ANNE ARUNDEL COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS

SEVERN CHAPEL AREA
OF THE BACON RIDGE NATURAL AREA

80% DESIGN DEVELOPMENT

AA CO. PROJECT: P588001

STANDARD RESPONSIBILITY NOTES

1. I (We) certify that:

   a. All development and construction will be done in accordance with this sediment and erosion control plan, and further, authorize the right of entry for periodic on-site evaluation by the Anne Arundel Soil Conservation District (AASCD) Board of Supervisors or their authorized agents.

   b. Any responsible personnel involved in the construction project will have a certificate of attendance from the Maryland Department of the Environment's approved training program for the control of sediment and erosion before beginning the project.

   Responsible personnel on site: TBD.

   c. If applicable, the appropriate enclosure will be constructed and maintained on sediment basin(s) included in this plan. Such structure(s) will be in compliance with the Anne Arundel County Code.

2. The developer is responsible for the acquisition of all easements, right, and/or rights-of-way that may be required for the sediment and erosion control practices, storm water management practices and the discharge of storm water onto or across adjacent or downstream properties included in the plan.
3. For initial soil disturbance or re-disturbance, permanent and/or temporary stabilization per the AASCD Vegetative Establishment shall be completed within three calendar days for the surface of all 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.
4. The grading and sediment control approval on this plan extends only to those areas within the limits of disturbance.
5. The approval of this plan for sediment and erosion control does not relieve the developer/consultant from complying with Federal, State or County requirements pertaining to environmental issues.
6. The developer must request that the sediment and erosion control inspector approve work completed in accordance with the approved erosion and sediment control plan, the grading or building permit, and the ordinance.
7. All material shall be taken to a site with an approved sediment and erosion control plan.
8. First phase inspection and approval of the sediment and erosion control inspector shall be required upon completion of the installation of erosion and sediment controls prior to proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until the initial approval by the sediment and erosion control inspector is given. Inspection and Permits may also require that an inspection and certification of the installation of sediment control also be performed by a design professional prior to construction commencing.
9. Approval from the inspector must be requested on final stabilization of all sites prior to removal of sediment and erosion controls.
10. Existing topography must be field verified by responsible personnel to the satisfaction of the sediment control inspector prior to commencing work.

Signature of Developer/Owner _____ Date _____

Name (Print): _____

Title: _____

Affiliation: _____

Address: _____

Telephone Number: _____

Email Address: _____

CONSULTANTS CERTIFICATION

The Developer's plan to control silt and erosion is adequate to contain the silt and erosion on the property covered by the plan. I certify that this plan of erosion and sediment control represents a practical and workable plan based on my personal knowledge of this site, and was prepared in accordance with the requirements of the AASCD Plan Submittal Guidelines and the current Maryland Standards and Specifications for Soil Erosion and Sediment Control. I have reviewed this erosion and sediment control plan with the owner/developer.

Signature: _____ Date: _____

Name: (Print): Anthony J. Dietz MD P.E. License Number: 32574

Firm Name: Century Engineering, LLC, A Kleinfelder Company

Address: 10710 Gilroy Road, Hunt Valley, Maryland 21031

SITE DATA

1. OWNER / DEVELOPER: Anne Arundel County
   Dept. of Recreation and Parks
   2662 Riva Road
   Annapolis, MD 21401
   Contact: Bruce Bruchey
   (410) 222-2827
2. SITE ADDRESS: 1214 Severn Chapel Road
   Crownsville, Maryland 21032
3. # OF EXISTING PARCELS: 6
4. NET TRACT AREA: ± 152.06 AC
5. PROJECT AREA / LOD: ± 9.90 AC (±431,244 SF)
6. PLAT REFERENCE: 226 / 35
7. DEED REFERENCE: SEE SHEET 2
8. TAX ACCOUNT: SEE SHEET 2
9. TAX MAP/ GRID/ PARCEL: 0037 / 0011 / 0086
10. CENSUS: 751700
11. CONGRESSIONAL DISTRICT: 3
12. COUNCIL DISTRICT: 6
13. LEGISLATIVE DISTRICT: 33B
14. ZONING: RA - Rural Agricultural
15. WATER SERVICE AREA: N/A
16. SEWER SERVICE AREA: RURAL (N/A)
17. FEMA FIRM MAP #: 24003C0145E
18. 100 YR FLOODPLAIN: N/A
19. TIDAL/NONTIDAL WETLANDS: SEE SHEET 2
20. WATERSHED: Bacon Ridge Branch, South River
21. THIS SITE IS NOT WITHIN THE CHESAPEAKE BAY CRITICAL AREA.
22. THIS SITE IS NOT WITHIN THE BWI AIRPORT ZONE.
23. EXISTING USE: Park / Natural Area
24. PROPOSED USE: Park / Natural Area
25. PARKING SUMMARY
    EXISTING: TEMPORARY / UNPAVED
    PROPOSED: 101 STANDARD SPACES
    15 TRAILER / BUS SPACES
    5 HANDICAP (ADA) SPACES
26. THERE IS (1) HISTORIC SITE WITHIN THE PROJECT LIMIT OF DISTURBANCE, AA-882, "THOMAS CRANDELL FARM." THE REMAINDER OF THE SEVERN CHAPEL AREA TRACT CONTAINS ADDITIONAL RESOURCES. SEE EXISTING CONDITIONS PLAN SHEET NOTES (SHEET 2).
27. SEVERN CHAPEL ROAD IS A CLASSIFIED "CATEGORY 1, RURAL" SCENIC AND HISTORIC ROAD.

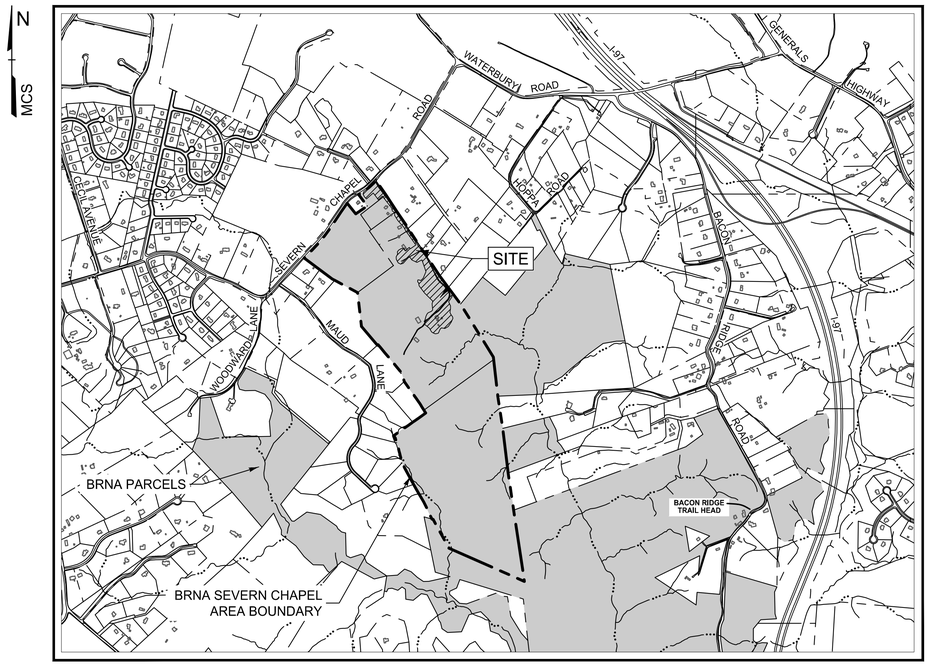
Outfall Statement

A field investigation was done of the outfalls and the conveyance systems down stream of them on October 31, 2023, by Century Engineering, LLC. The Bacon Ridge site is broken into four major drainage areas, A_1, A_2, B, & C. Area A_1 drains to a swale running west along Severn Chapel Road. Area A_2 drains to a swale running northwest from the middle of the proposed area of work and eventually rejoins with the Severn Chapel Road swale. Area B drains East from the southernmost portion of the proposed area of work. Area C is the southernmost area no work is proposed for this area therefore no computations are provided. All the drainage areas eventually combine but this is well outside of the study area, approximately 2 ¼ miles south of the proposed work area. The Point of investigation (POI) was set at where the proposed work areas were ten percent of the whole drainage area to that point. In most cases the proposed work was much less than the ten percent of the drainage area where the site drainage joined another larger stream or flood plain. A photo walking tour was done of the three outfalls the findings of this are described below:

Drainage area 'A_1' has Micro-bioretention 1, Submerged Gravel Wetland 1A, and Bioswale 2 as well as culverts bypassing runoff from upstream properties around the Environmental Site Design features draining to it. These facilities outfall to a meadow area which drains to a swale along Severn Chapel Road this swale drains to an area where a stream, part of Bacon Ridge Branch, crosses the road. The stream is in a FEMA 100 year flood plain. There is no indication of erosion in the field or roadside swale.

Drainage area 'A_2' has Submerged Gravel Wetland 1, 2 & 3, and Micro-bioretention 2,3 & 4 as well as culverts bypassing runoff from upstream properties around the Environmental Site Design features draining to it. These features discharge to an existing meadow area which drains to a swale leading to an existing pond. The discharge from the pond drains to a swale which crosses two private driveways eventually combining with the discharge from D.A. A_1 near Maud Lane just before reaching the existing flood plain and stream. There is no indication of erosion in the field or swales.

Drainage area 'B' has Micro-bioretention 5 & 6, and Bioswales 3 & 4 draining to it. These features discharge to an existing meadow area which drains to a swale leading to a stream eventually leading to Bacon Ridge Branch. There is no indication of erosion in the field or swales.



VICINITY MAP

SCALE: 1" = 1000'
0 1000' 2000'

SITE ANALYSIS

TOTAL SITE AREA	52.0 Acres(6,621,120 sf)
TOTAL DISTURBED AREA	9.9 Acres(431,244 sf)
TOTAL CUT	14,640± CY*
TOTAL FILL	16,400 ±CY*
AREA TO BE ROOFED OR PAVED	3.5 Acres (152,460 sf)
AREA TO BE VEGETAVELY STABILIZED	6.4 Acres (278,784 sf)

* EXCESS MATERIAL WILL BE PLACED ON-SITE.
* CONTRACTOR RESPONSIBLE TO VERIFY EARTHWORK QUANTITIES AND SUITABILITY OF SOILS

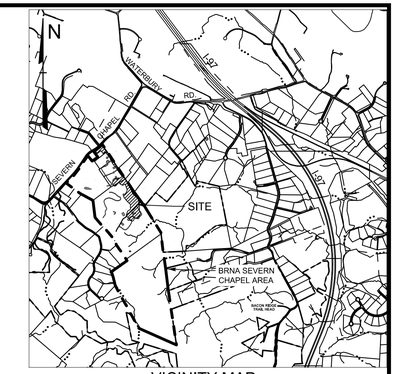
LIMIT OF DISTURBANCE

9.9 ACRES (431,244 SF)

SEQUENCE OF CONSTRUCTION -SEE SHEET 2

SHEET LIST

1	Cover Sheet
2	General Notes
3	Overall Existing Conditions Plan
4	Overall Site Plan
5	Demolition Plan
6	Demolition Plan
7	Demolition Plan
8	Grading & SWM Plan
9	Grading & SWM Plan
10	Grading & SWM Plan
11	Site Details
12	Site Details
13	Erosion And Sediment Control Plan-Phase I
14	Erosion And Sediment Control Plan-Phase I
15	Erosion And Sediment Control Plan-Phase I
16	Erosion And Sediment Control DA Map-Phase I
17	Erosion And Sediment Control Plan-Phase II
18	Erosion And Sediment Control Plan-Phase II
19	Erosion And Sediment Control Plan-Phase II
20	Erosion And Sediment Control DA Map-Phase II
21	Erosion And Sediment Control Plan-Phase II-A
22	Erosion And Sediment Control Plan-Phase II-A
23	Erosion And Sediment Control Plan-Phase II-A
24	Erosion And Sediment Control Notes & Details
25	Erosion And Sediment Control Notes & Details
26	Erosion And Sediment Control Notes & Specifications
27	Soil Boring Logs
28	Soil Boring Logs
29	Soil Boring Logs
30	SWM Existing Conditions DA Map
31	SWM Proposed Conditions DA Map
32	SWM Proposed Conditions DA Map
33	SWM Proposed Conditions DA Map
34	SWM Facilities
35	SWM Facilities
36	SWM Facilities
37	SWM Facilities
38	SWM Notes & Details
39	SWM Planting Plan
40	SWM Outfall Exhibit
41	Utility Profiles
42	Utility Profiles
43	Utility Profiles
44	Utility Details
45	Entrance And Sight Line Plan
46	Entrance And Sight Line Plan
47	Landscape Plan
48	Landscape Plan
49	Landscape Plan
50	Landscape Notes & Details
51	Landscape Notes & Details
52	Tree Protection Notes & Details



VICINITY MAP

SCALE: 1" = 2000'

BENCHMARKS

COORDINATES, BEARINGS AND DISTANCES ARE REFERRED TO THE MARYLAND STATE PLANE COORDINATE SYSTEM (NAD 83/2011) VIA GPS AND TIED TO THE FOLLOWING LEICA SMART NET NGS CORS REFERENCE STATION NETWORK STATIONS:
LOYF-0371 N 476639.2591 E 1448171.6640 ELEV. 61.4557
MDAN-0368N 533581.9866 E 1371782.9323 ELEV. 225.5004

LEGEND

- Property Line
- Adjacent Lot Line
- Existing Edge of Road
- Stream Centerline
- Existing Building
- Bacon Ridge Natural Area
- Project Site

CALL "MISS UTILITY" AT
1-800-257-7777
48 Hours Before Start Of Construction

DATA SOURCES:

- TOPOGRAPHY AND PLANIMETRICS SHOWN ARE FROM A FIELD-RUN SURVEY BY CENTURY ENGINEERING, DATED 8-11-2022, 11-14-2023, 2/20/2023, AND SUPPLEMENTED BY ANNE ARUNDEL COUNTY GIS.
- ON-SITE STREAMS AND WETLAND DELINEATION ARE BASED ON A NATURAL RESOURCES SURVEY PERFORMED BY CENTURY ENGINEERING, DATED 1/27/2021.
- FOREST CONSERVATION EASEMENTS SHOWN ARE BASED ON PLAT 11860 - 11861, PLAT BOOK 226, PAGES 34-35.
- FLOODPLAIN DATA IS FROM FEMA NATIONAL FLOOD HAZARD LAYER GIS.
- PROPERTY DATA IS FROM MARYLAND DEPARTMENT OF ASSESSMENTS AND TAXATION REAL PROPERTY DATA.
- MARYLAND COORDINATE SYSTEM (MCS)

60% CONFORMING SET

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.: 32574 EXPIRATION DATE: XXX

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE	AS SHOWN
DRAWN BY	LMV/RDT
CHECKED BY	MJP
SHEET	1 OF 52
PROJECT NO.:	P588001
DATE:	8/21/2023

DESIGN DEVELOPMENT

Cover Sheet

Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

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LEGEND

- Property Line
- Adjoiner Property Line
- 676 — Existing Minor Contour
- 670 — Existing Major Contour
- UuB (D) / UuC (D) — Soil Line
- Existing Edge of Paving
- SD — EX. 15" D. — Existing Storm Drain
- W — EX. 12" W. — Existing Water
- UGT — Existing Underground Telephone Line
- UGE — Existing Underground Electric Line
- OHE — Existing Overhead Electric Line
- Existing Utility Pole
- Existing Guy Pole / Guy Wire
- Existing Sign
- X — X — X — Existing Fence
- Existing Trail
- Existing Tree Line
- Existing Deciduous Tree
- Existing Evergreen Tree
- CRZ — Critical Root Zone
- Existing Building
- FCE — Existing Forest Conservation Easement
- Non-Tidal Wetlands and 25' Buffer
- FB — 100' Stream Buffer
- FP — FEMA 100-Year Flood Plain
- Water Edge or Stream Centerline
- Zoning Line
- LOD — Limit of Disturbance
- Existing Object to be Removed
- Existing Paving to be Removed
- Existing Tree to be Removed
- TPF — Tree Protection Fence
- UGE — Relocated Underground Electric Line
- OHE — Relocated Overhead Electric Line
- Relocated Utility Pole
- Relocated Guy Pole / Guy Wire
- Relocated Sign
- 676 — Proposed Minor Contour
- 670 — Proposed Major Contour
- +143.6 — Proposed Spot Elevation
- Proposed Edge of Road/Paving
- Proposed Curb and Gutter
- Proposed Paving
- Proposed Concrete Pavement / Sidewalk
- 18 — Proposed Parking Count
- Proposed Building
- Proposed Split Rail Fence
- Proposed Tree Line
- Proposed SWM Facility
- PR. 15" D. — Proposed Inlet and Storm Drain
- Proposed Storm Drain Outfall
- Soil Boring
- PR. 6" S. — Proposed Septic Connection
- PR. 1" W. — Proposed Water
- Drainage Area
- RSF — Reinforced Silt Fence
- SSF — Super Silt Fence
- A-2 — Earth Dike
- Perimeter Dike/Swale
- SCE — Stabilized Construction Entrance
- MB — Mountable Berm
- RPS — Removable Pumping Station
- GP — Gabion Inflow Protection
- ROP — Rock Outlet Protection
- Topsoil Stockpile
- Proposed Shade Tree
- Proposed Ornamental Tree
- Proposed Evergreen Tree
- Proposed Shrubs
- Proposed Perennials

LEGEND NOTES:
1. ALL ITEMS SHOWN MAY NOT BE PRESENT ON ALL SHEETS.
2. SUPPLEMENTAL SHEET-SPECIFIC LEGENDS WITH ADDITIONAL ITEMS MAY BE PRESENT ON INDIVIDUAL SHEETS.

GENERAL NOTES

1. ALL CONSTRUCTION SHALL COMPLY WITH ANNE ARUNDEL COUNTY STANDARDS. ALL CONSTRUCTION WITHIN THE STATE RIGHT OF WAY SHALL COMPLY WITH ALL THE MARYLAND DEPARTMENT OF TRANSPORTATION STANDARDS.
2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS REQUIRED BY GOVERNMENT AGENCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FROM ANNE ARUNDEL COUNTY DEPARTMENTS REQUIRED TO PERFORM THE WORK. THE CONTRACTOR SHALL POST ALL BONDS, PAY ALL FEES, PROVIDE PROOF OF INSURANCE AND PROVIDE TRAFFIC CONTROL NECESSARY FOR THIS WORK.
3. PROPER CONSTRUCTION PROCEDURES SHALL BE FOLLOWED ON ALL IMPROVEMENTS WITHIN THE PARCELS SO AS TO PREVENT THE SILTING OF ANY WATERCOURSE OR WETLANDS IN ACCORDANCE WITH THE REGULATIONS OF MDE & AASCD GUIDELINES FOR SOIL EROSION AND SEDIMENT POLLUTION CONTROL. IN ADDITION, HEREIN, THE CONTRACTOR SHALL STRICTLY ADHERE TO THE "EROSION AND SEDIMENT CONTROL PLAN" CONTAINED. THE CONTRACTOR SHALL BE RESPONSIBLE TO POST ALL BONDS AS REQUIRED BY ANNE ARUNDEL SCD WHICH GUARANTEE THE PROPER IMPLEMENTATION OF THE PLAN.
4. ALL FILL MATERIAL UNDER STRUCTURES AND UNDER PAVED AREAS SHALL BE "LOAD BEARING FILL" (COURSE AGGREGATE CRUSHED STONE) AND SHALL BE PLACED IN ACCORDANCE WITH THE REQUIREMENTS OF MD SHA, UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL ENGINEER. COMPACTION SHALL BE 95% MIN MODIFIED PROCTOR DENSITY PER ASTM D1557 AT 2 PERCENT OF OPTIMUM MOISTURE CONTENT.
5. ALTERNATIVE METHODS AND PRODUCTS OTHER THAN THOSE SPECIFIED MAY BE USED IF REVIEWED AND APPROVED BY THE OWNER, ENGINEER, AND APPROPRIATE REGULATORY AGENCIES PRIOR TO INSTALLATION.
6. THE CONTRACTOR SHALL RESTORE ANY UTILITY STRUCTURE, PIPE, UTILITY, PAVEMENT, CURBS, SIDEWALKS OR LANDSCAPED AREAS DISTURBED DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION OR BETTER.
7. TOPSOIL SHALL BE STRIPPED AND STOCKPILED FOR USE IN FINAL LANDSCAPING.
8. REFER TO THE DETAIL SHEETS FOR PAVEMENT, CURBING, AND SIDEWALK INFORMATION,THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SHOULD ANY DISCREPANCY REGARDING THE PROPOSED WORK OR UNFORESEEN CONDITIONS ARISE, PRIOR TO PROCEEDING FURTHER WITH THE AFFECTED WORK.
9. ALL DISTURBANCES INCURRED TO ANY ADJOINING PROPERTY DUE TO CONSTRUCTION OR DEMOLITION SHALL BE RESTORED TO THE PREVIOUS CONDITION OR BETTER, TO THE SATISFACTION OF ANNE ARUNDEL COUNTY AND/OR THE INVOLVED LAND OWNERS.
10. ALL PIPES SHALL BE LAID ON STRAIGHT ALIGNMENTS AND EVEN GRADES USING A PIPE LASER OR OTHER APPROVED ACCURATE METHOD.
11. THE CONTRACTOR SHALL COMPACT THE PIPE AND SITE BACKFILL IN 8" LIFTS ACCORDING TO THE PIPE BEDDING DETAIL. TRENCH BOTTOM SHALL BE STABLE IN HIGH GROUND WATER AREAS. A PIPE FOUNDATION SHALL BE USED IN AREAS OF ROCK EXCAVATION.
12. CONTRACTOR IS RESPONSIBLE FOR ALL TRENCHING, BACKFILL AND PADS FOR ELECTRIC UTILITIES. THE CONTRACTOR SHALL CONTACT ANNE ARUNDEL COUNTY PUBLIC WORKS REGARDING CONNECTIONS AND CONSTRUCTION.
13. CONTRACTOR SHALL VERIFY LOCATIONS AND EXISTENCE OF UTILITY SERVICES AND MAINS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" 1-800-257-7777 AT LEAST FIVE (5) DAYS PRIOR TO CONSTRUCTION..CONTRACTOR TO TEST PIT WHERE NECESSARY TO VERIFY EXISTING UTILITIES.
14. CONTRACTOR SHALL SAWCUT PAVEMENT WHERE UTILITIES ARE TO BE INSTALLED IN PAVEMENT.
15. THE OWNER IS REQUIRED TO SUPPLY THE DPW WITH TWO (2) SETS OF SIGNED AND APPROVED CONSTRUCTION PLANS.
16. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT THE FACILITIES OF THE COUNTY AND OTHER UTILITIES DURING CONSTRUCTION. EXCAVATION AND CONSTRUCTION SHALL BE PERFORMED WITH EXTREME CARE TO PREVENT DAMAGE TO FACILITIES.
17. ANY DAMAGE DONE DURING CONSTRUCTION TO PARK FACILITIES TO BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.

STORM DRAIN GENERAL NOTES

1. UNLESS OTHERWISE NOTED, ALL STORM DRAIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST ANNE ARUNDEL COUNTY DESIGN MANUAL AND STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.
2. EXISTING FEATURES AND UTILITIES SHOWN HAVE BEEN BASED UPON SURVEYS AND OTHER SOURCES BELIEVED TO BE RELIABLE. THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION SHOWN IS NOT GUARANTEED. THE CONTRACTOR SHALL VERIFY ALL INFORMATION BEFORE COMMENCING WORK.
3. THE CONTRACTOR SHALL NOTIFY MISS UTILITY AT 1-800-257-7777 A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO CONSTRUCTION.
4. THE CONTRACTOR SHALL MAINTAIN, REPAIR, AND/OR REPLACE ANY EXISTING SEDIMENT CONTROL DEVICES ENCOUNTERED AND DISTURBED DURING THE COURSE OF CONSTRUCTION. AT THE END OF EACH DAY, ALL MEASURES AND DEVICES SHALL BE REPAIRED OR REPLACED BEFORE LEAVING THE WORK SITE.
5. CONSTRUCTION SHALL FOLLOW THE SEQUENCE OF CONSTRUCTION ON THE APPROVED EROSION AND SEDIMENT CONTROL DRAWINGS.
6. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND INSPECTIONS.
7. THE CONTRACTOR SHALL MAINTAIN TRAFFIC AT ALL TIMES, IF APPLICABLE.
8. NUMERICALLY WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
9. UNLESS OTHERWISE NOTED, DIMENSIONS FROM CURB ARE MEASURED AT FACE OF CURB.
10. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION AND DEPTH OF ALL EXISTING UTILITIES, AS NECESSARY. REPORT ANY DISCREPANCIES FROM THE PLANS TO CENTURY ENGINEERING, INC. THE CONTRACTOR SHALL VERIFY ALL INVERT ELEVATIONS PRIOR TO INSTALLING ANY PIPE. ALL UTILITIES SHALL BE RETAINED UNLESS LABELED OTHERWISE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS AND WORK REQUIRED TO ADJUST EXISTING AND PROPOSED UTILITIES AND APPURTENANCES TO FINISHED GRADES WITHIN THE LIMITS OF WORK. DAMAGE TO EXISTING CONDITIONS AND UTILITIES SHALL BE REPAIRED TO THE OWNER'S SATISFACTION AT THE EXPENSE OF THE CONTRACTOR.
11. EXISTING UTILITIES WHICH ARE NOT TO BE REMOVED OR ABANDONED SHALL REMAIN OPERATIONAL AT ALL TIMES. APPROPRIATE EXISTING UTILITIES SHALL REMAIN IN SERVICE UNTIL REPLACEMENT/RELOCATED UTILITIES ARE OPERATIONAL, UNLESS OTHERWISE NOTED.
12. THE CONTRACTOR SHALL MAINTAIN 2.0 FEET MINIMUM COVER OVER ALL UTILITIES DURING CONSTRUCTION.
13. ELECTRIC, TELEPHONE, GAS, CABLE, AND LIGHTING TO BE DESIGNED BY OTHERS. WHERE THOSE FACILITIES ARE SHOWN, THEY ARE FOR COORDINATION PURPOSES ONLY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY WORK NOT SPECIFICALLY MENTIONED ON THE PLANS WHICH NORMALLY WOULD BE REQUIRED TO COMPLETE THE PROJECT.
15. THE CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL DATUM WITH THE SURVEYOR OF RECORD BEFORE STARTING WORK.

NOTE:

1. ROADS TO BE SWEPT DAILY
2. STOCKPILES: 15' MAX HEIGHT WITH 2:1 SLOPES

*NOTE: INSTALL RSF OR SSF PRIOR TO ROUGH GRADING/EXCAVATING SWM FACILITIES MAY BE CLEARED AND EXCAVATED DURING CONSTRUCTION WITH THE INSPECTOR'S APPROVAL. THEY MUST BE PROTECTED WITH RSF IMMEDIATELY UPON GRADING. SWM CANNOT BE COMPLETE (I.E. GRAVEL, STONE, AGGREGATES AND MEDIUM) UNTIL THE UPSTREAM DRAINAGE AREA TO EACH FACILITY IS 95% STABILIZED WITH PERMANENT COVER AND WITH THE INSPECTORS APPROVAL.

SANITARY AND WATER GENERAL NOTES

1. UNLESS OTHERWISE NOTED, PIPE ELEVATIONS FOR WATER MAINS REFER TO TOP OF PIPE AND SANITARY SEWER ELEVATIONS REFER TO INVERT. MAINTAIN A MINIMUM OF FOUR (4) FEET OF COVER OVER WATER MAINS UNLESS OTHERWISE NOTED.
2. CONTRACTOR TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING MAINS TO WHICH THE PROPOSED CONSTRUCTION CONNECTS. SHOULD LOCATIONS DIFFER FROM PROPOSED PLAN, CONTRACTOR IS TO NOTIFY ENGINEER PRIOR TO COMMENCING CONSTRUCTION, CONTRACTOR SHALL VERIFY ALL INVERTS PRIOR TO INSTALLING ANY PIPE.
3. THE CONTRACTOR SHALL NOTIFY ANNE ARUNDEL COUNTY DEPARTMENT OF INSPECTION AND PERMITS AT (410)222-7780 FIVE (5) WORKING DAYS PRIOR TO STARTING WORK SHOWN ON THESE PLANS.
4. UNLESS OTHERWISE NOTED, ALL WATER PIPES AND FITTINGS SHALL BE PVC SDR-14, CLASS 200, CONFORMING TO AWWA C900 WITH DIP OUTSIDE DIAMETER. PIPE SHALL BE FURNISHED WITH RUBBER GASKETED JOINTS OF EITHER THE INTEGRAL THICKENED BELL OR TWIN GASKETED COUPLING TYPE. WHERE SO NOTED, DUCTILE IRON PIPE FOR WATER MAINS SHALL BE CLASS 50 CONFORMING TO AWWA C151, WITH TYLON OR MECHANICAL JOINTS. JOINTS ON FITTINGS SHALL BE MECHANICAL JOINTS ONLY. FITTINGS SHALL CONFORM TO AWWA C110, DIP WATER PIPE AND FITTINGS SHALL BE CEMENT-LINED IN ACCORDANCE WITH AWWA C104, DOUBLE THICKNESS. LINING SHALL BE SEALED WITH A BITUMINOUS SEAL COAT. OUTSIDE SURFACE SHALL BE BITUMINOUS COATED.
5. CONCRETE BUTTRESSES ARE TO BE INSTALLED AT ALL BENDS, TEES, AND BLOWOFFS IN ACCORDANCE WITH ANNE ARUNDEL COUNTY DEPARTMENT OF PUBLIC WORKS STANDARD DETAILS.
6. UNLESS OTHERWISE NOTED, ALL SEWER PIPE SHALL BE PVC SDR-35 CONFORMING TO THE REQUIREMENTS OF ASTM SPECIFICATION D-3034, TYPE PSM. PIPE FITTINGS SHALL BE MANUFACTURED WITH INTEGRALLY FORMED BELL AND SPIGOT TYPE JOINTS IN ACCORDANCE WITH ASTM D3212, ELASTOMETRIC GASKETS CONFORMING TO ASTM F477. WHERE SO NOTED, DUCTILE IRON PIPE FOR SEWERS SHALL BE CLASS 50 WITH TYLON OR MECHANICAL JOINTS. OUTSIDE SURFACES SHALL BE BITUMINOUS COATED.
7. ALL MANHOLES ARE TO BE BITUMINOUS COATED, ALL MANHOLES IN NON-PAVED AREAS SHALL HAVE WATERTIGHT COVERS IN ACCORDANCE WITH ANNE ARUNDEL COUNTY STANDARD DETAILS, FRAMES AND COVERS TO BE SET ABOVE GRADE AS NOTED AND PAINTED YELLOW.
8. ALL FIRE HYDRANTS ARE TO BE PAINTED SAFETY YELLOW AND RISER IS TO BE PAINTED GLOSS BLACK.
9. TRENCH BACKFILL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED BY AASHTO METHOD T-180, METHOD C.
10. A. PRIOR TO PLACEMENT OF COMPACTED FILL, ANY SOFT OR OTHERWISE UNSUITABLE SOILS ENCOUNTERED AT OR BELOW THE PIPE INVERT SHALL BE UNDERCUT AND REMOVED FROM THE CONSTRUCTION AREA.
    B. ACCEPTABLE COMPACTED FILL SHALL BE PLACED IN SIX (6)-INCH THICK LOOSE LIFTS AND COMPACTED TO AT LEAST 98% OF THE MAXIMUM DRY DENSITY DETERMINED BY AASHTO METHOD T-180. COMPACTION TEST RESULTS CONDUCTED BY AN INDEPENDENT TESTING LAB ARE TO BE SEALED BY A REGISTERED ENGINEER AND SUBMITTED TO THE COUNTY PRIOR TO PIPE INSTALLATION.
    C. THE COMPACTED FILL SHALL BE BENCHED INTO THE EXISTING VIRGIN SLOPES WITH EACH LIFT PLACED TO ALLOW A SMOOTH TRANSITION FROM VIRGIN SOILS TO FILL SOILS.
11. MINIMUM ONE (1)-FOOT VERTICAL CLEARANCES ARE REQUIRED AT ALL UTILITY CROSSINGS.

SEQUENCE OF CONSTRUCTION

1 DAY — 1. Notify the department of inspections and permits (410-222-7780) at least 48 hours before commencing work. Work may not commence until the permittee or the responsible personnel have met on site with the sediment and erosion control inspector to review the approved plans.

PHASE 1.

7 DAYS — 2. Prior to beginning any construction on this site, install: construction fence, stabilized construction entrance (sce), and reinforced silt fence, super silt fence, and earth dikes. Clear the minimum area to install sediment controls, as shown on Sheets 13 and 14.

1 DAY — 3. Once sediment controls have been installed, contact the inspector for approval of sediment control installation prior to starting work.

NOTE: Inspections and permits may require that an inspection and certification of the installation of sediment control also be performed by a design professional prior to construction commencing.

60 DAYS — 4. With the sediment control inspector's approval:, begin utility construction to provide clean water diversions. Install I2A,M2,M2A,M2B,M2C,R2,I-2,E-2,I1A,I3A,I3B,E5,I3,I4,E6,I6,I5,M3 AND E9. Install Rip-Rap outlet protection at end sections. Install inlet protection as inlets are installed.Repair any sediment controls disturbed by the process as storm drain installation proceeds. During 3 day dry weather forecasts Install sediment traps 1 and 2 .

5. With the sediment control inspectors permission, Once clean water diversions are constructed, contact the inspector for approval prior to beginning work.

PHASE 2.

120 DAYS — 6. Begin site grading , storm drains and utilities. Begin building construction .Install curb and gutter, barrier curb and paving base course. Install inlet protection as inlets are installed.

7. Repair sediment controls at the end of each day as necessary as grading progresses.

9. Grade SWM facility only, delaying media installation until drainage areas to each facility is stabilized.Delay MB#1 and storm drains in the trap #2 area until all areas draining to the traps are stabilized and the traps can be removed.

10. Final pave parking lot , install filter media and landscaping.

11. Remove any sediment controls with the permission of the sediment control inspector and stabilize any areas disturbed by the process immediately.

ADJOINING PROPERTY INFORMATION:

NO.	OWNER	ADDRESS	ACCT. #	DEED
1	DIBENIO, LUCINDA W. & LAQUE, MARY A. et. al.	1545 SEVERN CHAPEL RD. CROWNSVILLE, MD 21032	0200012062400	23328/00314
2	REILAND, JERILYN A.T.	1329 TULIP TREE GROVE CROWNSVILLE, MD 21032	0200090040020	27205/00451
3	MILLER, ZACHARY	1331 TULIP TREE GROVE CROWNSVILLE, MD 21032	2000900400210	35633/00362
4	BURCH, SYLVAIN BONSIGNORE & VEON, LAURA G.	1335 TULIP TREE GROVE CROWNSVILLE, MD 21032	2000029725200	35221/00327
5	FITCH, CHRISTOPHER S. TRUSTEE & FITCH, CAROLYN A. TRUSTEE	8908 FOXWELL RD. MILLERSVILLE, MD 21108	200002972500	33422/00095
6	ANNE ARUNDEL COUNTY	2660 RIVA RD., 3rd FLOOR ANNAPOLIS, MD 21401	200009339922	21917/000194
7	STEPHEN & LAURIE MITCHELL LIVING TRUST	1622 MAUDE LN. CROWNSVILLE, MD 21032	261390224776	35436/00454
8	CLOUTIER, PERRY N. & CLOUTIER, JENNIFER M.	1624 MAUD LN. CROWNSVILLE, MD 21032	261390224777	30049/00007
9	ABBOTT, DOUGLAS L. IV & ABBOTT, LISA A.	1626 MAUD LN. CROWNSVILLE, MD 21032	200001834200	31866/00302
10	WEINSTEIN, SUSAN & HIX, LARRY J.	1627 SEVERN CHAPEL RD. CROWNSVILLE, MD 21032	200090109573	18390/00616
11	MOOS, DANIEL III	1569 SEVERN CHAPEL RD. CROWNSVILLE, MD 21032	0200010696000	27142/00241

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DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED / DATE	APPROVED / DATE		
		CHIEF ENGINEER	PROJECT MANAGER	SCALE AS SHOWN	DESIGN DEVELOPMENT
		APPROVED / DATE	APPROVED / DATE	DRAWN BY LMV/RDT	General Notes
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
				SHEET 2 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District, Anne Arundel Co., MD. — Tax Map 37, Grid 11, Parcel 86

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ENVIRONMENTAL SITE DATA

1. GROSS TRACT AREA: ±152.06 AC
2. PROJECT AREA: ±9.90 AC / ±431,244 SF
3. FLOODPLAIN AREA IN LOD: 0 AC / 0 SF
4. WETLAND AREA IN LOD: 0 AC / 0 SF
5. WETLAND BUFFER AREA IN LOD: 0 AC / 0 SF
6. STREAM BUFFER AREA IN LOD: 0 AC / 0 SF
7. EXISTING IMPERVIOUS IN LOD: ±0.47 AC / ±20,602 SF
8. THIS SITE IS NOT WITHIN THE CHESAPEAKE BAY CRITICAL AREA.
9. THERE ARE NO BOGS WITHIN OR NEAR THE SITE.

CULTURAL RESOURCES

1. Historic / Archeological Sites within BRNA Severn Chapel Area:
   - 18AN433 (Chapel of Ease)
   - 18AN527 (Forney)
   - AA-882 (Thomas Crandell Farm)
   - AA-896 (Chapel of Ease)
2. Historic / Archeological Sites within PROJECT SITE:
   - AA0882 (Thomas Crandell Farm)
   - AA-2351 (Severn Chapel Road)

PROPERTY DATA

LOT 1:	Acct. 90109639	Deed Ref. 33968 / 107
LOT 1A :	Acct. 90109638	Deed Ref. 33968 / 120
LOT 2A :	Acct. 90109640	Deed Ref. 9827 / 343
LOT 2B :	Acct. 90210144	Deed Ref. 33968 / 113
LOT 2 :	Acct. 90109641	Deed Ref. 33968 / 100
LOT 2 RESIDUE :	Acct. 90109642	Deed Ref. 33968 / 126

LINE TABLE

LINE	BEARING	DISTANCE (FT)
L1	N 43°11'36" E	236.74
L2	N 34°22'02" E	391.34
L3	S 34°22'02" E	211.25
L4	N 55°40'58" E	201.50
L5	N 34°22'02" W	214.17
L6	N 41°01'47" E	0.96
L7	S 34°40'09" E	1,321.97
L8	S 32°54'33" E	1,637.76
L9	S 07°01'46" E	3,234.00
L10	N 64°38'05" W	1,160.83
L11	N 25°22'23" W	745.80
L12	N 30°52'23" W	201.30
L13	N 29°08'08" W	264.00
L14	N 27°07'22" W	165.00
L15	N 13°52'23" W	231.00
L16	N 17°37'23" W	132.00
L17	N 37°52'23" W	33.00
L18	N 54°19'51" E	549.45
L19	N 32°06'04" W	168.51
L20	N 35°39'44" W	364.37
L21	N 14°59'51" W	115.49
L22	N 39°39'18" W	821.81
L23	N 06°06'06" W	477.08
L24	N 61°07'55" W	400.28
L25	N 52°52'58" W	536.24

CURVE TABLE

CURVE	DELTA ANGLE	RADIUS	ARC	TAN.	CHORD	CHORD BEARING
C1	08°49'33"	2030.00	312.71	156.66	312.40	N 38°46'49" E
C2	08°14'36"	370.00	53.22	26.66	53.18	N 38°29'21" E
C3	17°26'38"	930.00	283.14	142.67	282.05	N 49°45'06" E

NOTE: LINE AND CURVE DATA IS ADAPTED FROM PLAT 11860-11861 AND MAY NOT MATCH THE GIS PROPERTY BOUNDARY SHOWN HEREON.

SOIL CHART

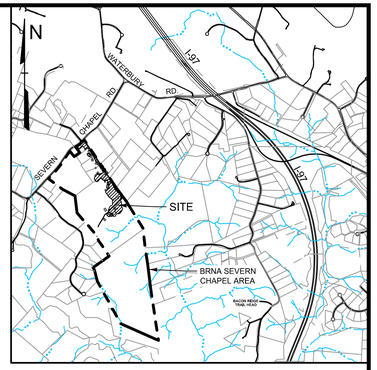
KEY	NAME	SLOPE	HYDROLOGIC GROUP	HYDRIC SOIL
AdA	Adelphia-Holmdel complex	0-2%	C	No
AdB	Adelphia-Holmdel complex	2-5%	C	No
AsB	Annapolis fine sandy loam	2-5%	C	No
AsC	Annapolis fine sandy loam	5-10%	C	No
AsE	Annapolis fine sandy loam	15-25%	C	No
AsF	Annapolis fine sandy loam	25-40%	C	No
CoB	Collington-Wist complex	2-5%	B	No
CoC	Collington-Wist complex	5-10%	B	No
CRD	Collington and Annapolis soils	10-15%	B/C	No
CSE	Collington, Wist, and Westphalia soils	15-25%	A/B	No
CSF	Collington, Wist, and Westphalia soils	25-40%	A/B	No
DnB	Donlonton fine sandy loam	2-5%	D	No
FaaA	Fallsington sandy loams	0-2%	C/D	Yes
SaB	Sassafras fine sandy loam	2-5%	B	No
SsA	Shrewsbury loam	0-2%	B/D	Yes
W	Water	-	-	-
WBA	Widewater and Issue soils	0-2%	B/D	Yes

NOTE: PLEASE REFER TO SHEET 2 FOR ADJACENT PROPERTY OWNER INFORMATION

PLAN

SCALE: 1" = 200'

0 200' 400'



VICINITY MAP

SCALE: 1" = 2000'

LEGEND

- Property Line
- Adjoiner / Lot Line
- Existing Minor Contour (676)
- Existing Major Contour (670)
- Existing Edge of Road/Paving
- Soil Line (UuB (D), UuC (D))
- Existing Building
- Existing Tree Line
- Existing Forest Conservation Easement (FCE)
- Non-Tidal Wetlands and 25' Buffer
- 100' Stream Buffer (FB)
- FEMA 100-Year Flood Plain (PANEL 24003C0145E, EFF. DATE 10/16/12) (FP)
- Water Edge or Stream Centerline
- Zoning Line
- Existing Septic Area
- Limit of Disturbance (LOD)

Note: Refer to Sheet 2 for additional Legend Notes & Items

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DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE	AS SHOWN
DRAWN BY	LMV/RDT
CHECKED BY	MJP
SHEET	3 OF 52
PROJECT NO.:	P588001
DATE:	2/7/2024

DESIGN DEVELOPMENT

Overall Existing Conditions Plan
Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

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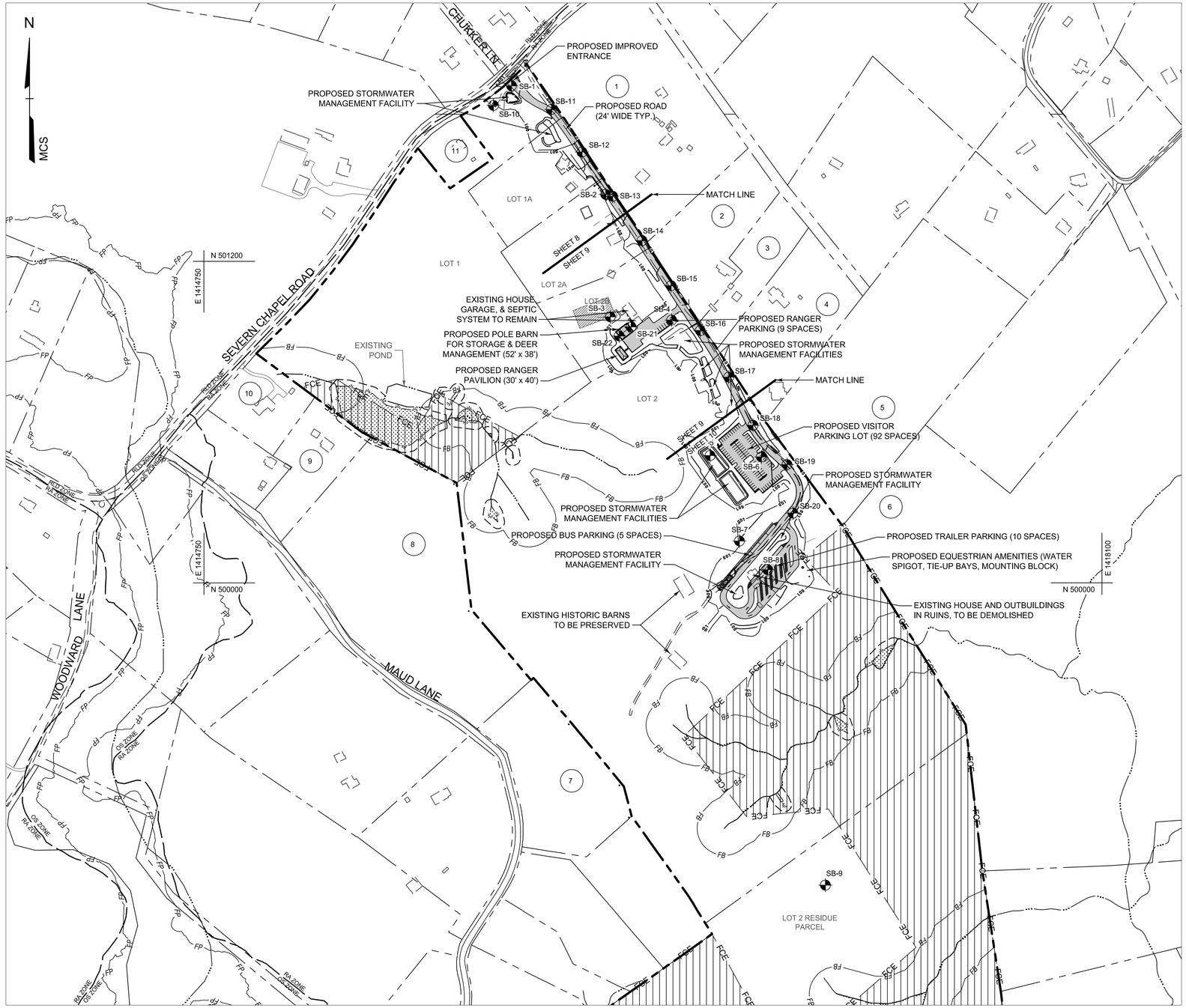
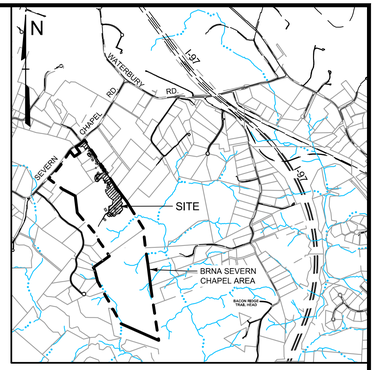


NOTE: PLEASE REFER TO SHEET 2 FOR ADJACENT PROPERTY OWNER INFORMATION

PLAN

SCALE: 1" = 200'



VICINITY MAP

SCALE: 1" = 2000'

LEGEND

- Property Line
- Adjoiner / Lot Line
- Zoning Line
- Existing Edge of Road/Paving
- Existing Building
- Non-Tidal Wetlands and 25' Buffer
- Water Edge or Stream Centerline
- FB — 100' Stream Buffer
- FP — FEMA 100-Year Flood Plain
- Forest Conservation Easement
- Proposed Paving
- Proposed Building
- Soil Boring
- LOD — Limit of Disturbance

Note: Refer to Sheet 2 for additional Legend Notes & Items

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APPROVED DATE — ASSISTANT CHIEF ENGINEER	APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE	AS SHOWN
DRAWN BY	LMV/RDT
CHECKED BY	MJP
SHEET	4 OF 52
PROJECT NO.:	P588001
DATE:	2/7/2024

DESIGN DEVELOPMENT

Overall Site Plan

Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

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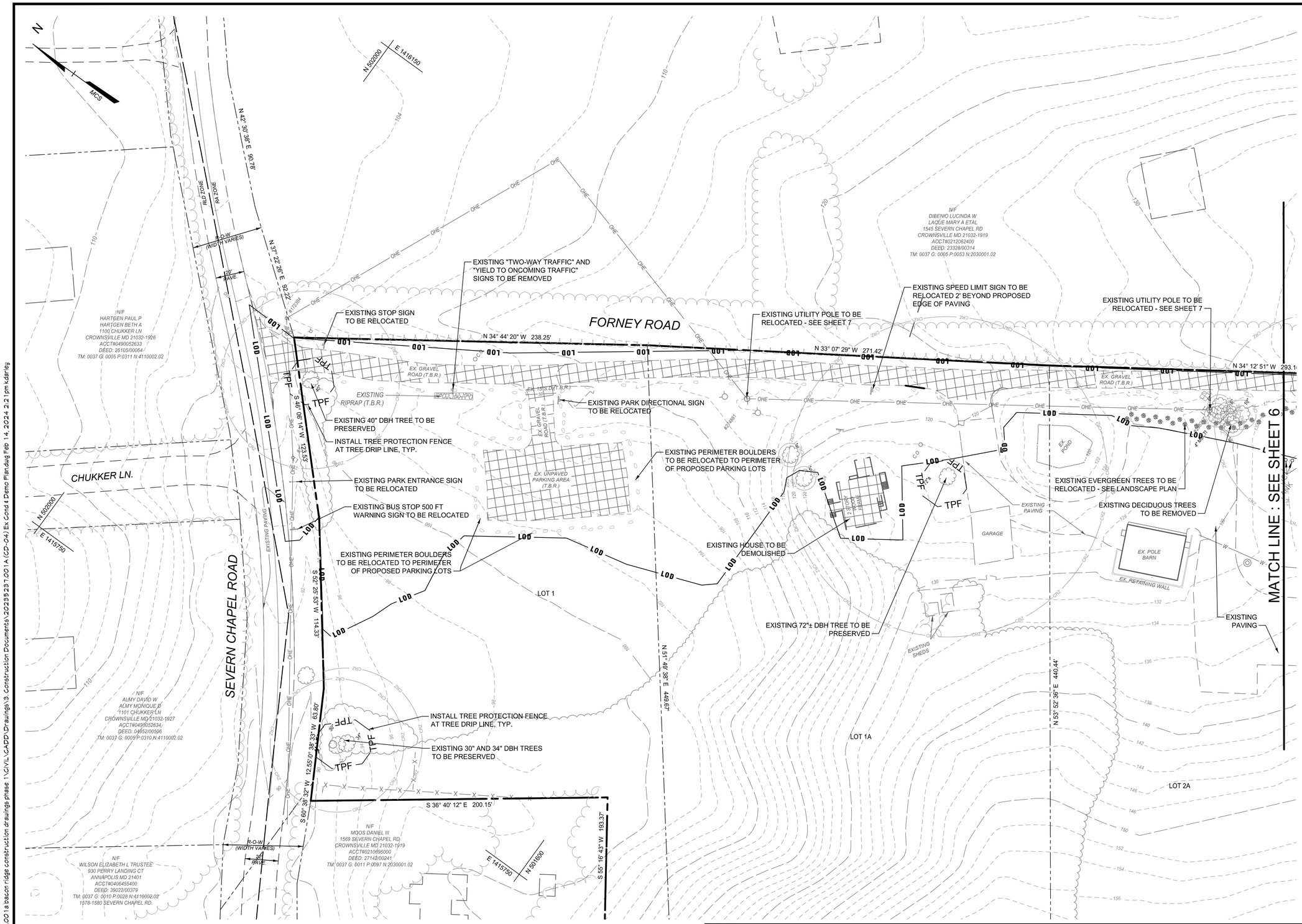
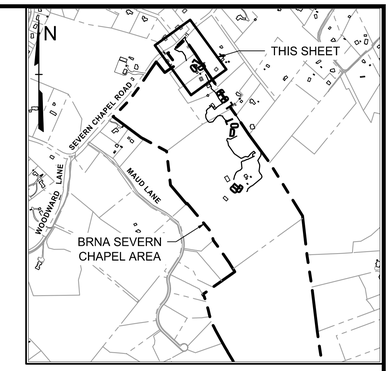


PLAN

SCALE: 1" = 30'



PLAN KEY

SCALE: 1" = 1000'

LEGEND

- Property Line
- Adjoiner / Lot Line
- Zoning Line
- 676 — Existing Minor Contour
- 670 — Existing Major Contour
- Existing Edge of Road/Paving
- W — EX. 12" W. — Existing Water
- OHE — Existing Overhead Electric Line
- Existing Utility Pole
- Existing Guy Pole / Guy Wire
- Existing Sign
- X — X — X — Existing Fence
- Existing Natural Surface Trail
- Existing Tree Line
- Existing Deciduous Tree
- Existing Evergreen Tree
- CRZ — Critical Root Zone
- Existing Building
- LOD — Limit of Disturbance
- Existing Impervious Areas to be Removed
- T.B.R. — To Be Removed
- TPF — Tree Protection Fence
- X — Existing Tree to be Removed
- Existing Boulders
- Existing Concrete
- Water Edge or Stream Centerline

Note: Refer to Sheet 2 for additional Legend Notes & Items

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		CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY LMV/RDT	Demolition Plan
		APPROVED DATE	APPROVED DATE	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 5 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

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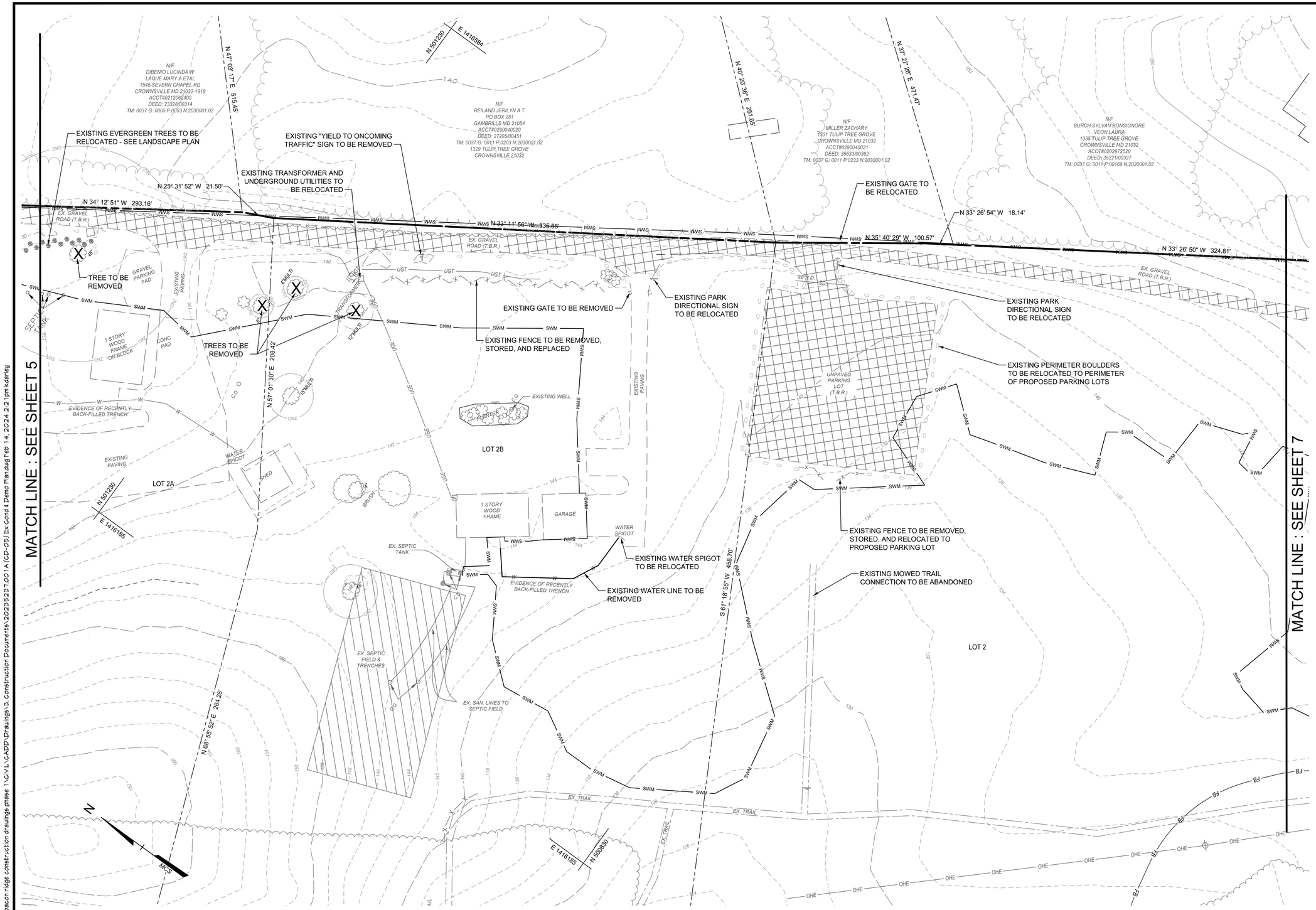

PLAN

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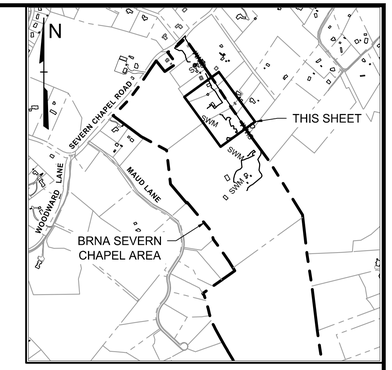

PLAN KEY

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LEGEND

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- Existing Minor Contour (676)
- Existing Major Contour (670)
- Existing Edge of Road/Paving
- Existing Storm Drain (SD — EX. 15" D.)
- Existing Water (W — EX. 12" W.)
- Existing Underground Telephone Line (UGT)
- Existing Underground Electric Line (UGE)
- Existing Overhead Electric Line (OHE)
- Existing Utility Pole
- Existing Guy Pole / Guy Wire
- Existing Sign
- Existing Fence
- Existing Natural Surface Trail
- Existing Tree Line
- Existing Deciduous Tree
- Existing Evergreen Tree
- Critical Root Zone (CRZ)
- Existing Building
- Existing Septic Area
- Limit of Disturbance (LOD)
- Existing Impervious Areas to be Removed
- To Be Removed (T.B.R.)
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Note: Refer to Sheet 2 for additional Legend Notes & Items

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		CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY LMV/RDT	Demolition Plan
		APPROVED DATE	APPROVED DATE	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 6 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

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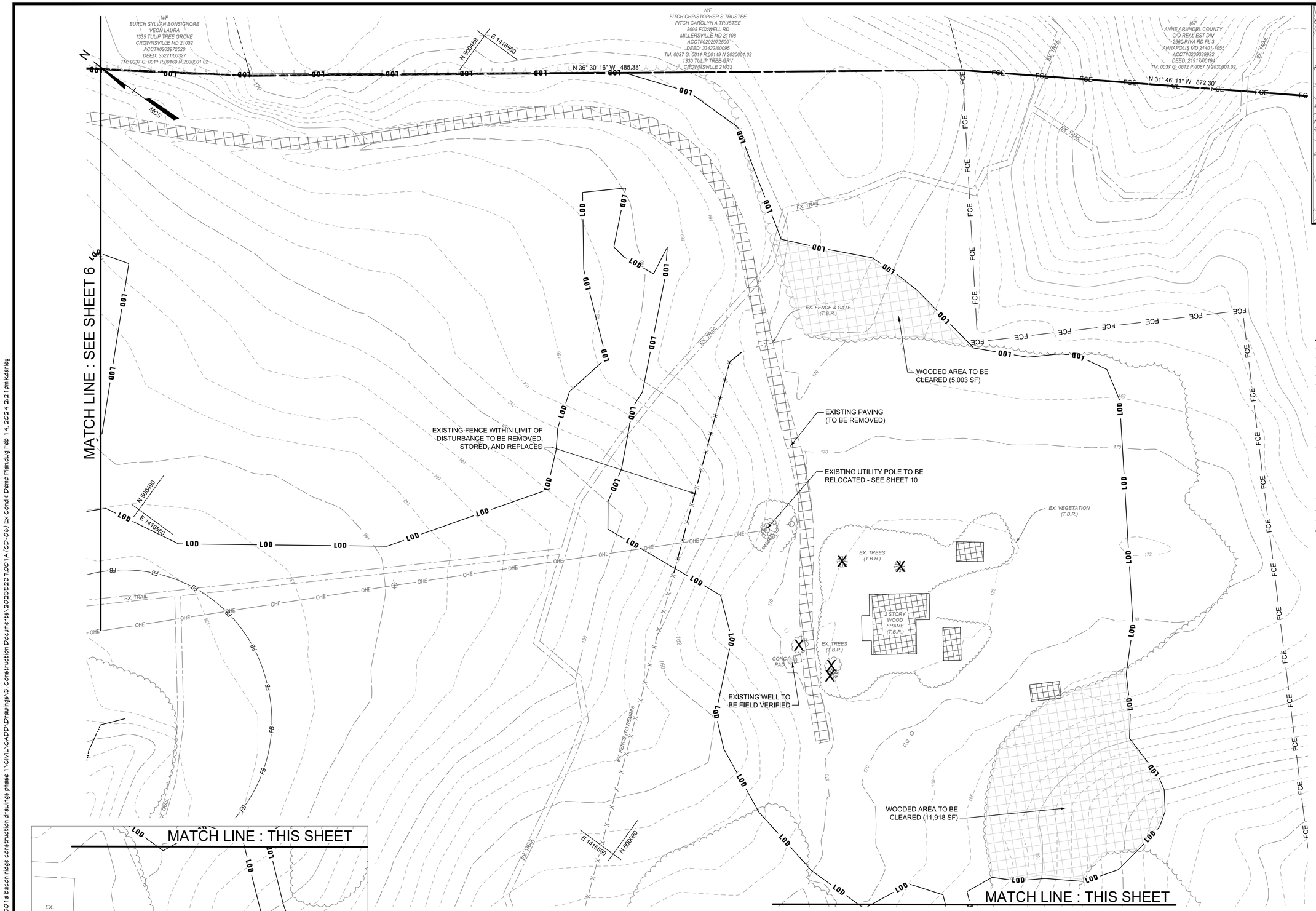

PLAN

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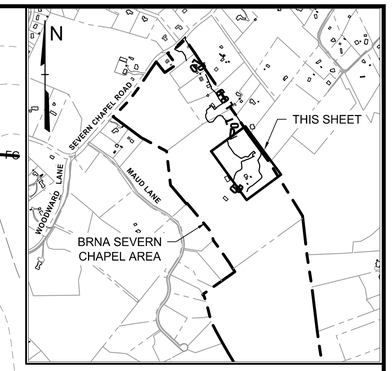

PLAN KEY

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LEGEND

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- Existing Building
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- 100' Stream Buffer
- Water Edge or Stream Centerline
- Limit of Disturbance
- Existing Impervious Areas to be Removed
- Wooded Areas to be Removed
- T.B.R. — To Be Removed
- Existing Tree to be Removed
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- Existing Concrete

Note: Refer to Sheet 2 for additional Legend Notes & Items

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		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 7 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

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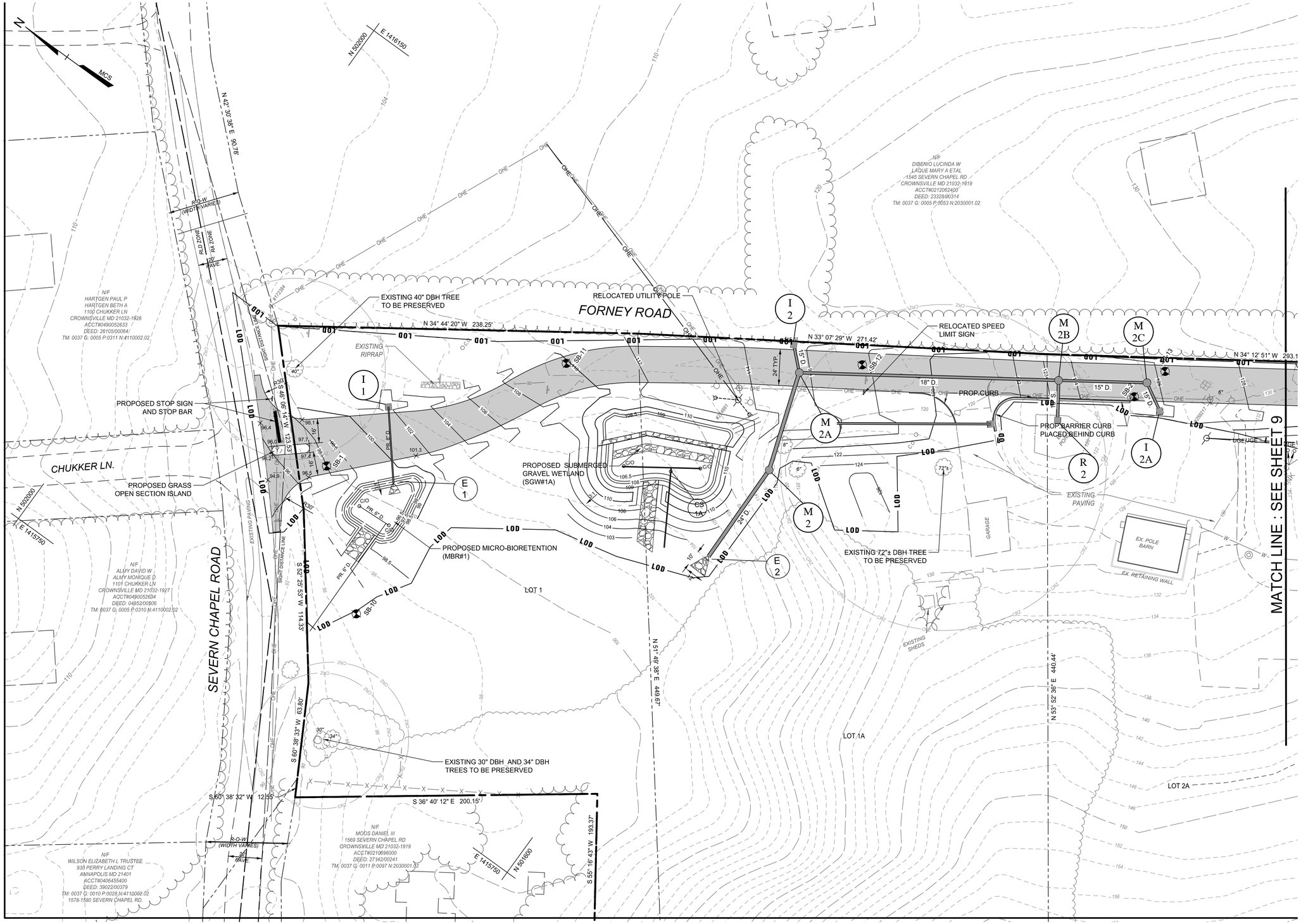
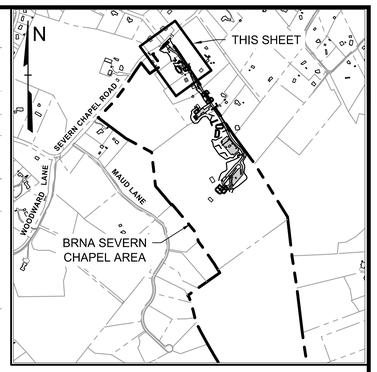


PLAN

SCALE: 1" = 30'

0 30' 60'



PLAN KEY

SCALE: 1" = 1000'

LEGEND

- Property Line
- Adjoiner / Lot Line
- Zoning Line
- 676 — Existing Minor Contour
- 670 — Existing Major Contour
- Existing Edge of Road/Paving
- SD — EX. 15" D. — Existing Storm Drain
- W — EX. 12" W. — Existing Water
- OHE — Existing Overhead Electric Line
- Existing Utility Pole
- Existing Guy Pole / Guy Wire
- Existing Sign
- X X X — Existing Fence
- Existing Natural Surface Trail
- Existing Tree Line
- Existing Deciduous Tree
- Existing Evergreen Tree
- CRZ — Critical Root Zone
- Existing Building
- LOD — Limit of Disturbance
- 676 — Proposed Minor Contour
- 670 — Proposed Major Contour
- +143.6 — Proposed Spot Elevation
- Proposed Edge of Road/Paving
- Proposed Asphalt Paving
- PR. 12" D. — Proposed Inlet and Storm Drain
- Proposed Storm Drain Outfall
- SD — Proposed Check Dam
- SB — Soil Boring
- Relocated Sign
- Relocated Utility Pole
- Relocated Guy Pole / Guy Wire
- OHE — Relocated Overhead Electric Line
- Water Edge or Stream Centerline
- Zoning Line

Note: Refer to Sheet 2 for additional Legend Notes & Items

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A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

REVISED	
DATE	BY

APPROVED DATE — CHIEF ENGINEER

APPROVED DATE — PROJECT MANAGER

APPROVED DATE — ASSISTANT CHIEF ENGINEER

APPROVED DATE — CHIEF, RIGHT OF WAY

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

SCALE	AS SHOWN
DRAWN BY	LMV/RDT
CHECKED BY	MJP
SHEET	8 OF 52
PROJECT NO.:	P588001
DATE:	2/7/2024

DESIGN DEVELOPMENT

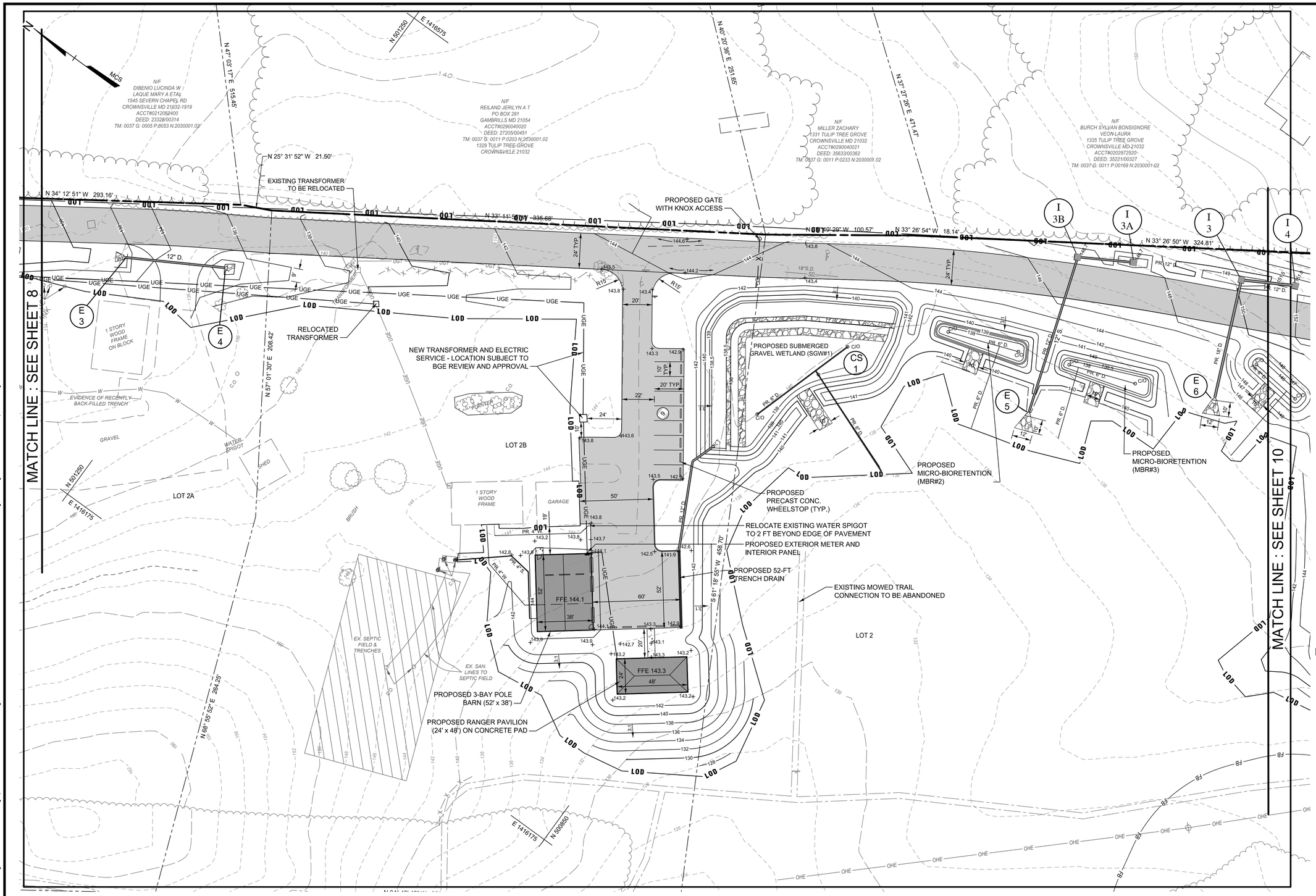
Grading & SWM Plan

Severn Chapel Area of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

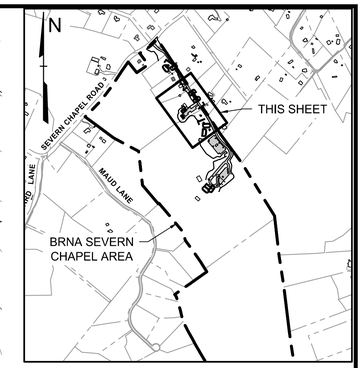
T:\2023\facilities\20235237.001a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\20235237.001A (CD-01) Grading Plan.dwg Feb 14, 2024 2:22pm kdarley



PLAN

SCALE: 1" = 30'

0 30' 60'



PLAN KEY

SCALE: 1" = 1000'

LEGEND

- Property Line
- Adjoiner / Lot Line
- Existing Minor Contour (676)
- Existing Major Contour (670)
- Existing Edge of Road/Paving
- Existing Storm Drain (SD EX. 15" D. / EX. 12" W.)
- Existing Water
- Existing Underground Telephone Line (UGT)
- Existing Underground Electric Line (UGE)
- Existing Overhead Electric Line (OHE)
- Existing Utility Pole
- Existing Guy Pole / Guy Wire
- Existing Sign
- Existing Fence
- Existing Tree Line
- Existing Deciduous Tree
- Existing Evergreen Tree
- Critical Root Zone (CRZ)
- Existing Natural Surface Trail
- Existing Building
- Existing Septic Area
- Limit of Disturbance (LOD)
- Proposed Minor Contour (676)
- Proposed Major Contour (670)
- Proposed Spot Elevation (+143.6)
- Proposed Building
- Proposed Asphalt Paving
- Proposed Edge of Road/Paving
- Proposed Curb & Gutter
- Proposed Inlet and Storm Drain (PR. 12" D.)
- Proposed Storm Drain Outfall
- Proposed Check Dam (CD)
- Proposed Water Line (PR. 4" W.)
- Proposed Septic Connection (PR. 6" S.)
- Soil Boring (SB)
- Relocated Sign
- Relocated Utility Pole
- Relocated Guy Pole / Guy Wire
- Relocated Overhead Electric Line (OHE)
- Proposed Underground Electric Line (UGE)
- Water Edge or Stream Centerline
- Zoning Line
- Proposed Precast Conc. Wheelstop

Note: Refer to Sheet 2 for additional Legend Notes & Items

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

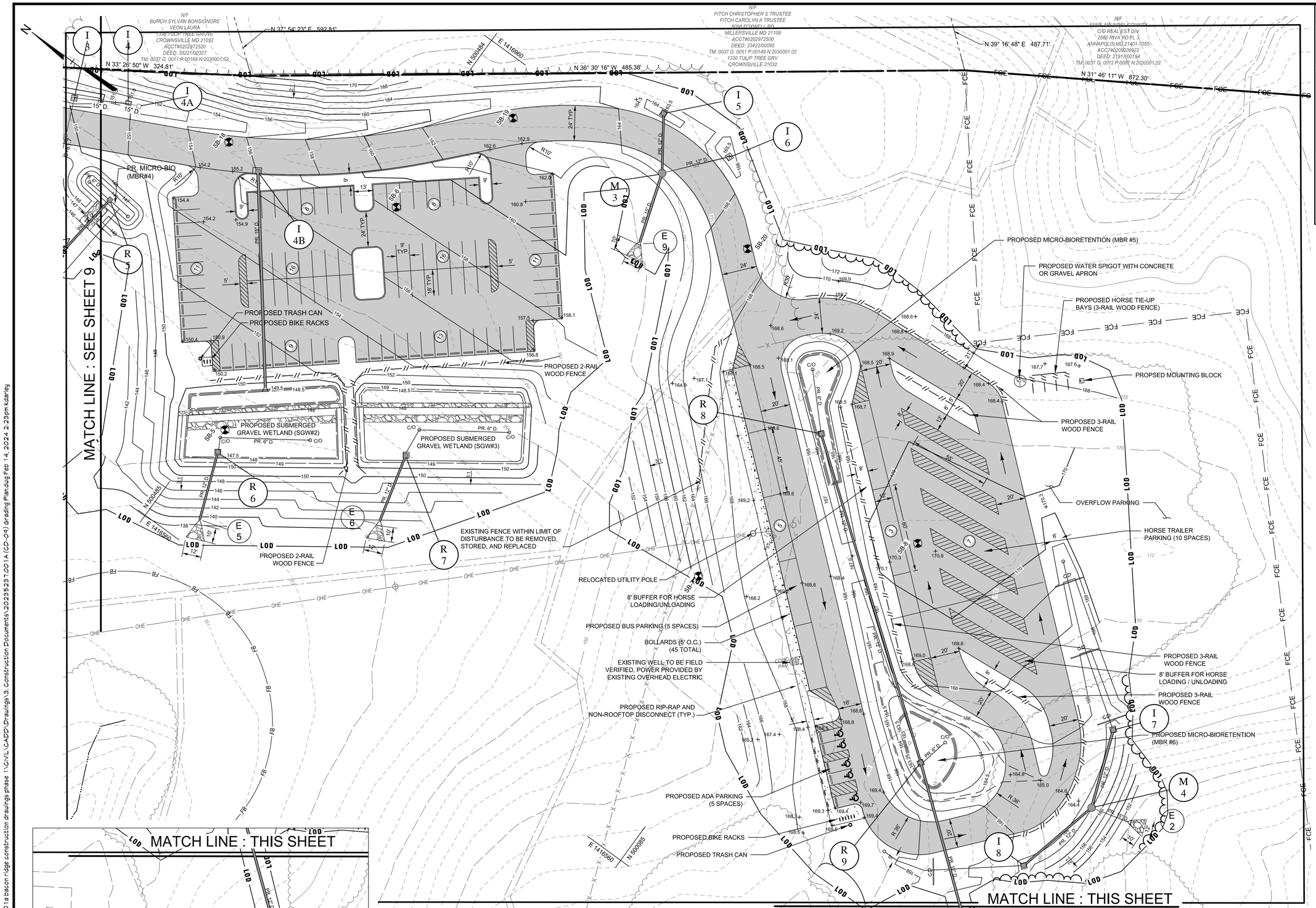
DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE		
		CHIEF ENGINEER	PROJECT MANAGER	SCALE AS SHOWN	DESIGN DEVELOPMENT
		APPROVED DATE	APPROVED DATE	DRAWN BY LMV/RDT	Grading & SWM Plan
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
				SHEET 9 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

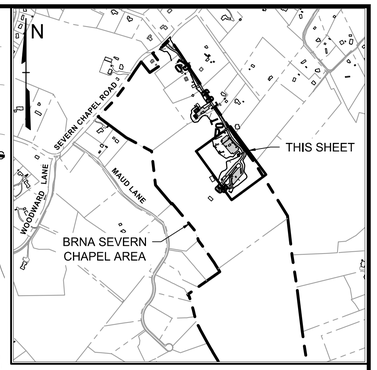
T:\2023\facilities\20235237.001a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\20235237.001A (CD-08) Grading Plan.dwg Feb 14, 2024 2:22pm kdarley



PLAN

SCALE: 1" = 30'

0 30' 60'



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- Proposed SWM Gabions

Note: Refer to Sheet 2 for additional Legend Notes & Items

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

SCALE	AS SHOWN
DRAWN BY	LMV/RDT
CHECKED BY	MJP
SHEET	10 OF 52
PROJECT NO.:	P588001
DATE:	2/7/2024

DESIGN DEVELOPMENT

Grading & SWM Plan

Severn Chapel Area of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

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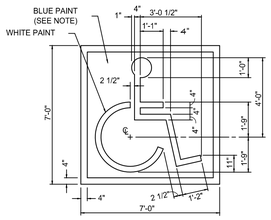
T:\2023\facilities\2023523T.001 a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\2023523T.001A (CD-04) Grading Plan.dwg Feb 14, 2024 2:23pm kdarley



NOTE:
SYMBOL TO BE CENTERED ON WIDTH OF PARKING STALL. SYMBOL IS REQUIRED TO CONTRAST WITH BACKGROUND WHITE ON BLUE (COLOR NO. 105090 IN FED. STANDARD 595Z) DOUBLE COAT (TYP.)

PAINTED HANDICAP PARKING SYMBOL DETAIL

NOT TO SCALE

NOTE: ARROW PLATE IS OPTIONAL, MAY BE USED WHEN IT IS NECESSARY TO OFFSET SIGN LOCATION DUE TO ACCESS RAMP.

SIGN SIZE	DIMENSIONS (INCHES)								
	A	B	C	D	E	F	G	H	J
STANDARD	12	18	3/8	1-3/4	2-1/20	1	2C	1-1/2	6

SIGN SIZE	DIMENSIONS (INCHES)						
	K	L	M	N	P	Q	R
STANDARD	6-1/2	1-5/8	7/8	1/8	3/4	9/64	30°

REFERENCES

MdMUTCD SECTION - 2B.39, 2B.40, 2B.41, 5B.05, 7B.14

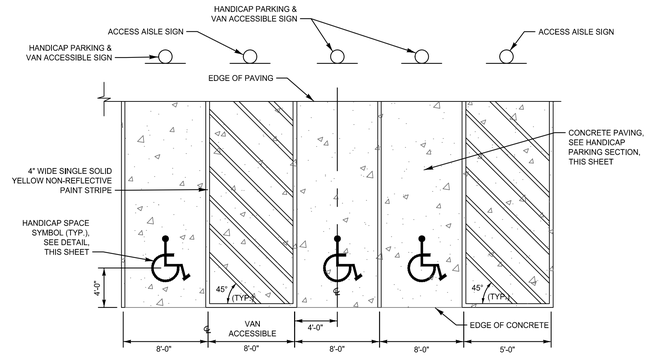
COLORS

LEGEND - RED

BACKGROUND - WHITE

ACCESS AISLE SIGN DETAIL

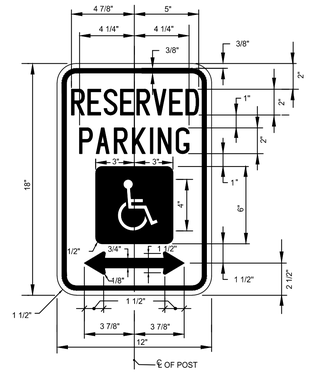
NOT TO SCALE



- STRIPING SHOULD END AT EDGE OF PAVING
- STRIPING MATERIAL AND METHODS OF CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE LATEST MUTCD EDITION STDS. & SPECS.
- INSTALL "VAN ACCESSIBLE" SIGN BELOW HANDICAP SIGN ON POSTS WHERE NOTED ON PLAN.
- YELLOW PAINT MAY BE USED ON CONCRETE OR OTHER SURFACES WHERE WHITE PAINT DOES NOT PROVIDE SUFFICIENT CONTRAST. OWNER'S WRITTEN APPROVAL MUST BE OBTAINED.
- ALL DIMENSION, LAYOUT, BACKGROUND AND COLOR TO CONFORM TO MOST CURRENT ADA GUIDELINES.

HANDICAP PARKING STRIPING DETAIL

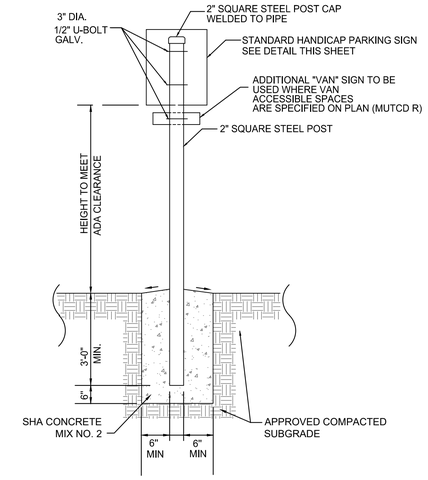
NOT TO SCALE



J. SECTION 4.6.4 SIGNAGE. EACH ACCESSIBLE PARKING SPACE SHALL BE IDENTIFIED BY AN APPROVED SIGN WITH THE BOTTOM EDGE AT LEAST 7 FEET ABOVE THE GROUND, UNLESS THE SIGN IS PLACED FLUSH AGAINST A BUILDING, STRUCTURE, OR OTHER LOCATION THAT DOES NOT OBSTRUCT VEHICLE OR PEDESTRIAN TRAFFIC, IN WHICH CASE THE SIGN SHALL BE AT LEAST 6 FEET AND NO MORE THAN 10 FEET ABOVE THE GROUND. SIGNS SHALL BEAR THE INTERNATIONAL SYMBOL OF ACCESS AND THE WORDS "RESERVED PARKING" AND SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (SEE REGULATION .07 FOR EXPLANATORY MATERIAL).
Sign R7-8
COLORS
BACKGROUND - WHITE; LEGEND AND BORDER-GREEN; WHITE SYMBOL ON BLUE BACKGROUND
NOTE:PROVIDE ADDITIONAL "VAN ACCESSIBLE" SIGNAGE (R7-8A) PER ADA REQUIREMENTS FOR SPACES SPACES AS NOTED ON PLAN.
FOR INFORMATION ON SIGN POST AND MOUNTING REFER TO DETAIL THIS SHEET.

HANDICAP PARKING SIGN DETAIL

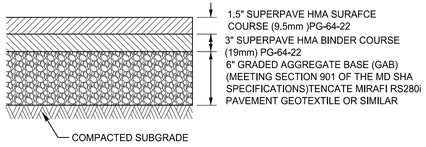
NOT TO SCALE



ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE MOST CURRENT ADA REGULATIONS.

HANDICAP SIGN MOUNTING DETAIL

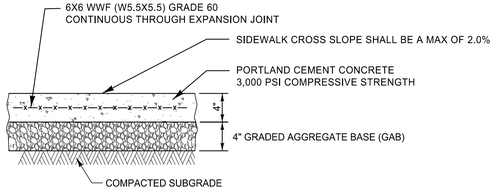
NOT TO SCALE



PAVING SECTION*

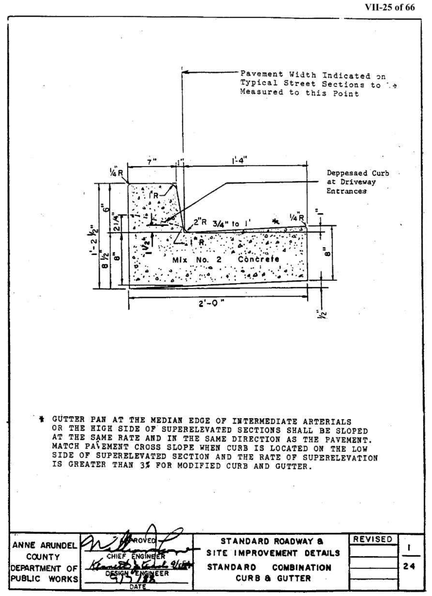
NOT TO SCALE

*GEO-TECH RECOMENDATION FOR FORNEY ROAD AND PARKING LOTS

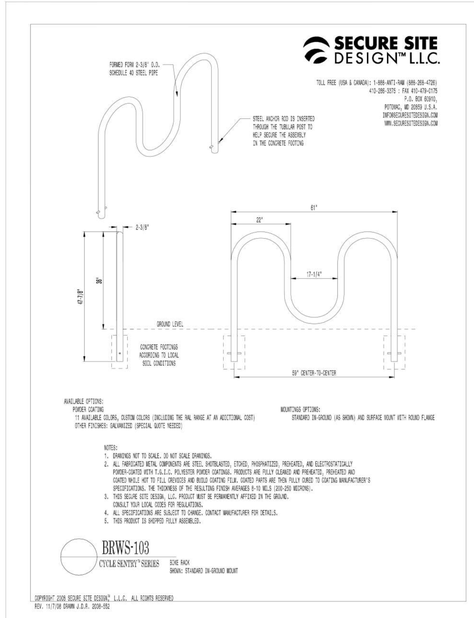


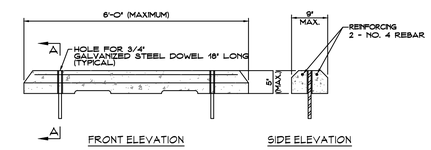
CONCRETE SIDEWALK SECTION

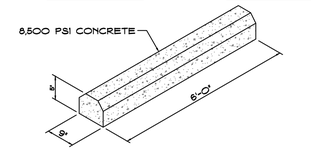
NOT TO SCALE

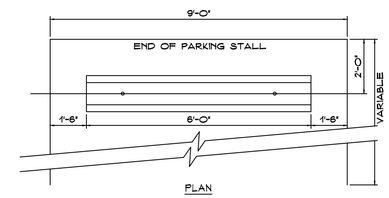


* GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIALS OR THE HIGH SIDE OF SUPERELEVATED SECTIONS SHALL BE SLOPED AT THE SAME RATE AND IN THE SAME DIRECTION AS THE PAVEMENT. MATCH PAVEMENT CROSS SLOPE WHEN CURB IS LOCATED ON THE LOW SIDE OF SUPERELEVATED SECTION AND THE RATE OF SUPERELEVATION IS GREATER THAN 3% FOR MODIFIED CURB AND GUTTER.



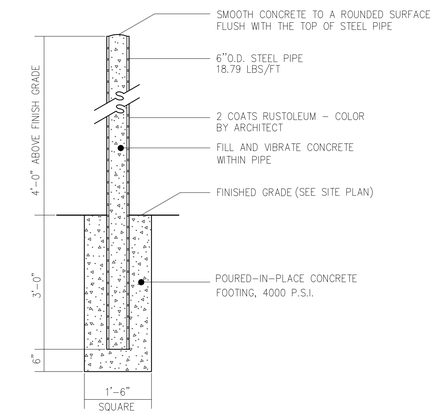






CONCRETE WHEEL STOP DETAIL

NOT TO SCALE



BOLLARD DETAIL

NOT TO SCALE

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CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

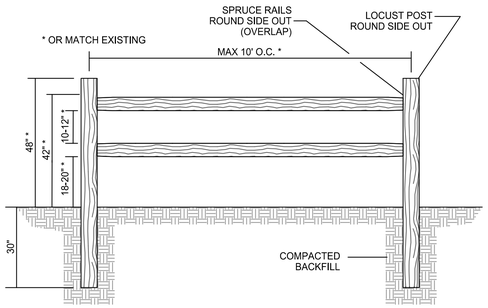
DATE: _____

LICENSE NO.

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE	SCALE AS SHOWN	SCHEMATIC DESIGN
		CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY LMV/RDT	Site Details
		APPROVED DATE	APPROVED DATE	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 11 OF 16	
				PROJECT NO.: P588001	
				DATE: 4/3/2023	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

NOTES:
1. FENCE POSTS AND RAILS SHALL BE TREATED IN ACCORDANCE WITH AWPA STANDARD U1 TO THE REQUIREMENT OF USE CATEGORY 4 (UC4A).
2. ALL EXISTING SPLIT RAIL FENCE TO BE REMOVED, STORED, AND REPLACED SHALL MATCH EXISTING SPLIT RAIL FENCE TO REMAIN.
3. CONTRACTOR SHALL REPLACE ANY SPLIT RAIL FENCE DAMAGED BY CONSTRUCTION.

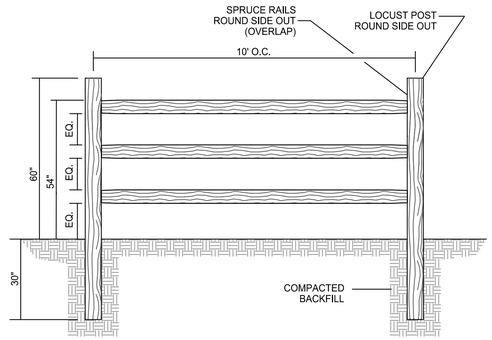


EXISTING 2-RAIL WOOD FENCE

2-RAIL WOOD FENCE DETAIL

NOT TO SCALE

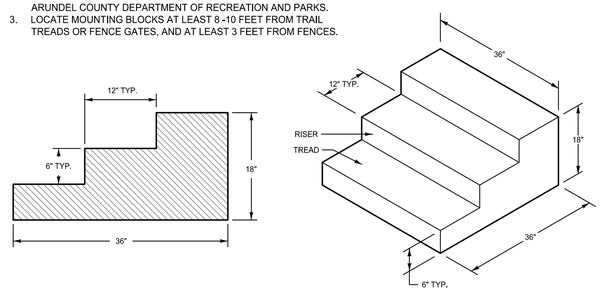
NOTE:
FENCE POSTS AND RAILS SHALL BE TREATED IN ACCORDANCE WITH AWPA STANDARD U1 TO THE REQUIREMENT OF USE CATEGORY 4 (UC4A).



3-RAIL WOOD FENCE DETAIL

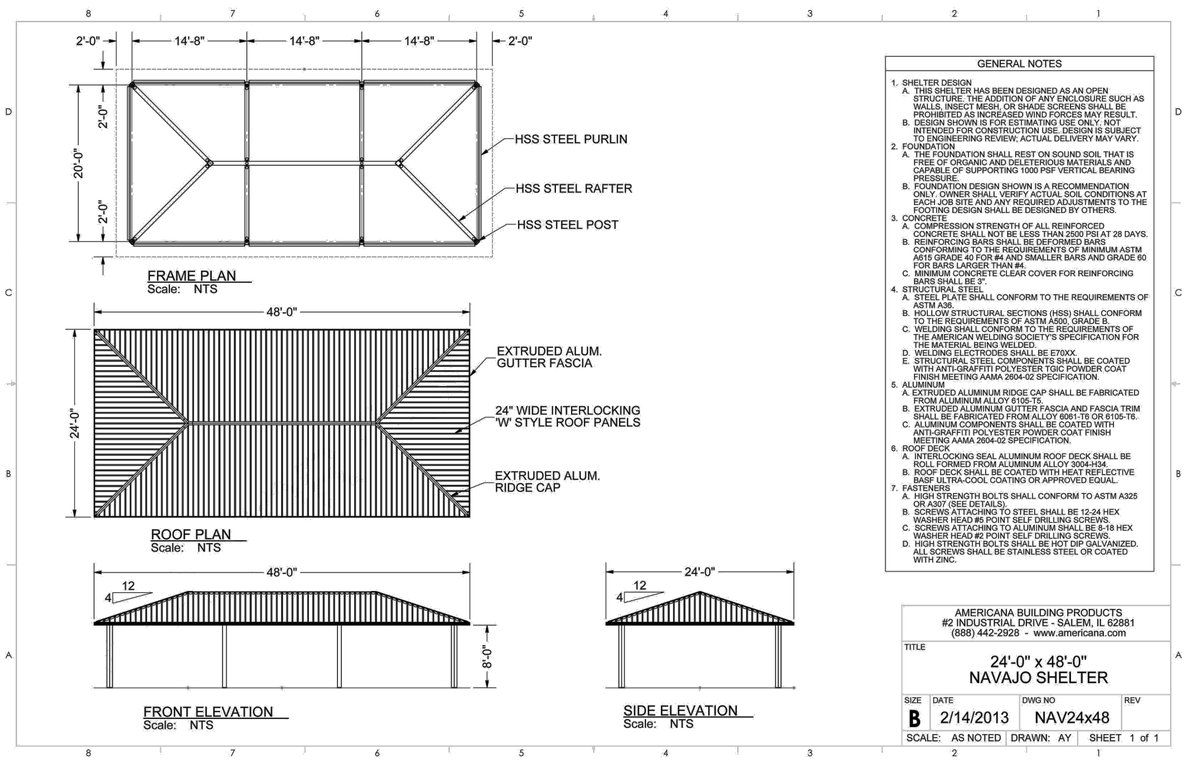
NOT TO SCALE

NOTES:
1. MOUNTING BLOCK MATERIAL SHALL BE WOOD.
2. PREFABRICATED MOUNTING BLOCKS SHALL BE APPROVED BY ANNE ARUNDEL COUNTY DEPARTMENT OF RECREATION AND PARKS.
3. LOCATE MOUNTING BLOCKS AT LEAST 8 -10 FEET FROM TRAIL TREADS OR FENCE GATES, AND AT LEAST 3 FEET FROM FENCES.



EQUESTRIAN MOUNTING BLOCK DETAIL

NOT TO SCALE



FRAME PLAN
Scale: NTS

ROOF PLAN
Scale: NTS

FRONT ELEVATION
Scale: NTS

SIDE ELEVATION
Scale: NTS

GENERAL NOTES

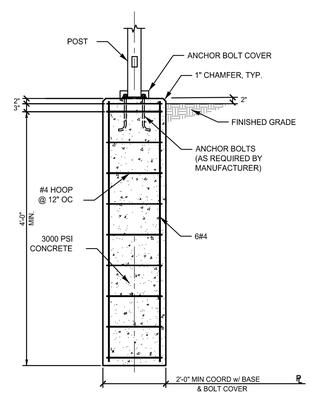
1. SHELTER DESIGN
   A. THIS SHELTER HAS BEEN DESIGNED AS AN OPEN STRUCTURE. THE ADDITION OF ANY ENCLOSURE SUCH AS WALLS, INSECT MESH, OR SHADE SCREENS SHALL BE PROHIBITED AS INCREASED WIND FORCES MAY RESULT.
   B. DESIGN SHOWN IS FOR ESTIMATING USE ONLY. NOT INTENDED FOR CONSTRUCTION USE. DESIGN IS SUBJECT TO ENGINEERING REVIEW; ACTUAL DELIVERY MAY VARY.
2. FOUNDATION
   A. THE FOUNDATION SHALL REST ON SOUND SOIL THAT IS FREE OF ORGANIC AND DELETERIOUS MATERIALS AND CAPABLE OF SUPPORTING 1000 PSF VERTICAL BEARING PRESSURE.
   B. FOUNDATION DESIGN SHOWN IS A RECOMMENDATION ONLY. OWNER SHALL VERIFY ACTUAL SOIL CONDITIONS AT EACH JOB SITE AND ANY REQUIRED ADJUSTMENTS TO THE FOOTING DESIGN SHALL BE DESIGNED BY OTHERS.
3. CONCRETE
   A. COMPRESSION STRENGTH OF ALL REINFORCED CONCRETE SHALL NOT BE LESS THAN 2500 PSI AT 28 DAYS.
   B. REINFORCING BARS SHALL BE DEFORMED BARS CONFORMING TO THE REQUIREMENTS OF MINIMUM ASTM A615 GRADE 40 FOR #4 AND SMALLER BARS AND GRADE 60 FOR BARS LARGER THAN #4.
   C. MINIMUM CONCRETE CLEAR COVER FOR REINFORCING BARS SHALL BE 3".
4. STRUCTURAL STEEL
   A. STEEL PLATE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36.
   B. HOLLOW STRUCTURAL SECTIONS (HSS) SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500, GRADE B.
   C. WELDING SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICAN WELDING SOCIETY'S SPECIFICATION FOR THE MATERIAL BEING WELDED.
   D. WELDING ELECTRODES SHALL BE E70XX.
   E. STRUCTURAL STEEL COMPONENTS SHALL BE COATED WITH ANTI-GRAFFITI POLYESTER TGIC POWDER COAT FINISH MEETING AAMA 2604-02 SPECIFICATION.
5. ALUMINUM
   A. EXTRUDED ALUMINUM RIDGE CAP SHALL BE FABRICATED FROM ALUMINUM ALLOY 6105-T5.
   B. EXTRUDED ALUMINUM GUTTER FASCIA AND FASCIA TRIM SHALL BE FABRICATED FROM ALLOY 6061-T6 OR 6105-T6.
   C. ALUMINUM COMPONENTS SHALL BE COATED WITH ANTI-GRAFFITI POLYESTER POWDER COAT FINISH MEETING AAMA 2604-02 SPECIFICATION.
6. ROOF DECK
   A. INTERLOCKING SEAL ALUMINUM ROOF DECK SHALL BE ROLL FORMED FROM ALUMINUM ALLOY 3004-H34.
   B. ROOF DECK SHALL BE COATED WITH HEAT REFLECTIVE BASF ULTRA-COOL COATING OR APPROVED EQUAL.
7. FASTENERS
   A. HIGH STRENGTH BOLTS SHALL CONFORM TO ASTM A325 OR A307 (SEE DETAILS).
   B. SCREWS ATTACHING TO STEEL SHALL BE 12-24 HEX WASHER HEAD #5 POINT SELF DRILLING SCREWS.
   C. SCREWS ATTACHING TO ALUMINUM SHALL BE 6-18 HEX WASHER HEAD #2 POINT SELF DRILLING SCREWS.
   D. HIGH STRENGTH BOLTS SHALL BE HOT DIP GALVANIZED. ALL SCREWS SHALL BE STAINLESS STEEL OR COATED WITH ZINC.

AMERICANA BUILDING PRODUCTS
#2 INDUSTRIAL DRIVE - SALEM, IL 62881
(888) 442-2928 - www.americana.com

TITLE
24'-0" x 48'-0"
NAVAJO SHELTER

SIZE	DATE	DWG NO	REV
B	2/14/2013	NAV24x48	

SCALE: AS NOTED | DRAWN: AY | SHEET 1 of 1



PAVILION POST FOUNDATION DETAIL

NOT TO SCALE

NOTES:
1. PAVILION SHALL INCLUDE ELECTRIC SERVICE FOR TWO (2) OVERHEAD LIGHTS AND TWO (2) STANDARD OUTLETS.
2. ROOF COLOR SHALL BE #555 DARK GREEN.
3. FRAME COLOR SHALL BE #815 ASH GRAY.

PAVILION

NOT TO SCALE

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY

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SCALE AS SHOWN
DRAWN BY LMV/RDT
CHECKED BY MJP
SHEET 12 OF 52
PROJECT NO.: P588001
DATE: 2/7/2024

DESIGN DEVELOPMENT

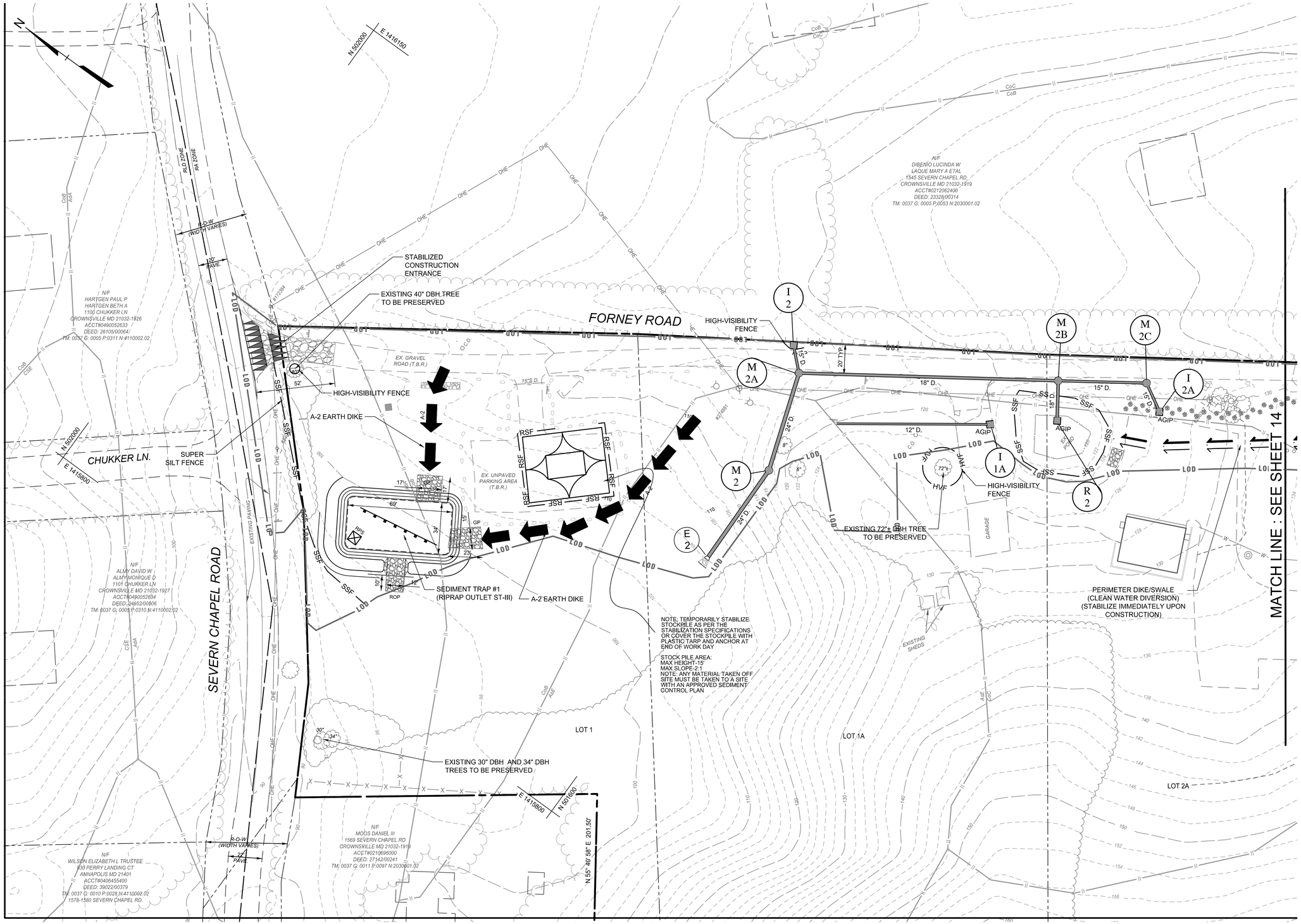
Site Details

Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

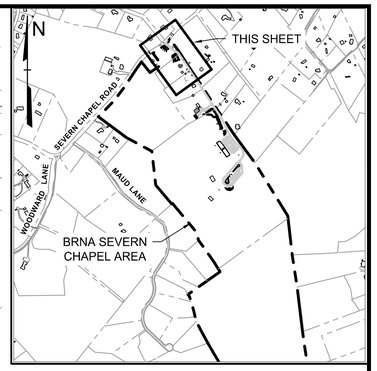
T:\2023\facilities\2023523700 1a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\2023523700 1A (CD-11) Site Details.dwg Feb 14, 2024 2:23pm kdarley



PLAN

SCALE: 1" = 30'

0 30' 60'



PLAN KEY

SCALE: 1" = 1000'

ESC LEGEND

- ESC Drainage Area
- RSF — Reinforced Silt Fence
- SSF — Super Silt Fence
- A-2 — Earth Dike
- Perimeter Dike/Swale
- SCE — Stabilized Construction Entrance
- RPS — Removable Pumping Station
- GP — Gabion Inflow Protection
- ROP — Rock Outlet Protection
- Topsoil Stockpile
- LOD — Limit of Disturbance
- MB — Mountable Berm
- Storm Drain & Outfall
- Check Dam

Note: Refer to Sheet 2 for Sequence of Construction and additional Legend Notes & Items

ESC LIMIT OF DISTURBANCE: 457,850 ft²/10.52 ac.±

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE AS SHOWN
DRAWN BY LMV/RDT
CHECKED BY MJP
SHEET 13 OF 52
PROJECT NO.: P588001
DATE: 2/7/2024

DESIGN DEVELOPMENT

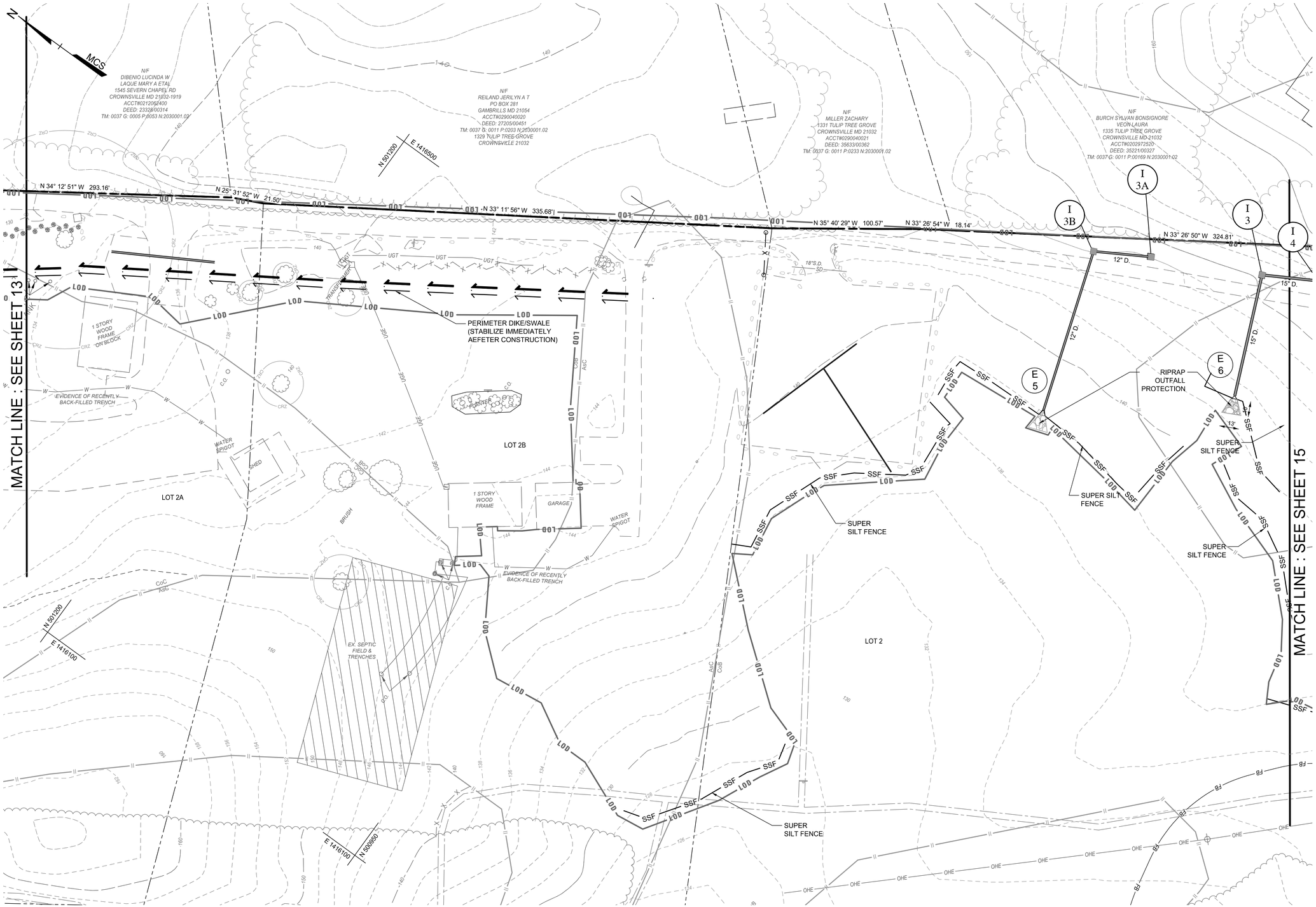
Erosion And Sediment Control Plan-Phase I

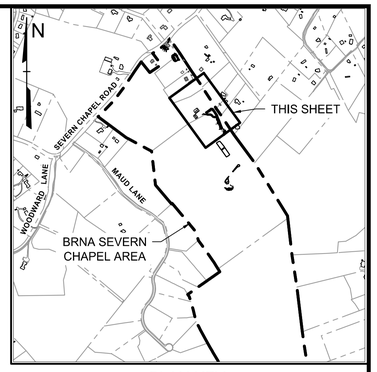
Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

T:\2023\facilities\20235231.001a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3_Construction Documents\20235231.001A (CD-12) ESC PH 1 Plan.dwg Feb 14, 2024 2:23pm kdarley





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- Storm Drain & Outfall
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Note: Refer to Sheet 2 for Sequence of Construction and additional Legend Notes & Items

PLAN

SCALE: 1" = 30'

0 30' 60'

ESC LIMIT OF DISTURBANCE: 457,850 ft²/10.52 ac.±

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LICENSE NO.32574

REVISED	
DATE	BY

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE	APPROVED DATE	SCALE	AS SHOWN
CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY	LMV/RDT
APPROVED DATE	APPROVED DATE	CHECKED BY	MJP
ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET	14 OF 52
		PROJECT NO.:	P588001
		DATE:	2/7/2024

DESIGN DEVELOPMENT

Erosion And Sediment Control Plan-Phase I

Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

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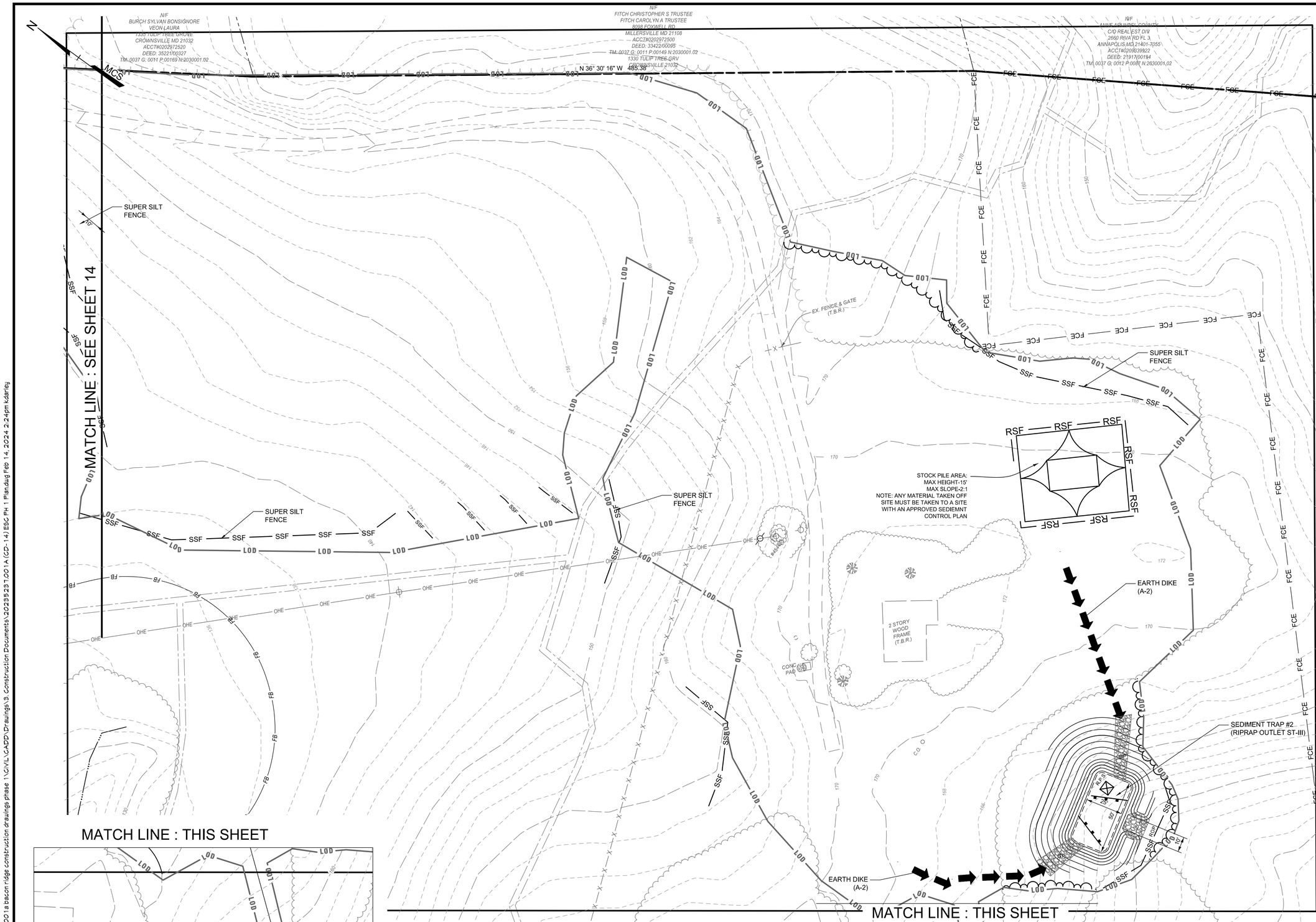
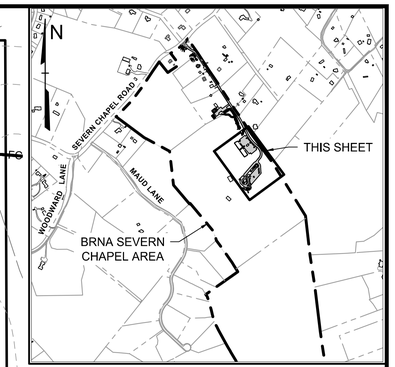


PLAN

SCALE: 1" = 30'

0 30' 60'



PLAN KEY

SCALE: 1" = 1000'

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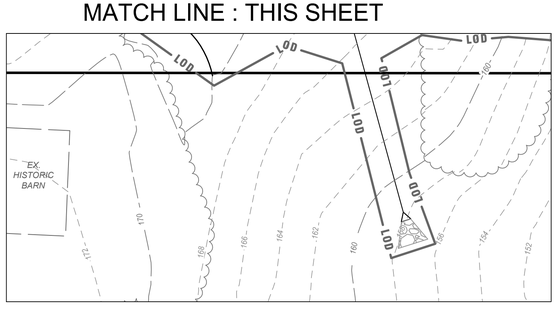
- Storm Drain & Outfall
- Check Dam

Note: Refer to Sheet 2 for Sequence of Construction and additional Legend Notes & Items

ESC LIMIT OF DISTURBANCE: 457,850 ft²/10.52 ac.±

MATCH LINE : THIS SHEET



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LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE		
		CHIEF ENGINEER	PROJECT MANAGER	SCALE AS SHOWN	DESIGN DEVELOPMENT
		APPROVED DATE	APPROVED DATE	DRAWN BY LMV/RDT	Erosion And Sediment Control Plan-Phase I
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
				SHEET 15 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

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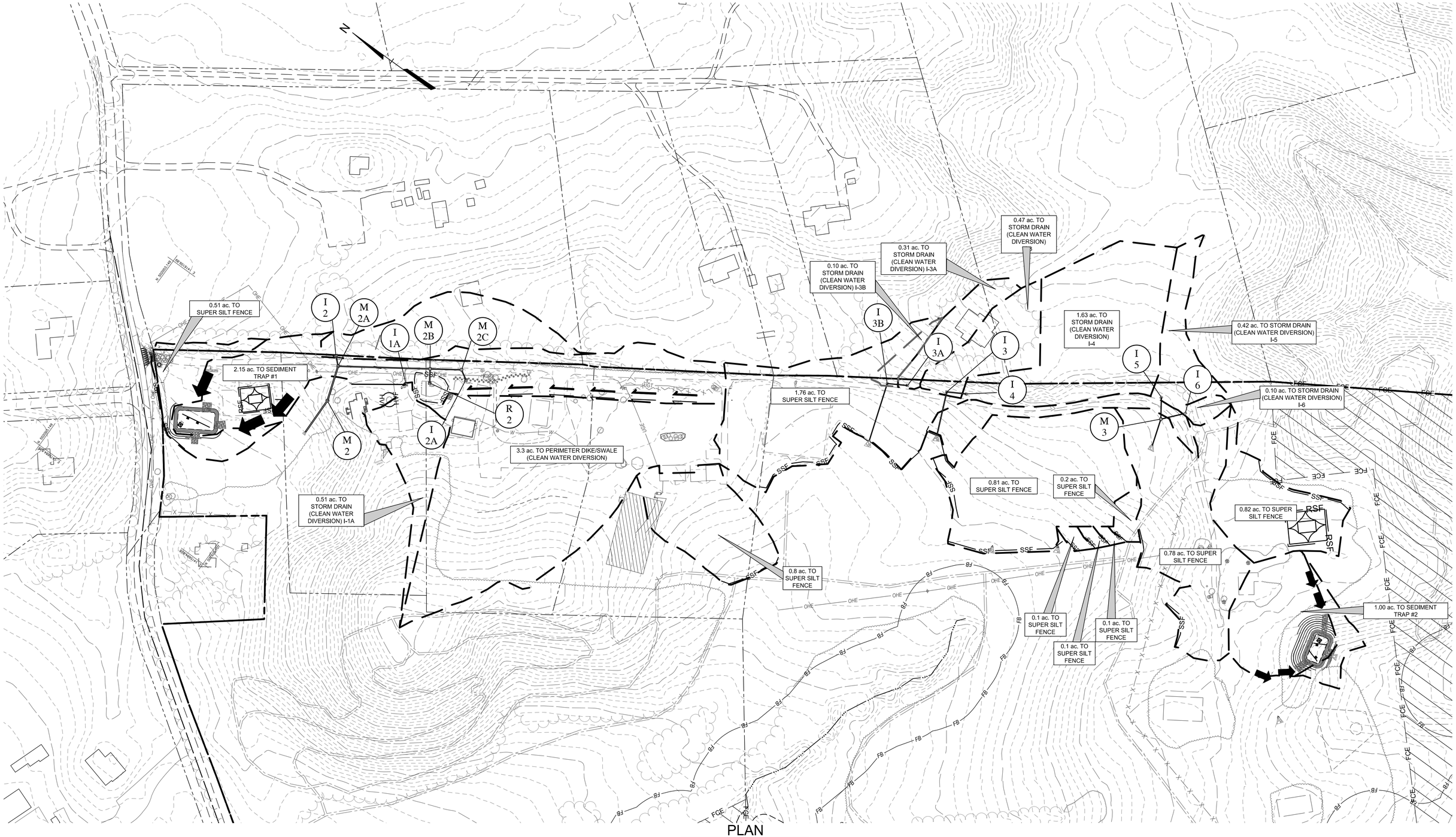

PLAN

SCALE: 1" = 80'

0 80'

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DATE: _____

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED	
DATE	BY

APPROVED DATE
CHIEF ENGINEER

APPROVED DATE
PROJECT MANAGER

APPROVED DATE
ASSISTANT CHIEF ENGINEER

APPROVED DATE
CHIEF, RIGHT OF WAY

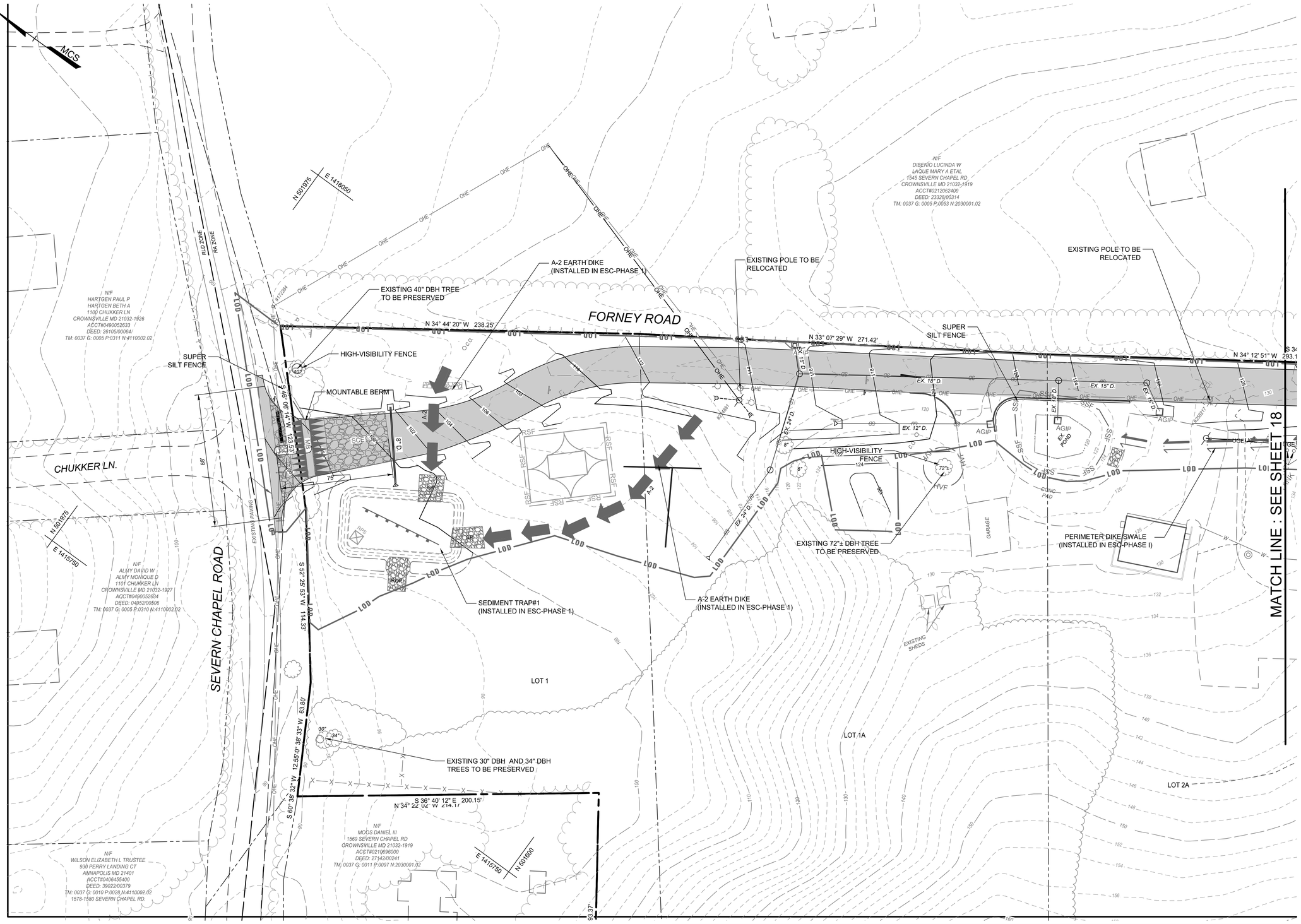
SCALE	AS SHOWN
DRAWN BY	LMV/RDT
CHECKED BY	MJP
SHEET	16 OF 52
PROJECT NO.:	P588001
DATE:	2/7/2024

DESIGN DEVELOPMENT

Erosion And Sediment Control
DA Map-Phase I
Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

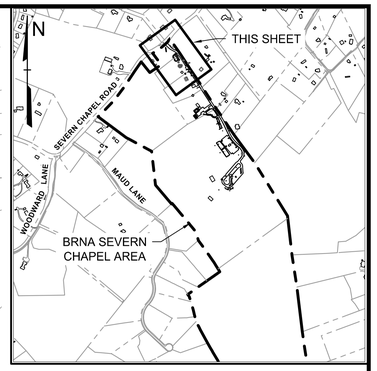
Tax Map 37, Grid 11, Parcel 86



PLAN

SCALE: 1" = 30'

0 30' 60'



PLAN KEY

SCALE: 1" = 1000'

ESC LEGEND

- ESC Drainage Area
- RSF — Reinforced Silt Fence
- SSF — Super Silt Fence
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- ROP — Rock Outlet Protection
- Topsoil Stockpile
- LOD — Limit of Disturbance
- MB — Mountable Berm
- SD — Existing Storm Drains
- Proposed Storm Drains
- Check Dam

Note: Refer to Sheet 2 for additional Legend Notes & Items

LIMIT OF DISTURBANCE: 457,850 ft²/10.52 ac.±

CENTURY ENGINEERING
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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE		
		CHIEF ENGINEER	PROJECT MANAGER	SCALE AS SHOWN	DESIGN DEVELOPMENT
		APPROVED DATE	APPROVED DATE	DRAWN BY LMV/RDT	Erosion And Sediment Control Plan-Phase II
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
				SHEET 17 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

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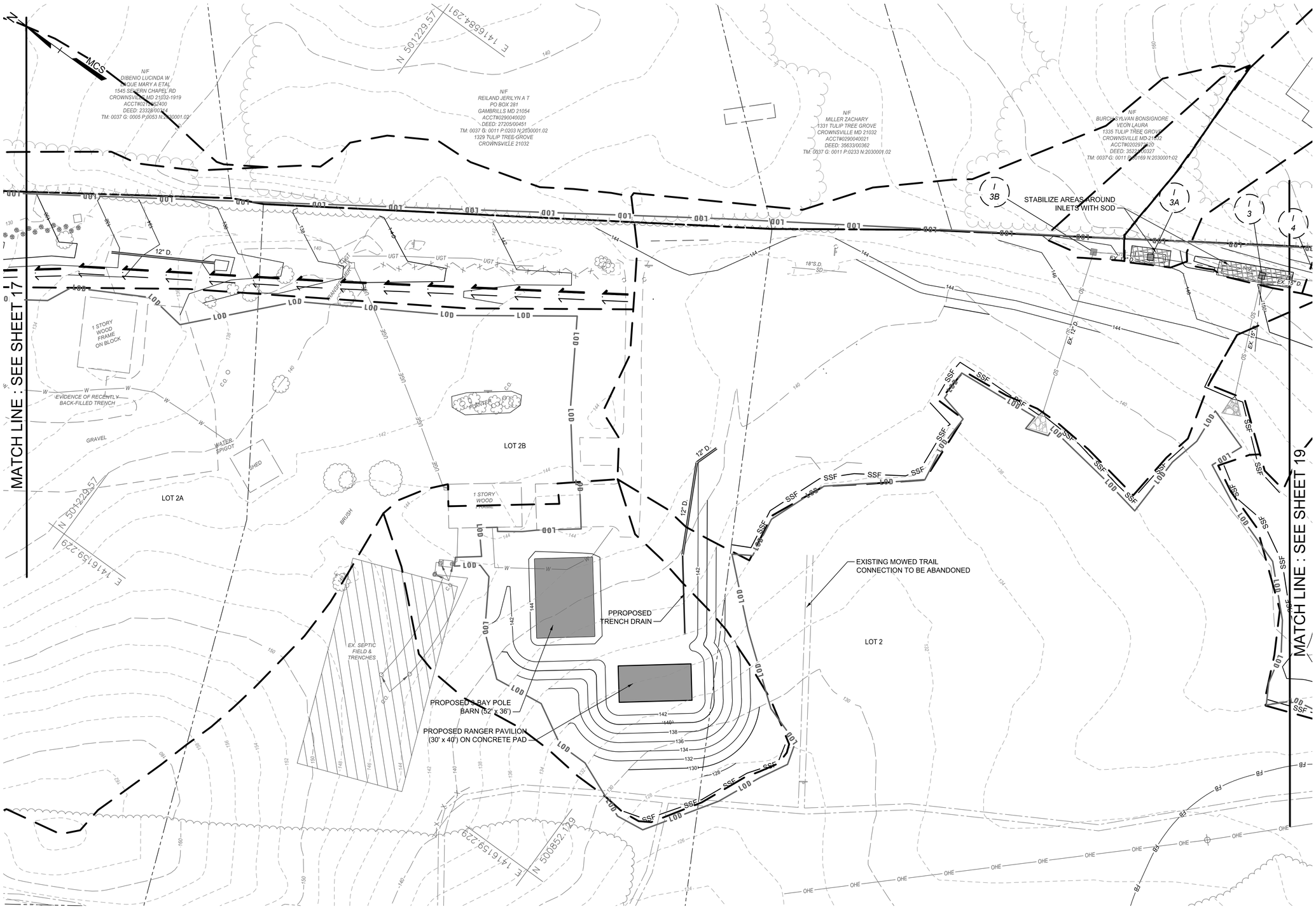

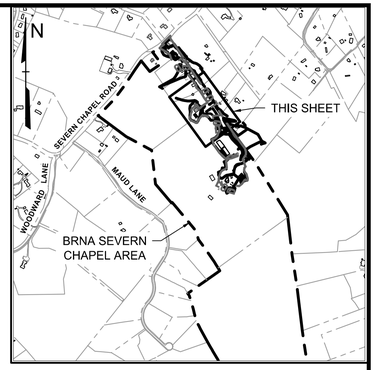

PLAN KEY

SCALE: 1" = 1000'

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Note: Refer to Sheet 2 for Sequence of Construction and additional Legend Notes & Items

ESC LIMIT OF DISTURBANCE: 457,850 ft²/10.52 ac.±

PLAN

SCALE: 1" = 30'

0 30' 60'

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE		
		CHIEF ENGINEER	PROJECT MANAGER	SCALE	AS SHOWN
		APPROVED DATE	APPROVED DATE	DRAWN BY	LMV/RDT
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	CHECKED BY	MJP
				SHEET	18 OF 52
				PROJECT NO.:	P588001
				DATE:	2/7/2024

DESIGN DEVELOPMENT

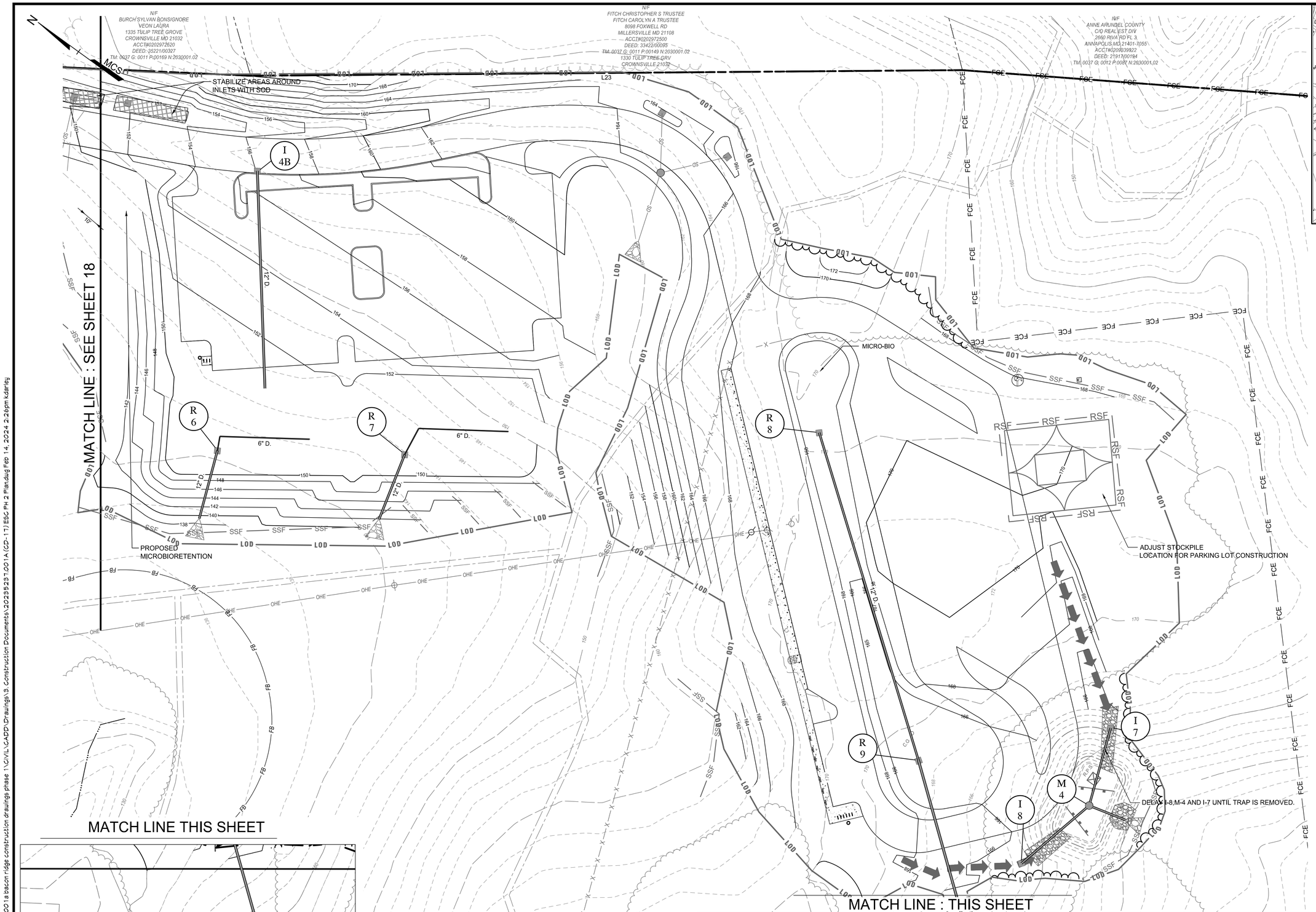
Erosion And Sediment Control Plan-Phase II

Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

T:\2023\facilities\20235231.001 a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\20235231.001A (CD-16) ESC PH 2 Plan.dwg Feb 14, 2024 2:25pm kdarling



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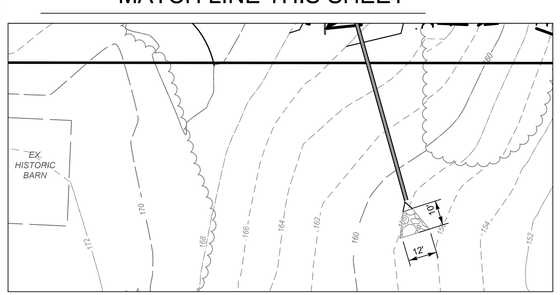
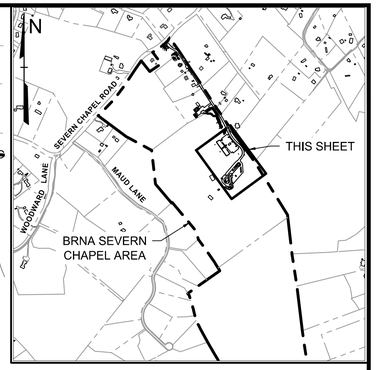


PLAN

SCALE: 1" = 30'

0 30' 60'



PLAN KEY

SCALE: 1" = 1000'

ESC LEGEND

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- Topsoil Stockpile
- LOD — Limit of Disturbance
- MB — Mountable Berm
- SD — Existing Storm Drains
- Proposed Storm Drains
- Check Dam

Note: Refer to Sheet 2 for Sequence of Construction and additional Legend Notes & Items

ESC LIMIT OF DISTURBANCE: 457,850 ft²/10.52 ac.±

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Phone: 443.589.2400 www.centuryeng.com

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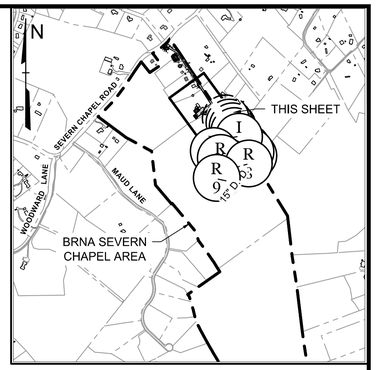
ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE	SCALE AS SHOWN	DESIGN DEVELOPMENT
		CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY LMV/RDT	Erosion And Sediment Control Plan-Phase II
		APPROVED DATE	APPROVED DATE	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 19 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

T:\2023\facilities\20235231.001 a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\20235231.001A(CD-11) ESC PH 2 Plan.dwg Feb 14, 2024 2:26pm kdarling



PLAN KEY

SCALE: 1" = 1000'

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- ROP — Rock Outlet Protection
- Topsoil Stockpile
- LOD — Limit of Disturbance
- MB — Mountable Berm
- Temporary Storm Drain & Outfall
- Temporary Flexible Pipe
- Check Dam
- Sod Stabilization

PLAN

SCALE: 1" = 80'

0 80' 160'

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE	SCALE AS SHOWN
		CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY LMV/RDT
		APPROVED DATE	APPROVED DATE	CHECKED BY MJP
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 20 OF 52
				PROJECT NO.: P588001
				DATE: 2/7/2024

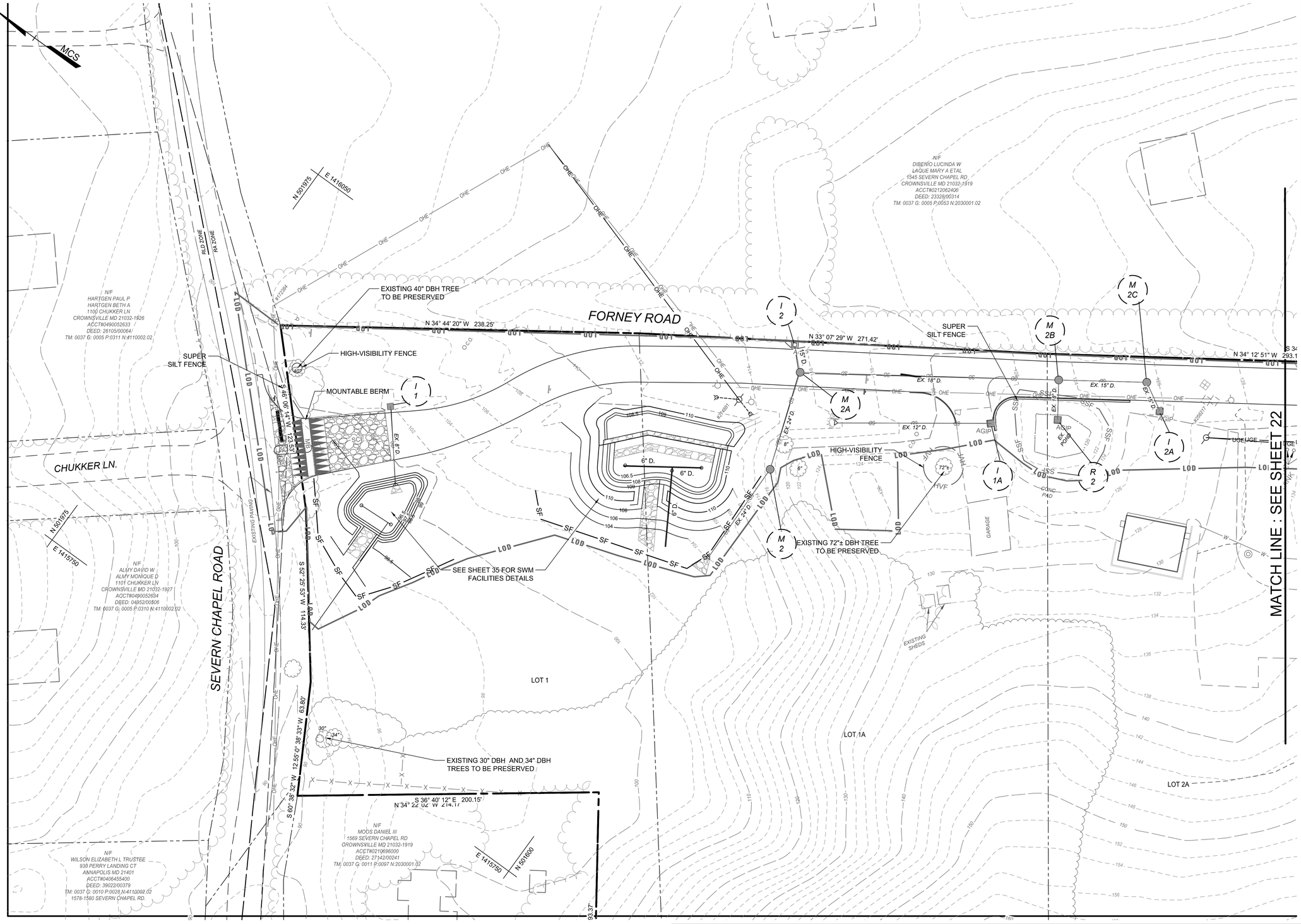
DESIGN DEVELOPMENT

Erosion And Sediment Control DA
Map-Phase II
Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

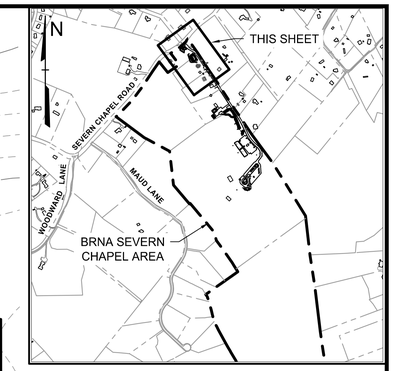
T:\2023\facilities\20235231.001a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. construction Documents\20235231.001A (CD-16A) ESC PH 2 DA Map.dwg Feb 14, 2024 2:27pm kdarfeg



PLAN

SCALE: 1" = 30'

0 30' 60'



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Note: Refer to Sheet 2 for Sequence of Construction and additional Legend Notes & Items

ESC LIMIT OF DISTURBANCE: 457,850 ft²/10.52 ac.±

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DATE: _____

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE		
		CHIEF ENGINEER	PROJECT MANAGER	SCALE AS SHOWN	DESIGN DEVELOPMENT
		APPROVED DATE	APPROVED DATE	DRAWN BY LMV/RDT	Erosion And Sediment Control Plan-Phase II-A
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
				SHEET 21 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

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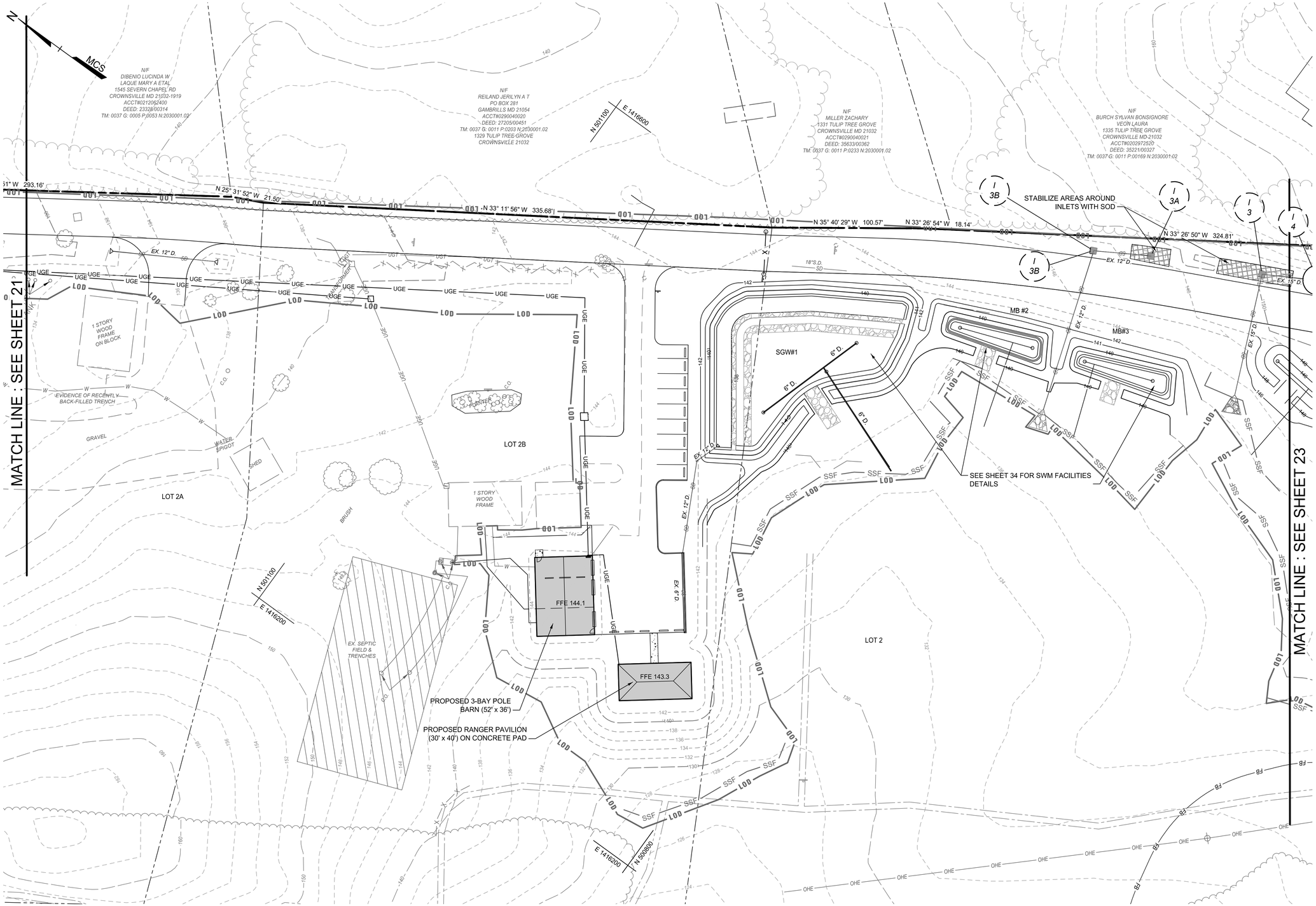

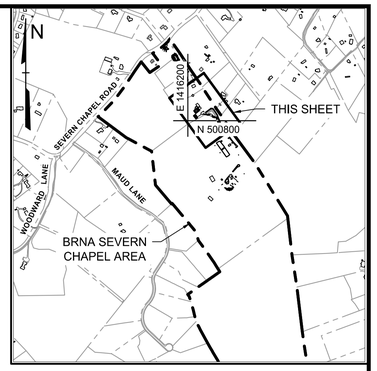

PLAN KEY

SCALE: 1" = 1000'

ESC LEGEND

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Note: Refer to Sheet 2 for additional Legend Notes & Items

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0 30' 60'

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APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE	AS SHOWN
DRAWN BY	LMV/RDT
CHECKED BY	MJP
SHEET	22 OF 52
PROJECT NO.:	P588001
DATE:	2/7/2024

DESIGN DEVELOPMENT

Erosion And Sediment Control Plan-Phase II-A

Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

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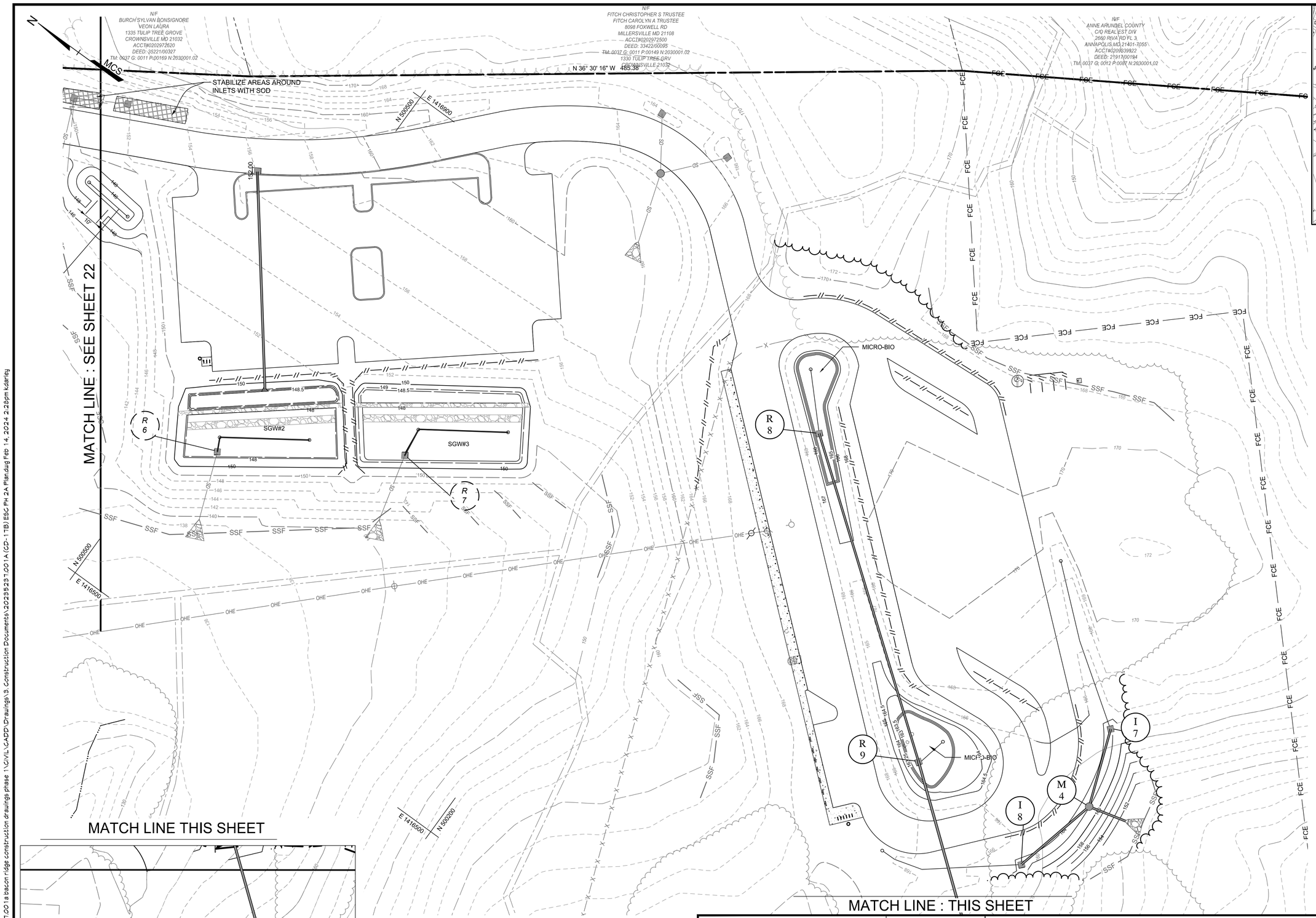

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CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

REVISED	
DATE	BY

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

SCALE	AS SHOWN
DRAWN BY	LMV/RDT
CHECKED BY	MJP
SHEET	23 OF 52
PROJECT NO.:	P588001
DATE:	2/7/2024

DESIGN DEVELOPMENT

Erosion And Sediment Control Plan-Phase II-A

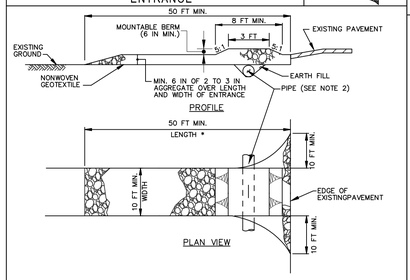
Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL — SCE



CONSTRUCTION SPECIFICATIONS

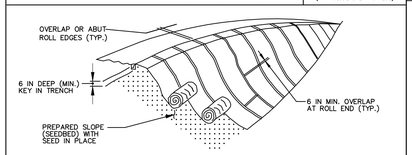
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING 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

DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL — TSSMS – * lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

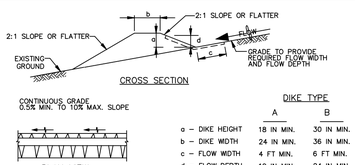
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

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

DETAIL C-1 EARTH DIKE

STANDARD SYMBOL — A-1 (PLACE DESIGNATION (A,B,C-1) ON FLOW CHANNEL SIDE OF DIKE.)



DIKE TYPE

	A	B
a – DIKE HEIGHT	18 IN MIN.	30 IN MIN.
b – DIKE WIDTH	24 IN MIN.	36 IN MIN.
c – FLOW WIDTH	4 FT MIN.	6 FT MIN.
d – FLOW DEPTH	12 IN MIN.	24 IN MIN.

FLOW CHANNEL STABILIZATION

A-1 SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)

A-2/B-2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.

A-3/B-3 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

CONSTRUCTION SPECIFICATIONS

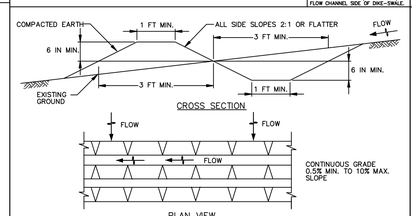
1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.
2. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. COMPACT FILL.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
8. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

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

DETAIL C-3 PERIMETER DIKE/SWALE

STANDARD SYMBOL — PDS-1 (PLACE DESIGNATION (PDS-1 OR 2) ON FLOW CHANNEL SIDE OF DIKE-SWALE.)



FLOW CHANNEL STABILIZATION

PDS-1 SEED AND MULCH AND TACK (DRAINING < 1 ACRE) (NOT ALLOWED FOR CLEAR WATER DIVERSION.)

PDS-2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD (DRAINING BETWEEN 1 AND 2 ACRES)

NOTE: THE MAXIMUM DRAINAGE AREA FOR THIS PRACTICE IS 2 ACRES.

CONSTRUCTION SPECIFICATIONS

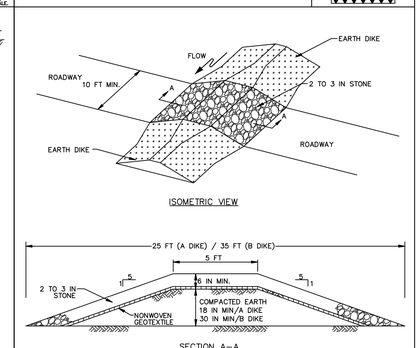
1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF DIKE/SWALE.
2. EXCAVATE OR SHAPE DIKE/SWALE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. COMPACT FILL.
4. CONSTRUCT DIKE/SWALE ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. STABILIZE DIKE/SWALE WITHIN 3 DAYS OF INSTALLATION. STABILIZE DIKE/SWALES USED FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP PERIMETER DIKE/SWALE AND POINT OF DISCHARGE FREE OF EROSION AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
8. UPON REMOVAL OF DIKE/SWALE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, MULCH, OR AS SPECIFIED ON APPROVED PLAN.

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

DETAIL C-8 MOUNTABLE BERM

STANDARD SYMBOL



CONSTRUCTION SPECIFICATIONS

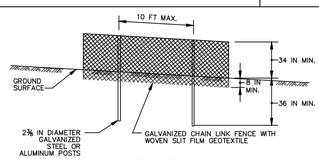
1. USE MINIMUM WIDTH OF 10 FEET TO ALLOW FOR VEHICULAR PASSAGE.
2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE EARTH MOUND PRIOR TO PLACING STONE.
3. PLACE 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE MOUNTABLE BERM.
4. MAINTAIN LINE, GRADE, AND CROSS SECTION. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN SPECIFIED DIMENSIONS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.

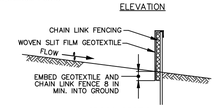
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL — SSF





CONSTRUCTION SPECIFICATIONS

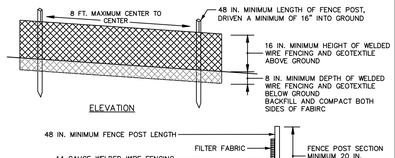
1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

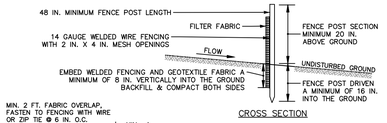
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

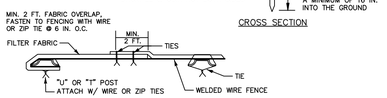
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

REINFORCED SILT FENCE

STANDARD SYMBOL — RSF







CONSTRUCTION SPECIFICATIONS

1. Metal fence post shall be a minimum of 48 inches long, driven 16 inches minimum into the ground and no more than 8 feet apart. Post shall be standard T or U section weighing not less than 1.00 pound per linear foot. Reinforcement shall be 14 gauge welded wire fencing with 2 inch x 4 inch mesh openings.
2. Geotextile shall be fastened securely to each fence post with wire ties or zip ties at top and midsection. Where ends of geotextile fabric come together, they shall be overlapped, folded and wire tied or zip tied to post to prevent sediment bypass.
3. Use a woven geotextile, as specified in section H-1 materials, and fasten to the upslope side of the fence posts with wire or zip ties at top and midsection. The Manufacturer's certification that the fabric meets the requirements in section H-1 must be made available to the inspection/enforcement authority.
4. Extend both ends of reinforced silt fence a minimum of five (5) horizontal feet upslope at 45 degrees to the main fence alignment to prevent runoff from going around the ends.
5. Remove accumulated sediment and debris when bulges develop in the reinforced silt fence fabric or when sediment reaches 25% of the fence height. Replace geotextile if torn. If undermining occurs, reinstall fence.

ANNE ARUNDEL SOIL CONSERVATION DISTRICT	2015	

REINFORCED SILT FENCE

Design Criteria

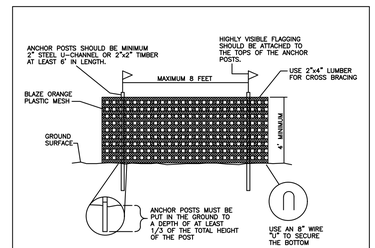
Reinforced Silt Fence Design Constraints

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 Hydrolic Soil Group (HSG) "A" soils**

1. The use of Reinforced Silt fence must conform to the design constraints listed above.
2. The area downgrade of the Reinforced Silt Fence must be undisturbed ground.
3. Reinforced Silt Fence must be placed along the contour.
4. Reinforced Silt Fence should be used with caution in areas where rocky soils may prevent trenching.
5. 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	



NOTES:

1. REMOVE ALL EXCESS MATERIALS FROM SITE AND DISPOSE OF AT A SITE WITH AN OPEN GRADING PERMIT AND AN APPROVED SEDIMENT CONTROL PLAN.
2. CONTRACTOR TO ENSURE THAT ALL CONSTRUCTION TRAFFIC MUST HAVE TIRES CLEANED PRIOR TO LEAVING CONSTRUCTION SITE.
3. PROTECTIVE FENCE (ORANGE HIGH VISIBILITY FENCE) SHALL BE MANUALLY INSTALLED ALONG THE LIMIT OF THE DISTURBANCE, WHERE THE LIMIT IS WITHIN 50 FEET OF THE STREAM BUFFER TO MINIMIZE IMPACT TO THE STREAM BUFFER. NO WORK IS TO TAKE PLACE AND NO PERMITS SHALL BE ISSUED UNTIL THE FENCE IS INSTALLED AND THE LOCATION OF THE FENCE IS APPROVED BY BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY. IF ANY PROBLEMS ARISE REGARDING THE FENCE LOCATION, UNNECESSARY EQUIPMENT CLEARING, ETC., NO PERMIT WILL BE ISSUED UNTIL THE REQUIRED CORRECTIONS ARE COMPLETED TO THE SATISFACTION OF BALTIMORE COUNTY DEPS.

DETAIL

PROTECTIVE FENCING

NOT TO SCALE

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE AS SHOWN
DRAWN BY LMV/RDT
CHECKED BY MJP
SHEET 24 OF 52
PROJECT NO.: P588001
DATE: 2/7/2024

DESIGN DEVELOPMENT

Erosion And Sediment Control Notes & Details

Severn Chapel Area
of the Bacon Ridge Natural Area

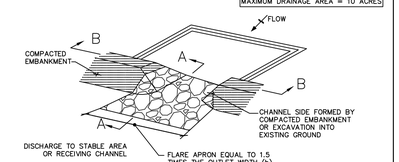
2nd Tax District — Tax Map 37, Grid 11, Parcel 86
Anne Arundel Co., MD.

T:\2023\facilities\20235231.001 a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\20235231.001(CD-18)ESC Details.dwg Feb 14, 2024 2:26pm kdarley

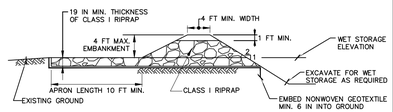
DETAIL G-1-3 RIPRAP OUTLET SEDIMENT TRAP ST-III

STANDARD SYMBOL ST-III

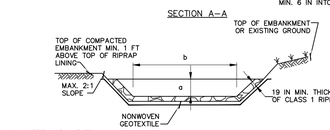
MAXIMUM DRAINAGE AREA = 10 ACRES



ISOMETRIC VIEW



SECTION A–A



a – DEPTH OF OUTLET
b – BOTTOM WIDTH OF OUTLET

SECTION B–B

1 OF 3

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

DETAIL G-1-3 RIPRAP OUTLET SEDIMENT TRAP ST-III

STANDARD SYMBOL ST-III

CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED.
2. CLEAR, GRUB, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.
3. USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.
4. CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE TOP OF RIPRAP OUTLET. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
5. MAKE ALL CUT AND FILL SLOPES 2:1 OR FLATTER.
6. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS, OVER THE BOTTOM AND SIDES OF OUTLET AND APRON PRIOR TO PLACEMENT OF RIPRAP. OVERLAP SECTIONS OF GEOTEXTILE AT LEAST 1 FOOT WITH THE SECTION NEAREST TO THE TRAP PLACED ON TOP. EMBED GEOTEXTILE AT LEAST 6 INCHES INTO EXISTING GROUND AT ENTRANCE OF OUTLET CHANNEL.
7. USE CLEAN CLASS 1 RIPRAP PLACED 19 INCHES IN DEPTH FOR THE OUTLET AND APRON. USE OF RECYCLED CONCRETE EQUIVALENT IS ACCEPTABLE.
8. CONSTRUCT AND MAINTAIN THE OUTLET ACCORDING TO APPROVED PLAN, AND IN SUCH A MANNER THAT EROSION AT OR BELOW THE OUTLET DOES NOT OCCUR.
9. STABILIZE THE EMBANKMENT AND INTERIOR SLOPES WITH SEED AND MULCH. STABILIZE POINTS OF CONCENTRATED INFLOW AS SHOWN ON APPROVED PLAN.
10. REMOVE SEDIMENT AND RESTORE TRAP TO ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO CLEANOUT ELEVATION (25% OF WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE. KEEP POINTS OF INFLOW AND OUTFLOW AS WELL AS INTERIOR OF THE TRAP FREE FROM EROSION AND REMOVE ACCUMULATED DEBRIS. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION. REMOVE ANY TREES, BRUSH, OR OTHER WOODY VEGETATION GROWING ON EMBANKMENT OR NEAR PRINCIPAL SPILLWAY. MAINTAIN LINE, GRADE, AND CROSS SECTION.
11. WHEN DEWATERING TRAP, PASS THE REMOVED WATER THROUGH AN APPROVED SEDIMENT CONTROL PRACTICE.
12. UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.

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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

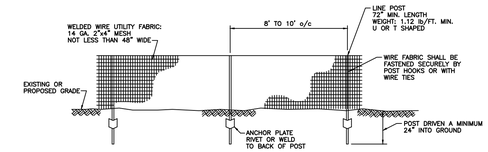
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

STONE/RIPRAP OUTLET SEDIMENT TRAP ST-III — TRAP#1

DRAINAGE AREA-INITIAL	2.20	ACRES
DRAINAGE AREA-INTERIM	2.20	ACRES
DRAINAGE AREA-FINAL	2.20	ACRES
TOTAL STORAGE STORAGE REQUIRED	9,700	CF
TOTAL STORAGE PROVIDED	9,854	CF
WET STORAGE REQUIRED	4,850	CF
WET STORAGE PROVIDED	4,850	CF
EXISTING GROUND ELEVATION AT OUTLET (WET STORAGE ELEVATION)	98.32	FT
TRAP BOTTOM ELEVATION	98.32	FT
TRAP BOTTOM DIMENSIONS	70 x 35	FT x FT
DEPTH OF OUTLET (a)	0.50	FT
WIDTH OF OUTLET (b)	12.00	FT
CLEANOUT ELEVATION	97.53	FT
TOP OF EMBANKMENT ELEVATION	100.00	FT
SIDE SLOPE	2:1	H:V RATIO
EMBANKMENT TOP WIDTH	5.00	FT
OUTLET PROTECTION -LENGTH	10	FT
OUTLET PROTECTION-DEPTH	19	IN

RIPRAP OUTLET SEDIMENT TRAP ST-III — TRAP#2

DRAINAGE AREA-INITIAL	0.43	ACRES
DRAINAGE AREA-INTERIM	1.00	ACRES
DRAINAGE AREA-FINAL	1.00	ACRES
TOTAL STORAGE STORAGE REQUIRED	3,600	CF
TOTAL STORAGE PROVIDED	4,056	CF
WET STORAGE REQUIRED	1,800	CF
WET STORAGE PROVIDED	1,800	CF
EXISTING GROUND ELEVATION AT OUTLET (WET STORAGE ELEVATION)	165.50	FT
TRAP BOTTOM ELEVATION	165.50	FT
TRAP BOTTOM DIMENSIONS	50 x 25	FT x FT
DEPTH OF OUTLET (a)	1.00	FT
WIDTH OF OUTLET (b)	10.00	FT
CLEANOUT ELEVATION	166.08	FT
TOP OF EMBANKMENT ELEVATION	152.00	FT
SIDE SLOPE	2:1	H:V RATIO
EMBANKMENT TOP WIDTH	5.00	FT
OUTLET PROTECTION -LENGTH	10	FT
OUTLET PROTECTION-DEPTH	19	IN



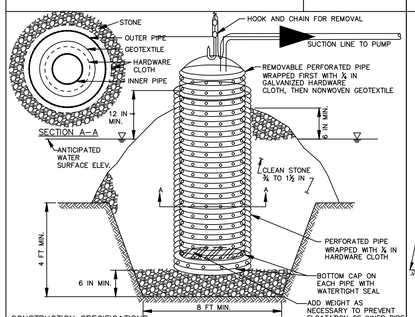
TEMPORARY SAFETY FENCE FOR SEDIMENT TRAPPING DEVICES

NOT TO SCALE

NOTE: "FENCING SHALL BE INSTALLED TO PREVENT ACCESS TO THE BASIN AND/OR TRAP BY CHILDREN"

DETAIL F-1 REMOVABLE PUMPING STATION

STANDARD SYMBOL RPS



ELEVATION

CONSTRUCTION SPECIFICATIONS

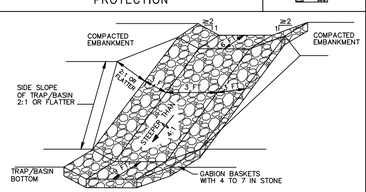
1. USE CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS 6 INCHES ON CENTER.
2. USE A MINIMUM 12 INCH DIAMETER INNER PIPE WITH AN OUTER PIPE A MINIMUM 6 INCHES LARGER IN DIAMETER. BOTTOM OF EACH PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
3. WRAP EACH PIPE WITH ¼ INCH GALVANIZED HARDWARE CLOTH. ON INNER PIPE WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS, OVER THE HARDWARE CLOTH.
4. EXCAVATE 8 FEET X 8 FEET X 4 FEET DEEP PIT FOR PIPE PLACEMENT. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
5. SET TOP OF INNER AND OUTER PIPES MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION (OR RISER CREST ELEVATION WHEN DEWATERING A BASIN).
6. BACKFILL PIT AROUND THE OUTER PIPE WITH ¾ TO 1½ INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
7. DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
8. A REMOVABLE PUMPING STATION REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, PULL OUT INNER PIPE AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

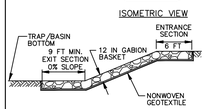
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL D-3-2 GABION INFLOW PROTECTION

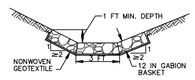
STANDARD SYMBOL GP



ISOMETRIC VIEW



PROFILE ALONG CENTERLINE



CROSS SECTION

CONSTRUCTION SPECIFICATIONS

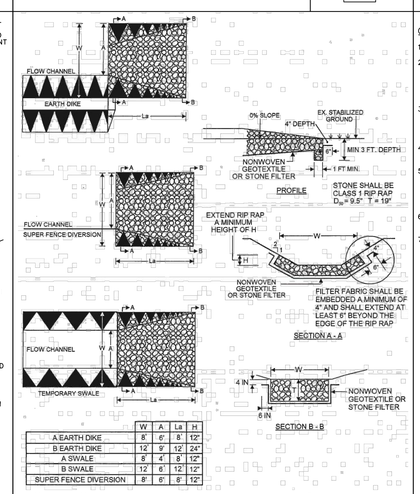
1. PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL GABION BASKETS.
2. USE BASKETS MADE OF MINIMUM 11 GAUGE WIRE.
3. CONSTRUCT GABION INFLOW PROTECTION BY ARRANGING 9 X 3 X 1 FOOT GABION BASKETS TO FORM A TRAPEZOIDAL SECTION WITH A 3 FOOT BOTTOM WIDTH, 1 FOOT MINIMUM DEPTH, 3 FOOT SIDE WALLS, AND 2:1 OR FLATTER SIDE SLOPES. FILL GABION BASKETS WITH 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WEIR MESH.
4. INSTALL ENTRANCE AND EXIT SECTIONS AS SHOWN ON THE PROFILE.
5. INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
6. BLEND GABIONS INTO EXISTING GROUND.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION

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

ROCK OUTLET PROTECTION III

STANDARD SYMBOL ROPIII



	W	A'	La	H
A EARTH DIKE	8'	6'	8'	12"
B EARTH DIKE	12'	9'	12'	24"
A SWALE	8'	4'	8'	12"
B SWALE	12'	6'	12'	12"
SUPER FENCE DIVERSION	8'	6'	8'	12"

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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	MODIFIED – 2012	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

ROCK OUTLET PROTECTION III

STANDARD SYMBOL ROPIII

CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (¾ TO 1½ INCH MINIMUM STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	MODIFIED – 2012	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE AS SHOWN
DRAWN BY LMV/RDT
CHECKED BY MJP
SHEET 25 OF 52
PROJECT NO.: P588001
DATE: 2/7/2024

DESIGN DEVELOPMENT

Erosion And Sediment Control Notes & Details
Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

T:\2023\facilities\2023523.001a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3 Construction Documents\2023523.001A(CD-14)ESC Details.dwg Feb 14, 2024 2:28pm kdarley

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

DEFINITION
Using vegetation as cover to protect exposed soil from erosion.

PURPOSE
To promote the establishment of vegetation on exposed soil.

CONDITIONS WHERE PRACTICE APPLIES
On all disturbed areas not stabilized by other methods. This specification is divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization.

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

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

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

SEDIMENT CONTROL PRACTICES MUST REMAIN IN PLACE DURING GRADING, SEEDBED PREPARATION, SEEDING, MULCHING, AND VEGETATIVE ESTABLISHMENT.

ADEQUATE VEGETATIVE ESTABLISHMENT
Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseedings within the planting season.

1. Adequate vegetative stabilization requires 95 percent groundcover.
2. If an area has less than 40 percent groundcover, restabilize following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.
3. If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.
4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

DEFINITION
Establishment of vegetative cover on cut and fill slopes.

PURPOSE
To provide timely vegetative cover on cut and fill slopes as work progresses.

CONDITIONS WHERE PRACTICE APPLIES
Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

CRITERIA

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

NOTE: ONCE EXCAVATION HAS BEGUN, THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

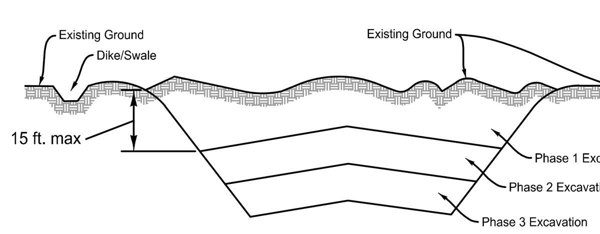

Figure B.1: Incremental Stabilization - Cut

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

NOTE: ONCE THE PLACEMENT OF FILL HAS BEGUN, THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

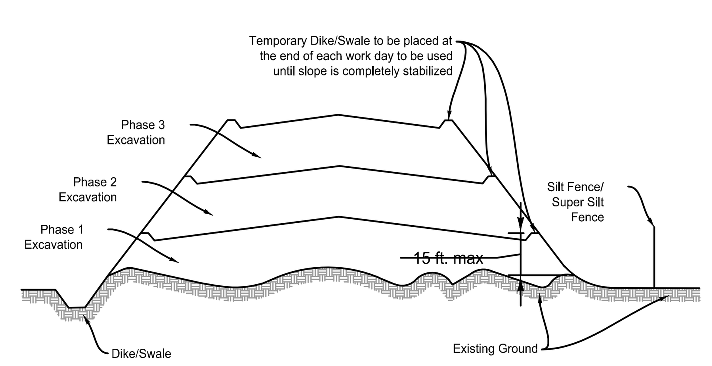

Figure B.2: Incremental Stabilization - Fill

B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

DEFINITION
The process of preparing the soils to sustain adequate vegetative stabilization.

PURPOSE
To provide a suitable soil medium for vegetative growth.

CONDITIONS WHERE PRACTICE APPLIES
Where vegetative stabilization is to be established.

CRITERIA

A. Soil Preparation
1. Temporary Stabilization
   - 1.a. Seed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After soil is loosened, it must not be rolled or dragged smooth but left in roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
   - 1.b. Apply fertilizer and lime as prescribed on the plans.
   - 1.c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means
2. Permanent Stabilization
   - 2.a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
     - a. Soil pH between 6.0 to 7.0.
     - b. Soluble salts less than 500 parts per million (ppm).
     - c. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable
     - d. Soil contains 1.5 percent minimum organic matter by weight.
     - e. Soil contains sufficient pore space to permit adequate root penetration.
   - 2.a. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
   - 2.b. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
   - 2.c. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
   - 2.d. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

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

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

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

DEFINITION
The application of seed and mulch to establish vegetative cover.

PURPOSE
To protect disturbed soils from erosion during and at the end of construction.

CONDITIONS WHERE PRACTICE APPLIES
To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

CRITERIA

A. Seeding
1. Specifications
   - 1.a. All seed must meet the requirement of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
   - 1.b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
   - 1.c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. use four times the recommended rate when hydroseeding. Note: it is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
   - 1.d. Sod and seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.
2. Application
   - 2.a. Dry seeding: This includes use of conventional drop or broadcast spreaders.
     - a. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
     - b. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
   - 2.b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
     - a. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least ¼ inch of soil covering. Seedbed must be firm after planting.
     - b. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
   - 2.c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
     - a. If fertilizer is being applied at the time of seeding, the application rates should be exceed the following: nitrogen, 100 pounds per acre total soluble nitrogen; P_2O_5 (phosphorous), 200 pounds per acre; K_2O (potassium), 200 pounds per acre.
     - b. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
     - c. Mix seed and fertilizer on site and seed immediately and without interruption.
     - d. When hydroseeding, do not incorporate into the soil.

B. Mulching
1. Mulch Materials (in order of preference)
   - 1.a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonable bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland See Law and not musty, moldy, caked, decayed, or excessively dusty. Note: Use only sterile straw mulch in areas where one species of grass is desired.
   - 1.b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
     - a. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
     - b. WCFM, including dye, must contain no germination or growth inhibiting factors.
     - c. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogenous slurry. the mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
     - d. WCFM material must not contain elements or compounds at concentration levels that will by phyto-toxic.
     - e. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.
2. Application
   - 2.a. Apply mulch to all seeded areas immediately after seeding.
   - 2.b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre.
   - 2.c. Wood cellulose fiber used as mulch must be applied at a net dry weight of 100 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
3. Anchoring
   - 3.a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard:
     - a. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour.
     - b. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
     - c. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. Use of asphalt binders is strictly prohibited.
     - d. Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000 feet long.

8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREAS

DEFINITION
A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

PURPOSE
To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

CONDITIONS WHERE PRACTICE APPLIES
Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

CRITERIA

A. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
B. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
C. Runoff from the stockpile area must drain to a suitable sediment control practice.
D. Access the stockpile area from the upgrade side.
E. Clear water runoff into the stockpile area must be minimized by use of a diversion fence such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
F. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
G. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
H. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

MAINTENANCE

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

TEMPORARY SEEDING NOTES

SCOPE: PLANTING SHORT TERM (NO MORE THAN 6 MONTHS) VEGETATION TO TEMPORARILY STABILIZE ANY AREAS WHERE SOIL DISTURBANCE HAS OCCURRED, UNTIL THE AREA CAN BE PERMANENTLY STABILIZED WITH VEGETATIVE OR NON-VEGETATIVE PRACTICES.

STANDARDS: THE FOLLOWING NOTES SHALL CONFORM TO SECTION B-4 OF THE"2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" PUBLISHED JOINTLY BY THE MARYLAND DEPARTMENT OF ENVIRONMENT - WATER MANAGEMENT ADMINISTRATION, THE NATIONAL RESOURCE CONSERVATION SERVICE AND THE MARYLAND ASSOCIATION OF SOIL CONSERVATION DISTRICTS

THE SEED BED SHALL BE PREPARED BY LOOSENING THE SOIL TO A DEPTH OF 3 TO 5 INCHES AND INCORPORATING THE LIME AND FERTILIZER INTO THIS LOOSENED LAYER OF SOIL. SEE SECTION B-4-2

FOR TEMPORARY STABILIZATION, FERTILIZER SHALL CONSIST OF A MIXTURE OF 10-20-20 AND BE APPLIED AT A RATE OF 436 LB. PER ACRE (10 LB. PER 1000 SQ. FT.) AND WILL MEET THE REQUIREMENTS IN SECTION B-4-2. LIME SHALL BE APPLIED AT A RATE OF 2 TONS PER ACRE (90 LB. PER SQ. FT.) AND SHALL MEET THE REQUIREMENTS IN SECTION B-4-2 AND B-4-4

SEED TYPE AND APPLICATION SHALL MEET THE REQUIREMENTS IN SECTION B-4-3 SEED TAGS SHALL BE MADE AVAILABLE TO THE INSPECTOR TO VERIFY THE TYPE AND RATE OF SEED USED.
MULCH TYPE AND ITS APPLICATION WILL MEET THE REQUIREMENTS IN SECTION B-4-3 A, B AND C AND WILL BE APPLIED ALONG WITH THE SEED OR IMMEDIATELY AFTER SEEDING

SEEDING MIXTURES SHALL BE SELECTED FROM OR WILL BE EQUAL TO THOSE ON TABLE B.1 (PAGE B.20).

THE SEEDING CHART BELOW WILL NEED TO BE PLACED ON AND FILLED IN ON THE SEDIMENT CONTROL PLAN

TEMPORARY SEEDING SUMMARY

Hardiness Zone: 7A Seed Mixture: N/A					Fertilizer Rate (10-20-20)	Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths		
N/A	Annual Ryegrass (*Lolium perenne ssp. multiflorum*)	40	Feb 15 to Apr 30; Aug 15 to Nov 30	0.5 in.	436 lb/ac (10 lb/1000sf)	2 tons/ac (90 lb/1000 sf)
	Barley (*Hordeum vulgare*)	96	Feb 15 to Apr 30; Aug 15 to Nov 30	1.0 in.		
	Foxtail Millet (*Setaria italica*)	30	May 1 to Aug 14	0.5 in.		
	Pearl Millet (*Pennisetum glaucum*)	20	May 1 to Aug 14	0.5 in.		

PERMANENT SEEDING NOTES

SCOPE: PLANTING PERMANENT, LONG LIVED VEGETATIVE COVER ON GRADED AND/OR CLEARED AREAS AND AREAS THAT HAVE BEEN IN TEMPORARY VEGETATION FOR MORE THAN 6 MONTHS.

STANDARDS: THE FOLLOWING NOTES SHALL CONFORM TO SECTION B-4 OF THE "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" PUBLISHED JOINTLY BY THE MARYLAND DEPARTMENT OF ENVIRONMENT - WATER MANAGEMENT ADMINISTRATION, THE NATIONAL RESOURCE CONSERVATION SERVICE AND THE MARYLAND ASSOCIATION OF SOIL CONSERVATION DISTRICTS.

THE SEED BED SHALL BE PREPARED BY LOOSENING THE SOIL TO A DEPTH OF 3 TO 5 INCHES AND INCORPORATING THE LIME AND FERTILIZER INTO THIS LOOSENED LAYER OF SOIL. SEE SECTION B-4-2.

FOR SITES OVER 5 AC. SOIL TESTS WILL BE PERFORMED. SOIL TESTS WILL BE CONDUCTED BY THE UNIVERSITY OF MARYLAND OR A RECOGNIZED COMMERCIAL LABORATORY. MINIMUM SOIL CONDITIONS SHALL MEET THE REQUIREMENTS OF SECTION B-4-2-A-2-A, OTHERWISE SOIL AMENDMENTS OR TOPSOIL WILL NEED TO BE APPLIED. TOPSOILING MAY OCCUR WHEN SOIL CONDITIONS MEET THE MINIMUM REQUIREMENTS AS STATED IN SECTION B-4-2-B. SOIL AMENDMENTS MUST MEET THE REQUIREMENTS AS SET FORTH IN SECTION B-4-2-C AND MUST BE APPLIED AS INDICATED BY THE SOILS TESTS.

FOR SITES OF 5 AC. OR LESS OF DISTURBANCE, THE FOLLOWING FERTILIZER AND LIME RATES SHALL APPLY.
FERTILIZER SHALL CONSIST OF A MIXTURE OF 10-20-20 AND BE APPLIED AT THE FOLLOWING RATES:
N = 45 LB. PER ACRE (1 LB. PER 1000 SQ.FT.) P205 = 90 LB. PER ACRE (2 LB. PER 1000 SQ.FT.)
K20 = 90 LB. PER ACRE (2 LB. PER 1000 SQ.FT.)
LIME SHALL BE APPLIED AT A RATE OF 2 TONS PER ACRE (90 LB. PER 1000 SQ.FT.)

SEED TYPE, TURFGRASS OR SOD APPLICATION SHALL MEET THE REQUIREMENTS IN SECTION B-4-5. SEED TAGS SHALL BE MADE AVAILABLE TO THE INSPECTOR TO VERIFY THE TYPE AND APPLICATION RATE OF SEED USED. MULCH TYPE AND ITS APPLICATION WILL MEET THE REQUIREMENTS IN SECTION B-4-3 A, B AND C, AND WILL BE APPLIED ALONG WITH SEED OR IMMEDIATELY AFTER SEEDING

SEEDING MIXTURES SHALL BE SELECTED FROM OR WILL BE EQUAL TO THOSE ON TABLE B-3. THE SEEDING CHART BELOW WILL NEED TO BE PLACED ON AND FILLED IN ON THE SEDIMENT CONTROL PLAN.

Permanent Seeding Summary

Hardiness Zone: 7A Seed Mixture: Cool-Season Grass Mix					Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P_2O_5	K_2O	
9	Tall Fescue (*Lolium arundinaceum*)	60	Feb 15 to Apr 30; Aug 15 to Oct 31; Nov 1 to Nov 30	¼ to ½ in.	45 lb/ac (1 lb/ 1000sf)	90 lb/ac (2 lb/ 1000sf)	90 lb/ac (2 lb/ 1000sf)	2 tons/ac (90 lb/ 1000 sf)
	Kentucky Bluegrass (*Poa pratensis*)	40		¼ to ½ in.				
	Perennial Ryegrass (*Lolium perenne*)	20		¼ to ½ in.				

Hardiness Zone: 7A Seed Mixture: Warm-Season Grass Mix					Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P_2O_5	K_2O	
4	Deertongue (*Dichanthekium clandestinum*)	15	Feb 15 to Apr 30; Aug 15 to Oct 31; Nov 1 to Nov 30	¼ to ½ in.	45 lb/ac (1 lb/ 1000sf)	90 lb/ac (2 lb/ 1000sf)	90 lb/ac (2 lb/ 1000sf)	2 tons/ac (90 lb/ 1000 sf)
	Creeping Red Fescue (*Festuca rubra var. rubra*)	20		¼ to ½ in.				
	Canada Wild Rye (*Elymus canadensis*)	5		¼ to ½ in.				

SEDIMENT AND EROSION CONTROL NOTES

1. ALL EROSION/SEDIMENT CONTROL MEASURES SHALL COMPLY WITH THE "MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION IN ASSOCIATION WITH THE NATURAL RESOURCES CONSERVATION SERVICE AND THE MARYLAND ASSOCIATION OF SOIL CONSERVATION DISTRICTS (REFERENCED AS THE 2011 STANDARDS AND SPECS).
2. AREAS THAT HAVE BEEN CLEARED AND/OR GRADED, BUT WILL NOT BE CONSTRUCTED ON OR PERMANENTLY VEGETATED FOR MORE THAN 5 DAYS (3 DAYS FOR SEDIMENT CONTROL MEASURES AND FOR STEEP SLOPES) MUST BE STABILIZED WITH MULCH OR TEMPORARY STABILIZATION. ANY AREAS THAT ARE IN TEMPORARY VEGETATION FOR OVER 6 MONTHS WILL NEED TO BE PERMANENTLY VEGETATED.
3. FOR SPECIFICATIONS ON PERMANENT OR TEMPORARY STABILIZATION, SEE B-4-4 AND B-4-5.
4. MULCHING ONLY IS RESTRICTED TO USE ON DISTURBED AREAS AS A TEMPORARY COVER WHERE VEGETATION IS NOT FEASIBLE OR WHERE SEEDING GERMINATION CANNOT BE COMPLETED BECAUSE OF WEATHER CONDITIONS. FOR SPECIFICATIONS SEE B-4-3, A.1.B
5. FOR SPECIFICATIONS ON THE STABILIZATION OF CUT AND FILL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL, SEE INCREMENTAL STABILIZATION B-4-1
6. THE EXISTING TOPSOIL FROM ON OR OFF SITE THAT IS USED MUST MEET THE MINIMUM SPECIFICATION IN B-4-2
7. THE REQUIRED SEQUENCE OF CONSTRUCTION MUST BE FOLLOWED DURING SITE DEVELOPMENT. ANY CHANGES IN THE SEQUENCE OF CONSTRUCTION MUST BE APPROVED BY THE SOIL CONSERVATION DISTRICT.
8. ANY REVISIONS TO THE SEDIMENT CONTROL PLAN, NOT COVERED UNDER THE LIST OF PLAN MODIFICATIONS THAT CAN BE APPROVED BY THE SEDIMENT CONTROL INSPECTOR, NEED TO BE SUBMITTED TO THE SOIL CONSERVATION DISTRICT FOR APPROVAL.
9. NO PROPOSED SLOPE THAT IS REQUIRED TO BE SEEDED AND/OR MULCHED SHALL BE STEEPER THAN 2:1. SLOPES STEEPER THEN 2:1 SHALL REQUIRE A ENGINEERED DESIGN FOR STABILIZATION
10. ALL SEDIMENT CONTROL STRUCTURES WILL BE INSPECTED ONCE A WEEK AND AFTER EACH RAINFALL AND WILL BE REPAIRED, AS NEEDED, SO THAT THE STRUCTURE MEETS THE MINIMUM SPECIFICATIONS AS SHOWN IN THE 2011 STANDARDS AND SPECS.
11. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL SEDIMENT AND EROSION CONTROL MEASURES UNTIL THE DISTURBED AREAS ARE PERMANENTLY STABILIZED.
12. THE DISTRICT APPROVAL FOR THIS SEDIMENT CONTROL PLAN IS GOOD FOR 2 YEARS. AT THE END OF 2 YEARS, IF CONSTRUCTION OF THE PLAN HAS NOT STARTED, THE PLAN WILL NEED TO BE RESUBMITTED TO THE SOIL CONSERVATION DISTRICT FOR REVIEW AND RE-APPROVAL. ANY PLANS THAT ARE CURRENTLY UNDER CONSTRUCTION AFTER 2 YEARS MAY BE REQUIRED TO BE RESUBMITTED TO THE SOIL CONSERVATION DISTRICT BY THE SEDIMENT CONTROL INSPECTOR.

SOD NOTES

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

1. GENERAL SPECIFICATIONS
   - a. CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.
   - b. SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF ¾ INCH, PLUS OR MINUS ¼ INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS AND TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE.
   - c. STANDARD SIZE SECTIONS OF SOD MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.
   - d. SOD MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
   - e. SOD MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPLANTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.
2. SOD INSTALLATION
   - a. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
   - b. LAY THE FIRST ROW OF SOD IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS.
   - c. WHEREVER POSSIBLE, LAY SOD WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS. ROLL AND TAMP, PEG OR OTHERWISE SECURE THE SOD TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOLID CONTACT EXISTS BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE.
   - d. WATER THE SOD IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD WITHIN EIGHT HOURS.
3. SOD MAINTENANCE
   - a. IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF 4 INCHES. WATER SOD DURING THE HEAT OF THE DAY TO PREVENT WILTING.
   - b. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.
   - c. DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN ⅓ OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

CENTURY ENGINEERING
A Kleinfelder Company
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Phone: 443.589.2400 www.centuryeng.com

DATE: ______

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED		APPROVED / DATE	APPROVED / DATE		
DATE	BY	CHIEF ENGINEER	PROJECT MANAGER	SCALE AS SHOWN	DESIGN DEVELOPMENT
		APPROVED / DATE	APPROVED / DATE	DRAWN BY LMV/RDT	Erosion And Sediment Control Notes & Specifications
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
				SHEET 26 OF 52	2nd Tax District, Anne Arundel Co., MD.
				PROJECT NO.: P588001	Tax Map 37, Grid 11, Parcel 86
				DATE: 2/7/2024	

T:\2023\facilities\20235237.001a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\20235237.001A (CD-20) ESC Notes Specs.dwg Feb 14, 2024 2:28pm kdarley

TEST BORING LOG — BORING SB-1

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
2/14/23	0 Hr	Dry		3.3	Size I.D.:	4-1/4"	2"	
2/16/23	48 Hr	Dry		3	Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING :
EASTING :
ELEVATION : 102
DATE START : 2-14-23
END : 2-14-23
DRILLER : DCTI
INSPECTOR : J. Harris

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			3 1-3	S-1	0.0 1.5	13"	101.8 0.3	Topsoil
								Brown, moist, very loose, Silty f-m SAND (sm)
			2 2-2	S-2	2.0 3.5	13"		
			2 2-3	S-3	3.5 5.0	14"	97.0 5.0	

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-1
		31+	Hard	- See Remarks	

Feb 21, 23

TEST BORING LOG — BORING SB-2

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
2/14/23	0 Hr	Dry		2.4	Size I.D.:	4-1/4"	2"	
2/16/23	48 Hr	Dry		2.4	Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING :
EASTING :
ELEVATION : 126
DATE START : 2-14-23
END : 2-14-23
DRILLER : DCTI
INSPECTOR : J. Harris

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			1 2-2	S-1	0.0 1.5	7"	125.7 0.3	Topsoil
								Brownto orange, moist, very loose to loose, Silty f-m SAND (sm) with f Gravel
			5 4-3	S-2	2.0 3.5	12"		
			3 4-6	S-3	3.5 5.0	18"	121.0 5.0	

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-2
		31+	Hard	- See Remarks	

Feb 21, 23

TEST BORING LOG — BORING SB-3

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
2/14/23	0 Hr	Dry		3.5	Size I.D.:	4-1/4"	2"	
2/16/23	48 Hr	Dry		3.5	Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING :
EASTING :
ELEVATION : 144
DATE START : 2-14-23
END : 2-14-23
DRILLER : DCTI
INSPECTOR : J. Harris

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			1 2-3	S-1	0.0 1.5	14"	143.8 0.2	Topsoil
								Brown, moist, very loose, Silty f-m SAND (sm)
			2 1-1	S-2	2.0 3.5	18"		
			2 1-1	S-3	3.5 5.0	16"	139.0 5.0	

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-3
		31+	Hard	- See Remarks	

Feb 21, 23

TEST BORING LOG — BORING SB-4

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
2/14/23	0 Hr	Dry		4.5	Size I.D.:	4-1/4"	2"	
2/16/23	48 Hr	Dry		3.4	Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING :
EASTING :
ELEVATION : 143
DATE START : 2-14-23
END : 2-14-23
DRILLER : DCTI
INSPECTOR : J. Harris

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			1 2-2	S-1	0.0 1.5	13"	142.8 0.3	Topsoil
								Brown, moist, very loose, Silty f-m SAND (sm)
			2 1-1	S-2	2.0 3.5	12"		
			2 2-2	S-3	3.5 5.0	12"	138.0 5.0	

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-4
		31+	Hard	- See Remarks	

Feb 21, 23

TEST BORING LOG — BORING SB-5

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
2/14/23	0 Hr	Dry		7.4	Size I.D.:	4-1/4"	2"	
2/16/23	48 Hr	Dry		7.4	Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING :
EASTING :
ELEVATION : 147
DATE START : 2-14-23
END : 2-14-23
DRILLER : DCTI
INSPECTOR : J. Harris

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			1 1-2 2	S-1	0.0 2.0	14"	146.7 0.3	Topsoil
								Brown, moist, very loose, Clayey f-m SAND (sc), trace Silt
			1 1-2 2	S-2	2.0 4.0	18"	145.0 2.0	Brown, moist, very loose, Silty f-m SAND (sm)
			1 1-1 3	S-3	4.0 6.0	18"	142.5 4.5	Infiltration test performed at 4 ft below grade
								Brown to orange, moist, very loose to loose, Poorly-graded f-m SAND with Silt (sp-sm)
			2 4-4 6	S-4	6.0 8.0	18"		
			4 5-2 1	S-5	8.0 10.0	18"		water on rods at 8 ft
							137.0 10.0	

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-5
		31+	Hard	- See Remarks	

Feb 21, 23

TEST BORING LOG — BORING SB-6

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
2/14/23	0 Hr	Dry		2.9	Size I.D.:	4-1/4"	2"	
2/16/23	48 Hr	Dry		2.7	Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING :
EASTING :
ELEVATION : 157
DATE START : 2-14-23
END : 2-14-23
DRILLER : DTCI
INSPECTOR : J. Harris

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			1 2-2	S-1	0.0 1.5	15"	156.7 0.3	Topsoil
							155.3 1.7	Orange to brown, moist, soft, Clayey SILT (ml), trace f-m Sand
			1 2-3	S-2	2.0 3.5	15"		Brown, moist, medium stiff, f-m Sandy SILT (ml)
			1 3-3	S-3	3.5 5.0	12'	152.0 5.0	

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-6
		31+	Hard	- See Remarks	

Feb 21, 23

TEST BORING LOG — BORING SB-7

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
2/14/23	0 Hr	Dry		7	Size I.D.:	4-1/4"	2"	
2/16/23	48 Hr	Dry		6.7	Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING :
EASTING :
ELEVATION : 164
DATE START : 2-14-23
END : 2-14-23
DRILLER : DTCI
INSPECTOR : J. Harris

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			2 2-1 2	S-1	0.0 2.0	16'	165.7 0.3	Topsoil
								Orange to brown, moist, very loose, Silty f-m SAND (sm)
			1 1-1 1	S-2	2.0 4.0	17"		Infiltration test performed at 2 ft below grade
			2 1-1 2	S-3	4.0 6.0	18"		less Silt
			2 2-2 2	S-4	6.0 8.0	18"		Water on rods at 6 ft
			2 2-2 3	S-5	8.0 10.0	18'	156.0 8.0	Light brown, moist, very loose, Poorly-graded SAND (sp)
							154.0 10.0	

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-7
		31+	Hard	- See Remarks	

Feb 21, 23

TEST BORING LOG — BORING SB-8

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
2/14/23	0 Hr	Dry		3.8	Size I.D.:	4-1/4"	2"	
2/16/23	48 Hr	Dry		3.4	Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING :
EASTING :
ELEVATION : 173
DATE START : 2-14-23
END : 2-14-23
DRILLER : DTCI
INSPECTOR : J. Harris

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			2 1-1	S-1	0.0 1.5	12"	172.5 0.5	Topsoil
								Dark brown to brown, moist, very loose, Silty f-m SAND (sm)
			1 2-1	S-2	2.0 3.5	17"		
			2 3-2	S-3	3.5 5.0	18"	168.0 5.0	

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-8
		31+	Hard	- See Remarks	

Feb 21, 23

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED	
DATE	BY

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE	AS SHOWN
DRAWN BY	LMV/RDT
CHECKED BY	MJP
SHEET	27 OF 52
PROJECT NO.:	P588001
DATE:	2/7/2024

DESIGN DEVELOPMENT

Soil Boring Logs

Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

T:\2023\facilities\20235237.001a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3.Construction Documents\20235237.001A(CD-21)Soil Boring Logs.dwg Feb 14, 2024 2:26pm kdanley

TEST BORING LOG — BORING SB-9

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
2/14/23	0 Hr	Dry		2.8	Size I.D.:	4-1/4"	2"	
2/16/23	48 Hr	Dry		1.9	Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING :
EASTING :
ELEVATION : 167
DATE START : 2-14-23
END : 2-14-23
DRILLER : DTCI
INSPECTOR : J. Harris

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number	Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			2 1-2	S-1		0.0 1.5	13"		Brown, moist, very soft to stiff, Silty CLAY (cl-ml)
			3 6-8	S-2		2.0 3.5	18"		
5			4 3-5	S-3		3.5 5.0	16"	162.0 5.0	
10									
15									

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-9
		31+	Hard	- See Remarks	

Feb 21, 23

TEST BORING LOG — BORING SB-10

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
8/10/23	0 Hr	Dry		3	Size I.D.:	4-1/4"	2"	
8/11/23	24 Hr	Dry		2.9	Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING : 501803
EASTING : 1415841
ELEVATION : 98
DATE START : 8-10-23
END : 8-10-23
DRILLER : DTCI
INSPECTOR : C. Stouten

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number	Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			2 2-1 2	S-1		0.0 2.0	0	97.7 0.3	Topsoil
									Brown, moist to wet, very loose to loose, Silty SAND (sm), trace organics
			5 5-4 5	S-2		2.0 4.0	0		trace silt and clay
5			2 1-2 2	S-3		4.0 6.0	24"		
			1 0-1 1	S-4		6.0 8.0	24"		Groundwater on rods @ 7 ft
			0 0-1 2	S-5		8.0 10.0	21"		
10								88.0 10.0	
15									

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-10
		31+	Hard	- See Remarks	

Aug 15, 23

TEST BORING LOG — BORING SB-11

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
8/10/23	0 Hr	Dry		1.2	Size I.D.:	4-1/4"	2"	
					Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING : 501771
EASTING : 1416036
ELEVATION : 109
DATE START : 8-10-23
END : 8-10-23
DRILLER : DTCI
INSPECTOR : C. Stouten

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number	Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			4 3-3	S-1		0.0 1.5	16"	108.7 0.3	Topsoil
								108.3 0.7	Sand and Gravel base
			2 1-1	S-2		2.0 3.5	12"		Brown, moist, very loose to loose, Silty SAND (sm), trace organics and Gravel
5			2 1-3	S-3		3.5 5.0	18"	104.0 5.0	
10									
15									

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-11
		31+	Hard	- See Remarks	

Aug 15, 23

TEST BORING LOG — BORING SB-12

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
8/10/23	0 Hr	Dry		1.3	Size I.D.:	4-1/4"	2"	
					Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING : 501602
EASTING : 1416152
ELEVATION : 117
DATE START : 8-10-23
END : 8-10-23
DRILLER : DTCI
INSPECTOR : C. Stouten

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number	Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			3 5-3	S-1		0.0 1.5	14"	116.7 0.3	Topsoil
								116.3 0.7	Sand and Gravel base
			1 2-1	S-2		2.5 4.0	16"		Dark brown to brown, moist, loose to very loose, Silty SAND (sm)
5			2 1-2	S-3		4.0 5.5	18"	111.5 5.5	
10									
15									

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-12
		31+	Hard	- See Remarks	

Aug 15, 23

TEST BORING LOG — BORING SB-13

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
8/10/23	0 Hr	Dry		1.2	Size I.D.:	4-1/4"	2"	
					Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING : 501445
EASTING : 1416271
ELEVATION : 125
DATE START : 8-10-23
END : 8-10-23
DRILLER : DTCI
INSPECTOR : C. Stouten

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number	Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			4 5-7	S-1		0.0 1.5	10"	124.7 0.3	Topsoil
								124.2 0.8	Sand and Gravel base
			7 7-7	S-2		1.5 3.0	13"		Orange-brown, moist, loose to medium dense, Silty SAND (sm), trace Gravel
5			7 7-9	S-3		3.0 4.5		120.5 4.5	
10									
15									

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-13
		31+	Hard	- See Remarks	

Aug 15, 23

TEST BORING LOG — BORING SB-14

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
8/10/23	0 Hr	Dry		1.4	Size I.D.:	4-1/4"	2"	
					Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING : 501304
EASTING : 1416365
ELEVATION : 135
DATE START : 8-10-23
END : 8-10-23
DRILLER : DTCI
INSPECTOR : C. Stouten

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number	Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			4 5-6	S-1		0.0 1.5	10"	134.7 0.3	Topsoil
								134.2 0.8	Sand and Gravel base
			3 2-2	S-2		2.5 4.0	14"		Brown to gray, moist, medium dense to very loose, Silty SAND (sm)
5			1 1-4	S-3		4.0 5.5	15"	129.5 5.5	
10									
15									

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-14
		31+	Hard	- See Remarks	

Aug 15, 23

TEST BORING LOG — BORING SB-15

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
8/10/23	0 Hr	Dry		1.5	Size I.D.:	4-1/4"	2"	
					Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING : 501117
EASTING : 1416484
ELEVATION : 142
DATE START : 8-10-23
END : 8-10-23
DRILLER : DTCI
INSPECTOR : C. Stouten

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number	Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			8 4-4	S-1		0.0 1.5	16"	141.7 0.3	Topsoil
								141.3 0.7	Sand and Gravel base
			2 2-2	S-2		1.5 3.0	16"		Brown to light brown, moist, loose to very loose, Silty SAND (sm)
5			4 4-5	S-3		3.0 4.5	20"	137.5 4.5	
10									
15									

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-15
		31+	Hard	- See Remarks	

Aug 15, 23

TEST BORING LOG — BORING SB-16

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:			EQUIPMENT	CASING	SAMPLER	CORE
Date	Time	Water	Casing	Hole	Type:	HSA	S	
8/10/23	0 Hr	Dry		1.2	Size I.D.:	4-1/4"	2"	
					Hammer Wt.:		140	----
					Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING : 500984
EASTING : 1416575
ELEVATION : 144
DATE START : 8-10-23
END : 8-10-23
DRILLER : DTCI
INSPECTOR : C. Stouten

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number	Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			3 3-6	S-1		0.0 1.5	15"	143.7 0.3	Topsoil
			6 4-5	S-2		1.5 3.0	18"		Orange-brown, moist, loose, Silty SAND (sm)
5			3 4-5	S-3		3.0 4.5	16"	139.5 4.5	
10									
15									

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-16
		31+	Hard	- See Remarks	

Aug 15, 23

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE AS SHOWN
DRAWN BY LMV/RDT
CHECKED BY MJP
SHEET 28 OF 52
PROJECT NO.: P588001
DATE: 2/7/2024

DESIGN DEVELOPMENT

Soil Boring Logs

Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

T:\2023\facilities\2025523T001a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\2025523T001A (GD-22) Soil Boring Logs.dwg Feb 14, 2024 2:29pm kdanley

TEST BORING LOG — BORING SB-17

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:		
Date	Time	Water	Casing	Hole
8/10/23	0 Hr	Dry		2.3

EQUIPMENT	CASING	SAMPLER	CORE
Type:	HSA	S	
Size I.D.:	4-1/4"	2"	
Hammer Wt.:		140	----
Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING : 500782
EASTING : 1416704
ELEVATION : 147
DATE START : 8-10-23
END : 8-10-23
DRILLER : DTCI
INSPECTOR : C. Stouten

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			1 2-3	S-1	0.0 1.5	16"		Brown, moist, very loose, Silty SAND (sm)
			1 0-1	S-2	2.5 4.0	17"		trace organics
			1 1-2	S-3	4.0 5.5	19"	141.5 5.5	

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-17
		31+	Hard	- See Remarks	

Aug 15, 23

TEST BORING LOG — BORING SB-18

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:		
Date	Time	Water	Casing	Hole
8/10/23	0 Hr	Dry		1.4

EQUIPMENT	CASING	SAMPLER	CORE
Type:	HSA	S	
Size I.D.:	4-1/4"	2"	
Hammer Wt.:		140	----
Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING : 500599
EASTING : 1416799
ELEVATION : 155
DATE START : 8-10-23
END : 8-10-23
DRILLER : DTCI
INSPECTOR : C. Stouten

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			2 1-2	S-1	0.0 1.5	17"		Light brown, moist, very loose to loose, Silty SAND (sm)
			2 2-3	S-2	1.5 3.0	18"		
			2 3-4	S-3	3.0 4.5	18"	150.5 4.5	

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-18
		31+	Hard	- See Remarks	

Aug 15, 23

TEST BORING LOG — BORING SB-19

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:		
Date	Time	Water	Casing	Hole
8/10/23	0 Hr	Dry		1.5

EQUIPMENT	CASING	SAMPLER	CORE
Type:	HSA	S	
Size I.D.:	4-1/4"	2"	
Hammer Wt.:		140	----
Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING : 500432
EASTING : 1416929
ELEVATION : 164
DATE START : 8-10-23
END : 8-10-23
DRILLER : DTCI
INSPECTOR : C. Stouten

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			2 4-3	S-1	0.0 1.5	13"	163.7 0.3	Topsoil
			3 3-3	S-2	1.5 3.0	15"	163.3 0.7 / 161.8 2.2	Sand and Gravel base / Brown, moist, loose, Clayey SAND (sc)
			3 4-6	S-3	3.0 4.5	18"	159.5 4.5	Brown, moist, loose, Silty SAND (sm)

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-19
		31+	Hard	- See Remarks	

Aug 15, 23

TEST BORING LOG — BORING SB-20

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:		
Date	Time	Water	Casing	Hole
8/10/23	0 Hr	Dry		1.5

EQUIPMENT	CASING	SAMPLER	CORE
Type:	HSA	S	
Size I.D.:	4-1/4"	2"	
Hammer Wt.:		140	----
Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 1
NORTHING : 500251
EASTING : 1416942
ELEVATION : 168
DATE START : 8-10-23
END : 8-10-23
DRILLER : DTCI
INSPECTOR : C. Stouten

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			5 3-4	S-1	0.0 1.5	12"	167.8 0.2	Topsoil
							167.7 0.3	Sand and Gravel base
			3 3-3	S-2	2.5 4.0	10"		Brown, moist, loose, Silty SAND (sm)
			4 3-5	S-3	4.0 5.5	13"	162.5 5.5	trace c Gravel

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-20
		31+	Hard	- See Remarks	

Aug 15, 23

TEST BORING LOG — BORING SB-21

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:		
Date	Time	Water	Casing	Hole
8/11/23	0 Hr	Dry		9.5

EQUIPMENT	CASING	SAMPLER	CORE
Type:	HSA	S	
Size I.D.:	4-1/4"	2"	
Hammer Wt.:		140	----
Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 2
NORTHING : 500946
EASTING : 1416318
ELEVATION : 142
DATE START : 8-11-23
END : 8-11-23
DRILLER : DTCI
INSPECTOR : C. Stouten

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			2 1-2	S-1	0.0 1.5	14"	141.4 0.6	Topsoil
								Brown, moist to wet, very loose to loose, Silty SAND (sm), trace organics
			1 1-1	S-2	2.5 4.0	20"		
			2 1-2	S-3	5.0 6.5	17"		
			1 1-2	S-4	7.5 9.0	18"		light brown to gray
			1 1-1	S-5	10.0 11.5	18"		
			2 2-2	S-6	13.5 15.0	12"		
			4 4-6	S-7	18.5 20.0	16"		dark brown

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-21
		31+	Hard	- See Remarks	

Aug 15, 23

TEST BORING LOG — BORING SB-21

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACT NO: 00181120.09
SHEET NO. : 2 of 2

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			1 2-3	S-8	23.5 25.0	18"		dark gray
								Groundwater on rods @ 27 ft
			1 1-2	S-9	28.5 30.0	18"	112.0 30.0	

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-21
		31+	Hard	- See Remarks	

Aug 15, 23

TEST BORING LOG — BORING SB-22

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACTOR : DTCI

GROUNDWATER		DEPTH (ft) OF:		
Date	Time	Water	Casing	Hole
8/11/23	0 Hr	Dry		7

EQUIPMENT	CASING	SAMPLER	CORE
Type:	HSA	S	
Size I.D.:	4-1/4"	2"	
Hammer Wt.:		140	----
Hammer Fall:		30	----

CONTRACT NO.: 00181120.09
SHEET NO. : 1 of 2
NORTHING : 500933
EASTING : 1416294
ELEVATION : 140
DATE START : 8-11-23
END : 8-11-23
DRILLER : DTCI
INSPECTOR : C. Stouten

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			1 1-2	S-1	0.0 1.5	15"	139.7 0.3	Topsoil
								Brown, moist to wet, very loose to medium dense, Silty SAND (sm), trace organics
			1 1-1	S-2	2.5 4.0	18"		trace organics
			3 2-1	S-3	5.0 6.5	15"		
			2 1-3	S-4	7.5 9.0	15"		
			1 0-1	S-5	10.0 11.5	6"		
			4 6-9	S-6	13.5 15.0	18"		dark gray
			1 2-3	S-7	18.5 20.0	18"		Groundwater on rods @ 18 ft

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-22
		31+	Hard	- See Remarks	

Aug 15, 23

TEST BORING LOG — BORING SB-22

CENTURY ENGINEERING

PROJECT : Bacon Ridge
CLIENT : Anne Arundel County
CONTRACT NO: 00181120.09
SHEET NO. : 2 of 2

Depth in Feet	Strata Change	Case BPF (Drill) (min/ft)	Sampler Blows Per 6" (RQD%)	Sample Number Type	Sample Depth Range (ft)	Sample Recovery (in)	Elevation/ Depth (ft)	FIELD CLASSIFICATION AND REMARKS
			2 1-2	S-8	23.5 25.0	18"		
			2 2-4	S-9	28.5 30.0	18"	110.0 30.0	

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE IDENTIFICATION	SUMMARY
0-5	Very Loose	0-3	Very Soft	- S - Split Spoon	Overburden:
6-10	Loose	4-5	Soft	- T - Thin Wall Tube	Rock:
11-30	Medium Dense	6-10	Medium Stiff	- U - Undisturbed Piston	Samples:
31-50	Dense	11-15	Stiff	- C - Diamond Core	
51+	Very Dense	16-30	Very Stiff	- W - Wash Sample	BORING SB-22
		31+	Hard	- See Remarks	

Aug 15, 23

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED	
DATE	BY

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE AS SHOWN
DRAWN BY LMV/RDT
CHECKED BY MJP
SHEET 29 OF 52
PROJECT NO.: P588001
DATE: 2/7/2024

DESIGN DEVELOPMENT

Soil Boring Logs

Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

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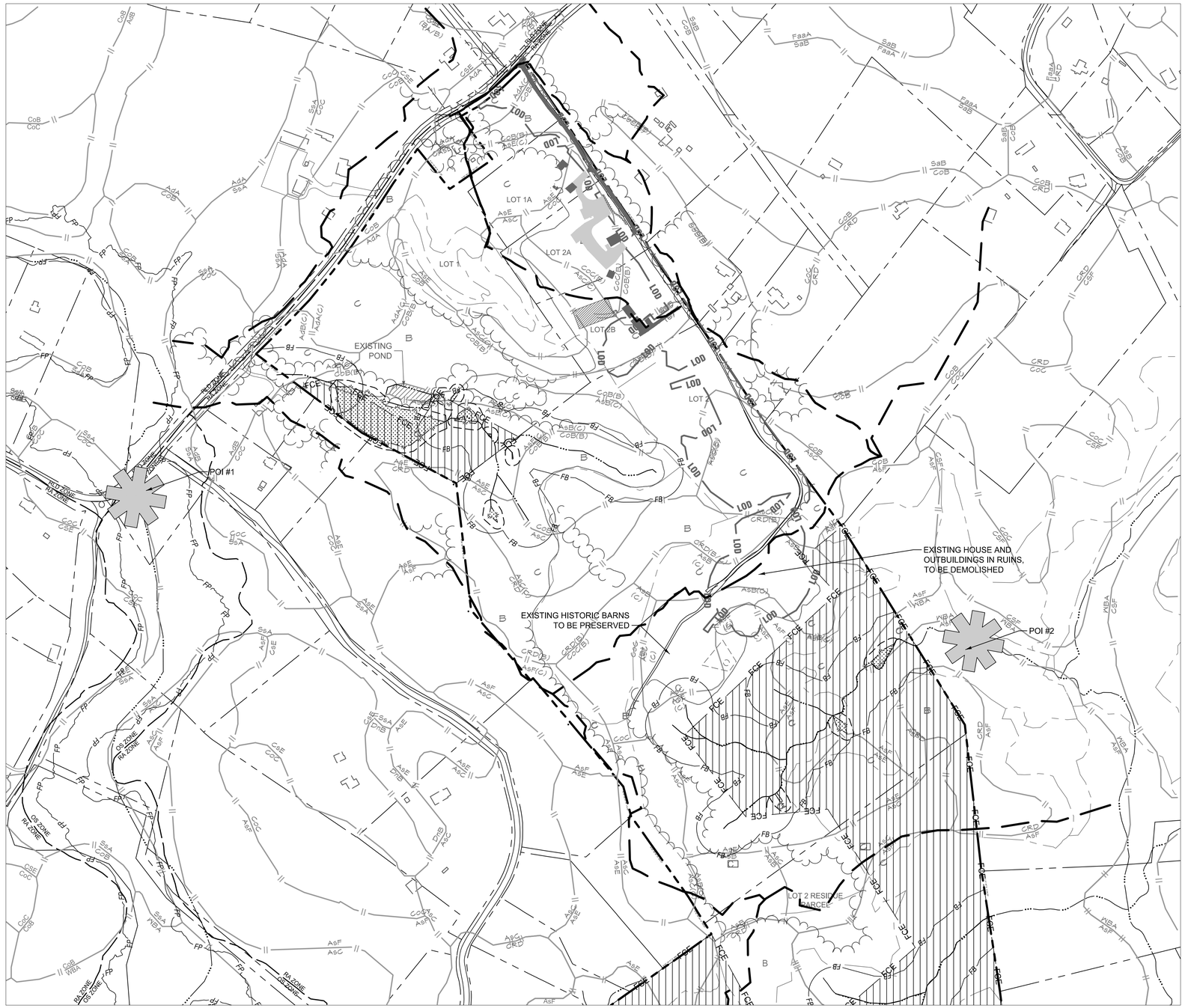

LEGEND

- Property Line
- Adjoiner / Lot Line
- Existing Minor Contour (676)
- Existing Major Contour (670)
- Existing Edge of Road/Paving
- Soil Line (UuB (D), UuC (D))
- Existing Storm Drain (SD, EX 15" D)
- Existing Water (W, EX 12" W)
- Existing Sewer (SAN, EX 8" S)
- Existing Gas Line (G, EX 8" G)
- Existing Underground Electric Line (E)
- Existing Overhead Electric Line (OHE)
- Existing Conduit Line (C)
- Existing Fiber Optic Line (FO)
- Existing Cable Line (CTV)
- Existing Telephone Line (T)
- Existing Chain Link Fence
- Existing Split Rail Fence
- Existing Trail
- Existing Tree Line
- Existing Building
- Non-Tidal Wetlands and 25' Buffer
- 100' Stream Buffer (FB)
- FEMA 100-Year Flood Plain (FP)
- Chesapeake Bay Critical Area Limits
- Water Edge or Stream Centerline
- Zoning Line

PLAN

SCALE: 1" = 200'

CENTURY ENGINEERING
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DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE	SCALE AS SHOWN	DESIGN DEVELOPMENT
		CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY KAD	SWM Existing Conditions DA Map
		APPROVED DATE	APPROVED DATE	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 30 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

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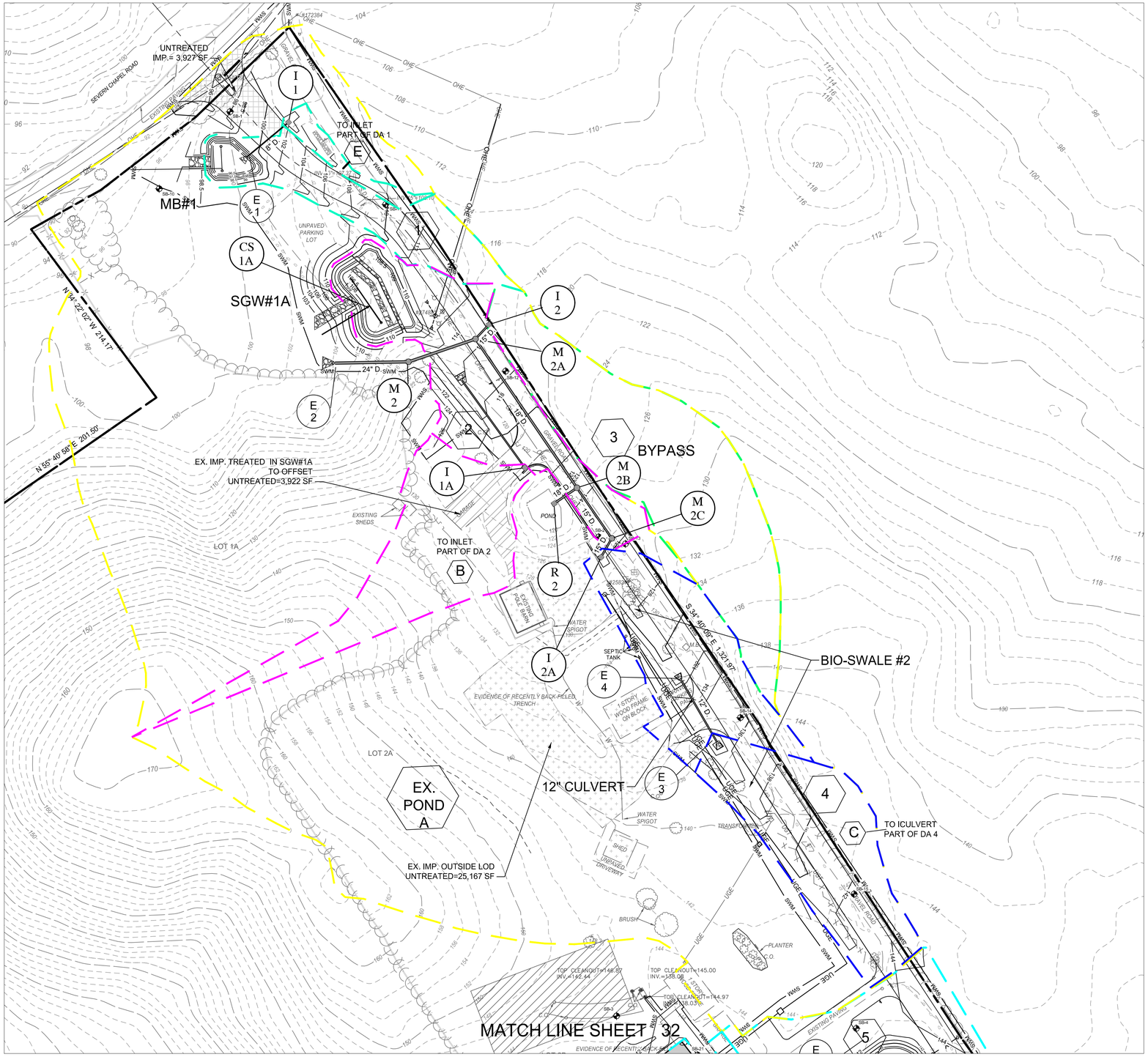

LEGEND

- Property Line
- Adjoiner / Lot Line
- Existing Minor Contour (676)
- Existing Major Contour (670)
- Existing Edge of Road/Paving
- Soil Line (UuB (D) / UuC (D))
- Existing Storm Drain (SD — EX. 15" D.)
- Existing Water (W — EX. 12" W.)
- Existing Sewer (SAN — EX. 6" S.)
- Existing Gas Line (G — EX. 6" G.)
- Existing Underground Electric Line (E)
- Existing Overhead Electric Line (OHE)
- Existing Conduit Line (C)
- Existing Fiber Optic Line (FO)
- Existing Cable Line (CTV)
- Existing Telephone Line (T)
- Existing Chain Link Fence
- Existing Split Rail Fence
- Existing Trail
- Existing Tree Line
- Existing Building
- Non-Tidal Wetlands and 25' Buffer
- 100' Stream Buffer (FB)
- FEMA 100-Year Flood Plain (FP)
- Chesapeake Bay Critical Area Limits
- Water Edge or Stream Centerline
- Zoning Line

DRAINAGE AREA MAP

SCALE: 1" = 50'

CENTURY ENGINEERING
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10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE	SCALE AS SHOWN	DESIGN DEVELOPMENT
		CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY KAD	SWM Proposed Conditions DA Map
		APPROVED DATE	APPROVED DATE	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 31 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District, Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

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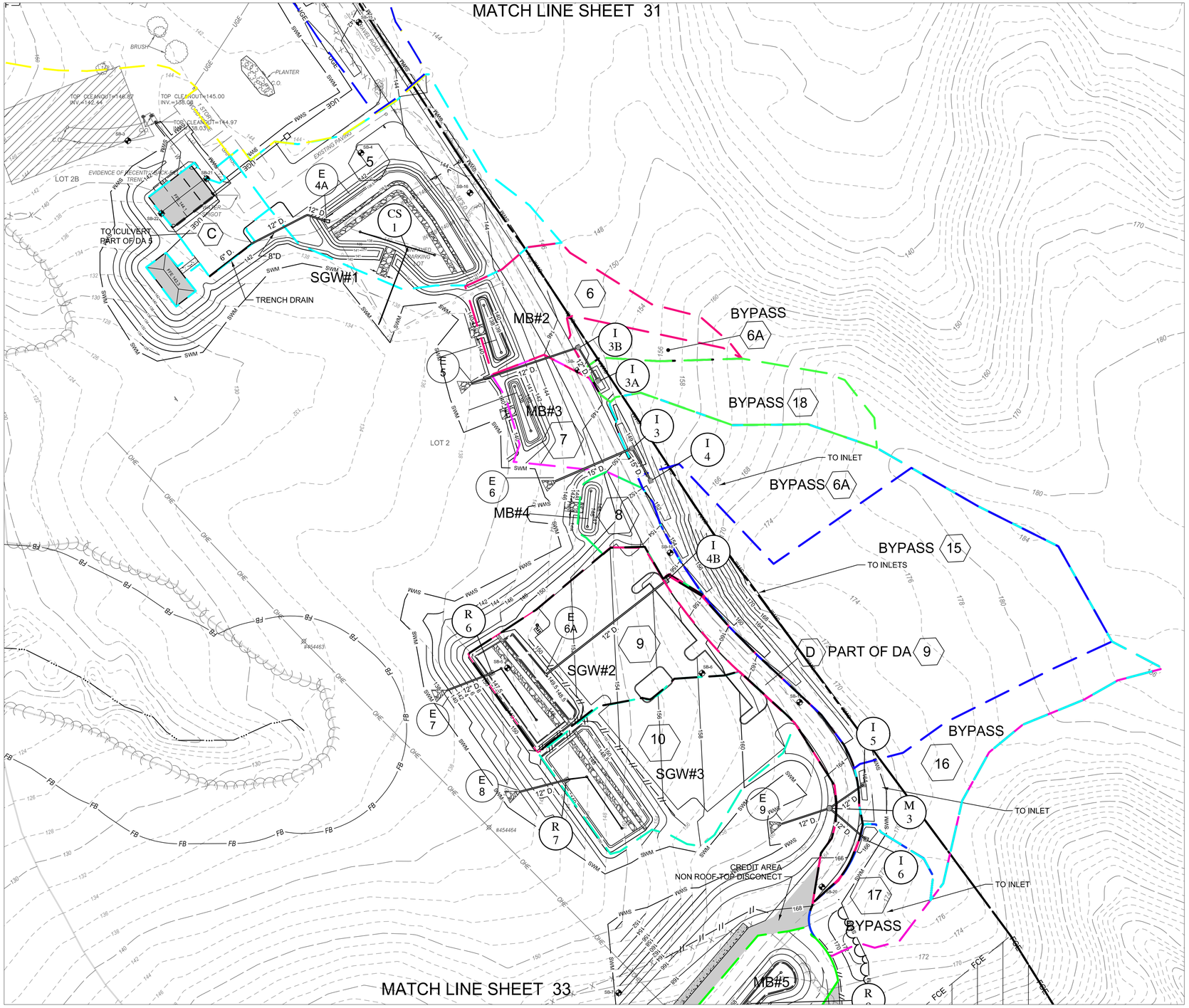

STORM DRAIN DRAINAGAE AREAS

INLET	DA	ACRES	C
I-1	E	0.06	.35
I-2A	4	0.95	.49
R-2	A	3.38	.44
I-2	3	0.80	.35
I-1A	B	0.51	43
I-4	15	1.62	.35
I-3	19	0.32	.35
I-5	16	0.42	.35
I-6	17	0.20	.35
I-7	13	0.08	.65
I-8	14	0.38	.65
I-3A	18	0.32	.35
I-3B	6A	0.10	.35
I-4B	19	0.20	.90
TRENCH	C	0.20	.90

LEGEND

- Property Line
- Adjoiner / Lot Line
- Existing Minor Contour (676)
- Existing Major Contour (670)
- Existing Edge of Road/Paving
- Soil Line (UuB (D), UuC (D))
- Existing Storm Drain (SD, EX. 15" D)
- Existing Water (W, EX. 12" W)
- Existing Sewer (SAN, EX. 8" S)
- Existing Gas Line (G, EX. 8" G)
- Existing Underground Electric Line (E)
- Existing Overhead Electric Line (OHE)
- Existing Conduit Line (C)
- Existing Fiber Optic Line (FO)
- Existing Cable Line (CTV)
- Existing Telephone Line (T)
- Existing Chain Link Fence
- Existing Split Rail Fence
- Existing Trail
- Existing Tree Line
- Existing Building
- Non-Tidal Wetlands and 25' Buffer
- 100' Stream Buffer (FB)
- FEMA 100-Year Flood Plain (FP)
- Chesapeake Bay Critical Area Limits
- Water Edge or Stream Centerline
- Zoning Line

LOCATION		AREA	ACRES		COEFF.	CA	SUMP CA	Σ CA	TIME CONC. MIN.			INTEN. "I" Adjusted	INTEN. "I" 10 Year	Q=C.I.A. C.F.S.	PIPE n = .013 Size	Slope	Vel.	Lgth.	REMARKS
From	To		Sub.	Total	"C"				Inlet	Drain	Total								
I2A	M2B	4	0.95		.49	0.47	0.00		5.0		5.0	8.00	7.00	3.76	15 "	0.34%	3.1	79 '	20 YR/10 YR
R-2	M2B	A	3.38		.44	1.49	0.00		10.0		10.0	6.95	6.10	10.36	18 "	0.97%	5.9	'	20 YR/10 YR
						0.00	0.00				0.0	.00	0.00	.00	"			'	
M2B	M2A	4+A		4.33				1.96	10.0	0.0	10.0	.00	6.10	11.96	15 "	3.43%	9.7	55 '	
I2	M2A	3	0.80		.35	0.28	0.00		10.0		10.0	6.95	6.10	1.95	15 "	0.09%	1.6	19 '	20 YR/10 YR
						0.00	0.00				0.0	.00	0.00	.00	"			'	
M2A	E2	3,4A		5.13				2.24	5.0	0.2	5.2	.00	6.96	15.60	24 "	0.48%	5.0	141 '	
						0.00	0.00				0.0	.00	0.00	.00	"			'	
	11A	B	0.51		.43	0.22	0.00		5.0		5.0	.00	7.00	1.54	"			'	
I1A	E1A			.51			0.00	0.22	5.0	0.0	5.0	.00	7.00	1.54	12 "	0.19%	2.0	102 '	
						0.00	0.00				0.0	.00	0.00	.00	"			'	
E-3	E-4	C	0.50		.65	0.33	0.00		5.0		5.0	.00	7.00	2.31	12 "	0.42%	2.9	68 '	
E-3	E-4	C		.50				0.33	5.0	0.4	5.4	.00	6.93	2.29	"			'	
I4	I-3	15	1.62		.35	0.57	0.00		10.0		10.0	.00	6.10	3.48	15 "	0.29%	2.8	37 '	
-	I-3	19	0.32		.35	0.11	0.00		5.0		5.0	8.00	7.00	.88	"			'	20 YR/10 YR
I-3	E6	15		1.94				0.68	10.0	0.2	10.2	.00	6.06	4.12	15 "	0.41%	3.4	82 '	
						0.00	0.00		5.0		5.0	.00	7.00	.00	"			'	
						0.00	0.00				0.0	.00	0.00	.00	"			'	
				.00				0.00	5.0	0.0	5.0	.00	7.00	.00	15 "	0.00%	.0	54 '	
I-5	M-3	16	0.42		.35	0.15	0.00		5.0		5.0	8.00	7.00	1.20	12 "	0.11%	1.5	41 '	20 YR/10 YR
I-6	M-3	17	0.20		.35	0.07	0.00		5.0		5.0	8.00	7.00	.56	12 "	0.02%	.7	47 '	20 YR/10 YR
M-3	E-9	17		.62				0.22	5.0	1.1	6.1	.00	6.80	1.50	12 "	0.18%	1.9	49 '	
I-8	M-4	14	0.38		.65	0.25	0.00		5.0		5.0	.00	7.00	1.75	12 "	0.24%	2.2	67 '	
I-7	M-4	13	0.08		.65	0.05	0.00		5.0		5.0	.00	7.00	.35	12 "	0.01%	.4	58 '	
M-4	E-4	13+14		.46				0.30	5.0	2.2	7.2	.00	6.60	1.98	15 "	0.09%	1.6	15 '	
						0.00	0.00				0.0	.00	0.00	.00	"			'	
						0.00	0.00				0.0	.00	0.00	.00	"			'	
				.00				0.00	7.2	0.2	7.4	.00	6.57	.00	"			'	
13A	13B	18	0.32		.35	0.11	0.00		5.0		5.0	8.00	7.00	.88	12 "	0.06%	1.1	107 '	20 YR/10 YR
	13B	6A	0.10		.35	0.04	0.00		5.0		5.0	.00	7.00	.28	"			'	
13B	I-5	18+6A		.42				0.15	5.0	1.6	6.6	.00	6.71	1.01	12 "	0.08%	1.3	110 '	
I4B	E6A	19	0.20		.90	0.18	0.00		5.0		5.0	.00	7.00	1.26	12 "	0.13%	1.6	148 '	
						0.00	0.00		10.0		10.0	.00	6.10	.00	"			'	
				.20				0.18	10.0	0.0	10.0	.00	6.10	1.10	"			'	
I-7	M4	13	0.39		.35	0.14	0.00		5.0		5.0	.00	7.00	.98	12 "	0.08%	1.2	55 '	
I-8	M4	14	0.11		.35	0.04	0.00		5.0		5.0	.00	7.00	.28	12 "	0.01%	.4	60 '	
M4	E11	13+14		.50				0.18	5.0	2.8	7.8	.00	6.50	1.17	12 "	0.11%	1.5	27 '	
						0.00	0.00		5.0		5.0	.00	7.00	.00	"			'	
						0.00	0.00				0.0	.00	0.00	.00	"			'	
				.00				0.00	5.0	0.0	5.0	.00	7.00	.00	"			'	
R-8	R-9	11	0.36		.73	0.26	0.00		5.0		5.0	8.00	7.00	2.08	12 "	0.34%	2.6	234 '	20 YR/10 YR
-	R-9	12	0.46		.58	0.27	0.00		5.0		5.0	8.00	7.00	2.16	"			'	20 YR/10 YR
R-9	E-11	11+12		.82				0.53	5.0	1.5	6.5	.00	6.73	3.57	15 "	0.30%	2.9	159 '	
I1	E1	E	0.06		.35	0.02	0.00		5.0		5.0	8.00	7.00	.16	8 "	0.02%	.5	51 '	20 YR/10 YR
						0.00	0.00				0.0	.00	0.00	.00	"			'	

DRAINAGE AREA MAP

SCALE: 1" = 50'

CENTURY ENGINEERING
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10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

REVISED	
DATE	BY

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE AS SHOWN
DRAWN BY KAD
CHECKED BY MJP
SHEET 32 OF 52
PROJECT NO.: P588001
DATE: 2/7/2024

DESIGN DEVELOPMENT

SWM Proposed Conditions DA Map

Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

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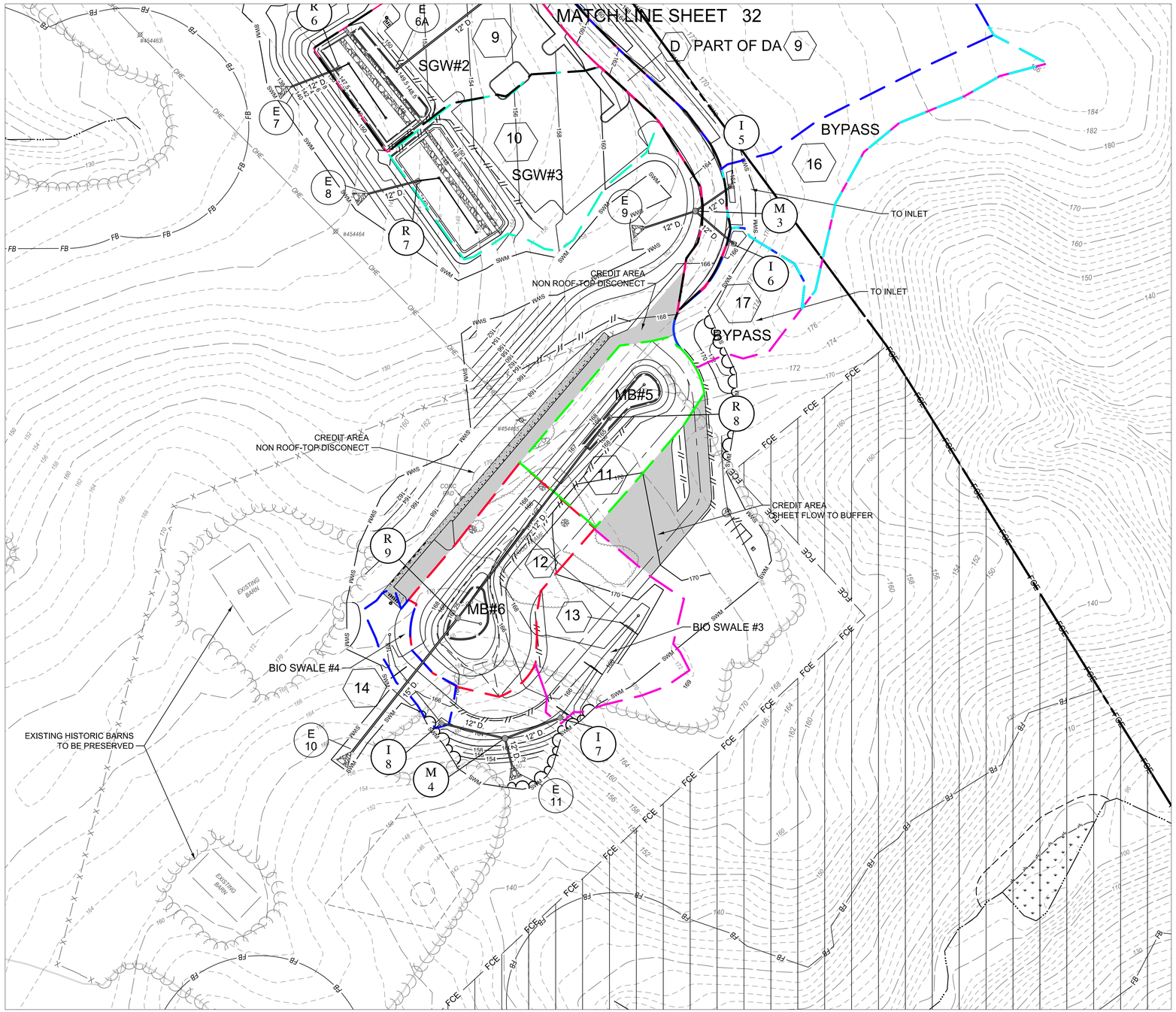

DRAINAGE AREA MAP

SCALE: 1" = 50'

ESD FACILITY SUMMARY TABLE

DA #	FACILITY TYPE	DA-SF	IMPERVIOUS AREA-SF	REQ.ESD VOLUME-CF	ACTUAL FACILITY VOLUME	ACTUAL 75% = TREATED VOLUME*	DESIGN PE	PE TREATED
1	MICRO-BIO #1	16,446	5,246	726	1,136	1,224	1.57	2.65
2	SUBMERGED GRAVEL WETLAND #1A	42,256	10,546	1,547	2,442	3,256	1.60	2.53
4	BIO-SWALE #2	41,328	9,578	1,247	2,360	2360*	1.40	2.65
5	SUBMERGED GRAVEL WETLAND #1	43,128	19,230	2,911	3,783	3,783	1.80	2.33
6	MICRO-BIO #2	15,249	2,842	277	1130	733	1.00	2.65
7	MICRO-BIO #3	10,627	2,963	392	931	706	1.47	2.65
8	MICRO-BIO #4	5,674	2,503	380	423	560	1.60	2.65
9	SUBMERGED GRAVEL WETLAND #2	36,117	26,159	4,213	3,982	3,982	2.00	1.90
10	SUBMERGED GRAVEL WETLAND #3	27,441	14,704	1,845	1,939	2,528	1.60	2.08
11	MICRO-BIO #5	15,534	9,790	1,154	1,473	2,072	1.60	2.65
12	MICRO-BIO #6	20,216	7,889	1,076	1,576	1,791	1.80	2.65
13	BIO-SWALE #3	16,960	7,489	1,138	1,211	1,615	1.80	2.55
14	BIO-SWALE #4	4,363	1,657	250	1,047	378*	1.80	2.65
		415,935	120,596	17,156	23,433	22,250		

* BASED ON MAX PE=2.65

TARGET PE=1.0 BASED ON TOTAL PARK SITE=152.0 AC.
PE REQUIRED BASED ON DA AND % IMPERVIOUS TO EACH BMP
EXISTING IMPERVIOUS AREA=49,830 SF (1.59 ACRES)
TOTAL PROPOSED IMPERVIOUS AREA=154,638 SF (3.55 ACRES)
SWM LOD=9.9 ACRES
PROPOSED IMPERVIOUS AREA IN LOD=2.92 ACRES
IMPERVIOUS AREA TREATED IN BMP= 120,596 SF
NON-ROOF TOP DISCONNECT CREDIT
IMPERVIOUS AREA= 10,775 SF
SHEET FLOW TO BUFFER CREDIT
IMPERVIOUS AREA =6,706 SF
TOTAL IMPERVIOUS AREA TREATED=138,077 SF (3.17 ACRES)
IMPERVIOUS AREA UNTREATED IN EX. SWALE= 3,927 SF (0.09 AC.)*

* 0.09 ACRES OF EXISTING IMPERVIOUS AREA PREVIOUSLY DRAINING TO EXISTING ON-SITE POND TRAETED TO OFFSET THE INTREATED IMOERVIOUS AT THE ENTRANCE.

CENTURY ENGINEERING
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Phone: 443.589.2400 www.centuryeng.com

DATE: _____

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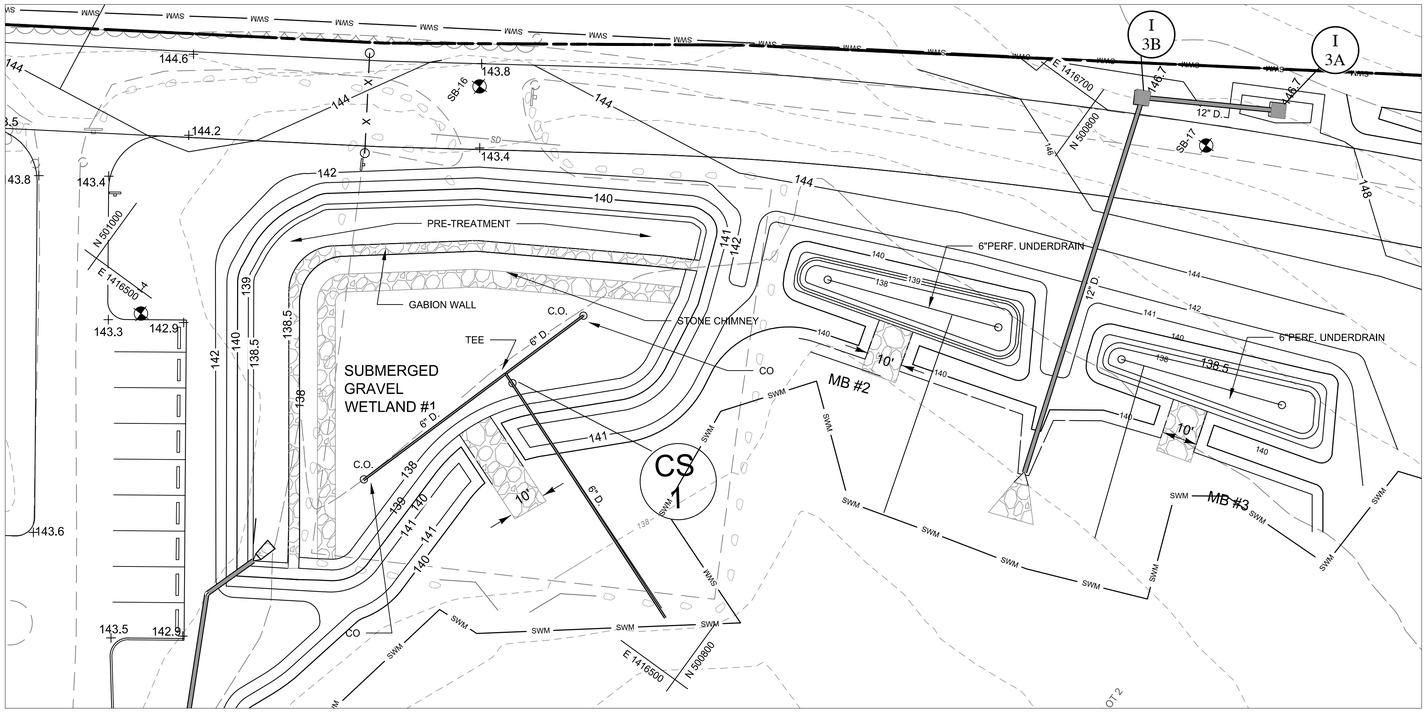
ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

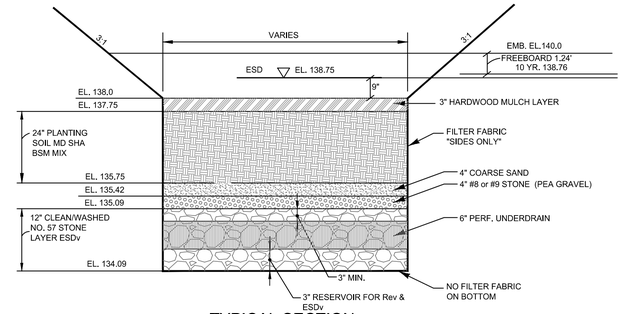
REVISED DATE	BY	APPROVED DATE	APPROVED DATE	SCALE AS SHOWN	DESIGN DEVELOPMENT
		CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY KAD	SWM Proposed Conditions DA Map
		APPROVED DATE	APPROVED DATE	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 33 OF 52	2nd Tax District, Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86
				PROJECT NO.: P588001	
				DATE: 2/7/2024	

T:\2023\facilities\20235237.001a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\20235237.001A(CD-25-27)SWM & SD Prop DA.dwg Feb 14, 2024 2:29pm kdarley



SUBMERGED GRAVEL WETLAND #1(M-2), MICRO-BIORETENTION #2 & #3 (M-6)

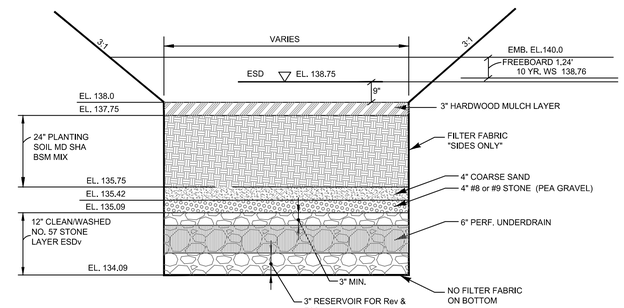
SCALE: 1" = 20'
0 20' 40'



TYPICAL SECTION

MICRO BIORETENTION 2

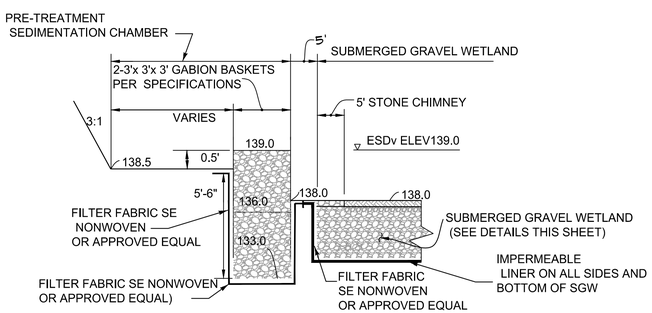
NOT TO SCALE



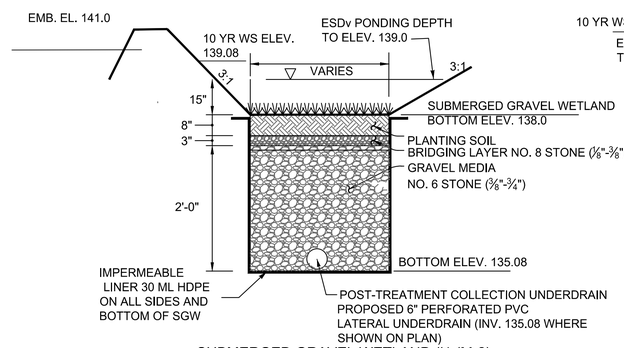
TYPICAL SECTION

MICRO BIORETENTION 3

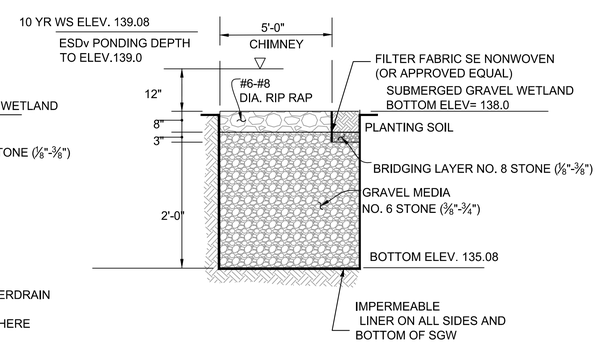
NOT TO SCALE



SUBMERGED GRAVEL WETLAND #1 (M-2)
SEDIMENTATION CHAMBER CROSS SECTION
NOT TO SCALE



SUBMERGED GRAVEL WETLAND #1 (M-2)
CROSS-SECTION
NOT TO SCALE



STONE CHIMNEY #1 DETAIL
NOT TO SCALE

NOTE: AREAS ADJACENT TO SWM TO BE SODDED AS DIRECTED AT TIME OF CONSTRUCTION

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE	SCALE AS SHOWN	DESIGN DEVELOPMENT
		CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY LMV/RDT	SWM Facilities
		APPROVED DATE	APPROVED DATE	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 34 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

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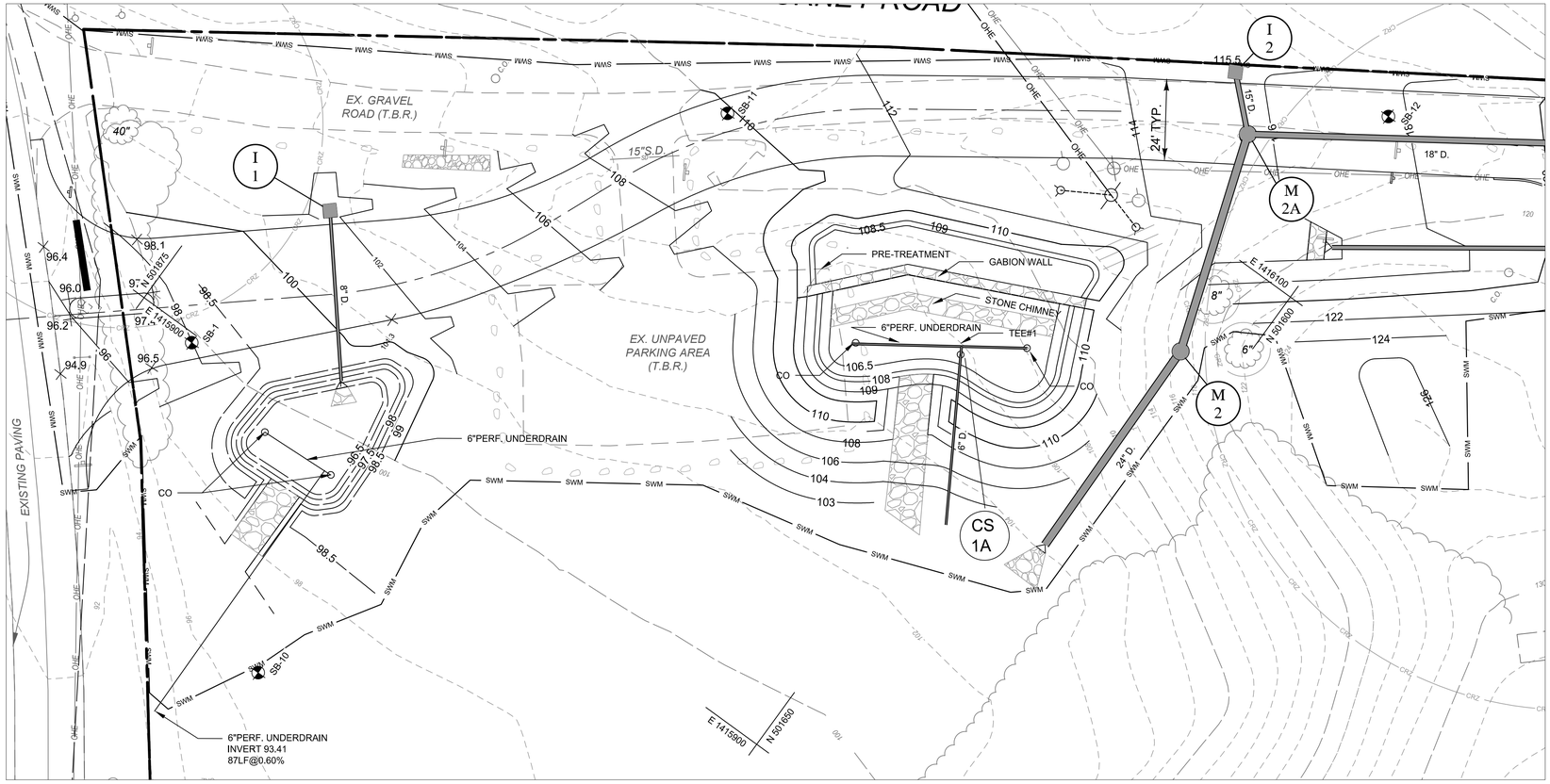
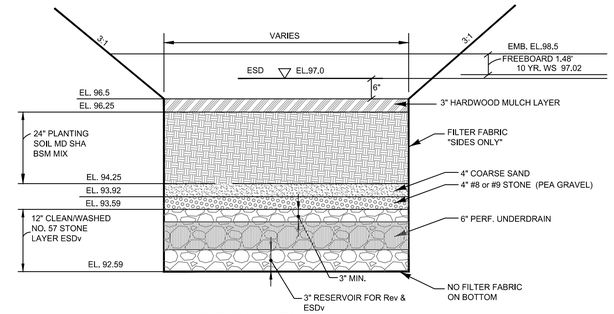


MICRO-BIORETENTION #1(M-6)

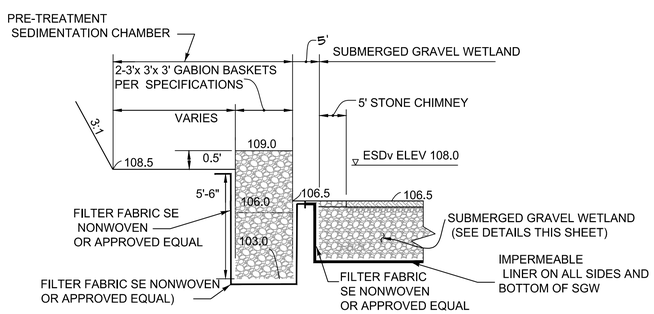
SCALE: 1" = 20'
0 20' 40'



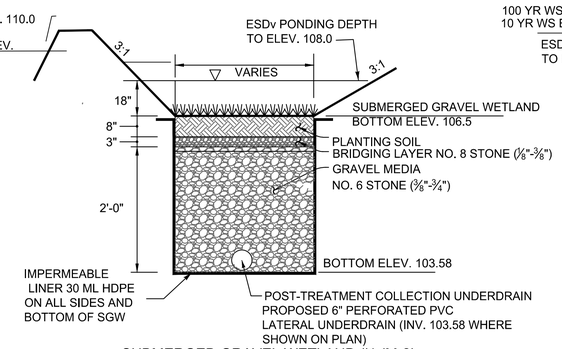
TYPICAL SECTION
MICRO BIORETENTION 1
NOT TO SCALE

SUBMERGED GRAVEL WETLAND #1A(M-2),

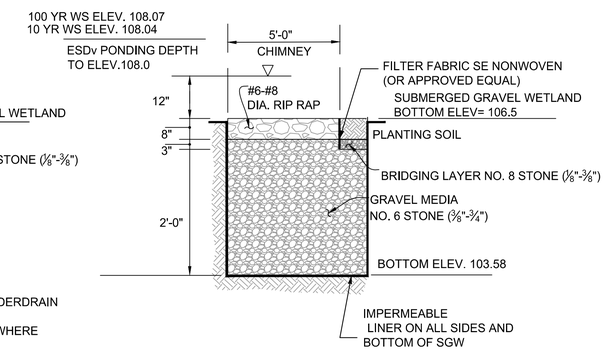
SCALE: 1" = 20'
0 20' 40'



SUBMERGED GRAVEL WETLAND #1 A (M-2)
SEDIMENTATION CHAMBER CROSS SECTION
NOT TO SCALE



SUBMERGED GRAVEL WETLAND #1 (M-2)
CROSS-SECTION
NOT TO SCALE



STONE CHIMNEY #1 DETAIL
NOT TO SCALE

CENTURY ENGINEERING
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10710 Gilroy Road, Hunt Valley, MD 21031
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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE		
		CHIEF ENGINEER	PROJECT MANAGER	SCALE AS SHOWN	DESIGN DEVELOPMENT
		APPROVED DATE	APPROVED DATE	DRAWN BY LMV/RDT	SWM Facilities
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
				SHEET 35 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

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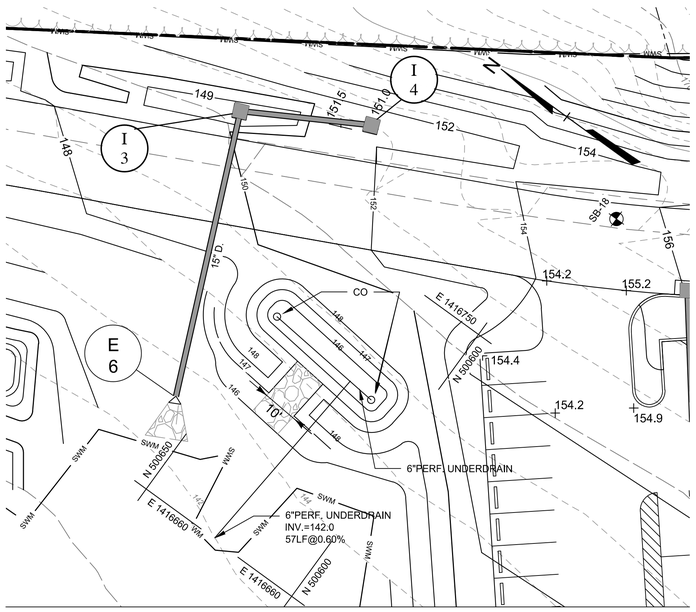
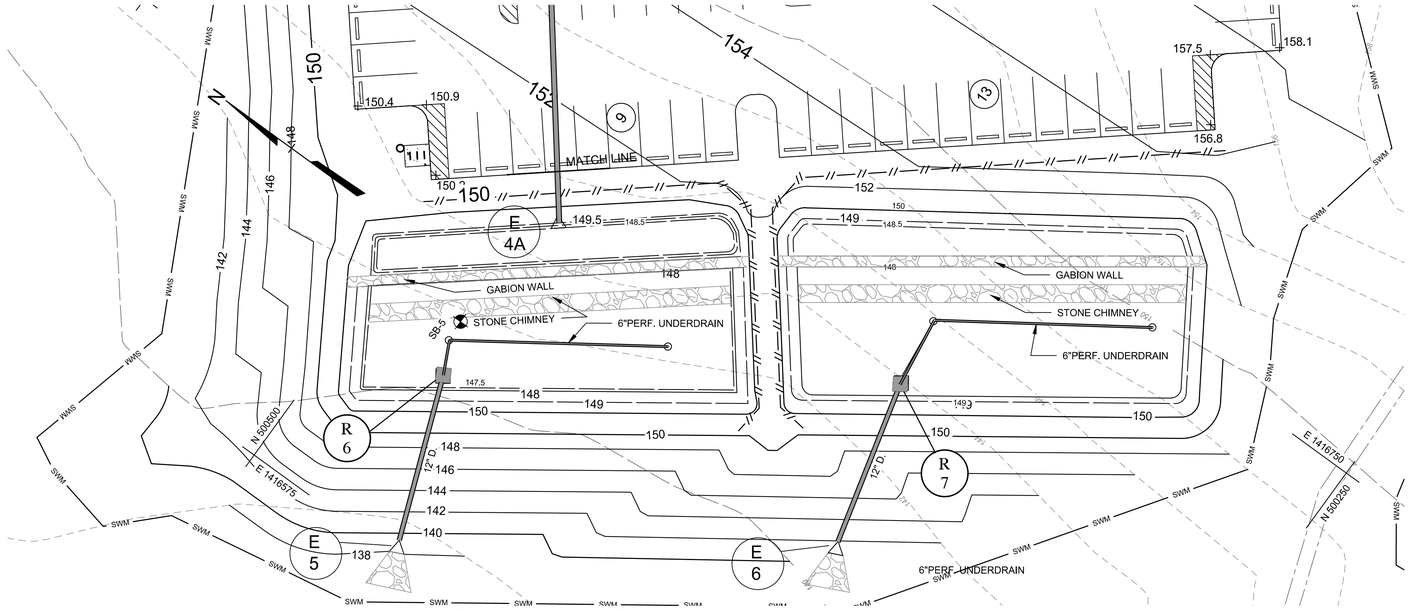


MICRO-BIORETENTION #4

SCALE: 1" = 20'

0 20' 40'

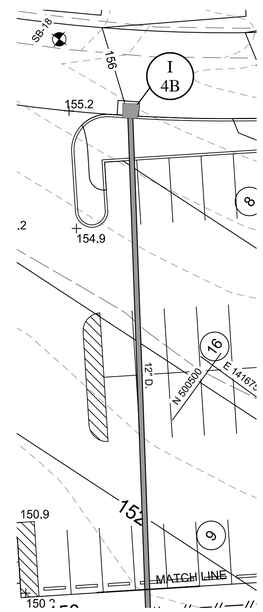
NOTE: AREAS ADJACENT TO SWM TO BE SODDED AS DIRECTED AT TIME OF CONSTRUCTION

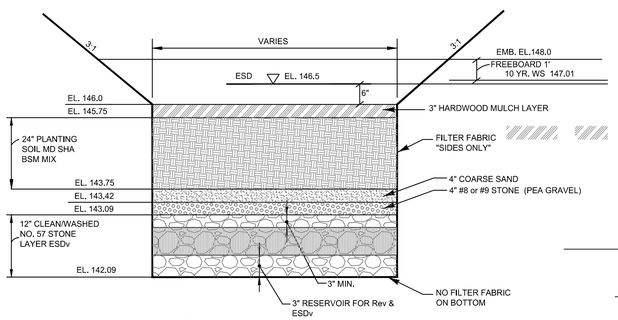


SUBMERGED GRAVEL WETLANDS #2 & #3

SCALE: 1" = 20'

0 20' 40'

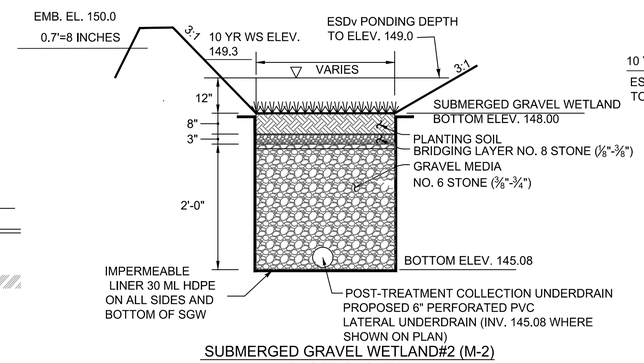




TYPICAL SECTION

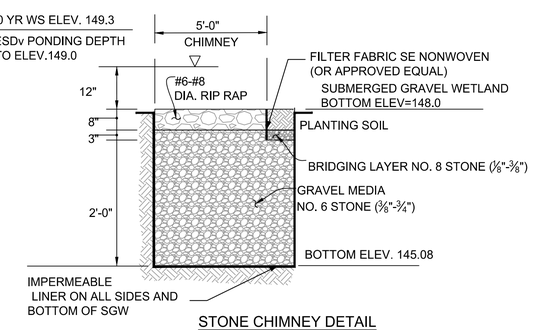
MICRO BIORETENTION 4

NOT TO SCALE



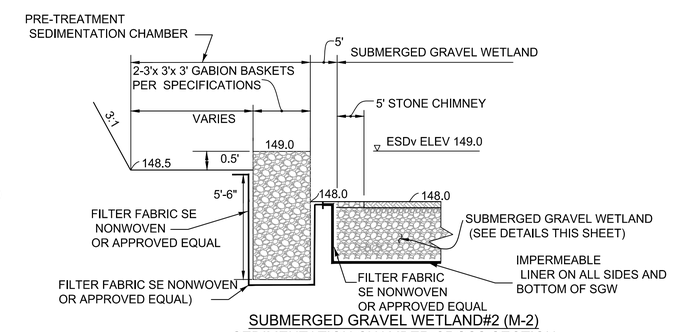
SUBMERGED GRAVEL WETLAND#2 (M-2) CROSS-SECTION

NOT TO SCALE



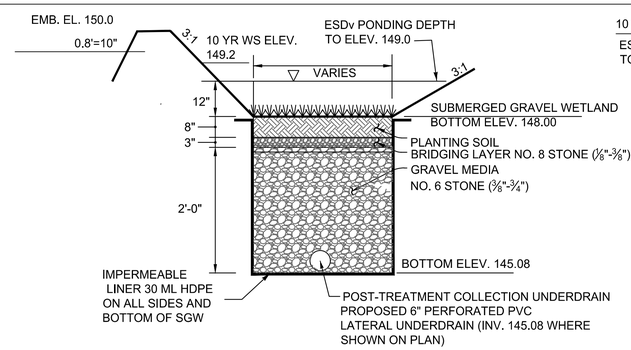
STONE CHIMNEY DETAIL

NOT TO SCALE



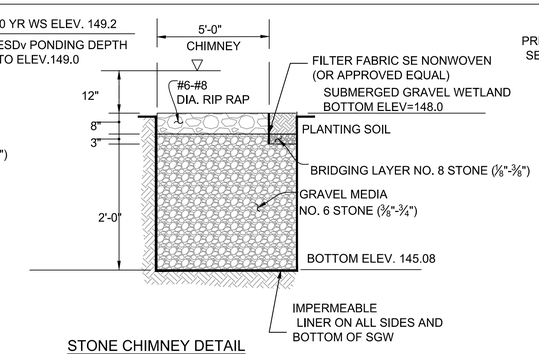
SUBMERGED GRAVEL WETLAND#2 (M-2) SEDIMENTATION CHAMBER CROSS SECTION

NOT TO SCALE



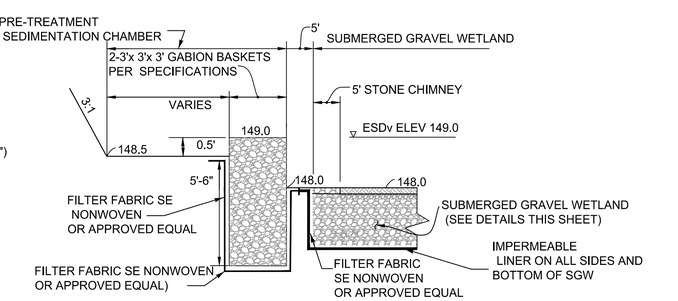
SUBMERGED GRAVEL WETLAND#3 (M-2) CROSS-SECTION

NOT TO SCALE



STONE CHIMNEY DETAIL

NOT TO SCALE



SUBMERGED GRAVEL WETLAND#3 (M-2) SEDIMENTATION CHAMBER CROSS SECTION

NOT TO SCALE

LEGEND

	Property Line
	Adjoiner / Lot Line
676	Existing Minor Contour
670	Existing Major Contour
	Existing Edge of Road/Paving
SD EX. 15" D	Existing Storm Drain
W EX. 12" W	Existing Water
UGT	Existing Underground Telephone Line
UGE	Existing Underground Electric Line
OHE	Existing Overhead Electric Line
	Existing Utility Pole
	Existing Guy Pole / Guy Wire
	Existing Sign
X X X	Existing Fence
	Existing Tree Line
	Existing Deciduous Tree
	Existing Evergreen Tree
CRZ	Critical Root Zone
	Existing Trail
	Existing Building
	Existing Septic Area
LOD	Limit of Disturbance
	Proposed Building
	Proposed Edge of Road/Paving
676	Proposed Minor Contour
670	Proposed Major Contour
+143.6	Proposed Spot Elevation
	Proposed Paving
	Proposed Inlet and Storm Drain
	Proposed Storm Drain Outfall
	Soil Boring

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

REVISED DATE	BY

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE	APPROVED DATE
CHIEF ENGINEER	PROJECT MANAGER
APPROVED DATE	APPROVED DATE
ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY

SCALE	AS SHOWN
DRAWN BY	LMV/RDT
CHECKED BY	MJP
SHEET	36 OF 52
PROJECT NO.:	P588001
DATE:	2/7/2024

DESIGN DEVELOPMENT

SWM Facilities

Severn Chapel Area of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

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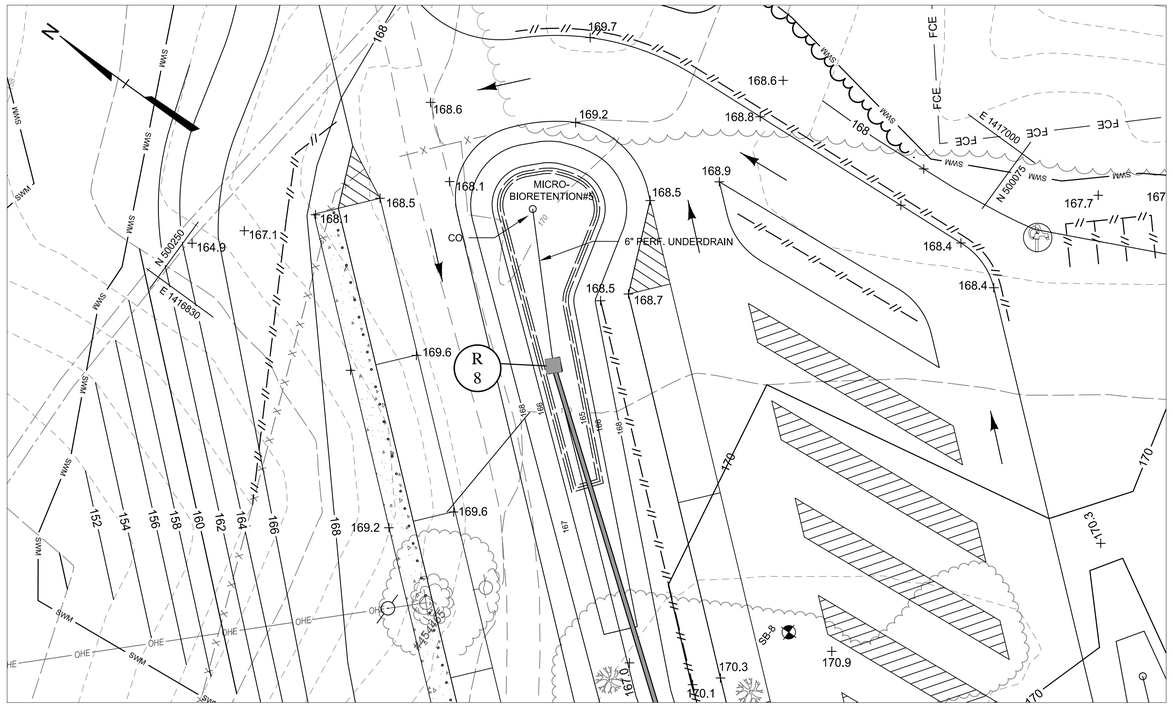
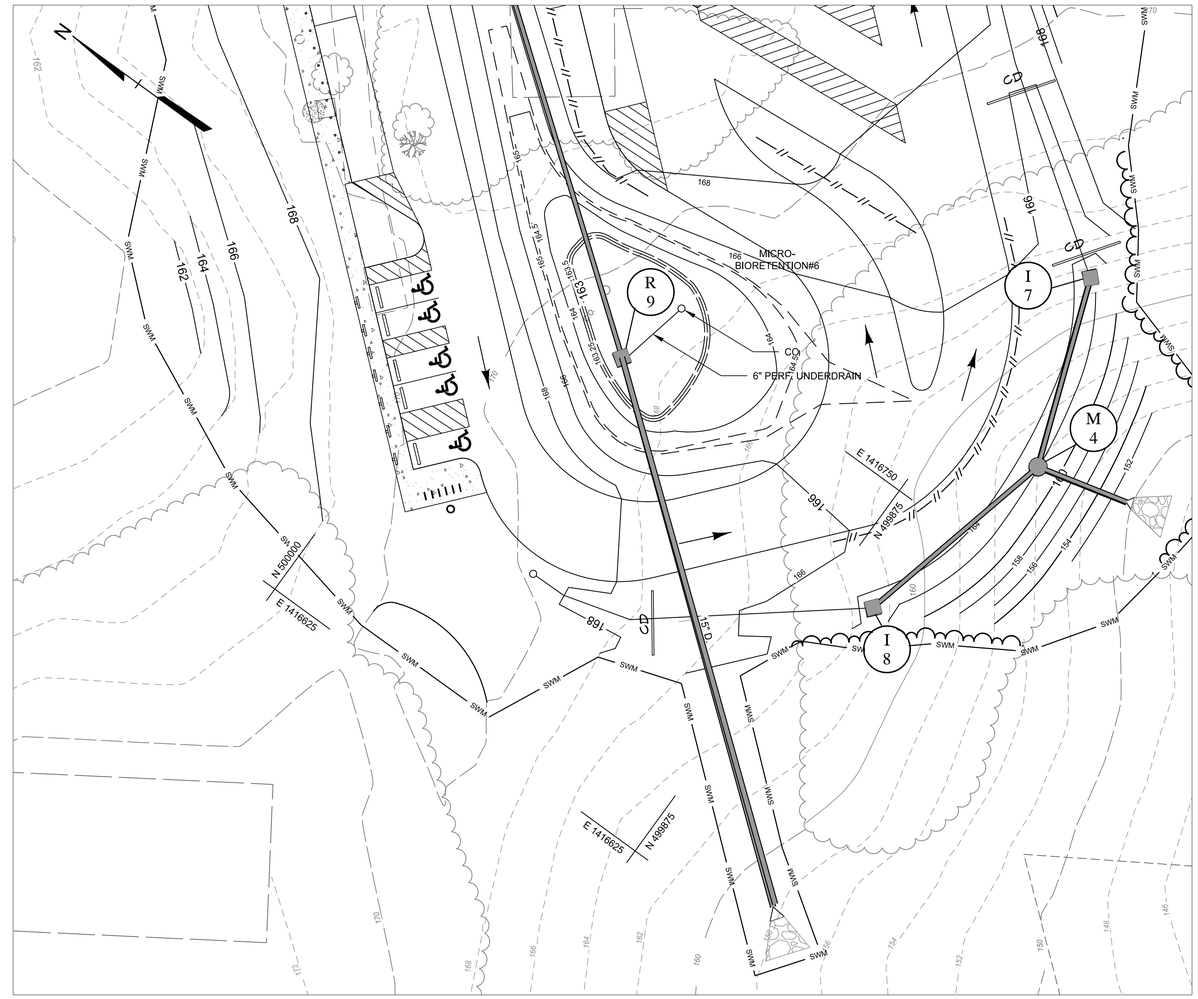


MICRO-BIORETENTION #5

SCALE: 1" = 20'

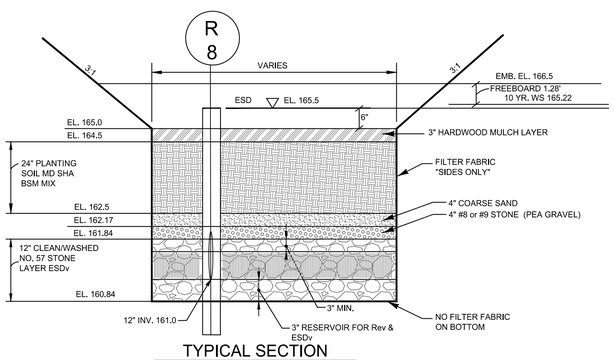
0 20' 40'



MICRO-BIORETENTION #6

SCALE: 1" = 20'

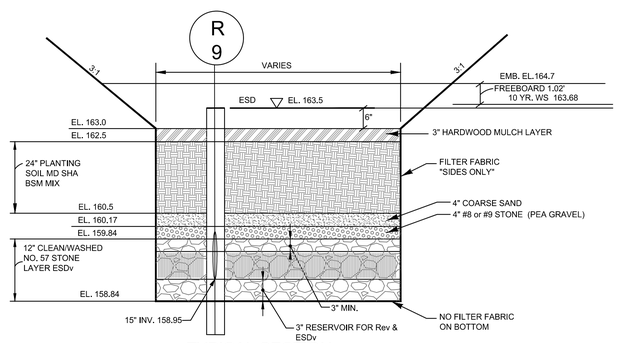
0 20' 40'



TYPICAL SECTION

MICRO BIORETENTION 5

NOT TO SCALE



TYPICAL SECTION

MICRO BIORETENTION 6

NOT TO SCALE

NOTE: AREAS ADJACENT TO SWM TO BE SODDED AS DIRECTED AT TIME OF CONSTRUCTION

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE	SCALE AS SHOWN	DESIGN DEVELOPMENT
		CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY LMV/RDT	SWM Facilities
		APPROVED DATE	APPROVED DATE	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 37 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

T:\2023\facilities\20235231.001a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\20235231.001A (CD-30) SWM Facilities.dwg Feb 14, 2024 2:32pm kdarley

Project Name: Bacon RIdge Park Improvements

AS-BUILT DATA FOR MICRO-BIORETENTION

* To be completed by the Certifying Engineer

BMP ID: MB#1

FEATURE	DESIGN	* AS-BUILT
Filter Bed Area	840 SF	
Filter Bed Surface Elevation	96.5	
Outlet Pipe (Underdrain) Size/Invert Elevation	6" / 93.48	
Thickness of Filter Media	24"	
Placement of Geotextile	Sides Only	
Plantings	Per Approved LA Plan	
Composition of Filter Media	MD SHA BSM MIX	
Observation Well with Depth to Filter Bottom Indicated on Cap	4'	
Ponding Depth	6"	
Ponding Volume	464 CF	
Total Volume	1,136 CF	

Date As-Built Accepted by Anne Arundel County: _____

Project Name: Bacon RIdge Park Improvements

AS-BUILT DATA FOR MICRO-BIORETENTION

* To be completed by the Certifying Engineer

BMP ID: SGW#1A

FEATURE	DESIGN	* AS-BUILT
Filter Bed Area	1,761 SF	
Filter Bed Surface Elevation	106.5	
Outlet Pipe (Underdrain) Size/Invert Elevation	6" / 103.58	
Thickness of Filter Media	24"	
Placement of Geotextile	Sides Only	
Plantings	Per Approved LA Plan	
Composition of Filter Media	MD SHA BSM MIX	
Observation Well with Depth to Filter Bottom Indicated on Cap	4'	
Ponding Depth	18"	
Ponding Volume	1,940 CF	
Total Volume	2,442 CF	

Date As-Built Accepted by Anne Arundel County: _____

Project Name: Bacon RIdge Park Improvements

AS-BUILT DATA FOR MICRO-BIORETENTION

* To be completed by the Certifying Engineer

BMP ID: MB#2

FEATURE	DESIGN	* AS-BUILT
Filter Bed Area	509 SF	
Filter Bed Surface Elevation	138.0	
Outlet Pipe (Underdrain) Size/Invert Elevation	6" / 134.34	
Thickness of Filter Media	24"	
Placement of Geotextile	Sides Only	
Plantings	Per Approved LA Plan	
Composition of Filter Media	MD SHA BSM MIX	
Observation Well with Depth to Filter Bottom Indicated on Cap	4'	
Ponding Depth	9"	
Ponding Volume	498 CF	
Total Volume	905 CF	

Date As-Built Accepted by Anne Arundel County: _____

Project Name: Bacon RIdge Park Improvements

AS-BUILT DATA FOR MICRO-BIORETENTION

* To be completed by the Certifying Engineer

BMP ID: MB#3

FEATURE	DESIGN	* AS-BUILT
Filter Bed Area	509 SF	
Filter Bed Surface Elevation	138.0	
Outlet Pipe (Underdrain) Size/Invert Elevation	6" / 134.34	
Thickness of Filter Media	24"	
Placement of Geotextile	Sides Only	
Plantings	Per Approved LA Plan	
Composition of Filter Media	MD SHA BSM MIX	
Observation Well with Depth to Filter Bottom Indicated on Cap	4'	
Ponding Depth	9"	
Ponding Volume	498 CF	
Total Volume	905 CF	

Date As-Built Accepted by Anne Arundel County: _____

Project Name: Bacon RIdge Park Improvements

AS-BUILT DATA FOR MICRO-BIORETENTION

* To be completed by the Certifying Engineer

BMP ID: MB#4

FEATURE	DESIGN	* AS-BUILT
Filter Bed Area	298 SF	
Filter Bed Surface Elevation	146.0	
Outlet Pipe (Underdrain) Size/Invert Elevation	6" / 142.32	
Thickness of Filter Media	24"	
Placement of Geotextile	Sides Only	
Plantings	Per Approved LA Plan	
Composition of Filter Media	MD SHA BSM MIX	
Observation Well with Depth to Filter Bottom Indicated on Cap	4'	
Ponding Depth	6"	
Ponding Volume	185 CF	
Total Volume	423 CF	

Date As-Built Accepted by Anne Arundel County: _____

Project Name: Bacon RIdge Park Improvements

AS-BUILT DATA FOR MICRO-BIORETENTION

* To be completed by the Certifying Engineer

BMP ID: MB#5

FEATURE	DESIGN	* AS-BUILT
Filter Bed Area	1,074 SF	
Filter Bed Surface Elevation	165.0	
Outlet Pipe (Underdrain) Size/Invert Elevation	12" / 161.0	
Thickness of Filter Media	24"	
Placement of Geotextile	Sides Only	
Plantings	Per Approved LA Plan	
Composition of Filter Media	MD SHA BSM MIX	
Observation Well with Depth to Filter Bottom Indicated on Cap	4'	
Ponding Depth	6"	
Ponding Volume	614 CF	
Total Volume	1,473 CF	

Date As-Built Accepted by Anne Arundel County: _____

Project Name: Bacon RIdge Park Improvements

AS-BUILT DATA FOR MICRO-BIORETENTION

* To be completed by the Certifying Engineer

BMP ID: MB#6

FEATURE	DESIGN	* AS-BUILT
Filter Bed Area	1,173 SF	
Filter Bed Surface Elevation	163.0	
Outlet Pipe (Underdrain) Size/Invert Elevation	15" / 159.0	
Thickness of Filter Media	24"	
Placement of Geotextile	Sides Only	
Plantings	Per Approved LA Plan	
Composition of Filter Media	MD SHA BSM MIX	
Observation Well with Depth to Filter Bottom Indicated on Cap	4'	
Ponding Depth	6"	
Ponding Volume	638 CF	
Total Volume	1,576 CF	

Date As-Built Accepted by Anne Arundel County: _____

Project Name: Bacon RIdge Park Improvements

AS-BUILT DATA FOR SUBMERGED GRAVEL WETLANDS

* To be completed by the Certifying Engineer

BMP ID:SGW#1

FEATURE	DESIGN	* AS-BUILT
Filter Bed Area	5,179 SF	
Filter Bed Surface Elevation	138.0	
Outlet Pipe (Underdrain) Size/Invert Elevation	6" / 136.6	
Thickness of Filter Media	24"	
Placement of Geotextile	Sides Only	
Plantings	Per Approved LA Plan	
Composition of Gravel Media		
No. 8 Stone		
No.6 Stone		
Observation Well with Depth to Filter Bottom Indicated on Cap	4'	
Ponding Depth	12"	
Ponding Volume	2,648 CF	
Total Volume	3,783 CF	

Date As-Built Accepted by Anne Arundel County: _____

Project Name: Bacon RIdge Park Improvements

AS-BUILT DATA FOR SUBMERGED GRAVEL WETLANDS

To be completed by the Certifying Engineer

BMP ID:SGW#2

FEATURE	DESIGN	* AS-BUILT
Filter Bed Area	3,179 SF	
Filter Bed Surface Elevation	147.5	
Outlet Pipe (Underdrain) Size/Invert Elevation	12" / 144.0	
Thickness of Filter Media	24"	
Placement of Geotextile	Sides Only	
Plantings	Per Approved LA Plan	
Composition of Gravel Media		
No. 8 Stone		
No.6 Stone		
Observation Well with Depth to Filter Bottom Indicated on Cap	4'	
Ponding Depth	18"	
Ponding Volume	3,451 CF	
Total Volume	3,982 CF	

Date As-Built Accepted by Anne Arundel County: _____

Project Name: Bacon RIdge Park Improvements

AS-BUILT DATA FOR SUBMERGED GRAVEL WETLANDS

To be completed by the Certifying Engineer

BMP ID:SGW#3

FEATURE	DESIGN	* AS-BUILT
Filter Bed Area	3,895 SF	
Filter Bed Surface Elevation	148.0	
Outlet Pipe (Underdrain) Size/Invert Elevation	12" / 144.0	
Thickness of Filter Media	24"	
Placement of Geotextile	Sides Only	
Plantings	Per Approved LA Plan	
Composition of Gravel Media		
No. 8 Stone		
No.6 Stone		
Observation Well with Depth to Filter Bottom Indicated on Cap	4'	
Ponding Depth	12"	
Ponding Volume	2,033 CF	
Total Volume	2,528 CF	

Date As-Built Accepted by Anne Arundel County: _____

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE	AS SHOWN
DRAWN BY	LMV/RDT
CHECKED BY	MJP
SHEET	38 OF 52
PROJECT NO.:	P588001
DATE:	2/7/2024

DESIGN DEVELOPMENT

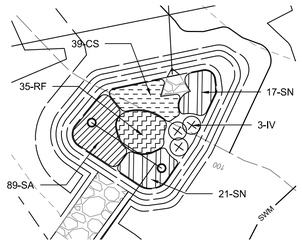
SWM Notes & Details

Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

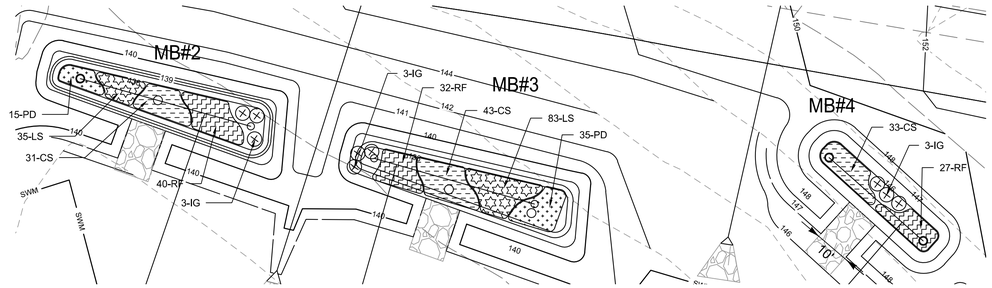
Tax Map 37, Grid 11, Parcel 86

T:\2023\facilities\20295231.001a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\20295231.001A (CD-31) SWM Notes Details.dwg Feb 14, 2024 2:32pm kdarley



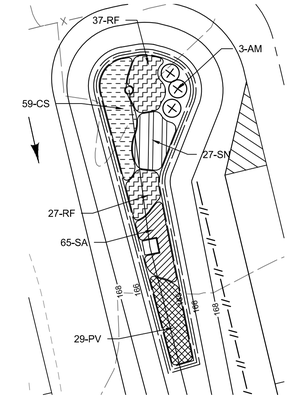
MICRO-BIORETENTION #1

SCALE: 1" = 20'



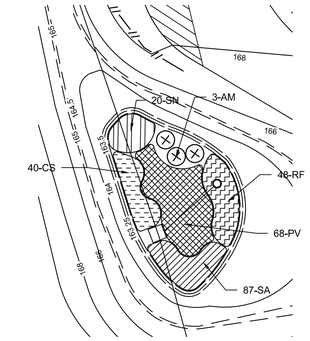
MICRO-BIORETENTION #2, #3, & #4

SCALE: 1" = 20'



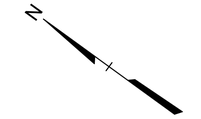
MICRO-BIORETENTION #5

SCALE: 1" = 20'



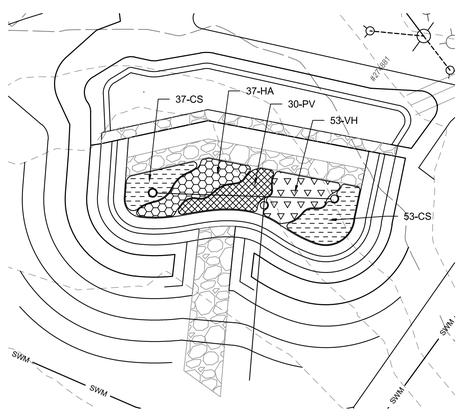
MICRO-BIORETENTION #6

SCALE: 1" = 20'



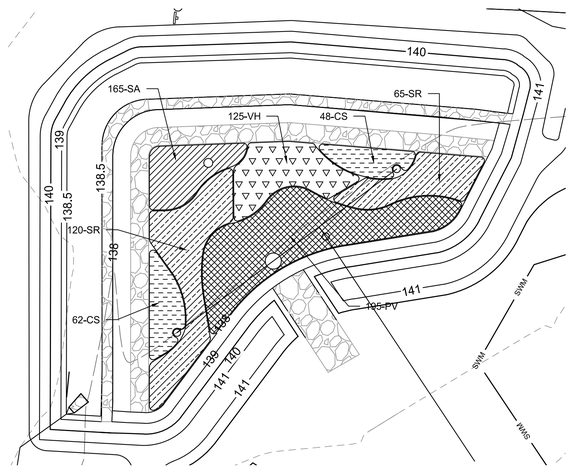
0 20' 40'

SCALE: 1" = 20'



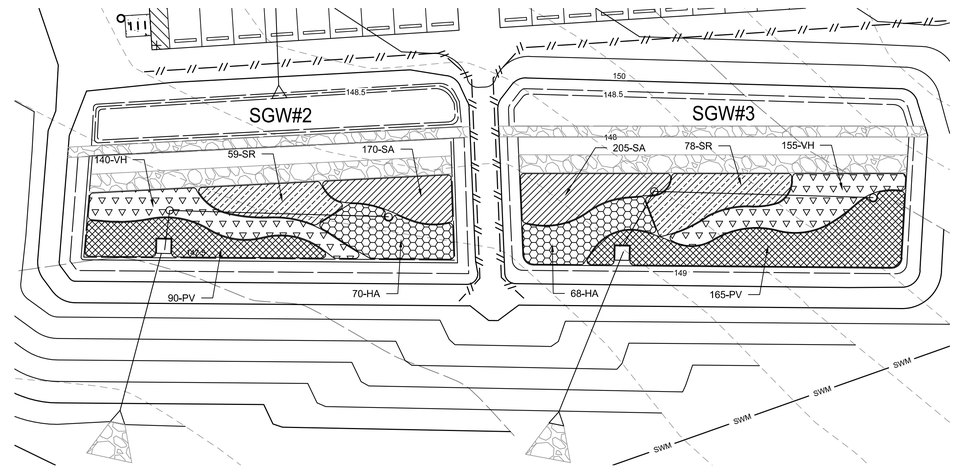
SUBMERGED GRAVEL WETLAND #1A

SCALE: 1" = 20'



SUBMERGED GRAVEL WETLAND #1

SCALE: 1" = 20'



SUBMERGED GRAVEL WETLAND #2 & #3

SCALE: 1" = 20'

LEGEND

- Property Line
- Adjoiner Property Line
- Existing Minor Contour
- Existing Major Contour
- Soil Line
- Existing Edge of Paving
- Existing Storm Drain
- Limit of Disturbance
- Proposed Minor Contour
- Proposed Major Contour
- Proposed Spot Elevation
- Proposed Edge of Road/Paving
- Proposed Curb and Gutter
- Proposed Paving
- Proposed Concrete Pavement / Sidewalk
- Proposed Split Rail Fence
- Proposed Inlet and Storm Drain
- Proposed Storm Drain Outfall
- Proposed Shrubs
- Proposed Perennials

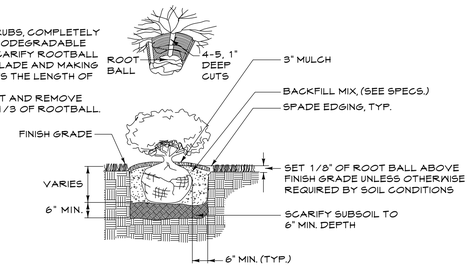
MICRO-BIORETENTION & SUBMERGED GRAVEL WETLAND PLANT LIST

KEY	QTY	SCIENTIFIC NAME	COMMON NAME	SIZE	COMMENTS
SHRUBS					
AM	6	Aronia melanocarpa	Black Chokeberry	24" - 36" ht.	Container; Full to Ground
IG	9	Ilex glabra	Inkberry	24" - 36" ht.	Container; Full to Ground
IV	3	Itea virginica	Virginia Sweetspire	24" - 36" ht.	Container; Full to Ground
TOTAL	18				
PERENNIALS, GRASSES, AND GROUNDCOVERS					
CS	445	Carex stricta	Tussock Sedge	9" - 12" ht.	Container; 24" o.c.
HA	175	Helenium autumnale	Common Sneezeweed	12" - 18" ht.	Container; 30" o.c.
LS	118	Liatris spicata	Blazing Star	9" - 12" ht.	Container; 18" o.c.
PV	577	Panicum virgatum	Switch Grass	12" - 18" ht.	Container; 30" o.c.
PD	50	Penstemon digitalis	Foxglove Beardtongue	9" - 12" ht.	Container; 24" o.c.
RF	246	Rudbeckia fulgida var. sullivantii	Black-Eyed Susan	9" - 12" ht.	Container; 24" o.c.
SA	781	Sisyrinchium angustifolium	Blue-Eyed Grass	9" - 12" ht.	Container; 18" o.c.
SR	322	Solidago rugosa	Rough Goldenrod	12" - 18" ht.	Container; 30" o.c.
SN	85	Symphyotrichum novae-angliae	New England Aster	12" - 18" ht.	Container; 30" o.c.
VH	473	Verbena hastata	American Blue Vervain	12" - 18" ht.	Container; 24" o.c.
TOTAL	3,272				

PLANTING NOTES

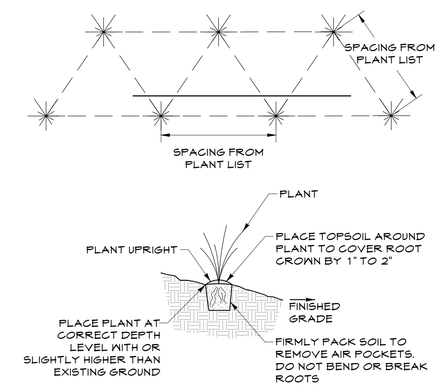
1. PLANT MATERIAL SUBSTITUTIONS WILL NOT BE ACCEPTED WITHOUT APPROVAL OF THE LANDSCAPE ARCHITECT.
2. ALL SHRUBS AND GROUNDCOVER AREAS SHALL BE PLANTED IN CONTINUOUS PREPARED PLANTING BEDS.
3. ALL SHRUB BEDS SHALL BE MULCHED WITH HARDWOOD MULCH AS DETAILED AND SPECIFIED EXCEPT WHERE NOTED ON PLANS.
4. MAINTAIN POSITIVE DRAINAGE OUT OF PLANTING BEDS AT A MINIMUM OF TWO PERCENT SLOPE.
5. PLANT QUANTITIES ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR. IF DISCREPANCIES EXIST BETWEEN QUANTITIES SHOWN ON THE PLAN AND THOSE SHOWN ON THE PLANT LIST, THE QUANTITIES ON THE PLAN SHALL TAKE PRECEDENCE.
6. ALL AREAS WITHIN CONTRACT LIMITS DISTURBED DURING OR PRIOR TO CONSTRUCTION NOT DESIGNATED TO RECEIVE PLANTINGS AND MULCH SHALL BE FINE GRADED AND SEEDED IN ACCORDANCE WITH PLANTING AND CONSTRUCTION.
7. THE CONTRACTOR SHALL NOTIFY MISS UTILITY, (800-257-7777) A MINIMUM OF THREE WORKING DAYS PRIOR TO PLANTING AND CONSTRUCTION.
8. ALL PLANT MATERIAL SHALL BE NURSERY GROWN, LANDSCAPE QUALITY, AND SHALL CONFORM TO AMERICAN STANDARDS FOR NURSERY STOCK (ANSI Z60.1) PUBLISHED BY AMERICAN HORT.
9. ALL PLANTING PROCEDURES SHALL CONFORM TO LANDSCAPE CONTRACTORS ASSOCIATION SPECIFICATION GUIDELINES FOR BALTIMORE/WASHINGTON METROPOLITAN AREA (LATEST EDITION).
10. CONTRACTOR SHALL TEST PIT PRIOR TO PLANT INSTALLATION.

NOTES:
1. FOR CONTAINER SHRUBS, COMPLETELY REMOVE ALL NON-BIODEGRADABLE CONTAINERS AND SCARIFY ROOTBALL BY USING A SHARP BLADE AND MAKING 4 TO 5 ONE INCH CUTS THE LENGTH OF THE ROOTBALL.
2. FOR B&B SHRUBS, CUT AND REMOVE BURLAP FROM TOP 1/3 OF ROOTBALL.



SHRUB PLANTING

Not To Scale



GROUNDCOVER PLANTING

Not To Scale

CENTURY ENGINEERING
A Kleinfelder Company
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Phone: 443.589.2400 www.centuryeng.com

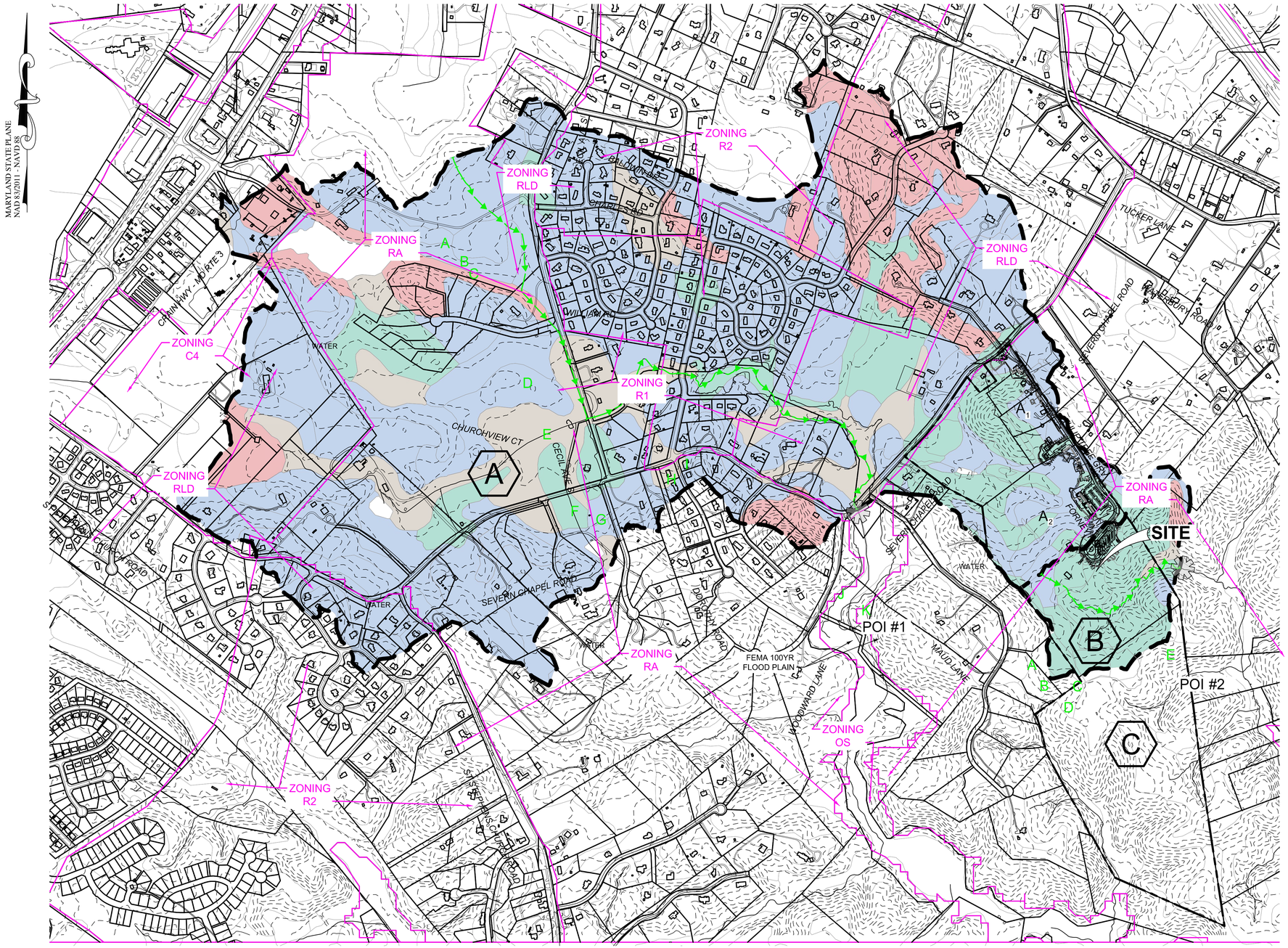
DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE		
		CHIEF ENGINEER	PROJECT MANAGER	SCALE AS SHOWN	DESIGN DEVELOPMENT
		APPROVED DATE	APPROVED DATE	DRAWN BY LMV/RDT	SWM Planting Plan
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
				SHEET 39 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

T:\2023\facilities\20235237.001 a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\20235237.001A (CD-39) SWM LS Plan.dwg Feb 14, 2024 2:32pm kdarney



EXISTING D.A.

RCN = 68	A	A = 726.27Ac.
T_c = 0.52		A = 1.13480 mi^2
RCN = 73	B	A = 41.67 Ac.
T_c = 0.25		A = 0.06511 mi^2

PROPOSED D.A.

RCN = 68	A	A = 725.97Ac.
T_c = 0.52		A = 1.13432 mi^2
RCN = 73*	B	A = 41.97 Ac.
T_c = 0.25		A = 0.06558 mi^2

*RCN W/ REDUCED WITH ESDv FACILITIES IN AREA B

Hydrologic 'A' Soils

Hydrologic 'B' Soils

Hydrologic 'C' Soils

Hydrologic 'D' Soils

Study Point (POI #1)

Existing Drainage Area Divide

Existing TC Path (A, B)

Zoning Line

LOD — Limit Of Disturbance (LOD)

B — Drainage Area ID

POINT OF INVESTIGATION
MANAGEMENT DRAINAGE AREA MAP

SCALE: 1"=500'

0 500' 1000'

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

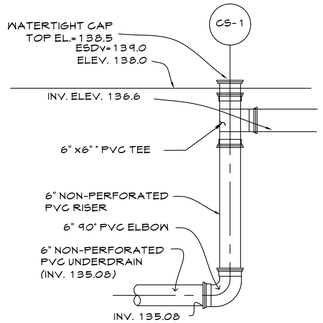
DATE: _____

LICENSE NO.32574

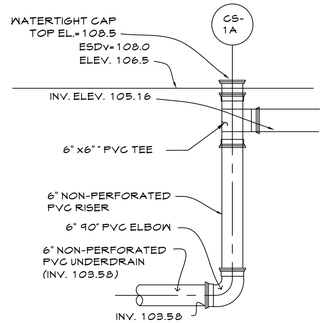
ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE		
		CHIEF ENGINEER	PROJECT MANAGER	SCALE AS SHOWN	DESIGN DEVELOPMENT
		APPROVED DATE	APPROVED DATE	DRAWN BY LMV/RDT	SWM Outfall Exhibit
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
				SHEET 40 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District, Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

T:\2023\facilities\20235237.001a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\20235237.001A (CD-34) SWM Outfall Exhibit.dwg Feb 14, 2024 2:39pm kdanieg



SGW#1 - PRIMARY OUTLET CONTROL
NOT TO SCALE



SGW#1A - PRIMARY OUTLET CONTROL
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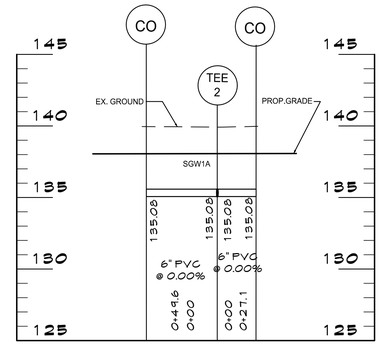
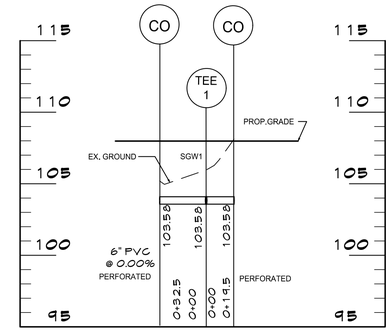
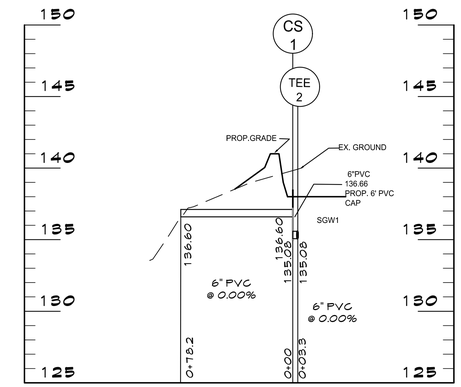


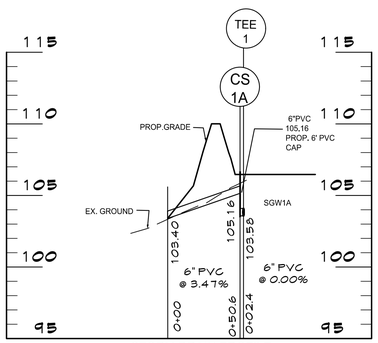
STORM DRAIN PROFILE
SCALE: 1"=50' (HORIZ.)
1"=5' (VERT.)
SGW#1A



STORM DRAIN PROFILE
SCALE: 1"=50' (HORIZ.)
1"=5' (VERT.)



STORM DRAIN PROFILE
SCALE: 1"=50' (HORIZ.)
1"=5' (VERT.)
SGW#1



STORM DRAIN PROFILE
SCALE: 1"=50' (HORIZ.)
1"=5' (VERT.)
SGW#1A

TYPICAL ORIFICE PLATE DETAIL @ CS-1A
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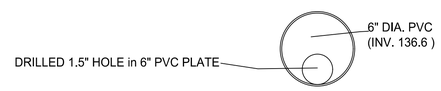
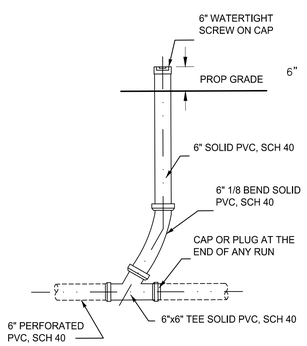


TYPICAL ORIFICE PLATE DETAIL @ CS-1
NOT TO SCALE



CLEANOUT
NOT TO SCALE

STORMWATER MANAGEMENT DATA

Project Table for Each Drainage Area

Permit Number		
Project Number	P588001	
Project Name	Severn Chapel Area/Bacon Ridge	
StructureAddress	1214 Severn Chapel Road	
Structure City	Crownsville	
State	Maryland	
Structure Zip	21032	
Total Drainage Area (Acres)	415,935	
RCN - Pre Construction	DA A=73, DA B= 68	
RCN - Post Construction	DA A=73, DA B= 68	
RCN - Woods		
Total Number of BMPs	13	
PE Required (see Note 1)	1.0*	PE required based on total site area 152.00 acres
PE Addressed (see Note 2)	2.05*	PE addressed based on distruebd area 9.9 acres
MD 8-Digit HUC (see Note 4)	2131003	
USGS 12-Digit HUC	**Blank - County Use**	

For Each Practice in the Drainage Area

STORM_ID	STRU_NAME	E, S, or A	MDE BMP CLASS	MDE BMP TYPE	New development (NEWD), Redevelopment (REDE), or Restoration (REST) CONSTRUCTION PURPOSE	ON or OFF SITE	MDP Code LAND USE	DEVICE DRAINAGE AREA (acres)	IMPERVIOUS AREA DRAINING TO DEVICE (acres)	IMPERVIOUS ACRES RESTORED (See Note 3)	MD NORTH COORD (NAD83 - FT)	MD EAST COORD (NAD83 - FT)	WQ_v (ac-ft) (See Note 5)
Blank - County Use	MB1	E	MMBR	NEWD	ON	18	0.38	0.12	N/A	N501,811	E1,415,897	1,224
	SGW1A	E	MSGW	NEWD	ON	18	0.97	0.24	N/A	N501,682	E1,416,040	3,256
	MB2	E	MMBR	NEWD	ON	18	0.35	0.07	N/A	N500,813	E1,416,620	733
	MB3	E	MMBR	NEWD	ON	18	0.24	0.07	N/A	N500,806	E1,416,624	706
	MB4	E	MMBR	NEWD	ON	18	0.13	0.06	N/A	N500,728	E1,416,654	560
	MB5	E	MMBR	NEWD	ON	18	0.36	0.22	N/A	N499,964	E1,416,745	1,911
	MB6	E	MMBR	NEWD	ON	18	0.46	0.18	N/A	N500,170	E1,416,905	1,782
	SGW1	E	MSGW	NEWD	ON	18	0.99	0.44	N/A	N504,100	E1,396,494	5,031
	SGW2	E	MSGW	NEWD	ON	18	0.83	0.60	N/A	N500,444	E1,416,645	5,296
	SGW3	E	MSGW	NEWD	ON	18	0.63	0.34	N/A	N500,348	E1,416,715	2,528
	BIO SWALE 2	E	MSWB	NEWD	ON	18	0.94	0.22	N/A	N501,347	E1,416,306	2,360
	BIO SWALE 3	E	MSBG	NEWD	ON	18	0.39	0.17	N/A	N499,916	E1,416863	1,615
	BIO SWALE 4	E	MSBG	NEWD	ON	18	0.1	0.04	N/A	N499,910	E1,416,676	368
	NON ROOF TOP DISCONNECT	E	NDRR	NEWD	ON	18	N/A	0.25	N/A			
	SHEET FLOW TO BUFFER CREDIT	E	NDRR	NEWD	ON	18	N/A	0.15	N/A			

STRUCTURE SCHEDULE				TYPE	DETAIL
NO.	NORTHING	EASTING	RIM ELEV.		
I-3	500690.85	1416761.11	148.50	TYPE 5 INLET	AA CO. STD-40
I-1	501845.30	1415953.56	103.00	TYPE 5 INLET	AA CO. STD-40
I-1A	501515.80	1416178.92	121.37	TYPE 5 INLET	AA CO. STD-40
I-2	501652.30	1416144.56	115.50	TYPE 5 INLET	AA CO. STD-40
I-2A	501430.39	1416251.60	125.50	TYPE 5 INLET	AA CO. STD-40
I-3A	500756.96	1416727.76	146.60	TYPE 5 INLET	AA CO. STD-40
I-3B	500789.82	1416708.40	146.70	TYPE 5 INLET	AA CO. STD-40
I-4	500658.91	1416779.48	151.00	TYPE 5 INLET	AA CO. STD-40
I-4B	500560.33	1416793.97	156.50	TYPE 5 INLET	AA CO. STD-40
I-5	500360.51	1416988.35	163.50	TYPE 5 INLET	AA CO. STD-40
I-6	500306.98	1416990.33	165.50	TYPE 5 INLET	AA CO. STD-40
I-7	499866.42	1416829.26	162.10	TYPE 5 INLET	AA CO. STD-40
I-8	499861.35	1416719.00	163.50	TYPE 5 INLET	AA CO. STD-40
M-2	501616.78	1416067.96	116.96	A-2	AA CO. STD-12
M-2A	501638.54	1416131.80	115.90	A-2	AA CO. STD-12
M-2B	501496.59	1416228.62	123.50	A-2	AA CO. STD-12
M-2C	501448.35	1416261.77	125.80	A-2	AA CO. STD-12
M-3	500337.40	1416954.84	164.10	A-2	AA CO. STD-12
M-4	499847.26	1416777.96	162.00	A-2	AA CO. STD-12
R2	501481.67	1416206.88	122.00	TYPE 5 INLET	AA CO. STD-40
R6	500470.16	1416623.80	149.00	TYPE 5 INLET	AA CO. STD-40
R7	500365.35	1416696.76	149.00	TYPE 5 INLET	AA CO. STD-40
R8	500145.65	1416875.19	166.00	TYPE 5 INLET	AA CO. STD-40
R9	499959.25	1416734.24	164.00	TYPE 5 INLET	AA CO. STD-40

NO.	TYPE	DETAIL
E-1	8"HDPE END SECTION	SH.42
E-1A	12"HDPE END SECTION	SH.42
E-2	24"HDPE END SECTION	SH.42
E-3	12"HDPE END SECTION	SH.42
E-5	12"HDPE END SECTION	SH.42
E-6	15"HDPE END SECTION	SH.42
E-6A	12"HDPE END SECTION	SH.42
E-7	12"HDPE END SECTION	SH.42
E-8	12"HDPE END SECTION	SH.42
E-9	15"HDPE END SECTION	SH.42
E-11	12"HDPE END SECTION	SH.42

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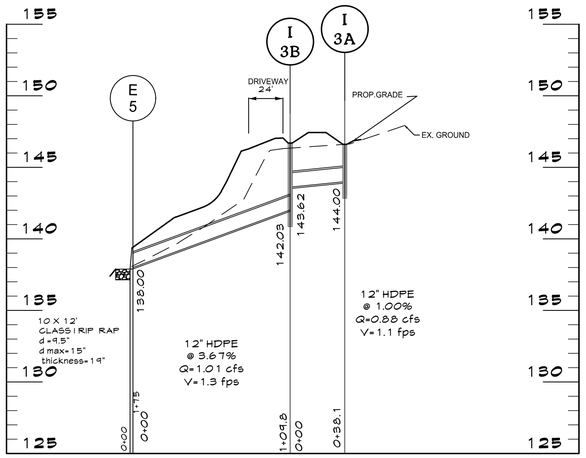
ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

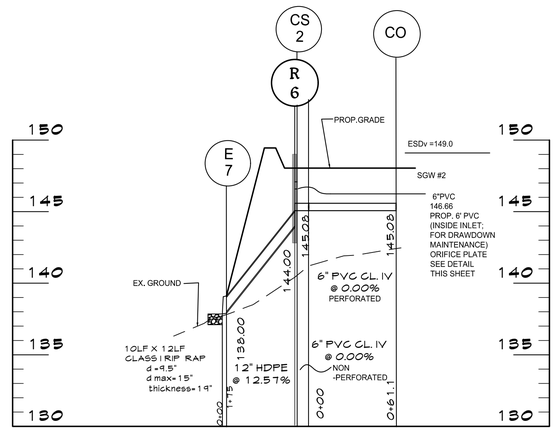
REVISED DATE	BY	APPROVED DATE	APPROVED DATE	SCALE AS SHOWN	DESIGN DEVELOPMENT
		CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY LMV/RDT	Utility Profiles
		APPROVED DATE	APPROVED DATE	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 41 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

T:\2023\facilities\20235237.001a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\20235237.001A (CD-35-36) Utility Profiles.dwg Feb 14, 2024 2:33pm kdarley



STORM DRAIN PROFILE

SCALE: 1"=50' (HORIZ.) 1"=5' (VERT.)

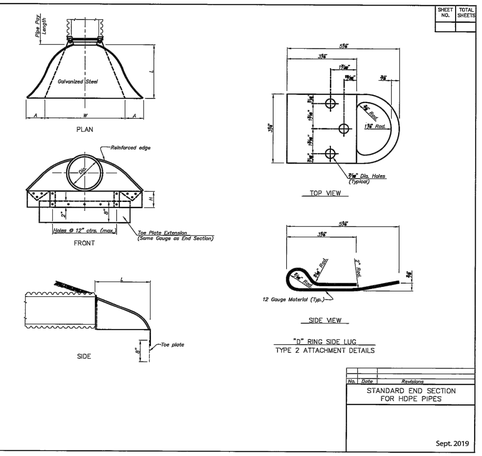


END SECTIONS FOR HDPE PIPE								
Dia.	Gauge	Weight	* A	* H	* L	* W	Slope	Overall Width
6"	16	10	4	3	8	12	2	20"
8"	16	14	5 3/4	4	14 1/2	16	2 1/4	27 1/2"
10"	16	17	7 5/8	6	14 1/2	20	2 1/2	35 1/4"
12"	16	25	7	6	21	24	2 1/2	36"
15"	16	33	9	6	29	30	2 1/2	46"
18"	16	42	8	6	31	36	2 1/2	52"
21"	16	49	9	6	36	42	2 1/2	60"
24"	16	63	10	6	41	48	2 1/2	68"
30"	14	123	12	8	51	60	2 1/2	84"
36"	14	139	14	9	60	79	2 1/2	102"
42"	12	300	16	11	69	84	2 1/2	115"
48"	12	375	18	13	78	90	2 1/4	128"
54"	12	440	18	12	84	102	2 1/4	139"
60"	12/10	610	18	12	87	114	2	150"

Toe plate extensions where specified, to be punched to match holes in apron (p. 1/8" bolts to be furnished. The length of toe plate to be as follows: W = 10" for 12" to 30" diameter pipes inclusive. W = 20" for 36" to 60" diameter pipes inclusive.

Multiple panel end sections shall have lap seams which are to be tightly jointed by bolts. Corner plate, and toe plate to be same gauge as end section.

* — Dimensions in Inches Plus or Minus Standard Shop Tolerance.

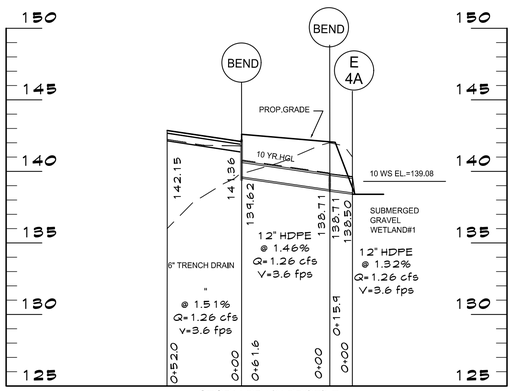


SHEET NO. | TOTAL SHEETS

No.	Date	Revision

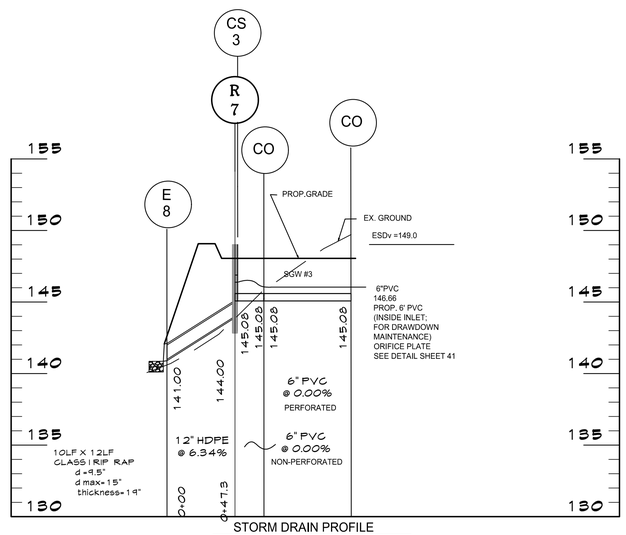
STANDARD END SECTION FOR HDPE PIPES

Sept. 2019



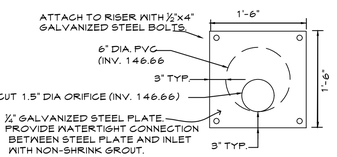
STORM DRAIN PROFILE

SCALE: 1"=50' (HORIZ.) 1"=5' (VERT.)



STORM DRAIN PROFILE

SCALE: 1"=50' (HORIZ.) 1"=5' (VERT.)



ORIFICE PLATE
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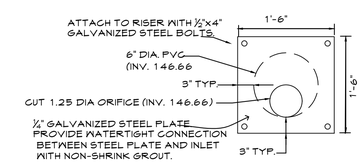

ORIFICE PLATE
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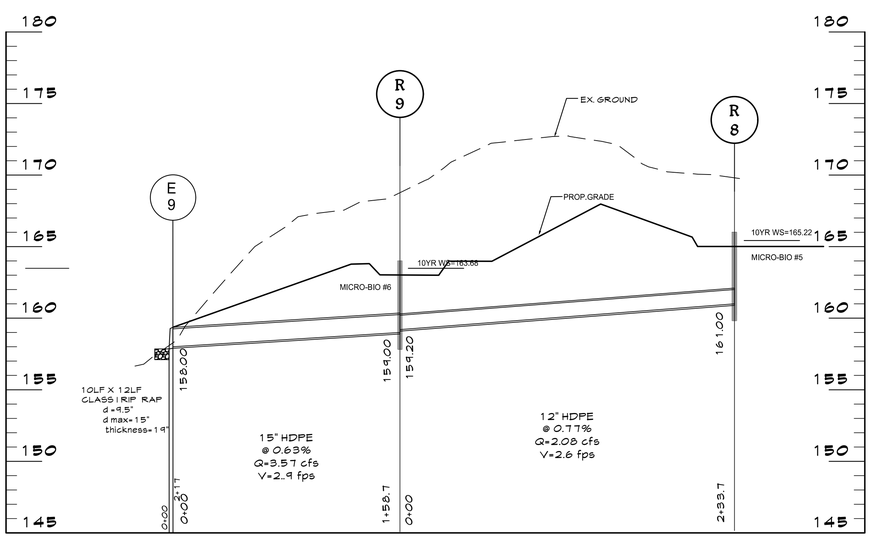

STORM DRAIN PROFILE

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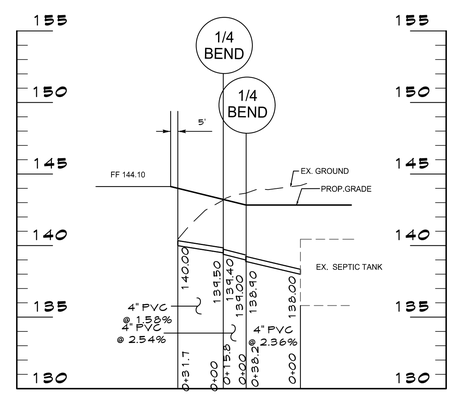


SANITARY PROFILE

SCALE: 1"=50' (HORIZ.) 1"=5' (VERT.)

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE AS SHOWN
DRAWN BY LMV/RDT
CHECKED BY MJP
SHEET 42 OF 52
PROJECT NO.: P588001
DATE: 2/7/2024

DESIGN DEVELOPMENT

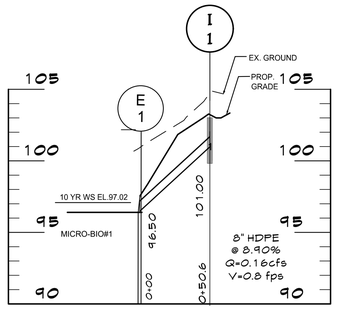
Utility Profiles

Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

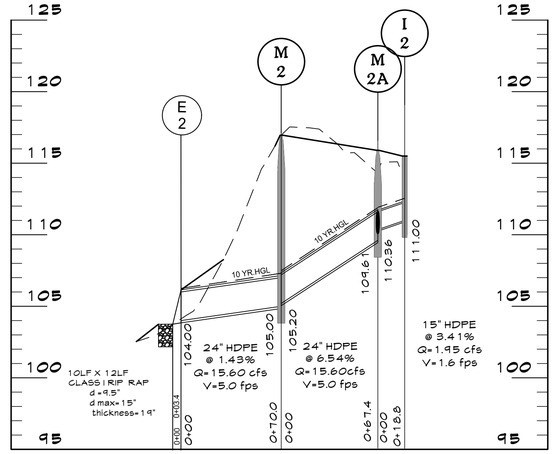
Tax Map 37, Grid 11, Parcel 86

T:\2023\facilities\20235231.001a bacon ridge construction drawings phase 1\CIVIL\GADD\Drawings\3 Construction Documents\20235231.001A (CD-35-36) Utility Profiles.dwg Feb 14, 2024 2:33pm kdarley



STORM DRAIN PROFILE

SCALE: 1"=50' (HORIZ.)
1"=5' (VERT.)



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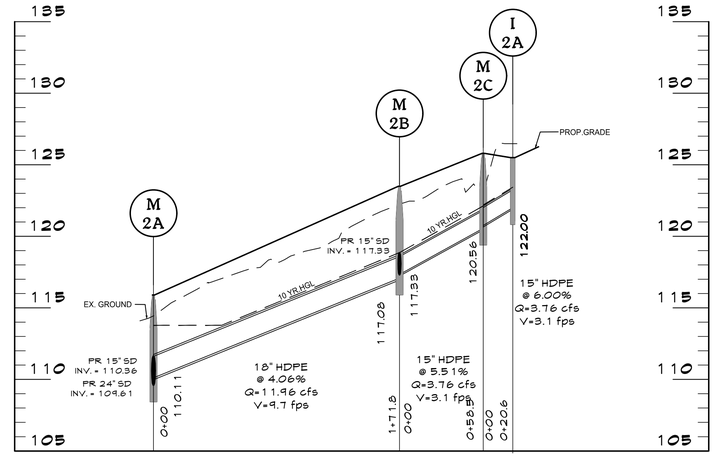
1"=5' (VERT.)



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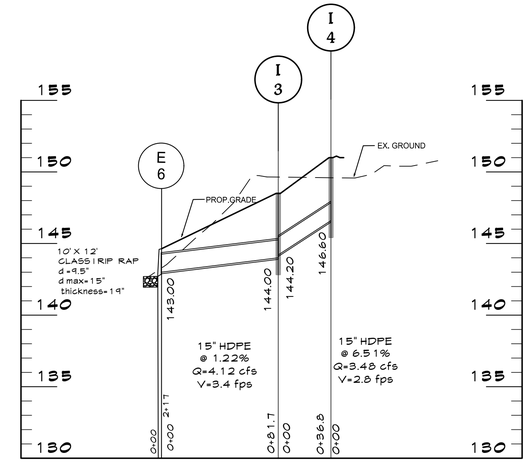
1"=5' (VERT.)



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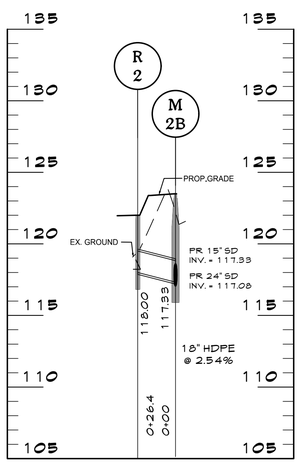

STORM DRAIN PROFILE

SCALE: 1"=50' (HORIZ.)
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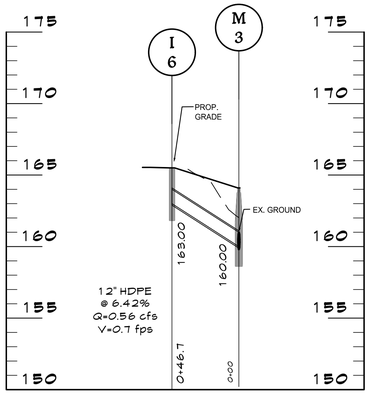

STORM DRAIN PROFILE

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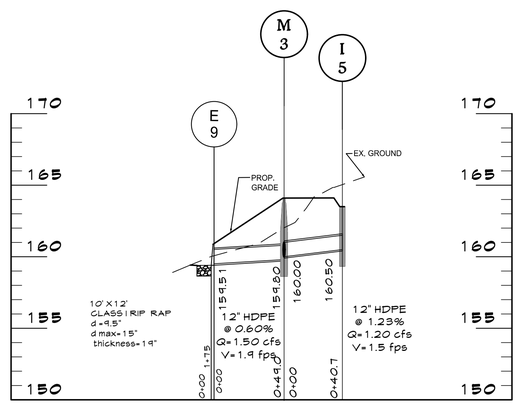
1"=5' (VERT.)



STORM DRAIN PROFILE

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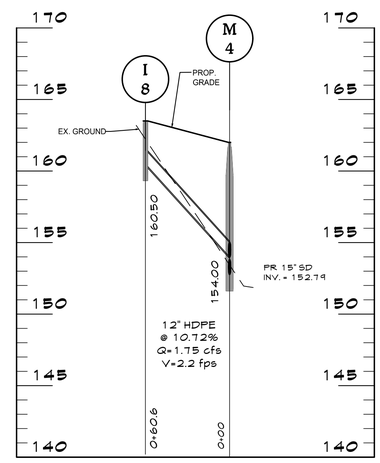
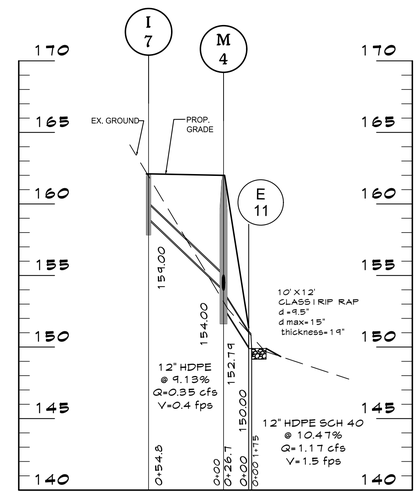
1"=5' (VERT.)



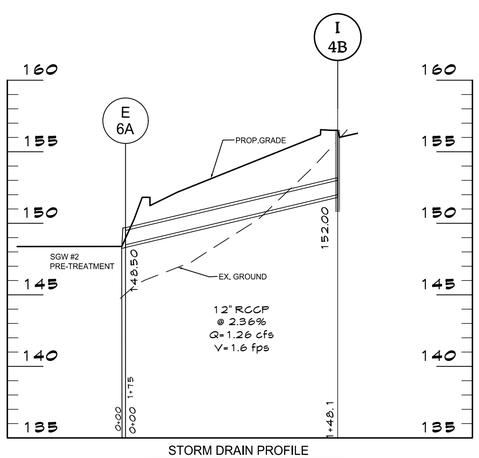
STORM DRAIN PROFILE

SCALE: 1"=50' (HORIZ.)
1"=5' (VERT.)



STORM DRAIN PROFILE

SCALE: 1"=50' (HORIZ.)
1"=5' (VERT.)



STORM DRAIN PROFILE

SCALE: 1"=50' (HORIZ.)
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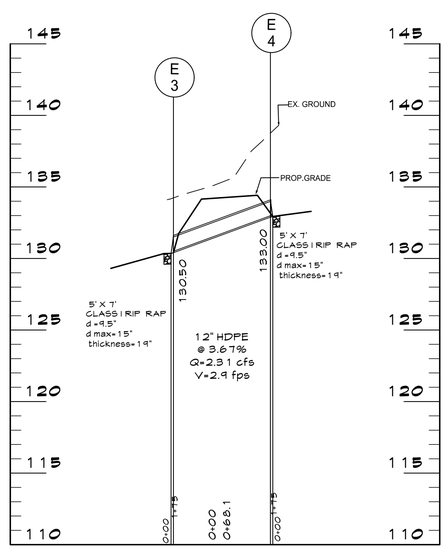
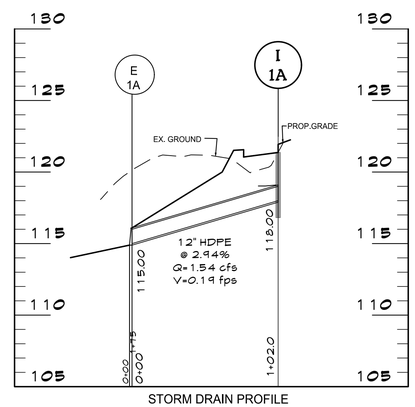


STORM DRAIN PROFILE

SCALE: 1"=50' (HORIZ.)
1"=5' (VERT.)



STORM DRAIN PROFILE

SCALE: 1"=50' (HORIZ.)
1"=5' (VERT.)

SGW#1

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE AS SHOWN
DRAWN BY LMV/RDT
CHECKED BY MJP
SHEET 43 OF 52
PROJECT NO.: P588001
DATE: 2/7/2024

DESIGN DEVELOPMENT

Utility Profiles
Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

T:\2023\facilities\20235231.001 bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\20235231.001A(CD-35-36)Utility Profiles.dwg Feb 14, 2024 2:33pm kdarley

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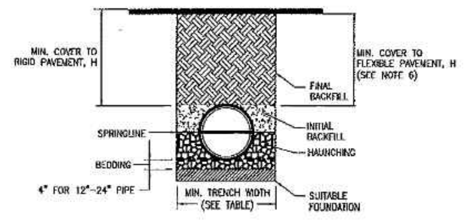
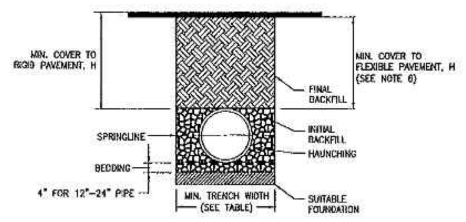


NON-TRAFFIC AREAS HDPE STORM DRAIN TRENCH INSTALLATION DETAIL

NOT TO SCALE



TRAFFIC AREAS HDPE STORM DRAIN TRENCH INSTALLATION DETAIL

NOT TO SCALE

TABLE 1, MINIMUM TRENCH WIDTH

PIPE DIAMETER	MINIMUM TRENCH WIDTH
12"	30"
15"	34"
18"	39"
24"	48"

TABLE 2, MINIMUM RECOMMENDED COVER BASED ON VEHICLE LOADING CONDITIONS

	SURFACE LIVE LOADING CONDITIONS	
PIPE DIA	H-25	HEAVY CONSTRUCTION (75T AXLE LOAD)*
12" – 24"	12"	48"

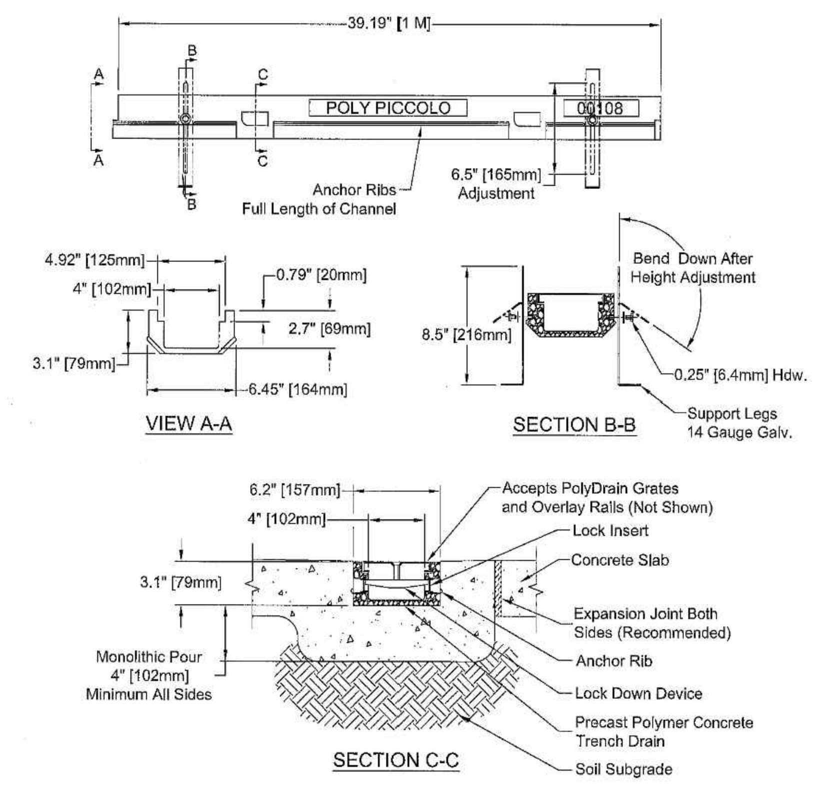
TABLE 3, MAXIMUM COVER FOR ADS N-12 HDPE PIPE, FT

	CLASS I
PIPE DIA	COMPACTED TO 95%
12"	26
15"	28
18"	24
24"	21

NOTES

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION, WITH THE EXCEPTION THAT THE INITIAL BACKFILL MAY EXTEND TO THE CROWN OF THE PIPE. BACKFILL TO BE PLACED UNDER THE PIPE HAUNCHES AND PLACED IN 8" LIFTS UNTIL THE CROWN OF PIPE IS REACHED. SOIL CLASSIFICATIONS ARE PER THE LATEST VERSION OF ASTM D2321. CLASS IV MATERIALS (MH, CH) AS DEFINED IN PREVIOUS VERSIONS OF ASTM D2321 ARE NOT APPROPRIATE BACKFILL MATERIALS.
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN BELOW THE GROUNDWATER ELEVATION OR OTHERWISE REQUIRED.
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II, III, OR IV. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. COMPACTION SHALL BE SPECIFIED BY THE ENGINEER IN ACCORDANCE WITH TABLE 3 FOR THE APPLICABLE FILL HEIGHTS LISTED. UNLESS OTHERWISE NOTED BY THE ENGINEER.
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II, III, OR IV IN THE PIPE ZONE EXTENDING TO THE CROWN OF THE PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST ADDITION. COMPACTION SHALL BE SPECIFIED BY THE ENGINEER IN ACCORDANCE WITH TABLE 3 FOR THE APPLICABLE HEIGHTS LISTED.
6. MINIMUM COVER: MINIMUM COVER H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. CONTRACTOR TO USE FLOWABLE FILL AS PORTION OF FINAL BACKFILL IF IT IS REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS CLASS I OR II MATERIAL COMPACTED TO 90% SPD AND CLASS III COMPACTED TO 95% SPD IS REQUIRED. FOR TRAFFIC APPLICATIONS MINIMUM COVER H IS 12" MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT. CLASS IV MATERIALS MAY NOT BE USED IN TRAFFIC AREAS WHERE COVER IS LESS THAN 72".

Plan Notes
1. Series Number: PD-Shallow 3.1
2. Channels are Non-Sloping with Flat Bottoms
3. Flow Cross-Section is 7.40 in² [47.7 cm²]
4. All Components are **Made in the USA**.
5. Concrete: Concrete Thickness and Reinforcement per Structural Engineer's Specification for the Application.



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ABT, INC. P.O. BOX 837, 259 MURDOCK ROAD TROUTMAN, NC 28166 (704) 528-9806

PolyDrain-Shallow - 4" [100mm] ID Precast Trench Drain 2.70" [68.7mm] Inside Depth Channel

SERIES: PD-Shallow 3.1 REV: 00

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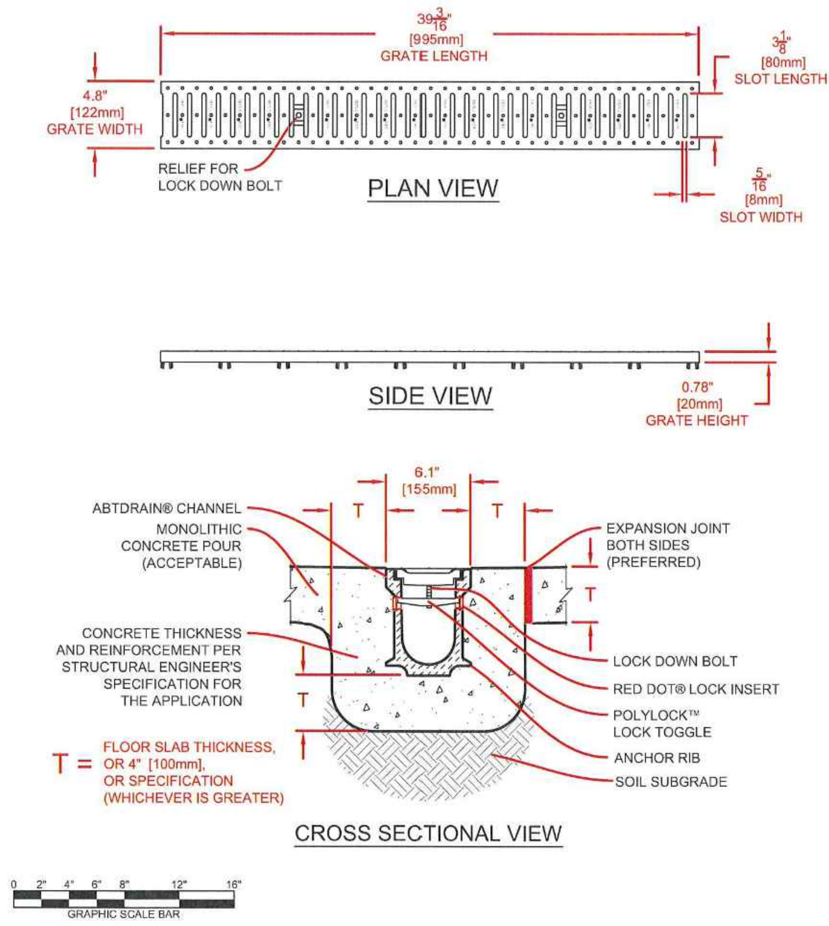

SPECIFICATION DRAWING ©2005 ABT, Inc.

INLAY GRATE - REINFORCED SLOTTED GALVANIZED STEEL

ABT, INC. P.O. BOX 837, 259 MURDOCK ROAD TROUTMAN, NC 28166 (704) 528-9806

FILE: S-2422-00 PART: 2422

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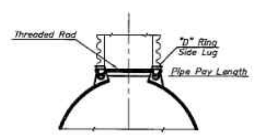
END SECTIONS FOR HDPE PIPE

Dia.	Gauge	Weight	* A	* H	* L	* W	Slope	Overall Width
6"	18	10	4	3	8	12	2	20"
8"	18	14	5 3/4	4	14 1/2	16	2 1/4	27 1/2"
10"	18	17	7 5/8	6	14 1/2	20	2 1/2	35 1/4"
12"	16	25	7	6	21	24	2 1/2	38"
15"	16	33	8	6	26	30	2 1/2	46"
18"	16	42	8	6	31	36	2 1/2	57"
21"	16	49	9	6	36	42	2 1/2	60"
24"	16	65	10	6	41	48	2 1/2	68"
30"	14	123	12	8	51	60	2 1/2	84"
36"	14	135	14	9	60	72	2 1/2	100"
42"	12	320	16	11	69	84	2 1/2	116"
48"	12	375	18	12	78	90	2 1/4	126"
54"	12	440	18	12	84	102	2 1/4	138"
60"	12/10	610	18	12	87	114	2	150"

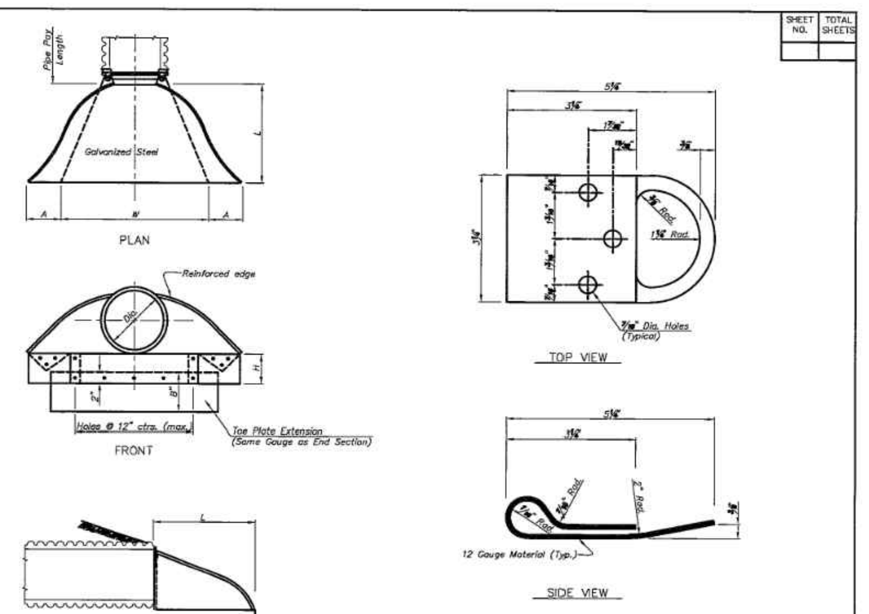
Toe plate extensions where specified, to be punched to match holes in apron lip. 3/8" bolts to be furnished. The length of toe plate to be as follows: W + 10" for 12" to 30" diameter pipes inclusive. W + 20" for 36" to 60" diameter pipes inclusive.

Multiple panel end sections shall have lap seams which are to be tightly jointed by bolts. Corner plate, and toe plate to be same gauge as end section.

* = Dimensions in Inches Plus or Minus Standard Shop Tolerance.



TYPE 2 CONNECTIONS
(12" & Larger)



"D" RING SIDE LUG
TYPE 2 ATTACHMENT DETAILS

SHEET NO. | TOTAL SHEETS

No.	Date	Revisions

STANDARD END SECTION FOR HDPE PIPES

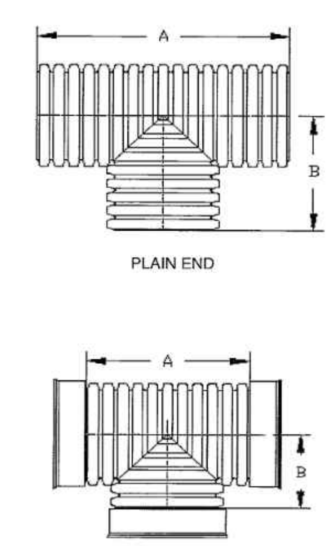
Sept. 2019

DUAL WALL FABRICATED TEES
4" - 30" DIAMETER

	PART #	PIPE SIZE	A	B	JOINT
**	0460AN	4 in (100 mm)	12.8 in (324 mm)	6.2 in (158 mm)	*
**	0661AN	6 in (150 mm)	16.5 in (419 mm)	8.1 in (207 mm)	*
**	0862AN	8 in (200 mm)	21.0 in (533 mm)	10.6 in (268 mm)	*
**	1063AN	10 in (250 mm)	26.0 in (660 mm)	12.6 in (320 mm)	*
	1264AN	12 in (300 mm)	30.7 in (780 mm)	15.4 in (390 mm)	*
	1264AN85B	12 in (300 mm)	21.1 in (536 mm)	10.6 in (268 mm)	ST
	1264AN65B	12 in (300 mm)	21.1 in (536 mm)	10.6 in (268 mm)	WT
	1565AN	15 in (375 mm)	38.9 in (987 mm)	19.4 in (494 mm)	*
	1565AN85B	15 in (375 mm)	23.3 in (592 mm)	11.7 in (296 mm)	ST
	1565AN65B	15 in (375 mm)	23.3 in (592 mm)	11.7 in (296 mm)	WT
	1866AN	18 in (450 mm)	42.9 in (1089 mm)	21.4 in (545 mm)	*
	1866AN85B	18 in (450 mm)	26.8 in (681 mm)	13.4 in (340 mm)	ST
	1866AN65B	18 in (450 mm)	26.8 in (681 mm)	13.4 in (340 mm)	WT
	2467AN	24 in (600 mm)	50.4 in (1280 mm)	25.2 in (640 mm)	*
	2467AN85B	24 in (600 mm)	37.8 in (960 mm)	18.9 in (480 mm)	ST
	2467AN65B	24 in (600 mm)	37.8 in (960 mm)	18.9 in (480 mm)	WT

* = PLAIN END
ST = SOIL TIGHT
WT = WATER TIGHT
** LIMITED AVAILABILITY. PLEASE SEE INJECTION MOLDED FITTING SECTION FOR OTHER AVAILABLE FITTINGS

NOTE: ALL FITTINGS DIMENSIONS ARE FOR REFERENCE ONLY



ADS ADVANCED DRAINAGE SYSTEMS, INC.

DRAWING #:	2400	
DRAWN BY:	JCB	05.23.07
APPROVED BY:	JCB	06.26.07
REVISIONS:	TJR	2/2/2010

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: ______

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED		APPROVED	DATE	APPROVED	DATE
DATE	BY	CHIEF ENGINEER		PROJECT MANAGER	
		APPROVED	DATE	APPROVED	DATE
		ASSISTANT CHIEF ENGINEER		CHIEF, RIGHT OF WAY	

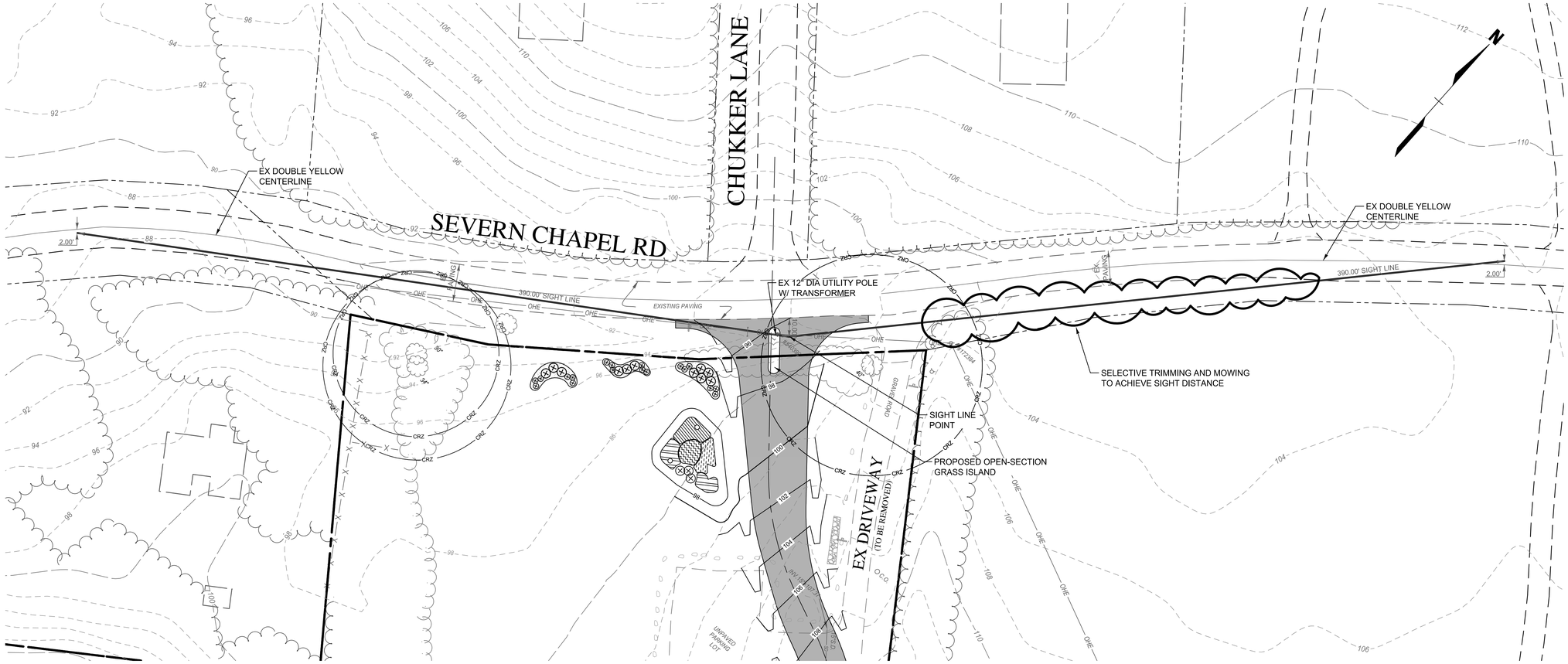
SCALE AS SHOWN
DRAWN BY LMV/RDT
CHECKED BY MJP
SHEET 44 OF 52
PROJECT NO.: P588001
DATE: 2/7/2024

DESIGN DEVELOPMENT

Utility Details

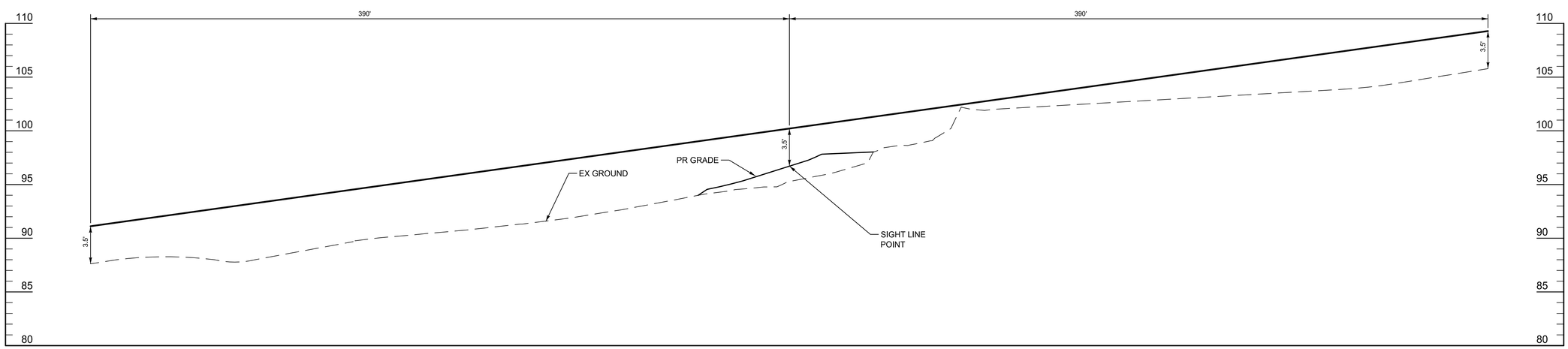
Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.
Tax Map 37, Grid 11, Parcel 86



PLAN

SCALE: 1"=30'



SIGHT LINE PROFILE

SCALE: HORIZ: 1"=30'
VERT: 1"=5'

LEGEND

- Property Line
- Adjoiner / Lot Line
- Existing Minor Contour (676)
- Existing Major Contour (670)
- Existing Edge of Road/Paving
- Soil Line
- Existing Storm Drain (SD — EX. 15" D.)
- Existing Water (W — EX. 12" W.)
- Existing Sewer (SAN — EX. 8" S.)
- Existing Gas Line (G — EX. 8" G.)
- Existing Underground Electric Line (E)
- Existing Overhead Electric Line (OHE)
- Existing Conduit Line (C)
- Existing Fiber Optic Line (FO)
- Existing Cable Line (CTV)
- Existing Telephone Line (T)
- Existing Chain Link Fence
- Existing Split Rail Fence
- Existing Trail
- Existing Tree Line
- Existing Building
- Non-Tidal Wetlands and 25' Buffer
- 100' Stream Buffer (FB)
- FEMA 100-Year Flood Plain (FP)
- Chesapeake Bay Critical Area Limits
- Water Edge or Stream Centerline
- Zoning Line

DRIVEWAY ENTRANCE DATA

POSTED SPEED = 35 mph
DESIGN SPEED = 45 mph
ROAD CLASSIFICATION = COLLECTOR (SCENIC BYWAY)
REQUIRED SIGHT DISTANCE (based of off posted speed):
CARS = 390'
TRUCKS = 490'

PROVIDED SIGHT DISTANCE:
LOOKING LEFT = 390'
LOOKING RIGHT 390'

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE		
		CHIEF ENGINEER	PROJECT MANAGER	SCALE	AS SHOWN
		APPROVED DATE	APPROVED DATE	DRAWN BY	LMV/RDT
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	CHECKED BY	MJP
				SHEET	45 OF 52
				PROJECT NO.:	P588001
				DATE:	2/7/2024

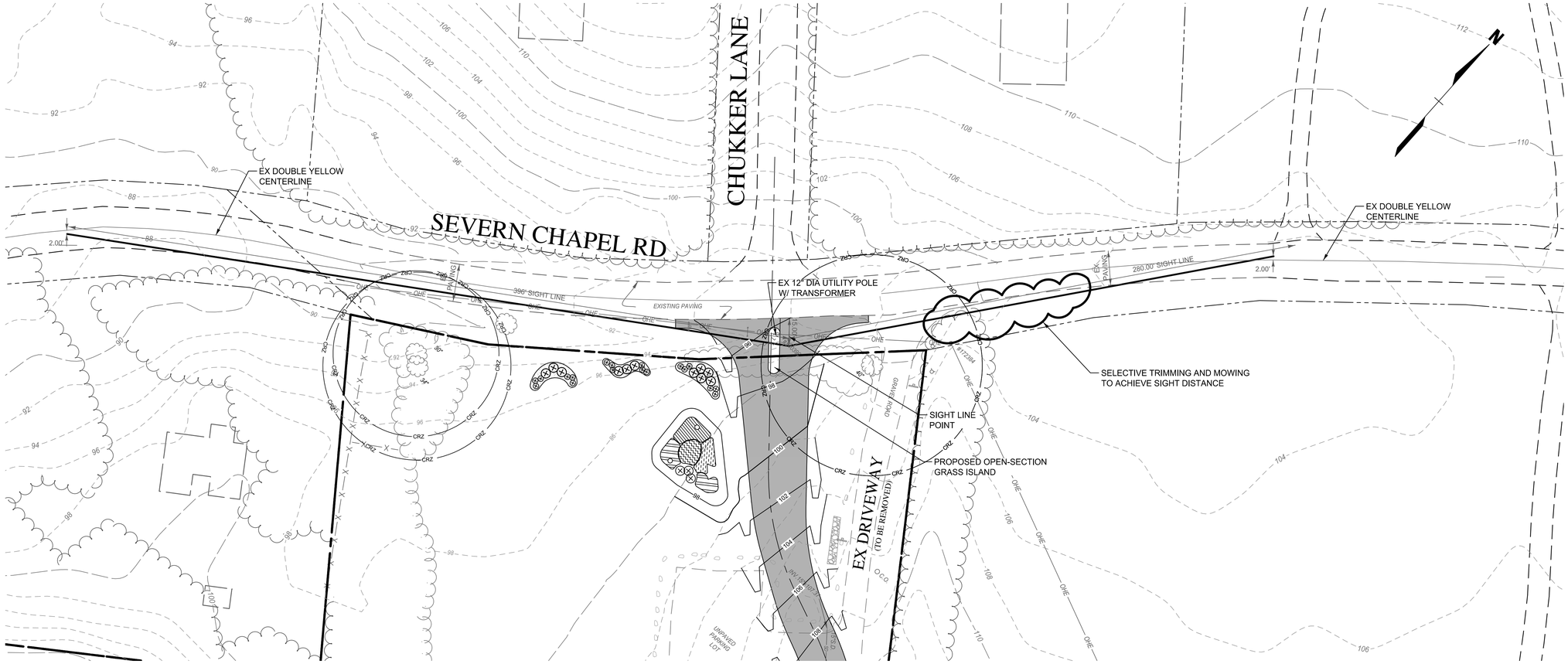
DESIGN DEVELOPMENT

Entrance And Sight Line Plan
(10ft Offset)
Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

T:\2023\facilities\20235231.001a bacon ridge construction drawings phase 1\CIVIL\CADD\Drawings\3. Construction Documents\20235231.001A (CD-31) EntrancePlan.dwg Feb 14, 2024 2:39pm kdarling



PLAN

SCALE: 1"=30'

LEGEND

- Property Line
- Adjoiner / Lot Line
- 676 — Existing Minor Contour
- 670 — Existing Major Contour
- Existing Edge of Road/Paving
- UuB (D) / UuC (D) — Soil Line
- SD — EX 15" D. — Existing Storm Drain
- W — EX 12" W. — Existing Water
- SAN — EX 8" S. — Existing Sewer
- G — EX 8" G. — Existing Gas Line
- E — Existing Underground Electric Line
- OHE — Existing Overhead Electric Line
- C — Existing Conduit Line
- FO — Existing Fiber Optic Line
- CTV — Existing Cable Line
- T — Existing Telephone Line
- X — X — X — Existing Chain Link Fence
- Existing Split Rail Fence
- Existing Trail
- Existing Tree Line
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- FB — 100' Stream Buffer
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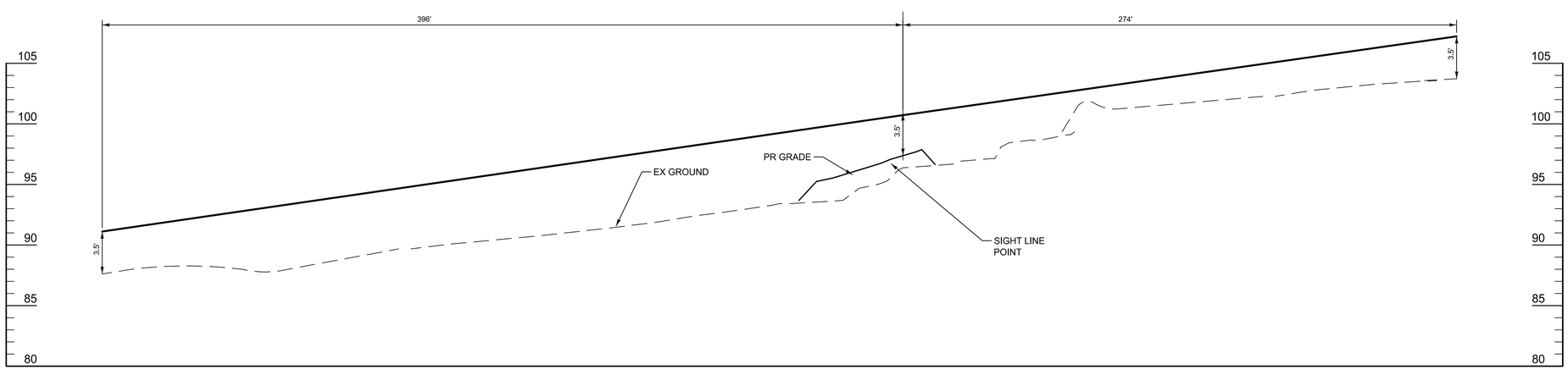

SIGHT LINE PROFILE

SCALE: HORIZ: 1"=30'
VERT: 1"=5'

DRIVEWAY ENTRANCE DATA

POSTED SPEED = 35 mph
DESIGN SPEED = 45 mph
ROAD CLASSIFICATION = COLLECTOR (SCENIC BYWAY)
REQUIRED SIGHT DISTANCE (based of off posted speed):
CARS = 390'
TRUCKS = 490'

PROVIDED SIGHT DISTANCE:
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LOOKING RIGHT 280'

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED	
DATE	BY

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE	AS SHOWN
DRAWN BY	LMV/RDT
CHECKED BY	MJP
SHEET	46 OF 52
PROJECT NO.:	P588001
DATE:	2/7/2024

DESIGN DEVELOPMENT

Entrance And Sight Line Plan
(15ft Offset)
Severn Chapel Area
of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

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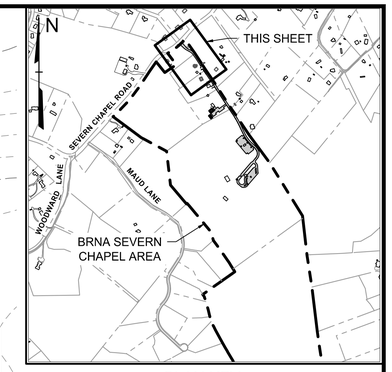
PLAN

SCALE: 1" = 30'



PLAN KEY

SCALE: 1" = 1000'

LEGEND

- Property Line
- Adjoiner / Lot Line
- Zoning Line
- Existing Minor Contour (676)
- Existing Major Contour (670)
- Existing Edge of Road/Paving
- Existing Storm Drain (SD — EX. 15" D.)
- Existing Water (W — EX. 12" W.)
- Existing Overhead Electric Line (OHE)
- Existing Utility Pole
- Existing Guy Pole / Guy Wire
- Existing Sign
- Existing Fence (X)
- Existing Trail
- Existing Tree Line
- Existing Deciduous Tree
- Existing Evergreen Tree
- Critical Root Zone (CRZ)
- Existing Building
- Limit of Disturbance (LOD)
- Proposed Edge of Road/Paving
- Proposed Minor Contour (676)
- Proposed Major Contour (670)
- Proposed Paving
- Proposed Inlet and Storm Drain (PR. 12" D.)
- Proposed Storm Drain Outfall
- Proposed Check Dam
- Relocated Sign
- Relocated Utility Pole
- Relocated Guy Pole / Guy Wire
- Relocated Overhead Electric Line (OHE)
- Proposed Major Tree
- Proposed Minor Tree
- Proposed Evergreen Tree
- Proposed Shrubs
- Proposed Mulched Bed

CENTURY ENGINEERING
A Kleinfelder Company
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 www.centuryeng.com

DATE: _____

LICENSE NO.32574

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE	SCALE AS SHOWN	DESIGN DEVELOPMENT
		CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY LMV/RDT	Landscape Plan
		APPROVED DATE	APPROVED DATE	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 47 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

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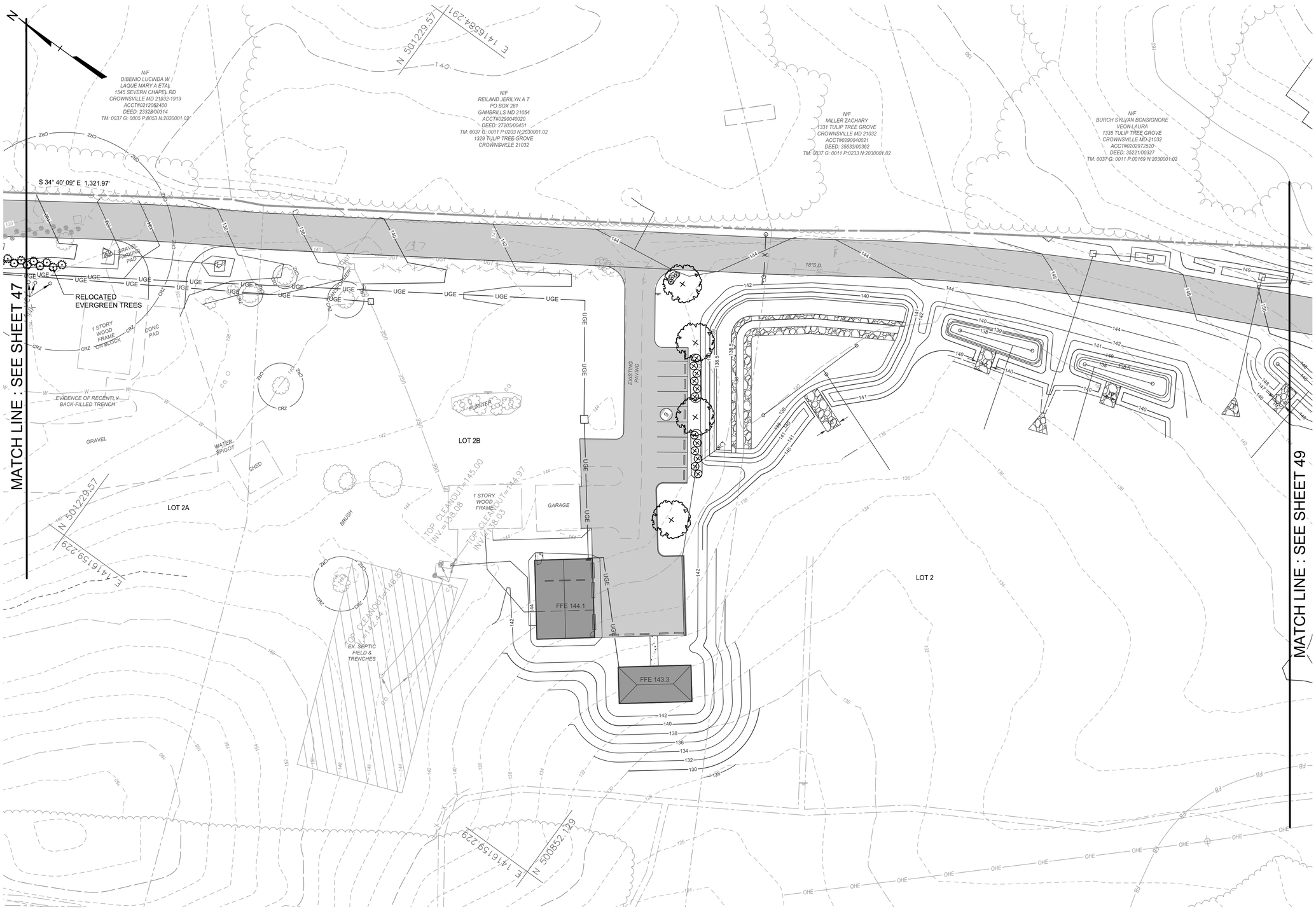

PLAN

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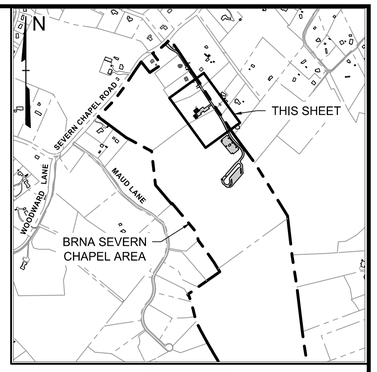

PLAN KEY

SCALE: 1" = 1000'

LEGEND

- Property Line
- Adjoiner / Lot Line
- Existing Minor Contour (676)
- Existing Major Contour (670)
- Existing Edge of Road/Paving
- Existing Storm Drain (SD — EX 15" D.)
- Existing Water (W — EX 12" W.)
- Existing Underground Telephone Line (UGT)
- Existing Underground Electric Line (UGE)
- Existing Overhead Electric Line (OHE)
- Existing Utility Pole
- Existing Guy Pole / Guy Wire
- Existing Sign
- Existing Fence
- Existing Tree Line
- Existing Deciduous Tree
- Existing Evergreen Tree
- Critical Root Zone (CRZ)
- Existing Trail
- Existing Building
- Limit of Disturbance (LOD)
- Proposed Building
- Proposed Edge of Road/Paving
- Proposed Minor Contour (676)
- Proposed Major Contour (670)
- Proposed Spot Elevation (+143.6)
- Proposed Paving
- Proposed Major Tree
- Proposed Minor Tree
- Proposed Evergreen Tree
- Proposed Shrubs
- Proposed Mulched Bed

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REVISED DATE	BY	APPROVED DATE	APPROVED DATE	SCALE AS SHOWN	DESIGN DEVELOPMENT
		CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY LMV/RDT	Landscape Plan
		APPROVED DATE	APPROVED DATE	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 48 OF 52	2nd Tax District, Anne Arundel Co., MD. — Tax Map 37, Grid 11, Parcel 86
				PROJECT NO.: P588001	
				DATE: 2/7/2024	

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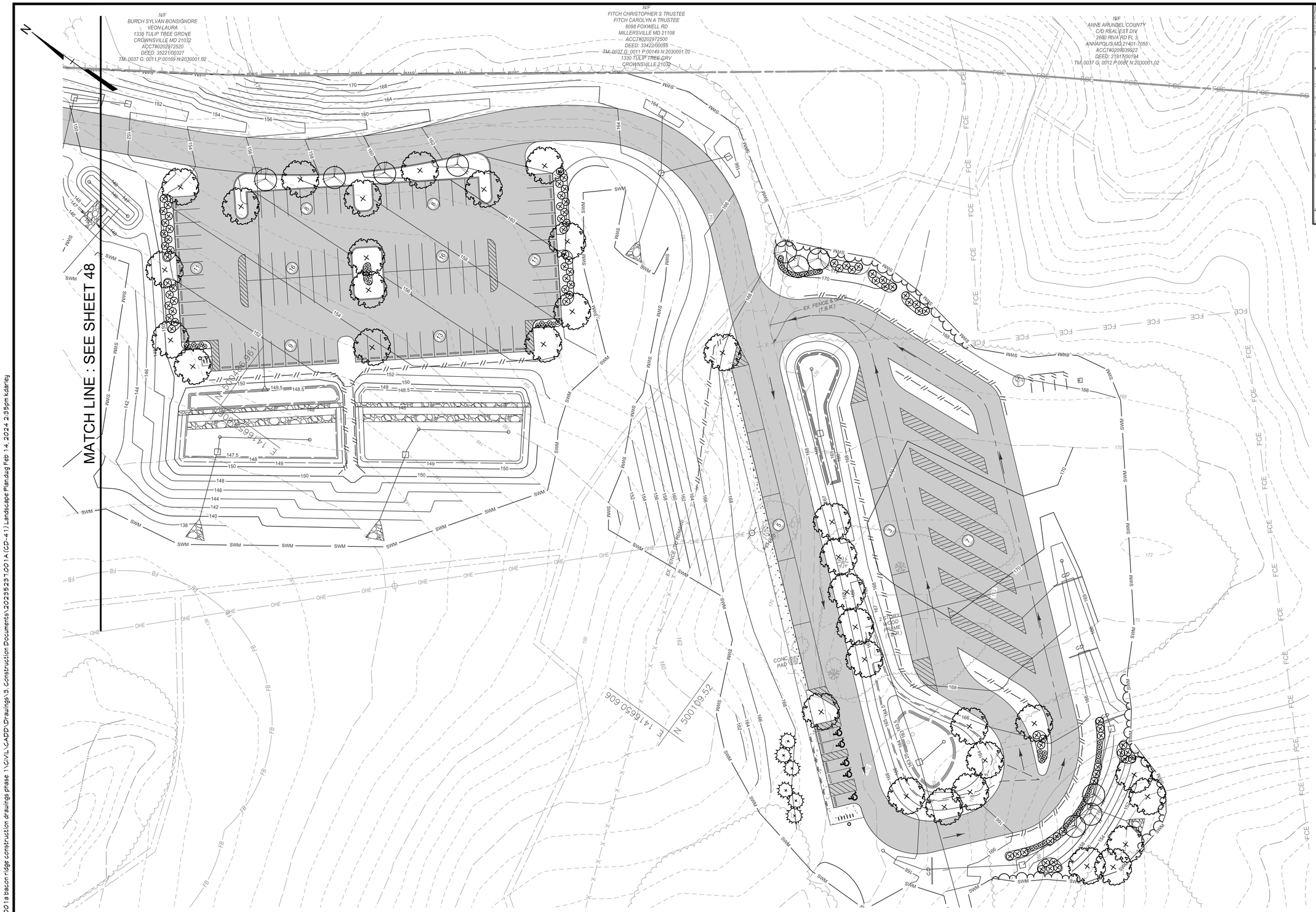

PLAN

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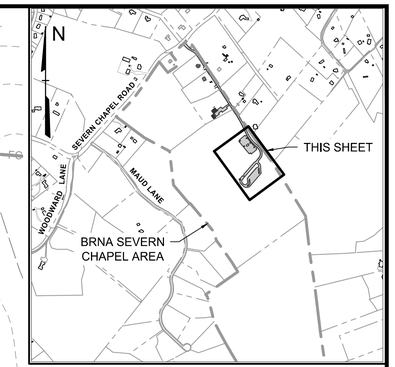

PLAN KEY

SCALE: 1" = 1000'

LEGEND

- Property Line
- Adjoiner / Lot Line
- Existing Minor Contour (676)
- Existing Major Contour (670)
- Existing Edge of Road/Paving
- Existing Overhead Electric Line (OHE)
- Existing Utility Pole
- Existing Guy Pole / Guy Wire
- Existing Sign
- Existing Fence (X)
- Existing Trail
- Existing Tree Line
- Existing Deciduous Tree
- Existing Evergreen Tree
- Critical Root Zone (CRZ)
- 100' Stream Buffer (FB)
- Water Edge or Stream Centerline
- Existing Building
- Limit of Disturbance (LOD)
- Proposed Building
- Proposed Edge of Road/Paving
- Proposed Minor Contour (676)
- Proposed Major Contour (670)
- Proposed Spot Elevation (+143.6)
- Proposed Paving
- Proposed Inlet and Storm Drain
- Proposed Tree Line
- Proposed Major Tree
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REVISED	
DATE	BY

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DEPARTMENT OF PUBLIC WORKS

APPROVED	DATE	APPROVED	DATE
CHIEF ENGINEER		PROJECT MANAGER	
APPROVED	DATE	APPROVED	DATE
ASSISTANT CHIEF ENGINEER		CHIEF, RIGHT OF WAY	

SCALE	AS SHOWN
DRAWN BY	LMV/RDT
CHECKED BY	MJP
SHEET	49 OF 52
PROJECT NO.:	P588001
DATE:	2/7/2024

DESIGN DEVELOPMENT

Landscape Plan

Severn Chapel Area of the Bacon Ridge Natural Area

2nd Tax District
Anne Arundel Co., MD.

Tax Map 37, Grid 11, Parcel 86

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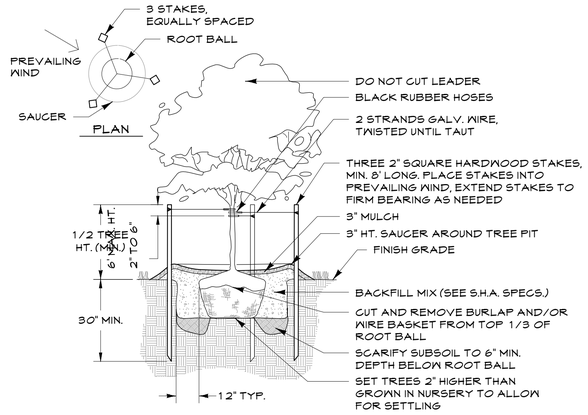
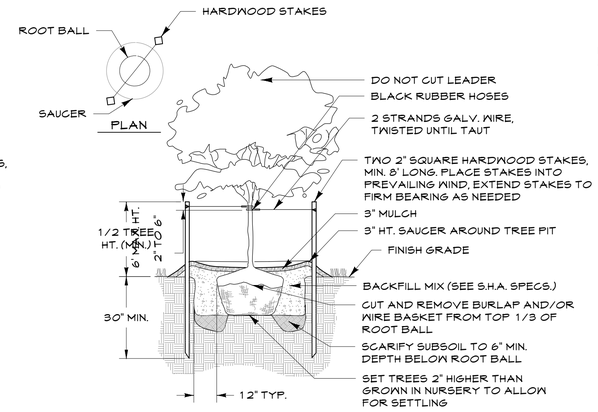


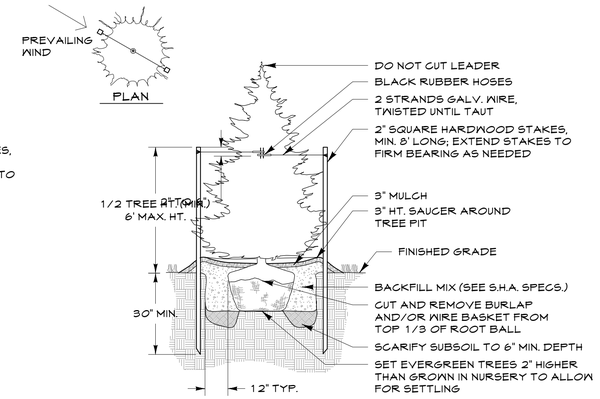
DECIDUOUS TREE PLANTING

NOT TO SCALE



FLOWERING TREE PLANTING

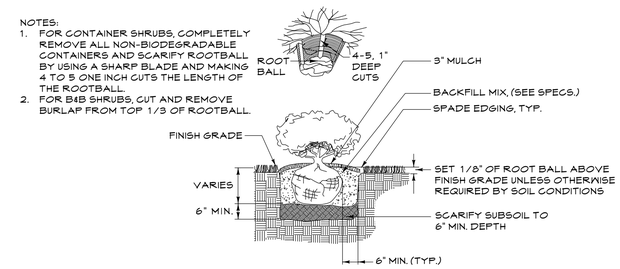
NOT TO SCALE



EVERGREEN TREE PLANTING

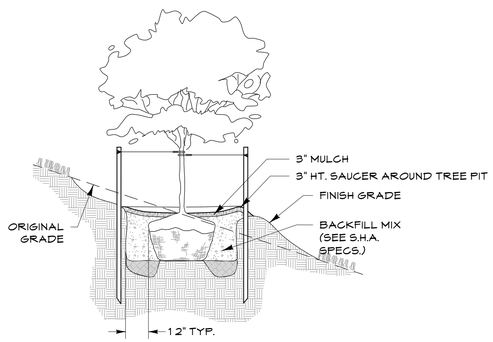
NOT TO SCALE

NOTES:
1. FOR CONTAINER SHRUBS, COMPLETELY REMOVE ALL NON-BIODEGRADABLE CONTAINERS AND SCARIFY ROOTBALL BY USING A SHARP BLADE AND MAKING 4 TO 5 ONE INCH CUTS THE LENGTH OF THE ROOTBALL.
2. FOR B&B SHRUBS, CUT AND REMOVE BURLAP FROM TOP 1/3 OF ROOTBALL.



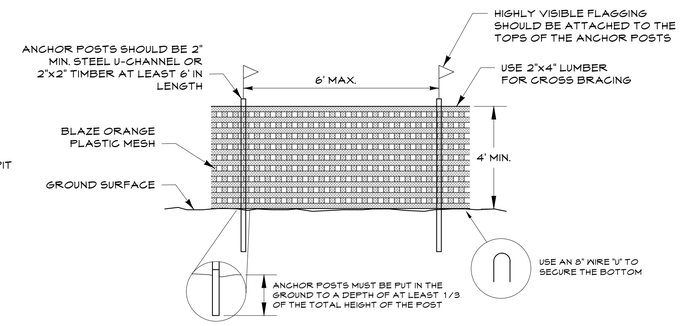
SHRUB PLANTING

Not To Scale



TREE PLANTING ON SLOPE (TYP.)

Not To Scale



TREE PROTECTION FENCE

Not To Scale

PLANTING NOTES

1. PLANT MATERIAL SUBSTITUTIONS WILL NOT BE ACCEPTED WITHOUT APPROVAL OF THE LANDSCAPE ARCHITECT.
2. ALL SHRUBS AND GROUNDCOVER AREAS SHALL BE PLANTED IN CONTINUOUS PREPARED PLANTING BEDS.
3. ALL SHRUB BEDS SHALL BE MULCHED WITH HARDWOOD MULCH AS DETAILED AND SPECIFIED EXCEPT WHERE NOTED ON PLANS.
4. MAINTAIN POSITIVE DRAINAGE OUT OF PLANTING BEDS AT A MINIMUM OF TWO PERCENT SLOPE.
5. PLANT QUANTITIES ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR. IF DISCREPANCIES EXIST BETWEEN QUANTITIES SHOWN ON THE PLAN AND THOSE SHOWN ON THE PLANT LIST, THE QUANTITIES ON THE PLAN SHALL TAKE PRECEDENCE.
6. ALL AREAS WITHIN CONTRACT LIMITS DISTURBED DURING OR PRIOR TO CONSTRUCTION NOT DESIGNATED TO RECEIVE PLANTINGS AND MULCH SHALL BE FINE GRADED AND SEEDED IN ACCORDANCE WITH PLANTING AND CONSTRUCTION.
7. THE CONTRACTOR SHALL NOTIFY MISS UTILITY, (800-257-7777) A MINIMUM OF THREE WORKING DAYS PRIOR TO PLANTING AND CONSTRUCTION.
8. ALL PLANT MATERIAL SHALL BE NURSERY GROWN, LANDSCAPE QUALITY, AND SHALL CONFORM TO AMERICAN STANDARDS FOR NURSERY STOCK (ANSI Z60.1) PUBLISHED BY AMERICAN HORT.
9. ALL PLANTING PROCEDURES SHALL CONFORM TO LANDSCAPE CONTRACTORS ASSOCIATION SPECIFICATION GUIDELINES FOR BALTIMORE/WASHINGTON METROPOLITAN AREA (LATEST EDITION).
10. CONTRACTOR SHALL TEST PIT PRIOR TO PLANT INSTALLATION.

PLANTING PROVIDED

SYMBOL	TYPE	QTY
	MAJOR DECIDUOUS TREES	38
	MINOR DECIDUOUS TREES	10
	EVERGREEN TREES	6
	SHRUBS	181

PLANT LIST

KEY	QTY	SCIENTIFIC NAME	COMMON NAME	SIZE	COMMENTS
MAJOR DECIDUOUS TREES					
CO		Carya ovata	Shagbark Hickory	2" - 2 ½" cal.	B&B
CE		Celtis occidentalis	Hackberry	2" - 2 ½" cal.	B&B
CK		Cladrastis kentukea	American Yellowwood	2" - 2 ½" cal.	B&B
LT		Liriodendron tulipifera	Tulip Poplar	2" - 2 ½" cal.	B&B
TA		Tilia americana	American Linden	2" - 2 ½" cal.	B&B
TOTAL	38				
MINOR DECIDUOUS TREES					
CC		Cercis canadensis	Eastern Redbud	1" - 1 ½" cal.	B&B
TOTAL	10				
EVERGREEN TREES					
PS		Pinus strobus	Eastern White Pine	6' - 8' ht.	B&B; full to ground
TOTAL	6				
SHRUBS					
AM		Aronia melanocarpa	Black Chokeberry	18" - 24" ht.	Container
CA		Ceanothus americanus	New Jersey Tea	18" - 24" ht.	Container
CR		Cornus racemosa	Gray Dogwood	24" - 30" ht.	Container
PF		Potentilla fruticosa	Shrubby Cinquefoil	12" - 15" ht.	Container
PO		Physocarpus opulifolius	Ninebark	24" - 30" ht.	Container
VD		Viburnum dentatum	Arrowwood Viburnum	24" - 30" ht.	Container
TOTAL	181				

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DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE	SCALE AS SHOWN	DESIGN DEVELOPMENT
		CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY LMV/RDT	Landscape Notes & Details
		APPROVED DATE	APPROVED DATE	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 50 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

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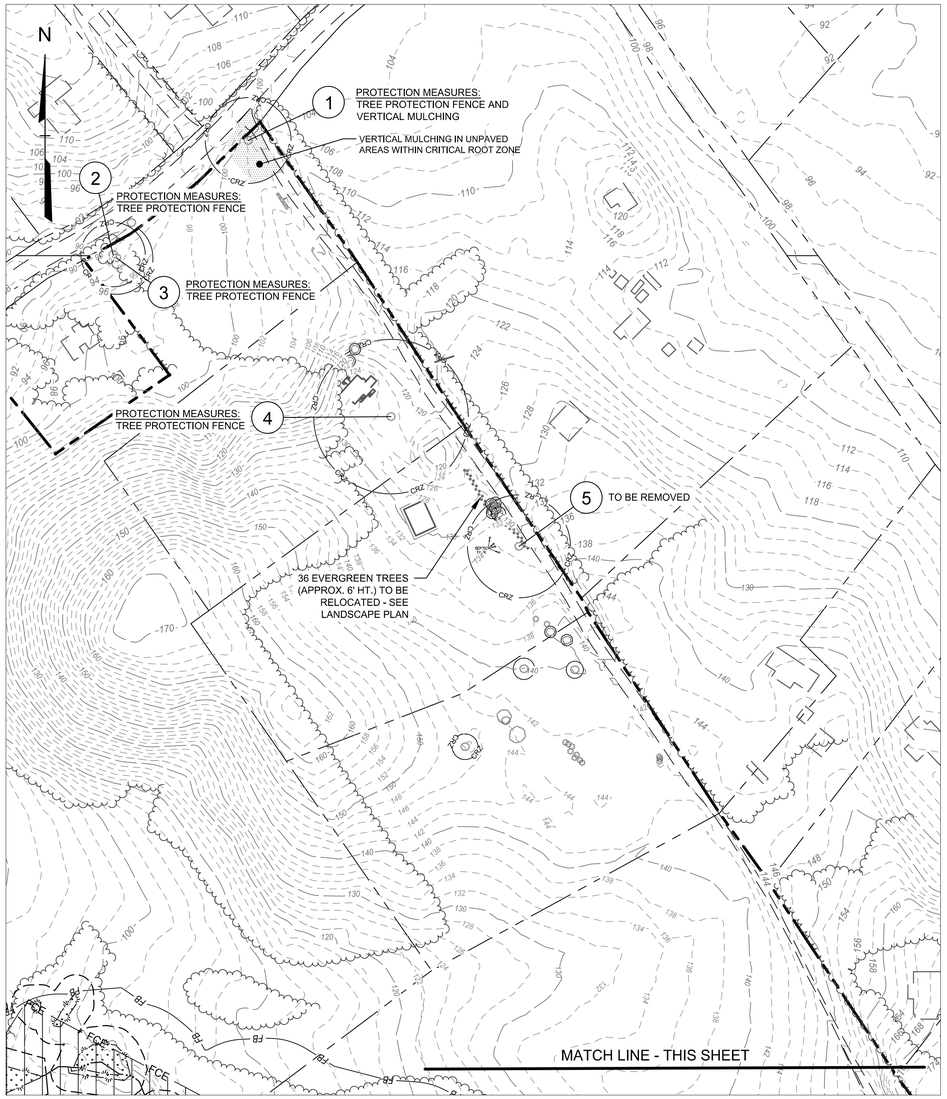
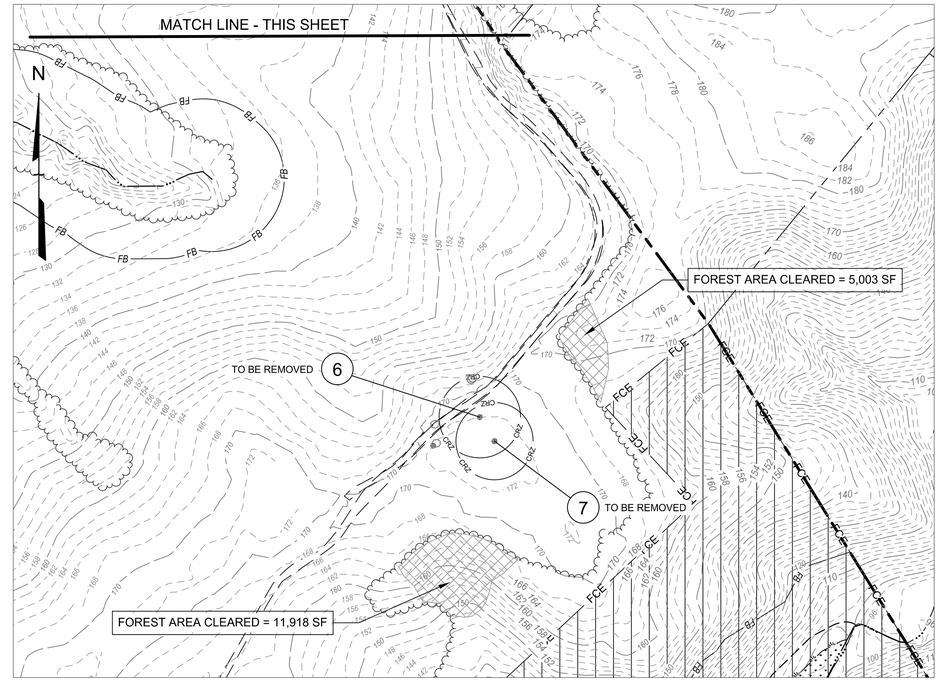


PLAN

SCALE: 1" = 100'

0 100' 200'



PLAN

SCALE: 1" = 100'

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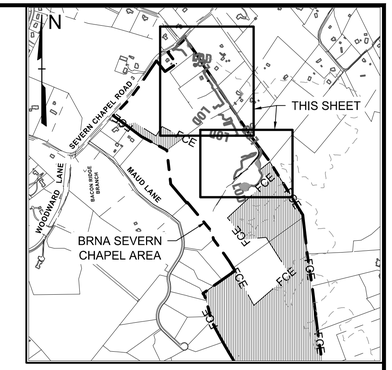

PLAN KEY

SCALE: 1" = 1000'

LEGEND

- Property Line
- Adjoiner / Lot Line
- Existing Edge of Road/Paving
- Existing Minor Contour
- Existing Major Contour
- Existing Building
- Non-Tidal Wetlands and 25' Buffer
- Water Edge or Stream Centerline
- 100' Stream Buffer
- FEMA 100-Year Flood Plain
- Forest Conservation Easement
- Existing Tree Line
- Critical Root Zone
- Limit of Disturbance
- Proposed Forest Clearing
- Proposed Vertical Mulching Area

SPECIMEN TREES

KEY	SPECIES	SIZE (DBH)	CRZ	CONDITION	PROPOSED ACTION	CRZ IMPACT
1	Liriodendron tulipifera	40"	60'	Good	Retained w/ CRZ impacts	20.6%
2	Liriodendron tulipifera	30"	45'	Good	Retained	0.0%
3	Liriodendron tulipifera	34"	51'	Good	Retained	0.0%
4	Acer saccharinum	72"±	108'	Fair	Retained w/ CRZ impacts	22.2%
5	Acer saccharinum	48"	72'	Fair	Removed	49.6%
6	Juniperus virginiana	38"	57'	Fair	Removed	100.0%
7	Pinus strobus	36"	54'	Fair	Removed	100.0%

TOTAL FOREST AREA CLEARED

16,921 SF

EXCEPTION TO §17-6 SUBTITLE 3: FOREST CONSERVATION

In accordance with § 17-6-301.(b) of the Anne Arundel County Code, the proposed improvements to this site do not result in more than 20,000 square feet of forest clearing. No additional clearing is expected for future site improvements. Therefore, the requirements of Subtitle 3, Forest Conservation, do not apply to this site.

A Declaration of Intent will be filed in accordance with § 17-6-301.(c) prior to approval of the grading permit.

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DEPARTMENT OF PUBLIC WORKS

REVISED DATE	BY	APPROVED DATE	APPROVED DATE	SCALE AS SHOWN	DESIGN DEVELOPMENT
		CHIEF ENGINEER	PROJECT MANAGER	DRAWN BY LMV/RDT	Tree Inventory Plan
		APPROVED DATE	APPROVED DATE	CHECKED BY MJP	Severn Chapel Area of the Bacon Ridge Natural Area
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	SHEET 51 OF 52	
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. Tax Map 37, Grid 11, Parcel 86

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CENTURY ENGINEERING
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MEETING SUMMARY

Project: Bacon Ridge Natural Area – Severn Chapel Area (P588001)
Purpose: Tree Consultation
Date: May 4, 2023 at 2:30 P.M.

The meeting was held on site. Specimen trees and off-site trees potentially impacted by the proposed development were examined. Schematic plan drawings were used to review the proposed development and limits of disturbance. Findings and recommendations by the attending Arborist are listed below. The following individuals were in attendance:

Bud Reaves – Arborist, Anne Arundel County Department of Inspections and Permits
Emma Pfefferkorn – Anne Arundel County Department of Public Works
Michael Pieranunzi – Century Engineering, a Kleinfelder Company
Lydia Vaccare – Century Engineering, a Kleinfelder Company

40" DBH Tulip Poplar

- Located immediately south of the existing park entrance.
- Potential proposed disturbance includes excavation/grading in the outer critical root zone for the proposed entrance road and accompanying runoff conveyance swales, and removal of the existing entrance.
- **Findings:** The tree appears to be in good condition. The tree's drip line is relatively narrow. The proposed limits of grading are acceptable. Removal of the existing entrance will likely be beneficial for the tree.
- **Recommendations:** Vertical mulching throughout the entire root zone to treat compaction and encourage small root growth.

72"± DBH Silver Maple (Multi-stem)

- Located on Lot 1A adjacent to the existing garage and 2-story building.
- Potential proposed disturbance includes excavation/grading in the outer critical root zone for the proposed road and accompanying runoff conveyance swale.
- **Findings:** The tree appears to be in fair condition. The proposed limits of grading are acceptable; not likely to impact the tree.
- **Recommendations:** N/A

48" DBH Silver Maple

- Located on Lot 2A between the existing park road and 1-story building.
- The current design plans propose to remove the tree to accommodate the proposed road and accompanying runoff conveyance swale.
- **Findings:** The tree appears to be in fair condition. It is currently impacted by other activity taking place on the lot. Several Giant Arborvitae have been recently planted directly next to the tree.
- **Recommendations:** Removal of the tree is acceptable.

38" DBH Eastern Red Cedar

- Located on Lot 2 adjacent to the existing 2-story farmhouse.
- The current design plans propose to remove the tree to accommodate the proposed horse trailer and school bus parking area.
- **Findings:** The tree appears to be in fair condition. It is currently impacted by vine growth on the trunk and branches.
- **Recommendations:** Removal of the tree is acceptable.

36" DBH Eastern White Pine

- Located on Lot 2 adjacent to the existing 2-story farmhouse.
- The current design plans propose to remove the tree to accommodate the proposed horse trailer and school bus parking area.
- **Findings:** The tree appears to be in fair condition.
- **Recommendations:** Removal of the tree is acceptable.

Off-Site Trees

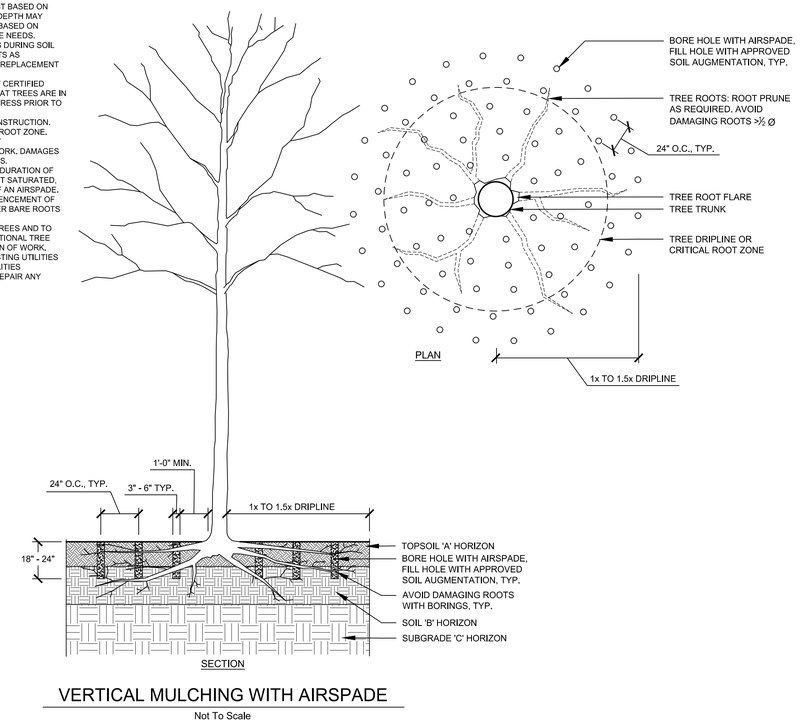
- Located along the northeastern property line from Severn Chapel Road and following the entire length of the existing park road/driveway.
- Potential proposed disturbance includes excavation/grading in the root zones for the proposed road.
- **Findings:** No specimen trees were visually identified along the existing road. The proposed limits of grading are acceptable.
- **Recommendations:** N/A

Earl Reaves Jr. CF — May 30, 2023

Earl "Bud" Reaves Jr. — **Date**
Anne Arundel County Department of Inspections and Permits

NOTES:

1. DEPTH AND SPACING OF BORE HOLES TO BE DETERMINED BY LANDSCAPE ARCHITECT AND/OR CERTIFIED ARBORIST BASED ON INITIAL SITE INVESTIGATION. SPECIFIED BORE HOLE DEPTH MAY RANGE FROM 18" TO 36" AND SHOULD BE SPECIFIED BASED ON INDIVIDUAL SITE CONDITIONS AND TREE HEALTHCARE NEEDS.
2. USE AIRSPADE TO BARE-ROOT IMPACTED PLANTINGS DURING SOIL AERATION, STOCKPILE, PROTECT, AND WATER PLANTS AS NECESSARY, AND ENSURE PROPER REPLANTING OR REPLACEMENT AT COMPLETION OF WORK.
3. ALL WORK TO BE DONE UNDER THE SUPERVISION OF CERTIFIED ARBORIST OR APPROVED CONTRACTOR. ENSURE THAT TREES ARE IN GOOD HEALTH AND NOT EXPERIENCING UNUSUAL STRESS PRIOR TO COMMENCING WORK.
4. PROTECT TREE AND TREE ROOTS THROUGHOUT CONSTRUCTION. AIRSPADE OR HAND DIG ONLY WITHIN THE CRITICAL ROOT ZONE. DOCUMENT AND ASSESS ALL DAMAGES TO TREES AT COMMENCEMENT AND THROUGH COMPLETION OF WORK. DAMAGES TO BE COMPENSATED BASED ON PRE-AGREED TERMS.
5. ENSURE PROPER SOIL MOISTURE LEVELS THROUGH DURATION OF WORK. SOIL MUST BE NEAR FIELD CAPACITY, BUT NOT SATURATED, AND PASS A FIELD MOISTURE TEST PRIOR TO USE OF AN AIRSPADE. HAND WATER TREES AS NECESSARY BEFORE COMMENCEMENT OF WORK AND WITHIN 24 HOURS OF COMPLETION. COVER BARE ROOTS AND WATER AS NECESSARY DURING WORK.
6. ARBORIST TO EVALUATE THE OVERALL HEALTH OF TREES AND TO MAKE A REPORT AND RECOMMENDATIONS FOR ADDITIONAL TREE CARE BEFORE, DURING, AND AFTER THE COMPLETION OF WORK.
7. CALL 811 OR CONTACT MISS UTILITY TO LOCATE EXISTING UTILITIES PRIOR TO ANY EXCAVATION. PROTECT EXISTING UTILITIES THROUGHOUT THE CONSTRUCTION PROCESS AND REPAIR ANY DAMAGE TO THESE AT NO COST TO THE OWNER.



VERTICAL MULCHING WITH AIRSPADE
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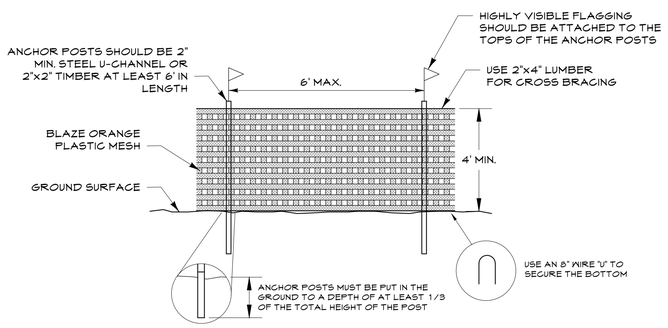

TREE PROTECTION FENCE
Not To Scale

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		CHIEF ENGINEER	PROJECT MANAGER	SCALE AS SHOWN	DESIGN DEVELOPMENT
		APPROVED / DATE	APPROVED / DATE	DRAWN BY LMV/RDT	Tree Protection Notes & Details
		ASSISTANT CHIEF ENGINEER	CHIEF, RIGHT OF WAY	CHECKED BY MJP	
				SHEET 52 OF 52	Severn Chapel Area of the Bacon Ridge Natural Area
				PROJECT NO.: P588001	
				DATE: 2/7/2024	2nd Tax District Anne Arundel Co., MD. — Tax Map 37, Grid 11, Parcel 86

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