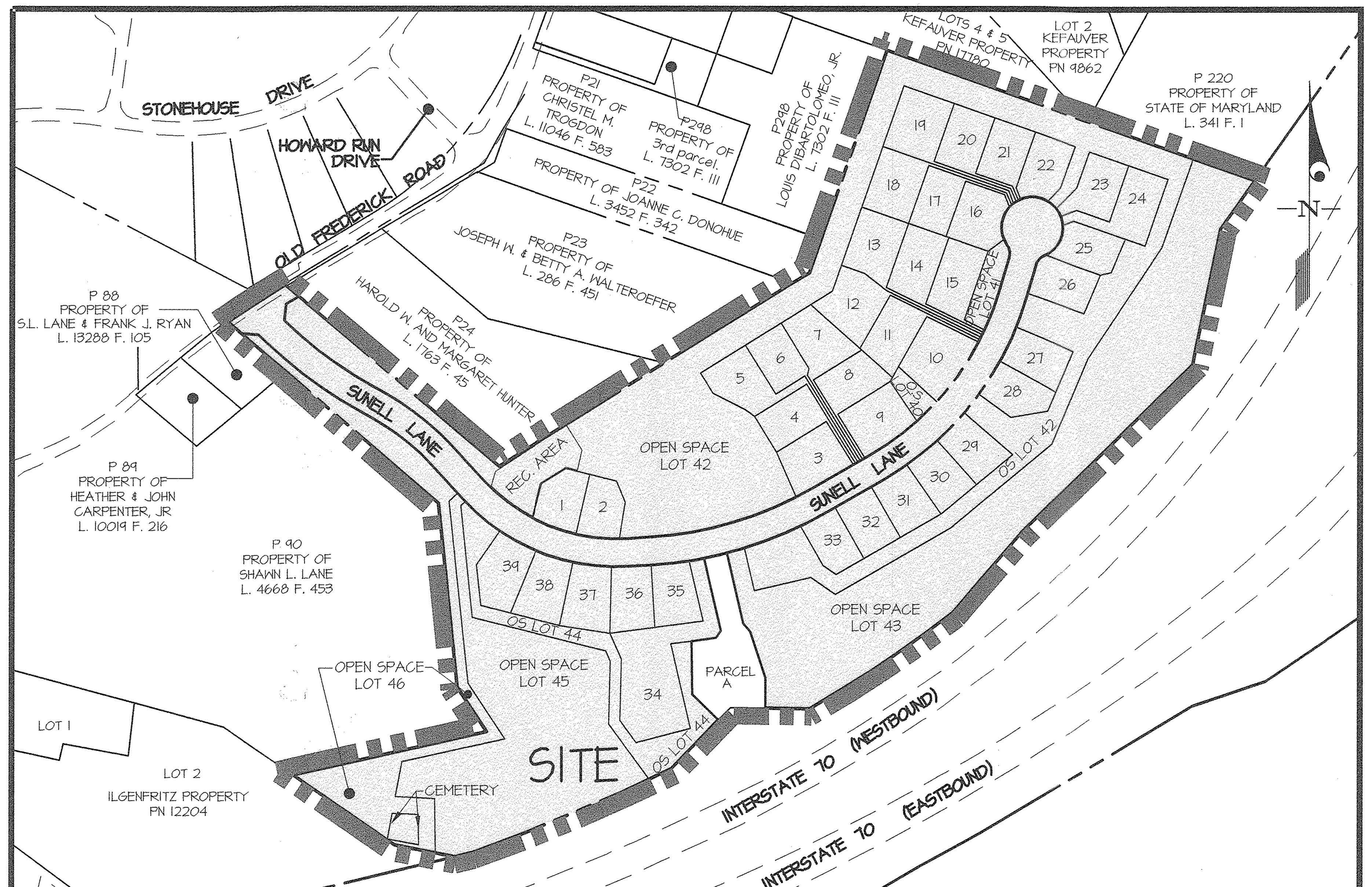
FINAL PLAN
PATAPSCO CROSSING
LOTS 1 - 39 & OPEN SPACE LOTS 40 - 46 & FOREST CONSERVATION BANK

GENERAL NOTES:

1. ZONING: THE SUBJECT PROPERTY IS ZONED R-20 PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN. THIS SITE IS DEVELOPING UNDER R-ED REGULATIONS PER 108.0.G.3.
2. PREVIOUS DEPARTMENT OF PLANNING AND ZONING FILE NUMBERS: ECP-14-059, WP-15-011, SP-15-002, SDP-14-051, PB 414.
3. SITE ANALYSIS:
   - TOTAL AREA OF SITE: 24.71± ACRES
   - AREA OF 100 YR. FLOODPLAIN: 0.07± ACRES
   - AREA OF STEEP SLOPES 25% AND GREATER: 2.17 ± ACRES
   - NET AREA: 22.47± ACRES
   - AREA OF PROPOSED ROADWAY (PUBLIC): 2.33± ACRES
   - NO. OF SINGLE FAMILY DETACHED LOTS: 39
   - AREA OF SINGLE FAMILY DETACHED LOTS: 8.68 ACRES
   - TOTAL NUMBER OF LOTS: 39
   - NO. OF OPEN SPACE LOTS: 6
   - AREA OF OPEN SPACE: 13.70± ACRES
   - TOTAL APPROXIMATE LIMIT OF PROP. SITE DISTURBANCE: 15.8± ACRES± (63.9± % OF GROSS)
4. OPEN SPACE REQUIREMENTS:
   - OPEN SPACE REQUIRED: 50% OF GROSS AREA
   - OPEN SPACE REQUIRED: 12.36 ACRES
   - OPEN SPACE PROVIDED/ CREDITED: 13.26± ACRES
   - OPEN SPACE PROVIDED/ NON-CREDITED: 0.44± ACRES
   - RECREATIONAL OPEN SPACE REQUIRED: 300 SF PER SFA LOT
   - RECREATIONAL OPEN SPACE REQUIRED: 0.27 ACRES
   - RECREATIONAL OPEN SPACE PROVIDED: 0.27± ACRES
5. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
6. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/ BUREAU OF ENGINEERING/ CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
7. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
8. TRAFFIC CONTROL DEVICES:
   A) THE R1-1 ("STOP") SIGN AND THE STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED.
   B) THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
   C) ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MdMUTCD).
   D) ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED ("QUICK PUNCH"), SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
9. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006) SECTION 5.5.A. A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREETLIGHT AND ANY TREE.
10. THERE IS A CEMETERY ON SITE LOCATED ON OPEN SPACE LOT 46. THE CEMETERY ON SITE IS LISTED IN THE CEMETERY INVENTORY AS #17-6 / GOSNELL FAMILY CEMETERY IN ACCORDANCE WITH THE CEMETERY MAP INVENTORY. THE CEMETERY SHALL BE DEDICATED TO AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION.
11. THE SCENIC ROADS MAP DOES NOT INDICATE ANY SCENIC ROADS IN THE VICINITY.
12. THE HISTORIC SITES MAP DOES NOT SHOW ANY HISTORICAL SITES WITHIN THE PROJECT LIMITS.
13. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY BENCHMARKS 171B AND 171C WERE USED FOR THIS PROJECT.
14. BOUNDARY INFORMATION IS FROM BOUNDARY SURVEYS BY GUTSCHICK, LITTLE, AND WEBER, P.A., DATED MAY 2013
15. SOIL DATA WAS TAKEN FROM THE SOIL SURVEY OF HOWARD COUNTY, MARYLAND ISSUED MARCH, 2008.
16. THE EXISTING TOPOGRAPHY IS TAKEN FROM AERIAL TOPOGRAPHY PREPARED BY MCKENZIE-SNYDER DURING APRIL, 2011.
17. THE WETLANDS DELINEATION STUDY FOR THIS PROJECT WAS PREPARED BY KLEBASKO ENVIRONMENTAL, LLC., DATED OCTOBER 2, 2012 AND APPROVED WITH SP-15-002 ON JULY 30, 2015.
18. THERE IS NO FLOODPLAIN ON SITE.
19. A NOISE STUDY WAS PREPARED BY PHOENIX ENGINEERING DATED JANUARY, 2015 AND WAS APPROVED WITH SP-15-002 IN JULY, 2015.
20. A TRAFFIC STUDY WAS PREPARED BY TRAFFIC GROUP IN A REPORT DATED MAY 5, 2014 AND WAS APPROVED ON AUGUST 21, 2014.
21. THE GEO-TECHNICAL REPORT WAS PROVIDED BY GTA DATED JUNE 4, 2014. THIS STUDY WILL BE APPROVED AS PART OF THIS PLAN SET.
22. EXISTING UTILITIES WERE TAKEN FROM AVAILABLE HOWARD COUNTY RECORDS.
23. THE PROJECT IS WITHIN THE METROPOLITAN DISTRICT.
24. WATER AND SEWER ARE PUBLIC PER CONTRACT NO. 14-4879-D.
    EXISTING CONTRACT NUMBERS: WATER: 70-W
    SEWER: 10-4136-D
25. THE FOLLOWING STREAM BUFFERS HAVE BEEN PROVIDED.
    INTERMITTENT STREAM = 50' BUFFER
    PERENNIAL STREAM= 75' BUFFER
    THE STREAM BUFFERS ARE MEASURED FROM THE STREAM BANKS AND NOT THE CENTERLINE.
26. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAMS OR THEIR REQUIRED BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS UNLESS PERMITTED UNDER AN APPROVED WAIVER PETITION OR DETERMINED TO BE ESSENTIAL OR NECESSARY BY DPZ. DPZ HAS DETERMINED THAT IMPACTS TO ENVIRONMENTAL RESOURCES SHOWN (CONSTRUCTION OF A ROAD CROSSING & REMOVAL OF EXISTING WELL) ARE NECESSARY IN ACCORDANCE WITH SUBSECTION 16.116(C) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
27. OPEN SPACE LOT 42 WILL CONTAIN PASSIVE RECREATIONAL AREAS IN ACCORDANCE WITH SECTION 16.121(A)(4) OF THE AMENDED 5TH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. THE RECREATIONAL SPACE REQUIREMENTS WILL BE MET BY PROVIDING THE REQUIRED AMOUNT OF OPEN SPACE LAND. NO FACILITIES ARE BEING PROPOSED AT THIS TIME.
28. THE FOREST CONSERVATION REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL FOR THIS SUBDIVISION ARE MET BY THE CREATION OF **FOUR (4)** FOREST CONSERVATION EASEMENTS THAT CONTAIN MORE THAN THE BREAK-EVEN POINT MINIMUM ACREAGE FOR CREDITED RETENTION.
    THE MAXIMUM CLEARING AREA AT THE BREAK-EVEN POINT FOR THIS SITE IS 9.17± ACRES AND THE PROPOSED CLEARING AREA FOR THIS DEVELOPMENT IS LESS THAN THAT AMOUNT.
    THE MINIMUM RETENTION AREA AT THE BREAK-EVEN POINT IS 7.32± ACRES AND THE PROPOSED RETENTION AREA IS 7.73± ACRES; THEREFORE, EXCESS RETENTION (7.73-7.32=0.41) IS AVAILABLE FOR BANKING. NO SURETY IS REQUIRED FOR FOREST RETENTION.
29. MINIMUM BUILDING SETBACK RESTRICTIONS FROM PUBLIC ROADS AND PROPERTY LINES WILL BE PROVIDED IN ACCORDANCE WITH THE ZONING REGULATIONS ADOPTED OCTOBER, 2013.
30. THE REQUIRED LANDSCAPE BUFFER PLANTINGS ARE PROVIDED IN ACCORDANCE WITH SECTION 16.124 AND THE HOWARD COUNTY LANDSCAPE MANUAL. SEE **SHEETS 21-22** OF THIS PLAN SET FOR BUFFER (AND STREET TREE) PLANTINGS. THE REQUIRED LANDSCAPE SURETY (IN THE AMOUNT OF **$14,700.00**) WILL BE POSTED WITH THE DEVELOPER AGREEMENT.
31. A PRE-SUBMISSION COMMUNITY MEETING WAS HELD FOR THIS PROJECT ON 07/18/2013 IN COMPLIANCE WITH SECTION 16.128 OF THE AMENDED 5TH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
32. STORMWATER MANAGEMENT FOR THIS SITE WILL BE PROVIDED IN ACCORDANCE WITH CHAPTER 5 OF THE MDE STORMWATER DESIGN MANUAL. BASED ON TABLE 5.3, THIS SITE HAS A TARGET PE OF 1.8". IN ORDER TO FULFILL THE STORMWATER MANAGEMENT REQUIREMENTS A COMBINATION OF SHEET FLOW TO CONSERVATION AREA (N-3), DRY WELLS (M-5), RAIN BARRELS (M-1), BIO-SWALES (M-8), BIORETENTION (F-6) AND MICRO-BIORETENTION (M-6) WILL BE USED. MBR-1, MBR-2, BR-3, AND BR-4 WILL BE PRIVATELY OWNED AND JOINTLY MAINTAINED BY THE COUNTY AND THE HOA. ALL OTHER BIORETENTION, MICRO-BIORETENTION, AND BIO-SWALES WILL BE PRIVATELY OWNED AND MAINTAINED BY THE HOA. ON-LOT ESD INCLUDING DRY WELLS AND RAINWATER HARVESTING WILL BE PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNER.
33. DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
    A) WIDTH - 12' (16' SERVING MORE THAN ONE RESIDENCE)
    B) SURFACE - 6" OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-1 1/2" MIN)
    C) GEOMETRY - MAX. 15% GRADE, MAX 10% GRADE CHANGE AND MIN. 45' TURNING RADIUS
    D) STRUCTURE (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING)
    E) DRAINAGE ELEMENTS - SAFELY PASSING 100-YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE.
    F) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE
34. FLAG AND PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM AND ROAD RIGHT-OF-WAY LINE AND NOT ONTO THE PIPESTEM LOT DRIVEWAY.
35. THE ZONING REGULATIONS REQUIRE AT LEAST 10% OF THE DWELLINGS IN EACH R-ED DEVELOPMENT TO BE MIHU UNITS PER 108.0.E TO FULFILL THIS REQUIREMENT; ALL LOTS IN THIS SUBMISSION EXCEPT FOR LOT 34 ARE SUBJECT TO THE MIHU FEE-IN-LIEU PAYMENT THAT IS TO BE CALCULATED AND PAID TO THE DEPARTMENT OF INSPECTIONS, LICENSES, AND PERMITS AT THE TIME OF BUILDING PERMIT ISSUANCE BY THE PERMIT APPLICANT. A MIHU AGREEMENT IS RECORDED IN THE HOWARD COUNTY LAND RECORDS OFFICE.
36. THE PLANNING BOARD APPROVED SP-15-002 AND CEMETERY BOUNDARY DOCUMENTATION ON 6/23/2015 (PB 414).
37. THE 6" FORCE MAIN AND PUMP STATION WILL BE DESIGNED AND CONSTRUCTED UNDER CAPITOL PROJECT S-6275, CONT. #10-5096.
38. WP-15-011, A WAIVER REQUEST FROM SUBDIVISION SECTION 16.1205(a)(7), PROHIBITING REMOVAL OF SPECIMEN TREES WAS APPROVED ON JULY 30, 2014 UNDER THE FOLLOWING CONDITIONS:
    1.) REMOVAL IS APPROVED FOR 18 OF 29 SPECIMEN TREES AS IDENTIFIED ON THE WAIVER PETITION EXHIBIT.
    2.) THE DEVELOPMENT PROPOSES THE PLACEMENT OF APPROXIMATELY 13 ACRES IF EXISTING FOREST AND AFFORESTATION INTO FOREST CONSERVATION EASEMENT AREAS. IN ADDITION TO PERIMETER LANDSCAPING, STORMWATER MANAGEMENT SCREENING AND STREET TREES WILL BE PROVIDED. ALL PROPOSED PLANTINGS AND CREATION OF FOREST CONSERVATION EASEMENT AREAS WILL SERVE TO PROVIDE AN ALTERNATE PROPOSAL FOR THE REMOVAL OF 18 SPECIMEN TREES.
    3.) COMPLIANCE WITH THE SUBDIVISION REVIEW COMMITTEE AGENCY COMMENTS FOR SP-15-002 SUBDIVISION PLAN.
39. THERE ARE EXISTING DWELLINGS/STRUCTURES LOCATED ON LOT 34 TO REMAIN. NO NEW BUILDINGS, EXTENSIONS OR ADDITIONS TO THE EXISTING DWELLING ARE TO BE CONSTRUCTED AT A DISTANCE LESS THAN THE ZONING REGULATION REQUIREMENTS.
40. USE IN COMMON MAINTENANCE AGREEMENTS FOR LOTS 4-9, 10-15, 16-21 & 23-24 SHALL BE RECORDED SIMULTANEOUSLY WITH THE FINAL PLAT.
41. MDE PERMIT NUMBER: 201861702/18-NT-3290. APPROVAL DATE: JANUARY 10, 2019.
42. JUSTIFICATION FOR NECESSARY DISTURBANCES AT PATAPSCO CROSSING PER SECTION 16.116(C)
    A) PROPOSED STREAM CROSSING - AFTER SETTING ASIDE ALL THE ENVIRONMENTALLY SENSITIVE AREAS AND PROVIDING ACCESS FROM OLD FREDERICK ROAD, THE ONLY PERMITTED ACCESS POINT, THE PROJECT WAS DESIGNED AS ONE LONG CUL-DE-SAC. DEVELOPING THE EAST SIDE OF THE PROPERTY IS REQUIRED TO ACHIEVE THE BASE DENSITY AND 80% OF THE LOTS SHOWN ARE ON THE EAST SIDE. THE STREAM BISECTS THE PROPERTY AND THERE IS NO WAY TO ACCESS THE EAST SIDE WITHOUT A STREAM CROSSING. THE CONSTRUCTION SHOWN MINIMIZES THE DISTURBANCE WHILE USING THE STANDARD COUNTY ROAD CROSS SECTION.
    B) REMOVAL OF EXISTING WELL - THE HEALTH DEPARTMENT IS REQUIRING THAT THE EXISTING WELL TO BE ABANDONED. THE WELL IS LOCATED WITHIN WETLANDS AND THERE IS NO WAY TO ACCESS THE WELL WITHOUT CROSSING THE STREAM.
43. THE NOISE FENCE LOCATED ON LOTS 35, 36 & 37 & OPEN SPACE LOTS 42 & 44 WILL BE OWNED AND MAINTAINED BY THE HOA.
44. **IF THE EXISTING DWELLING ON LOT 34 IS REMOVED TO CONSTRUCT A NEW DWELLING UNIT OR MODIFIED TO ADD TO THE EXISTING STRUCTURE, THE NEW CONSTRUCTION SHALL MEET CURRENT NOISE REQUIREMENTS.**
45. USING THE NEIGHBORHOOD PRESERVATION DENSITY DESCRIBED IN SECTION 108.0.G OF THE ZONING REGULATIONS, THE DEVELOPMENT RIGHTS FOR 1 OF THE RESIDENTIAL LOTS/PARCELS SHOWN ON THE SUBDIVISION PLAN FOR PATAPSCO CROSSING (F-19-038) HAVE BEEN TRANSFERRED FROM PHELPS PROPERTY, LOT 2, TAX MAP 18, PART OF PARCEL 357, GRID No. 1. SEE PLAT FOR ADDITIONAL INFORMATION.
46. THE ASBUILT FOR THE PUBLIC WATER AND SEWER CONTRACT SHALL NOT BE SUBMITTED UNTIL THE EXISTING WELL AND SEPTIC FOR LOT 34 HAVE BEEN PROPERLY ABANDONED AND DOCUMENTATION HAS BEEN SUBMITTED TO THE HEALTH DEPARTMENT.
47. A PRIVATE RANGE OF ADDRESS SIGN ASSEMBLY SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPERS/ OWNERS EXPENSE FOR ALL USE-IN-COMMON DRIVEWAYS IN THE DEVELOPMENT. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-5752 FOR DETAILS AND COST ESTIMATES.
48. PURSUANT TO SECTION 16.102(B) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS FOR HOWARD COUNTY, MARYLAND, A DEED DATED 6-26-19 WAS RECORDED IN LIBER 18742 AT FOLIO 353 CONVEYING PARCEL 'A' FROM WILLIAM EUGENE SUNELL TO THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS FOR THE PURPOSE OF A PUBLIC UTILITY.
49. IF OCCUPIED, ACCESS SHALL BE MAINTAINED TO THE EXISTING RESIDENCE AT ALL TIMES DURING CONSTRUCTION.



BENCHMARKS

171B	ELEV. 376.282	N = 592,199.737	E = 1,364,004.914
171C	ELEV. = 415.413	N = 591,056.916	E = 1,363,154.631

LOCATION PLAN
SCALE: 1"=200'

STORMWATER MANAGEMENT INFORMATION CHART

LOT NO.	(M-6)	(M-8)	(F-6)
OS LOT 40			1
OS LOT 41			1
OS LOT 42	2	3	3
OS LOT 44			1
OS LOT 46	1		

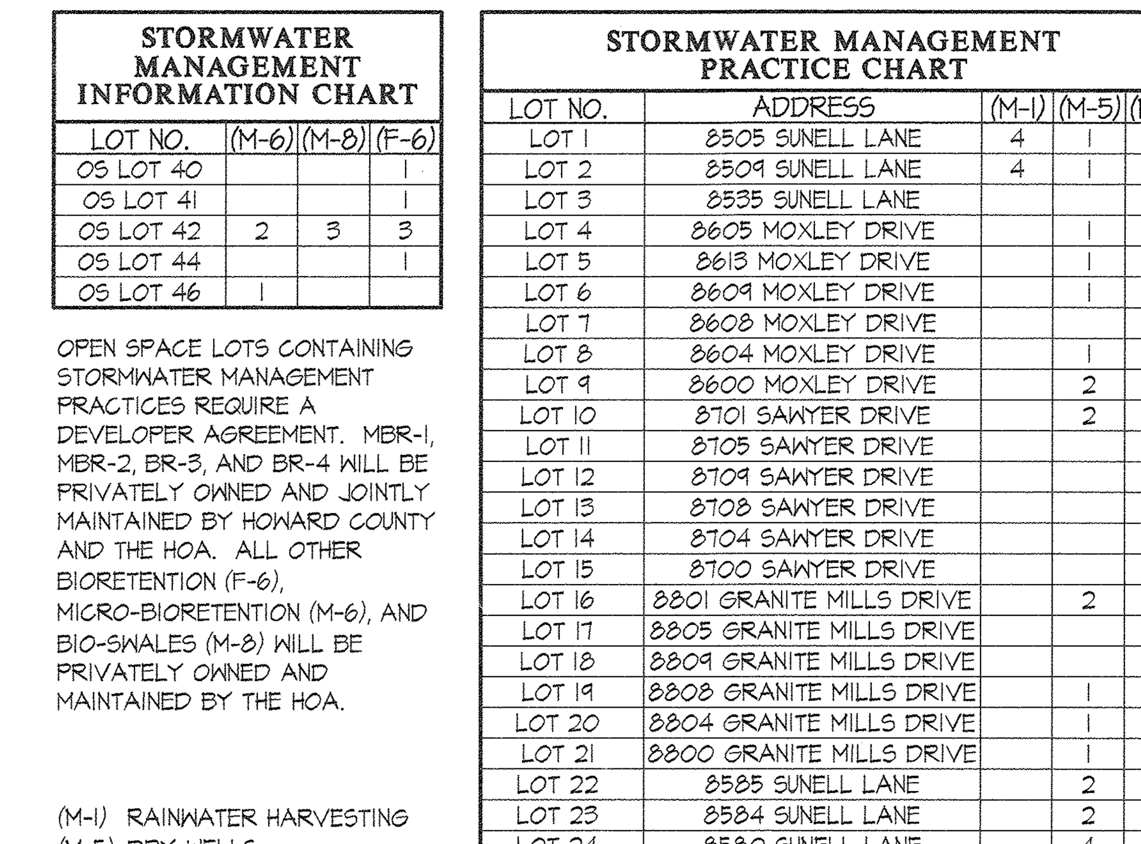
OPEN SPACE LOTS CONTAINING STORMWATER MANAGEMENT PRACTICES REQUIRE A DEVELOPER AGREEMENT. MBR-1, MBR-2, BR-3, AND BR-4 WILL BE PRIVATELY OWNED AND JOINTLY MAINTAINED BY HOWARD COUNTY AND THE HOA. ALL OTHER BIORETENTION (F-6), MICRO-BIORETENTION (M-6), AND BIO-SWALES (M-8) WILL BE PRIVATELY OWNED AND MAINTAINED BY THE HOA.

(M-1) RAINWATER HARVESTING
(M-5) DRY WELLS
(M-6) MICRO-BIORETENTION
(M-8) SWALES
(F-6) BIORETENTION

STORMWATER MANAGEMENT PRACTICE CHART

LOT NO.	ADDRESS	(M-1)	(M-5)	(M-8)
LOT 1	8505 SUNELL LANE	4	1	
LOT 2	8509 SUNELL LANE	4	1	
LOT 3	8535 SUNELL LANE			
LOT 4	8605 MOXLEY DRIVE		1	
LOT 5	8613 MOXLEY DRIVE		1	
LOT 6	8609 MOXLEY DRIVE		1	
LOT 7	8608 MOXLEY DRIVE			
LOT 8	8604 MOXLEY DRIVE		1	
LOT 9	8600 MOXLEY DRIVE		2	
LOT 10	8701 SAWYER DRIVE		2	
LOT 11	8705 SAWYER DRIVE			1
LOT 12	8709 SAWYER DRIVE			1
LOT 13	8708 SAWYER DRIVE			1
LOT 14	8704 SAWYER DRIVE			1
LOT 15	8700 SAWYER DRIVE			1
LOT 16	8801 GRANITE MILLS DRIVE		2	1
LOT 17	8805 GRANITE MILLS DRIVE			1
LOT 18	8809 GRANITE MILLS DRIVE			1
LOT 19	8808 GRANITE MILLS DRIVE		1	
LOT 20	8804 GRANITE MILLS DRIVE		1	
LOT 21	8800 GRANITE MILLS DRIVE		1	
LOT 22	8585 SUNELL LANE		2	
LOT 23	8584 SUNELL LANE		2	
LOT 24	8580 SUNELL LANE		4	
LOT 25	8576 SUNELL LANE	4		
LOT 26	8572 SUNELL LANE	4		
LOT 27	8564 SUNELL LANE		2	
LOT 28	8560 SUNELL LANE		2	
LOT 29	8552 SUNELL LANE		2	
LOT 30	8548 SUNELL LANE		2	1
LOT 31	8544 SUNELL LANE		2	1
LOT 32	8540 SUNELL LANE		2	1
LOT 33	8536 SUNELL LANE		2	1
LOT 35	8520 SUNELL LANE		3	
LOT 36	8516 SUNELL LANE		3	
LOT 37	8512 SUNELL LANE		3	
LOT 38	8508 SUNELL LANE		3	
LOT 39	8504 SUNELL LANE		3	

LOTS CONTAINING STORMWATER MANAGEMENT PRACTICES ARE SUBJECT TO A DOC.



VICINITY MAP
SCALE: 1" = 2,000'

GEODETIC CONTROL STATIONS

171B	ELEV. 376.282	N = 592,199.767	E = 1,364,004.914
171C	ELEV. = 415.413	N = 591,056.916	E = 1,363,154.631

ADC MAP: 21 GRID: B4

SHEET INDEX

MINIMUM LOT SIZE CHART

LOT NUMBER	GROSS AREA	PIPESTEM AREA	MINIMUM LOT SIZE
Lot 4	8,701 s.f.	440 s.f.	8,261 s.f.
Lot 5	11,109 s.f.	1,661 s.f.	9,448 s.f.
Lot 6	8,564 s.f.	866 s.f.	7,698 s.f.
Lot 7	10,329 s.f.	802 s.f.	9,527 s.f.
Lot 8	8,896 s.f.	443 s.f.	8,453 s.f.
Lot 11	9,595 s.f.	500 s.f.	9,095 s.f.
Lot 12	11,647 s.f.	860 s.f.	10,787 s.f.
Lot 13	11,059 s.f.	924 s.f.	10,135 s.f.
Lot 14	10,091 s.f.	556 s.f.	9,535 s.f.
Lot 15	9,935 s.f.	196 s.f.	9,739 s.f.
Lot 17	8,299 s.f.	475 s.f.	7,824 s.f.
Lot 18	11,063 s.f.	828 s.f.	10,235 s.f.
Lot 19	11,728 s.f.	813 s.f.	10,915 s.f.
Lot 20	8,980 s.f.	458 s.f.	8,522 s.f.
Lot 21	8,260 s.f.	116 s.f.	8,144 s.f.
Lot 23	8,694 s.f.	953 s.f.	7,741 s.f.
Lot 24	11,106 s.f.	1,629 s.f.	9,477 s.f.
Lot 34	26,438 s.f.	9,270 s.f.	17,168 s.f.

LEGEND

- EXISTING CONTOUR (400)
- PROPOSED CONTOUR (400)
- EXISTING TREELINE
- EXISTING SANITARY SEWER (EX. 8"S.)
- PROPOSED SANITARY SEWER (8"S.)
- EXISTING WATERLINE (EX. 8"W.)
- PROPOSED WATERLINE (8"W.)
- PROPOSED FIRE HYDRANT
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- STRUCTURE NUMBER (M 202)
- LIMIT OF SITE
- CONCRETE SIDEWALK
- EXISTING CURB AND GUTTER
- EXISTING EDGE OF PAVEMENT
- PROPOSED CURB AND GUTTER
- LIMIT OF WETLAND
- WETLAND AREA
- STREAM BANK BUFFER (SBB)
- WETLAND BUFFER (WB)
- NON-CREDITED OPEN SPACE
- FOREST CONSERVATION EASEMENT (FCE)
- RECREATIONAL OPEN SPACE
- STREAM BANK / CENTERLINE OF STREAM
- STEEP SLOPES - 25% AND GREATER
- PROPOSED STREET LIGHT
- PROPOSED EASEMENTS
- PROPOSED BUILDING RESTRICTION LINE (25' BRL)
- EXISTING BUILDING
- PROPOSED BUILDING
- PROPOSED DRIVEWAY
- SOIL BOUNDARY
- SOIL TYPE (GnA)
- LIMIT OF DISTURBANCE
- EXISTING OVERHEAD WIRES (OHW)
- EXISTING UTILITY POLES
- PROPOSED GUARDRAIL
- PROPOSED NOISE FENCE / RETAINING WALL

RECREATIONAL OPEN SPACE CHART

Type	CRITERIA	REQUIRED	PROVIDED	WHERE PROVIDED
RECREATIONAL OPEN SPACE	300 SF PER SFD LOT X 39 LOTS	11,700 SF (0.27 Ac.)	11,744 (0.27 Ac.)	OPEN SPACE LOT 42
TOTAL		11,700 SF (0.27 Ac.)	11,744 SF (0.27 Ac.)	

UNIT DENSITY TABULATION

HO. CO. FILE NO.	ZONING	SITE ACREAGE				MAXIMUM No. OF UNITS		PROVIDED No. OF UNITS		
		GROSS	100 YR FP	STEEP SLOPES	NET	MAX. UNIT DENSITY ALLOWED	MAX. UNITS ALLOWED	SFA PROVIDED	SFD PROVIDED	TOTAL
F-19-038	R-20*	24.71	0.07	2.17	22.47	2 UNITS / NET ACRE	45**	---	39	39

*NOTE: THIS SITE IS DEVELOPING UNDER R-ED REGULATIONS WITHIN THE R-20 ZONING PER 108.0.G.3
**NOTE: INCLUDES ONE NEIGHBORHOOD PRESERVATION DENSITY FROM PHELPS PROPERTY, LOT 2. THE SENDING PLAT WILL BE RECORDED SIMULTANEOUSLY WITH THE SUNELL SUBDIVISION PLAT. SEE PLAT DENSITY EXCHANGE CHART FOR ADDITIONAL INFORMATION.

SITE ANALYSIS CHART

HO. CO. FILE NO.	GROSS ACREAGE	100 YR FLOODPLAIN	STEEP SLOPE AREAS	NET ACREAGE	SFD ACREAGE (% OF GROSS AC.)	OPEN SPACE				PUBLIC R/W (% OF GROSS AC.)	LIMIT OF DISTURBANCE AREAS (% OF GROSS AC.)
						REQUIRED (50% OF GROSS AC.)	CREDITED OS PROVIDED (AC.)	PROVIDED (% OF GROSS AC.)	NON-CREDITED OS (AC.)		
F-19-038	24.71	0.07	2.17	22.47	8.68 (35.1%)	12.36	13.26	53.7 %	0.44	2.33 (9.4%)	15.8 (63.9%)

SINGLE FAMILY DETACHED PARKING ANALYSIS

NUMBER OF SINGLE-FAMILY DETACHED LOTS = 39
REQUIRED PARKING (@ 2 SPACES PER UNIT) = 78 SPACES
REQUIRED OVERFLOW PARKING (@ 0.5 SPACES PER UNIT) = 20 SPACES

TOTAL REQUIRED SPACES = 98 SPACES

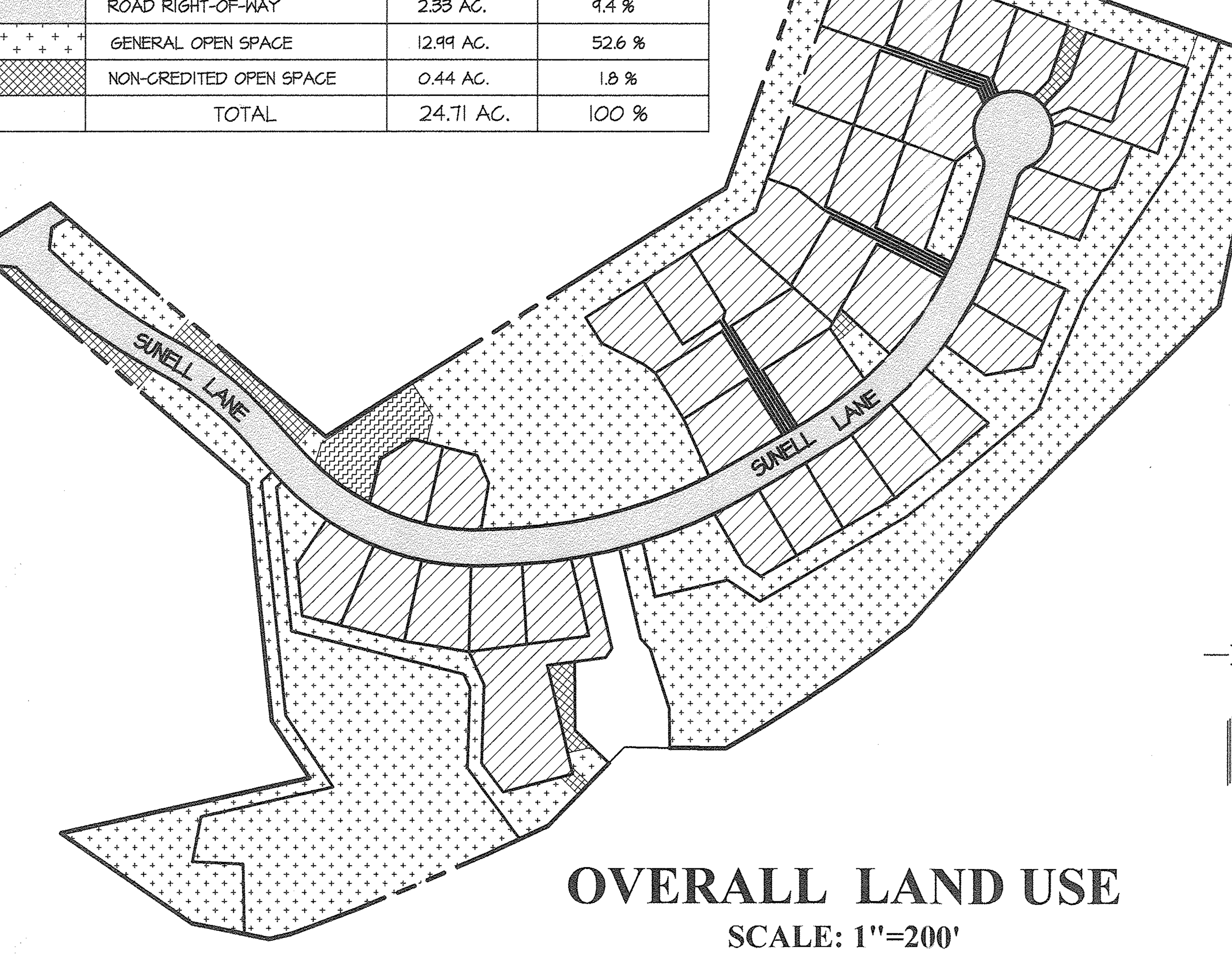
PARKING PROVIDED:

4 SPACES/UNIT (2 GARAGE & 2 DRIVEWAY) = 156 SPACES

TOTAL PROVIDED: = 156 SPACES

OVERALL LAND USE

LEGEND	LAND USE DESCRIPTION	ACREAGE	(% OF TOTAL)
	SINGLE FAMILY DETACHED	8.68 AC.	35.1 %
	RECREATIONAL OPEN SPACE	0.27 AC.	1.1 %
	ROAD RIGHT-OF-WAY	2.33 AC.	9.4 %
	GENERAL OPEN SPACE	12.99 AC.	52.6 %
	NON-CREDITED OPEN SPACE	0.44 AC.	1.8 %
	TOTAL	24.71 AC.	100 %



OVERALL LAND USE
SCALE: 1"=200'

SETBACK REQUIREMENTS (R-ED OPTION)

SETBACK TYPE	SETBACK SINGLE FAMILY DETACHED
FROM PROJECT BOUNDARIES :	
1. STRUCTURES AND USES IN SINGLE-FAMILY ATTACHED DEVELOPMENT PROJECTS	50'
EXCEPT ADJOINING SINGLE-FAMILY DETACHED DEVELOPMENTS	75'
2. STRUCTURES IN SINGLE-FAMILY DETACHED DEVELOPMENTS	30'
EXCEPT ADJOINING SINGLE-FAMILY DETACHED DEVELOPMENTS (PER 108.G.3.b)	75'
3. OTHER STRUCTURES AND USES	50'
FROM EXTERNAL PUBLIC STREET RIGHT-OF- WAY - ALL STRUCTURES AND USES	75'
FROM INTERNAL PUBLIC STREET RIGHT-OF-WAY- ALL STRUCURES AND USES 1. FRONT OR SIDE	20'
2. REAR (a) ACCESSORY STRUCTURES ON SINGLY-FAMILY DETACHED LOTS	10'
(b) OTHER	20'
3. USES (OTHER THAN STRUCURES), EXCLUDING USES IN SINGLE-FAMILY DETACHED DEVELOPMENT PROJECTS AND PARKING FOR SINGLE-FAMILY ATTACHED DWELLINGS	20'
FROM LOT LINES - STRUCTURES AND USES IN ALL DEVELOPMENT PROJECTS EXCEPT SINGLE-FAMILY ATTACHED:	
1. PRINCIPAL STRUCTURES (a) FRONT	20'
(b) SIDE	7.5
EXCEPT ZERO LOT LINE DWELLINGS. A MINIMUM OF 15 FEET MUST BE PROVIDED BETWEEN STRUCTURES	0'
(c) REAR	25'
2. DETACHED ACCESSORY GARAGES OR SHEDS (a) FRONT	20'
(b) SIDE	0'
(c) REAR	0'
3. OTHER ACCESSORY STRUCTURES (a) FRONT	20'
(b) SIDE	7.5'
(C) REAR	5'
4. USES (OTHER THAN STRUCTURES) IN ALL DEVELOPMENT PROJECTS EXCEPT SINGLE-FAMILY DETACHED OR ATTACHED	20'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[signature] MK 6/20/2019
Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

[signature] 7-9-19
Chief, Division of Land Development — Date
[signature] 7.8.19
Chief, Development Engineering Division — Date

DEVELOPER/CONTRACT PURCHASER:

PATAPSCO CROSSING, LLC
24024 FREDERICK ROAD
CLARKSBURG, MD 20871

301-428-0800
ATTN: DAN SNYDER

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY: dds
DRAWN BY: GT
CHECKED BY:

DATE	REVISION	BY	APP'R.

OWNER:

WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043

410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975
EXPIRATION DATE: May 26 , 2020
5/15/19

STATE OF MARYLAND — CARLTON KENNETH GUTSCHICK — No. 12975 — PROFESSIONAL ENGINEER

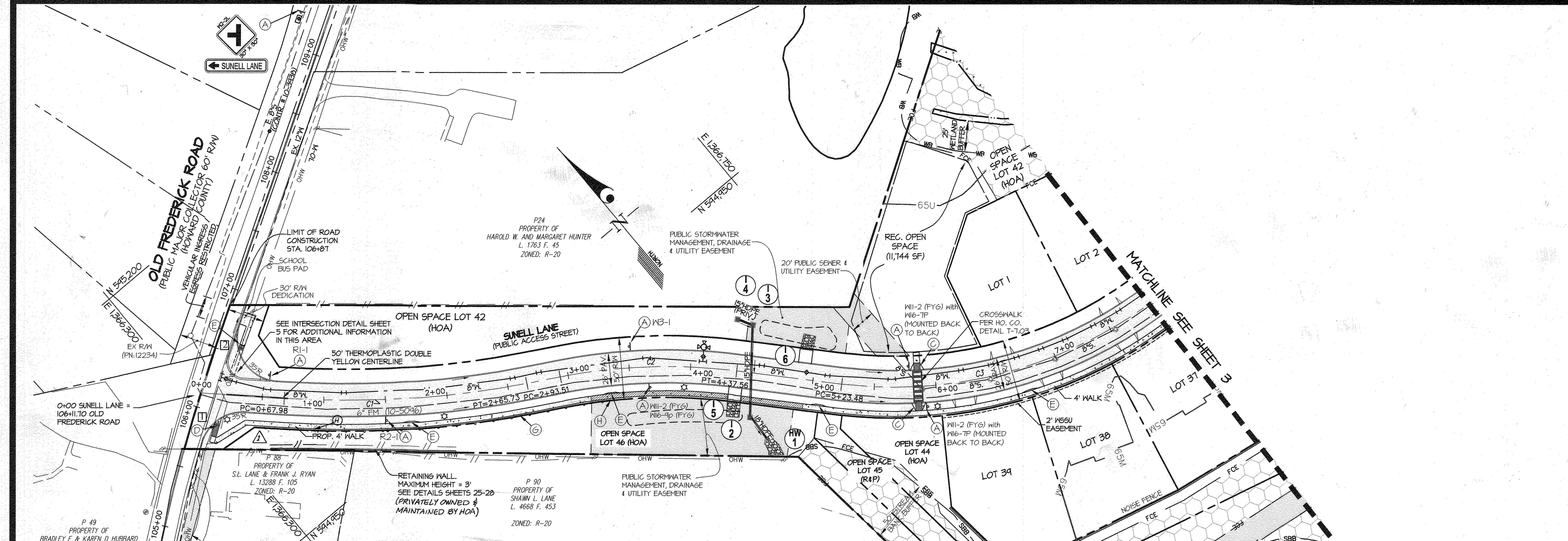
COVER SHEET

PATAPSCO CROSSING
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

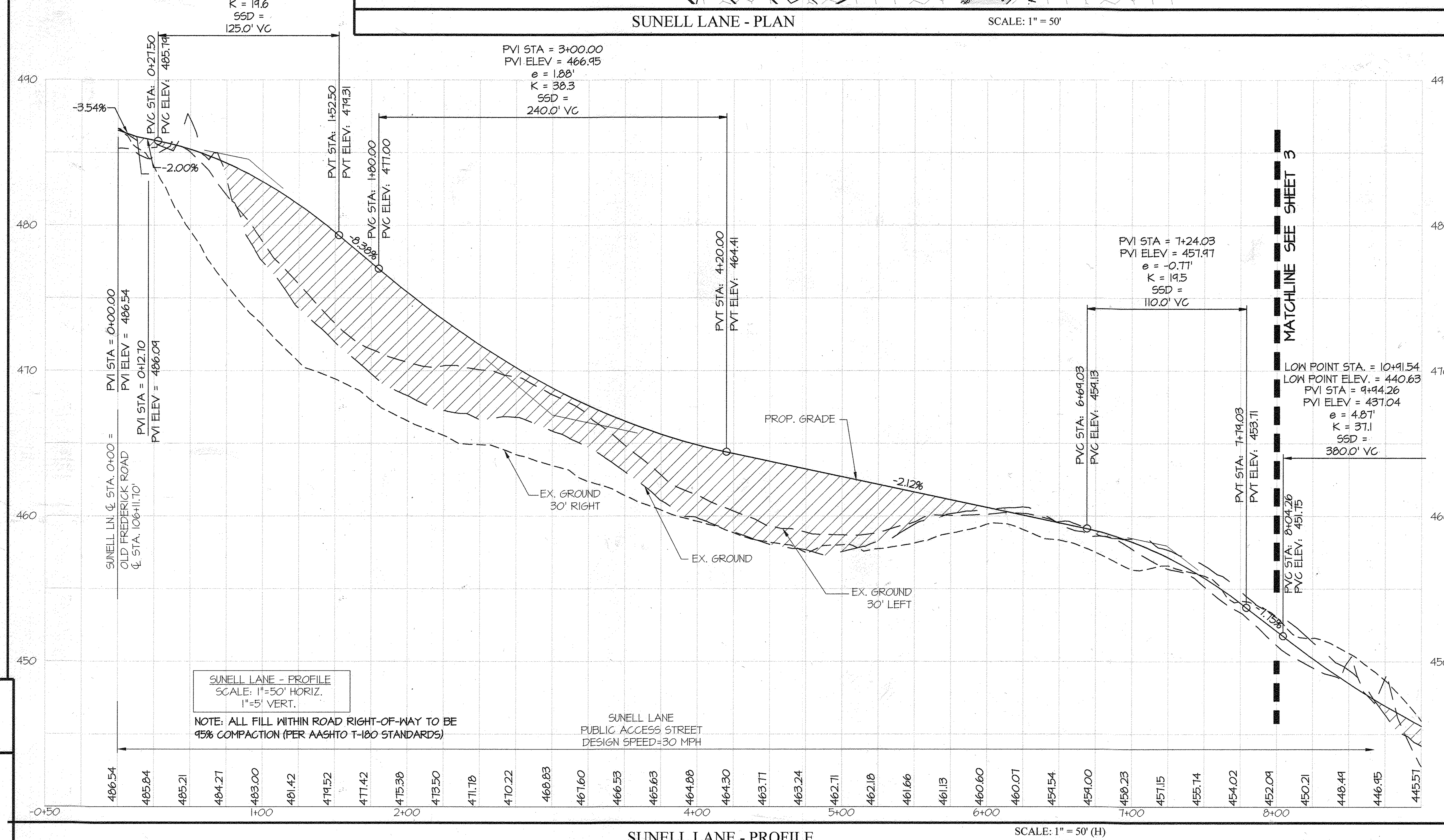
SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	1 OF 30

F-19-038



SUNELL LANE - PLAN

SCALE: 1" = 50'



SUNELL LANE - PROFILE

SCALE: 1" = 50' (H)
1" = 5' (V)

LEGEND:

DRIVEWAY ENTRANCE PER HO.CO. STD DETAIL R-6.01

STREET LIGHT. SEE TABLE THIS SHEET FOR LOCATIONS AND TYPES.

GROUND MOUNTED SIGN

STREET LIGHT POLE MOUNTED SIGN

REINFORCED CONCRETE SIDEWALK OUTSIDE OF DRIVEWAY ENTRANCE (R-6.01) (SEE DETAIL SHEET 5)

MITIGATED 65 dBA NOISE LINE

UNMITIGATED 65 dBA NOISE LINE

STOP — R1-1 30 X 30; SPEED LIMIT 25 — R2-1 24 X 30; W3-1 30 X 30; W2-2L 30" X 30"; W2-2R 30" X 30"; W11-2 30" X 30"; AHEAD — W16-9p 12" X 24"; W16-7pL 12" X 24"; W16-7pR 12" X 24"

CONSTRUCTION DETAILS

(A) INSTALL GROUND MOUNTED SIGN (R1-1)

(B) INSTALL STREET LIGHT POLE MOUNTED SIGN (R2-1)

(C) TYPE B RAMP PER HO.CO. STD DETAIL R-4.02

(D) SEE RAMP DETAIL SHEET 5

(E) SIDEWALK PASSING AREA PER R-4.11 (APPROX. LOCATION)

(G) W BEAM SINGLE FACE GUARDRAIL

(H) GUARDRAIL END TREATMENT PER MD-605.03

PAVEMENT MARKING NOTES

1. ALL PAVEMENT MARKINGS ARE TO BE EITHER LOCATED OR APPROVED BY THE TRAFFIC DIVISION PRIOR TO THE PLACEMENT OF ANY MARKINGS

2. ALL EXISTING PAVEMENT MARKING IN CONFLICT WITH PROPOSED PAVEMENT MARKINGS ARE TO BE REMOVED BY GRINDING ONLY. HOWARD COUNTY TRAFFIC (410-313-5752) WILL DETERMINE WHICH EXISTING MARKINGS SHALL BE REMOVED.

SIGNING NOTES:

1. THE R1-1 STOP ("STOP") SIGN AND THE STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED.

2. THE TRAFFIC CONTROL DEVICES SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2340) PRIOR TO THE INSTALLATION OF OF ANY OF THE TRAFFIC CONTROL DEVICES.

3. ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MdMUTCD).

4. ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1//2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.

STREET LIGHT LOCATIONS		
STREET	STATION	TYPE
SUNELL LANE	0+23	LED-150
SUNELL LANE	1+96	LED-150
SUNELL LANE	2+95	LED-150
SUNELL LANE	6+00	LED-100
SUNELL LANE	8+03	LED-100
SUNELL LANE	10+50	LED-150
SUNELL LANE	13+08	LED-100
3 SUNELL LANE	16+02	LED-100
SUNELL LANE CUL-DE-SAC	1+67	LED-100

STREET LIGHT NOTES:
1. ALL STREET LIGHTS TO BE EITHER LED-100 OR LED-150 PREMIER COLONIAL POST-TOP FIXTURES MOUNTED ON A 14' BLACK FIBERGLASS POLE

CURB FILLET TABLE □				
NO.	RADIUS	LENGTH	START	END
1	35.00'	47.67'	105+72.48 12.0'R (OFR)	PT: 0+37.35 13.0'R (S)
2	35.00'	64.50'	106+74.33 12.06'R (OFR)	PT: 0+61.13 13.0'L (S)

NOTE: (OFR) = OLD FREDERICK ROAD
(S) = SUNELL LANE
SEE INTERSECTION DETAILS ON SHEET 5 FOR ADDITIONAL INFORMATION.

℄ CURVE DATA CHART									
CURVE	STREET NAME	PC STA.	PT STA.	RADIUS	TANGENT	ARC	CHORD	BEARING	DELTA
C1	SUNELL LANE	0+67.98	2+65.73	775.00'	99.41'	197.74'	197.21'	S53°38'11"E	14°37'09"
C2	SUNELL LANE	2+93.51	4+37.56	458.00'	72.62'	144.05'	143.45'	S51°56'09"E	18°01'13"
C3	SUNELL LANE	5+23.48	8+31.31	350.00'	164.67'	307.83'	298.01'	S68°07'20"E	50°23'35"
C4	SUNELL LANE	8+68.45	11+94.42	700.00'	166.00'	325.97'	323.04'	N73°20'26"E	26°40'53"
C5	SUNELL LANE	13+12.67	17+14.52	525.00'	211.35'	401.86'	392.12'	N38°04'18"E	43°51'24"

NOTES:
1. WSSU DENOTES PUBLIC SIDEWALK MAINTENANCE, SEWER HOUSE CONNECTION, WATER HOUSE CONNECTION & UTILITY EASEMENT
2. ALL STORM DRAIN IS PUBLIC UNLESS NOTED OTHERWISE
3. ALL PUBLIC ROADS ARE OWNED AND MAINTAINED BY HOWARD COUNTY UNLESS NOTED OTHERWISE.
4. BUILDING CONSTRUCTION MATERIALS SHALL BE USED TO REDUCE THE INTERIOR SOUND TO 45 DBA
5. ALL PROPOSED PAVEMENT FOR SUNELL LANE IS TO BE HOWARD COUNTY P-2 PAVEMENT. ALL PROPOSED PAVEMENT FOR OLD FREDERICK ROAD IS TO BE P-4 PAVEMENT. SEE SHEET 5 FOR PAVEMENT SECTION DETAIL.
6. SEE SHEETS 22-23 FOR STREET TREE LOCATIONS
7. SEE TYPICAL SECTION, SHEET 5, FOR CURB TYPE.
8. SEE SHEET 5 FOR DETAIL OF THE PARCEL A DRIVEWAY APRON. ALL OTHER DRIVEWAY ENTRANCES ARE PER HO.CO. STD DETAIL R-6.01 UNLESS OTHERWISE NOTED.
9. SEE SHEET 9 FOR GUARDRAIL DETAILS.
10. SEE SHEET 24 FOR NOISE FENCE DETAILS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[illegible] MK — 6/20/2019
Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

[illegible] — 7-9-19
Chief, Division of Land Development — Date

[illegible] — 7.8.19
Chief, Development Engineering Division — Date

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY: dds
DRAWN BY: dds
CHECKED BY:

DATE	REVISION	BY	APP'R.
04/10/23	3 Rev. street light location	WSJ	DDS
02/04/2021	GUARDRAIL END TREATMENT MOVED TO STATION 0+50 1	HKJ	DDS

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS 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. 12975
EXPIRATION DATE: MAY 26, 2020
5/15/19

STATE OF MARYLAND — CARLTON KENNETH GUTSCHICK — No. 12975 — PROFESSIONAL ENGINEER

SUNELL LANE - PLAN and PROFILE

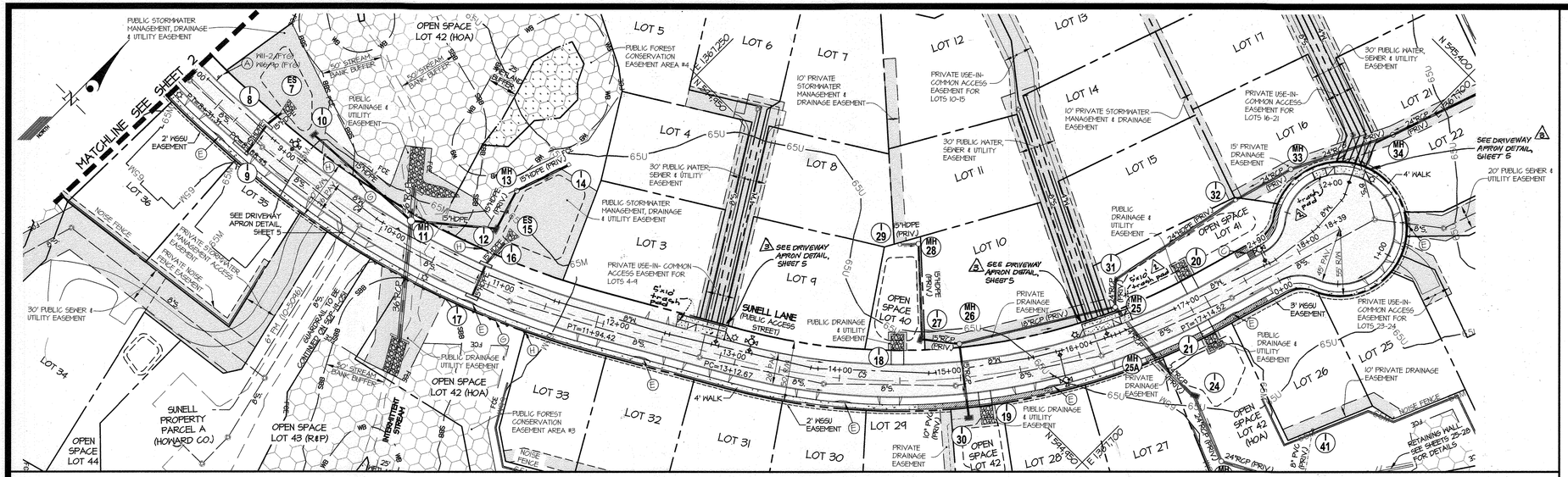
PATAPSCO CROSSING
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

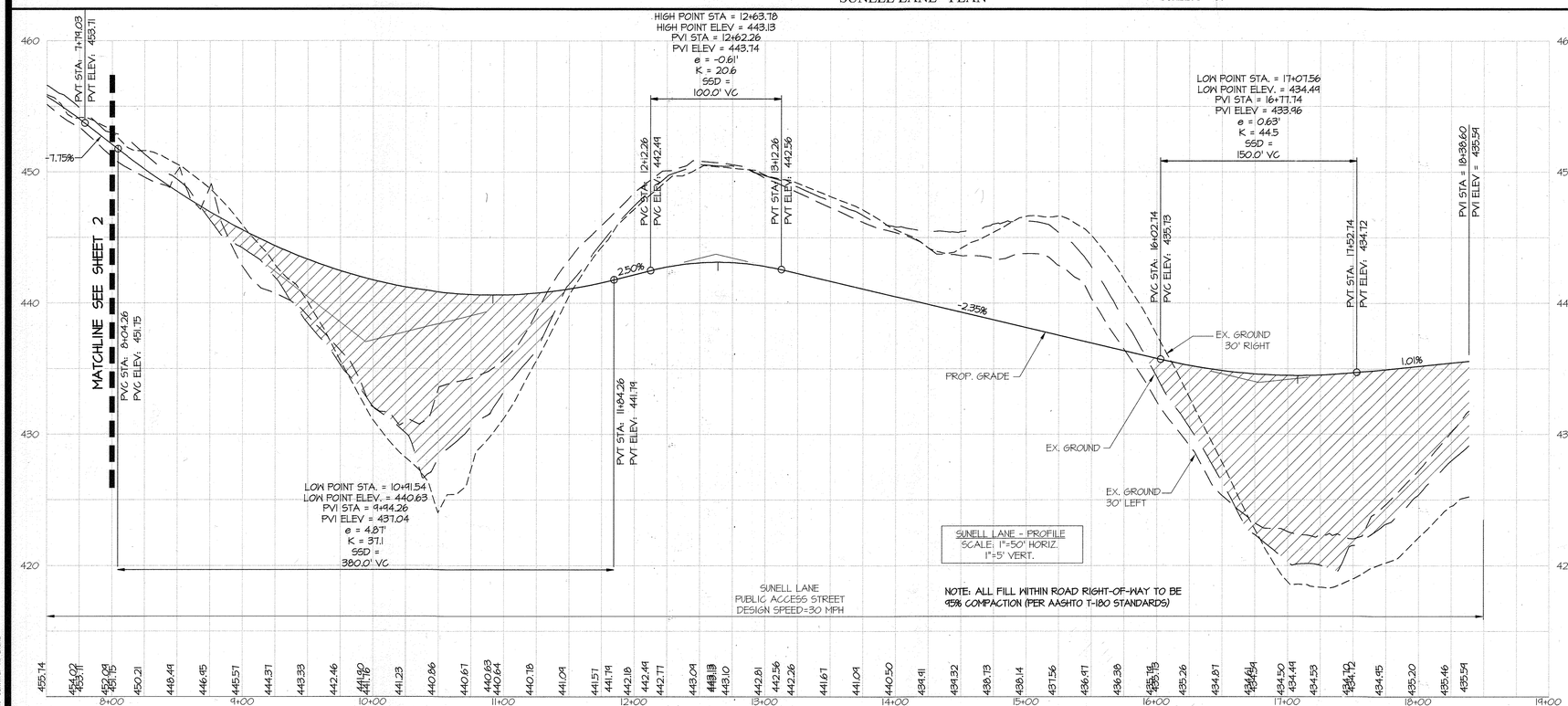
SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	2 OF 30

F-19-038

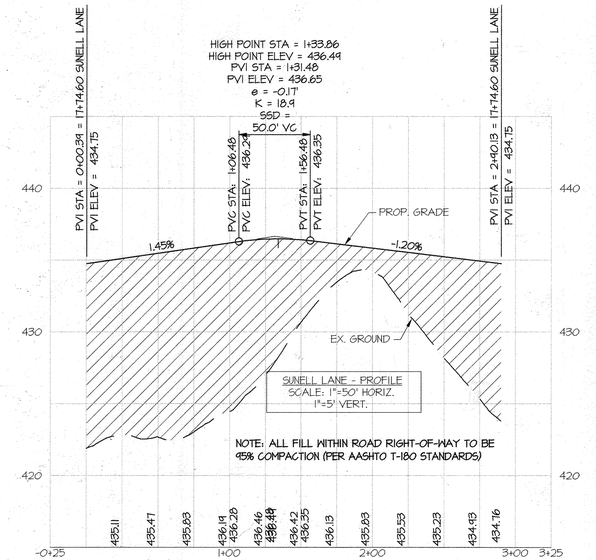
L:\CADD\DRAWINGS\11014\PLANS BY GLW\Finals\11014_02-03-Road Plan.dwg, PLOTTED: 5/13/2019 11:28 AM, LAST SAVED: 5/9/2019 12:08 PM, PLOTTED BY: Jennifer R. Dicks



SUNELL LANE - PLAN SCALE: 1" = 50'



SUNELL LANE - PROFILE SCALE: 1" = 50' (H) 1" = 5' (V)



SUNELL LANE CUL-DE-SAC - PROFILE SCALE: 1" = 50' (H) 1" = 5' (V)

NOTES:
1. WSSU DENOTES PUBLIC SIDEWALK MAINTENANCE, SEWER HOUSE CONNECTION, WATER HOUSE CONNECTION & UTILITY EASEMENT
2. ALL STORM DRAIN IS PUBLIC UNLESS NOTED OTHERWISE
3. ALL PUBLIC ROADS ARE OWNED AND MAINTAINED BY HOWARD COUNTY UNLESS NOTED OTHERWISE.
4. BUILDING CONSTRUCTION MATERIALS SHALL BE USED TO REDUCE THE INTERIOR SOUND TO 45 DBA
5. ALL PROPOSED PAVEMENT FOR SUNELL LANE IS TO BE HOWARD COUNTY P-2 PAVEMENT. ALL PROPOSED PAVEMENT FOR OLD FREDERICK ROAD IS TO BE P-4 PAVEMENT. SEE SHEET 5 FOR PAVEMENT SECTION DETAIL.
6. SEE SHEETS 22-23 FOR STREET TREE LOCATIONS
7. SEE TYPICAL SECTION, SHEET 5, FOR CURB TYPE.
8. SEE SHEET 5 FOR DETAIL OF THE FARGEL A DRIVEWAY APRON. ALL OTHER DRIVEWAY ENTRANCES ARE PER HO.CO. STD DETAIL R-6.01 UNLESS OTHERWISE NOTED.
9. SEE SHEET 9 FOR GUARDRAIL DETAILS.
10. SEE SHEET 24 FOR NOISE FENCE DETAILS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19

0 10 25 50 100
1 inch = 50 ft.

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY:	DDS
DRAWN BY:	JRC
CHECKED BY:	CKG

DATE	REVISION	BY	APP'R.
2021-4-10	⚠ REVISE USE IN COMMON DRIVEWAY APRONS	MCJ	
2021-9-16	⚠ add trash pads		

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975, EXPIRATION DATE: MAY 26, 2020.

6/14/19

STATE OF MARYLAND — CHRISTOPHER KEVIN GUTSCHICK — No. 12975 — PROFESSIONAL ENGINEER

SUNELL LANE - PLAN and PROFILE

PATAPSCO CROSSING
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25

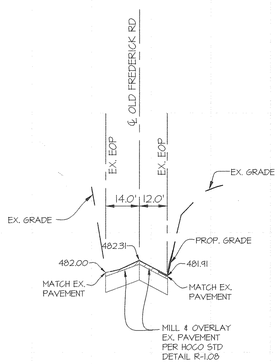
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	3 OF 30

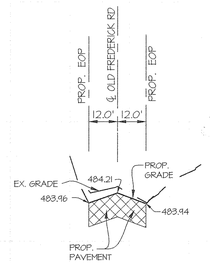
F-19-038

STA. 104+15



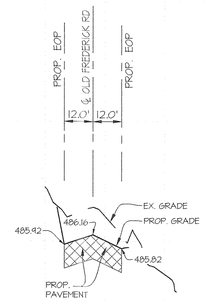
STA:104+15
SCALE: 1"=30' (H)
1"=3' (V)

STA. 104+50



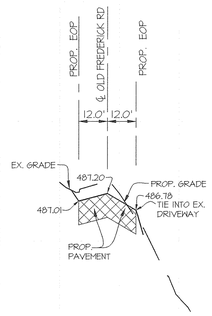
STA:104+50
SCALE: 1"=30' (H)
1"=3' (V)

STA. 105+00



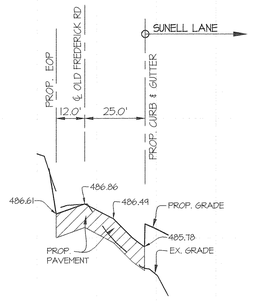
STA105+00
SCALE: 1"=30' (H)
1"=3' (V)

STA. 105+50



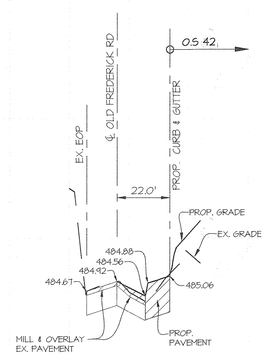
STA:105+50
SCALE: 1"=30' (H)
1"=3' (V)

STA. 106+00



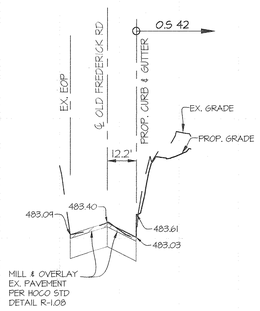
STA:106+00
SCALE: 1"=30' (H)
1"=3' (V)

STA. 106+50



STA:106+50
SCALE: 1"=30' (H)
1"=3' (V)

STA. 106+87



STA:106+87
SCALE: 1"=30' (H)
1"=3' (V)

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/29/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

SEE OLD FREDERICK ROAD DETAILS, SHEET 5, FOR ADDITIONAL INFORMATION.

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY:	DATE	REVISION	BY	APP'R.
DDS				
DRAWN BY: XX				
CHECKED BY: CKG				

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975 EXPIRATION DATE: MAY 26, 2020

5/15/19

STATE OF MARYLAND — CHRISTOPHER KNOTT — PROFESSIONAL ENGINEER

OLD FREDERICK ROAD CROSS SECTIONS

PATAPSCO CROSSING

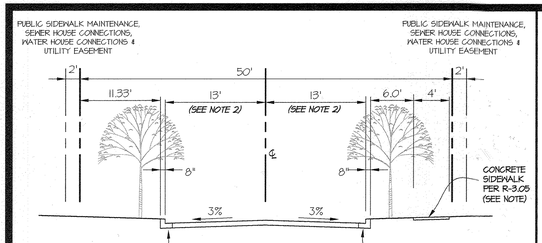
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=30' (H) 1"=3' (V)	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	4 OF 30

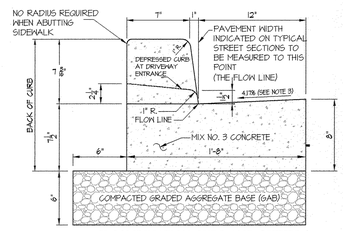
L:\CADD\DRAWINGS\11014\PLANS BY GLW\Finals\11014_04-OLD FRED ROAD XSEC.dwg, 5/15/2019 3:38 PM, DAVID DESIMONE, 1:1 in. plotted by: david desimone

F-19-038

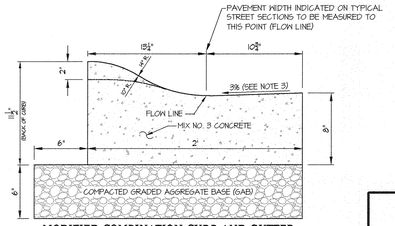


TYPICAL PAVING SECTION W/ STANDARD CURB

1 TYPICAL SECTION (R-1.02) NO SCALE



7" COMBINATION CURB AND GUTTER
N.T.S.



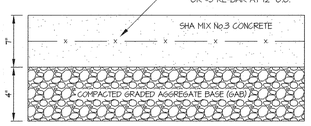
MODIFIED COMBINATION CURB AND GUTTER
N.T.S.

NOTES:

1. A REVERSE GUTTER PAN SHALL HAVE A GUTTER SLOPE OF 4.17% AWAY FROM THE FLOW LINE, AND SHALL NOT BE USED WHERE THIS DRAINAGE CREATES A HAZARDOUS CONDITION.
2. A MINIMUM OF TWO (2) FEET OF COMPACTED STABILIZED EARTH, OR EQUIVALENT, SHALL SUPPORT THE ENTIRE BACK OF CURB.
3. POSITIVE DRAINAGE SHALL BE PROVIDED BOTH BEHIND THE CURB AND ALONG THE GUTTER AND FLOW LINE.

2 CURB DETAILS (R-3.01) NO SCALE

REINFORCED SIDEWALK



NOTES:

1. PROVIDE REINFORCED SIDEWALK FOR A MINIMUM OF 50-FOOT FROM EACH SIDE OF FLOW-THRU INLET.
2. PROVIDE 1/2" PREFORMED BITUMINOUS EXPANSION JOINT WHERE THE DRIVEWAY APRON ABUTS OTHER CONCRETE STRUCTURES OR PAVEMENTS.
3. FOR REFERENCE, SEE HOWARD COUNTY STD. DETAILS R-6.03 FOR 7" CONCRETE SIDEWALK SECTION @ DRIVEWAY.

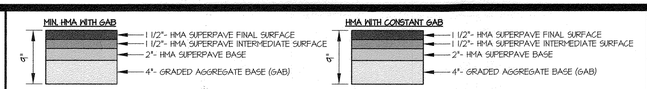
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/20/2019

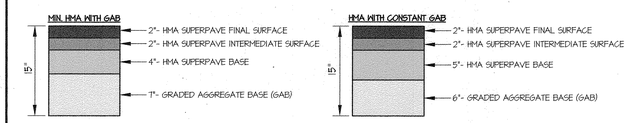
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19



P-2 PAVING SECTION



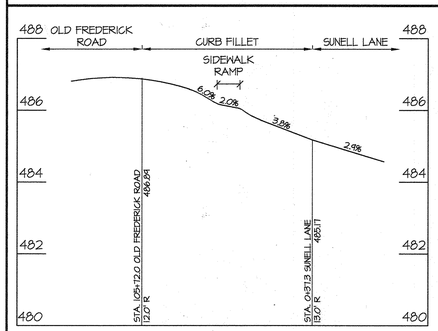
P-4 PAVING SECTION

NOTE:
THE VALUES SHOWN ARE FOR A CBR VALUE 5 TO <7, DEPENDING ON THE CBR VALUES OBTAINED IN THE FIELD, THE PAVING SECTIONS MAY BE REVISED, IF APPROVED BY A PROFESSIONAL SOILS ENGINEER. THESE SUBSTITUTIONS MUST ALSO BE APPROVED BY THE HOWARD COUNTY DEPT. OF PUBLIC WORKS.

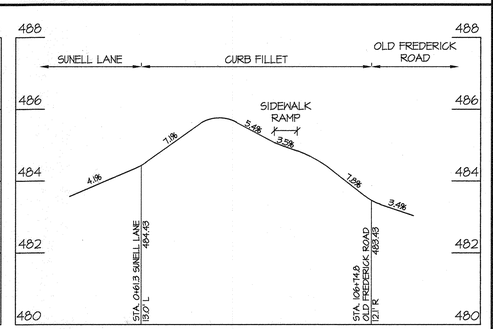
3 PAVING SECTIONS (R-2.01) NO SCALE

SUNELL LANE - INFORMATION

STATION	SECTION	CLASSIFICATION	DESIGN SPEED		PAVING SECTION
0+61 TO 18+39	TYP. 26' W/ STANDARD CURB	ACCESS STREET	30 MPH		P-2

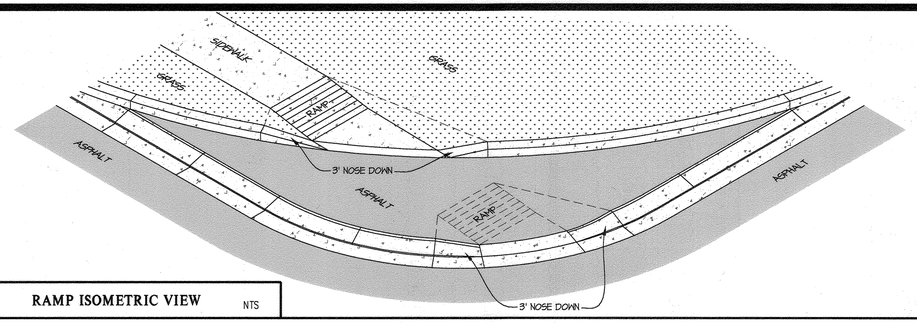


CURB RETURN PROFILE FOR OLD FREDERICK ROAD AND SUNELL LANE (WEST)

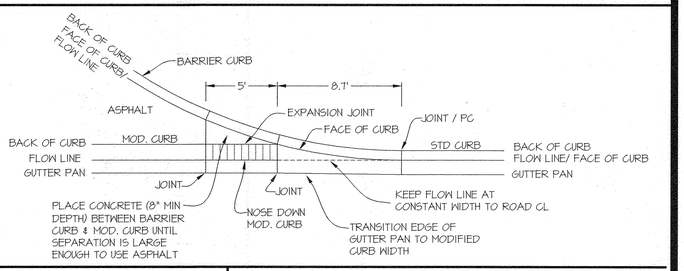


OUTER CURB RETURN PROFILE FOR OLD FREDERICK ROAD AND SUNELL LANE (EAST)

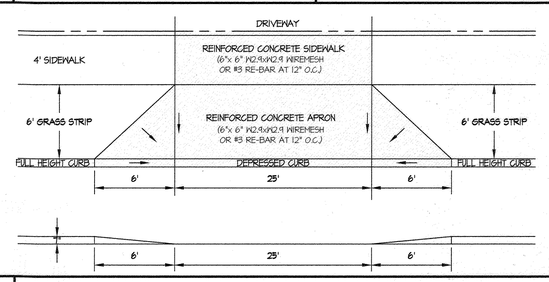
4 CURB RETURN PROFILES SCALE: 1"=2' (V) 1"=20' (H)



5 RAMP ISOMETRIC VIEW NTS

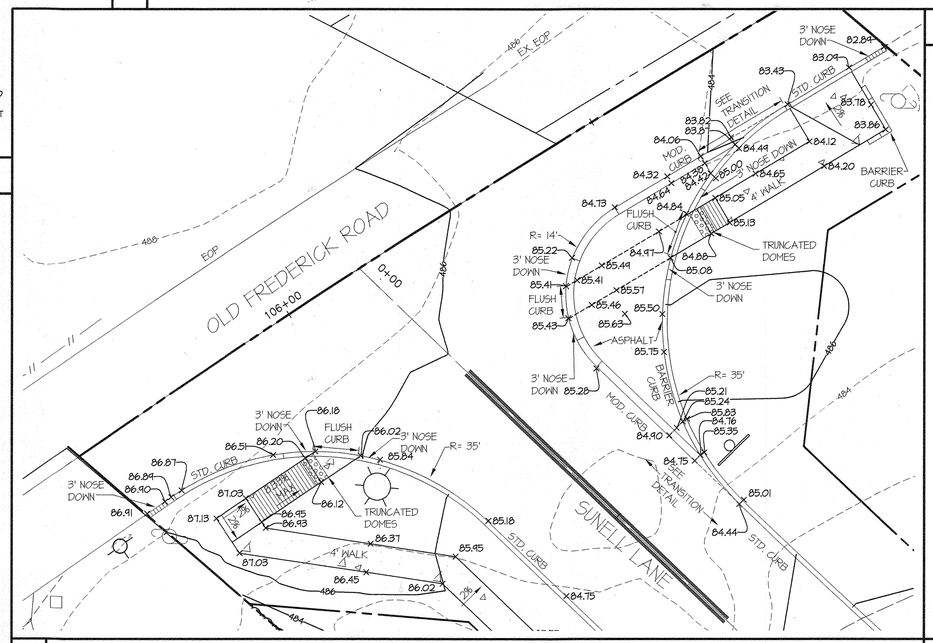


8 CURB TRANSITION DETAIL NTS



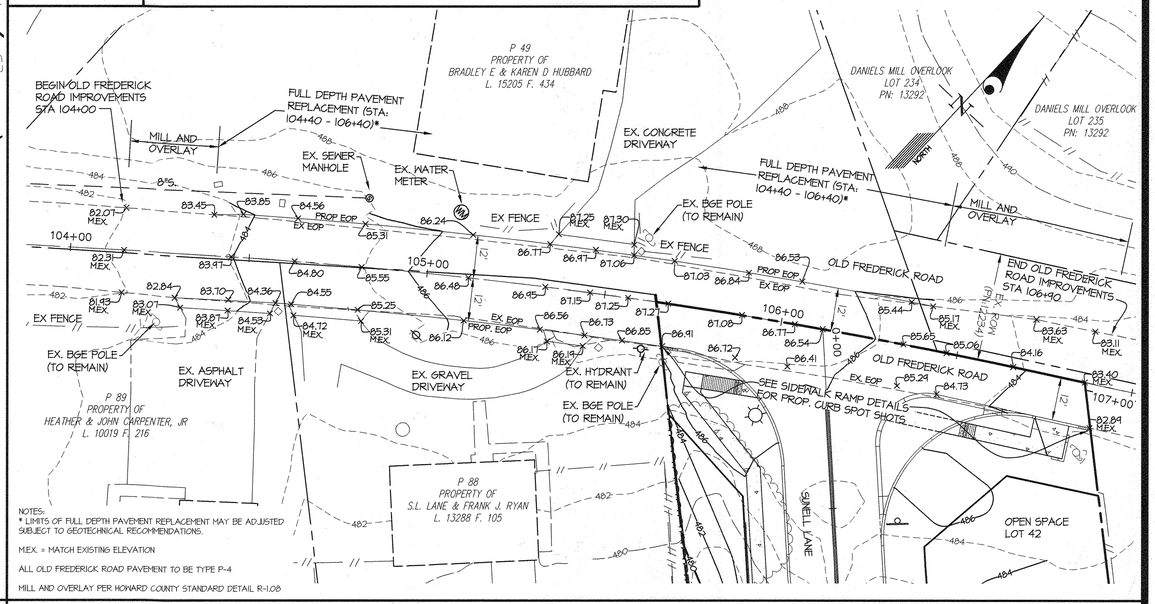
7 PARCEL A DRIVEWAY APRON NTS

Note: Parcel A driveway apron detail may also be used for use in common driveway aprons.



6 SIDEWALK RAMP DETAILS SCALE: 1"=10'

0 2 5 10 20
1 inch = 10 ft.



OLD FREDERICK ROAD DETAILS SCALE: 1"=20'

0 4 10 20 40
1 inch = 20 ft.

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY:			
DDS			
DRAWN BY:			
JRC			
CHECKED BY:			
CKG	10/31/19	Revise driveway apron detail	WSJ / DDG
	DATE	REVISION	BY / APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975 EXPIRATION DATE: MAY 26, 2020.

STATE OF MARYLAND — CHRISTOPHER K. GILBERT — No. 12975 — PROFESSIONAL ENGINEER

5/15/19

ROAD DETAILS

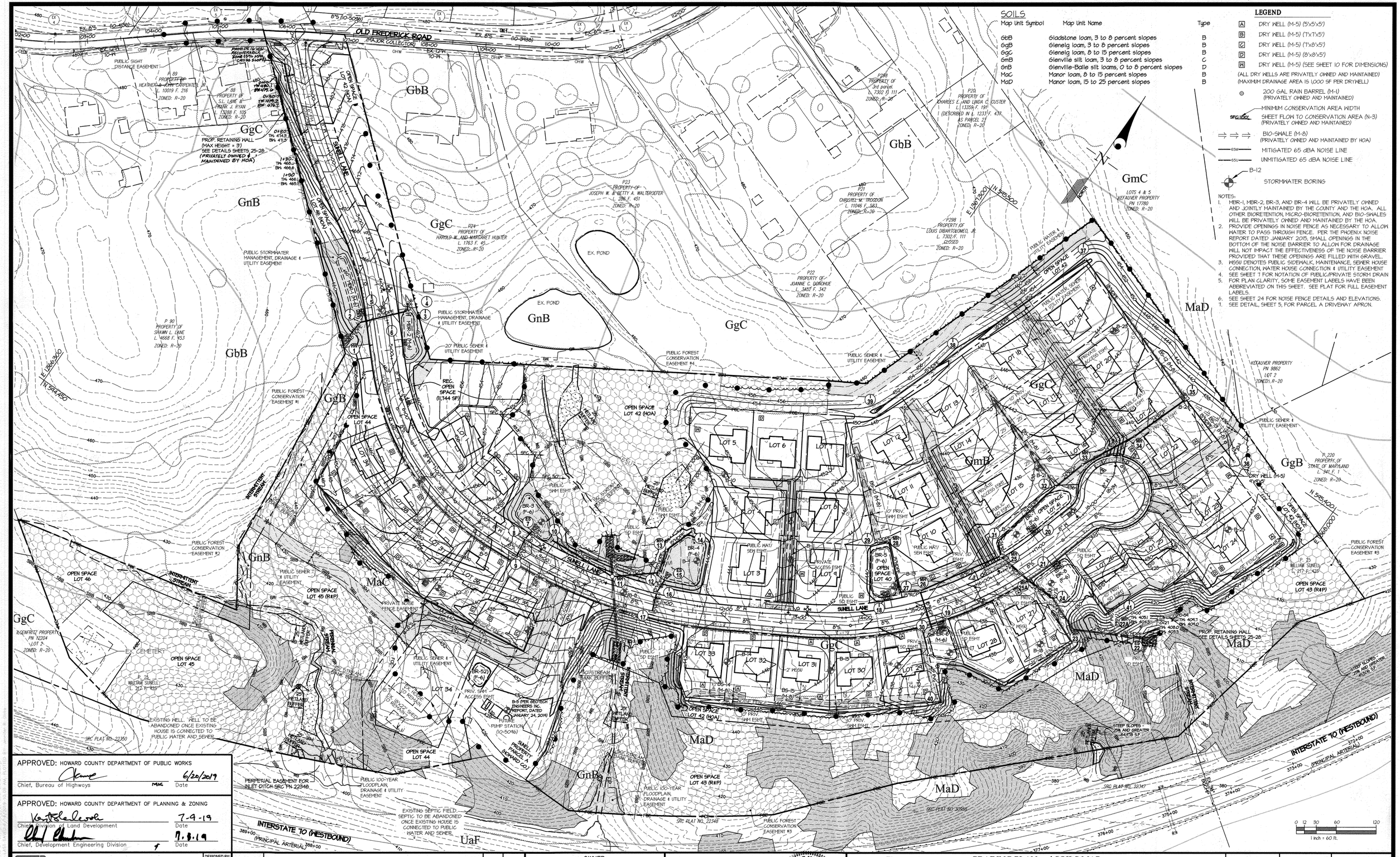
PATAPSCO CROSSING

LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	5 OF 30

F-19-038



SOILS

Map Unit Symbol	Map Unit Name	Type
GbB	Gladstone loam, 3 to 8 percent slopes	B
GgB	Glenelg loam, 3 to 8 percent slopes	B
GgC	Glenelg loam, 8 to 15 percent slopes	B
GmB	Glenville silt loam, 3 to 8 percent slopes	C
GnB	Glenville-Baile silt loams, 0 to 8 percent slopes	D
MaC	Manor loam, 8 to 15 percent slopes	B
MaD	Manor loam, 15 to 25 percent slopes	B

LEGEND

- A — DRY WELL (M-5) (5'x5'x5')
- B — DRY WELL (M-5) (7'x7'x5')
- C — DRY WELL (M-5) (7'x8'x5')
- D — DRY WELL (M-5) (8'x8'x5')
- W — DRY WELL (M-5) (SEE SHEET 10 FOR DIMENSIONS)

(ALL DRY WELLS ARE PRIVATELY OWNED AND MAINTAINED)
(MAXIMUM DRAINAGE AREA IS 1,000 SF PER DRYWELL)

- 200 GAL RAIN BARREL (M-1) (PRIVATELY OWNED AND MAINTAINED)
- SFC 100' — MINIMUM CONSERVATION AREA WIDTH
- SHEET FLOW TO CONSERVATION AREA (N-3) (PRIVATELY OWNED AND MAINTAINED)
- BIO-SWALE (M-8) (PRIVATELY OWNED AND MAINTAINED BY HOA)
- 65M — MITIGATED 65 dBA NOISE LINE
- 65U — UNMITIGATED 65 dBA NOISE LINE
- B-12 — STORMWATER BORING

NOTES:
1. MBR-1, MBR-2, BR-3, AND BR-4 WILL BE PRIVATELY OWNED AND JOINTLY MAINTAINED BY THE COUNTY AND THE HOA. ALL OTHER BIORETENTION, MICRO-BIORETENTION, AND BIO-SWALES WILL BE PRIVATELY OWNED AND MAINTAINED BY THE HOA.
2. PROVIDE OPENINGS IN NOISE FENCE AS NECESSARY TO ALLOW WATER TO PASS THROUGH FENCE. PER THE PHOENIX NOISE REPORT DATED JANUARY 2015, SMALL OPENINGS IN THE BOTTOM OF THE NOISE BARRIER TO ALLOW FOR DRAINAGE WILL NOT IMPACT THE EFFECTIVENESS OF THE NOISE BARRIER PROVIDED THAT THESE OPENINGS ARE FILLED WITH GRAVEL.
3. W5SU DENOTES PUBLIC SIDEWALK, MAINTENANCE, SEWER HOUSE CONNECTION, WATER HOUSE CONNECTION & UTILITY EASEMENT
4. SEE SHEET 1 FOR NOTATION OF PUBLIC/PRIVATE STORM DRAIN
5. FOR PLAN CLARITY, SOME EASEMENT LABELS HAVE BEEN ABBREVIATED ON THIS SHEET. SEE PLAT FOR FULL EASEMENT LABELS.
6. SEE SHEET 24 FOR NOISE FENCE DETAILS AND ELEVATIONS.
7. SEE DETAIL, SHEET 5, FOR PARCEL A DRIVEWAY APRON.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — MAC — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19

0 12 30 60 120
1 inch = 60 ft.

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY:	DATE	REVISION	BY	APP'R.
dds				
DRAWN BY: jrc				
CHECKED BY: ckg	2023-04-10	A REVISE USE IN COMMON DRIVEWAY APRONS	HKJ	
	2021-9-16	A add trash pads		
	02-04-2021	REVISED RETAINING WALL, GRADING AND TWIBW ELEVATIONS	HKJ	DDS

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975 EXPIRATION DATE: May 26, 2020

STATE OF MARYLAND — CHRISTOPHER KARL HOFMANN — 12975 — REGISTERED PROFESSIONAL ENGINEER

6/14/19

GRADING PLAN and SOILS MAP

PATAPSCO CROSSING

LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK A RESUBDIVISION OF PARCEL 25

Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"= 60'	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	6 OF 30

F-19-038

LEGEND

- 'B' TYPE SOILS
- 'C' TYPE SOILS
- 'D' TYPE SOILS
- STORM DRAIN DRAINAGE DIVIDE
- CULVERT DRAINAGE DIVIDE

NOTE: SEE COMPUTATIONS FOR DRAINAGE AREAS TO EXISTING CULVERTS.

'C' FACTOR COMPUTATIONS

STRUCTURE	AREA (AC.)	'C'	IMPERVIOUS
I-2	0.07	0.33	15%
I-3	0.04	0.33	15%
I-4	0.93	0.58	55%
I-5	0.27	0.71	76%
I-6	0.28	0.71	76%
I-8	0.34	0.65	66%
I-9	0.43	0.65	66%
I-10	0.09	0.33	15%
I-12	0.28	0.33	15%
I-14	0.33	0.43	31%
I-16	0.28	0.65	66%
I-17	0.42	0.65	66%
I-18	0.58	0.58	55%
I-19	0.37	0.58	55%
I-20	0.79	0.58	55%
I-21	0.59	0.60	58%
I-24	0.10	0.33	15%
I-27	0.41	0.35	18%
I-29	0.56	0.35	18%
I-30	0.10	0.33	15%
I-31	0.54	0.43	31%
I-32	0.71	0.35	18%
I-35	0.98	0.40	26%
I-36	0.46	0.43	31%
I-37	0.82	0.58	55%
I-38	1.06	0.58	55%
I-39	1.09	0.58	55%
I-40	0.37	0.40	26%
I-41	0.25	0.35	18%

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — MK — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY: DDS
DRAWN BY: JRC
CHECKED BY: CKG

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975, EXPIRATION DATE: May 26, 2020

6/14/19

STATE OF MARYLAND — CARLTON KENNETH GUTSCHICK — No. 12975 — PROFESSIONAL ENGINEER

STORM DRAIN DRAINAGE AREA MAP

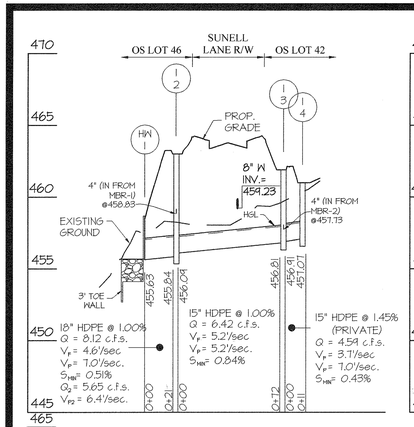
PATAPSCO CROSSING

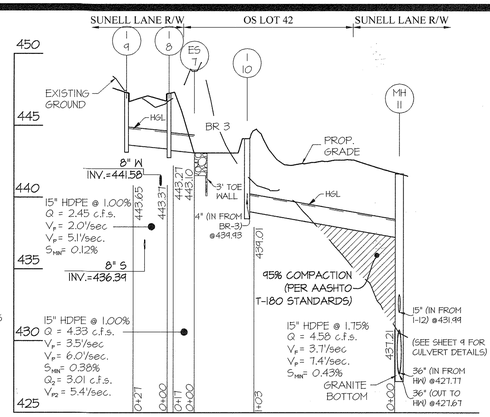
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25
Liber: 18476 Folio: 223

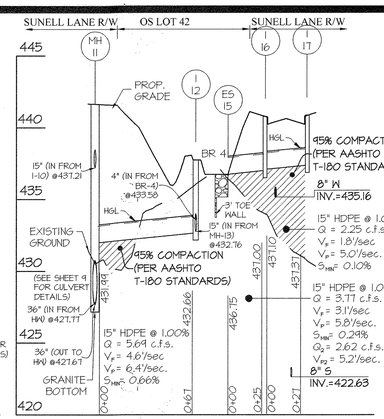
ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

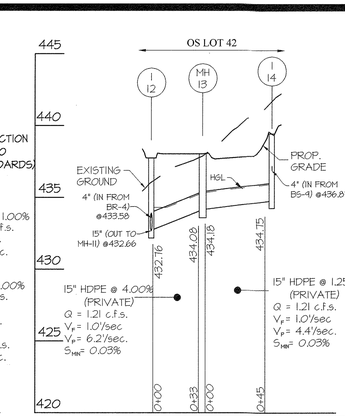
SCALE	ZONING	G. L. W. FILE No.
1"=60'	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	7 OF 30

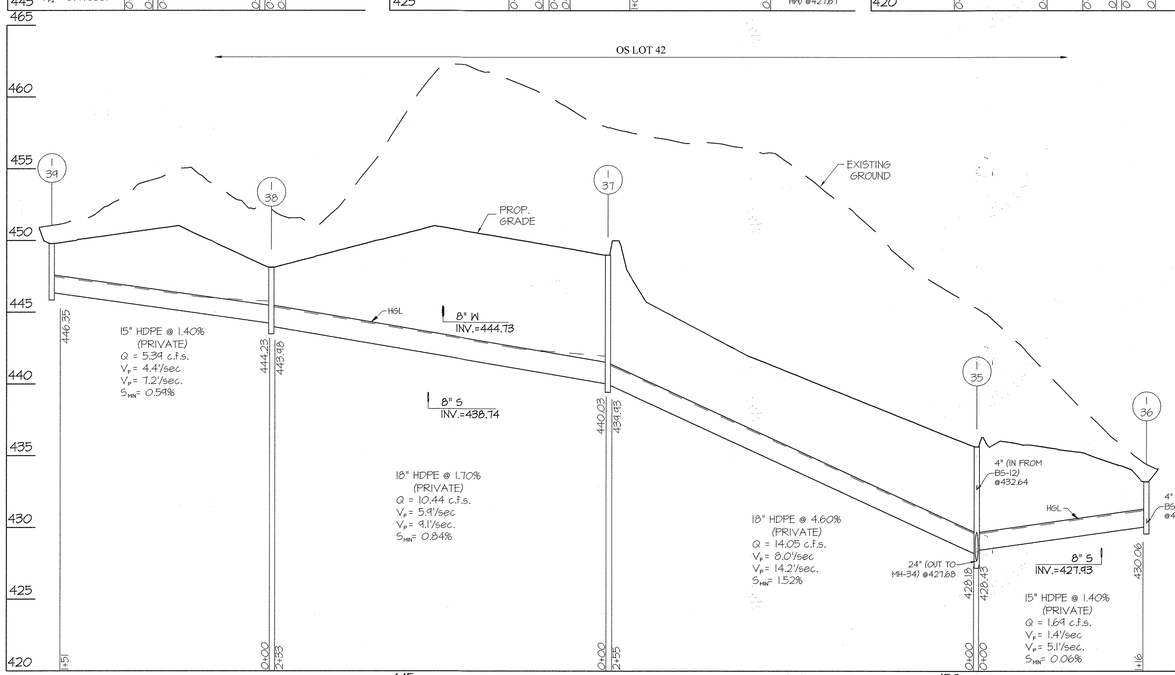
F-19-038

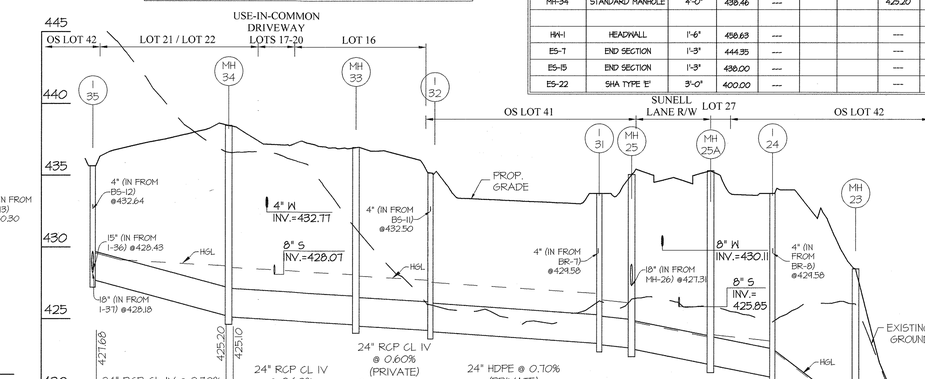


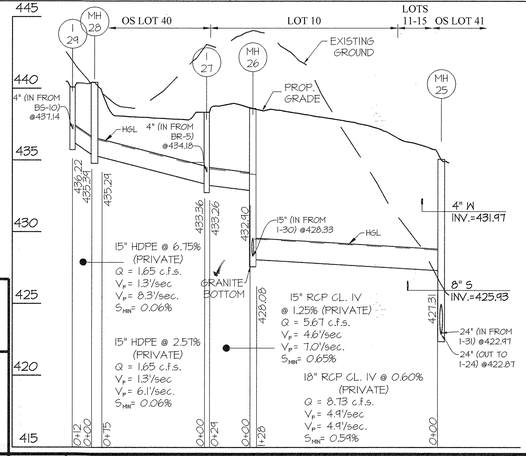


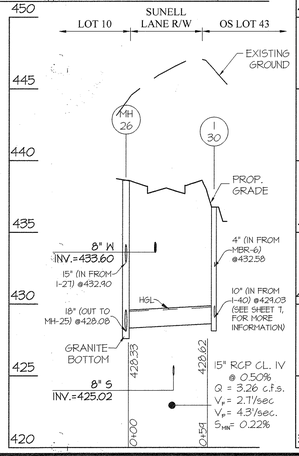












THIS PIPE SCHEDULE IS FOR THE STORM DRAIN ON SHEET 7 ONLY. FOR THE PIPE SCHEDULE FOR ESD FACILITIES, SEE SHEET 11.

PIPE SCHEDULE

SIZE	TYPE	QUANTITY (LF)	REMARKS
◇1 8"	PVC	44	PRIVATE
◇2 10"	PVC	112	PRIVATE
15"	HDPE	338	PUBLIC
15"	HDPE	443	PRIVATE
15"	RCP CL. IV	54	PUBLIC
15"	RCP CL. IV	29	PRIVATE
18"	HDPE	21	PUBLIC
18"	HDPE	488	PRIVATE
18"	RCP CL. IV	128	PRIVATE
24"	HDPE	116	PRIVATE
24"	RCP CL. IV	52	PUBLIC
24"	RCP CL. IV	408	PRIVATE
36"	HDPE	34	PRIVATE
◇3 36"	RCP CL. IV	120	PUBLIC

STRUCTURE SCHEDULE

NO	TYPE	WIDTH (INSIDE)	TOP ELEVATION PROPOSED UPPER	TOP ELEVATION PROPOSED LOWER	TOP ELEVATION AS-BUILT UPPER	TOP ELEVATION AS-BUILT LOWER	INVERT PROPOSED UPPER	INVERT PROPOSED LOWER	INVERT AS-BUILT UPPER	INVERT AS-BUILT LOWER	STD. DETAIL	LOCATIONS ◇4	PRIVATE/ PUBLIC
I-2	'S' INLET	2'-7"	463.00	---			456.83	455.84			HO. CO. D-4.24	N 544,742 E 1,366,638	PUBLIC
I-3	'S' INLET	2'-7"	461.90	---			457.13	456.81			HO. CO. D-4.24	N 544,848 E 1,366,888	PUBLIC
I-4	'S' INLET	2'-7"	461.00	---			---	457.07			HO. CO. D-4.24	N 544,860 E 1,366,881	PRIVATE
I-5	10' THRU INLET	12'-0"	464.34	464.11			---	---			HO. CO. D-4.35	N 544,819 E 1,366,645	PUBLIC
I-6	10' THRU INLET	11'-0"	463.20	462.98			---	---			HO. CO. D-4.35	N 544,791 E 1,366,700	PUBLIC
I-8	A-10 INLET	2'-6"	447.44	446.74			443.31	443.21			HO. CO. D-4.03	N 544,670 E 1,367,029	PUBLIC
I-9	C06-15 INLET	2'-6"	448.00	447.05			---	443.65			MD 374.31	N 544,643 E 1,367,028	PUBLIC
I-10	DOUBLE 'S' INLET	2'-7.5"	444.10	---			434.93	434.01			HO. CO. D-4.25	N 544,693 E 1,367,262	PUBLIC
I-12	DOUBLE 'S' INLET	2'-7.5"	437.75	---			433.56	432.66			HO. CO. D-4.25	N 544,744 E 1,367,223	PUBLIC
I-14	'S' INLET	2'-7"	434.33	---			436.87	434.75			HO. CO. D-4.24	N 544,824 E 1,367,228	PRIVATE
I-16	A-10 INLET	2'-6"	440.83	440.83			437.10	437.00			HO. CO. D-4.03	N 544,716 E 1,367,236	PUBLIC
I-17	A-10 INLET	2'-6"	440.83	440.83			---	437.37			HO. CO. D-4.03	N 544,642 E 1,367,241	PUBLIC
I-18	10' THRU INLET	12'-0"	434.70	434.44			---	---			HO. CO. D-4.35	N 544,698 E 1,367,536	PUBLIC
I-19	10' THRU INLET	12'-0"	438.04	437.80			---	---			HO. CO. D-4.35	N 544,934 E 1,367,602	PUBLIC
I-20	10' THRU INLET	12'-0"	434.70	434.70			---	---			HO. CO. D-4.35	N 545,114 E 1,367,665	PUBLIC
I-21	10' THRU INLET	12'-0"	434.70	434.70			---	---			HO. CO. D-4.35	N 545,302 E 1,367,684	PUBLIC
I-24	DOUBLE 'S' INLET	2'-7.5"	433.75	---			424.56	420.84			HO. CO. D-4.25	N 545,055 E 1,367,727	PRIVATE
I-27	DOUBLE 'S' INLET	2'-7.5"	436.35	---			434.18	433.26			HO. CO. D-4.25	N 544,928 E 1,367,534	PRIVATE
I-29	'S' INLET	2'-7"	440.10	---			437.14	436.22			HO. CO. D-4.24	N 544,870 E 1,367,467	PRIVATE
I-30	DOUBLE 'S' INLET	2'-7.5"	436.75	---			432.56	428.62			HO. CO. D-4.25	N 544,810 E 1,367,608	PRIVATE
I-31	'S' INLET	2'-7"	433.75	---			424.56	423.91			HO. CO. D-4.24	N 545,076 E 1,367,614	PRIVATE
I-32	'S' INLET	2'-7"	435.50	---			432.50	424.10			HO. CO. D-4.24	N 545,192 E 1,367,631	PRIVATE
I-35	'S' INLET	2'-7"	435.64	---			432.64	421.88			HO. CO. D-4.24	N 545,411 E 1,367,722	PRIVATE
I-36	'S' INLET	2'-7"	433.21	---			430.30	430.06			HO. CO. D-4.24	N 545,316 E 1,367,835	PRIVATE
I-37	'S' INLET	2'-7"	444.00	---			440.03	439.93			HO. CO. D-4.24	N 545,497 E 1,367,478	PRIVATE
I-38	'S' INLET	2'-7"	446.12	---			444.23	443.98			HO. CO. D-4.24	N 545,275 E 1,367,401	PRIVATE
I-39	'S' INLET	2'-7"	444.78	---			---	446.35			HO. CO. D-4.24	N 545,130 E 1,367,350	PRIVATE
I-40	NYLOPLAST	10"	432.00	---			430.16	429.61			◇5	N 544,830 E 1,367,673	PRIVATE
I-41	NYLOPLAST	10"	424.81	---			---	422.20			◇5	N 545,103 E 1,367,815	PRIVATE
MH-11	STANDARD MANHOLE	5'-0"	441.64	---			437.21	427.67			HO. CO. 6-5.13	N 544,698 E 1,367,668	PUBLIC
MH-13	STANDARD MANHOLE	4'-0"	438.01	---			434.18	434.08			HO. CO. 6-5.12	N 544,778 E 1,367,212	PRIVATE
MH-22A	STANDARD MANHOLE	5'-0"	408.90	---			403.50	398.34			HO. CO. 6-5.13	N 545,064 E 1,367,843	PRIVATE
MH-23	STANDARD MANHOLE	4'-0"	428.50	---			416.63	416.53			HO. CO. 6-5.12	N 545,282 E 1,367,781	PRIVATE
MH-25	STANDARD MANHOLE	4'-0"	435.01	---			427.31	422.87			HO. CO. 6-5.12	N 545,060 E 1,367,629	PRIVATE
MH-25A	STANDARD MANHOLE	4'-0"	435.34	---			421.84	421.74			HO. CO. 6-5.12	N 545,054 E 1,367,684	PRIVATE
MH-26	STANDARD MANHOLE	4'-0"	438.83	---			432.90	428.08			HO. CO. 6-5.12	N 544,948 E 1,367,560	PRIVATE
MH-28	STANDARD MANHOLE	4'-0"	440.45	---			435.91	435.21			HO. CO. 6-5.12	N 544,982 E 1,367,418	PRIVATE
MH-33	STANDARD MANHOLE	4'-0"	436.84	---			424.54	424.44			HO. CO. 6-5.12	N 545,242 E 1,367,651	PRIVATE
MH-34	STANDARD MANHOLE	4'-0"	438.46	---			425.20	425.10			HO. CO. 6-5.12	N 545,322 E 1,367,640	PRIVATE
HW-1	HEADWALL	1'-6"	458.63	---			---	455.63			HO. CO. D-5.11	N 544,770 E 1,366,638	PUBLIC
ES-7	END SECTION	1'-3"	444.35	---			---	443.10			HO. CO. D-5.51	N 544,684 E 1,367,031	PUBLIC
ES-15	END SECTION	1'-3"	438.00	---			---	436.75			HO. CO. D-5.51	N 544,744 E 1,367,236	PUBLIC
ES-22	SHA TYPE 'E'	3'-0"	400.00	---			---	398.00			MD 356.01	N 545,081 E 1,367,874	PRIVATE

◇1 COORDINATE POINT GIVEN IS TO THE CENTER OF MANHOLES, RISERS AND S-INLETS, TO THE CENTERLINE OF A, C06, AND C05 INLETS AT FACE OF GIRB, AND AT CENTERLINE OF OUTLET OF END SECTIONS.

◇2 SEE SHEET 20 FOR TYPICAL RIP RAP DETAILS.

◇3 8" PVC AND 10" PVC ARE FOR THE PRIVATE CONNECTIONS TO I-40 ON LOT 29 AND I-41 ON LOT 26 SHOWN ON SHEET 7.

◇4 PUBLIC 36" RCP IS FOR THE CULVERT SHOWN ON SHEET 9.

◇5 YARD INLET TO BE 10" INLINE DRAIN PER NYLOPLAST 2700406D WITH A SMALL FLEXSTORM PIPE INLET FILTER FOR ROUND OPENINGS (OR APPROVED EQUALS)

NOTES:
-SEE CULVERT DETAILS, SHEET 9, FOR HEADWALL AND RIPRAP INFORMATION.

RIP RAP INFORMATION ◇2

STRUCTURE	CLASS	LENGTH	D_{50}	D_{100}	THICKNESS
HW-1	CLASS I	10'	9.5"	15"	19"
ES-7	CLASS I	9'	9.5"	15"	19"
ES-15	CLASS I	9'	9.5"	15"	19"
ES-22	CLASS I	20'	9.5"	15"	19"

0 10 25 50 100
1 inch = 50 ft.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 7-9-19
Chief, Development Engineering Division — Date 7.8.19

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY:	DRAWN BY:	CHECKED BY:
JRC	JRC	DDS

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS 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. 12975
EXPIRATION DATE: MAY 26, 2020
6/14/19

STORM DRAIN PROFILES

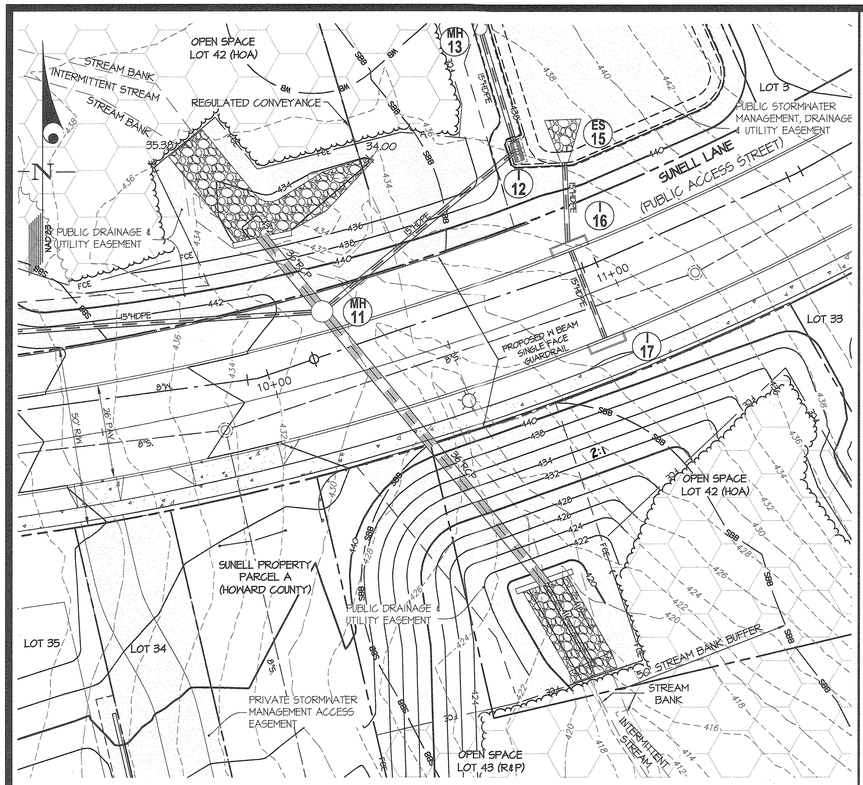
PATAPSCO CROSSING
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1" = 50' (H) 1" = 5' (V)	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	8 OF 30

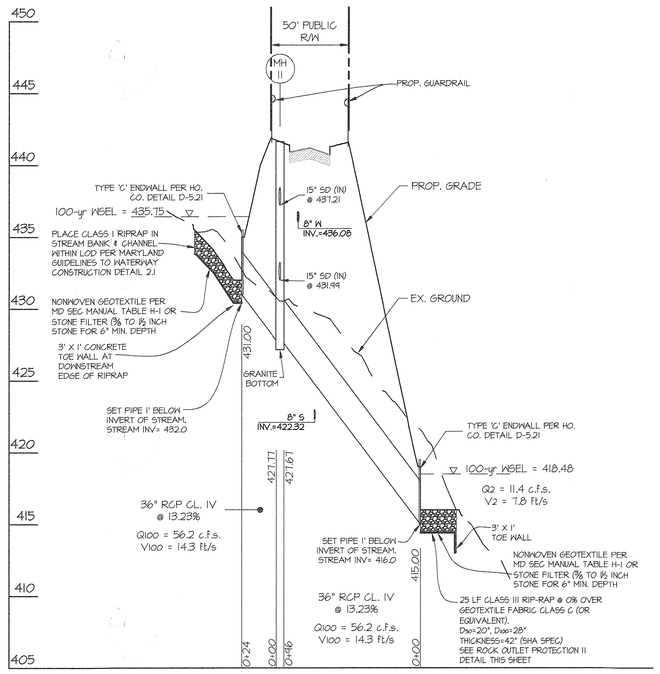
L:\CADD\DRAWINGS\11014\PLANS BY GLW\Trials\11014_08-SD PROF.dwg
LAST SAVED BY: Jennifer R. Dines ON: 6/13/2019 12:42:44 PM LAST PLOTTED BY: Jennifer R. Dines ON: 6/13/2019 12:43:08 PM

F-19-038



CULVERT DETAILS

SCALE: 1" = 20'



PROFILE ALONG CULVERT

SCALE: 1" = 50' (H)
1" = 5' (V)

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

1) NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.

2) PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.

3) DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.

4) PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.

5) REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, OR WATERWAYS, OR PERMANENT MODIFICATION OF THE 100-YEAR FLOODPLAIN IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.

6) RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.

7) ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES: ANNUAL 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.

8) AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST-CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.

9) TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM.

USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.

10) STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.

11) CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

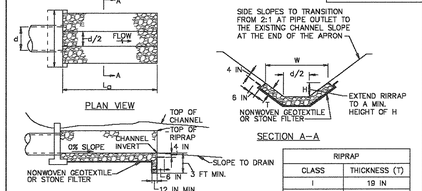
Chief, Development Engineering Division — Date 7.8.19

NOTE: STREAM DISTURBANCE HAS BEEN APPROVED BY MDE.
TRACKING #:18-NT-3290/201861702

DETAIL D-4-1-B ROCK OUTLET PROTECTION II

STANDARD SYMBOL: ROPII

DISCHARGE TO CONFINED CHANNEL SECTION



RIPRAP	
CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	48 IN

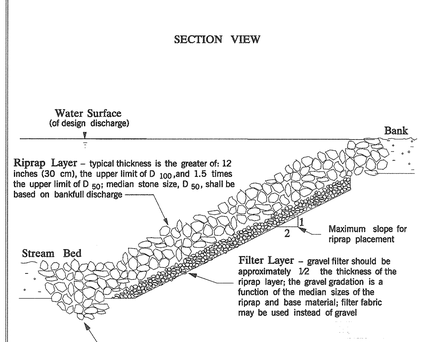
CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (3/8 TO 1½ INCH STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

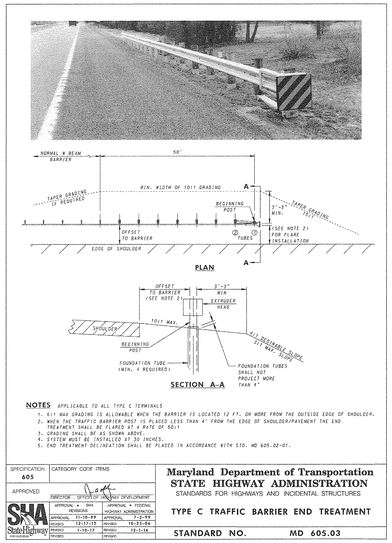
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

Maryland's Guidelines To Waterway Construction
DETAIL 2.1: RIPRAP



SLOPE PROTECTION AND STABILIZATION TECHNIQUES	REVISED NOVEMBER 2000 PAGE 2.1 - 4	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



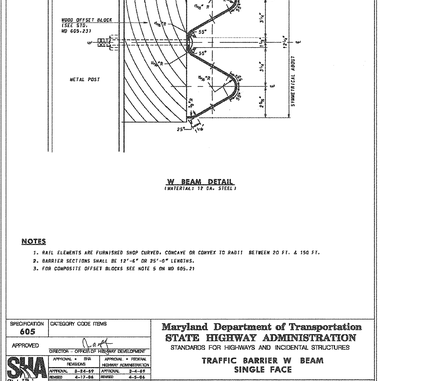
NOTES APPLICABLE TO ALL TYPE C TERMINALS

1. 10:1 MAX GRADING IS ALLOWABLE WHEN THE BARRIER IS LOCATED 12 FT. OR MORE FROM THE OUTSIDE EDGE OF SHOULDER.
2. WHEN THE TRAFFIC BARRIER POST IS PLACED LESS THAN 4' FROM THE EDGE OF SHOULDER/PAVEMENT THE END TREATMENT SHALL BE FLARED AT A RATE OF 50:1.
3. GRADING SHALL BE AS SHOWN ABOVE.
4. SYSTEM MUST BE INSTALLED AT 30 INCHES.
5. END TREATMENT DELINEATION SHALL BE PLACED IN ACCORDANCE WITH STD. NO 605.02-01.

SPECIFICATION 605	CATEGORY CODE ITEMS	Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES TYPE C TRAFFIC BARRIER END TREATMENT STANDARD NO. MD 605.03

APPROVED — DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

APPROVAL & REVISIONS	SHA	OPINION & FEDERAL HIGHWAY ADMINISTRATION
APPROVAL	11-18-99	APPROVAL 7-2-99
REVISED	12-17-15	REVISED 10-20-04
REVISED	1-18-17	REVISED 12-1-16
REVISED		REVISED



NOTES

1. RAIL ELEMENTS ARE FURNISHED SHOP CURVED. CONCAVE OR CONVEX TO SUIT BETWEEN 20 FT. & 150 FT.
2. BARRIER SECTIONS SHALL BE 12'-6" OR 25'-0" LENGTHS.
3. FOR COMPOSITE OFFSET BLOCKS SEE NOTE 5 ON MD 605.21

SPECIFICATION 605	CATEGORY CODE ITEMS	Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES TRAFFIC BARRIER W BEAM SINGLE FACE STANDARD NO. MD 605.22

APPROVED — DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

APPROVAL & REVISIONS	SHA	OPINION & FEDERAL HIGHWAY ADMINISTRATION
APPROVAL	8-14-96	APPROVAL 2-4-97
REVISED	4-17-06	REVISED 4-3-06
REVISED		REVISED
REVISED		REVISED

GRAPHIC SCALE
20 0 10 20 40
1 inch = 20 ft.

GRAPHIC SCALE
50 0 25 50 100
1 inch = 50 ft.

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY:	DRAWN BY:	CHECKED BY:
JRC	JRC	DDS

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975 EXPIRATION DATE: MAY 26, 2020

STATE OF MARYLAND — JOHN R. CROMWELL — No. 12975 — PROFESSIONAL ENGINEER

5/15/19

CULVERT DETAILS

PATAPSCO CROSSING
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25

Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	9 OF 30

F-19-038

ON LOT MICRO-SCALE PRACTICES

LOT NO.	(M-1)	(M-3)	(M-4)	(M-5)	(M-6)	(M-7)	(M-8)
Lot 1	X			X			
Lot 2	X			X			
Lot 3							
Lot 4				X			
Lot 5				X			
Lot 6				X			
Lot 7							
Lot 8				X			
Lot 9				X			
Lot 10				X			
Lot 11							X
Lot 12							X
Lot 13							X
Lot 14							X
Lot 15							X
Lot 16				X			X
Lot 17							X
Lot 18							X
Lot 19				X			
Lot 20				X			
Lot 21				X			
Lot 22				X			
Lot 23				X			
Lot 24				X			
Lot 25	X						
Lot 26	X						
Lot 27				X			
Lot 28				X			
Lot 29				X			
Lot 30				X			X
Lot 31				X			X
Lot 32				X			X
Lot 33				X			X
Lot 34							
Lot 35				X			
Lot 36				X			
Lot 37				X			
Lot 38				X			
Lot 39				X			

Micro Scale Drainage Areas	
Drianage Area	Area (SF)
DW 1A	800
RB 1B	430
RB 1C	525
DW 2A	695
RB 2B	455
RB 2C	420
DW 4A	645
DW 5A	840
DW 6A	915
DW 8A	710
DW 9A	800
DW 9B	630
DW 10A	630
DW 10B	800
DW 15A	815
DW 16B	530
DW 19A	415
DW 20A	530
DW 21A	645
DW 22A	575
DW 23B	510
DW 23A	705
DW 23B	820
DW 24A	1000
DW 24B	555
DW 24C	560
DW 24D*	2870
RB 25A	566
RB 25B	400
RB 26A	418
RB 26B	522
DW 27A	450
DW 27B	874
DW 28A	450
DW 28B	874
DW 29A	624
DW 29B	967
DW 30A	624
DW 30B	772
DW 31A	624
DW 31B	440
DW 32A	738
DW 32B	538
DW 33A	827
DW 33B	520
DW 35A	642
DW 35B	662
DW 35C	709
DW 36A	642
DW 36B	662
DW 36C	709
DW 37A	642
DW 37B	662
DW 37C	709
DW 38A	642
DW 38B	662
DW 38C	709
DW 39A	642
DW 39B	662
DW 39C	709

*LOT 24D DRAINAGE AREA IS 45% IMPERVIOUS

NOTE: DRAINAGE AREAS TO ON-LOT MICRO PRACTICES (DRYWELLS, RAIN BARRELS, AND DISCONNECTS) ARE CONCEPTUAL. THESE AREAS WILL BE REVISED ON A FUTURE PLAN ONCE AN ACTUAL HOUSE MODEL IS DETERMINED FOR EACH LOT. THE DRAINAGE AREAS AND PRACTICE LOCATIONS MAY BE REVISED WITHOUT THE NEED TO REDLINE THIS PLAN PROVIDED THAT THE MAXIMUM DRAINAGE AREA TO A DRYWELL STAYS BELOW 1000 SF, THE MAXIMUM DRAINAGE AREA TO A SINGLE RAIN BARREL STAYS BELOW 500 SF, AND THE TOTAL ESD VOLUME PROVIDED FOR EACH LOT IS WHAT WAS ANTICIPATED ON THESE PLANS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 9.8.19

STORMWATER MANAGEMENT RECHARGE

DEVELOPMENT AREA :	15.10 Ac.
% IMPERVIOUS:	USE 35%
RECHARGE FACTOR:	0.230
REQUIRED RECHARGE:	
S x Rv x A/12=	
(0.230*0.365*15.08*43560)/12=	4,610 cf
PROVIDED RECHARGE BY DRY WELLS:	5,437 cf

STORMWATER MANAGEMENT REQUIREMENT

DEVELOPMENT AREA :	15.10 Ac.
% IMPERVIOUS:	35%
TARGET Pe:	1.8"
REQUIRED ESDV:	
DEVELOPMENT AREA:	
A x Rv x Pe/12=	
(15.10*43560*.365*1.8)/12=	36,012 cf

STORMWATER MANAGEMENT PROVIDED BY DEVICE

RAIN BARRELS (16) (M-1):	428 CU-FT
DRY WELLS (52) (M-5):	5,431 CU-FT
MICRO-BIORETENTION (3) (M-6):	5,115 CU-FT
BIO-SWALES (7) (M-8):	9,068 CU-FT
BIORETENTION (6) (F-6):	16,818 CU-FT
SHEETFLOW TO CONSERVATION AREA (5) (N-3):	134 CU-FT
TOTAL:	36,795 CU-FT

ESD SUMMARY TABLE

AREA NO.	AREA (SF.)	IMPERVIOUS	ESDv (CF)	Pe PROVIDED
MBR 1	14,535	59%	1,626	2.29
MBR 2	14,071	66%	1,408	1.86
BR 3	37,949	60%	3,286	1.75
BR 4	42,297	51%	3,697	2.07
BR 5	44,303	45%	3,658	2.20
MBR 6	20,388	51%	2,231	2.60
BR 7	57,684	51%	4,160	1.72
BR 8	30,103	54%	3,251	2.43
BS 9	14,453	37%	1,199	2.60
BS 10	23,136	25%	1,376	2.60
BS 11	30,744	25%	1,829	2.60
BS 12	42,595	28%	2,764	2.60
BS 13	20,139	31%	1,450	2.60
BS 14	6,340	30%	440	2.60
BS 15	9,866	25%	588	2.60
DA 50	5,897	43%	305	1.42
DA 51	14,357	30%	720	1.88
BR 52	22,848	30%	1,248	2.05
DA 53	2,242	40%	140	1.83
DA 54	3,840	40%	256	1.95
DA 55	5,690	35%	256	1.48
DA 56	5,918	43%	214	1.00
DA 57	11,901	42%	694	1.63
TOTAL	481,296	43%	36,795	2.12

REQUIRED ESDv	PROVIDED ESDv
36,012 cf	36,795 cf

LEGEND

- A — DRY WELL (M-5) (5'x5'x5')
- B — DRY WELL (M-5) (7'x7'x5')
- C — DRY WELL (M-5) (7'x8'x5')
- D — DRY WELL (M-5) (8'x8'x5')
- R — DRY WELL (M-5) (SEE SHEET FOR SIZE)

(ALL DRY WELLS ARE PRIVATELY OWNED AND MAINTAINED)

- 200 GAL RAIN BARREL (M-1) (PRIVATELY OWNED AND MAINTAINED)
- SFC 100 — MINIMUM CONSERVATION AREA WIDTH SHEET FLOW TO CONSERVATION AREA (N-3) (PRIVATELY OWNED AND MAINTAINED)
- BIO-SWALE (M-8) (PRIVATELY OWNED AND MAINTAINED BY HOA)
- B-12 — STORMWATER BORING
- 'B' TYPE SOILS
- 'C' TYPE SOILS
- 'D' TYPE SOILS
- ESD DRAINAGE DIVIDE

NOTES:
1. MBR 1, MBR-2, BR-3, AND BR-4 WILL BE PRIVATELY OWNED AND JOINTLY MAINTAINED BY HOWARD COUNTY AND THE HOA. ALL OTHER BIORETENTION (F-6), MICRO-BIORETENTION (M-6), AND BIO-SWALES (M-8) WILL BE PRIVATELY OWNED AND MAINTAINED BY THE HOA.
2. PROVIDE OPENINGS IN NOISE FENCES AS NECESSARY TO ALLOW WATER TO PASS THROUGH
3. SEE SHEET 7 FOR PUBLIC/PRIVATE STORM DRAIN

0 12 30 60 120
1 inch = 60 ft.

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY:	DDS
DRAWN BY:	JRC
CHECKED BY:	CKG

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975
EXPIRATION DATE: May 26, 2020

STATE OF MARYLAND — CHRISTOPHER K. GILLESPIE — REG. NO. 12975 — PROFESSIONAL ENGINEER

6/14/19

STORMWATER DRAINAGE AREA MAP

PATAPSCO CROSSING

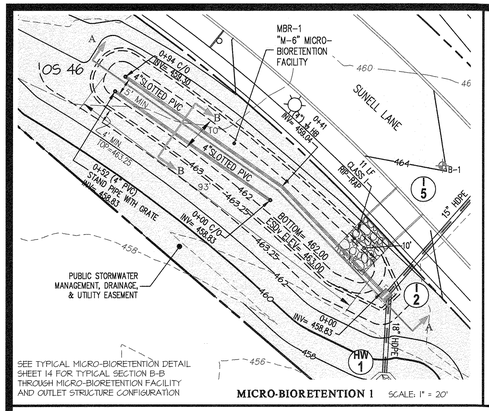
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK A RESUBDIVISION OF PARCEL 25

Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"= 60'	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	10 OF 30

F-19-038



SEE TYPICAL MICRO-BIORETENTION DETAIL SHEET 14 FOR TYPICAL SECTION B-B THROUGH MICRO-BIORETENTION FACILITY AND OUTLET STRUCTURE CONFIGURATION

MICRO-BIORETENTION 1 SCALE: 1" = 20'

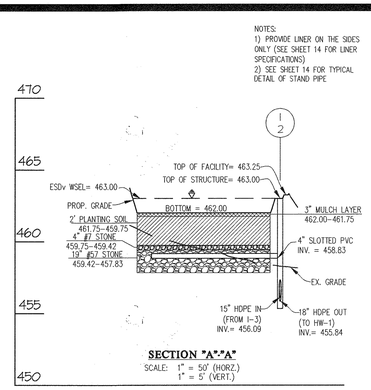
MBR-1
TYPE (PER MDE): MICRO BIORETENTION SYSTEM (M6)
NON - MDE 378 FACILITY
TOTAL DRAINAGE AREA TO FACILITY = 14,535 SF
STORAGE PROVIDED = 1,223 CU-FT (@463.00)
ESDv PROVIDED = 1,626 CU-FT

LOW-FLOW OUTFALL: PERFORATED 4" UNDERDRAIN SYSTEM
BOTTOM OF FACILITY = 462.00
HIGH-FLOW OUTFALL: I-2 (5' INLET, TOP =463.00)
TOP OF FACILITY = 463.25

93 HERBACEOUS PLANTING (18" O.C) (182 S.F.)
83 HERBACEOUS PLANTING (18" O.C) (162 S.F.)
84 HERBACEOUS PLANTING (18" O.C) (164 S.F.)

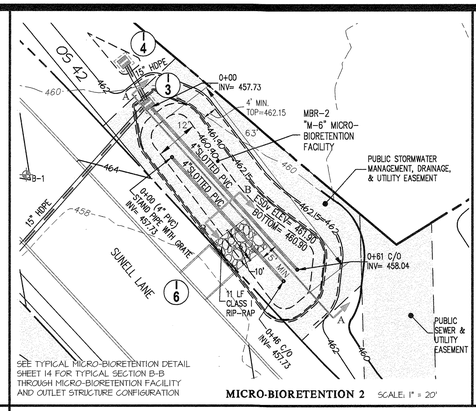
MICRO-BIORETENTION 1 LANDSCAPE PLAN SCALE: 1" = 30'

NOTES:
1) PROVIDE LINER ON THE SIDES ONLY (SEE SHEET 14 FOR LINER SPECIFICATIONS)
2) SEE SHEET 14 FOR TYPICAL DETAIL OF STAND PIPE



SECTION "A"-"A"
SCALE: 1" = 50' (HORZ.)
1" = 5' (VERT.)

MICRO-BIORETENTION 1 (M-6) DETAILS



SEE TYPICAL MICRO-BIORETENTION DETAIL SHEET 14 FOR TYPICAL SECTION B-B THROUGH MICRO-BIORETENTION FACILITY AND OUTLET STRUCTURE CONFIGURATION

MICRO-BIORETENTION 2 SCALE: 1" = 20'

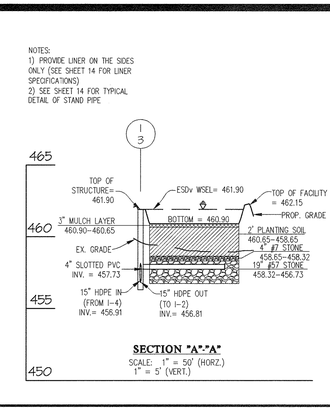
MBR-2
TYPE (PER MDE): MICRO BIORETENTION SYSTEM (M6)
NON - MDE 378 FACILITY
TOTAL DRAINAGE AREA TO FACILITY = 14,071 SF
STORAGE PROVIDED = 1,059 CU-FT (@461.90)
ESDv PROVIDED = 1,408 CU-FT

LOW-FLOW OUTFALL: PERFORATED 4" UNDERDRAIN SYSTEM
BOTTOM OF FACILITY = 460.90
HIGH-FLOW OUTFALL: I-3 (5' INLET, TOP = 461.90)
TOP OF FACILITY = 462.15

56 HERBACEOUS PLANTING (18" O.C) (110 S.F.)
56 HERBACEOUS PLANTING (18" O.C) (110 S.F.)
87 HERBACEOUS PLANTING (18" O.C) (171 S.F.)

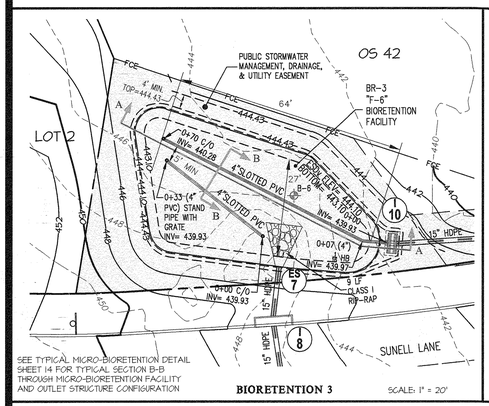
MICRO-BIORETENTION 2 LANDSCAPE PLAN SCALE: 1" = 30'

NOTES:
1) PROVIDE LINER ON THE SIDES ONLY (SEE SHEET 14 FOR LINER SPECIFICATIONS)
2) SEE SHEET 14 FOR TYPICAL DETAIL OF STAND PIPE



SECTION "A"-"A"
SCALE: 1" = 50' (HORZ.)
1" = 5' (VERT.)

MICRO-BIORETENTION 2 (M-6) DETAILS



SEE TYPICAL MICRO-BIORETENTION DETAIL SHEET 14 FOR TYPICAL SECTION B-B THROUGH MICRO-BIORETENTION FACILITY AND OUTLET STRUCTURE CONFIGURATION

BIORETENTION 3 SCALE: 1" = 20'

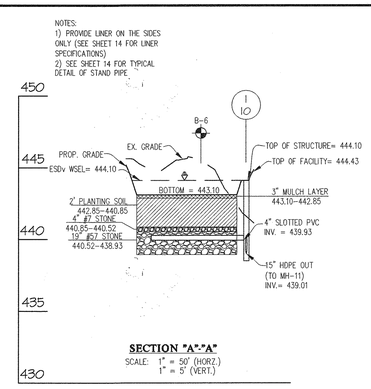
BR-3
TYPE (PER MDE): BIORETENTION SYSTEM (F6)
NON - MDE 378 FACILITY
TOTAL DRAINAGE AREA TO FACILITY = 37,944 SF
STORAGE PROVIDED = 1,894 CU-FT (@444.10)
ESDv PROVIDED = 2,518 CU-FT

LOW-FLOW OUTFALL: PERFORATED 4" UNDERDRAIN SYSTEM
BOTTOM OF FACILITY = 443.10
HIGH-FLOW OUTFALL: I-10 (DOUBLE 'S' INLET, TOP =444.10)
TOP OF FACILITY = 444.43

118 HERBACEOUS PLANTING (18" O.C) (231 S.F.)
86 HERBACEOUS PLANTING (18" O.C) (169 S.F.)
33 HERBACEOUS PLANTING (18" O.C) (64 S.F.)

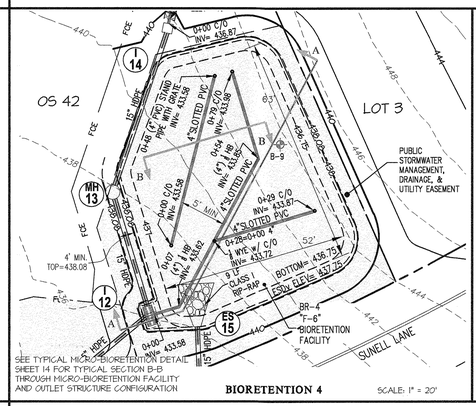
BIORETENTION 3 LANDSCAPE PLAN SCALE: 1" = 30'

NOTES:
1) PROVIDE LINER ON THE SIDES ONLY (SEE SHEET 14 FOR LINER SPECIFICATIONS)
2) SEE SHEET 14 FOR TYPICAL DETAIL OF STAND PIPE



SECTION "A"-"A"
SCALE: 1" = 50' (HORZ.)
1" = 5' (VERT.)

BIORETENTION 3 (F-6) DETAILS



SEE TYPICAL MICRO-BIORETENTION DETAIL SHEET 14 FOR TYPICAL SECTION B-B THROUGH MICRO-BIORETENTION FACILITY AND OUTLET STRUCTURE CONFIGURATION

BIORETENTION 4 SCALE: 1" = 20'

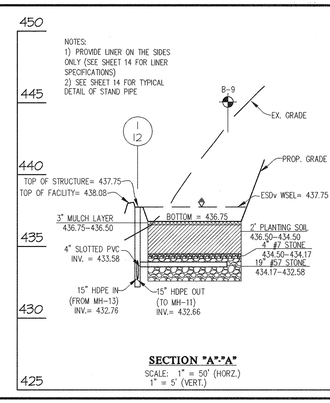
BR-4
TYPE (PER MDE): BIORETENTION SYSTEM (F6)
NON - MDE 378 FACILITY
TOTAL DRAINAGE AREA TO FACILITY = 42,241 SF
STORAGE PROVIDED = 3,313 CU-FT (@437.75)
ESDv PROVIDED = 3,313 CU-FT

LOW-FLOW OUTFALL: PERFORATED 4" UNDERDRAIN SYSTEM
BOTTOM OF FACILITY = 436.75
HIGH-FLOW OUTFALL: I-12 (DOUBLE 'S' INLET, TOP =437.75)
TOP OF FACILITY = 438.08

80 HERBACEOUS PLANTING (18" O.C) (156 S.F.)
83 HERBACEOUS PLANTING (18" O.C) (163 S.F.)
75 HERBACEOUS PLANTING (18" O.C) (147 S.F.)
48 HERBACEOUS PLANTING (18" O.C) (95 S.F.)

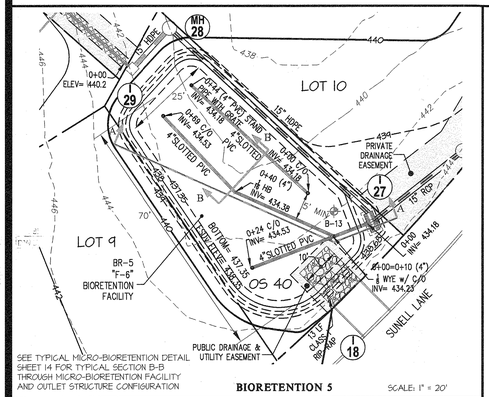
BIORETENTION 4 LANDSCAPE PLAN SCALE: 1" = 30'

NOTES:
1) PROVIDE LINER ON THE SIDES ONLY (SEE SHEET 14 FOR LINER SPECIFICATIONS)
2) SEE SHEET 14 FOR TYPICAL DETAIL OF STAND PIPE



SECTION "A"-"A"
SCALE: 1" = 50' (HORZ.)
1" = 5' (VERT.)

BIORETENTION 4 (F-6) DETAILS



SEE TYPICAL MICRO-BIORETENTION DETAIL SHEET 14 FOR TYPICAL SECTION B-B THROUGH MICRO-BIORETENTION FACILITY AND OUTLET STRUCTURE CONFIGURATION

BIORETENTION 5 SCALE: 1" = 20'

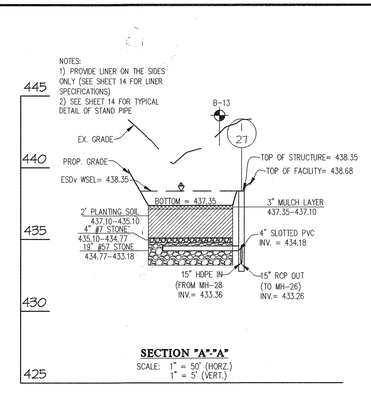
BR-5
TYPE (PER MDE): BIORETENTION SYSTEM (F6)
NON - MDE 378 FACILITY
TOTAL DRAINAGE AREA TO FACILITY = 44,303 SF
STORAGE PROVIDED = 2,352 CU-FT (@438.35)
ESDv PROVIDED = 3,121 CU-FT

LOW-FLOW OUTFALL: PERFORATED 4" UNDERDRAIN SYSTEM
BOTTOM OF FACILITY = 437.35
HIGH-FLOW OUTFALL: I-27 (DOUBLE 'S' INLET, TOP =438.35)
TOP OF FACILITY = 438.68

59 HERBACEOUS PLANTING (18" O.C) (113 S.F.)
52 HERBACEOUS PLANTING (18" O.C) (102 S.F.)
50 HERBACEOUS PLANTING (18" O.C) (98 S.F.)
73 HERBACEOUS PLANTING (18" O.C) (143 S.F.)

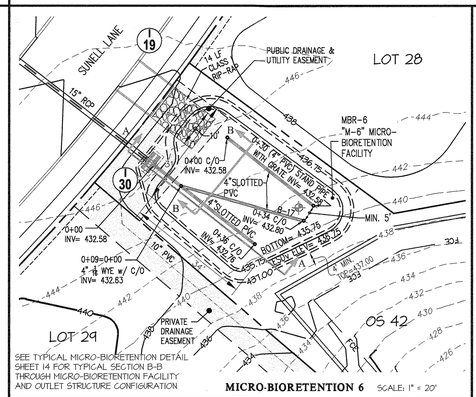
BIORETENTION 5 LANDSCAPE PLAN SCALE: 1" = 30'

NOTES:
1) PROVIDE LINER ON THE SIDES ONLY (SEE SHEET 14 FOR LINER SPECIFICATIONS)
2) SEE SHEET 14 FOR TYPICAL DETAIL OF STAND PIPE



SECTION "A"-"A"
SCALE: 1" = 50' (HORZ.)
1" = 5' (VERT.)

BIORETENTION 5 (M-6) DETAILS



SEE TYPICAL MICRO-BIORETENTION DETAIL SHEET 14 FOR TYPICAL SECTION B-B THROUGH MICRO-BIORETENTION FACILITY AND OUTLET STRUCTURE CONFIGURATION

MICRO-BIORETENTION 6 SCALE: 1" = 20'

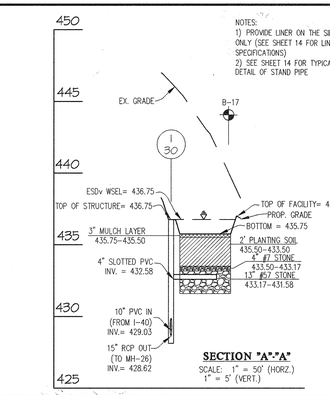
MBR-6
TYPE (PER MDE): MICRO BIORETENTION SYSTEM (M6)
NON - MDE 378 FACILITY
TOTAL DRAINAGE AREA TO FACILITY = 20,388 SF
STORAGE PROVIDED = 1,565 CU-FT (@436.75)
ESDv PROVIDED = 2,081 CU-FT

LOW-FLOW OUTFALL: PERFORATED 4" UNDERDRAIN SYSTEM
BOTTOM OF FACILITY = 435.75
HIGH-FLOW OUTFALL: I-30 (DOUBLE 'S' INLET, TOP =436.75)
TOP OF FACILITY = 437.00

61 HERBACEOUS PLANTING (18" O.C) (120 S.F.)
47 HERBACEOUS PLANTING (18" O.C) (92 S.F.)
70 HERBACEOUS PLANTING (18" O.C) (138 S.F.)

MICRO-BIORETENTION 6 LANDSCAPE PLAN SCALE: 1" = 30'

NOTES:
1) PROVIDE LINER ON THE SIDES ONLY (SEE SHEET 14 FOR LINER SPECIFICATIONS)
2) SEE SHEET 14 FOR TYPICAL DETAIL OF STAND PIPE



SECTION "A"-"A"
SCALE: 1" = 50' (HORZ.)
1" = 5' (VERT.)

MICRO-BIORETENTION 6 (M-6) DETAILS

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19

MICRO-BIORETENTION PLANT LIST

SYMBOL	QTY.	NAMES (BOTANICAL / SCIENTIFIC)	SIZE	ROOT/COMMENTS
SHRUBS	(SEE SHEET 14 FOR SHRUB AND HERBACEOUS PLANTING DETAILS)			
	80	CORNUS SERICEA 'RUBY' / RUBY RED OSIER DOGWOOD	18"-24" SPR.	CONTAINER
	124	ITEA VIRGINICA 'HENRY'S GARNET' / VIRGINIA SWEETSPIRE	18"-24" SPR.	CONTAINER
HERBACEOUS	(SEE SHEET 14 FOR SHRUB AND HERBACEOUS PLANTING DETAILS)			
HERBACEOUS PLANTING	2,153	PROVIDE AN EVEN MIX OF EACH PLANTS IN EACH BED: -HEMEROCALLIS 'STRAWBERRY CANDY' DAYLILY -HEMEROCALLIS 'JOAN SENIOR' DAYLILY -RUDBECKIA HIRTA / BLACK-EYED SUSAN	18" O.C. (MIX)	CONTAINER

UNDERDRAIN SUMMARY TABLE

SIZE (INCHES)	TYPE	QUANTITY (L.F.)	REMARKS
4	SLOTTED PVC	1,883	
4	PVC	192	

GRAPHIC SCALE
30 0 10 20 40
1 inch = 20 ft.

GRAPHIC SCALE
30 0 15 30 60
1 inch = 30 ft.

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY: JRC
DRAWN BY: JRC
CHECKED BY: DDS

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975 EXPIRATION DATE: MAY 26, 2020

STATE OF MARYLAND — DONALD R. CORMANY — 12975 — PROFESSIONAL ENGINEER

6/18/19

ESD DETAILS

PATAPSCO CROSSING

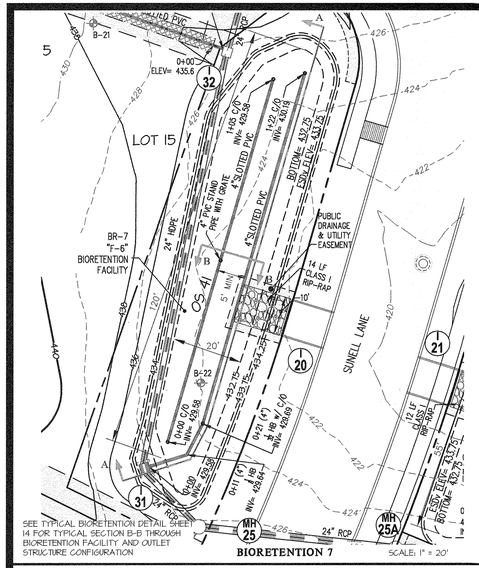
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	11 OF 30

F-19-038

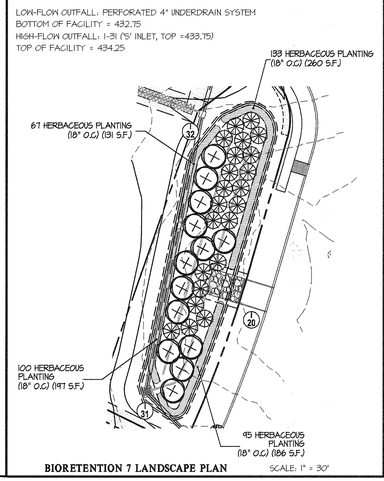
L:\CADD\DRAWINGS\11014\PLANS BY GLW\Finals\11014_11-13-ESD DETAILS.dwg, 6/18/2019 10:29 AM, USER: SAVERS, 6/13/2019 2:12 PM, PLOTTED BY: Jennifer B. Poole



BIORETENTION 7 SCALE: 1" = 20'

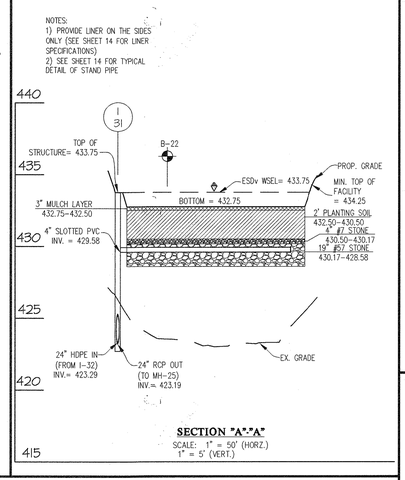
BR-7
TYPE (PER MDE): BIORETENTION SYSTEM (F6)
NON - MDE 378 FACILITY
TOTAL DRAINAGE AREA TO FACILITY = 57,684 SF
STORAGE PROVIDED = 2,885 CU-FT (@433.75)
ESDV PROVIDED = 3,831 CU-FT

LOW-FLOW OUTFALL: PERFORATED 4" UNDERDRAIN SYSTEM
BOTTOM OF FACILITY = 432.75
HIGH-FLOW OUTFALL: I-31 ('S' INLET, TOP =433.75)
TOP OF FACILITY = 434.25



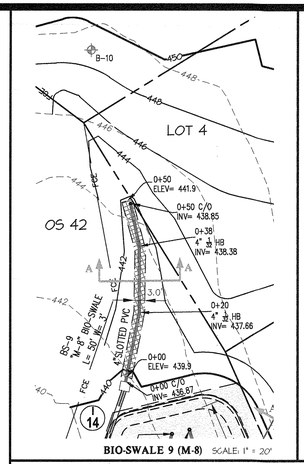
BIORETENTION 7 LANDSCAPE PLAN SCALE: 1" = 30'

NOTES:
1) PROVIDE LINER ON THE SIDES ONLY (SEE SHEET 14 FOR LINER SPECIFICATIONS)
2) SEE SHEET 14 FOR TYPICAL DETAIL OF STAND PIPE

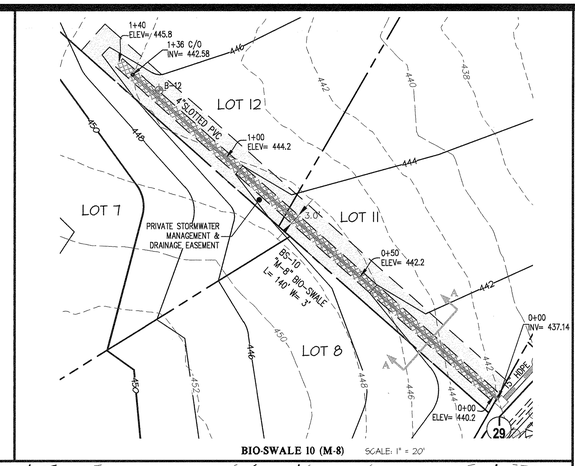


SECTION "A"-"A"
SCALE: 1" = 50' (HORZ.)
1" = 5' (VERT.)

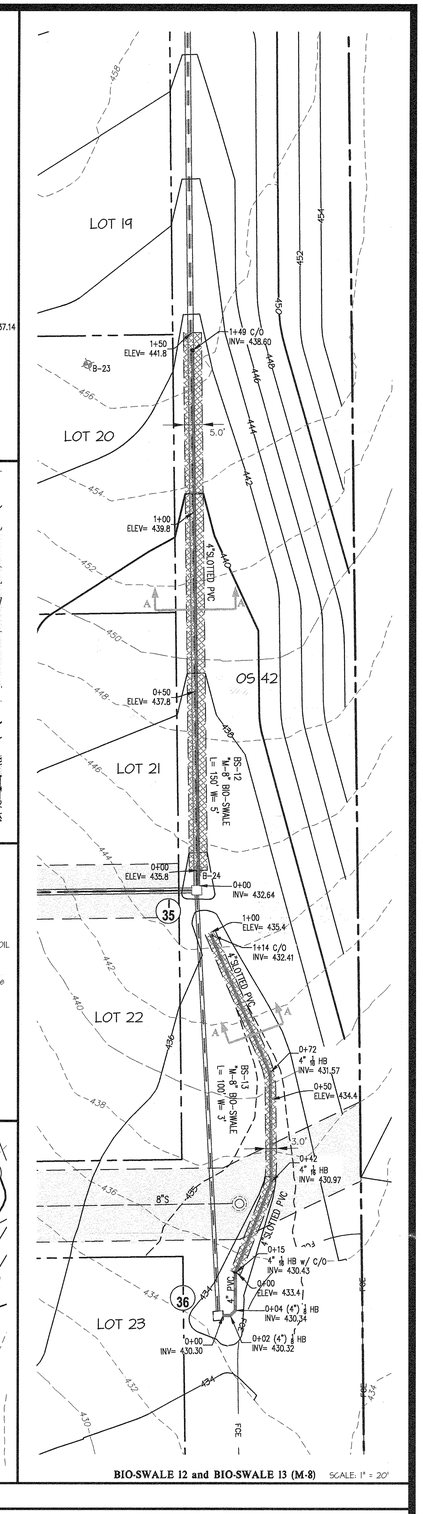
BIORETENTION 7 (F-6) DETAILS



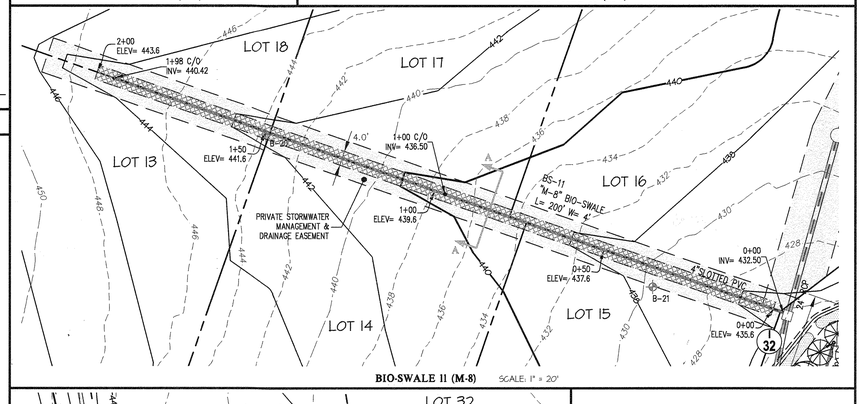
BIO-SWALE 9 (M-8) SCALE: 1" = 20'



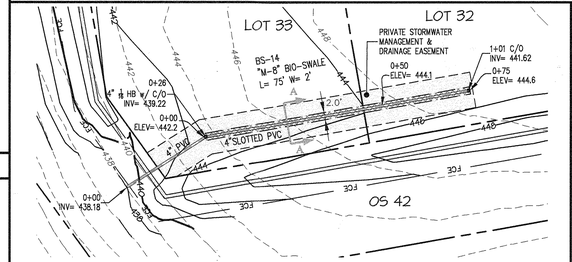
BIO-SWALE 10 (M-8) SCALE: 1" = 20'



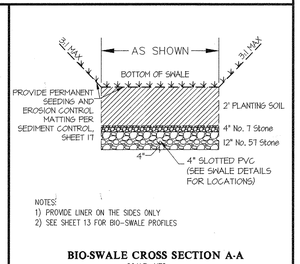
BIO-SWALE 12 and BIO-SWALE 13 (M-8) SCALE: 1" = 20'



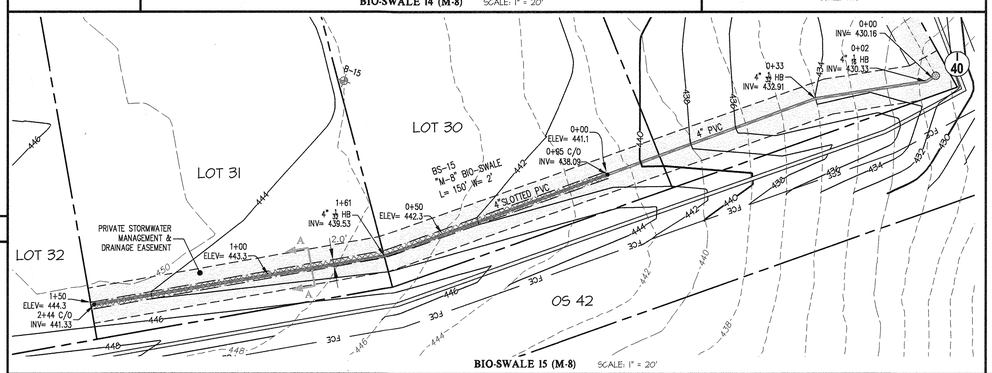
BIO-SWALE 11 (M-8) SCALE: 1" = 20'



BIO-SWALE 14 (M-8) SCALE: 1" = 20'

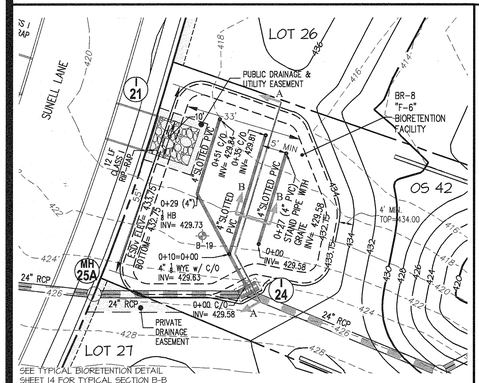


BIO-SWALE CROSS SECTION A-A
SCALE: NTS

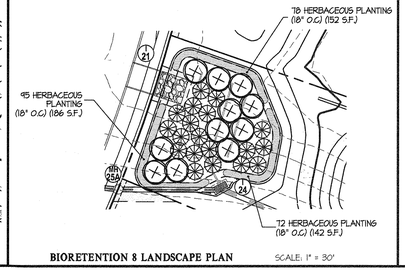


BIO-SWALE 15 (M-8) SCALE: 1" = 20'

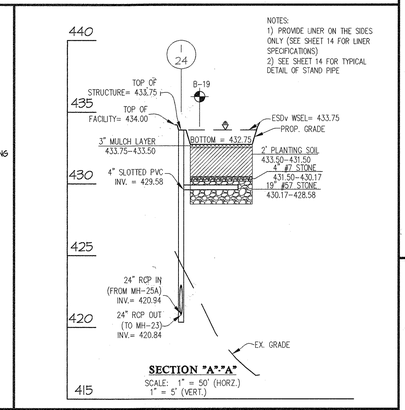
BIO-SWALE (M-8) DETAILS



BIORETENTION 8 SCALE: 1" = 20'



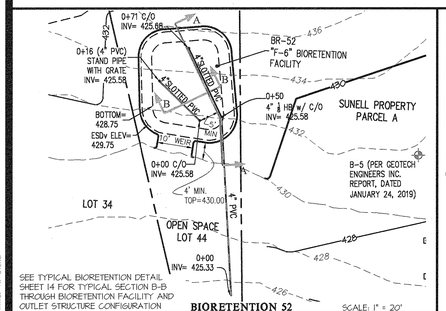
BIORETENTION 8 LANDSCAPE PLAN SCALE: 1" = 30'



NOTES:
1) PROVIDE LINER ON THE SIDES ONLY (SEE SHEET 14 FOR LINER SPECIFICATIONS)
2) SEE SHEET 14 FOR TYPICAL DETAIL OF STAND PIPE

SECTION "A"-"A"
SCALE: 1" = 50' (HORZ.)
1" = 5' (VERT.)

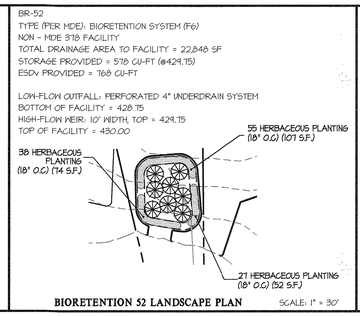
BIORETENTION 8 (F-6) DETAILS



BIORETENTION 52 SCALE: 1" = 20'

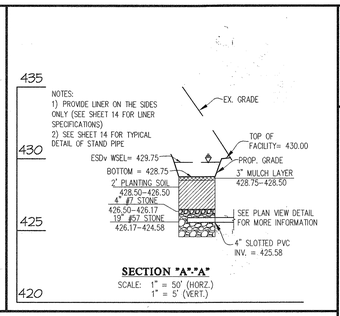
BR-52
TYPE (PER MDE): BIORETENTION SYSTEM (F6)
NON - MDE 378 FACILITY
TOTAL DRAINAGE AREA TO FACILITY = 22,848 SF
STORAGE PROVIDED = 518 CU-FT (@429.75)
ESDV PROVIDED = 768 CU-FT

LOW-FLOW OUTFALL: PERFORATED 4" UNDERDRAIN SYSTEM
BOTTOM OF FACILITY = 428.75
HIGH-FLOW WEIR: 10' WIDTH, TOP = 429.75
TOP OF FACILITY = 430.00



BIORETENTION 52 LANDSCAPE PLAN SCALE: 1" = 30'

NOTES:
1) PROVIDE LINER ON THE SIDES ONLY (SEE SHEET 14 FOR LINER SPECIFICATIONS)
2) SEE SHEET 14 FOR TYPICAL DETAIL OF STAND PIPE



SECTION "A"-"A"
SCALE: 1" = 50' (HORZ.)
1" = 5' (VERT.)

BIORETENTION 52 (F-6) DETAILS

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19

GRAPHIC SCALE
30 0 10 20 40
1 inch = 20 ft.

GRAPHIC SCALE
30 0 15 30 60
1 inch = 30 ft.

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY:	DRAWN BY:	CHECKED BY:
JRC	JRC	DDS

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975
EXPIRATION DATE: MAY 25, 2020
6/14/19

STATE OF MARYLAND — CHRISTOPHER D. MEYER — PROFESSIONAL ENGINEER

ESD DETAILS

PATAPSCO CROSSING

LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25

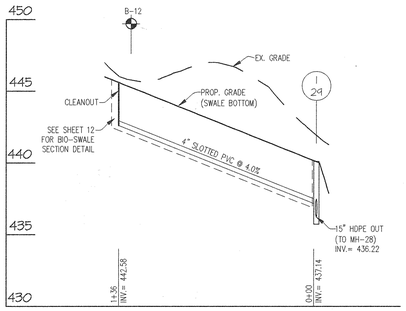
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

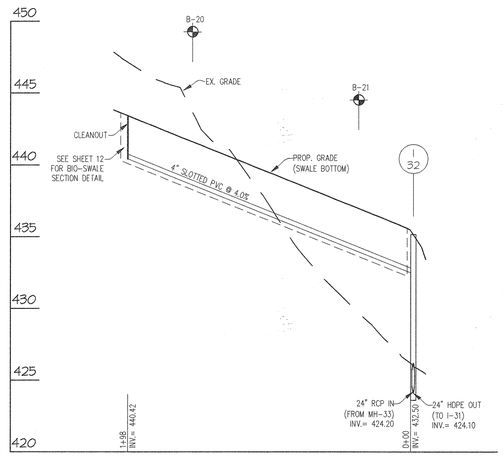
SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	12 OF 30

F-19-038

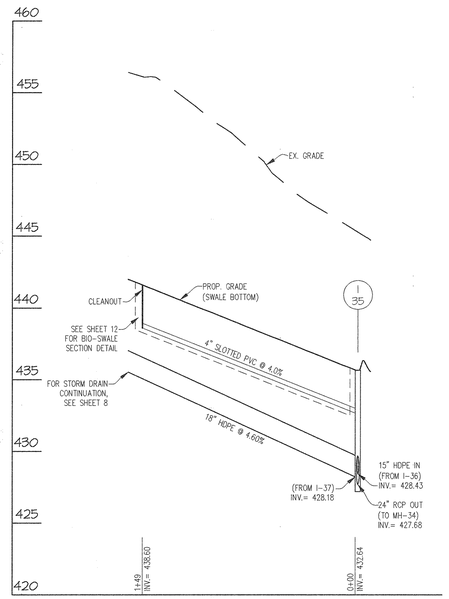
L:\CADD\DRAWINGS\11014\PLANS BY GLW\Finals\11014_11-13-ESD DETAILS.dwg, 6/14/2019 11:37 AM, EASTSAVED BY:Jennifer R. Price, PLOTTED BY:Jennifer R. Price



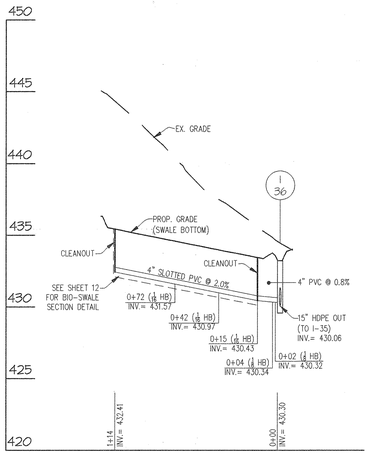
BIO-SWALE 10 (M-8) PROFILE



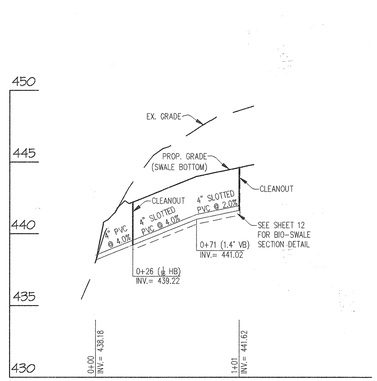
BIO-SWALE 11 (M-8) PROFILE



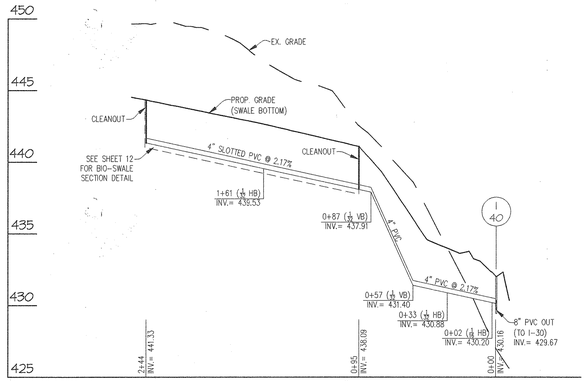
BIO-SWALE 12 (M-8) PROFILE



BIO-SWALE 13 (M-8) PROFILE



BIO-SWALE 14 (M-8) PROFILE



BIO-SWALE 15 (M-8) PROFILE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/24/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19

GRAPHIC SCALE

50 0 25 50 100

1 inch = 50 ft.

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY:				
JRC				
DRAWN BY:				
JRC				
CHECKED BY:				
DDS				
DATE	REVISION		BY	APP'R.

OWNER:

WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043

410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975 EXPIRATION DATE: MAY 26, 2020

6/14/19

ESD DETAILS

PATAPSCO CROSSING

LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25

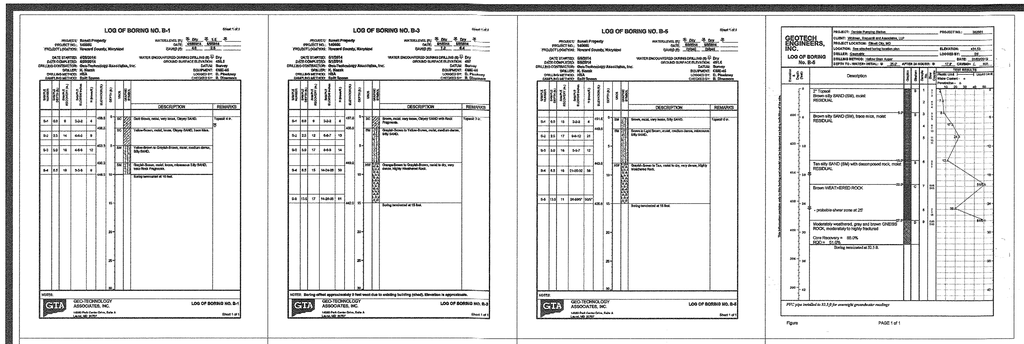
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'(H) 1"=5'(V)	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	13 OF 30

L:\LAND\DRAWINGS\11014\PLANS BY GLW\Finals\11014_11-13-ESD DETAILS.dwg
Plotted: 6/14/2019 10:19 AM By: Jennifer R. Dicks

F-19-038



APPENDIX B.1.1. – SUPPLEMENTAL POND SPECIFICATIONS (NON-378)

SUPPLEMENTAL STORMWATER PONDS AND WETLAND SPECIFICATIONS (NON-378)

THESE NOTES AND SPECIFICATIONS ARE IN ADDITION TO THE MD-378 SPECIFICATIONS. IF THERE IS ANY QUESTIONS AS TO THE APPLICABILITY, THE MD-378 SPECIFICATIONS SUPERCEDE.

1. IT IS PREFERRED TO USE THE SAME MATERIAL IN THE EMBANKMENT AS IS BEING INSTALLED FOR THE CORE TRENCH. IF THIS IS NOT POSSIBLE BECAUSE THE APPROPRIATE MATERIAL IS NOT AVAILABLE, A DAM CORE WITH A SHELL MAY BE USED. THE CROSS-SECTION OF THE STORMWATER FACILITY SHOULD SHOW THE LIMITS OF THE DAM CORE (UP TO 10-YEAR WATER SURFACE ELEVATION) AS WELL AS THE ACCEPTABLE MATERIALS FOR THE SHELL. THE SHAPE OF THE DAM CORE AND THE MATERIAL TO BE USED IN THE SHELL SHOULD BE PROVIDED BY THE GEOTECHNICAL ENGINEER.

2. IF THE COMPACTION TESTS FOR THE SITE IMPROVEMENTS IS USING MODIFIED PROCTOR (AASHTO T-180), THEN TO MAINTAIN ON-SITE CONSISTENCY, THE MODIFIED PROCTOR MAY BE USED IN LIEU OF A STANDARD PROCTOR (AASHTO T-99). THE MINIMUM DENSITY USING THE MODIFIED PROCTOR TEST METHOD SHALL BE AT LEAST 92% OF THE MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT OF ±2% OF THE OPTIMUM. THE MINIMUM REQUIRED DENSITY USING THE STANDARD PROCTOR TEST METHOD SHALL BE AT LEAST 95% OF THE MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT OF ±2% OF THE OPTIMUM.

3. FOR ALL STORMWATER MANAGEMENT FACILITIES, A GEOTECHNICAL ENGINEER OR THEIR REPRESENTATIVE MUST BE PRESENT TO VERIFY COMPACTION IN ACCORDANCE WITH THE SELECTED TEST METHOD. THIS INFORMATION NEEDS TO BE PROVIDED IN A REPORT TO THE DESIGN ENGINEER, SO THAT CERTIFICATION OF THE CONSTRUCTION OF THE FACILITY, IN ACCORDANCE WITH MD-378 SPECIFICATIONS, CAN BE MADE.

4. A 4-INCH LAYER OF TOPSOIL SHALL BE PLACED ON ALL DISTURBED AREAS OF THE DAM EMBANKMENT. SEEDING, LIMING, FERTILIZING, MULCHING, ETC. SHALL BE IN ACCORDANCE WITH MARYLAND SOIL CONSERVATION SERVICE MD-342 OR THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL PERMANENT SEEDING, SECTION IN CHAPTER 20. THE PURPOSE OF THE TOPSOIL IS TO ESTABLISH A GOOD GROWTH OF GRASS, WHICH IS NOT ALWAYS POSSIBLE WITH SOME OF THE MATERIALS THAT MAY BE PLACED FOR THE EMBANKMENT FILL.

5. GEOTEXTILE PLACED BENEATH RIP-RAP SHALL BE CLASS "C" GEOTEXTILE OR BETTER (SEE SECTION 24.0, MATERIAL SPECIFICATIONS, 1994 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL (MDE, 1994). SOME ACCEPTABLE GEOTEXTILES THAT MEET THE CLASS "C" CRITERIA INCLUDE.

AMOCO 4552	CARTHAGE FX-70S
GEOLON N70	MIRAFI 180-N
WEBTEC N07	

THIS IS ONLY A PARTIAL LISTING OF AVAILABLE GEOTEXTILES BASED ON INFORMATION PROVIDED BY THE MANUFACTURERS OF THE 1997 SPECIFIER'S GUIDE DATED DECEMBER 1996. IT IS THE RESPONSIBILITY OF THE ENGINEER TO VERIFY THE ADEQUACY OF THE MATERIAL, AS THERE ARE CHANGES IN THE MANUFACTURING PROCESS AND THE TYPE OF FABRIC USED, WHICH MAY AFFECT THE CONTINUED ACCEPTANCE.

6. A RULE OF THUMB TO DETERMINE WHEN AN EXCAVATED POND MAY NEED TO BE CONSIDERED AN EMBANKMENT POND IS AS FOLLOWS:
PROVIDE CALCULATION OF 10H + 20 FEET = L WHERE H HEIGHT FROM POND BOTTOM TO TOP OF DAM. IF THE PROJECTION OF L, DOWNSTREAM IS A HORIZONTAL LINE FROM THE UPSTREAM TOE OF SLOPE IS BELOW EXISTING GROUND, THE POND CAN BE CONSIDERED AN EXCAVATED POND. IN ADDITION, THE EXISTING GROUND SLOPE, DOWNSTREAM OF THE TOE, MUST BE LESS THAN 10%.

7. THE DESIGN ENGINEER AND GEOTECHNICAL ENGINEER SHOULD MAKE THE DETERMINATION THAT THE SETTLEMENT OF THE POND WILL NOT CAUSE EXCESSIVE JOINT EXTENSION. FOR FURTHER INFORMATION ON JOINT ANALYSIS, SEE NRCE PUBLICATION TR-18.

8. FILL PLACEMENT SHALL NOT EXCEED A MAXIMUM 8-INCH. EACH LIFT SHALL BE CONTINUOUS FOR THE ENTIRE LENGTH OF THE EMBANKMENT.

9. THE EMBANKMENT FILL SHALL NOT BE PLACED HIGHER THAN THE CENTERLINE OF THE PRINCIPAL SPILLWAY UNTIL AFTER THE PRINCIPAL SPILLWAY HAS BEEN INSTALLED. IF THE EMBANKMENT NEEDS TO BE EXCAVATED TO INSTALL THE PRINCIPAL SPILLWAY, THE SIDE SLOPE SHALL BE NO LESS THAN 2:1

10. THE SIDE SLOPES OF A CUT TO REPAIR A DAM, INSTALL A PRINCIPAL SPILLWAY FOR AN EXCAVATED POND, OR OTHER REPAIR WORK, SHALL BE NO LESS THAN 2:1.

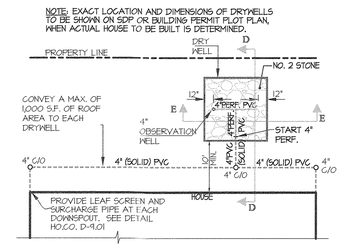
STORMWATER MANAGEMENT GENERAL NOTES:

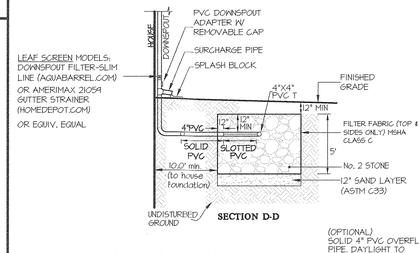
1. THE STORMWATER MANAGEMENT OBLIGATION WAS MET WITH ESD PRACTICES INCLUDING: RAINWATER HARVESTING (M-1), DRY WELLS (M-5), BIO-SWALES (M-8), MICRO-BIORETENTION (M-6), AND BIORETENTION (F-6).

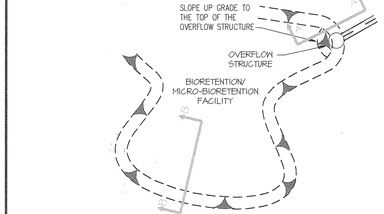
2. MBR-1, MBR-2, BR-3, AND BR-4 WILL BE PRIVATELY OWNED AND JOINTLY MAINTAINED BETWEEN THE COUNTY AND THE HOA. ALL OTHER BIORETENTION, MICRO-BIORETENTION, AND BIO-SWALES WILL BE PRIVATELY OWNED AND MAINTAINED BY THE HOA. ALL ON-LOT ESD PRACTICES INCLUDING DRY WELLS AND RAINWATER HARVESTING WILL BE PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNER.

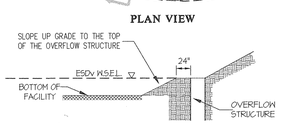
3. IN ADDITION TO STANDARD MDE REQUIREMENTS, THE CONTRACTOR SHOULD BE PREPARED TO DEWATER EXCAVATIONS AND MAINTAIN TRAFFICABILITY OF THE SWM AREAS DURING CONSTRUCTION. ALL EXCAVATIONS SHOULD BE PROPERLY SHORED AND SUPPORTED IN ACCORDANCE WITH THE LATEST OSHA REQUIREMENTS. IF INFILTRATION FACILITY AREAS ARE EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE-TRACK OR LIGHTWEIGHT EQUIPMENT WITH TURF TIRES TO MINIMIZE COMPACTION OF THE SUBGRADE SOILS. EXCESSIVE COMPACTION WITHIN THE INFILTRATION AREA WILL RESULT IN POOR PERFORMANCE OF THE FACILITIES. THE BASE OF THE INFILTRATION FACILITIES SHOULD BE TILLED TO A DEPTH OF 12 INCHES TO ALLEVIATE ANY COMPACTION OF THE SUBGRADE BY EXCAVATION EQUIPMENT. BACKFILL OF THE INFILTRATION FACILITIES SHOULD BE PERFORMED IN ACCORDANCE WITH MDE GUIDELINES.

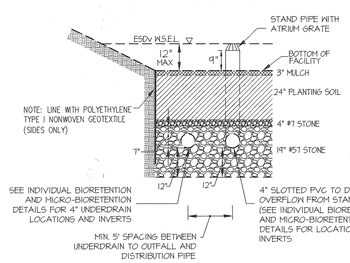
NOTE: EXACT LOCATION AND DIMENSIONS OF DRYWELLS TO BE SHOWN ON SDP OR BUILDING PERMIT PLOT PLAN, WHEN ACTUAL HOUSE TO BE BUILT IS DETERMINED.



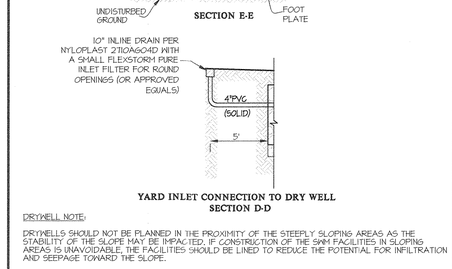








TYPICAL BIORETENTION/MICRO-BIORETENTION SECTION SCALE: N.T.S.



YARD INLET CONNECTION TO DRY WELL SECTION D-D

DRYWELL NOTE:

DRYWELLS SHOULD NOT BE PLANNED IN THE PROXIMITY OF THE STEEPLY SLOPING AREAS AS THE STABILITY OF THE SLOPE MAY BE IMPACTED. IF CONSTRUCTION OF THE SWM FACILITIES IN SLOPING AREAS IS UNAVOIDABLE, THE FACILITIES SHOULD BE LINED TO REDUCE THE POTENTIAL FOR INFILTRATION AND SEEPAGE TOWARD THE SLOPE.

DRYWELL DETAIL NO SCALE

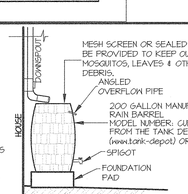
OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED RAINWATER HARVESTING (M-1)

a. THE OWNER SHALL EMPTY BARRELS ON A MONTHLY BASIS AND CLEAN BARREL WITH A HOSE.

b. THE OWNER SHALL VERIFY INTEGRITY OF LEAF SCREENS, GUTTERS, DOWNSPOUTS, SPIGOTS, AND MOSQUITO SCREENS, AND CLEAN AND REMOVE ANY DEBRIS.

c. THE OWNER SHALL REPLACE DAMAGED COMPONENTS AS NEEDED.

d. THE OWNER SHALL DISCONNECT THE BARREL PRIOR TO WINTER, OR ALLOW THE BARREL TO DRAIN BY BOTTOM SPIGOT DURING THE WINTER SEASON.



RAIN BARREL DETAIL NO SCALE

GENERAL NOTES

1. MATERIAL SPECIFICATIONS
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

2. 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-BIORETENTION PRACTICE 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 COMAR 15.08.01.05.

THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:
- SOIL COMPONENT – LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION)ORGANIC MATTER 1.5 – 4% (BY WEIGHT)
- 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% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
- CLAY CONTENT – MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%
- PH RANGE – SHOULD BE BETWEEN 5.5 – 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED INTO THE SOIL TO INCREASE OR DECREASE PH.

THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

3. COMPACTION
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, 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 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. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE.

WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND; THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE. WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12"TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. 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 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. 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.

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. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION.

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. 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 (ASTMF 758, TYPE PS 28, OR AASHTO–M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OR HDPE).
- PERFORATIONS – IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A #4 (NO. 4 OR 4X4) GALVANIZED HARDWARE CLOTH
- GRAVEL –THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
- THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE
- A RIGID, NON–PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,0000 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"

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

OPERATION AND MAINTENANCE SCHEDULE FOR

PRIVATELY OWNED AND MAINTAINED BIORETENTION (F-6), MICRO-BIORETENTION (M-6) AND BIO-SWALES (M-8)

A. THE HOA SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.

B. THE HOA SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.

C. THE HOA SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.

D. THE HOA SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

E. THE HOA SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE UNDERDRAINS WITHIN THE BIO-RETENTION LAYERS.

F. THE HOA SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL STORM DRAIN PIPES AND STRUCTURES WITHIN PUBLIC EASEMENTS.

OPERATION AND MAINTENANCE SCHEDULE FOR

PRIVATELY OWNED AND JOINTLY MAINTAINED BIORETENTION (F-6) AND MICRO-BIORETENTION (M-6)

ROUTINE MAINTENANCE (BY HOA):
A. FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE FACILITY IS FUNCTIONING PROPERLY.
B. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOWED AS NEEDED.
C. UNDER DRAINS, FEEDERS, PLANTINGS, OBSERVATION WELL, PIPE OUTFALL, OR OTHER ITEMS SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS.
D. DEBRIS/LITTER AND SEDIMENT SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
E. KEEP ANNUAL MAINTENANCE LOGS/RECORDS FOR COUNTY INSPECTION.

NON-ROUTINE MAINTENANCE (BY COUNTY):
A. COUNTY SHALL BE RESPONSIBLE FOR THE DRAIN PIPES AND OUTFALL STRUCTURES ADJACENT TO A PUBLIC ROAD. THE COMPONENTS SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.

OPERATION AND MAINTENANCE SCHEDULE FOR

PRIVATELY OWNED AND MAINTAINED DRY WELLS (M-5)

A. THE OWNER SHALL INSPECT THE MONITORING WELLS AND STRUCTURES ON A QUARTERLY BASIS AND AFTER EVERY HEAVY STORM EVENT.

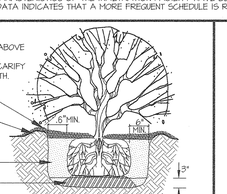
B. THE OWNER SHALL RECORD THE WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.

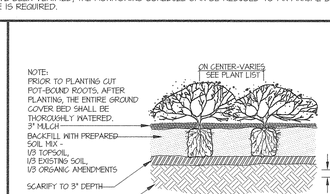
C. THE OWNER SHALL MAINTAIN A LOG BOOK TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.

D. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN A SEVENTY-TWO (72) HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.

E. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.

F. 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.





APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19

GLW PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY:	DRAWN BY:	CHECKED BY:
JRC	JRC	DDS

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975 EXPIRATION DATE: MAY 26, 2020

5/15/19

ESD NOTES and DETAILS

PATAPSCO CROSSING

LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK A RESUBDIVISION OF PARCEL 25

Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	14 OF 30

F-19-038

NOTES:
1. STANDARD SILT FENCE MAY BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
2. WHEN SUPER SILT FENCE IS RUNNING AT A SLOPE GREATER THEN 5% FOR A DISTANCE OVER 50', CURL FENCE UP 2' FOR EVERY 2' OF ELEVATION CHANGE ALONG SILT FENCE.
3. SEDIMENT CONTROL INSPECTOR MAY RELOCATE STABILIZED CONSTRUCTION ENTRANCES.
4. SEE DETAIL B-4-8 ON SHEET 20 FOR STOCKPILE BENCHING REQUIREMENTS.
5. ANY SEDIMENT CONTROLS INTERRUPTED BY THE INSTALLATION OF A STORM DRAIN IS TO BE REPAIRED IMMEDIATELY.
6. THE LOD OVERLAPS SEDIMENT CONTROL FEATURES INCLUDING SSF, EARTH DIKES, AND T60S, BUT HAS BEEN SHOWN OFFSET FOR CLARITY IN THIS PLAN. THE ACTUAL LOD IS ON THE OUTSIDE OF THE DEVICE.

STANDARD STABILIZATION NOTE:
FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:
A.) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1) AND
B.) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

THIS PLAN IS FOR SEDIMENT CONTROL PURPOSES ONLY

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 5/22/19

DEVELOPER'S/BUILDER'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 ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

SIGNATURE OF DEVELOPER/BUILDER — DATE 5/14/19

PRINTED NAME & TITLE: PATAPSCO CROSSING LLC

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."

ENGINEER'S SIGNATURE — DATE 5/15/19

CARL GUTSCHICK — 12975 (P.E.) MD REGISTRATION NO.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY:	DATE	REVISION	BY	APP'R.
DDS				
DRAWN BY: JRC				
CHECKED BY: CKG				

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975
EXPIRATION DATE: May 26, 2020
5/15/19

STATE OF MARYLAND — CARL GUTSCHICK — NO. 12975 — PROFESSIONAL ENGINEER

DRAINAGE AREA INFORMATION

CONDITION	AREA NO.	AREA (AC.)	CN	TC (HOURS)
EXISTING	1	7.6	60	0.17
INTERIM	1	7.6	92	0.17

0 12 30 60 120
1 Inch = 60 ft.

LEGEND

- 400 EXISTING CONTOUR
- 400 PROPOSED CONTOUR
- EXISTING TREELINE
- LOD LIMIT OF DISTURBANCE (SEE NOTE 6)
- EARTH DIKE
- SSF PROPOSED SUPERSILT FENCE
- BAFFLES
- DRAINAGE DIVIDE

NOTE: SEE COMPUTATIONS FOR DRAINAGE AREAS TO EARTH DIKES, T60S, AND INLET PROTECTION

- TEMPORARY STOCKPILE AREA — PROPOSED TEMPORARY STOCKPILE AREA
- EROSION CONTROL MATTING PER DETAIL B-4-6-A (SHEAR STRESS ≤ 1.5 LB/SF)
- SIP INLET PROTECTION TYPE
- SOIL BOUNDARY
- GnA SOIL TYPE
- SCE STABILIZED CONSTRUCTION ENTRANCE
- T60S TEMPORARY GABION OUTLET STRUCTION PER DETAIL B-8
- HIGHLY ERODIBLE SOIL
- MGWC 1.2 PUMP AROUND PRACTICE PER MARYLAND'S GUIDELINES TO WATERWAY CONSTRICTION DETAIL 1.2. NOTE: STREAM IS A USE I STREAM. NO DISTURBANCE TO STREAM CHANNEL IS ALLOWED BETWEEN MARCH 1 - JUNE 15

SEDIMENT CONTROL OVERVIEW and DRAINAGE AREA MAP

PATAPSCO CROSSING
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

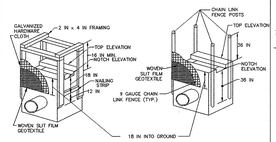
SCALE	ZONING	G. L. W. FILE No.
1"=60'	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	15 OF 30

F-19-038

DETAIL E-9-1 STANDARD INLET PROTECTION

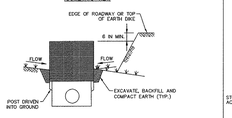
STANDARD SYMBOL: SIP

TYPE A MAXIMUM DRAINAGE AREA = ¼ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE



TYPE A TYPE B

ISOMETRIC VIEW



SECTION FOR TYPE A AND B

1 OF 2

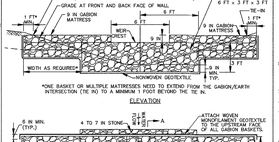
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

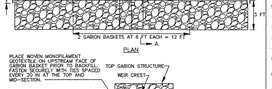
DETAIL E-8 TEMPORARY GABION OUTLET STRUCTURE

STANDARD SYMBOL: TGOS

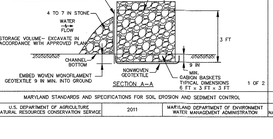
MAXIMUM DRAINAGE AREA = 1⅝ ACRE



ELEVATION



PLAN



SECTION A–A

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-8 TEMPORARY GABION OUTLET STRUCTURE

STANDARD SYMBOL: TGOS

EARTH DIKE TRANSITION

NOTES:
1. PROVIDE TRANSITION LENGTH AND HEIGHT AS SPECIFIED ON PLAN. HEIGHT OF TRANSITION EARTH DIKE MUST EXCEED 6 INCH MINIMUM FREEBOARD ABOVE TOP OF GABION AND EXTEND AT THIS ELEVATION UNTIL IT INTERSECTS THE TOP OF ADJOINING EARTH DIKE.
2. PROVIDE POSITIVE DRAINAGE ALONG EARTH DIKE TO GABION OUTLET STRUCTURE.
3. COMPACT FILL.
4. SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED ON PLAN. BANK PROJECTIONS OR IRREGULARITIES ARE NOT ALLOWED.

CONSTRUCTION SPECIFICATIONS:
1. PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.
2. USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
3. USE NONWOVEN AND WOVEN MONOFILAMENT GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
4. INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
5. EMBED THE GABION OUTLET STRUCTURE INTO THE SOIL A MINIMUM OF 9 INCHES. PROVIDE NONWOVEN GEOTEXTILE UNDER ALL GABIONS.
6. FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WIRE MESH.
7. MAKE THE WEIR CREST OF THE GABION OUTLET STRUCTURE 9 INCHES LOWER THAN THE TOP OF THE ADJACENT GABIONS.
8. PROVIDE A MINIMUM WEIR CREST OF 6 FEET.
9. ATTACH WOVEN MONOFILAMENT GEOTEXTILE TO THE UPSTREAM FACE OF GABION BASKETS AND COVER WITH 4 TO 7 INCH STONE.
10. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO WITHIN 12 INCHES OF THE WEIR CREST. REPLACE GEOTEXTILE AND STONE FACING WHEN STRUCTURE CEASES TO FUNCTION. MAINTAIN LINE, GRADE, AND CROSS SECTION.
11. UPON REMOVAL OF GABION 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.

2 OF 2

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

SEQUENCE OF CONSTRUCTION:

SCE INDICATES STONE CONSTRUCTION ENTRANCE
SSF INDICATES SUPER SILT FENCE
CWD INDICATES CLEAN WATER DIVERSION
ED INDICATES EARTH DIKE

ON-SITE CONSTRUCTION

1. OBTAIN GRADING PERMIT AND ARRANGE FOR AN ON SITE PRE-CONSTRUCTION MEETING. (1 DAY)
2. INSTALL SCE, SSF ALONG OPEN SPACE LOT 42 & THE EXISTING DRIVEWAY, THE CWD (ED #1), ED #5, AND TGOS-1 AS SHOWN ON SHEET 16. INSTALL SSF ALONG PARCEL A AND ED #6 AS SHOWN ON SHEET 17. (1 WEEK)
3. BEGIN CLEARING AND MASS GRADING IN THE AREA OF THE SITE WEST OF THE EXISTING STREAM. ACCESS TO THE EXISTING DWELLING MUST BE MAINTAINED DURING ALL PHASES OF CONSTRUCTION. (3 WEEKS)
4. INSTALL TEMPORARY PUMP AROUND SHOWN ON SHEET 17. BEGIN CONSTRUCTION OF THE SEWER WITHIN THE AREA OF THE PROPOSED CULVERT, THEN BEGIN CONSTRUCTION OF THE 36" RCP. (1 WEEK)
5. AS THE MASS GRADING PROGRESSES AND THE GRADES ALLOW, BEGIN CONSTRUCTION OF THE STORM DRAIN IN THE AREA WEST OF THE STREAM PER THESE PLANS AND THE WATER AND SEWER PER CONT. #14-4874-D. IF AT ANY TIME PONDING SHOULD OCCUR PRIOR TO AN INLET BEING CONSTRUCTED, THE CONTRACTOR IS TO "CUT IN" A SWALE TO ALLOW THE RUNOFF TO DRAIN TO THE PERIMETER DEVICES. THE CONTRACTOR MAY ALSO HAVE TO USE EARTHEN OR ASPHALT BERMS TO CONTINUE TO HAVE ROADWAYS DRAIN TO THE PERIMETER DEVICES THAT WERE INTENDED TO RECEIVE THEM. DELAY CONSTRUCTION OF STORM DRAIN FROM I-2 TO HH-1 UNTIL AFTER EXISTING DRIVEWAY HAS BEEN REMOVED. BLOCK INLETS I-4, I-3, & I-2 IF THEY ARE INSTALLED BEFORE HH-1. (1 MONTH)
6. ONCE ENOUGH FILL HAS BEEN PLACED OVER THE 36" RCP TO ALLOW ACCESS TO THE EAST SIDE OF THE SITE AND ALL MATERIALS TO CONSTRUCT THE BASIN ARE ON SITE, INSTALL THE CLEANWATER DIVERSIONS SWALE A, ED #2, AND ED #3, TGOS-2, ED #1, ED #9, AND THE SSF SHOWN ON SHEET 17. THE SEDIMENT BASIN AND OUTFALL PIPES IN THE AREA OF LOTS 23 THROUGH 26 CAN BE CONSTRUCTED AT THIS TIME. UPON COMPLETION OF THE SEDIMENT BASIN CONSTRUCTION, INSTALL GABION INFLOW PROTECTION AND ED #4 BEGINNING AT THE BASIN EMBANKMENT AND WORKING UPHILL. (2 WEEKS)
7. WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR BEGIN MASS GRADING THE REMAINDER OF THE SITE. (3 WEEKS)
8. AS THE MASS GRADING PROGRESSES AND THE GRADES ALLOW, BEGIN CONSTRUCTION OF THE STORM DRAIN IN THE AREA EAST OF THE STREAM PER THESE PLANS AND THE WATER AND SEWER PER CONT. #14-4874-D. THE CONTRACTOR WILL NOT INSTALL THE STORM DRAIN RUNS I-40 TO I-30, I-24 TO MH-22A OR I-41 TO MH-22A AT THIS TIME. A TEMPORARY PIPE WILL RUN FROM I-24 TO THE SEDIMENT BASIN TO DIRECT SEDIMENT LADEN RUNOFF TO THE BASIN AND ANOTHER TEMPORARY PIPE WILL CONNECT FROM THE BASIN TO MH-22A TO ALLOW CLEAN WATER TO OUTFALL. SEE ITEM NUMBER 5 ABOVE FOR MEASURES TO MANAGE PONDING IN THE ROADS UNTIL STORM DRAIN STRUCTURES HAVE BEEN INSTALLED. (1 MONTH)
9. INSTALL CURB AND GUTTER, SIDEWALKS, AND BASE PAVE. THERE IS A PORTION OF THE ROAD IN WHICH THESE ITEMS CANNOT BE DONE UNTIL THE EXISTING DRIVEWAY HAS BEEN REMOVED. (3 WEEKS)
10. ONCE A SUITABLE MEANS OF ACCESS TO THE EXISTING HOUSE (LOT 34) AND PUMP STATION (PARCEL A) FROM THE NEW ROAD HAS BEEN ACHIEVED, BEGIN REMOVING THE EXISTING DRIVEWAY AND GRADE THE AREA AS SHOWN ON SHEET 19. INSTALL THE CURB AND GUTTER, SIDEWALKS, AND ANY REMAINING STORM DRAIN FROM I-4 TO HH-1, AND BASE PAVE THE REMAINDER OF THE ROAD. (1 WEEK)
11. FINE GRADE THE SITE AND STABILIZE ALL DISTURBED AREAS IN ACCORDANCE WITH THE PERMANENT SEEDING SPECIFICATIONS. ONCE ALL AREAS DRAINING TO A PARTICULAR SEDIMENT CONTROL DEVICE HAVE BEEN STABILIZED, THE DEVICE MAY BE REMOVED. ANY DISTURBANCE CAUSED BY THE REMOVAL MUST BE STABILIZED IMMEDIATELY. (3 WEEKS)
12. WHEN BACKFILLING TGOS-2 AND REMOVING ED #7 AND #8, PROVIDE SSF ALONG THE LOWER LIMITS OF THE BACKFILL, AS SHOWN ON SHEET 19. CONSTRUCT THE STORM DRAIN RUN I-40 TO I-30. ONCE STABILIZED, THE SSF MAY BE REMOVED, (3 DAYS)
13. WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, FLUSH THE STORM DRAIN SYSTEM. (1 WEEK)
14. WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, BEGIN BACKFILLING THE SEDIMENT BASIN AND CONSTRUCT THE RETAINING WALL AS SHOWN ON SHEET 19. (3 WEEKS)
15. CONSTRUCT THE STORM DRAIN RUNS I-24 TO MH-22A AND I-41 TO MH-22A. (2 DAYS)
16. ONCE THE AREA DISTURBED WHILE BACKFILLING THE BASIN AND CONSTRUCTING THE RETAINING WALL HAS BEEN STABILIZED, THE SSF ALONG OPEN SPACE LOT 43 MAY BE REMOVED. (2 DAYS)
17. INSTALL THE SURFACE COURSE OF PAVING. (1 WEEK)
18. BEGIN CONSTRUCTION OF THE BIORETENTION AND MICRO BIO-RETENTION FACILITIES. ANY AREAS RE-DISTURBED AS A RESULT OF THIS CONSTRUCTION MUST BE STABILIZED IMMEDIATELY. (3 WEEKS)

IMPROVEMENTS TO OLD FREDERICK ROAD
NOTE: THESE IMPROVEMENTS CAN BE PERFORMED AT ANY TIME DURING THE ON SITE CONSTRUCTION. SINCE OLD FREDERICK ROAD WILL BE CLOSED DURING THE CONSTRUCTION PERIOD, THE CONTRACTOR SHOULD NOTIFY THE SEDIMENT CONTROL INSPECTOR. THE ROAD CLOSURE MUST BE DONE IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS THAT ARE A PART OF THIS FINAL PLAN.

1. ONCE THE MAINTENANCE OF TRAFFIC PLANS HAVE BEEN IMPLEMENTED, INSTALL THE SSF AT THE DOWNHILL LIMITS OF THE WORK AREA. (1 DAY)
2. LOWER THE ROAD TO THE GRADES SHOWN ON THESE PLANS. (2 DAYS)
3. PAVE OLD FREDERICK ROAD. (1 DAY)

SOILS

Map Unit Symbol	Map Unit Name	Type	K Factor
GbB	Gladstone loam, 3 to 8 percent slopes	B	0.24
GgB	Glenelg loam, 3 to 8 percent slopes	B	0.28
GgC	Glenelg loam, 8 to 15 percent slopes	B	0.28
GmB	Glenville silt loam, 3 to 8 percent slopes	C	0.43
GnB	Glenville-Baile silt loams, 0 to 8 percent slopes	D	0.43
MaC	Manor loam, 8 to 15 percent slopes	B	0.28
MaD	Manor loam, 15 to 25 percent slopes	B	0.28

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 5/22/19

DEVELOPER'S/BUILDER'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 ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

SIGNATURE OF DEVELOPER/BUILDER — DATE 5/14/19
AGENT PATAPSCO CROSSING LLC
PRINTED NAME & TITLE

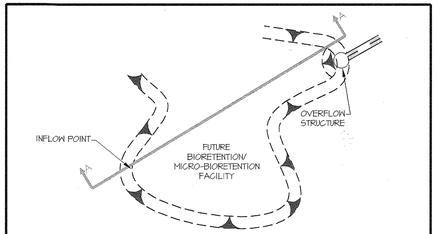
ENGINEER'S CERTIFICATE

" 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."

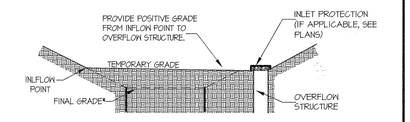
ENGINEER'S SIGNATURE — DATE 5/15/19
CARL GUTSCHICK — 12975 (P.E.)
PRINTED NAME — MD REGISTRATION NO.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways MK — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 7.9.19
Chief, Development Engineering Division — Date 7.8.19



PLAN VIEW



SECTION A-A

NOTE: DO NOT EXCAVATE TO FINAL GRADE OR INSTALL BIORETENTION / MICRO-BIORETENTION MEDIA UNTIL ALL CONTRIBUTING AREA HAS BEEN STABILIZED. IF MEDIA IS INSTALLED, PROVIDE LINER ON TOP OF THE FACILITY UNTIL ALL CONTRIBUTING AREA HAS BEEN STABILIZED.

BIORETENTION/MICRO-BIORETENTION TEMPORARY GRADING SCALE: N.T.S.

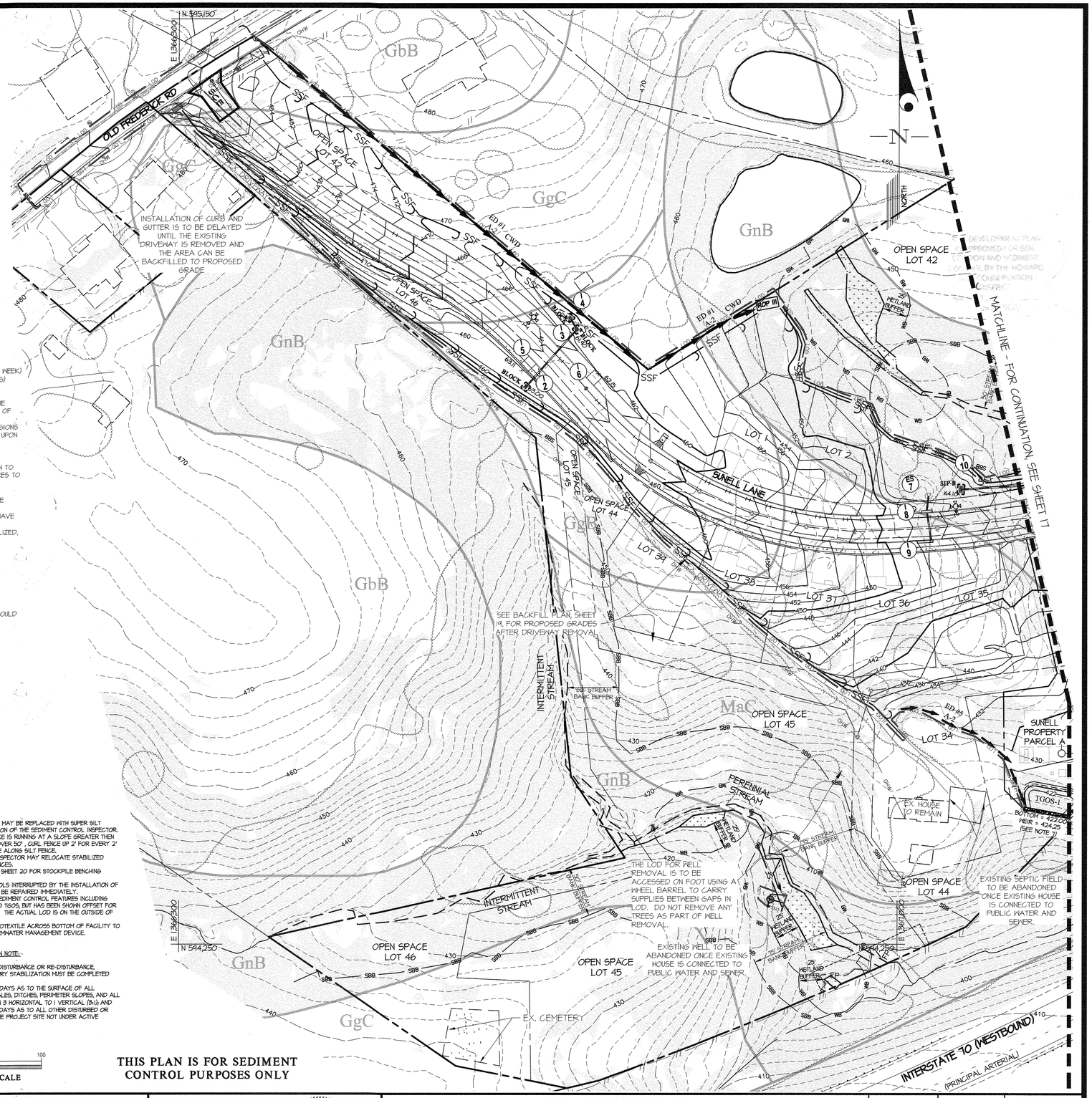
NOTES:
1. STANDARD SILT FENCE MAY BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
2. WHEN SUPER SILT FENCE IS RUNNING AT A SLOPE GREATER THEN 5% FOR A DISTANCE OVER 50', GIRL FENCE UP 2' FOR EVERY 2' OF ELEVATION CHANGE ALONG SILT FENCE.
3. SEDIMENT CONTROL INSPECTOR MAY RELOCATE STABILIZED CONSTRUCTION ENTRANCES.
4. SEE DETAIL B-4-8 ON SHEET 20 FOR STOCKPILE BENCHING REQUIREMENTS.
5. ANY SEDIMENT CONTROLS INTERRUPTED BY THE INSTALLATION OF A STORM DRAIN IS TO BE REPAIRED IMMEDIATELY.
6. THE LOD OVERLAPS SEDIMENT CONTROL FEATURES INCLUDING SSF, EARTH DIKES, AND TGOS, BUT HAS BEEN SHOWN OFFSET FOR CLARITY IN THIS PLAN. THE ACTUAL LOD IS ON THE OUTSIDE OF THE DEVICE.
7. AT TGOS-1, EXTEND GEOTEXTILE ACROSS BOTTOM OF FACILITY TO PROTECT FUTURE STORMWATER MANAGEMENT DEVICE.

STANDARD STABILIZATION NOTE:

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:
A.) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND
B.) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

0 25 50 100
GRAPHIC SCALE

THIS PLAN IS FOR SEDIMENT CONTROL PURPOSES ONLY



GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY: DDS
DRAWN BY: JRC
CHECKED BY: CKG

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975 EXPIRATION DATE: May 26, 2020
5/15/19

STATE OF MARYLAND — CARL KENNETH GUTSCHICK — 12975 — PROFESSIONAL ENGINEER

SEDIMENT CONTROL PLAN

PATAPSCO CROSSING

LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK A RESUBDIVISION OF PARCEL 25

Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	16 OF 30

F-19-038

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 instream 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):

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.

TEMPORARY INSTREAM CONSTRUCTION MEASURES — MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION — PAGE 1.2 – 1 — REVISED NOVEMBER 2000

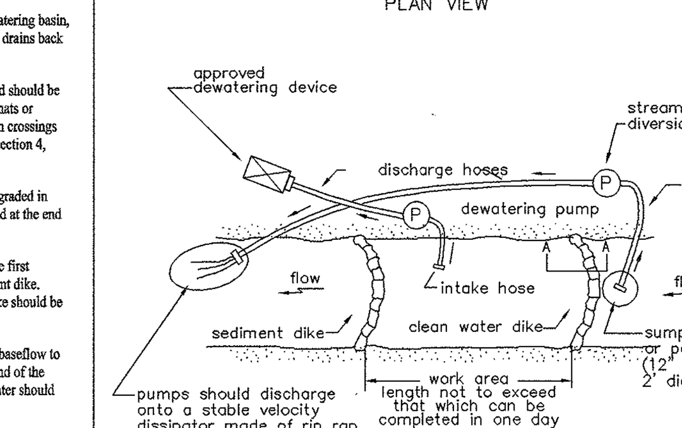
MGWC 1.2: PUMP-AROUND PRACTICE

7. 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.
8. 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).
9. 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.
10. 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.
11. 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.
12. 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.
13. The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
14. After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

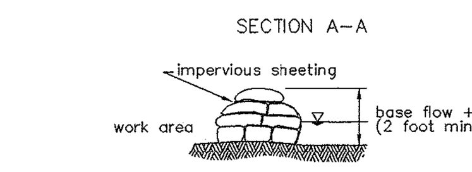
TEMPORARY INSTREAM CONSTRUCTION MEASURES — MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION — PAGE 1.2 – 2 — REVISED NOVEMBER 2000

MARYLAND'S GUIDELINES TO WATERWAY CONSTRUCTION
DETAIL 1.2: PUMP–AROUND PRACTICE

PLAN VIEW



SECTION A–A

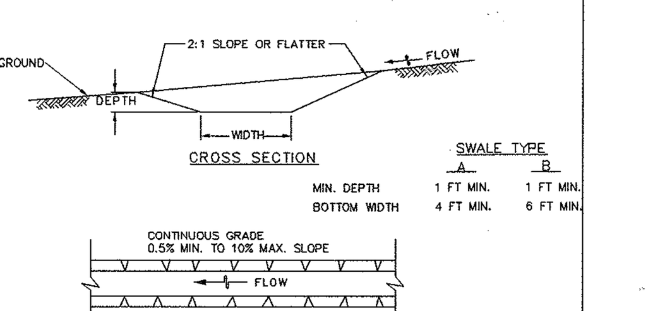


cross section of sandbag dike

TEMPORARY INSTREAM CONSTRUCTION MEASURES — REVISED NOVEMBER 2000 PAGE 1.2 – 3 — MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-2 TEMPORARY SWALE

STANDARD SYMBOL A–1



	SWALE TYPE A	SWALE TYPE B
MIN. DEPTH	1 FT MIN.	1 FT MIN.
BOTTOM WIDTH	4 FT MIN.	6 FT MIN.

FLOW CHANNEL STABILIZATION

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

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

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

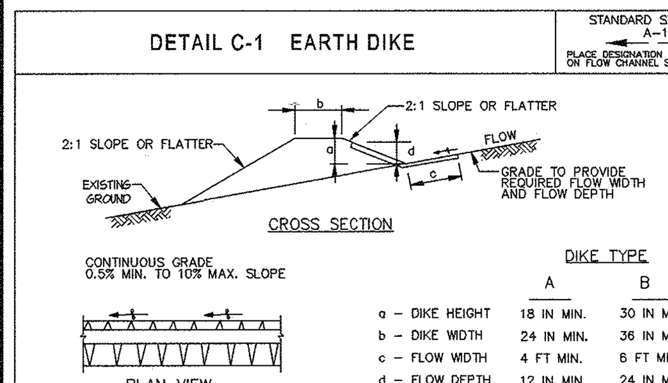
CONSTRUCTION SPECIFICATIONS

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

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

DETAIL C-1 EARTH DIKE

STANDARD SYMBOL A–1 — PLACE DESIGNATION (e.g. A–1) ON FLOW CHANNEL SIDE OF DIKE.



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

FLOW CHANNEL STABILIZATION

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

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

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

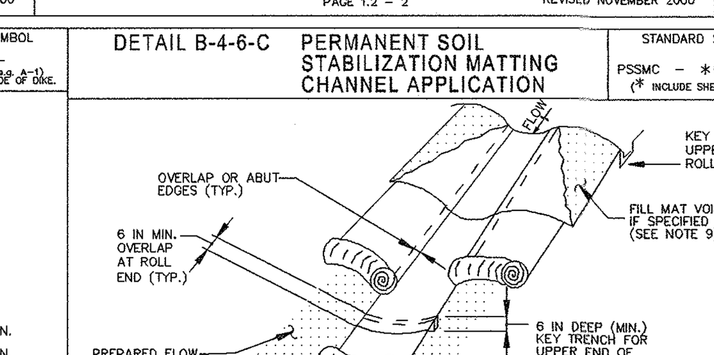
CONSTRUCTION SPECIFICATIONS

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

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

DETAIL B-4-6-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL PSSMC – *0.70 lb/ft² (* INCLUDE SHEAR STRESS)

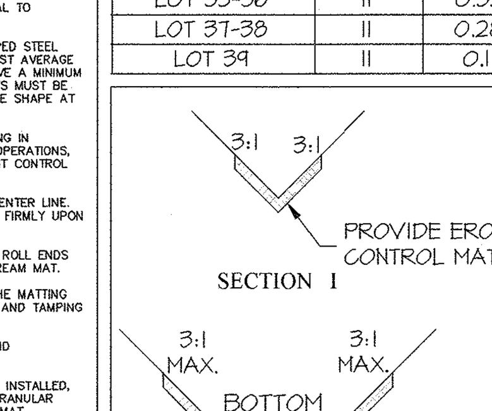


CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE 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-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 ½ 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, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. 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 SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.

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

SWALE LOCATION	SECTION	DRAINAGE AREA (ac.)	Q2 (cfs)	V2 (fps)	BOTTOM (ft)	FLOW DEPTH (ft)	SHEAR STRESS (lb/sf)
BS-9	II	0.33	1.47	2.65	3	0.16	0.35
BS-10	II	0.56	2.46	3.16	3	0.21	0.45
BS-11	II	0.71	3.12	3.20	4	0.21	0.46
BS-12	II	0.98	4.33	3.39	5	0.23	0.50
BS-13	II	0.46	2.05	2.31	5	0.16	0.26
BS-14	II	0.15	0.64	1.71	4	0.09	0.17
BS-15	II	0.23	1.00	1.95	4	0.12	0.20
TO I-37	I	0.82	2.80	2.74	0	0.58	0.30
TO I-38 (EAST)	I	0.79	2.71	3.18	0	0.53	0.40
TO I-38 (WEST)	I	0.27	0.93	3.04	0	0.32	0.44
TO I-39 (EAST)	I	0.68	2.32	2.46	0	0.56	0.24
TO I-39 (WEST)	I	0.42	1.42	3.06	0	0.39	0.43
LOT 24	II	0.23	1.02	2.25	1	0.19	0.27
LOT 25-26	II	0.25	1.13	2.09	2	0.21	0.20
LOT 27-28	II	0.14	0.64	2.16	2	0.12	0.25
LOT 35-36	II	0.35	1.55	3.72	2	0.17	0.70
LOT 37-38	II	0.28	1.25	2.84	2	0.17	0.41
LOT 39	II	0.11	0.50	2.84	2	0.08	0.50



PERMANENT SWALE

TEMPORARY DIKE/SWALE

DEVICE	DRAINAGE AREA (ac.)	MAX SLOPE (%)	FLOW DEPTH (ft)	V2 (fps)	TREATMENT
ED #1	1.14	10.0	0.36	4.90	A-2
ED #2	1.86	0.7	0.94	2.40	A-2
ED #3	0.64	7.0	0.31	3.75	A-2
ED #4	0.30	30.0	0.35	5.28	A-3
ED #5	0.44	14.0	0.36	3.83	A-2
ED #6	0.59	5.5	0.42	2.68	A-2
ED #7	0.15	20.0	0.09	1.81	A-2
ED #8	0.04	27.0	0.05	1.45	A-2
A	2.54	1.0	0.56	2.77	A-2

NOTES:

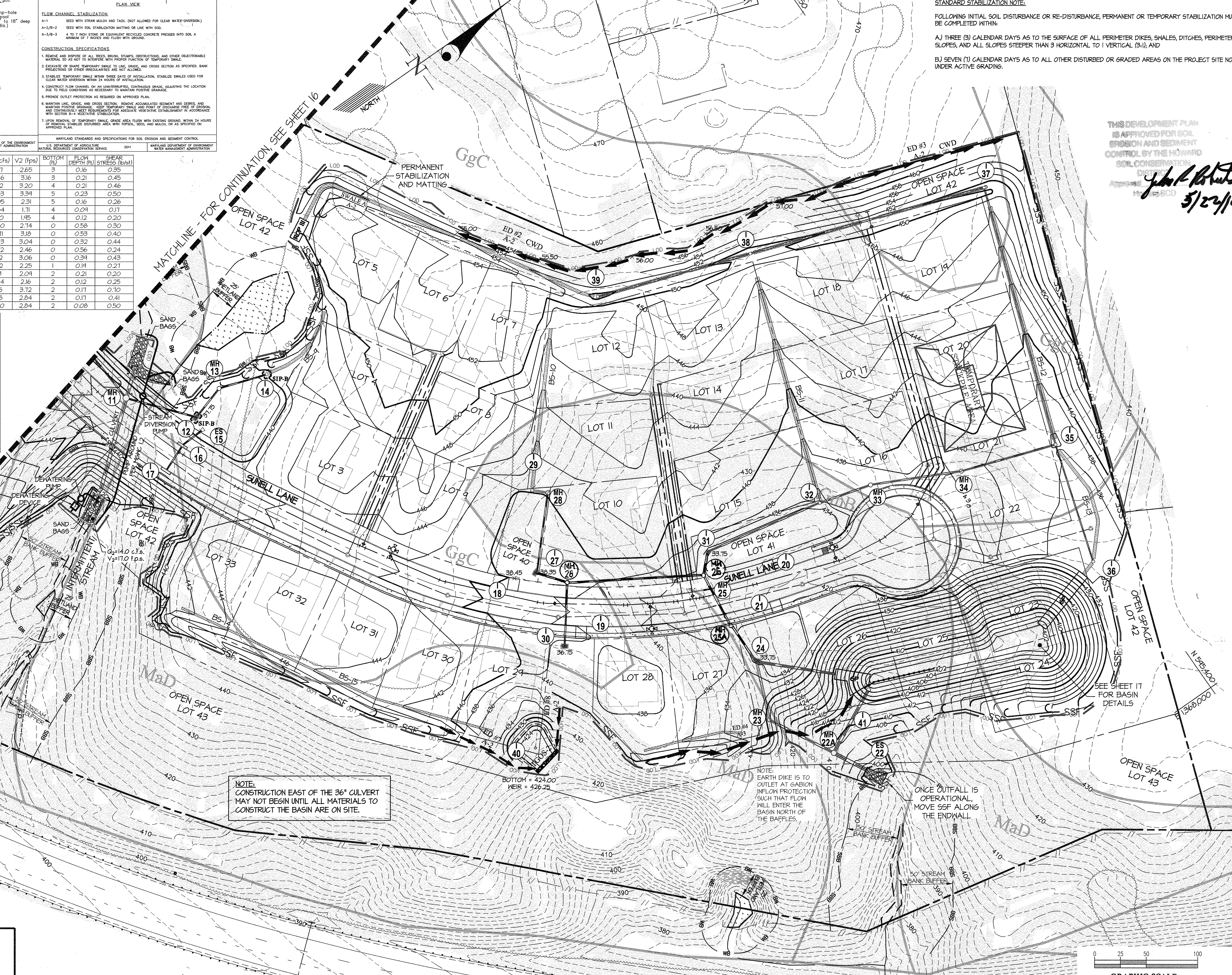
1. STANDARD SILT FENCE MAY BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
2. WHEN SUPER SILT FENCE IS RUNNING AT A SLOPE GREATER THEN 5% FOR A DISTANCE OVER 50' , CURL FENCE UP 2' FOR EVERY 2' OF ELEVATION CHANGE ALONG SILT FENCE.
3. SEDIMENT CONTROL INSPECTOR MAY RELOCATE STABILIZED CONSTRUCTION ENTRANCES.
4. SEE DETAIL B-4-8 ON SHEET 20 FOR STOCKPILE BENCHING REQUIREMENTS.
5. ANY SEDIMENT CONTROLS INTERRUPTED BY THE INSTALLATION OF A STORM DRAIN IS TO BE REPAIRED IMMEDIATELY.
6. THE LOD OVERLAPS SEDIMENT CONTROL FEATURES INCLUDING SSF, EARTH DIKES, AND TGOS, BUT HAS BEEN SHOWN OFFSET FOR CLARITY IN THIS PLAN. THE ACTUAL LOD IS ON THE OUTSIDE OF THE DEVICE.

STANDARD STABILIZATION NOTE:

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

A.) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND

B.) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.



THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT. HSCD 5/22/19

DEVELOPER'S/BUILDER'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 ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

VP PLANNING & DEV. — 5/14/19

SIGNATURE OF DEVELOPER/BUILDER — DATE

AGENT FOR PATAPSCO CROSSING LLC

PRINTED NAME & TITLE

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."

ENGINEER'S SIGNATURE — 5/15/19 DATE

CARL GUTSCHICK — 12975 (P.E.)

PRINTED NAME — MD REGISTRATION NO.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19

THIS PLAN IS FOR SEDIMENT CONTROL PURPOSES ONLY

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

HOWARD SOIL CONSERVATION DISTRICT — DATE

0 25 50 100 GRAPHIC SCALE

GLW — PLANNING | ENGINEERING | SURVEYING

3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY: DDS — DRAWN BY: JRC — CHECKED BY: CKG

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410–615–7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975, EXPIRATION DATE: May 26, 2020

5/15/19

STATE OF MARYLAND — CARLTON KENNETH GUTSCHICK — NO. 12975 — PROFESSIONAL ENGINEER

SEDIMENT CONTROL PLAN

PATAPSCO CROSSING

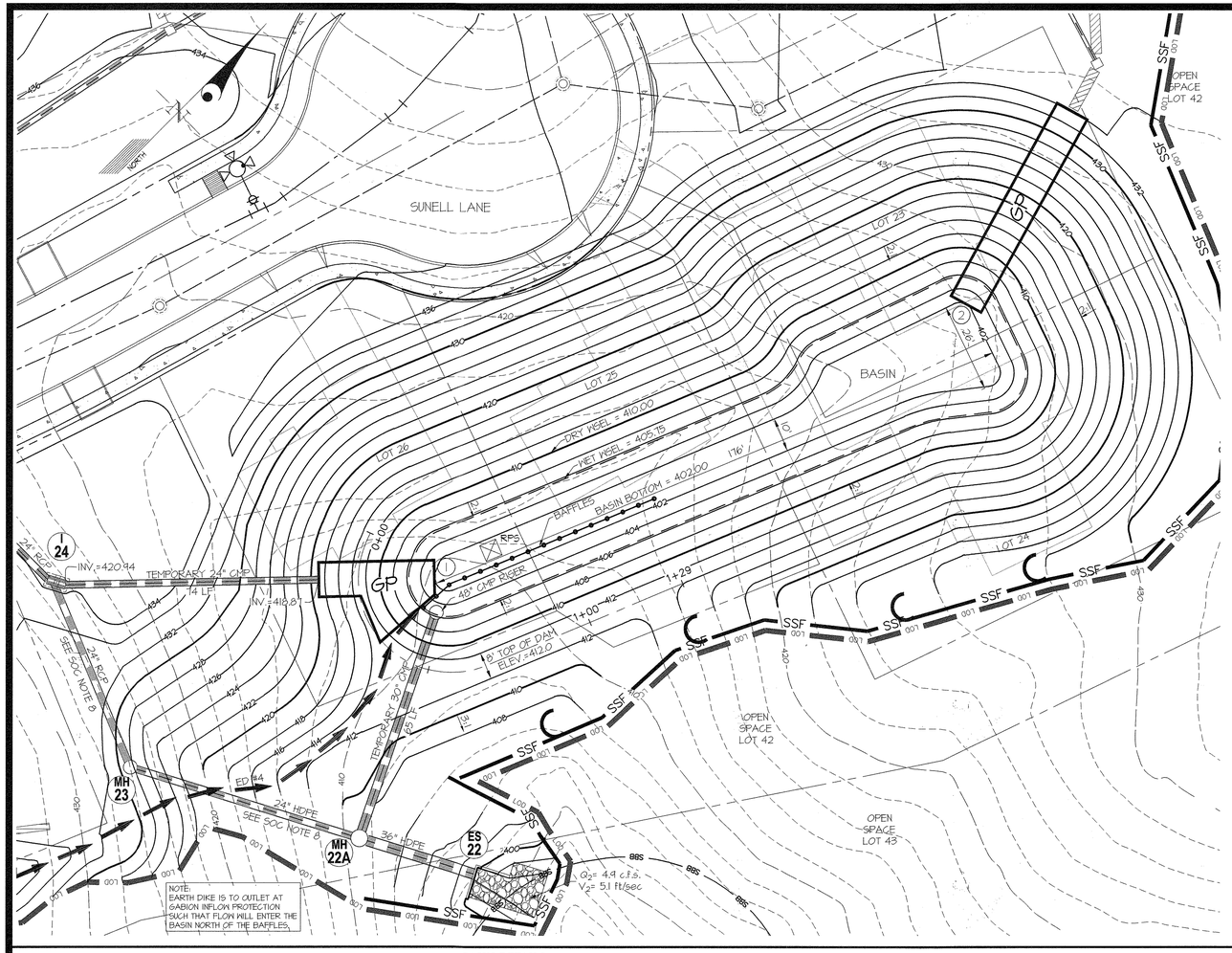
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25

Liber: 18476 Folio: 223

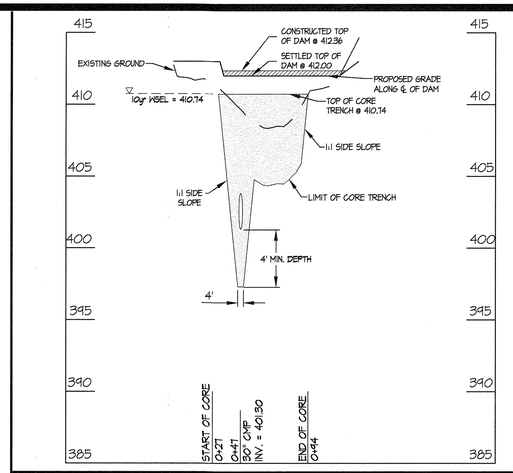
ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	R–20	11014
DATE	TAX MAP – GRID	SHEET
MAY, 2019	18 – 13	17 OF 30

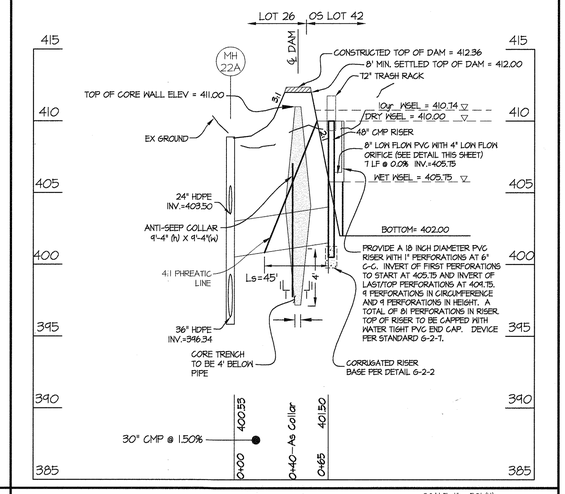
F-19-038



BASIN DETAILS SCALE: 1" = 20'



BASIN - PROFILE AT TOP OF DAM SCALE: 1" = 50' (H), 1" = 5' (V)



BASIN - PROFILE THROUGH PRINCIPAL SPILLWAY SCALE: 1" = 50' (H), 1" = 5' (V)

BASIN DATA TABLE

SEDIMENT BASIN

EXISTING DRAINAGE AREA : 7.6 AC
WORST CASE INTERIM DRAINAGE AREA : 7.6 AC

WET STORAGE VOL. REQUIRED : 0.31 AC-FT
WET STORAGE VOL. PROVIDED : 0.32 AC-FT
WET STORAGE ELEV : 405.75
DRY STORAGE REQUIRED: 0.69 AC-FT
DRY STORAGE PROVIDED = 0.72 AC-FT
DRY STORAGE WSEL = 410.00

EXISTING Q-1YR = 0.9 cfs
INTERIM Q-1YR = 18.4 cfs
SAFE PASS OF 10-YR STORM PROVIDED
Q_{25} = 24.9 cfs
10-YR WSEL = 410.74 ft.

BOTTOM ELEVATION : 402.00
TOP OF EMBANKMENT : 412.00
WEIR CREST ELEVATION : 410.00
WEIR LENGTH : 12.6'

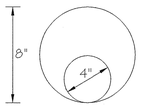
EMERGENCY SPILLWAY ELEV : NONE
CLEANOUT ELEVATION : 403.88
EMBANKMENT TOP WIDTH: 8'
SIDE SLOPES : 2:1 INTERIOR - 3:1 EXTERIOR

BAFFLE COMPUTATION

① D = 8 FT.
A WET POOL = 5360 FT²
We = √(A/2) = 52
Le = 2We = 104 FT REQUIRED
Le = 138 FT PROVIDED

② D = 17.1 FT.
A WET POOL = 5360 FT²
We = √(A/2) = 52
Le = 2We = 104 FT REQUIRED
Le = 177 FT PROVIDED

TEMPORARY STORMWATER MANAGEMENT LOW FLOW ORIFICE



0 10 20 40 — **GRAPHIC SCALE**

0 25 50 100 — **GRAPHIC SCALE**

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19

DEVELOPER'S/BUILDER'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 ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

SIGNATURE OF DEVELOPER/BUILDER — DATE 5/14/19

PRINTED NAME & TITLE — VP Planning Dev. Agent for Patapsco Crossing LLC

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."

ENGINEER'S SIGNATURE — DATE 5/15/19

CARL GUTSCHICK — 12975 (PE)

PRINTED NAME — MD REGISTRATION NO.

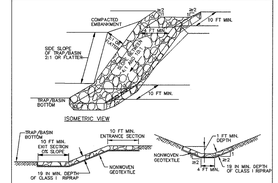
THIS PLAN IS FOR SEDIMENT CONTROL PURPOSES ONLY

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 5/22/19

DETAIL D-3-1 RIPRAP INFLOW PROTECTION

STANDARD SYMBOL: RIPIN



CONSTRUCTION SPECIFICATIONS

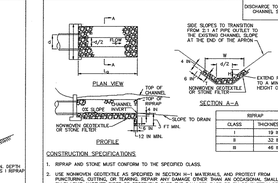
1. PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION M-1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL RIPRAP.
2. CONSTRUCT INFLOW CHANNEL WITH CLASS 1 RIPRAP OR EQUIVALENT RECYCLED CONCRETE LINING TO A MINIMUM DEPTH OF 10 INCHES (1 ½ FT.) AND A 1 FOOT DEEP FLOW CHANNEL. BEFORE PLACING PROTECTION CHANNEL MUST HAVE A TRAPEZOIDAL CROSS SECTION WITH 2:1 OR FLATTER SIDE SLOPES AND A 4 FOOT MINIMUM BOTTOM WIDTH.
3. INSTALL ENTRANCE AND EXIT SECTIONS AS SHOWN ON THE PROFILE.
4. BLEND RIPRAP INTO EXISTING GROUND.
5. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL D-4-1-B ROCK OUTLET PROTECTION II

STANDARD SYMBOL: ROPTI



RIPRAP	
CLASS	THICKNESS (T)
1	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS

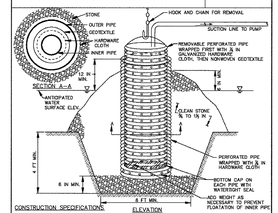
1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION M-1 MATERIALS AND PROTECT FROM PUNCTURING DURING PLACEMENT OF STONE. REPAIR ANY HOLES OR TEARS BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (¾ TO 1½ INCH STONE FOR 6 INCH MINIMUM DEPTH) AND REPAIR TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT THE STONE MASS WILL BE REASONABLY HOMOGENEOUS WITH THE LARGER STONES EVENLY DISTRIBUTED AND WITH SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO FLOWS WILL BE USED TO CONSTRUCT THE UPSTREAM END OF THE APRON 10 FEET OR AT LEAST TWICE THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE ENTIRE OUTLET 10' X MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL F-1 REMOVABLE PUMPING STATION

STANDARD SYMBOL: RPMS



CONSTRUCTION SPECIFICATIONS

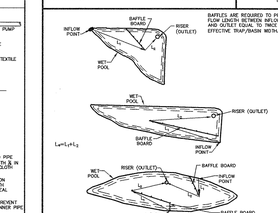
1. USE CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS 6 INCHES ON CENTER.
2. USE A MINIMUM 12 INCH DIAMETER INNER PIPE WITH AN OUTER PIPE A MINIMUM 6 INCHES LARGER IN DIAMETER. BOTTOM OF EACH PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
3. WRAP EACH PIPE WITH ½ INCH GALVANIZED HARDWARE CLOTH, ON INNER PIPE WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION M-1 MATERIALS, OVER THE HARDWARE CLOTH.
4. EXCAVATE A FIRST 3.5 FEET X 4 FEET SQUARE HOLE 2 FEET DEEP PIT FOR PIPE PLACEMENT. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
5. SET TOP OF INNER AND OUTER PIPES MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION (OR RISER CREST ELEVATION WHEN DEWATERING A BASIN).
6. BACKFILL PIT AROUND THE OUTER PIPE WITH ¾ TO 1½ INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
7. DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
8. A REMOVABLE PUMPING STATION REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, PULL OUT INNER PIPE AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL G-2-4 BAFFLE BOARDS

STANDARD SYMBOL: BB

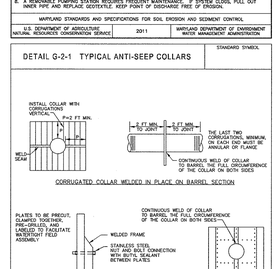


MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL G-2-1 TYPICAL ANTI-SEEP COLLARS

STANDARD SYMBOL

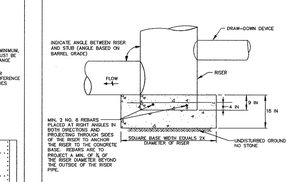


MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL G-2-2 CORRUGATED RISER BASE

STANDARD SYMBOL



CONSTRUCTION SPECIFICATIONS

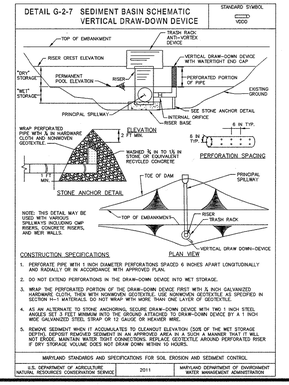
1. BOTTOM OF CONCRETE BASE TO BE PLACED ON UNDISTURBED, NATURAL GROUND.
2. NO STONE IS ALLOWED UNDER BASE. IF NECESSARY, TO ACHIEVE STABILITY INCREASE DEPTH OF CONCRETE BASE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL G-2-7 SEDIMENT BASIN SCHEMATIC VERTICAL DRAW-DOWN DEVICE

STANDARD SYMBOL: 10000



NOTE: THIS DETAIL MAY BE USED WITH VARIOUS SPILLWAYS INCLUDING CMP, RISER/BARREL STRUCTURES, AND BEE WALLS.

CONSTRUCTION SPECIFICATIONS

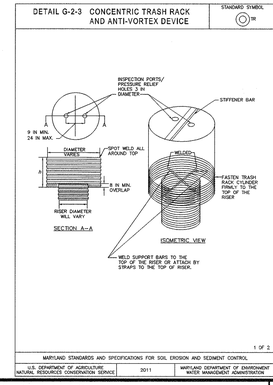
1. PERFORATE PIPE WITH 1 INCH DIAMETER PERFORATIONS SPACED 6 INCHES APART LONGITUDINALLY AND RADIALLY FOR 81 PERFORATIONS WITH APPROVED PLAN.
2. DO NOT EXTEND PERFORATIONS IN THE DRAW-DOWN DEVICE INTO WET STORAGE.
3. WRAP THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE FIRST WITH ½ INCH GALVANIZED HARDWARE CLOTH, THEN WITH NONWOVEN GEOTEXTILE. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION M-1 MATERIALS. DO NOT WRAP WITH MORE THAN ONE LAYER OF GEOTEXTILE.
4. AS AN ALTERNATE TO STONE ANCHORING, SECURE DRAW-DOWN DEVICE WITH TWO 1 INCH STEEL ANGLES SET 3 FEET MINIMUM INTO THE GROUND ATTACHED TO DRAW-DOWN DEVICE BY A 1 INCH WIDE GALVANIZED STEEL STRAP OR 12 GAUGE OR HEAVIER WIRE.
5. REMOVE SEDIMENT WHEN IT ACCUMULATES TO CLEANOUT ELEVATION (TOP OF THE WET STORAGE ELEVATION). REMOVE AND DISPOSE OF SEDIMENT IN A MANNER THAT WILL ENSURE THAT IT WILL NOT ERODE. MAINTAIN WATER TIGHT CONNECTIONS. REPLACE GEOTEXTILE AROUND PERFORATED RISER IF DRY STORAGE VOLUME DOES NOT DRAW DOWN WITHIN 10 HOURS.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL G-2-3 CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE

STANDARD SYMBOL: TR



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL G-2-3 CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE

STANDARD SYMBOL: TR

RISER DIAM. (D) (IN)	TRASH RACK CYLINDER DIAM. (IN)	THICKNESS (GAUGE)	h (IN)	MINIMUM TOP SUPPORT BAR SIZE	MINIMUM TOP THICKNESS (GAUGE)	MINIMUM TOP STIFFENER
12	16	16	14	#5 REBAR	16	N/A
15	21	16	15	#5 REBAR	16	N/A
18	27	16	16	#5 REBAR	16	N/A
21	30	16	19	#5 REBAR	16	N/A
24	36	16	21	#5 REBAR	14	N/A
27	42	16	21	#5 REBAR	14	N/A
30	54	14	25	#5 REBAR	12	N/A
42	60	14	27	#5 REBAR	12	N/A
48	72	12	29	1¼ IN PIPE OR 1¼ x 1¼ x ¼ ANGLE	10	N/A
54	78	12	33	1½ IN PIPE OR 1½ x 1½ x ¼ ANGLE	10	N/A
60	90	12	37	1½ IN PIPE OR 1½ x 1½ x ¼ ANGLE	8	N/A
66	96	10	41	2 IN PIPE OR 2 x 2 x ¾ ANGLE	8	2 x 2 x ¾ ANGLE
72	102	10	44	2 IN PIPE OR 2 x 2 x ¾ ANGLE	8	2½ x 2½ x ¾ ANGLE
78	114	10	47	2½ IN PIPE OR 2 x 2 x ¾ ANGLE	8	2½ x 2½ x ¾ ANGLE
84	120	10	50	2½ IN PIPE OR 2½ x 2½ x ¾ ANGLE	8	3½ x 3½ x ¾ ANGLE

NOTE:
THE ABOVE TRASH RACK AND ANTI-VORTEX DEVICE INFORMATION IS FOR CORRUGATED METAL PIPE ONLY. CONCRETE RISERS MUST BE DESIGNED BY A PROFESSIONAL ENGINEER.

2 OF 2

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

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY: DDS
DRAWN BY: JRC
CHECKED BY: CKG

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975, EXPIRATION DATE: May 26, 2020

STATE OF MARYLAND — CARL K. GUTSCHICK — NO. 12975 — PROFESSIONAL ENGINEER

5/15/19

SEDIMENT TRAP NOTES and DETAILS

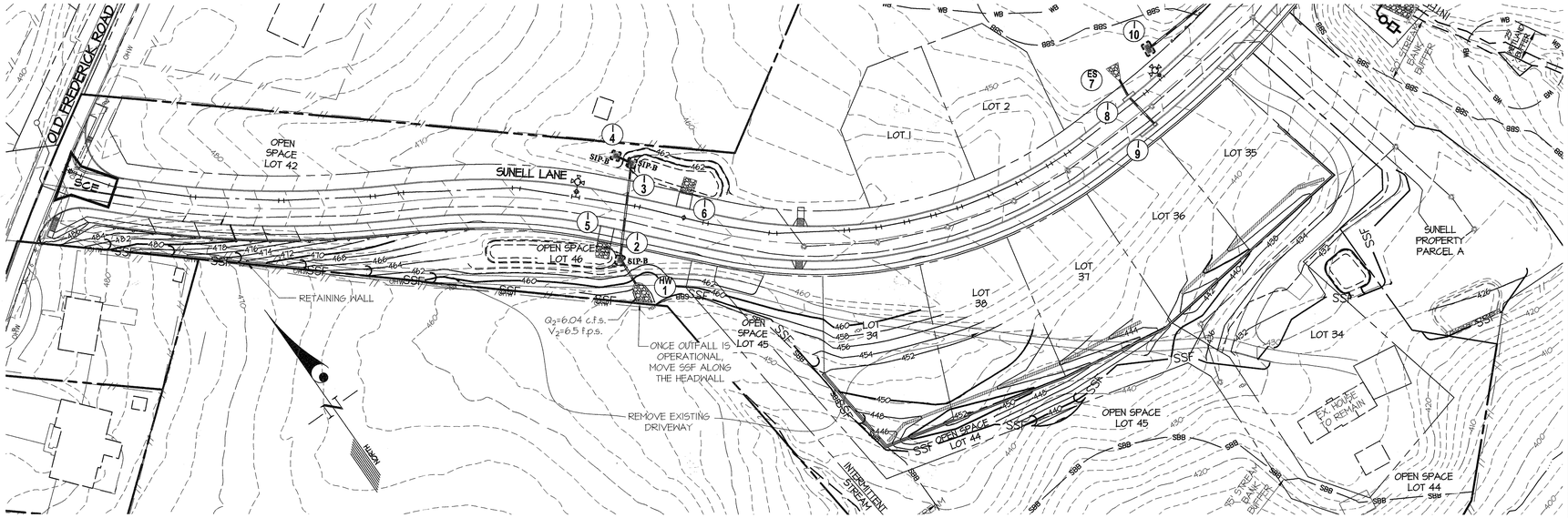
PATAPSCO CROSSING

LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25
Liber: 18476 Folio: 223

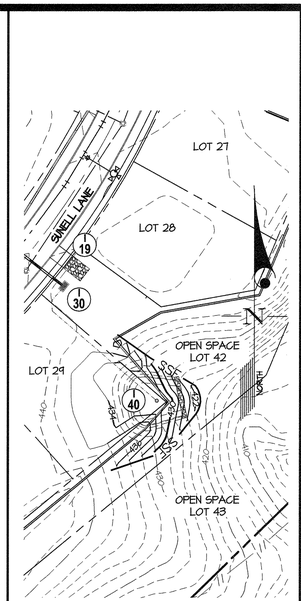
ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	18 OF 30

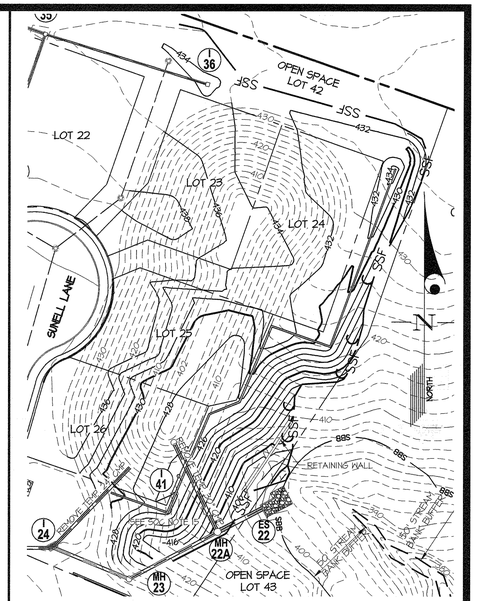
F-19-038



BACKFILL DETAIL - TGOS-1 and EXISTING DRIVEWAY REMOVED SCALE: 1" = 50'



BACKFILL DETAIL - TGOS-2 SCALE: 1" = 50'



BACKFILL DETAIL - BASIN SCALE: 1" = 50'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19

DEVELOPER'S/BUILDER'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 ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

SIGNATURE OF DEVELOPER/BUILDER — DATE 5/14/19

PRINTED NAME & TITLE — PCOUT PATAPSCO CROSSING LLC

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."

ENGINEER'S SIGNATURE — DATE 5/15/19

CARL GUTSCHICK — 12475 (P.E.) MD REGISTRATION NO.

PRINTED NAME

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 5/22/19

THIS PLAN IS FOR SEDIMENT CONTROL PURPOSES ONLY

GRAPHIC SCALE 0 25 50 100

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY: DDS
DRAWN BY: JRC
CHECKED BY: CKG

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975
EXPIRATION DATE: May 26, 2020
5/15/19

STATE OF MARYLAND — CARL KENNETH GUTSCHICK — NO. 12975 — PROFESSIONAL ENGINEER

SEDIMENT CONTROL BACKFILL PLAN

PATAPSCO CROSSING

LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK A RESUBDIVISION OF PARCEL 25

Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	19 OF 30

F-19-038

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

DEFINITION

THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

PURPOSE

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

CONDITIONS WHERE PRACTICE APPLIES

WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

CRITERIA

A. SOIL PREPARATION

1. TEMPORARY STABILIZATION

a. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.
b. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
c. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

2. PERMANENT STABILIZATION

a. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:

I. SOIL PH BETWEEN 6.0 AND 7.0.

II. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).

III. SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION: IF LOVEGRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.

IV. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.

V. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.

b. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.

c. GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES.

d. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.

e. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRIABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

B. TOPSOILING

1. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.

2. TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.

3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:

a. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
b. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
c. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
d. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.

5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:

a. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1.5 INCHES IN DIAMETER.

b. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.

c. TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.

6. TOPSOIL APPLICATION

a. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.
b. UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
c. TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)

1. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.
2. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARRANTY OF THE PRODUCER.
3. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.
4. LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

H-5 STANDARDS AND SPECIFICATIONS FOR DUST CONTROL

DEFINITION

CONTROLLING THE SUSPENSION OF DUST PARTICLES FROM CONSTRUCTION ACTIVITIES.

PURPOSE

TO PREVENT BLOWING AND MOVEMENT OF DUST FROM EXPOSED SOIL SURFACES TO REDUCE ON AND OFF-SITE DAMAGE INCLUDING HEALTH AND TRAFFIC HAZARDS.

CONDITIONS WHERE PRACTICE APPLIES

AREAS SUBJECT TO DUST BLOWING AND MOVEMENT WHERE ON AND OFF-SITE DAMAGE IS LIKELY WITHOUT TREATMENT.

SPECIFICATIONS

1. MULCHES: SEE SECTION B-4-2 SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS, SECTION B-4-3 SEEDING AND MULCHING, AND SECTION B-4-4 TEMPORARY STABILIZATION. MULCH MUST BE ANCHORED TO PREVENT BLOWING.
2. VEGETATIVE COVER: SEE SECTION B-4-4 TEMPORARY STABILIZATION.
3. TILLAGE: TILL TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. BEGIN PLOWING ON WINDWARD SIDE OF SITE. CHISEL-TYPE PLOWS SPACED ABOUT 12 INCHES APART, SPRING-TOOTHED HARROWS, AND SIMILAR PLOWS ARE EXAMPLES OF EQUIPMENT THAT MAY PRODUCE THE DESIRED EFFECT.
4. IRRIGATION: SPRINKLE SITE WITH WATER UNTIL THE SURFACE IS MOIST. REPEAT AS NEEDED. THE SITE MUST NOT BE IRRIGATED TO THE POINT THAT RUNOFF OCCURS.
5. BARRIERS: SOLID BOARD FENCES, SILT FENCES, SNOW FENCES, BURLAP FENCES, STRAW BALES, AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING.
6. CHEMICAL TREATMENT: USE OF CHEMICAL TREATMENT REQUIRES APPROVAL BY THE APPROPRIATE PLAN REVIEW AUTHORITY.

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

DEFINITION

THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

PURPOSE

TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

CONDITIONS WHERE PRACTICE APPLIES

TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

CRITERIA

A. SEEDING

1. SPECIFICATIONS

a. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.
b. MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAWS.
c. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
d. SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

2. APPLICATION

a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.
   i. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.
   ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.

b. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
   i. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.
   ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.

c. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).
   i. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P205 (PHOSPHOROUS), 200 POUNDS PER ACRE; K20 (POTASSIUM), 200 POUNDS PER ACRE.
   ii. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.
   iii. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.
   iv. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

B. MULCHING

1. MULCH MATERIALS (IN ORDER OF PREFERENCE)

a. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.
b. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.
   i. WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY.
   ii. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.
   iii. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.
   iv. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.
   v. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.

2. APPLICATION

a. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.
b. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING A MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE.
c. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

3. ANCHORING

a. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:
   i. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR.
   ii. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
   iii. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRA TAX II, TERRA MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED.
   iv. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

DEFINITION

TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

PURPOSE

TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS.
CONDITIONS WHERE PRACTICE APPLIES EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

CRITERIA

1. SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3), AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONG WITH APPLICATION RATES, SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLAN AND COMPLETED, THEN TABLE B.1 PLUS FERTILIZER AND LIME RATES MUST BE PUT ON THE PLAN.
2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING.
3. WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3.A.1.B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

TEMPORARY SEEDING SUMMARY

HARDINESS ZONE: 6b SEED MIXTURE:					FERTILIZER RATE (10-10-10)	LIME RATE
No.	SPECIES	APPLICATION RATE (lb/ac.)	SEEDING DATES	SEEDING DEPTHS		
1	ANNUAL RYEGRASS	40 lb/ac	Mar. 1 to May 15, Aug. 1 to Oct. 15	0.5 INCHES	436 lb./ac. (10 lb./ 1,000 sf)	2 tons/ac. (90 lb./ 1,000 sf)
2	PEARL MILLET	20 lb/ac	May 16 to July 31	0.5 INCHES		

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. A MINIMUM OF 48 HOURS NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
   A. PRIOR TO THE START OF EARTH DISTURBANCE,
   B. UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING,
   C. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT,
   D. PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.

   OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN.

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" AND REVISIONS THERETO.

3. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
   A. 3 CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND
   B. 7 CALENDAR DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING.

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" FOR TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES IF THE GROUND FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-1) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH >15' OF CUT AND/OR FILL. STOCKPILES (SEC. B-4-8) IN EXCESS OF 20 FT. MUST BE BENCHED WITH STABLE OUTLET. ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-6).

5. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE CID.

6. SITE ANALYSIS:

TOTAL AREA OF SITE	:	24.71± AC.
AREA DISTURBED	:	15.8± AC.
AREA TO BE ROOFED OR PAVED	:	5.3± AC.
AREA TO BE VEGETATIVELY STABILIZED	:	10.5± AC.
TOTAL CUT	:	55,000± CY
TOTAL FILL	:	55,000± CY
OFF-SITE WASTE/BORROW AREA LOCATION	:	NA

7. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE

8. 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 RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST, IS PART OF EVERY INSPECTION AND SHOULD INCLUDE:
   - 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)
   - BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES
   - EVIDENCE OF SEDIMENT DISCHARGES
   - IDENTIFICATION OF PLAN DEFICIENCIES
   - IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE
   - IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS
   - COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS
   - PHOTOGRAPHS
   - MONITORING/SAMPLING
   - MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED
   - OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES (NPDES, MDE).

9. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO 3 PIPE LENGTHS OR THAT WHICH SHALL BE BACKFILLED 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 HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY BE ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.

11. DISTURBANCE SHALL NOT OCCUR OUTSIDE THE LOD. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE 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 BE STABILIZED AND APPROVED BY CID. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE HSCD, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

12. WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.

13. TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.

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

15. STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE):
   - USE I AND IP MARCH 1 - JUNE 15
   - USE III AND IIIP OCTOBER 1 - APRIL 30
   - USE IV MARCH 1 - MAY 31

16. 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 THIS SITE IS ACTIVE.

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

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.

CONDITIONS WHERE PRACTICE APPLIES

EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

CRITERIA

A. SEED MIXTURES

1. GENERAL USE
   a. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE B.2. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
   b. ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING.
   c. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
   d. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3 1/2 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.

2. TURFGRASS MIXTURES
   a. AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
   b. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
      i. KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
      ii. KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE: FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MANAGEMENT. CERTIFIED PERENNIAL RYEGRASS CULTIVARS/CERTIFIED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
      iii. TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES; CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.
      iv. KENTUCKY BLUEGRASS/FINE FESCUE: SHADE MIXTURE: FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES; CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 TO 70 PERCENT. SEEDING RATE: 11/2 TO 3 POUNDS PER 1000 SQUARE FEET.

      NOTES:

      SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND"

      CHOOSE CERTIFIED MATERIAL. CERTIFIED MATERIAL IS THE BEST GUARANTEE OF CULTIVAR PURITY. THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE, TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE

   i. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES
      WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDINESS ZONES: 5B, 6A)
      CENTRAL MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 6B)
      SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7A, 7B)
   j. TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES, LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1 1/2 INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.
   k. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (1/2 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

PERMANENT SEEDING SUMMARY

HARDINESS ZONE: 6b					FERTILIZER RATE (10-20-20)	LIME RATE	REMARKS
MIX No.	SPECIES	APPLICATION RATE	SEEDING DATES	SEEDING DEPTHS			
4	• Deertongue (*Dichanthelium clandistinum*) • Creeping Red Fescue • Virginia Wide Rye (*Elymus virginicus*) or Canada Wild Rye (*Elymus canadensis*)	15 lb/ac 20 lb/ac 5 lb/ac	Mar. 1 to May 15 May 16 to Jun 15*	1/4 – 1/2 IN.	1.0 lb/1000 s.f. (45 lb/acre)	90 lb/ 1000 s.f.	See notes 1 & 2.
8	Tall Fescue blend of at least 3 cultivars (see note#3)	100 lb/ac	Mar. 1 to May 15, Aug. 15 to Oct. 15	1/4 – 1/2 IN.	1.0 lb/1000 s.f. (45 lb/acre)	90 lb/ 1000 s.f.	See notes 1, 3 & 4

Notes:
1. The planting dates listed are average for the hardiness zone indicated. These dates may require adjustment to reflect local conditions, especially near the boundaries of the zones. When seeding toward the end of the listed planting dates, or when conditions are expected to be less than optimal, provide Temporary Seeding and plant together with the permanent seeding mix. Additional planting dates during which supplemental watering may be needed to ensure plant establishment are shown with an asterisk (*).
2. Use Virginia wild rye on moist, shady area. Use Canada wild rye on dry area.
3. Use Tall Fescue cultivars listed as "proven" in the most current University of Maryland TT-77 bulletin.
4. For residential lawns, areas adjacent thereto and recreation areas, use a Tall Fescue blend (Mix#8).

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

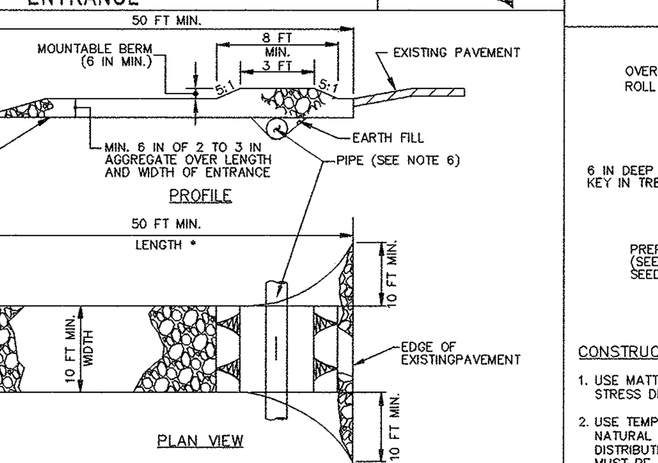
1. GENERAL SPECIFICATIONS
   a. CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.
   b. SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4 INCH, PLUS OR MINUS 1/4 INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS AND TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE.
   c. STANDARD SIZE SECTIONS OF SOD MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.
   d. SOD MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
   e. SOD MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPLANTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.

2. SOD INSTALLATION
   a. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
   b. LAY THE FIRST ROW OF SOD IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS.
   c. WHEREVER POSSIBLE, LAY SOD WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS. ROLL AND TAMP, PEG OR OTHERWISE SECURE THE SOD TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOLID CONTACT EXISTS BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE.
   d. WATER THE SOD IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD WITHIN EIGHT HOURS.

3. SOD MAINTENANCE
   a. IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF 4 INCHES. WATER SOD DURING THE HEAT OF THE DAY TO PREVENT WILTING.
   b. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.
   c. DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN 1/3 OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



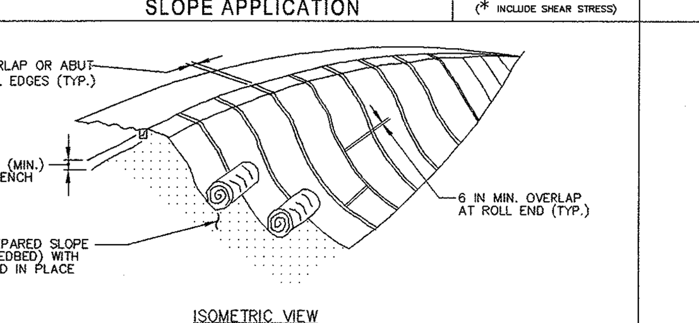
CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

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

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

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



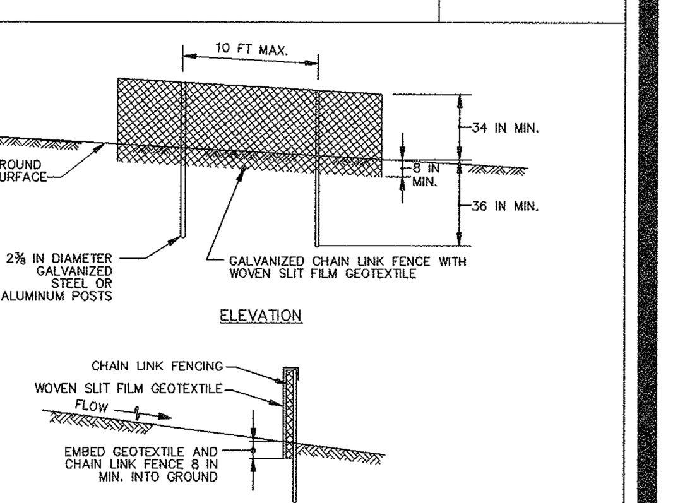
CONSTRUCTION SPECIFICATIONS

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

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

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



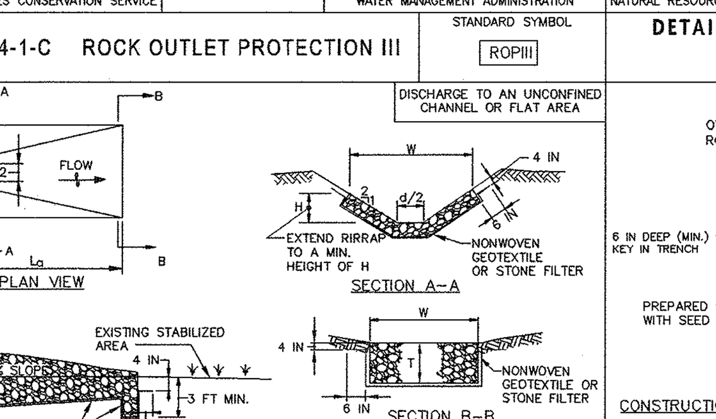
CONSTRUCTION SPECIFICATIONS

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

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

DETAIL D-4-1-C ROCK OUTLET PROTECTION III

STANDARD SYMBOL: ROPIII



RIPRAP	
CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

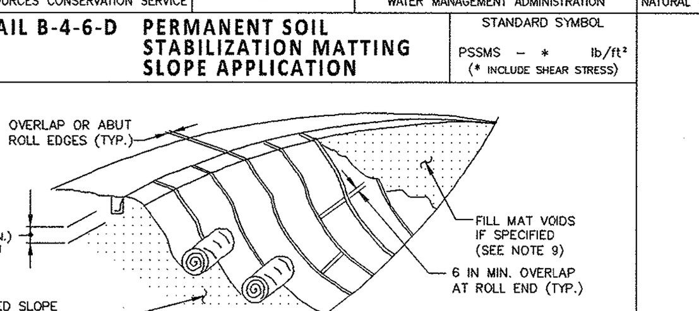
CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (⅜ TO 1½ INCH MINIMUM STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND RIPRAP DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

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

DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL: PSSMS – * lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE 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-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

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

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.

PURPOSE

TO PROVIDE A DESIGNATED LOCATION FOR THE TEMPORARY STORAGE OF SOIL THAT CONTROLS THE POTENTIAL FOR EROSION, SEDIMENTATION, AND CHANGES TO DRAINAGE PATTERNS.

CONDITIONS WHERE PRACTICE APPLIES

STOCKPILE AREAS ARE UTILIZED WHEN IT IS NECESSARY TO SALVAGE AND STORE SOIL FOR LATER USE.

CRITERIA

1. THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
2. THE FOOTPRINT OF THE STOCKPILE MUST BE SIZED TO ACCOMMODATE THE ANTICIPATED VOLUME OF MATERIAL AND BASED ON A SIDE SLOPE RATIO NO STEEPER THAN 2:1. BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.
3. RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE.
4. ACCESS THE STOCKPILE AREA FROM THE UPGRADE SIDE.
5. CLEAR WATER RUNOFF INTO THE STOCKPILE AREA MUST BE MINIMIZED BY USE OF A DIVERSION DEVICE SUCH AS AN EARTH DIKE, TEMPORARY SWALE OR DIVERSION FENCE. PROVISIONS MUST BE MADE FOR DISCHARGING CONCENTRATED FLOW IN A NON-EROSIVE MANNER.
6. WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL, AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
7. STOCKPILES MUST BE STABILIZED IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION REQUIREMENT AS WELL AS STANDARD B-4-1 INCREMENTAL STABILIZATION AND STANDARD B-4-4 TEMPORARY STABILIZATION.
8. IF THE STOCKPILE IS LOCATED ON AN IMPERVIOUS SURFACE, A LINER SHOULD BE PROVIDED BELOW THE STOCKPILE TO FACILITATE CLEANUP. STOCKPILES CONTAINING CONTAMINATED MATERIAL MUST BE COVERED WITH IMPERMEABLE SHEETING.

MAINTENANCE

THE STOCKPILE AREA MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. SIDE SLOPES MUST BE MAINTAINED AT NO STEEPER THAN A 2:1 RATIO. THE STOCKPILE AREA MUST BE KEPT FREE OF EROSION. IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 20 FEET FOR 2:1 SLOPES, 30 FEET FOR 3:1 SLOPES, OR 40 FEET FOR 4:1 SLOPES, BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.

NOTES:

1. WHEN SUPER SILT FENCE IS RUNNING AT A SLOPE GREATER THAN 5% FOR A DISTANCE OVER 50', CURL FENCE UP 2' FOR EVERY 2' OF ELEVATION CHANGE ALONG SILT FENCE.
2. SEDIMENT CONTROL INSPECTOR MAY RELOCATE STABILIZED CONSTRUCTION ENTRANCES.
3. SEE DETAIL B-4-8 ON THIS SHEET FOR STOCKPILE BENCHING REQUIREMENTS.
4. ANY SEDIMENT CONTROL INTERRUPTED BY THE INSTALLATION OF A STORM DRAIN IS TO BE REPAIRED IMMEDIATELY.
5. THE STANDARD SEDIMENT CONTROL PLAN MAY NOT BE USED TO OBTAIN GRADING PERMITS FOR THIS PROJECT.
6. HOUSES MAY NOT BE CONSTRUCTED USING THIS ROAD DRAWING.
7. IF PERMANENT SEEDING IS NEEDED OUTSIDE OF RECOMMENDED SEEDING DATES, USE THE APPROPRIATE TEMPORARY SEEDING MIX AND RESEED ONCE INSIDE OF RECOMMENDED PERMANENT SEEDING DATES.

STANDARD STABILIZATION NOTE:

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

A.) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND

B.) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[signature] 6/20/2019
Chief, Bureau of Highways MK Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

[signature] 7-9-19
Chief, Division of Land Development Date

[signature] 7.8.19
Chief, Development Engineering Division Date

DEVELOPER'S/BUILDER'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 ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

[signature] VP PLOPERTIES DEV LLC 5/14/19
SIGNATURE OF DEVELOPER/BUILDER DATE

AGENT FOR PATAPSCO CROSSING LLC
PRINTED NAME & TITLE

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."

[signature] 5/15/19
ENGINEER'S SIGNATURE DATE

CARL GUTSCHICK 12975 (P.E.)
PRINTED NAME MD REGISTRATION NO.

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

[signature] 5/22/19
HOWARD SOIL CONSERVATION DISTRICT DATE

THIS PLAN IS FOR SEDIMENT CONTROL PURPOSES ONLY

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY: DDS
DRAWN BY: JRC
CHECKED BY: CKG

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975, EXPIRATION DATE: May 26, 2020.

5/15/19 [signature]

STATE OF MARYLAND CARLTON KENNETH GUTSCHICK No. 12975 PROFESSIONAL ENGINEER

SEDIMENT CONTROL NOTES and DETAILS

PATAPSCO CROSSING

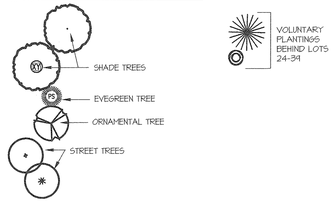
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	20 OF 30

F-19-038

LANDSCAPE LEGEND:



RECREATIONAL OPEN SPACE

FOREST CONSERVATION LEGEND:

PROPERTY LINE

BUILDING (dashed line = existing; solid line = proposed)

EXISTING TREE CANOPY LINE
EXISTING FORESTED TREE LINE
PROPOSED TREE LINE

#7 SPECIMEN TREE & NO. (see table on sheet 23) — SPECIMEN TREE TO REMAIN

#8 SPECIMEN TREE TO BE REMOVED

STREAM & STREAM BANK

STREAM BANK BUFFER (Area = 3.8681 ac.)

NON-TIDAL WETLAND (Area = 8,614 s.f.)

25' WETLAND BUFFER (Area = 1.11± ac.)

152 EXISTING CONTOUR

152 PROPOSED CONTOUR

LOD GRADING LIMIT OF DISTURBANCE (L.O.D.)

STEEP SLOPES (≥ 25%)

FOREST CONSERVATION EASEMENT AREA (honeycomb pattern)

FOREST RETENTION (cross hatching within FCE)

FOREST ACCOUNTED AS CLEARING (square netting pattern)

FCE FOREST CONSERVATION SIGN (along FCE)

FP 100-YR FLOODPLAIN AREA

dd SOIL DELINEATION & TYPE (see table below)

TPF TREE PROTECTION FENCE

SWM & WET UTILITIES (water, sewer and strom drain) EASEMENT AREAS

TABLE 1: MAPPED SOIL TYPES

Map Unit	Soil Description	K-factor (whole soil)	Hydric Rating
GhB	Gladstone loam, 3-8% slopes	0.20	Not Hydric
GgB	Glenelg loam, 3-8% slopes	0.20	Not Hydric
GgC	Glenelg loam, 8-15% slopes	0.20	Not Hydric
GmB	Glenville silt loam, 3-8% slopes	0.37	Predominantly Non-hydric
GnB	Glenville-Baile silt loams, 0-8% slopes	0.37	Partially
MaC	Manor loam, 8-15% slopes	0.24	Not Hydric
MaD	Manor loam, 15-25% slopes	0.24	Not Hydric
UaF	Udorthents, Highway, 0-65% slopes	0.24	Not Hydric

Source: http://websoilsurvey.nrcs.usda.gov (January 20, 2014)

DEVELOPER'S/BULDER'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 LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

Dale M. Smith VP Planning Dev. 5/17/19
NAME DATE

MGMT PATAPSCO CROSSING LLC

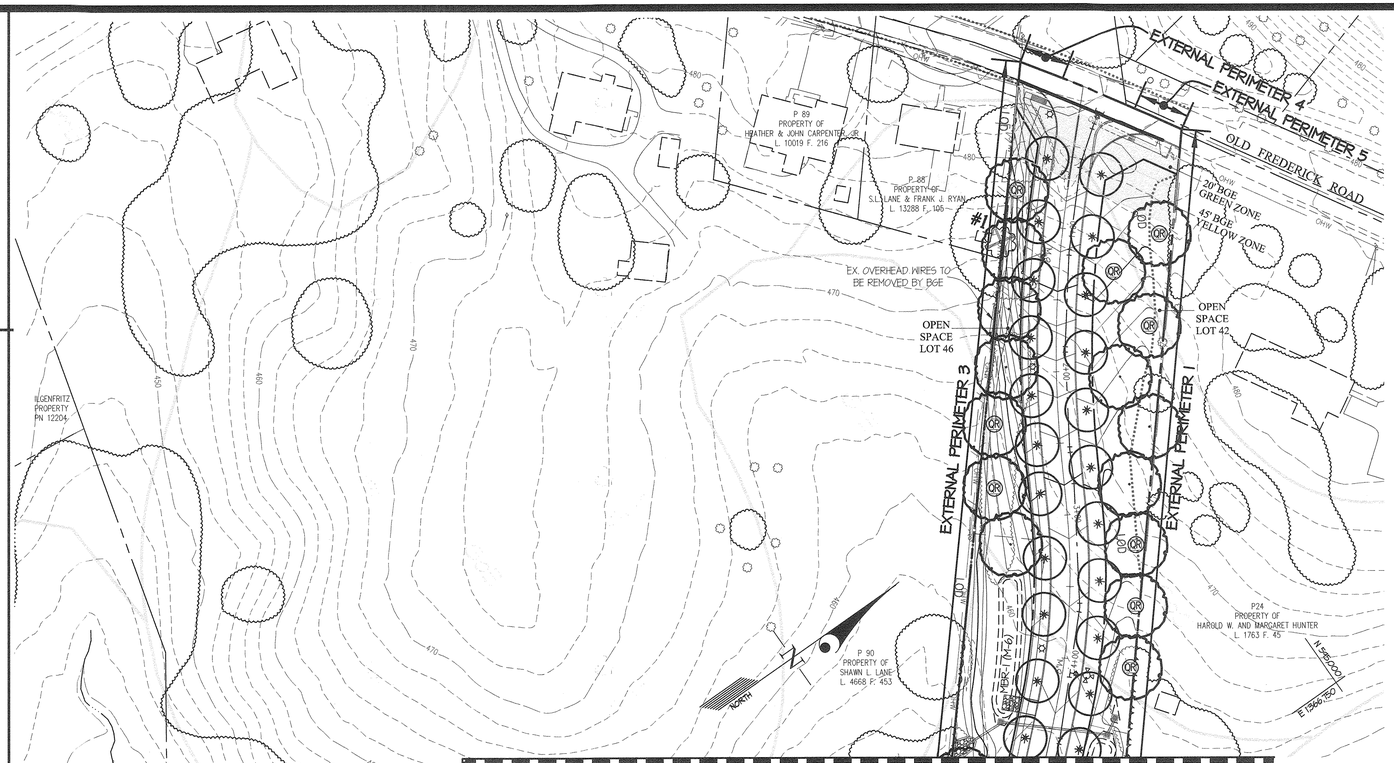
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — MK — 6/20/2019 Date

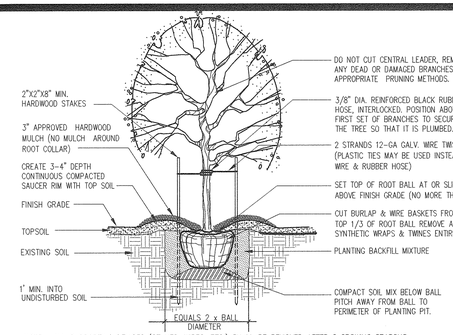
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — 7-9-19 Date

Chief, Development Engineering Division — 7.8.19 Date

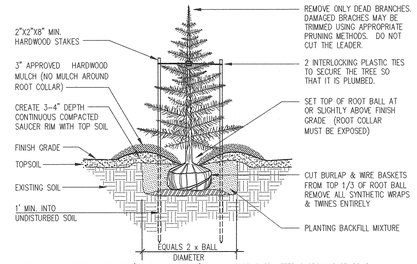


MATCHLINE (SEE SHEET 22 FOR CONTINUATION)



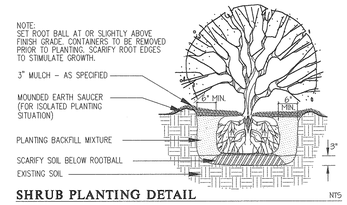
NOTE: ALL SUPPORTING DEVICES (STAKES, WIRES, ETC.) SHALL BE REMOVED AFTER 2 GROWING SEASONS.

DECIDUOUS TREE PLANTING DETAIL
FOR PLANTING MATERIAL UP TO 3 1/2" CALIPER — NTS



NOTE: ALL SUPPORTING DEVICES (STAKES, TIES, ETC.) SHALL BE REMOVED AFTER 2 GROWING SEASONS.

EVERGREEN TREE PLANTING DETAIL — NTS



SHRUB PLANTING DETAIL — NTS

LANDSCAPE NOTES

1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE & THE HOWARD COUNTY LANDSCAPE MANUAL.
2. CONTRACTOR SHALL NOTIFY ALL UTILITIES AT LEAST (5) FIVE DAYS BEFORE STARTING WORK. ALL GENERAL NOTES, ESPECIALLY THOSE REGARDING UTILITIES, ON SHEET NO.1 SHALL APPLY.
3. FIELD VERIFY UNDERGROUND UTILITY LOCATIONS AND EXISTING CONDITIONS BEFORE STARTING PLANTING WORK. CONTACT CONSTRUCTION MANAGER OR OWNER IF ANY RELOCATIONS ARE REQUIRED.
4. PLANT QUANTITIES SHOWN ON THE PLANT LIST ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. IF DISCREPANCIES EXIST BETWEEN QUANTITIES SHOWN ON THE PLAN AND THOSE SHOWN ON THE PLANT LIST, THE QUANTITIES ON THE PLAN SHALL TAKE PRECEDENCE.
5. ALL PLANT MATERIAL SHALL BE FULL, HEAVY, WELL FORMED, SYMMETRICAL, AND CONFORM TO THE A.A.N. SPECIFICATIONS. ALL PLANT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL.
6. AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND TREES LISTED AND APPROVED ON THE LANDSCAPE PLAN SHALL COMPLY WITH THE PROPER HEIGHT REQUIREMENT IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATIONS OF THE REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THE APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO THE APPLICABLE PLANS.
7. ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES BUT NOT OTHERWISE PLANTED, PAVED, OR MULCHED SHALL BE SODDED OR SEEDED IN ACCORDANCE WITH THE PERMANENT SEEDING SPECIFICATION. A MINIMUM OF 4" OF TOPSOIL SHALL BE PROVIDED TO ALL PLANTING AREAS (FOR TOPSOIL SPEC. SEE SHEET 20).
8. THE CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING IF HE/SHE ENCOUNTERS SOIL DRAINAGE CONDITIONS THAT MAY BE DETRIMENTAL TO THE GROWTH OF THE PLANTS.
9. ALL EXPOSED EARTH WITHIN THE LIMITS OF PLANTING BEDS SHALL BE MULCHED WITH SHREDDED HARDWOOD MULCH PER THE PLANTING DETAILS.
10. DO NOT PLANT WITHIN THE PUBLIC WATER, SEWER AND UTILITY EASEMENT.
11. 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
12. SCHEDULE "A" IS PROVIDED FOR LANDSCAPE SURETY CALCULATION PURPOSES. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING SHALL BE POSTED TO THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF **$14,700.00** AS FOLLOWS:

    47 SHADE TREES AT $300/TREE = **$ 14,100.00**
    4 EVERGREEN TREES @ $150/TREE = **$ 600.00**

    FOR LANDSCAPE INSPECTION TO OBTAIN THE RELEASE OF THE SURETY, CONTACT HOWARD COUNTY DEPT. OF PLANNING & ZONING AT 410-313-2350. STREET TREES ARE BONDED SEPARATELY THROUGH DPW AND INSPECTED BY CID.
13. SEE SHEET-23 FOR FOREST CONSERVATION NOTES & CHARTS.

PERIMETER PLANTING - SCHEDULE A

PERIMETER	LAND USE	ADJACENT LAND USE	TYPE OF BUFFER	LINEAR FEET OF ROADWAY FRONTAGE/ PERIMETER	CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) DESCRIBE BELOW IF NEEDED.	CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) DESCRIBE BELOW IF NEEDED.	NUMBER OF PLANTS REQUIRED			NUMBER OF PLANTS PROVIDED		
							SHADE TREES	EVERGREEN TREES	SHRUBS	SHADE TREES	EVERGREEN TREES	SHRUBS
EXTERNAL PERIMETER 1	SFD	RESIDENTIAL (SFD)	'A' Buffer	2,280'	YES, 190' CREDIT (2280-190) = 2,090 LF	NO	35	0	0	35	0	0
EXTERNAL PERIMETER 2	SFD REAR	ROADWAY	'B' Buffer	1,997'	YES, 1,838' CREDIT (1997-1838) = 159 LF	NO	3	4	0	3	4	0
EXTERNAL PERIMETER 3	SFD	RESIDENTIAL (SFD)	'A' Buffer	1,613'	YES, 1,074' CREDIT (1613-1074) = 539 LF	NO	9	0	0	9	0	0
EXTERNAL PERIMETER 4	SFD FRONT	ROADWAY	NONE	32'	NO	NO	0	0	0	0	0	0
EXTERNAL PERIMETER 5	SFD FRONT	ROADWAY	NONE	36'	NO	NO	0	0	0	0	0	0

THE BUFFERS SHOWN IN THE SCHEDULES ARE IN ACCORDANCE WITH THE LANDSCAPE MANUAL, CHAPTER IV, TABLE-I

BUFFER TYPE	LANDSCAPE CHARACTER	SHADE TREES/LF	EVERGREEN/LF	SHRUBS/LF
A	LIGHT BUFFER	1:60	0	0
B	MODERATE BUFFER	1:50	1:40	0
C	HEAVY BUFFER	1:40	1:20	0

PUBLIC STREET TREE REQUIREMENTS

LOCATION	LENGTH OF CURB	NUMBER of TREES REQUIRED	NUMBER of TREES PROVIDED
SUNELL LANE	3,466 LF. (3466ft-(14dev.20))	87 (approx. 40' o.c. each way)	87

STREET TREE GENERAL NOTES:

1. MAINTAIN THE FOLLOWING MINIMUM DISTANCE WHEN PLANTING STREET TREES:
   - 20' FROM STREET LIGHTS.
   - 30' FROM STREET SIGNS AND ROAD INTERSECTIONS.
   - 5' FROM A FIRE HYDRANT OR A STORM DRAIN INLET 10' FROM A DRIVEWAY
2. WHEN THE DISTANCE BETWEEN THE CURB AND THE SIDEWALK IS LESS THAN 6-FT., AND WHERE TREES ARE PLANTED CLOSER THAN 3-FT TO THE SIDEWALK, A BIOLOGIC ROOT BARRIER SHALL BE PROVIDED.

PLANT LIST FOR SUPPLEMENTAL PLANTINGS

SYMBOL	QTY.	NAMES (BOTANICAL / SCIENTIFIC)	SIZE	ROOT/COMMENTS
EVERGREEN TREES (CHOOSE FROM THE FOLLOWING)				
	52	SERBIAN SPRUCE / PICEA OMORIKA RED CEDAR / JUNIPERUS VIRGINIANA 'HILLSPIRE' GREEN GIANT ARBORVITAE / THUJA 'GREEN GIANT'	6-8' HT.	B&B, Single Intact leader
SHRUBS (CHOOSE FROM THE FOLLOWING)				
	99	CARDINAL CANDY LINDEN VIBURNUM / VIBURNUM DILATATUM 'HENNKE' RUBY SPICE SUMMERSWEET / CLETHRA ALNIFOLIA 'RUBY SPICE' BRILLIANT RED CHOKEBERRY / ARONIA ARBUTIFOLIA 'BRILLIANTISSIMA'	30"MIN. HT.	ALL CONTAINERIZED

NOTE: THE SUPPLEMENTAL PLANTINGS BEHIND LOTS 24-39 ARE VOLUNTARY and NO BONDING IS REQUIRED

PLANT LIST FOR LANDSCAPE BUFFERS AND STREET TREES

SYMBOL	QTY.	NAMES (BOTANICAL / SCIENTIFIC)	SIZE	ROOT/COMMENTS
DECIDUOUS TREES				
	29	GINKO BILOBA 'AUTUMN GOLD' / AUTUMN GOLD GINKGO (male only)	2 1/2-3" CAL	B&B (STREET TREE)
	58	ACER RUBRUM 'Armstrong' / ARMSTRONG COLUMNAR RED MAPLE	2 1/2-3" CAL	B&B (STREET TREE)
	7	BETULA NIGRA 'HERITAGE' / HERITAGE RIVER BIRCH	2 1/2-3" CAL	B&B
	17	QUERCUS RUBRA / NORTHERN RED OAK	2 1/2-3" CAL	B&B
	11	QUERCUS PHELLOS / WILLOW OAK	2 1/2-3" CAL	B&B
	12	PLATANUS x ACERIFOLIA 'BLOODSGOOD' / BLOODSGOOD LONDON PLANE	2 1/2-3" CAL	B&B
EVERGREEN TREES				
	4	PINUS STROBUS / EASTERN WHITE PINE		

STATE OF MARYLAND
MICHAEL B. TROSS
No. 21609
REGISTERED LANDSCAPE ARCHITECT
5.15.19

0 25 50 100
GRAPHIC SCALE

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY: DDS
DRAWN BY: JRC
CHECKED BY: CKG

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

FOREST CONSERVATION and LANDSCAPE PLAN

PATAPSCO CROSSING

LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	21 OF 30

F-19-038

MATCHLINE (SEE SHEET 21 FOR CONTINUATION)

Forest Conservation Easement
Area No.1: 0.5749 acre total

0.2330 ac. = FOREST RETENTION (on net tract, credited)
0.3419 ac. = Natural Regeneration (Non-credited)

Forest Conservation Easement
Area No.4: 1.7296 Acres total

1.1646 Ac. = FOREST RETENTION (on net tract, credited)
0.5650 Ac. = Natural Regeneration (non-credited)

NET TRACT FOREST CLEARING TABULATION		
CLEARING No.	Area	
CLR-1	3,430 sf.	0.0788 Ac.
CLR-2	232 sf.	0.0053 Ac.
CLR-3	358,383 sf.	8.2273 Ac.
CLR-4	2,429 sf.	0.0558 Ac.
CLR-5	618 sf.	0.0142 Ac.
CLR-6	167 sf.	0.0038 Ac.
CLR-7	971 sf.	0.0223 Ac.
CLR-8	9,206 sf.	0.2113 Ac.
CLR-9	5,960 sf.	0.1368 Ac.
TOTAL	381,397 sf.	8.7557 Ac.

Part of Forest Conservation Easement
Area No.2: 2.6560 Acres total

2.2418 Ac. = FOREST RETENTION (Total on net tract, credited)
0.0027 Ac. = Forest Retention within 100-yr Floodplain (non-credited)
0.4114 AC. = Natural Regeneration (Total, non-credited)

Forest Conservation Easement
Area No.3: 4.4442 Acres total

4.0965 Ac. = FOREST RETENTION (on net tract, credited)
0.0482 Ac. = Forest Retention within 100-yr Floodplain (non-credited)
0.2995 Ac. = Natural Regeneration (non-credited)

DEVELOPER'S/BULDER'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 LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

NAME: Daniel Sunell, VP. Patapsco Crossing, LLC — 5/14/19

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — MK — 6/20/2019 Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — 7-9-19 Date

Chief, Development Engineering Division — 7.8.19 Date

GRAPHIC SCALE 0 25 50 100

STATE OF MARYLAND — Richard B. Thom — 869 — LANDSCAPE ARCHITECT — 5.15.19

GLW PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY: DDS
DRAWN BY: JRC
CHECKED BY: CKG

DATE	REVISION	BY	APP'R.
2023-4-10	2 REVISE USE IN COMMON DRIVEWAY APRONS & SHIFT STREET TREES	MKJ	
2021-9-16	1 add trash pads		

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

FOREST CONSERVATION and LANDSCAPE PLAN

PATAPSCO CROSSING
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25

Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	22 OF 30

F-19-038

FOREST CONSERVATION GENERAL NOTES

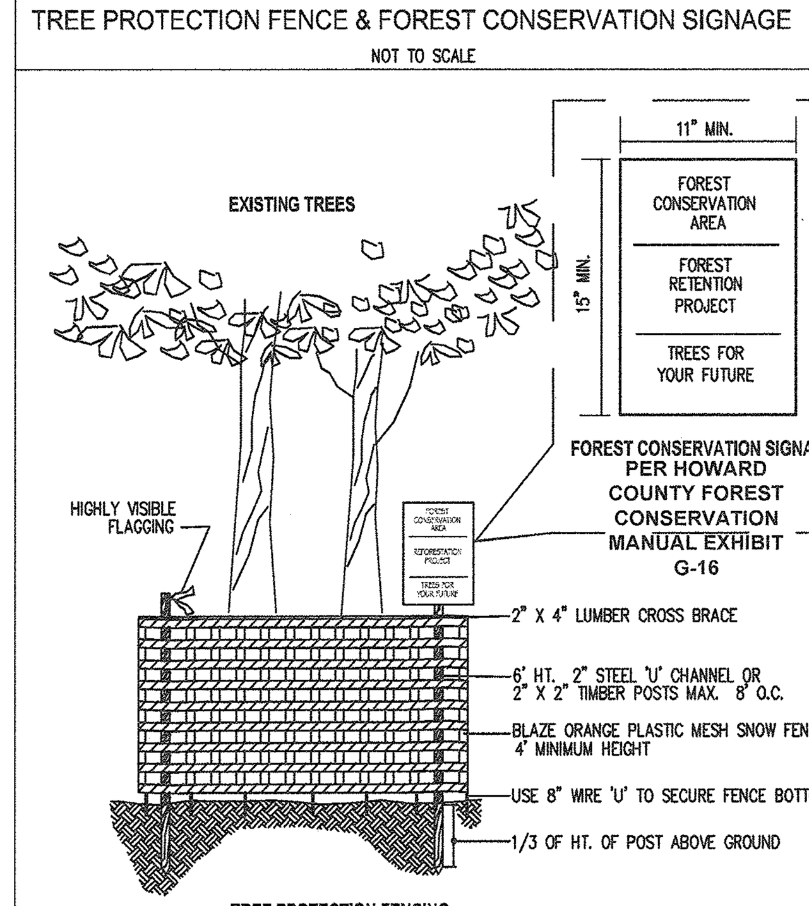
1. THIS FOREST CONSERVATION PLAN IS PROVIDED IN ACCORDANCE WITH THE REQUIREMENTS OF SUBTITLE 12 "FOREST CONSERVATION" OF THE HOWARD COUNTY CODE.
2. IMPLEMENTATION OF THIS PLAN MUST BE PERFORMED BY A CONTRACTOR THAT IS KNOWLEDGEABLE AND EXPERIENCED IN AFFORESTATION/REFORESTATION TECHNIQUES AND PRACTICES.
3. THE OWNER IS RESPONSIBLE FOR A 2-YEAR (MIN.) POST-CONSTRUCTION MAINTENANCE PERIOD WHICH INVOLVES ACTIVITIES NECESSARY TO ENSURE SURVIVAL AND GROWTH OF THE CONSERVATION AREA. TWO INSPECTIONS PER YEAR BY A QUALIFIED PROFESSIONAL AT BEGINNING AND END OF THE GROWING SEASON, ARE RECOMMENDED IN ORDER TO TAKE REMEDIAL STEPS AS NECESSARY. IF, AFTER ONE YEAR, THE POSSIBILITY EXISTS THAT THE ORIGINAL PLANTING (IF APPLICABLE) WILL NOT MEET SURVIVAL RATE STANDARDS, THE APPLICANT MAY CHOOSE TO ESTABLISH REINFORCEMENT PLANTINGS.
4. THE DEVELOPER/BUILDER SHALL NOTIFY (IN WRITING) ALL LOT OWNERS OF THIS DEVELOPMENT OF THE EXISTENCE OF FOREST CONSERVATION AREAS AND THAT DISTURBANCE TO THE FOREST CONSERVATION AREAS OR THE REMOVAL OF FOREST CONSERVATION SIGNAGE IS PROHIBITED
5. AT THE END OF THE POST-CONSTRUCTION MANAGEMENT AND PROTECTION PERIOD, CONTACT THE HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING TO SCHEDULE INSPECTION FOR THE RELEASE OF THE FOREST CONSERVATION SURETY (IF ANY) AND OBLIGATIONS.
6. REFORESTATION/AFFORESTATION TREE PLANTINGS (IF REQUIRED) SHOULD BE INSTALLED IN A CURVILINEAR PATTERN TO FACILITATE MAINTENANCE BUT AVOID A GRID APPEARANCE. EACH SPECIES OF TREE SHALL BE DISTRIBUTED EVENLY WITHIN EACH FOREST CONSERVATION EASEMENT AREA.
7. THE 4 FOREST CONSERVATION EASEMENTS ARE RECORDED WITH THE PLATS ASSOCIATION WITH THIS FINAL PLAN TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED. SEE THE RECORD PLATS ASSOCIATED WITH THIS FINAL PLAN FOR THE BEARING & DISTANCES DEFINING THE 4 FCEs.
8. THE FOLLOWING ARE GENERAL NOTES FROM THE FSD (Prepared by Klebasko Environmental, LLC) FILED WITH ECP-14-059:
   a. Total Site Area: 25.23 acres
   b. Total Forest Area: 16.57 acres
      Stand F1 4.63 acres
      Stand F2 10.21 acres
      Stand F3 1.73 acres
   c. Total Floodplain Area: 0 acres
      Forested Floodplain Area: 0 acres
   d. No rare, threatened, or endangered species were identified on the property during the course of the Forest Stand Delineation field work.
   e. No known historic structures are located on the property.
   f. Forest stand delineation field work conducted by Michael J. Klebasko of Klebasko Environmental, LLC on January 13 and 15, 2014.
   g. Twenty-nine (29) specimen trees exist on or within close proximity to the site and their surveyed locations are denoted on the plan.
   h. A wetland delineation was performed by Michael J. Klebasko of Klebasko Environmental, LLC on August 24, 2012. The delineation revealed that jurisdictional Waters of the U.S. (including wetlands) do exist on the site, and their surveyed limits are demarcated on this plan. Verbal confirmation of the delineation was provided by Jon Romeo of the U.S. Army Corps of Engineers on November 27, 2012 and written confirmation is pending.
   i. Site is located in the Patapsco River Watershed, DNR listing number: 02-13-09-06.

FOREST CONSERVATION PROGRAM SEQUENCES

1. OBTAIN ALL NECESSARY PERMITS.
2. STAKEOUT LIMITS OF DISTURBANCE (LOD) FOR SITE GRADING WORK.
3. FIELD MEETING TO REVIEW AND VERIFY LIMIT OF DISTURBANCE FOR THE SITE GRADING AND CONSTRUCTION.
4. ALL FOREST CONSERVATION EASEMENTS (FCEs) SHALL BE DEVOID OF TRASH, DEBRIS, STRUCTURES, FENCES, UTILITY LINES AND ANY OTHER MANUFACTURED MATERIALS. DO NOT DAMAGE ANY TREES (OUTSIDE THE LOD) IN THE REMOVAL OF THESE MATERIALS.
5. INSTALL FOREST CONSERVATION SIGNS AND FOREST PROTECTION DEVICES (FENCES) ALONG THE PORTION OF THE LIMIT OF DISTURBANCE (THAT INVOLVES CLEARING AND/OR RETENTION OF TREES).
6. COMMENCE SITE CONSTRUCTION.
7. PREPARE SITE SOIL BY MULCHING AND REMOVAL OF TRASH AND WEEDS INCLUDING AN APPLICATION OF HERBICIDES TO CONTROL NOXIOUS WEEDS AND INVASIVE SPECIES.
8. INSTALL FOREST PLANTING (WHERE APPLICABLE) AND THE REMAINDER OF THE CONSERVATION SIGNS ALONG THE EDGE OF THE CONSERVATION EASEMENT. MOVE CONSERVATION SIGNS INSTALLED IN #4 (ABOVE) TO THE EDGE OF THE CONSERVATION EASEMENT.
9. INSPECTION AND CERTIFICATION FOR THE RELEASE OF THE CONSTRUCTION PERIOD OBLIGATIONS; START OF POST-CONSTRUCTION MANAGEMENT PERIOD.
10. POST-CONSTRUCTION MANAGEMENT FOR A PERIOD OF 2 YEARS (MIN.).
11. FINAL INSPECTION AND CERTIFICATION FOR THE RELEASE OF THE OWNER'S FOREST CONSERVATION SURETY (IF ANY) AND OBLIGATIONS.

TREE PROTECTION FENCE & FOREST CONSERVATION SIGNAGE

NOT TO SCALE



TREE PROTECTION FENCING

NOTES:

1. THE TREE PROTECTION FENCING SHOWN ON THESE PLANS IS TEMPORARY AND SHALL REMAIN IN PLACE DURING CONSTRUCTION ACTIVITY, BUT THE FOREST CONSERVATION SIGNAGE IS PERMANENT AND SHALL REMAIN IN PLACE FOR PERPETUITY AROUND THE FOREST CONSERVATION EASEMENTS AFTER THE REMOVAL OF THE TREE PROTECTION FENCING. SEE THE SEDIMENT CONTROL PLAN OF THIS PLAN SET FOR WHERE SUPER SILT FENCE ARE REQUIRED.
2. FOREST CONSERVATION SIGNAGE SHALL BE INSTALLED ALONG THE PERIMETER OF THE CONSERVATION EASEMENT AT 50' TO 100' APART.
3. ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[signature] MK — 6/20/2019
Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

[signature] — 7-9-19
Chief, Division of Land Development — Date

[signature] — 7.8.19
Chief, Development Engineering Division — Date

FOREST CONSERVATION NARRATIVE

THIS 25.2 ACRE SITE IS LOCATED BETWEEN OLD FREDERICK ROAD AND INTERSTATE I-70 WHICH IS ALONG THE SITE'S SOUTHEASTERN BOUNDARY. THE SITE'S BOUNDARY HAS A PIPE STEM PORTION (ABOUT 115' WIDE) THAT PROVIDES ACCESS TO OLD FREDERICK FOR THE EXISTING RESIDENCE AND A FUTURE ROADWAY TO SERVE THE PROPOSED DEVELOPMENT. ON EITHER SIDES OF THE PIPE STEM ARE OTHER R-20 RESIDENTIAL PROPERTIES.

THE SITE IS APPROXIMATELY 66% FORESTED, THERE'S NO FLOODPLAIN AND THERE ARE POCKETS OF WETLANDS ALONG THE 2 STREAMS THAT CROSS THIS PROPERTY NEAR ITS MID AND WESTERN PORTION. A THIRD STREAM HEAD THAT'S EPHEMERAL-INTERMITTENT PROJECTS INTO THE NORTHEASTERN PART OF THE SITE FOR APPROXIMATELY 100'. ALL THE STREAMS ARE PIPED UNDER I-70 AND EVENTUALLY FLOW TO THE PATAPSCO RIVER. THE TOPOGRAPHY PRIMARILY SLOPES FROM OLD FREDERICK ROAD (ON THE HIGH SIDE) TO I-70 (ON THE LOW SIDE), RANGING FROM 5% TO MORE THAN 25% WITH MOST OF THE STEEPER SLOPES ON THE LOW SIDE OF THE SITE. THE PROPOSED DEVELOPMENT IS LOCATED TOWARD THE HIGH SIDE OF THE SITE TO AVOID IMPACTING THE STEEP SLOPE AREAS, THE PERENNIAL STREAM, THE EPHEMERAL STREAM AND THE MAJORITY OF THE EXISTING FORESTED AREAS. CROSSING THE INTERMITTENT STREAM IN THE MID PART OF THE SITE IS UNAVOIDABLE SINCE THE BULK OF THIS SITE'S ACREAGE IS ON THE NORTHEAST SIDE OF THAT INTERMITTENT STREAM. NO FORESTATION PLANTING IS REQUIRED FOR THIS PROJECT BECAUSE THE PROPOSED FOREST RETENTION IS ABOVE THE BREAK-EVEN POINT.

FOREST CONSERVATION CONSTRUCTION PERIOD PROGRAM

1. THE LIMIT OF FOREST RETENTION SHALL BE STAKED AND FLAGGED.
2. A PRE-CONSTRUCTION MEETING AT THE SITE SHOULD BE HELD TO CONFIRM THE LIMITS OF CLEARING SPECIFIED. THE MEETING SHOULD INCLUDE THE OWNER OR THE OWNER'S REPRESENTATIVE, THE ON-SITE FOREMAN IN CHARGE OF LAND DISTURBANCE, THE ENVIRONMENTAL CONSULTANT AND THE APPROPRIATE HOWARD COUNTY INSPECTORS.
3. FOREST PROTECTION DEVICES AND SIGNS (SEE DETAILS) SHALL BE INSTALLED PRIOR TO ANY CLEARING OR GRADING. THE PROTECTION DEVICES AND SIGNS SHALL BE MAINTAINED DURING THE ENTIRE CONSTRUCTION PERIOD. NONE OF THE DEVICES SHALL BE ANCHORED OR ATTACHED IN ANY WAY TO THE TREES TO BE SAVED.
4. EQUIPMENT, VEHICLES AND BUILDING MATERIALS SHALL NOT BE WITHIN THE PROTECTED AREA. ACTIVITIES STRICTLY TO IMPLEMENT ANY REFORESTATION PLANTING AND MAINTENANCE (I.E. WATERING, FERTILIZING THINNING, PRUNING, REMOVAL OF DEAD AND DISEASED TREES WHERE NECESSARY, ETC.) OF THE CONSERVATION AREA ARE PERMITTED. CLEARING FOR THE PURPOSE OF SODDING OR PLANTING GRASS IS NOT PERMITTED WITHIN THE FOREST CONSERVATION AREAS ONCE THEY'RE ESTABLISHED.
5. AT THE END OF THE CONSTRUCTION PERIOD, THE DESIGNATED QUALIFIED PROFESSIONAL SHALL CONVEY TO THE ADMINISTRATOR OF THE HOWARD COUNTY FOREST CONSERVATION PROGRAM CERTIFICATION THAT ALL FOREST RETENTION AREAS HAVE BEEN PRESERVED, ALL REFORESTATION AND/OR AFFORESTATION PLANTINGS (IF APPLICABLE) HAVE BEEN INSTALLED AS REQUIRED BY THE FOREST CONSERVATION PLAN, AND THAT ALL PROTECTION MEASURES REQUIRED FOR THE POST-CONSTRUCTION PERIOD HAVE BEEN INSTALLED. UPON REVIEW OF THE FINAL CERTIFICATION DOCUMENT FOR COMPLETENESS AND ACCURACY, THE PROGRAM COORDINATOR WILL NOTIFY THE OWNER OF RELEASE FROM THE CONSTRUCTION PERIOD OBLIGATIONS. THE 2-YEAR (MIN.) POST-CONSTRUCTION MANAGEMENT AND PROTECTION PERIOD THEN COMMENCES.

FOREST CONSERVATION POST-CONSTRUCTION MANAGEMENT PRACTICES

MANY OF THE PROTECTION AND MANAGEMENT PRACTICES FOR THE CONSTRUCTION PERIOD MUST BE CONTINUED FOR AT LEAST 2 GROWING SEASONS FOLLOWING OFFICIAL NOTIFICATION OF COMPLETION OF THE DEVELOPMENT (OR A SPECIFIC PHASE OF THE OVERALL DEVELOPMENT IF PHASING HAS BEEN APPROVED). THE RESPONSIBILITY TO MEET THE SURVIVAL STANDARDS REQUIRES ADEQUATE WATERING, REPLANTING, THINNING OR OTHER APPROPRIATE MEASURES. ALSO, INAPPROPRIATE USES OR INTRUSIONS MUST NOT OCCUR, A RESPONSIBILITY THAT REQUIRES THE KNOWLEDGE AND COOPERATION OF THE NEW OCCUPANTS OF THE DEVELOPMENT.

MINIMUM TWO GROWING SEASON POST-CONSTRUCTION MANAGEMENT PROGRAM

A POST-CONSTRUCTION MANAGEMENT PROGRAM MUST BE APPROVED AS PART OF THE ORIGINAL FOREST CONSERVATION PLAN AND REMAIN IN EFFECT FOR A MINIMUM OF TWO GROWING SEASONS. A LONGER PERIOD MAY BE REQUIRED FOR SPECIFIC STRATEGIES (E.G. NATURAL REGENERATION NEAR HIGH USE AREAS WHOSE LONG-TERM VIABILITY MAY TAKE LONGER TO CONFIRM.)

IMPLEMENTATION OF THE POST-CONSTRUCTION MANAGEMENT PROGRAM MUST BE SUPERVISED BY A QUALIFIED PROFESSIONAL WHO SHOULD INSPECT THE STATUS OF ALL FOREST RETENTION, REFORESTATION AND AFFORESTATION AREAS AT SPECIFIED TIMES DURING THE LIFE OF THE POST CONSTRUCTION AGREEMENT AND WHO MUST CERTIFY THAT THE REQUIRED SURVIVAL RATES HAVE BEEN ACHIEVED IN ACCORDANCE WITH THE AGREEMENT PRIOR TO RELEASE OF BONDS.

THERE ARE FIVE PRIMARY COMPONENTS OF THE POST-CONSTRUCTION PROGRAM: INSPECTION, MANAGEMENT OF RETAINED OR NEW PLANTINGS, REPLACEMENT OF DEAD OR DAMAGED MATERIAL WHEN NECESSARY, EDUCATION OF NEW OCCUPANTS OF THE DEVELOPMENT AND FINAL INSPECTION AND RELEASE OF DEVELOPER FROM ADDITIONAL RESPONSIBILITIES.

INSPECTION

INSPECTIONS SHOULD BE CARRIED OUT AT THE BEGINNING AND END OF THE GROWING SEASON TO PINPOINT ANY PROBLEMS, MONITOR SURVIVAL RATES, AND SPECIFY REMEDIAL ACTIONS NEEDED TO CORRECT EXISTING PROBLEMS. APPENDIX J HAS AN EXAMPLE OF AN INSPECTION REPORT CHECKLIST.

MANAGEMENT OF FOREST CONSERVATION AREAS

POST CONSTRUCTION MANAGEMENT INCLUDES: MAINTENANCE OF ALL FENCES, SIGNS OR OTHER DEVICES DELINEATING FOREST CONSERVATION AREAS AND OTHER MEASURES. SUCH OTHER MEASURES INCLUDE: NEEDED WATERING; REMOVAL OF DEAD OR DAMAGED MATERIAL AND CONTROL OF UNDESIRABLE COMPETING SPECIES; THINNING OR PRUNING TO ENCOURAGE PROPER GROWTH; FERTILIZING, IF NECESSARY; AND CONTROL OF PESTS. SPECIFIC PRACTICES WILL DEPEND ON THE WEATHER PREVAILING DURING THE POST CONSTRUCTION PERIOD, THE TYPES OF PLANT MATERIAL AND PLANTING METHODS USED, AND SPECIFIC SITE CONDITIONS SUCH AS PROXIMITY TO HIGH USE AREAS. IT IS THE RESPONSIBILITY OF THE POST-CONSTRUCTION PLAN SUPERVISOR TO TAKE APPROPRIATE ACTIONS AS NEEDED. THIS MANUAL, THEREFORE, DOES NOT CITE REQUIRED MEASURES. SURVIVAL SUCCESS, NOT FULFILLMENT OF A GIVEN SERIES OF TASKS, WILL BE THE MEASURE OF CONFORMANCE TO THE NEEDS OF THE POST-CONSTRUCTION PROGRAM.

NEWLY PLANTED TREES, WHETHER THEY ARE SEEDLINGS OR 4" CALIPER TRANSPLANTS, HAVE BASIC NEEDS. SOME OF THESE NEEDS CAN BE MET BY NATURE ALONE; OTHERS MAY REQUIRE HUMAN INTERVENTION. (THE THREE MOST LIKELY CAUSES OF DEATH FOR NEWLY PLANTED TREES ARE DROUGHT, COMPETING VEGETATION AND DEER.) THE BASIC MAINTENANCE REGIME SHOULD BE DETERMINED BY ON-SITE ENVIRONMENTAL CONDITIONS, STRUCTURE AND NUTRIENT CONTENT OF SOIL, AND RAINFALL. UNDERSTANDING THESE FACTORS AND THE SPECIFIC NEEDS OF THE SPECIES AND SIZE OF PLANTS USED WILL RESULT IN A HEALTHY FORESTED AREA AT THE END OF THE MAINTENANCE PERIOD. APPENDIX H CONTAINS GUIDELINE SPECIFICATIONS FOR MAINTENANCE OF FOREST CONSERVATION AREAS AND FOCUSES ON THE FOLLOWING CRITICAL NEEDS:

- WATERING
- FERTILIZING
- CONTROL OF COMPETING VEGETATION
- PROTECTION FROM PESTS, DISEASES AND MECHANICAL INJURY.

REPLACEMENT OF PLANT MATERIAL

AN INSPECTION SHALL TAKE PLACE AT THE END OF YEAR ONE OR BEFORE THE SECOND GROWING SEASON TO EVALUATE SURVIVAL RATES WITH REFERENCE TO THE SURVIVAL REQUIRED AT THE END OF THE TWO YEAR PERIOD. THIS IS AN OPPORTUNITY TO AVOID THE PENALTY FOR VIOLATING SURVIVAL RATE STANDARDS. THIS INSPECTION SHOULD ESTIMATE SURVIVAL POTENTIAL BASED ON THE FOLLOWING:

- VIGOR AND THREAT OF COMPETING VEGETATION (I.E. IF SEEDLINGS ARE FREE TO GROW)
- STRUCTURE
- GROWTH RATE
- CROWN DEVELOPMENT
- TRUNK HEALTH

IF, AFTER ONE YEAR, THE POSSIBILITY EXISTS THAT THE ORIGINAL PLANTING WILL NOT MEET SURVIVAL STANDARDS, THE APPLICANT MAY CHOOSE TO ESTABLISH REINFORCEMENT PLANTINGS. IF PLANT MORTALITY OF REFORESTATION OR AFFORESTATION EXCEEDS 10% OF PLANTED MATERIAL AT THE END OF THE FIRST GROWING SEASON, SUCH MATERIAL SHOULD BE REPLACED TO BRING THE TOTAL NUMBER OF TREES TO 90% OF THE ORIGINAL TOTAL. SUCH MATERIAL SHALL BE INSTALLED BY THE BEGINNING OFTHE SECOND GROWING SEASON. IF AT THE END OF THE SECOND GROWING SEASON, SURVIVAL RATE DROPS BELOW 75%, SUCH MATERIAL AS NEEDED TO GUARANTEE AN 75% SURVIVAL RATE BY THE END OF THE THIRD GROWING SEASON SHALL BE INSTALLED.

EDUCATION OF NEW OCCUPANTS

THE OCCUPANTS OF A NEW DEVELOPMENT, WHETHER OWNERS OR TENANTS, MUST AVOID ACTIVITIES THAT DESTROY OR DEGRADE PROTECTED FOREST RESOURCES. THE POST-CONSTRUCTION MANAGEMENT PROGRAM MUST THEREFORE INCLUDE STEPS TO EDUCATE THE NEW OCCUPANTS ABOUT THE PROPER USE OF FOREST CONSERVATION AREAS, ABOUT THE NEED FOR THE DEVELOPER TO CARRY OUT THE POSTCONSTRUCTION MANAGEMENT PROGRAM, AND THE EVENTUAL TRANSFER OF LONG-TERM RESPONSIBILITIES TO THE OWNERS OR OCCUPANTS. SUCH EDUCATIONAL MATERIAL SHOULD INCLUDE A PLAN LOCATING ALL PROTECTED AREAS ON THE SITE AND A DESCRIPTION OF PERMITTED AND PROHIBITED ACTIVITIES WITHIN OR AFFECTING SUCH AREAS. THE FORMAT AND METHOD OF CONVEYING SUCH INFORMATION IS LEFT TO THE DISCRETION OF THE DEVELOPER.

FINAL INSPECTION AND RELEASE OF OBLIGATIONS

AT THE END OF THE POST-CONSTRUCTION MANAGEMENT AND PROTECTION PERIOD, THE DESIGNATED RESPONSIBLE PROFESSIONAL SHALL CONVEY TO THE DEPARTMENT OF PLANNING AND ZONING CERTIFICATION THAT ALL FOREST CONSERVATION AREAS HAVE REMAINED INTACT OR HAVE BEEN RESTORED TO THE APPROPRIATE CONDITION, THAT THE STIPULATED SURVIVAL RATES HAVE BEEN ACHIEVED, AND THAT ANY PERMANENT PROTECTION MEASURES REQUIRED BY THE PLAN ARE IN PLACE. APPENDIX J CONTAINS A SAMPLE FORMAT FOR SUCH CERTIFICATION.

UPON REVIEW OF THE FINAL CERTIFICATION DOCUMENT FOR COMPLETENESS AND ACCURACY, THE COUNTY WILL NOTIFY THE DEVELOPER OF RELEASE OF SURETY AND ALL FUTURE OBLIGATIONS. THE DEVELOPER'S LAST OFFICIAL RESPONSIBILITY WILL BE TO TRANSMIT A COPY OF THIS NOTIFICATION TO THE OWNER(S) OF THE PROPERTY(IES). SUCH TRANSMITTAL WILL SERVE AS OFFICIAL NOTICE TO OWNERS OF THEIR ASSUMPTION OF FULL RESPONSIBILITY FOR ALL FUTURE FOREST CONSERVATION OBLIGATIONS.

FOREST CONSERVATION WORKSHEET

Project Name: PATAPSCO CROSSING (L.18476 F.223) — DPZ File No.: F-19-038

		Acreage
1 Site Data		
A.	Gross Site Area (includes Parcel 'A', **0.47** ac, deeded to Howard Co.)	25.227
B.	Area within 100-yr floodplain, if any	0.067
C.	Area of existing easement for major utility transmission lines, if any	0.000
D.	Area of external public road (frontage) dedication, if any	0.000
E.	Net Tract Area	25.160
F.	Land Use Category	Residential - Suburban
2 Input Data		
A.	Net Tract Area	25.160
B.	Reforestation Threshold (percent of net tract = 20 %)	5.032
C.	Afforestation Threshold (percent of net tract = 15 %)	3.774
D	Existing Forest on Net Tract Area	16.492
E.	Forest Clearing on Net Tract Area	8.756
F.	Forest Retention on Net Tract Area	7.736
3 Reforestation and/or Afforestaion Calculations		
A.	Net tract forest clearing **above** reforestation threshold, if applicable	8.756
B.	Net tract forest clearing **below** reforestation threshold, if applicable	0.000
C.	Planting up to afforestation threshold, if applicable	0.000
D.	Reforestation planting required for clearing **above** threshold (3A x 0.25)	2.189
E,	Reforestation planting required for clearing **below** threshold (3B x 2.0)	0.000
F.	Net tract forest retention above reforestation threshold (2F-2B, available credit)	2.704
G.	Total reforestation planting required (3C+3D+3E - 3F)	**0.000**
4 Break Even Point (BEP) Calculations		
A.	Maximum clearing allowed with no reforestation planting (2D-2B)/1.25	9.168
B.	Minimum net tract retention at BEP 0.20(2D-2B)+2B or 2D-4A	7.324
5 Forest Conservation Required		
A.	Forest Retention Area (2F)	**7.736**
B.	Forest Planting Area (3G)	**0.000**
C.	Total minimum FCE required for retention and reforestation	**7.736**
D	If 2F>4B, then there's forest retention acreage availabe for banking (2F-4B)	**0.412**

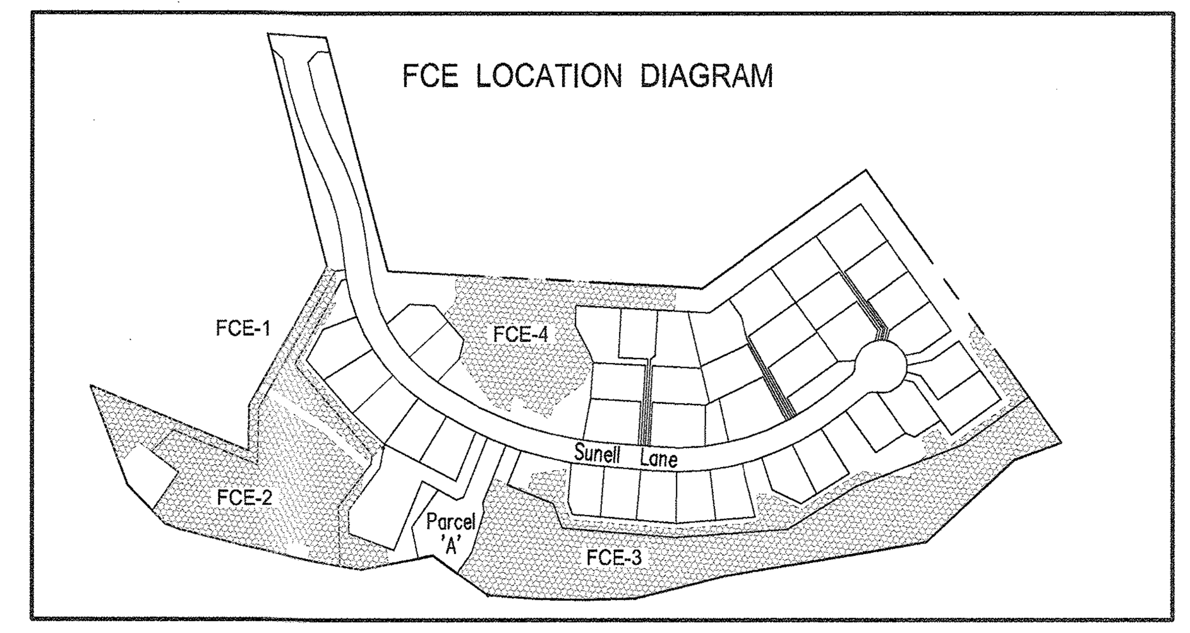
FOREST CONSERVATION OBLIGATION SUMMARY

THE FOREST CONSERVATION REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL FOR THIS SUBDIVISION ARE MET BY THE CREATION OF FOUR (4) FOREST CONSERVATION EASEMENTS THAT CONTAIN MORE THAN THE BREAK-EVEN POINT MINIMUM ACREAGE FOR CREDITED RETENTION.

THE MAXIMUM CLEARING AREA AT THE BREAK-EVEN POINT FOR THIS SITE IS 9.17± ACRES AND THE PROPOSED CLEARING AREA FOR THIS DEVELOPMENT IS LESS THAN THAT AMOUNT. THE MINIMUM RETENTION AREA AT THE BREAK-EVEN POINT IS 7.32± ACRES AND THE PROPOSED RETENTION AREA IS 7.73± ACRES; THEREFORE, EXCESS RETENTION (7.73-7.32 = 0.41) IS AVAILABLE FOR BANKING. NO SURETY IS REQUIRED FOR PROJECT.

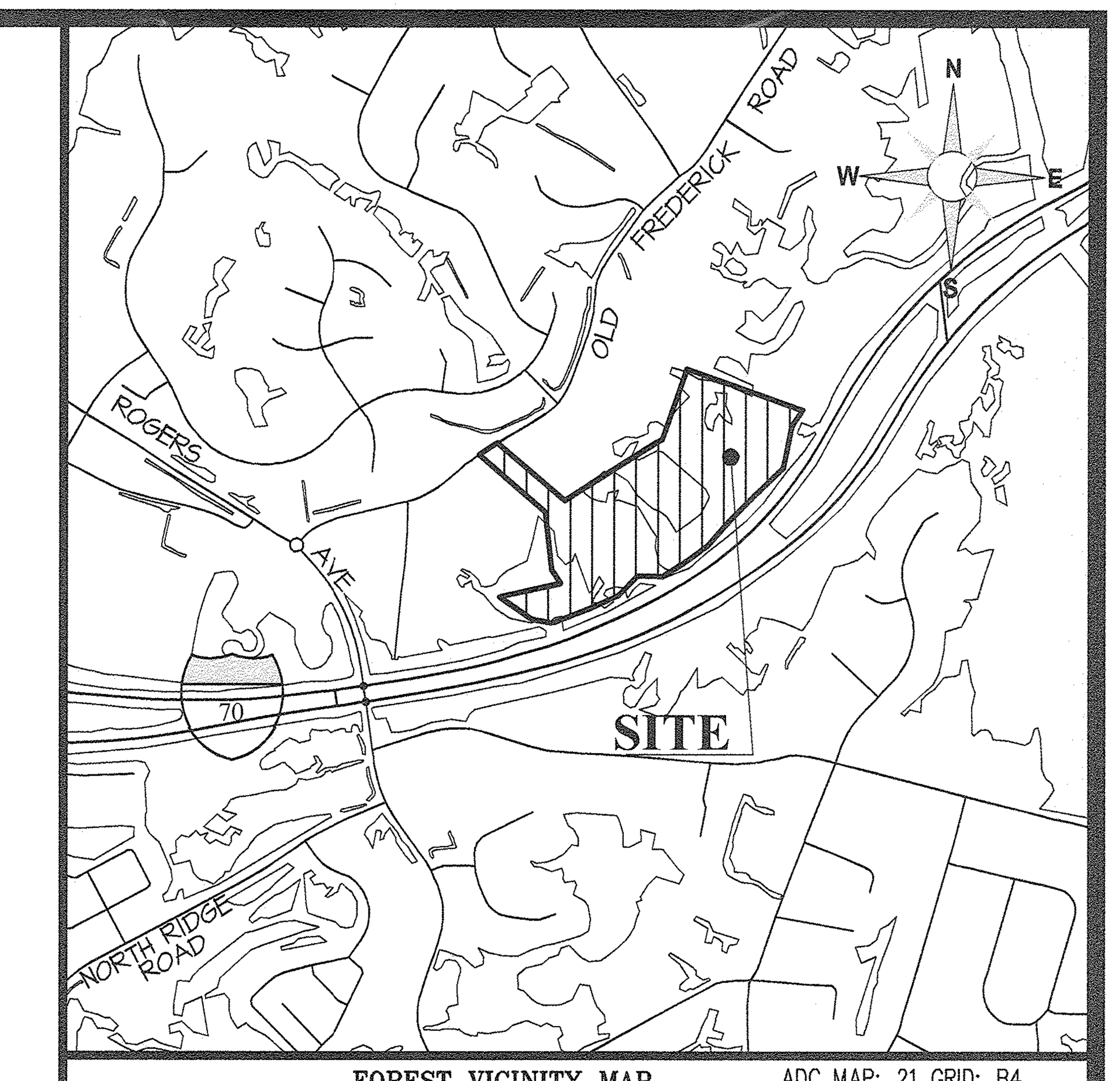
FOREST CONSERVATION ACREAGE TABULATION

Forest Conservation Easement No.	Credited Retention Area	Non-Credited Retention within 100-yr Floodplain	Natural Regeneration Area	Total Forest Conservation Easement Area (non-credited portion in parenthesis)
FCE-1	0.2330	0	0.3419	0.5749 (0.3419)
FCE-2	2.2418	0.0027	0.4114	2.6560 (0.4142)
FCE-3	4.0965	0.0482	0.2995	4.4442 (0.3477)
FCE-4	1.1646	0	0.5650	1.7296 (0.5650)
TOTAL	7.7360	0.0510	1.6178	9.4047 (1.6688)



FOREST BANK TRACKING CHART

DPZ File No.	PROJECT NAME	DEBIT to CONSERVATION BANK AREA			Remaiming Retention Credit Area
		Amount Used	At Project Name & DPZ File No.		
F-19-038	Patapsco Crossing	n/a	n/a		0.41 Ac.



FOREST VICINITY MAP — ADC MAP: 21 GRID: B4
SCALE: 1" = 1,000'

TABLE 2: SPECIMEN TREE TABLE

No.	Common Name	Scientific Name	DBH (inches)	Condition Rating	Condition /Comments
(1)	Silver Maple	*Acer saccharinum*	35	Poor	broken off main leader, broken limbs
2	Yellow Poplar	*Liriodendron tulipifera*	30	Fair	broken limbs, vine cover (poison ivy)
3	Yellow Poplar	*Liriodendron tulipifera*	34	Good	
4	Yellow Poplar	*Liriodendron tulipifera*	35	Good	
5	Silver Maple	*Acer saccharinum*	45	Fair	critical root zone disturbance
(6)	Pin Oak	*Quercus palustris*	31	Good	
(7)	Yellow Poplar	*Liriodendron tulipifera*	33	Good	
(8)	Yellow Poplar	*Liriodendron tulipifera*	35	Good	
(9)	Yellow Poplar	*Liriodendron tulipifera*	38	Good	
(10)	Yellow Poplar	*Liriodendron tulipifera*	38	Good	
(11)	Yellow Poplar	*Liriodendron tulipifera*	30	Fair	poor form, split at base with twin
(12)	Yellow Poplar	*Liriodendron tulipifera*	32	Fair	leaning
(13)	Yellow Poplar	*Liriodendron tulipifera*	35	Good	
14	Yellow Poplar	*Liriodendron tulipifera*	45	Poor	twin, split @ 8 feet, weak crotch
15	Yellow Poplar	*Liriodendron tulipifera*	39	Good	
16	Yellow Poplar	*Liriodendron tulipifera*	30	Good	
17	Yellow Poplar	*Liriodendron tulipifera*	38	Good	
(18)	Yellow Poplar	*Liriodendron tulipifera*	36	Good	
(19)	Yellow Poplar	*Liriodendron tulipifera*	38	Good	
(20)	Yellow Poplar	*Liriodendron tulipifera*	30	Fair	slight lean, heavy vine cover
(21)	Yellow Poplar	*Liriodendron tulipifera*	30	Good	
(22)	Yellow Poplar	*Liriodendron tulipifera*	31	Good	
(23)	Yellow Poplar	*Liriodendron tulipifera*	32	Good	
(24)	Yellow Poplar	*Liriodendron tulipifera*	30	Good	
(25)	Yellow Poplar	*Liriodendron tulipifera*	30	Very Poor	broken off twin; trunk damage
(26)	Yellow Poplar	*Liriodendron tulipifera*	38	Fair	twin, split @ 8 feet, vine cover
27	Silver Maple	*Acer saccharinum*	56	Fair	critical root zone disturbance, broken limbs
28	Silver Maple	*Acer saccharinum*	55 (est.)	Poor	critical root zone disturbance, broken limbs, crown dieback
29	Silver Maple	*Acer saccharinum*	38	Fair	multi-trunk, split @ base, poor structure, some broken limbs

FOREST STAND ANALYSIS TABLE

Applicant: Hailey Development ***Project Name:*** Patapsco Crossing ***Submission No.***__________

KEY	A. TYPE OF COMMUNITY	B. AREA (acres)	C. SOIL INFORMATION: 1. Soil Types	2. Typical forest cover for soil type	3. Woodland Suitability Index	4. Habitat value for soil type	D. EXISTING VEGETATION (Dominant Species & Approx. %)	E. STAND CHARACTERISTICS: 1. Size (Diameter)	2. Age	3. General Conditions	F. FOREST AREA IN SENSITIVE ENVIRONMENTS
F1	Red Maple Black Cherry Sassafras	4.63 ac.	GbB GgC GmB GnB MaC MaD	[This information is not available with the updated soil survey]	[This information is not available with the updated soil survey]	[This information is not available with the updated soil survey]	***Canopy:*** Red Maple (55%) Black Cherry (20%) Sassafras ((15%) Yellow Poplar (10%) Elm (<5%) White Ash (<5%) ***Understory*** American Elm (5%) Black Cherry (20%) Sassafras (20%) Red Maple (50%) ***Herbaceous:*** Wineberry (25%) Barberry (15%) Japanese honeysuckle (15%) Bittersweet (25%) Indian mock strawberry (10%) Stilt Grass (10%) Fox Grape (1%)	4-15" 4-13" 5-13" 5-14" 3-9" 10-17"	30-40 yrs.	Good -numerous invasive species	steep slopes: 1.21 ac. wetlands: 0.02 ac wetland buffers: 0.31 ac. 100-yr floodplain: 0.00 ac. stream buffers: 1.83 ac.
F2	Yellow Poplar	10.21 ac.	GbB GgC GmB GnB MaD	[This information is not available with the updated soil survey]	[This information is not available with the updated soil survey]	[This information is not available with the updated soil survey]	***Canopy:*** Yellow Poplar (35%) Red Maple (30%) Black Cherry (15%) Silver Maple (10%) ***Understory*** Flowering Dogwood (10%) Black Cherry (30%) Mockernut Hickory (5%) American Beech (5%) Red Maple (40%) ***Herbaceous:*** Wineberry (15%) Barberry (15%) Japanese honeysuckle (10%) Bittersweet (35%) Stilt Grass (15%) Wild Onion (5%)	15-35" 5-13" 5-13" 10-20"	80-100 yrs.	Good -numerous invasive species	steep slopes: 0.59 ac. wetlands: 0.07 ac wetland buffers: 0.34 ac. 100-yr floodplain: 0.00 ac. stream buffers: 0.76 ac.
F3	Virginia Pine	1.73 ac.	GgC GmB GnB MaD	[This information is not available with the updated soil survey]	[This information is not available with the updated soil survey]	[This information is not available with the updated soil survey]	***Canopy:*** Virginia Pine (60%) Red Maple (10%) Sassafras (20%) Eastern Red Cedar (<5%) Big-tooth Aspen (<5%) ***Understory*** Flowering Dogwood (5%) ***Herbaceous:*** Stilt Grass (35%)	5-15" 3-10" 3-10" <6" <6"	20-30 yrs.	Fair High percentage of Virginia Pine	steep slopes: 0.32 ac. wetlands: 0.00 ac wetland buffers: 0.00 ac. 100-yr floodplain: 0.00 ac. stream buffers: 0.00 ac.

NOTES:

A. THE SPECIMEN TREE TABLE AND FSA TABLE ARE FROM THE FOREST STAND DELINEATION (FSD) PREPARED BY KLEBASKO ENVIRONMENTAL, LLC and FIELD WORK PERFORMED BY SAME ON JANUARY 13 AND 15, 2014. THE FSD IS FILED WITH ECP-14-059.

B. THE SPECIMEN TREES TO BE REMOVED ARE DESIGNATED BY A CIRCLED NUMBER (SEE WP-15-011).

C. WP-15-011, A WAIVER REQUEST FROM SUBDIVISION SECTION 16.1205(a)(7), PROHIBITING REMOVAL OF SPECIMEN TREES WAS APPROVED ON JULY 30, 2014 UNDER THE FOLLOWING CONDITIONS:
   1. REMOVAL IS APPROVED FOR 18 OF 29 SPECIMEN TREES AS IDENTIFIED ON THE WAIVER PETITION EXHIBIT.
   2. THE DEVELOPMENT PROPOSES THE PLACEMENT OF APPROXIMATELY 13 ACRES IF EXISTING FOREST AND AFFORESTATION INTO FOREST CONSERVATION EASEMENT AREAS. IN ADDITION TO PERIMETER LANDSCAPING, STORMWATER MANAGEMENT SCREENING AND STREET TREES WILL BE PROVIDED. ALL PROPOSED PLANTINGS AND CREATION OF FOREST CONSERVATION EASEMENT AREAS WILL SERVE TO PROVIDE AN ALTERNATE PROPOSAL FOR THE REMOVAL OF 18 SPECIMEN TREES.
   3. COMPLIANCE WITH THE SUBDIVISION REVIEW COMMITTEE AGENCY COMMENTS FOR SP-15-002 SUBDIVISION PLAN.

STATE OF MARYLAND — Michael B. Tran — REGISTERED LANDSCAPE ARCHITECT — 938
[signature] 5.15.19

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY: mbt
DRAWN BY: klp
CHECKED BY: mbt

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

FOREST CONSERVATION NOTES & CHARTS

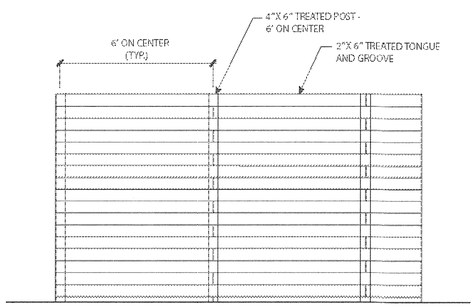
PATAPSCO CROSSING

LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25

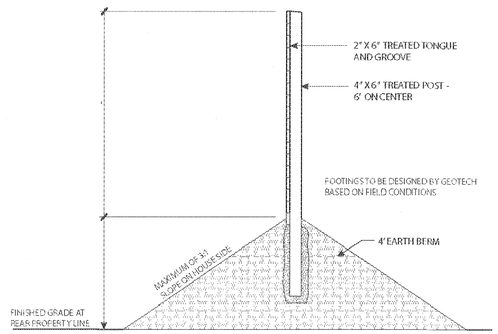
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

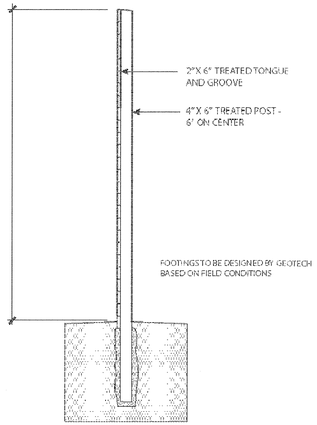
SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	23 OF 30



HOUSE SIDE ELEVATION



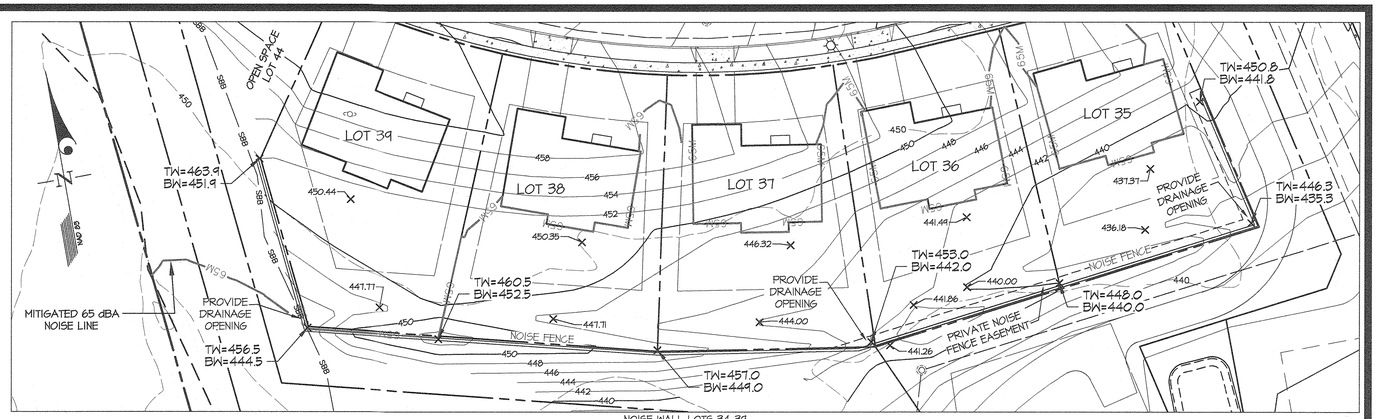
WALL WITH BERM
SECTION



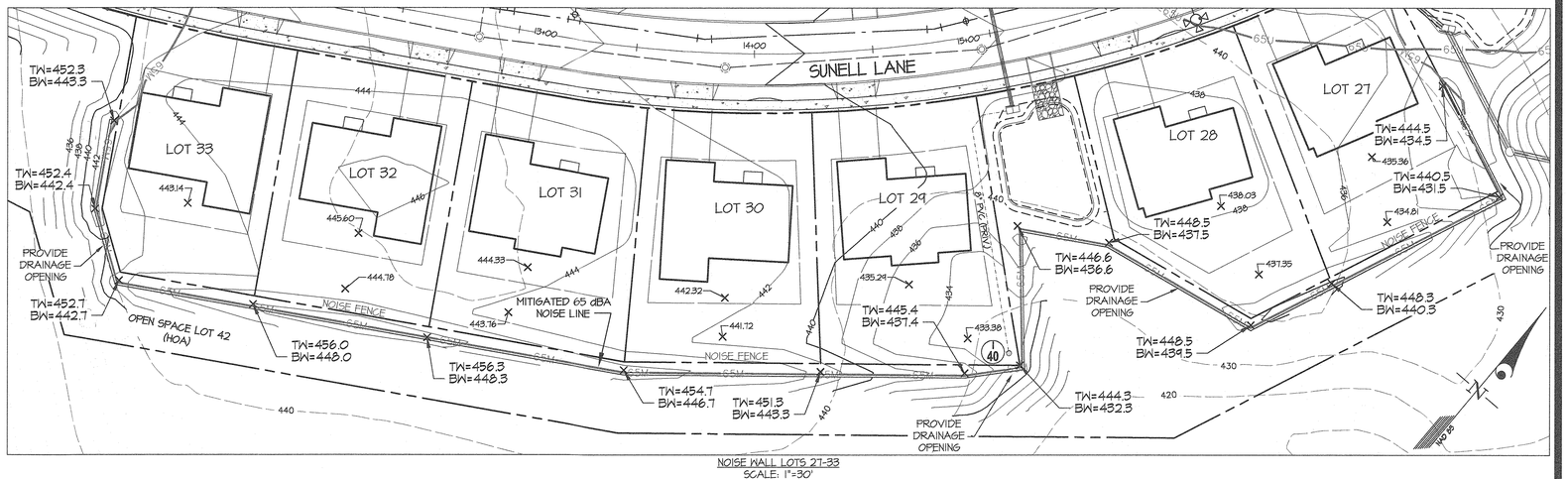
WALL
SECTION

NOTE: SEE PLAN FOR WALL HEIGHTS

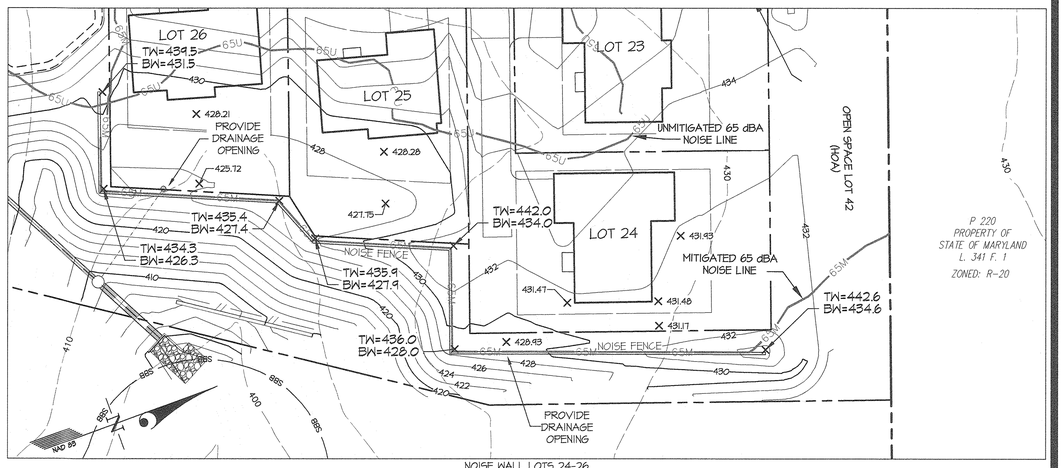
WALL DETAILS (NTS)



NOISE WALL LOTS 34-39
SCALE: 1"=30'



NOISE WALL LOTS 27-33
SCALE: 1"=30'



NOISE WALL LOTS 24-26
SCALE: 1"=30'

0 6 15 30 60
1 inch = 30 ft.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — MK — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.9.19

GLW
PLANNING | ENGINEERING | SURVEYING
3909 NATIONAL DRIVE | SUITE 250 | BURTONSVILLE, MD 20866 | GLWPA.COM
PHONE: 301-421-4024 | BALT: 410-880-1820 | DC&VA: 301-989-2524 | FAX: 301-421-4186

DESIGNED BY:	DATE	REVISION	BY	APP'R.
dds				
DRAWN BY:				
jrc				
CHECKED BY:				
ckg				

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975, EXPIRATION DATE: May 26, 2020

5/15/19

NOISE WALL DETAILS

PATAPSCO CROSSING
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25

Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"= 30'	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	24 OF 30

F-19-038

SEGMENTAL RETAINING WALL SPECIFICATIONS

PART 1 - GENERAL

1.1 WORK INCLUDES

FURNISHING AND INSTALLING SEGMENTAL RETAINING WALL UNITS, GEOGRID REINFORCEMENT, WALL FILL, AND BACKFILL TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS AND AS SPECIFIED HEREIN. THE CONTRACT ALSO INCLUDES THE FURNISHING AND INSTALLING ALL APPURTENANT MATERIALS, EQUIPMENT, AND LABOR REQUIRED FOR CONSTRUCTION OF THE GRAVITY AND GEOGRID-REINFORCED, SEGMENTAL RETAINING WALLS. ALL EXISTING AND PROPOSED CONSTRUCTION AND SITE GRADING INFORMATION WAS REFERENCED FROM ELECTRONIC COPIES OF THE GRADING PLAN AND THE WALL DETAILS PLAN, DATED OCTOBER, 2018 AND NOVEMBER, 2018, RESPECTIVELY, AND PREPARED BY GUTSCHICK, LITTLE & WEBER, P.E. (GLW), THE PROJECT CIVIL ENGINEER. A REVISED VERSION OF THE WALL DETAILS PLAN DEPICTING THE REVISED GEOGRID-REINFORCED RETAINING WALL LAYOUT WAS PROVIDED TO GTA VIA EMAIL ON JANUARY 29, 2019. THIS PLAN ALSO DEPICTS MINOR CHANGES TO THE HEIGHT OF THE GRAVITY RETAINING WALL. SUBSURFACE INFORMATION WAS REFERENCED FROM GTA'S REPORT OF GEOTECHNICAL EXPLORATION, DATED JUNE 4, 2014, AND ADDITIONAL HAND AUGER EXPLORATIONS PERFORMED IN THE VICINITY OF THE PROPOSED RETAINING WALL BY GTA IN NOVEMBER OF 2018 IN CONJUNCTION WITH THIS DESIGN.

1.2 REFERENCE STANDARDS

A. ASTM C90-75 (1981 REV) - HOLLOW LOAD BEARING MASONRY UNITS.
B. ASTM C140-75 (1981 REV) - SAMPLING AND TESTING CONCRETE MASONRY UNITS.
C. ASTM C145-75 (1981 REV) - SOLID LOAD BEARING CONCRETE MASONRY UNITS.
D. GEOSYNTHETIC RESEARCH INSTITUTE (GRI), GRI-GG4 - DETERMINATION OF LONG TERM DESIGN STRENGTH OF GEOGRIDS.
E. ASTM D 638 - TEST METHOD FOR TENSILE PROPERTIES OF PLASTIC.
F. ASTM D 1248 - SPECIFICATION OF POLYETHYLENE PLASTICS MOLDING AND EXTRUSION MATERIALS.
G. ASTM D 4218 - TEST METHOD FOR CARBON BLACK CONTENT IN POLYETHYLENE COMPOUNDS BY THE MUFFLE FURNACE TECHNIQUE.
H. ASTM D 3034 - SPECIFICATION FOR POLYVINYL CHLORIDE (PVC) PIPE.
I. ASTM C 1372 - SPECIFICATIONS FOR SEGMENTAL RETAINING WALL UNITS.
J. INTERNATIONAL BUILDING CODE 2009 (IBC 2009)

1.3 DELIVERY, STORAGE AND HANDLING

A. CONTRACTOR SHOULD CHECK THE MATERIALS UPON DELIVERY TO ASSURE THAT PROPER MATERIAL HAS BEEN RECEIVED.
B. CONTRACTOR SHOULD PREVENT EXCESSIVE MUD, WET CEMENT, EPOXY, AND LIKE MATERIALS WHICH MAY AFFIX THEMSELVES, FROM COMING IN CONTACT WITH THE MATERIALS.
C. GEOGRIDS SHOULD BE STORED ABOVE -20° F.
D. CONTRACTOR SHOULD PROTECT THE MATERIALS FROM DAMAGE. DAMAGED MATERIAL SHOULD NOT BE INCORPORATED INTO THE REINFORCED RETAINING WALL.

1.4 SUBMITTALS/CERTIFICATION

THE CONTRACTOR SHALL SUBMIT A MANUFACTURER'S CERTIFICATION, PRIOR TO THE START OF THE WORK, THAT THE RETAINING WALL SYSTEM COMPONENTS MEET THE REQUIREMENTS OF ASTM C 1372 AND OTHER REQUIREMENTS SPECIFIED HEREIN. THIS CERTIFICATION SHOULD BE PROVIDED TO THE GEOTECHNICAL ENGINEER FOR REVIEW AND APPROVAL PRIOR TO WALL CONSTRUCTION.

PART 2 - PRODUCTS

2.1 DEFINITIONS

A. GEOGRID IS A HIGH-DENSITY POLYETHYLENE, POLYESTER, OR POLYPROPYLENE GRID, SPECIFICALLY FABRICATED FOR USE AS A SOIL REINFORCEMENT.
B. CONCRETE RETAINING WALL UNITS ARE AS DETAILED ON THE DRAWINGS AND AS SPECIFIED HEREIN.
C. GEOSYNTHETIC DRAINAGE COMPOSITES ARE POLYETHYLENE NET STRUCTURE WITH NON-WOVEN GEOTEXTILES BONDED TO BOTH SIDES.
D. EROSION CONTROL BLANKETS CONSIST OF A WEB OF POLYOLEFIN FIBERS SECURELY BOUNDED BY POLYOLEFIN THREADS BETWEEN TWO HIGH STRENGTH POLYOLEFIN NETS.
E. BACKFILL IS THE SOIL WHICH IS USED AS FILL FOR THE REINFORCED SOIL MASS.
F. FOUNDATION SOIL IS THE IN-SITU SOIL OR CONTROLLED COMPACTED FILL PLACED BELOW THE BOTTOM OF THE RETAINING WALL AND GEOGRID ZONE.

2.2 MATERIALS

THE CONTRACTOR SHOULD SUBMIT MANUFACTURER'S CATALOG AND SAMPLES OF THE PROPOSED MATERIALS FOR APPROVAL BY THE PROJECT GEOTECHNICAL ENGINEER A MINIMUM OF SEVEN DAYS BEFORE THE START OF CONSTRUCTION. MATERIALS SHOULD BE TRANSPORTED TO THE SITE ONLY AFTER APPROVAL OF THE PROPOSED MATERIALS BY THE PROJECT GEOTECHNICAL ENGINEER.

A. CONCRETE UNITS

1. MASONRY UNITS FOR THE GEOGRID-REINFORCED RETAINING WALL SHOULD BE KEYSTONE COMPAC II OR III RETAINING WALL UNITS. MASONRY UNITS FOR THE GRAVITY RETAINING WALL SHOULD BE KEYSTONE STANDARD II OR III RETAINING WALL UNITS. SUBSTITUTION OF OTHER CONCRETE UNITS MAY BE ALLOWED WITH THE PRIOR APPROVAL OF THE GEOTECHNICAL ENGINEER.
2. CONCRETE WALL UNITS SHOULD HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI, IN ACCORDANCE WITH ASTM C-90. THE CONCRETE SHOULD HAVE ADEQUATE FREEZE/THAW PROTECTION WITH A MAXIMUM MOISTURE ABSORPTION OF 6 PERCENT.
3. MODULAR CONCRETE MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C 1372 - STANDARD SPECIFICATIONS FOR SEGMENTAL RETAINING WALL UNITS.
4. THE UNITS SHALL PASS 100 FREEZE/THAW CYCLES IN WATER WITH LESS THAN 1% WEIGHT LOSS IN ACCORDANCE WITH ASTM C 1372.
5. EXTERIOR DIMENSIONS MAY VARY. UNITS ARE REQUIRED TO HAVE A MINIMUM OF ONE SQUARE FOOT OF FACE AREA EACH.
6. UNITS SHOULD HAVE ANGLED SIDES AND BE CAPABLE OF ATTAINING CONCAVE AND CONVEX ALIGNMENT CURVES IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. UNITS SHOULD BE INTERLOCKED WITH NON-CORROSIVE REINFORCED FIBERGLASS PINS.
7. UNITS SHOULD BE INTERLOCKED AS TO PROVIDE A MAXIMUM OF 1 INCH OF SETBACK PER BLOCK.

B. LEVELING PAD

MATERIAL FOR LEVELING PAD/FOOTING SHOULD CONSIST OF COMPACTED FREE-DRAINING COARSE AGGREGATES MEETING THE REQUIREMENTS OF ASTM NO. 57 STONE OR GRADED AGGREGATE BASE (GAB) PER MARYLAND STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS. FOR THE GEOGRID-REINFORCED RETAINING WALL, A MINIMUM OF 6 INCHES DEEP AND 24 INCHES WIDE COMPACTED LEVELING PAD IS REQUIRED. FOR THE GRAVITY RETAINING WALL, A MINIMUM OF 6 INCHES DEEP AND 30 INCHES WIDE COMPACTED LEVELING PAD IS REQUIRED.

C. FIBERGLASS CONNECTING PINS

1. THERMOSET ISOPTHALIC POLYESTER RESIN PULTRUDED FIBERGLASS REINFORCEMENT RODS, A MINIMUM ONE-HALF INCH IN DIAMETER.
2. PINS SHOULD HAVE A MINIMUM FLEXURAL STRENGTH OF 128,000 PSI AND SHORT BEAM SHEAR OF 6400PSI.
3. FOR SUBSTITUTE CONCRETE UNITS, USE OF OTHER COMPATIBLE CONNECTOR SYSTEMS MAY BE ALLOWED WITH THE PRIOR APPROVAL OF THE GEOTECHNICAL ENGINEER.

D. GEOGRID

GEOGRID SHOULD BE MIRAGRID 03XT, STRATAGRID SG150, SYNTEEN SF35, OR EQUIVALENT AS APPROVED BY THE GEOTECHNICAL ENGINEER. THE GEOGRID SHOULD HAVE AN ALLOWABLE STRENGTH OF 1332 POUNDS PER FOOT. THE ALLOWABLE STRENGTH IS DEFINED AS THE ULTIMATE STRENGTH DIVIDED BY REDUCTION FACTORS FOR CREEP, DURABILITY, INSTALLATION DAMAGE AND AN OVERALL FACTOR OF SAFETY OF 1.5.

E. REINFORCED BACKFILL

REINFORCED BACKFILL SOILS SHOULD BE NONPLASTIC, CONTROLLED FILL MEETING THE REQUIREMENTS OF AASHTO A-2-4, OR MORE GRANULAR. BASED ON THE AVAILABLE SUBSURFACE INFORMATION, SUITABLE MATERIALS MAY BE AVAILABLE FROM ON-SITE EXCAVATIONS. HOWEVER, SEGREGATION AND STOCKPILING OF SUITABLE MATERIALS WILL BE REQUIRED. IF ADEQUATE QUANTITIES OF THIS MATERIAL ARE NOT AVAILABLE ON-SITE, IMPORTED BACKFILL SHOULD MEET THE ABOVE REQUIREMENTS AND SHOULD BE APPROVED BY THE GEOTECHNICAL ENGINEER.

F. CONTROLLED FILL

PROPER CONSTRUCTION OF THE FILL SLOPES PLANNED BEHIND THE PROPOSED RETAINING WALLS WILL BE CRITICAL FOR THE STABILITY OF THE GRAVITY AND GEOGRID-REINFORCED WALLS. AS SUCH, THE FILL SLOPES SHOULD CONSTRUCTED USING THE MOST GRANULAR, NONPLASTIC SOILS AVAILABLE. THE FILL SLOPES SHOULD BE KEYED INTO THE EXISTING SLOPES TO ENHANCE THEIR STABILITY.

CONTROLLED FILL SOILS TO BE PLACED IN THE FILL SLOPES (I.E., BEHIND THE GRAVITY WALL AND OUTSIDE THE REINFORCED BACKFILL AREA OF THE GEOGRID REINFORCED WALL, AND WHERE SPECIFIED) SHOULD CONSIST OF ON-SITE OR BORROW NONPLASTIC SOILS MEETING THE REQUIREMENTS OF AASHTO A-2-4 OR MORE GRANULAR. ALL FILL MATERIALS SHOULD BE PLACED IN A CONTROLLED MANNER IN MAXIMUM 8-INCH LIFTS AND COMPACTED TO 95 PERCENT OF MAXIMUM DRY DENSITY IN ACCORDANCE WITH THE STANDARD PROCTOR, ASTM D-698.

G. LOW-PERMEABILITY SOIL

LOW-PERMEABILITY SOILS TO BE PLACED AT THE TOP OF THE WALL WHERE SPECIFIED SHOULD CONSIST OF SANDY, SILTY OR CLAYEY SOILS MEETING THE REQUIREMENTS OF ML, CL, SM, OR SC WITH A MINIMUM OF 25% PASSING THE NO. 200 SIEVE.

H. DRAINAGE PIPE

THE DRAINAGE PIPES SHOULD BE PERFORATED OR SLOTTED PVC PIPE MANUFACTURED IN ACCORDANCE WITH ASTM D-3034.

I. FILTER FABRIC

FILTER FABRIC SHOULD BE NONWOVEN, POLYPROPYLENE GEOTEXTILE, 140 N MANUFACTURED BY NICOLON MIRAFI GROUP OR APPROVED EQUIVALENT.

J. EROSION CONTROL BLANKET

EROSION CONTROL BLANKET, WHERE SPECIFIED HEREIN, SHOULD BE NORTH AMERICAN GREEN C350 PERMANENT TURF REINFORCEMENT MAT OR APPROVED EQUIVALENT.

PART 3 - EXECUTION

A. EXCAVATION

1. THE CONTRACTOR SHOULD EXCAVATE TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. UNDER NO CIRCUMSTANCES SHOULD THE EXCAVATION LINES AND GRADES BE EXCEEDED, EXCEPT WITH OWNER'S APPROVAL. THE CONTRACTOR SHOULD PROTECT THE EXCAVATION FROM SLOUGHING BY PLACING A MEMBRANE OVER THE FACE OF THE EXCAVATION.
2. PRIOR TO RETAINING WALL CONSTRUCTION AND THE PLACEMENT OF FILL, ALL TOPSOIL SHOULD BE STRIPPED AND REMOVED FROM THE SITE.
3. EXCAVATIONS SHOULD BE SLOPED OR OTHERWISE SUPPORTED IN ACCORDANCE WITH OCCUPATION SAFETY AND HEALTH ADMINISTRATION (OSHA) AND OTHER LOCAL AND STATE REGULATIONS.

B. FOUNDATION SUBGRADE PREPARATION

1. FOUNDATION SOIL SHOULD BE EXCAVATED AS REQUIRED FOR INSTALLATION OF LEVELING PAD, GEOGRID AND OTHER ELEMENTS AND AS SHOWN ON THE CONSTRUCTION DRAWINGS.
2. FOUNDATION SOIL SHOULD BE EXAMINED BY THE ENGINEER TO ENSURE THAT THE ACTUAL FOUNDATION SOIL STRENGTH MEETS OR EXCEEDS ASSUMED DESIGN STRENGTH. SOILS NOT MEETING REQUIRED STRENGTH SHOULD BE REMOVED AND REPLACED WITH CONTROLLED, COMPACTED MATERIAL.
3. OVEREXCAVATED AREAS SHOULD BE FILLED WITH SELECT AND APPROVED MATERIAL AND COMPACTED TO 95 PERCENT OF MAXIMUM DRY DENSITY IN ACCORDANCE WITH THE STANDARD PROCTOR, ASTM D-698.
4. ALLOWABLE BEARING PRESSURE FOR NATURAL AND CONTROLLED, COMPACTED FILL SOILS SHOULD BE AS SPECIFIED IN PART 5.
5. THE EXPOSED FOUNDATION SUBGRADE SHOULD BE PROOFROLLED WITH A LOADED DUMP TRUCK. ANY SOFT OR UNSTABLE AREAS IDENTIFIED DURING PROOFROLLING SHOULD BE OVEREXCAVATED AND BACKFILLED WITH CONTROLLED FILL.
6. ANY FILLS REQUIRED TO ESTABLISH SLOPING SURFACES IN FRONT OF THE WALLS SHOULD CONSIST OF CONTROLLED FILL AND SHOULD BE PLACED, COMPACTED AND FIELD TESTED IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED HEREIN.

C. LEVELING PAD

1. THE LEVELING PAD SHOULD BE PLACED AS SHOWN ON THE CONSTRUCTION DRAWINGS WITH A MINIMUM THICKNESS OF 6 INCHES.
2. LEVELING PAD MATERIALS SHOULD BE INSTALLED UPON UNDISTURBED IN SITU SOILS OR CONTROLLED, COMPACTED BACKFILL.
3. LEVELING PAD SHOULD BE PREPARED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH BASE. GAPS SHOULD NOT BE ALLOWED.

D. UNIT INSTALLATION

1. FIRST COURSE OF CONCRETE WALL UNITS SHOULD BE PLACED ON THE LEVELING PAD. THE UNITS SHOULD BE CHECKED FOR LEVEL AND ALIGNMENT. THE FIRST COURSE IS THE MOST IMPORTANT TO PROVIDE ACCURATE AND ACCEPTABLE RESULTS.
2. ENSURE THAT UNITS ARE IN FULL CONTACT WITH BASE.
3. UNITS ARE PLACED SIDE BY SIDE FOR FULL LENGTH OF WALL ALIGNMENT. ALIGNMENT MAY BE DONE BY MEANS OF A STRING LINE OR OFFSET FROM BASE LINE.
4. INSTALL FIBERGLASS CONNECTING PIN.
5. LAY UP EACH COURSE ENSURING THAT THE CONNECTING PINS ARE INSERTED THROUGH FRONT SLOT OF THE UNIT, AND INTO THE RECEIVING SLOT IN THE COURSE BENEATH. REPEAT PROCEDURE TO THE EXTENT OF WALL HEIGHT.
6. AT THE END OF EACH COURSE WHERE THE WALL CHANGES ELEVATION, UNITS SHOULD BE TURNED INTO THE BACKFILL. UNITS SHOULD BE LAID AS TO CREATE THE MINIMUM RADIUS POSSIBLE. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, A MINIMUM OF ONE UNIT SHOULD BE INSTALLED INTO THE GRADE. ONLY THE FRONT FACE OF THE UNITS SHOULD BE VISIBLE FROM THE SIDE OF THE WALL.
7. CONVEX AND CONCAVE CURVES SHOULD BE MADE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
8. CAP UNITS SHOULD BE INSTALLED AND BONDED WITH CONSTRUCTION ADHESIVE OR EPOXY CEMENT AS REQUIRED BY MANUFACTURER.
9. CONTRACTOR SHOULD PROVIDE POSITIVE DRAINAGE FOR THE BACK OF THE RETAINING WALL DURING CONSTRUCTION.

E. GEOGRID INSTALLATION

1. ALL UTILITIES IN THE VICINITY OF ANY RETAINING WALL OR GEOGRID REINFORCEMENT MUST BE INSTALLED AND PROPERLY BACKFILLED PRIOR TO PLACING THE GEOGRID SOIL REINFORCEMENT OR CONSTRUCTING THE WALL.
2. THE GEOGRID SOIL REINFORCEMENT SHOULD BE LAID HORIZONTALLY ON COMPACTED BACKFILL, CONNECTED TO THE CONCRETE WALL UNITS. HOOK GRID OVER THE FIBERGLASS CONNECTING PIN, PULL TAUT, AND ANCHOR BEFORE BACKFILL IS PLACED ON THE GEOGRID.
3. SLACK IN THE GEOGRID AT THE WALL UNIT CONNECTIONS SHOULD BE REMOVED IN A MANNER, AND TO SUCH A DEGREE, AS APPROVED BY THE ENGINEER.
4. GEOGRID SHOULD BE LAID AT THE PROPER ELEVATION AND ORIENTATION AS SHOWN ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE ENGINEER.
5. CORRECT ORIENTATION (ROLL DIRECTION) OF THE GEOGRID SHOULD BE VERIFIED BY THE CONTRACTOR.
6. GEOGRID SHOULD BE SECURED IN-PLACE WITH STAPLES, PINS, SAND BAGS, OR BACKFILL AS REQUIRED BY FILL PROPERTIES, FILL PLACEMENT PROCEDURES, OR WEATHER CONDITIONS, OR AS DIRECTED BY THE ENGINEER.
7. OVERLAPS.
   a. UNIAXIAL GEOGRID DOES NOT NEED TO BE OVERLAPPED IN THE ACROSS THE ROLL DIRECTION, EXCEPT TO CONTAIN THE FILL AT THE SLOPE FACE WHEN WRAP-AROUND FACING IS USED. UNIAXIAL GRID SHOULD BE OVERLAPPED 48" IN THE ROLLED DIRECTION.
   b. A LAYER OF SOIL A MINIMUM OF 4 INCHES IN THICKNESS SHOULD BE SPREAD BETWEEN UNIAXIAL GEOGRID LAYERS IN THE AREA TO BE OVERLAPPED, OR AS DIRECTED.

F. FILL PLACEMENT

1. WALL BACKFILL MATERIAL SHOULD BE PLACED IN NO MORE THAN 8-INCH LIFTS AND COMPACTED TO 95 PERCENT OF THE STANDARD PROCTOR (ASTM D-698).
2. BACKFILL SHOULD BE PLACED, SPREAD, AND COMPACTED IN SUCH A MANNER THAT MINIMIZES THE DEVELOPMENT OF WRINKLES IN AND/OR MOVEMENT OF THE GEOGRID.
3. ONLY HAND-OPERATED COMPACTION EQUIPMENT SHOULD BE ALLOWED WITHIN 4 FEET OF THE WALL FACE.
4. BACKFILL SHOULD BE PLACED FROM THE WALL OUTWARD TO INSURE THAT THE GEOGRID REMAINS TAUT.
5. TRACKED CONSTRUCTION EQUIPMENT SHOULD NOT BE OPERATED BEHIND OR ABOVE THE WALL.
6. RUBBER-TIRED EQUIPMENT MAY PASS OVER THE GEOGRID REINFORCEMENT AT SLOW SPEEDS, LESS THAN 10 MPH. SUDDEN BRAKING AND SHARP TURNING SHOULD BE AVOIDED.
7. PLACE FILTER FABRIC BETWEEN THE UNIT CORE FILL AND THE REINFORCED BACKFILL AS SHOWN ON PLANS. THE FILTER FABRIC SHOULD BE EMBEDDED A MINIMUM OF TWO FEET INTO THE REINFORCED FILL.
8. THE FINISHED SLOPING SURFACE ON THE TOE SIDE OF RETAINING WALLS SHOULD BE PROTECTED BY INSTALLING THE PERMANENT EROSION CONTROL BLANKET AND LOAMING AND SEEDING IN ACCORDANCE WITH PROJECT REQUIREMENTS.

G. DRAINAGE

1. DRAINAGE FILL SHOULD BE PLACED BEHIND THE WALLS TO THE LIMITS SHOWN. FOR THE GEOGRID-REINFORCED RETAINING WALL, THE DRAINAGE FILL SHOULD BE A MINIMUM OF 1 FOOT THICK. FOR THE GRAVITY RETAINING WALL, THE DRAINAGE FILL SHOULD BE A MINIMUM OF 2.5 FEET THICK. THE DRAINAGE FILL SHOULD BE ASTM NO. 57 STONE. THE DRAINAGE FILL SHOULD BE WRAPPED IN FILTER FABRIC (MIRAFI 140N OR EQUAL) AS SHOWN ON THE DRAWINGS.
2. POSITIVE DRAINAGE SHOULD BE MAINTAINED DURING AND AFTER CONSTRUCTION. SOILS WITHIN THE REINFORCED ZONE THAT BECOME WET DURING CONSTRUCTION SHOULD BE DRIED TO OPTIMUM MOISTURE OR REMOVED.
3. INSTALL THE PERFORATED DRAINAGE PIPES AND LATERAL DRAINAGE PIPES INCREMENTALLY ALONG WITH THE INSTALLATION OF CONCRETE UNITS AND PLACEMENT OF FILL.

PART 4 - CONSTRUCTION OBSERVATION AND TESTING

A. RETAINING WALLS SHOULD ONLY BE CONSTRUCTED UNDER THE OBSERVATION OF A REGISTERED PROFESSIONAL ENGINEER AND A CERTIFIED (NICET, WACEL, OR EQUIVALENT) SOILS TECHNICIAN.
B. THE REQUIRED BEARING PRESSURE BENEATH THE FOOTING OF THE WALL SHOULD BE VERIFIED IN THE FIELD BY A CERTIFIED SOILS TECHNICIAN. TESTING DOCUMENTATION MUST BE PROVIDED TO THE GEOTECHNICAL ENGINEER PRIOR TO THE START OF WALL CONSTRUCTION. THE REQUIRED TEST PROCEDURE SHALL BE THE DYNAMIC CONE PENETROMETER (DCP) TEST ASTM STP-399.
C. THE SUITABILITY OF FILL MATERIAL SHOULD BE CONFIRMED BY THE ON-SITE SOILS TECHNICIAN.
D. THE SOILS TECHNICIAN SHOULD VERIFY THAT THE SOILS PRESENT AT THE FOUNDATION SUBGRADE ELEVATION MEET THE REQUIREMENTS SPECIFIED IN PART 5.

PART 5 - DESIGN CRITERIA

1. REQUIRED MINIMUM ALLOWABLE FOUNDATION BEARING PRESSURE IS 2,000 PSF.
2. DESIGN INTERNAL FRICTION ANGLE FOR REINFORCED SOIL = 30 DEGREES.
3. DESIGN MOIST UNIT WEIGHT FOR REINFORCED SOIL = 120 PCF.
4. RETAINED SOIL INTERNAL FRICTION ANGLE = 30 DEGREES AND COHESION = 0 PSF.
5. FOUNDATION SOIL INTERNAL FRICTION ANGLE = 28 DEGREES AND COHESION = 0 PSF.
6. FOUNDATION AND RETAINED SOIL DESIGN MOIST UNIT WEIGHT = 120 PCF.
7. RETAINING WALLS ARE NOT DESIGNED TO RESIST HYDROSTATIC PRESSURE.

RETAINING WALL LOCATION PLAN

SCALE: 1" = 100'

BASE PLAN WAS ADAPTED FROM ELECTRONIC COPIES OF THE GRADING PLAN AND THE WALL DETAILS PLAN, DATED OCTOBER, 2018 AND NOVEMBER, 2018, RESPECTIVELY, AND PREPARED BY GLW. A REVISED VERSION OF THE WALL DETAILS PLAN DEPICTING THE REVISED GEOGRID-REINFORCED RETAINING WALL LAYOUT WAS PROVIDED TO GTA VIA EMAIL ON JANUARY 29, 2019. THIS PLAN ALSO DEPICTS MINOR CHANGES TO THE HEIGHT OF THE GRAVITY RETAINING WALL.

Legend

HA-1 ◆ Identification and approximate location of hand auger explorations performed by GTA in November of 2018. See Sheet 2.B for additional information. It should be noted that Hand Auger HA-1a was performed at an offset location approximately 5 feet to the southwest of Hand Auger HA-1. Due to the scale used in this plan and the relative proximity of Hand Augers HA-1 and HA-1a, the approximate locations of these explorations are indicated using the same symbol.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — MK — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19

GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
14280 PARK CENTER DRIVE, SUITE A
LAUREL, MARYLAND 20707
(410) 792-9446 OR (301) 470-4470
FAX: (410) 792-7395
WWW.GTAENG.COM

DESIGNED BY: TLC				
DRAWN BY: TLC				
CHECKED BY: BTD				
DATE	REVISION	BY	APP'R.	

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

MD 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. 29184, EXPIRATION DATE: 6/16/19.

STATE OF MARYLAND — BRIAN T. OSBORNE — 29184 — REGISTERED PROFESSIONAL ENGINEER

PLAN AND GENERAL NOTES

PATAPSCO CROSSING

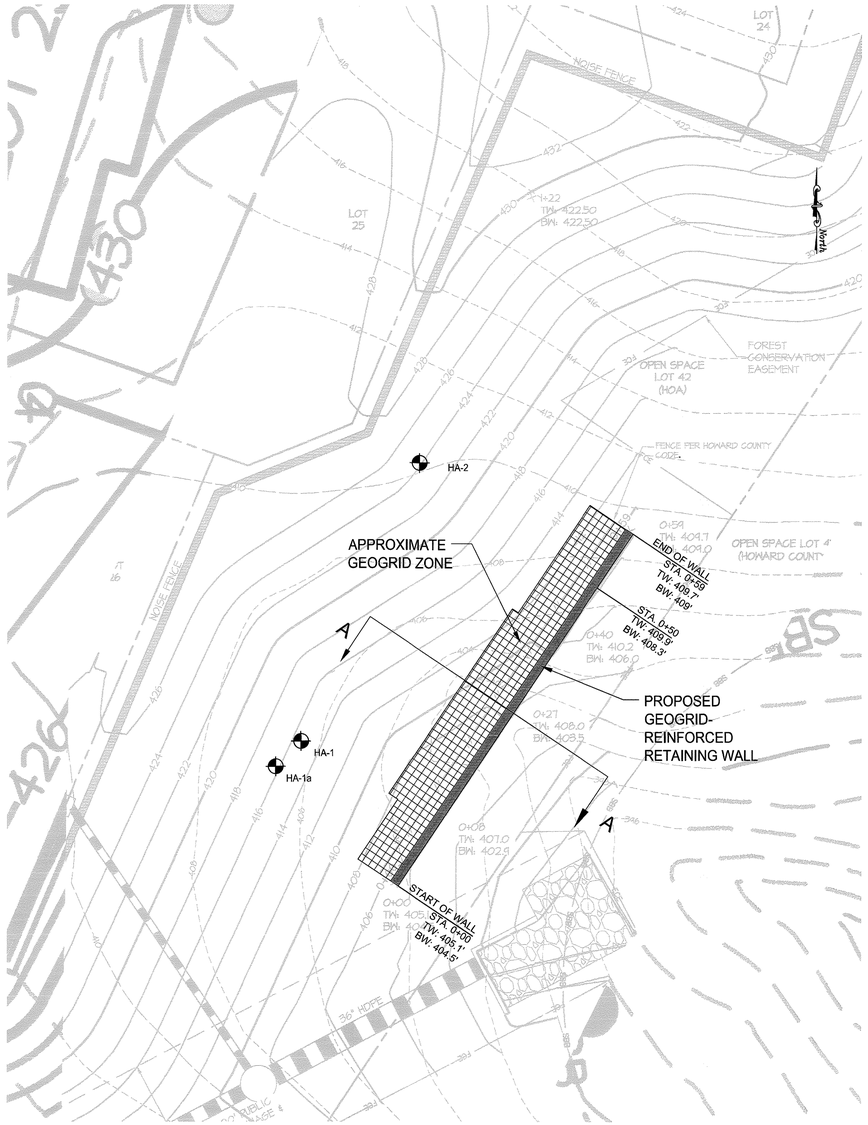
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 + FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	GTA Project No.
AS SHOWN	R-20	140665x1
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	25 OF 30

F-19-038

S:\Project Files\2014\140665x1 Sunnell Property Retaining Wall\CAD\GEO 140665 Retwall Recovered2.dwg, 2/19/2019 2:49:39 PM, Brian Osborne



0 5 10
Approximate Scale
1 inch = 10 feet

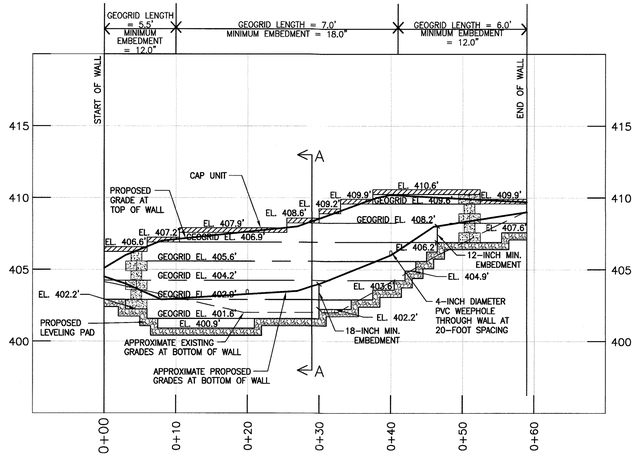
PROPOSED GEOGRID-REINFORCED RETAINING WALL - PLAN VIEW

SCALE: 1" = 10'

BASE PLAN WAS ADAPTED FROM ELECTRONIC COPIES OF THE GRADING PLAN AND THE WALL DETAILS PLAN, DATED OCTOBER, 2018 AND NOVEMBER, 2018, RESPECTIVELY, AND PREPARED BY GLW. A REVISED VERSION OF THE WALL DETAILS PLAN DEPICTING THE REVISED GEOGRID-REINFORCED RETAINING WALL LAYOUT WAS PROVIDED TO GTA VIA EMAIL ON JANUARY 29, 2019. THIS PLAN ALSO DEPICTS MINOR CHANGES TO THE HEIGHT OF THE GRAVITY RETAINING WALL.

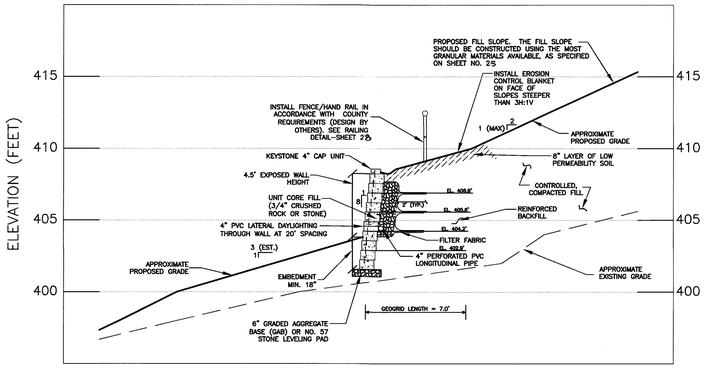
Legend

HA-1 ◆ Identification and approximate location of hand auger explorations performed by GTA in November of 2018. See Sheet 2'1 for additional information.



RETAINING WALL PROFILE

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 5'



RETAINING WALL - SECTION AA (APPROXIMATE STATION 0+29)

HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE: 1" = 5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — MK — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.3.19

GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
14280 PARK CENTER DRIVE, SUITE: A
LAUREL, MARYLAND 20707
(410) 792-9446 OR (301) 470-4470
FAX: (410) 792-7395
WWW.GTAENG.COM

DESIGNED BY:	DATE	REVISION	BY	APP'R.
TLC				
DRAWN BY: TLC				
CHECKED BY: BTD				

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

MD 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. 29184, EXPIRATION DATE: 6/16/19.

STATE OF MARYLAND — BENJAMIN T. GIBSON — NO. 29184 — REGISTERED PROFESSIONAL ENGINEER

GEOGRID-REINFORCED RETAINING WALL PLAN, PROFILE, AND SECTION

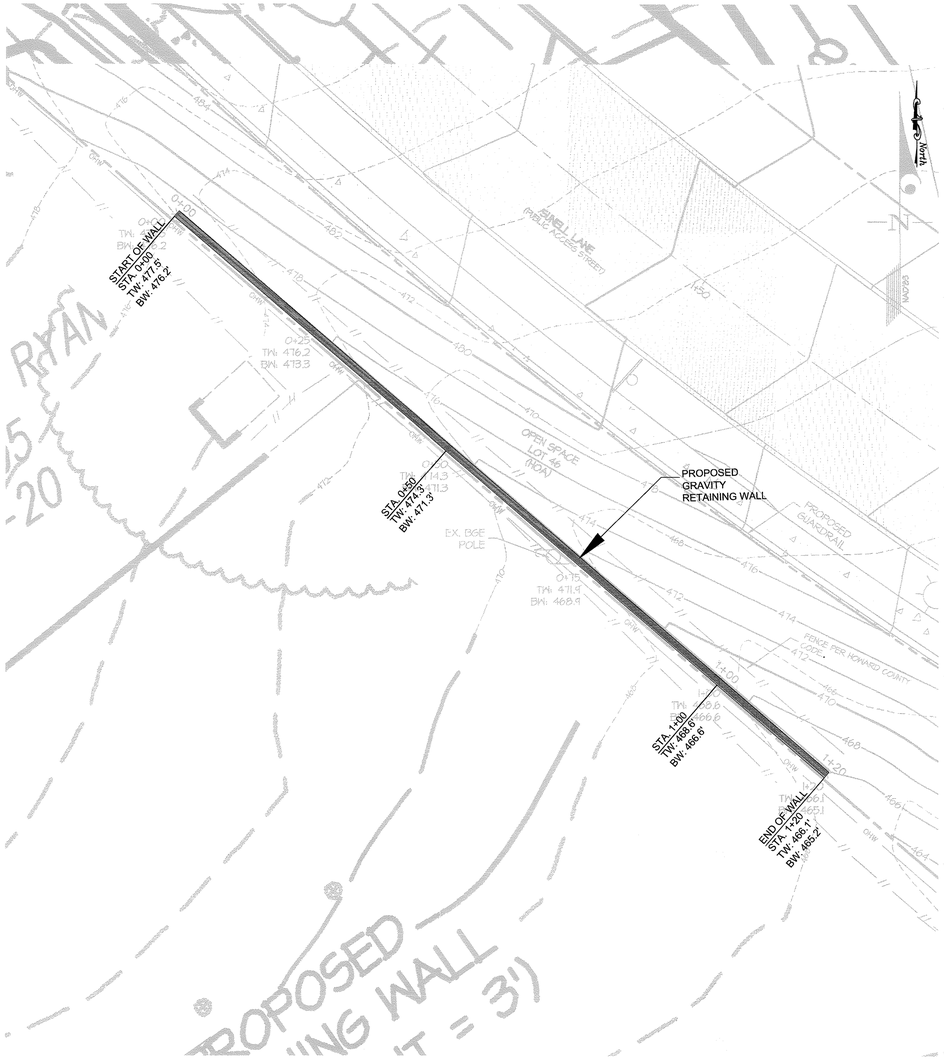
PATAPSCO CROSSING

LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	GTA Project No.
AS SHOWN	R-20	140665x1
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	26 OF 30

F-19-038

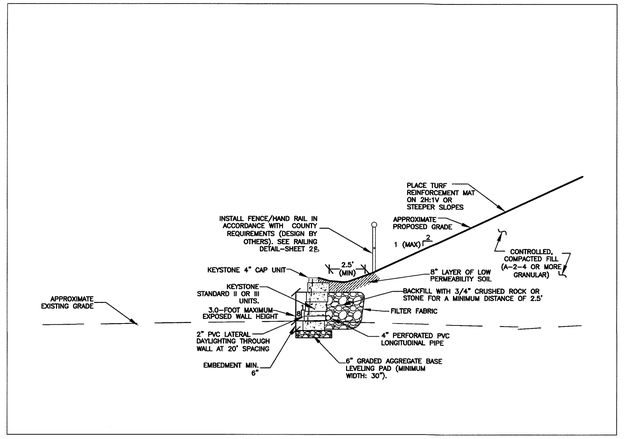


0 5 10
Approximate Scale
1 inch = 10 feet

PROPOSED GRAVITY RETAINING WALL - PLAN VIEW

SCALE: 1" = 10'

BASE PLAN WAS ADAPTED FROM ELECTRONIC COPIES OF THE GRADING PLAN AND THE WALL DETAILS PLAN, DATED OCTOBER, 2018 AND NOVEMBER, 2018, RESPECTIVELY, AND PREPARED BY GLW. A REVISED VERSION OF THE WALL DETAILS PLAN DEPICTING THE REVISED GEOGRID-REINFORCED RETAINING WALL LAYOUT WAS PROVIDED TO GTA VIA EMAIL ON JANUARY 29, 2019. THIS PLAN ALSO DEPICTS MINOR CHANGES TO THE HEIGHT OF THE GRAVITY RETAINING WALL.



TYPICAL GRAVITY WALL SECTION

NOT TO SCALE

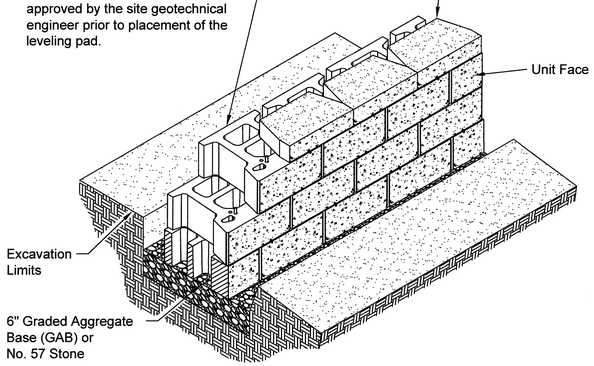
NOTES:
1. THIS DETAIL IS PROVIDED TO FACILITATE CONSTRUCTION OF THE PROPOSED GRAVITY RETAINING WALL.
2. THIS RETAINING WALL SHOULD BE CONSTRUCTED USING THE MATERIALS AND METHODS SPECIFIED ON SHEET 25.
3. THIS DETAIL IS APPROPRIATE FOR WALLS WITH MAXIMUM EXPOSED HEIGHTS OF UP TO 3 FEET. IF A TALLER WALL IS PLANNED, GTA SHOULD BE CONTACTED TO PROVIDE RECOMMENDATIONS AND PLANS AS NECESSARY.
4. THE FILL SLOPE BEHIND THE WALL SHOULD BE CONSTRUCTED USING NONPLASTIC SOILS MEETING OR EXCEEDING AASHTO A-2-4 SPECIFICATIONS FOR GRANULAR MATERIAL CONTENT.

Base Leveling Pad Notes:

1. The leveling pad is to be constructed of Graded Aggregate Base (GAB) or No. 57 stone.
2. The base foundation is to be approved by the site geotechnical engineer prior to placement of the leveling pad.

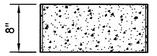
Standard III Unit	
Width:	18"
Depth:	18"
Height:	8"
Weight:	112 lbs

Cap Unit	
Width:	18"
Depth:	10 1/2"
Height:	4"
Weight:	50 lbs

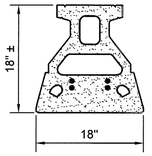


Standard III Unit/Base Pad Isometric Section View

* Dimensions & Weight May Vary by Region
Not To Scale



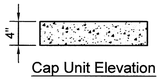
Standard III Elevation



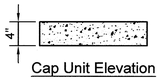
Standard III Plan

Standard III Unit

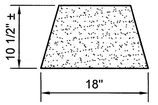
* Dimensions May Vary by Region



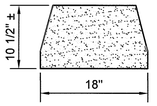
Cap Unit Elevation



Cap Unit Elevation



Cap Unit Plan



Cap Unit Plan

Universal Cap Unit Option

* Dimensions & Availability Will Vary by Region

Straight Split Cap Unit Option

* Dimensions & Availability Will Vary by Region

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — MK — Date 6/24/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19

GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
14280 PARK CENTER DRIVE, SUITE A
LAUREL, MARYLAND 20707
(410) 792-9446 OR (301) 470-4470
FAX: (410) 792-7395
WWW.GTAENG.COM

DESIGNED BY:	DRAWN BY:	CHECKED BY:
TLC	TLC	BTD

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

MD 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. 29184, EXPIRATION DATE: 6/16/19.

STATE OF MARYLAND — GARRETT T. DEVILBISS — 29184 — REGISTERED PROFESSIONAL ENGINEER

GRAVITY WALL PLAN, TYPICAL SECTION, AND TYPICAL DETAILS

PATAPSCO CROSSING

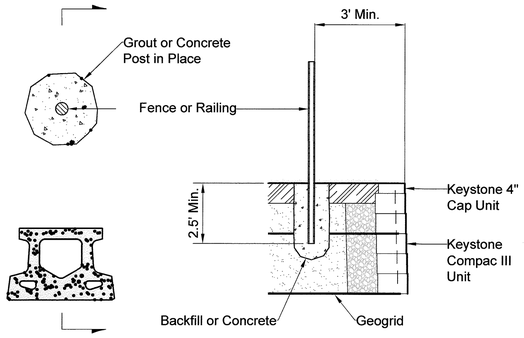
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 ÷ FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	GTA Project No.
AS SHOWN	R-20	140665x1
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	27 OF 30

S:\Project Files\2014\140665x1 Sunnell Property Retaining Wall\CAD\GEO 140665 Retwall Recovered2.dwg, 2/1/2019 2:41:44 PM, Brian Dudley

F-19-038

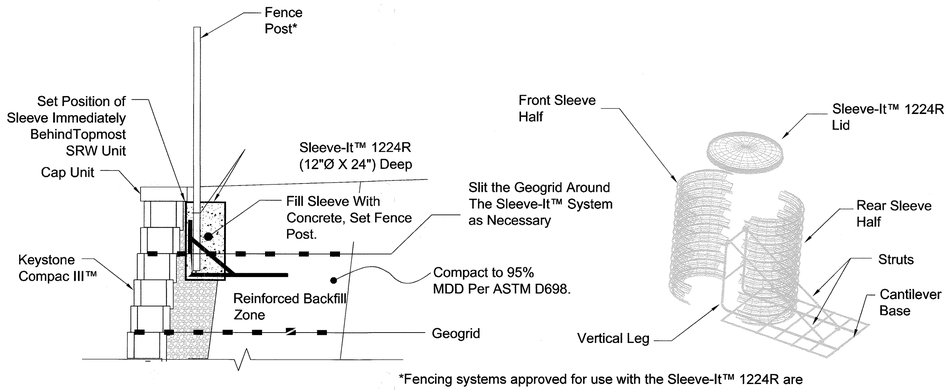


Fence Plan Detail

Rail/Fence Typical Detail

Fence Section Detail

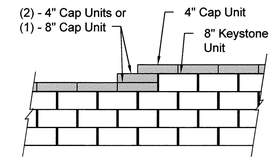
Compac III Unit - 1" Setback
NOT TO SCALE



*Fencing systems approved for use with the Sleeve-It™ 1224R are limited to the following heights: chain link - up to 8 feet, privacy - up to 6 feet (wooden, PVC, metal). Post size: 4"X4" max.

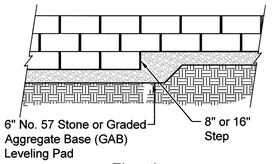
Detail of Fence Post Installation Using Sleeve-It™ 1224R

(Alternative Fence Detail)
NOT TO SCALE



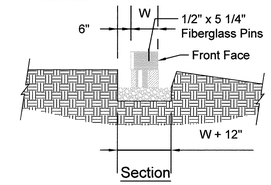
Note:
1. Secure all cap units with Keystone Kapseal or equal.

Top of Wall Steps

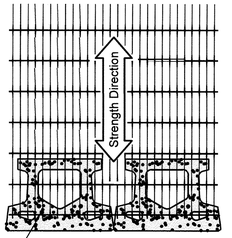


Elevation

Note:
1. The leveling pad is to be constructed of crushed stone or 2000 psi ± unreinforced concrete.

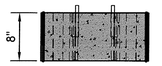


Leveling Pad Detail

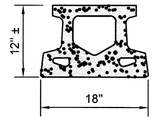


Geogrid is to be Placed on Level Backfill and Extended Over the Fiberglass Pins. Place Next Unit. Pull Grid Taught and Backfill. Stake as required.

Grid & Pin Connection

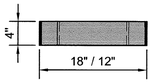


Compac III Elevation

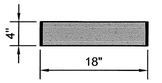


Compac III Plan

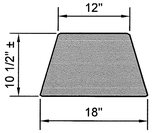
Compac III Unit
* Dimensions May Vary by Region



Cap Unit Elevation

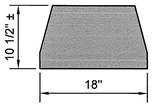


Cap Unit Elevation



Cap Unit Plan

Universal Cap Unit Option
* Dimensions & Availability Will Vary by Region



Cap Unit Plan

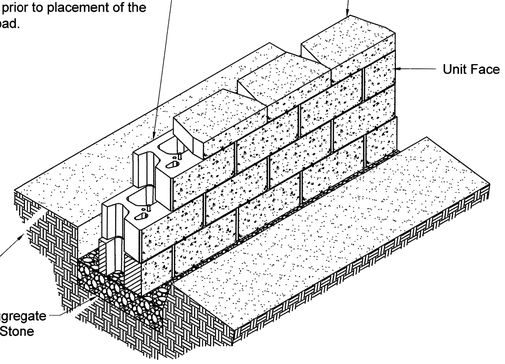
Straight Split Cap Unit Option
* Dimensions & Availability Will Vary by Region

Base Leveling Pad Notes:

1. The leveling pad is to be constructed of Graded Aggregate Base (GAB) or #57 stone.
2. The base foundation is to be approved by the site geotechnical engineer prior to placement of the leveling pad.

Compac III Unit	
Width:	18"
*Depth:	12"
Height:	8"
*Weight:	75 lbs

Universal Cap Unit	
Width:	18"/12"
*Depth:	10 1/2"
Height:	4"
*Weight:	49 lbs



Compac III Unit/Base Pad Isometric Section View

* Dimensions & Weight May Vary by Region
Not To Scale

LOG OF HAND AUGER NO. HA-1

Sheet 1 of 1

PROJECT: **Sunell Property**
PROJECT NO.: **140665**
PROJECT LOCATION: **Howard County, Maryland**
WATER LEVEL (ft): Dry
DATE: 11-7-2018
CAVED (ft): 4.8
DATE STARTED: **11-7-2018**
DATE COMPLETED: **11-7-2018**
DRILLING CONTRACTOR: **Geo-Technology Associates, Inc.**
DRILLER: **T. Coville**
DRILLING METHOD: **Hand Auger**
SAMPLING METHOD: **Hand Auger**
GROUND SURFACE ELEVATION: **406**
DATUM: **Topo**
EQUIPMENT: **HA/DCP**
LOGGED BY: **TLC**
CHECKED BY: **BTD**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE BLOWS/6 inches	DCP (see notes)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
					0				Topsoil: 2 in.
S-1	0.5	5-6-4-5	5	405.5		SM		Brown, moist to wet, loose, Silty SAND.	
S-2	2.0	2-2-3-4	3	404.0		SM		Light Brown, moist, very loose, Silty SAND, trace Mica.	
S-3	4.0	10-9-20-25	18	402.0		SP		Light Brown, moist, medium dense, Silty SAND with Rock Fragments.	
S-4	4.8	25	25	401.2	5			Hand auger refusal at 4.8 feet.	
								*"DCP" indicates Dynamic Cone Penetrometer test results. The DCP value is the approximate average blow count required to advance the penetrometer over three 1.75-inch intervals.	
					10				

NOTES: **Existing ground surface was interpolated from the topographic contour lines shown on the available plan and is approximate.**

GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, MD 20707

LOG OF HAND AUGER NO. HA-1

Sheet 1 of 1

LOG OF HAND AUGER NO. HA-1a

Sheet 1 of 1

PROJECT: **Sunell Property**
PROJECT NO.: **140665**
PROJECT LOCATION: **Howard County, Maryland**
WATER LEVEL (ft): Dry
DATE: 11-7-2018
CAVED (ft): 5.5
DATE STARTED: **11-7-2018**
DATE COMPLETED: **11-7-2018**
DRILLING CONTRACTOR: **Geo-Technology Associates, Inc.**
DRILLER: **T. Coville**
DRILLING METHOD: **Hand Auger**
SAMPLING METHOD: **Hand Auger**
GROUND SURFACE ELEVATION: **406**
DATUM: **Topo**
EQUIPMENT: **HA/DCP**
LOGGED BY: **TLC**
CHECKED BY: **BTD**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE BLOWS/6 inches	DCP (see notes)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
					0			Auger probe to 5 feet.	Topsoil: 2 in.
S-1	5.0	20-25	25	401.0 400.5	5	SM		Brown, moist, medium dense, Silty SAND with Rock Fragments.	
								Hand auger refusal at 5.5 feet.	
								Hand Auger HA-1a was performed at an offset location approximately 5 feet to the southwest of Hand Auger HA-1.	
								*Difficult augering from 4 to 5 feet.	
								*"DCP" indicates Dynamic Cone Penetrometer test results. The DCP value is the approximate average blow count required to advance the penetrometer over three 1.75-inch intervals.	
					10				

NOTES: **Existing ground surface was interpolated from the topographic contour lines shown on the available plan and is approximate.**

GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, MD 20707

LOG OF HAND AUGER NO. HA-1a

Sheet 1 of 1

LOG OF HAND AUGER NO. HA-2

Sheet 1 of 1

PROJECT: **Sunell Property**
PROJECT NO.: **140665**
PROJECT LOCATION: **Howard County, Maryland**
WATER LEVEL (ft): 6.3
DATE: 11-7-2018
CAVED (ft): 9.2
DATE STARTED: **11-7-2018**
DATE COMPLETED: **11-7-2018**
DRILLING CONTRACTOR: **Geo-Technology Associates, Inc.**
DRILLER: **T. Coville**
DRILLING METHOD: **Hand Auger**
SAMPLING METHOD: **Hand Auger**
GROUND SURFACE ELEVATION: **410**
DATUM: **Topo**
EQUIPMENT: **HA/DCP**
LOGGED BY: **TLC**
CHECKED BY: **BTD**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE BLOWS/6 inches	DCP (see notes)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
					0				Topsoil: 3 in.
S-1	0.5	3-3-4-6	4	409.5		SC		Brown, moist to wet, very loose, Clayey SAND.	
S-2	2.0	12-11-9-7	9	408.0		SM		Light Brown, moist, loose, Poorly Graded SAND, trace Silt.	
S-3	4.0	25	25	406.0		SP		Light Brown, moist, medium dense, Poorly Graded SAND, trace Silt.	
S-4	6.0	21-25	25	404.0	5	SP		Light Brown, moist, medium dense, Poorly Graded SAND with Rock Fragments, trace Silt.	
S-5	8.0	25	25	402.0		SM		Brown to Gray, wet, medium dense, Silty SAND with Rock Fragments.	
S-6	9.0	25	25	400.8				Hand auger refusal at 9.2 feet.	
					10			*"DCP" indicates Dynamic Cone Penetrometer test results. The DCP value is the approximate average blow count required to advance the penetrometer over three 1.75-inch intervals.	

NOTES: **Existing ground surface was interpolated from the topographic contour lines shown on the available plan and is approximate.**

GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, MD 20707

LOG OF HAND AUGER NO. HA-2

Sheet 1 of 1

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/20/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-9-19

Chief, Development Engineering Division — Date 7.8.19

GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
14280 PARK CENTER DRIVE, SUITE: A
LAUREL, MARYLAND 20707
(410) 792-9446 OR (301) 470-4470
FAX: (410) 792-7395
WWW.GTAENG.COM

DESIGNED BY: TLC
DRAWN BY: TLC
CHECKED BY: BTD

DATE	REVISION	BY	APP'R.

OWNER:
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

MD 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. 29184, EXPIRATION DATE: 6/16/19.

STATE OF MARYLAND — TIMOTHY L. COVILLE — 29184 — PROFESSIONAL ENGINEER

GEOGRID-REINFORCED RETAINING WALL TYPICAL DETAILS

PATAPSCO CROSSING

LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 - FOREST CONSERVATION BANK
A RESUBDIVISION OF PARCEL 25
Liber: 18476 Folio: 223

ELECTION DISTRICT No. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	GTA Project No.
AS SHOWN	R-20	140665x1
DATE	TAX MAP - GRID	SHEET
MAY, 2019	18 - 13	28 OF 30

S:\Project Files\2014\140665\Sunell Property Retaining Wall\CAD\GEO 140665 Retwall Recoverdd.dwg, 8/7/2019 2:25:46 PM, Timothy Coville

F-19-038

ROAD NAME PANEL DETAIL

12" OLD FREDERICK RD B/W

30"

1

OLD FREDERICK RD
DETOUR

30" x 12"
M 4-9(I)
B/W
30" x 24"
M 4-9 Mod.
Black on Orange

2

OLD FREDERICK RD
DETOUR

30" x 12"
M 4-9(I)
B/W
30" x 24"
M 4-9
Black on Orange

3

OLD FREDERICK RD
DETOUR

30" x 12"
M 4-9(I)
B/W
30" x 24"
M 4-9
Black on Orange

4

OLD FREDERICK RD
DETOUR

30" x 12"
M 4-9(I)
B/W
30" x 24"
M 4-9
Black on Orange

5

OLD FREDERICK RD
DETOUR

30" x 12"
M 4-9(I)
B/W
30" x 24"
M 4-9
Black on Orange

6

OLD FREDERICK RD
DETOUR

30" x 12"
M 4-9(I)
B/W
30" x 24"
M 4-9(MOD)
Black on Orange

7

END
DETOUR

24" x 18"
M 4-8a
Black on Orange

8

ROAD
CLOSED
BK/W

RII-2
48" x 30"
Mounted on
Type III Barricade
60" x 12"
(2 SIGNS- IN EACH DIRECTION)

9

ROAD CLOSED
1200 FT AHEAD
LOCAL TRAFFIC ONLY
DETOUR

60" x 30"
R II-3A
BK/W
48" x 18"
M4-10(L)
Black on Orange

Mounted on
Type III Barricade
60" x 12"

10

ROAD CLOSED
1.4 MILES AHEAD
LOCAL TRAFFIC ONLY
DETOUR

60" x 30"
R II-3A
BK/W
48" x 18"
M4-10(R)

Mounted on
Type III Barricade
60" x 12"

11

ROAD
CLOSED
AHEAD

48" x 48"
W 20-3(I)
Black on Orange

12

ROAD
CLOSED
500 FT

48" x 48"
W 20-3(I)
Black on Orange

13

ROAD
CLOSED
1000 FT

48" x 48"
W 20-3(I)
Black on Orange

14

DETOUR
500 FT

48" x 48"
W 20-2(I)
Black on Orange

15

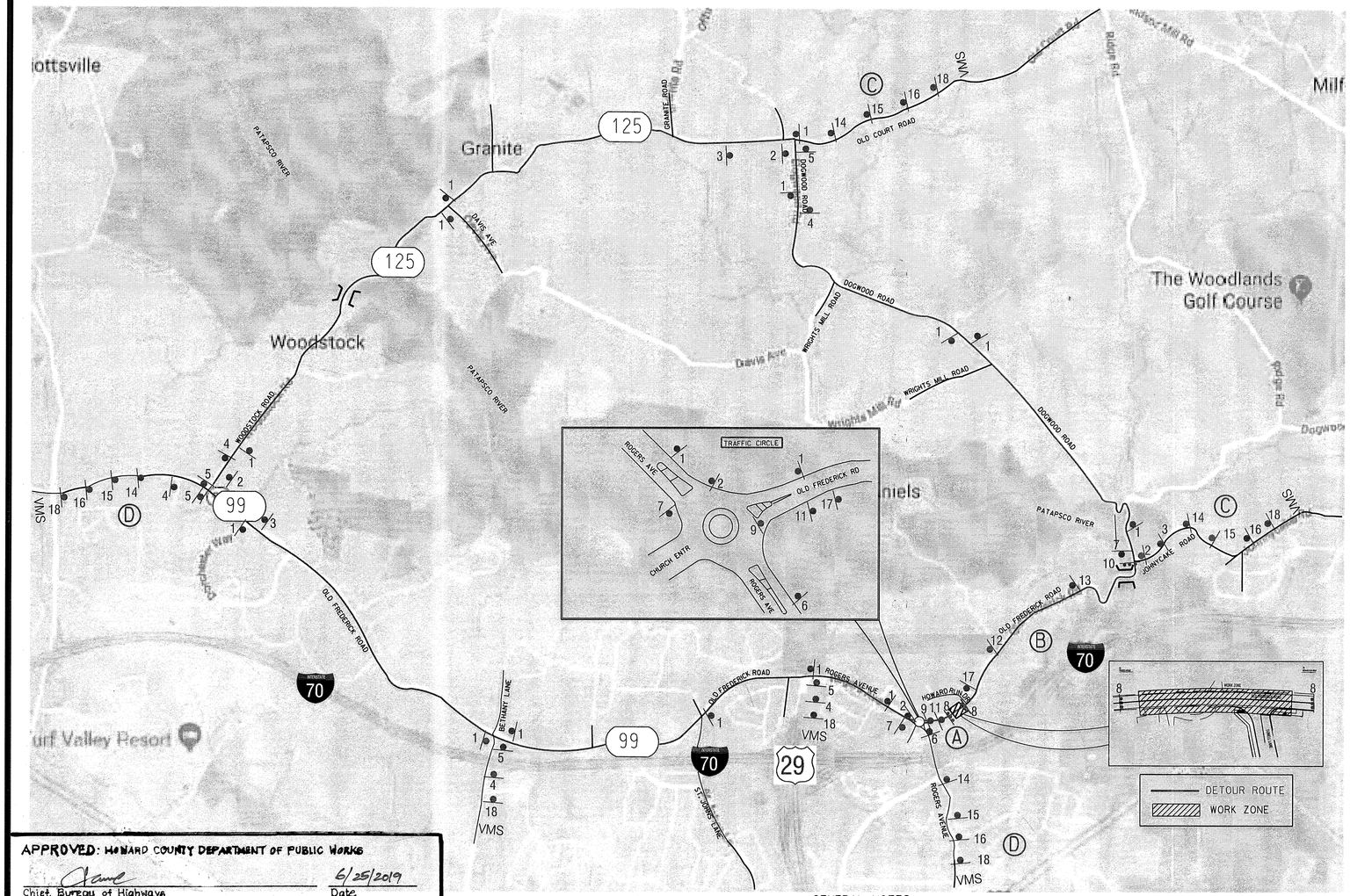
DETOUR
1000 FT

48" x 48"
W 20-2(I)
Black on Orange

16

DETOUR
1500 FT

48" x 48"
W 20-2(I)
Black on Orange



17

NOTICE
OLD FREDERICK RD
TO BE CLOSED
ON OR ABOUT
(DATE)
FOR INFO CALL
410-313-XXXX *

BK/Y
BK/W
BK/W
*

60" MAX

SIGN MUST BE INSTALLED 2 WEEKS PRIOR TO CLOSURE.

TRAFFIC DIVISION WILL SUPPLY PHONE #

18

NOTICE
OLD FREDERICK RD
CLOSED
EAST OF
ROGERS AVENUE
FOLLOW DETOUR

BK/Y
BK/W
BK/O

60" MAX

VARIABLE MESSAGE SIGN (VMS)

A1 A1

A2 A2

AT LEAST 14 DAYS PRIOR TO CLOSURE — DURING CLOSURE

HOWARD COUNTY TRAFFIC SHALL DETERMINE THE MESSAGE ON ALL VMS BOARDS.

(A) TYPICAL ROAD CLOSURE SIGN SEQUENCE

11 ROAD CLOSED AHEAD 48" x 48" W 20-2(I)
8 ROAD CLOSED

250'

(B) TYPICAL ROAD CLOSURE SIGN SEQUENCE

8 ROAD CLOSED
12 ROAD CLOSED 500 FT 48" x 48" W 20-2(I)
13 ROAD CLOSED 1000 FT 48" x 48" W 20-2(I)

500' 500'

(C) TYPICAL ROAD CLOSURE SIGN SEQUENCE

* DIRECTIONAL ARROW
OLD FREDERICK RD DETOUR *
OLD FREDERICK RD DETOUR *
14 DETOUR 500 FT
15 DETOUR 1000 FT
16 DETOUR 1500 FT
18 NOTICE OLD FREDERICK RD CLOSED EAST OF ROGERS AVENUE FOLLOW DETOUR
VMS

250 250' 500' 500' 1100' 1/2 Mile
JOHNYCAKE ROAD
500 500' 500' 500' 1/2 Mile
OLD COURT ROAD

(D) TYPICAL ROAD CLOSURE SIGN SEQUENCE

18 NOTICE OLD FREDERICK RD CLOSED EAST OF ROGERS AVENUE FOLLOW DETOUR
16 DETOUR 1500 FT
15 DETOUR 1000 FT
14 DETOUR 500 FT
* DIRECTIONAL ARROW
OLD FREDERICK RD DETOUR *
ROGERS AVE DETOUR *
VMS

1/2 Mile 1100' 500' 500' 500' 250 250
OLD FREDERICK ROAD
1/2 Mile 1100' 500' 500' 500
ROGERS AVE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/25/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Development Engineering Division — Date 7.8.19

Chief, Division of Land Development — Date 7-9-19

NOTE:
ROAD CLOSURE/DETOUR IS NECESSARY FOR THE OVER-VERTICAL CROWN RECONSTRUCTION OF THE EXISTING ROADWAY DETOUR WILL BE NECESSARY FOR APPROXIMATLEY TWO CONSECTUTIVE WEEKEND PERIODS.
BEGINNING 7:00 PM FRIDAY - 5:00 AM MONDAY.

GENERAL NOTES:

1. NO WORK TO BEGIN UNTIL ALL ADVANCED ROADWAY WARNING SIGNS ARE IN PLACE AND OPERATIONAL.
2. ACCESS TO PRIVATE DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.
3. ALL SIGN LOCATIONS SHALL BE MARKED AND/OR APPROVED BY HOWARD COUNTY TRAFFIC (410-313-2430) PRIOR TO INSTALLATION OF SIGNS.
4. THE ADVANCE NOTICE VARIABLE MESSAGE SIGNS (VMS) SHALL BE IN PLACE A MINIMUM OF FOURTEEN (14) DAYS PRIOR TO THE DETOUR PLAN BEGIN OPERATIONS. HOWARD COUNTY TRAFFIC SHALL DETERMINE THE MESSAGE ON ALL VMS BOARDS.
5. ALL TEMPORARY TRAFFIC CONTROL AND DETOUR SIGNS SHALL BE FULL COVERED WITH A NONTRANSPARENT MATERIAL WHEN DETOUR IS NOT IN USE TO TRAFFIC AS APPROVED BY THE ENGINEER.

The Traffic Group, Inc.
Suite H
9900 Franklin Square Drive
Baltimore, Maryland 21236
410-931-6600 1-800-583-8411 Fax: 410-931-6601
www.trafficgroup.com
"Merging Innovation and Excellence"

F:\2012\2012-1108\Des\MOT-DETOUR.dgn | DES. JJD | DRN. JAD | CHK. JJD

DATE	REVISION	BY	APPR.

PREPARED FOR OWNER
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION

I HEREBY CERIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSED NO. 31757 EXPIRATION DATE: 6-28-19

STATE OF MARYLAND FU-HSIUNG HUANG 31757 PROFESSIONAL ENGINEER

MAINTENANCE OF TRAFFIC PLAN - DETOUR PLAN

PATAPSCO CROSSING
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBMISSION OF PARCEL 25
Liber:18476 Folio: 223

ELECTION DISTRICT NO. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	TTG FILE No.
N/A	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY 2019	18 - 13	29 OF 30

F-19-038

PLOTTED BY: JADirndorfer –

F:\2012\2012-1108\Des\MOT-DETOUR.dgn

NOTE:
The following standards are required for this project:
MD 104.02-02 Shoulder Work 2 Lane,2-Way Eql/less than 40 MPH
MD 104.02-10 Flagging Operation/2 Lane,2-Way Eql/less than 40 MPH
For all standards referred to on the plans the contractor must go to the Book of Standards which will have the most current version. The Book of Standards can be accessed at:
http://apps.roads.maryland.gov/businesswithsha/bizstdsspecs/desmanualstdpub/publicationsonline/ohd/bookstd/index.asp
All items are to be constructed in accordance with the current version of the referenced standard at the time of construction.

Drop Off Policy

Contractor to maintain less than 2.5 in. of drop-off during periods of non-construction. Use appropriate standard. See General Note No: 13.

Signing for All Other Times
Shall Follow
SHA Standard NO. 104.02-02
Shoulder Work

48" x 48" W 21-5 SHOULDER WORK

48" x 48" W 20-1a ROAD WORK 1500 FT

Signing During
Flaggering Operation
Shall Follow
SHA Standard NO. 104.02-10

48" x 48" W 20-7a

48" x 48" W 20-4 ONE LANE ROAD 1500 FT

SHA Standard NO. 104.02-10
Shoulder Work Operation/
2 Lane,2-Way eql/lesss than
40 MPH to be used during
periods when flagger operation
is not necessary

TO:
ROGERS AVENUE

48" x 24" G20-2(l) END ROAD WORK

500'

8654 OLD FREDERICK RD

OLD FREDERICK ROAD

D/W

100' Buffer

50' Transition

800'

700'

8655 OLD FREDERICK RD

SUNELL LANE

700'

800'

50' Transition

100' Buffer

48" x 48" W 20-4 ONE LANE ROAD 1500 FT

48" x 48" W 20-7a

Signing During
Flaggering Operation
Shall Follow
SHA Standard NO. 104.02-10

NOTE:
CONTRACTOR TO PROVIDE
ACCESS TO DRIVEWAYS
AT ALL TIMES.

48" x 24" G20-2(l) END ROAD WORK

500'

TO:
HOWARD RUN DRIVE

48" x 48" W 20-1a ROAD WORK 1500 FT

48" x 48" W 21-5 SHOULDER WORK

Signing for All Other Times
Shall Follow
SHA Standard NO. 104.02-02
Shoulder Work

KEY

- Area of Construction
- Direction of Traffic
- Channelizing Device (Drum)
- Temporary Construction Sign
- Flagger
- Existing Geometrics
- Proposed Geometrics

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 6/25/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Development Engineering Division — Date 7.8.19

Chief, Division of Land Development — Date 7-9-19

The Traffic Group, Inc.
Suite H
9900 Franklin Square Drive
Baltimore, Maryland 21236
410-931-6600 1-800-583-8411 Fax: 410-931-6601
www.trafficgroup.com
"Merging Innovation and Excellence"

F:\2012\2012-1108\Des\MOT-DETOUR.dgn | DES. JJD | DRN. JAD | CHK. JJD

DATE | BY | APP'R.

PREPARED FOR OWNER
WILLIAM E. SUNELL
8643 OLD FREDERICK ROAD
ELLICOTT CITY, MD 21043
410-615-7409

PROFESSIONAL CERTIFICATION
I HEREBY CERIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSED NO. 31757
EXPIRATION DATE: 6-28-19

STATE OF MARYLAND · PURSUING HUANG · 31757 · PROFESSIONAL ENGINEER

MAINTENANCE OF TRAFFIC PLAN - NON DETOUR PLAN

PATAPSCO CROSSING
LOTS 1-39 & OPEN SPACE LOTS 40 thru 46 & FOREST CONSERVATION BANK
A RESUBMISSION OF PARCEL 25
Liber:18476 Folio:: 223

ELECTION DISTRICT NO. 2 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	TTG FILE No.
1" = 30'	R-20	11014
DATE	TAX MAP - GRID	SHEET
MAY 2019	18 - 13	30 OF 30

F-19-038

PLOTTED BY: JADirndorfer
F:\2012\2012-1108\Des\MOT-DETOUR.dgn