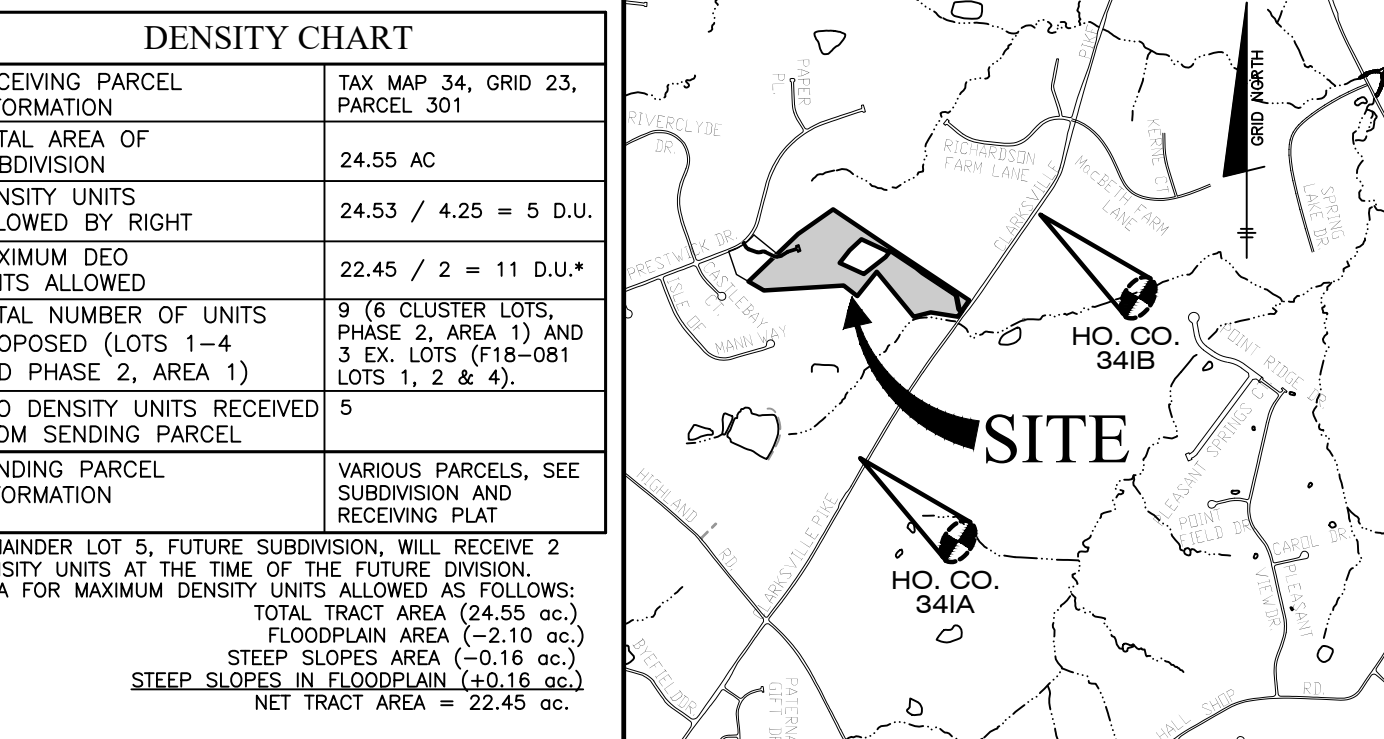
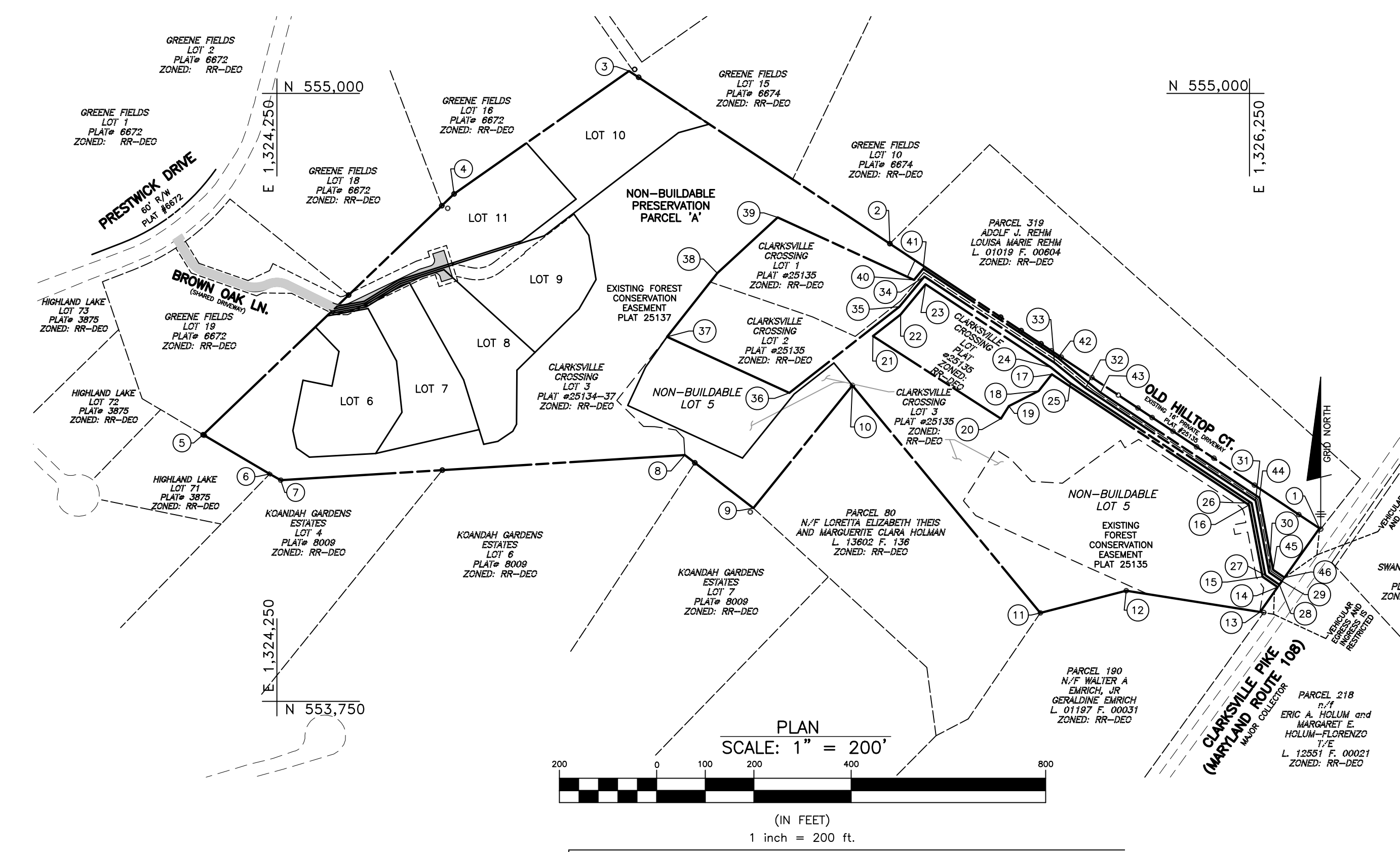


GENERAL NOTES

- 1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY... 2. SUBJECT PROPERTY 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...

CLARKSVILLE CROSSING, PHASE 2, AREA 1 FINAL PLAN BUILDABLE LOTS 6 THRU 11, NON-BUILDABLE LOT 5, AND NON-BUILDABLE PRESERVATION PARCEL 'A' TAX MAP 34, GRID 23, P/O PARCEL 301 5TH ELECTION DISTRICT, HOWARD COUNTY, MD



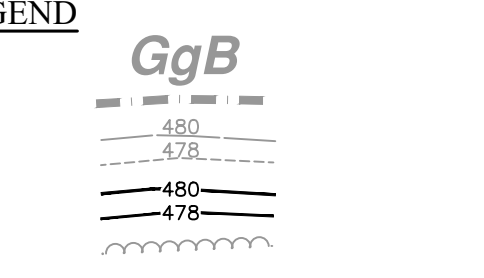
BOUNDARY COORDINATES table with columns for Point #, Northing, Easting, and Boundary Coordinates.

STORMWATER MANAGEMENT PRACTICES table with columns for Lot Number, Address, Non-Rooftop Disconnection, Dry Well, Micro-Bioretentation, and Bio-Retention.

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

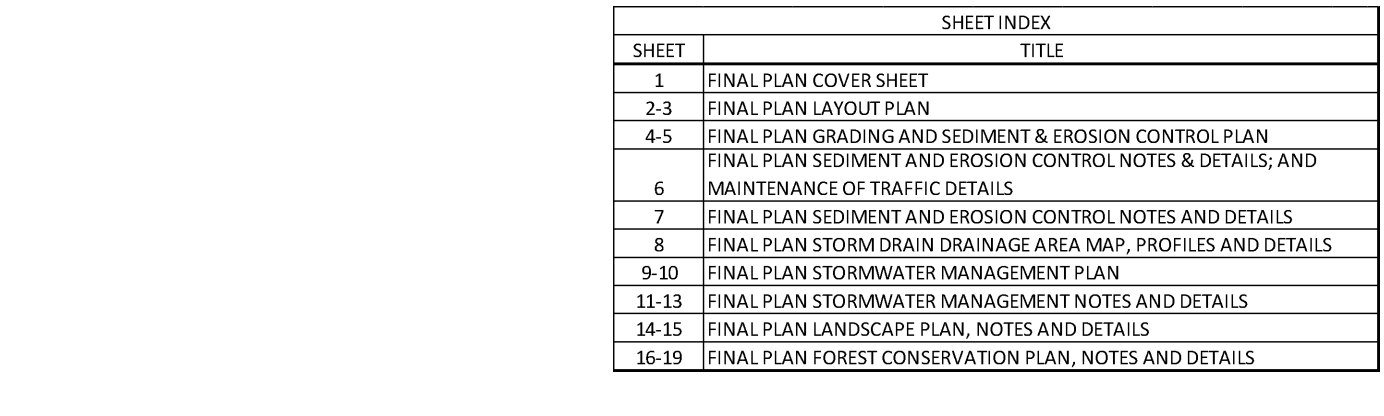
Specimen Tree Chart - CLARKSVILLE CROSSING PHASE 2 AND GREENE FIELD LOT 19 table with columns for Key, DW, Species, Site, CRZ, Remove or Retain, Comments.

Specimen Tree Chart - CLARKSVILLE CROSSING PHASE 2 AND GREENE FIELD LOT 19 table with columns for Key, DW, Species, Site, CRZ, Remove or Retain, Comments.



Minimum Lot Size Chart table with columns for Lot, Gross Area (SF), Pipestem Area (SF), Lot Size (SF).

SECTION NUMBER, ROAD AND STREET CLASSIFICATION, CALIFORNIA BEARING RATIO (CBR) table with columns for CBR, 3 to <5, 5 to <7, 7 to <8, 8 to <10, 10 to <15, 15 to <20, 20 to <25, 25 to <30, 30 to <35, 35 to <40, 40 to <45, 45 to <50, 50 to <55, 55 to <60, 60 to <65, 65 to <70, 70 to <75, 75 to <80, 80 to <85, 85 to <90, 90 to <95, 95 to <100.



REVISION table with columns for NO., DATE, REVISION.

Project information including OWNER (CLARKSVILLE NL LLC), DEVELOPER (ROCK REALTY, INC.), TAX MAP 34, GRID 23, PARCEL 301, and contact information for BENCHMARK ENGINEERING, INC.

APPROVED: DEPARTMENT OF PUBLIC WORKS, APPROVED: DEPARTMENT OF PLANNING AND ZONING, with signatures and dates.

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND					
SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
GgB	YES	B	D	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	0.2
GhB	YES	C	D	GLENVILLE-BALIE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.370.32
GcB		C	D	GLENVILLE-ODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	0.37
GcC		B		GLENELG LOAM, 8 TO 15 PERCENT SLOPES	0.2
GbB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.2
GbC		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.2

** HIGHLY ERODIBLE, K>0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES TAKEN FROM THE NRCS WEB SOIL SURVEY AUGUST 2014, MAP 23.

LEGEND

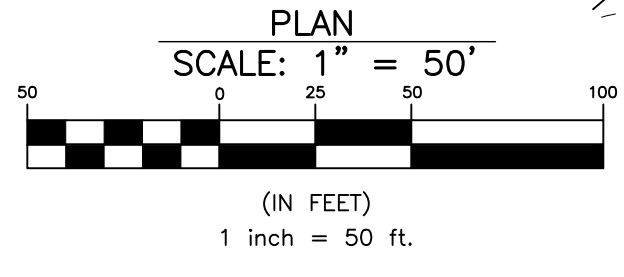
- EXISTING TREE LINE
- PROPOSED TREE LINE
- PROPOSED STRUCTURE
- EXISTING STRUCTURE
- WELL BOX
- EXISTING SEWAGE DISPOSAL AREA
- SEWAGE DISPOSAL AREA
- EXISTING FOREST CONSERVATION EASEMENT
- PROPOSED DRIVEWAY
- EXISTING DRYWELL
- EXISTING MICRO-BIORETENTION FACILITY
- PROPOSED MICRO-BIORETENTION FACILITY
- SPECIMEN TREE



FOR MAINTENANCE OF TRAFFIC SEE SHEET 6 FOR DETAILS ON BARREL PLACEMENT AND SHOULDER WORK ON ROADWAY LESS THAN 40 MPH.

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.



APPROVED: DEPARTMENT OF PUBLIC WORKS
 6/8/2023
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 6/8/2023
 CHIEF, DIVISION OF LAND DEVELOPMENT

6/8/2023
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

SEE SHEETS 20-23 FOR POND REHABILITATION PLANS INCLUDING GRADING AND SEDIMENT CONTROLS.

FOR CONTINUATION SEE MATCH LINE SHEET 3

Key (X#)	Species	Size (Inches DBH)	Remove (ft radius)	Retention	Comments
1	Tulip poplar	38.5	57.75	Remove	FAIR
2	Tulip poplar	31.5	47.25	Remove	
3	Tulip poplar	30.5	45.75	Remove	FAIR
4	Tulip poplar	31	46.50	Remove	FAIR
5	Hickory	31.5	47.25	Retain	POOR, MAJOR DIEBACK
6N	Tulip poplar	32	48.00	Retain	
6	Tulip poplar	30	45.00	Retain	
7	Tulip poplar	31	46.50	Retain	
8	Tulip poplar	34	51.00	Retain	
9	Tulip poplar	32	48.00	Retain	
10	Tulip poplar	38.5/30.5	57.75	Retain	
11	Tulip poplar	38	57.00	Retain	
12	Tulip poplar	30.5	45.75	Retain	
13	Tulip poplar	34	51.00	Retain	
14	Tulip poplar	33.5	50.25	Retain	POOR, MAJOR DIEBACK
15	Tulip poplar	38	57.00	Retain	FAIR
16	Tulip poplar	36	54.00	Retain	
17	Tulip poplar	33	49.50	Retain	
18	Tulip poplar	35	52.50	Retain	
19	Tulip poplar	40	60.00	Retain	FAIR, SOME STORM DAMAGE AND DIEBACK
20	Tulip poplar	33	49.50	Retain	POOR, MAJOR LEAN, ROT
21	Tulip poplar	38.5	57.75	Retain	
22	Tulip poplar	30.5	45.75	Retain	FAIR, LIMB DIEBACK
23	Tulip poplar	38.5	57.75	Retain	TWIN STREAM BELOW BH
24	Tulip poplar	31.5	47.25	Remove	FAIR
25	Tulip poplar	32	48.00	Retain	
26	Tulip poplar	33.5	50.25	Retain	
27	Tulip poplar	34	51.00	Retain	
28	Tulip poplar	35	52.50	Retain	
29	Tulip poplar	34	51.00	Retain	
30	Tulip poplar	35	52.50	Retain	
31	Tulip poplar	34	51.00	Remove	POOR, SIGNIFICANT DIEBACK IN THE CANOPY
32	Tulip poplar	36	54.00	Retain	
33	Tulip poplar	36	54.00	Retain	POOR, DIEBACK
34	Tulip poplar	36	54.00	Remove	VERY POOR, MAJOR TRUNK ROT
35	Tulip poplar	33.5	50.25	Remove	POOR, MAJOR ROT
36	Red Oak	33.5	50.25	Retain	
37	Tulip poplar	38	57.00	Retain	POOR, TRUNK AND CANOPY DIEBACK
38	Tulip poplar	38	57.00	Retain	SPLITS ABOVE BH
39	Tulip poplar	30	45.00	Retain	VINE
40	Tulip poplar	33.5	50.25	Remove	
41	Tulip poplar	31	46.50	Remove	
42	Tulip poplar	31	46.50	Retain	
43	Tulip poplar	30.5	45.75	Retain	
44	Red Oak	31	46.50	Retain	POOR, MAJOR DIEBACK
45	Tulip poplar	31.5	47.25	Retain	
46	Tulip poplar	42	63.00	Retain	FAIR, LIMITED CROWN
47	Tulip poplar	37.5	56.25	Retain	
48	Tulip poplar	30.5	45.75	Retain	FAIR, LEANING
49	Tulip poplar	31.5	47.25	Retain	
50	Tulip poplar	33	49.50	Retain	
51	Tulip poplar	31	46.50	Retain	FAIR, DIEBACK
52	Tulip poplar	31	46.50	Retain	
53	Tulip poplar	31	46.50	Retain	
54	Tulip poplar	31	46.50	Retain	
55	Tulip poplar	33	49.50	Retain	
56	Tulip poplar	31	46.50	Retain	
57	Red Oak	30	45.00	Remove	POOR, MAJOR DIEBACK
58	Tulip poplar	32	48.00	Retain	
59	Tulip poplar	34.5	51.75	Retain	
60	Tulip poplar	31	46.50	Retain	FAIR, LEANING
61	Tulip poplar	35	52.50	Retain	FAIR, LEANING
62	Tulip poplar	30.5	45.75	Retain	FAIR, LEANING
63	Tulip poplar	31.5	47.25	Retain	FAIR, SOME DIEBACK
64	Tulip poplar	30.2	45.30	Retain	POOR, STORM DAMAGE
65	Tulip poplar	35	52.50	Retain	
66	White Oak	34	51.00	Retain	FAIR
67	Tulip poplar	31	46.50	Retain	
68	White Oak	30.5	45.75	Retain	
69	Red Oak	33	49.50	Retain	POOR, MAJOR DIEBACK
70	Tulip poplar	33	49.50	Retain	
71	Tulip poplar	35	52.50	Retain	
72	Tulip poplar	37	55.50	Retain	
73	Tulip poplar	48	72.00	Retain	
74	Tulip poplar	34.5	51.75	Remove	
75	Tulip poplar	42.5	63.75	Retain	FAIR, LEANING
76	Tulip poplar	33	49.50	Retain	FAIR, ONE SIDED CANOPY
77	Tulip poplar	35.5	53.25	Remove	POOR, NOTABLE ROT IN CANOPY
78	Tulip poplar	38.5	57.75	Retain	
79	Tulip poplar	33.5	50.25	Retain	
80	Tulip poplar	33.5	50.25	Remove	
81	Tulip poplar	34	51.00	Retain	
82	Tulip poplar	35.5	53.25	Retain	FAIR, LEANING
83	Tulip poplar	38.5	57.75	Remove	FAIR, LEANING, ELECTRICAL WIRING ATTACHED TO TRUNK
84	Tulip poplar	34.5	51.75	Retain	
85	Tulip poplar	31	46.50	Retain	
86	Tulip poplar	31.5	47.25	Retain	
87	Tulip poplar	31	46.50	Retain	
88	Tulip poplar	32	48.00	Retain	
89	Tulip poplar	31	46.50	Retain	
90	Tulip poplar	38.5	57.75	Retain	
91	Tulip poplar	33	49.50	Retain	
92	Black Gum	33	49.50	Retain	
93	Tulip poplar	30	45.00	Retain	
94	Tulip poplar	33.5	50.25	Retain	
95	Tulip poplar	76	124.00	Retain	FAIR, DIEBACK NOTED, MULTI-STEMMED
96	Tulip poplar	64	96.00	Retain	FAIR, DIEBACK NOTED, MULTI-STEMMED
97	Tulip poplar	30.5	45.75	Retain	
98	Tulip poplar	38.5	57.75	Retain	POOR, MULTI-STEMMED, STORM DAMAGE AND DIEBACK
99	Tulip poplar	32.5	48.75	Retain	
100	Tulip poplar	30	45.00	Retain	FAIR, MULTI-STEMMED ABOVE BH
101	Red Oak	37.5	56.25	Retain	
102	Tulip poplar	36	54.00	Retain	
103	Tulip poplar	32	48.00	Retain	
104	Red Oak	40.5	60.75	Retain	POOR, TRUNK ROT

NOTE: THE REMOVAL OF 13 TREES CONDITIONALLY APPROVED BY ALTERNATIVE COMPLIANCE WP-20-016. THE REMOVAL OF 2 TREES CONDITIONALLY APPROVED BY ALTERNATIVE COMPLIANCE WP-23-045.

NO.	DATE	REVISION
<p align="center">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-ORVENGINEERING.COM</p>		
<p align="right">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.</p> <p align="right">John M. Carney 04.26.2023</p>		
OWNER:	<p>CLARKSVILLE CROSSING, PHASE 2, AREA 1 A RESUBDIVISION OF CLARKSVILLE CROSSING LOT 3 (PLAT #25135-25137) TO CREATE NON-BUILDABLE BULK PARCEL 'B', BUILDABLE LOTS 5-10 AND NON-BUILDABLE PRESERVATION PARCELS 'A' & 'C'</p>	
DEVELOPER:	<p>TAX MAP: 34 GRID: 23 PARCEL: 301 ZONED: RR-DEO ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND</p>	
<p align="center">FINAL PLAN LAYOUT PLAN</p>		
DATE:	APRIL, 2023	BEI PROJECT NO: 2525
DESIGN: JC	DRAWN: JC	SCALE: AS SHOWN SHEET 2 OF 23

LEGEND

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

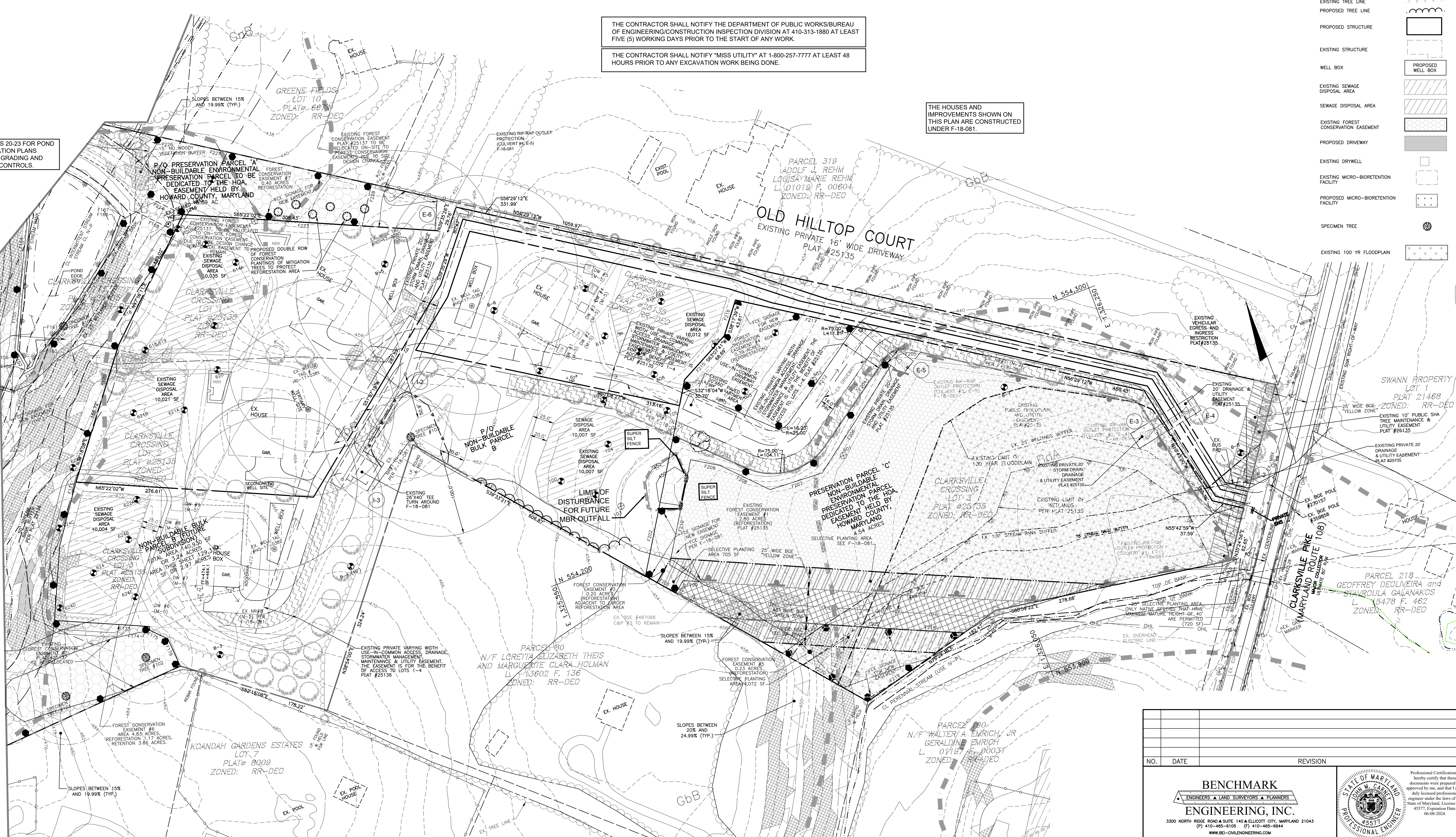
THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.

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

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

SEE SHEETS 20-23 FOR POND REHABILITATION PLANS INCLUDING GRADING AND SEDIMENT CONTROLS.

FOR CONTINUATION SEE MATCH LINE SHEET 2



APPROVED: DEPARTMENT OF PUBLIC WORKS
 6/8/2023
 CHIEF, BUREAU OF HIGHWAYS

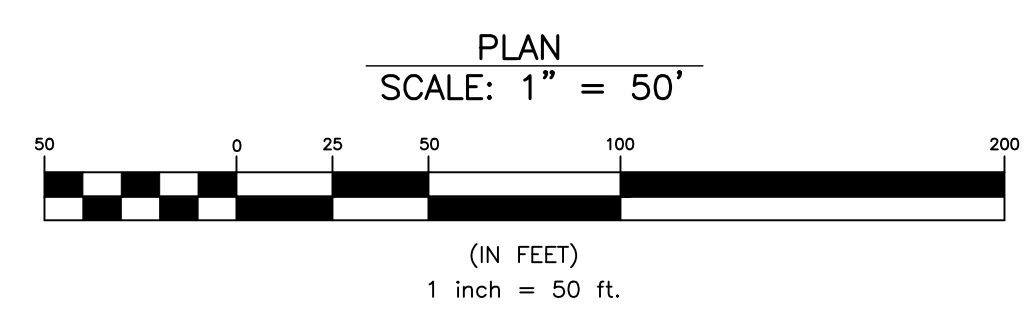
APPROVED: DEPARTMENT OF PLANNING AND ZONING
 6/8/2023
 CHIEF, DIVISION OF LAND DEVELOPMENT

6/8/2023
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
GbB		B	D	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	0.2
GbB	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.370.32
GcB		C	D	GLENVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	0.37
GcC		B	D	GLENELG LOAM, 8 TO 15 PERCENT SLOPES	0.2
GbB		B	D	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.2
GbC		B	D	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.2

** HIGHLY ERODIBLE, K>0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES TAKEN FROM THE NRCS WEB SOIL SURVEY AUGUST 2014, MAP 23.



NO.	DATE	REVISION

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

John M. Carney 04.26.2023

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 1 A RESUBDIVISION OF CLARKSVILLE CROSSING LOT 3 (PLAT #25135-25137) TO CREATE NON-BUILDABLE BULK PARCEL 'B', BUILDABLE LOTS 5-10 AND NON-BUILDABLE PRESERVATION PARCELS 'A' & 'C'
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 PARCEL: 301 ZONED: RR-DEO ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND
FINAL PLAN LAYOUT PLAN	
DATE: APRIL, 2023 SCALE: AS SHOWN	BEI PROJECT NO: 2525 SHEET 3 OF 23

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
GgB		B		GLENELG LOAM, 3 TO 8 PERCENT SLOPES	0.2
GhB	YES	C	D	GLENNVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
GcB		C		GLENNVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	0.37
GdC		B		GLENELG LOAM, 8 TO 15 PERCENT SLOPES	0.2
GhB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.2
GdC		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.2

** HIGHLY ERODIBLE, K>0.35, AND STEEPER THAN 8% OR 15% AND GREATER SLOPES TAKEN FROM THE NRCS WEB SOIL SURVEY AUGUST 2014, MAP 23.

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.

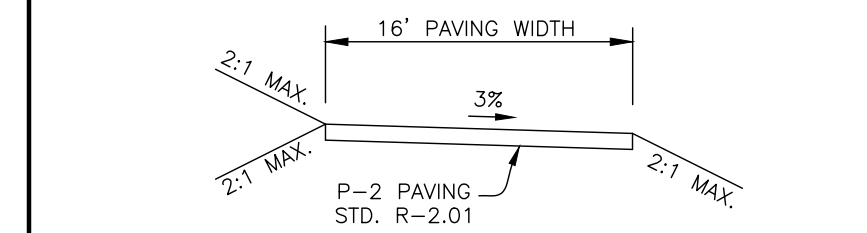
NOTE: UNLESS OTHERWISE NOTED, THE FIRST RUN OF PVC ROOF LEADER SHALL BE 4" AND SHALL INCREASE TO AT LEAST 6" AFTER ANY CONFLUENCE OF 4" PIPES.

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

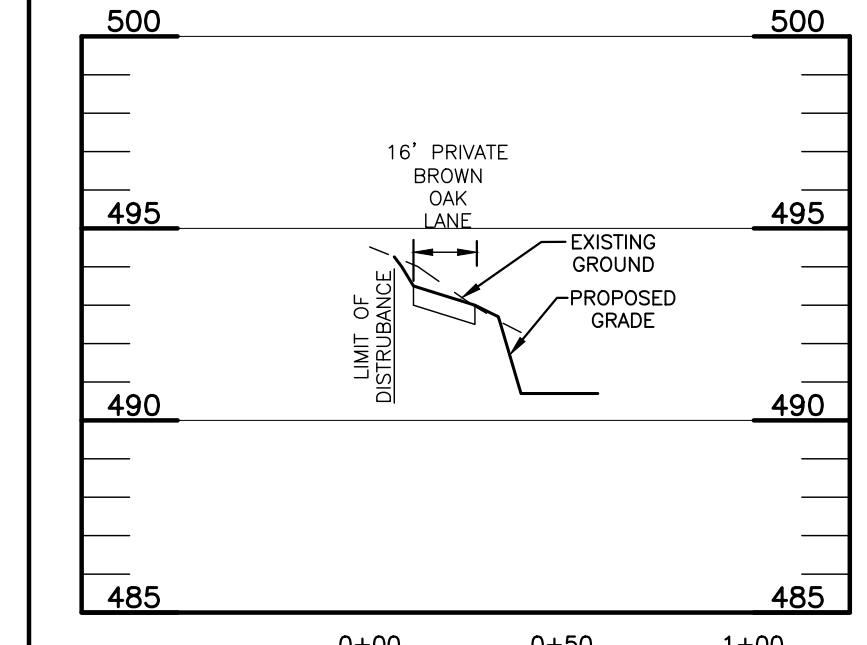
SILT FENCE MAY BE REPLACED BY SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

Temporary Stone/Gabion Outlet Structure

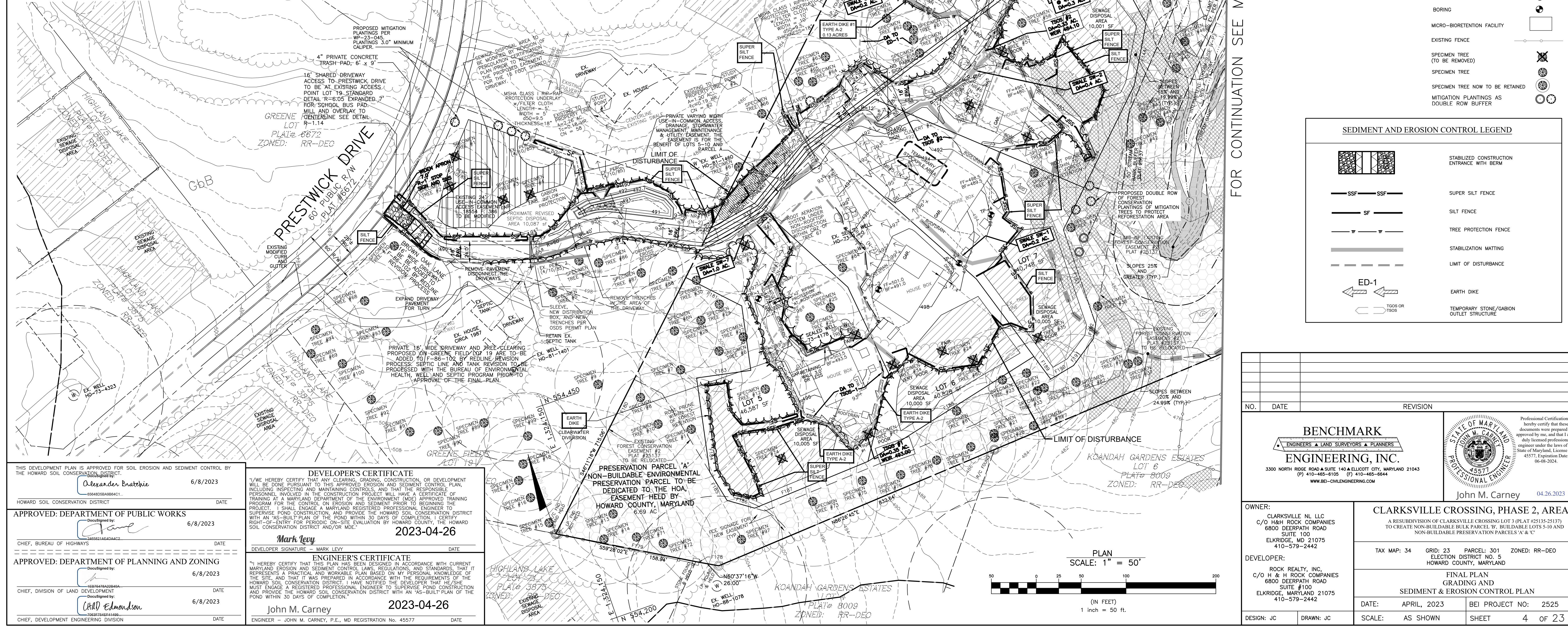
Designation	Drainage Area SF	Drainage Area Acres	Practice	Volume Required	Ground Elev.	Embankment Elev.	Weir Elev.	Pond Bottom	Bottom Width at Weir	Bottom Length Uphill of Weir	Volume Provided	Adequate Volume?
#1	15338	0.35	TSOS	634	492.00	493.50	493.00	490.75	15.00	18.00	1032.75	Yes
#2	14474	0.33	TSOS	598	483.10	484.60	484.10	481.85	10.00	18.00	779.625	Yes
#3	63626	1.46	TGOS	2629	454.50	456.00	455.25	453.00	22.00	40.00	2698.875	Yes



BROWN OAK LANE PRIVATE DRIVEWAY TYPICAL SECTION SCALE: 1" = 10'



DRIVEWAY SECTION AT BIOH SCALE: 1"=50' HORIZ., 1"=5' VERT.



LEGEND

SOILS CLASSIFICATION	(Symbol)
SOILS DELINEATION	(Symbol)
EXISTING CONTOURS	(Symbol)
PROPOSED CONTOURS	(Symbol)
EXISTING TREE LINE	(Symbol)
PROPOSED TREE LINE	(Symbol)
EXISTING UTILITY POLE	(Symbol)
PROPOSED STRUCTURE	(Symbol)
EXISTING STRUCTURE	(Symbol)
WELL BOX	(Symbol)
EXISTING WELL BOX	(Symbol)
EXISTING SEWAGE DISPOSAL AREA	(Symbol)
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)
PASSED PERCOLATION TEST	(Symbol)
FAILED PERCOLATION TEST	(Symbol)
BORING	(Symbol)
MICRO-BIORETENTION FACILITY	(Symbol)
EXISTING FENCE	(Symbol)
SPECIMEN TREE (TO BE REMOVED)	(Symbol)
SPECIMEN TREE	(Symbol)
SPECIMEN TREE NOW TO BE RETAINED	(Symbol)
MITIGATION PLANTINGS AS DOUBLE ROW BUFFER	(Symbol)

SEDIMENT AND EROSION CONTROL LEGEND

(Symbol)	STABILIZED CONSTRUCTION ENTRANCE WITH BERM
(Symbol)	SUPER SILT FENCE
(Symbol)	SILT FENCE
(Symbol)	TREE PROTECTION FENCE
(Symbol)	STABILIZATION MATTING
(Symbol)	LIMIT OF DISTURBANCE
(Symbol)	EARTH DIKE
(Symbol)	TEMPORARY STONE/GABION OUTLET STRUCTURE

FOR CONTINUATION SEE MATCH LINE SHEET 5

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

Alexander Bratek 6/8/2023

HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS 6/8/2023

CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING 6/8/2023

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

WHD Edmondson 6/8/2023

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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 THE CONTROL OF 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 MDC.

2023-04-26

Mark Levy

DEVELOPER SIGNATURE - MARK LEVY DATE

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.

2023-04-26

John M. Carney

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

PRESERVATION PARCEL 'A' NON-BUILDABLE ENVIRONMENTAL PRESERVATION PARCEL TO BE DEDICATED TO THE HOA EASEMENT HELD BY HOWARD COUNTY, MARYLAND 0.69 AC

NO.	DATE	REVISION

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.

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

John M. Carney 04.26.2023

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

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

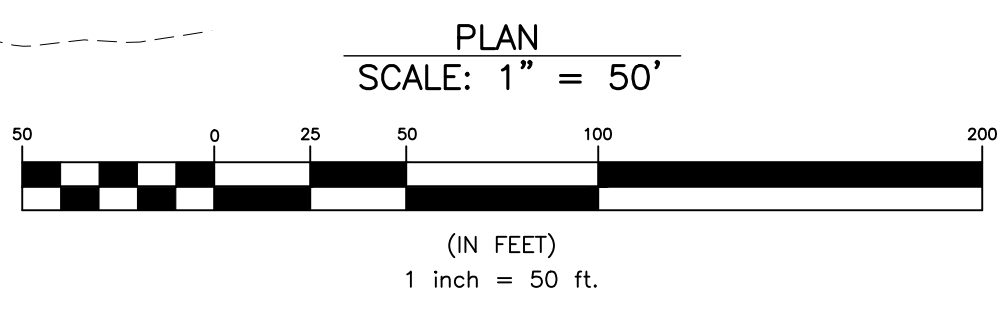
CLARKSVILLE CROSSING, PHASE 2, AREA 1
A RESUBDIVISION OF CLARKSVILLE CROSSING LOT 3 (PLAT #25135-25137) TO CREATE NON-BUILDABLE BULK PARCEL 'B', BUILDABLE LOTS 5-10 AND NON-BUILDABLE PRESERVATION PARCELS 'A' & 'C'

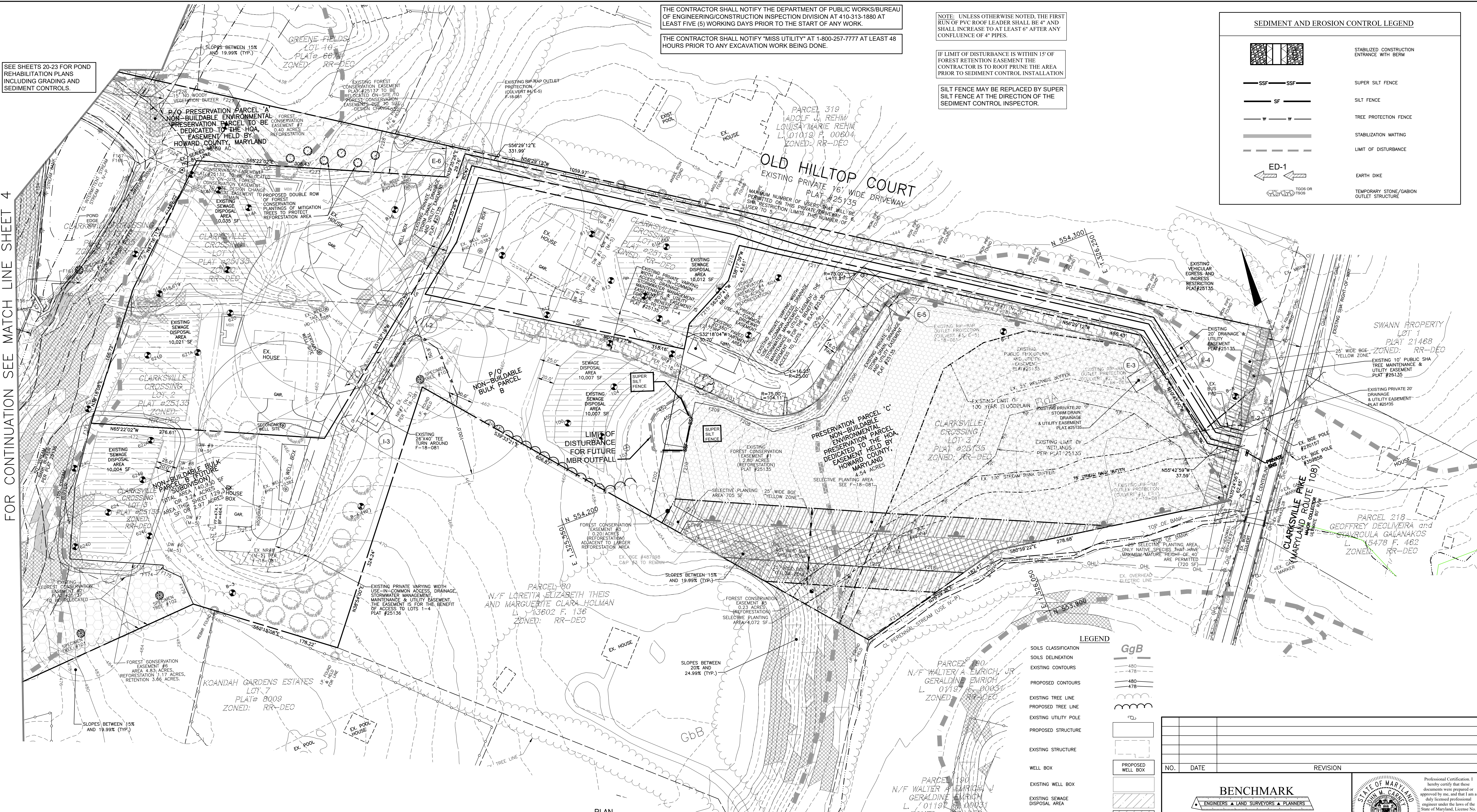
TAX MAP: 34 GRID: 23 PARCEL: 301 ZONED: RR-DEO
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

FINAL PLAN GRADING AND SEDIMENT & EROSION CONTROL PLAN

DATE: APRIL, 2023 BEI PROJECT NO: 2525
SCALE: AS SHOWN SHEET 4 OF 23

DESIGN: JC DRAWN: JC





FOR CONTINUATION SEE MATCH LINE SHEET 4

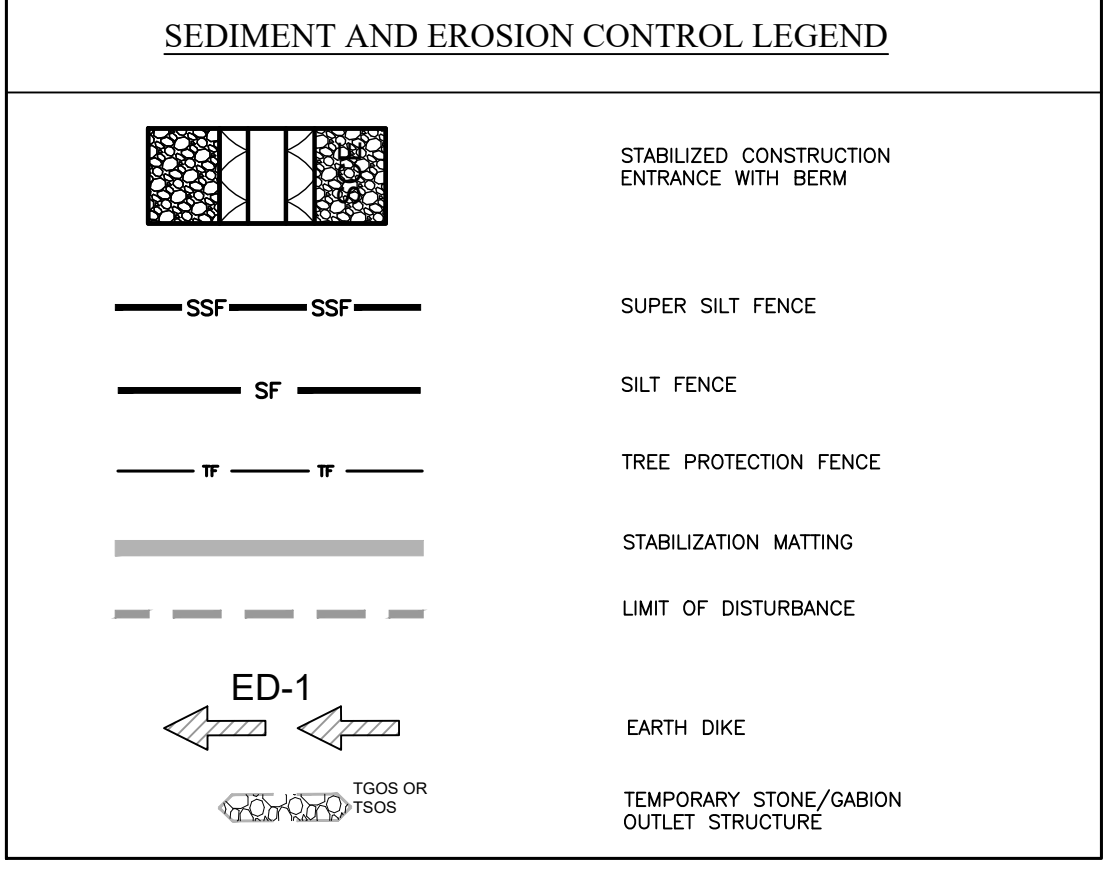
THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.

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.



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

Alexander Bratchie 6/8/2023
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PUBLIC WORKS
Mark Levy 6/8/2023
CHIEF, BUREAU OF HIGHWAYS

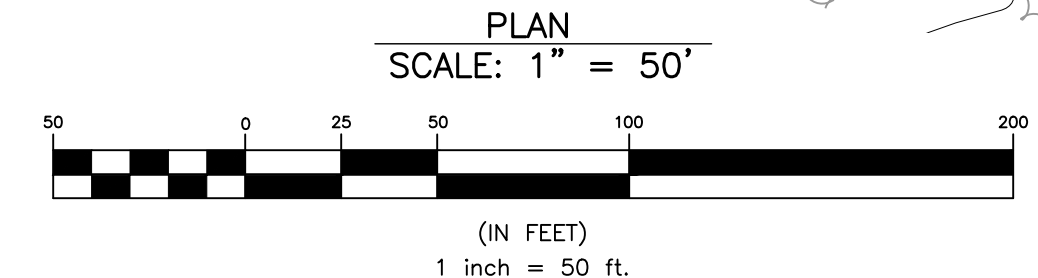
APPROVED: DEPARTMENT OF PLANNING AND ZONING
John M. Carney 6/8/2023
CHIEF, DIVISION OF LAND DEVELOPMENT

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 THE CONTROL OF 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.

Mark Levy 2023-04-26
DEVELOPER SIGNATURE - MARK LEVY DATE

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.

John M. Carney 2023-04-26
ENGINEER - JOHN M. CARNEY, P.E., MD REGISTRATION No. 45577 DATE



SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
GgB		B		GLENNELG LOAM, 3 TO 8 PERCENT SLOPES	0.2
GnB	YES	C	D	GLENNVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
GoB		C		GLENNVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	0.37
GgC		B		GLENNELG LOAM, 8 TO 15 PERCENT SLOPES	0.2
GbB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.2
GbC		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.2

** HIGHLY ERODIBLE, K>0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES TAKEN FROM THE NRCS WEB SOIL SURVEY AUGUST 2014, MAP 23.

LEGEND

GgB

- SOILS CLASSIFICATION
- SOILS DELINEATION
- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING TREE LINE
- PROPOSED TREE LINE
- EXISTING UTILITY POLE
- PROPOSED STRUCTURE
- EXISTING STRUCTURE
- WELL BOX
- PROPOSED WELL BOX
- EXISTING WELL BOX
- EXISTING SEWAGE DISPOSAL AREA
- 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

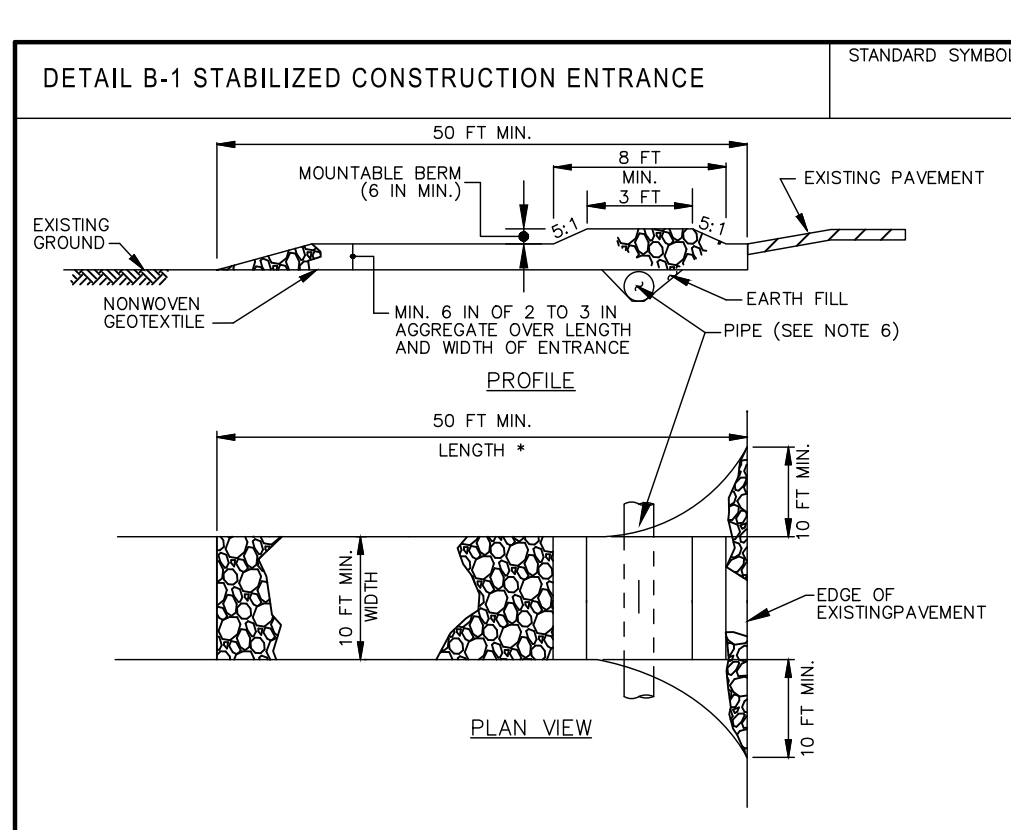
NO.	DATE	REVISION

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Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 06-06-2024.

John M. Carney 04.26.2023

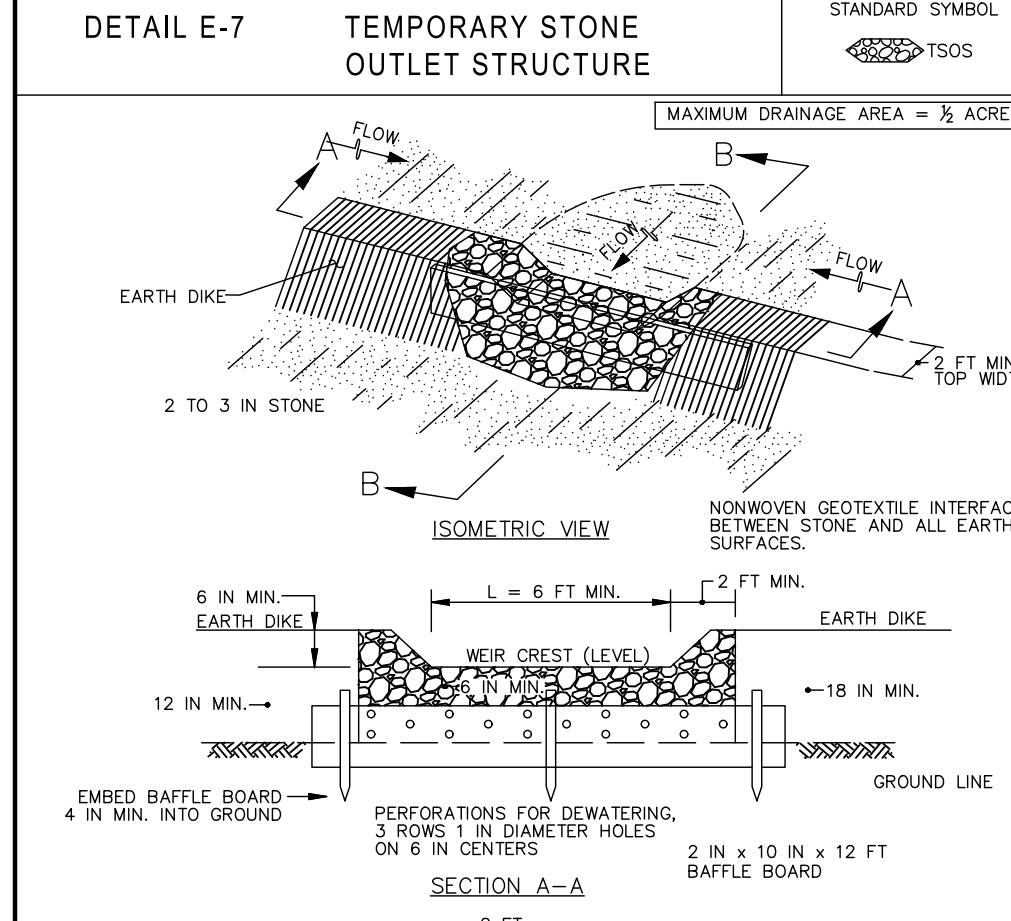
OWNER: CLARKSVILLE NL LLC C/O H & H ROCK COMPANIES 6800 DEERPATH ROAD SUITE 100 ELKDRIDGE, MD 21075 410-579-2442	CLARKSVILLE CROSSING, PHASE 2, AREA 1 A RESUBDIVISION OF CLARKSVILLE CROSSING LOT 3 (PLAT #25135-25137) TO CREATE NON-BUILDABLE BULK PARCEL 'B', BUILDABLE LOTS 5-10 AND NON-BUILDABLE PRESERVATION PARCELS 'A' & 'C'
DEVELOPER: ROCK REALTY, INC. C/O H & H ROCK COMPANIES 6800 DEERPATH ROAD SUITE #100 ELKDRIDGE, MARYLAND 21075 410-579-2442	TAX MAP: 34 GRID: 23 PARCEL: 301 ZONED: RR-DEO ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND
DESIGN: JC DRAWN: JC	FINAL PLAN GRADING AND SEDIMENT AND EROSION CONTROL PLAN DATE: APRIL, 2023 BEI PROJECT NO: 2525 SCALE: AS SHOWN SHEET 5 OF 23



CONSTRUCTION SPECIFICATIONS

- PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE CENTRE LENGTH OF THE ENTRANCE. USE MINIMUM LENGTH OF 50 FEET (30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SIZE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
- PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE ENTRANCE UNDER THE ENTRANCE. MAINTAIN POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE ENTRANCE 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 PIPE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN PIPE IS NOT LOCATED AT A HIGH SPOT.
- PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
- 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 ENTRANCE.
- MAINTAIN TRACKING 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 ON ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ON PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

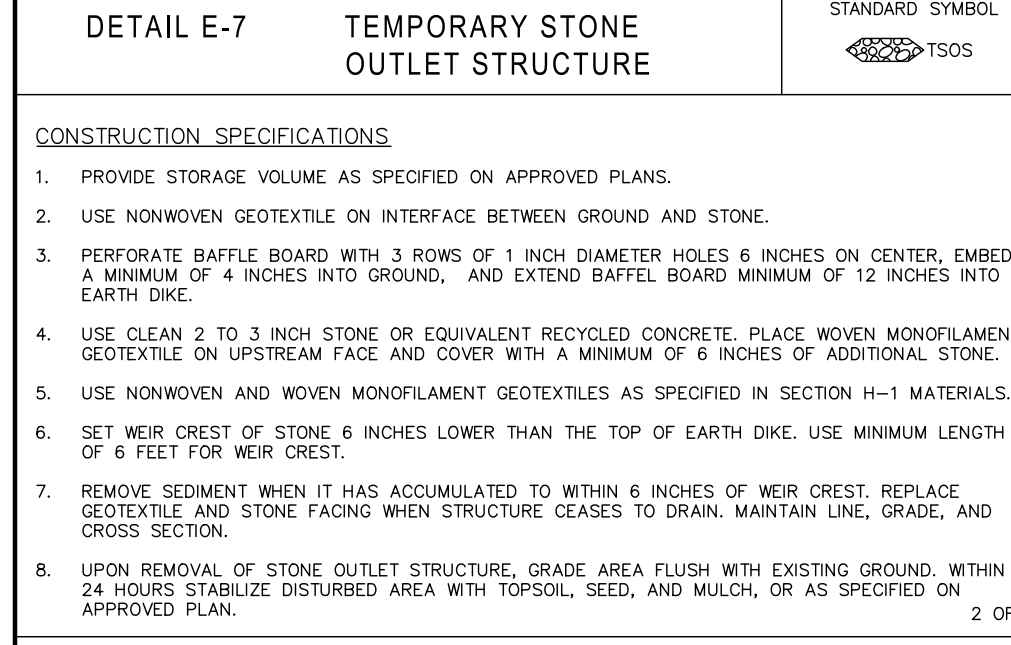
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



CONSTRUCTION SPECIFICATIONS

- USE MINIMUM WIDTH OF 10 FEET TO ALLOW FOR VEHICULAR PASSAGE.
- PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE EARTH MOUND PRIOR TO PLACING STONE.
- PLACE 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE MOUNTABLE BERM.
- 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



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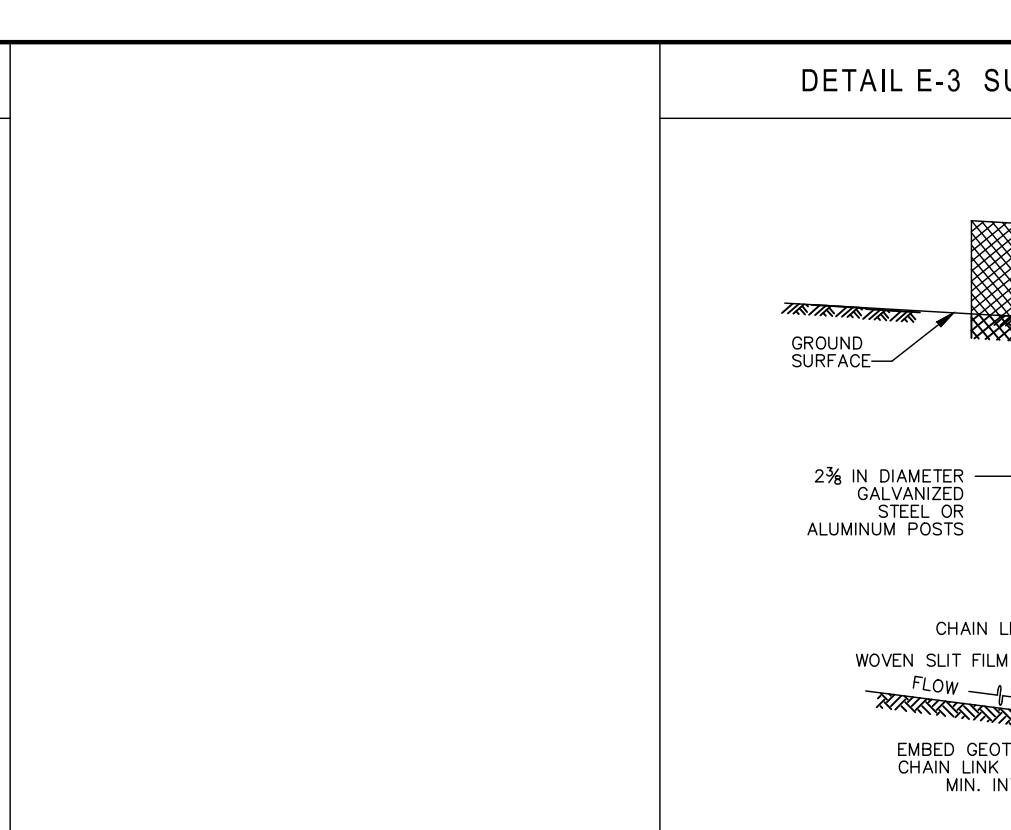
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THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

Alexander Bratchie 6/8/2023
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PUBLIC WORKS
Mark Levy 6/8/2023
CHIEF, BUREAU OF HIGHWAYS

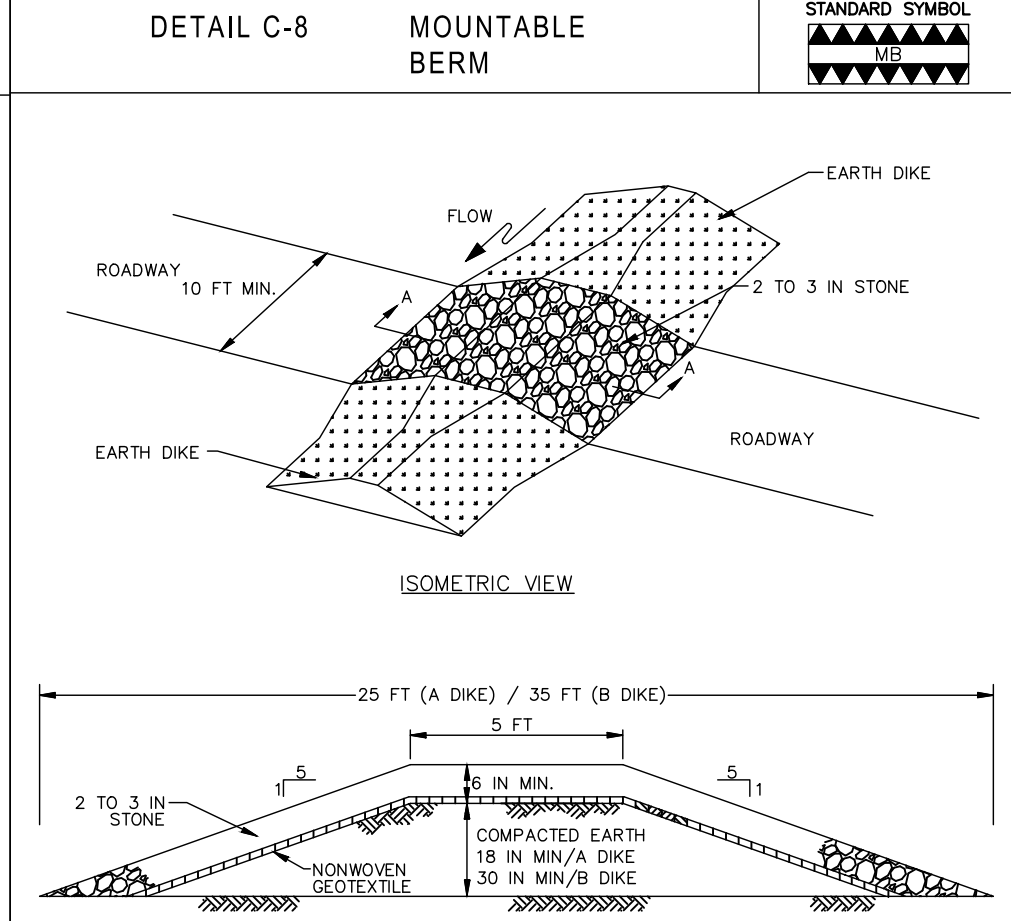
APPROVED: DEPARTMENT OF PLANNING AND ZONING
John M. Carney 6/8/2023
CHIEF, DIVISION OF LAND DEVELOPMENT



CONSTRUCTION SPECIFICATIONS

- INSTALL 2 1/2 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.
- FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2 1/2 INCH MINIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
- 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.
- WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 8 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
- 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.
- PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- 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.

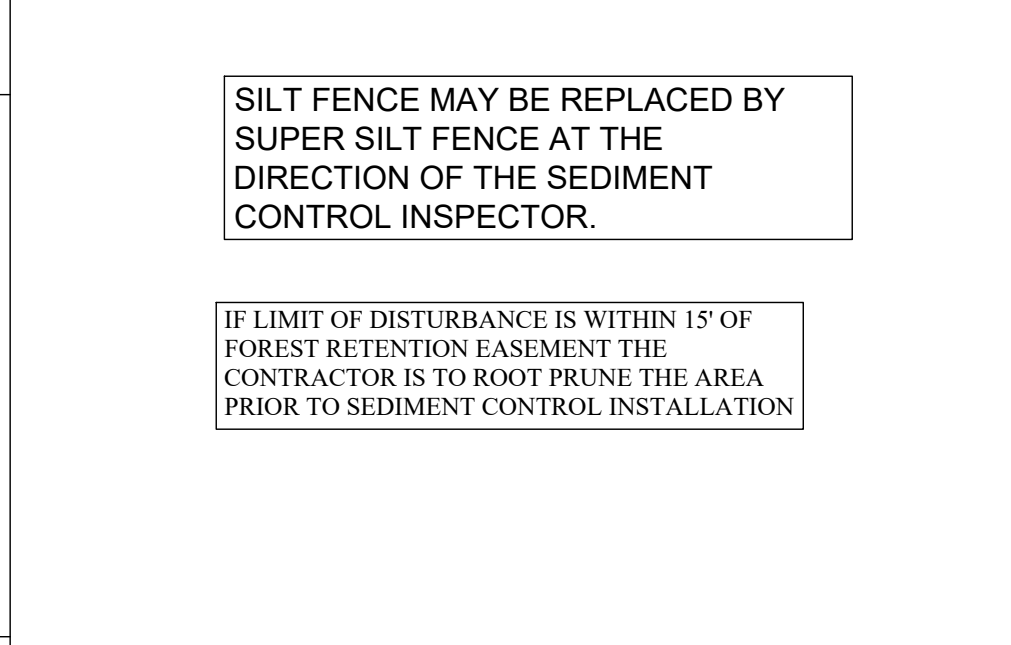
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



CONSTRUCTION SPECIFICATIONS

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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



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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

DEVELOPER'S CERTIFICATE

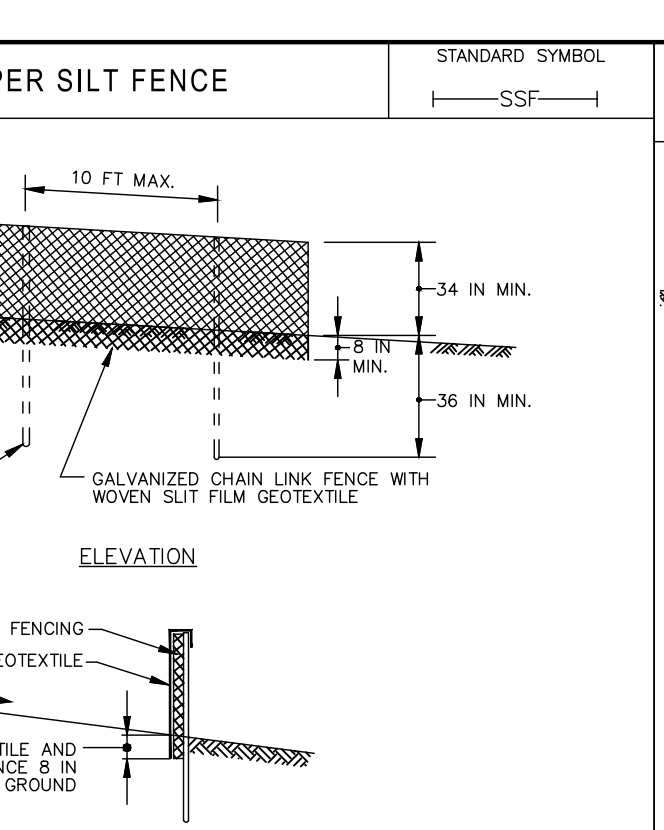
"I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT INVOLVED IN THIS DEVELOPMENT PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH THE MARYLAND EROSION AND SEDIMENT CONTROL ACT, REGULATIONS, AND STANDARDS, THAT IT IS BEING PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING IDENTIFICATION 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 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."

John M. Carney 2023-04-26
DEVELOPER SIGNATURE - MARK LEVY DATE

ENGINEER'S CERTIFICATE

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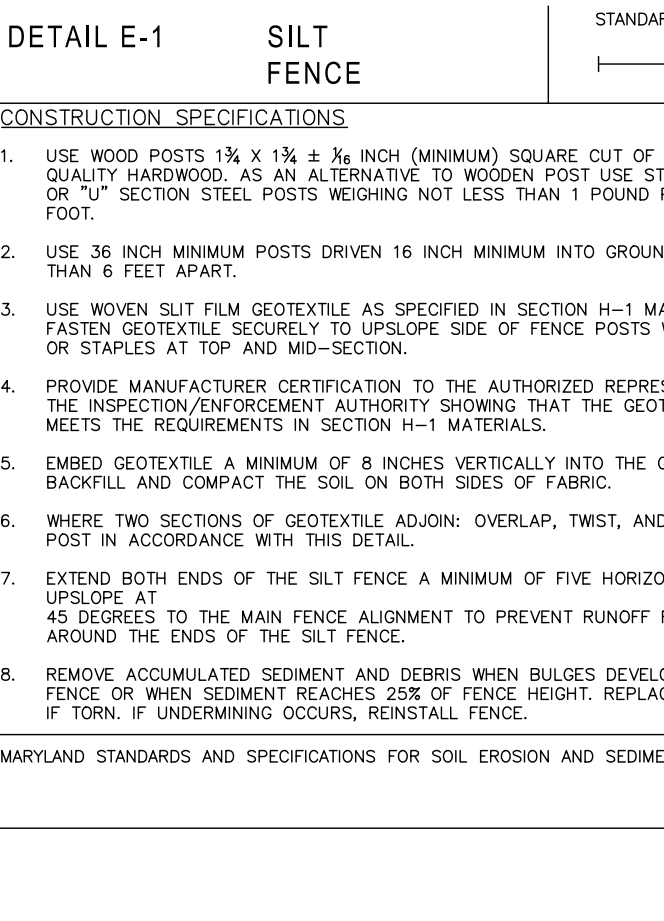
John M. Carney 2023-04-26
ENGINEER - JOHN M. CARNEY, P.E., MD REGISTRATION NO. 45577 DATE



CONSTRUCTION SPECIFICATIONS

- INSTALL 2 1/2 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.
- FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2 1/2 INCH MINIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
- 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.
- WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 8 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
- 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.
- PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- 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.

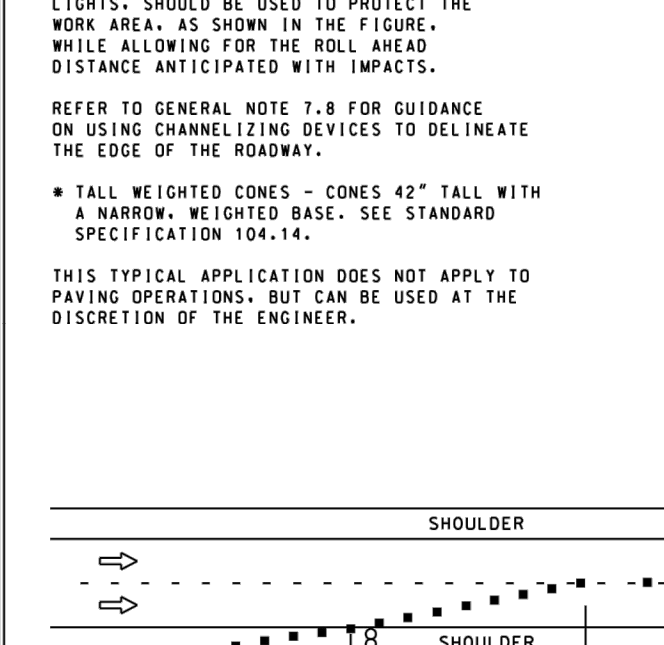
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



CONSTRUCTION SPECIFICATIONS

- USE WOOD POSTS 1 1/2 X 1 1/2 X 3/4 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD, AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
- USE 3/8 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
- USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
- PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
- WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN, OVERLAP, TWIST, AND STAPLE TO JOIN IN ACCORDANCE WITH THIS DETAIL.
- EXTEND BOTH ENDS OF THE 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 SILT FENCE.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

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



TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

IMPORTANT: THIS DRAWING SHALL BE USED IN COMBINATION WITH THE GENERAL NOTES MD 104.00-01 - MD 104.00-18 AND STANDARD DETAILS MD 104.01-01 - MD 104.01-81

NOTES: DRUMS, 36" CONES OR TALL WEIGHTED CONES SHOULD BE USED IN THE MERGING TAPER.

DRUMS, 36" CONES OR TALL WEIGHTED CONES SHOULD BE USED ADJACENT TO THE WORK AREA.

PROTECTION VEHICLE, WITH FLASHING LIGHTS, SHOULD BE USED TO PROTECT THE WORK AREA, AS SHOWN IN THE FIGURE.

WELLS SHALL BE HAND PLACED TO INDICATE DISTANCE ANTICIPATED WITH IMPACTS.

REFER TO GENERAL NOTE 7.8 FOR GUIDANCE ON USING CHANNELIZING DEVICES TO DELINEATE THE EDGE OF THE ROADWAY.

* TALL WEIGHTED CONES - CONES 42" TALL WITH A NARROW, WEIGHTED BASE. SEE STANDARD SPECIFICATION 104.14.

THIS TYPICAL APPLICATION DOES NOT APPLY TO PAVING OPERATIONS, BUT CAN BE USED AT THE DISCRETION OF THE ENGINEER.

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

DEVELOPER'S CERTIFICATE

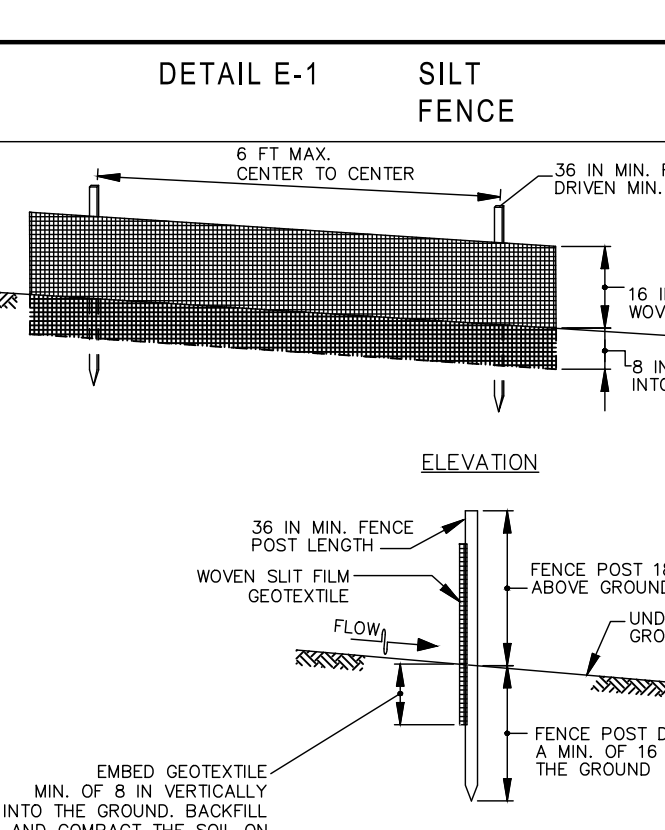
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John M. Carney 2023-04-26
DEVELOPER SIGNATURE - MARK LEVY DATE

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."

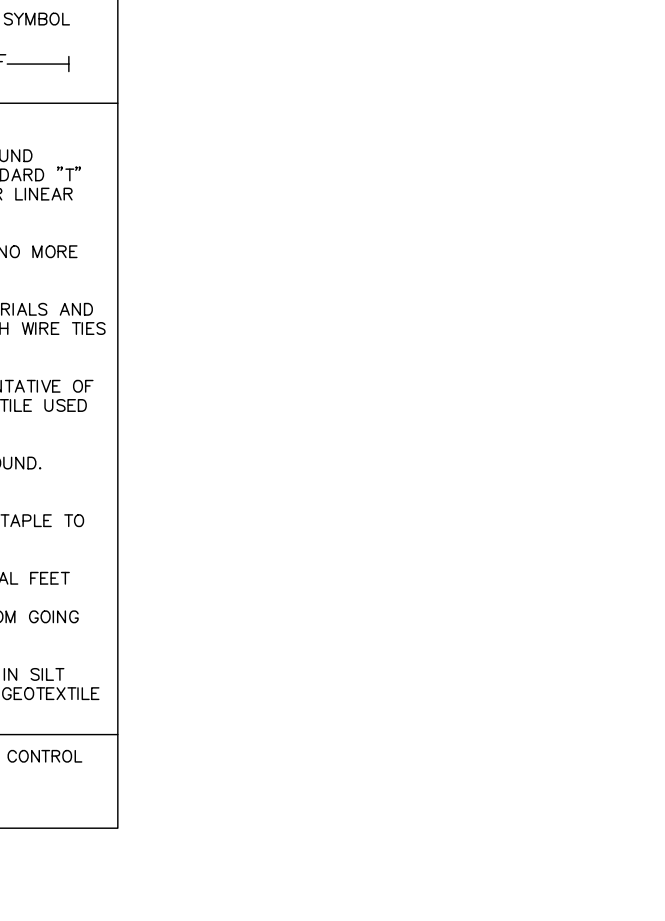
John M. Carney 2023-04-26
ENGINEER - JOHN M. CARNEY, P.E., MD REGISTRATION NO. 45577 DATE



CONSTRUCTION SPECIFICATIONS

- INSTALL 2 1/2 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.
- FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2 1/2 INCH MINIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
- 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.
- WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 8 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
- 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.
- PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- 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



TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

IMPORTANT: THIS DRAWING SHALL BE USED IN COMBINATION WITH THE GENERAL NOTES MD 104.00-01 - MD 104.00-18 AND STANDARD DETAILS MD 104.01-01 - MD 104.01-81

NOTES: DRUMS, 36" CONES OR TALL WEIGHTED CONES SHOULD BE USED IN THE MERGING TAPER.

DRUMS, 36" CONES OR TALL WEIGHTED CONES SHOULD BE USED ADJACENT TO THE WORK AREA.

PROTECTION VEHICLE, WITH FLASHING LIGHTS, SHOULD BE USED TO PROTECT THE WORK AREA, AS SHOWN IN THE FIGURE.

WELLS SHALL BE HAND PLACED TO INDICATE DISTANCE ANTICIPATED WITH IMPACTS.

REFER TO GENERAL NOTE 7.8 FOR GUIDANCE ON USING CHANNELIZING DEVICES TO DELINEATE THE EDGE OF THE ROADWAY.

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

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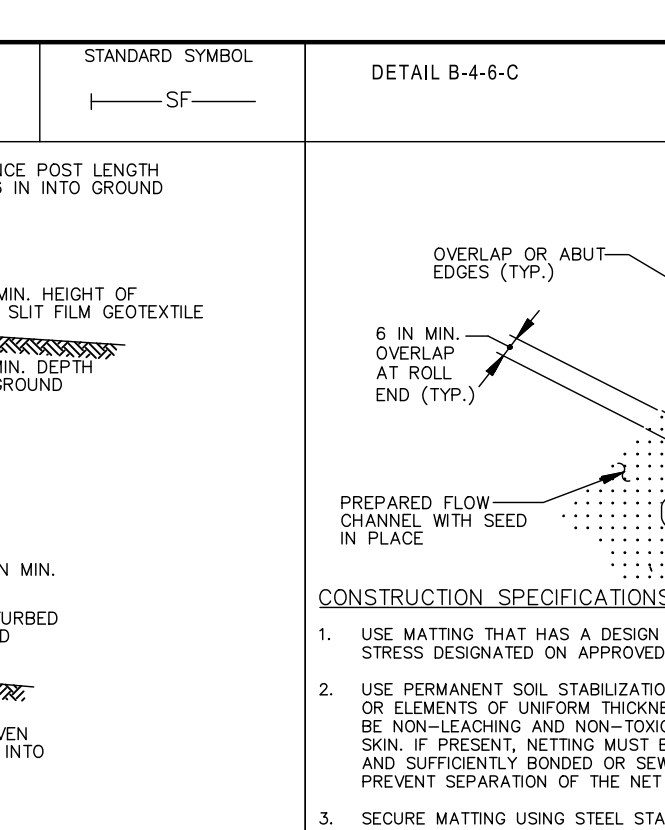
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John M. Carney 2023-04-26
DEVELOPER SIGNATURE - MARK LEVY DATE

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John M. Carney 2023-04-26
ENGINEER - JOHN M. CARNEY, P.E., MD REGISTRATION NO. 45577 DATE



CONSTRUCTION SPECIFICATIONS

- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
- USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-HARMFUL TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 1/2 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.
- SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE 1/2" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "T" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 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 MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1 1/2 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
- 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 AND SEDIMENT CONTROL PLAN.
- UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDBED SURFACE. AVOID STRETCHING THE MATTING.
- OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
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- STAPLE/STAKE MAT IN A STAGGED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
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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



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THERE SHALL BE A MINIMUM OF SEVEN CHANNELIZING DEVICES IN THE SHOULDER TAPER.

THE ENGINEER SHOULD CONSIDER ADDITIONAL ADJACENT LANE CLOSURES WHEN THE POSSIBILITY OF UNPLANNED TRAVELWAY ENCROACHMENTS EXISTS.

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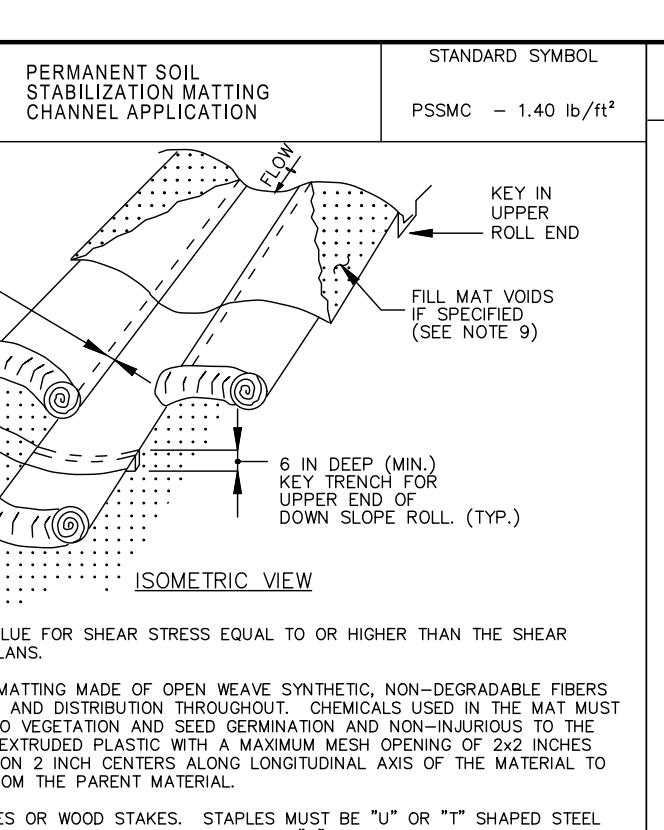
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

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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

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B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION
Definition: Using vegetation cover to protect exposed soil from erosion.
Purpose: To promote the establishment of vegetation on exposed soil.

1. Adequate vegetative stabilization requires 95 percent groundcover.
2. If an area has less than 40 percent groundcover, reestablish following the original B-4 recommendations for rates, fertilizer, seedbed preparation, and seeding.

B-4.1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION
Definition: Establishment of vegetative cover on cut and fill slopes.
Conditions Where Practice Applies: Any cut or fill slope greater than 15 feet in height.

1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height.
2. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.

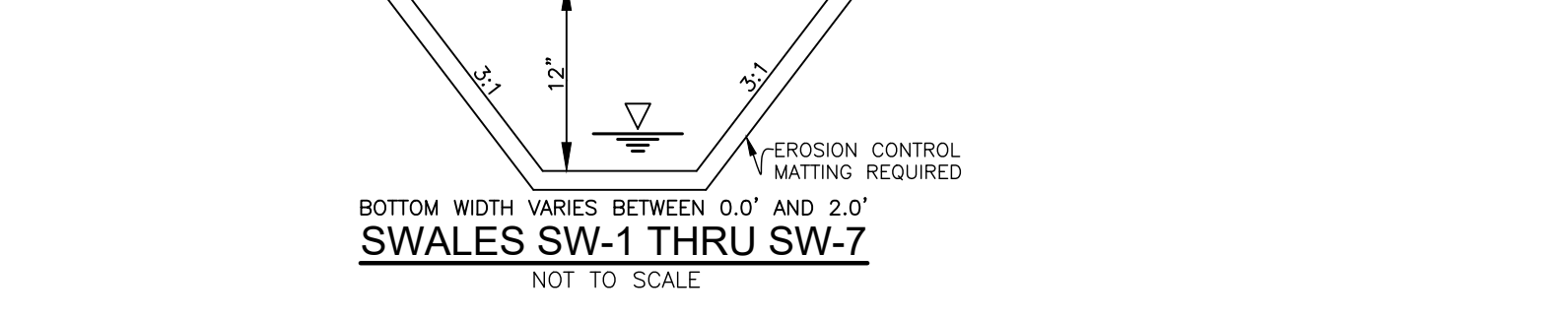
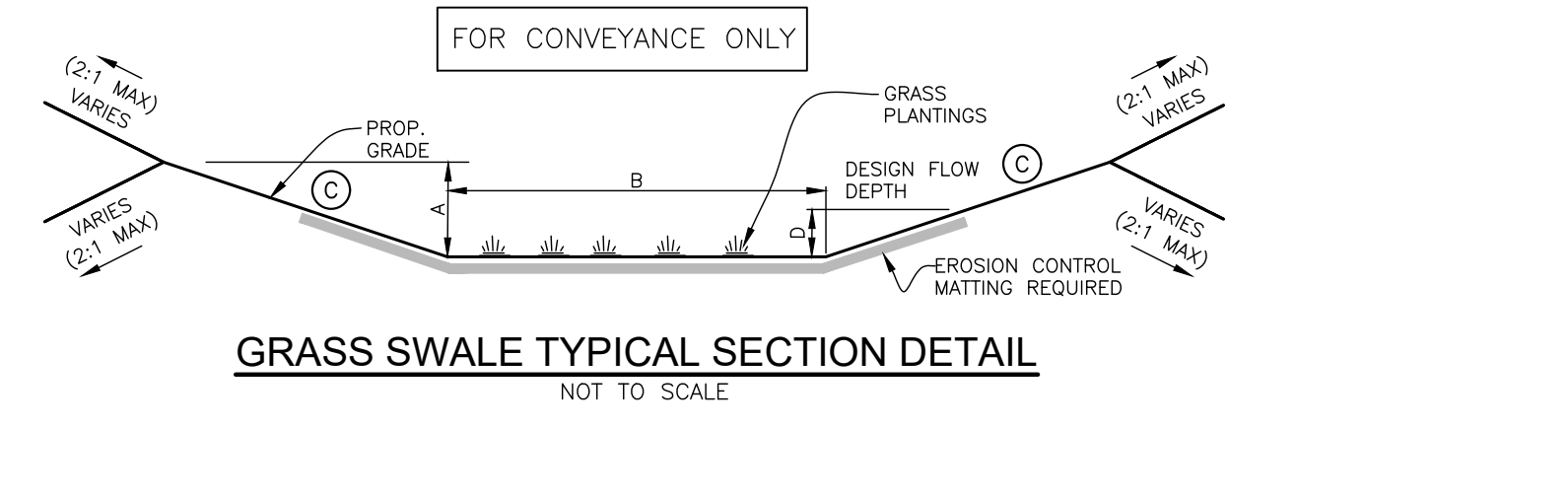
B-4.2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS
Definition: The process of preparing the soil to assist adequate vegetative stabilization.
Conditions Where Practice Applies: Where vegetative stabilization is to be established.

1. Soil Preparation
a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment.

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.

1. Seeding
a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be tested by re-testing by a recognized seed laboratory.

Table with 12 columns: Swale Designation, Point, Depth 'A', Bottom Width 'B' (ft), Side Slopes (ft:1), C', Q2, V2, d2, Q10, V10, d10. Rows include ED-1, ED-2, SW-1, SW-2, SW-3, SW-4, SW-5, SW-6, SW-7.



APPROVED: DEPARTMENT OF PUBLIC WORKS
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, BUREAU OF HIGHWAYS
CHIEF, DIVISION OF LAND DEVELOPMENT

DEVELOPER'S CERTIFICATE
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ENGINEER'S CERTIFICATE
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B-4.4 STANDARDS AND SPECIFICATION FOR PERMANENT STABILIZATION
Definition: To stabilize disturbed soils with permanent vegetation.
Conditions Where Practice Applies: Exposed soils where ground cover is needed for 6 months or more.

1. Application
a. Dry Seeding: This includes use of conventional drop or broadcast seeders.

B-4.5 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION
Definition: To stabilize disturbed soils with vegetation for up to 18 months.
Purpose: To use fast growing vegetation that provides cover on disturbed soils.

1. Mulch Materials
a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably light in color.

B-4.6 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA
Definition: A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.

B-4.7 STANDARDS AND SPECIFICATIONS FOR DUST CONTROL
Definition: Controlling the suspension of dust particles from construction activities.

1. General Specifications
a. Class of turfgrass must be Maryland State Certified. Soil labels must be made available to the job foreman and inspector.

1. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other.

B-4.8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA
Definition: A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.

B-4.9 STANDARDS AND SPECIFICATIONS FOR DUST CONTROL
Definition: Controlling the suspension of dust particles from construction activities.

1. General Specifications
a. Class of turfgrass must be Maryland State Certified. Soil labels must be made available to the job foreman and inspector.

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a. Class of turfgrass must be Maryland State Certified. Soil labels must be made available to the job foreman and inspector.

Table B.1: Temporary Seeding for Site Stabilization. Columns: Plant Species, Seeding Rate, Seeding Depth, Recommended Seeding Dates by Plant Hardiness Zone.

Table B.2: Permanent Seeding Summary. Columns: No., Species, Application Rate, Seeding Dates, Seeding Depth, Fertilizer Rate, Lime Rate.

Table B.3: Recommended Planting Dates for Permanent Cover in Maryland. Columns: Type of Plant Material, Seeding Dates by Hardiness Zone.

Table B.3 Notes: 1. The planting dates listed are averages for each zone. These dates may require adjustment to reflect local conditions.

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SEQUENCE OF CONSTRUCTION - SITE DEVELOPMENT
1. DAY 1 VERIFY THE CONSTRUCTION OF THE ON-SITE SEWAGE DISPOSAL SYSTEM ON GREENE FIELDS, LOT 19, AND THE ASSOCIATED PROTECTIVE FENCING HAS BEEN INSTALLED.

Table with 3 columns: NO., DATE, REVISION. Contains a grid for tracking changes to the plan.

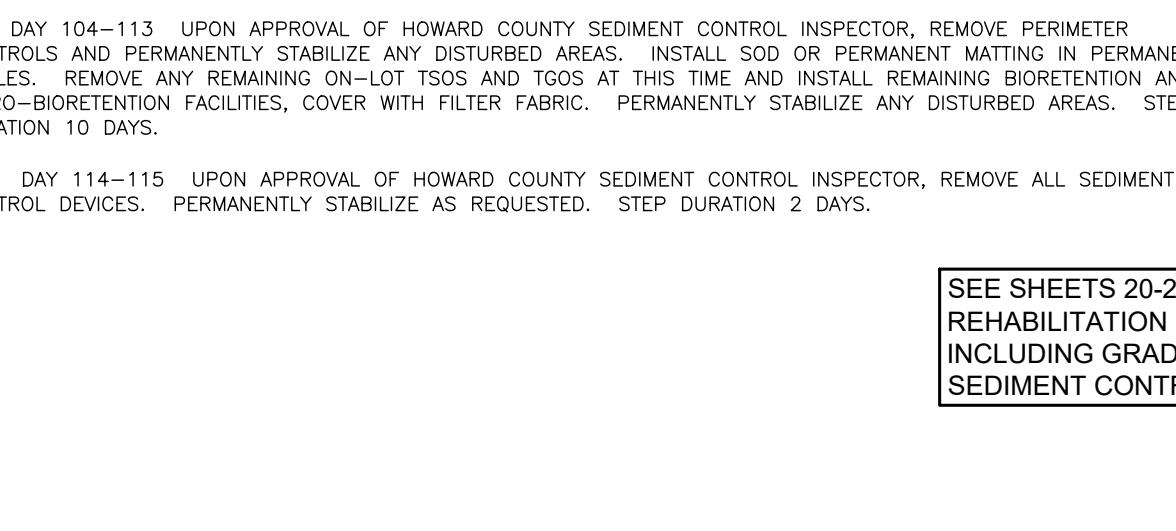


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TIER II HIGH QUALITY WATERSHED
HOWARD SOIL CONSERVATION DISTRICT (HSCD)
STANDARD SEDIMENT CONTROL NOTES

1. A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID), 410-313-1855 after the future LOD and protected areas are marked clearly in the field.

2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

3. Accelerated stabilization (same day stabilization) is necessary due to this site being in a Tier II watershed.

4. All disturbed areas must be stabilized within the time period specified above in accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

6. Site Analysis:
Total Area of Site: 20.85 Acres
Area Disturbed: 7.4 Acres

8. Additional sediment control must be provided, if deemed necessary by the CID. The site and control details shall be inspected by the contractor every four days and the next day after each rain event.

- Inspection date
Inspection type (routine, pre-storm event, during rain event)
Name and title of inspector
Weather information (current conditions as well as time and amount of last recorded precipitation)

- 9. Trenches for the construction of utilities is limited to three pipe lengths or that which can and shall be back filled and stabilized by the end of each work day, whichever is shorter.
10. Any major changes or revisions to the plan or sequence of construction must be reviewed and approved by the HSCD prior to proceeding with construction.

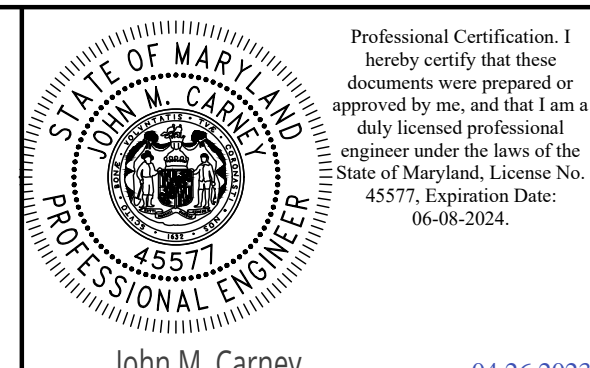
- 11. Disturbance shall not occur outside the L.O.D. A project is to be sequenced so that grading activities begin on a grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the CID.

- 12. Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved wastewater structure.
13. Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.

- 14. All fill fence and super sill fence shall be placed on-the-contour, and be imbricated at 25' minimum intervals, with lower ends curled upthru 1/2" in elevation.
15. Stream channels must not be disturbed during the following restricted time periods (inclusive):

ENGINEERING, INC.
3300 NORTH RIDGE ROAD SUITE 140 ELLICOTT CITY, MARYLAND 21043
(410) 465-6105 (P) 410-465-6644

OWNER: CLARKSVILLE NL LLC
DEVELOPER: ROCK REALTY, INC.
DATE: APRIL, 2023
SCALE: AS SHOWN
SHEET 7 OF 23



Professional Certification: I hereby certify that I was duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 06-06-2024.

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
GbB	YES	B	D	GLENNELG LOAM, 3 TO 8 PERCENT SLOPES	0.2
GbB	YES	C	D	GLENNVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
GbB	YES	C	D	GLENNVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	0.37
GgC		B		GLENNELG LOAM, 8 TO 15 PERCENT SLOPES	0.2
GbB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.2
GbC		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.2

** HIGHLY ERODIBLE, K>0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES TAKEN FROM THE NRCS WEB SOIL SURVEY AUGUST 2014, MAP 23.

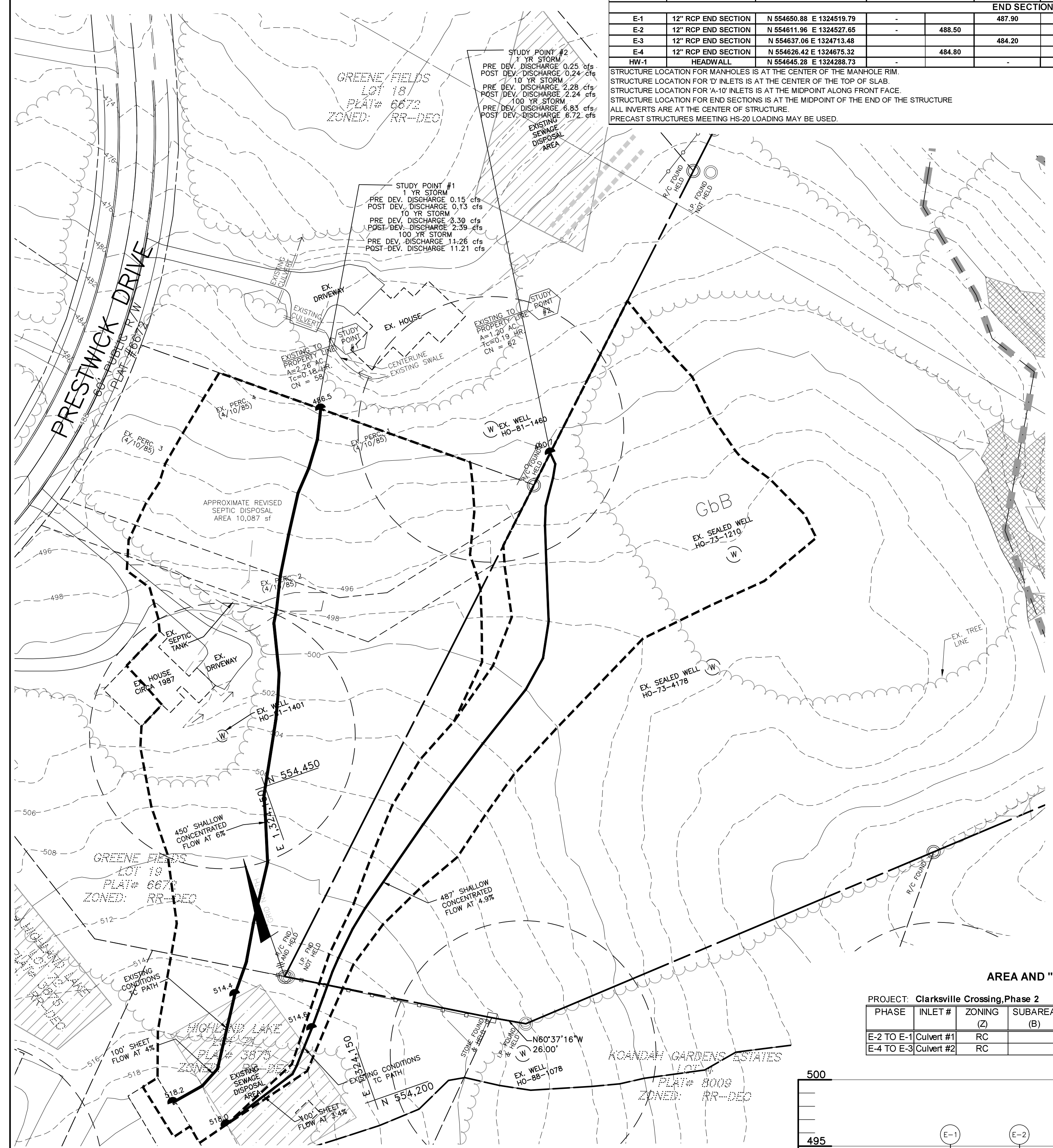
THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.

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.

STRUCTURE	TYPE	LOCATION	INVERT IN	INVERT OUT	TOP ELEV.	THROAT ELEV.	STD. DETAIL	NOTES	MAINTENANCE
E-1	12" RCP END SECTION	N 554650.88 E 1324519.79	-	487.90			D-5.51		PRIVATE
E-2	12" RCP END SECTION	N 554611.96 E 1324527.65	488.50				D-5.51		PRIVATE
E-3	12" RCP END SECTION	N 554637.06 E 1324713.48		484.20			D-5.51		PRIVATE
E-4	12" RCP END SECTION	N 554626.42 E 1324675.32		484.80			D-5.51		PRIVATE
HW-1	HEADWALL	N 554645.28 E 1324288.73			472.70		SEE DETAIL		PRIVATE

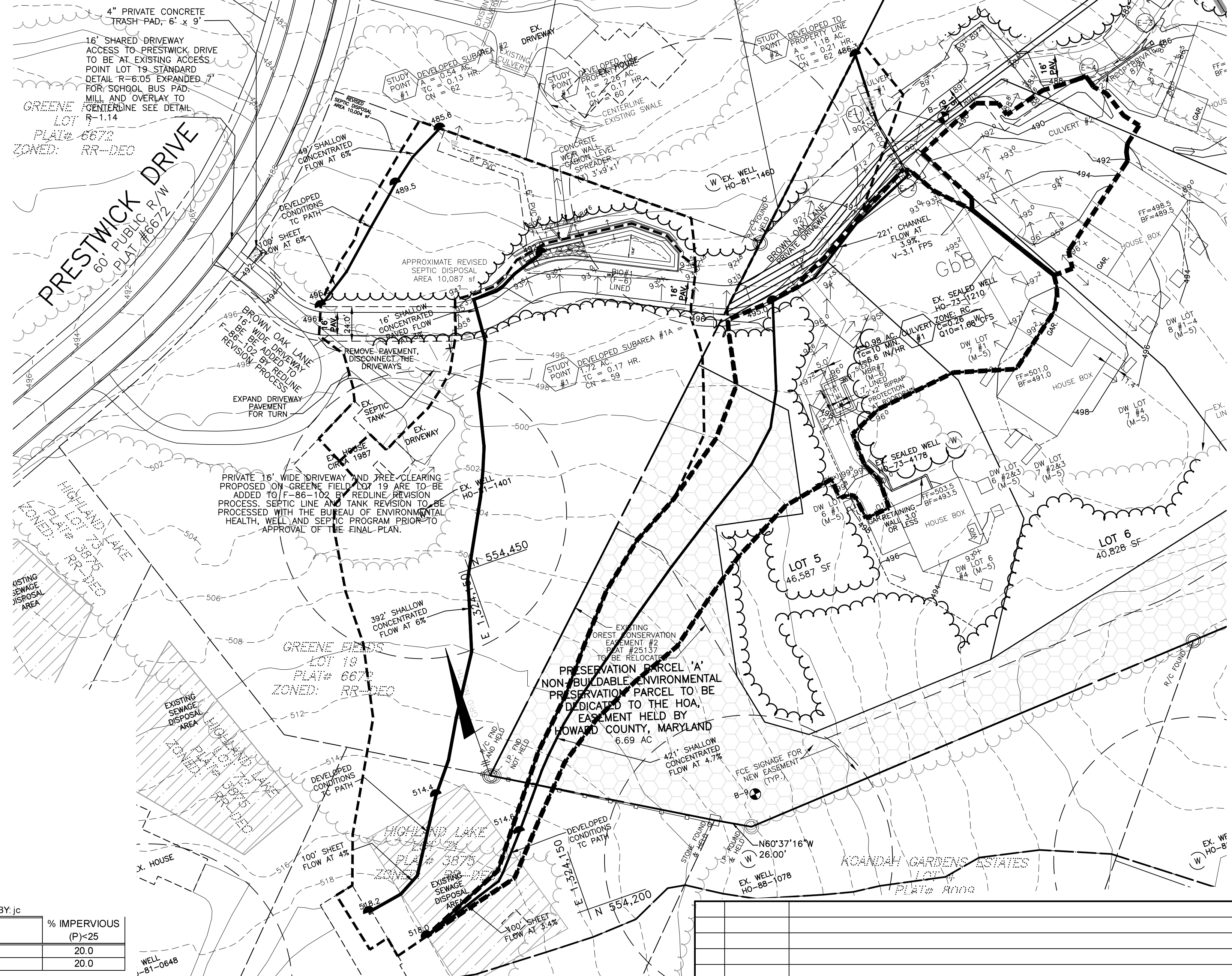
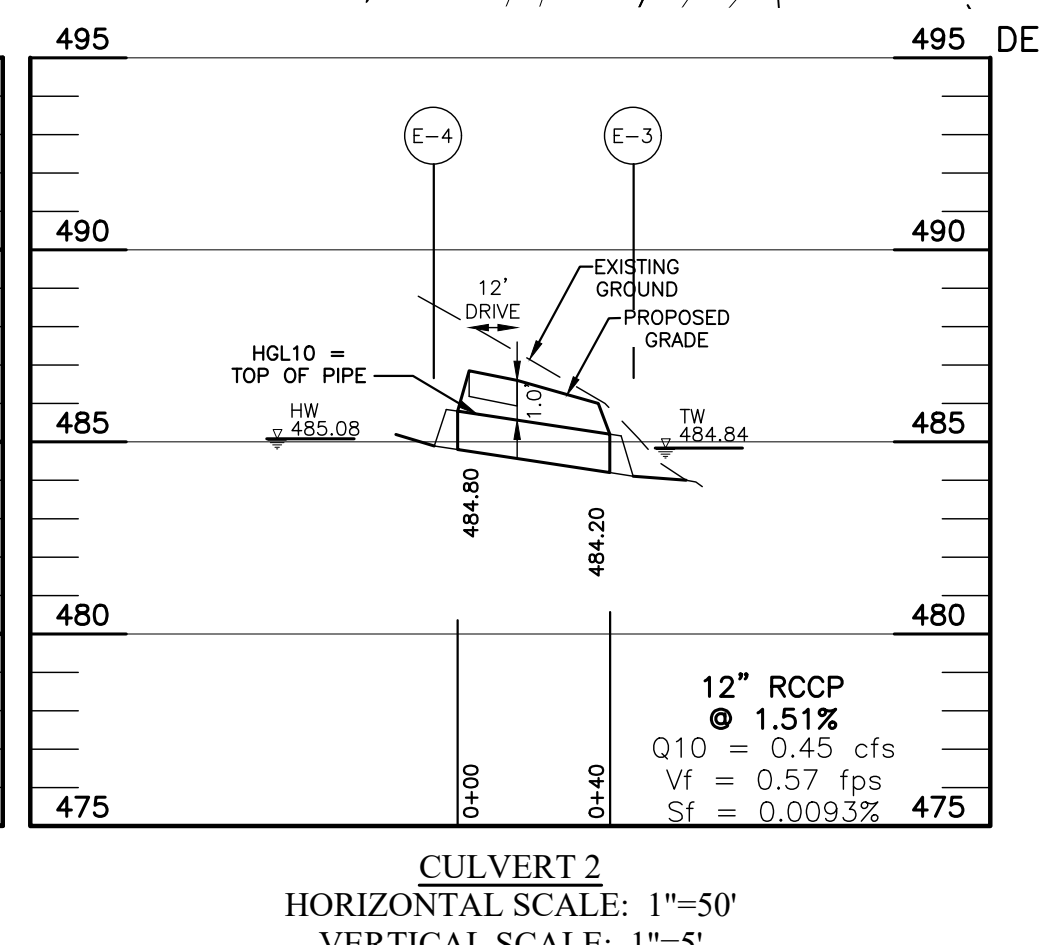
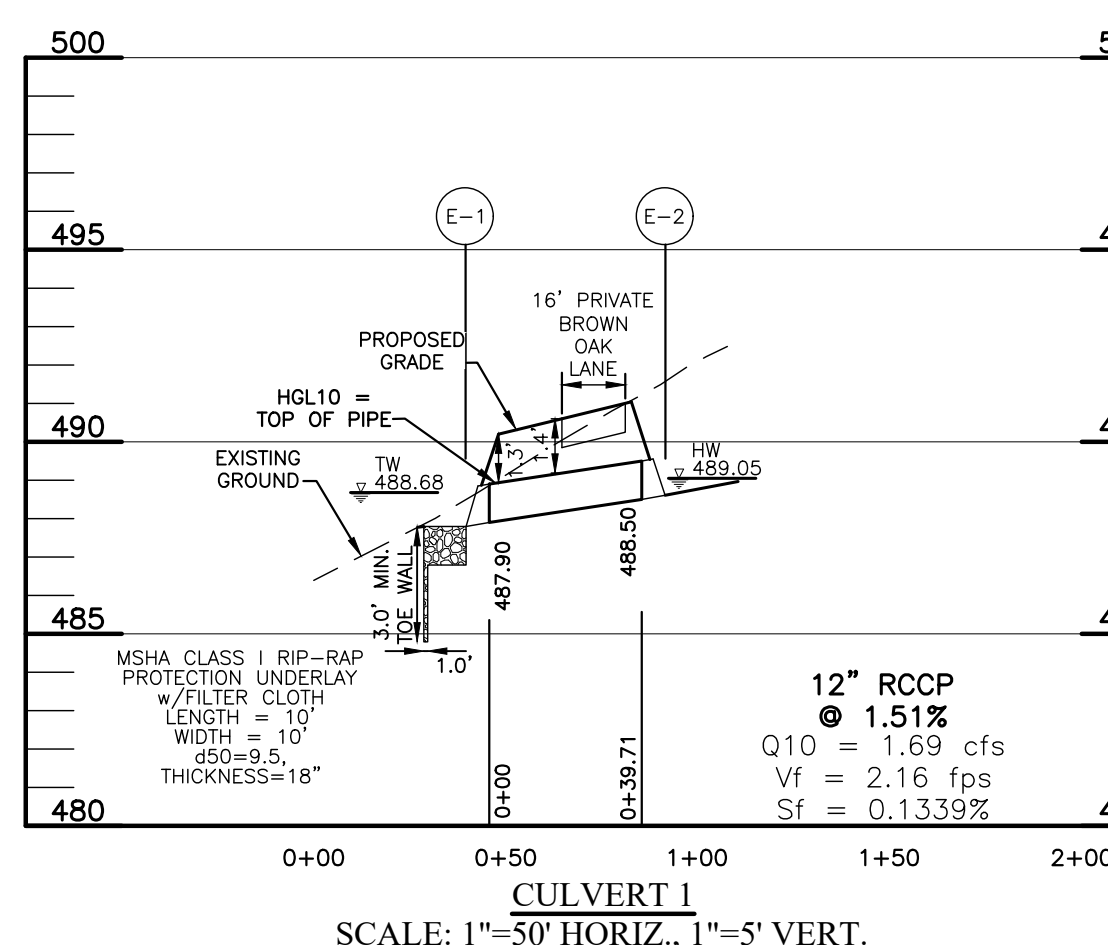
STRUCTURE LOCATION FOR MANHOLES IS AT THE CENTER OF THE MANHOLE RM.
 STRUCTURE LOCATION FOR 'D' INLETS IS AT THE CENTER OF THE TOP OF SLAB.
 STRUCTURE LOCATION FOR 'A'-10' INLETS IS AT THE MIDPOINT ALONG FRONT FACE.
 STRUCTURE LOCATION FOR END SECTIONS IS AT THE MIDPOINT OF THE END OF THE STRUCTURE.
 ALL INVERTS ARE AT THE CENTER OF STRUCTURE.
 PRECAST STRUCTURES MEETING HS-20 LOADINGS MAY BE USED.



EXISTING CONDITIONS PLAN SCALE: 1" = 50'

AREA AND "C" FACTOR TABULATION

PHASE	INLET #	ZONING	SUBAREA (B)	AREA (A)	"C" FACTOR	% IMPERVIOUS (P)≥25
E-2 TO E-1	Culvert #1	RC		0.99	0.26	20.0
E-4 TO E-3	Culvert #2	RC		0.26	0.26	20.0



DEVELOPED CONDITIONS PLAN SCALE: 1" = 50'

APPROVED: DEPARTMENT OF PUBLIC WORKS
 6/8/2023
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 6/8/2023
 CHIEF, DIVISION OF LAND DEVELOPMENT

6/8/2023
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

SIZE	TYPE	LENGTH (L.F.)	MAINTENANCE
12"	RCCP	40	PRIVATE

All pipes shall have smooth interior. No interior corrugations.

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.BEI-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.

STATE OF MARYLAND
 JOHN M. CARNEY
 PROFESSIONAL ENGINEER
 45577

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

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

CLARKSVILLE CROSSING, PHASE 2, AREA 1
 A RESUBDIVISION OF CLARKSVILLE CROSSING LOT 3 (PLAT 02515-25137) TO CREATE NON-BUILDABLE BULK PARCEL 'B', BUILDABLE LOTS 5-10 AND NON-BUILDABLE PRESERVATION PARCELS 'A' & 'C'

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

FINAL PLAN
 STORM DRAIN DRAINAGE AREA MAP,
 PROFILES AND DETAILS

DATE: APRIL, 2023 BEI PROJECT NO: 2525
 SCALE: AS SHOWN SHEET 8 OF 23

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

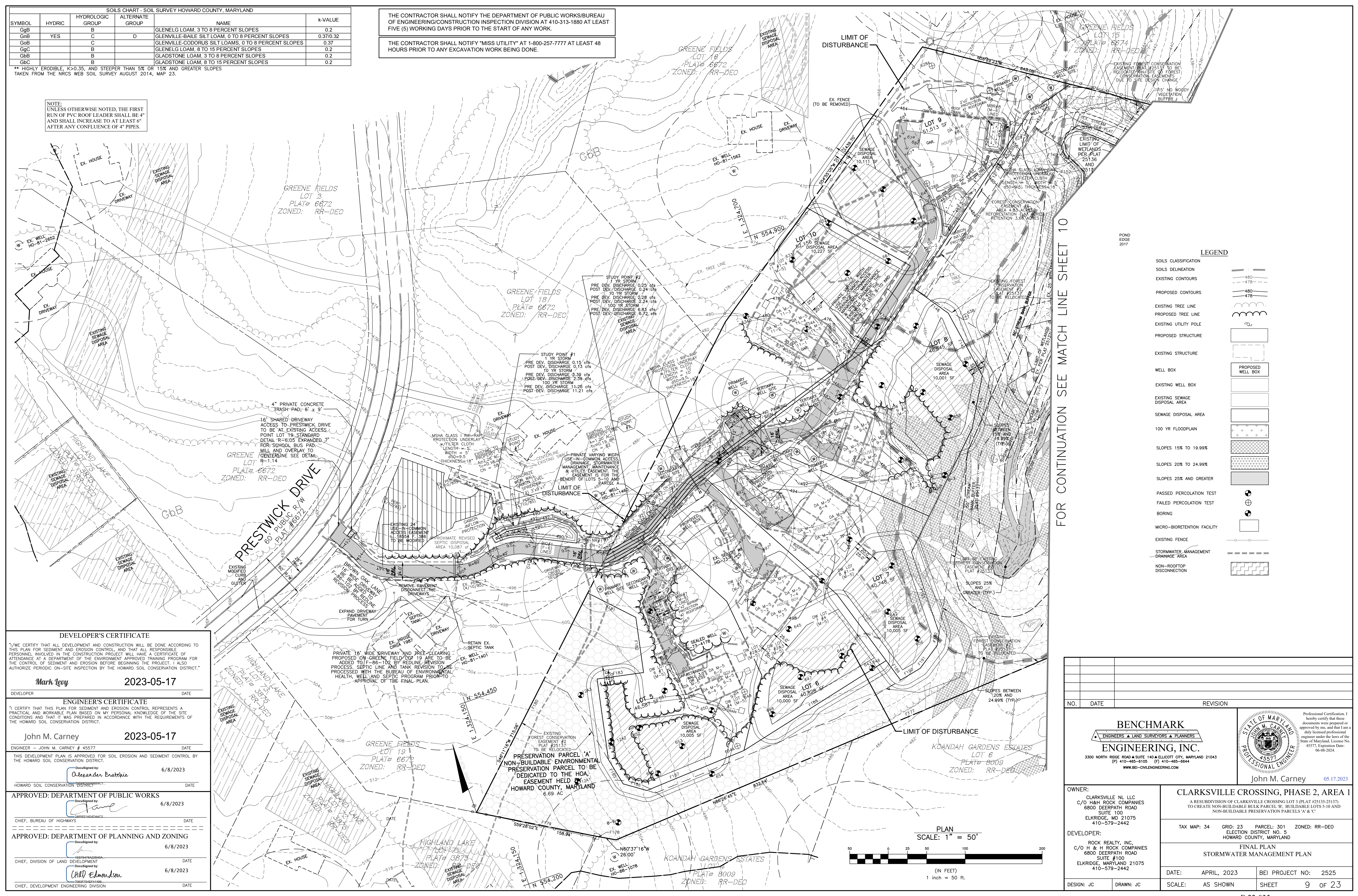
Table with 5 columns: SYMBOL, HYDRIC, HYDROLOGIC GROUP, ALTERNATE GROUP, NAME, k-VALUE. Lists soil types like GbB, GbB, GcB, GcC, GbB, GbC and their properties.

** HIGHLY ERODIBLE, >0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES TAKEN FROM THE NRCS WEB SOIL SURVEY AUGUST 2014, MAP 23.

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.

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.



FOR CONTINUATION SEE MATCH LINE SHEET 10

LEGEND

- SOILS CLASSIFICATION
SOILS DELINEATION
EXISTING CONTOURS
PROPOSED CONTOURS
EXISTING TREE LINE
PROPOSED TREE LINE
EXISTING UTILITY POLE
PROPOSED STRUCTURE
EXISTING STRUCTURE
WELL BOX
EXISTING WELL BOX
EXISTING SEWAGE DISPOSAL AREA
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-BIRETENTION FACILITY
EXISTING FENCE
STORMWATER MANAGEMENT DRAINAGE AREA
NON-ROOFTOP DISCONNECTION

DEVELOPER'S CERTIFICATE

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

Mark Levy 2023-05-17
DEVELOPER DATE

ENGINEER'S CERTIFICATE

I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

John M. Carney 2023-05-17
ENGINEER - JOHN M. CARNEY # 45577 DATE

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

Alexander Bratovic 6/8/2023
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

6/8/2023
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

6/8/2023
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

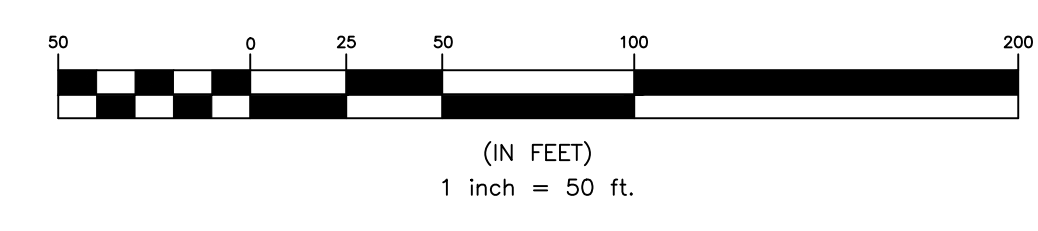
6/8/2023
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DATE

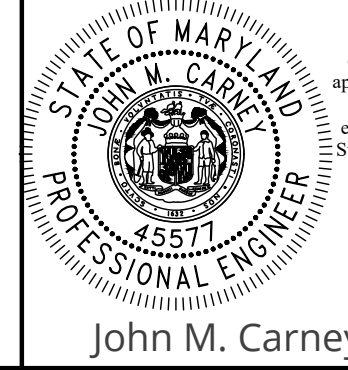
PRIVATE 16' WIDE DRIVEWAY AND TREE-CLEARING PROPOSED ON GREENE FIELDS LOT 19 ARE TO BE ADDED TO F-86-102 BY REDLINE REVISION PROCESS. SEPTIC LINE AND TANK REVISION TO BE PROCESSED WITH THE BUREAU OF ENVIRONMENTAL HEALTH, WELL AND SEPTIC PROGRAM PRIOR TO APPROVAL OF THE FINAL PLAN.

PRESERVATION PARCEL 'A' NON-BUILDABLE ENVIRONMENTAL PRESERVATION PARCEL TO BE DEDICATED TO THE HOA EASEMENT HELD BY HOWARD COUNTY, MARYLAND 6.69 AC

PLAN SCALE: 1" = 50'



Project information block including: BENCHMARK ENGINEERING, INC. logo and contact info; OWNER: CLARKSVILLE NL LLC; DEVELOPER: ROCK REALTY, INC.; APPROVED: DEPARTMENT OF PUBLIC WORKS and PLANNING AND ZONING; DATE: APRIL, 2023; SHEET 9 OF 23.



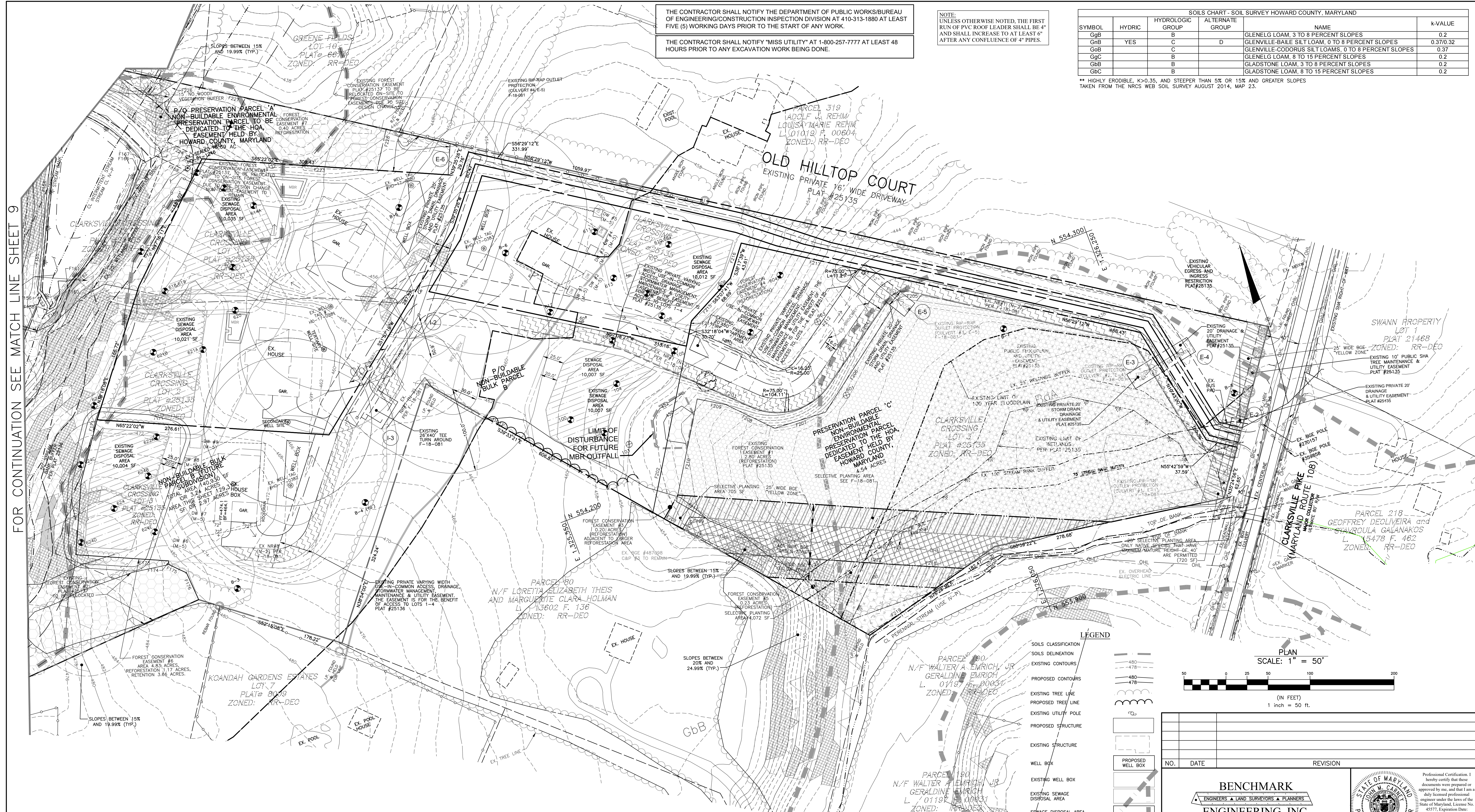
FOR CONTINUATION SEE MATCH LINE SHEET 9

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

NOTE:
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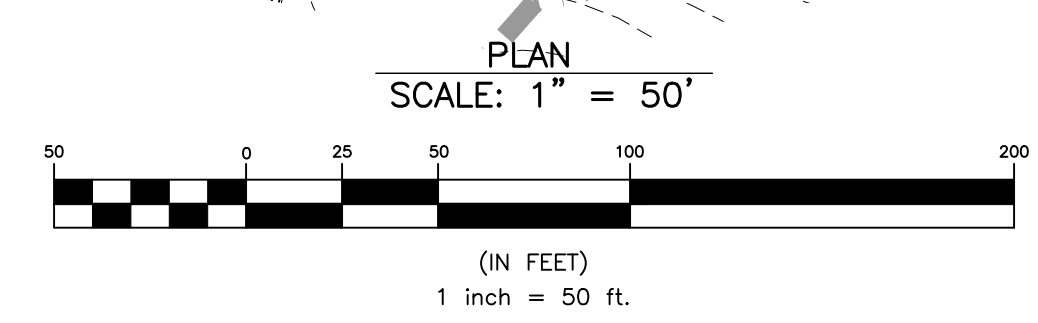
SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND					
SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
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GnB	YES	C	D	GLENNVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
GcB		C		GLENNVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	0.37
GgC		B		GLENELG LOAM, 8 TO 15 PERCENT SLOPES	0.2
GbB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.2
GbC		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.2

** HIGHLY ERODIBLE, K<0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES TAKEN FROM THE NRCS WEB SOIL SURVEY AUGUST 2014, MAP 23.



LEGEND

- SOILS CLASSIFICATION
- SOILS DELINEATION
- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING TREE LINE
- PROPOSED TREE LINE
- EXISTING UTILITY POLE
- PROPOSED STRUCTURE
- EXISTING STRUCTURE
- WELL BOX
- EXISTING WELL BOX
- EXISTING SEWAGE DISPOSAL AREA
- 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



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

Developed by: *Olexander Bratovic* 6/8/2023

APPROVED: DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways: *[Signature]* 6/8/2023

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 Chief, Division of Land Development: *[Signature]* 6/8/2023

DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

Developer: *Mark Levy* 2023-04-26

ENGINEER'S CERTIFICATE
 I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Engineer: *John M. Carney* 2023-04-26

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 04.26.2023

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 1 A RESUBDIVISION OF CLARKSVILLE CROSSING LOT 3 (PLAT #25135-25137) TO CREATE NON-BUILDABLE BULK PARCEL 'B', BUILDABLE LOTS 5-10 AND NON-BUILDABLE PRESERVATION PARCELS 'A' & 'C'
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 PARCEL: 301 ZONED: RR-DEO ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND
FINAL PLAN	
DATE: APRIL, 2023 SCALE: AS SHOWN	BEI PROJECT NO: 2525 SHEET 10 OF 23

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%).

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.

Rotill 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 planted 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:

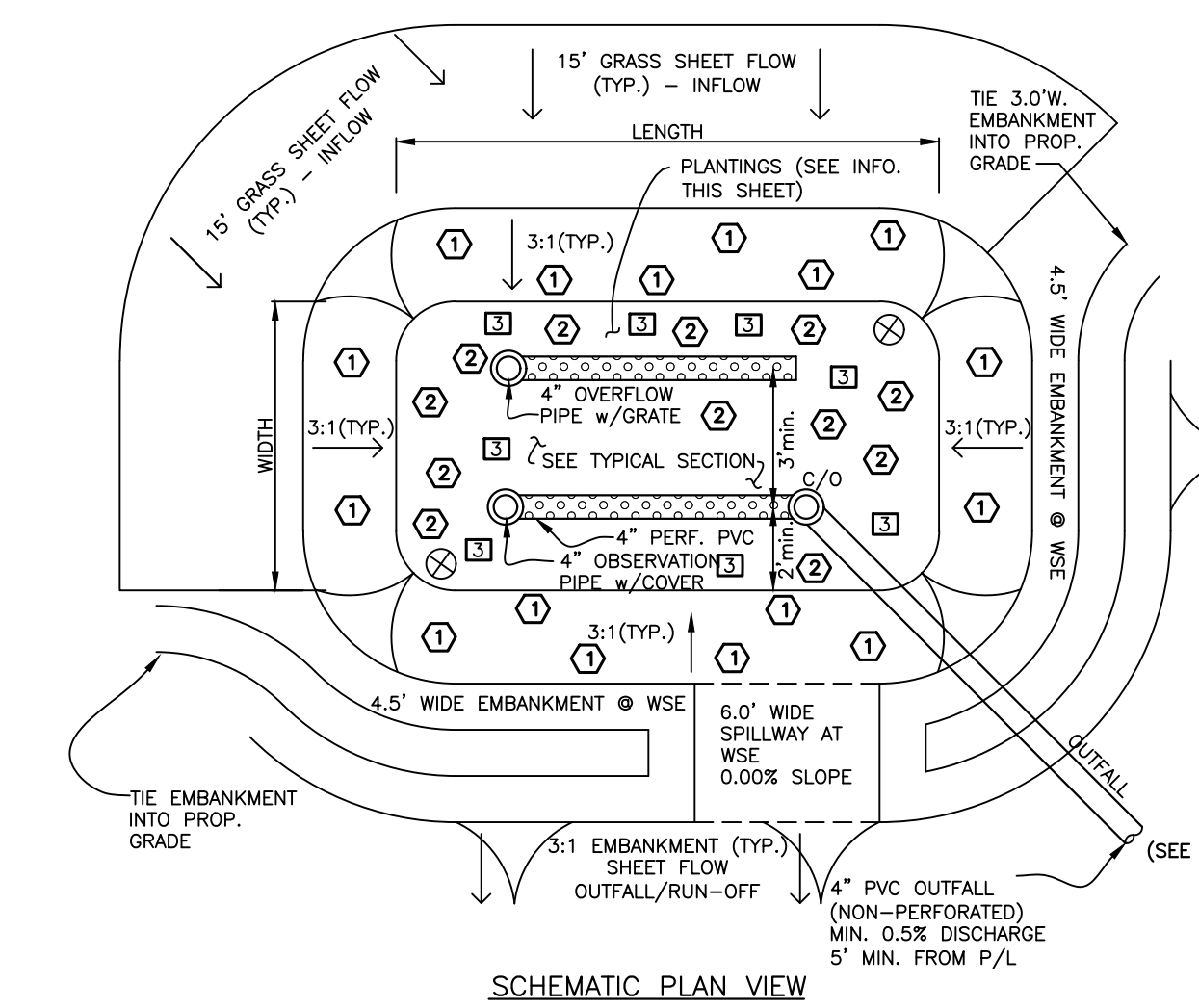
Underdrains should meet the following criteria:

- 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 1/2" 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.

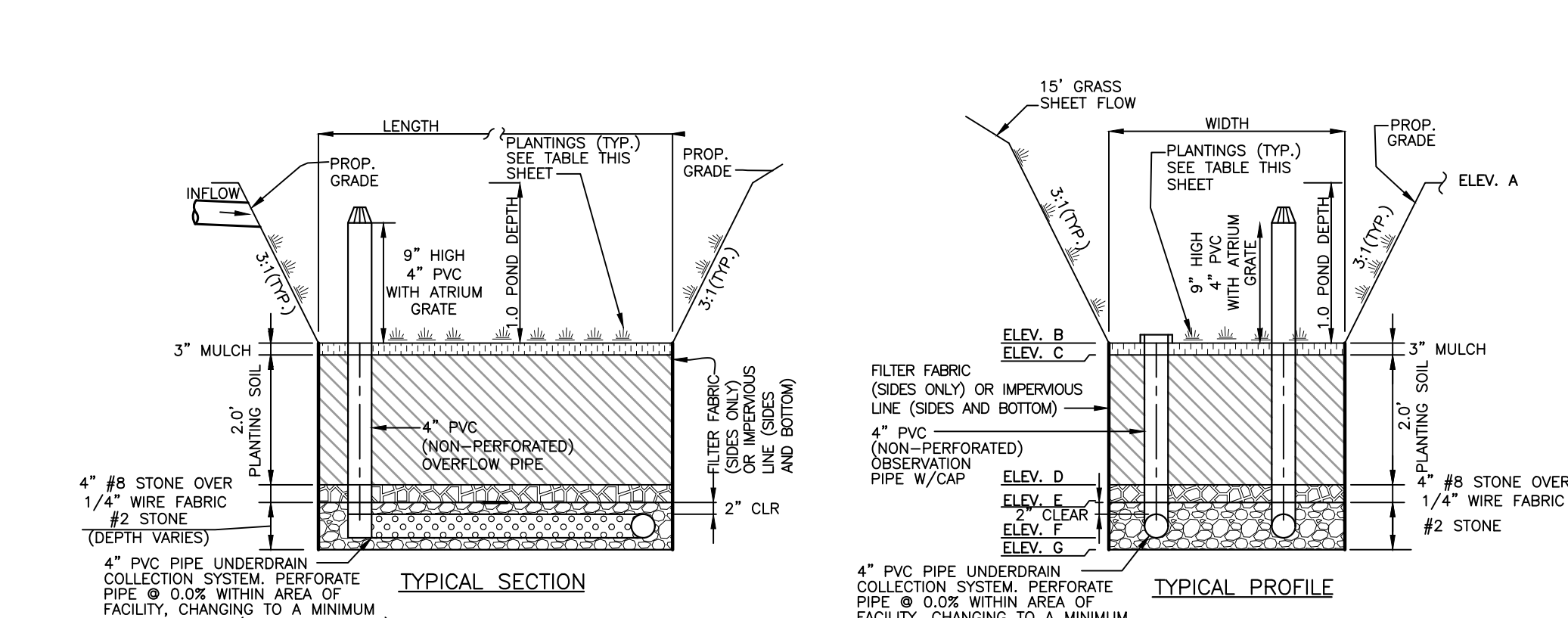
The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

7. Miscellaneous:

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



NOTE: FACILITIES MUST BE CONSTRUCTED WITH IMPERMEABLE LINER WHEN INSTALLED WITHIN THE 100' WELL RADIUS. THIS LINER SHOULD INCLUDE ENTIRE SIDES AND BOTTOM OF THE EXCAVATION AND EXTEND TO TOP OF EMBANKMENT... MICROBIORETENTION AND BIORETENTION PLANTING SCHEDULE



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.
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...

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 IMPERMEABLE AREA. IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.

Table with 12 columns: Facility, Drainage Area (SF), Impervious (SF), I (%), Rv, ESDV Req'd (cf), Req'd Pondered Storage (75%), Pondered Volume Provided (cf), Req'd Stone Storage (cf), Stone Storage Provided (cf), Total ESDV (cf), Pe Prov, Rev (cf), Notes, Maintenance.

Table with 12 columns: Facility, Impervious Area (SF), Drainage Area (SF), Volumetric Runoff, ESDV, Contrib. Pervious Length (ft), Contrib. Impervious Length (ft), Disconnection Length (ft), Ratio, Pe Treated (inches), Volume Provided (cf), Maintenance.

Table with 12 columns: Facility, Impervious Area (SF), Drainage Area (SF), I (%), Rv, ESDV (cf), Length (ft), Width (ft), Depth (ft), Porosity, Grade, Top of Stone, Bottom of Stone, Volume Stored (cf), Pe Treated, Maintenance.

The total ESDV provided by this design is: 6366 CF. The total Rev provided by this design is: 3649 CF. Micro-Bioretentation facilities within the 100' well radius must be provided with an impermeable liner.

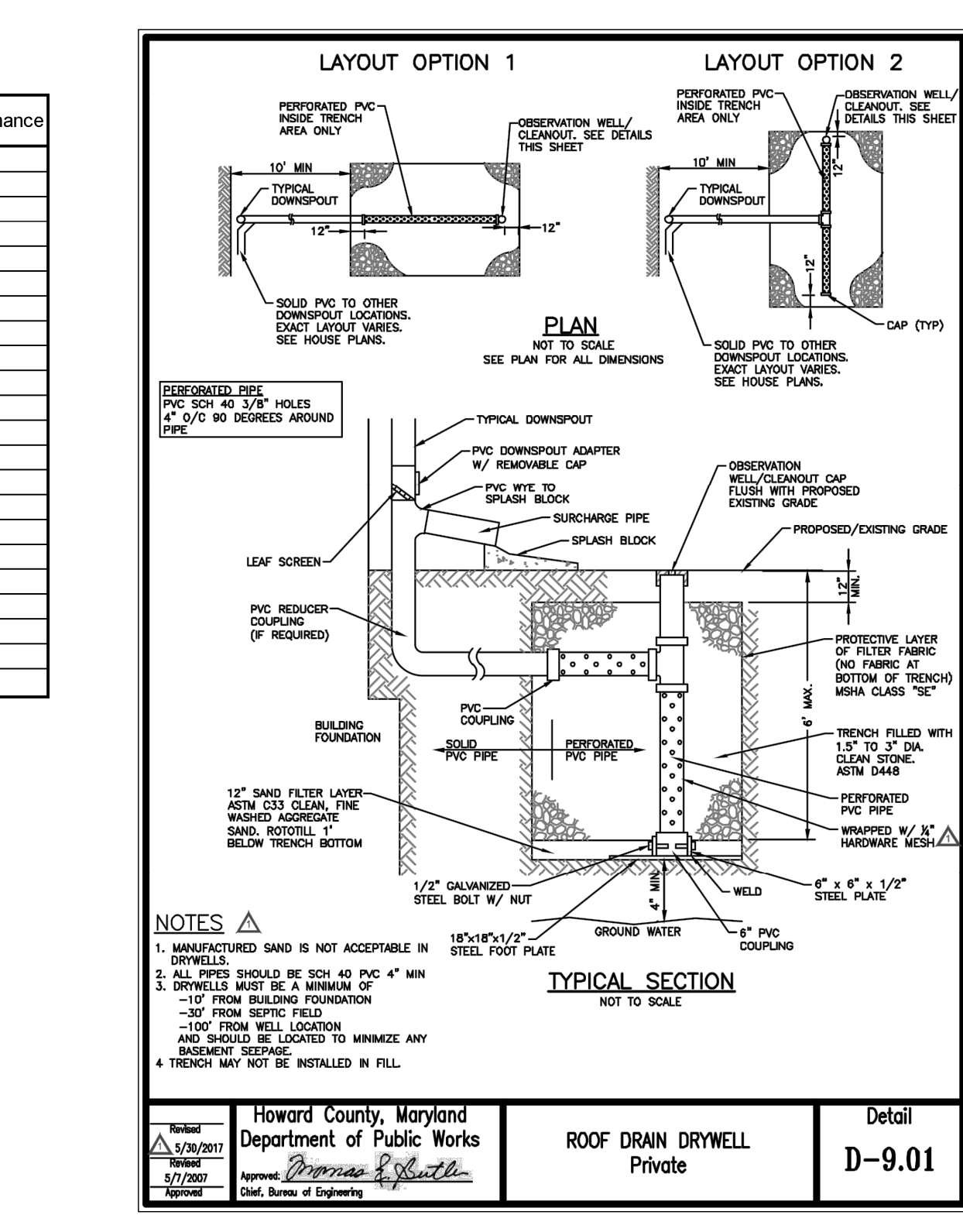
EXCAVATED PONDS: GENERAL - EXCAVATED PONDS THAT CREATE A FAILURE POTENTIAL THROUGH A CONSTRUCTED OR CREATED EMBANKMENT WILL BE DESIGNED AS EMBANKMENT PONDS EXCAVATED PONDS THAT INCLUDE A PIPE OR WEIR OUTLET CONTROL SYSTEM FOR URBAN STORMWATER MANAGEMENT SHALL BE DESIGNED USING THE PRINCIPAL AND EMERGENCY SPILLWAY HYDROLOGIC CRITERIA FOR EMBANKMENT PONDS, TABLE 1.

Table with 10 columns: FACILITY, A, B, C, D, E, F, G, H, FILTER LENGTH (ft), WIDTH (ft), AREA (sf), PLANTINGS 1, 2, 3, LINER REQ'D.

Table with 10 columns: Disconnection Designation, Area (SF), Impervious Area (SF), Drainage Area (SF), Volumetric Runoff, ESDV Required (CF), Contrib. Pervious Length (ft), Contrib. Impervious Length (ft), Disconnection Length (ft), Ratio, Pe Treated (inches), Volume Provided (CF), Lot.

BIO-RETENTION DIMENSION LEGEND table with 2 columns: FACILITY, NAME.

MATERIALS & SPECIFICATIONS FOR DRY WELLS table with 4 columns: MATERIAL, SPECIFICATION, SIZE, NOTES.



Howard County, Maryland Department of Public Works ROOF DRAIN DRYWELL Private Detail D-9.01

MATERIALS & SPECIFICATIONS FOR MICRO-BIORETENTION table with 4 columns: MATERIAL, SPECIFICATION, SIZE, NOTES.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED table with 7 columns: Drywell Designation, Length (ft), Width (ft), Depth (ft), Grade, Top of Stone, Bottom of Stone.

APPROVED: DEPARTMENT OF PUBLIC WORKS, APPROVED: DEPARTMENT OF PLANNING AND ZONING, APPROVED: DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES

DEVELOPER'S CERTIFICATE, ENGINEER'S CERTIFICATE, John M. Carney 2023-05-17

Non-Rooftop Discon. Target Pe = 1.20 (N-2) table with 10 columns: Disconnection Designation, Area (SF), Impervious Area (SF), Drainage Area (SF), Volumetric Runoff, ESDV Required (CF), Contrib. Pervious Length (ft), Contrib. Impervious Length (ft), Disconnection Length (ft), Ratio, Pe Treated (inches), Volume Provided (CF), Lot.

FOR SEQUENCE OF OPERATIONS PLEASE SEE SEDIMENT CONTROL NOTES AND DETAILS. THIS PLAN IS FOR CONCEPTUAL STORMWATER MANAGEMENT ONLY. FINAL STORMWATER MANAGEMENT WILL BE DESIGNED UNDER THE BUILDING PERMIT PLAN AND UPDATED BY REDLINE REVISION.

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

OWNER: CLARKSVILLE NL LLC, DEVELOPER: ROCK REALTY, INC., TAX MAP: 34, GRID: 23, PARCEL: 301, ZONED: RR-DEO, DATE: APRIL, 2023, SCALE: AS SHOWN, SHEET 11 OF 23

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) not using previously approved State or local standards 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.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) not using previously approved State or local standards 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 #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

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) not using previously approved State or local standards 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.

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

Developed by: Deborah Bratovich 6/8/2023

APPROVED: DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways: [Signature] 6/8/2023

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 Chief, Division of Land Development: [Signature] 6/8/2023

DEVELOPER'S CERTIFICATE

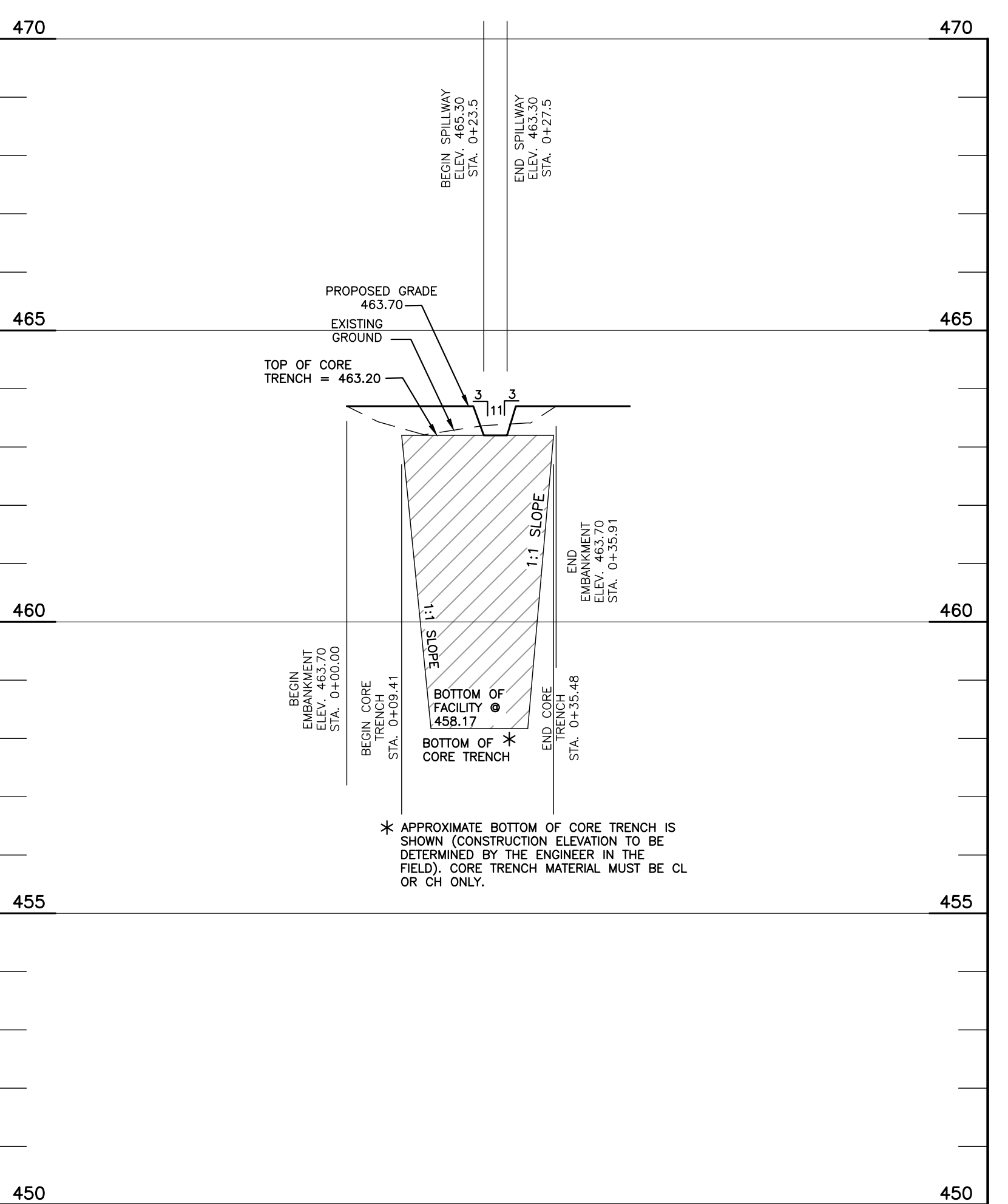
"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

Developer: Mark Levy 2023-05-17

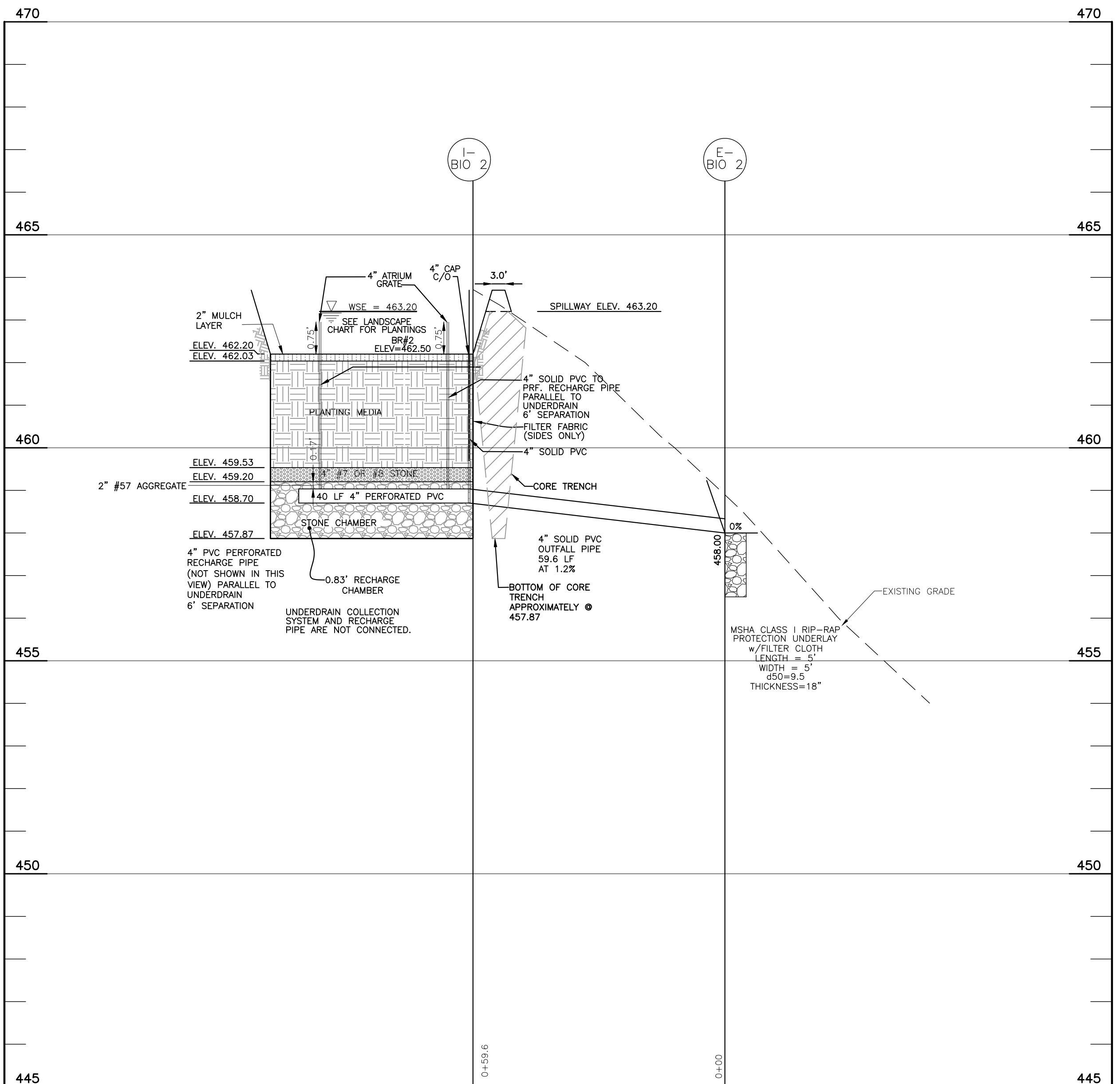
ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

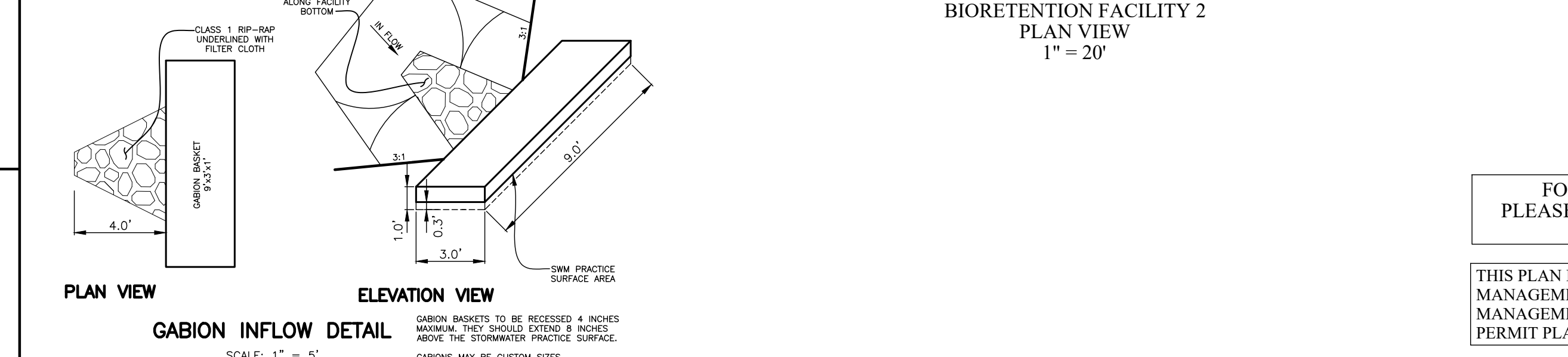
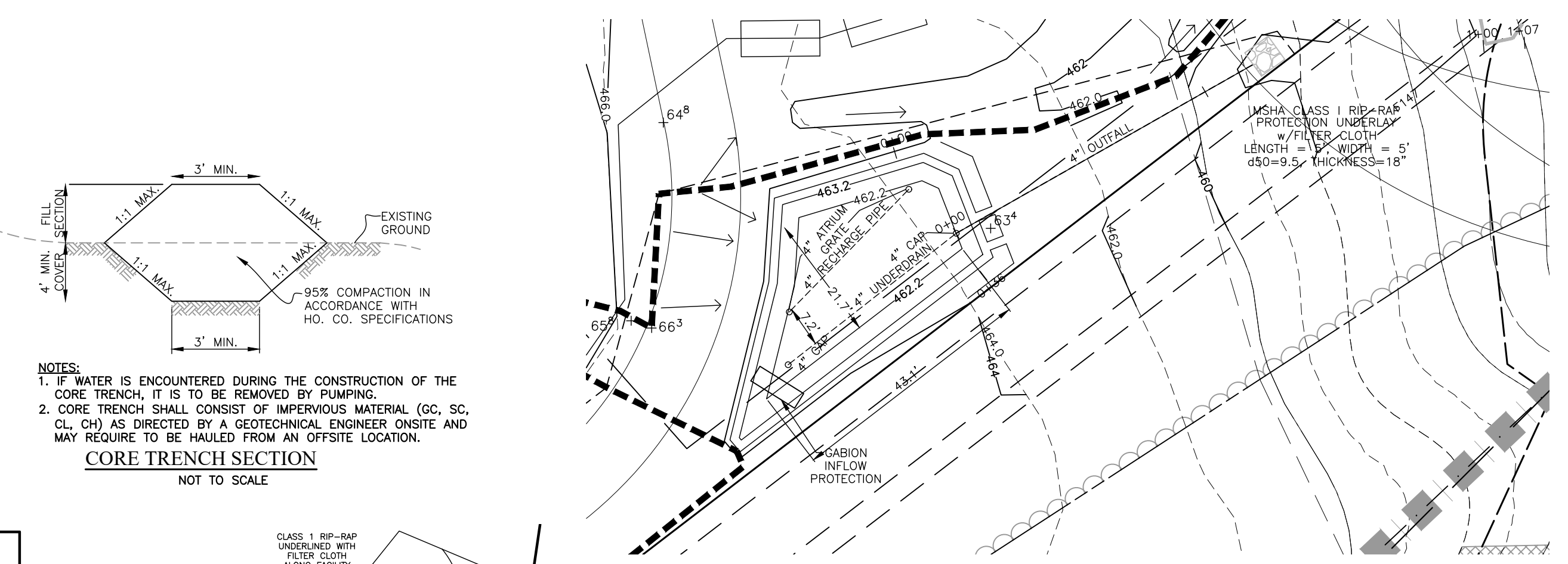
Engineer: John M. Carney 2023-05-17



BIORETENTION FACILITY 2 CL EMBANKMENT
 HORIZONTAL SCALE: 1" = 20'
 VERTICAL SCALE: 1" = 2'



BIORETENTION FACILITY 2 OUTFALL
 HORIZONTAL SCALE: 1" = 20'
 VERTICAL SCALE: 1" = 2'



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

THIS PLAN IS FOR CONCEPTUAL STORMWATER
 MANAGEMENT ONLY. FINAL STORMWATER
 MANAGEMENT WILL BE DESIGNED UNDER THE BUILDING
 PERMIT PLAN AND UPDATED BY REDLINE REVISION.

NO.	DATE	REVISION

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.

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

John M. Carney 05.17.2023

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

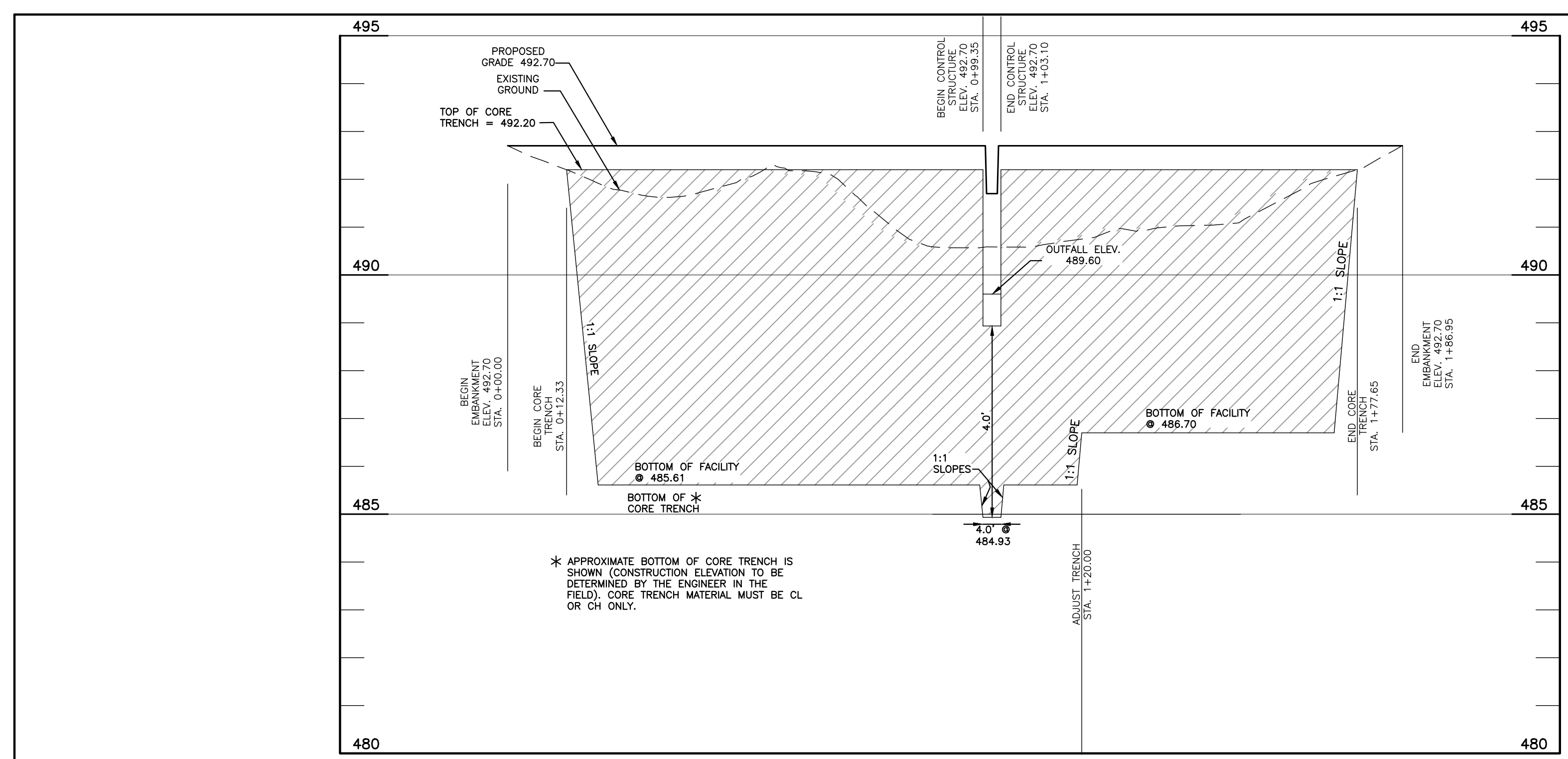
CLARKSVILLE CROSSING, PHASE 2, AREA 1
 A RESUBDIVISION OF CLARKSVILLE CROSSING LOT 3 (PLAT 25115-25137) TO CREATE NON-BUILDABLE BULK PARCEL 'B', BUILDABLE LOTS 5-10 AND NON-BUILDABLE PRESERVATION PARCELS 'A' & 'C'

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

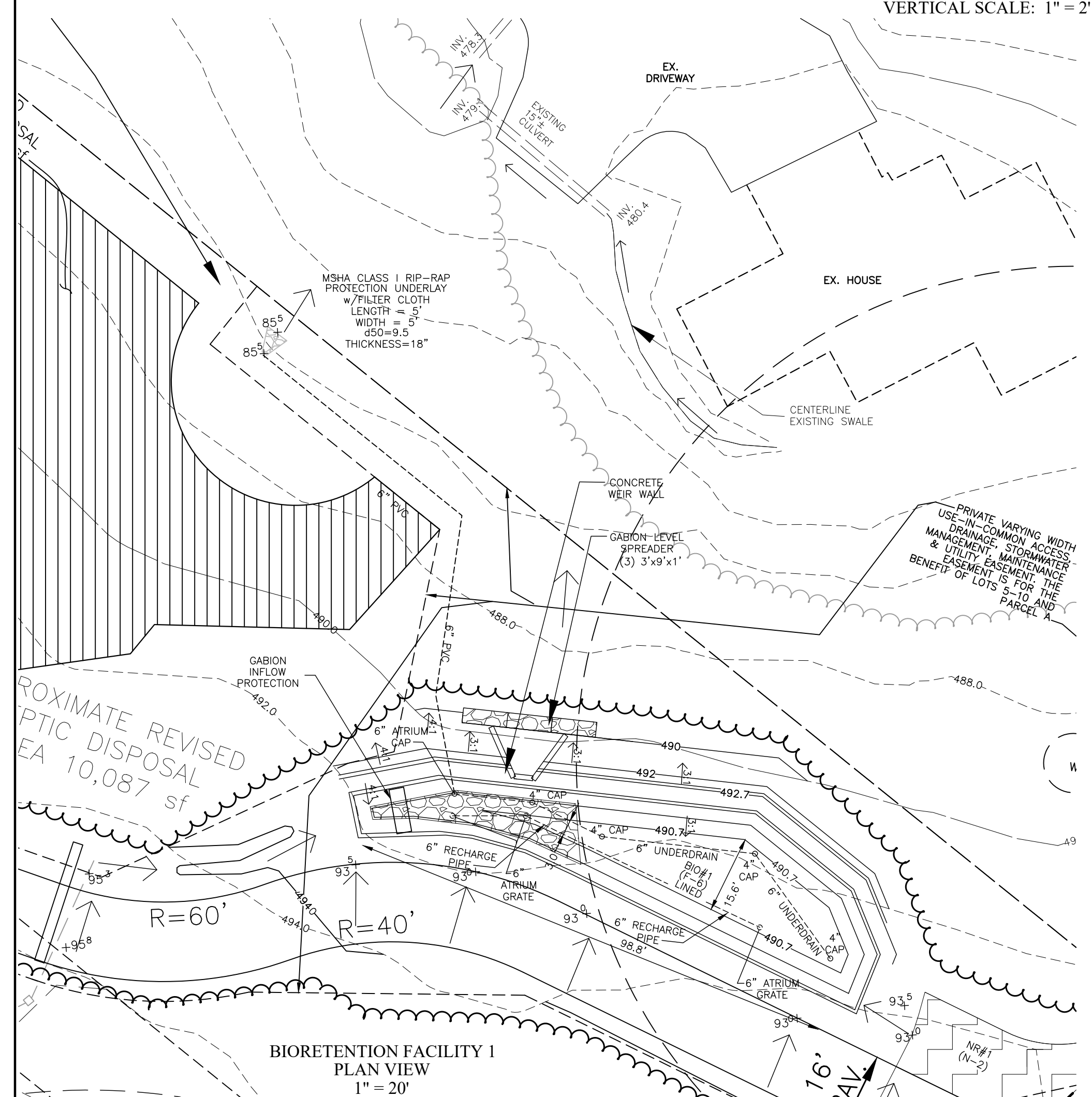
DEVELOPER: ROCK REALTY, INC.
 C/O H & H ROCK COMPANIES
 6800 DEERPATH ROAD SUITE #100
 ELK RIDGE, MARYLAND 21075 410-579-2442

FINAL PLAN
 STORMWATER MANAGEMENT NOTES AND DETAIL

DATE: APRIL, 2023 BEI PROJECT NO: 2525
 SCALE: AS SHOWN SHEET 12 OF 23



BIORETENTION FACILITY 1 CL EMBANKMENT
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

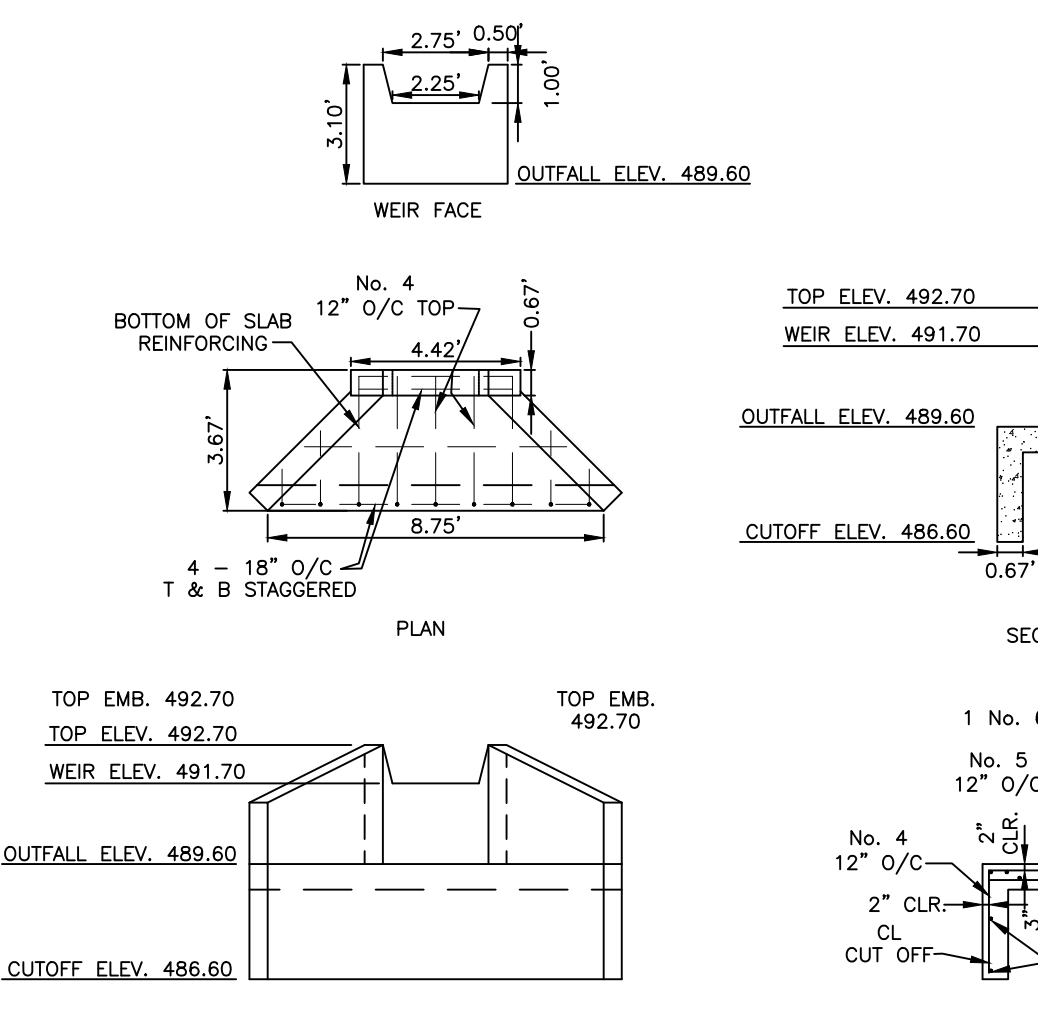


APPROVED: DEPARTMENT OF PUBLIC WORKS
APPROVED: DEPARTMENT OF PLANNING AND ZONING

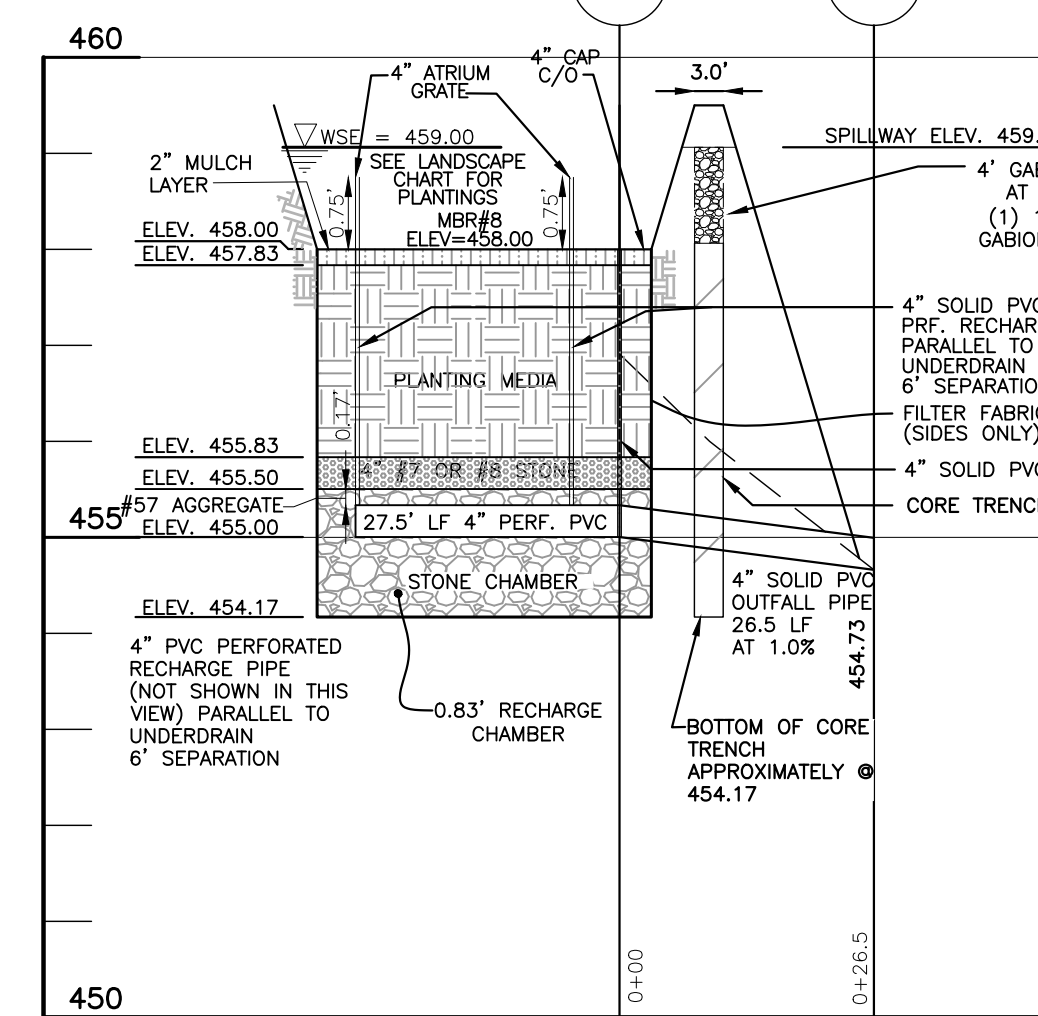
CHIEF, BUREAU OF HIGHWAYS
CHIEF, DIVISION OF LAND DEVELOPMENT
CHIEF, DEVELOPMENT ENGINEERING DIVISION

DEVELOPER'S CERTIFICATE
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

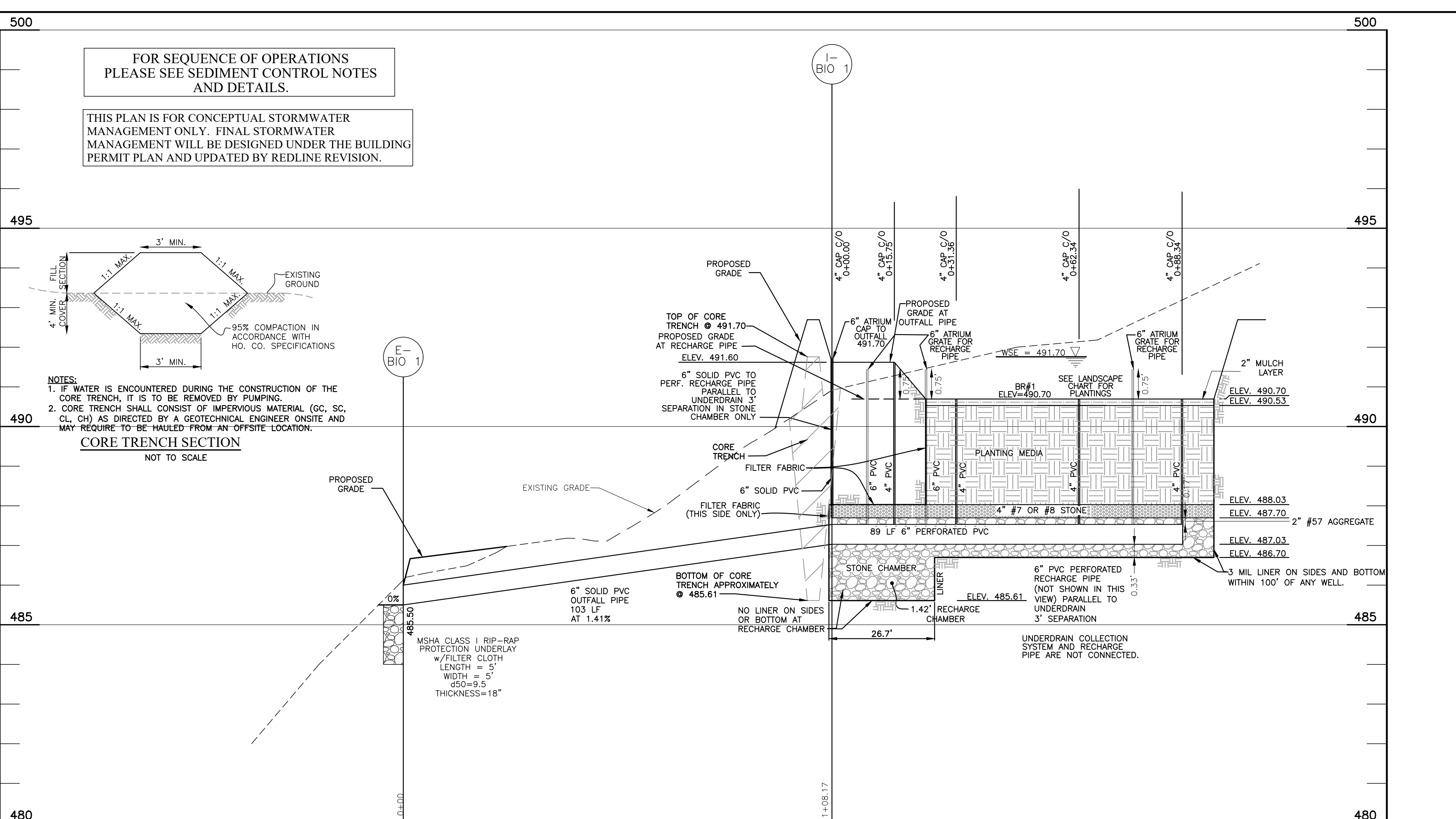
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I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.



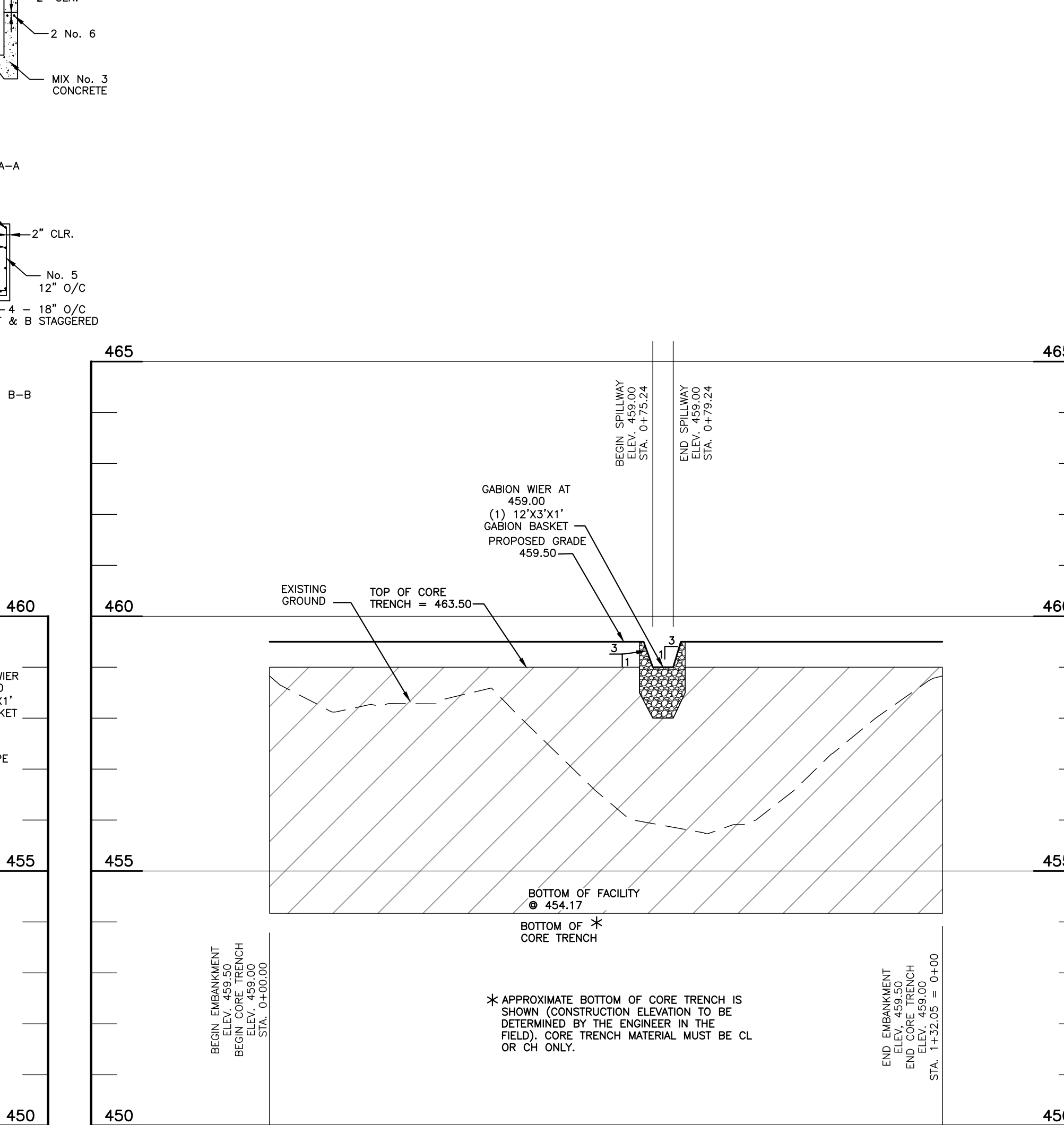
BIORETENTION FACILITY 1 OUTLET STRUCTURE
1" = 5'



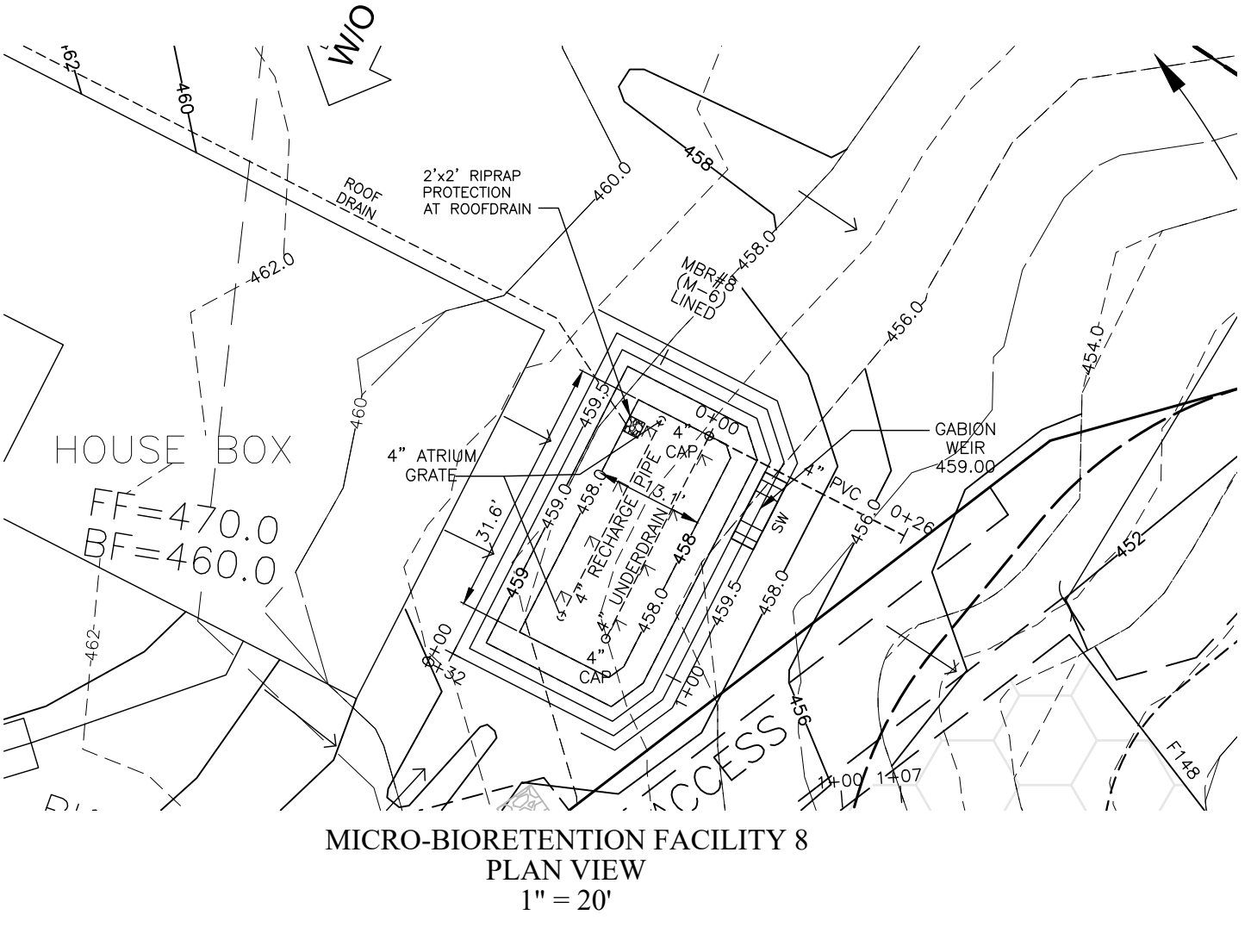
MICRO-BIORETENTION FACILITY 8 OUTFALL
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'



BIORETENTION FACILITY 1 OUTFALL
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



MICRO-BIORETENTION FACILITY 8 CL EMBANKMENT
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'



NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
3300 NORTH RIDGE ROAD SUITE 140 • ELICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CVLENGINEERING.COM

STATE OF MARYLAND PROFESSIONAL ENGINEER
John M. Carney 05.17.2023

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

DEVELOPER:
ROCK REALTY, INC.
6800 DEERPATH ROAD
SUITE #100
ELK RIDGE, MARYLAND 21075
410-579-2442

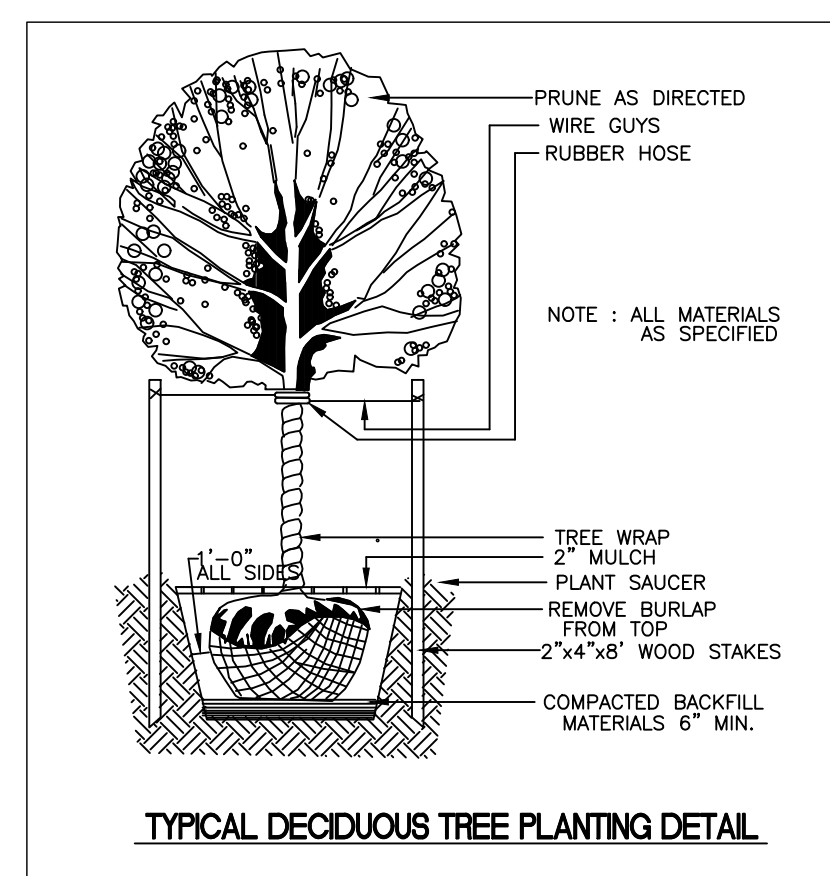
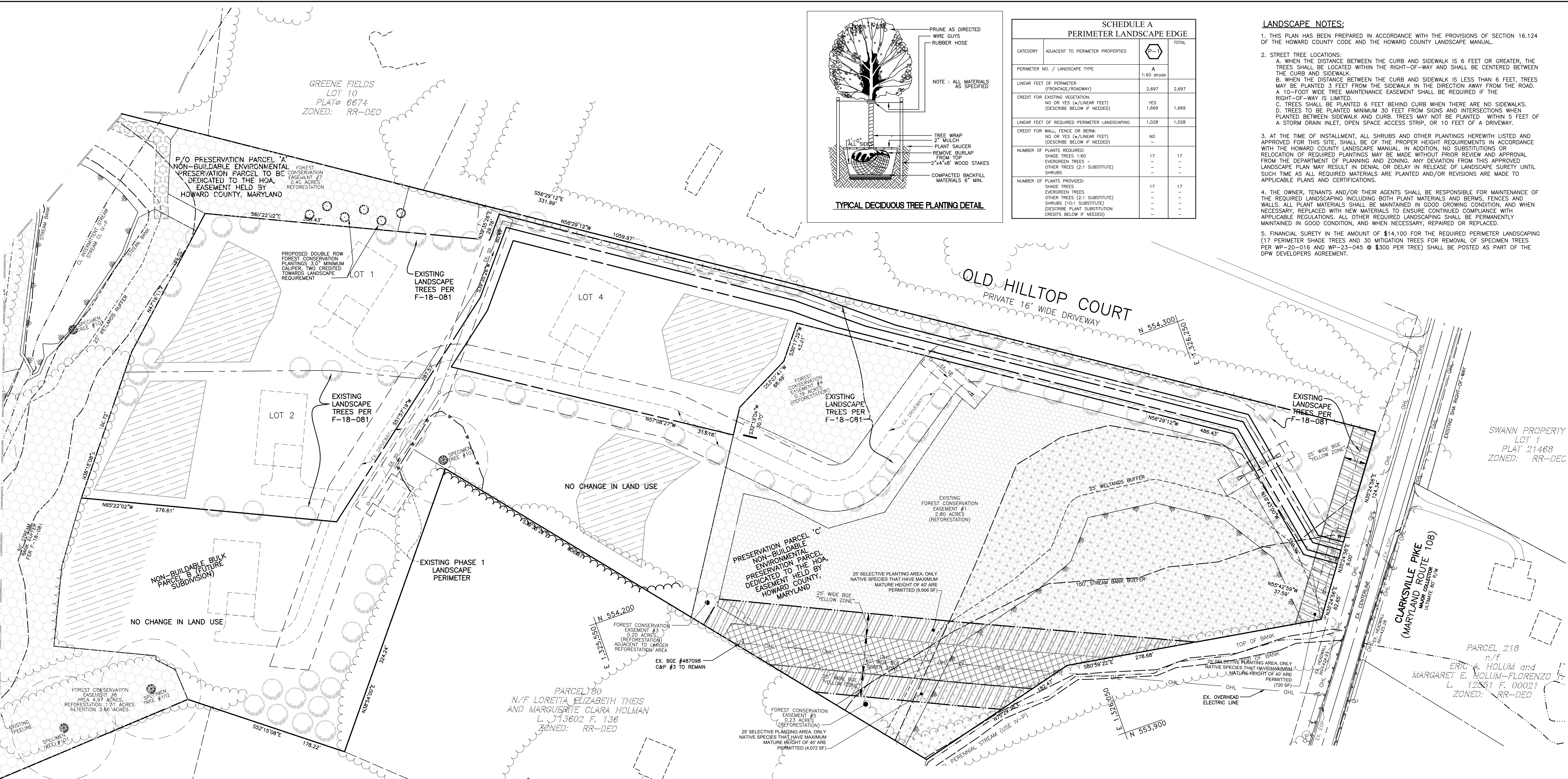
CLARKSVILLE CROSSING, PHASE 2, AREA 1
A RESUBDIVISION OF CLARKSVILLE CROSSING LOT 3 (PLAT #25115-25137) TO CREATE NON-BUILDABLE BULK PARCEL 'B', BUILDABLE LOTS 5-10 AND NON-BUILDABLE PRESERVATION PARCELS 'A' & 'C'

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

FINAL PLAN
STORMWATER MANAGEMENT NOTES AND DETAIL

DATE: APRIL, 2023 BEI PROJECT NO: 2525
DESIGN: JC DRAWN: JC SCALE: AS SHOWN SHEET 13 OF 23

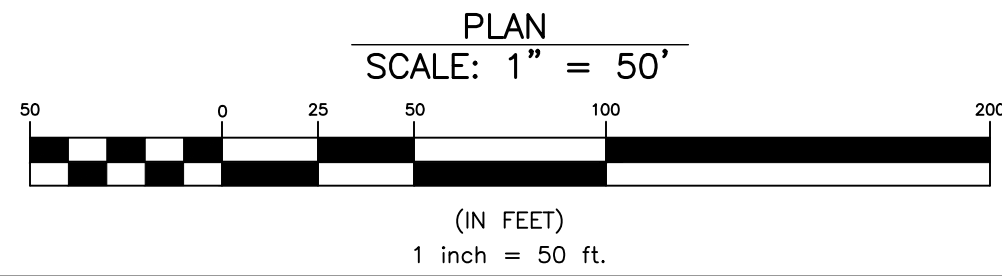
FOR CONTINUATION SEE MATCH LINE SHEET 15



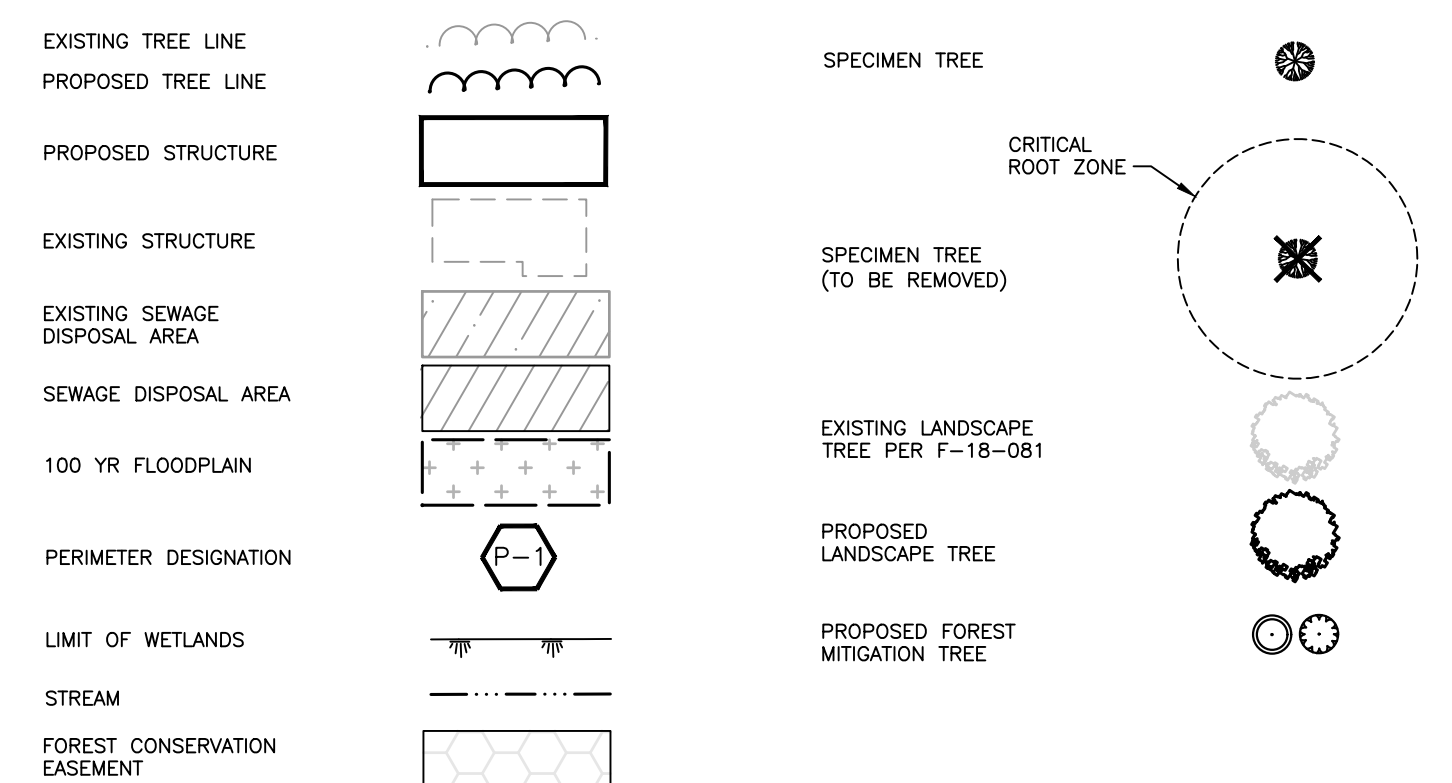
SCHEDULE A PERIMETER LANDSCAPE EDGE			
CATEGORY	ADJACENT TO PERIMETER PROPERTIES	P-1	TOTAL
PERIMETER NO. / LANDSCAPE TYPE		A	1:60 shade
LINEAR FEET OF PERIMETER (FRONTAGE/ROADWAY)		2,697	2,697
CREDIT FOR EXISTING VEGETATION: NO OR YES (w/LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	YES	1,669	1,669
LINEAR FEET OF REQUIRED PERIMETER LANDSCAPING		1,028	1,028
CREDIT FOR WALL, FENCE OR BERM: NO OR YES (w/LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	-	-
NUMBER OF PLANTS REQUIRED: SHADE TREES 1:60		17	17
EVERGREEN TREES - OTHER TREES (2:1 SUBSTITUTE)		-	-
SHRUBS		-	-
NUMBER OF PLANTS PROVIDED: SHADE TREES		17	17
EVERGREEN TREES		-	-
OTHER TREES (2:1 SUBSTITUTE)		-	-
SHRUBS (10:1 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 \$14,100 FOR THE REQUIRED PERIMETER LANDSCAPING (17 PERIMETER SHADE TREES AND 30 MITIGATION TREES FOR REMOVAL OF SPECIMEN TREES PER WP-20-016 AND WP-23-045 @ \$300 PER TREE) SHALL BE POSTED AS PART OF THE DPW DEVELOPERS AGREEMENT.



LEGEND



SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
⊙	2	QUERCUS RUBRA (Red Oak)	3.0" cal. (min.) AT BREAST HEIGHT	MITIGATION FOR REMOVAL OF RED OAK SPECIMEN TREE (WP-20-016) SEE FOREST CON. PLAN
⊙	28	LIRIODENDRON TULIPIFERA / (tulip poplar)	3.0" cal. (min.) AT BREAST HEIGHT	MITIGATION TREE FOR REMOVAL OF TULIP POPLAR SPECIMEN TREES (WP-20-016 AND WP-23-045) SEE FOREST CON. PLAN
⊙	17	Acer rubrum Red Sunset/ (Red Sunset Red Maple)	2.5" cal. (min.)	PERIMETER SHADE TREES

THE QUERCUS RUBRA AND LIRIODENDRON TULIPIFERA ARE MITIGATION TREES FOR THE REMOVAL OF SPECIMEN TREES. THE MINIMUM CALIPER SIZE INDICATED IN THE CHART IS THE MINIMUM SIZE ALLOWED PER WP-20-016 AND WP-23-045 AND CANNOT BE CHANGED.

STREET TREE SCHEDULE		
	CLARKSVILLE PIKE PUBLIC ROAD	TOTAL
LINEAR FEET OF RIGHT-OF-WAY	12'	
LINEAR FEET OF CREDIT	0	
LINEAR FEET OF REQUIRED PLANTING	12'	
TREE SIZE	MEDIUM 1:40 LF	
TREES REQUIRED	0*	0*

*STREET TREES PROVIDED UNDER F-18-081

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND					
SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	k-VALUE
GgB		B	D	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	0.2
GnB	YES	C		GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
GgB		C		GLENVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	0.37
GgC		B		GLENELG LOAM, 8 TO 15 PERCENT SLOPES	0.2
GgB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.2

** HIGHLY ERODIBLE, K>0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES TAKEN FROM THE NRCS WEB SOIL SURVEY AUGUST 2014, MAP 23.

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 2023-04-26

CLARKSVILLE NL, LLC DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS 6/8/2023

CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING 6/8/2023

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

CHAD Edmondson 6/8/2023

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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: 06-08-2024.

John M. Carney 04.26.2023

<p>OWNER: CLARKSVILLE NL LLC C/O H&H ROCK COMPANIES 6800 DEERPATH ROAD SUITE 100 ELKBRIDGE, MD 21075 410-579-2442</p> <p>DEVELOPER: ROCK REALTY, INC. C/O H & H ROCK COMPANIES 6800 DEERPATH ROAD SUITE #100 ELKBRIDGE, MARYLAND 21075 410-579-2442</p>	<p>CLARKSVILLE CROSSING, PHASE 2, AREA 1</p> <p>A RESUBDIVISION OF CLARKSVILLE CROSSING LOT 3 (PLAT #25115-25117) TO CREATE NON-BUILDABLE BULK PARCEL 'B', BUILDABLE LOTS 5-10 AND NON-BUILDABLE PRESERVATION PARCELS 'A' & 'C'</p> <p>TAX MAP: 34 GRID: 23 PARCEL: 301 ZONED: RR-DEO</p> <p>ELCTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND</p> <p>FINAL PLAN LANDSCAPE PLAN, NOTE AND DETAILS</p> <p>DATE: APRIL, 2023 BEI PROJECT NO: 2525</p> <p>DESIGN: JC DRAWN: JC SCALE: AS SHOWN SHEET 14 OF 23</p>
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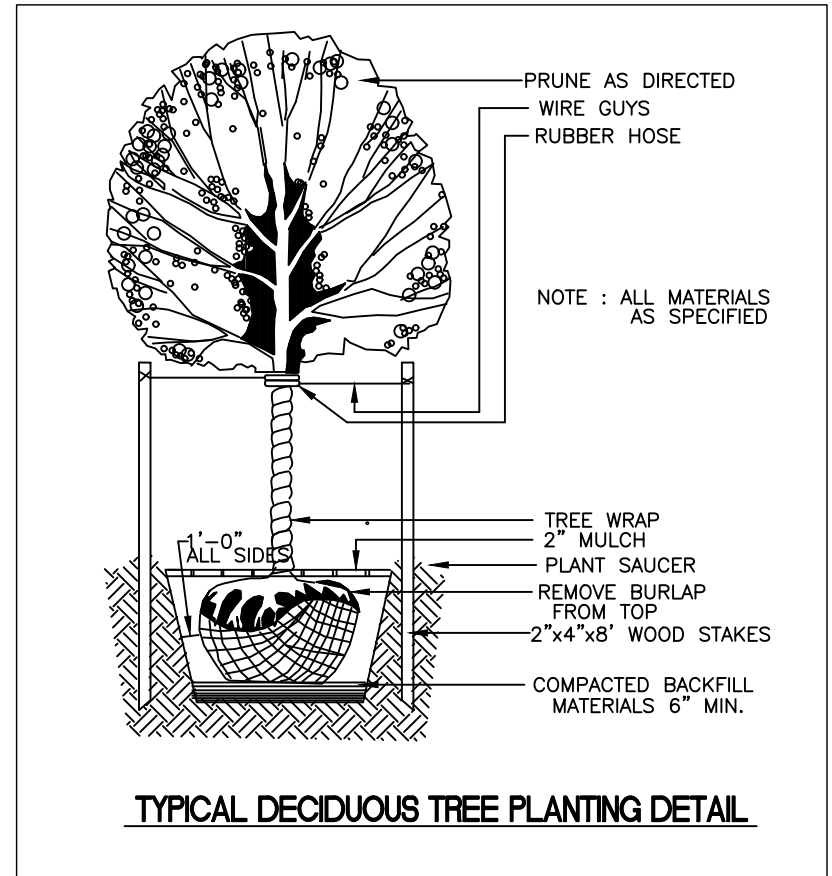
Key (X#)	Species	Site (inches DBH)	CRZ (ft radius)	Remove or Retain	Comments
1	Tulip poplar	38.5	57.75	Remove	FAIR
2	Tulip poplar	31.5	47.25	Remove	
3	Tulip poplar	30.5	45.75	Remove	FAIR
4	Tulip poplar	31	46.50	Remove	FAIR
5	Hickory	31.5	47.25	Retain	POOR, MAJOR DIEBACK
6N	Tulip poplar	32	48.00	Retain	
7	Tulip poplar	30	45.00	Retain	
8	Tulip poplar	31	46.50	Retain	
9	Tulip poplar	32	48.00	Retain	
10	Tulip poplar	38.5/30.5	57.75	Retain	
11	Tulip poplar	38	57.00	Retain	
12	Tulip poplar	30.5	45.75	Retain	
13	Tulip poplar	34	51.00	Retain	
14	Tulip poplar	33.5	50.25	Retain	POOR, MAJOR DIEBACK
15	Tulip poplar	38	57.00	Retain	FAIR
16	Tulip poplar	36	54.00	Retain	
17	Tulip poplar	33	49.50	Retain	
18	Tulip poplar	35	52.50	Retain	
19	Tulip poplar	40	60.00	Retain	FAIR, SOME STORM DAMAGE AND DIEBACK
20	Tulip poplar	33	49.50	Retain	POOR, MAJOR LEAN, ROT
21	Tulip poplar	38.5	57.75	Retain	
22	Tulip poplar	30.5	45.75	Retain	FAIR, LIMB DIEBACK
23	Tulip poplar	38.5	57.75	Retain	TWIN STREAM BELOW BH
24	Tulip poplar	31.5	47.25	Remove	FAIR
25	Tulip poplar	32	48.00	Retain	
26	Tulip poplar	32.5	48.75	Retain	
27	Tulip poplar	34	51.00	Retain	
28	Tulip poplar	35	52.50	Retain	
29	Tulip poplar	34	51.00	Retain	
30	Tulip poplar	35	52.50	Retain	
31	Tulip poplar	34	51.00	Remove	POOR, SIGNIFICANT DIEBACK IN THE CANOPY
32	Tulip poplar	36	54.00	Retain	
33	Tulip poplar	36	54.00	Retain	POOR, DIEBACK
34	Tulip poplar	36	54.00	Remove	VERY POOR, MAJOR TRUNK ROT
35	Tulip poplar	33	49.50	Remove	POOR, MAJOR ROT
36	Red Oak	33.5	50.25	Retain	
37	Tulip poplar	38	57.00	Retain	POOR, TRUNK AND CANOPY DIEBACK
38	Tulip poplar	38	57.00	Retain	SPLITS ABOVE BH
39	Tulip poplar	30	45.00	Retain	VINE
40	Tulip poplar	33.5	50.25	Remove	
41	Tulip poplar	31	46.50	Remove	
42	Tulip poplar	31	46.50	Retain	
43	Tulip poplar	30.5	45.75	Retain	
44	Red Oak	31	46.50	Retain	POOR, MAJOR DIEBACK
45	Tulip poplar	31.5	47.25	Retain	
46	Tulip poplar	42	63.00	Retain	FAIR, LIMITED CROWN
47	Tulip poplar	37.5	56.25	Retain	
48	Tulip poplar	30.5	45.75	Retain	FAIR, LEANING
49	Tulip poplar	31.5	47.25	Retain	
50	Tulip poplar	33	49.50	Retain	
51	Tulip poplar	31	46.50	Retain	FAIR, DIEBACK
52	Tulip poplar	31	46.50	Retain	
53	Tulip poplar	31	46.50	Retain	
54	Tulip poplar	31	46.50	Retain	
55	Tulip poplar	33	49.50	Retain	
56	Tulip poplar	31	46.50	Retain	
57	Red Oak	30	45.00	Remove	POOR, MAJOR DIEBACK
58	Tulip poplar	32	48.00	Retain	
59	Tulip poplar	34.5	51.75	Retain	
60	Tulip poplar	31	46.50	Retain	FAIR, LEANING
61	Tulip poplar	35	52.50	Retain	FAIR, LEANING
62	Tulip poplar	30.5	45.75	Retain	FAIR, LEANING
63	Tulip poplar	31.5	47.25	Retain	FAIR, SOME DIEBACK
64	Tulip poplar	30.2	45.30	Retain	POOR, STORM DAMAGE
65	Tulip poplar	35	52.50	Retain	
66	White Oak	34	51.00	Retain	FAIR
67	Tulip poplar	41	61.50	Retain	
68	White Oak	30.5	45.75	Retain	
69	Red Oak	33	49.50	Remove	POOR, MAJOR DIEBACK
70	Tulip poplar	33	49.50	Retain	
71	Tulip poplar	35	52.50	Retain	
72	Tulip poplar	37	55.50	Retain	
73	Tulip poplar	48	72.00	Retain	
74	Tulip poplar	34.5	51.75	Remove	
75	Tulip poplar	42.5	63.75	Retain	FAIR, LEANING
76	Tulip poplar	33	49.50	Retain	FAIR, ONE SIDED CANOPY
77	Tulip poplar	35.5	53.25	Remove	POOR, NOTABLE ROT IN CANOPY
78	Tulip poplar	38.5	57.75	Retain	
79	Tulip poplar	33.5	50.25	Retain	
80	Tulip poplar	33.5	50.25	Remove	
81	Tulip poplar	34	51.00	Retain	
82	Tulip poplar	35.5	53.25	Retain	FAIR, LEANING
83	Tulip poplar	38.5	57.75	Remove	FAIR, LEANING, ELECTRICAL WIRING ATTACHED TO TRUNK
84	Tulip poplar	34.5	51.75	Retain	
85	Tulip poplar	31	46.50	Retain	
86	Tulip poplar	31.5	47.25	Retain	
87	Tulip poplar	31	46.50	Retain	
88	Tulip poplar	32	48.00	Retain	
89	Tulip poplar	31	46.50	Retain	
90	Tulip poplar	38.5	57.75	Retain	
91	Tulip poplar	33	49.50	Retain	
92	Black Gum	33	49.50	Retain	
93	Tulip poplar	30	45.00	Retain	
94	Tulip poplar	33.5	50.25	Retain	
95	Tulip poplar	76	114.00	Retain	FAIR, DIEBACK NOTED, MULTI-STEMMED
96	Tulip poplar	64	96.00	Retain	FAIR, DIEBACK NOTED, MULTI-STEMMED
97	Tulip poplar	30.5	45.75	Retain	
98	Tulip poplar	38.5	57.75	Retain	POOR, MULTI-STEMMED, STORM DAMAGE AND DIEBACK
99	Tulip poplar	32.5	48.75	Retain	
100	Tulip poplar	30	45.00	Retain	FAIR, MULTI-STEMMED ABOVE BH
101	Red Oak	37.5	56.25	Retain	
102	Tulip poplar	36	54.00	Retain	
103	Tulip poplar	32	48.00	Retain	
104	Red Oak	40.5	60.75	Retain	POOR, TRUNK ROT

NOTE: THE REMOVAL OF 13 TREES CONDITIONALLY APPROVED BY ALTERNATIVE COMPLIANCE WP-20-016. THE REMOVAL OF 2 TREES CONDITIONALLY APPROVED BY ALTERNATIVE COMPLIANCE WP-23-045.

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
GgB		B		GLENELG LOAM, 3 TO 8 PERCENT SLOPES	0.2
GnB	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
GgC		C		GLENVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	0.37
GnB		B		GLENELG LOAM, 8 TO 15 PERCENT SLOPES	0.2
GgB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.2

** HIGHLY ERODIBLE, K>0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES TAKEN FROM THE NRCS WEB SOIL SURVEY AUGUST 2014, MAP 23.



GREENE FIELDS LOT 15 PLAT# 6674 ZONED: RR-DEO

GREENE FIELDS LOT 16 PLAT# 6672 ZONED: RR-DEO

GREENE FIELDS LOT 18 PLAT# 6672 ZONED: RR-DEO

GREENE FIELDS LOT 1 PLAT# 6672 ZONED: RR-DEO

GREENE FIELDS LOT 19 PLAT# 6672 ZONED: RR-DEO

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GREENE FIELDS LOT 3 PLAT# 6672 ZONED: RR-DEO

GREENE FIELDS LOT 2 PLAT# 6672 ZONED: RR-DEO

GREENE FIELDS LOT 1 PLAT# 6672 ZONED: RR-DEO

LEGEND

FOREST CONSERVATION WORKSHEET FOR

Net Tract Area
 A. Total (Gross) Tract Area
 B. Area within 100-year Floodplain
 C. Other Deductions (Identify)
 D. Net Tract Area

Land Use Category
 Insert the number "1" under the appropriate land use (limit to only one)

Resid	Resid	Resid	Inst/	Retain/	Mixed Use/
Rural	Rural MD	Suburban	Linear	Office	PUD
0	1	0	0	0	0

Existing Forest Cover
 E. Afforestation Threshold (Net Tract Area x 20%) E = 4.0
 F. Reforestation Threshold (Net Tract Area x 25%) F = 5.70

Break Even Point
 J. Break Even Point J = 6.53
 K. Forest Clearing Permitted without Mitigation K = 1.67

Proposed Forest Clearing
 L. Total Area of Forest to be Cleared L = 4.50
 M. Total Area of Forest to be Retained M = 3.70

Planting Requirements Inside Watershed
 N. Reforestation for Clearing above the Reforestation Threshold N = 1.30
 P. Reforestation for Clearing below the Reforestation Threshold P = 4.00
 Q. Credit for Retention above the Reforestation Threshold Q = 0.00
 R. Total Reforestation Required R = 5.30
 S. Total Afforestation Required S = 0.00
 T. Total Reforestation and Afforestation Requirement T = 5.30
 U. 75% of Total Obligation (Retention + Planting) U = 6.80
 V. Planting Required Onsite to meet 75% Obligation V = 3.10

Planting Requirements Outside Watershed
 W. Total Planting within Development Site Watershed W = 5.19
 X. Total Afforestation Required X = 0.00
 Y. Remaining Planting within Watershed for Reforestation Credit Y = 5.20
 Z. Reforestation for Clearing above the Reforestation Threshold Z = 0.00
 AA. Reforestation for Clearing below the Reforestation Threshold AA = 0.10
 BB. Credit for Retention above the Reforestation Threshold BB = 0.00
 CC. Total Reforestation Required CC = 0.10
 DD. Total Afforestation and Reforestation Requirement DD = 0.10

OFF-SITE REFORESTATION, IN THE AMOUNT OF 0.3 ACRES, WAS PREVIOUSLY PURCHASED FROM THE FOREST BANK AT PROPERTY OF FOREVER A FARM, INC., SDP-14-005. NO NEW OFF-SITE OBLIGATIONS EXIST.

THIS PLAN CONTAINS APPROXIMATELY 1.7 ACRES OF FOREST THAT IS RETAINED OUTSIDE OF THE FOREST CONSERVATION EASEMENTS.

FOREST STAND ANALYSIS TABLE

Project Name: Clarksville Crossing

Key	Type of Community	Area (0.1 acres)	Soil Information Source : USDA Web Soil Survey			Existing Vegetation (dominant species & %)	Stand Characteristics			Forest Area in Sensitive Environment 15 (0.1 acres)	
			Soil Type	Typical Forest Cover	Woodland Suitability Index		Habitat Value for Soil	Size (dbh)	Age		General Condition
F1	Mixed oak/ Poplar	8.2	GbB	oak/poplar	80-90	75%	Liriodendron tulipifera	20-30	80-100	good	1.4 +/- buffers and slopes
			GbC	oak/poplar	75-95	good	Quercus rubra 15%				Quercus alba 10%

- ### FSD NOTES:
- No rare, threatened or endangered species, or their habitats, were observed on the property.
 - Surrounding land use is medium density residential development.
 - Approximately 1.0 acre of forest is currently present within 100 feet of the subject property. This forest occurs on private residential lots.
 - The site lies within the Use IV-P watershed of the Carroll's Run (02-13-11). The wetlands will require a 25 foot buffer, intermittent streams 50 foot buffers, and perennial stream channels require a 100 foot buffer. 12-DIGIT WATERSHED IS 021310106900.
 - No historic elements or cemeteries are known to occur on the property.
 - There is 2.1 +/- acres of 100 year floodplain present on the property.
 - There are steep slopes present on the site.
 - Specimen trees are present on Phase 2 of the subject property. 104 specimen trees have been identified. No state champion or trees 75% of state champion are present on the site.

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

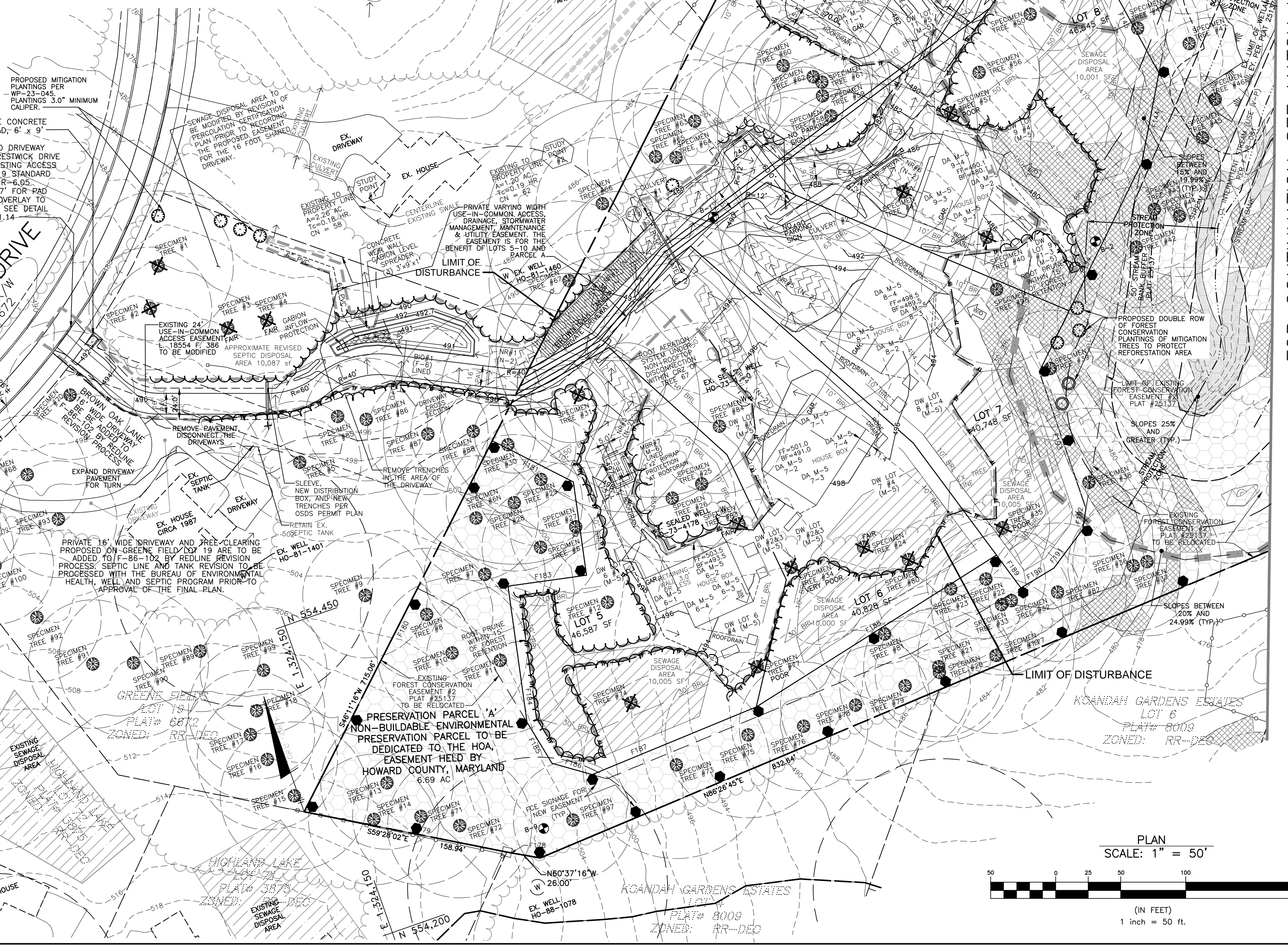
SYMBOL	HYDRIC GROUP	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
GbB	B	C	D	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	0.2
GhB	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
GbB	B	C	D	GLENVILLE-COOKRUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	0.37
GcC	B	C	D	GLENELG LOAM, 5 TO 15 PERCENT SLOPES	0.2
GbB	B	C	D	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.2
GbC	B	C	D	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.2

J. Brody McAllister
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 ISA Certified Arborist
 Cert ID: MA6471A
 MD DNR FCA Qualified Professional

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APPROVED: DEPARTMENT OF PUBLIC WORKS
 6/8/2023
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 6/8/2023
 CHIEF, DIVISION OF LAND DEVELOPMENT



Specimen Tree Chart - CLARKVILLE CROSSING PHASE 2 AND GREENE FIELD LOT 19

Key (N#)	Species	Inches DBH	ft radius	Remove or Retain	Comments
1	Tulip poplar	38.5	57.75	Remove	FAIR
2	Tulip poplar	31.5	47.25	Remove	FAIR
3	Tulip poplar	30.5	45.75	Remove	FAIR
4	Tulip poplar	31	46.50	Remove	FAIR
5	Hickory	31.5	47.25	Retain	POOR, MAJOR DIEBACK
6N	Tulip poplar	32	48.00	Retain	
6	Tulip poplar	30	45.00	Retain	
7	Tulip poplar	31	46.50	Retain	
8	Tulip poplar	34	51.00	Retain	
9	Tulip poplar	32	48.00	Retain	
10	Tulip poplar	38.5/30.5	57.75	Retain	
11	Tulip poplar	38	57.00	Retain	
12	Tulip poplar	30.5	45.75	Retain	
13	Tulip poplar	34	51.00	Retain	
14	Tulip poplar	33.5	50.25	Retain	POOR, MAJOR DIEBACK
15	Tulip poplar	38	57.00	Retain	FAIR
16	Tulip poplar	36	54.00	Retain	
17	Tulip poplar	33	49.50	Retain	
18	Tulip poplar	35	52.50	Retain	
19	Tulip poplar	40	60.00	Retain	FAIR, SOME STORM DAMAGE AND DIEBACK
20	Tulip poplar	33	49.50	Retain	POOR, MAJOR LEAN, ROT
21	Tulip poplar	38.5	57.75	Retain	
22	Tulip poplar	30.5	45.75	Retain	FAIR, LIMB DIEBACK
23	Tulip poplar	38.5	57.75	Retain	TWIN STREAM BELOW BH
24	Tulip poplar	31.5	47.25	Retain	FAIR
25	Tulip poplar	32	48.00	Retain	
26	Tulip poplar	32.5	48.75	Retain	
27	Tulip poplar	34	51.00	Retain	
28	Tulip poplar	35	52.50	Retain	
29	Tulip poplar	34	51.00	Retain	
30	Tulip poplar	35	52.50	Retain	
31	Tulip poplar	34	51.00	Remove	POOR, SIGNIFICANT DIEBACK IN THE CANOPY
32	Tulip poplar	36	54.00	Retain	
33	Tulip poplar	36	54.00	Retain	POOR, DIEBACK
34	Tulip poplar	36	54.00	Retain	VERY POOR, MAJOR TRUNK ROT
35	Tulip poplar	33	49.50	Retain	POOR, MAJOR ROT
36	Red Oak	33.5	50.25	Retain	
37	Tulip poplar	38	57.00	Retain	POOR, TRUNK AND CANOPY DIEBACK
38	Tulip poplar	38	57.00	Retain	FRUITS ABOVE BH
39	Tulip poplar	31.5	47.25	Retain	FAIR
40	Tulip poplar	33.5	50.25	Retain	
41	Tulip poplar	31	46.50	Remove	
42	Tulip poplar	31	46.50	Retain	
43	Tulip poplar	30.5	45.75	Retain	
44	Red Oak	31	46.50	Retain	
45	Tulip poplar	31.5	47.25	Retain	POOR, MAJOR DIEBACK
46	Tulip poplar	42	63.00	Retain	FAIR, LIMITED CROWN
47	Tulip poplar	37.5	56.25	Retain	
48	Tulip poplar	30.5	45.75	Retain	FAIR, LEANING
49	Tulip poplar	31.5	47.25	Retain	
50	Tulip poplar	33	49.50	Retain	
51	Tulip poplar	31	46.50	Retain	FAIR, DIEBACK
52	Tulip poplar	31	46.50	Retain	
53	Tulip poplar	31	46.50	Retain	
54	Tulip poplar	31	46.50	Retain	
55	Tulip poplar	33	49.50	Retain	
56	Tulip poplar	31	46.50	Retain	
57	Red Oak	30	45.00	Remove	POOR, MAJOR DIEBACK
58	Tulip poplar	32	48.00	Retain	
59	Tulip poplar	34.5	51.75	Retain	
60	Tulip poplar	31	46.50	Retain	FAIR, LEANING
61	Tulip poplar	35	52.50	Retain	FAIR, LEANING
62	Tulip poplar	30.5	45.75	Retain	FAIR, LEANING
63	Tulip poplar	31.5	47.25	Retain	FAIR, SOME DIEBACK
64	Tulip poplar	30.2	45.30	Retain	POOR, STORM DAMAGE
65	Tulip poplar	35	52.50	Retain	
66	White Oak	34	51.00	Retain	FAIR
67	Tulip poplar	41	61.50	Retain	
68	White Oak	30.5	45.75	Retain	
69	Red Oak	33	49.50	Retain	
70	Tulip poplar	33	49.50	Retain	POOR, MAJOR DIEBACK
71	Tulip poplar	35	52.50	Retain	
72	Tulip poplar	37	55.50	Retain	
73	Tulip poplar	48	72.00	Retain	
74	Tulip poplar	34.5	51.75	Remove	
75	Tulip poplar	42.5	63.75	Retain	FAIR, LEANING
76	Tulip poplar	33	49.50	Retain	FAIR, ONE SIDED CANOPY
77	Tulip poplar	35.5	53.25	Remove	POOR, NOTABLE ROT IN CANOPY
78	Tulip poplar	38.5	57.75	Retain	
79	Tulip poplar	33.5	50.25	Retain	
80	Tulip poplar	33.5	50.25	Remove	
81	Tulip poplar	34	51.00	Retain	
82	Tulip poplar	35.5	53.25	Retain	FAIR, LEANING
83	Tulip poplar	38.5	57.75	Remove	FAIR, LEANING, ELECTRICAL WIRING ATTACHED TO TRUNK
84	Tulip poplar	34.5	51.75	Retain	
85	Tulip poplar	31	46.50	Retain	
86	Tulip poplar	31.5	47.25	Retain	
87	Tulip poplar	31	46.50	Retain	
88	Tulip poplar	32	48.00	Retain	
89	Tulip poplar	31	46.50	Retain	
90	Tulip poplar	38.5	57.75	Retain	
91	Tulip poplar	33	49.50	Retain	
92	Black Gum	33	49.50	Retain	
93	Tulip poplar	30	45.00	Retain	
94	Tulip poplar	33.5	50.25	Retain	
95	Tulip poplar	76	114.00	Retain	FAIR, DIEBACK NOTED, MULTI-STEMMED
96	Tulip poplar	64	96.00	Retain	FAIR, DIEBACK NOTED, MULTI-STEMMED
97	Tulip poplar	30.5	45.75	Retain	
98	Tulip poplar	38.5	57.75	Retain	POOR, MULTI-STEMMED, STORM DAMAGE AND DIEBACK
99	Tulip poplar	32.5	48.75	Retain	
100	Tulip poplar	30	45.00	Retain	FAIR, MULTI-STEMMED ABOVE BH
101	Red Oak	37.5	56.25	Retain	
102	Tulip poplar	36	54.00	Retain	
103	Tulip poplar	32	48.00	Retain	
104	Red Oak	40.5	60.75	Retain	POOR, TRUNK ROT

FOREST CONSERVATION LINE TABLE

LINE	BEARING	DISTANCE
F144	N30°07'29"E	70.11'
F145	N09°20'18"W	92.21'
F146	N34°53'51"W	34.98'
F147	N52°27'13"E	261.00'
F148	S37°32'47"E	40.98'
F149	S07°14'08"W	9.25'
F150	S16°47'18"E	8.99'
F151	S27°28'58"E	14.47'
F152	S17°47'43"E	10.83'
F153	S19°28'55"W	23.19'
F154	S26°43'44"W	46.60'
F155	S26°15'00"W	102.08'
F156	S42°30'31"E	5.18'
F157	S09°20'59"E	15.83'
F181	S43°48'44"E	69.92'
F182	S11°17'58"W	72.45'

FOREST CONSERVATION LINE TABLE

LINE	BEARING	DISTANCE
F183	N78°42'02"W	61.00'
F184	S11°17'58"W	105.59'
F185	S12°00'08"E	37.06'
F186	S55°00'06"E	31.96'
F187	N86°52'57"E	136.41'
F188	N76°59'20"E	218.58'
F189	S17°18'22"E	31.51'
F190	N78°23'42"E	29.63'
F191	N55°51'57"E	37.16'
F192	N28°11'43"E	16.30'
F193	N00°25'43"E	111.08'
F194	N45°25'40"E	179.02'

FOREST CONSERVATION LINE TABLE

LINE	BEARING	DISTANCE			
83	Tulip poplar	38.5	57.75	Remove	
84	Tulip poplar	34.5	51.75	Retain	
85	Tulip poplar	31	46.50	Retain	
86	Tulip poplar	31.5	47.25	Retain	
87	Tulip poplar	31	46.50	Retain	
88	Tulip poplar	32	48.00	Retain	
89	Tulip poplar	31	46.50	Retain	
90	Tulip poplar	38.5	57.75	Retain	
91	Tulip poplar	33	49.50	Retain	
92	Black Gum	33	49.50	Retain	
93	Tulip poplar	30	45.00	Retain	
94	Tulip poplar	33.5	50.25	Retain	
95	Tulip poplar	76	114.00	Retain	FAIR, DIEBACK NOTED, MULTI-STEMMED
96	Tulip poplar	64	96.00	Retain	FAIR, DIEBACK NOTED, MULTI-STEMMED
97	Tulip poplar	30.5	45.75	Retain	
98	Tulip poplar	38.5	57.75	Retain	POOR, MULTI-STEMMED, STORM DAMAGE AND DIEBACK
99	Tulip poplar	32.5	48.75	Retain	
100	Tulip poplar	30	45.00	Retain	FAIR, MULTI-STEMMED ABOVE BH
101	Red Oak	37.5	56.25	Retain	
102	Tulip poplar	36	54.00	Retain	
103	Tulip poplar	32	48.00	Retain	
104	Red Oak	40.5	60.75	Retain	POOR, TRUNK ROT

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 3300 NORTH RIDGE ROAD & SUITE 140 & ELLICOTT CITY, MARYLAND 21143
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BE-ONLINEENGINEERING.COM

John M. Carney 04.25.2023
 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: 06-08-2024.

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

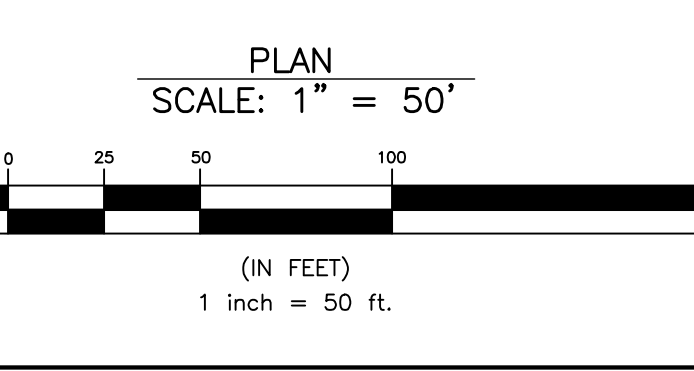
DEVELOPER: ROCK REALTY, INC.
 C/O H & H ROCK COMPANIES
 6800 DEERPATH ROAD
 SUITE #100
 ELK RIDGE, MARYLAND 21075
 410-579-2442

CLARKVILLE CROSSING, PHASE 2, AREA 1
 A RESUBDIVISION OF CLARKVILLE CROSSING LOT 3 (PLAT #25135-25137) TO CREATE NON-BUILDABLE BULK PARCEL 'B', BUILDABLE LOTS 5-10 AND NON-BUILDABLE PRESERVATION PARCELS 'A' & 'C'

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

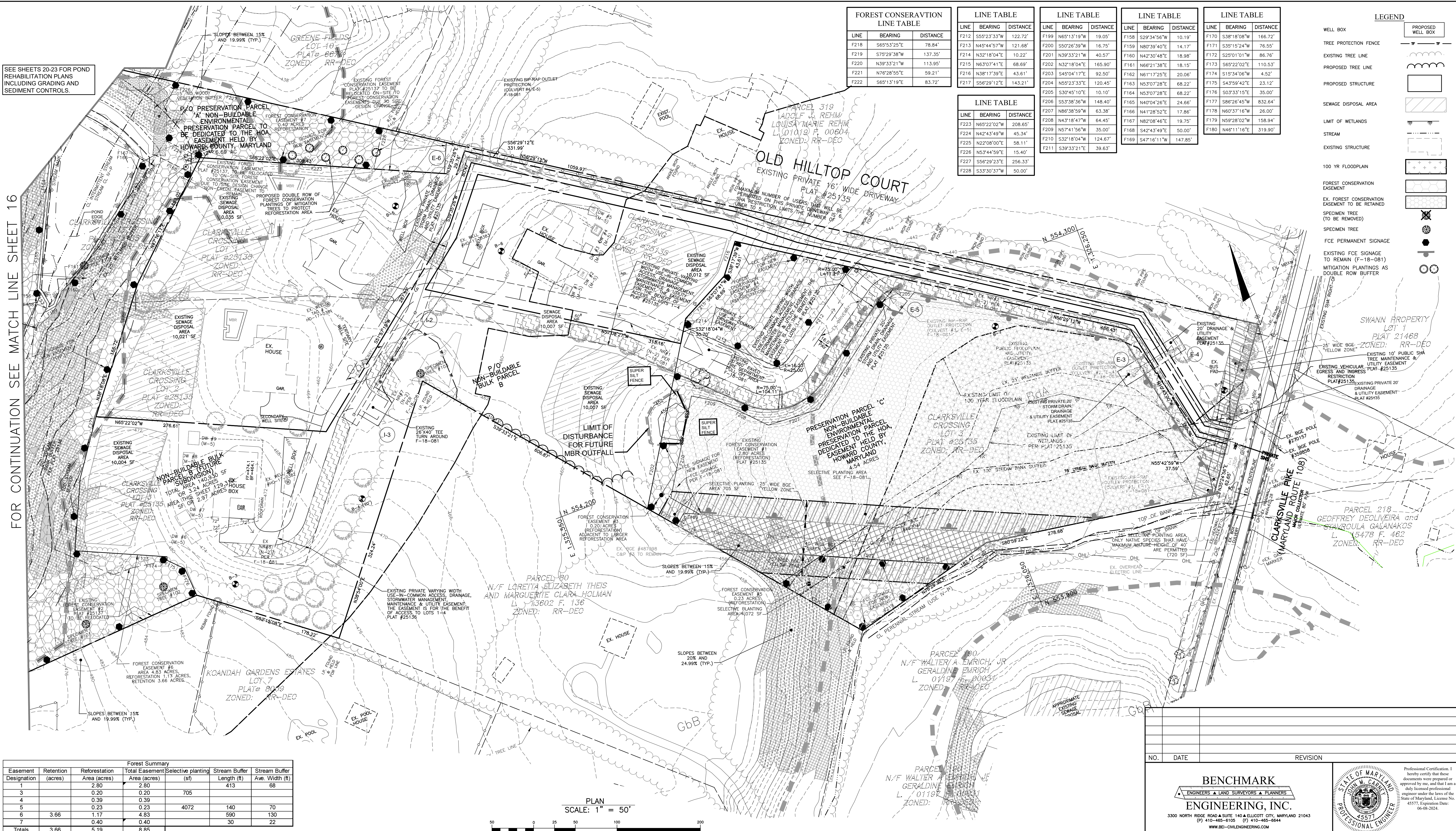
FINAL PLAN
FOREST CONSERVATION PLAN, NOTES AND DETAILS

DATE: APRIL, 2023 BEI PROJECT NO: 2525
SCALE: AS SHOWN SHEET 16 OF 23



FOR CONTINUATION SEE MATCH LINE SHEET 16

SEE SHEETS 20-23 FOR POND REHABILITATION PLANS INCLUDING GRADING AND SEDIMENT CONTROLS.



FOREST CONSERVATION LINE TABLE		
LINE	BEARING	DISTANCE
F218	S65°53'25"E	78.84'
F219	S75°29'38"W	137.35'
F220	N39°33'21"W	113.95'
F221	N76°28'55"E	59.21'
F222	S65°13'19"E	83.72'

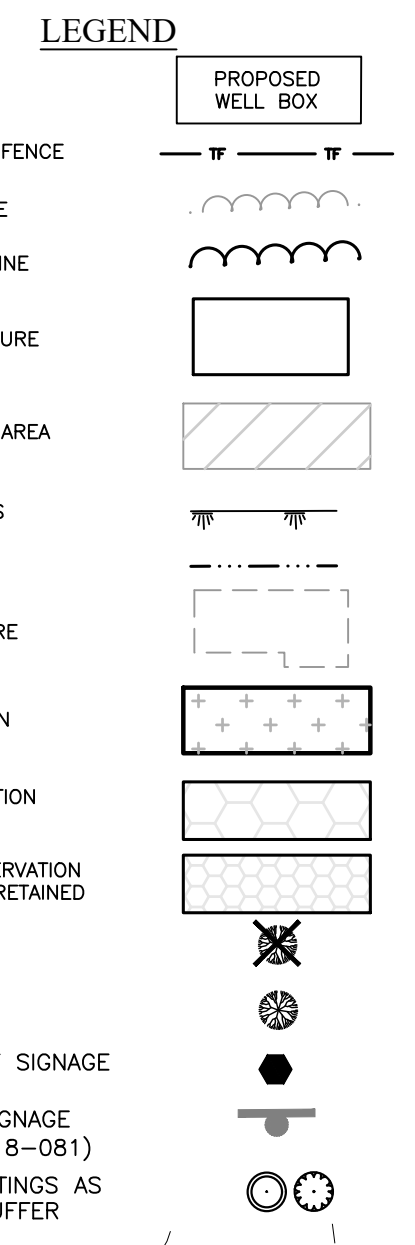
LINE TABLE		
LINE	BEARING	DISTANCE
F212	S55°23'33"W	122.72'
F213	N45°44'57"W	121.68'
F214	N32°18'04"E	10.22'
F215	N63°07'41"E	68.69'
F216	N38°17'39"E	43.61'
F217	S56°29'12"E	143.21'

LINE TABLE		
LINE	BEARING	DISTANCE
F199	N65°13'19"W	19.05'
F200	S50°26'39"W	16.75'
F201	N39°33'21"W	40.57'
F202	N32°18'04"E	165.90'
F203	S45°04'17"E	92.50'
F204	N55°23'33"E	120.45'
F205	S30°45'10"E	10.10'
F206	S53°38'36"W	148.40'
F207	N86°38'59"W	63.38'
F208	N43°18'47"W	64.45'
F209	N57°41'56"W	35.00'
F210	S32°18'04"W	124.67'
F211	S39°33'21"E	39.63'

LINE TABLE		
LINE	BEARING	DISTANCE
F198	S29°34'56"W	10.19'
F199	N80°39'40"E	14.17'
F201	N42°30'48"E	18.98'
F202	N32°18'04"E	18.15'
F203	S45°04'17"E	20.06'
F204	N55°23'33"E	68.22'
F205	N53°07'28"E	68.22'
F206	N40°04'26"E	24.66'
F207	N41°28'52"E	17.86'
F208	N82°08'46"E	19.75'
F209	S42°43'49"E	50.00'
F210	S47°16'11"W	147.85'

LINE TABLE		
LINE	BEARING	DISTANCE
F170	S38°18'08"W	166.72'
F171	S35°15'24"W	76.55'
F172	S25°01'01"W	86.76'
F173	S65°22'02"E	110.53'
F174	S15°34'06"W	4.52'
F175	S43°59'42"E	23.12'
F176	S03°33'15"E	35.00'
F177	S86°26'45"W	832.64'
F178	N60°37'16"W	26.00'
F179	N59°28'08"W	158.94'
F180	N46°11'16"E	319.90'

LINE TABLE		
LINE	BEARING	DISTANCE
F223	N65°22'02"W	208.65'
F224	N42°43'49"W	45.34'
F225	N22°08'00"E	58.11'
F226	N53°44'59"E	15.40'
F227	S56°29'23"E	256.33'
F228	S33°30'37"W	50.00'



Forest Summary						
Easement Designation	Retention (acres)	Reforestation Area (acres)	Total Easement Area (acres)	Selective planting (sf)	Stream Buffer Length (ft)	Stream Buffer Ave. Width (ft)
1		2.80	2.80		413	68
3		0.20	0.20	705		
4		0.39	0.39			
5		0.23	0.23	4072	140	70
6	3.66	1.17	4.83		590	130
7		0.40	0.40		30	22
Totals	3.66	5.19	8.85			

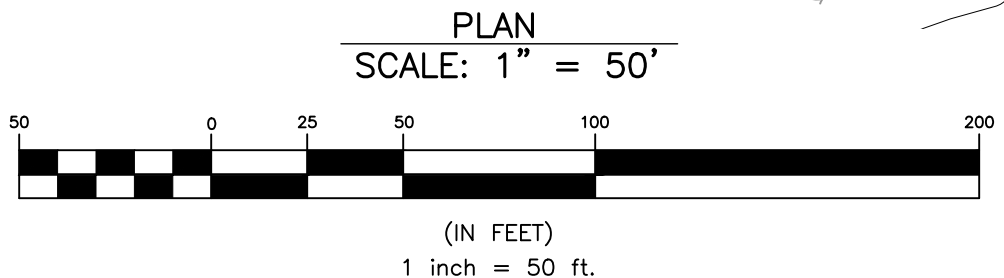
0.3 acres of reforestation was previously provided on FOREVER A FARM, INC. Forest Bank SDP-14-005.

Approximate Forest retained outside of FCE 1.7 Acres

APPROVED: DEPARTMENT OF PUBLIC WORKS
 6/8/2023
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 DATE
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE 6/8/2023
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND					
SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
GgB		B		GLENELG LOAM, 3 TO 8 PERCENT SLOPES	0.2
GnB	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
GcB		C		GLENVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	0.37
GcC		B		GLENELG LOAM, 8 TO 16 PERCENT SLOPES	0.2
GcB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.2
GcC		B		GLADSTONE LOAM, 8 TO 16 PERCENT SLOPES	0.2

** HIGHLY ERODIBLE, K>0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES TAKEN FROM THE NRCS WEB SOIL SURVEY AUGUST 2014, MAP 23.



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 ISA Certified Arborist
 Cert ID: MA6471A
 MD DNR FCA Qualified Professional

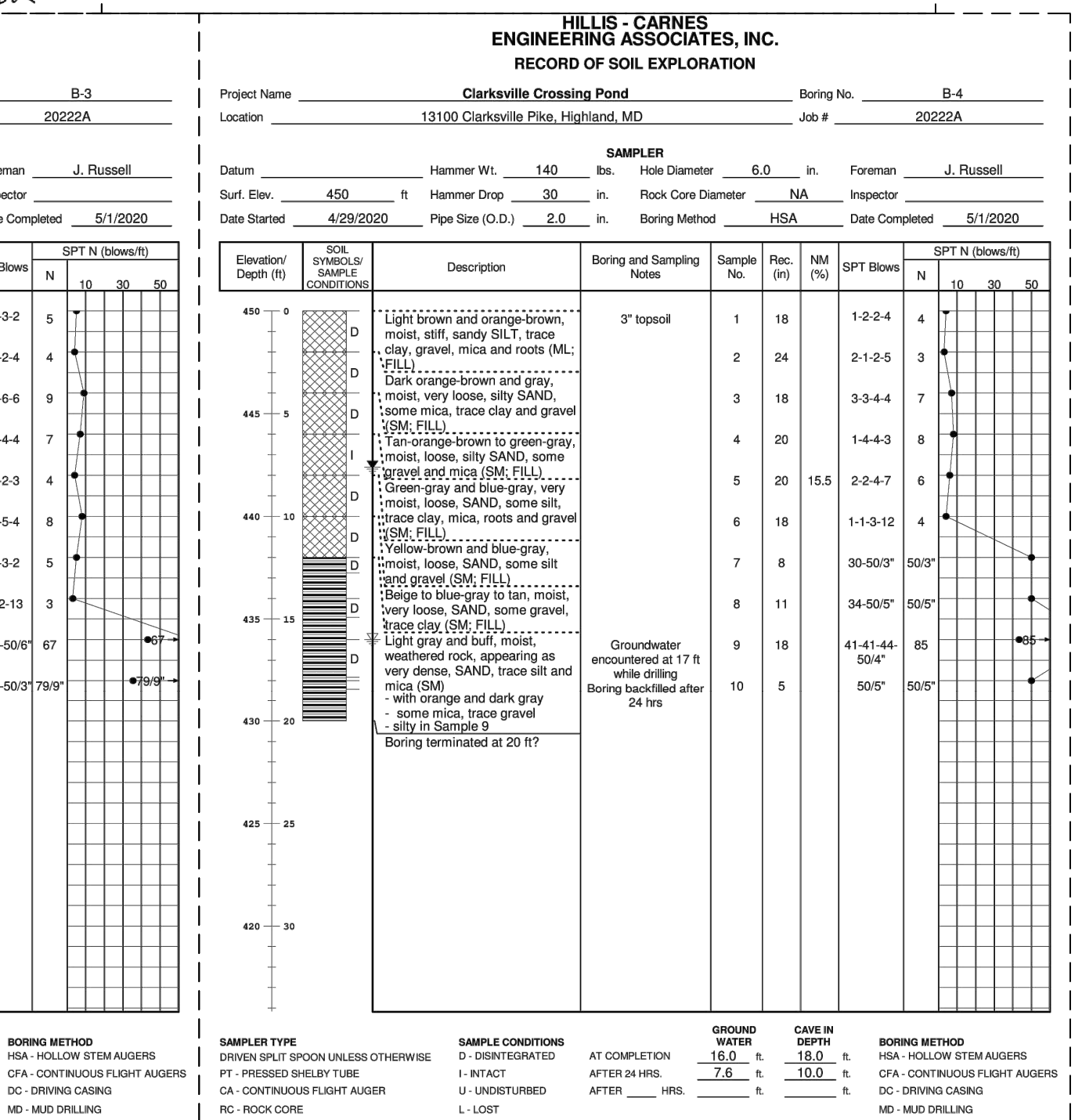
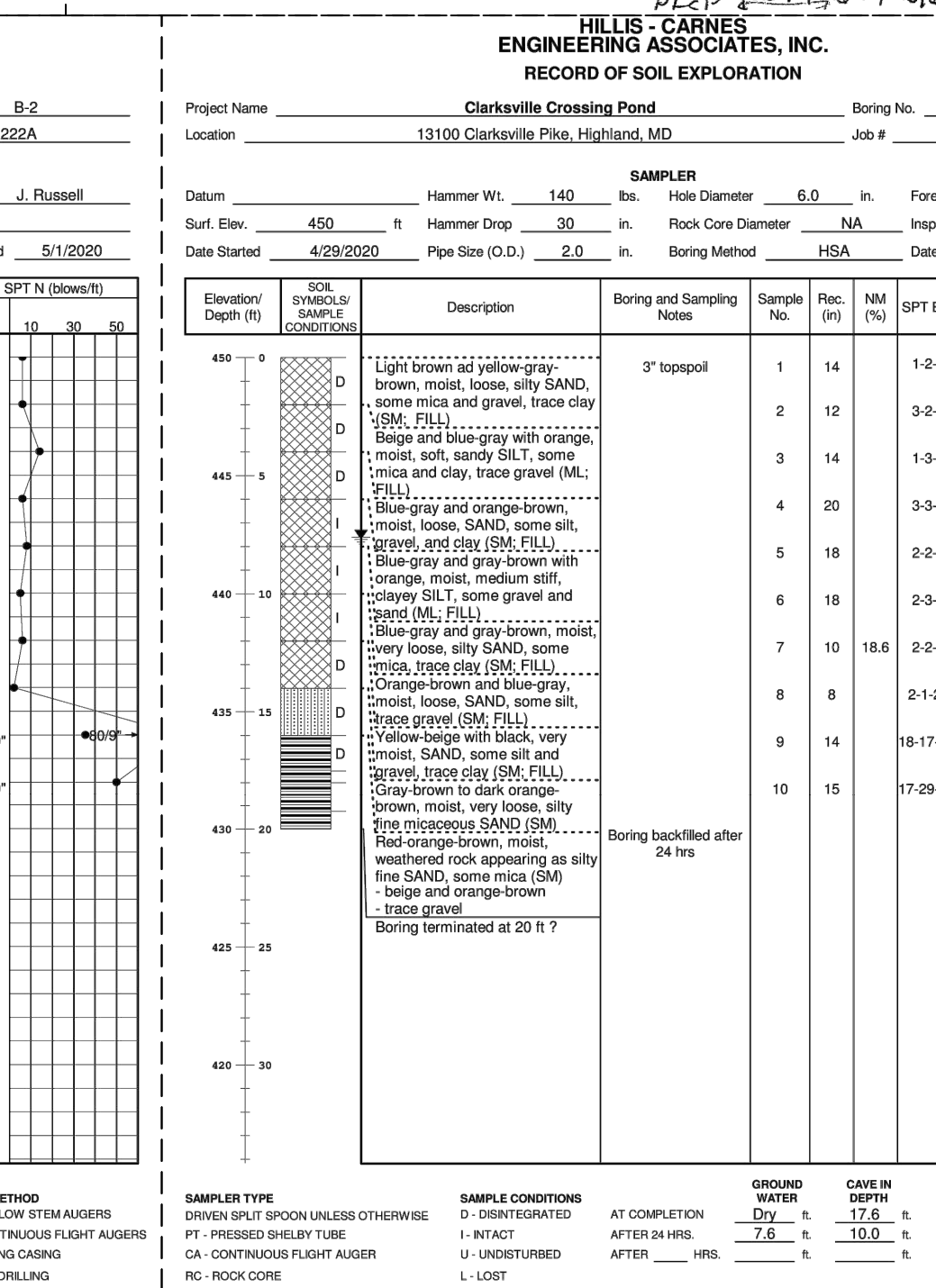
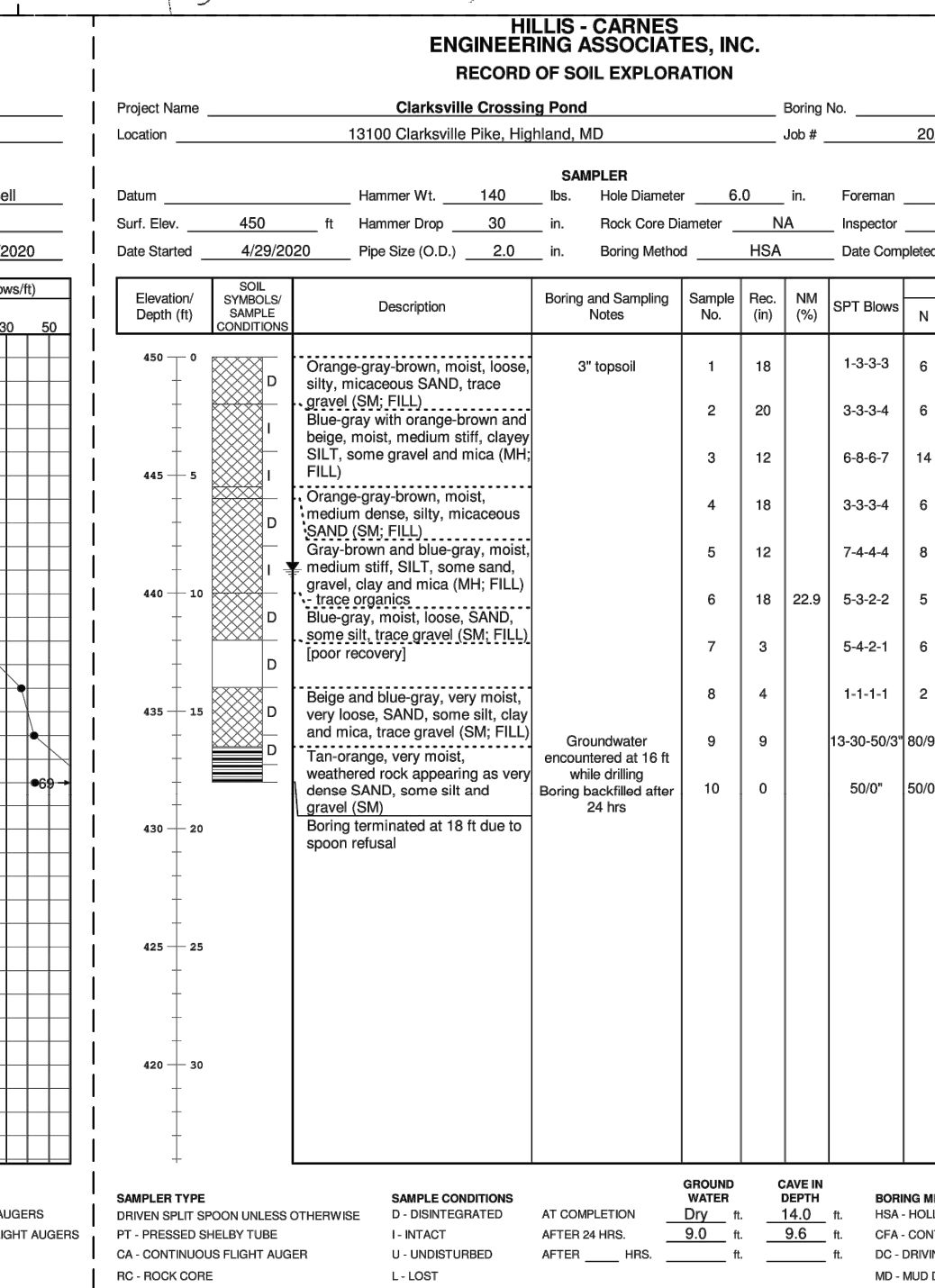
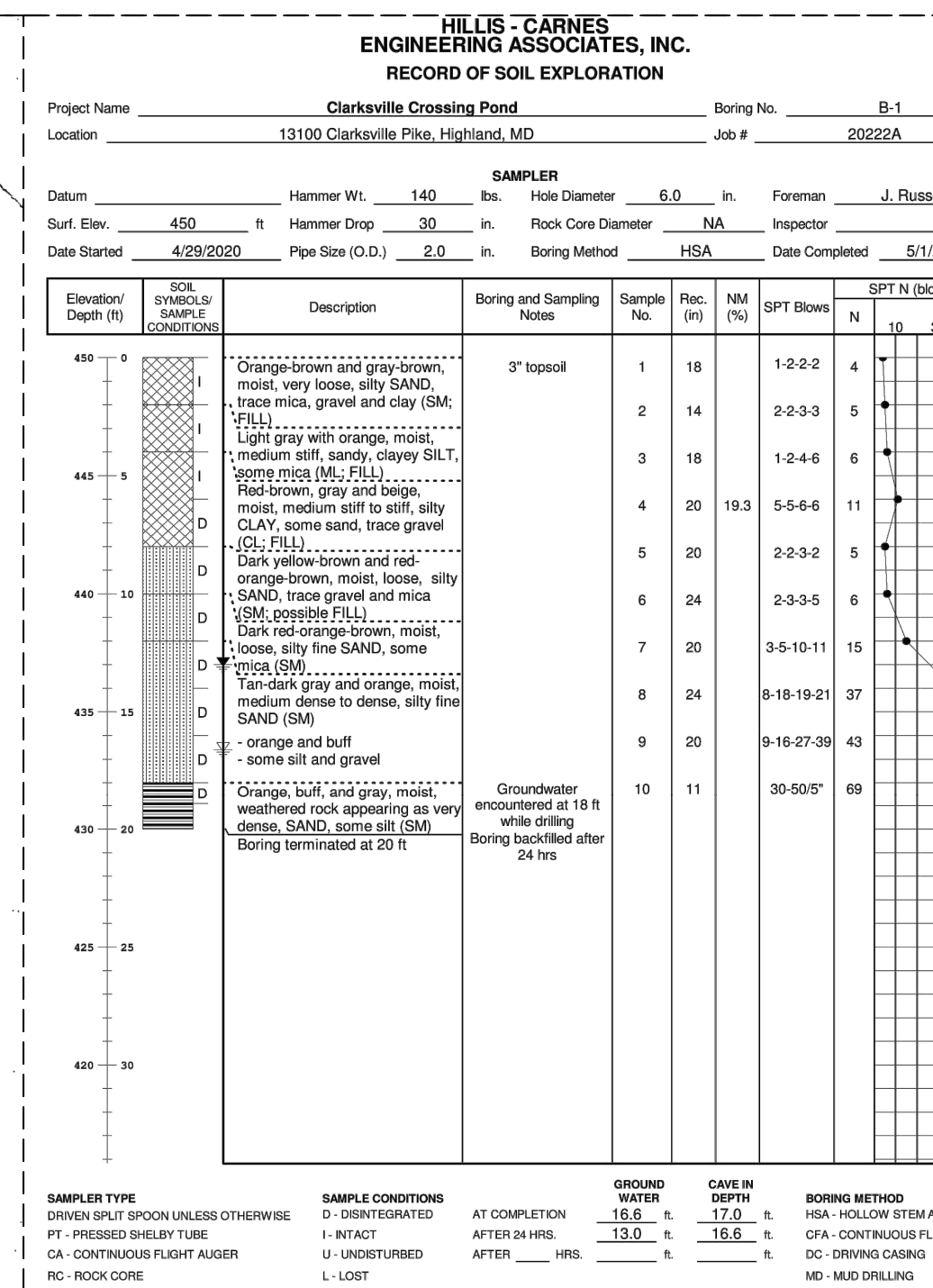
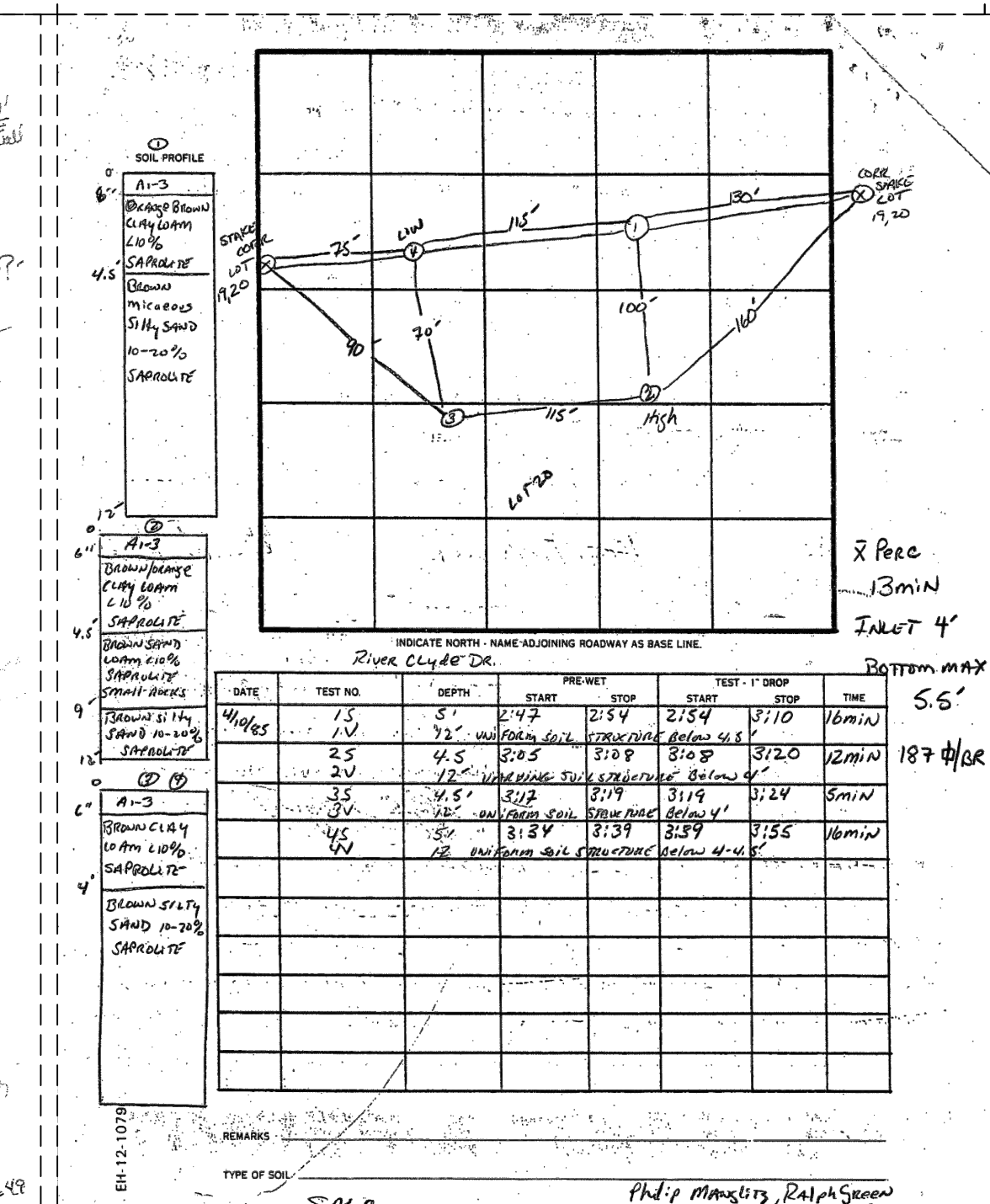
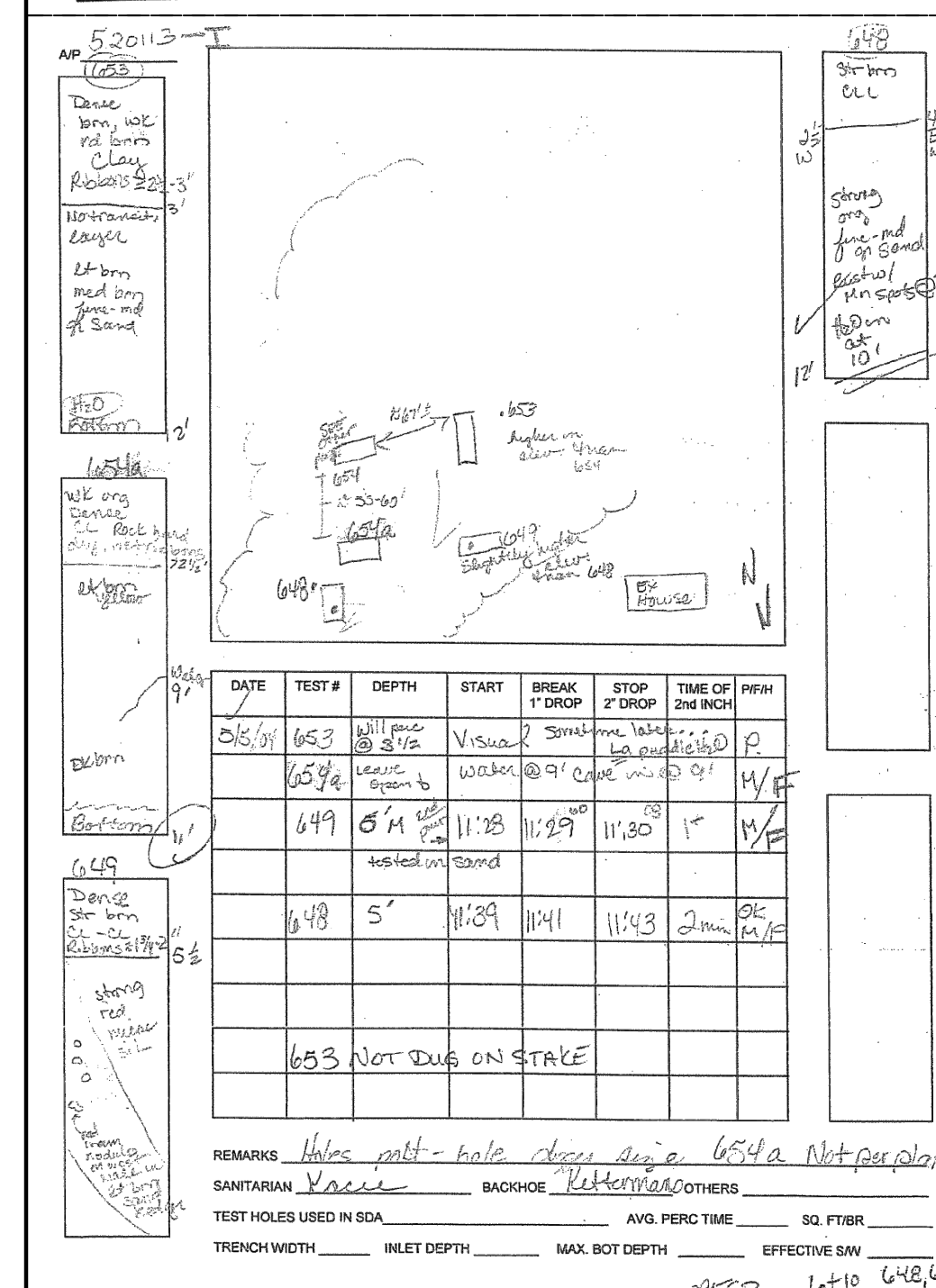
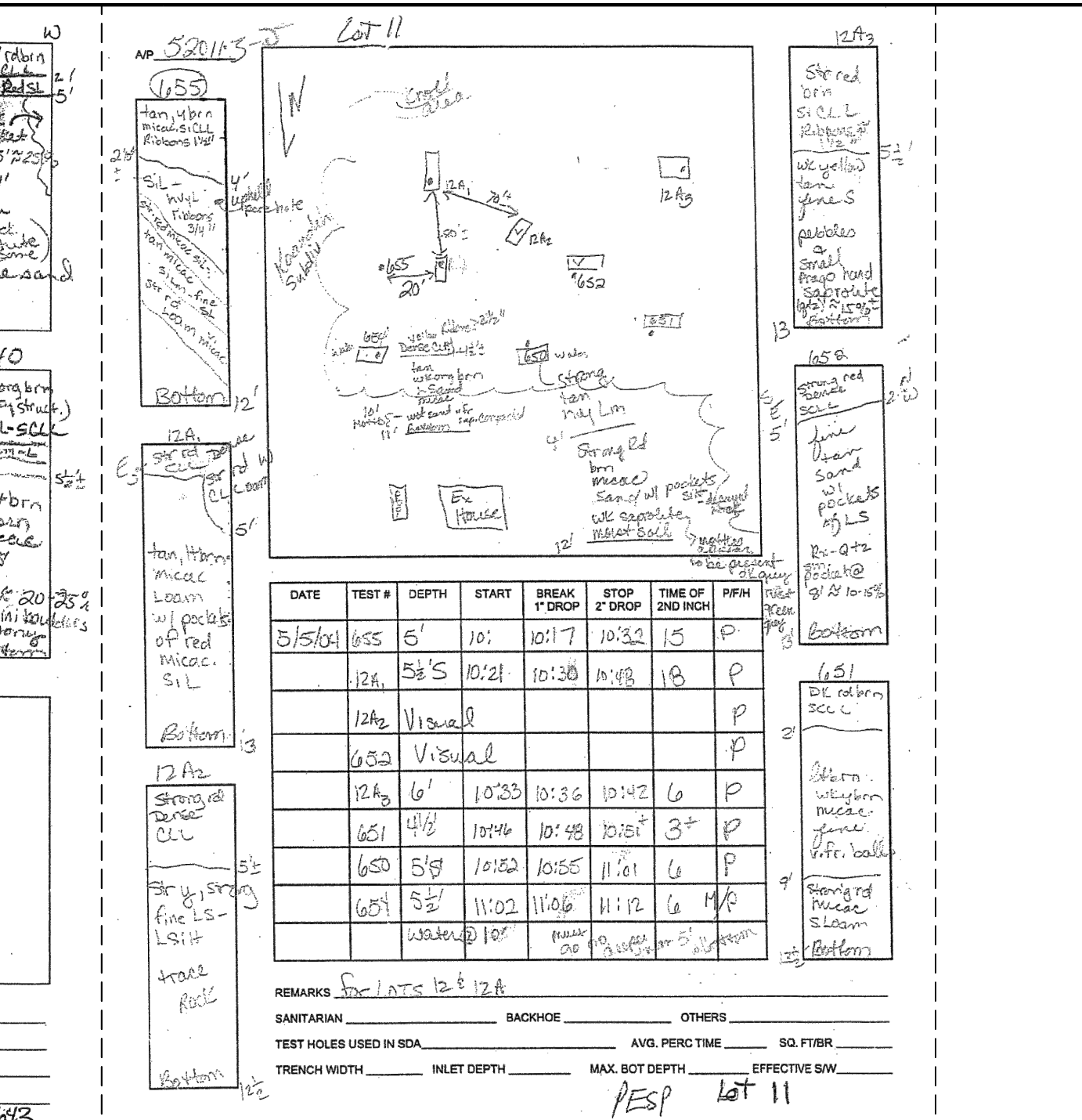
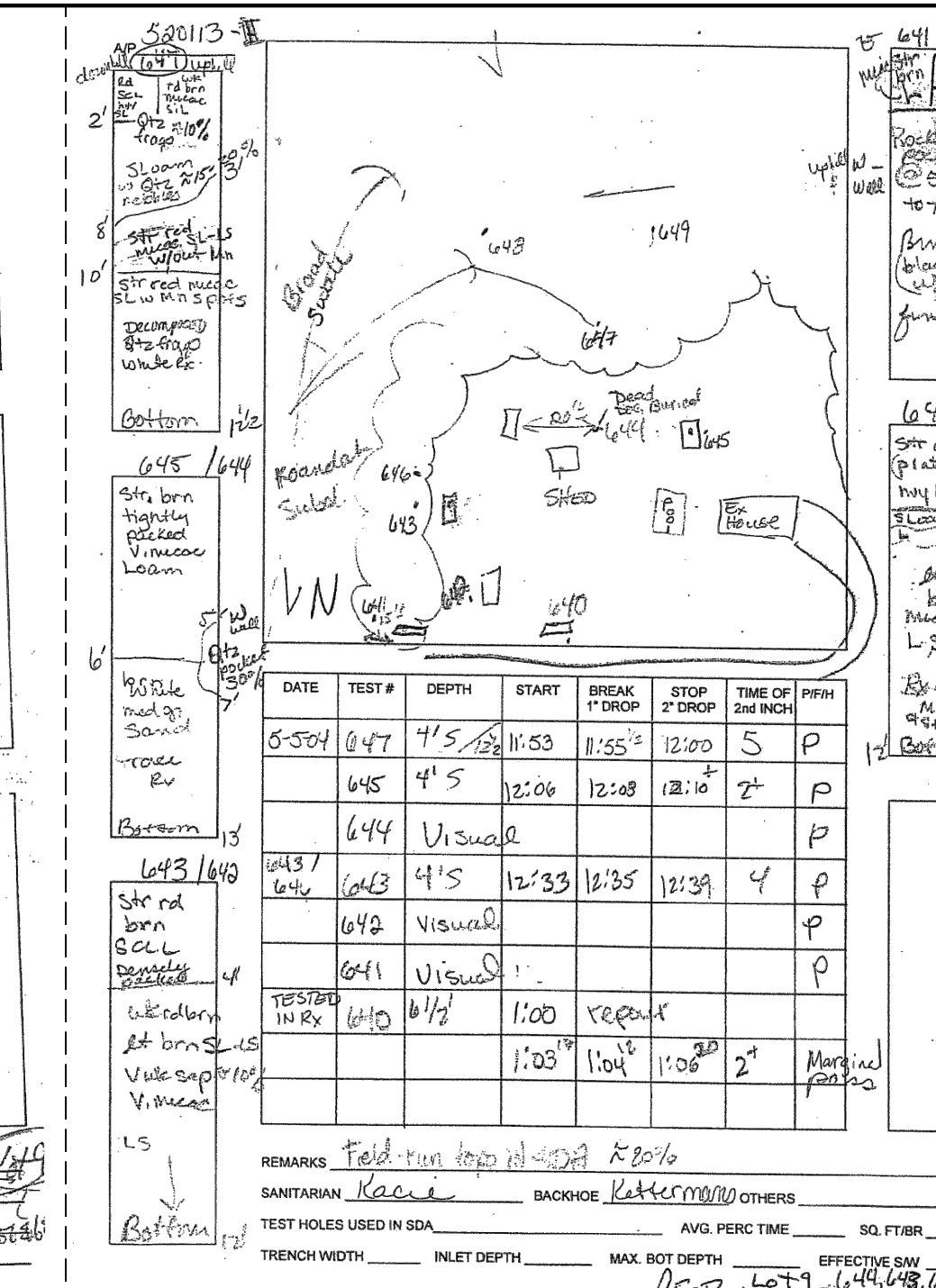
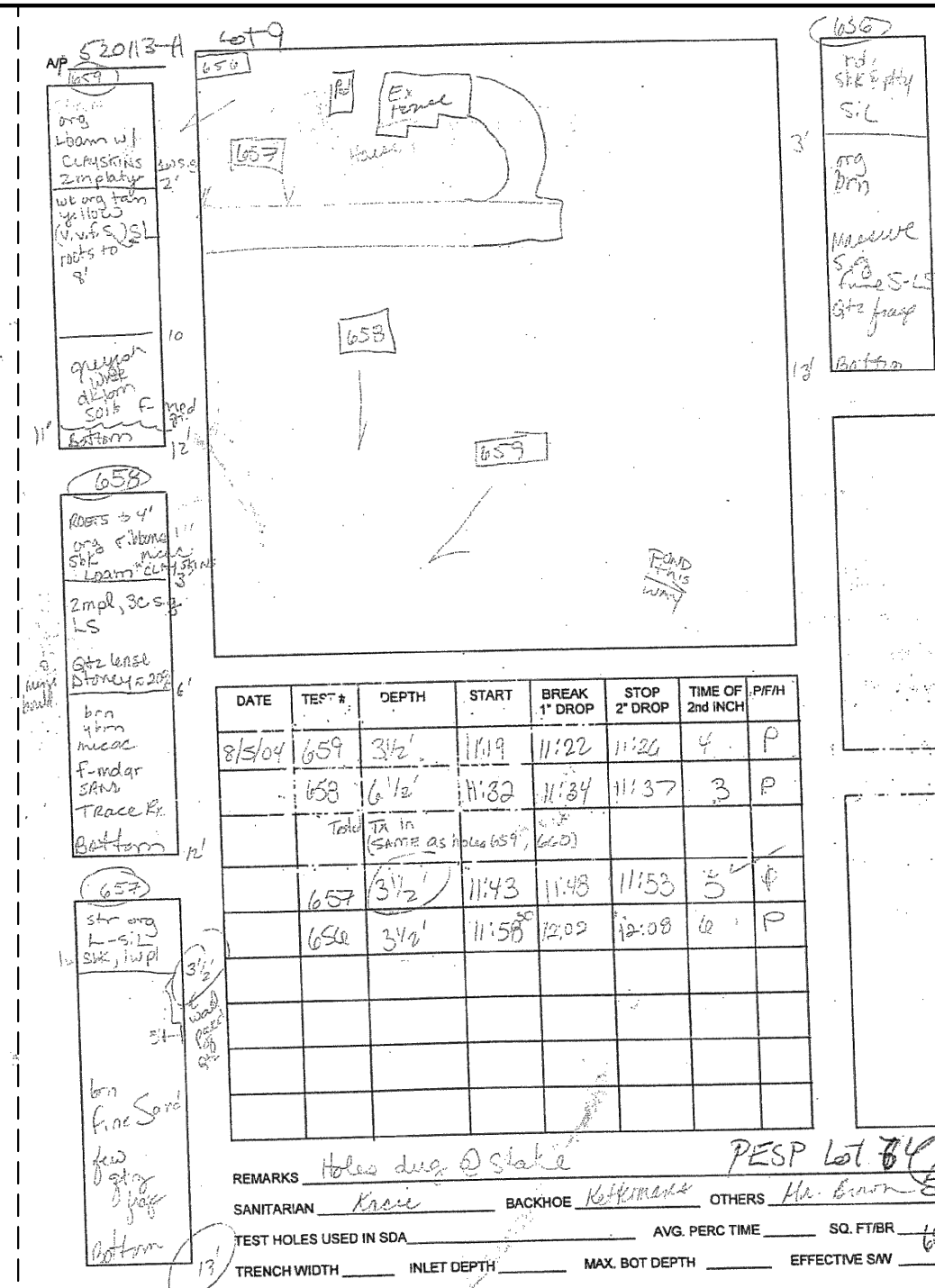
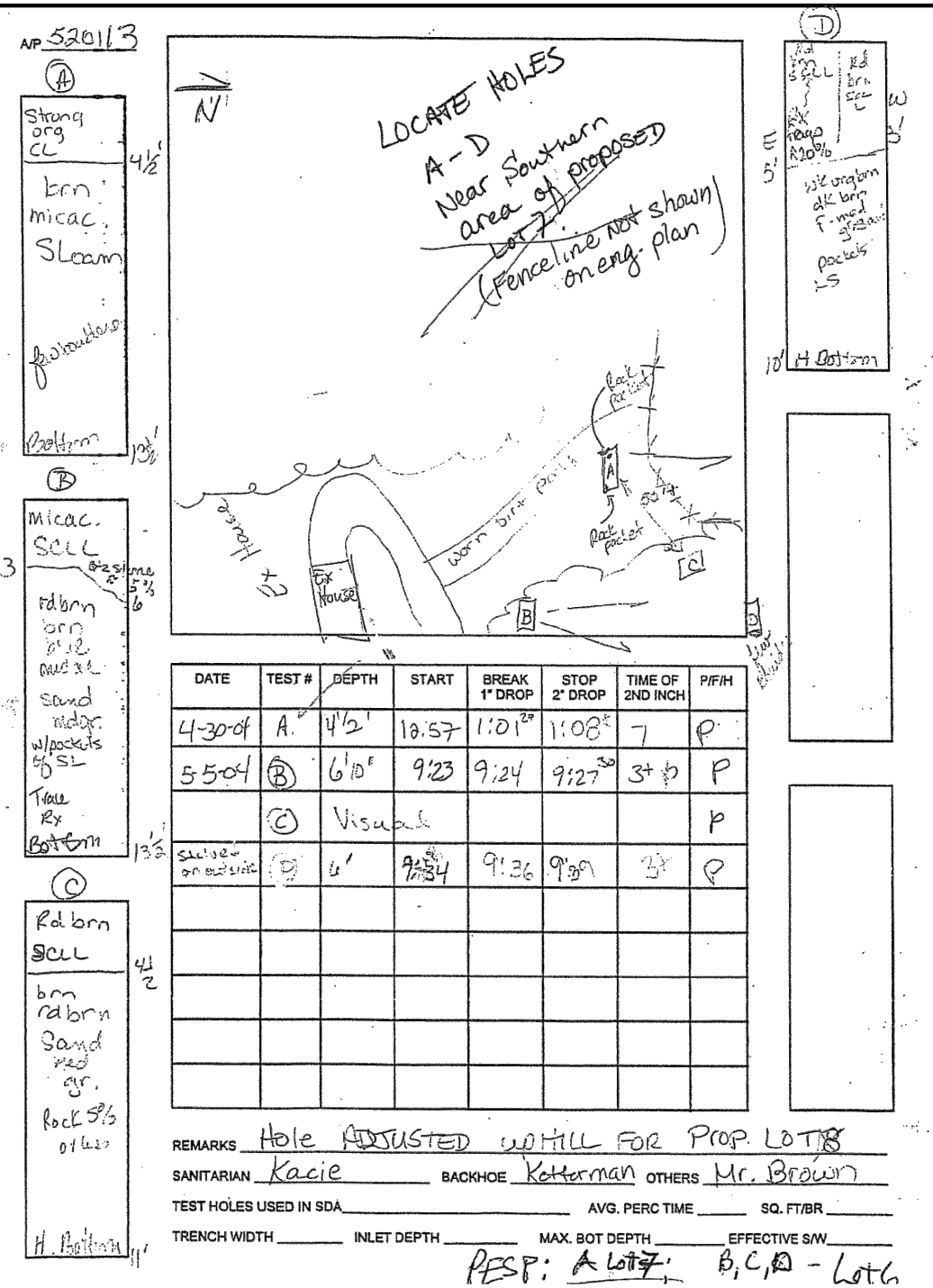
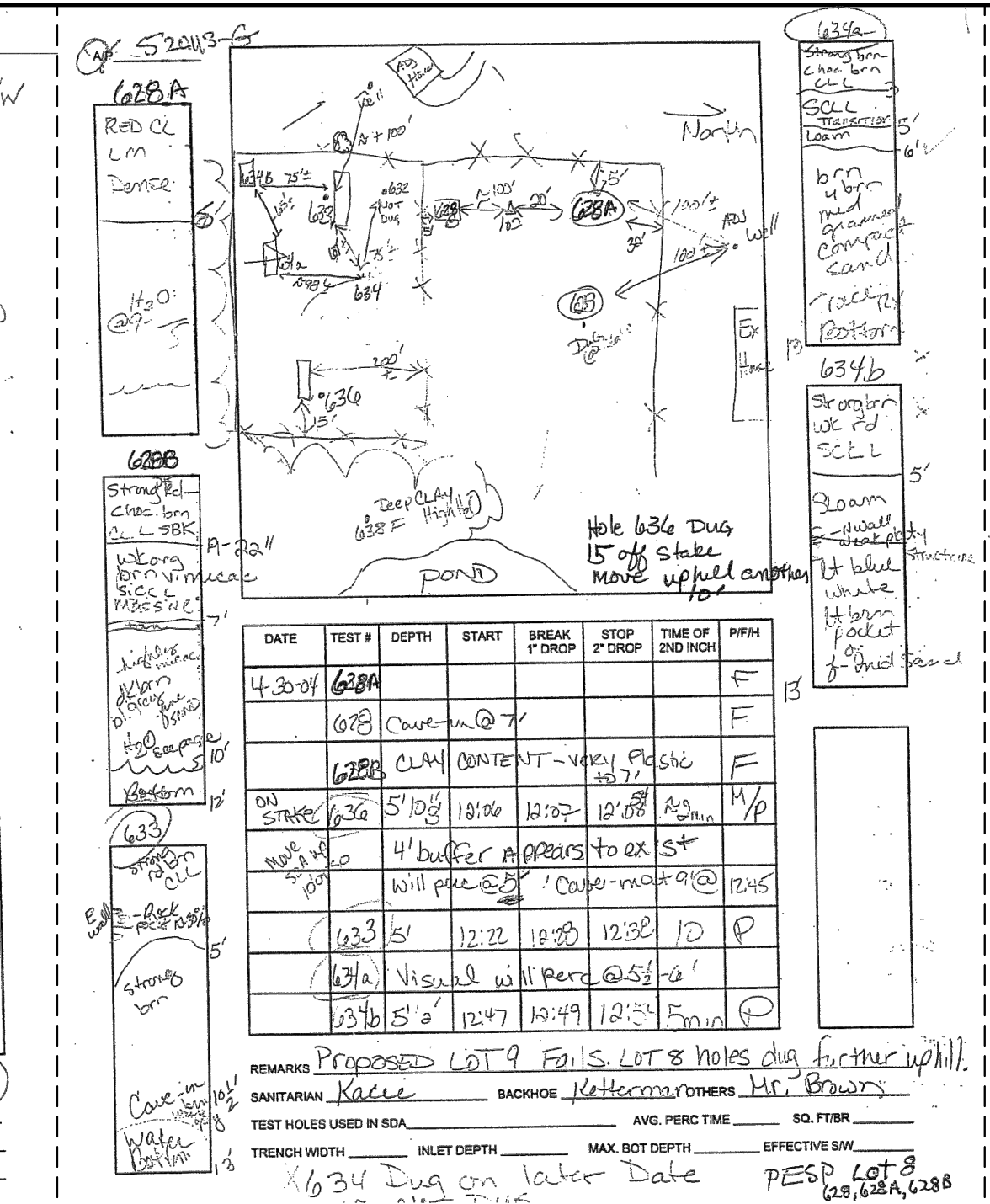
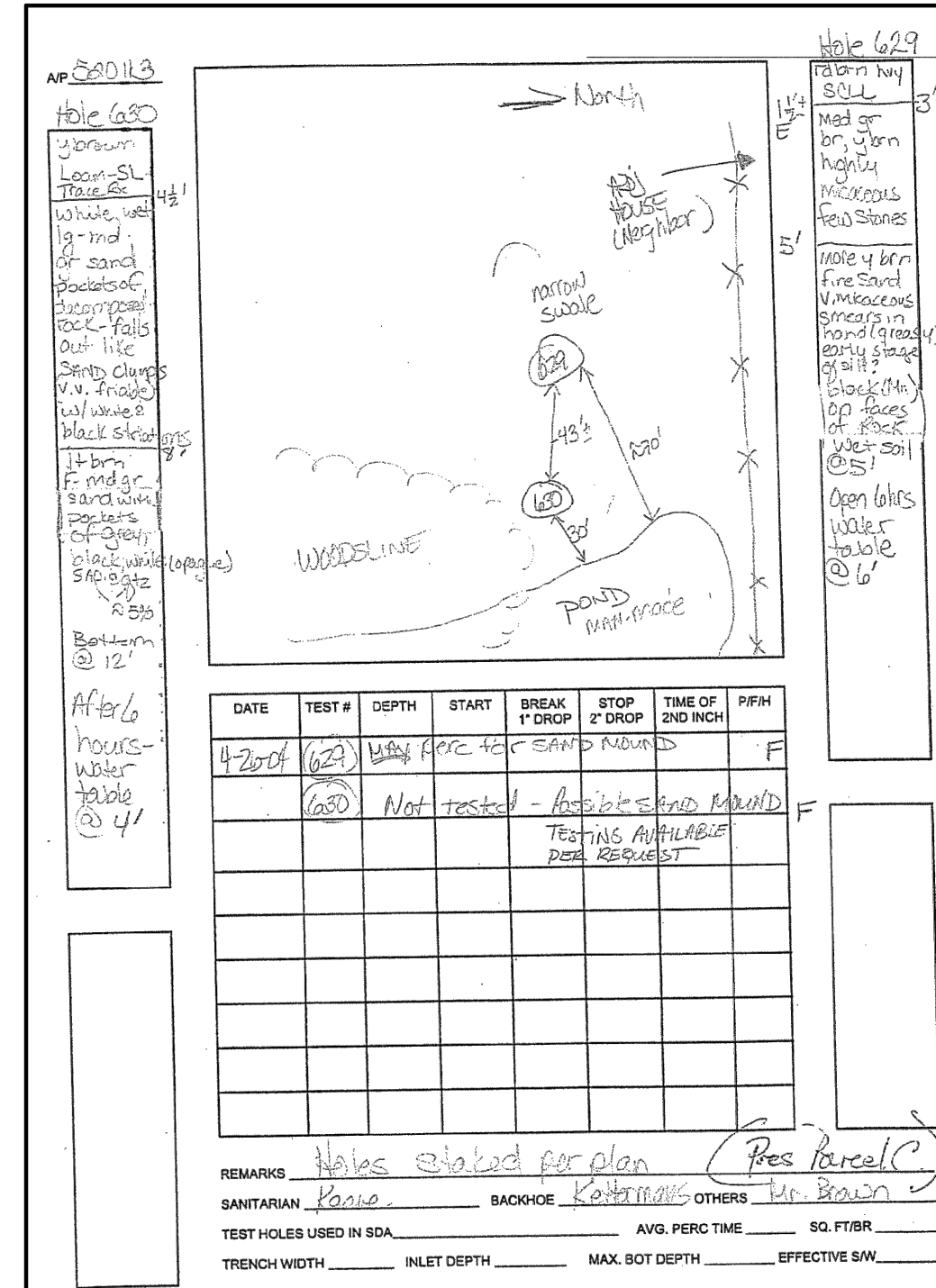
NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 3300 NORTH RIDGE ROAD SUITE 140 & ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BE-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 04/25/2023

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 1 A RESUBDIVISION OF CLARKSVILLE CROSSING LOT 3 (PLAT #25135-25137) TO CREATE NON-BUILDABLE BULK PARCEL 'B', BUILDABLE LOTS 5-10 AND NON-BUILDABLE PRESERVATION PARCELS 'A' & 'C'
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 PARCEL: 301 ZONED: RR-DEO ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND
DESIGN: JC DRAWN: JC	DATE: APRIL, 2023 BEI PROJECT NO: 2525 SCALE: AS SHOWN SHEET 17 OF 23



Clarksville Crossing Geotechnical Analysis

Facility	Type	MDE	Bottom Media	Test Designation	Depth to Restriction*	Restriction Type	Depth Media to Restriction	Note
DW 6-1	Dry Well	M-5	492.0	651	484.4	Excavation Depth	7.6	
DW 6-2	Dry Well	M-5	489.0	649	482.1	Excavation Depth	6.9	Bottom of hole assumed at 11'
DW 6-3	Dry Well	M-5	488.0	649	482.1	Excavation Depth	5.9	Bottom of hole assumed at 11'
DW 6-4	Dry Well	M-5	486.6	649	482.1	Excavation Depth	4.5	Bottom of hole assumed at 11'
MBR 7	Micro-bioretentation	M-6	493.8	TP-1	489.0	Excavation Depth	4.8	per Hillis Carns Field Report 4/15/22
DW 7-1	Dry Well	M-5	491.5	TP-2	484.0	Excavation Depth	7.5	per Hillis Carns Field Report 4/15/22
DW 7-2	Dry Well	M-5	490.0	TP-2	484.0	Excavation Depth	6.0	per Hillis Carns Field Report 4/15/22
DW 7-3	Dry Well	M-5	490.0	TP-2	483.0	Excavation Depth	7.0	
DW 7-4	Dry Well	M-5	491.5	TP-2	483.0	Excavation Depth	8.5	
DW 8-1	Dry Well	M-5	490.0	TP-3	482.7	Excavation Depth	7.3	per Hillis Carns Field Report 4/15/22
DW 8-2	Dry Well	M-5	489.0	TP-3	482.7	Excavation Depth	6.3	per Hillis Carns Field Report 4/15/22
DW 8-3	Dry Well	M-5	486.0	TP-4	477.9	Excavation Depth	8.1	per Hillis Carns Field Report 4/15/22
DW 8-4	Dry Well	M-5	484.0	TP-4	477.9	Excavation Depth	6.1	per Hillis Carns Field Report 4/15/22
DW 9-1	Dry Well	M-5	478.9	B	470.4	Excavation Depth	8.5	
DW 9-2	Dry Well	M-5	476.6	B	470.4	Excavation Depth	5.2	
DW 9-3	Dry Well	M-5	475.3	B	470.4	Excavation Depth	4.9	
DW 9-4	Dry Well	M-5	474.5	C	466.3	Hard Bottom	8.2	
Bio 2	Micro-bioretentation	M-6	459.5	628B and 662	454.6	Water	4.9	
MBR 8	Micro-bioretentation	M-6	455.8	629	448.9	Water	6.9	
DW 11-1	Dry Well	M-5	473.7	634B	467.0	Excavation Depth	6.7	
DW 11-2	Dry Well	M-5	472.0	634B	467.0	Excavation Depth	5.0	
DW 11-3	Dry Well	M-5	470.7	633	463.3	Water	7.4	
DW 11-4	Dry Well	M-5	470.0	633	463.3	Water	6.7	
DW 11-5	Dry Well	M-5	471.0	634A	465.2	Excavation Depth	5.8	
Bio 1	Micro-bioretentation	M-6	488.0	1	476.6	Excavation Depth	11.4	
Bio 1	Micro-bioretentation	M-6	488.0	2	483.2	Excavation Depth	4.8	
Bio 1	Micro-bioretentation	M-6	488.0	D	479.9	Excavation Depth	8.1	

HILLIS-CARNES ENGINEERING ASSOCIATES, INC. FIELD REPORT

Project Name: Clarksville Crossing Pond
Boring No.: B-1
Job #: 20222A

Work Order No.: WOHCI22007210
Date: April 15, 2022
Weather/Temp: Sunny 65°F

Project Name: Clarksville Crossing CMT Services
Client: H&H Rock Companies
Contractor: M&M EXCAVATING

Description of Work:
HCEA representative arrived on site to provide testing and observation services. Test pits were conducted at the proposed building and stormwater management areas for Phase 3 at the 4 locations staked out by others.

Four test pits were excavated to depths ranging from 9 to 15 feet below the existing grades. The test pit designation, and associated ground elevation and depth of excavation are presented below (ground elevations and test pit location staked out provided by Benchmark Engineering, Inc.). A test pit location plan is attached to this report.

The soils excavated from and exposed in the test pits consisted of natural sandy silts (lean) and silty sands (sandy loam). The materials appeared stable for the support of the proposed residential dwelling. The excavated materials appeared suitable for use as structural fill. All footing excavations should be examined and tested to verify the availability of the design bearing pressure.

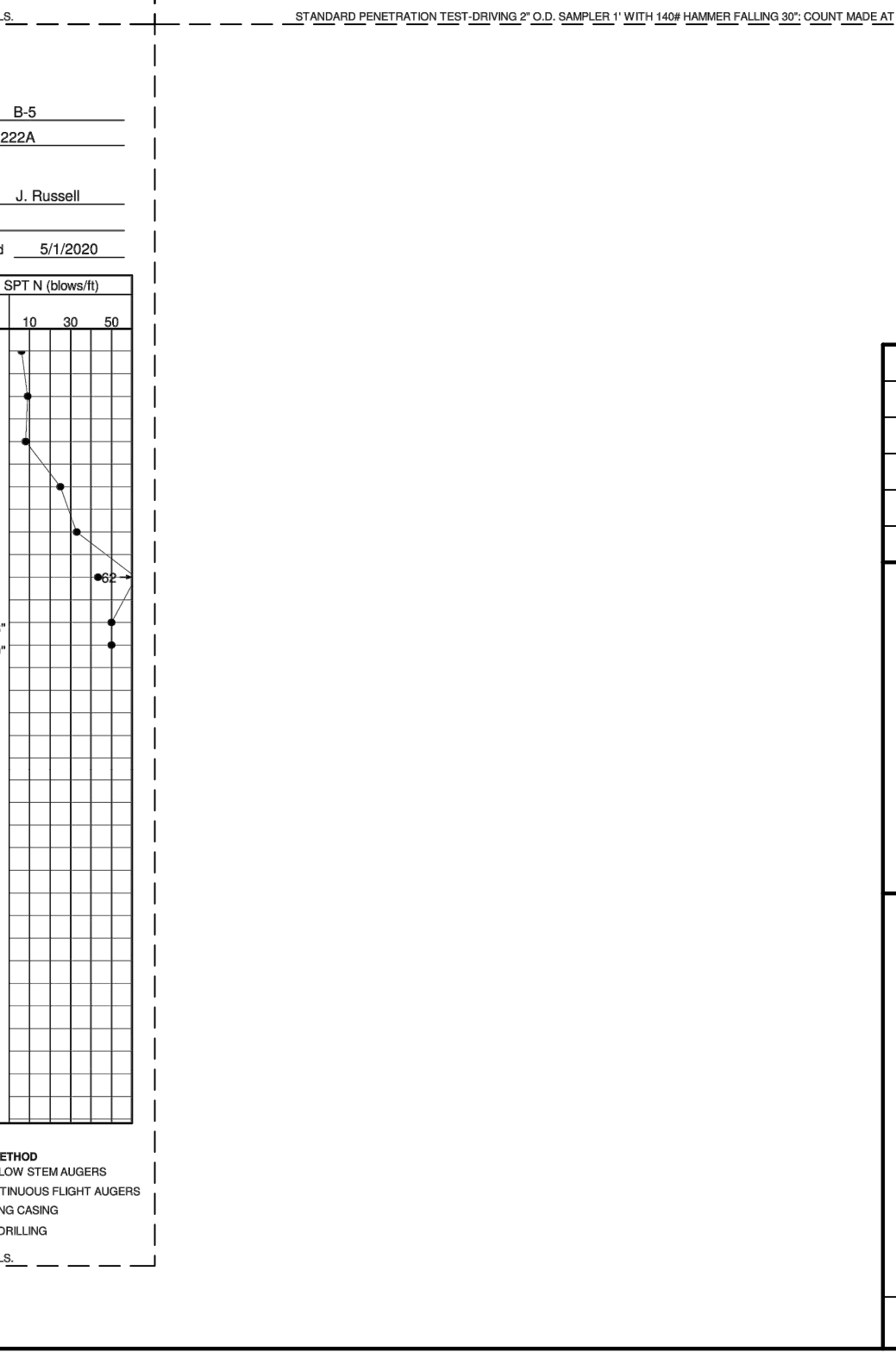
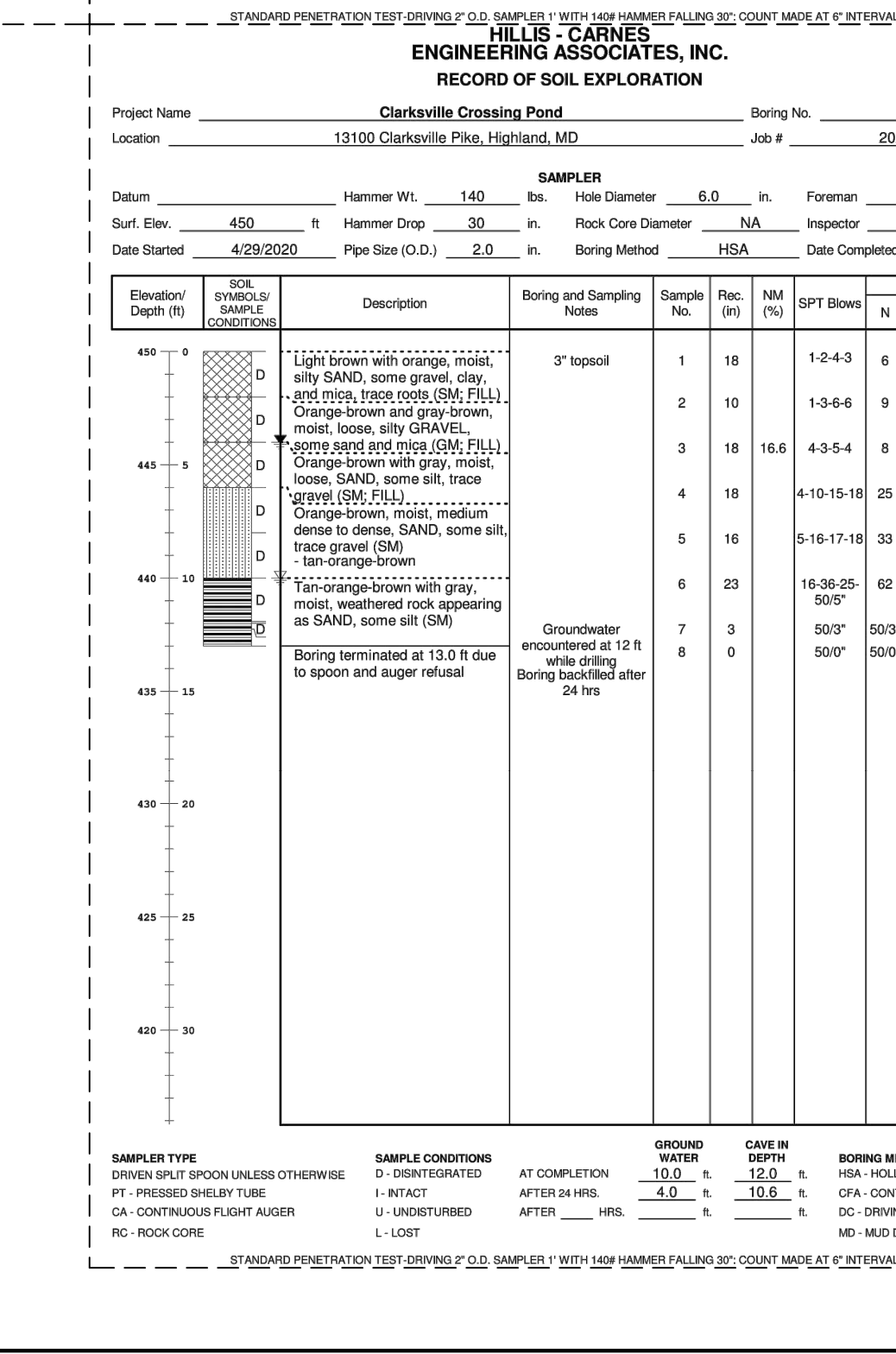
No groundwater or bedrock was observed within the depths of excavation.

Test Performed:
Test pit observations

Referenced Plan:
NA

Problems:
NA

Reviewed By: David G. Patron
Technician: Hamed Bizgah



BENCHMARK ENGINEERING, INC.
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CLARKSVILLE CROSSING, PHASE 2, AREA 1
A RESUBDIVISION OF CLARKSVILLE CROSSING LOT 3 (PLAT 025115-25137) TO CREATE NON-BUILDABLE BULK PALK PER B, BUILDABLE LOTS 5-10 AND NON-BUILDABLE PRESERVATION PARCELS 'A' & 'C'

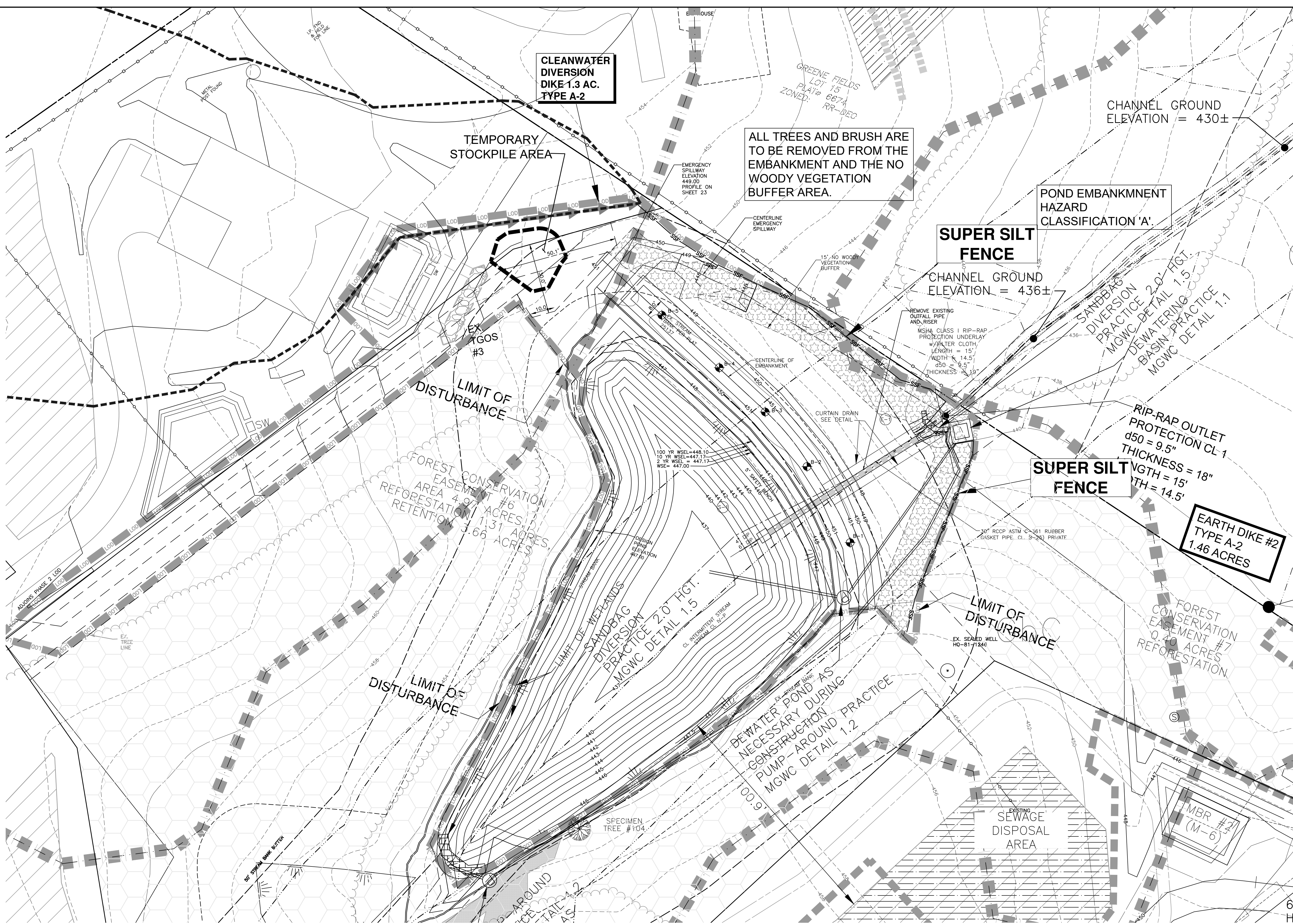
OWNER: CLARKSVILLE NL LLC
C/O H & H ROCK COMPANIES
6800 DEERPATH ROAD
SUITE 100
ELKDRIDGE, MD 21075
410-579-2442

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

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

FINAL PLAN BORING LOGS

DATE: APRIL, 2023 BEI PROJECT NO: 2525
SCALE: AS SHOWN SHEET 19 OF 23



MGWC 1.2: PUMP-AROUND PRACTICE

Temporary measure for dewatering in-channel construction sites

- DESCRIPTION**
The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites.
- IMPLEMENTATION SEQUENCE**
Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):
- Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility company's satisfaction.
 - The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
 - The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority.
 - Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
 - Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.
 - Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags.

MGWC 1.2: PUMP-AROUND PRACTICE

- Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
- Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction).
- All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross-sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
- After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.
- A pump around must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.
- If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work area in the main stem.
- The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
- After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

THIS PLAN IS APPROVED FOR SMALL POND CONSTRUCTION, AND SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

DocuSigned by:
Alexander Bratohie 6/8/2023

APPROVED: DEPARTMENT OF PUBLIC WORKS
DATE: 6/8/2023

CHIEF, BUREAU OF HIGHWAYS
DATE: 6/8/2023

APPROVED: DEPARTMENT OF PLANNING AND ZONING
DocuSigned by:
CHAD Edmondson 6/8/2023

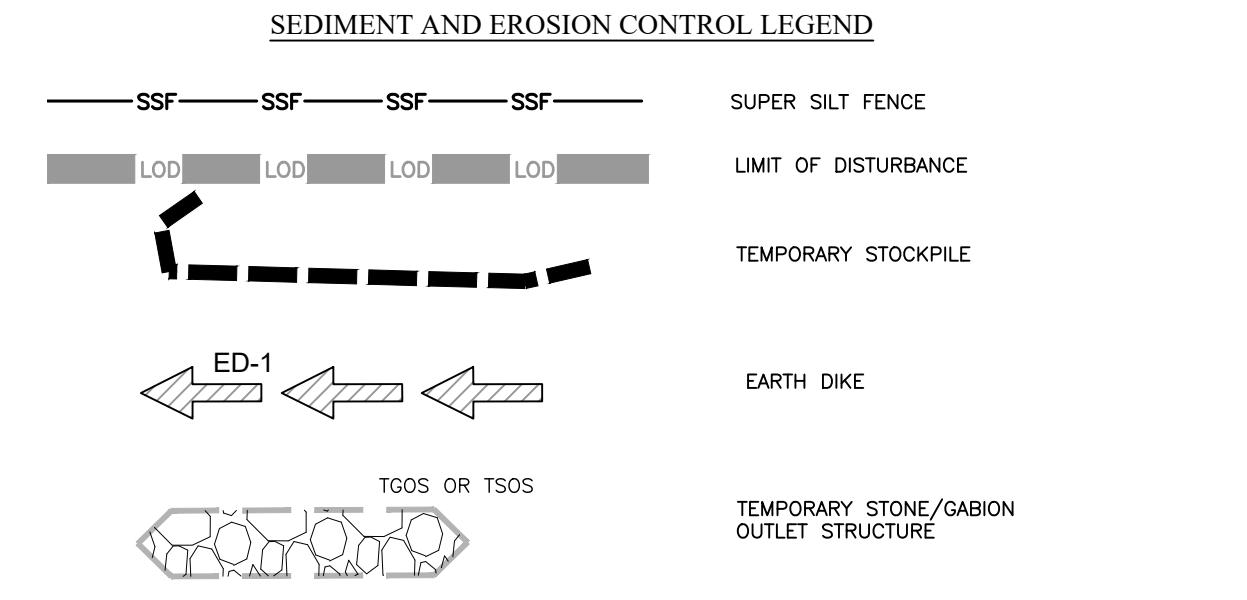
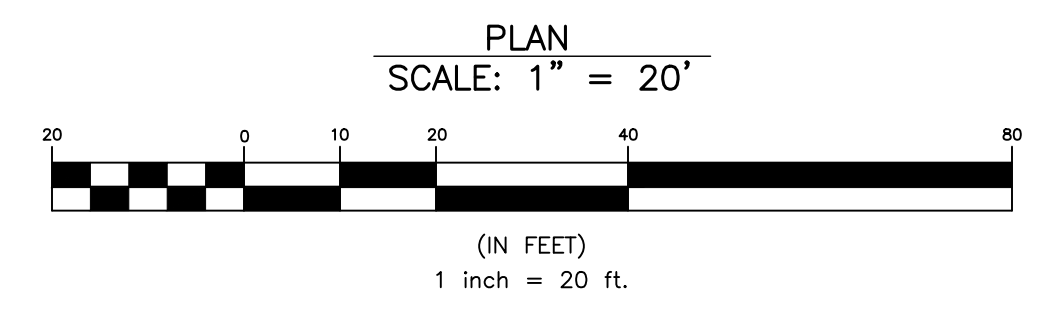
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 6/8/2023

DEVELOPER'S CERTIFICATE
I 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 THE CONTROL OF 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 MDC.

Mark Levy 2023-04-26
DEVELOPER SIGNATURE - MARK LEVY DATE

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.

John M. Carney 2023-04-26
ENGINEER - JOHN M. CARNEY, P.E., MD REGISTRATION No. 45577 DATE



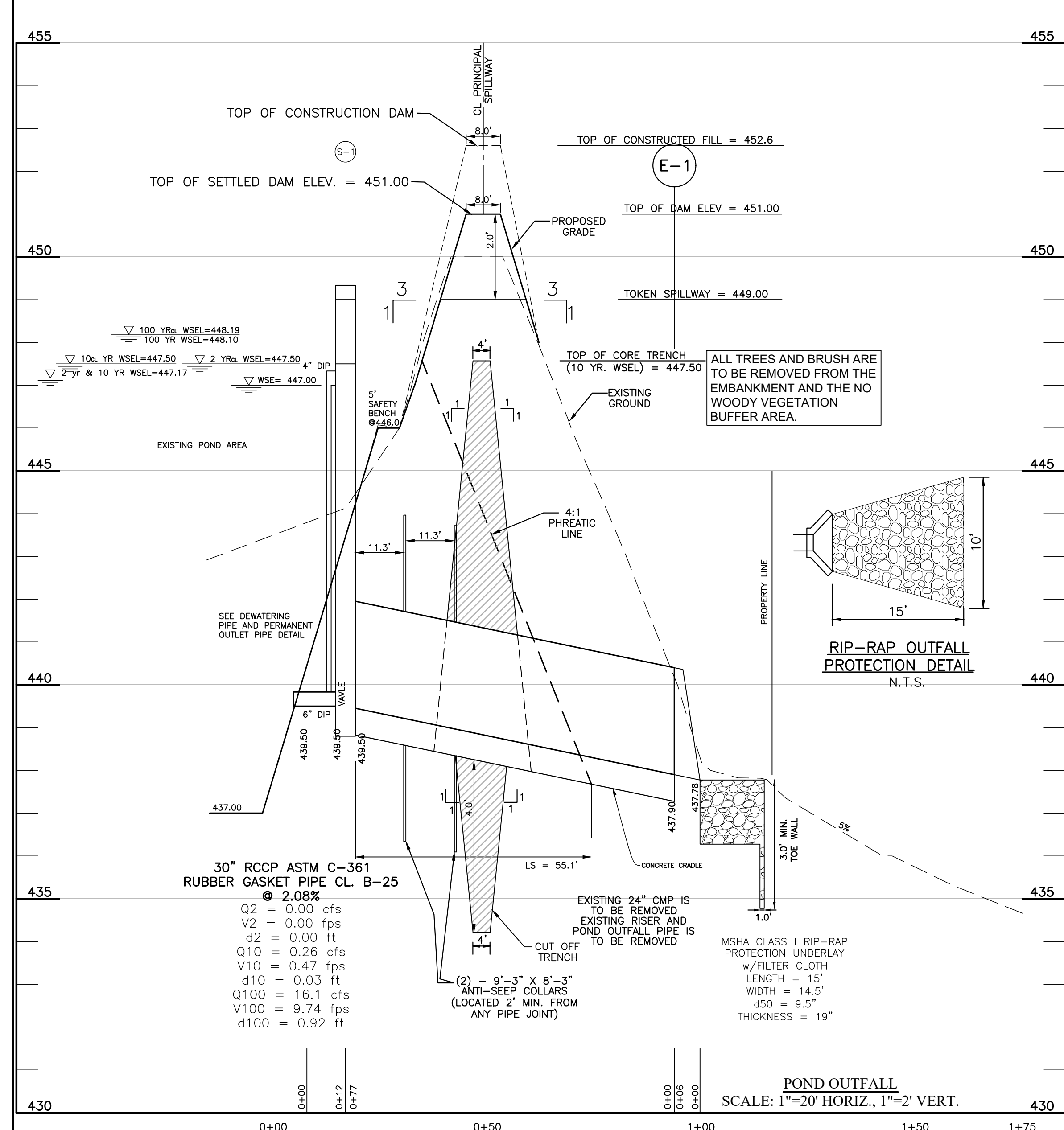
NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
3300 NORTH RIDGE ROAD PIKE A SUITE 140 & ELICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-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: 06-08-2024.

John M. Carney 04.26.2023

OWNER: CLARKSVILLE NL LLC C/O H&H ROCK COMPANIES 6800 DEERPATH ROAD SUITE 100 ELKRIDGE, MD 21075 410-579-2442		CLARKSVILLE CROSSING, PHASE 2, AREA 1 A REVISION OF CLARKSVILLE CROSSING LOT 3 (PLAT 25135-25137) TO CREATE NON-BUILDABLE BULK PARCEL 'B', BUILDABLE LOTS 5-10 AND NON-BUILDABLE PRESERVATION PARCELS 'A' & 'C'	
DEVELOPER: ROCK REALTY, INC. C/O H & H ROCK COMPANIES 6800 DEERPATH ROAD SUITE #100 ELKRIDGE, MARYLAND 21075 410-579-2442		TAX MAP: 34	GRID: 23
DESIGN: JC		PARCEL: 301	ZONED: RR-DEO
DRAWN: JC		ELECTION DISTRICT NO. 5	HOWARD COUNTY, MARYLAND
DATE: APRIL, 2023		POND REHABILITATION	
SCALE: AS SHOWN		SEDIMENT AND EROSION CONTROL PLAN	
SHEET 21 OF 23		BEI PROJECT NO: 2525	DATE: APRIL, 2023



CONSTRUCTION SPECIFICATIONS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent version.

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped to topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and shore breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

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 THE CONTROL OF 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.

Mark Levy 2023-04-26
DEVELOPER SIGNATURE - MARK LEVY DATE

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.

John M. Carney 2023-04-26
ENGINEER - JOHN M. CARNEY, P.E., MD REGISTRATION NO. 45577 DATE

THIS PLAN IS APPROVED FOR SMALL POND CONSTRUCTION, AND SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

Obedean Brathea 6/8/2023
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS 6/8/2023

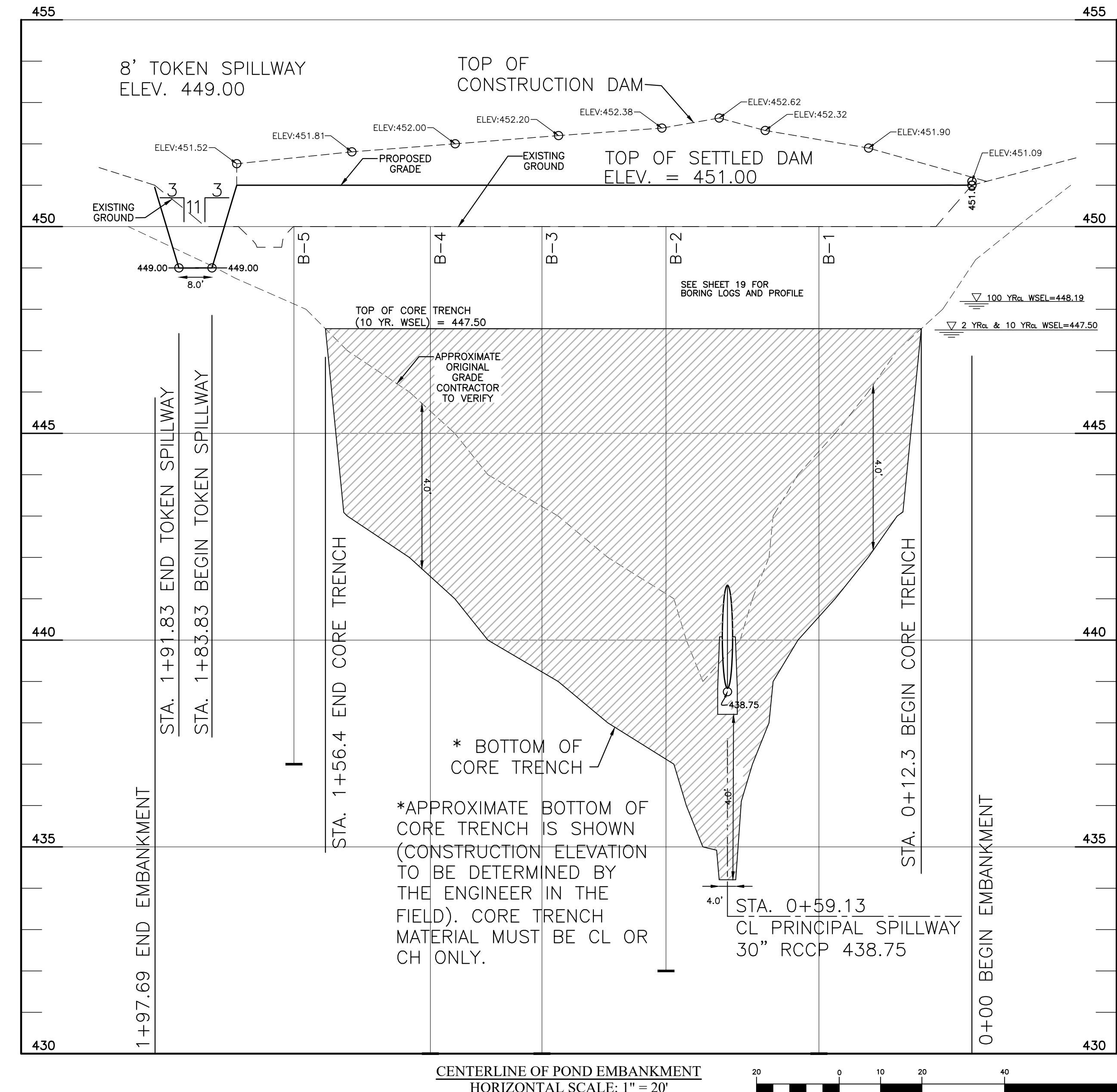
APPROVED: DEPARTMENT OF PLANNING AND ZONING 6/8/2023

CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF LAND DEVELOPMENT 6/8/2023

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

CHAD Edmondson 6/8/2023
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



CENTERLINE OF POND EMBANKMENT
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

(bedding), over and, on the side of the pipe, it will be needed to extend up to the spring line for riser conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.

Materials - (Polymer Coated Steel Pipe) - Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.

Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Aluminum Coated Steel Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-150 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-150 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-150 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. The pH of the surrounding soils shall be between 4 and 9.

Coupling bands, anti-seep collars, end sections, etc., must be composed of the same material and coatings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.

Connections - All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded ground when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

Each joint shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled on adequate number of corrugations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24 inches in diameter: flanges on both ends of the pipe with a circular 3/8 inch closed cell neoprene gasket, prepunched to the flange bolt circle, sandwiched between adjacent flanges; a 1/2-inch wide standard top type band with 12-inch wide by 3/8-inch thick closed cell neoprene gasket; and a 1/2-inch wide hugger type band with o-ring gaskets having a minimum diameter of 1/2 inch greater than the corrugation depth. Pipes 24 inches in diameter and larger shall be connected by a 24 inch long annular corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe end. A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12 inches on the end of each pipe. Flanged joints with 3/8 inch closed cell gaskets the full width of the flange is also acceptable.

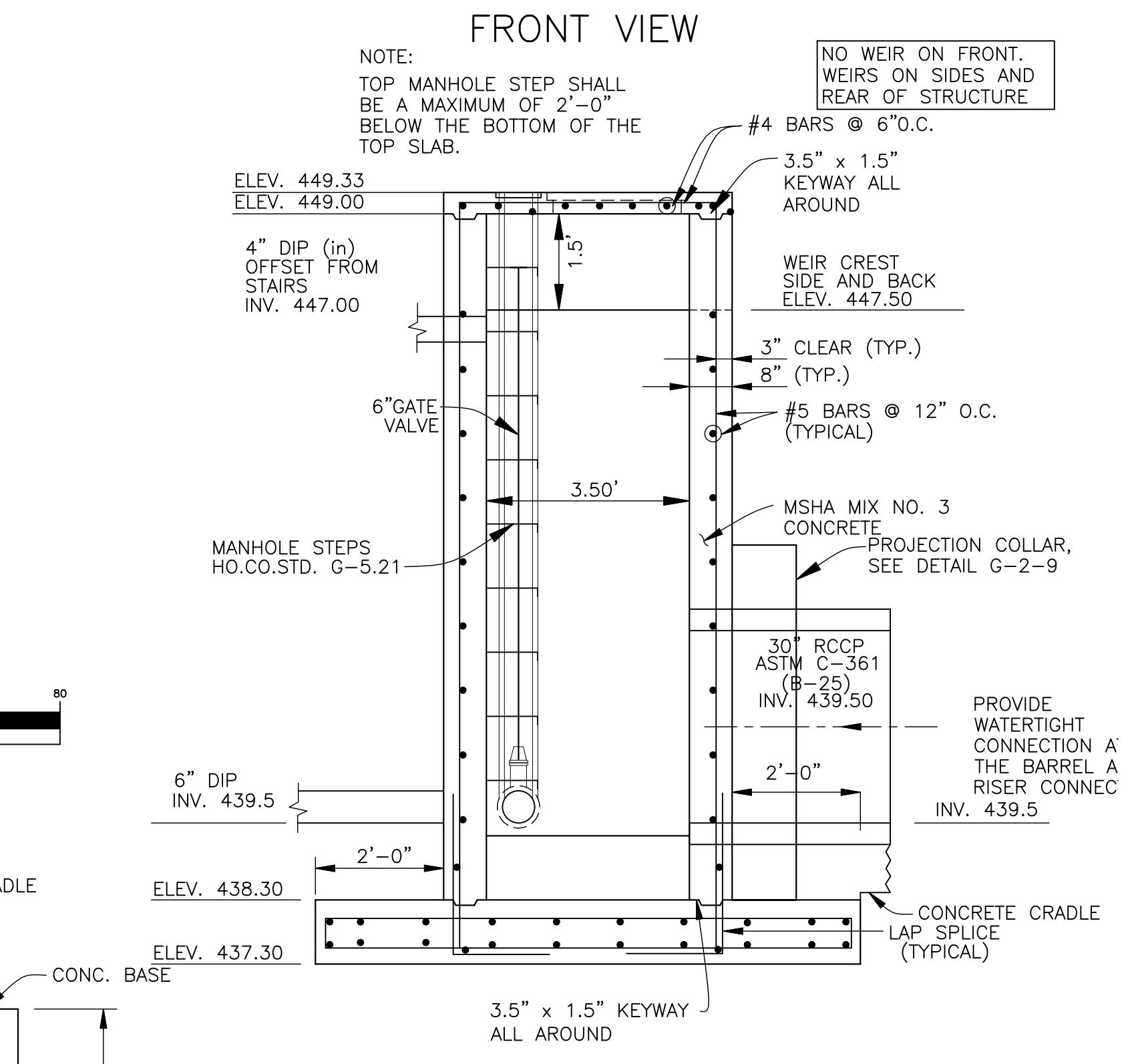
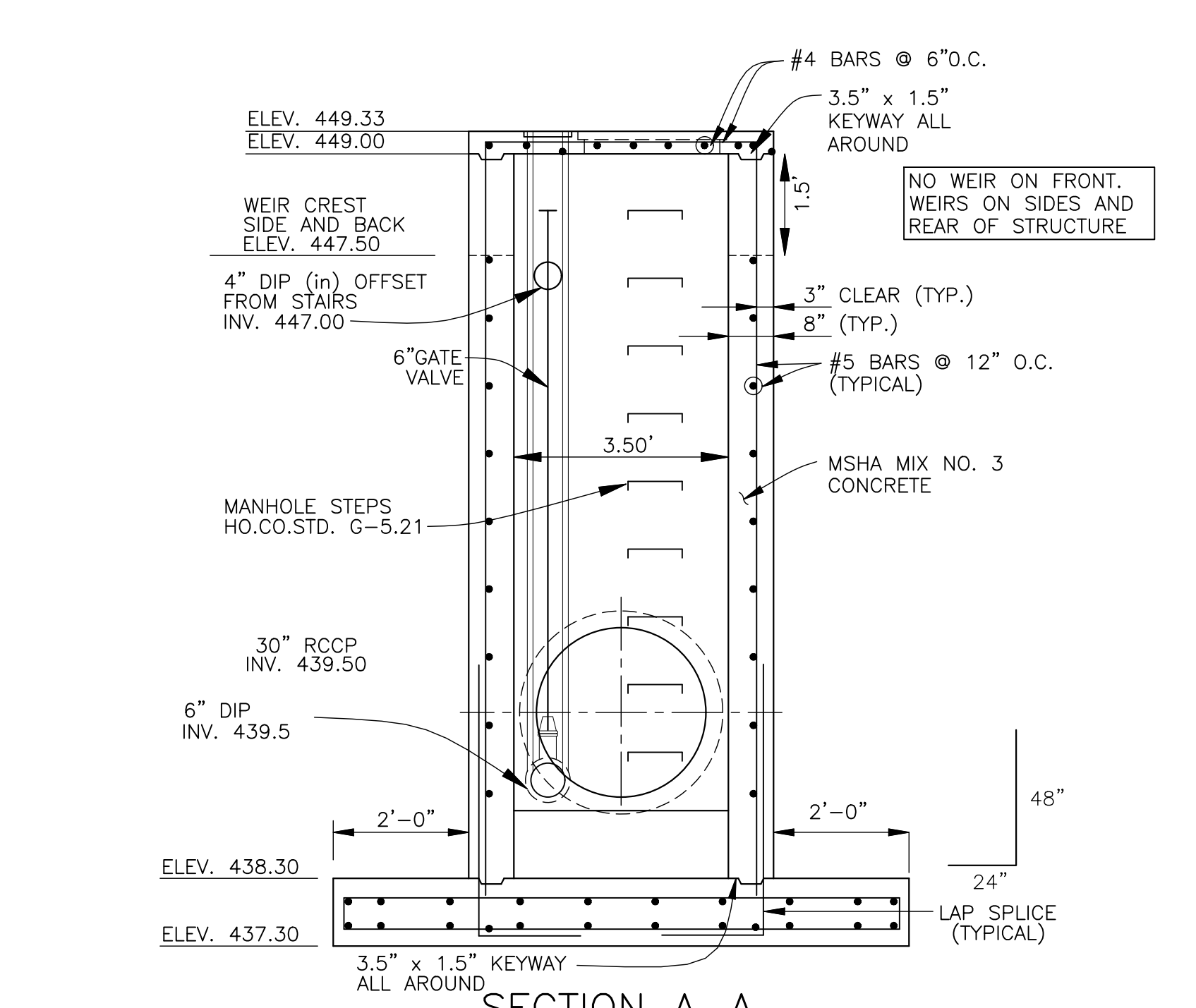
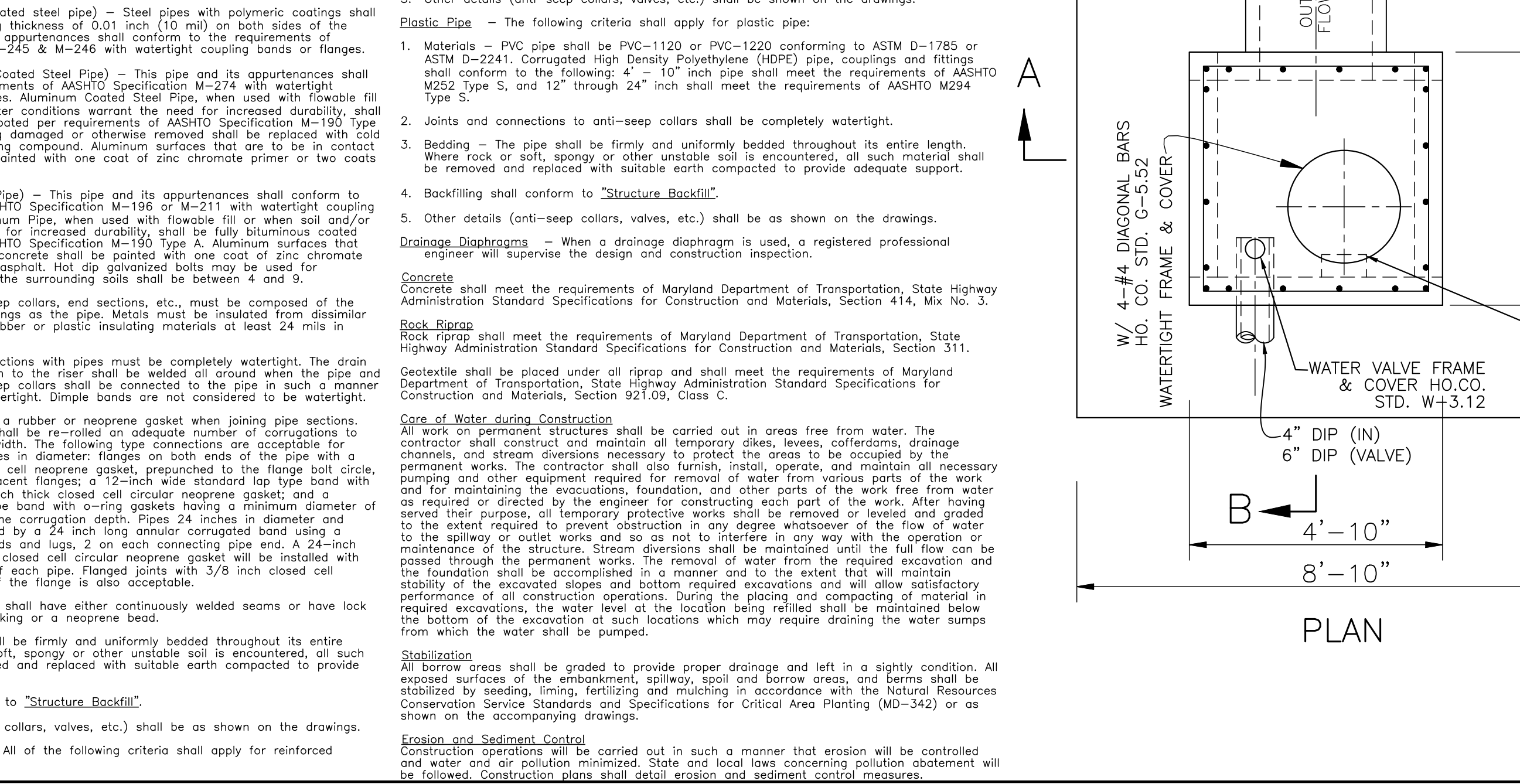
Helically corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene band.

Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

Backfilling shall conform to "Structure Backfill".

Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Reinforced Concrete Pipe - All of the following criteria shall apply for reinforced concrete pipe:



SECTION B-B SIDE VIEW CONTROL STRUCTURE
SCALE: 1" = 2'

NO.	DATE	REVISION

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS

John M. Carney 04.26.2023

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: 06-08-2024.

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

CLARKSVILLE CROSSING, PHASE 2, AREA 1
A REVISION OF CLARKSVILLE CROSSING LOT 1 (PL 2515-2517)
TO CREATE NON-BUILDABLE BULK PARCEL 'B', BUILDABLE LOTS 5 AND NON-BUILDABLE PRESERVATION PARCELS 'A' & 'C'

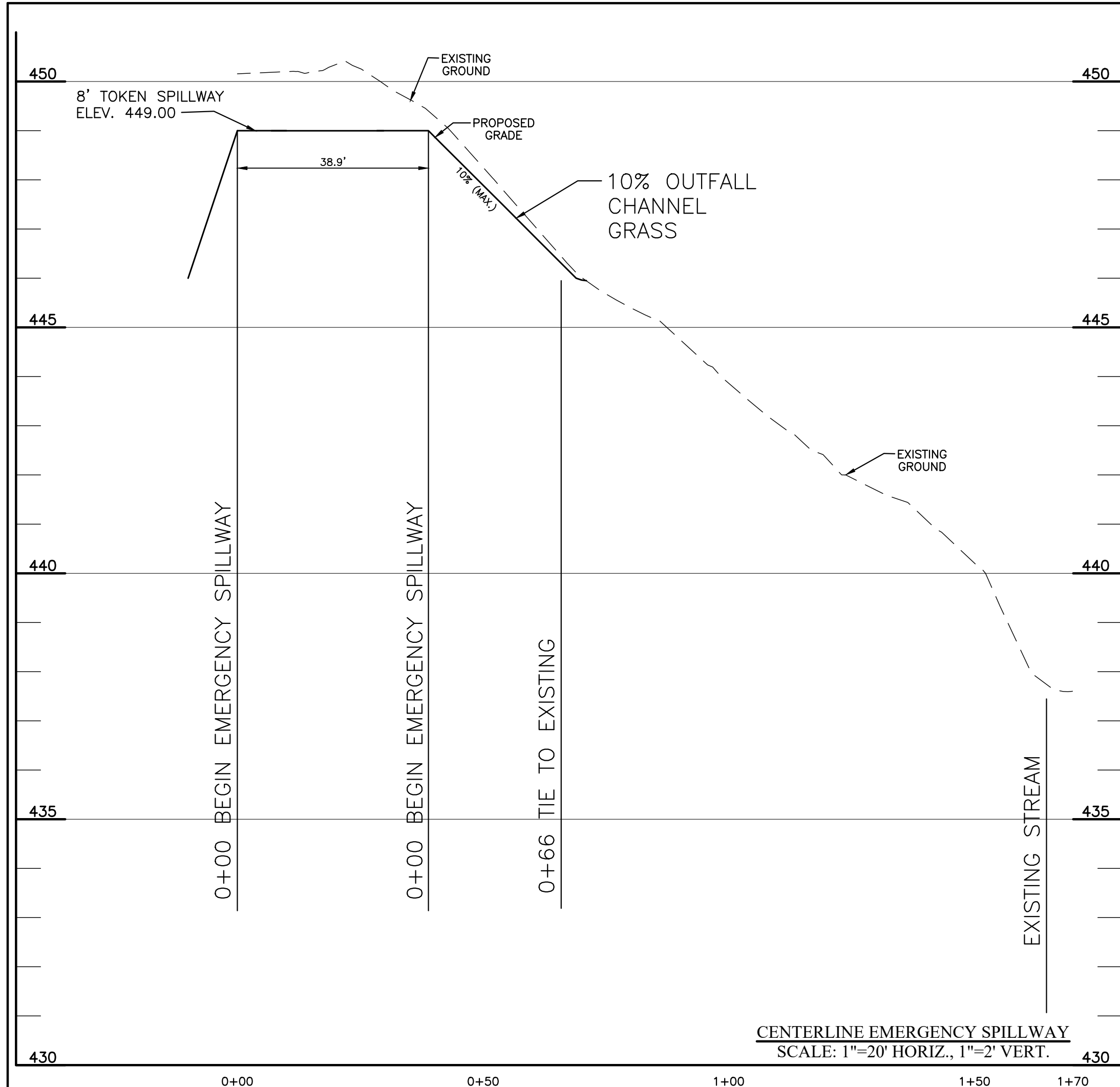
TAX MAP: 34 GRID: 23 PARCEL: 301 ZONED: RR-DEO
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

DEVELOPER: ROCK REALTY, INC.
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6800 DEERPATH ROAD
SUITE #100
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410-579-2442

POND REHABILITATION PROFILES

DATE: APRIL, 2023 **BEI PROJECT NO:** 2525

DESIGN: JC **DRAWN:** JC **SCALE:** AS SHOWN **SHEET:** 22 OF 23



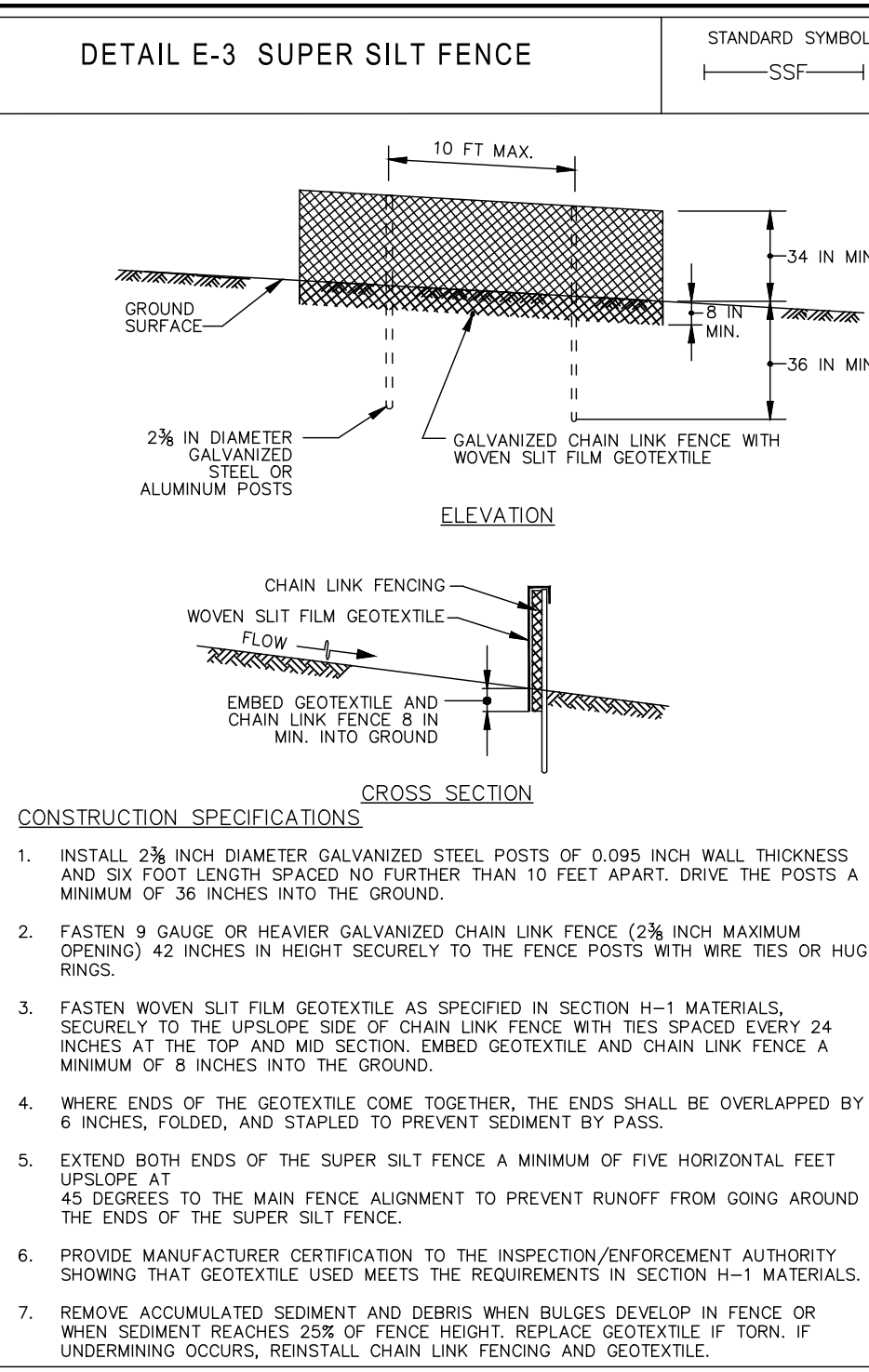
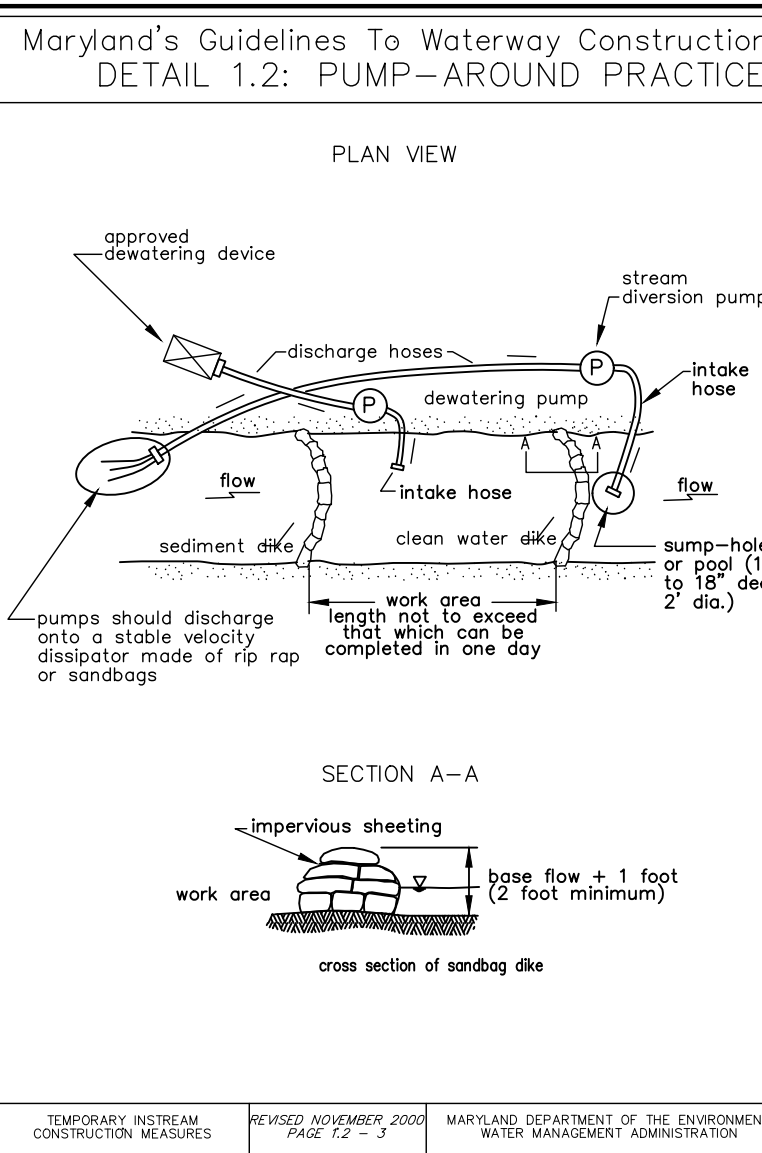
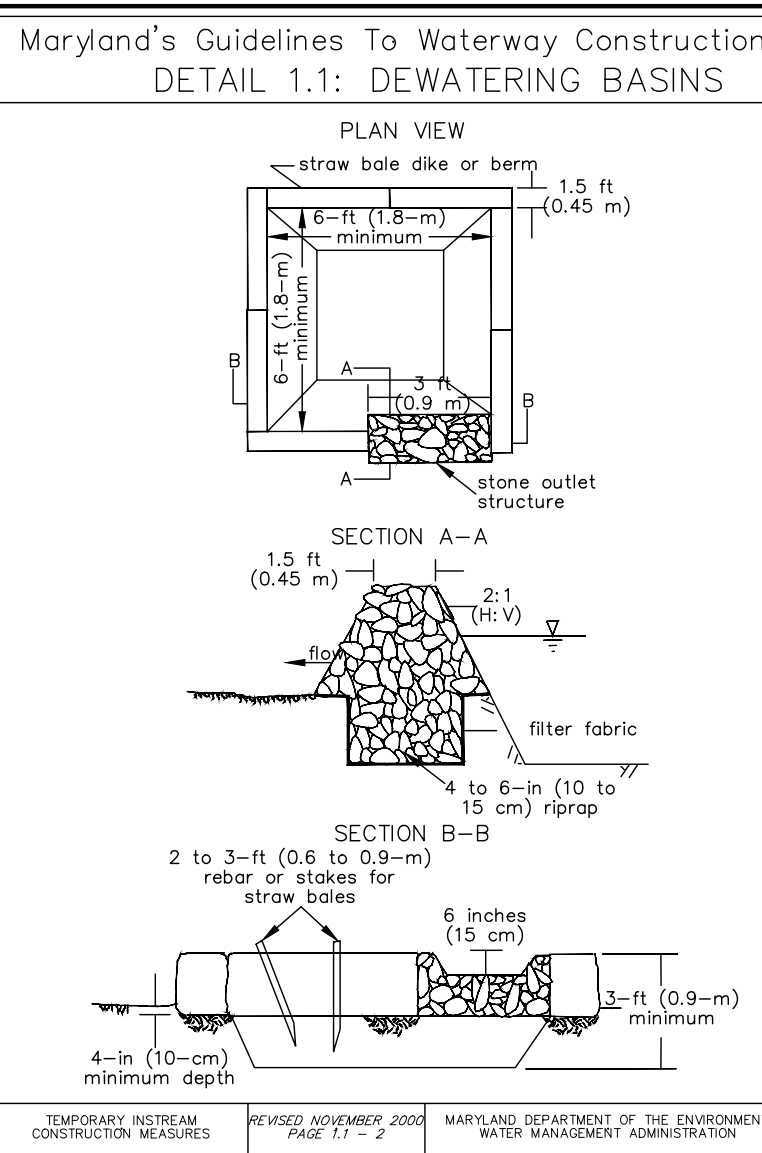
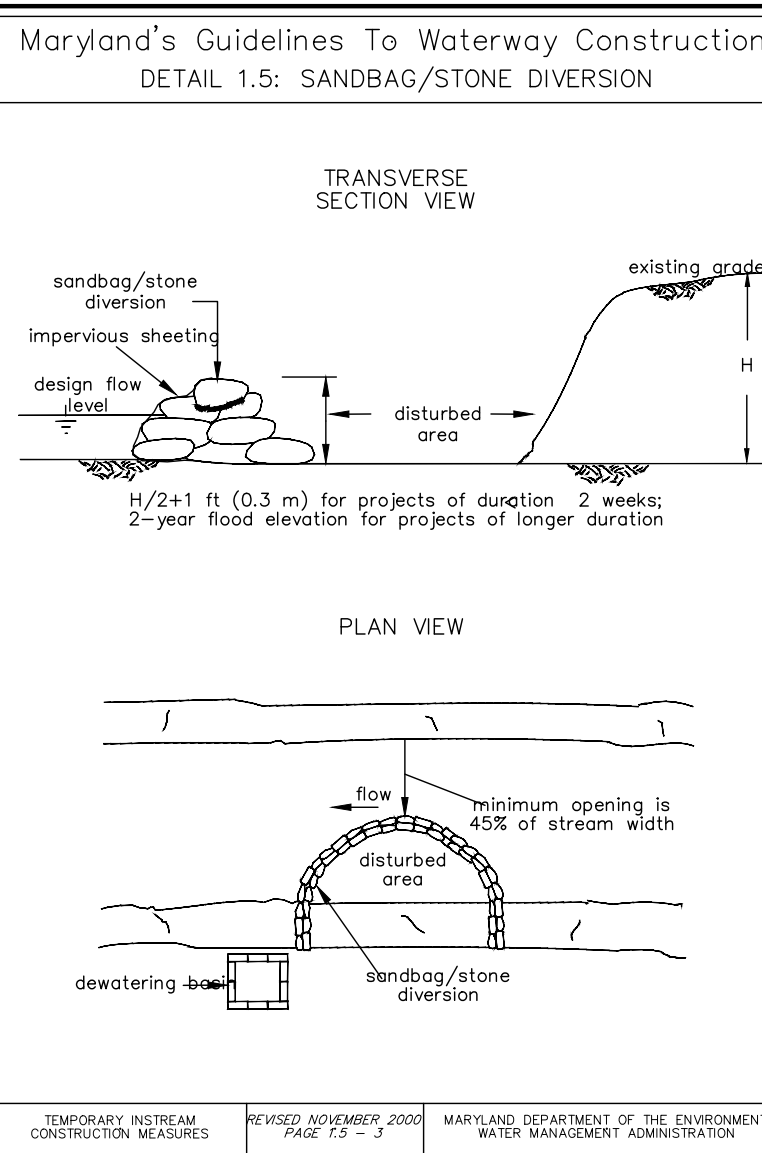
- SEQUENCE OF CONSTRUCTION FOR POND REHABILITATION**
- NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF WORK
- OBTAIN GRADING PERMIT. (DAY 1)
 - HOLD ON-SITE PRE-CONSTRUCTION MEETING. (DAY 2)
 - CLEAR AND GRUB AS NECESSARY TO INSTALL STABILIZED CONSTRUCTION ENTRANCE AND PERIMETER CONTROLS (I.E. SUPER SILT FENCE, DEWATERING BASIN, STABLE OUTFALL PUMP AROUND PRACTICE AND EARTH DIKES). (DAY 3-5)
 - INSTALL ANY OTHER SEDIMENT CONTROL DEVICES. (6)
 - WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, INSTALL SANDBAG DIVERSION, DEWATER THE POND USING THE PUMP AROUND PROCESS, DEWATERING BASIN AND/OR REMOVAL OF THE RISER STRUCTURE. (7-9)
 - UPON APPROVAL FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, EXCAVATE EMBANKMENT, REMOVE PRINCIPAL SPILLWAY, RISER, LOW FLOW PIPE, STORE EMBANKMENT MATERIAL IN TEMPORARY STOCK PILE AREA. (DAY 10-14)
 - INSTALL CORE TRENCH, ANTI-SEEP COLLARS AND CONSTRUCT NEW PRINCIPAL SPILLWAY. (DAY 15-17)
 - REBUILD THE EMBANKMENT AND EMERGENCY SPILLWAY. (DAY 18-20)
 - WITH VALVE OPEN IN NEW RISER STRUCTURE, REMOVE SAND BAG DIVERSIONS, PUMP AROUND PROCESS AND DEWATERING BASIN. (DAY 21)
 - CLOSE VALVE. (DAY 22)
 - STABILIZE ALL DISTURBED AREAS. (DAY 23)
 - UPON APPROVAL FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT CONTROL DEVICES AND STABILIZE ANY REMAINING DISTURBED AREAS WITH THE PERMANENT SEEDBED, PERMANENTLY STABILIZED. (DAY 24)

Method placement specification

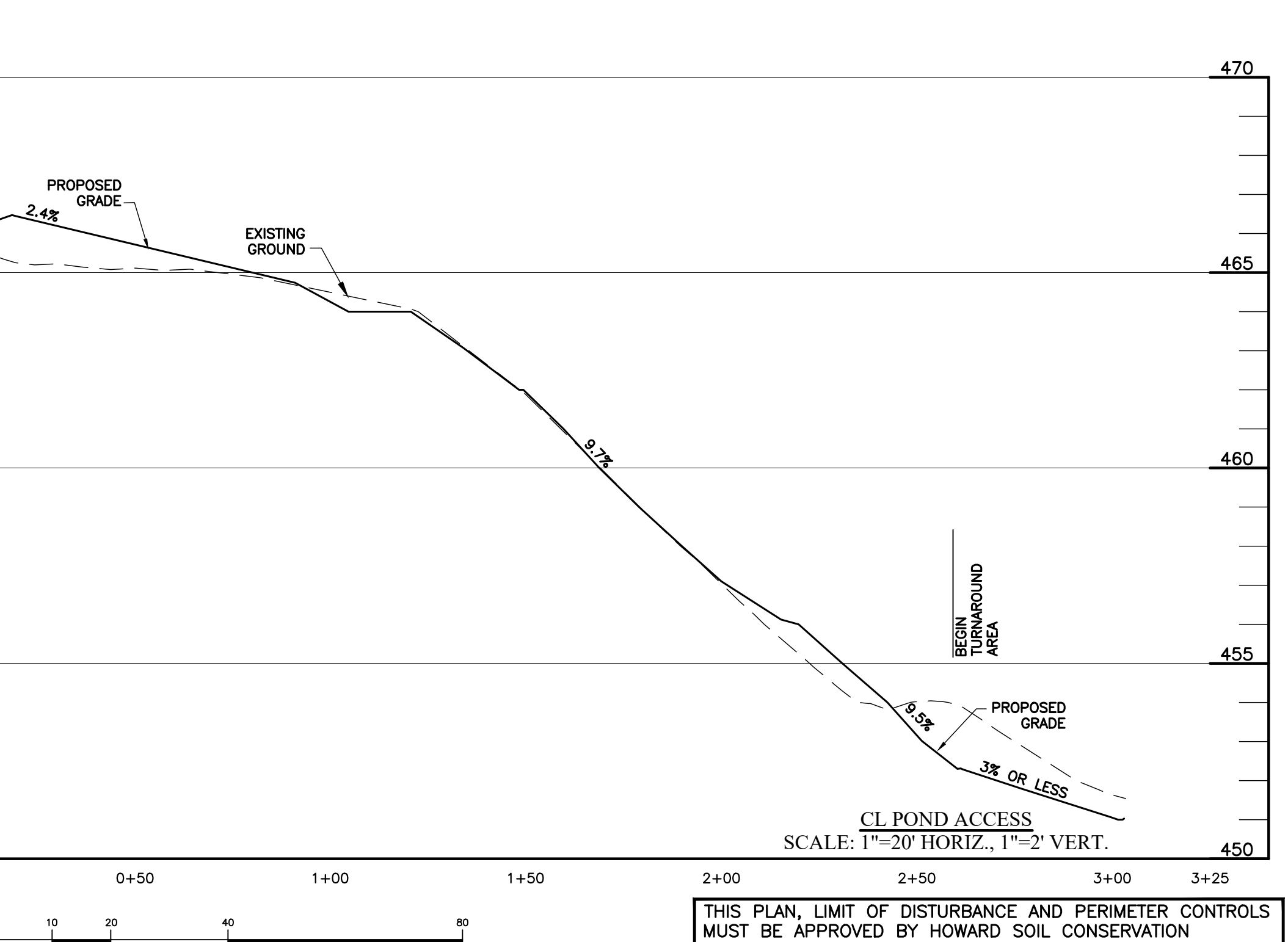
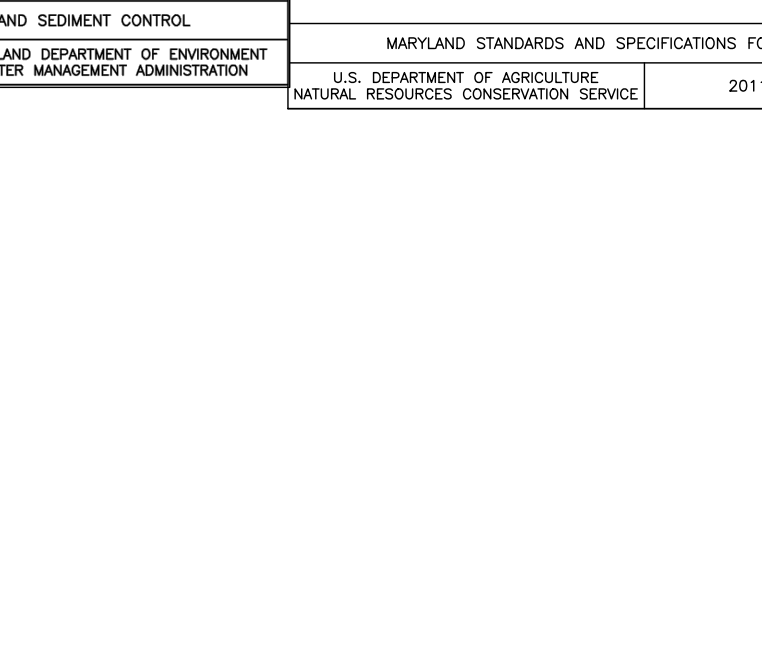
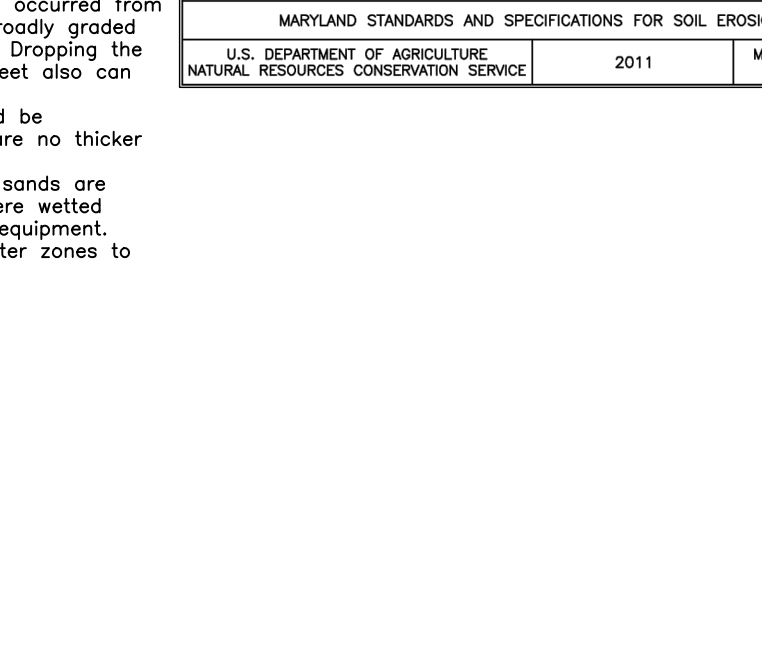
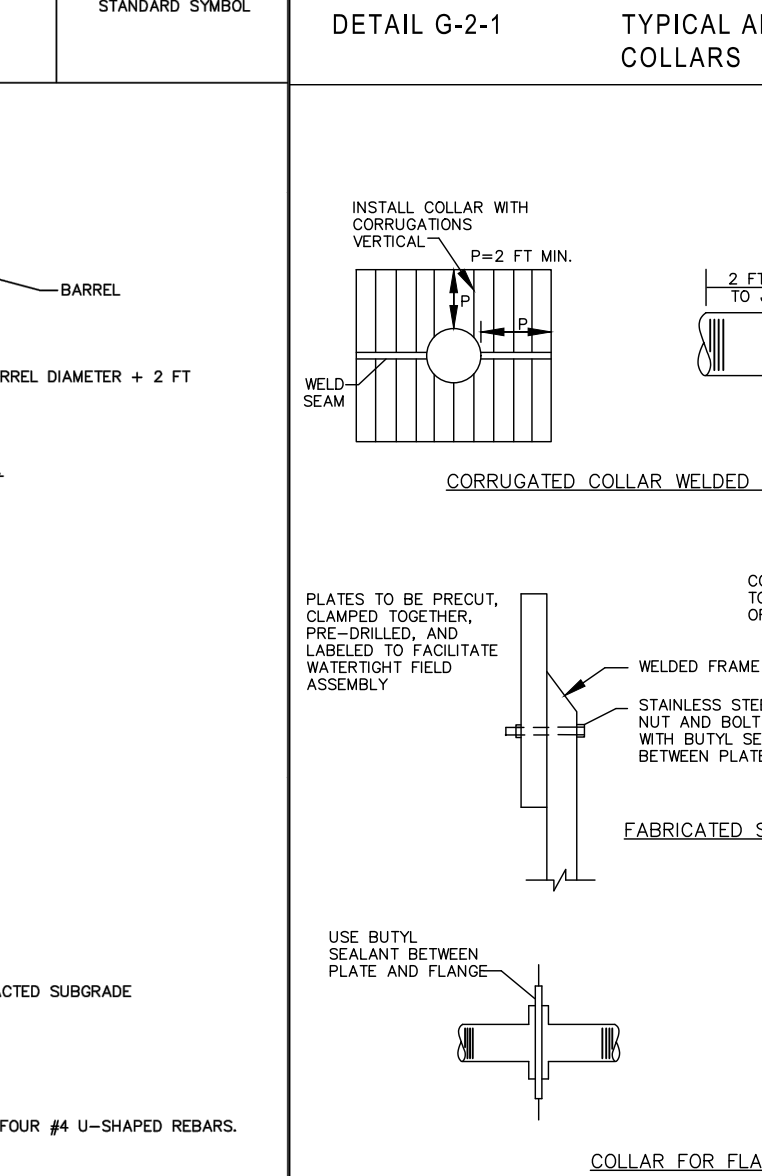
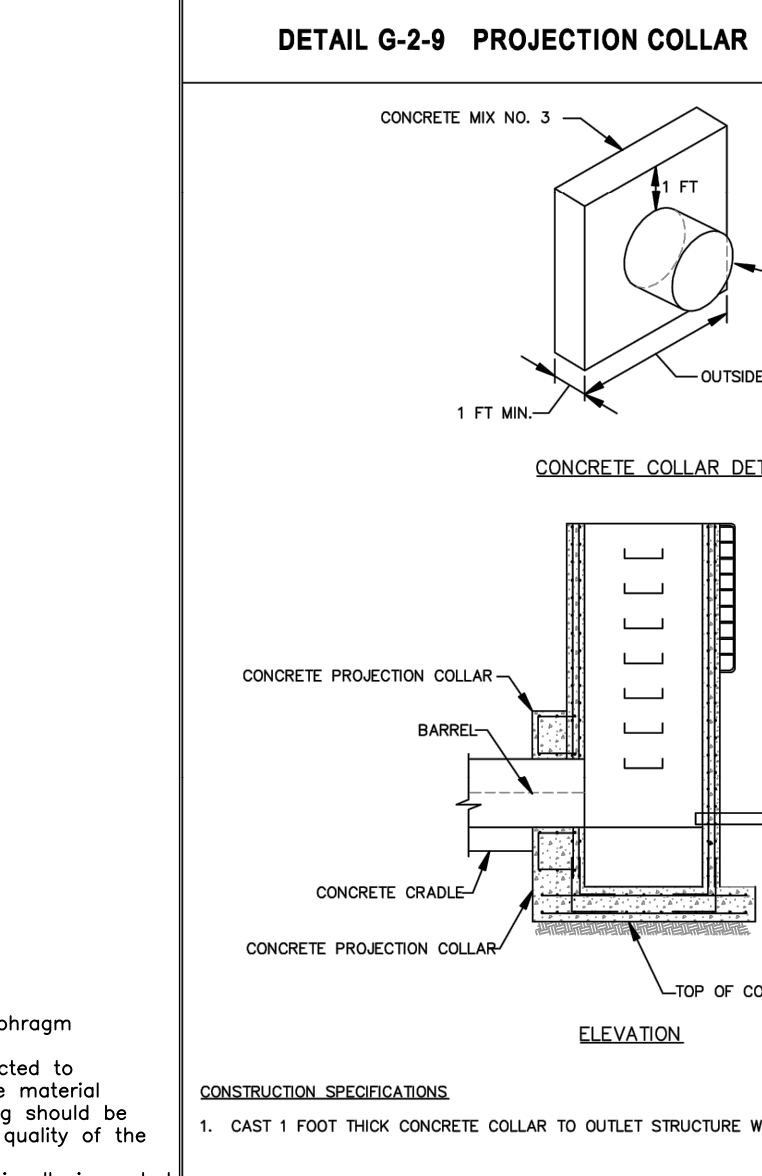
- Filter diaphragm sand shall be placed uniformly in layers not to exceed 8 inches thick before compaction. Each layer shall be thoroughly wetted immediately prior to compaction.
- Each layer of sand shall be compacted by a minimum of two passes of a vibratory plate compactor weighing at least 160 pounds. The compactor shall have a minimum centrifugal force of 2,450 pounds at a vibrating frequency of no less than 5,000 cycles per minute (or by a minimum of two passes of a vibratory smooth wheeled roller weighing at least 325 pounds with a centrifugal force of 2,250 pounds at a vibrating frequency of no less than 4,500 cycles per minute).
- The sand shall be placed to avoid segregation of particle sizes and to ensure the continuity and integrity of all zones. No foreign material shall be allowed to become intermixed with or otherwise contaminate the gravel.
- Traffic shall not be permitted to crossover filter zones at random. Equipment crossovers shall be maintained, and the number and location of such crossovers shall be established and approved before the beginning of diaphragm placement. Each crossover shall be cleaned of all contaminating material and shall be inspected and approved by the engineer before the placement of additional drain fill material.
- Any damage to the foundation surface or the trench sides or bottom occurring during placement of sand filter shall be repaired before the sand filter zone placement is continued.
- The upper surface of the sand filter zone constructed concurrently with adjacent zones of earthfill shall be maintained at a minimum elevation of 1 foot above the upper surface of adjacent earthfill.

Quality Control Inspection of Filter Diaphragm Installation Standards

- Materials should be visually inspected to determine whether they likely meet the material specifications. If a doubt exists, testing should be requested to verify the gradation and quality of the furnished filter sand and gravel.
- The placed materials should be visually inspected to determine that segregation has not occurred from transporting and placing the filters. Broadly graded sands are most prone to segregation. Dropping the materials from heights more than 4 feet also can promote segregation.
- Placement and compaction should be accomplished in lift thicknesses that are no thicker than specified.
- Observations should determine if sands are either placed very dry or that they were wetted immediately prior to compaction with equipment. Clean water should be used to wet filter zones to avoid adding clay fines.



- BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS**
- No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
 - Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
 - Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material, or any other deleterious substance. If additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material, or any other deleterious substance.
 - Place heavy equipment on mats or suitably operate the equipment to prevent damage to nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
 - Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetlands, nontidal wetland buffers, or waterways, or permanent modification of the 100-year floodplain in excess of that lost under the originally authorized structure or fill.
 - Rectify any nontidal wetlands, wetland buffers, waterways, or 100-year floodplain temporarily impacted by any construction.
 - All stabilization in the nontidal wetland and nontidal wetland buffer shall consist of the following species: Annual Ryegrass (*Lolium multiflorum*), Millet (*Setaria italica*), Barley (*Hordeum sp.*), Oats (*Avena sp.*), and/or Rye (*Secale cereale*). These species will allow for the stabilization of the site while also allowing for the voluntary revegetation of natural wetland species. Other non-persistent vegetation may be acceptable, but must be approved by the Nontidal Wetlands and Waterways Division. Kentucky 31 fescue shall not be utilized in wetland or buffer areas. The area should be seeded and mulched to reduce erosion after construction activities have been completed.
 - After installation has been completed, make post-construction grades and elevations the same as the original grades and elevations in temporarily impacted areas.
 - To protect aquatic species, in-stream work is prohibited as determined by the classification of the stream:
 - Use IV waters: In-stream work shall not be conducted during the period March 1 through May 31, inclusive, during any year.
 - Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.
 - Cutverts shall be constructed and any riprap placed so as not to obstruct the movement of aquatic species, unless the purpose of the activity is to impound water.



THIS PLAN, LIMIT OF DISTURBANCE AND PERIMETER CONTROLS MUST BE APPROVED BY HOWARD SOIL CONSERVATION DISTRICT PRIOR TO CONSTRUCTION. THIS PLAN MUST BE APPROVED BY MARYLAND DEPARTMENT OF THE ENVIRONMENT AND US ARMY CORPS OF ENGINEERS PRIOR TO CONSTRUCTION. IT IS POSSIBLE THAT THOSE REVIEWS MAY RESULT IN CHANGES THAT WOULD REQUIRE THIS PLAN TO BE REVISED.

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 REGISTERED PROFESSIONAL ENGINEER 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 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.

Mark Levy 2023-04-26
DEVELOPER SIGNATURE - MARK LEVY DATE

ENGINEER'S CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT SPECIFICATIONS, REGULATIONS, 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 2023-04-26
ENGINEER - JOHN M. CARNEY, P.E., MD REGISTRATION NO. 45577 DATE

THIS PLAN IS APPROVED FOR SMALL POND CONSTRUCTION, AND SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

Approved by: **Alexander Bratke** 6/8/2023
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS
DATE: 6/8/2023

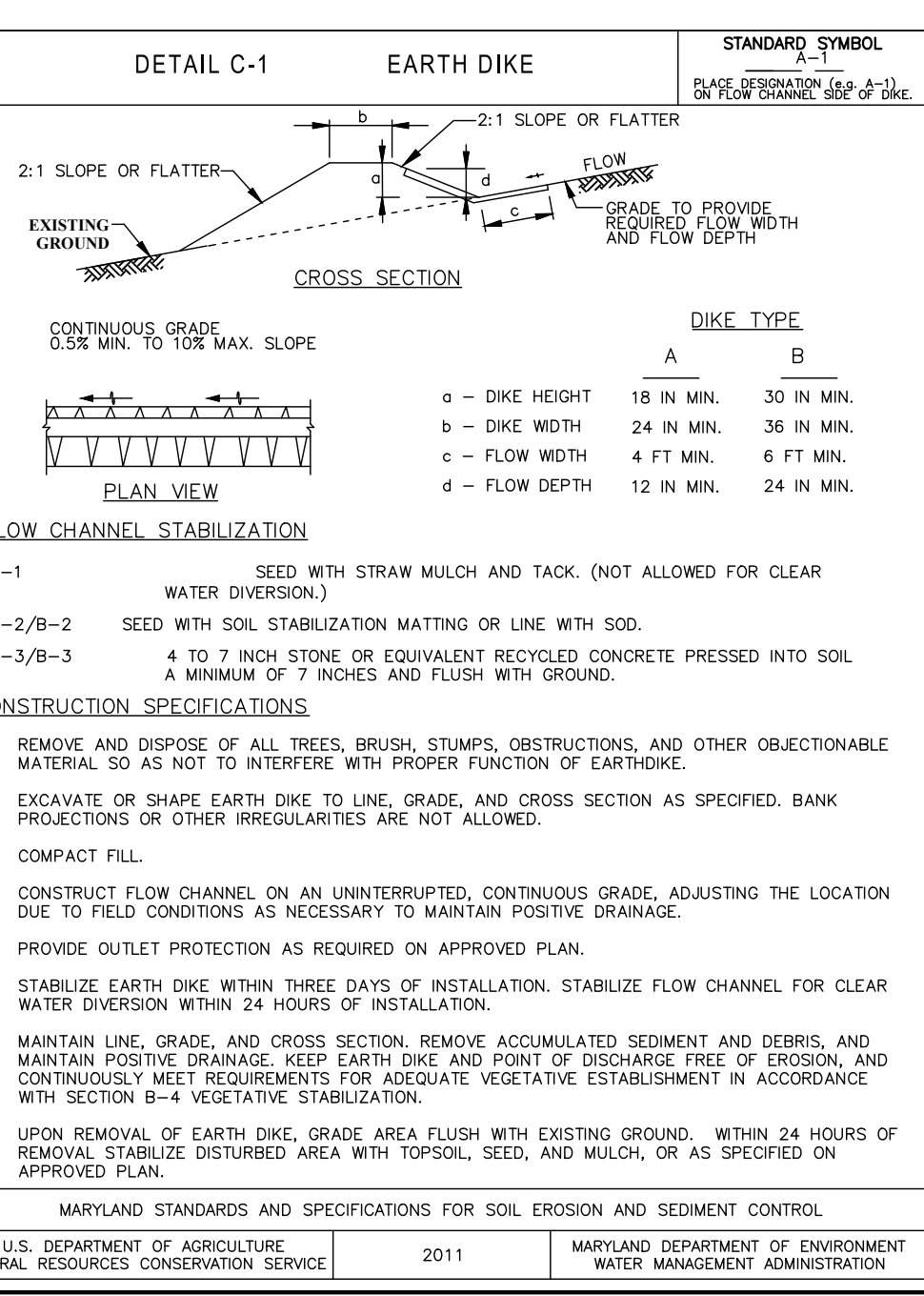
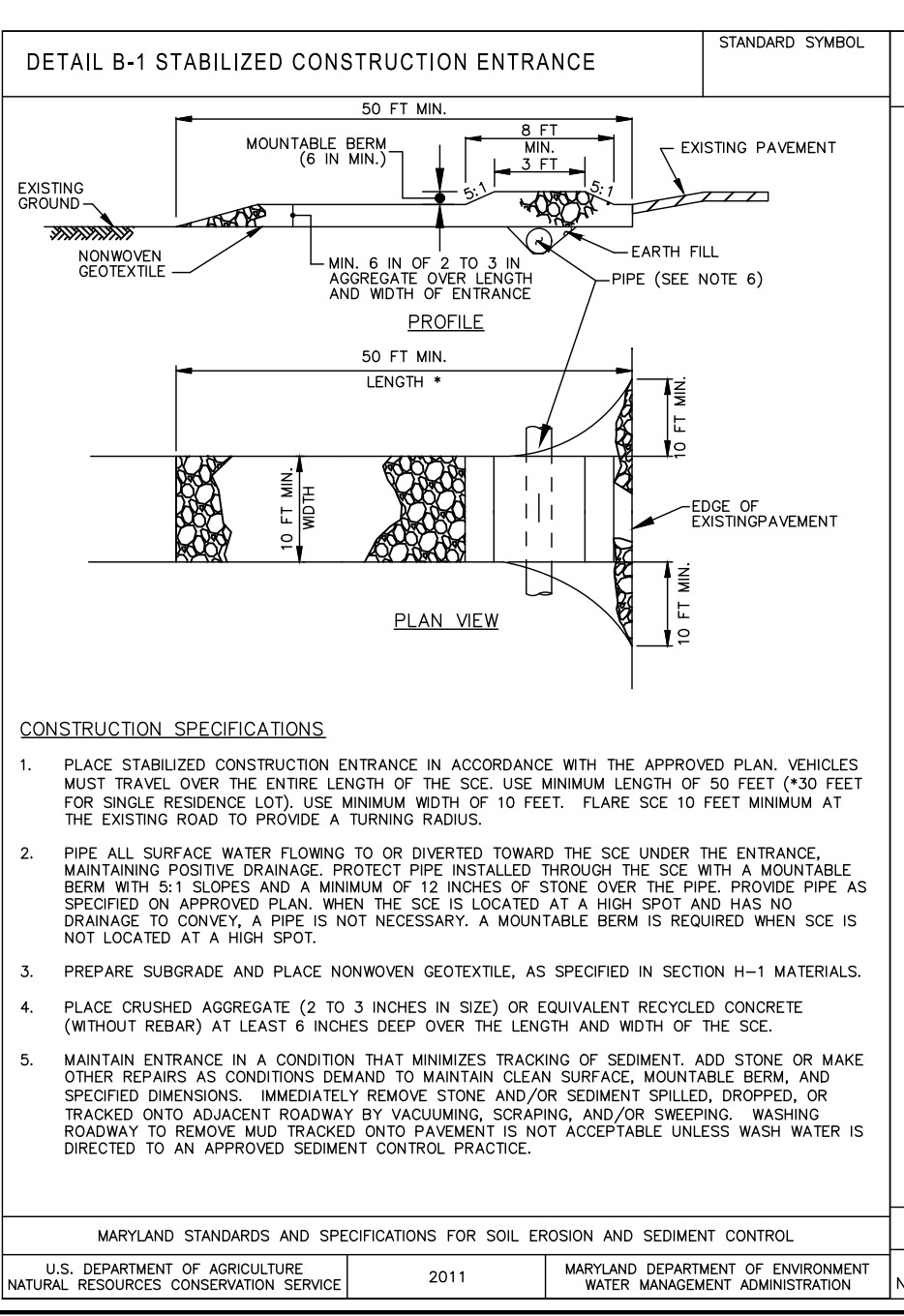
APPROVED: DEPARTMENT OF PLANNING AND ZONING
DATE: 6/8/2023

CHIEF, BUREAU OF HIGHWAYS DATE: 6/8/2023

APPROVED: DEPARTMENT OF PLANNING AND ZONING
DATE: 6/8/2023

CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 6/8/2023

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 6/8/2023



CONCLUSIONS AND RECOMMENDATIONS BY HILLIS-CARNES ENGINEERING ASSOCIATES, INC. IN A REPORT DATED MAY 22, 2020:

BASED ON THE RESULTS OF OUR FIELD EXPLORATION AND OUR EVALUATION, IT IS OUR OPINION THAT THE POND EMBANKMENT WAS GENERALLY NOT CONSTRUCTED IN ACCORDANCE WITH USDA NRCS MD-378 (JANUARY, 2000) GUIDELINES. ON THE BASIS OF THE BORING DATA AND OUR EVALUATION, THE POND EMBANKMENT DOES NOT APPEAR TO HAVE BEEN CONSTRUCTED WITH A SPECIFIC DISCRETE CORE TRENCH ACROSS THE ENTIRETY OF THE EMBANKMENT.

IT WOULD BE ANTICIPATED THAT VARIOUS MEASURES WILL BE REQUIRED IN ORDER TO UPGRADE THE POND. THE RECOMMENDATIONS PROVIDED BELOW CAN BE UTILIZED TO ASSIST IN THE DESIGN OF THE UPGRADES REQUIRED FOR THE NEW POND FACILITY.

OUTFALL STRUCTURE: BASED ON A VISUAL OBSERVATION OF THE EXISTING OUTFALL STRUCTURE AND ON DISCUSSIONS WITH THE CLIENT AND CIVIL ENGINEER, IT HAS BEEN ASSUMED THAT THE OUTFALL WILL NEED TO BE REPLACED. IT IS RECOMMENDED THAT THE EXCAVATION FOR THE NEW OUTFALL PIPE BE SLOPED BACK AT 5:1 (H:V) IN THE DIRECTION PERPENDICULAR TO THE PIPE IN ORDER TO PROVIDE LONG-TERM STABILITY OF THE NEW EMBANKMENT AREA. IT SHOULD BE ANTICIPATED THAT DEWATERING WILL BE REQUIRED DURING CONSTRUCTION.

EMBANKMENT SEEPAGE CONTROL: AS STATED PREVIOUSLY, THE POND EMBANKMENT DOES NOT APPEAR TO HAVE BEEN CONSTRUCTED WITH A SPECIFIC DISCRETE CORE TRENCH ACROSS THE ENTIRETY OF THE EMBANKMENT. AS SUCH, ADDITIONAL MEASURES WILL NEED TO BE TAKEN TO ADDRESS THE CONTROL OF SEEPAGE THROUGH THE EMBANKMENT.

THE FIRST POTENTIAL REPAIR OPTION WOULD BE TO REMOVE THE ENTIRETY OF THE EXISTING EMBANKMENT (OR A SIGNIFICANT PORTION THEREOF) TO CONSTRUCT A PROPER CORE TRENCH. IN LIEU OF REMOVING THE ENTIRETY OF THE EXISTING EMBANKMENT, IT MAY BE ALTERNATIVELY POSSIBLE TO PROVIDE A RELATIVELY IMPERMEABLE UPSTREAM BLANKET TO PROVIDE THE REQUIRED SEEPAGE CONTROL. THE UPSTREAM BLANKET WOULD CONSIST OF A 2 FT THICK LAYER OF RELATIVELY IMPERMEABLE CLAY MATERIAL. THE CLAY WOULD NEED TO EXTEND FROM THE 100-YEAR STORM ELEVATION, DOWN THE UPSTREAM FACE OF THE EMBANKMENT AND EXTEND INTO THE POND BOTTOM. THE DISTANCE THAT THE CLAY WILL NEED TO EXTEND INTO THE POND BOTTOM AND ABUTMENTS (AS WELL AS THE EVALUATION OF THE REQUIREMENT TO KEY THE BLANKET INTO THE BOTTOM) WILL BE DEPENDENT ON THE FINAL POND GEOMETRY. ADDITIONAL GEOTECHNICAL EVALUATION WILL BE REQUIRED TO ASSIST IN THIS PART OF THE IT SHOULD ALSO BE ANTICIPATED THAT DEWATERING WILL BE REQUIRED DURING CONSTRUCTION.

EMBANKMENT CLEARING: THE FIELD EXPLORATION ALSO INCLUDED A VISUAL INSPECTION OF THE EXISTING EMBANKMENT CONDITIONS. AT THE TIME OF OUR FIELD EXPLORATION, TREES AND BRUSH WERE PRESENT ON THE EXISTING EMBANKMENT. ALL TREES AND BRUSH SHOULD BE REMOVED FROM THE EMBANKMENT IN ACCORDANCE WITH THE 'MARYLAND DAM SAFETY MANUAL'. HCSA SHOULD BE ON SITE DURING THE CLEARING PROCESS TO VERIFY THAT ALL TREES AND BRUSH ARE PROPERLY REMOVED AND TO VISUALLY INSPECT THE EXPOSED EMBANKMENT FOR ANY PROBLEMS THAT MAY HAVE GONE UNNOTICED DUE TO THE OVERGROWTH. ADDITIONAL RECOMMENDATIONS MAY BE REQUIRED IF ANY PROBLEM AREAS ARE UNCOVERED AND IDENTIFIED.

EMBANKMENT CONSTRUCTION: THE FOLLOWING PROCEDURES SHOULD BE UTILIZED TO PREPARE THE SUBGRADE FOR EMBANKMENT SUPPORT AND TO CONSTRUCT THE PROPOSED EMBANKMENT.

ALL TREES, TOPSOIL, ORGANIC MATERIALS, FROZEN, WET, SOFT OR LOOSE SOILS AND OTHER EXISTING MATERIALS SHOULD BE REMOVED FROM THE AREAS OF PROPOSED NEW EMBANKMENT AND WASTED PRIOR TO THE PLACEMENT OF FILL. THESE STRIPPING OPERATIONS SHOULD BE PERFORMED IN A MANNER CONSISTENT WITH GOOD EROSION AND SEDIMENT CONTROL PRACTICES AND IN ACCORDANCE WITH SOIL CONSERVATION GUIDELINES.

AFTER STRIPPING OPERATIONS HAVE BEEN COMPLETED, THE EXPOSED SUBGRADE MATERIALS SHOULD BE PROTECTED WITH A LOADED DUMP TRUCK OR SIMILAR EQUIPMENT IN THE PRESENCE OF A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE FOR AREAS THAT ARE NOT ACCESSIBLE TO A DUMP TRUCK. THE PROPOSED MATERIALS SHOULD BE OBSERVED AND TESTED BY A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE UTILIZING A DYNAMIC CONE PENETROMETER. ANY EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY PROFFROLLING OR PENETROMETER TESTING SHOULD BE EXCAVATED TO SUITABLE FIRM SOIL, AND THEN GRADES RE-ESTABLISHED BY BACKFILLING WITH SUITABLE SOIL.

ANY WATER INFILTRATION RESULTING FROM A SHALLOW INTERCEPTION OF THE GROUNDWATER TABLE, SURFACE RUN-OFF OR PERCHED WATER, IF NOT TOO EXTENSIVE, SHOULD BE ABLE TO BE CONTROLLED BY MEANS OF SLUMP PIT AND PUMP, OR BY GRAVITY DITCHING PROCEDURES PROVIDED THAT THE GROUNDWATER LEVEL MUST NOT BE LOWERED BY A DEPTH OF 1+ FT TO 2+ FT. IF THE GROUNDWATER MUST BE LOWERED BY MORE THAN 1+ FT TO 2+ FT, OR IF LESSER AMOUNTS OF WATER CANNOT BE SUITABLY LOWERED BY PUMPING, THEN THE USE OF A MORE EXTENSIVE DEWATERING SYSTEM SUCH AS DEEP WELLS OR WELL POINTS WILL BE REQUIRED.

FILL MATERIAL SUITABILITY: ALL MATERIALS TO BE USED AS FILL IN THE EMBANKMENT SHOULD BE INSPECTED, TESTED AND APPROVED BY THE GEOTECHNICAL ENGINEER. BASED ON OUR EVALUATION OF THE SOILS ENCOUNTERED BORINGS CONDUCTED ON THE SITE, IT APPEARS THAT THE ON-SITE SOILS THAT ARE FREE FROM ORGANICS AND OTHER DELETERIOUS MATERIALS CAN BE PROPERLY USED FOR CONSTRUCTION OF THE EMBANKMENT. MOISTURE CONDITIONING (THAT IS, WETTING OR DRYING) OF THE MATERIALS MAY BE REQUIRED IN ORDER TO ACHIEVE PROPER COMPACTION. DEPENDING ON THE SEASON OF THE YEAR, THE MOISTURE CONTENTS OF THE SOILS SHOULD BE PROPERLY CONTROLLED TO AVOID EXTENSIVE CONSTRUCTION DELAYS. ADDITIONAL LABORATORY TESTS SHOULD BE PERFORMED ON THE BORROW MATERIALS PRIOR TO THEIR USE IN THE COMPACTED FILL.

IMPORTED FILL MATERIALS SHOULD BE OF EQUAL OR GREATER QUALITY THAN THE ON-SITE MATERIALS AND SHOULD BE APPROVED FOR USE BY THE GEOTECHNICAL ENGINEER.

FILL PLACEMENT AND COMPACTION: ALL FILL MATERIALS MUST BE PLACED AND COMPACTED IN ACCORDANCE WITH NRCS-MD CODE NO. 378 SPECIFICATIONS. IN PARTICULAR, FILL MATERIALS SHOULD BE PLACED IN RELATIVELY HORIZONTAL LIFTS OF 8-INCH MAXIMUM THICKNESS AND SHOULD BE COMPACTED TO DRY DENSITIES OF AT LEAST 95 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). MOISTURE CONTENTS SHOULD BE MAINTAINED WITHIN +/- 2 PERCENT OF OPTIMUM MOISTURE CONTENT, AND PREFERABLY BETWEEN OPTIMUM MOISTURE CONTENT AND +/- PERCENT OF OPTIMUM MOISTURE CONTENT. ALL ENGINEERED FILL MATERIALS SHOULD BE PROPERLY BENCHMOT INTO EXISTING SLOPES.

AN EXPERIENCED SOILS TECHNICIAN UNDER THE DIRECTION OF A GEOTECHNICAL ENGINEER SHOULD PERFORM FIELD DENSITY TESTS ON THE EMBANKMENT FILL, AS NECESSARY, TO VERIFY THAT ADEQUATE COMPACTION IS ACHIEVED. IF ANY COMPACTION PROBLEMS ARE ENTERED DURING CONSTRUCTION, THE GEOTECHNICAL ENGINEER SHOULD BE CONTACTED FOR ADVICE, AS MODIFICATIONS TO THE COMPACTION PROCEDURES MAY BE APPROPRIATE.

CUT-OFF TRENCH CONSTRUCTION: A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHOULD BE PRESENT TO MONITOR PLACEMENT AND COMPACTION OF FILL FOR THE EMBANKMENT AND CUT-OFF TRENCH. IN ACCORDANCE WITH NRCS-MD CODE NO. 378 POND STABILIZATION SPECIFICATIONS, SOILS CONSIDERED SUITABLE FOR THE CENTER OF EMBANKMENT AND CUT-OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE.

IT IS OUR PROFESSIONAL OPINION THAT IN ADDITION TO THE SOIL MATERIALS DESCRIBED ABOVE A FINE GRADED SUBGRADE INCLUDING SILT (ML) WITH A PLASTICITY INDEX OF 10 OR MORE CAN BE UTILIZED FOR THE CENTER OF THE EMBANKMENT AND CORE TRENCH.

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS • LAND SURVEYORS • PLANNERS
3300 NORTH RIDGE ROAD, PINEA 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, approved by me, and that I am a duly licensed professional engineer in the State of Maryland, License No. 45577. Expiration Date: 06-09-2024.

John M. Carney 04.26.2023

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

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

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

POND REHABILITATION PROFILE AND STANDARD DETAILS

DATE: APRIL, 2023 BEI PROJECT NO: 2525
SCALE: AS SHOWN SHEET 23 OF 23