

GENERAL NOTES

- 1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLANS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
2. SUBSTANTY ZONED RR-DEO PER THE 10-6-2013 COMPREHENSIVE ZONING PLAN.
3. THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
4. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENTS NO. 3414 AND 3416 WERE USED FOR THIS PROJECT.
5. TRACT BOUNDARY IS BASED ON FIELD RUN BOUNDARY SURVEY PERFORMED ON OR ABOUT SEPTEMBER 25, 2016, BY BENCHMARK ENGINEERING, INC.
6. TOPOGRAPHY SHOWN IS BASED ON FIELD-RUN SURVEY PERFORMED ON OR ABOUT AUGUST, 2017, BY BENCHMARK ENGINEERING, INC.
7. EXISTING UTILITIES SHOWN ARE BASED ON FIELD LOCATIONS BY BENCHMARK ENGINEERING, INC., HOWARD COUNTY GIS, F-18-081 AND SP-07-013.
8. WETLAND AND FOREST STAND DELINEATION WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DATED MARCH, 2018 AND APPROVED ON 12/17/2021.
9. THE GEOTECHNICAL REPORTS WERE PREPARED BY HILLIS-GARNEE ENGINEERING ASSOCIATES, INC. IN APRIL, 2007, AND GEOLAG GEOTECHNICAL LABORATORIES, INC. IN OCTOBER, 2013.
10. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS OR STREAMS, BUFFER ZONES, 100YR FLOODPLAIN, STEEP SLOPES OR FOREST CONSERVATION EASEMENTS, EXCEPT AS APPROVED BY THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.
11. THE 100-YEAR FLOODPLAIN STUDY WAS PREPARED BY BENCHMARK ENGINEERING, INC. IN MARCH, 2018. THERE IS NO CHANGE IN LAND USE WITHIN THE DRAINAGE AREA LIMITS FROM WHAT WAS USED IN THAT FLOODPLAIN ANALYSIS. THIS STUDY WAS APPROVED UNDER THE REVIEW OF F-18-081 AND APPROVED ON 10/2/2018. NO NEW FLOODPLAIN STUDY IS REQUIRED.
12. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO CEMETERIES OR HISTORIC STRUCTURES LOCATED ON THIS SITE.
13. THIS SITE IS NOT LOCATED WITHIN THE METROPOLITAN DISTRICT. WATER AND SEWER WILL BE PRIVATE ON-SITE FACILITIES AND IN ACCORDANCE WITH THE PERCOLATION CERTIFICATION PLAN APPROVED AS PART OF SP-20-001 AND AS REVISED.
14. A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT PER F-18-081.
15. A TRAFFIC STUDY WAS REQUIRED FOR THIS SUBDIVISION, IT IS PROVIDED BY MARKS GROUP, INC. DATED AUGUST, 2019, AND APPROVED UNDER SP-20-001 ON 12/17/2021.
BASED ON THE DATA AND ANALYSIS PRESENTED IN THE TRAFFIC STUDY IT WAS DETERMINED THAT THE PROPOSED DEVELOPMENT CAN BE ADEQUATELY ACCOMMODATED BY THE SURROUNDING AREA ROAD SYSTEM.
REPORT COMPILED ON: JUNE 23, 2022.
PLAN NUMBER THE REPORT WAS SUBMITTED UNDER: SP-23-002 KEY INTERSECTIONS IDENTIFIED FOR THE STUDY:
HIGHLAND ROAD @ MINK HOLLOW ROAD
MD 216 @ MD 108 AND HIGHLAND ROAD
MD 108 @ GUILFORD ROAD AND CHURCH/SCHOOL ENTRANCE JURISDICTION OVER THE KEY INTERSECTIONS: FIRST INTERSECTION IS HOWARD COUNTY CONTROLLED, LAST TWO INTERSECTIONS ARE STATE CONTROLLED.
KEY INTERSECTION VOLUME COUNT COLLECTED ON: JUNE 13, 2019.
KEY INTERSECTION COUNTY WERE COLLECTED WHILE: HOWARD COUNTY PUBLIC SCHOOL 2019-2020 WAS IN OPERATION.
DESIGN YEAR LEVEL-OF-SERVICE AT KEY INTERSECTION:
HIGHLAND RD @ MINK HOLLOW RD: AM PEAK 'A'; PM PEAK 'A'
MD 216 @ MD 108 & HIGHLAND RD: AM PEAK 'B'; PM PEAK 'B'
MD 108 @ GUILFORD RD & ENTRANCE: AM PEAK 'A'; PM PEAK 'A'
MITIGATION REQUIREMENT: NONE.

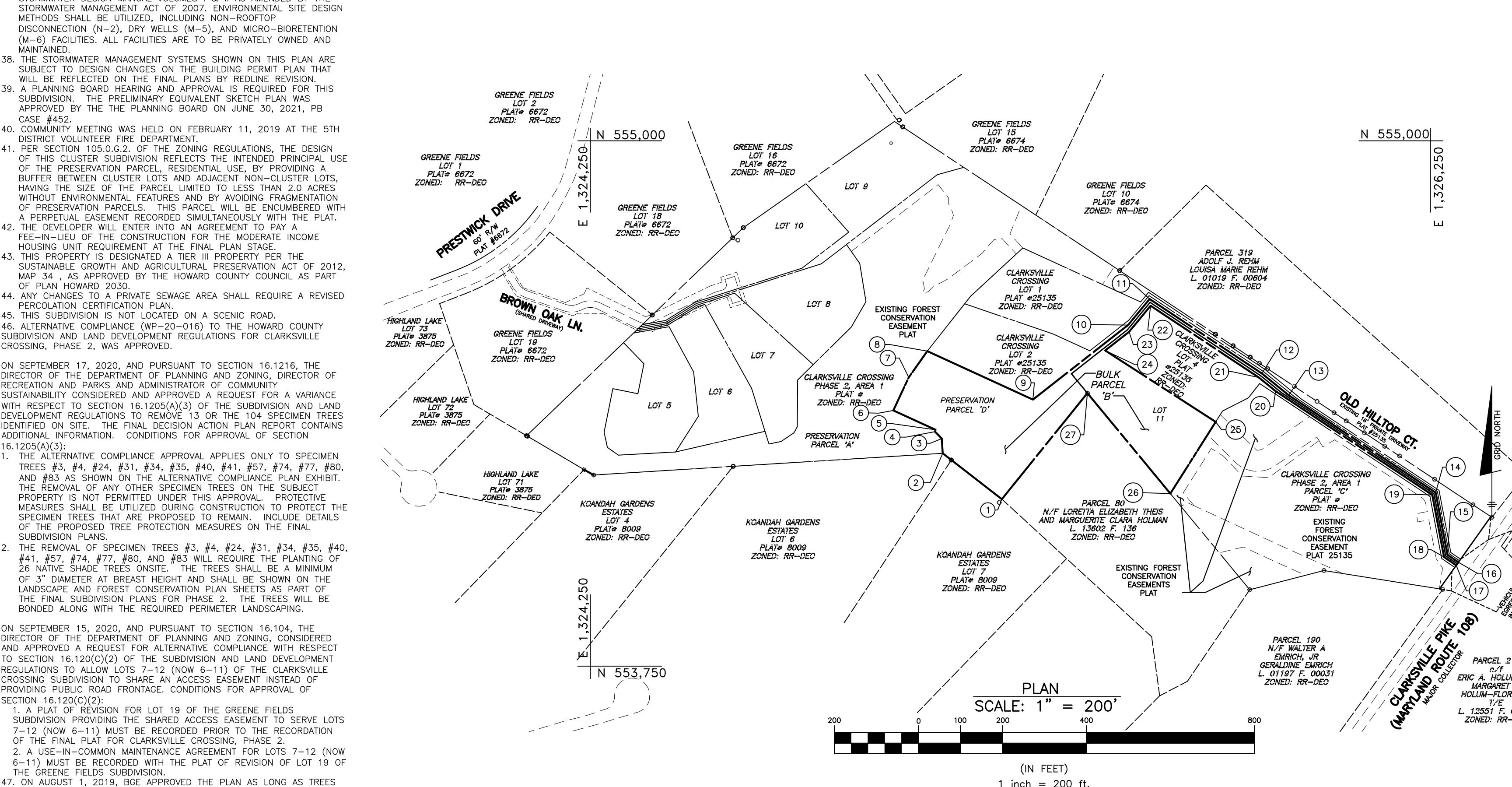
- 16. STORMWATER MANAGEMENT ENVIRONMENTAL SITE DESIGN (ESD) HAS BEEN PROVIDED TO THE MAXIMUM EXTENT PRACTICAL (MEP). THE DECLARATION OF COVENANTS SHALL BE RECORDED FOR ON-SITE DEVICES SUCH AS SWIM DEVICES, SHARED SWIM DEVICES, PRIVATELY OWNED AND MAINTAINED IN ACCORDANCE WITH MAINTENANCE EASEMENT AGREEMENT. THE STORMWATER PRACTICES INCLUDE SHARED MAINTENANCE NON-ROOFTOP DISCONNECTION (N-2); ONE INDIVIDUALLY MAINTAINED MICRO-BIORETENTION FACILITY (M-6); 4 INDIVIDUALLY MAINTAINED MICRO-BIORETENTION FACILITIES (M-6); AND ONE NON-ROOFTOP DISCONNECTION. SEE STORMWATER MANAGEMENT DETAIL SHEET FOR OPERATION AND MAINTENANCE SCHEDULES.
17. THIS SUBDIVISION COMPLIES WITH THE REQUIREMENTS OF SECTION 16.200 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION AS IT WAS PREVIOUSLY PROVIDED BY F-22-035 AND IS NOT TO BE REVISED BY THIS PLAN. FOREST CONSERVATION OBLIGATION WAS TO BE FULFILLED BY RETENTION ON-SITE RESTORATION OF 5.43 ACRES, AND A PREVIOUSLY PURCHASED FOREST BANK OF 0.3 ACRES (PROPERTY OF FOREVER A FARM, INC., SDP-14-005).

- 18. LANDSCAPING IS PROVIDED WITH A CERTIFIED LANDSCAPE PLAN IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE POSTING OBLIGATION FOR SURETY FOR REQUIRED LANDSCAPING IN ACCORDANCE WITH SECTION 16.124 OF THE LANDSCAPE MANUAL WILL BE REQUIRED. FINANCIAL SURETY IN THE AMOUNT OF \$ 4,800.00 (10 SHADE TREES) FOR THE REQUIRED LANDSCAPING MUST BE POSTED AS PART OF THE GRADING PERMIT.
19. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410)-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
20. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
21. THERE ARE NO EXISTING STRUCTURES ON NON-BUILDABLE BULK PARCEL 'B'.
22. AN ALTERNATIVE COMPLIANCE (WP-24-028, CLARKSVILLE CROSSING, PHASE 2, AREA 1) TO SECTION 16.114 (C) AND (G) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATION WAS APPROVED ON OCTOBER 11, 2023. THE ALTERNATIVE COMPLIANCE WAS APPROVED SUBJECT TO ONE CONDITION: THE DEADLINE FOR SUBMISSION OF FINAL PLAT ORIGINALS IS EXTENDED 100 DAYS FROM THE ORIGINAL SUBMISSION DATE OF AUGUST 28TH, 2023 (ON OR BEFORE DECEMBER 4, 2023).

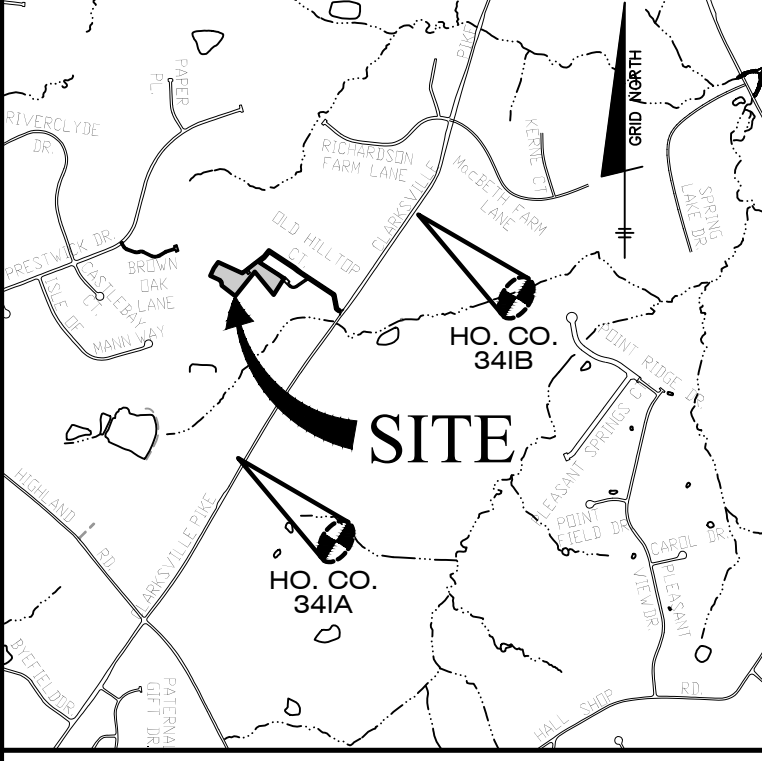
Table with 2 columns: Item, Description. Includes sections for SITE DATA TABULATION, AREA TABULATION, and DENSITY TABULATION.

APPROVED: DEPARTMENT OF PUBLIC WORKS
APPROVED: DEPARTMENT OF PLANNING AND ZONING
APPROVED: DEPARTMENT OF ENGINEERING

CLARKSVILLE CROSSING, PHASE 2, AREA 2
FINAL PLAN
BUILDABLE LOT 11 AND BUILDABLE PRESERVATION PARCEL 'D'
TAX MAP 34, GRID 23, P/O PARCEL 301
5TH ELECTION DISTRICT, HOWARD COUNTY, MD



DENSITY CHART table with columns: RECEIVING PARCEL INFORMATION, TAX MAP 34, GRID 23, PARCEL 301, TOTAL AREA OF SUBDIVISION, DENSITY UNITS ALLOWED BY RIGHT, MAXIMUM DENSITY UNITS ALLOWED, TOTAL NUMBER OF UNITS, PROPOSED (LOTS 1-4 AND PHASE 2, AREA 1), CEO DENSITY UNITS RECEIVED FROM SENDING PARCEL.



BOUNDARY COORDINATES table with columns: POINT #, NORTHING, EASTING. Includes a LEGEND for soils classification, contours, and structures.

STORMWATER MANAGEMENT PRACTICES table with columns: Lot Number, Address, Non-Rooftop Disconnection (N-2), Well (M-5), Dry Bioretention (M-6), Micro-Bioretention (M-6).

Stormwater Management Information table with columns: Lot/Parcel Number, Facility Name & Number, Practice Type (Quantity), Public, Private, HOA Maintains.

Specimen Tree Chart, CLARKSVILLE CROSSING, PHASE 2, AREA 2 ONLY table with columns: Key, Species, Size (inches DBH), CRZ (ft radius), Remove or Retain, Comments.

Minimum Lot Size Chart table with columns: Lot, Gross Area (SF), Pipestem Area (SF), Minimum Lot Size (SF). Includes a note about specimen trees in the vicinity of Phase 2 Area 2.

SECTION NUMBER, ROAD AND STREET CLASSIFICATION, CALIFORNIA BEARING RATIO (CBR), PAVEMENT MATERIAL (INCHES), MIN HMA WITH GAB, HMA WITH CONSTANT GAB, HMA SUPERPAVE FINAL SURFACE, HMA SUPERPAVE INTERMEDIATE SURFACE, HMA SUPERPAVE BASE, GRADED AGGREGATE BASE (GAB), P-2 PAVING DETAIL.

SHEET INDEX table with columns: SHEET, TITLE. Lists sheets 1 through 10 including Final Plan Cover Sheet, Layout Plan, Grading, etc.

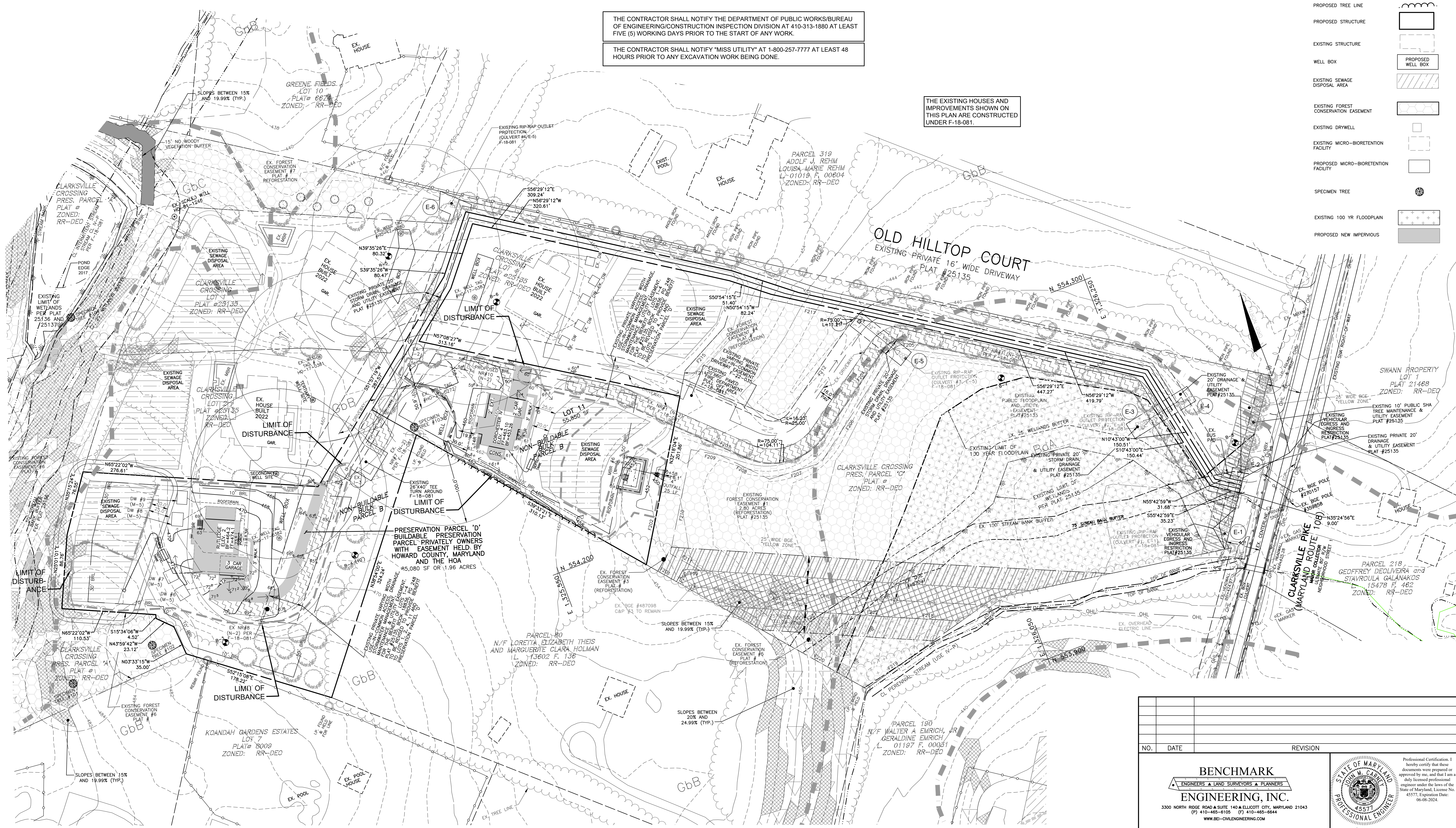
Professional seal for BENCHMARK ENGINEERING, INC. and project information for CLARKSVILLE CROSSING, PHASE 2, AREA 2. Includes owner, developer, and final plan cover sheet details.

- EXISTING TREE LINE
- PROPOSED TREE LINE
- PROPOSED STRUCTURE
- EXISTING STRUCTURE
- WELL BOX
- EXISTING SEWAGE DISPOSAL AREA
- EXISTING FOREST CONSERVATION EASEMENT
- EXISTING DRYWELL
- EXISTING MICRO-BIORETENTION FACILITY
- PROPOSED MICRO-BIORETENTION FACILITY
- SPECIMEN TREE
- EXISTING 100 YR FLOODPLAIN
- PROPOSED NEW IMPERVIOUS

THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.

THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

THE EXISTING HOUSES AND IMPROVEMENTS SHOWN ON THIS PLAN ARE TO BE CONSTRUCTED UNDER F-18-081.



APPROVED: DEPARTMENT OF PUBLIC WORKS
 DocuSigned by: *[Signature]* 3/5/2024
 CHIEF, BUREAU OF HIGHWAYS

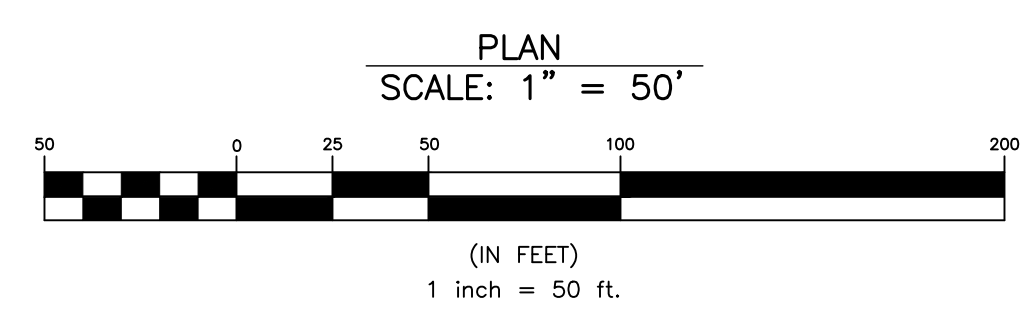
APPROVED: DEPARTMENT OF PLANNING AND ZONING
 DocuSigned by: *[Signature]* 3/6/2024
 CHIEF, DIVISION OF LAND DEVELOPMENT

DocuSigned by: *[Signature]* 3/4/2024
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

SOILS CHART - <https://websol survey.nrcs.usda.gov/app/>

SYMBOL	HYDRIC	HYDROLOGIC GROUP	NAME	k-VALUE	Whole Soil
GbB		A	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES		0.32
GbC		A	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES		0.32

** HIGHLY ERODIBLE, K>0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES TAKEN FROM THE NCRS WEB SOIL SURVEY NOVEMBER 2023, MAP 23.



NO.	DATE	REVISION

BENCHMARK
 ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
 3300 NORTH RIDGE ROAD & SUITE 140 • ELICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BE-CIVILENGINEERING.COM

John M. Carney 02.16.2024

OWNER: CLARKSVILLE NL LLC C/O H&H ROCK COMPANIES 6800 DEERPATH ROAD SUITE 100 ELK RIDGE, MD 21075 410-579-2442	CLARKSVILLE CROSSING, PHASE 2, AREA 2 A RESUBDIVISION OF CLARKSVILLE CROSSING, PHASE 2, AREA 1, NON-BUILDABLE BULK PARCEL 'B' (PLAT #) TO CREATE LOT 11 AND BUILDABLE PRESERVATION PARCEL 'D'
DEVELOPER: ROCK REALTY, INC. C/O H & H ROCK COMPANIES 6800 DEERPATH ROAD SUITE #100 ELK RIDGE, MARYLAND 21075 410-579-2442	TAX MAP: 34 GRID: 23 P/O PARCEL: 301 ZONED: RR-DEC ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND
FINAL PLAN LAYOUT PLAN, EXISTING CONDITIONS AND SOILS MAP	
DATE: FEBRUARY, 2024 DESIGN: JC DRAWN: JC	BEI PROJECT NO: 2525 SCALE: AS SHOWN SHEET 2 OF 10

THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.

THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

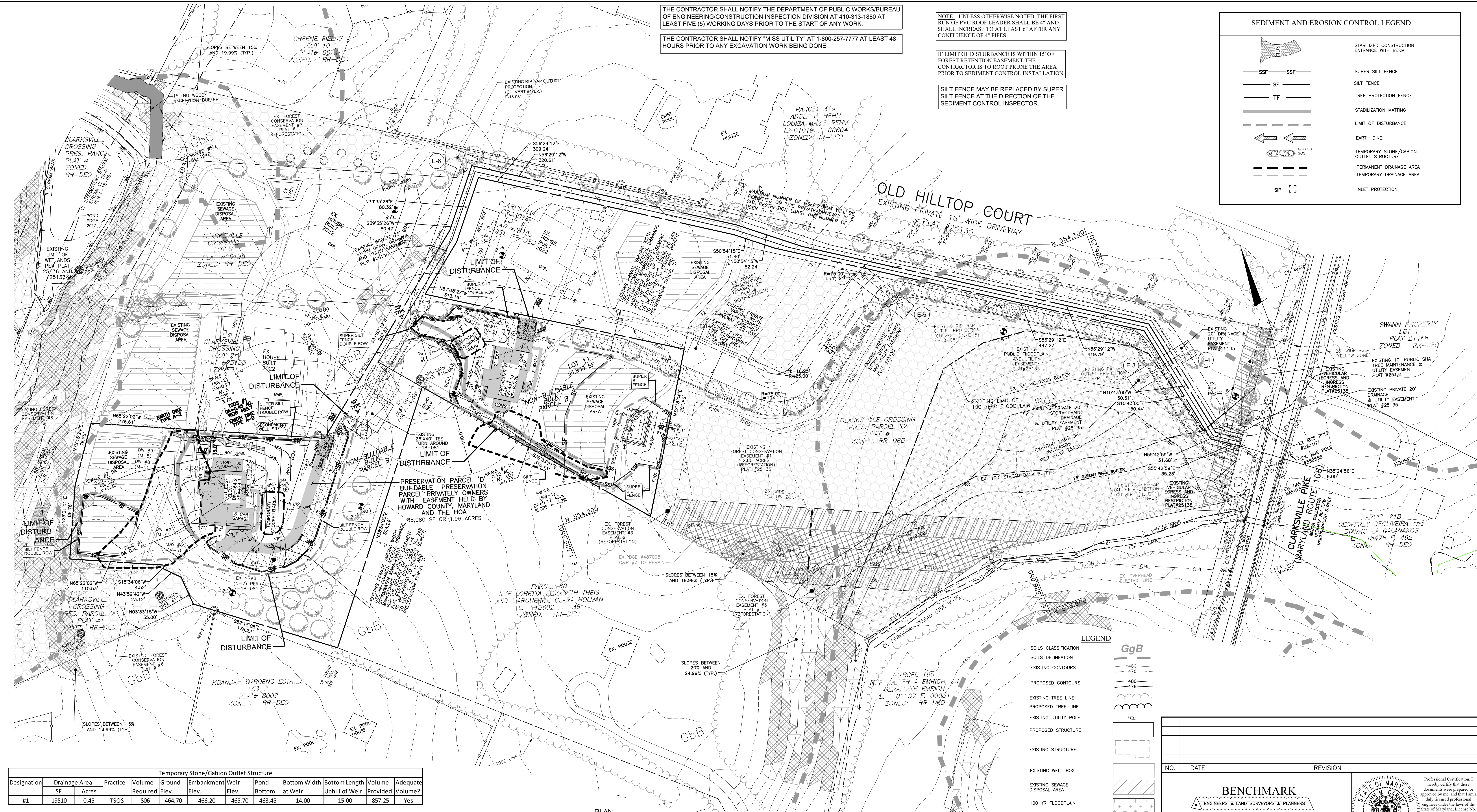
NOTE: UNLESS OTHERWISE NOTED, THE FIRST RUN OF PVC ROOF LEADER SHALL BE 4" AND SHALL INCREASE TO AT LEAST 6" AFTER ANY CONFLUENCE OF 4" PIPES.

IF LIMIT OF DISTURBANCE IS WITHIN 15' OF FOREST RETENTION EASEMENT THE CONTRACTOR IS TO ROOT PRUNE THE AREA PRIOR TO SEDIMENT CONTROL INSTALLATION

SILT FENCE MAY BE REPLACED BY SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

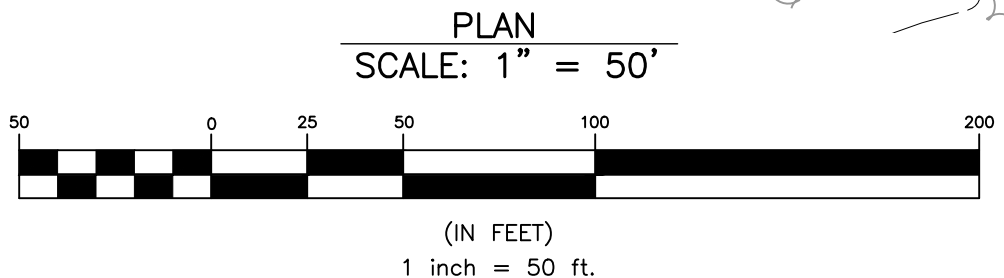
SEDIMENT AND EROSION CONTROL LEGEND

- SSF SSF: STABILIZED CONSTRUCTION ENTRANCE WITH BERM
- SF: SUPER SILT FENCE
- TF: SILT FENCE
- : TREE PROTECTION FENCE
- : STABILIZATION MATTING
- : LIMIT OF DISTURBANCE
- ←: EARTH DIKE
- : TEMPORARY STONE/GABION OUTLET STRUCTURE
- : PERMANENT DRAINAGE AREA
- : TEMPORARY DRAINAGE AREA
- SIP: INLET PROTECTION



Temporary Stone/Gabion Outlet Structure

Designation	Drainage Area	Practice	Volume Required	Ground Elev.	Embankment Elev.	Weir Elev.	Pond Bottom	Bottom Width at Weir	Bottom Length Uphill of Weir	Volume Provided	Adequate Volume?	
#1	19510	0.45	TSOS	806	464.70	466.20	465.70	463.45	14.00	15.00	857.25	Yes



LEGEND

- SOILS CLASSIFICATION: GgB
- SOILS DELINEATION: 480, 478
- EXISTING CONTOURS: 480, 478
- PROPOSED CONTOURS: 480, 478
- EXISTING TREE LINE: [Symbol]
- PROPOSED TREE LINE: [Symbol]
- EXISTING UTILITY POLE: [Symbol]
- PROPOSED STRUCTURE: [Symbol]
- EXISTING STRUCTURE: [Symbol]
- EXISTING WELL BOX: [Symbol]
- EXISTING SEWAGE DISPOSAL AREA: [Symbol]
- 100 YR FLOODPLAIN: [Symbol]
- SLOPES 15% TO 19.99%: [Symbol]
- SLOPES 20% TO 24.99%: [Symbol]
- SLOPES 25% AND GREATER: [Symbol]
- FAILED PERCOLATION TEST: [Symbol]
- FAILED PERCOLATION TEST BORING: [Symbol]
- MICRO-BIORETENTION FACILITY: [Symbol]
- EXISTING FENCE: [Symbol]
- STORMWATER MANAGEMENT DRAINAGE AREA: [Symbol]
- NON-ROOFTOP DISCONNECTION: [Symbol]
- PROPOSED NEW IMPERVIOUS: [Symbol]

Specimen Tree Chart - CLARKSVILLE CROSSING, PHASE 2, AREA 2 ONLY

Key	Species	Site	CRZ	Remove or	Comments
101	Red Oak	37.5	56.25	Retain	
102	Tulip poplar	36	54.00	Retain	
103	Tulip poplar	32	48.00	Retain	

NOTE: ONLY THE SPECIMEN TREES IN THE VICINITY OF PHASE 2 AREA 2 ARE SHOWN. FOR A FULL LIST OF THE SPECIMEN TREES ON THE CLARKSVILLE CROSSING PROPERTY SEE F-22-035.

Specimen Tree Impacts

Specimen Tree	CRZ area (sf)	Area Impact (sf)	% CRZ impacted	Result
102	9161	530	5.8%	Tree to Remain
103	7238	155	2.1%	Tree to Remain

SOILS CHART - https://websoilsurvey.nrcs.usda.gov/app/

SYMBOL	HYDRIC	HYDROLOGIC GROUP	NAME	k-VALUE Whole Soil
GgB	A		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.32
GgC	A		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.32

** HIGHLY ERODIBLE, K<0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES TAKEN FROM THE NRCS WEB SOIL SURVEY NOVEMBER 2023, MAP 23.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

Decided by: *Alexander Brachic* 3/4/2024

APPROVED: DEPARTMENT OF PUBLIC WORKS

Decided by: *David* 3/5/2024

CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Decided by: *Chad Edmondson* 3/6/2024

CHIEF, DIVISION OF LAND DEVELOPMENT

Decided by: *Chad Edmondson* 3/4/2024

CHIEF, DEVELOPMENT ENGINEERING DIVISION

DEVELOPER'S CERTIFICATE

I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I SHALL ENGAGE A MARYLAND REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION, AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

Decided by: *Mark Levy* 2/16/2024

DEVELOPER SIGNATURE - MARK LEVY

ENGINEER'S CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

Decided by: *John M. Carney* 2/16/2024

ENGINEER - JOHN M. CARNEY, P.E., MD REGISTRATION NO. 45577

BENCHMARK ENGINEERING, INC.

3300 NORTH RIDGE ROAD SUITE 140 & ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-ONLINEENGINEERING.COM

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. 45577, Expiration Date: 06-06-2024.

John M. Carney 02.16.2024

OWNER: CLARKSVILLE NL LLC
C/O H&H ROCK COMPANIES
6800 DEERPATH ROAD
SUITE 100
ELKDRIDGE, MD 21075
410-579-2442

DEVELOPER: ROCK REALTY, INC.
C/O H & H ROCK COMPANIES
6800 DEERPATH ROAD
SUITE #100
ELKDRIDGE, MARYLAND 21075
410-579-2442

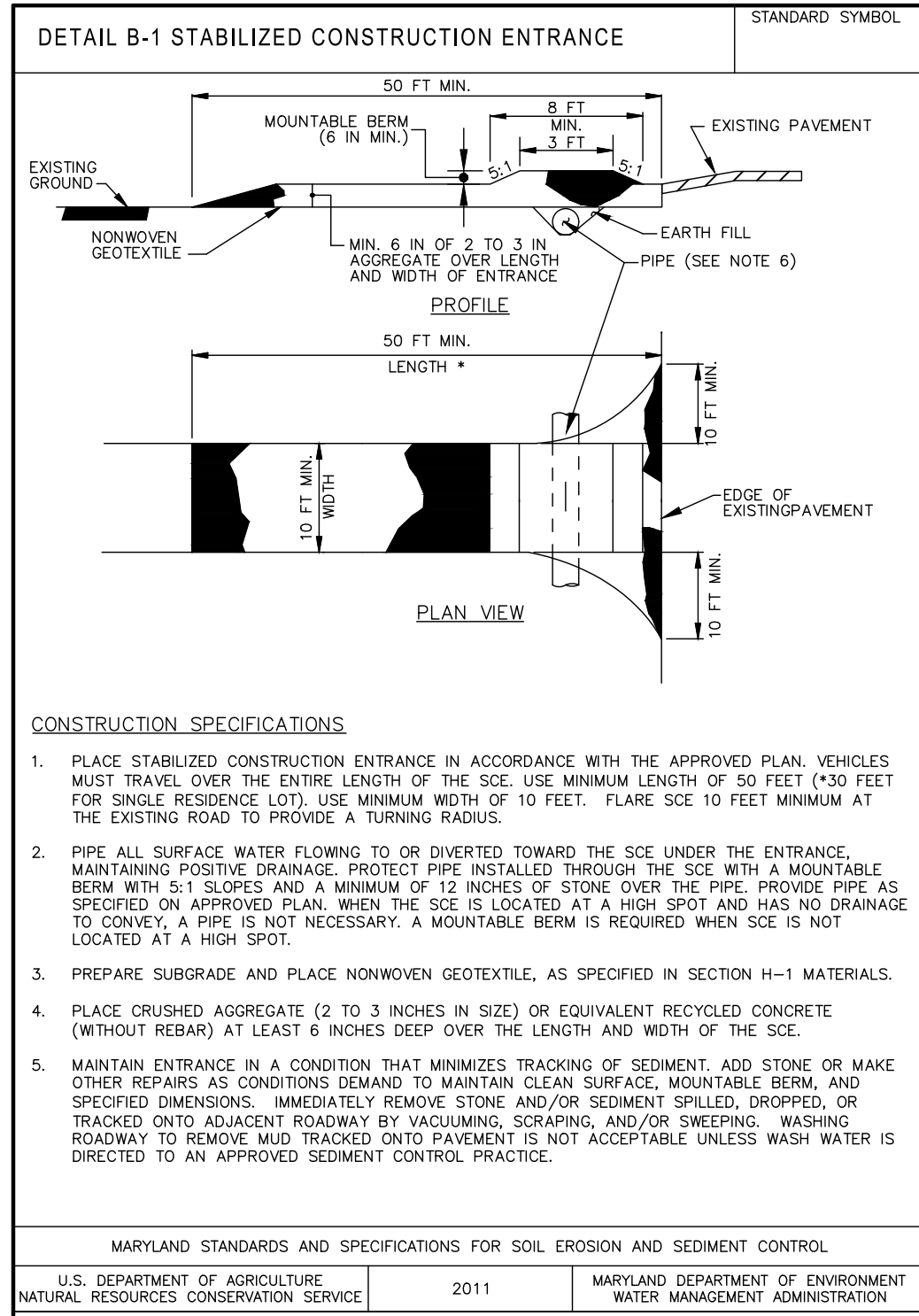
CLARKSVILLE CROSSING, PHASE 2, AREA 2
A RESUBDIVISION OF CLARKSVILLE CROSSING, PHASE 2, AREA 1, NON-BUILDABLE BULK PARCEL B (PLAT #) TO CREATE LOT 11 AND BUILDABLE PRESERVATION PARCEL 'D'

TAX MAP: 34 GRID: 23 P/O PARCEL: 301 ZONED: RR-DEC
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

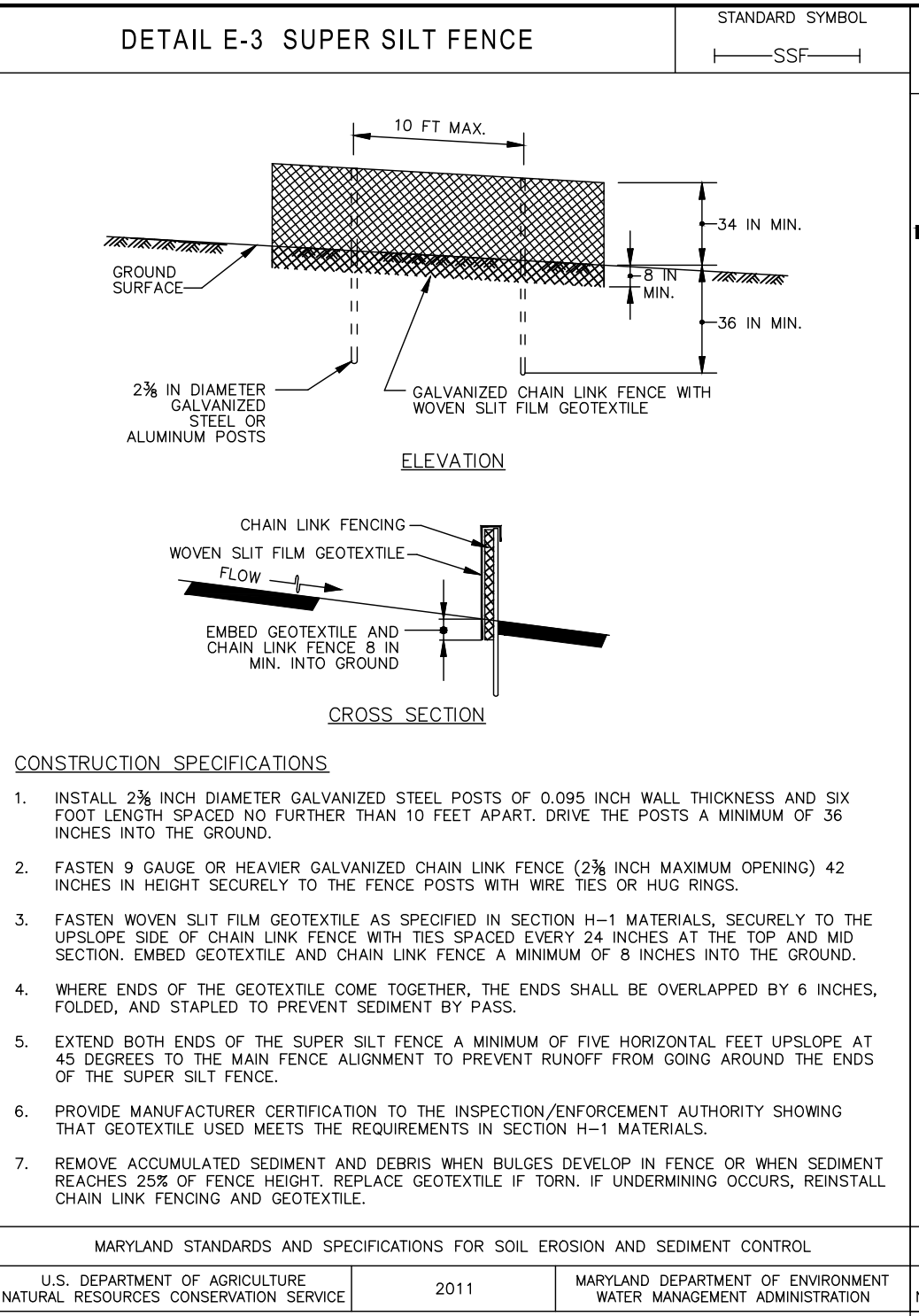
FINAL PLAN
GRADING, SEDIMENT AND EROSION CONTROL PLAN
AND SEDIMENT CONTROL DRAINAGE AREA MAP

DATE: FEBRUARY, 2024 BEI PROJECT NO: 2525

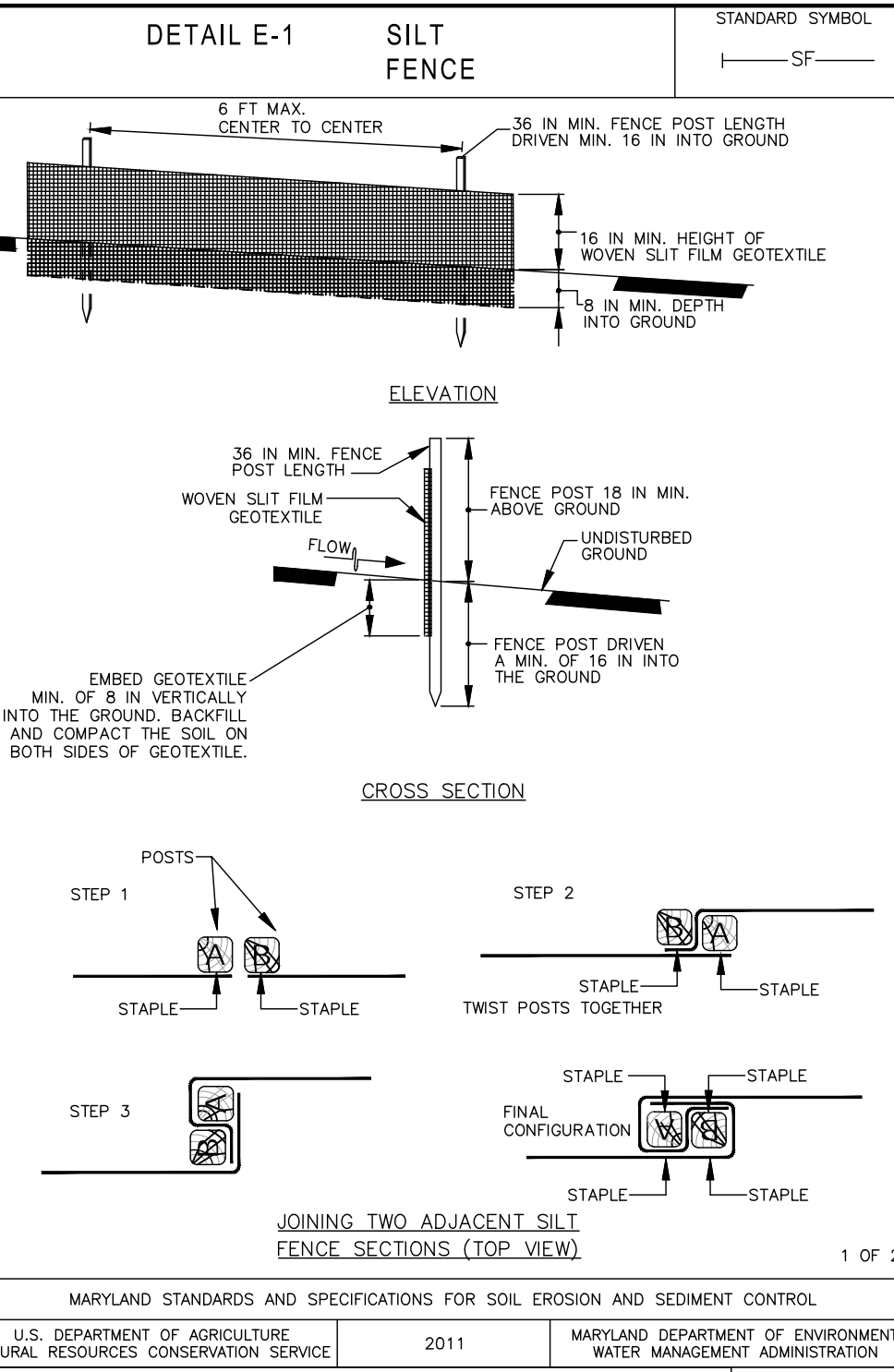
DESIGN: JC DRAWN: JC SCALE: AS SHOWN SHEET 3 OF 10



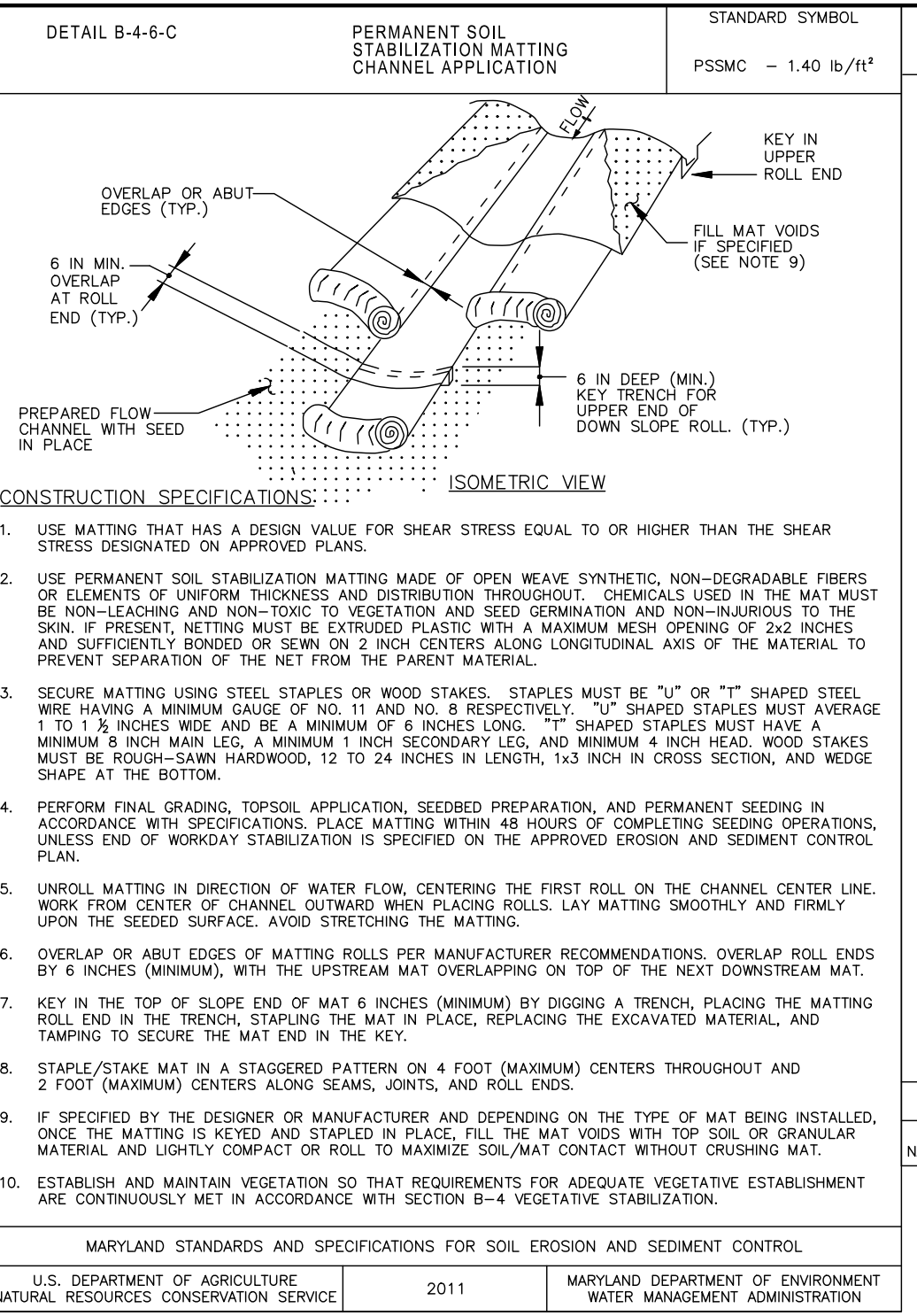
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



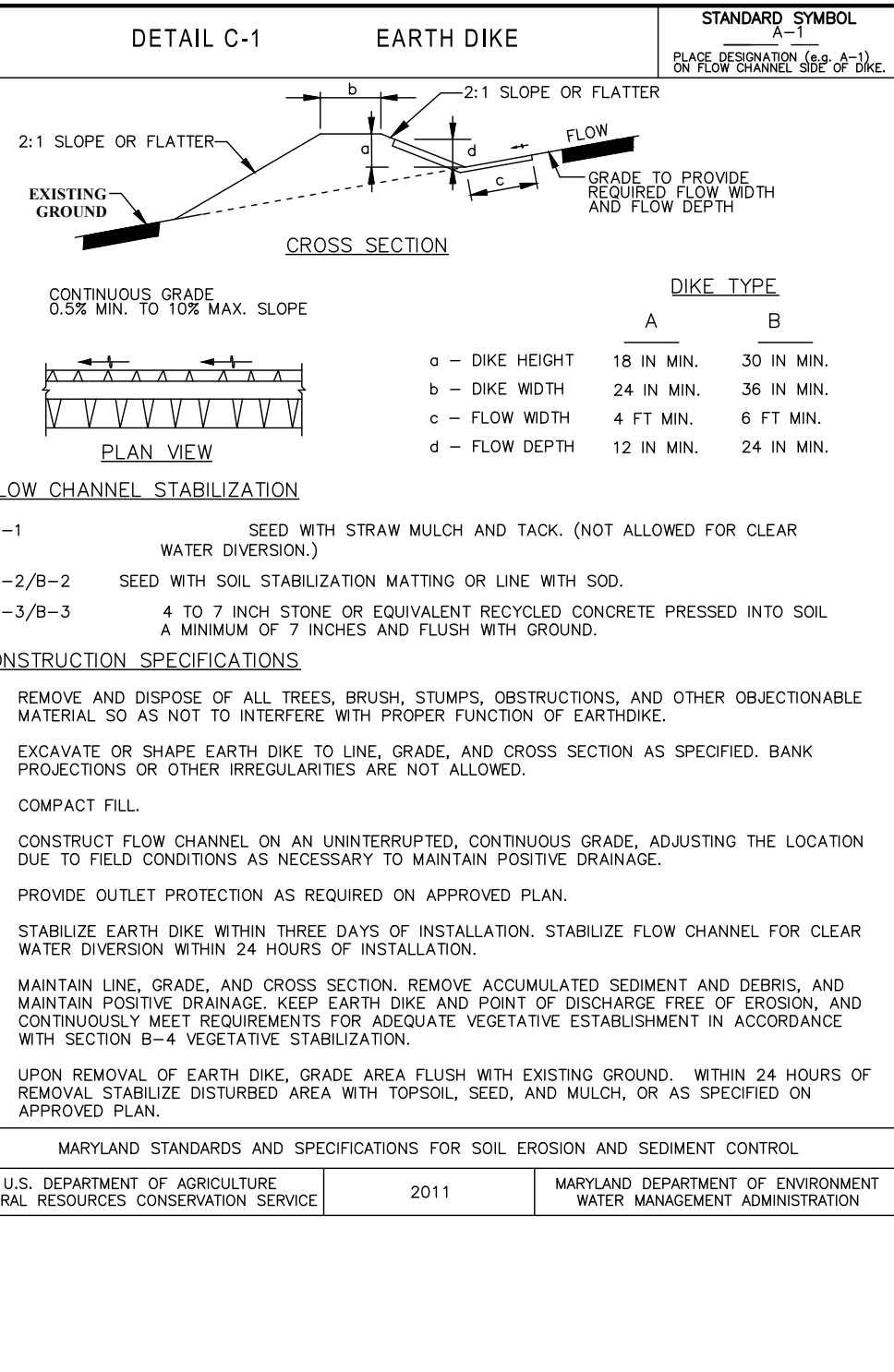
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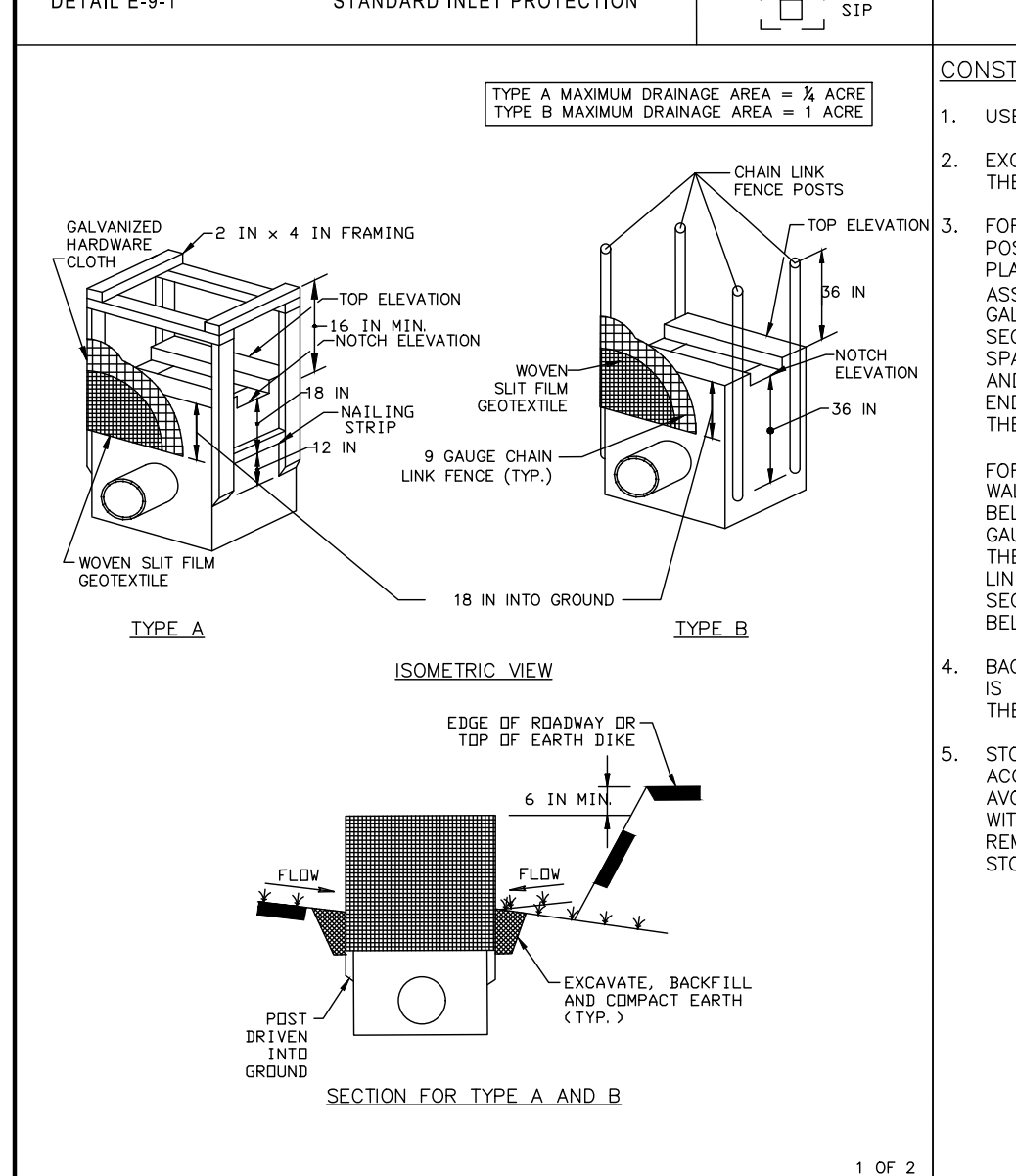
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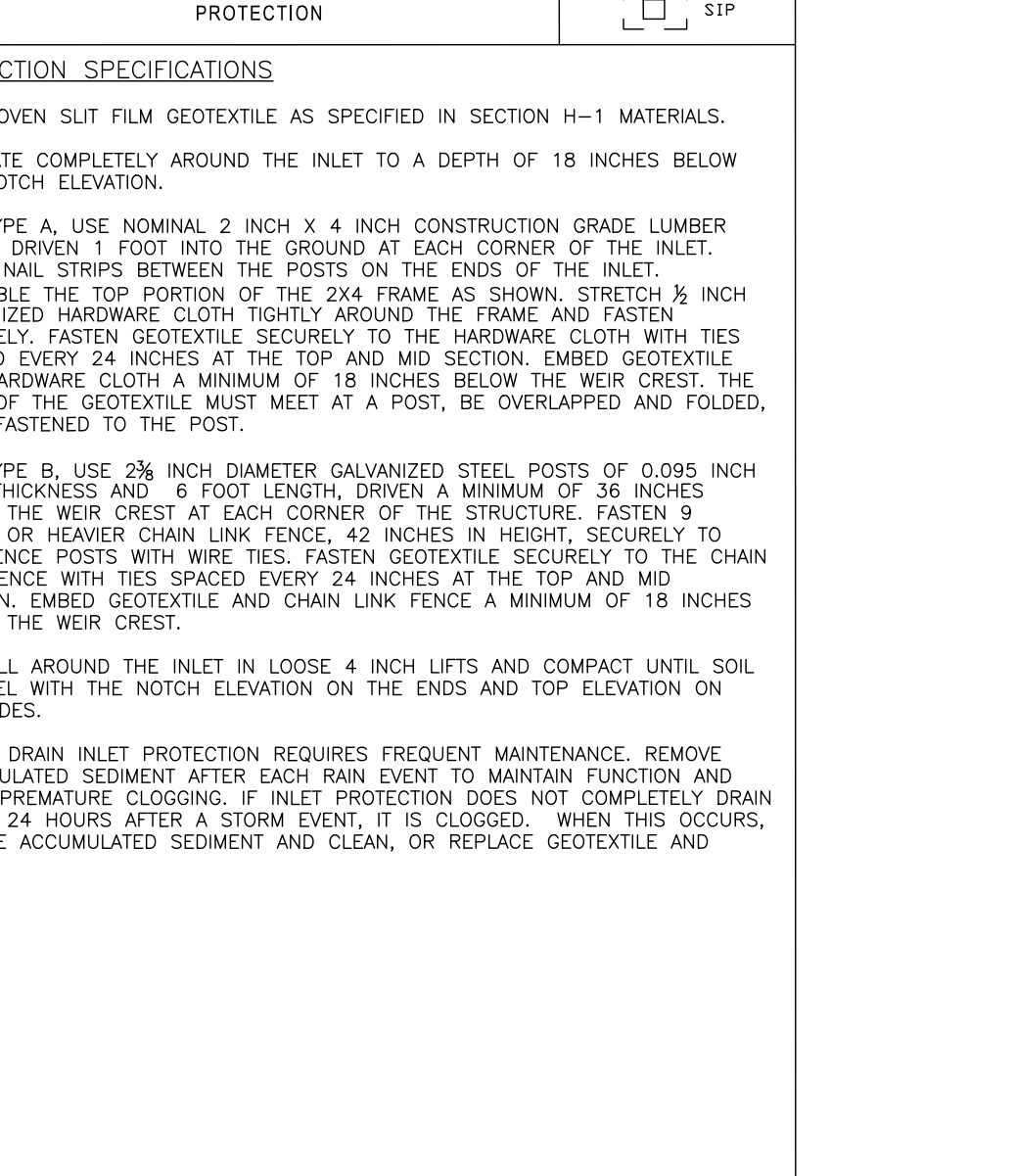
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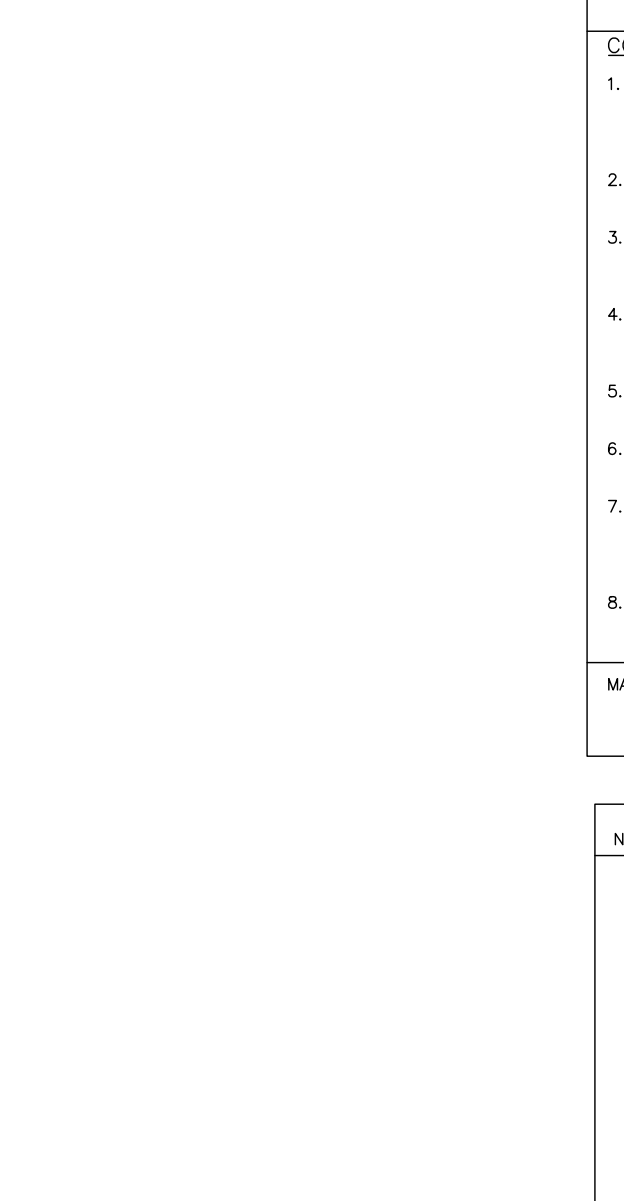
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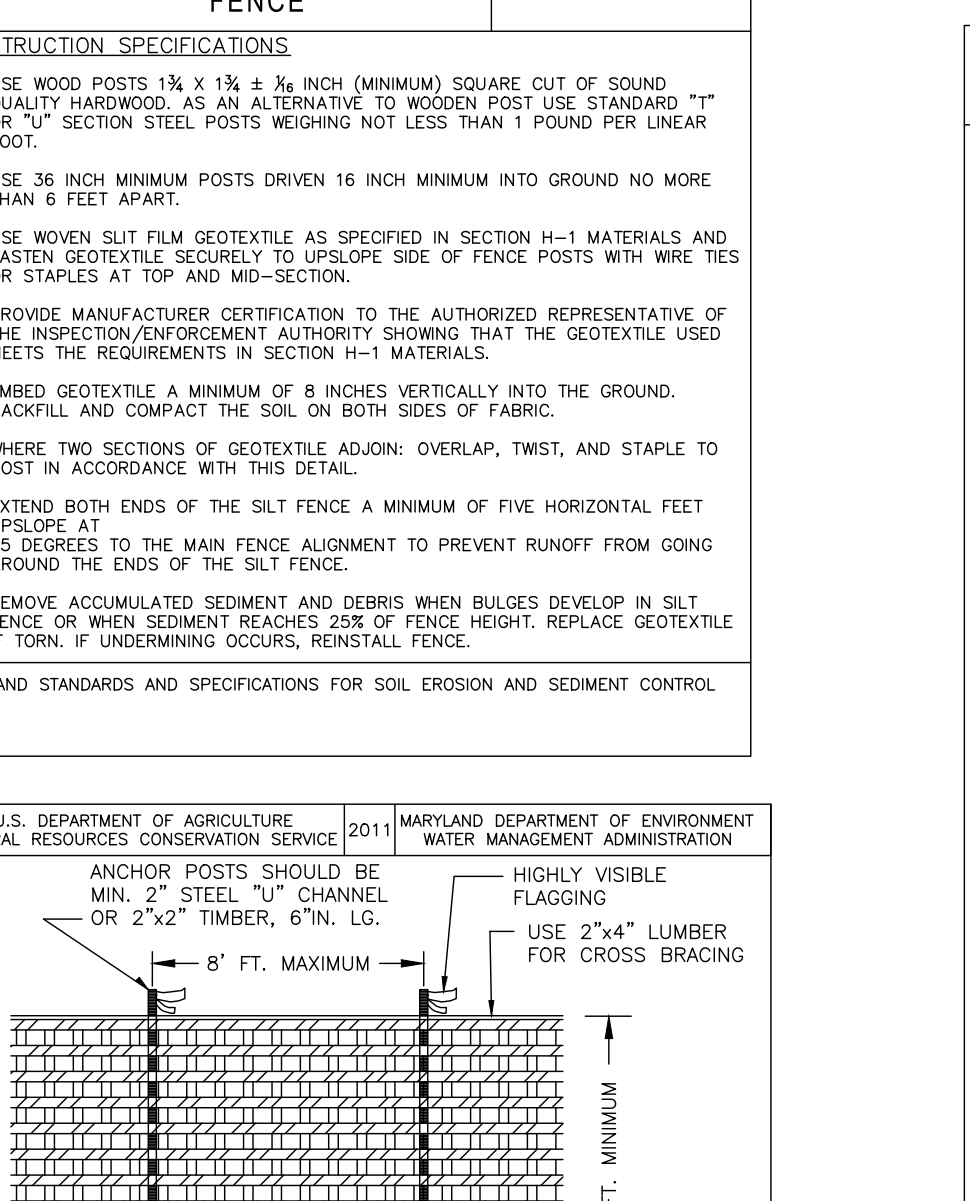
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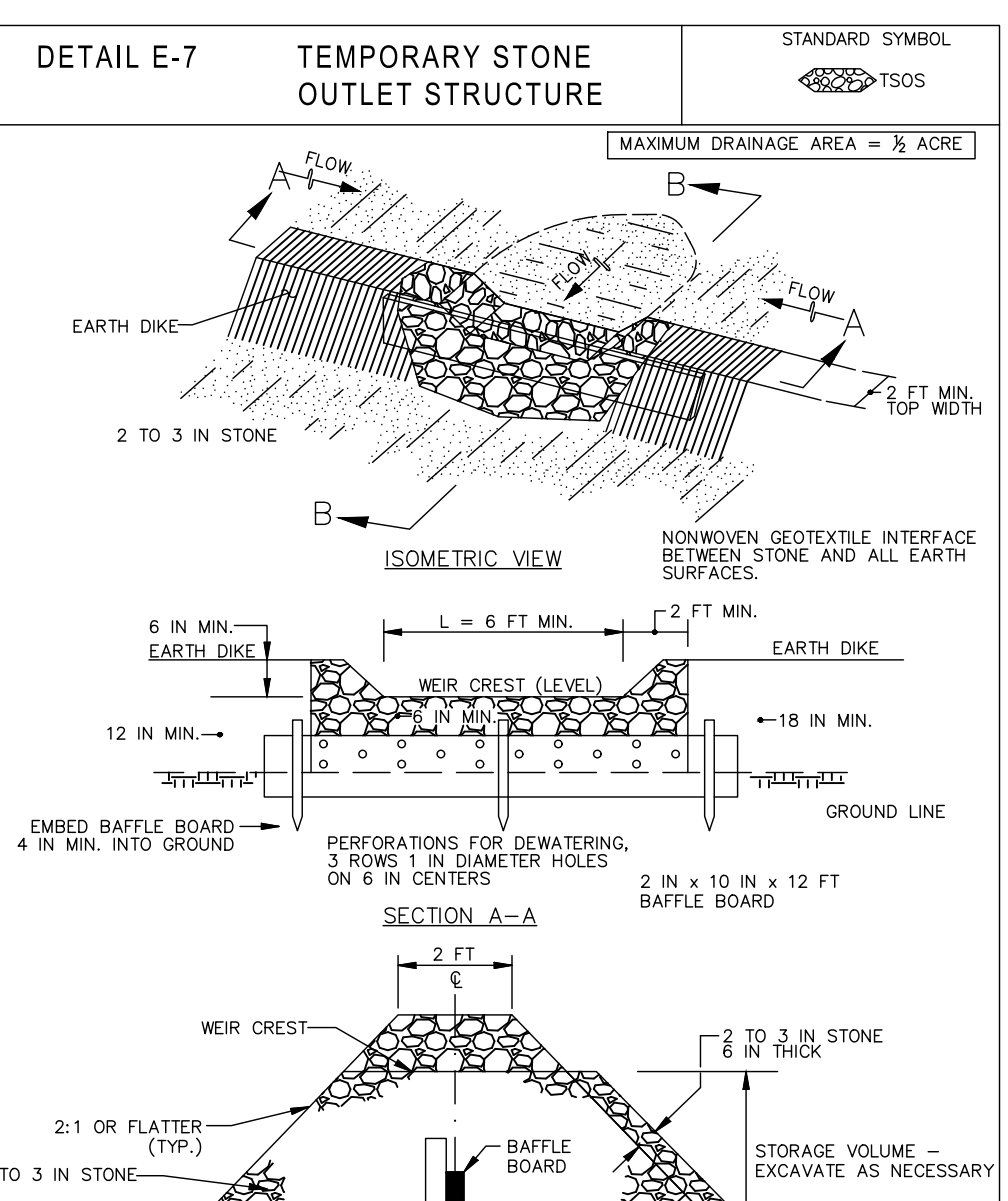
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



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



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THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

Desigined by: Alexander Bratek 3/4/2024

APPROVED: DEPARTMENT OF PUBLIC WORKS
 Desigined by: [Signature] 3/5/2024
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 Desigined by: [Signature] 3/6/2024
 CHIEF, DIVISION OF LAND DEVELOPMENT

Desigined by: [Signature] 3/4/2024
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

DEVELOPER'S CERTIFICATE

I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION OR DEVELOPMENT HAS BEEN DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I SHALL ENGAGE A MARYLAND REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE THE CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

Mark Levy 2/16/2024
 DEVELOPER SIGNATURE - MARK LEVY DATE

ENGINEER'S CERTIFICATE

I/WE HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

John M. Carney 2/16/2024
 ENGINEER - JOHN M. CARNEY, P.E., MD REGISTRATION No. 45577 DATE

SILT FENCE MAY BE REPLACED BY SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

IF LIMIT OF DISTURBANCE IS WITHIN 15' OF SUPER SILT FENCE, CONTRACTOR IS TO ROOT PRUNE THE AREA PRIOR TO SEDIMENT CONTROL INSTALLATION

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
 3300 NORTH RIDGE ROAD SUITE 140 & ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BE-ENGINEERING.COM

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. 45577, Expiration Date: 06-06-2024.

John M. Carney 02.16.2024

OWNER: CLARKSVILLE NL LLC
 C/O H & H ROCK COMPANIES
 6800 DEERPATH ROAD SUITE 100
 ELKRIE, MD 21075 410-579-2442

CLARKSVILLE CROSSING, PHASE 2, AREA 2
 A RESUBDIVISION OF CLARKSVILLE CROSSING, PHASE 2, AREA 1, NON-BUILDABLE BULK PARCEL B (PLAT #) TO CREATE LOT 11 AND BUILDABLE PRESERVATION PARCEL 'D'

TAX MAP: 34 GRID: 23 P/O PARCEL: 301 ZONED: RR-DEO
 ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

DEVELOPER: ROCK REALTY, INC.
 C/O H & H ROCK COMPANIES
 6800 DEERPATH ROAD SUITE #100
 ELKRIE, MARYLAND 21075 410-579-2442

FINAL PLAN
 SEDIMENT AND EROSION CONTROL NOTES & DETAILS

DATE: FEBRUARY, 2024 BEI PROJECT NO: 2525
 SCALE: AS SHOWN SHEET 4 OF 10

THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.

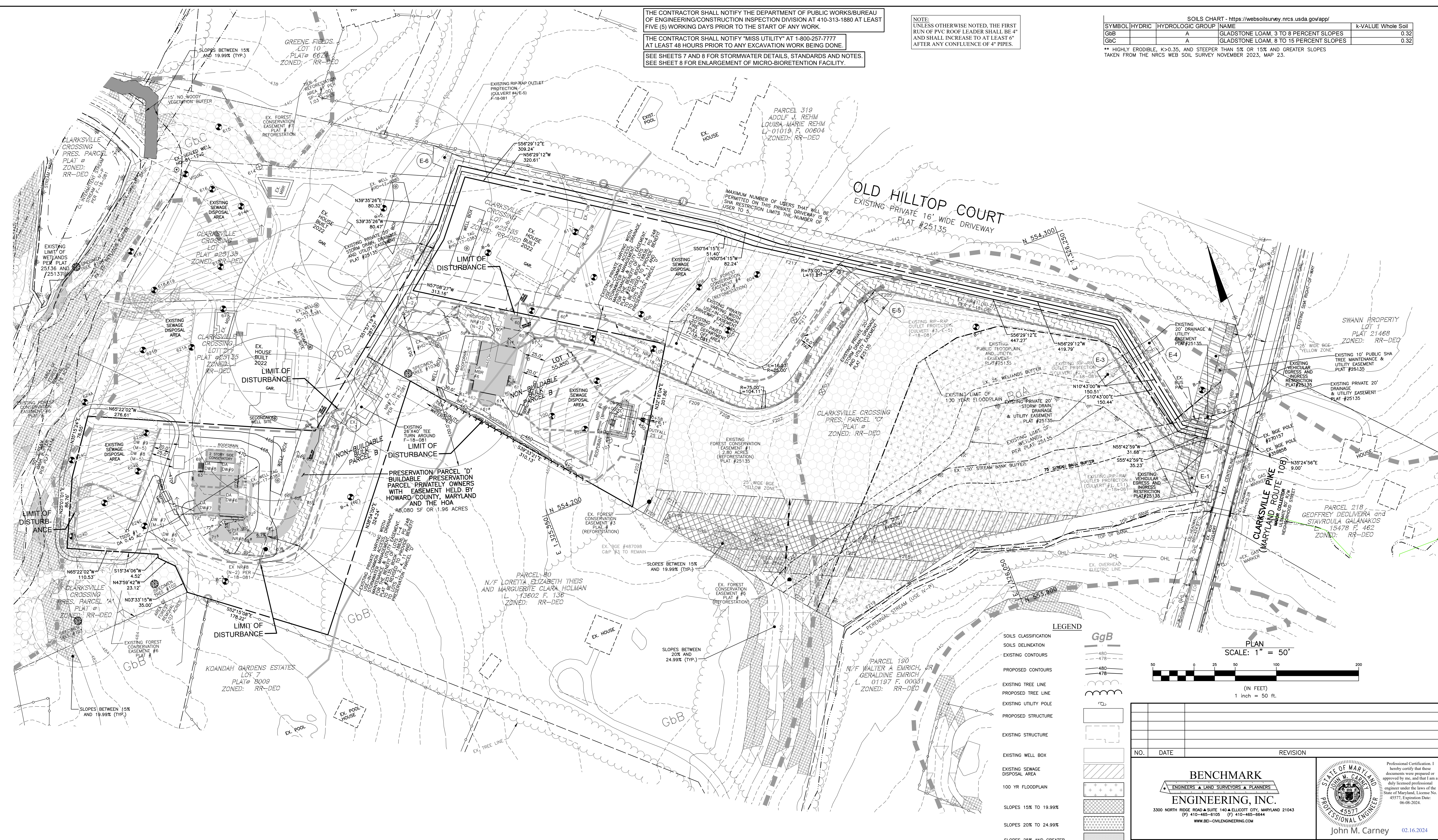
THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

SEE SHEETS 7 AND 8 FOR STORMWATER DETAILS, STANDARDS AND NOTES. SEE SHEET 8 FOR ENLARGEMENT OF MICRO-BIORETENTION FACILITY.

NOTE:
UNLESS OTHERWISE NOTED, THE FIRST RUN OF PVC ROOF LEADER SHALL BE 4" AND SHALL INCREASE TO AT LEAST 6" AFTER ANY CONFLUENCE OF 4" PIPES.

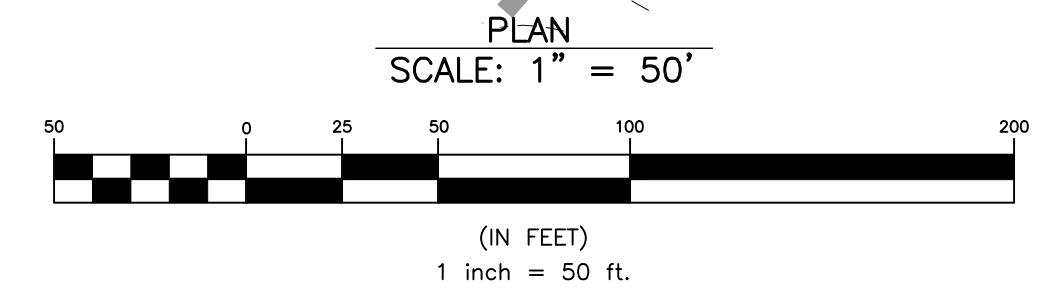
SOILS CHART - https://websoilsurvey.nrcs.usda.gov/app/				
SYMBOL	HYDRIC	HYDROLOGIC GROUP	NAME	k-VALUE Whole Soil
Gbb		A	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.32
Gbc		A	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.32

** HIGHLY ERODIBLE, K>0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES TAKEN FROM THE NRCS WEB SOIL SURVEY NOVEMBER 2023, MAP 23.



LEGEND

- SOILS CLASSIFICATION
- SOILS DELINEATION
- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING TREE LINE
- PROPOSED TREE LINE
- EXISTING UTILITY POLE
- PROPOSED STRUCTURE
- EXISTING STRUCTURE
- EXISTING WELL BOX
- EXISTING SEWAGE DISPOSAL AREA
- 100 YR FLOODPLAIN
- SLOPES 15% TO 19.99%
- SLOPES 20% TO 24.99%
- SLOPES 25% AND GREATER
- PASSED PERCOLATION TEST
- FAILED PERCOLATION TEST
- BORING
- MICRO-BIORETENTION FACILITY
- EXISTING FENCE
- STORMWATER MANAGEMENT DRAINAGE AREA
- NON-ROOFTOP DISCONNECTION
- PROPOSED NEW IMPERVIOUS



APPROVED: DEPARTMENT OF PUBLIC WORKS
 DocuSigned by: *[Signature]* 3/5/2024
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 DocuSigned by: *[Signature]* 3/6/2024
 CHIEF, DIVISION OF LAND DEVELOPMENT

DocuSigned by: *[Signature]* 3/4/2024
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
 ENGINEERS • LAND SURVEYORS • PLANNERS
 3300 NORTH RIDGE ROAD & SUITE 140 • ELICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BE-ONLINEENGINEERING.COM

John M. Carney 02.16.2024

OWNER: CLARKSVILLE NL LLC C/O H & H ROCK COMPANIES 6800 DEERPATH ROAD SUITE 100 ELKBRIDGE, MD 21075 410-579-2442	CLARKSVILLE CROSSING, PHASE 2, AREA 2 A RESUBDIVISION OF CLARKSVILLE CROSSING, PHASE 2, AREA 1, NON-BUILDABLE BULK PARCEL B (PLAT #) TO CREATE LOT 11 AND BUILDABLE PRESERVATION PARCEL 'D'
DEVELOPER: ROCK REALTY, INC. C/O H & H ROCK COMPANIES 6800 DEERPATH ROAD SUITE #100 ELKBRIDGE, MARYLAND 21075 410-579-2442	TAX MAP: 34 GRID: 23 P/O PARCEL: 301 ZONED: RR-DEO ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND FINAL PLAN STORMWATER MANAGEMENT PLAN
DATE: FEBRUARY, 2024 SCALE: AS SHOWN	BEI PROJECT NO: 2525 SHEET 6 OF 10

CONSTRUCTION SPECIFICATIONS

B.4.C Specifications for Micro-Bioretentation, Rain Gardens, Landscape Infiltration & Infiltration Berms

1. Material Specifications:

The allowable materials to be used in these practices are detailed in Table B.4.1.

2. Filtering Media or Planting Soil:

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the micro-bioretentation practice that may be harmful to plant growth...

Soil Component - Loamy Sand or Sandy Loam (USDA Soil Textural Classification)

Organic Content - Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy and (60%-65%) and compost (35% to 40%) or sandy loam (30%), coarse sand (30%), and compost (40%).

Clay Content - Media shall have a clay content of less than 5%. pH Range - Should be between 5.5 - 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH.

There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

3. Compaction:

It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoes to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires.

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to refracture the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand.

4. Plant Material:

Recommended plant material for micro-bioretentation practices can be found in Appendix A, Section A.2.3.

5. Plant Installation:

Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2" to 3". Shredded or chipped hardwood mulch is the only accepted mulch.

Rootstock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be placed so 1/8th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball.

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball.

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal.

6. Underdrains:

Underdrains should meet the following criteria:

- Pipe- Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTM F 758, Type PS 28, or AASHTO-M-278) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
Perforations - If perforated pipe is used, perforations should be 3/8" diameter located 6" on center with a minimum of four holes per row. Pipe shall be wrapped with a 1/2" (No. 4 or 4x4) galvanized hardware cloth.
Gravel - The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain
The main collector pipe shall be at a minimum 0.5% slope.
A rigid, non-perforated observation well must be provided (one per every 1,000 square feet) to provide a clean-out port and monitor performance of the filter.
A 4" layer of pea gravel (1/2" to 3/8" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when bed thickness exceeds 24".

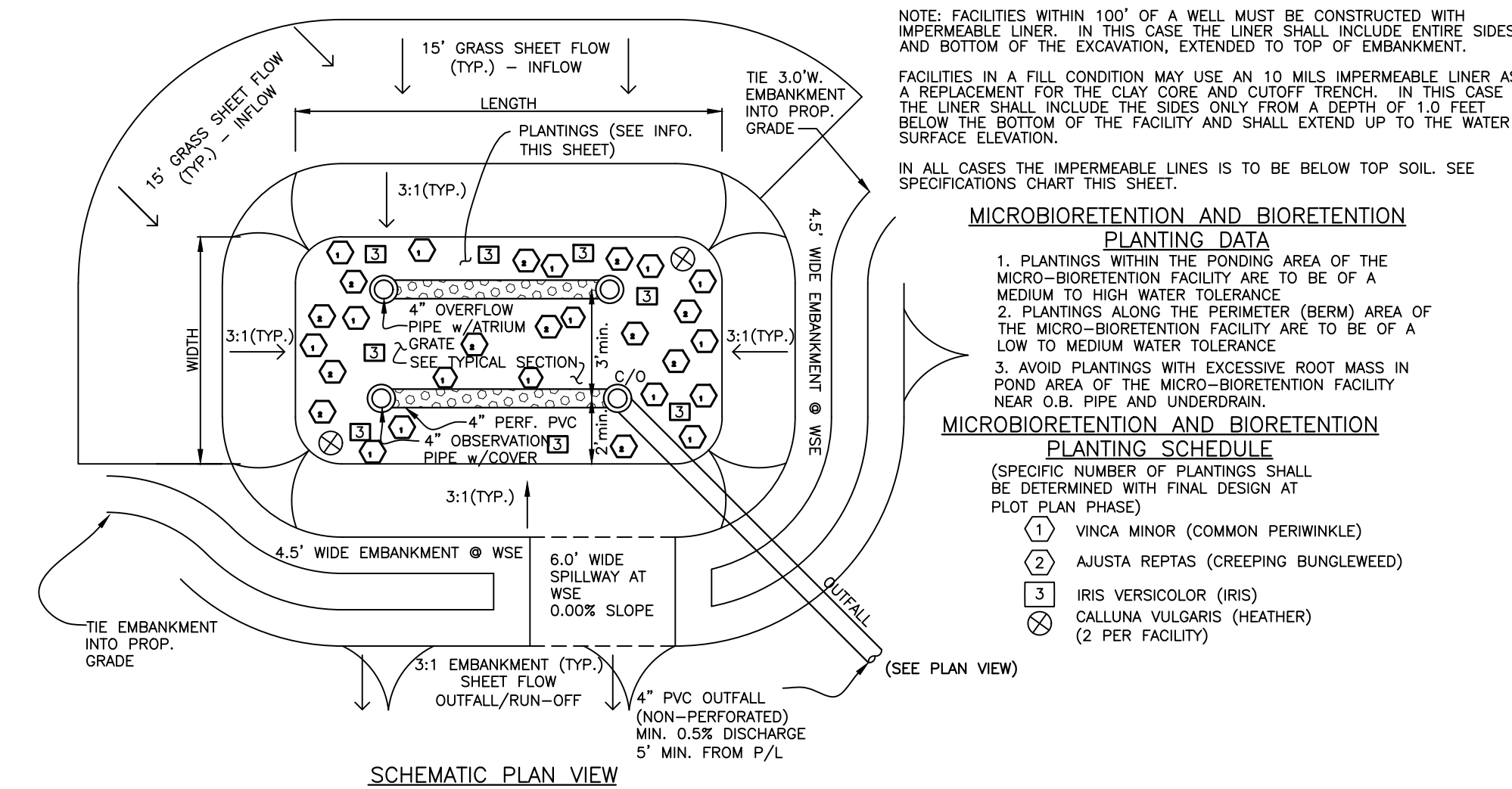
The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

7. Miscellaneous:

These practices may not be constructed until all contributing drainage area has been stabilized

EXCAVATED PONDS

EXCAVATED PONDS - EXCAVATED PONDS THAT CREATE A FAILURE POTENTIAL THROUGH A CONSTRUCTED OR CREATED EMBANKMENT WILL BE DESIGNED AS EMBANKMENT PONDS EXCAVATED PONDS THAT INCLUDE A PIPE OR WEIR OUTLET CONTROL SYSTEM FOR URBAN STORMWATER MANAGEMENT SHALL BE DESIGNED USING THE PRINCIPAL AND EMERGENCY SPILLWAY HYDROLOGIC CRITERIA FOR EMBANKMENT PONDS, TABLE 1.
SIDE SLOPES - SIDE SLOPES OF EXCAVATED PONDS SHALL BE SUCH THAT THEY WILL BE STABLE AND SHALL NOT BE STEEPER THAN 1 HORIZONTAL TO 1 VERTICAL. FLATTER SLOPES ARE TO BE UTILIZED WHERE SAFETY FOR CHILDREN, LIVESTOCK WATERING, ETC. IS A DESIGN FACTOR.
PERIMETER FORM - WHERE THE STRUCTURES ARE USED FOR RECREATION OR ARE LOCATED IN HIGH PUBLIC VIEW, THE PERIMETER OR EDGE SHOULD BE SHAPED TO A CURVILINEAR FORM.
INLET PROTECTION - WHEN THE EXCAVATED POND IS A BYPASS TIE AND WATER IS BEING DIVERTED FROM A STREAM, THE MINIMUM SIZE INLET LINE SHALL BE A 4-INCH DIAMETER PIPE. ALL STATE LAWS CONCERNING WATER USE AND DOWNSTREAM RIGHTS SHALL BE STRICTLY ADHERED TO. WHERE SURFACE WATER ENTERS THE POND IN A NATURAL OR EXCAVATED CHANNEL, THE SIDE SLOPE OF THE POND SHALL BE PROTECTED AGAINST EROSION.
OUTLET PROTECTION - AN EXCAVATED POND WITH A LOW EMBANKMENT (COMBINATION EXCAVATION / EMBANKMENT POND SHALL BE DESIGNED TO ENSURE A STABLE OUTFALL FOR THE 10-YEAR, 24-HOUR FREQUENCY STORM.
PLACEMENT OF EXCAVATED MATERIAL - THE MATERIAL EXCAVATED FROM THE POND SHALL BE PLACED IN ONE OF THE FOLLOWING WAYS SO THAT ITS WEIGHT WILL NOT ENDANGER THE STABILITY OF THE POND SIDE SLOPES AND WHERE IT WILL NOT BE WASHED BACK INTO THE POND BY RAINFALL:
1. UNIFORMLY SPREAD TO A HEIGHT NOT EXCEEDING 3 FEET WITH THE TOP GRADED TO A CONTINUOUS SLOPE AWAY FROM THE POND;
2. UNIFORMLY PLACED OR SHAPED REASONABLY WELL WITH SIDE SLOPES NO STEEPER THAN 2 TO 1; THE EXCAVATED MATERIAL WILL BE PLACED AT A DISTANCE EQUAL TO THE DEPTH OF THE POND, BUT NOT LESS THAN 12 FEET FROM THE EDGE OF THE POND;
3. SHAPED TO A DESIGNED FORM THAT BLENDS VISUALLY WITH THE LANDSCAPE;
4. USED FOR LOW EMBANKMENT AND LEVELING; OR
5. HAULED AWAY.



NOTE: FACILITIES WITHIN 100' OF A WELL MUST BE CONSTRUCTED WITH IMPERMEABLE LINER. IN THIS CASE THE LINER SHALL INCLUDE ENTIRE SIDES AND BOTTOM OF THE EXCAVATION, EXTENDED TO TOP OF EMBANKMENT.

FACILITIES IN A FILL CONDITION MAY USE AN 10 MILS IMPERMEABLE LINER AS A REPLACEMENT FOR THE CLAY CORE AND OUTFALL TRENCH. IN THIS CASE THE LINER SHALL INCLUDE THE SIDES ONLY FROM A DEPTH OF 1.0 FEET BELOW THE BOTTOM OF THE FACILITY AND SHALL EXTEND UP TO THE WATER SURFACE ELEVATION.

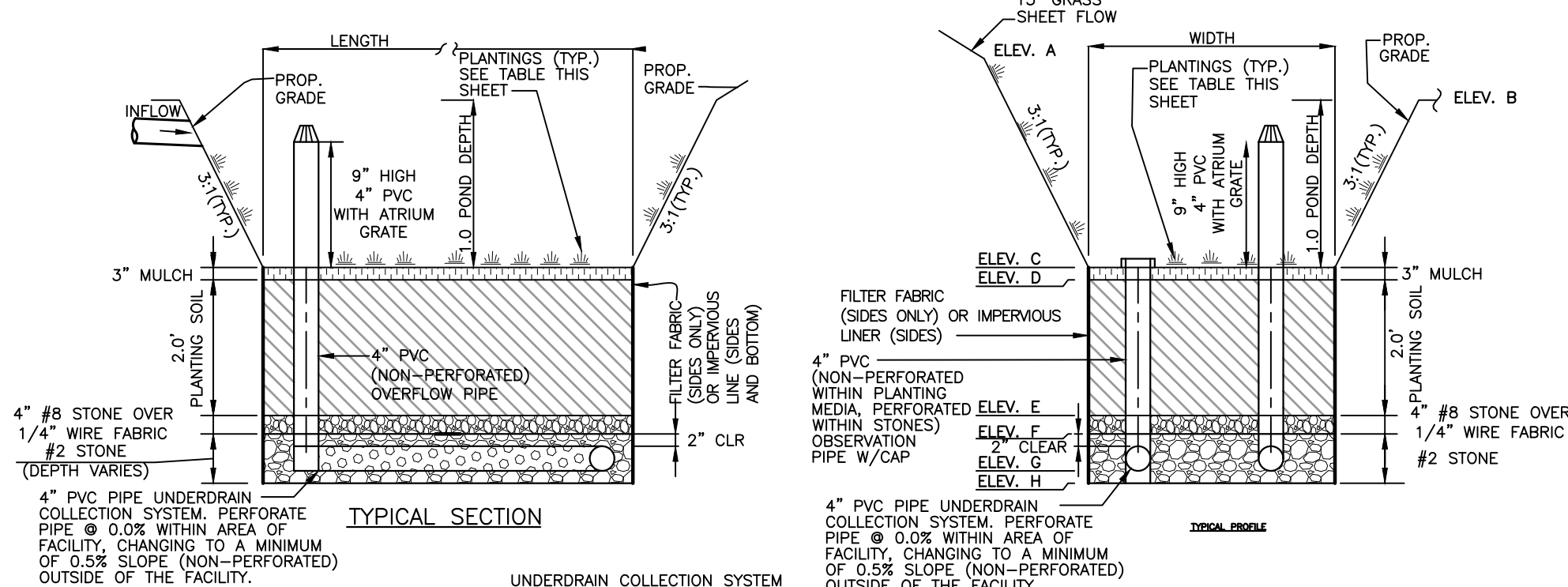
IN ALL CASES THE IMPERMEABLE LINES IS TO BE BELOW TOP SOIL. SEE SPECIFICATIONS CHART THIS SHEET.

MICROBIORETENTION AND BIORETENTION PLANTING DATA

- 1. PLANTINGS WITHIN THE PONDING AREA OF THE MICRO-BIORETENTION FACILITY ARE TO BE OF A MEDIUM TO HIGH WATER TOLERANCE
2. PLANTINGS ALONG THE PERIMETER (BERM) AREA OF THE MICRO-BIORETENTION FACILITY ARE TO BE OF A LOW TO MEDIUM WATER TOLERANCE
3. AVOID PLANTINGS WITH EXCESSIVE ROOT MASS IN POND AREA OF THE MICRO-BIORETENTION FACILITY NEAR O.B. PIPE AND UNDERDRAIN.

MICROBIORETENTION AND BIORETENTION PLANTING SCHEDULE

- (SPECIFIC NUMBER OF PLANTINGS SHALL BE DETERMINED WITH FINAL DESIGN AT PLOT PLAN PHASE)
1 VINCA MINOR (COMMON PERIWINKLE)
2 AJUSTA REPTAS (CREEPING BUNGLEWEED)
3 IRIS VERSICOLOR (IRIS)
4 CALLUNA VULGARIS (HEATHER) (2 PER FACILITY)



TYPICAL SECTION

MICRO-BIORETENTION DETAILS (TYPICAL)

NOT TO SCALE

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6) AND BIORETENTION (F-6)

- A. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.
B. THE OWNER SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
C. THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
D. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)

- A. MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE OWNER SHALL ENSURE THE AREAS RECEIVING RUNOFF ARE PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.

Table with columns for PROJECT, Facility Dimensions, and DATE: 11/29/23

Table with columns for FACILITY, ELEVATIONS (SEE TYPICAL BIORETENTION DETAIL), FILTER, PLANTINGS, and LINER REQ'D

Table with columns for PROJECT, Facility Summary, and DATE: 11/29/23

Table with columns for FACILITY, Drainage Area (SF), Impervious (SF), I (%), Rv, ESDv Req'd (cf), Ponded Storage (cf), etc.

Table with columns for FACILITY, Impervious Area (SF), Drainage Area (SF), Volumetric Runoff, ESDv Required (CF), etc.

Table with columns for FACILITY, Impervious Area (SF), Drainage Area (SF), I (%), Rv, ESDv (cf), Length (ft), Width (ft), Depth (ft), Porosity, Grade, Top of Stone, Bottom of Sand, Volume Stored (cf), Pe Treated, ESDv Provided, Maintenance

Table with columns for FACILITY, Impervious Area (SF), Drainage Area (SF), I (%), Rv, ESDv (cf), Length (ft), Width (ft), Depth (ft), Porosity, Grade, Top of Stone, Bottom of Sand, Volume Stored (cf), Pe Treated, ESDv Provided, Maintenance

The total ESDv provided by this design is: 1896 CF 494 CF greater than required

The total R provided by this design is: 1395 CF 951 CF greater than required

*The ESDv summary table portrays storage in excess of that required for Environmental Site Design requirements.

Large table with columns for DW-6 and DW-7, DW-8, and DW-9, detailing R-TANK DESIGN parameters like Number of R-Tank Modules, Width of R-Tank, Length of R-Tank, etc.

BIO-RETENTION DIMENSION LEGEND table with columns for FACILITY and NAME

MATERIALS & SPECIFICATIONS FOR DRY WELLS table with columns for MATERIAL, SPECIFICATION, SIZE, and NOTES

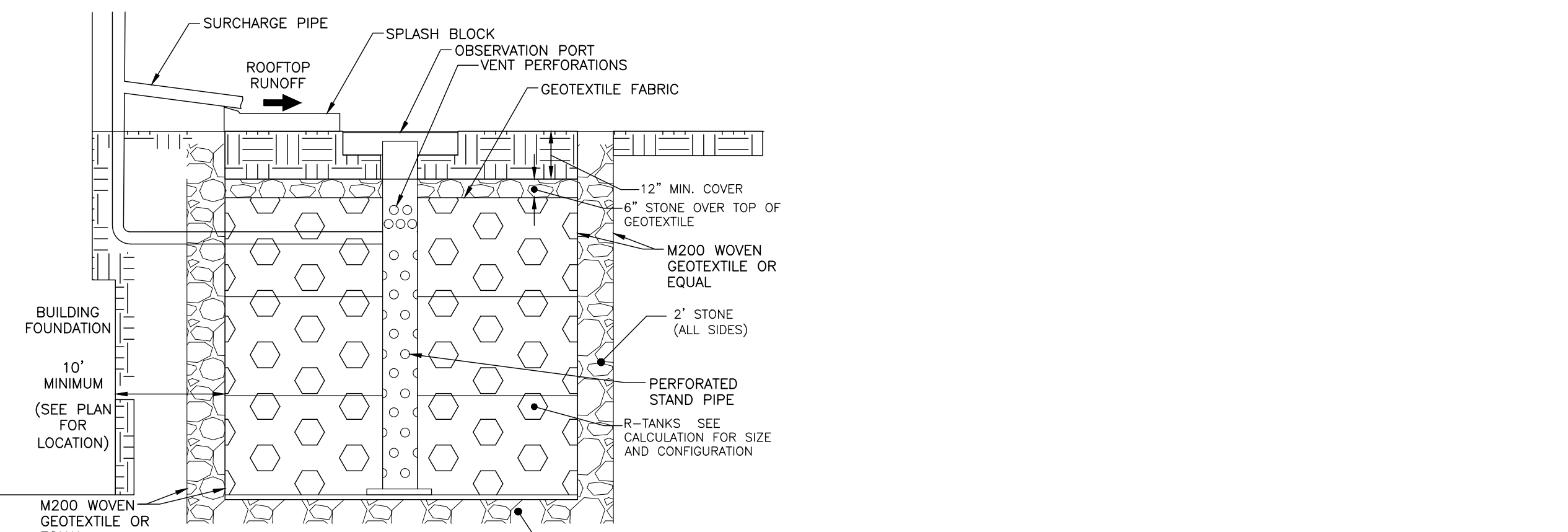
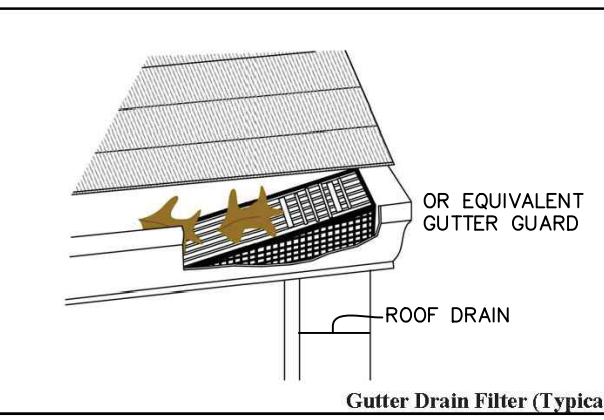
Table with columns for Drywell Designation, Length (ft), Width (ft), Depth (ft), Grade, Top of Stone, Bottom of Sand

NOTE: SEE MANUFACTURER'S DETAILS FOR ADDITIONAL INFORMATION

MATERIALS & SPECIFICATIONS FOR MICRO-BIORETENTION table with columns for MATERIAL, SPECIFICATION, SIZE, and NOTES

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DRY WELLS

- 1. The monitoring wells and structures shall be inspected on a quarterly basis and after every large storm event.
2. Water levels and sediment build up in the monitoring wells shall be recorded over a period of several days to insure trench drainage.
3. A log book shall be maintained to determine the rate at which the facility drains
4. When the facility becomes clogged so that it does not drain down within the 72 hour time period, corrective action shall be taken.
5. The maintenance log book shall be available to Howard County for inspection to insure compliance with operation and maintenance criteria.
6. Once the performance characteristics of the infiltration facility have been verified, the monitoring schedule can be reduced to an annual basis unless the performance data indicates that a more frequent schedule is required.



DRY WELL 6, 7, 8 & 9 R-TANK DETAIL NOT TO SCALE

NOTE: SEE MANUFACTURER'S DETAILS FOR ADDITIONAL INFORMATION



(IN FEET) 1 inch = 20 ft.

FOR SEQUENCE OF OPERATIONS PLEASE SEE SEDIMENT CONTROL NOTES AND DETAILS.

FINAL STORMWATER MANAGEMENT WILL BE DESIGNED UNDER THE BUILDING PERMIT PLAN AND UPDATED BY REDLINE REVISION.

Table with columns for APPROVED: DEPARTMENT OF PUBLIC WORKS, CHIEF, BUREAU OF HIGHWAYS, DATE, and APPROVED: DEPARTMENT OF PLANNING AND ZONING, CHIEF, DIVISION OF LAND DEVELOPMENT, DATE.

Table with columns for Non-Rooftop Discon, Target Pe = 1.20, Disconnection, Impervious, Drainage, Volumetric Runoff, ESDv Required (CF), etc.

BENCHMARK ENGINEERING, INC. logo and contact information, including address, phone, and website.

Table with columns for OWNER, DEVELOPER, TAX MAP, GRID, P/O, PARCEL, ZONED, DATE, BEI PROJECT NO., SCALE, SHEET, and OF 10.

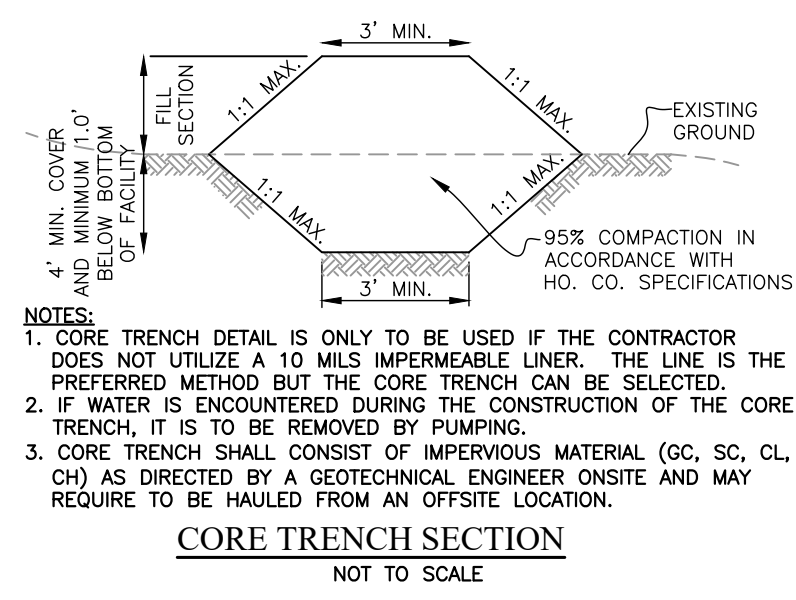
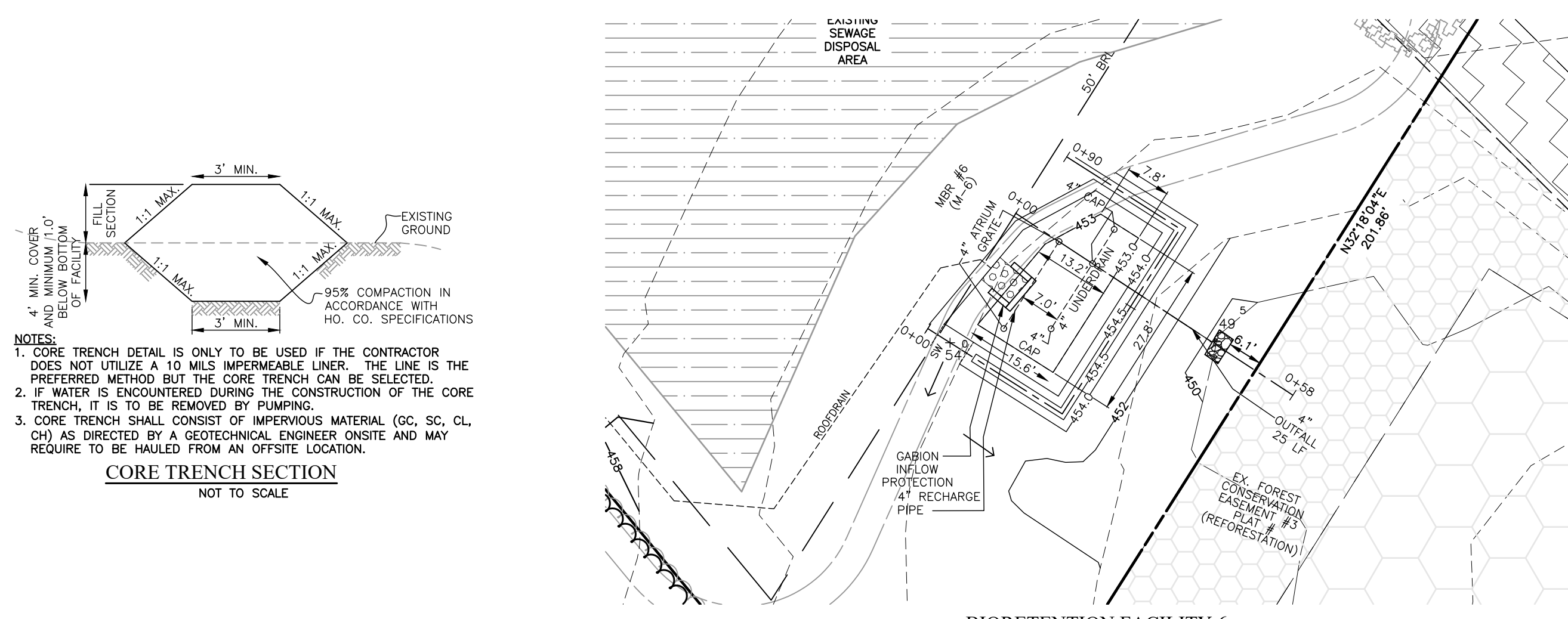
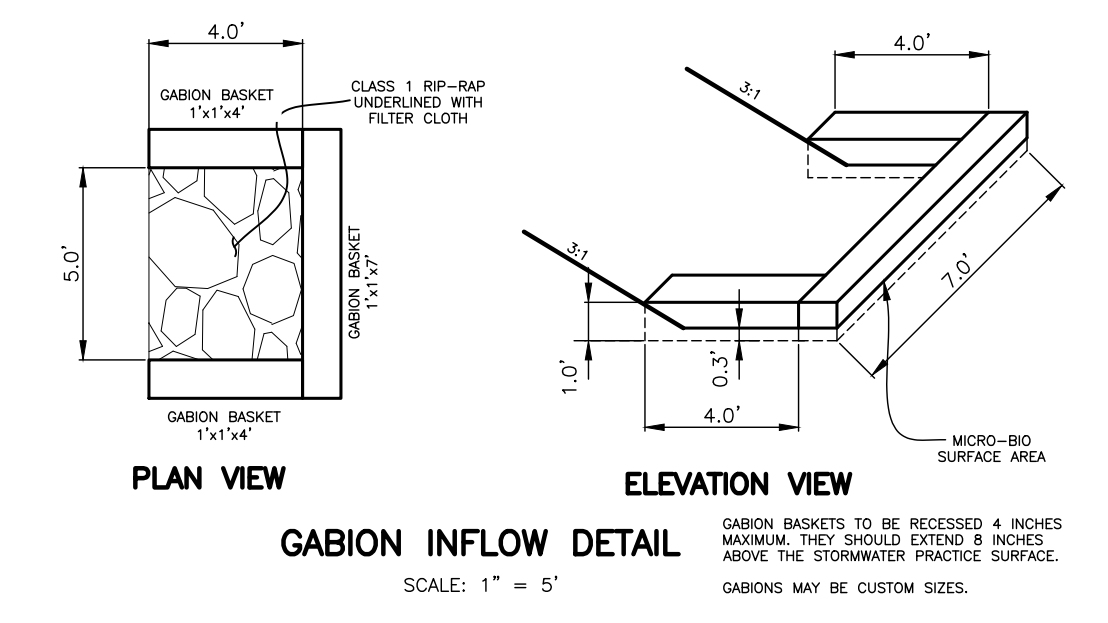
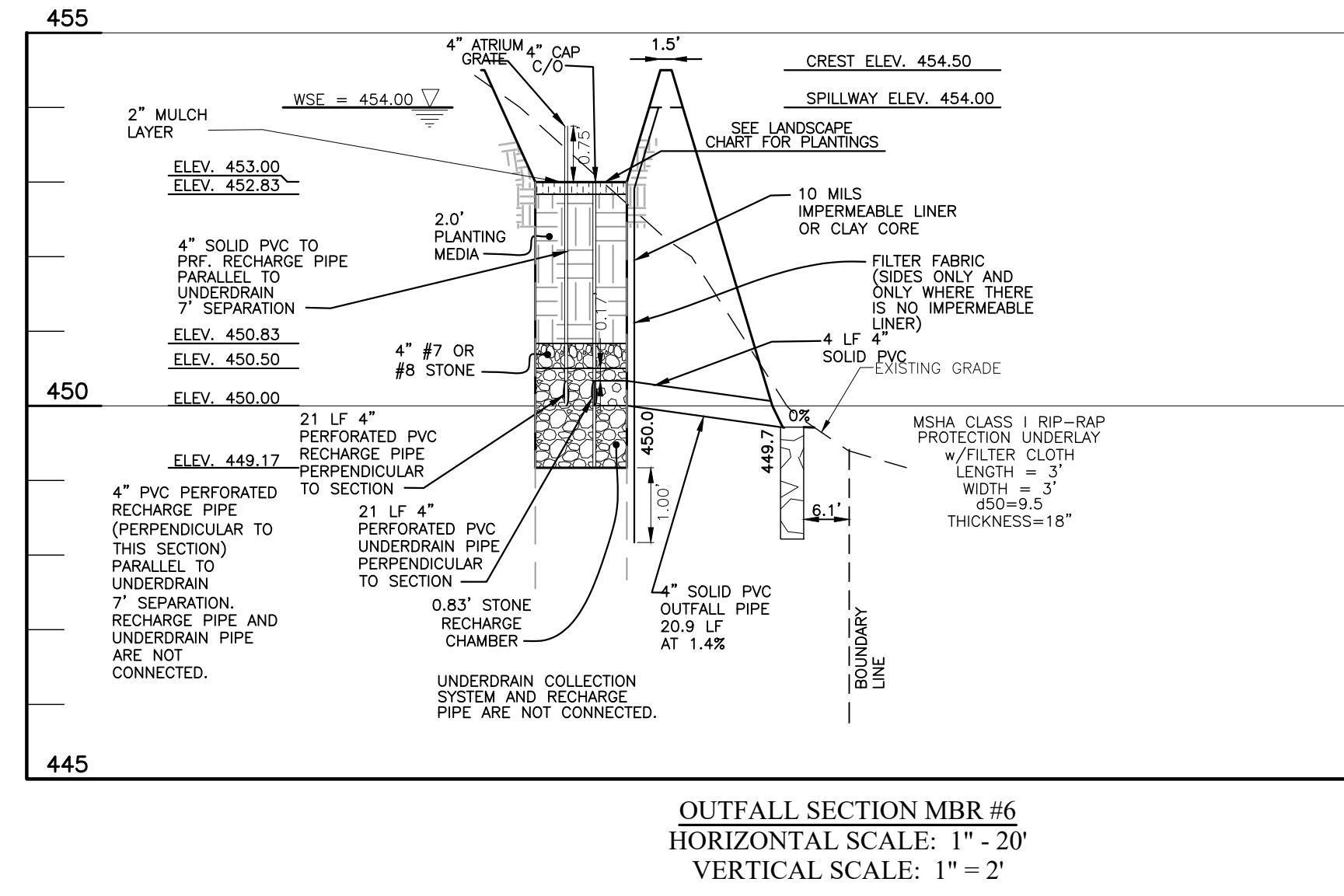
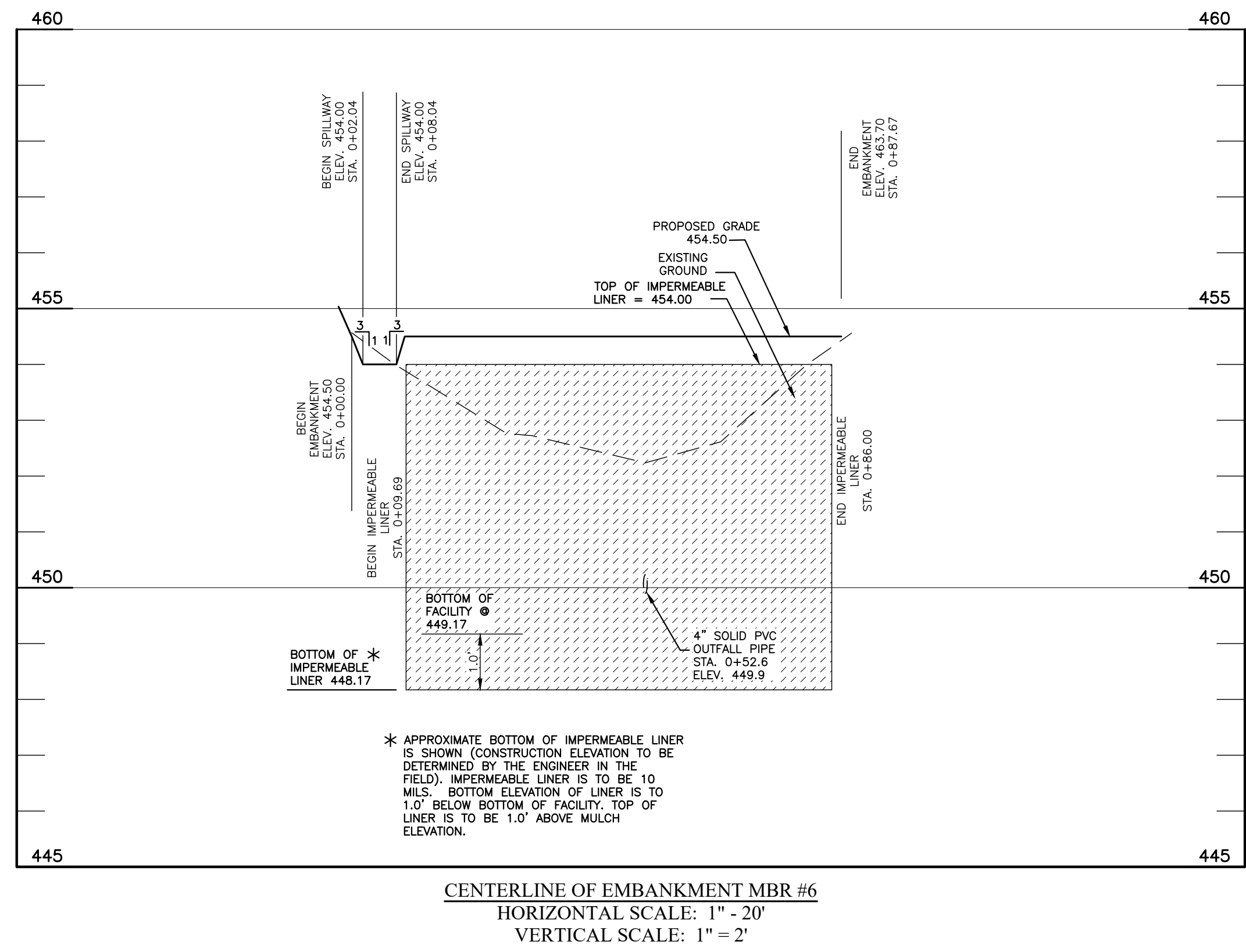
Appendix B.4. Construction Specifications for Environmental Site Design Practices

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil [2' to 4' deep]	loamy sand (60 - 65%) & compost (35 - 40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with 1/4-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; $f_c = 3500$ psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) <i>not using previously approved State or local standards</i> requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.R/89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone (AASHTO) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

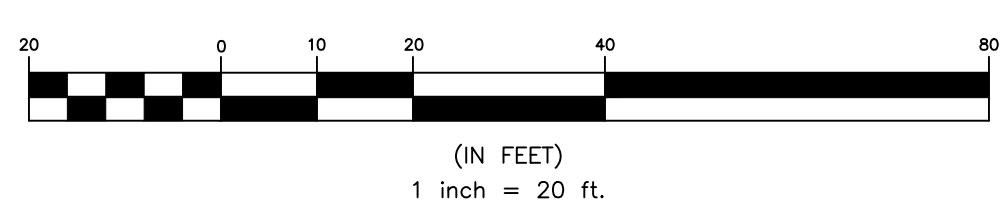
Table B.3.2 Materials Specifications for Bioretention

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
planting soil [2.5' to 4' deep]	sand 35 - 60% silt 30 - 55% clay 10 - 25%	n/a	USDA soil types loamy sand, sandy loam or loam
mulch	shredded hardwood		aged 6 months, minimum
pea gravel diaphragm and curtain drain	pea gravel: ASTM-D-448 ornamental stone: washed cobbles	pea gravel: No. 6 stone: 2" to 5"	
geotextile	Class "C" - apparent opening size (ASTM-D-4751), grab tensile strength (ASTM-D-4632), puncture resistance (ASTM-D-4833)	n/a	for use as necessary beneath underdrains only
underdrain gravel	AASHTO M-43	0.375" to 0.75"	
underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes
poured in place concrete (if required)	MSHA Mix No. 3; $f_c = 3500$ psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) <i>not using previously approved State or local standards</i> requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.R/89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking
sand [1" deep]	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

Appendix B.3. Construction Specifications for Sand Filters, Bioretention and Open Channels



- NOTES:**
- CORE TRENCH DETAIL IS ONLY TO BE USED IF THE CONTRACTOR DOES NOT UTILIZE A 10 MILS IMPERMEABLE LINER. THE LINE IS THE PREFERRED METHOD BUT THE CORE TRENCH CAN BE SELECTED.
 - IF WATER IS ENCOUNTERED DURING THE CONSTRUCTION OF THE CORE TRENCH, IT IS TO BE REMOVED BY PUMPING.
 - CORE TRENCH SHALL CONSIST OF IMPERVIOUS MATERIAL (GC, SC, CL, CH) AS DIRECTED BY A GEOTECHNICAL ENGINEER ONSITE AND MAY REQUIRE TO BE HAULED FROM AN OFFSITE LOCATION.



FOR SEQUENCE OF OPERATIONS
PLEASE SEE SEDIMENT CONTROL NOTES
AND DETAILS.

APPROVED: DEPARTMENT OF PUBLIC WORKS
 DocuSigned by: *[Signature]* 3/5/2024
 CHIEF, BUREAU OF HIGHWAYS
 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 DocuSigned by: *[Signature]* 3/6/2024
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE

DocuSigned by: *[Signature]* 3/4/2024
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE

NO.	DATE	REVISION

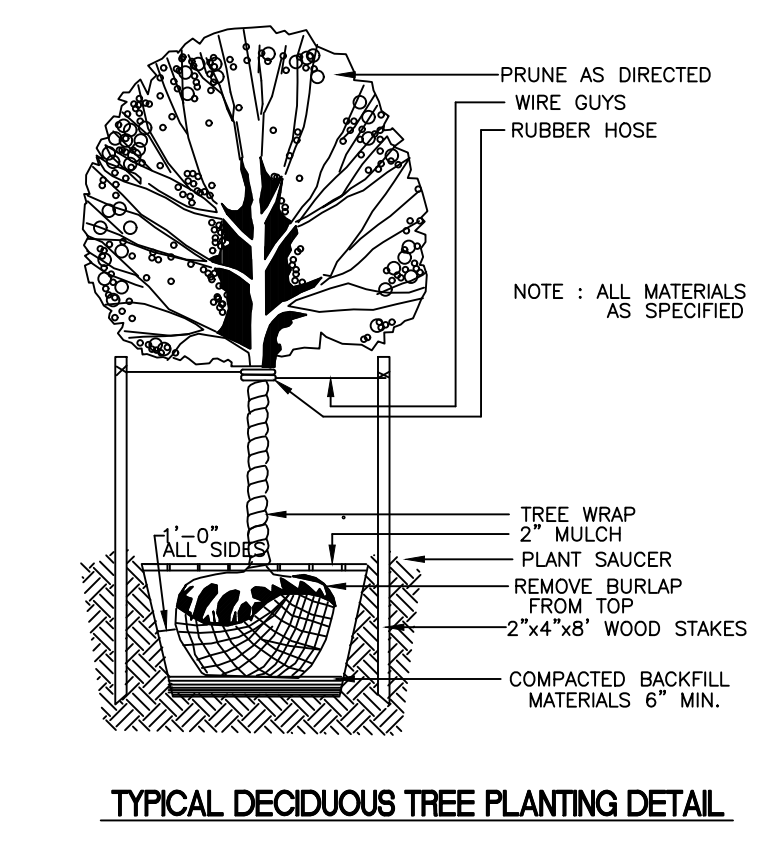
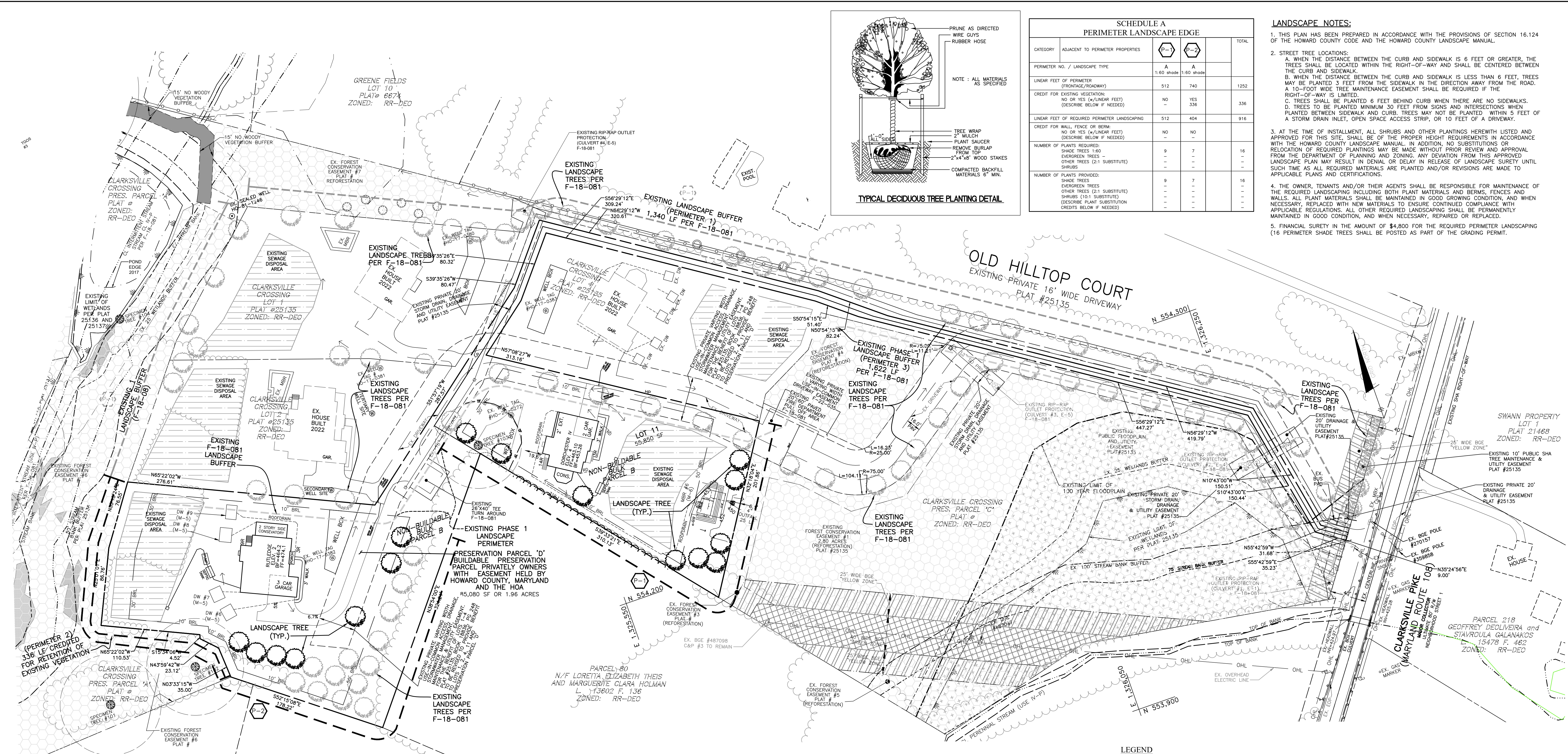
BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.

3300 NORTH RIDGE ROAD & SUITE 140 & ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BE-CIVILENGINEERING.COM

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. 45577, Expiration Date: 06-06-2024.

John M. Carney 02.16.2024

<p>OWNER: CLARKSVILLE NL LLC C/O H&H ROCK COMPANIES 6800 DEERPATH ROAD SUITE 100 ELKRIDGE, MD 21075 410-579-2442</p>	<p>CLARKSVILLE CROSSING, PHASE 2, AREA 2 A RESUBDIVISION OF CLARKSVILLE CROSSING, PHASE 2, AREA 1, NON-BUILDABLE BULK PARCEL B' (PLAT #) TO CREATE LOT 11 AND BUILDABLE PRESERVATION PARCEL 'D'</p>
<p>DEVELOPER: ROCK REALTY, INC. C/O H & H ROCK COMPANIES 6800 DEERPATH ROAD SUITE #100 ELKRIDGE, MARYLAND 21075 410-579-2442</p>	<p>TAX MAP: 34 GRID: 23 P/O PARCEL: 301 ZONED: RR-DEO ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND</p>
<p>FINAL PLAN STORMWATER MANAGEMENT NOTES AND DETAIL</p>	
<p>DESIGN: JC DRAWN: JC</p>	<p>DATE: FEBRUARY, 2024 BEI PROJECT NO: 2525 SCALE: AS SHOWN SHEET 8 OF 10</p>



SCHEDULE A PERIMETER LANDSCAPE EDGE				
CATEGORY	ADJACENT TO PERIMETER PROPERTIES	PERIMETER		TOTAL
		P-1	P-2	
LINEAR FEET OF PERIMETER (FRONTAGE/ROADWAY)		512	740	1252
CREDIT FOR EXISTING VEGETATION: NO OR YES (w/LINEAR FEET) (DESCRIBE BELOW IF NEEDED)		NO	YES	336
LINEAR FEET OF REQUIRED PERIMETER LANDSCAPING		512	404	916
CREDIT FOR WALL, FENCE OR BERM: NO OR YES (w/LINEAR FEET) (DESCRIBE BELOW IF NEEDED)		NO	NO	
NUMBER OF PLANTS REQUIRED:				
SHADE TREES: 1:60	9	7		16
EVERGREEN TREES - OTHER TREES (2:1 SUBSTITUTE)	-	-		-
SHRUBS	-	-		-
NUMBER OF PLANTS PROVIDED:				
SHADE TREES	9	7		16
EVERGREEN TREES	-	-		-
OTHER TREES (2:1 SUBSTITUTE)	-	-		-
SHRUBS (10:1 SUBSTITUTE)	-	-		-
OTHER TREES (2:1 SUBSTITUTE) (DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	-	-		-

LANDSCAPE NOTES:

- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL.
- STREET TREE LOCATIONS:**
 - WHEN THE DISTANCE BETWEEN THE CURB AND SIDEWALK IS 6 FEET OR GREATER, THE TREES SHALL BE LOCATED WITHIN THE RIGHT-OF-WAY AND SHALL BE CENTERED BETWEEN THE CURB AND SIDEWALK.
 - WHEN THE DISTANCE BETWEEN THE CURB AND SIDEWALK IS LESS THAN 6 FEET, TREES MAY BE PLANTED 3 FEET FROM THE SIDEWALK IN THE DIRECTION AWAY FROM THE ROAD. A 10-FOOT WIDE TREE MAINTENANCE EASEMENT SHALL BE REQUIRED IF THE RIGHT-OF-WAY IS LIMITED.
 - TREES SHALL BE PLANTED 6 FEET BEHIND CURB WHEN THERE ARE NO SIDEWALKS.
 - TREES TO BE PLANTED MINIMUM 30 FEET FROM SIGNS AND INTERSECTIONS WHEN PLANTED BETWEEN SIDEWALK AND CURB. TREES MAY NOT BE PLANTED WITHIN 5 FEET OF A STORM DRAIN INLET, OPEN SPACE ACCESS STRIP, OR 10 FEET OF A DRIVEWAY.
- AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWIT LISTED AND APPROVED FOR THIS SITE SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATIONS.
- THE OWNER, TENANTS AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
- FINANCIAL SURETY IN THE AMOUNT OF \$4,800 FOR THE REQUIRED PERIMETER LANDSCAPING (16 PERIMETER SHADE TREES SHALL BE POSTED AS PART OF THE GRADING PERMIT).

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

Mark Levy 2/16/2024

CLARKSVILLE NL, LLC DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

3/5/2024

APPROVED: DEPARTMENT OF PLANNING AND ZONING

3/6/2024

3/4/2024

STREET TREE SCHEDULE		
LINEAR FEET OF RIGHT-OF-WAY	CLARKSVILLE PIKE PUBLIC ROAD	
LINEAR FEET OF CREDIT		
LINEAR FEET OF REQUIRED PLANTING		TOTAL
TREE SIZE	MEDIUM 11-40 LF	
TREES REQUIRED	0*	0*

*STREET TREES PROVIDED UNDER F-18-081

PERIMETER LANDSCAPE PLANTING LIST				
SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
	16	Quercus rubra/ NORTHERN RED OAK	2.5" cal. (min.)	PERIMETER SHADE TREES

LEGEND

- EXISTING TREE LINE
- PROPOSED TREE LINE
- EXISTING UTILITY POLE
- PROPOSED STRUCTURE
- EXISTING STRUCTURE
- EXISTING SEWAGE DISPOSAL AREA
- 100 YR FLOODPLAIN
- MICRO-BIORETENTION FACILITY
- EXISTING FENCE
- SPECIMEN TREE
- EX. LANDSCAPE TREE F-18-081
- EXISTING FOREST CONSERVATION EASEMENT
- LANDSCAPE PERIMETER
- LANDSCAPE PERIMETER DESIGNATION

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.

3300 NORTH RIDGE ROAD & SUITE 140 & ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BE-ENGINEERING.COM

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. 45577, Expiration Date: 06-06-2024.

John M. Carney 02.16.2024

<p>OWNER:</p> <p>CLARKSVILLE NL LLC C/O H & H ROCK COMPANIES 6800 DEERPATH ROAD SUITE 100 ELKRIDGE, MD 21075 410-579-2442</p> <p>DEVELOPER:</p> <p>ROCK REALTY, INC. C/O H & H ROCK COMPANIES 6800 DEERPATH ROAD SUITE #100 ELKRIDGE, MARYLAND 21075 410-579-2442</p>	<p>CLARKSVILLE CROSSING, PHASE 2, AREA 2</p> <p>A RESUBDIVISION OF CLARKSVILLE CROSSING, PHASE 2, AREA 1, NON-BUILDABLE BULK PARCEL 'B' (PLAT #) TO CREATE LOT 11 AND BUILDABLE PRESERVATION PARCEL 'D'</p> <p>TAX MAP: 34 GRID: 23 P/O PARCEL: 301 ZONED: RR-DEO ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND</p> <p style="text-align: center;">FINAL PLAN LANDSCAPE PLAN, NOTES AND DETAILS</p> <p>DATE: FEBRUARY, 2024 BEI PROJECT NO: 2525</p> <p>DESIGN: JC DRAWN: JC SCALE: AS SHOWN SHEET 9 OF 10</p>
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October 23, 2013

Mr. Jason Vankirk
 Elm Street Development
 5704 Dorsey Hall Road, Suite 205
 Ellicott City, Maryland 21042

Re: Clarksville Crossing
 Proposed SWM
 Project No. 113-097

Dear Mr. Vankirk:

On October 14 and 15, 2013 Geolab personnel conducted nine soil test borings at the above referenced site to determine the feasibility of the use of infiltration-based structures. These test borings were drilled with the intent of verifying that bedrock was not present to the minimum design depth and to verify the groundwater table. Each test boring was drilled using a hand-auger and advanced to a depth of 10 or 12 feet, auger refusal or groundwater.

The project site is currently a single family residence which consists of both open fields and woodland areas. The current site grading consists of hills and valleys that ultimately are sloping downward to the east-southeast. A natural drainage feature, a small stream, is located in the southeast corner of the property. This stream flows to the east-southeast. The property is accessed by a single lane driveway leading from Clarksville Pike (Route 108).

Groundwater was encountered in Test Boring Nos. B-5, B-7 and B-8 during drilling at depths of 5.0 to 6.0 feet. After 24 hours, the water levels rose approximately 2 feet. Groundwater was not encountered in Test Borings Nos. B-1 through B-4, B-6 and B-9. Bedrock was not encountered in any of the test borings to the depths explored.

Laboratory tested was performed on representative samples at the approximate bottom of storm water device depth. The soils encountered in the test borings were classified using the USDA system as Sand, Sandy Loam, Silt Loam and Loam. The following hydrologic soil profiles and infiltration rates are assigned to the USDA soil type recorded at the explored locations:

Texture Class	Effective Water Capacity (inches/hour)	Minimum Infiltration Rate (inches/hour)	Hydrologic Soil Group
SANDY LOAM	0.25	1.02	B
LOAM	0.19	0.52	B
SAND	0.34	8.27	A
SILT LOAM	0.17	0.27	C

8980 Route 108, Suite D, Columbia, Maryland 21045
 410-772-2220 301-621-2221 1-888-4geolab fax: 410-772-2221

BORING LOG

GEOLAB, INC.

Report No.:		Date: 10/23/2013	
Client: Elm Street Development		Project No. 113-097	
Project: Clarksville Crossing		Location: See Boring Location Plan	
Boring No. B-4 (1 of 1)		Total Depth: 10	Elev. 468 +/-
Type of Boring: Hang-auger		Issued: 10/14/2013	Completed: 10/14/2013
Elevation	Depth	DESCRIPTION OF MATERIALS (classification)	REMARKS
469	0.0	Forest litter with root (organic) matter and organic soil	Boring dry during drilling and at completion.
467.5	0.5	Dark brown fine sandy SILT with little gravel, moist (ML, Loam)	
	2.0		28.0
	2.5		
	3.5		33.0
	4.0		
	4.5		
464.5	3.5	Light brown micaceous clayey silty fine to coarse SAND with trace gravel, moist (SC, Sandy Loam)	
	4.0		
	4.5		
458	10.0	End of Boring	

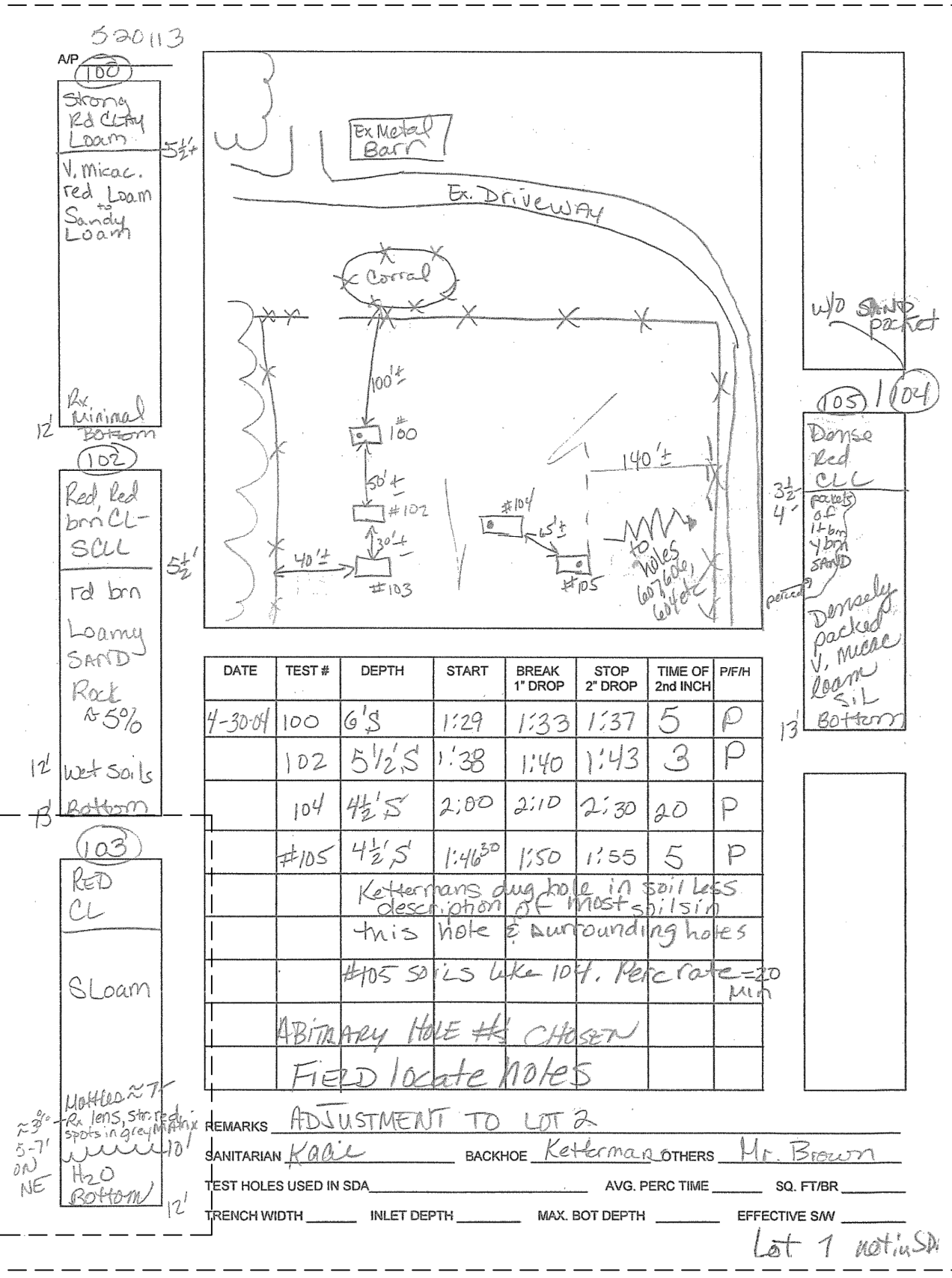
Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the last two increments of penetration is termed the standard penetration resistance, N.

BORING LOG

GEOLAB, INC.

Report No.:		Date: 10/23/2013	
Client: Elm Street Development		Project No. 113-097	
Project: Clarksville Crossing		Location: See Boring Location Plan	
Boring No. B-3 (1 of 1)		Total Depth: 10	Elev. 478 +/-
Type of Boring: Hang-auger		Issued: 10/14/2013	Completed: 10/14/2013
Elevation	Depth	DESCRIPTION OF MATERIALS (classification)	REMARKS
478	0.0	Forest litter with root (organic) matter and organic soil	Boring dry during drilling and at completion.
477.5	0.5	Light brown fine sandy SILT, moist (ML, Loam)	
	1.0		23.5
	1.5		
	2.0		
	3.0		
	4.0		
	5.0		
	6.0		
	7.0		
	8.0		
	9.0		
468	10.0	End of Boring	

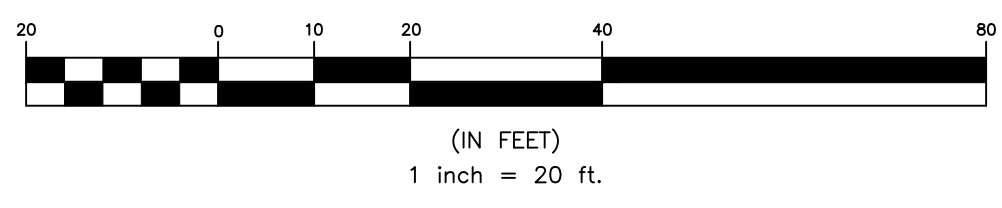
Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the last two increments of penetration is termed the standard penetration resistance, N.



Clarksville Crossing, Phase 2, Area 2 - Geotechnical Analysis								
Facility	Type	MDE	Bottom Media	Test Designation	Depth to Restriction*	Restriction Type	Depth Media to Bottom of Test	Note
MBR 6	Micro-bioretentation	M-6	450.8	103	444.0	Excavation Depth	6.8	

* Water Restriction

APPROVED: DEPARTMENT OF PUBLIC WORKS 3/5/2024
 CHIEF, BUREAU OF HIGHWAYS DATE
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



 3300 NORTH RIDGE ROAD & SUITE 140 • ELICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BE-CIVILENGINEERING.COM		
OWNER: CLARKSVILLE NL LLC C/O H&H ROCK COMPANIES 6800 DEERPATH ROAD SUITE 100 ELKBRIDGE, MD 21075 410-579-2442		CLARKSVILLE CROSSING, PHASE 2, AREA 2 A RESUBDIVISION OF CLARKSVILLE CROSSING, PHASE 2, AREA 1, NON-BUILDABLE BULK PARCEL 'B' (PLAT #) TO CREATE LOT 11 AND BUILDABLE PRESERVATION PARCEL 'D'
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DATE: FEBRUARY, 2024 SCALE: AS SHOWN		BEI PROJECT NO: 2525 SHEET 10 OF 10