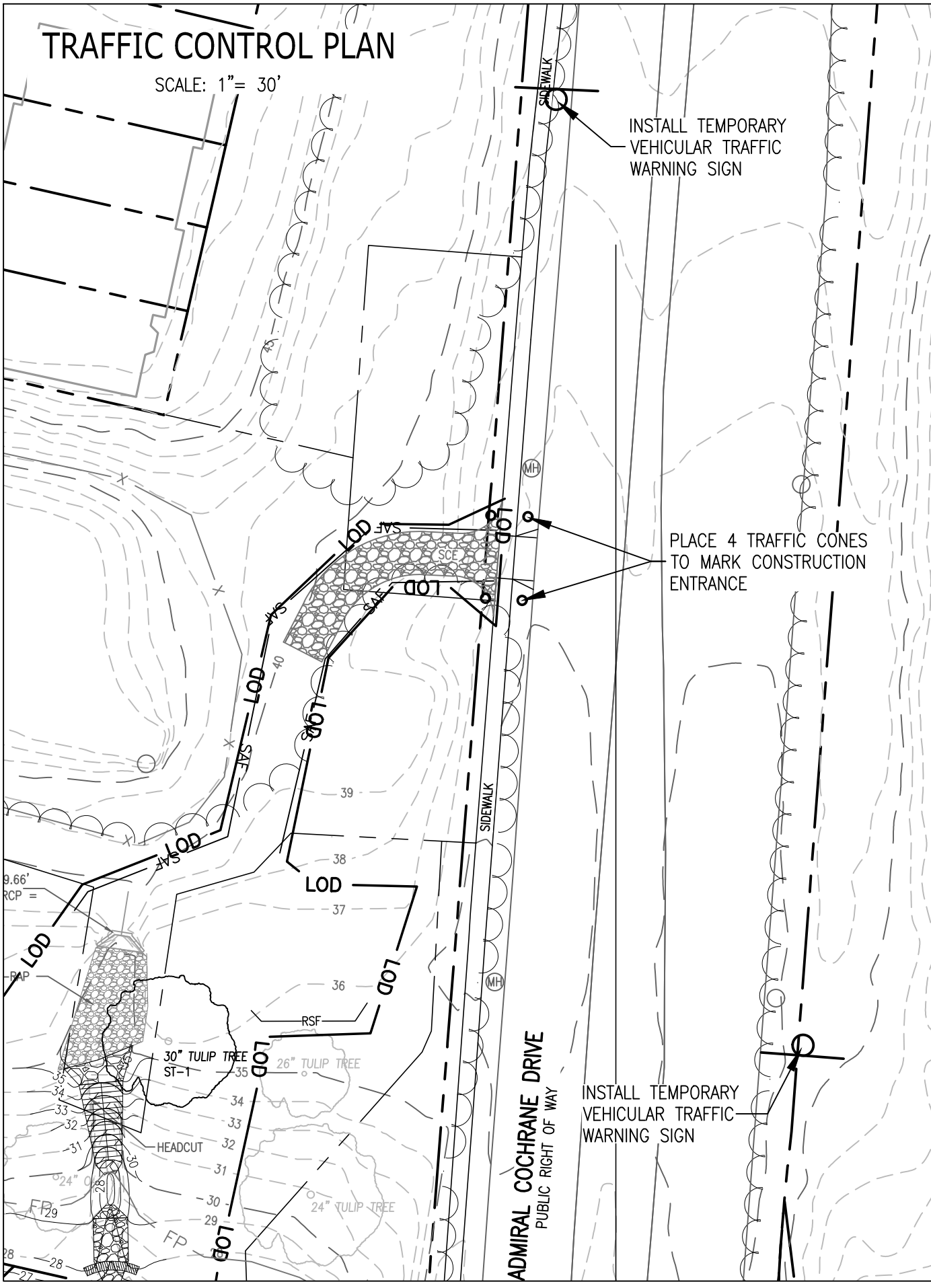
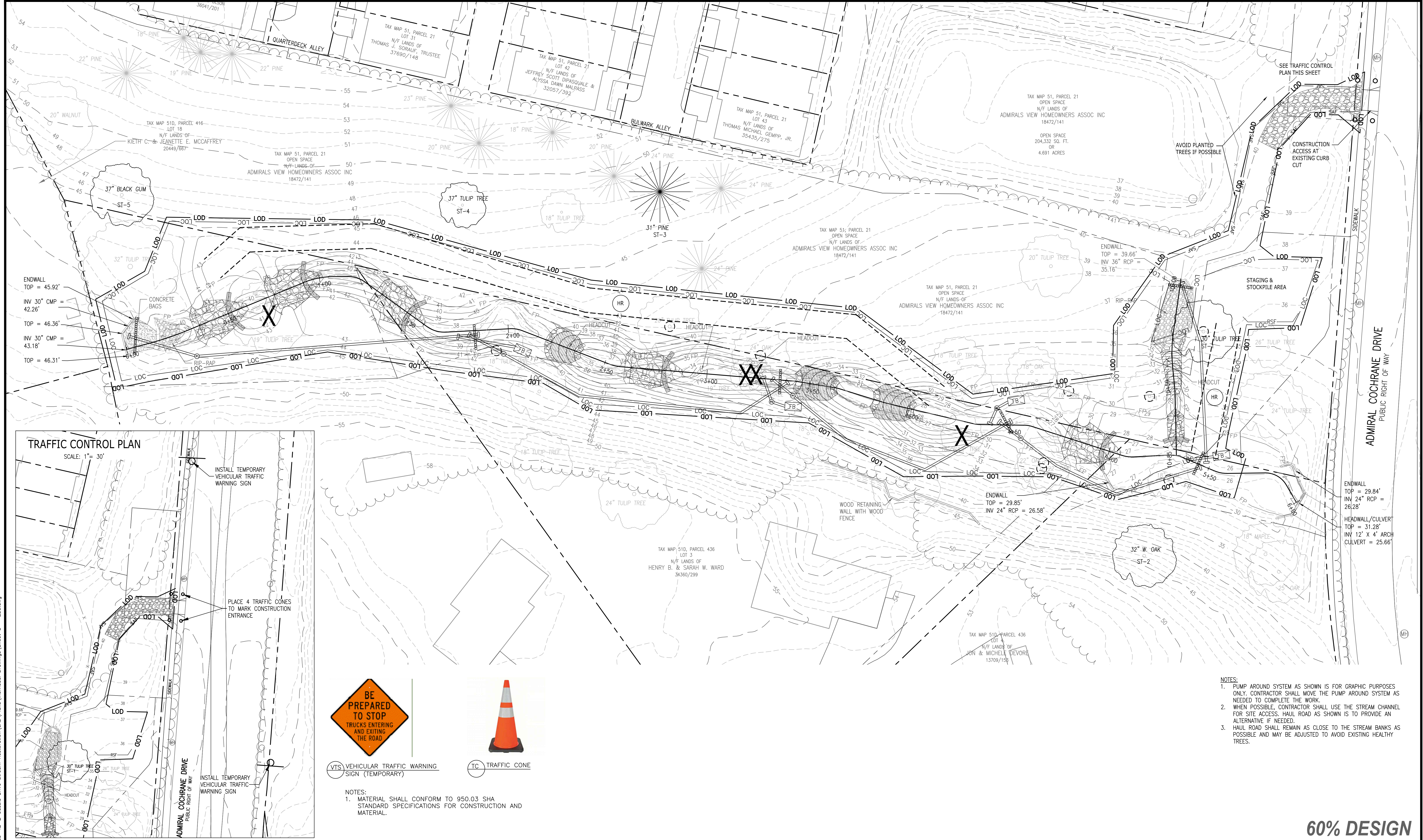
REVISIONS		
NO.	BY	DATE

Prepared for:
 Arundel Rivers Federation
 P.O. Box 760
 Edgewater, MD 21037

Prepared by:
 Environmental Systems Analysis, Inc.
 Natural Resources Management
 Ecological Restoration
 2141 Priest Bridge Drive, Suite 1
 Crofton, Maryland 21114

CONSTRUCTION DETAILS	
CASSIA DRIVE STREAM RESTORATION	
MAP 051D, GRID 0015, PARCEL 0436, SUBDIVISION 280	
SECOND ELECTION DISTRICT, ANNE ARUNDEL COUNTY, MD	
SCALE:	DATE: JUNE 2026
ESA PROJECT NO.: 2025-42-2 Cassia Drive Stream Restoration\CAD\Plans\Individual Drawings	
SHEET: 7 of 12	

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VTS VEHICULAR TRAFFIC WARNING SIGN (TEMPORARY)
TC TRAFFIC CONE

NOTES:
1. MATERIAL SHALL CONFORM TO 950.03 SHA STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIAL.

- NOTES:
1. PUMP AROUND SYSTEM AS SHOWN IS FOR GRAPHIC PURPOSES ONLY. CONTRACTOR SHALL MOVE THE PUMP AROUND SYSTEM AS NEEDED TO COMPLETE THE WORK.
 2. WHEN POSSIBLE, CONTRACTOR SHALL USE THE STREAM CHANNEL FOR SITE ACCESS. HAUL ROAD AS SHOWN IS TO PROVIDE AN ALTERNATIVE IF NEEDED.
 3. HAUL ROAD SHALL REMAIN AS CLOSE TO THE STREAM BANKS AS POSSIBLE AND MAY BE ADJUSTED TO AVOID EXISTING HEALTHY TREES.

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Natural Resources Management
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Crofton, Maryland 21114

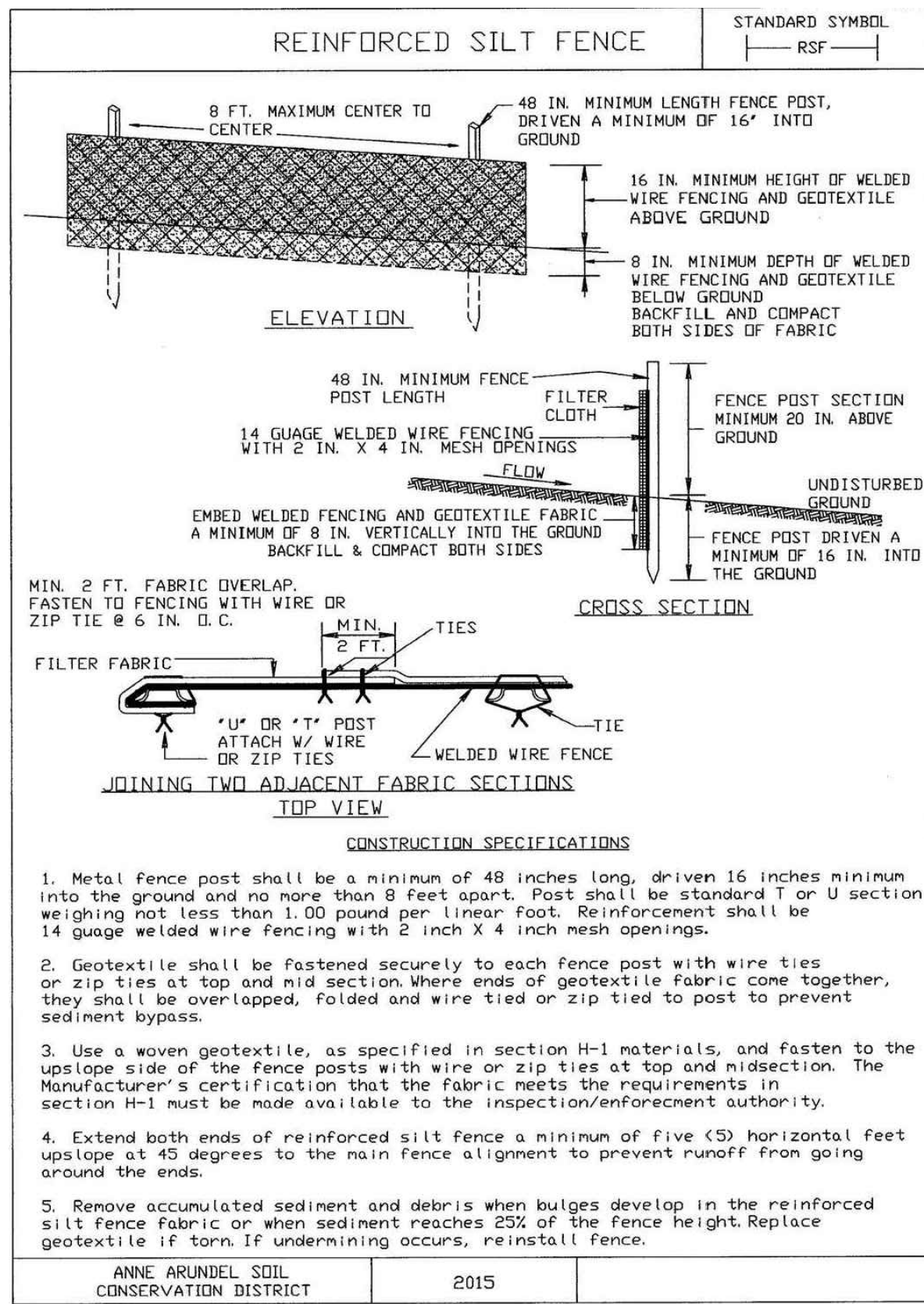
EROSION & SEDIMENT CONTROL
CASSIA DRIVE STREAM RESTORATION
MAP 051D, GRID 0015, PARCEL 0436, SUBDIVISION 280

SECOND ELECTION DISTRICT, ANNE ARUNDEL COUNTY, MD

SCALE: 1" = 20'

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ESA PROJECT NO.: 2025-42-2 Cassia Drive Stream Restoration\CAD\Plans\Individual Drawings
SHEET: 8 of 12

60% DESIGN



REINFORCED SILT FENCE

Design Criteria

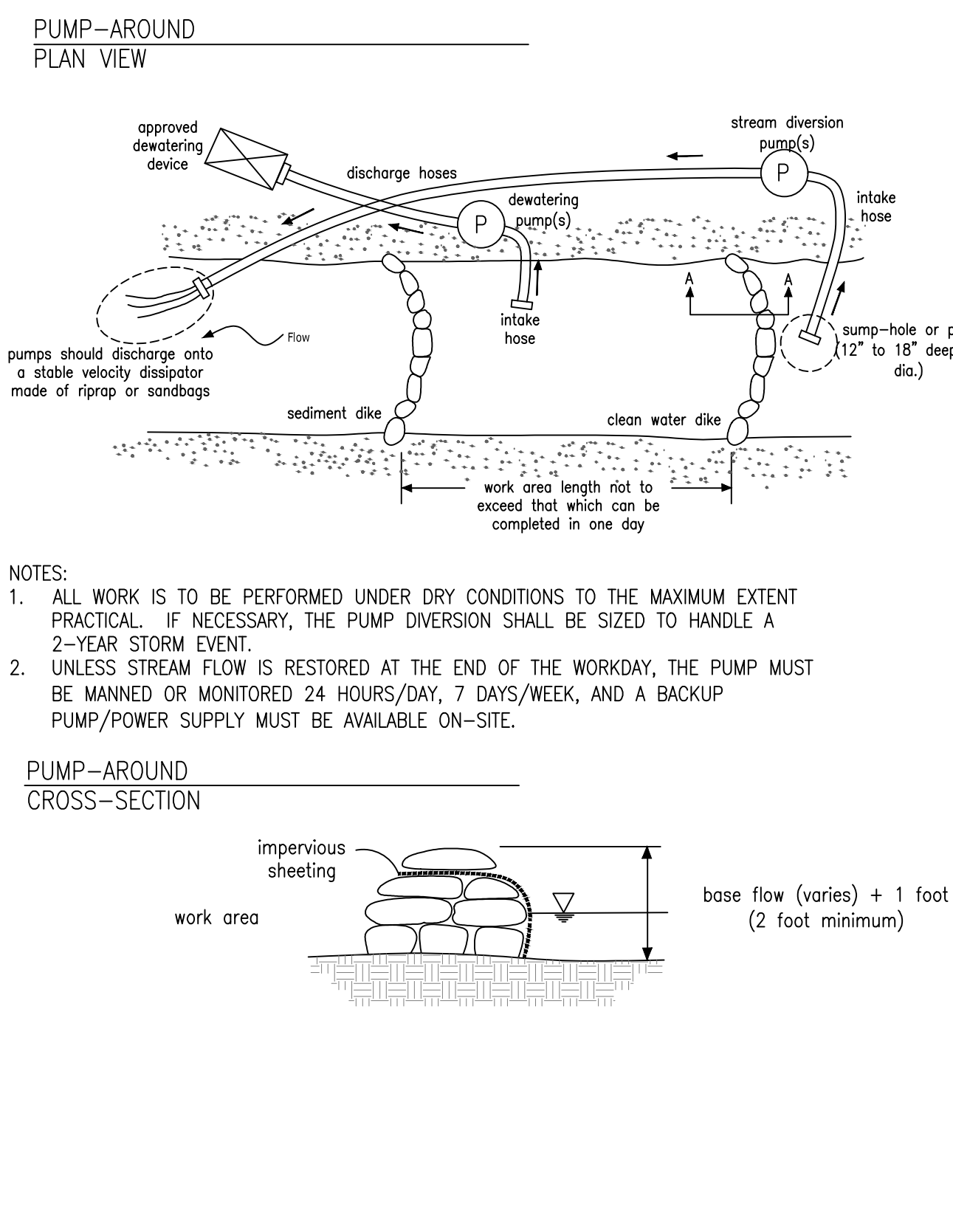
Reinforced Silt Fence Design Constraints

Average Slope Steepness	Maximum Slope Length	Maximum Silt Fence Length
Flatter than 50:1 (<2%)	300 feet*	Unlimited
50:1 to 10:1 (2-10%)	125 feet	1,000 feet
10:1 to 5:1 (10-20%)	100 feet	750 feet
5:1 (>20%)	40 feet	250 feet

*Maximum slope length is unlimited on the Hydrologic Soil Group (HSG) "A" soils

- The use of Reinforced Silt Fence must conform to the design constraints listed above.
- The area downgrade of the Reinforced Silt Fence must be undisturbed ground.
- Reinforced Silt Fence must be placed along the contour.
- Reinforced Silt Fence should be used with caution in areas where rocky soils may prevent trenching.
- Extend both ends of reinforced silt fence a minimum of five (5) horizontal feet upslope and 45 degrees to the main fence alignment to prevent runoff from going around the edges.

ANNE ARUNDEL SOIL CONSERVATION DISTRICT 2015



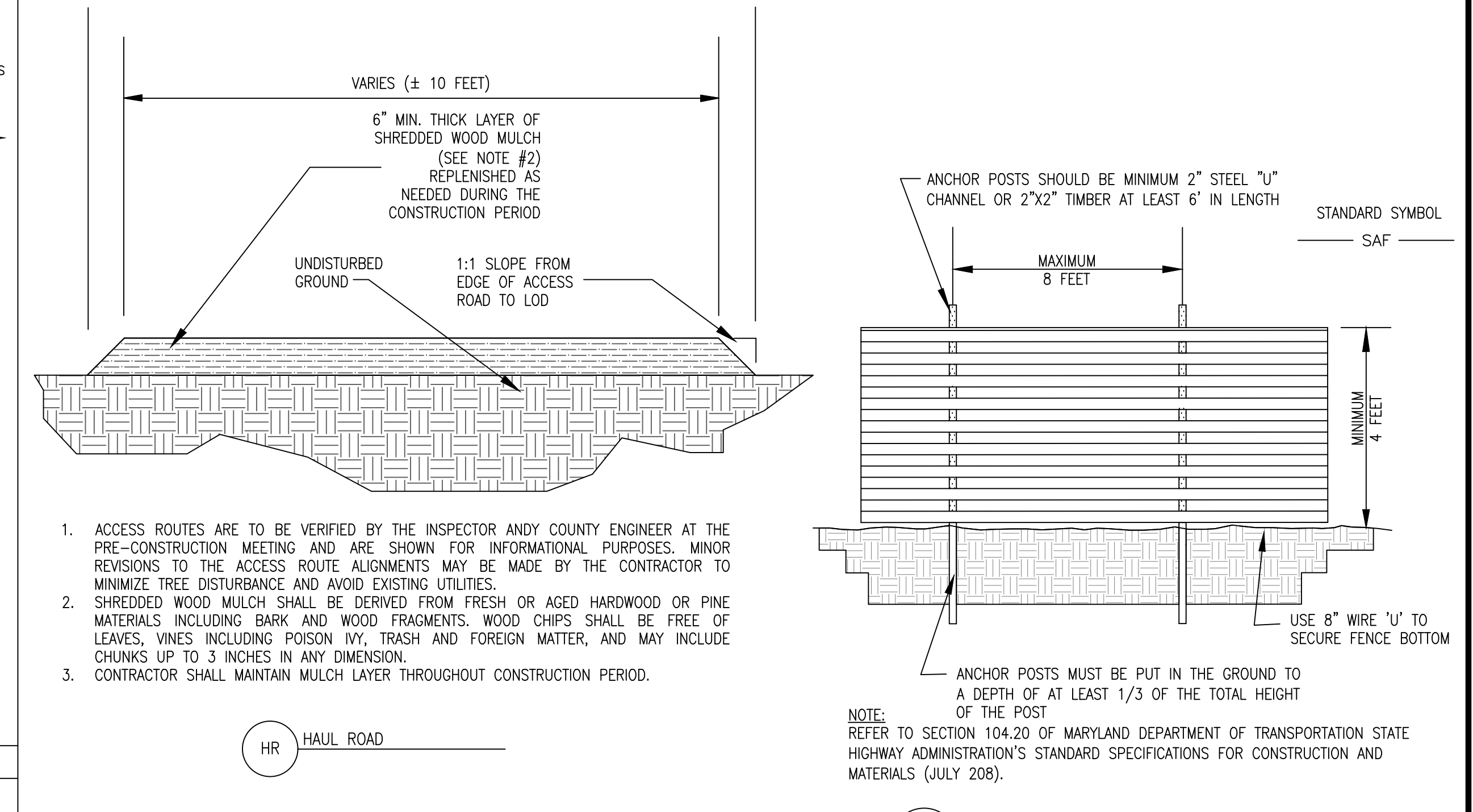
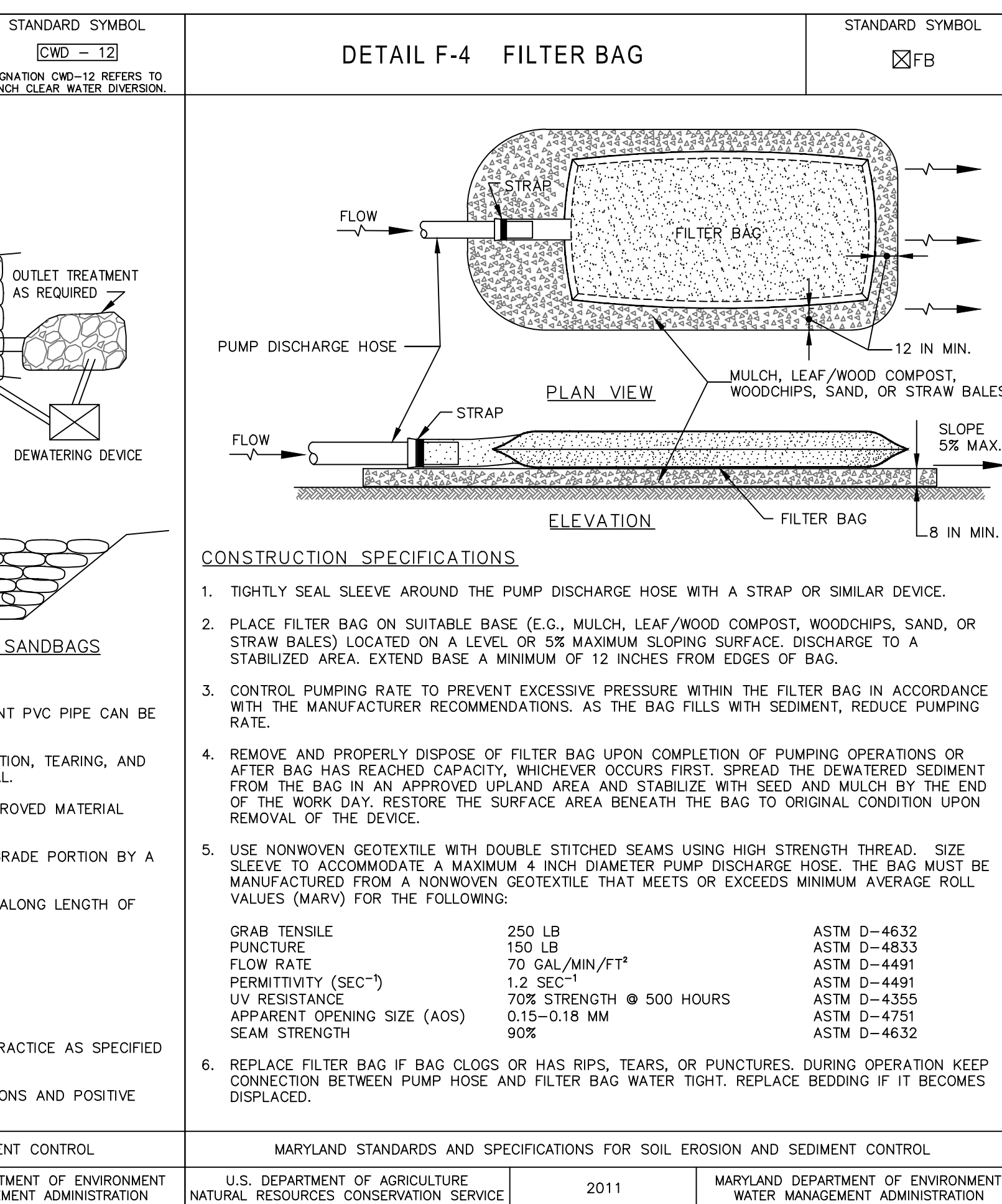
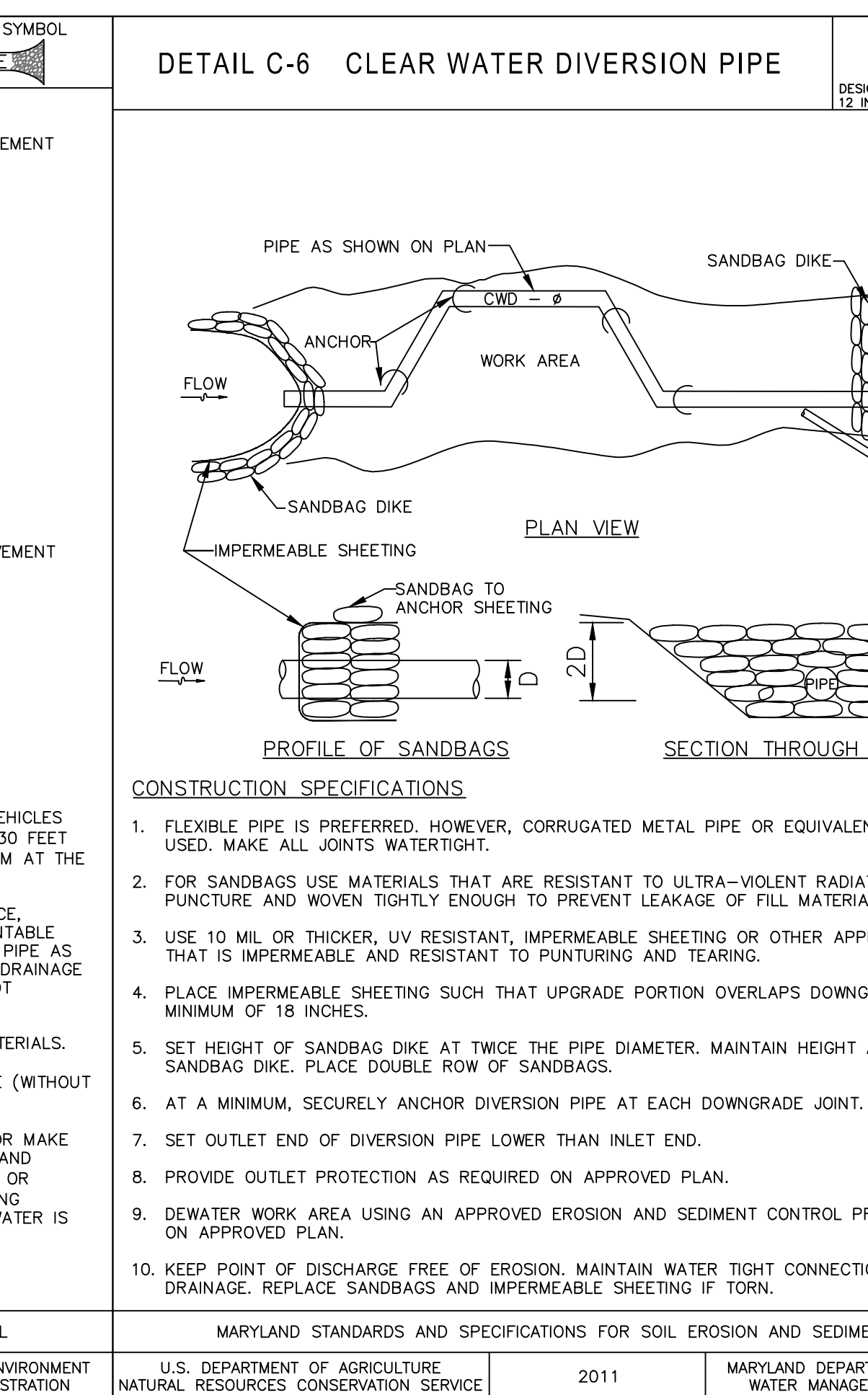
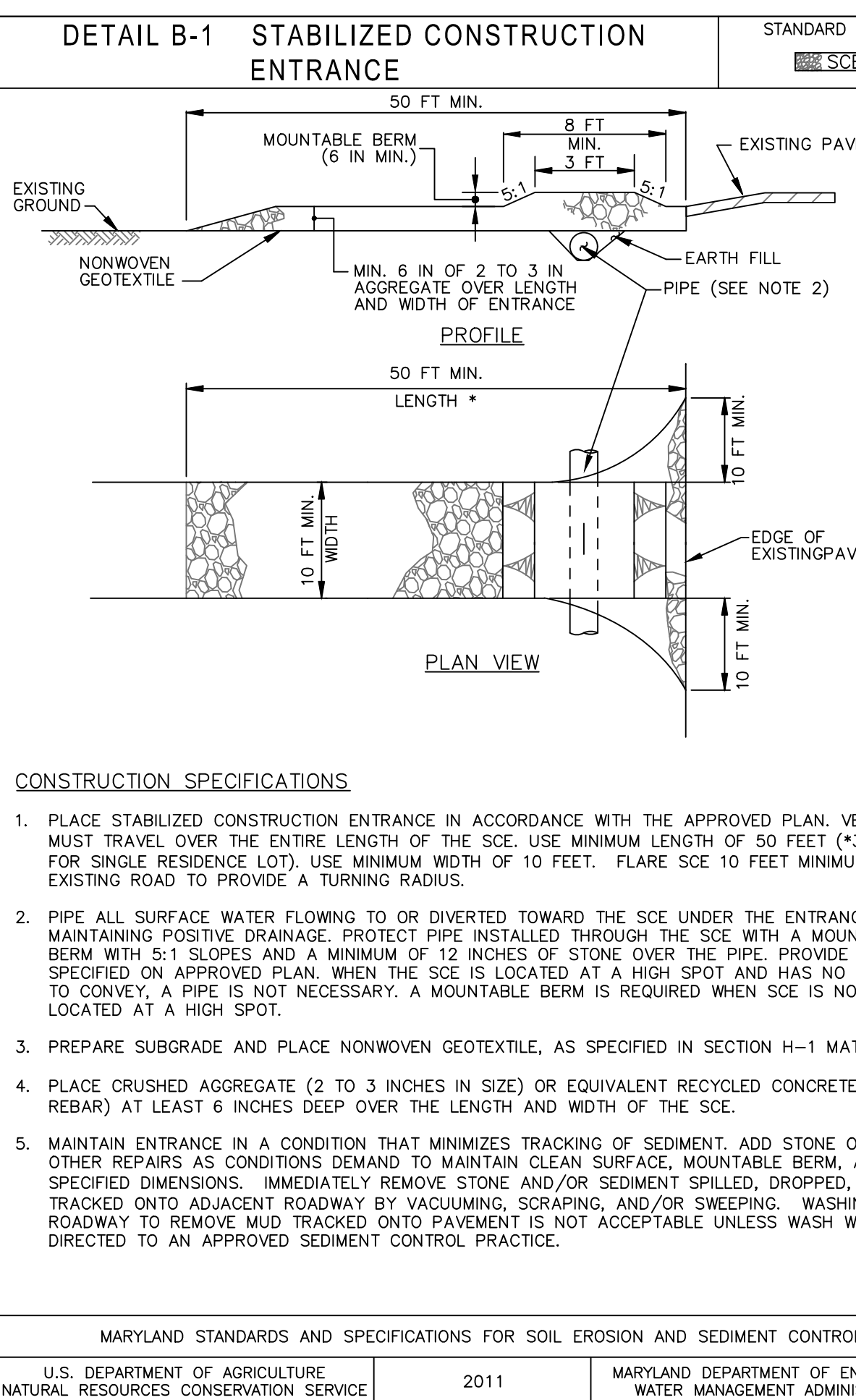
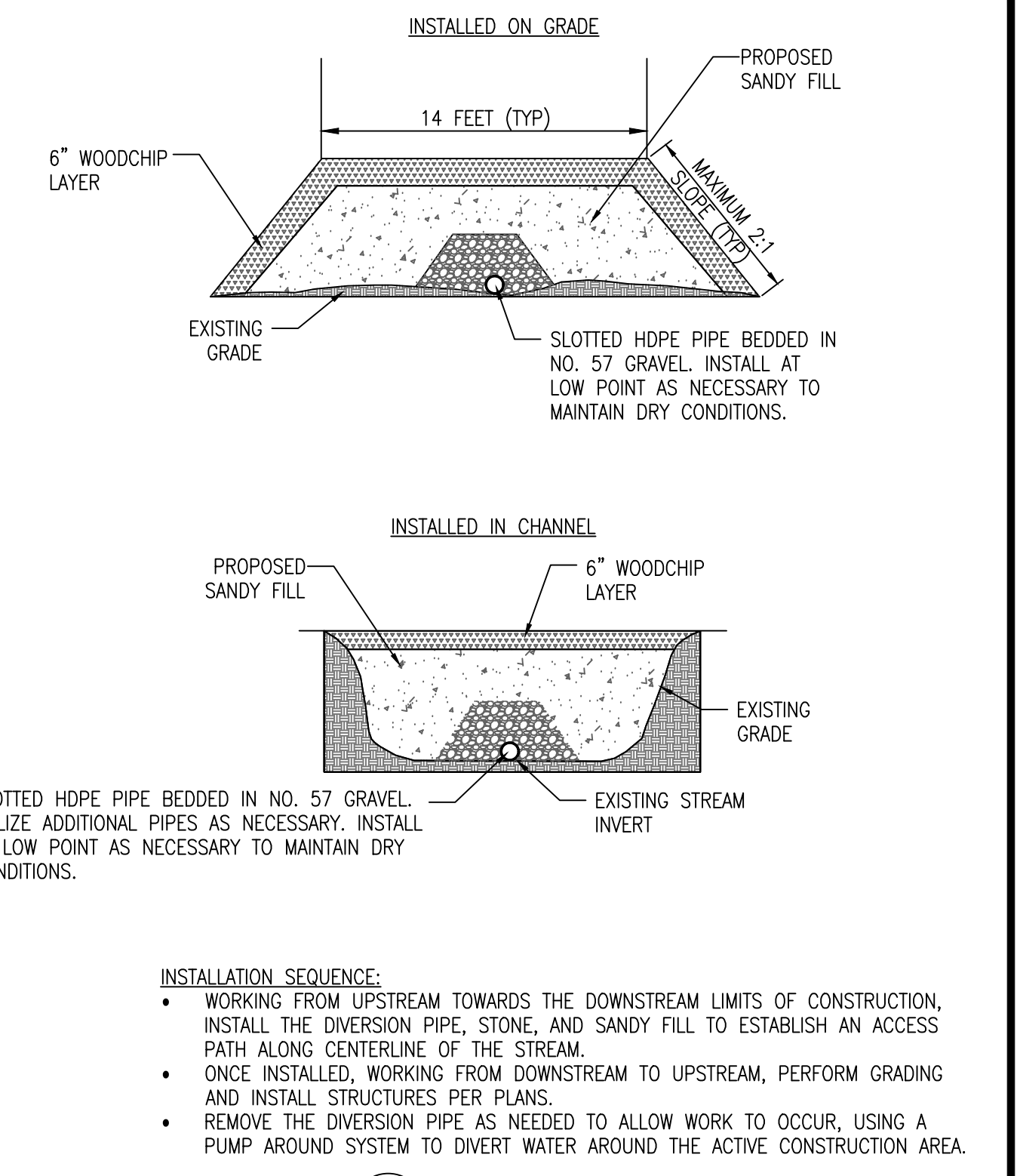
MGWC 1.2: PUMP-AROUND PRACTICE

Temporary measure for dewatering in-channel construction sites

DESCRIPTION
The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites.

IMPLEMENTATION SEQUENCE
Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):

- Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility company's satisfaction.
- The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
- The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority.
- Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
- Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.
- Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags.
- Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
- Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction).
- All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross-sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
- After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.
- A pump around must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.
- If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work area in the main stem.
- The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
- After construction, all disturbed areas should be regraded and revegetated as per the planning plan.



NO.	BY	DATE	REVISIONS DESCRIPTION

NO.	BY	DATE	REVISIONS DESCRIPTION

NO.	BY	DATE	REVISIONS DESCRIPTION

Prepared for:

Arundel Rivers Federation

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EROSION CONTROL DETAILS
CASSIA DRIVE STREAM RESTORATION
MAP 051D, GRID 0015, PARCEL 0436, SUBDIVISION 280

SECOND ELECTION DISTRICT, ANNE ARUNDEL COUNTY, MD

SCALE:
DATE: JUNE 2026
ESA PROJECT NO.: 2025-42-2 Cassia Drive Stream Restoration\CAD\Plans\Individual Drawings
SHEET: 9 of 12

60% DESIGN

EROSION AND SEDIMENT CONTROL GENERAL NOTES

1. THE CONTRACTOR SHALL NOTIFY MDE AT (410) 537-3510 SEVEN (7) DAYS BEFORE COMMENCING ANY LAND DISTURBING ACTIVITY AND, UNLESS WAIVED BY MDE, SHALL BE REQUIRED TO HOLD A PRE-CONSTRUCTION MEETING BETWEEN PROJECT REPRESENTATIVES AND A REPRESENTATIVE OF MDE.
2. THE CONTRACTOR SHALL NOTIFY MDE IN WRITING AND BY TELEPHONE AT THE FOLLOWING POINTS:
 - A. THE REQUIRED PRE-CONSTRUCTION MEETING.
 - B. FOLLOWING INSTALLATION OF SEDIMENT CONTROL MEASURES.
 - C. DURING THE INSTALLATION OF SEDIMENT BASINS (TO BE CONVERTED INTO PERMANENT STORMWATER MANAGEMENT STRUCTURES) AT THE REQUIRED INSPECTION POINTS (SEE INSPECTION CHECKLIST ON PLAN). NOTIFICATION PRIOR TO COMMENCING CONSTRUCTION OF EACH STEP IS MANDATORY.
 - D. PRIOR TO REMOVAL OR MODIFICATION OF ANY SEDIMENT CONTROL STRUCTURE(S).
 - E. PRIOR TO REMOVAL OF ALL SEDIMENT CONTROL DEVICES.
 - F. PRIOR TO FINAL ACCEPTANCE.
3. THE PLAN APPROVAL LETTER, APPROVED EROSION AND SEDIMENT CONTROL PLANS, DAILY LOG BOOKS, AND TEST REPORTS SHALL BE AVAILABLE AT THE SITE FOR INSPECTION BY DULY AUTHORIZED OFFICIALS OF MDE AND THE AGENCY RESPONSIBLE FOR THE PROJECT.
4. THE CONTRACTOR SHALL CONSTRUCT ALL EROSION AND SEDIMENT CONTROL MEASURES PER THE APPROVED PLAN AND CONSTRUCTION SEQUENCE AND SHALL HAVE THEM INSPECTED AND APPROVED BY THE MDE INSPECTOR PRIOR TO BEGINNING ANY OTHER LAND DISTURBANCES. MINOR SEDIMENT CONTROL DEVICE LOCATION ADJUSTMENTS MAY BE MADE IN THE FIELD WITH THE APPROVAL OF THE MDE INSPECTOR. THE CONTRACTOR SHALL ENSURE THAT ALL RUNOFF FROM DISTURBED AREAS IS DIRECTED TO THE SEDIMENT CONTROL DEVICES AND SHALL NOT REMOVE ANY EROSION OR SEDIMENT CONTROL MEASURE WITHOUT PRIOR PERMISSION FROM MDE INSPECTOR. THE CONTRACTOR SHALL OBTAIN PRIOR AGENCY AND MDE APPROVAL FOR MODIFICATIONS TO THE EROSION AND SEDIMENT CONTROL PLAN AND/OR SEQUENCE OF CONSTRUCTION.
5. THE MDE INSPECTOR HAS THE OPTION OF REQUIRING ADDITIONAL SAFETY OR SEDIMENT CONTROL MEASURES, IF DEEMED NECESSARY.
6. THE CONTRACTOR SHALL PROTECT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS TO PREVENT THE DEPOSITION OF MATERIALS ONTO PUBLIC ROADS. ALL MATERIALS DEPOSITED ONTO PUBLIC ROADS SHALL BE REMOVED IMMEDIATELY.
7. THE CONTRACTOR SHALL INSPECT DAILY AND MAINTAIN CONTINUOUSLY IN AN EFFECTIVE OPERATING CONDITION ALL EROSION AND SEDIMENT CONTROL MEASURES UNTIL SUCH TIME AS THEY ARE REMOVED WITH PRIOR PERMISSION FROM THE MDE INSPECTOR.
8. EROSION AND SEDIMENT CONTROL FOR UTILITY CONSTRUCTION SHALL BE PROVIDED IN ACCORDANCE WITH APPROVED PLANS. UTILITY CONSTRUCTION SHALL ONLY BE FOR AREAS WITHIN THE DELINEATED LIMIT OF DISTURBANCE. CALL "MISS UTILITY" AT 1-800-257-7777 48 HOURS PRIOR TO THE START OF WORK. WHEN SAME DAY STABILIZATION IS APPROVED:
 - A. EXCAVATED TRENCH MATERIAL SHALL BE PLACED ON THE HIGH SIDE OF THE TRENCH.
 - B. TRENCHES FOR UTILITY INSTALLATION SHALL BE BACKFILLED, COMPACTED, AND STABILIZED AT THE END OF EACH WORKING DAY. NO MORE TRENCH SHALL BE OPENED THAN CAN BE COMPLETED THE SAME DAY.
9. ALL WATER REMOVED FROM EXCAVATED AREAS SHALL BE PASSED THROUGH AN MDE APPROVED DEWATERING PRACTICE OR PUMPED TO A SEDIMENT TRAP OR BASIN PRIOR TO DISCHARGE TO A FUNCTIONAL STORM DRAIN SYSTEM OR TO STABLE GROUND SURFACE.
10. CONCRETE WASHOUT STRUCTURES SHALL BE USED WHEN CONCRETE TRUCKS, DRUMS, PUMPS, CHUTES, OR OTHER EQUIPMENT IS RINSED OR CLEANED ON-SITE.
11. CONSTRUCTION ACTIVITIES PRODUCING DUST SHALL IMPLEMENT CONTROL MEASURES TO AVOID THE SUSPENSION OF DUST PARTICLES AND/OR PREVENT DUST FROM BLOWING OFF-SITE OR TO AREAS WITHOUT TREATMENT.
12. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
 - A. THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND
 - B. SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.
13. VEGETATIVE STABILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. REFER TO APPROPRIATE SPECIFICATIONS FOR TEMPORARY SEEDING, PERMANENT SEEDING, MULCHING, SODDING, AND GROUND COVERS.
14. WHEN SEEDING, ALL DISTURBED AREAS WITH SLOPES FLATTER THAN 2:1 SHALL BE STABILIZED WITH 4 INCHES OF TOPSOIL, SEED, AND MULCH. ALL DISTURBED AREAS WITH SLOPES 2:1 OR STEEPER SHALL BE STABILIZED WITH MATTING OVER 2 INCHES OF TOPSOIL AND SEED.
15. ALL SEDIMENT BASINS, TRAP EMBANKMENTS AND SLOPES, PERIMETER DIKES, SWALES AND ALL DISTURBED SLOPES STEEPER OR EQUAL TO 3:1 SHALL BE STABILIZED WITH SEED AND ANCHORED STRAW MULCH, SOD, OR OTHER APPROVED STABILIZATION MEASURES, AS SOON AS POSSIBLE BUT NO LATER THAN THREE (3) CALENDAR DAYS AFTER ESTABLISHMENT. ALL AREAS DISTURBED OUTSIDE OF THE PERIMETER SEDIMENT CONTROL SYSTEM SHALL BE MINIMIZED. MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION.
16. PERMANENT SWALES OR OTHER POINTS OF CONCENTRATED WATER FLOW SHALL BE STABILIZED WITH SEED AND AN APPROVED EROSION CONTROL MATTING, SOD, RIP-RAP, OR OTHER APPROVED STABILIZATION MEASURES.
17. FOR STOCKPILE SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1), THE CONTRACTOR SHALL APPLY SEED AND ANCHORED STRAW MULCH, SOD, OR OTHER APPROVED STABILIZATION MEASURES TO THE FACE OF THE STOCKPILE WITHIN THREE (3) CALENDAR DAYS OF ACTIVITY HAVING CEASED ON THE RESPECTIVE FACE. FOR SLOPES 3:1 OR FLATTER THE CONTRACTOR SHALL APPLY STABILIZATION MEASURES TO THE FACE OF THE STOCKPILE WITHIN SEVEN (7) CALENDAR DAYS OF ACTIVITY HAVING CEASED ON THE RESPECTIVE FACE. MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION.
18. FOR FINISHED GRADING, THE CONTRACTOR SHALL PROVIDE ADEQUATE GRADIENTS TO PREVENT WATER FROM PONDING FOR MORE THAN TWENTY-FOUR (24) HOURS AFTER THE END OF A RAINFALL EVENT. DRAINAGE COURSES AND SWALE FLOW AREAS MAY TAKE AS LONG AS FORTY-EIGHT (48) HOURS AFTER THE END OF A RAINFALL EVENT TO DRAIN. AREAS DESIGNED TO HAVE STANDING WATER SHALL NOT BE REQUIRED TO MEET THIS REQUIREMENT.
19. WHERE DEEMED APPROPRIATE BY THE ENGINEER OR INSPECTOR, SEDIMENT BASINS AND TRAPS MAY NEED TO BE SURROUNDED WITH AN APPROVED SAFETY FENCE. THE FENCE MUST CONFORM TO LOCAL ORDINANCES AND REGULATIONS. THE DEVELOPER OR OWNER SHALL CHECK WITH LOCAL BUILDING OFFICIALS ON APPLICABLE SAFETY REQUIREMENTS. WHERE SAFETY FENCE IS DEEMED APPROPRIATE AND LOCAL ORDINANCES DO NOT SPECIFY FENCING SIZES AND TYPES, THE FOLLOWING SHALL BE USED AS A MINIMUM STANDARD: THE SAFETY FENCE SHALL BE MADE OF WELDED WIRE AND AT LEAST 42 INCHES HIGH, HAVE POSTS SPACED NO FARTHER APART THAN 8 FEET, HAVE MESH OPENINGS NO GREATER THAN 2 INCHES IN WIDTH AND 4 INCHES IN HEIGHT WITH A MINIMUM OF 14 GAUGE WIRE. SAFETY FENCE SHALL BE MAINTAINED AND IN GOOD CONDITION AT ALL TIMES.
20. ALL SEDIMENT TRAP DEPTH DIMENSIONS ARE RELATIVE TO THE OUTLET ELEVATION. ALL TRAPS SHALL HAVE A STABLE OUTFALL. ALL TRAPS AND BASINS SHALL HAVE STABLE INFLOW POINTS.
21. SEDIMENT SHALL BE REMOVED AND THE TRAP OR BASIN RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE QUARTER OF THE TOTAL DEPTH OF THE TRAP OR BASIN. TOTAL DEPTH SHALL BE MEASURED FROM THE TRAP OR BASIN BOTTOM TO THE CREST OF THE OUTLET.
22. SEDIMENT REMOVED FROM TRAPS (AND BASINS) SHALL BE PLACED AND STABILIZED IN APPROVED AREAS, BUT NOT WITHIN A FLOODPLAIN, WETLAND OR TREE-SAVE AREA. WHEN PUMPING SEDIMENT LADEN WATER, THE DISCHARGE SHALL BE DIRECTED TO AN MDE APPROVED SEDIMENT TRAPPING DEVICE PRIOR TO RELEASE FROM THE SITE. A SUMP PIT MAY BE USED IF SEDIMENT TRAPS THEMSELVES ARE BEING PUMPED OUT.

23. PRIOR TO REMOVAL OF SEDIMENT CONTROL MEASURES, THE CONTRACTOR SHALL STABILIZE AND HAVE ESTABLISHED PERMANENT STABILIZATION FOR ALL CONTRIBUTORY DISTURBED AREAS USING SOD OR AN APPROVED PERMANENT SEED MIXTURE WITH REQUIRED SOIL AMENDMENTS AND AN APPROVED ANCHORED MULCH. WOOD FIBER MULCH MAY ONLY BE USED IN SEEDING SEASON WHERE THE SLOPE DOES NOT EXCEED 10% AND GRADING HAS BEEN DONE TO PROMOTE SHEET FLOW DRAINAGE. AREAS BROUGHT TO FINISHED GRADE DURING THE SEEDING SEASON SHALL BE PERMANENTLY STABILIZED AS SOON AS POSSIBLE, BUT NOT LATER THAN THREE (3) CALENDAR DAYS AFTER ESTABLISHMENT FOR SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1) AND SEVEN (7) CALENDAR DAYS FOR FLATTER SLOPES. WHEN PROPERTY IS BROUGHT TO FINISHED GRADE DURING THE MONTHS OF NOVEMBER THROUGH FEBRUARY, AND PERMANENT STABILIZATION IS FOUND TO BE IMPRACTICAL, TEMPORARY SEED AND ANCHORED STRAW MULCH SHALL BE APPLIED TO DISTURBED AREAS. THE FINAL PERMANENT STABILIZATION OF SUCH PROPERTY SHALL BE APPLIED BY MARCH 15 OR EARLIER IF GROUND AND WEATHER CONDITIONS ALLOW.
24. TEMPORARY SEDIMENT CONTROL DEVICES SHALL BE REMOVED WITH PERMISSION OF THE MDE INSPECTOR WITHIN THIRTY (30) CALENDAR DAYS FOLLOWING ESTABLISHMENT OF PERMANENT STABILIZATION IN ALL CONTRIBUTORY DRAINAGE AREAS. UPON REMOVAL OF SEDIMENT CONTROL DEVICES, THE AREA DISTURBED BY REMOVAL SHALL BE STABILIZED WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED, WITHIN 24 HOURS OF SAID REMOVAL. STORMWATER MANAGEMENT STRUCTURES USED TEMPORARILY FOR SEDIMENT CONTROL SHALL BE CONVERTED TO THE PERMANENT CONFIGURATION WITHIN THIS TIME PERIOD AS WELL.
25. OFF-SITE SPOIL OR BORROW AREAS ON STATE OR FEDERAL PROPERTY SHALL HAVE PRIOR APPROVAL BY MDE AND OTHER APPLICABLE STATE, FEDERAL, AND LOCAL AGENCIES; OTHERWISE APPROVAL SHALL BE GRANTED BY THE LOCAL AUTHORITIES. ALL WASTE AND BORROW AREAS OFF-SITE SHALL BE PROTECTED BY SEDIMENT CONTROL MEASURES AND STABILIZED.
26. SITE INFORMATION:
 - A. AREA DISTURBED: 0.90 ACRES
 - B. TOTAL CUT 315 CUBIC YARDS
 - C. TOTAL FILL 245 CUBIC YARDS
 - D. OFF-SITE WASTE / BORROW AREA LOCATION: TBD BY CONTRACTOR AT TIME OF CONSTRUCTION. WASTE SITE MUST HAVE AN ACTIVE EROSION AND SEDIMENT CONTROL PERMIT.
 - E. LENGTH OF EXISTING STREAM RESTORED: 550 LINEAR FEET
 - F. LENGTH OF PROPOSED STREAM: 550 LINEAR FEET
 - G. AMOUNT OF MS-4 CREDIT (1 ACRE PER 100 LINEAR FEET): 5.50 ACRES

TEMPORARY AND PERMANENT STABILIZATION NOTES:

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:

- THREE CALENDAR DAYS FOR THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1);
- SEVEN DAYS FOR ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

THE ABOVE REQUIREMENTS DO NOT APPLY TO INTERIOR AREAS OF A SURFACE MINE SITE WHERE THE STABILIZATION MATERIAL WOULD CONTAMINATE THE RECOVERABLE RESOURCE. MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO ENSURE THAT THE STABILIZED AREAS CONTINUOUSLY MEET THE APPROPRIATE REQUIREMENTS OF THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

IF ADDITIONAL STOCKPILE AREAS ARE NEEDED WITHIN THE EXISTING LOD, THE CONTRACTOR MUST GET APPROVAL FROM THE S&E INSPECTOR, AND WRAP THE STOCKPILES WITH FILTER LOGS (12") OR REINFORCED SILT FENCE.

NO DISTURBED AREA SHALL BE LEFT OVERNIGHT; TEMPORARY STABILIZATION MUST BE PROVIDED AT THE END OF EACH WORK DAY.

STABILIZATION FOR STREAM RESTORATION ACTIVITY

TEMPORARY STABILIZATION FOR ANY AREA OF EARTH DISTURBANCE AROUND THE POOLS AND RIFLE ZONES OF A STREAM RESTORATION PROJECT (e.g., STEP POOL STORM CONVEYANCE SYSTEM) SHALL BE CONSIDERED ACHIEVED WHEN COVERING THE AREA WITH 4 TO 8 INCHES OF COMPOST OR 2 TO 4 INCHES OF WOOD CHIPS. ANNUAL RYE MAY BE UTILIZED FOR TEMPORARY SEEDING DURING SEEDING APPLICATION PERIOD FOUND UNDER THE ANNE ARUNDEL SOIL CONSERVATION DISTRICT (AASCD) VEGETATIVE ESTABLISHMENT SPECIFICATIONS.

PERMANENT STABILIZATION FOR ANY AREA OF EARTH DISTURBANCE AROUND THE POOLS AND RIFFLES ZONE OF A STREAM RESTORATION PROJECT (e.g., STEP POOL STORM CONVEYANCE SYSTEM) SHALL BE CONSIDERED ACHIEVED WHEN COVERING THE AREA WITH 4 TO 8 INCHES OF COMPOST OR 2 TO 4 INCHES OF WOOD CHIPS AND THE PLANTING PLAN (<http://www.socounty.org/IP/Resources/ANativePlants.pdf>) HAS BEEN IMPLEMENTED. RED FESCUE AND CHEWING RED FESCUE MAY BE UTILIZED FOR PERMANENT SEEDING DURING SEEDING APPLICATION PERIOD FOUND UNDER THE AASCD VEGETATIVE ESTABLISHMENT SPECIFICATIONS.

MDE REQUIREMENTS FOR GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY

1. UTILIZATION OF ENVIRONMENTAL SITE DESIGN: THE SUBJECT PROJECT PROPOSES TO STABILIZE THE EXISTING STREAM CHANNEL USING NATURAL CHANNEL DESIGN, AND BANK STABILIZATION TECHNIQUES. NO IMPERVIOUS SURFACES ARE PROPOSED. STREAM EROSION WILL BE DECREASED AND FLOW WILL INFILTRATE THROUGH THE PROPOSED COASTAL PLAIN OUTFALL.
2. MAINTENANCE OF LIMITS OF DISTURBANCE TO PROTECT NATURAL AREAS: THE LIMITS OF DISTURBANCE SHOWN ON THE PLAN SET ARE INCLUSIVE, CONSISTENT AND PREVENT DISTURBANCE TO STREAMS, NATURAL DRAINAGE FEATURES, STREAM BUFFERS, SOIL CONSERVATION AREAS, WETLANDS, AND FOREST CONSERVATION AREAS DURING CONSTRUCTION EXCEPT AS SPECIFIED IN AN APPROVED EROSION AND SEDIMENT CONTROL PLAN. ON-GOING MAINTENANCE INSPECTIONS OF THE EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONDUCTED.
3. CONTROL OF CONSTRUCTION EQUIPMENT AND VEHICLES: CONSTRUCTION VEHICLES WILL ACCESS THE PROJECT FROM THE PROPOSED STABILIZED CONSTRUCTION ENTRANCE.
4. EVALUATION AND APPROPRIATE LIMITATION OF SITE CLEARING: CLEARING OF THIS SITE HAS BEEN LIMITED TO WITHIN THE PROPERTY BOUNDARY AND IS MINIMAL AS NECESSARY TO PERFORM THE STREAM STABILIZATION.
5. EVALUATION AND DESIGNATION OF SITE AREA FOR PHASING OR SEQUENCING: STABILIZATION WORK WILL PROCEED FROM THE UPSTREAM LIMIT TO THE DOWNSTREAM LIMIT. IN-STREAM DIVERSION PIPES WILL BE INSTALLED TO DIVERT STREAM FLOW IN ORDER TO WORK IN DIFFERENT LOCATIONS AND STAGES OF THE EXISTING STREAM.
6. IDENTIFICATION OF SOILS AT HIGH RISK FOR EROSION AND ADVANCED STABILIZATION TECHNIQUES TO BE USED: NO HIGHLY ERODIBLE SOILS WILL BE IMPACTED DURING CONSTRUCTION AT THIS SITE.
7. IDENTIFICATION OF STEEP SLOPES AND DESIGNATION OF LIMITATIONS ON CLEARING THEM: STEEP SLOPES ARE INDICATED ON THE EROSION AND SEDIMENT CONTROL PLANS IF APPLICABLE AND WILL BE STABILIZED AS INDICATED ON THE PLANS.
8. EVALUATION AND DESIGNATION OF STABILIZATION REQUIREMENTS AND TIME LIMITS AND PROTECTION MEASURES FOR DISCHARGES TO THE CHESAPEAKE BAY, IMPAIRED WATERS, OR WATERS WITH ESTABLISHED TMDLS: THE SUBJECT PROJECT SITE IS NOT WITHIN THE LOCALIZED DRAINAGE BASINS OF WATERS WITH ESTABLISHED TMDLS. PROPOSED TEMPORARY SEDIMENT CONTROLS HAVE BEEN DESIGNATED ON THE PLAN SET.

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS AND 100-YEAR FLOODPLAIN

- 1) NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- 2) PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF 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 ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.
- 4) PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, 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 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
- 7) ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES: ANNUAL PREGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (LINDULA 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 NOT 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:
 - A. USE 1 WATER: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
- 10) STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
- 11) CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

VEGETATIVE ESTABLISHMENT

FOLLOWING INITIAL DISTURBANCES OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN THREE CALENDAR DAYS FOR THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1) AND SEVEN DAYS FOR ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

1. PERMANENT SEEDING:
 - A. SOIL TESTS: LIME AND FERTILIZER WILL BE APPLIED PER SOIL TESTS RESULTS FOR SITES GREATER THAN 5 ACRES. SOIL TESTS WILL BE DONE AT COMPLETION OF INITIAL ROUGH GRADING OR AS RECOMMENDED BY THE SEDIMENT CONTROL INSPECTOR. RATES AND ANALYSES WILL BE PROVIDED TO THE GRADING INSPECTOR AS WELL AS THE CONTRACTOR.
 - A. OCCURRENCE OF ACID SULFATE SOILS (GRAYS BLACK COLOR) WILL REQUIRE COVERING WITH AN MINIMUM OF 12 INCHES OF CLEAN SOIL WITH 6 INCHES MINIMUM CAPPING OF TOP SOIL. NO STOCKPILING OF MATERIAL IS ALLOWED. IF NEEDED, SOIL TESTS SHOULD BE DONE BEFORE AND AFTER A 6-WEEK INCUBATION PERIOD TO ALLOW OXIDATION OF SULFATES.
 - B. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
 - a. SOIL pH SHALL BE BETWEEN 6.0 AND 7.0.
 - b. SOLUBLE SALTS SHALL BE LESS THAN 500 PARTS PER MILLION (ppm).
 - c. THE SOIL SHALL CONTAIN LESS THAN 40% CLAY BUT ENOUGH FINE GRAINED MATERIAL (>30% SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION IS IF LOVEGRASS OR SERICEA LESPEDEZA IS TO BE PLANTED, THEN A SANDY SOIL (<30% SILT PLUS CLAY) WOULD BE ACCEPTABLE.
 - d. SOIL SHALL CONTAIN 15% MINIMUM ORGANIC MATTER BY WEIGHT.
 - e. SOIL MUST CONTAIN SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
 - f. IF THESE CONDITIONS CANNOT BE MET BY SOILS ON SITE, ADJUST TOPSOIL IS REQUIRED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR TOPSOIL PREPARATION, TOPSOILING AND SOIL AMENDMENTS FROM THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL OR AMENDMENTS MADE AS RECOMMENDED BY A CERTIFIED AGRONOMIST.
 - B. SEEDING PREPARATION: AREA TO BE SEEDED SHALL BE LOOSE AND FRIABLE TO A DEPTH OF AT LEAST 3-5 INCHES. THE TOP LAYER SHALL BE LOOSENED BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING OCCURS. FOR SITES LESS THAN 5 ACRES, APPLY 100 POUNDS DOLOMITIC LIMESTONE AND 21 POUNDS OF 10-10-10 FERTILIZER PER 1,000 SQUARE FEET. HARROW OR DISK LIME AND FERTILIZER INTO THE SOIL TO A DEPTH OF AT LEAST 3-5 INCHES ON SLOPES FLATTER THAN 3:1.
 - C. SEEDING: APPLY 5-6 POUNDS PER 1,000 SQUARE FEET OF TALL FESCUE BETWEEN FEBRUARY 1 AND APRIL 30 OR BETWEEN AUGUST 15 AND OCTOBER 31. APPLY SEED UNIFORMLY ON A MOIST FIRM SEEDBED WITH A CYCLONE SEEDER, CULTIPACKER SEEDER OR HYDROSEEDER (SLURRY INCLUDES SEEDS AND FERTILIZER, RECOMMENDED ON STEEP SLOPES ONLY). MAXIMUM SEED DEPTH SHOULD BE ¼ INCH IN CLAYEY SOILS AND ½ INCH IN SANDY SOILS WHEN USING OTHER THAN THE HYDROSEEDER METHOD. IRRIGATE WHERE NECESSARY TO SUPPORT ADEQUATE GROWTH UNTIL VEGETATION IS FIRMLY ESTABLISHED. IF OTHER SEED MIXES ARE TO BE USED, SELECT FROM TABLE B3 AND B5 OF THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION CONTROL.
 - A. MULCHING: MULCH SHALL BE APPLIED TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING. DURING THE TIME PERIODS WHEN SEEDING IS NOT PERMITTED, MULCH SHALL BE APPLIED IMMEDIATELY AFTER GRADING. MULCH SHALL BE UNROTTED, UNCHOPPED, SMALL GRAIN STRAW APPLIED AT A RATE OF 2 TONS PER ACRE OR 90 POUNDS PER 1,000 SQUARE FEET (2 BALES). IF A MULCH-ANCHORING TOOL IS USED, APPLY 2.5 TONS PER ACRE. MULCH MATERIALS SHALL BE RELATIVELY FREE OF ALL KINDS OF WEEDS AND SHALL BE COMPLETELY FREE OF PROHIBITED NOXIOUS WEEDS. SPREAD MULCH UNIFORMLY, MECHANICALLY OR BY HAND, TO A DEPTH OF 1-2 INCHES.
 - E. SECURING STRAW MULCH: STRAW MULCH SHALL BE SECURED IMMEDIATELY FOLLOWING MULCH APPLICATION TO MINIMIZE MOVEMENT BY WIND OR WATER. THE FOLLOWING METHODS ARE PERMITTED:
 - i. US A MULCH-ANCHORING TOOL WHICH IS DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE TO A MINIMUM DEPTH OF 2 INCHES. THIS IS THE MOST EFFECTIVE METHOD FOR SECURING MULCH, HOWEVER, IT IS LIMITED TO RELATIVELY FLAT AREAS WHERE EQUIPMENT CAN OPERATE SAFELY.
 - ii. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. IF MIXED WITH WATER, USE 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
 - iii. LIQUID BINDERS MAY BE USED. APPLY AT HIGHER RATES AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF SLOPES. THE REMAINDER OF THE AREA SHOULD APPEAR UNIFORM AFTER BINDER APPLICATION. BINDERS LISTED IN THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL OR APPROVED EQUAL SHALL BE APPLIED AT RATES RECOMMENDED BY THE MANUFACTURERS.
 - iv. LIGHTWEIGHT PLASTIC NETTING MAY BE USED TO SECURE MULCH. THE NETTING WILL BE STAPLED TO THE GROUND ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
 2. TEMPORARY SEEDING
 - A. LIME: 100 POUNDS OF DOLOMITIC LIMESTONE PER 1,000 SQUARE FEET.
 - B. FERTILIZER: 15 POUNDS OF 10-10-10 PER 1,000 SQUARE FEET.
 - C. SEED: PERENNIAL RYE - 0.92 POUNDS PER 1,000 SQUARE FEET (FEBRUARY 1 THROUGH APRIL 30 OR AUGUST 15 THROUGH OCTOBER 31).
MILLET - 0.92 POUNDS PER 1,000 SQUARE FEET (MAY 1 THROUGH AUGUST 15).
 - D. MULCH: SAME AS 1D AND E ABOVE.
 3. NO FILLS MAY BE PLACED ON FROZEN GROUND. ALL FILL IS TO BE PLACED IN APPROXIMATELY HORIZONTAL LAYERS, EACH LAYER HAVING A LOOSE THICKNESS OF NOT MORE THAN 8 INCHES. ALL COMPACTION REQUIREMENTS ARE IN ACCORDANCE TO ANNE ARUNDEL COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION AS WELL AS THE AA COUNTY DESIGN MANUAL AND STANDARD DETAILS. FILLS FOR POND EMBANKMENTS SHALL BE COMPACTED AS PER MD-378 CONSTRUCTION SPECIFICATIONS. ALL OTHER FILLS SHALL BE COMPACTED SUFFICIENTLY SO AS TO BE STABLE AND PREVENT EROSION AND SLIPPAGE.
 4. PERMANENT SOD:
 - A. INSTALLATION OF SOD SHOULD FOLLOW PERMANENT SEEDING DATES. SEEDBED PREPARATION FOR SOD SHALL BE AS NOTED IN SECTION (B) ABOVE. PERMANENT SOD IS TO BE TALL FESCUE, STATE APPROVED SOD, LIME AND FERTILIZER PER PERMANENT SEEDING SPECIFICATIONS AND LIGHTLY IRRIGATE SOIL PRIOR TO LAYING SOD. SOD IS TO BE LAID ON THE CONTOUR WITH ALL ENDS TIGHTLY ABUTTING. JOINTS ARE TO BE STAGGERED BETWEEN ROWS. WATER AND ROLL OR TAMP SOD TO INSURE POSITIVE ROOT CONTACT WITH THE SOIL. ALL SLOPES STEEPER THAN 3:1, AS SHOWN, ARE TO BE PERMANENTLY SODDED OR PROTECTED WITH AN APPROVED EROSION CONTROL NETTING. ADDITIONAL WATERING FOR ESTABLISHMENT MAY BE REQUIRED. SOD IS NOT TO BE INSTALLED ON FROZEN GROUND. SOD SHALL NOT BE TRANSPLANTED WHEN MOISTURE CONTENT (DRY OR WET) AND/OR EXTREME TEMPERATURE MAY ADVERSELY AFFECT ITS SURVIVAL. IN THE ABSENCE OF ADEQUATE RAINFALL, IRRIGATION SHOULD BE PERFORMED TO ENSURE ESTABLISHMENT OF SOD.
 - B. MINING OPERATIONS:
 - A. SEDIMENT CONTROL PLANS FOR MINING OPERATIONS MUST INCLUDE THE FOLLOWING SEEDING DATES AND MIXTURES:
 - A. FOR SEEDING DATES OF FEBRUARY 1 THROUGH APRIL 30 AND AUGUST 15 THROUGH OCTOBER 31, USE SEED MIXTURE OF TALL FESCUE AT THE RATE OF 2 POUNDS PER 1,000 SQUARE FEET AND SERICEA LESPEDEZA AT THE MINIMUM RATE OF 0.5 POUNDS PER 1,000 SQUARE FEET.
 - B. TOPSOIL SHALL BE APPLIED AS PER THE STANDARD AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS FROM THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.


60% DESIGN

June 2026 FILE: T:\NEWPROJ\2025\2025-42-2 Cassia Drive Stream Restoration\CAD\Plans\Individual Drawings\Sheet 9-10 - ESC Details.dwg

REVISIONS		
NO.	BY	DATE

NO.	BY	DATE	DESCRIPTION

Prepared for:



**P.O. Box 760
Edgewater, MD 21037**

Prepared by:



Environmental Systems Analysis, Inc.
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EROSION CONTROL NOTES	
CASSIA DRIVE STREAM RESTORATION MAP 051D, GRID 0015, PARCEL 0436, SUBDIVISION 280	
SECOND ELECTION DISTRICT, ANNE ARUNDEL COUNTY, MD	
SCALE:	DATE: JUNE 2026
ESA PROJECT NO.: 2025-42-2 Cassia Drive Stream Restoration\CAD\Plans\Individual Drawings	
SHEET: 10 of 12	

PLANT SCHEDULE

ZONE 1 - Stream Banks		6,762 Total s.f.		0.16 Acres	
Reference					
QTY	SCIENTIFIC NAME	COMMON NAME	INDICATOR	COND	RATE/SPACING
SEED					
See MD Coastal Plain Mix - ERNMx-732					
SHRUBS					
20	<i>Ilex verticillata</i>	Winterberry	FACW	1 gal.	8' o.c.
20	<i>Lindera benzoin</i>	Spicebush	FACW	1 gal.	8' o.c.
20	<i>Vaccinium corymbosum</i>	Highbush Blueberry	FACW	1 gal.	8' o.c.
20	<i>Viburnum dentatum</i>	Arrowwood Viburnum	FAC	1 gal.	8' o.c.
80	Total				

ZONE 2 - Upland Forest		39,401 Total s.f.		0.90 Acres	
Reference					
Mid-Atlantic Mesic Mixed Hardwood Forest (CEGL006075) Northeastern Coastal Plain / Piedmont Oak - Beech / Heath Forest (CEGL006919)					
QTY	SCIENTIFIC NAME	COMMON NAME	INDICATOR	COND	RATE/SPACING
SEED					
See Right-of-Way Native Woods Mix ERNMx-132-1					
SHRUBS					
40	<i>Kalmia latifolia</i>	Mountain Laurel	FACU	1 gal.	8' o.c.
40	<i>Vaccinium corymbosum</i>	High Bush Blueberry	FACW	1 gal.	8' o.c.
40	<i>Vaccinium pallidum</i>	Early Low Bush Blueberry	N/A	1 gal.	8' o.c.
40	<i>Viburnum acerifolium</i>	Oak Leaf Viburnum	FACU	1 gal.	8' o.c.
40	<i>Viburnum dentatum</i>	Arrowwood Viburnum	FAC	1 gal.	8' o.c.
200	Total				

UNDERSTORY TREES					
10	<i>Cercis canadensis</i>	Redbud	FACU	1 gal.	12' o.c.
10	<i>Comus florida</i>	Flowering Dogwood	FACU	1 gal.	12' o.c.
10	<i>Ilex opaca</i>	American Holly	FAC	1 gal.	12' o.c.
10	<i>Sassafras albidum</i>	Sassafras	FACU	1 gal.	12' o.c.
40	Total				

CANOPY TREES (Container)					
22	<i>Carya tomentosa</i>	Mockernut Hickory	N/A	1 gal.	12' o.c.
22	<i>Fagus grandifolia</i>	Beech	FACU	1 gal.	12' o.c.
22	<i>Nyssa sylvatica</i>	Black Gum	FAC	1 gal.	12' o.c.
22	<i>Quercus alba</i>	White Oak	FACU	1 gal.	12' o.c.
22	<i>Quercus rubra</i>	Northern Red Oak	FACU	1 gal.	12' o.c.
110	Total				

ZONE 3 - Turf		2,422 Total s.f.		0.06 Acres	
Reference					
MDE permanent seed mix #11					
QTY	SCIENTIFIC NAME	COMMON NAME	INDICATOR	COND	RATE/SPACING
TURF GRASS SEED MIX					
					lbs/ac
	<i>Festuca rubra</i> var. <i>rubra</i>	Creeping Red Fescue		Seed	30
	<i>Festuca rubra</i> ssp. <i>Commutata</i>	Chewings Fescue		Seed	30
	<i>Poa pratensis</i>	Kentucky Bluegrass		Seed	20

FOREST MITIGATION CALCULATIONS

Total area within LOD = 0.90 Ac. (39,401 s.f.)
 Total forested area = 0.72 Ac. (31,488 s.f.)
Trees Removed Per Forest Stand
 Stand A 31488 s.f. (0.72 Acres) w/ LOD @ 193 trees/acre = 139 trees removed
Total trees removed = 139
 Mitigation required = 139 trees
 Mitigation provided = 150 trees

- Notes:
 1) Cluster shrubs of groups of 3-7 similar species
 2) Seed mixes may be substituted with similar mix pending approval of restoration professional.

SEED MIXES

ZONE 1		MD Coastal Plain Riparian Mix - ERNMx-732	
Botanical Name		Common Name	
39.70 %	<i>Sorghastrum nutans</i> , PA Ecotype	Indiangrass, PA Ecotype	
23.00 %	<i>Elymus virginicus</i> , Madison-NY Ecotype	Virginia Wildrye, Madison-NY Ecotype	
18.00 %	<i>Panicum virgatum</i> , "Habitat"-NJ Ecotype	Switchgrass, "Habitat"-NJ Ecotype	
10.00 %	<i>Panicum rigidulum</i> , PA Ecotype	Redtop Panicgrass, PA Ecotype	
3.00 %	<i>Rudbeckia hirta</i>	Blackeyed Susan	
2.00 %	<i>Helianthus scaberrimus</i> , PA Ecotype	Oxeye Sunflower, PA Ecotype	
1.00 %	<i>Astilbe incarnata</i> , PA Ecotype	Swamp Milkweed, PA Ecotype	
0.90 %	<i>Vernonia noveboracensis</i> , PA Ecotype	New York Ironweed, PA Ecotype	
0.80 %	<i>Eupatorium perfoliatum</i> , PA Ecotype	Boneset, PA Ecotype	
0.80 %	<i>Euthamia graminifolia</i> , PA Ecotype	Grassleaf Goldenrod, PA Ecotype	
0.80 %	<i>Helianthus angustifolius</i> , Coastal Plain NC Ecotype	Narrowleaf Sunflower, Coastal Plain NC Ecotype	

100.00 %
Seeding Rate: Seed at 20 lbs/acre with a cover crop. For a cover crop on well drained sites, use one of the following: grain oats (30 lbs/acre; 1 Jan to 30 Apr), brown top millet (10 lbs/acre; 1 May to 31 Aug), or grain rye (30 lbs/acre; 1 Sep to 31 Dec). For sites that are moist, use either grain rye (30 lbs/acre; 1 Sep to 30 Apr) or Japanese Millet (10 lbs/acre; 1 May to 31 Aug).
 Grasses & Grass-like Species - Herbaceous Perennial; Herbaceous Flowering Species - Herbaceous Perennial; Riparian Sites; Stormwater Management
 Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

ZONE 2		Right-of-Way Native Woods Mix w/Annual Ryegrass - ERNMx-132-1	
Botanical Name		Common Name	
30.00 %	<i>Lolium multiflorum</i>	Annual Ryegrass	
24.00 %	<i>Panicum clandestinum</i> , Tioga	Deertongue, Tioga	
14.40 %	<i>Panicum virgatum</i> , "Habitat"-NJ Ecotype	Switchgrass, "Habitat"-NJ Ecotype	
13.30 %	<i>Elymus virginicus</i> , Madison-NY Ecotype	Virginia Wildrye, Madison-NY Ecotype	
10.00 %	<i>Festuca rubra</i>	Creeping Red Fescue	
5.00 %	<i>Agrostis perennans</i> , Albany Pine Bush-NY Ecotype	Autumn Bentgrass, Albany Pine Bush-NY Ecotype	
3.00 %	<i>Carex vulpinoidea</i> , PA Ecotype	Fox Sedge, PA Ecotype	
0.30 %	<i>Aster pilosus</i> , PA Ecotype	Heath Aster, PA Ecotype	

100.00 %
Seeding Rate: 30 lb per acre
 Grasses & Grass-like Species - Herbaceous Perennial; Woodland Openings
 The shade-tolerant grasses and legumes are ideal for over seeding log landings and bioengineering sites. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

GENERAL PLANTING NOTES

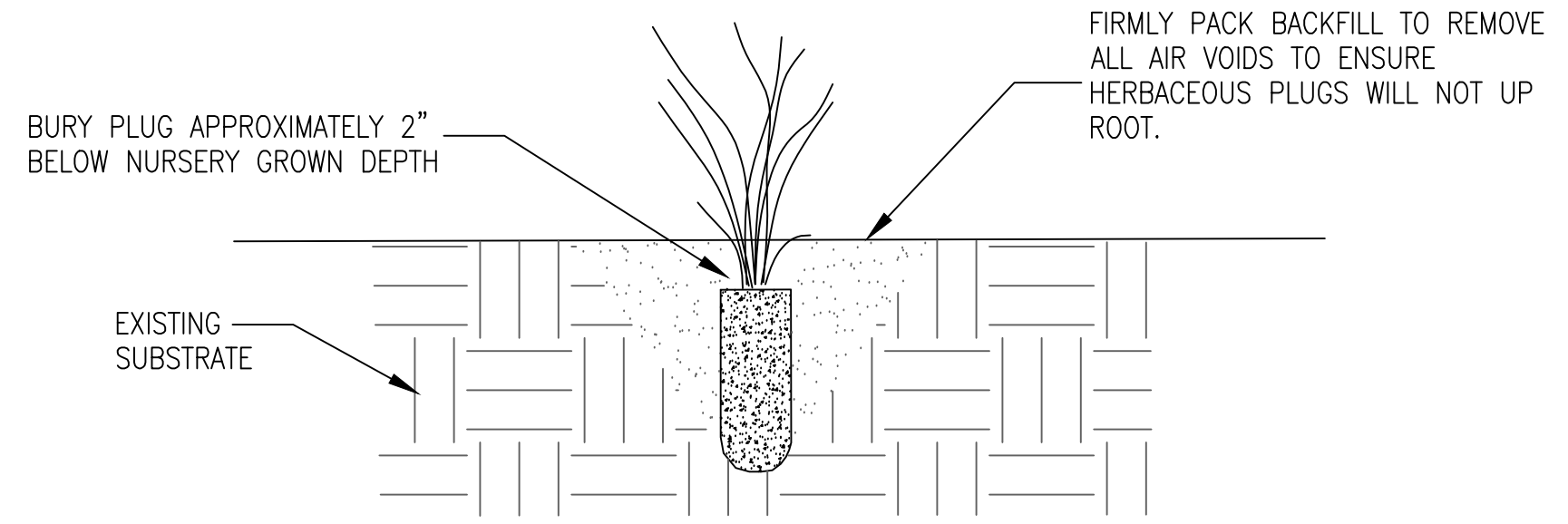
- GENERAL PLANTING NOTES
- THE LANDSCAPE CONTRACTOR SHALL NOTIFY THE RESTORATION SPECIALIST OF THE SCHEDULED DATE FOR COMMENCEMENT OF PLANTING SO THAT ALL PLANTING MATERIALS AND PLANTING METHODS MAY BE INSPECTED AND APPROVED BY THE COUNTY ENGINEER. NO PLANTS SHALL BE INSTALLED WITHOUT THE COUNTY CM/I ON SITE.
 - ALL PLANTS SHALL BE PLACED WITHIN THE LIMITS OF DISTURBANCE.
 - THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND FOR UNDERSTANDING AND HONORING PROPERTY BOUNDARIES. ANY UTILITIES OR OTHER PROPERTY DAMAGED DURING PLANTING SHALL BE CORRECTED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.
 - INSTALL TREE SHELTERS AROUND TREES AND DEER PROTECTION FENCING OR CAGES AROUND SHRUBS.
 - ALLOW AT LEAST THREE (3) MONTHS IN ADVANCE TO ORDER MATERIALS AND PLANTS.
 - THE PREFERRED PLANTING TIME FOR CONTAINER GROWN MATERIALS (TREES, SHRUBS, AND SEEDLINGS) IS FROM SEPTEMBER 1 TO DECEMBER 1. PLANTING SHALL NOT TAKE PLACE IN SUB-FREEZING TEMPERATURES, WHEN THE GROUND IS FROZEN, OR WHEN THE SOIL IS TOO DRY OR WET, OR OTHERWISE IN A CONDITION NOT GENERALLY ACCEPTED AS SATISFACTORY FOR PLANTING AND MAY ADVERSELY AFFECT PLANT MATERIALS.
 - IF CONDITIONS DETRIMENTAL TO PLANT GROWTH ARE ENCOUNTERED, SUCH AS RUBBLE FILL, ADVERSE DRAINAGE CONDITIONS, OR OBSTRUCTIONS, NOTIFY THE COUNTY ENGINEER BEFORE PLANTING.
 - ALL BARE SOIL MUST BE STABILIZED AND SEEDED USING THE SEED MIX SPECIFIED ON THE PLANS PRIOR TO PLANTING.
 - PLANTING SHOULD OCCUR WITHIN 24 HOURS OF PLANT MATERIAL DELIVERY TO THE SITE. AFTER BEING DELIVERED TO THE JOB SITE, PLANTS SHALL BE STORED IN A COOL, SHADY LOCATION. PLANT ROOT MASSES SHALL BE KEPT MOIST WITH PERIODIC WATERING UNTIL THE TIME OF PLANTING. PLANT MATERIALS LEFT UNPLANTED FOR MORE THAN 24 HOURS SHALL BE PROTECTED FROM DIRECT SUN AND WEATHER AND KEPT MOIST. NURSERY STOCK SHALL NOT BE LEFT UNPLANTED FOR MORE THAN 2 WEEKS.
 - SEED SHALL BE DELIVERED IN CONTAINERS (BOTTLES, JARS, PAPER/CLOTH BAGS/SACKS) HAVING LABELS THAT REPORT THE ORIGIN OF THE SEED, THE PURITY OF THE SEED AND THE GERMINATION PERCENTAGE, AND DATE OF GERMINATION TESTING OF THE SEED.
 - AFTER BEING DELIVERED TO THE JOB SITE, PLANTS SHALL BE STORED IN A COOL, SHADY LOCATION, PLANT ROOT MASSES SHALL BE KEPT MOIST WITH PERIODIC WATERING UNTIL THE TIME OF PLANTING.
 - SOIL ROOT MASSES SHALL BE THOROUGHLY MOIST UPON DELIVERY TO THE SITE. DRY OR LIGHT WEIGHT PLANTS SHALL BE REJECTED/REPLACED. IF THE SOIL/ROOT MASSES ARE SUBSTANTIALLY SMALLER THAN THE SPECIFIED CONTAINER SIZE AND LOOSE SOIL EXISTS ON THE BOTTOM OF THE CONTAINERS, THE PLANTS SHALL BE REJECTED/REPLACED.
 - ALL REJECTED PLANTS SHALL BE IMMEDIATELY REMOVED FROM THE SITE AND APPROVED REPLACEMENT PLANTS INSTALLED AT NO COST TO THE COUNTY.

- STANDARDS**
- ALL PLANT MATERIAL SHALL CONFORM TO THE CURRENT ISSUE OF THE AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN HORTICULTURE INDUSTRY ASSOCIATION AND AS SPECIFIED BELOW.
 - ALL CONTAINER STOCK SHALL BE NURSERY-GROWN WITHIN A 100-MILE RADIUS OF THE SITE. PLANT MATERIALS, WITH THE EXCEPTION OF LIVE STAKES, THAT ARE COLLECTED FROM THE WILD WILL BE REJECTED.
 - PLANT MATERIAL SHALL BE OBTAINED FROM NURSERIES THAT HAVE BEEN INSPECTED AND CERTIFIED BY STATE PLANT INSPECTORS.
 - THE ROOT SYSTEM OF CONTAINER GROWN PLANTS SHALL BE WHITE, WELL-DEVELOPED, AND WELL-DISTRIBUTED THROUGHOUT THE CONTAINER WITH THE ROOTS VISIBLY EXTENDING TO THE INSIDE FACE OF THE GROWING CONTAINER. WOODY PLANTS THAT HAVE GIRDLED ROOTS WILL NOT BE ACCEPTED.
 - IF IN LEAF, THE PLANTS SHALL APPEAR HEALTHY WITH NO LEAF SPOTS, LEAF DAMAGE, LEAF DISCOLORATION, LEAF WILTING OR EVIDENCE OF INSECTS ON THE PLANT.
 - THERE SHALL BE NO CHANGE IN THE QUANTITY, SIZE OR SPECIES OF SCHEDULED PLANT MATERIAL WITHOUT THE PRIOR APPROVAL OF THE COUNTY CM/I.

- PRODUCTS**
- MULCHING MATERIAL:
 - STRAW: SMALL GRAINED, SUCH AS WHEAT OR BARLEY WHICH IS FREE OF ROT, MILDEW, AND NOXIOUS WEED SEEDS. SHALL BE APPLIED TO SEEDED AREAS.
 - SHREDDED MULCH: SHALL BE FROM HARDWOOD OR PINE SOURCES AND MAY INCLUDE BARK AND WOOD FRAGMENTS THAT ARE BROWN IN COLOR AND AGED. MULCH SHALL BE FREE OF LEAVES, VINES, TRASH AND FOREIGN MATTER, AND SHALL BE APPLIED TO THE TEMPORARY CONSTRUCTION ACCESS ROAD AND AS MULCH RING AROUND TREES/SHRUBS ONLY.
 - WOOD CHIPS SHALL BE FROM FRESH OR AGED HARDWOOD OR PINE SOURCES AND MAY INCLUDE BARK AND WOOD FRAGMENTS. SHALL BE FREE OF LEAVES, VINES, TRASH AND FOREIGN MATTER, MAY INCLUDE CHUNKS UP TO 2 INCHES IN ANY DIMENSION. SHALL BE MIXED INTO UPPER CHANNEL BED AS SHOWN ON THE PLANS.
- MAINTENANCE AND GUARANTEE**
- PLANT MATERIAL SHALL BE MAINTAINED BY THE LANDSCAPE CONTRACTOR FOR ONE YEAR FROM THE DATE OF INITIAL INSPECTION AND ACCEPTANCE OF THE PLANTING BY THE COUNTY CM/I. MAINTENANCE SHALL INCLUDE ALL WATERING, FERTILIZATION AND ANIMAL REPELLENTS NECESSARY TO ENSURE THE SURVIVAL AND GROWTH OF THE PLANTS.
 - THE LANDSCAPE CONTRACTOR SHALL GUARANTEE THAT 85% OF THE PLANTED SHRUBS, 75% OF THE HERBACEOUS STOCK SHALL BE ALIVE AND HEALTHY ONE YEAR AFTER THE INITIAL INSPECTION AND ACCEPTANCE BY THE COUNTY CM/I. AT THE END OF THIS PERIOD, THE COUNTY CM/I SHALL CONDUCT A FINAL INSPECTION WITH THE LANDSCAPE CONTRACTOR. ALL PLANT MATERIAL EXCEEDING THOSE THRESHOLDS SHALL BE REPLACED BY THE LANDSCAPE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. THIS GUARANTEE SHALL COVER ALL DAMAGES EXCEPT VANDALISM, FIRE, AND FLOOD, AND ANIMAL PREDATION.
 - PLANT MATERIAL WHICH IS 25% DEAD OR MORE SHALL BE CONSIDERED DEAD.
 - PLANT MATERIAL REPLACEMENTS SHALL BE OF THE SAME SIZE, TYPE, AND VARIETY AS THE PLANTS SPECIFIED IN THE PLANTING SCHEDULE OR AS THE APPROVED SUBSTITUTES FOR THE ORIGINAL PLANTING.
 - PLANTS SHALL BE FURNISHED AND PLANTED AS SPECIFIED IN THESE PLANS.

- GENERAL PLANTING PROCEDURES**
- PLANTING SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE LANDSCAPE CONTRACTORS ASSOCIATION'S LANDSCAPE SPECIFICATION GUIDELINES" AND AS SPECIFIED BELOW.
 - CONTAINER STOCK MAY BE INSTALLED FROM SEPTEMBER 1 TO DECEMBER 1 AND FROM MARCH 15 TO JUNE 15. PLANTING SHALL NOT BE PERFORMED OUTSIDE OF THESE DATES WITHOUT THE EXPRESSED PERMISSION OF THE COUNTY CM/I. IN ADDITION, PLANTING SHALL NOT OCCUR IN SUB-FREEZING TEMPERATURES, WHEN THE GROUND IS FROZEN, OR WHEN THE SOIL IS TOO DRY OR WET, OR OTHERWISE IN A CONDITION NOT GENERALLY ACCEPTED AS SATISFACTORY FOR PLANTING.
 - HERBACEOUS PLUGS SHALL BE PLANTED AT LEAST TWO WEEKS AFTER GRADING AND BETWEEN MAY 1 TO SEPTEMBER 30.
 - IF SOIL STABILIZATION MATTING (SSM) IS PRESENT IN THE PLANTING AREAS, CUT A SMALL SLIT IN THE MATTING JUST LARGE ENOUGH TO EXCAVATE THE PLANTING HOLE BUT DO NOT DETACH OR REMOVE THE MATTING. ONCE PLANTING IS COMPLETE, RE-LAY THE MATTING OVER THE ROOT BALL BUT KEEP THE MATTING LOOSE AROUND THE TRUNK SO AS NOT TO INHIBIT GROWTH. ANY SPECIFIED MULCH IS TO BE PLACED ON TOP OF THE MATTING TO HOLD IT IN PLACE.

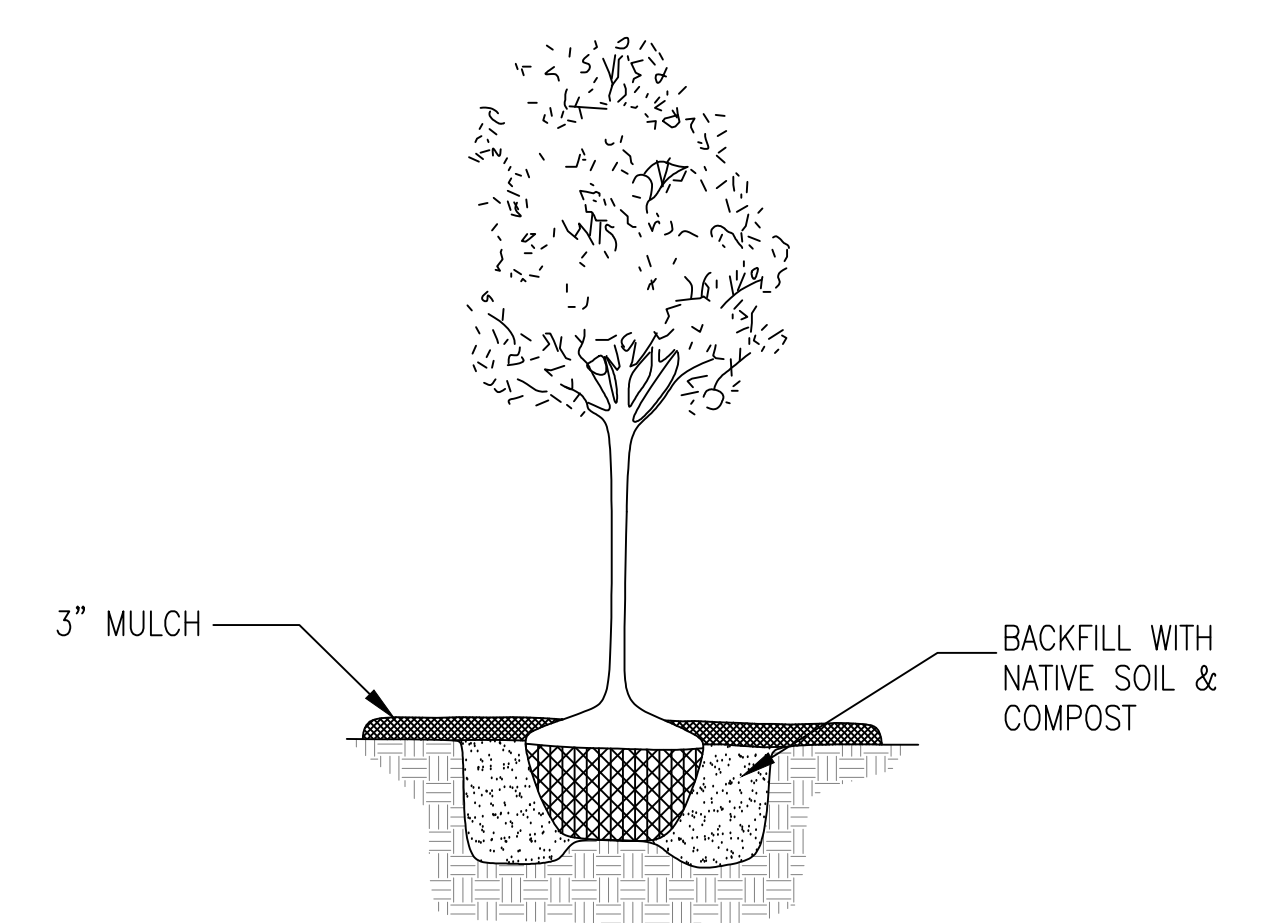
TYPICAL HERBACEOUS PLUG PLANTING DETAIL



- CONTAINER STOCK**
- FOR TREES AND SHRUBS, EXCAVATE A HOLE AT LEAST 12" WIDER THAN THE WIDTH OF THE ROOTBALL. FOR HERBACEOUS STOCK, EXCAVATE HOLE WITH A DIBBLE BAR AT LEAST 1 INCH WIDER THAN THE WIDTH OF THE ROOT MASS.
 - REMOVE THE PLANT EITHER BY CUTTING OR INVERTING THE CONTAINER.
 - TO ENCOURAGE THE OUTWARD GROWTH OF THE ROOTS FOR TREES AND SHRUBS, MAKE 4 TO 5, 1-INCH DEEP CUTS THE LENGTH OF THE ROOT BALL WITH A SHARP KNIFE OR BLADE.
 - INSTALL PLANT IN THE CENTER OF THE HOLE SO THAT THE ROOTBALL IS FLUSH WITH THE FINISHED LANDSCAPE GRADE.
 - ANY SURPLUS SOIL WHICH REMAINS AFTER PLANTING SHALL BE USED TO CREATE A SMALL MOUND AROUND THE EDGE OF THE PLANTING HOLE TO HOLD WATER DURING WATERING OPERATIONS.
 - THOROUGHLY WATER EACH PLANT AFTER INSTALLATION. WATERING SHALL BE PERFORMED EVEN IF IT IS RAINING. A SECOND WATERING MAY BE NECESSARY TO INSURE SATURATION OF THE ROOTBALL AND ELIMINATION OF THE AIR POCKETS.
 - PLACE A 3-FT. DIAMETER MULCH RING AROUND EACH TREE AND SHRUB. MULCH SHALL BE A MINIMUM DEPTH OF 2 INCHES AND A MAXIMUM DEPTH OF 3 INCHES. DO NOT PLACE MULCH AGAINST THE TRUNK. MULCHING IS NOT REQUIRED FOR HERBACEOUS PLANTS.
 - PRUNE ANY AND ALL TREE BRANCHES THAT ARE DEAD, DISEASED, DAMAGED, OR CONFLICTING.
 - AFTER PLANTING IS REVIEWED AND APPROVED BY THE COUNTY CM/I, REMOVE ALL TAGS, LABELS, STRINGS, AND WIRE.

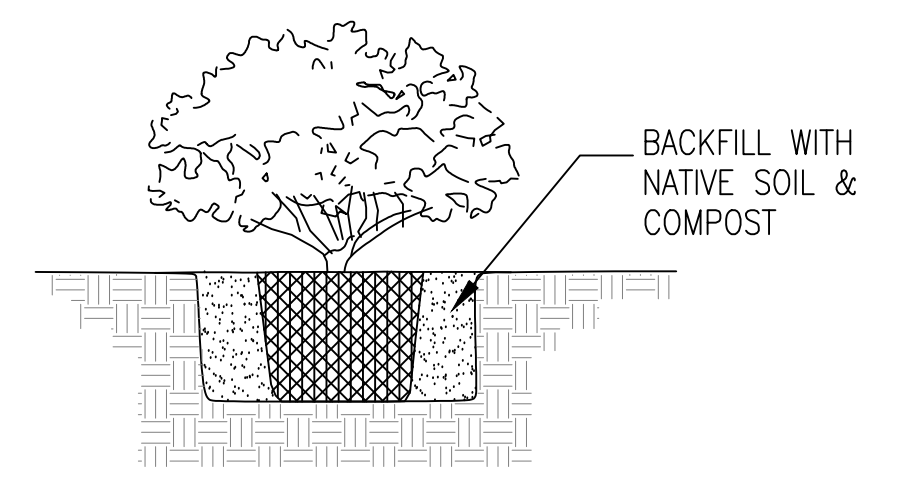
- SEE ANNE ARUNDEL SOIL CONSERVATION DISTRICT DETAILS AND SPECIFICATIONS FOR VEGETATIVE ESTABLISHMENT.**
- APPLY SEED WHEN THE SOIL IS FRAGILE (SOIL SHOULD BREAK UP EASILY AND NOT FORM CLOUDS WHEN WORKED USING A BROADCAST SEEDER OR A HYDROSEEDER)
 - IF A BROADCAST SEEDER IS USED, MIX THE SEED WITH A CARRIER OR SIMILAR WEIGHT (PERLITE, VERMICULITE, SANDWUST, OR SIMILAR PRODUCT) AND MAKE TWO PASSES OVER EACH AREA. THE SECOND PASS SHALL BE MADE AT A 90 DEGREE ANGLE TO THE FIRST PASS TO ENSURE EVEN SEED DISTRIBUTION. WORK SEED INTO THE SOIL WITH THE BACK OF A HAND RAKE. FINALLY, PRESS THE SEED INTO THE SOIL WITH A HAND ROLLER OR BY SIMPLY WALKING ON THE SEEDED AREAS FOLLOWING RAKING TO ENSURE SOIL TO SEED CONTACT.
 - IF USING A HYDROSEEDER, NO CARRIER IS REQUIRED AND ONE PASS OVER EACH AREA WILL BE SUFFICIENT PROVIDED THAT ALL PORTIONS OF THE SITE TO BE SEEDED ARE COVERED.
 - PLACE STRAW AT A RATE OF 100 BALES/ACRE ON ALL SEEDED AREAS, EXCEPT THOSE TO BE COVERED WITH SOIL STABILIZATION MATTING.

TYPICAL DECIDUOUS PLANTING DETAIL
CONTAINER / B&B



SHREDDED MULCH SHALL BE FROM HARDWOOD OR PINE SOURCES AND MAY INCLUDE BARK AND WOOD FRAGMENTS THAT ARE BROWN IN COLOR AND AGED. MULCH SHALL BE FREE OF LEAVES, VINES, TRASH AND FOREIGN MATTER.

TYPICAL SHRUB / HERBACEOUS PLANTING DETAIL
CONTAINER / B&B



60% DESIGN

REVISIONS		
NO.	BY	DATE

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PLANTING DETAILS	
CASSIA DRIVE STREAM RESTORATION	
MAP 051D, GRID 0015, PARCEL 0436, SUBDIVISION 280	
SECOND ELECTION DISTRICT, ANNE ARUNDEL COUNTY, MD	
SCALE:	DATE: JUNE 2026
ESA PROJECT NO.: 2025-42-2 Cassia Drive Stream Restoration\CAD\Plans\Individual Drawings	
SHEET: 12 of 12	