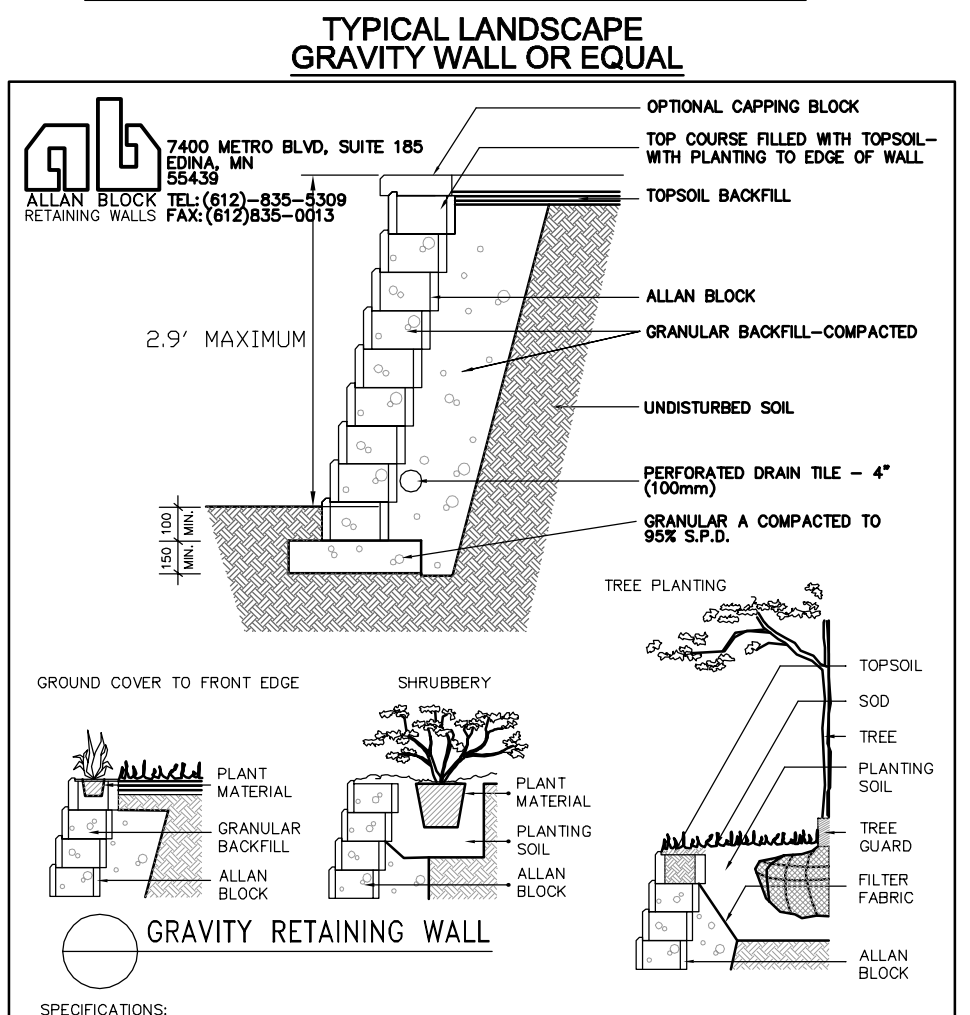


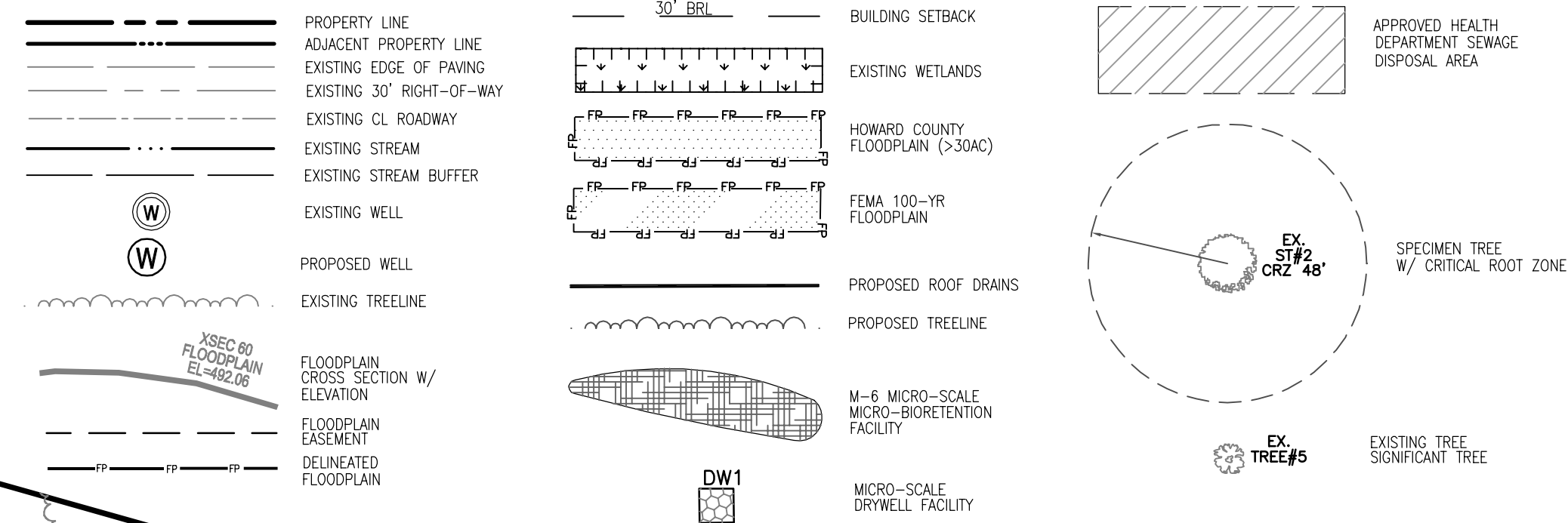
THIS PLAN MAY NOT BE USED TO OBTAIN PERMITS FOR HOUSE CONSTRUCTION. IF REQUIRED, AN ENGINEERED WALL DESIGN SHALL ACCOMPANY THE BUILDING PERMIT DOCUMENTS.



- SPECIFICATIONS: 1. EXCAVATE AREA TO LINE AND GRADES AS SHOWN ON CONSTRUCTION DRAWINGS... 2. SUBGRADE TO BE FIRM AND UNDISTURBED AND COMPACTED TO 95% S.P.D....

- NOTES: 1. NO SPECIMEN TREES ARE TO BE REMOVED. LOTS 1 & 2 HAVE ROAD FRONTAGE ON OLD ROVER MILL ROAD.

LEGEND:



MATCHLINE - SEE SHEET 3

E. 1312800
N. 596100

E. 1312800
N. 595700

E. 1313700
N. 595700

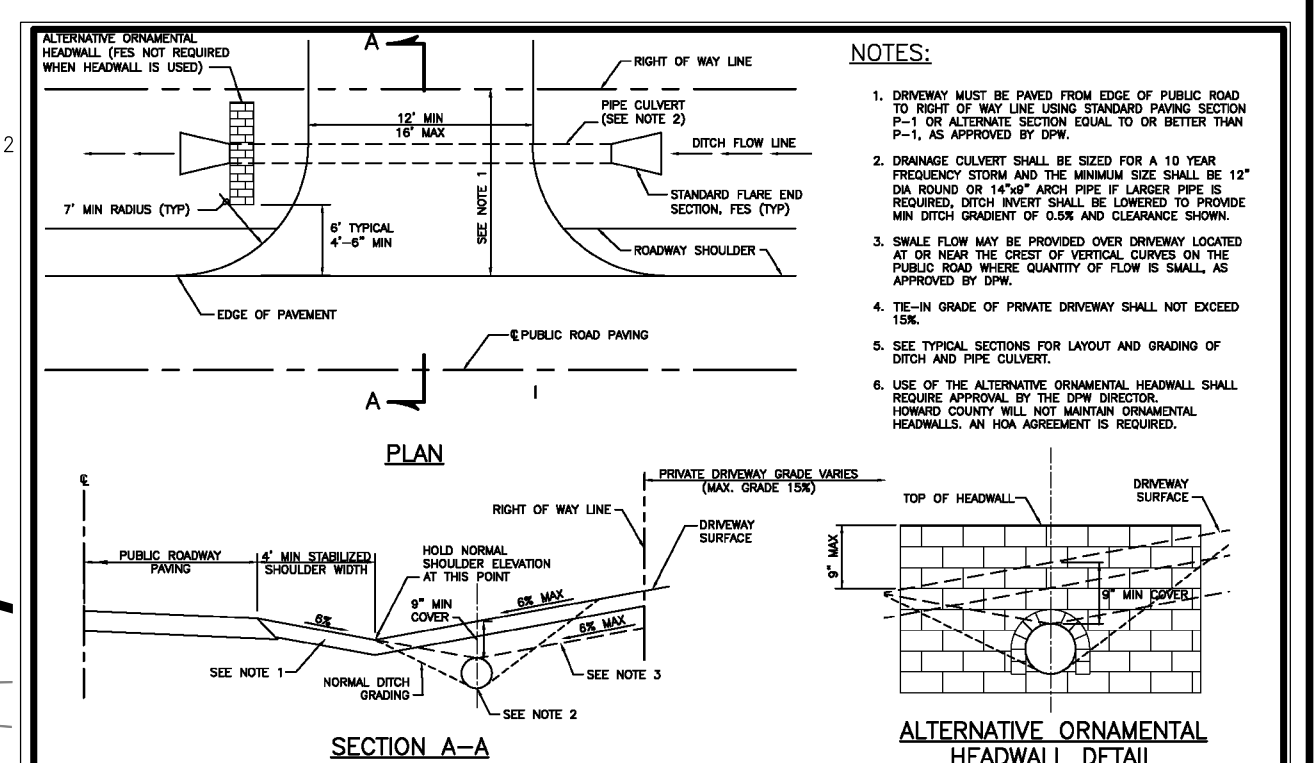
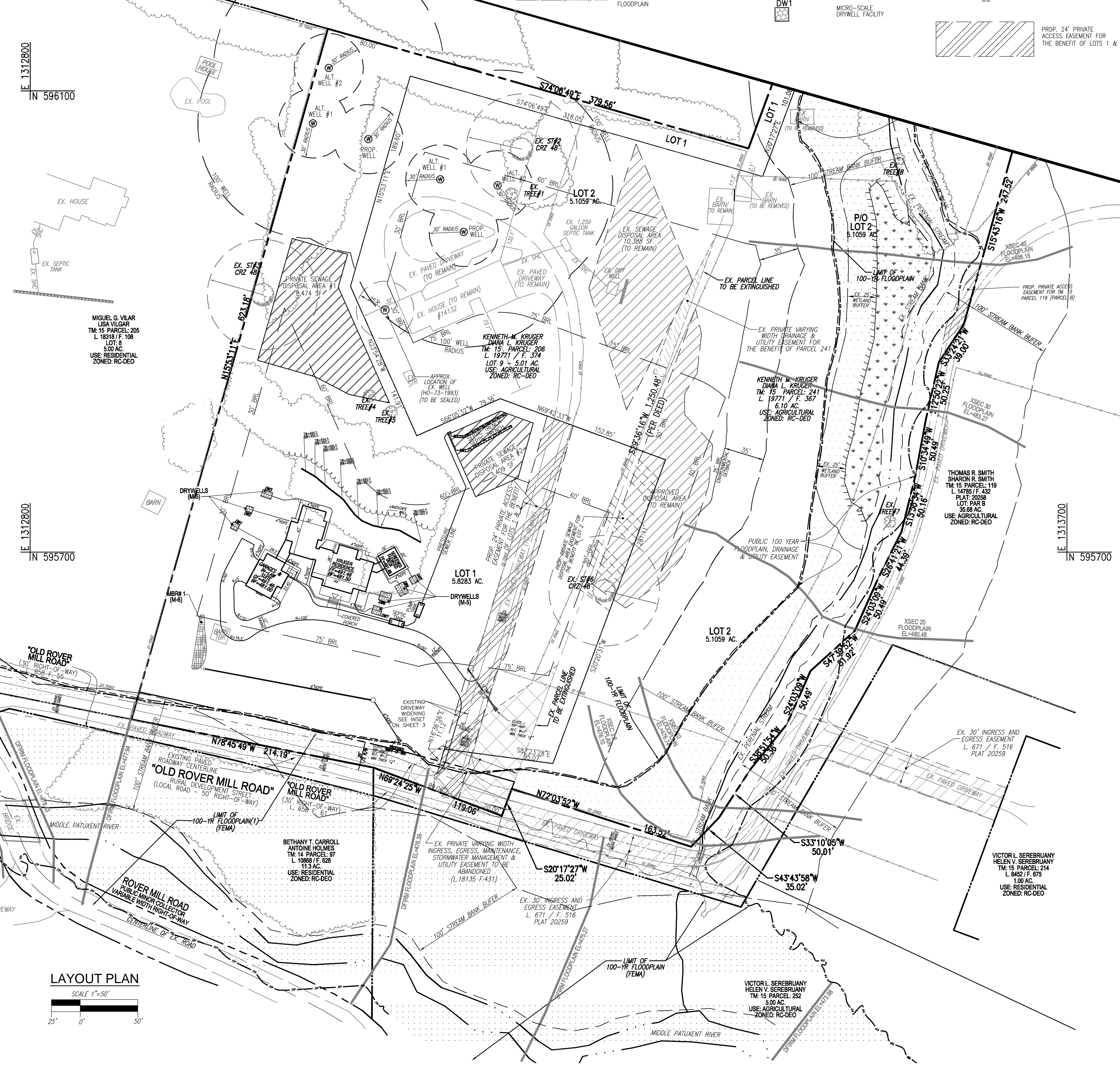


Table with 4 columns: SECTION NUMBER, ROAD AND STREET CLASSIFICATION, CALIFORNIA BEARING RATIO (CBR), and SUPERPAVE ASPHALT MIX. Includes notes and a legend for surface materials.

NOTE (1) THE LIMITS OF THE MIDDLE PATUXENT RIVER FLOODPLAIN ALONG OLD ROVER MILL ROAD IS BASED UPON FIELD SURVEY DATED APRIL 2023.

JOSEPH M. FIORE
SHERYL C. FIORE
TM: 14 PARCEL: 283
L: 8168 / F: 174
USE RESIDENTIAL
ZONED: RC-DEO

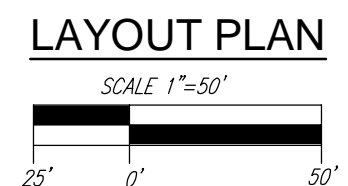
BETHANY T. CARROLL
ANTHONY HOLMES
TM: 14 PARCEL: 89
L: 10688 / F: 628
113 AC
USE RESIDENTIAL
ZONED: RC-DEO

VICTOR L. SEREBRANY
HELEN V. SEREBRANY
TM: 15 PARCEL: 252
5.00 AC
USE AGRICULTURAL
ZONED: RC-DEO

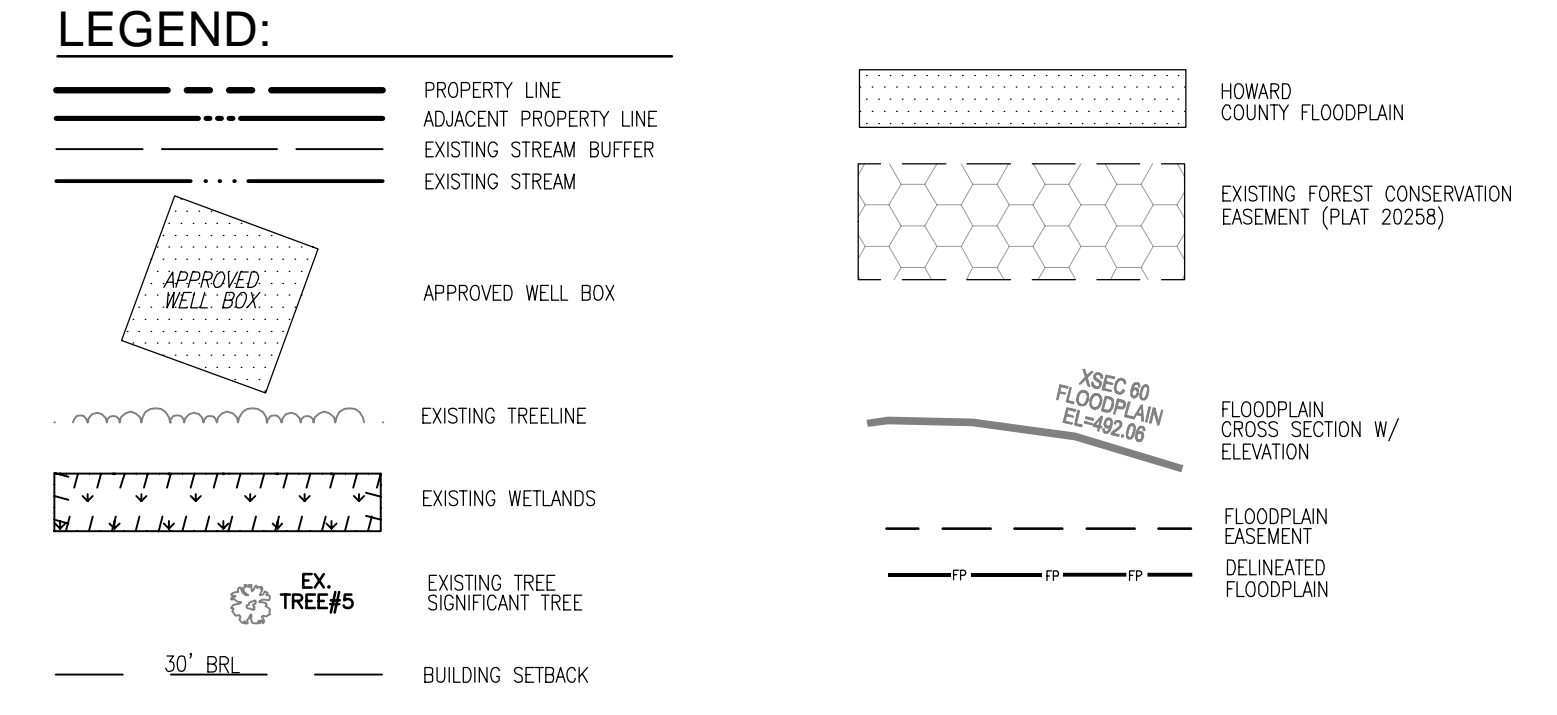
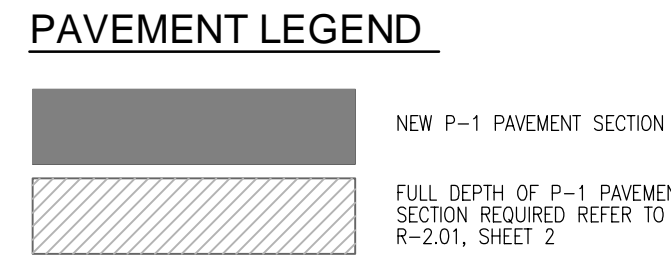
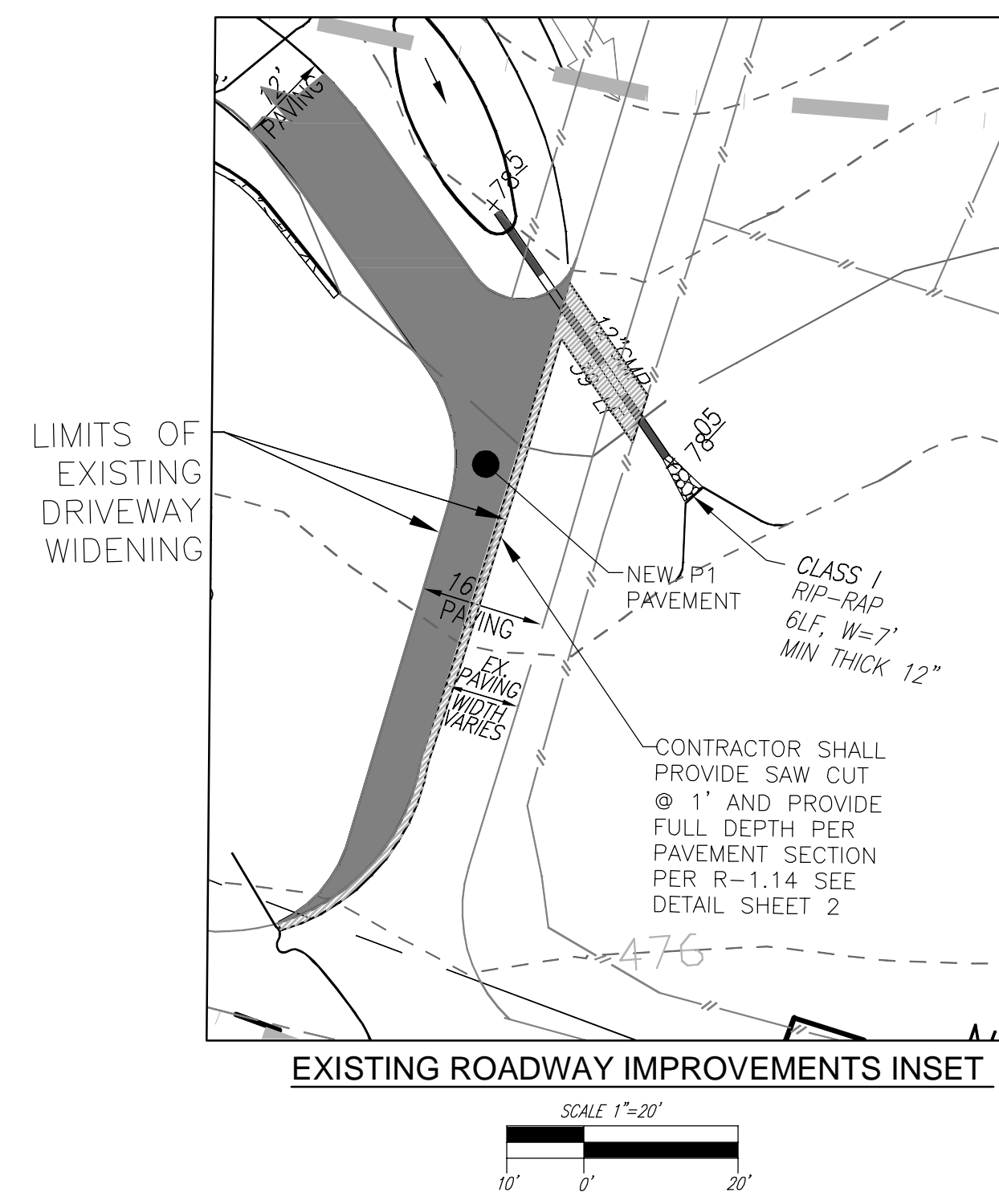
VICTOR L. SEREBRANY
HELEN V. SEREBRANY
TM: 15 PARCEL: 214
L: 9451 / F: 676
1.00 AC
USE RESIDENTIAL
ZONED: RC-DEO

OWNER/DEVELOPER
KENNETH & DIANA KRUGER
14132 ROVER MILL ROAD
WEST FRIENDSHIP, MD 21794

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Designed by: [Signature] 10/9/2024
CHIEF, DEVELOPMENT ENGINEERING DIVISION
Designed by: [Signature] 10/9/2024
CHIEF, DIVISION OF LAND DEVELOPMENT



FINAL SUPPLEMENTAL PLAN LAYOUT PLAN KRUGER PROPERTY LOTS 1 AND 2 A REVISION TO TAX MAP 15 - PARCELS 206 & 241. Includes VOGEL ENGINEERING and TIMMONS GROUP logos and contact information.



- NOTES:**
- NO SPECIMEN TREES ARE TO BE REMOVED.
 - NO STORM DRAINS ARE PROPOSED ONSITE.
 - LOTS 1 & 2 HAVE ROAD FRONTAGE ON OLD ROVER MILL ROAD.

NOTE:
NO GRADING OR PROPOSED IMPROVEMENTS ARE LOCATED ON THIS PORTION OF LOT 2 UNDER THIS PLAN

OWNER/DEVELOPER
KENNETH & DIANA KRUGER
14132 ROVER MILL ROAD
WEST FRIENDSHIP, MD 21794

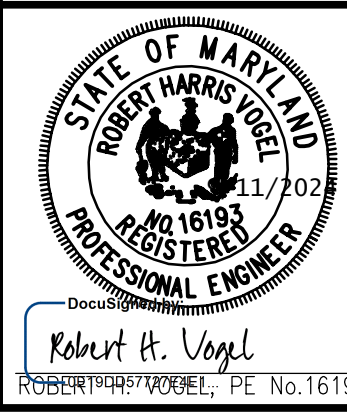
NO.	REVISION	DATE

FINAL SUPPLEMENTAL PLAN LAYOUT PLAN
KRUGER PROPERTY LOTS 1 AND 2
A REVISION TO TAX MAP 15 - PARCELS 206 & 241

TAX MAP: 15 GRP: 7
3RD ELECTION DISTRICT
L. 19771 / F. 374 (PARCEL: 206)
L. 19771 / F. 367 (PARCEL: 241)

ZONED: RC-DEO
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com



PROFESSIONAL CERTIFICATE
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. 16193 EXPIRATION DATE: 09-27-2028

DESIGN BY: RHV
DRAWN BY: ONB/EDS
CHECKED BY: RHV
DATE: SEPTEMBER 2024
SCALE: 1"=50'
W.O. NO.: 46261

3 SHEET OF 9

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Decommissioned by: *Charles Edmondson* 10/9/2024
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

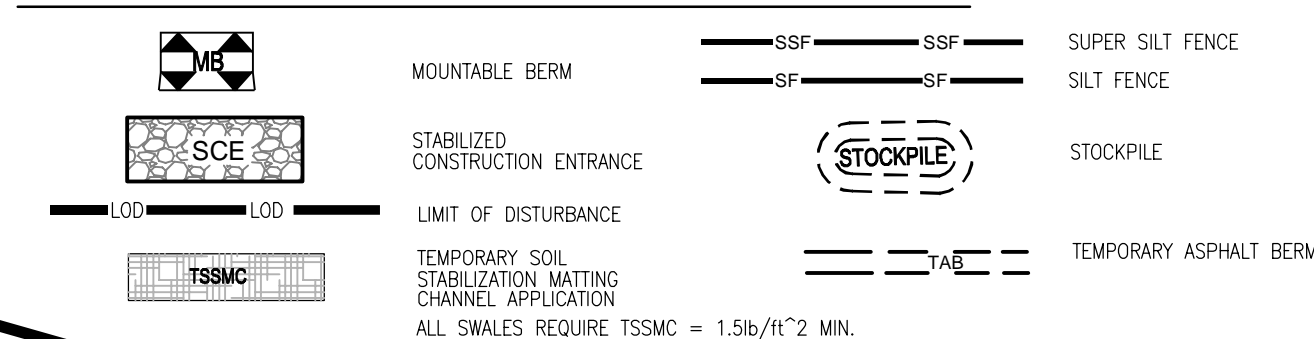
Decommissioned by: _____ 10/9/2024
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

SOILS LEGEND

Table with 5 columns: SYMBOL, NAME/DESCRIPTION, GROUP, K-FACTOR, HYDRIC, ERODIBLE. Lists soil types like GbB, GmB, Ha, M6C, M6D.

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

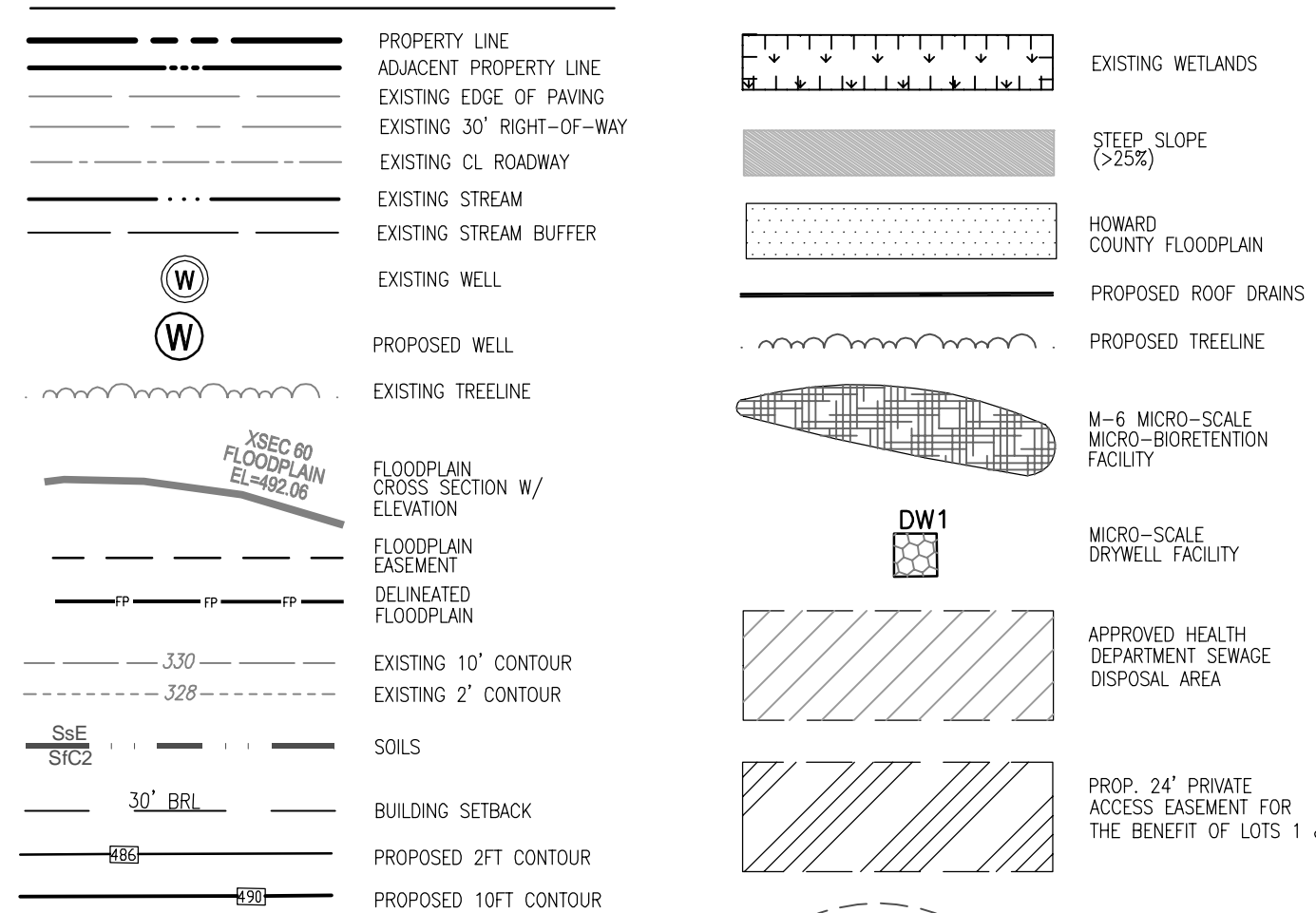
SEDIMENT CONTROL LEGEND



NOTE: - SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR. - SILT FENCE SHALL BE CURLED UPHILL. NO MORE THAN 35 FEET APART. - DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

NOTE: LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED.

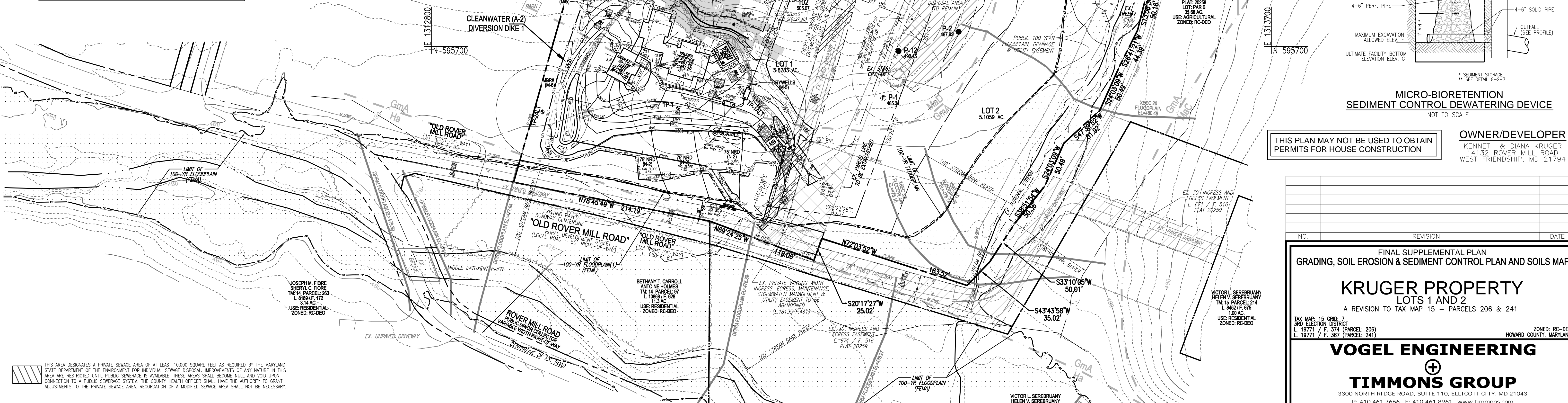
LEGEND



SEQUENCING OF CONSTRUCTION

- 1. OBTAIN GRADING PERMIT - (1 DAY)
2. THE DEVELOPER WILL OBTAIN ALL NECESSARY STATE PERMITS FOR THE PROPOSED DRIVEWAY CONNECTION TO OLD ROVER MILL ROAD
3. OBTAIN A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT IF REQUIRED - (1 DAY)
4. DEVELOPER / CONTRACTOR SHALL REQUEST A PRE-CONSTRUCTION MEETING WITH THE APPROPRIATE ENFORCEMENT AUTHORITY PRIOR TO BEGINNING CONSTRUCTION. - (1 DAY)
5. NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (410-313-1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK. - (1 DAY)
6. STAKEOUT LIMITS OF DISTURBANCE. - (3 DAYS)
7. CLEAR AND GRUB FOR THE INSTALLATION OF PERMETER CONTROLS (1 DAY)
8. INSTALL STABILIZED CONSTRUCTION ENTRANCE, PERMETER CONTROLS AND ASPHALT AS SHOWN HEREON. STABILIZE DISTURBANCES WITH TEMPORARY SEEDING MIXTURE AND STRAW MULCH.
9. AT THIS TIME, NO WORK SHALL BE DONE ON WIDENING THE EXISTING DRIVEWAY. (2 DAYS)
10. WITH TEMPORARY ASPHALT BERM IN PLACE, SAW CUT EXISTING DRIVEWAY FOR THE INSTALLATION OF THE DRIVEWAY CULVERT AND RIP RAP OUTFALL. IMMEDIATELY STABILIZE DISTURBANCES AROUND AND BELOW OUTFALL WITH SOD. ACCESS TO LOT 2 SHALL BE MAINTAINED AT ALL TIMES. (1 DAY)
11. WITH DRIVEWAY CULVERT IN PLACE AND DISTURBANCES STABILIZED, INSTALL THE PROJECT TSOAS AND EXCAVATE THE MICROBIOTENTION FACILITY TO AN ELEVATION AT LEAST 1 FOOT ABOVE ULTIMATE UNDERDRAIN PIPE INVERT ELEVATION AND INSTALL THE VERTICAL STANDING PER DETAIL SHOWN HEREON. THIS WILL PROVIDE TEMPORARY SEDIMENT STORAGE FOR THE OVERALL SITE GRADING OPERATIONS.
12. COMPLETION OF A PROJECT STORMWATER ESP - MICROBIOTENTION FACILITY SHALL OCCUR WHEN ITS CONTRIBUTING DRAINAGE AREA IS STABILIZED, AFTER HOME CONSTRUCTION UPON FULL STABILIZATION AND IN ACCORDANCE WITH THE SPECIFICATIONS ON SHEET 10.
13. IMMEDIATELY STABILIZE DISTURBANCES WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. - (4 DAYS)
14. BEGIN OVERALL SITE GRADING OPERATIONS AS REQUIRED FOR THE CONSTRUCTION OF THE PROPOSED HOME AS GRADES ARE ESTABLISHED, THEY SHALL BE IMMEDIATELY STABILIZED WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. (1 WEEK)
15. THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE ON THE SEDIMENT AND EROSION CONTROLS SHOWN HEREON AFTER EACH RAINFALL AND ON A DAILY BASIS. - (1 DAY)
16. HOME CONSTRUCTION SHALL BE COMPLETED UNDER A SEPARATE SEDIMENT CONTROL PLAN. (3 DAYS)
17. DRY UTILITIES (CABLE, GAS ELECTRIC) MUST BE INSTALLED AFTER DRIVEWAY IS PLACED TO SUBGRADE AND PRIOR TO THE INSTALLATION OF THE MICROSCALE MICROBIOTENTION (MBR) FACILITY. (2 DAYS)
18. STABILIZE AREAS PLACED TO FINAL GRADE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. - (1 DAY)
19. WITH BUILDING CONSTRUCTION COMPLETE, COMPLETE CONSTRUCTION ACTIVITIES TO WIDEN THE EXISTING DRIVEWAY FROM ROVER MILL ROAD TO THE NEW DRIVEWAY FOR LOT 1.
20. NOTE: THE DRIVEWAY WIDENING AREA WHICH DISTURBS THE FLOODPLAIN AS APPROVED BY WP-24-079 AND MDE PERMIT 24-NF-2022 SHALL BE COMPLETED AND IMMEDIATELY STABILIZED WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. (2 DAYS)
21. INSTALL DRIVEWAY PAVEMENT, COMPLETE FINAL GRADING AND STABILIZE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. (2 DAYS)
22. WITH CONTRIBUTING AREA STABILIZED WITH A 2\"/>

NOTE: ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION.



MICRO-BIOTENTION SEDIMENT CONTROL DEWATERING DEVICE NOT TO SCALE

THIS PLAN MAY NOT BE USED TO OBTAIN PERMITS FOR HOUSE CONSTRUCTION

OWNER/DEVELOPER KENNETH & DIANA KRUGER 14132 ROVER MILL ROAD WEST FRIENDSHIP, MD 21794

Table with 3 columns: NO., REVISION, DATE. Shows revision history.

FINAL SUPPLEMENTAL PLAN GRADING, SOIL EROSION & SEDIMENT CONTROL PLAN AND SOILS MAP KRUGER PROPERTY LOTS 1 AND 2 A REVISION TO TAX MAP 15 - PARCELS 206 & 241

VOGEL ENGINEERING TIMMONS GROUP 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043 P: 410.461.7666 F: 410.461.8961 www.timmons.com

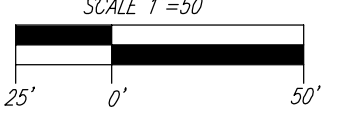
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING. Chief, Development Engineering Division: Chad Edmondson, dated 10/9/2024. Chief, Division of Land Development: dated 10/9/2024.

OWNER/DEVELOPER CERTIFICATION: I HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN... Kenneth Kruger, dated 9/13/2024.

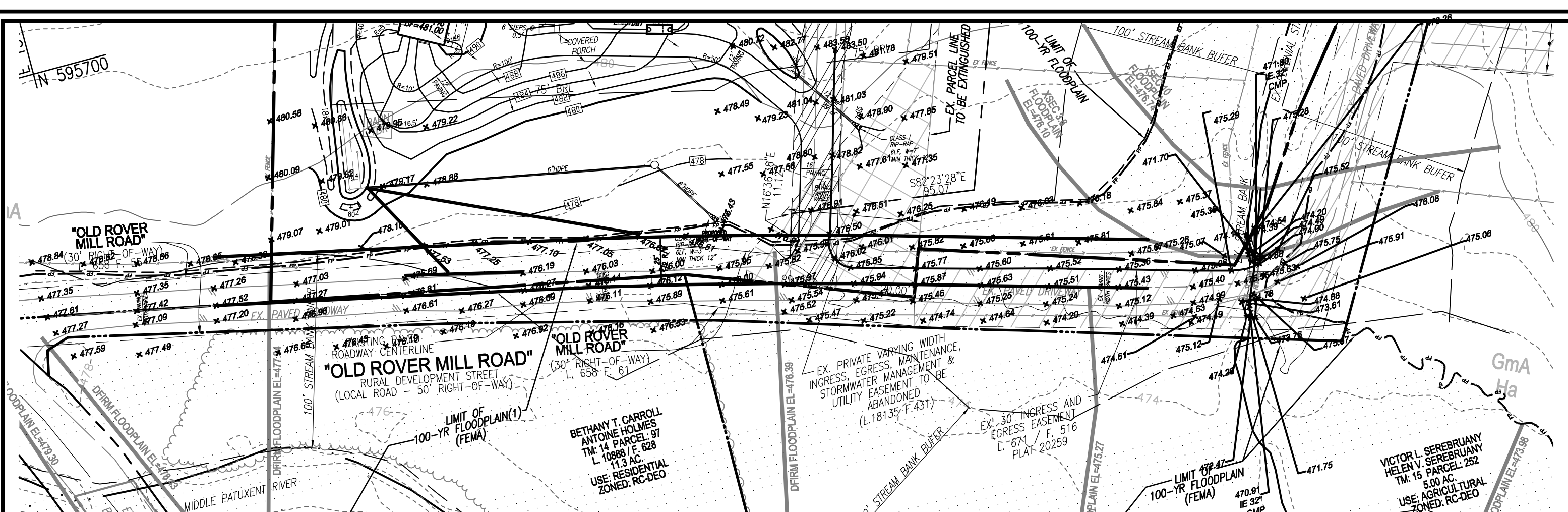
DESIGN CERTIFICATION: I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS AND STANDARDS... Robert H. Vogel, dated 9/11/2024.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT. Alexander Bratchie, dated 10/9/2024.

SOILS MAP & GRADING, SOIL EROSION & SEDIMENT CONTROL PLAN



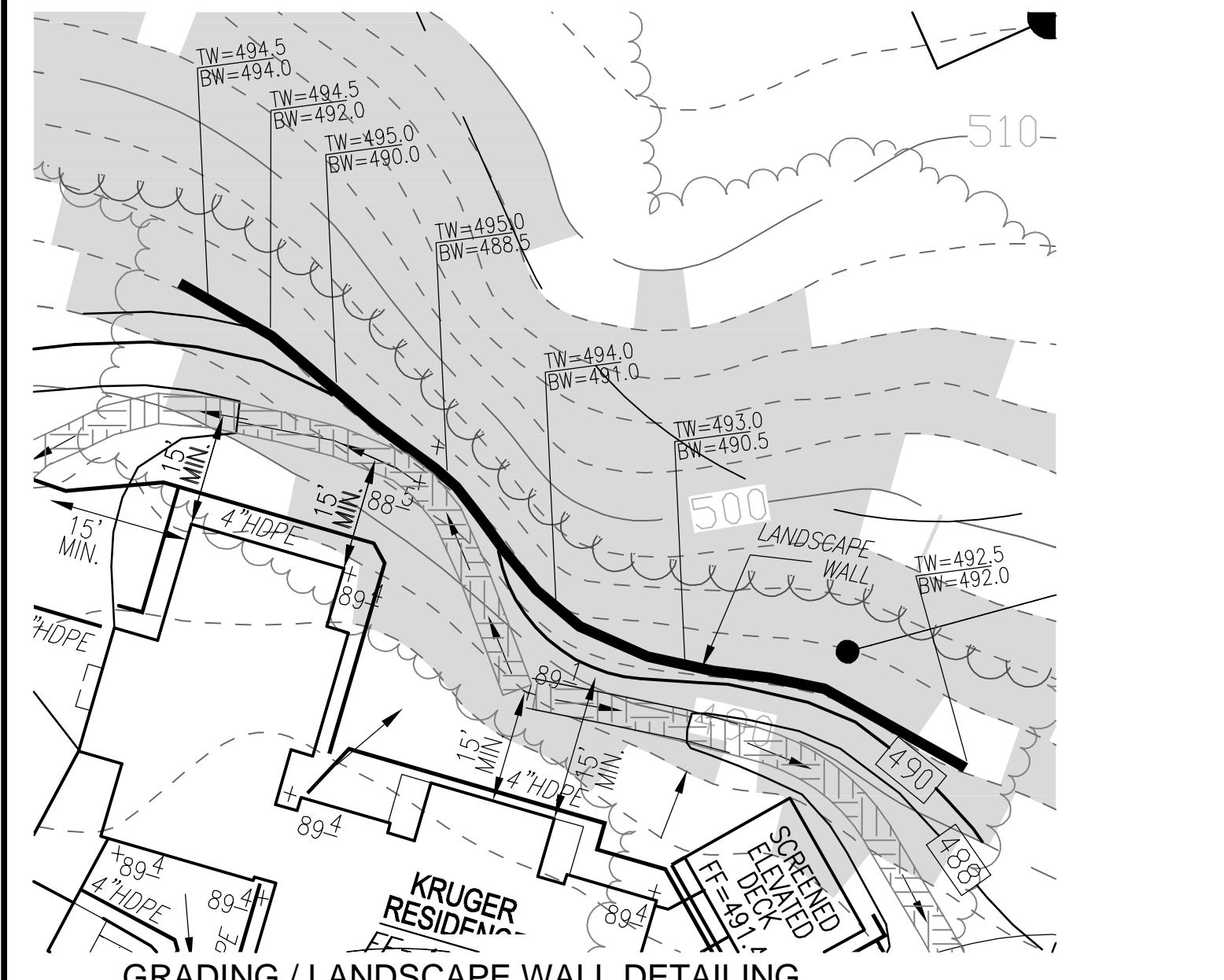
PROFESSIONAL CERTIFICATE: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193... Robert H. Vogel, dated 9/11/2024.



MIDDLE PATUXENT RIVER FLOODPLAIN DELINEATION EXHIBIT



NOTE (1)
THE LIMITS OF THE MIDDLE PATUXENT RIVER FLOODPLAIN ALONG OLD ROVER MILL ROAD IS BASED UPON FIELD SURVEY DATED APRIL, 2023



NOTE
FINAL DESIGN SHALL BE WITH FUTURE PLOT PLAN FOR BUILDING PERMIT FOR HOUSE CONSTRUCTION.

- 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 (UNIOLEA 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 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 I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
USE II WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE, DURING ANY YEAR.
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.
 - CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

NOTE
THE DEVELOPER WILL OBTAIN ALL NECESSARY STATE PERMITS FOR THE PROPOSED ENVIRONMENTAL IMPACTS.

- REFER TO MDE TRACKING NUMBER 202460507, PERMIT NUMBER 24-NI-3052 AUTHORIZATION NUMBER 24-NI-3052/202460507 EFFECTIVE MAY 23, 2024 FOR THE DISTURBANCES SHOWN HEREON.

ALL WORK IN THE NONTIDAL WETLANDS, WETLAND BUFFERS SHALL BE COMPLETED PER THE BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Designed by: *Chad Edmondson* 10/9/2024
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Designed by: _____ 10/9/2024
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

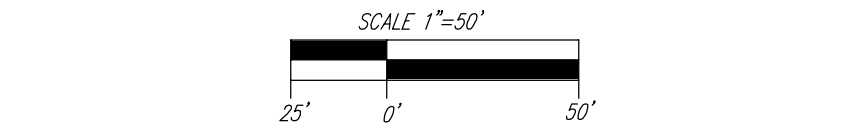
OWNER/DEVELOPER CERTIFICATION:
I HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT FROM BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

Designed by: *Kenneth Kruger* 9/13/2024
OWNER/DEVELOPER SIGNATURE DATE
Kenneth Kruger
PRINTED NAME & TITLE

DESIGN CERTIFICATION:
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.

Designed by: *Robert H. Vogel* 9/11/2024
DESIGNER'S SIGNATURE DATE
ROBERT H. VOGEL
PRINTED NAME
MD REGISTRATION NO. 16193
R.L.S., OR R.L.A. (circle one) DATE

SOILS MAP & GRADING, SOIL EROSION & SEDIMENT CONTROL PLAN



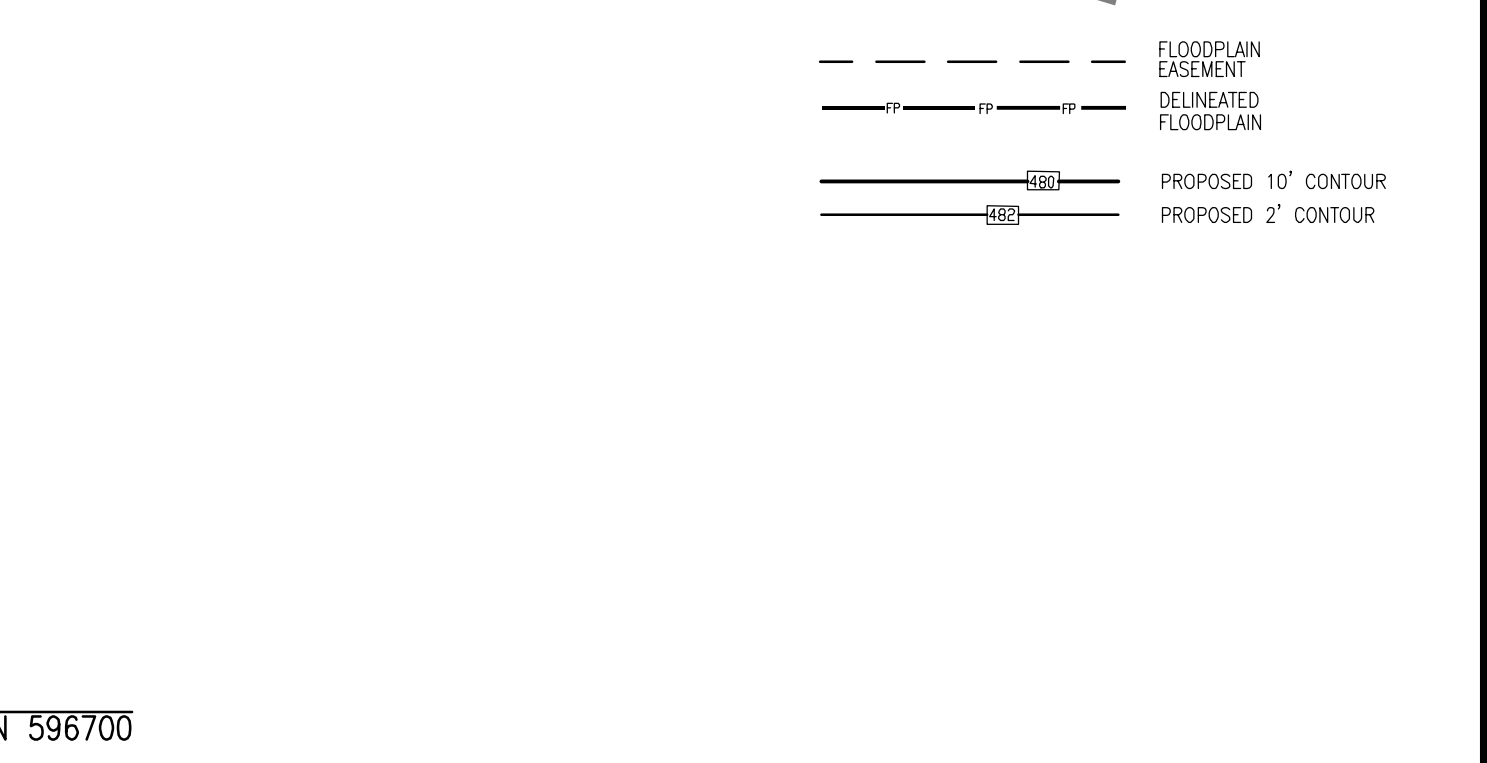
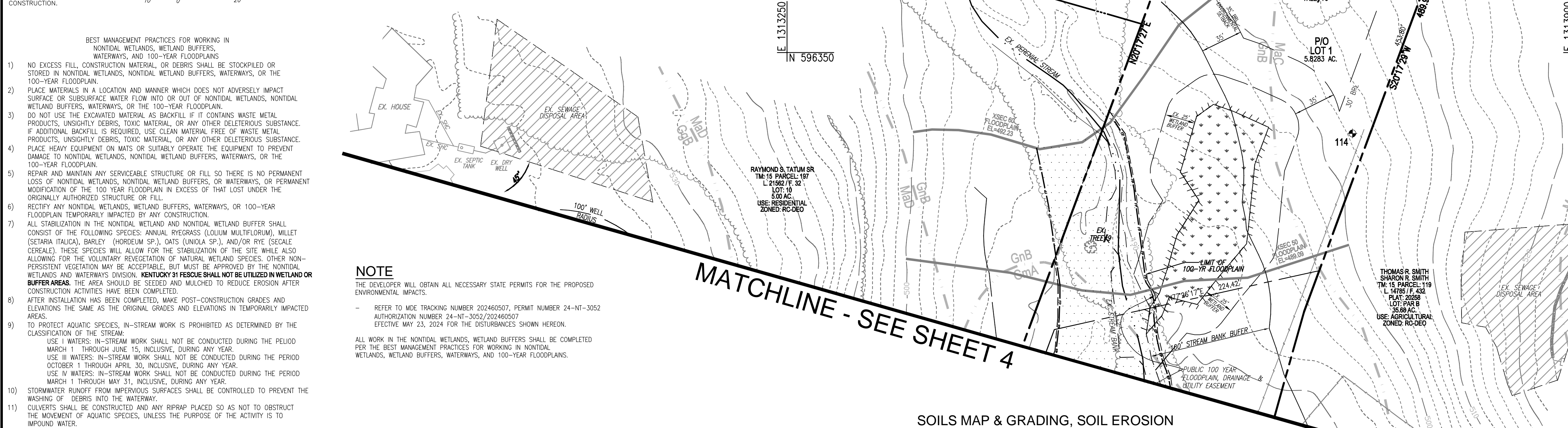
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

Designed by: *Alexander Bratchik* 10/9/2024
DATE

SOILS LEGEND					
SYMBOL	NAME/DESCRIPTION	GROUP	K-FACTOR	HYDRIC	ERODIBLE
GgB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	24	NO	NO
GmA	GLENVILLE SILT LOAM, SOMEWHAT POORLY DRAINED, 0 TO 3 PERCENT SLOPES	C/D	43	YES	NO
GhB	GLENVILLE-BALE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	37	YES	YES
Hd	HATBORO-CODRUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	37	YES	NO
MdC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	28	NO	NO
Mod	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	28	NO	YES

NOTE:
HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

LEGEND:	
	PROPERTY LINE
	ADJACENT PROPERTY LINE
	EXISTING STREAM BUFFER
	EXISTING STREAM
	APPROVED WELL BOX
	EXISTING TREELINE
	EXISTING WETLANDS
	EXISTING TREE SIGNIFICANT TREE
	BUILDING SETBACK
	HOWARD COUNTY FLOODPLAIN
	EXISTING FOREST CONSERVATION EASEMENT (PLAT 2025B)
	FLOODPLAIN SECTION W/ ELEVATION
	FLOODPLAIN EASEMENT
	DELINEATED FLOODPLAIN
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR



DETAIL E-7 TEMPORARY STONE OUTLET STRUCTURE	
	STANDARD SYMBOL: 4220/1505
CONSTRUCTION SPECIFICATIONS	
1. PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.	
2. USE NONWOVEN GEOTEXTILE ON INTERFACE BETWEEN GROUND AND STONE.	
3. PERFORATE BATTLE BOARD WITH 3 ROWS OF 1 INCH DIAMETER HOLES & HOLES ON CENTER, EMBED A MINIMUM OF 4 INCHES INTO GROUND, AND EXTEND BATTLE BOARD MINIMUM OF 12 INCHES INTO EARTH DIKE.	
4. USE CLEAN 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE, PLATE WORK MANUFACTURED GEOTEXTILE ON UPSTREAM FACE AND COVER WITH A MINIMUM OF 6 INCHES OF ADDITIONAL STONE.	
5. USE NONWOVEN AND WEIGH MANUFACTURED GEOTEXTILES AS SPECIFIED IN SECTION H-11 MATERIALS.	
6. SET WEIR CREST OF STONE & HOLES LOWER THAN THE TOP OF EARTH DIKE. USE MINIMUM LENGTH OF 6 FEET FOR WEIR CREST.	
7. REMOVE STORMWATER WHICH HAS ACCUMULATED TO WITHIN 6 INCHES OF WEIR CREST. REPLACE GEOTEXTILE AND STONE FACING WHEN STRUCTURE CEASES TO DRAIN. MAINTAIN LINE, GRADE, AND CROSS SECTION.	
8. UPON REMOVAL OF STONE OUTLET STRUCTURE, GRADE AREA FLUSH WITH EXISTING GROUND, WITHIN 24 HOURS STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.	
DESIGN DATA	
DRAINAGE AREA = 0.14 ACRES	
REQUIRED SED. STORAGE = 260 CUFT	
UPSTREAM TOE = ELEVATION 479.0	
TOP ELEVATION = 481.5	
WEIR CREST ELEVATION = 481.0	
TOP BATTLE BOARD ELEVATION = 480.5	
BATTLE BOARD = THREE(3) 2' X 10' X 8 FT	
PROVIDED SED. STORAGE = 299 CUFT	
SEE SHEET 4 SEQUENCE OF CONSTRUCTION, ITEMS 7 & 8.	
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	
U.S. DEPARTMENT OF AGRICULTURE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION	

OWNER/DEVELOPER
KENNETH & DIANA KRUGER
14132 ROVER MILL ROAD
WEST FRIENDSHIP, MD 21794

NO.	REVISION	DATE

FINAL SUPPLEMENTAL PLAN
SOILS MAP & GRADING, SOIL EROSION & SEDIMENT CONTROL PLAN
KRUGER PROPERTY
LOTS 1 AND 2
A REVISION TO TAX MAP 15 - PARCELS 206 & 241

TAX MAP: 15, GRID: 7
3RD ELECTION DISTRICT
L. 19771 / F. 374 (PARCEL: 206)
L. 19771 / F. 367 (PARCEL: 241)

ZONED: RC-DEO
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP

3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P. 410.461.7666 F. 410.461.8961 www.timmons.com

PROFESSIONAL CERTIFICATE

DESIGN BY: *RHV*

DRAWN BY: *ONB/EDS*

CHECKED BY: *RHV*

DATE: *SEPTEMBER 2024*

SCALE: 1"=50'

W.O. NO.: 45261

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2028

5 SHEET OF 9

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

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

- 1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS... PRIOR TO THE START OF EARTH DISTURBANCE.

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

CRITERIA A. SEED MIXTURES 1. GENERAL USE A. SELECT ONE OR MORE OF THE SPECIES OR SPECIES MIXTURES LISTED IN TABLE 8.3 FOR THE APPROPRIATE PLANT HARDNESS ZONE...

- 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.

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

- 3. FOLLOWING INITIAL SOIL DISTURBANCE (RE-3) DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERMETER CONTROLS, Dikes, SWALES, DITCHES, PERMETER SLOPES, AND ALL SLOPES STEEPER THAN 1:1 VERTICAL (3:1) AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING.

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

- 4. TEMPORARY STABILIZATION WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-3), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-5).

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

- 5. SITE ANALYSIS TOTAL AREA OF SITE: 11.1 ACRES AREA DISTURBED: 0.99 ACRES AREA TO BE REFORESTED OR PAVED: 0.72 ACRES AREA TO BE VEGETATIVELY STABILIZED: 0.60 ACRES TOTAL: 2.31 ACRES TOTAL FULL: 2.50 ACRES TOTAL OFFSITE WASH/BORROW AREA LOCATION: DISTRICT

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

- 6. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE CID, THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY, AND THE NEXT DAY AFTER EACH INSPECTION. THE RESULTING RECORDS MUST BE MADE AVAILABLE UPON REQUEST. THIS IS PART OF EVERY INSPECTION AND SHOULD INCLUDE: - INSPECTION DATE - EVIDENCE OF SEDIMENT DISCHARGES - NAME AND TITLE OF INSPECTOR - WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED PRECIPITATION)

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

- 7. 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 WORKDAY, WHICHEVER IS GREATER.

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

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

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

- 9. GENERAL SPECIFICATIONS A. CLASS OF TURFGRASS/SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

- 10. WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SURFACES MUST BE INSTALLED IN A SEDIMENT BASIN OR OTHER APPROVED WASH STRUCTURE.

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

- 11. TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION INTO FINAL GRADE.

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

- 12. ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON THE-CONTOUR, AND BE IMBERGATED AT 25' MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPHILL BY 2' IN ELEVATION.

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

- 13. STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUDES): - USE I AND II FROM 1 - JUNE 15 - APRIL 30 - USE III FROM 1 - APRIL 30 - USE IV FROM 1 - MAY 31

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

- 14. A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

- 15. ITEM 11, REGARDING PROJECT DISTURBANCE IS NO LONGER A REQUIREMENT OF THE STATE OF MARYLAND, HOWEVER REMAINS A REQUIREMENT OF HOWARD COUNTY.

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

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

DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

- 17. I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT REPRESENTS A PRACTICAL AND FEASIBLE DESIGN, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

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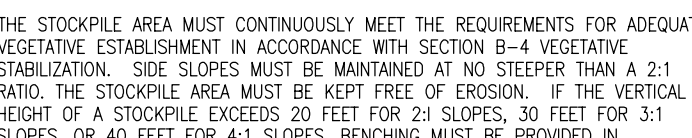
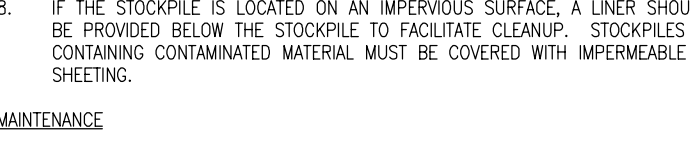
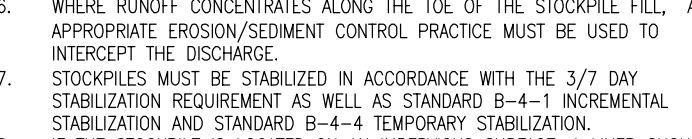
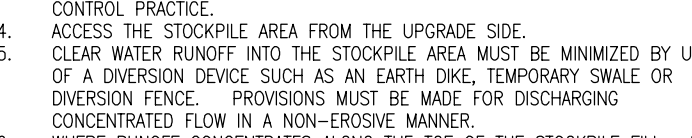
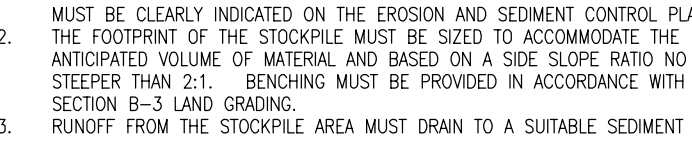
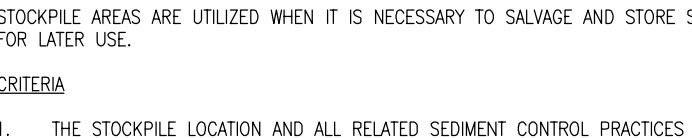
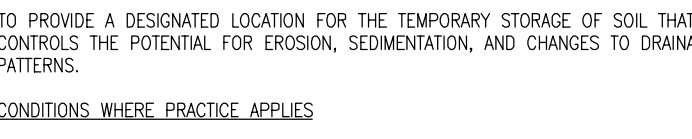
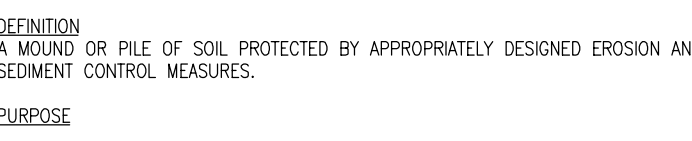
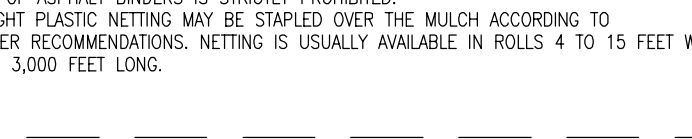
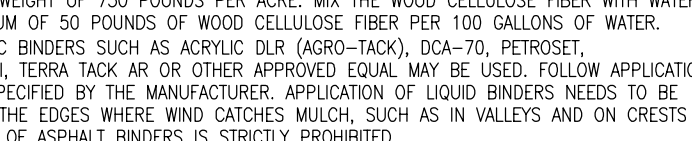
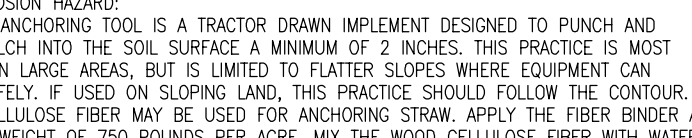
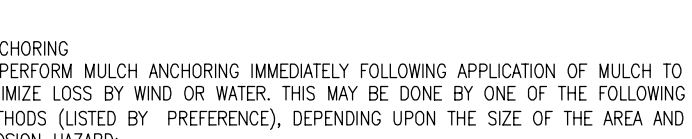
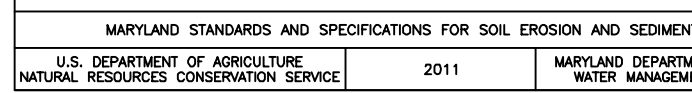
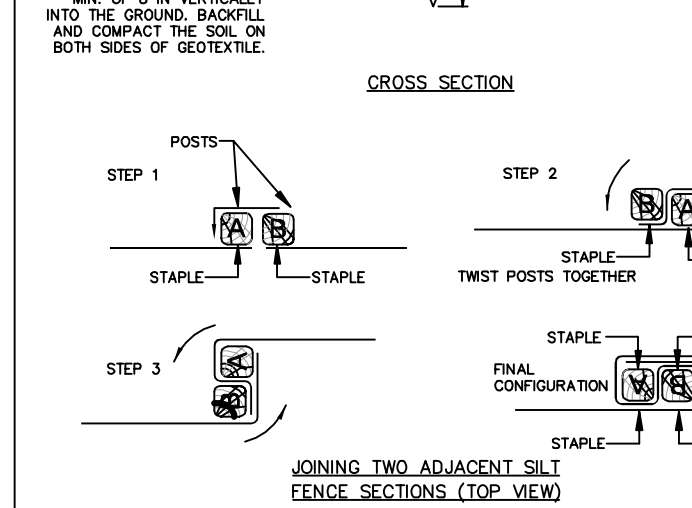
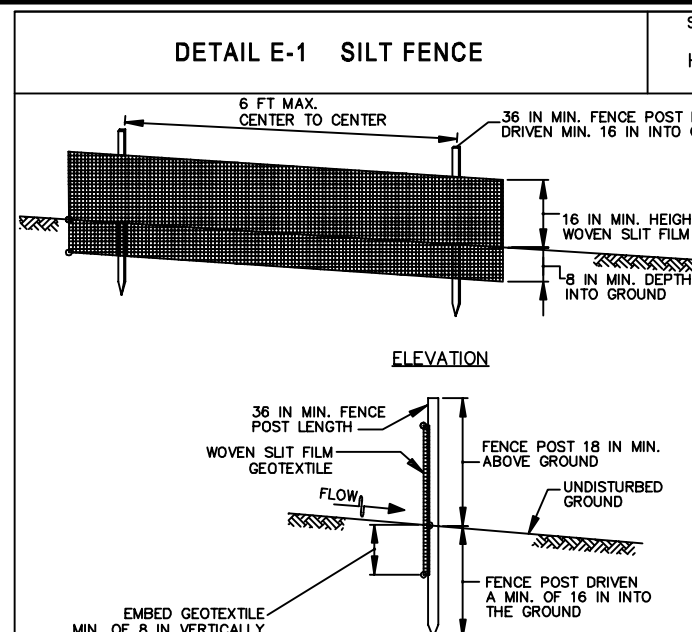
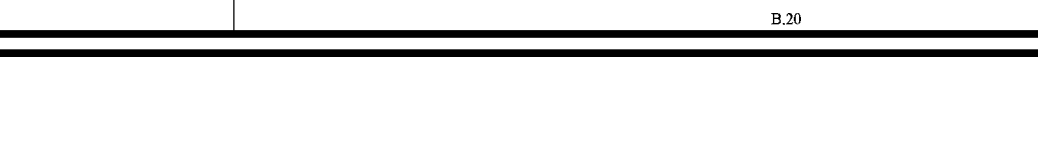
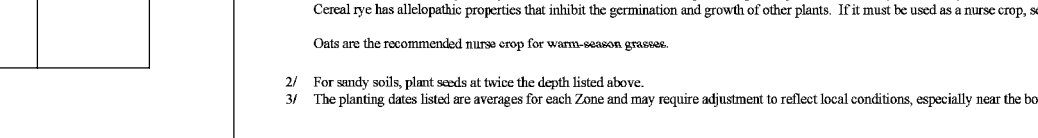
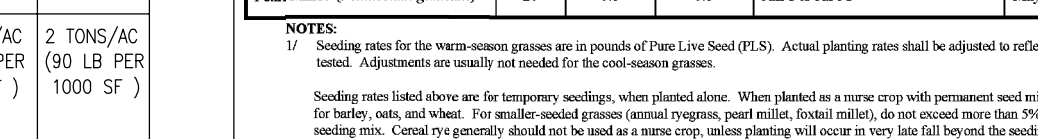
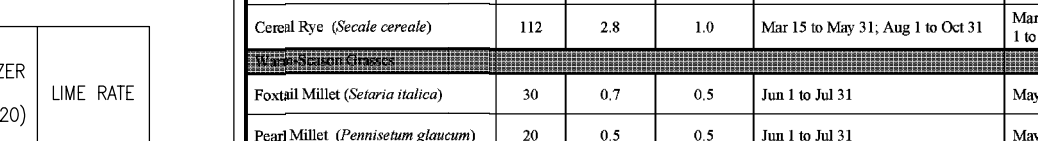
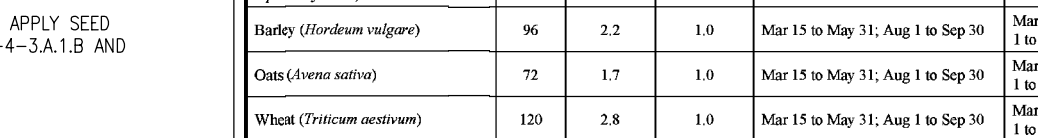
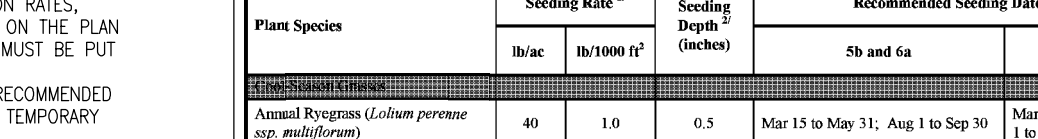
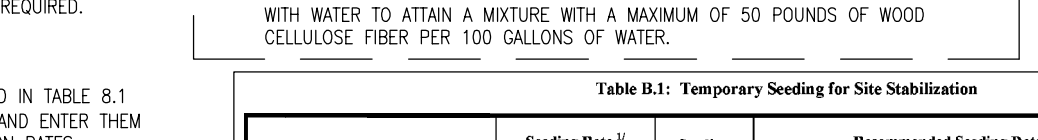
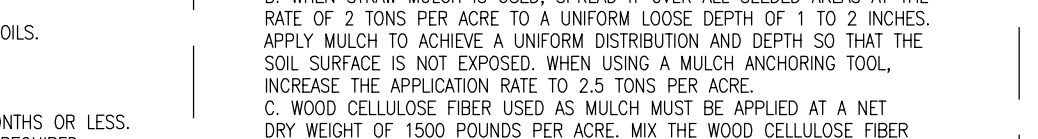
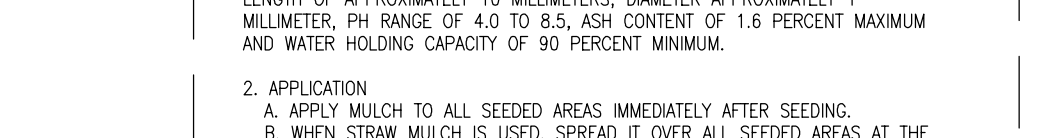
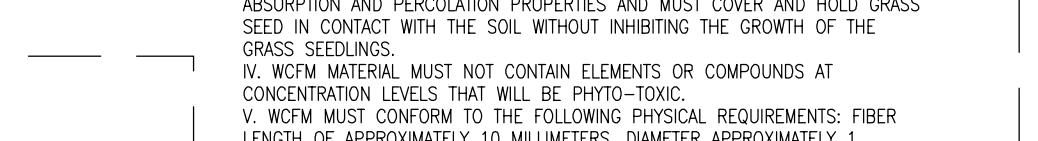
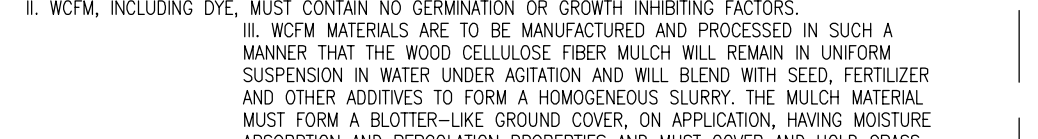
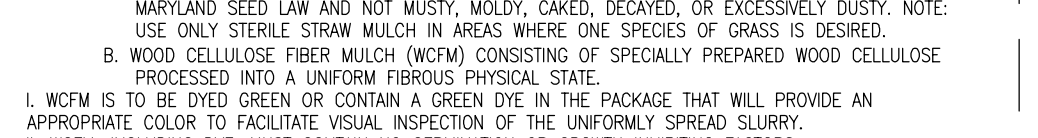
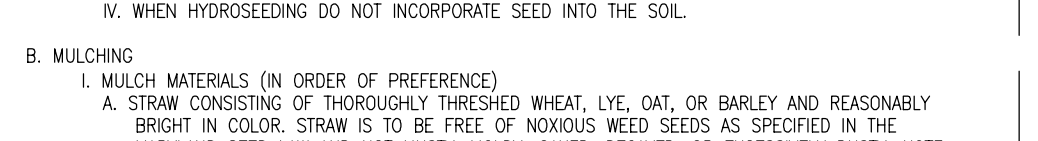
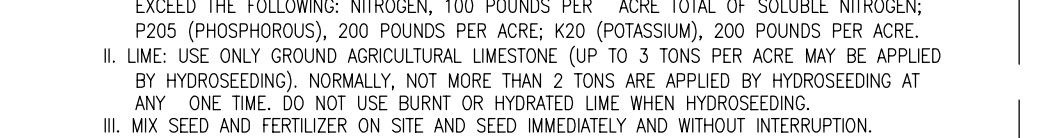
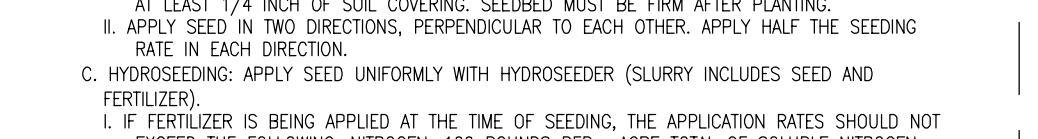
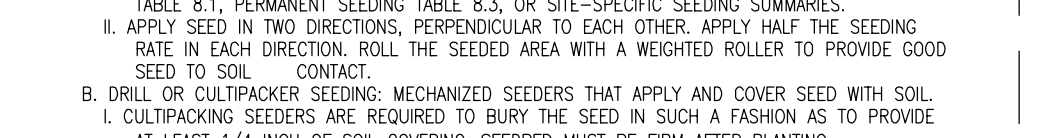
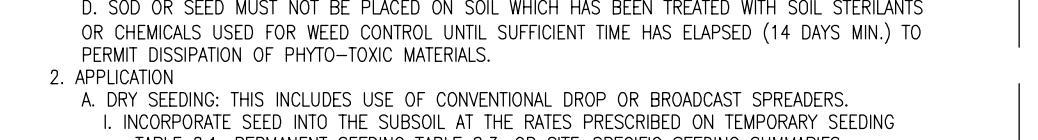
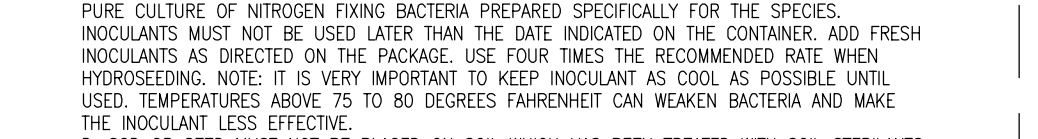
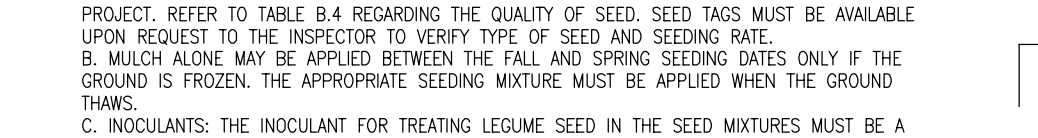
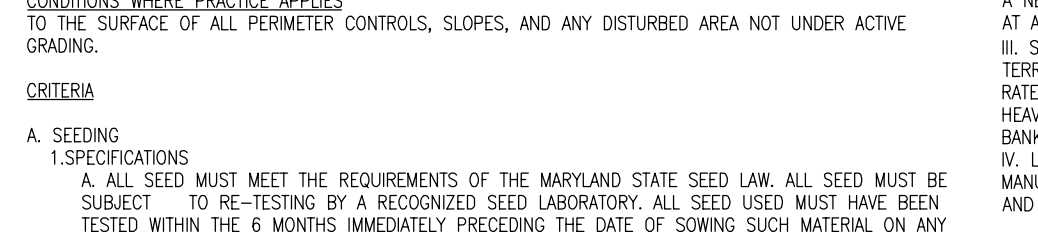
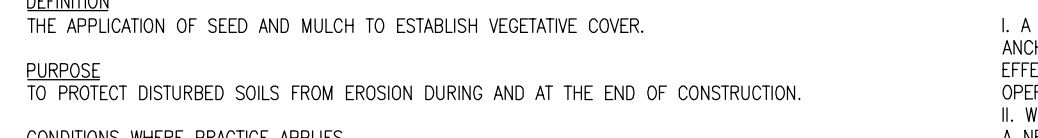
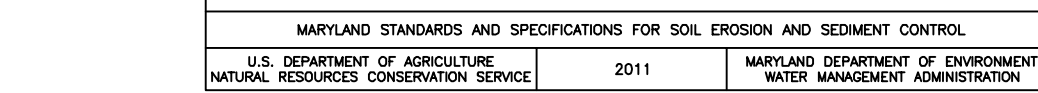
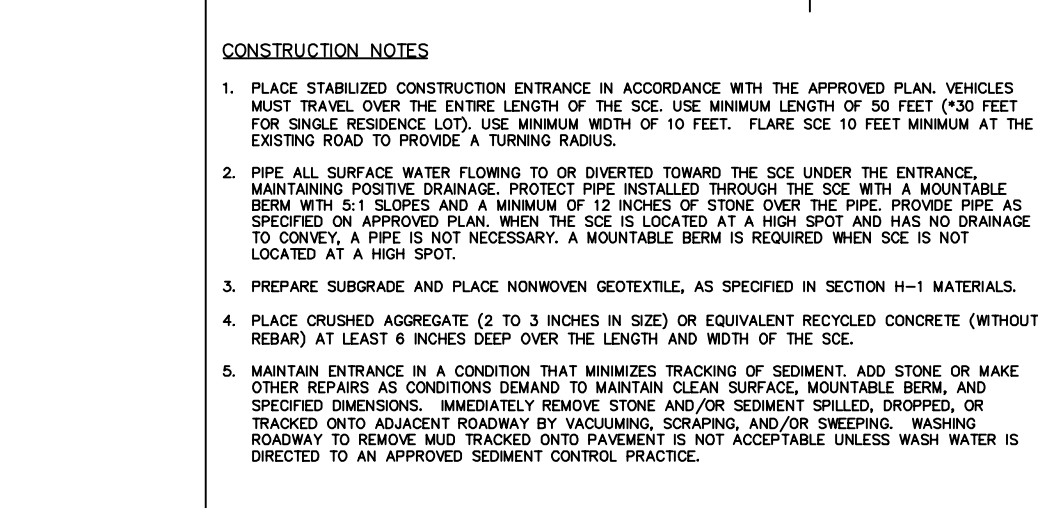
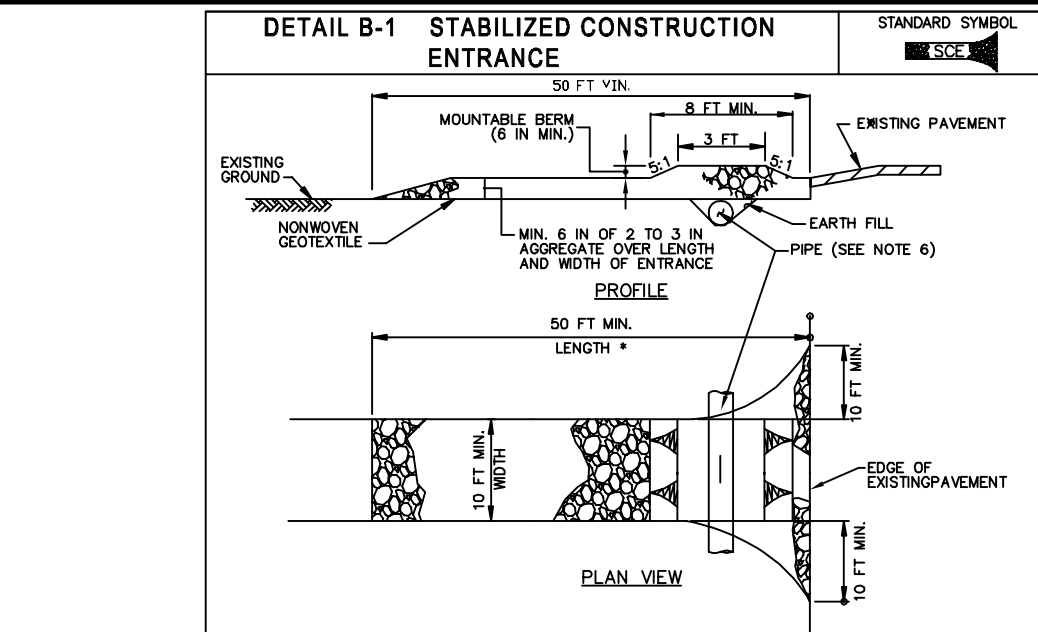
DEFINITION TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

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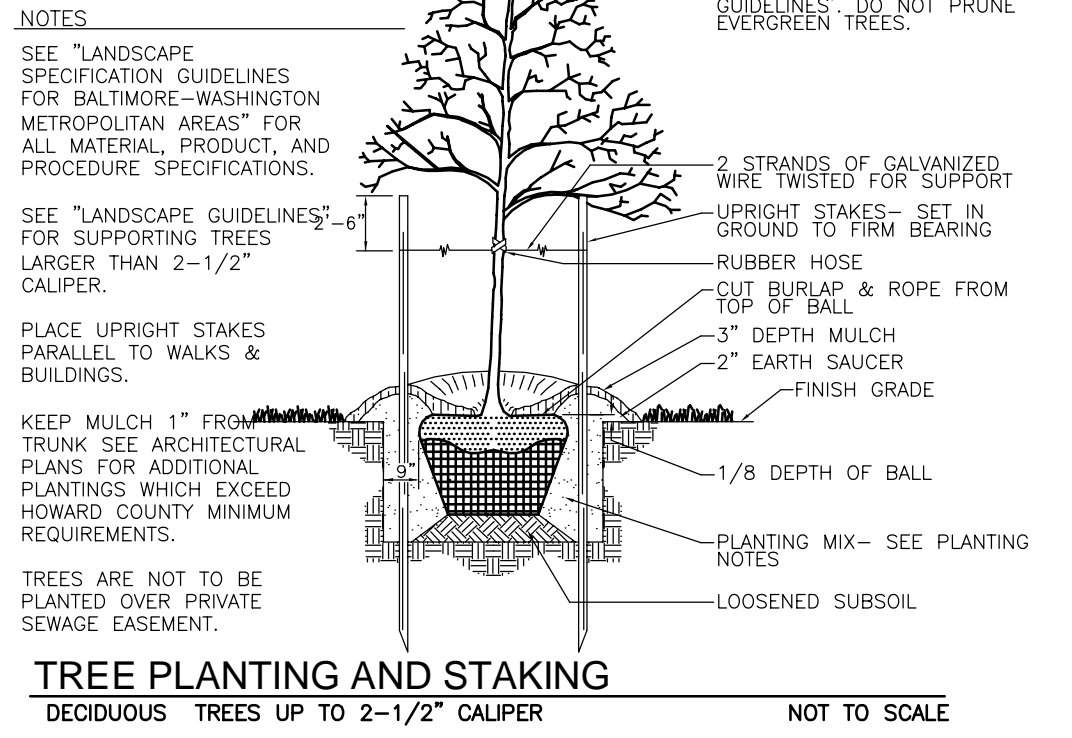
LEGEND:

Legend detailing symbols for property lines, setbacks, wetlands, floodplains, wells, easements, and contours.

THIS AREA DESIGNATES A PRIVATE SEWAGE AREA OF AT LEAST 10,000 SQUARE FEET AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT...

LANDSCAPE SCHEDULE REQUIRED PLANTING table with columns: LEGEND, QUAN, BOTANICAL NAME, SIZE, CAT.

LANDSCAPE SCHEDULE NOTE: 1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY... 2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES...



TREE PLANTING AND STAKING DECIDUOUS TREES UP TO 2-1/2" CALIPER NOT TO SCALE

SCHEDULE 'A' PERIMETER LANDSCAPE EDGE table with columns: CATEGORY, ADJACENT TO PERIMETER PROPERTIES, and various counts.

(1) CREDIT FOR SPECIMEN TREE #3 TO REMAIN. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS...

LANDSCAPING NOTES: 1. AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND TREES LISTED AND APPROVED ON THE LANDSCAPE PLAN... 2. THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE...

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 CODE...

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING. Chief, Development Engineering Division: 10/9/2024. Chief, Division of Land Development: 10/9/2024.

SOILS LEGEND table with columns: SYMBOL, NAME/DESCRIPTION, GROUP, K-FACTOR, HYDRIC, ERODIBLE.

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL EROSION FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.



FOREST CONSERVATION NOTE: IN ACCORDANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, THIS PROJECT (NON CLUSTER SUBDIVISION WITH BUILDABLE LOTS LESS THAN 6 ACRES) IS EXEMPT FROM PROVIDING FOREST CONSERVATION...

OWNER/DEVELOPER: KENNETH & DIANA KRUGER, 14132 ROVER MILL ROAD, WEST FRIENDSHIP, MD 21794.

Table with columns: NO., REVISION, DATE.

FINAL SUPPLEMENTAL PLAN LANDSCAPE PLAN NOTES & DETAILS KRUGER PROPERTY LOTS 1 AND 2. A REVISION TO TAX MAP 15 - PARCELS 206 & 241.

VOGEL ENGINEERING TIMMONS GROUP. 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043.

Professional Engineer seal for Robert H. Vogel, State of Maryland, License No. 16193.

SPECIMEN & SIGNIFICANT TREE CHART

Key (X#)	Species	Size (in. DBH)	State Champion (in. DBH)	CRZ (ft radius)
1	Tulip Poplar	25	101.3	37.5
2	Silver Maple	36	94	54
3	Black Cherry	31.5		47.3
4	Norway Crimson Maple	29	66.6	43.5
5	Pignut Hickory	26.5	47.5	39.8
6	Black Cherry	32	64	48
7	White Pine	27.5	53.5	41.3
8	Red Maple	25	96.9	37.5
9	Silver Maple	25.5	94	38.3
10	Silver Maple	26.5	94	39.8
11	Red Maple	24.75	86.9	37.1
12	Black Cherry	24	64	36

NOTES:
 1. NO SPECIMEN TREES ARE TO BE REMOVED.

FOREST CONSERVATION NOTE:
 IN ACCORDANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, THIS PROJECT (NON CLUSTER SUBDIVISION WITH BUILDABLE LOTS LESS THAN 6 ACRES) IS EXEMPT FROM PROVIDING FOREST CONSERVATION. SECTION 16.1202(B)(1)(VII) A MINOR SUBDIVISION THAT CREATES ONE ADDITIONAL LOT AND HAS NO FURTHER SUBDIVISION POTENTIAL.



LEGEND:

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- EXISTING STREAM BUFFER
- EXISTING STREAM
- APPROVED WELL BOX
- EXISTING TREELINE
- EXISTING WETLANDS
- EXISTING TREE SIGNIFICANT TREE
- BUILDING SETBACK
- HOWARD COUNTY FLOODPLAIN
- EXISTING FOREST CONSERVATION EASEMENT (PLAT 20258)
- FLOODPLAIN CROSS SECTION W/ ELEVATION
- FLOODPLAIN EASEMENT DELINEATED FLOODPLAIN

NOTE:
 NO GRADING OR PROPOSED IMPROVEMENTS ARE LOCATED ON THIS PORTION OF LOT 2 UNDER THIS PLAN

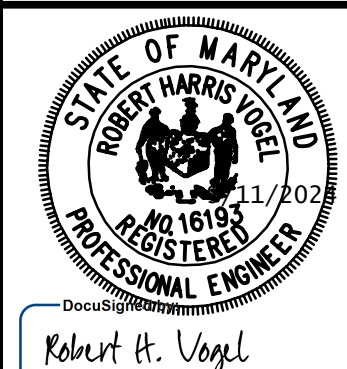
OWNER/DEVELOPER
 KENNETH & DIANA KRUGER
 14132 ROVER MILL ROAD
 WEST FRIENDSHIP, MD 21794

NO.	REVISION	DATE

**FINAL SUPPLEMENTAL PLAN
 LANDSCAPE PLAN
 NOTES & DETAILS
 KRUGER PROPERTY
 LOTS 1 AND 2
 A REVISION TO TAX MAP 15 - PARCELS 206 & 241**

TAX MAP: 15 GRP: 7
 3RD ELECTION DISTRICT
 L. 19771 / F. 374 (PARCEL: 206)
 L. 19771 / F. 367 (PARCEL: 241)
 ZONED: RC-DEO
 HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
 +
TIMMONS GROUP
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 P. 410.461.7666 F. 410.461.8961 www.timmons.com



PROFESSIONAL CERTIFICATE
 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. 16193, EXPIRATION DATE: 09-27-2028

DESIGN BY: RHV
 DRAWN BY: ONB/EDS
 CHECKED BY: RHV
 DATE: SEPTEMBER 2024
 SCALE: 1"=50'
 W.O. NO.: 46261

8 SHEET OF 9

MATCHLINE - SEE SHEET 7

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 CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.
 Signed by: *Kenneth Kruger* 9/13/2024
 SIGNATURE OF DEVELOPER DATE

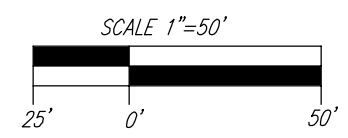
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division: *Charles Edmondson* 10/9/2024
 Chief, Division of Land Development: *[Signature]* 10/9/2024

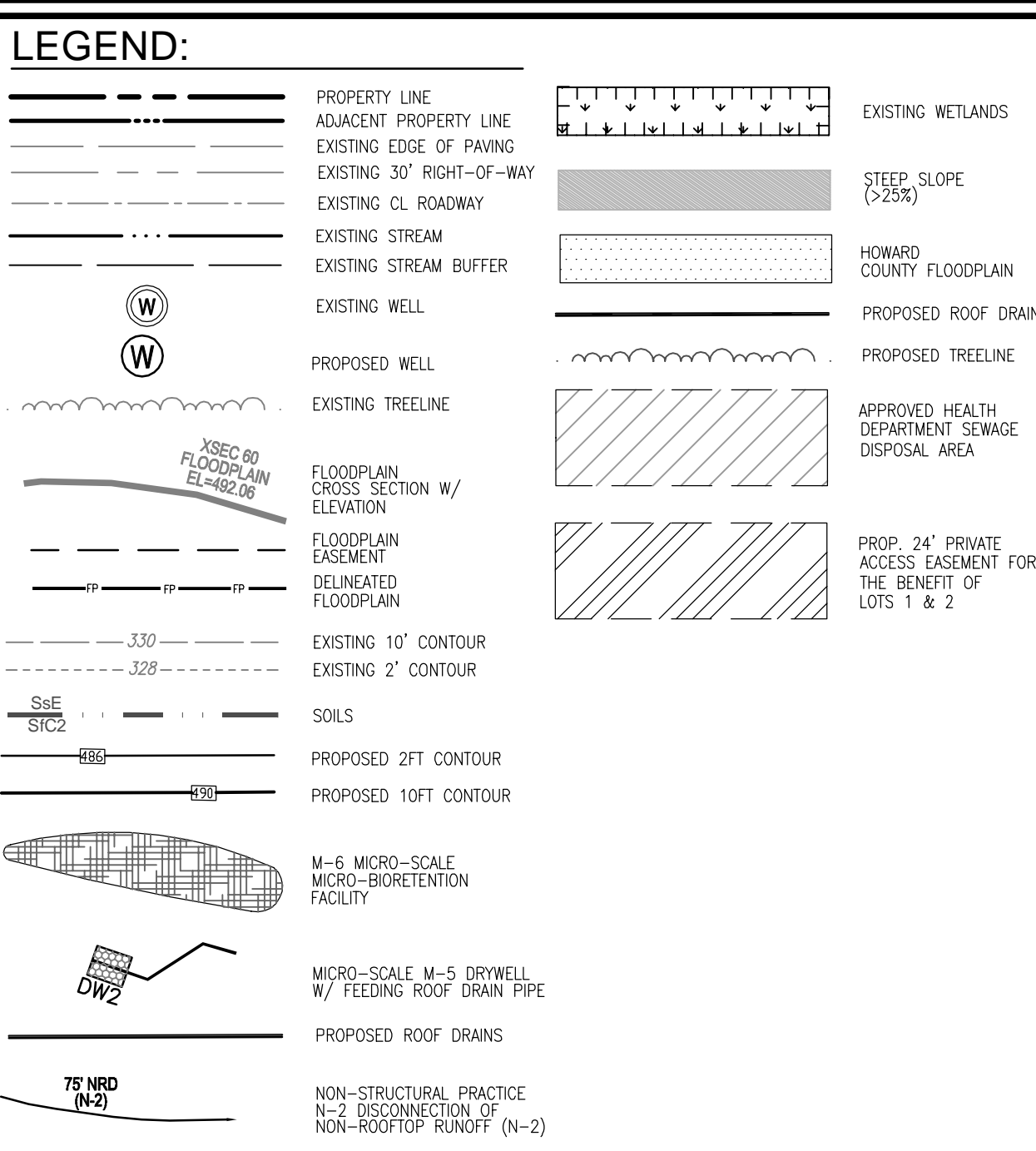
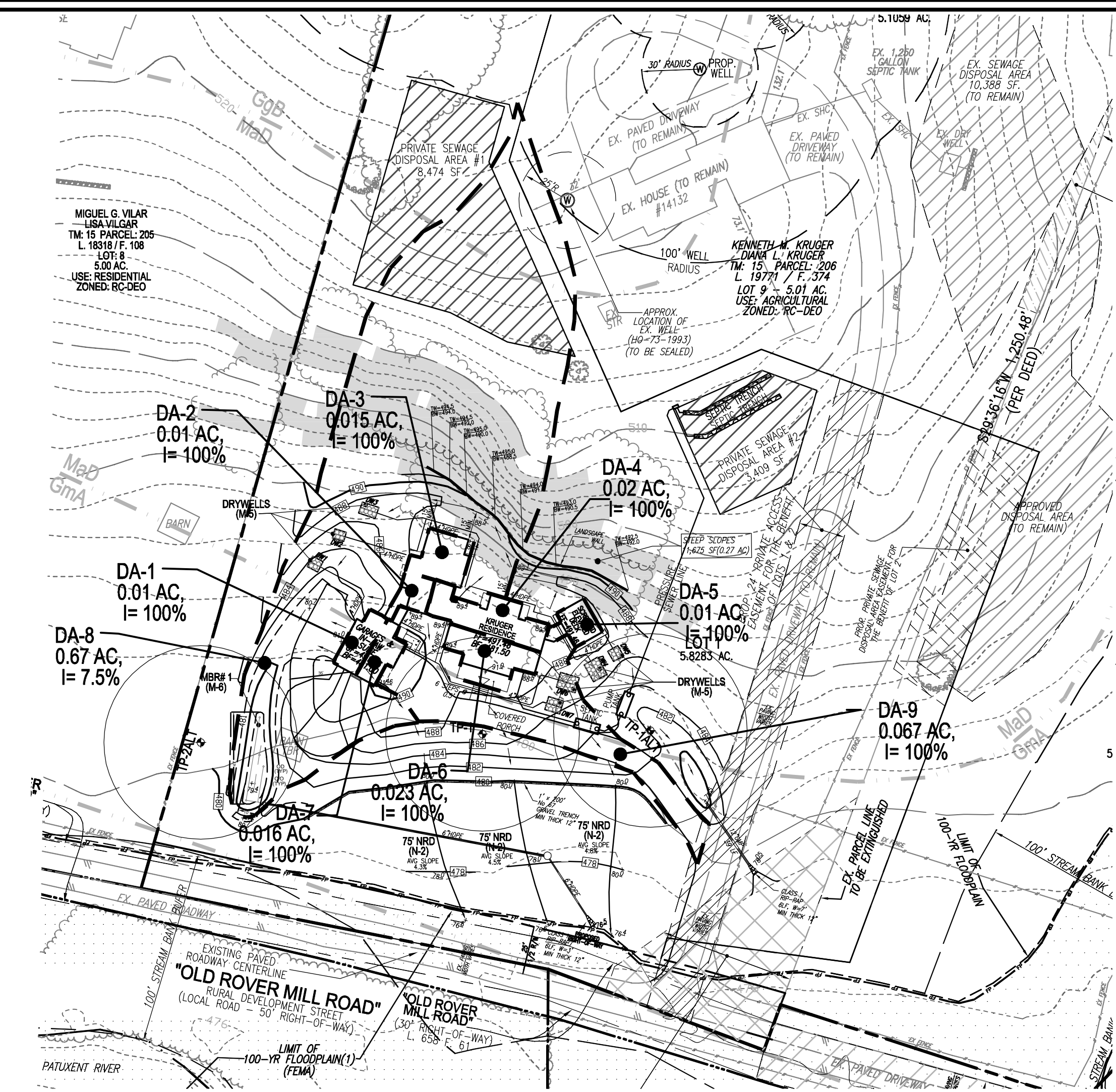
SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	HYDRIC	ERODIBLE
Gsb	GLENVIEW LOAM, 3 TO 8 PERCENT SLOPES	B	.24	NO	NO
Gmb	GLENVILLE SILT LOAM, SOMEWHAT POORLY DRAINED, 0 TO 3 PERCENT SLOPES	C/D	.37	YES	NO
GnB	GLENVILLE-BALE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	.43	YES	YES
Hs	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES	NO
Mac	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	.28	NO	NO
Msd	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	.28	NO	YES

-SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE
 -HOWARD COUNTY SOILS MAP NUMBER 11 - SYKESVILLE SW

NOTE:
 HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT





ESD STORMWATER MANAGEMENT - DRAINAGE AREA MAP

N-2. DISCONNECTION OF NON-ROOFTOP RUNOFF
CONSTRUCTION CRITERIA:
THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING THE CONSTRUCTION OF PROJECTS WITH PLANNED ROOFTOP DISCONNECTIONS:
- EROSION AND SEDIMENT CONTROL: EROSION AND SEDIMENT CONTROL PRACTICES (E.G., SEDIMENT TRAPS) SHALL NOT BE LOCATED IN VEGETATED AREAS RECEIVING DISCONNECTED RUNOFF.
- SITE DISTURBANCE: CONSTRUCTION VEHICLES AND EQUIPMENT SHOULD AVOID AREAS RECEIVING DISCONNECTED RUNOFF TO MINIMIZE DISTURBANCE AND COMPACTION. SHOULD AREAS RECEIVING DISCONNECTED RUNOFF BECOME COMPACTED, SCOURING THEM LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
- A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
4. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN THE 72 HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
5. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
6. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER DRY WELLS (M-5)

1. THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.
2. WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
3. A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
4. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN THE 72 HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
5. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
6. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

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

1. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUME II, TABLE 4.4.1 AND 2.
2. THE OWNER SHALL PERFORM A PLANT IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
3. THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
4. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

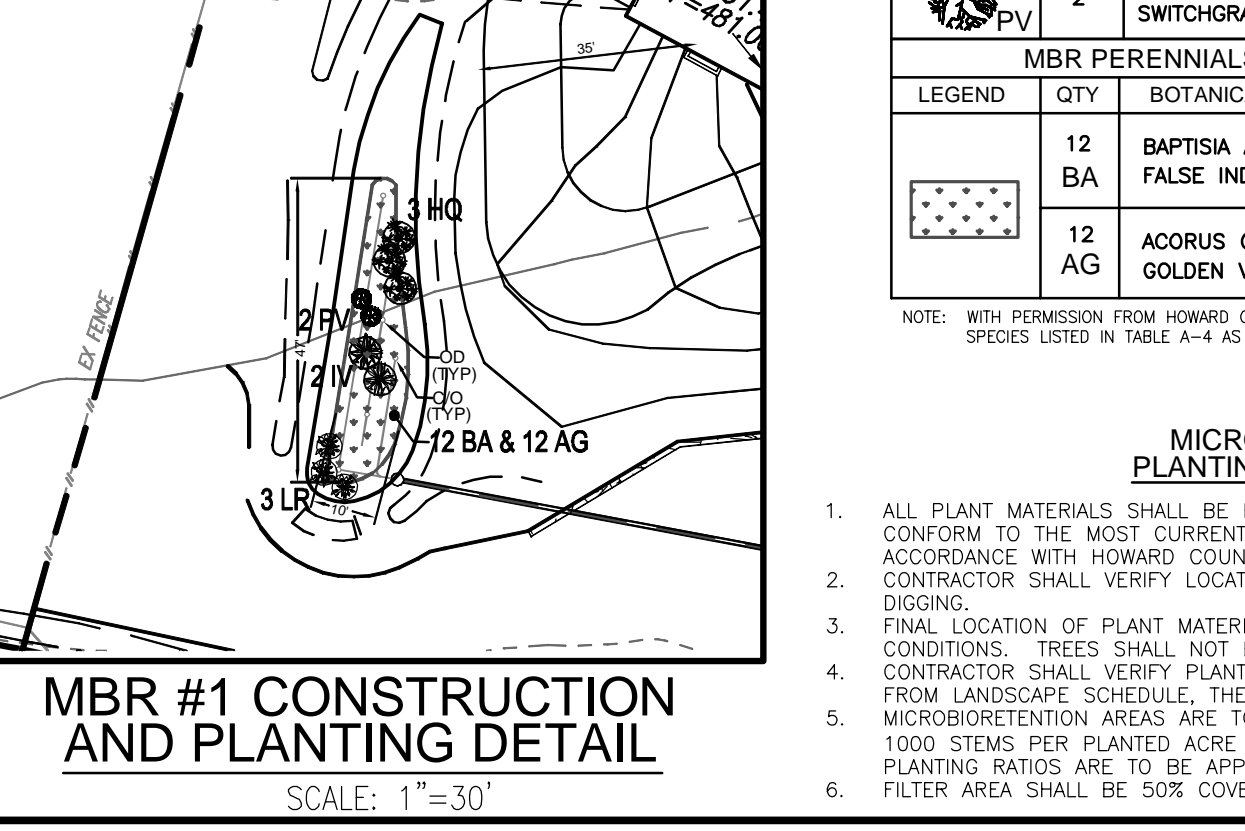
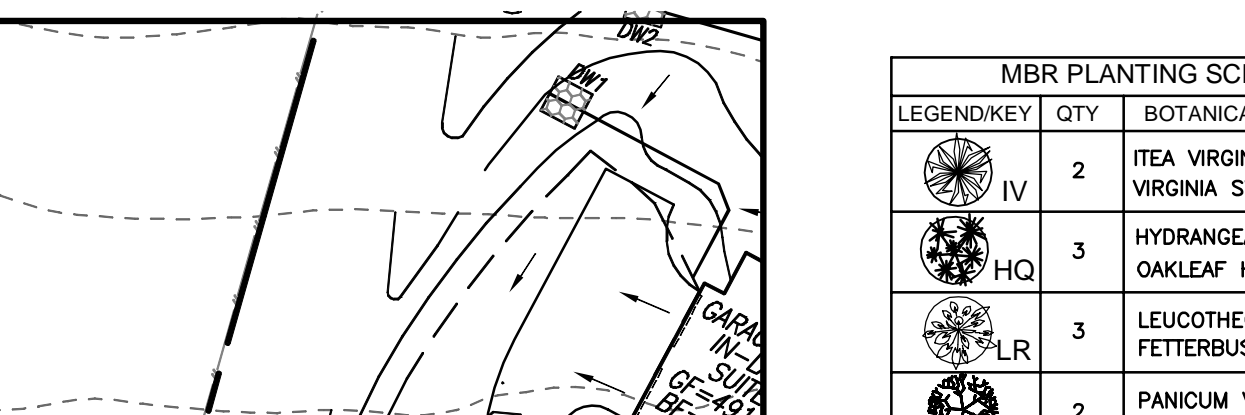
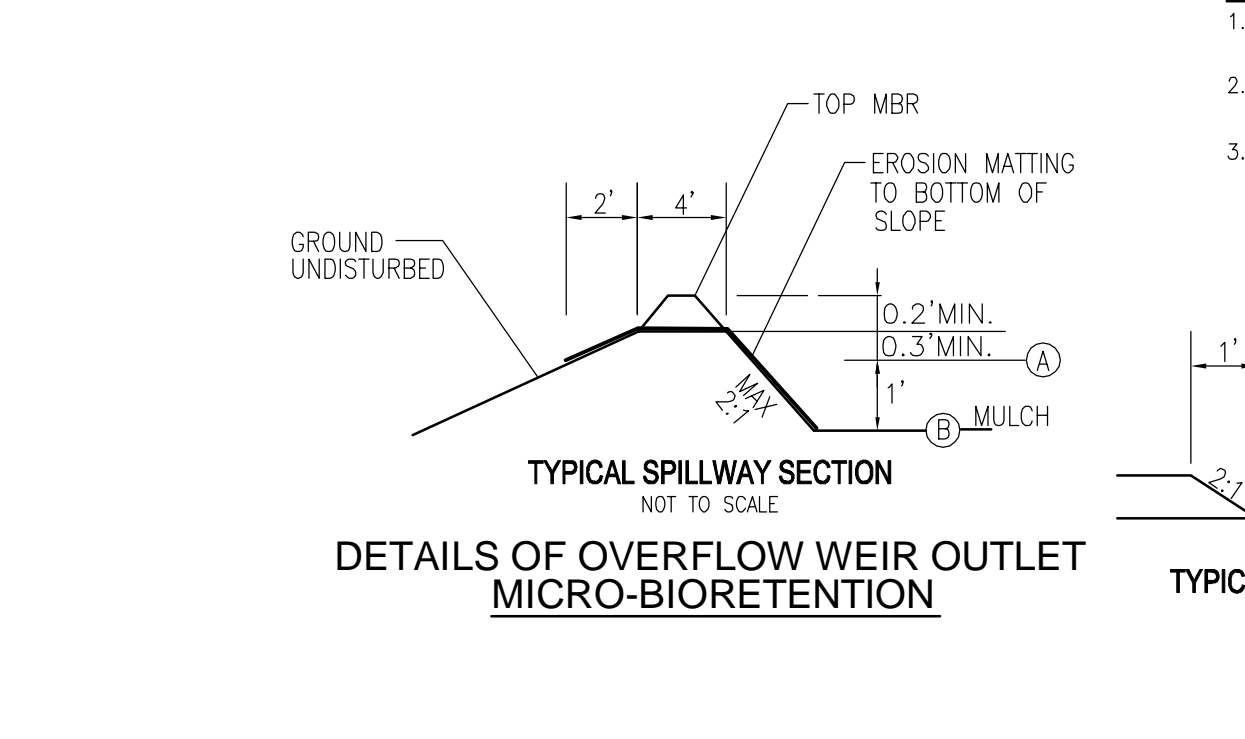
SOILS LEGEND

SYMBOL	NAME/DESCRIPTION	GROUP	K-FACTOR	HYDRIC	ERODIBLE
GgB	GLENNEL LOAM, 3 TO 8 PERCENT SLOPES	B	24	NO	NO
GmA	GLENNVILLE SILT LOAM, SOMEWHAT POORLY DRAINED, 0 TO 3 PERCENT SLOPES	C/D	37	YES	NO
GmB	GLENNVILLE-SILT LOAM, 0 TO 8 PERCENT SLOPES	C	43	YES	YES
Hd	HAYBRO-COLORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/O	37	YES	NO
Msc	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	28	NO	NO
Msd	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	28	NO	YES

-SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE
-HOWARD COUNTY SOILS MAP NUMBER 11 - STOKESVILLE SW

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Designed by: *Chad Edmondson* 10/9/2024
DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION
Designed by: *Chad Edmondson* 10/9/2024
DATE
CHIEF, DIVISION OF LAND DEVELOPMENT

M-6 MICRO-BIORETENTION (UNDERDRAIN)



SCALE: 1"=30'

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

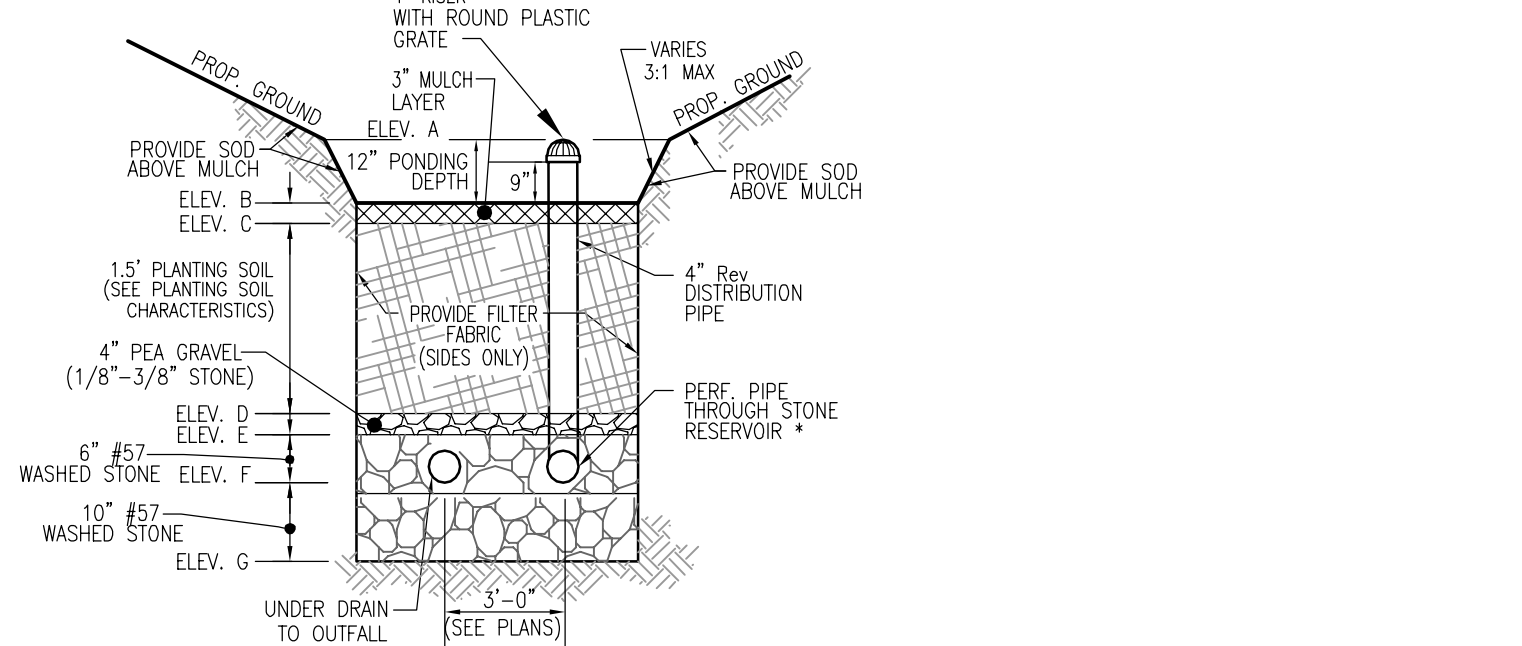
Table B.4.1 Materials Specifications for Micro-Bioretenention, Rain Gardens & Landscape Infiltration

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%) or coarse sand (30%) & compost (40%)		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	n/a	PE Type I nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping	#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 1/2-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 350.8R/89; vertical loading 1H-10 or H-20; allowable horizontal loading (based on soil pressure); and analysis of potential cracking.
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone (AASHTO #10 are not acceptable. No calcium carbonate or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

MICRO-BIORETENTION FACILITY - DESIGN ELEVATION CHART

MBR FACILITY #	ESD VESL	TOP MULCH	TOP PLANT SOIL	BOTTOM PLANT SOIL	PEA GRAVEL	INV. PIPE (1")	INV. SURFACE STONE	APPROX. AREA	DIM.	OWNER	MAINTENANCE
1	480.40	479.40	479.15	477.65	477.32	476.82	475.99	360	SEE PLAN	PRIVATE	PRIVATE

(1) UNDERDRAIN PIPE AND OVERFLOW DISTRIBUTION PIPE



M-6 MICRO-BIORETENTION (OVERFLOW)

NOT TO SCALE

MICRO BIORETENTION NOTES:

1. ONLY THE SIDES OF MICRO BIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICRO BIORETENTION WILL CAUSE THE MBR TO FAIL, AND THEREFORE SHALL NOT BE INSTALLED.
2. WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH. SEE APPENDIX B.4.C.6.
3. SLOTTED RIGID PVC DOES NOT REQUIRE GALVANIZED HARDWARE CLOTH WRAP.
4. PROVIDE 9" MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFORATED PIPE THROUGH STONE RESERVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIOS. (SEE PLANS)

PLANTING REQUIREMENTS	PRACTICE #	AREA	STEMS REQUIRED (0.0227)	STEMS PROVIDED	PLANTINGS PROVIDED				PERENNIALS/GROUND COVER PROVIDED		
					IV	PV	HQ	LR	BA	AG	TOTAL
MBR-1	364	9	10	2	2	3	3	12	12	24	
TOTALS	364	9	10	2	2	3	3	12	12	24	

AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (0.0227 STEMS PER SQUARE FOOT).

Appendix A. Landscaping Guidelines for Stormwater BMPs Specific Landscaping Criteria

Trees	Shrubs	Herbaceous Species
<i>Topiram</i> <i>Red Maple</i>	<i>Amelanchier canadensis</i> <i>Buddleia davidii</i> <i>Bromelidia</i>	<i>Andropogon virginicus</i> <i>Bromelidia</i> <i>Bromelidia</i>
<i>Red Maple</i> <i>Black Birch</i>	<i>Cephalanthus occidentalis</i> <i>Bromelidia</i>	<i>Bromelidia</i> <i>Joe Pye Weed</i>
<i>Juncus virginiana</i> <i>Eastern Red Cedar</i>	<i>Hemodictyon virginiana</i> <i>Witch Hazel</i>	<i>Scirpus pungens</i> <i>Three Square Bulrush</i>
<i>Chionodoxa virginiana</i> <i>Fringe tree</i> <i>Nyssa sylvatica</i> <i>Black Gum</i>	<i>Vaccinium corymbosum</i> <i>Highbush Blueberry</i> <i>Lobelia cardinalis</i> <i>Labrador</i>	<i>Iris versicolor</i> <i>Rhiz Flag</i> <i>Lobelia cardinalis</i> <i>Indian Flower</i>
<i>Diogenes virginiana</i> <i>Peristemon</i>	<i>Ilex verticillata</i> <i>Waterberry</i>	<i>Panicum virginicum</i> <i>Schizanthus</i>
<i>Platanus occidentalis</i> <i>Sycamore</i>	<i>Viburnum dentatum</i> <i>Astragalus</i>	<i>Dichanthium scoparium</i> <i>Broom Panic Grass</i>
<i>Quercus palustris</i> <i>Pellaea</i>	<i>Lindera benzoin</i> <i>Spicebush</i>	<i>Rudbeckia hirta</i> <i>Tall Coarctata</i>
<i>Quercus phellos</i> <i>White Oak</i> <i>Black willow</i>	<i>Myrica pennsylvanica</i> <i>Bayberry</i>	<i>Scirpus caperatus</i> <i>Woodgrass</i> <i>Vernonia noveboracensis</i> <i>New York Ironweed</i>

MBR PLANTING SCHEDULE (SHRUB/ORNAMENTAL GRASSES)

LEGEND/KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
IV	2	ITEA VIRGINICA 'HENRY'S GARNETT' VIRGINIA SWEETSPICE	1 GALLON	-
HQ	3	HYDRANGEA QUERCIFOLIA OAKLEAF HYDRANGEA	1 GALLON	-
LR	3	LEUCOTHEA RACEMOSA FETTERBUSH	1 GAL.	-
PV	2	PANICUM VIRGATUM SWITCHGRASS	1 GAL.	-

MBR PERENNIALS/GROUND COVER PLANTING SCHEDULE

LEGEND	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
BA	12	BAPTISIA AUSTRALIS FALSE INDIGO	4" POT	12"-15" O.C. FOR SIDES AND BOTTOM OF MBR. MIX ALL VARIETIES IN A NATURALIZED RANDOM PATTERN THROUGHOUT.
AG	12	ACORUS GRAMINEUS 'OGON' GOLDEN VARIATED SWEET FLAG	1 QT.	PLANT IN GROUPS OF NO LESS THAN 9 PLANTS PER CLUMP.

MICRO-BIORETENTION PLANTING SCHEDULE NOTES

1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AND SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HOWARD COUNTY PLANTING SPECIFICATIONS.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
3. FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLANT DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
5. MICROBIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (0.0227 STEMS PER SQUARE FOOT). ABOVE PLANTING RATIOS ARE TO BE APPLIED TO THE AREAS PROVIDED IN THE ESDV SUMMARY. FILTER AREA SHALL BE 50% COVERED BY PLANTINGS AT FULL GROWTH.

APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDEN, LANDSCAPE INFILTRATION & INFILTRATION BERMS

1. 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 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-BIORETENTION FACILITY THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COWAR 15.03.01.05.
THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:
• 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 SAND (60%-65%) AND COMPOST (35%) OR SANDY LOAM (30%), COARSE SAND (30%) & COMPOST (40%).
• CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
• PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO INCREASE OR DECREASE PH.

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 LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.
COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL, PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RESTRUCTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT. ROTOTILL TO 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 LOTS 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. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

4. PLANT MATERIAL:
RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION 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 INNER 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. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.
ROOTKNOT OF THE PLANT MATERIAL SHALL BE KEPT MOST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED 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. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE BRACKETED 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 PLOWS SHALL BE PLANTED FOLLOWING THE NON-CROSS 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 DEFATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

6. UNDERDRAINS:
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
• PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM 758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED. 4" RIGID PIPE (E.G., PVC OF RIGID) IS THE ONLY ACCEPTED MATERIAL.
• PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PERFORATIONS SHOULD BE WRAPPED WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.
• GRAVEL - THE GRAVEL LAYER (NO. 57 STONE) PREFERRED SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
• THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
• A RESERVOIR (NON-PERFORATED OBSERVATION WELL) MUST BE PROVIDED (ONE PER EVERY 10000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
• A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".

7. MISCELLANEOUS:
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

NO.	REVISION	DATE

FINAL SUPPLEMENTAL PLAN
ESD - STORM WATER MANAGEMENT DRAINAGE AREA MAP
NOTES AND DETAILS
KRUGER PROPERTY
LOTS 1 AND 2
A REVISION TO TAX MAP 15 - PARCELS 206 & 241

TAX MAP: 15-GRP-7
3RD ELECTION DISTRICT
L 19771 / F. 374 (PARCEL 206)
L 19771 / F. 367 (PARCEL 241)
ZONED: RC-DEO
HOWARD COUNTY, MARYLAND

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PROFESSIONAL CERTIFICATE
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. 16193 EXPIRATION DATE: 09-27-2028

DESIGN BY: *RHV*
DRAWN BY: *CNB/EDS*
CHECKED BY: *RHV*
DATE: *SEPTEMBER 2024*
SCALE: *1"=50'*
S.W.O. NO.: *46261*

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