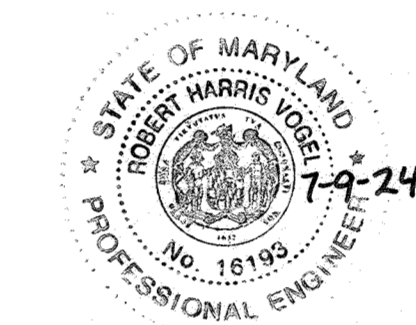


CURVE TABLE					
CURVE	ARC	RADIUS	TANGENT	DELTA	CHORD
0+56.95 - 2+72.54	215.59'	400.00'	110.48'	30°52'52"	S83°22'02"E 212.99'
2+72.54 - 3+70.60	98.06'	100.00'	53.38'	56°11'11"	S39°50'00"E 94.18'

LEGEND	
EXISTING CURB AND GUTTER	20' PUBLIC WATER & UTILITY EASEMENT
EXISTING UTILITY POLE	20' PUBLIC SEWER & UTILITY EASEMENT
EXISTING LIGHT POLE	30' PUBLIC WATER, SEWER & UTILITY EASEMENT
EXISTING MAILBOX	PUBLIC DRAINAGE & UTILITY EASEMENT
EXISTING SIGN	PRIVATE DRAINAGE & UTILITY EASEMENT
EXISTING FENCE	REINFORCED SIDEWALK
PROPERTY LINE	OPEN SPACE BOLLARD (SEE DETAIL SHEET 5)
RIGHT-OF-WAY LINE	
APPROXIMATE EXTENTS OF ELECTRICAL RIGHT OF WAY LIBER 141 FOLIO 412	
SIDEWALK	
EXISTING TREELINE	
TREELINE	
STORM DRAIN	
STORM DRAIN INLET	
EX. FOREST CONSERVATION EASEMENT	
FOREST CONSERVATION EASEMENT (RETENTION)	
EX. WETLANDS	
EX. WETLAND BUFFER	
EX. STREAM	
EX. STREAM BUFFER	
LOT LINES	

SIGNAGE LOCATION CHART			
ROAD NAME	STATION	OFFSET	TYPE
HANOVER ROAD	10+38.51	28.8 LT	"NO OUTLET" SIGN
TAYLOR ACRES ROAD	0+52.44	16.2 LT	R1-1 STOP SIGN
TAYLOR ACRES ROAD	0+89.63	16.2 RT	R2-1 SPEED LIMIT SIGN
TAYLOR ACRES ROAD	1+49.90	26.8 RT	RECREATION OPEN SPACE
TAYLOR ACRES ROAD	2+65.05	17.0 RT	R7-1 "NO PARKING" SIGN
TAYLOR ACRES ROAD	2+86.00	15.9 LT	PRIVATE ADDRESS SIGN
TAYLOR ACRES ROAD	2+90.10	17.0 LT	R7-1 "NO PARKING" SIGN
TAYLOR ACRES ROAD	3+68.00	17.0 RT	R7-1 "NO PARKING" SIGN
TAYLOR ACRES ROAD	3+76.10	16.9 LT	R7-1 "NO PARKING" SIGN
TAYLOR ACRES ROAD	4+27.10	16.5 LT	PRIVATE ADDRESS SIGN
TAYLOR ACRES ROAD	4+60.56	0.0	R7-1 "NO PARKING" SIGN



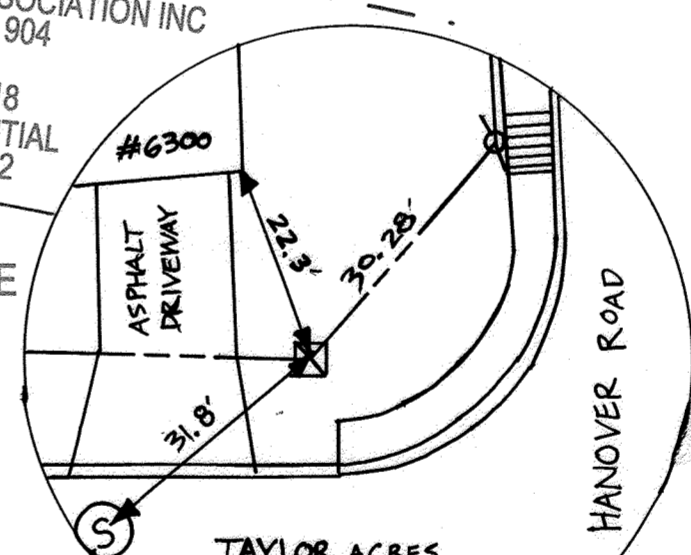
AS-BUILT CERTIFICATION FOR PSWM
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

DATE: 7-9-24
 P.E. NAME: R.H.V.
 P.E. # 16193

USE-IN-COMMON DRIVEWAY NOTE
 1. SEE SHEET 4 FOR FRANCIS LANE USE-IN-COMMON DRIVEWAY PLAN AND ROAD-PROFILE.

HANOVER ROAD IMPROVEMENTS NOTE
 1. FOR HANOVER ROAD WIDENING/IMPROVEMENT DETAILS REFER TO SHEET 22 AND 23.
 2. FOR HANOVER ROAD PAVEMENT MARKING AND STRIPING REFER TO SHEET 24.

OWNER/DEVELOPER
 GRACE TAYLOR SCHULTZ,
 TRUSTEE OF THE GRACE T. SCHULTZ REVOCABLE TRUST
 6132 HANOVER ROAD
 HANOVER, MD 21076
 443-463-6760



STREET LIGHT LOCATIONS			
ROAD NAME	STATION	OFFSET	FIXTURE/POLE TYPE
HANOVER ROAD	11+55.3	30.6 LT	150 WATT LED PREMIER POST-TOP FIXTURE MOUNTED ON A 14" BLACK FIBERGLASS POLE
HANOVER ROAD	8+87.1	32.4 LT	150 WATT LED PREMIER POST-TOP FIXTURE MOUNTED ON A 14" BLACK FIBERGLASS POLE
TAYLOR ACRES ROAD	0+39.56	27.88 RT	150 WATT LED PREMIER POST-TOP FIXTURE MOUNTED ON A 14" BLACK FIBERGLASS POLE
TAYLOR ACRES ROAD	1+49.9	18.4 RT	150 WATT LED PREMIER POST-TOP FIXTURE MOUNTED ON A 14" BLACK FIBERGLASS POLE
TAYLOR ACRES ROAD	3+08.2	16.4 LT	150 WATT LED PREMIER POST-TOP FIXTURE MOUNTED ON A 14" BLACK FIBERGLASS POLE
TAYLOR ACRES ROAD	4+60.56	0.0	150 WATT LED PREMIER POST-TOP FIXTURE MOUNTED ON A 14" BLACK FIBERGLASS POLE

- NOTES:**
- FOR TYPICAL LANDSCAPE WALL DETAIL, REFER TO SHEET 5.
 - FOR USE-IN-COMMON DRIVEWAY TURNAROUND DETAIL, REFER TO SHEET 5.
 - FOR STREET TREE LOCATIONS, REFER TO SHEET 14.
 - ALL STREET TREES AND/OR SIGN SHALL BE LOCATED 5' MIN. FROM PROPOSED DRAINAGE, UTILITY STRUCTURE.
 - THERE SHOULD BE A MINIMUM OF 40' BETWEEN THE SIGN FACE AND CLOSEST TREE FOR ALL STOP SIGNS.
 - THERE SHOULD BE A MINIMUM OF 35' BETWEEN THE SIGN FACE AND CLOSEST TREE FOR ALL SIGNS OTHER THAN A STOP SIGN.
 - REFER TO SHEET 5 FOR PROPOSED CENTRAL MAIL DELIVERY BOX (CMB) LOCATIONS. FINAL LOCATION SHALL BE AS DIRECTED BY THE US POSTAL SERVICE.
 - HANDICAP RAMP ARE STANDARD R-4.01.
 - SEE SHEET 3 FOR TAYLOR ACRES ROAD-PROFILE.
 - SEE SHEET 4 FOR FRANCIS LANE PLAN AND ROAD-PROFILE.
 - SEE DETAILS ON SHEET 5 FOR OPEN SPACE BOLLARDS.
 - SEE DETAILS ON SHEET 5 FOR RECREATION OPEN SPACE SIGNAGE.

ADJOINER INFORMATION FOR SHADY LANE CROSSING					
LOT NO.	STREET ADDRESS	OWNERS	TAX MAP/PARCEL	LIBER/FOLIO	USE & ZONING
1	6164 HANOVER ROAD	ADEOSUN ADEDOTUN AFOLARAN, ADEOSUN BETTY LANDU	38/235	16022/196	RES R-12
2	6106 PHELPS LANE	TREICH BRIAN P., TREICH SARAH M.	38/235	18298/204	RES/COMM R-12
3	6106 PHELPS LANE	NADKAR AMOL, SANKARANARAYANAN SOMMYA	38/235	16190/286	RES R-12
4	6110 PHELPS LANE	OH JUNG WHAN THOMAS, OH CECELIA H.	38/235	16190/310	RES R-12
5	6114 PHELPS LANE	SAVKO ANDREA, PHALEN LUCAS	38/235	16315/006	RES R-12
6	6118 PHELPS LANE	MEHERET TEMESGEN B.	38/235	16022/298	RES R-12

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS MK 11/29/2021 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION SR 1-6-22 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT 69 11/6/22 DATE

NO.	REVISION TO ADD PRIVATE HOUSING EASEMENT, FIRE HYDRANT AND ITS EASEMENT	REVISION	DATE
8-3-23			

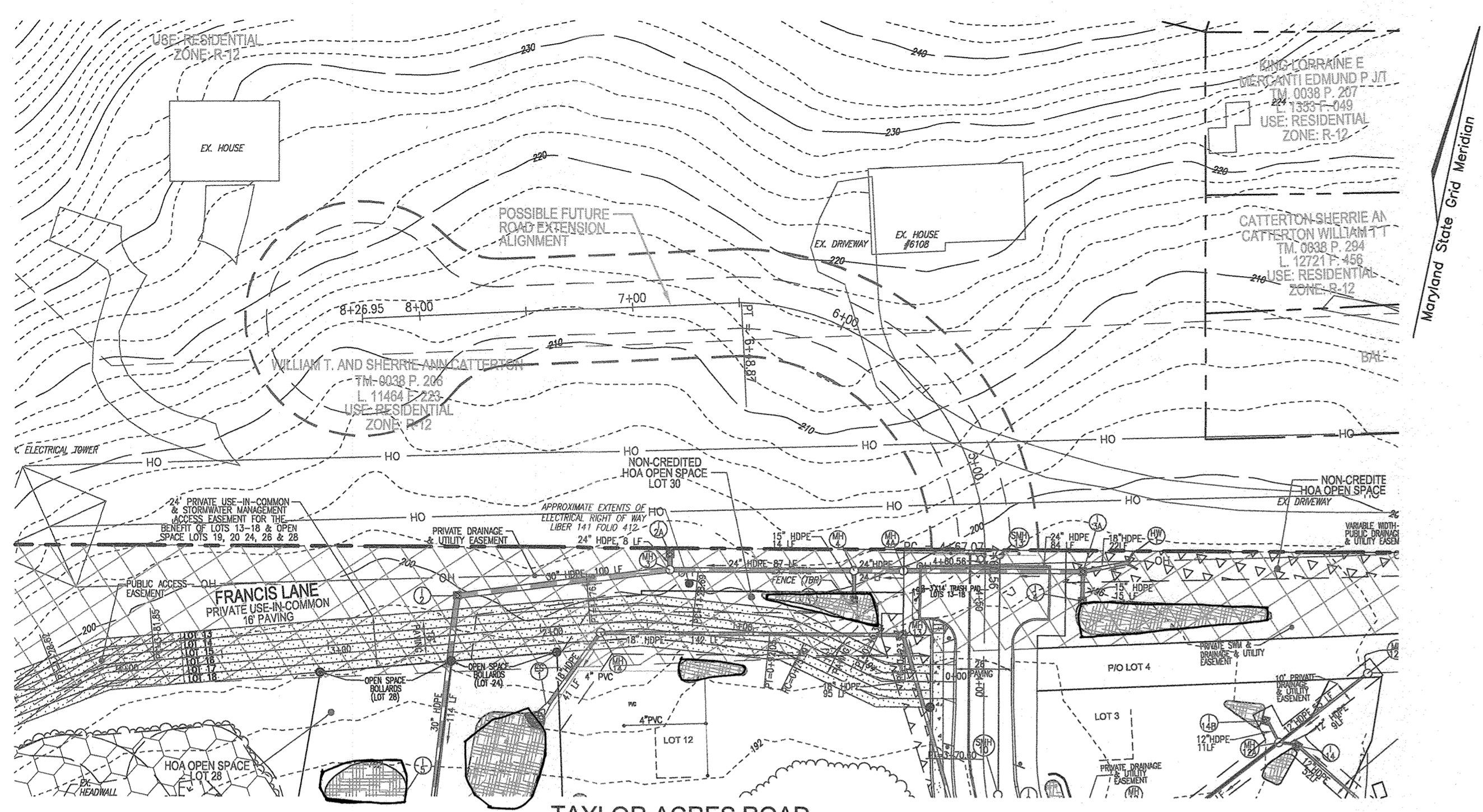
FINAL ROAD CONSTRUCTION PLANS
 TAYLOR ACRES ROAD - PLAN VIEW
GRACE MEADOWS
 LOTS 1 - 18 AND OPEN SPACE LOTS 19 - 30
 L. 14536 / F. 269
 TAX MAP 38 BLOCK 09
 1ST ELECTION DISTRICT
 A SUBDIVISION OF TAX MAP 38 - PARCEL 731
 ZONED R-12
 HOWARD COUNTY, MARYLAND

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

DESIGN BY: RHV
 DRAWN BY: MWP/HX/KG
 CHECKED BY: RHV
 DATE: AUGUST 2021
 SCALE: AS SHOWN
 W.O. NO.: 40077

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE 09-27-2027.

2 SHEET OF 25



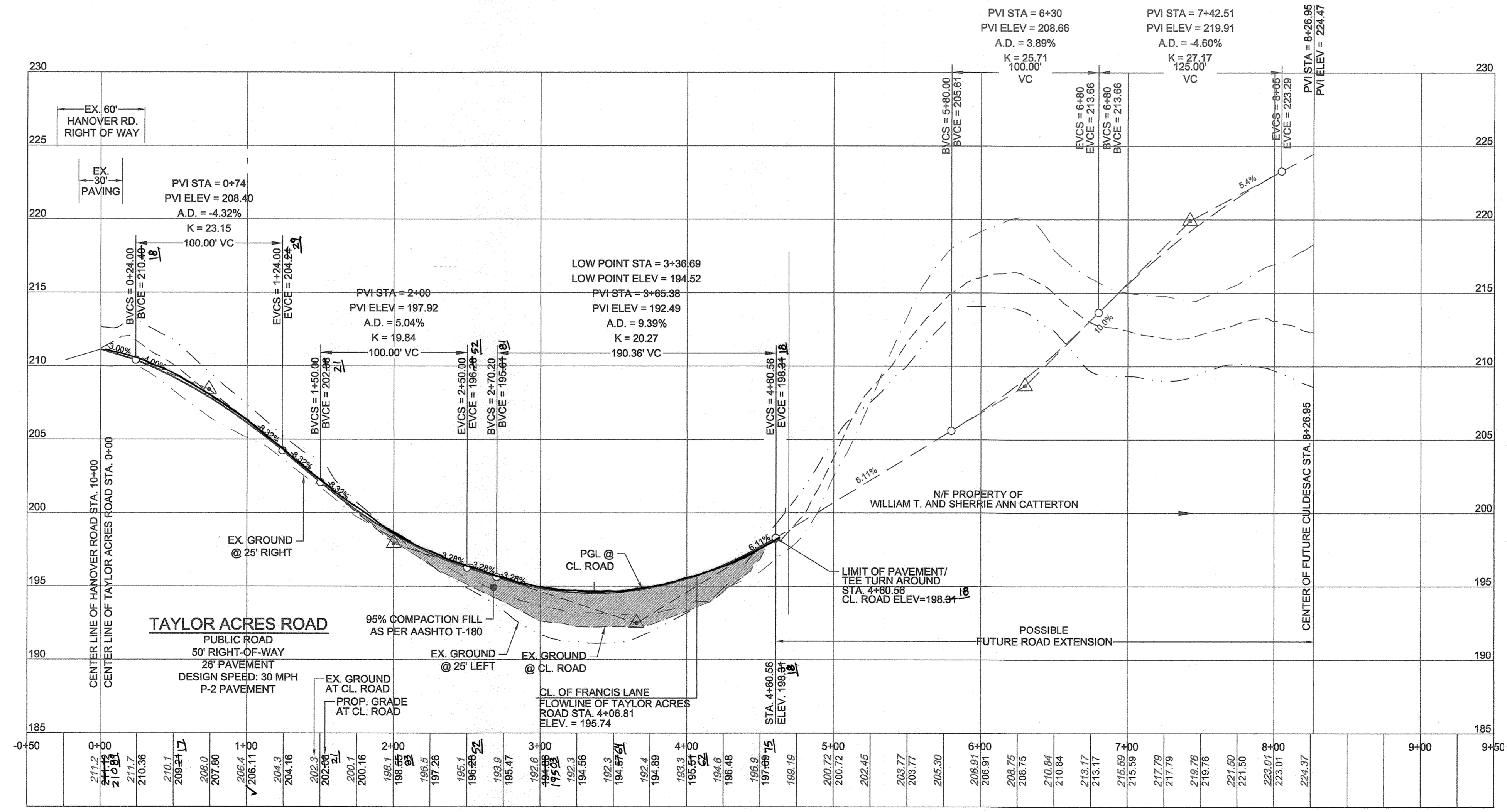
LEGEND

- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- MICRO-BORIENTATION
- PROPOSED SIDEWALK
- EXISTING TREELINE
- PROPOSED TREELINE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN DRAIN INLET
- EX. FOREST CONSERVATION EASEMENT
- APPROXIMATE EXTENTS OF ELECTRICAL RIGHT OF WAY LIBER 141 FOLD 412
- ACCESS EASEMENTS
- EX. WETLANDS
- EX. WETLAND BUFFER
- EX. STREAM BUFFER
- PRIVATE DRAINAGE & UTILITY EASEMENT
- OPEN SPACE BOLLARD (SEE DETAIL SHEET 5)

TAYLOR ACRES ROAD POSSIBLE FUTURE ROAD EXTENSION
SCALE: 1"=50'

POSSIBLE FUTURE ROAD EXTENSION - CURVE TABLE

CURVE	ARC	RADIUS	TANGENT	DELTA	CHORD
4+67.07 - 6+48.86	181.79'	116.85'	115.22'	89°17'23"	556°15'38"E 163.95'



TAYLOR ACRES ROAD - PROFILE
SCALE: 1"=50' HORZ.
1"=5' VERT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS MK
 DATE: 11/29/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 1.6.22

CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 1/6/22



AS-BUILT CERTIFICATION FOR PSWM
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

16193 7-9-24
 P.E.# DATE

OWNER/DEVELOPER
 GRACE TAYLOR SCHULTZ TRUSTEE OF THE GRACE T. SCHULTZ REVOCABLE TRUST
 6132 HANOVER ROAD
 HANOVER, MD 21076
 443-463-6760

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLANS
 TAYLOR ACRES ROAD - ROAD PROFILE
GRACE MEADOWS
 LOTS 1 - 18 AND OPEN SPACE LOTS 19 - 30
 A SUBDIVISION OF TAX MAP 38 - PARCEL 731

L. 14536 / F. 269
 TAX MAP 38 BLOCK 09
 1ST ELECTION DISTRICT
 DPZ REFERENCE: SEE SITE DATA

HOWARD COUNTY, MARYLAND
 ZONED R-12
 PARCEL 731

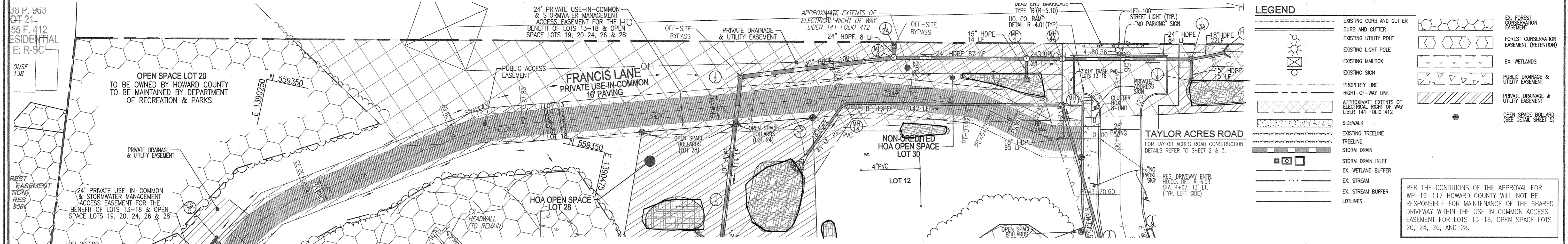
VOGEL ENGINEERING
 +
TIMMONS GROUP
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

PROFESSIONAL CERTIFICATE

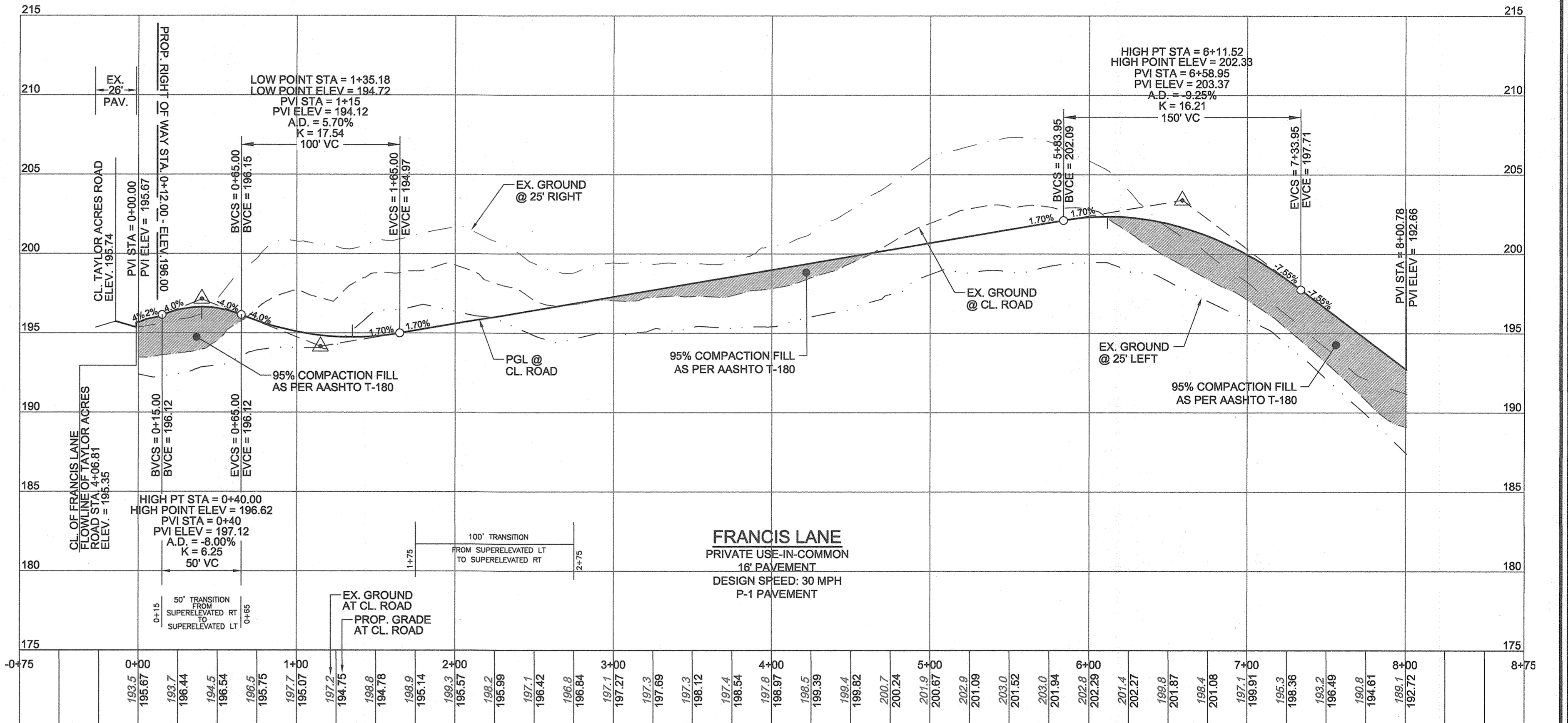
DESIGN BY: RHV
 DRAWN BY: MVP/HJ/KG
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 DATE: AUGUST 2021
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3 SHEET OF 25



PER THE CONDITIONS OF THE APPROVAL FOR WP-19-17 HOWARD COUNTY WILL NOT BE RESPONSIBLE FOR MAINTENANCE OF THE SHARED DRIVEWAY WITHIN THE USE IN COMMON ACCESS EASEMENT FOR LOTS 13-18, OPEN SPACE LOTS 20, 24, 26, AND 28.



ADJOINER INFORMATION FOR SHADY LANE CROSSING

LOT NO.	STREET ADDRESS	OWNERS	TAX MAP/PARCEL	LIBER/FOLD	USE	ZONING
7	6227 SWEETGUM LANE	JOHN RAJESH DAVID, RAJESH JEENASANTHA P.	38/235	16199/305	RES	R-12
8	6219 SWEETGUM LANE	PARMAR ANKIT M., PARMAR MAHPALSINH M.	38/235	16088/050	RES	R-12
9	6215 SWEETGUM LANE	ALI FNU MOHAMMED EHSAN, PATTAN SHAHEEN	38/235	18655/416	RES	R-12

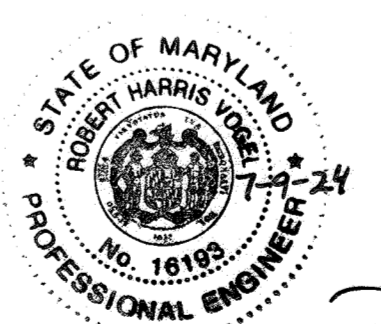
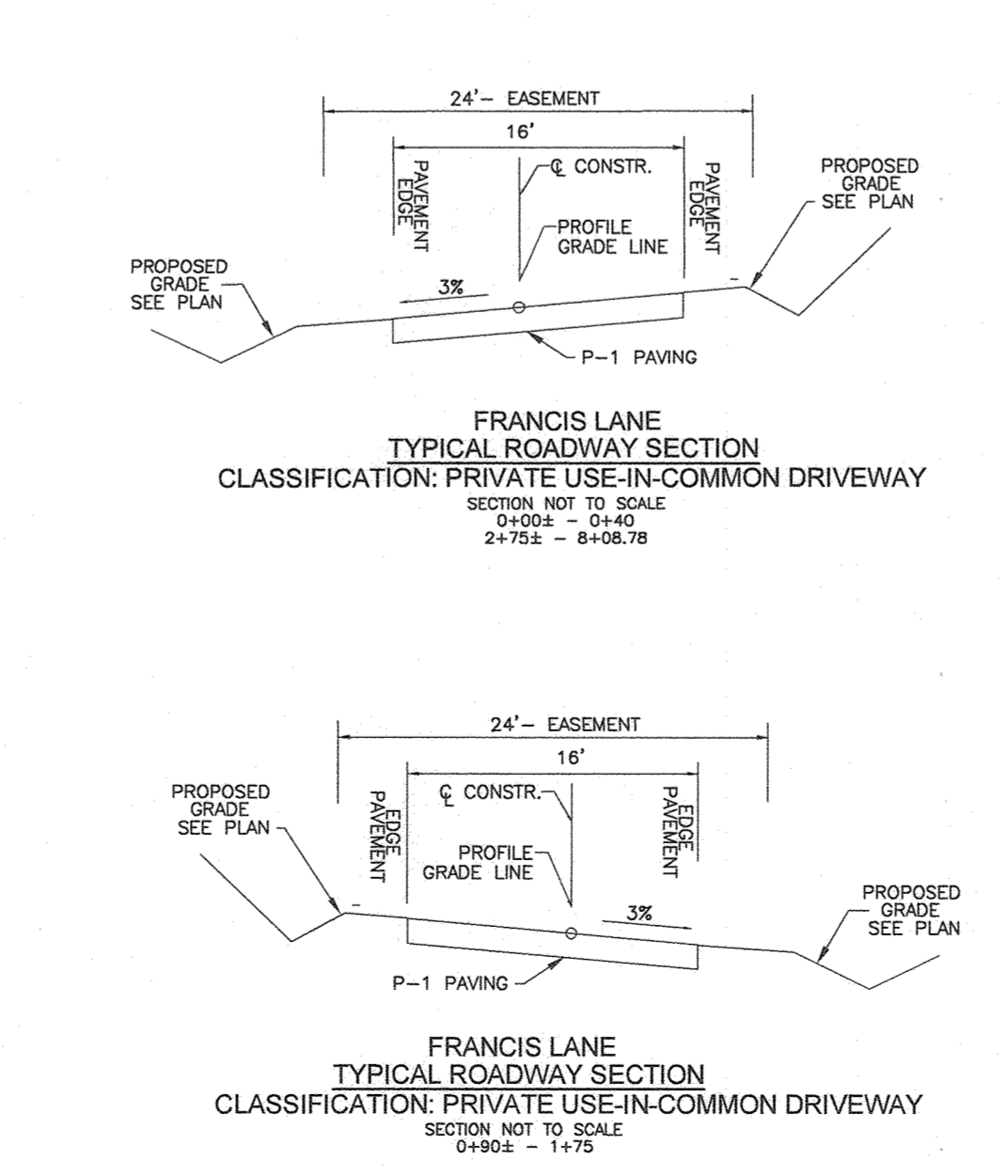
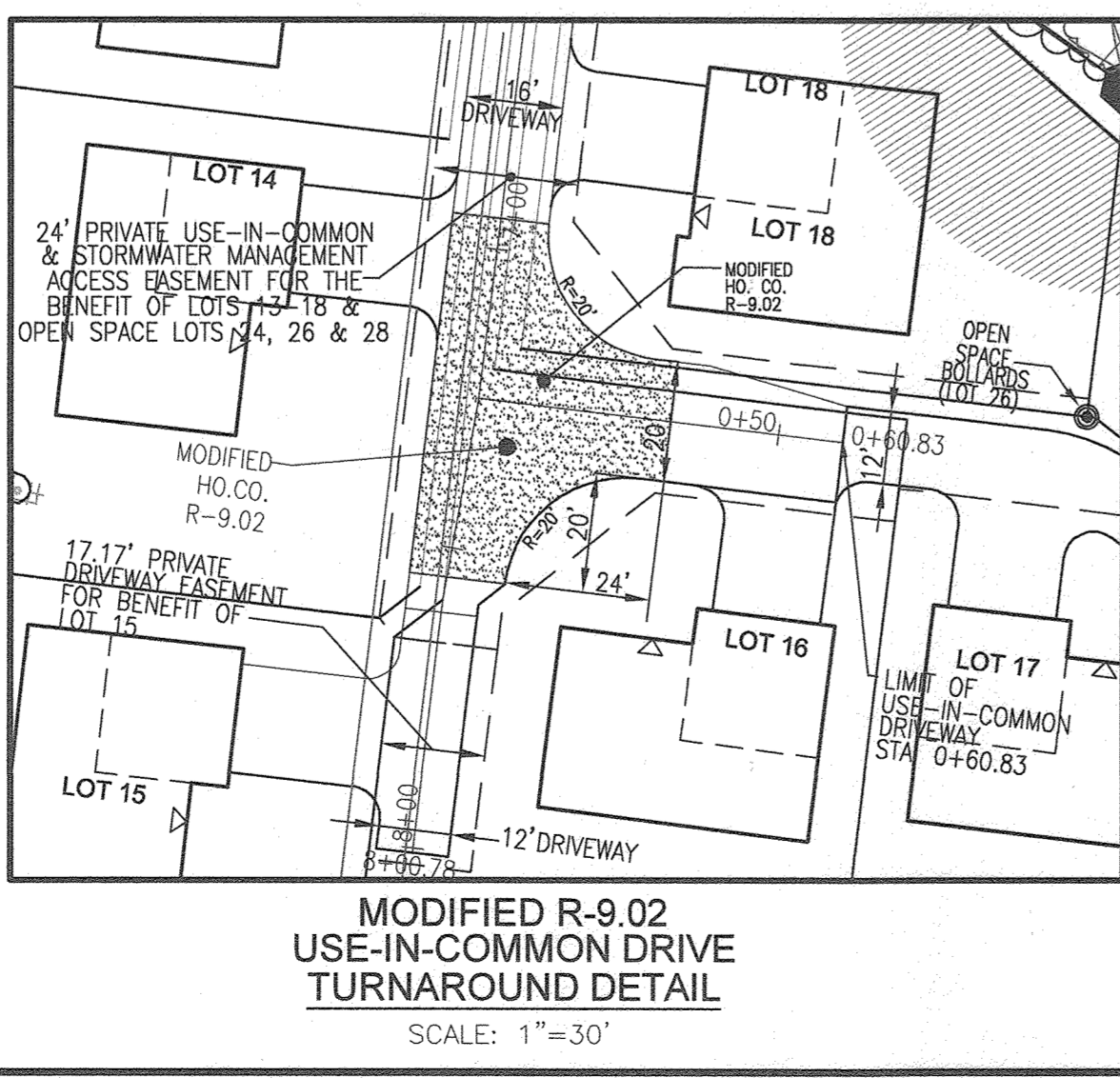
CURVE TABLE

CURVE	ARC	RADIUS	TANGENT	DELTA	CHORD
0+23.93 - 0+45.38	21.45'	48.00'	10.91'	25.3615"	S88°56'17"E 21.27'
0+45.38 - 0+92.05	16.76'	48.00'	8.46'	20°00'00"	S86°08'09"E 16.67'
1+28.69 - 1+76.76	48.07'	258.00'	24.11'	10°40'32"	S78°31'35"W 48.00'
3+81.85 - 4+28.82	46.77'	165.00'	23.54'	16°08'35"	S65°07'02"W 46.62'
5+30.93 - 6+28.29	97.36'	104.00'	52.58'	53°38'20"	S33°38'20"W 93.85'
6+28.29 - 6+53.54	15.57'	104.00'	7.80'	08°34'40"	N00°52'56"W 15.56'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS MK 11/29/2021 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION R 1.6.22 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT 10/12/22 DATE



AS-BUILT CERTIFICATION FOR PSWM
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

DATE: 7-9-24
 P.E.#: 16193

OWNER/DEVELOPER
 GRACE TAYLOR SCHUTT
 6132 HANOVER ROAD
 HANOVER, MD 21076
 443-463-6760

NO.	REVISION	DATE
1	REVISE TO ADD PRIVATE MONUMENT EASEMENT FILE HYDRANT AND ITS EASEMENT	8-3-23

FINAL ROAD CONSTRUCTION PLANS
 FRANCIS LANE ROAD PLAN & PROFILE
GRACE MEADOWS
 LOTS 1-18 AND OPEN SPACE LOTS 19-30
 A SUBDIVISION OF TAX MAP 38 - PARCEL 731

L. 14536 / F. 269
 TAX MAP 38 DISTRICT 09
 1ST ELECTION DISTRICT
 DPZ REFERENCE: SEE SITE DATA

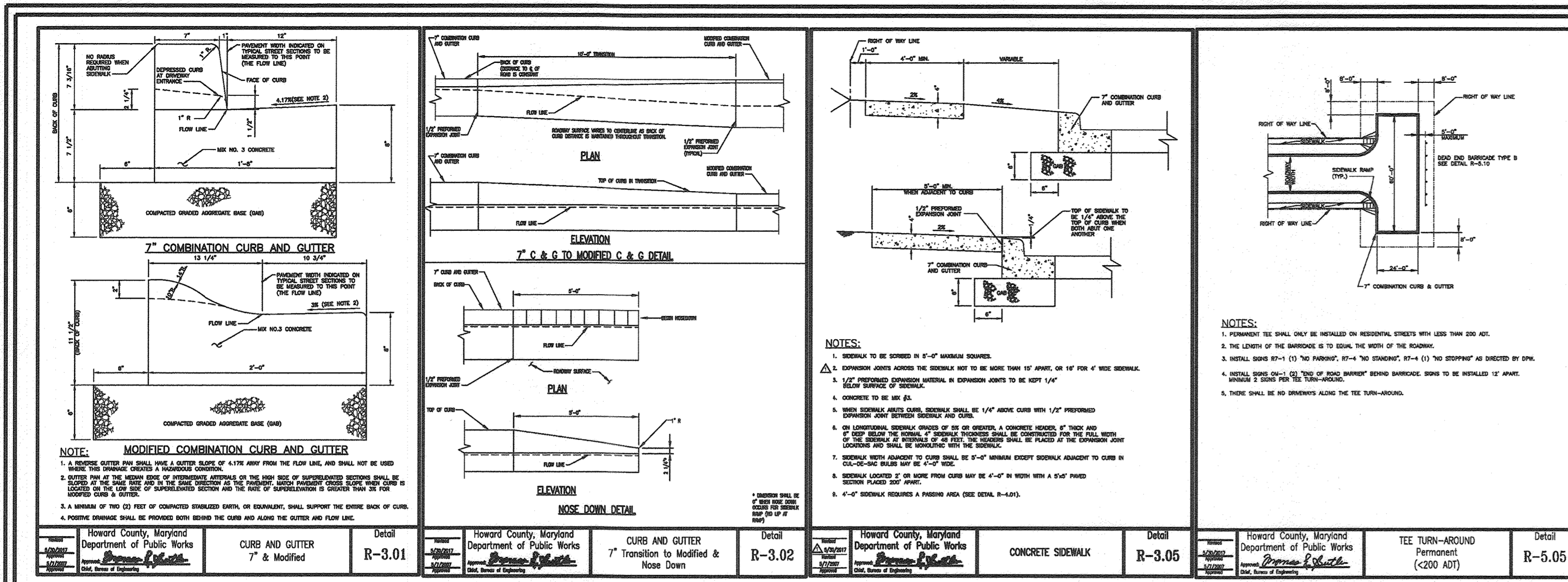
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 HOWARD COUNTY, MARYLAND

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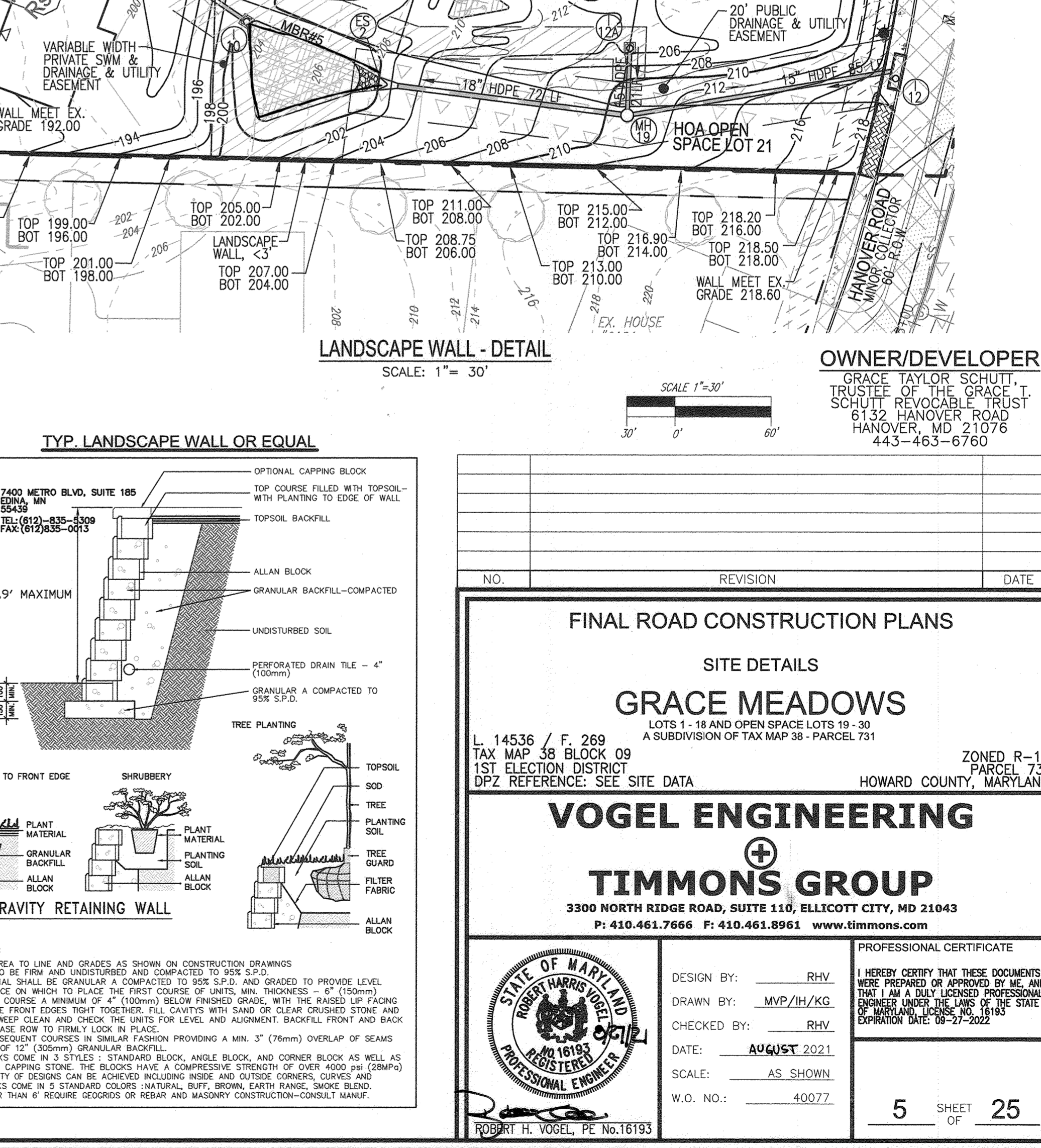
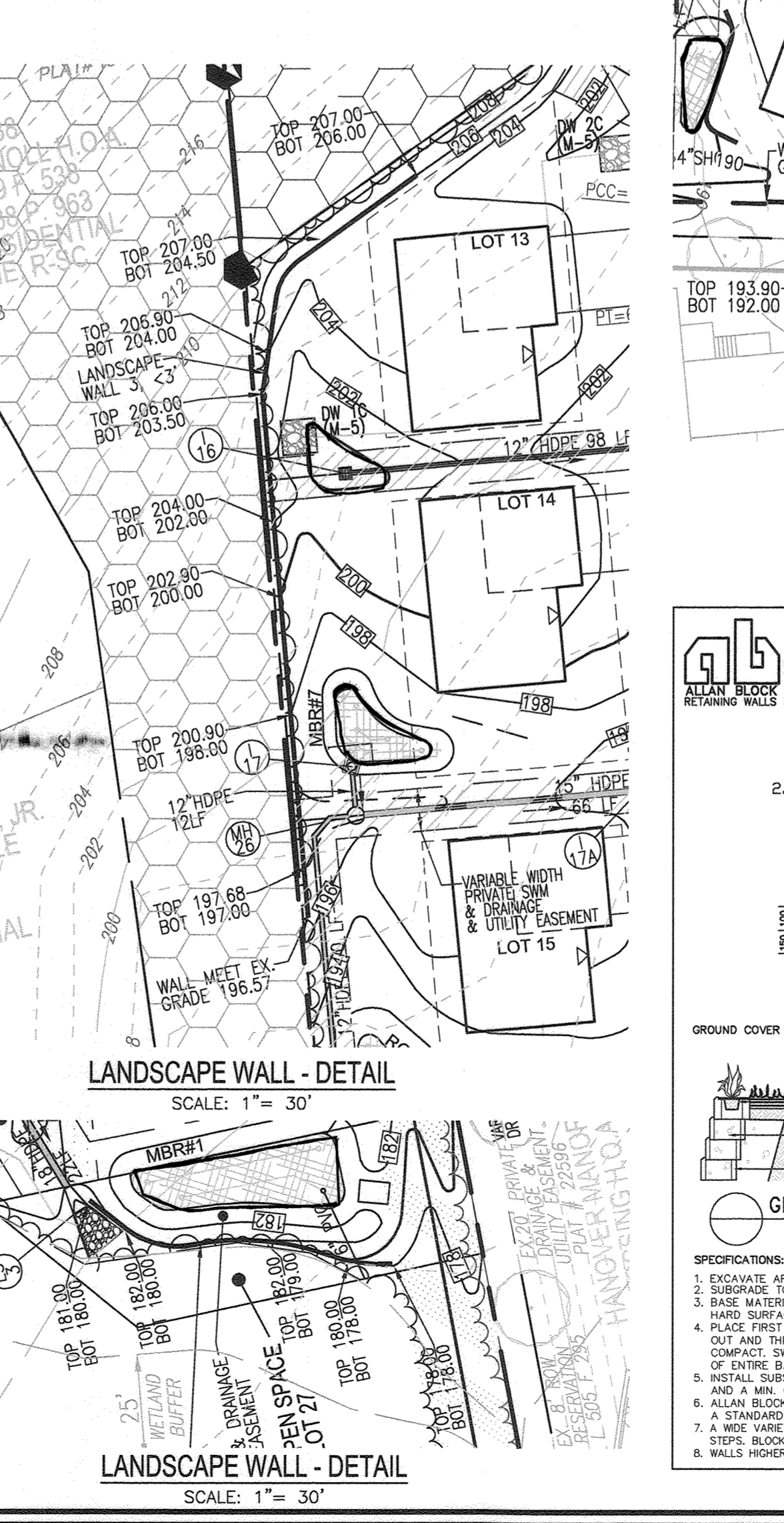
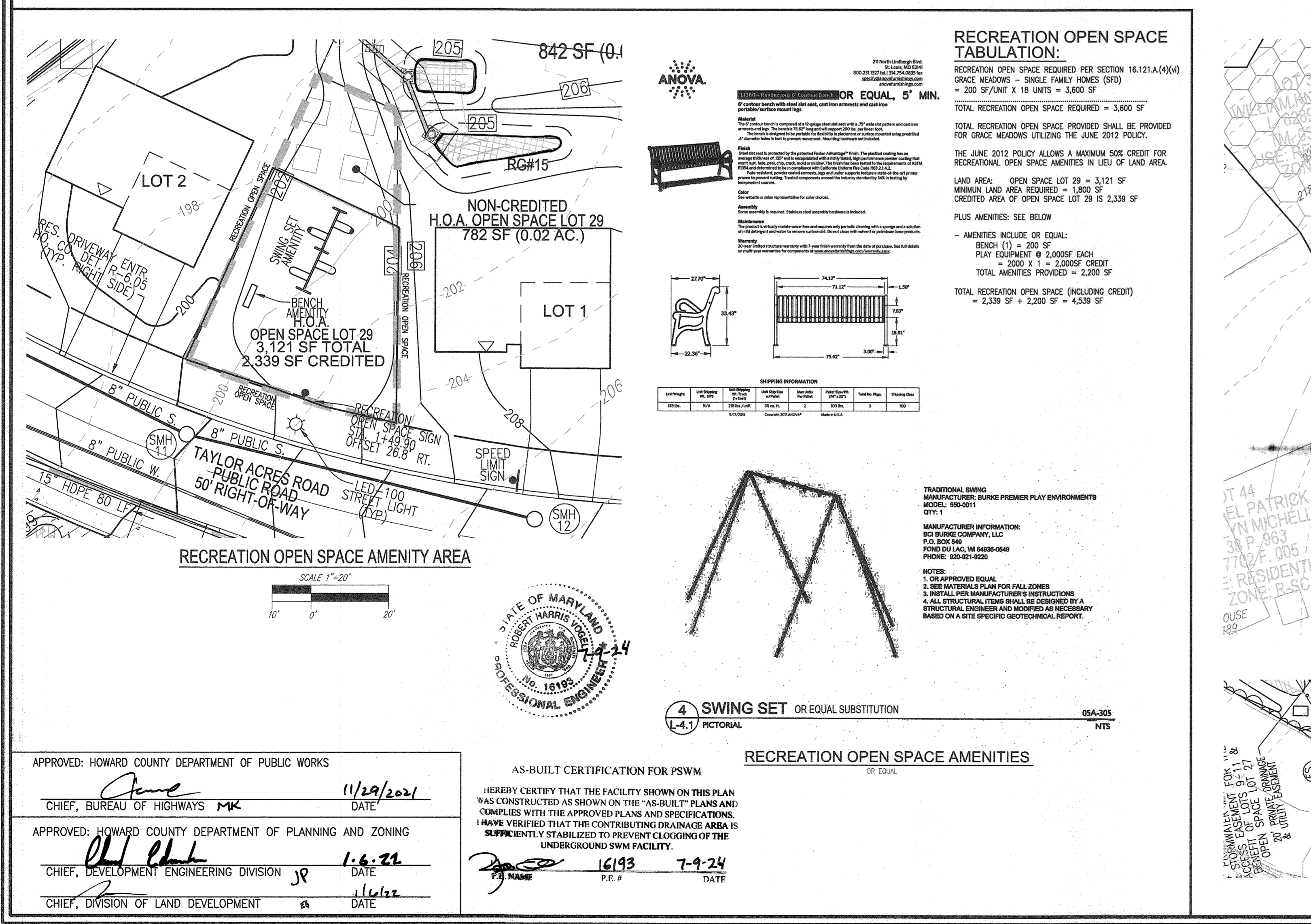
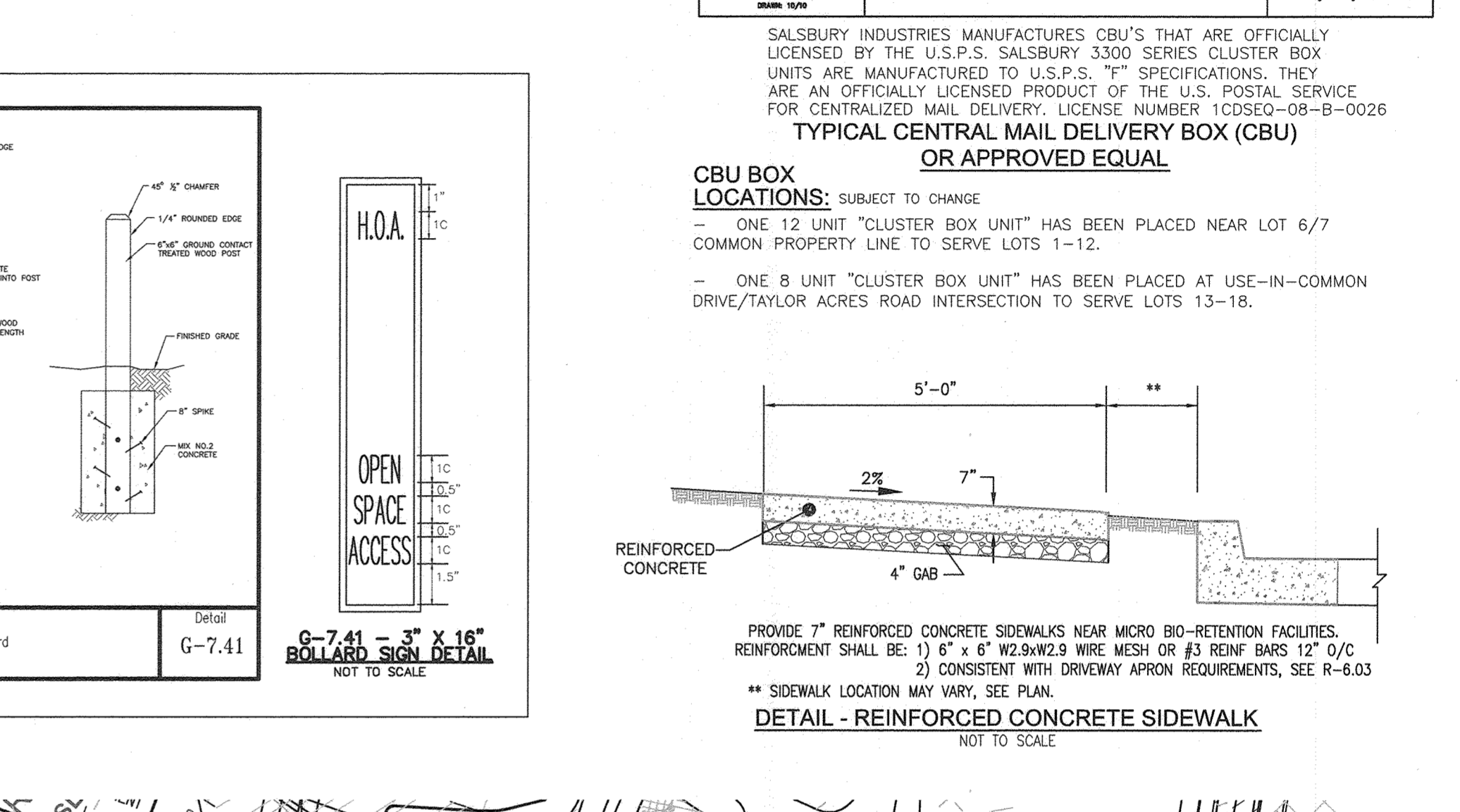
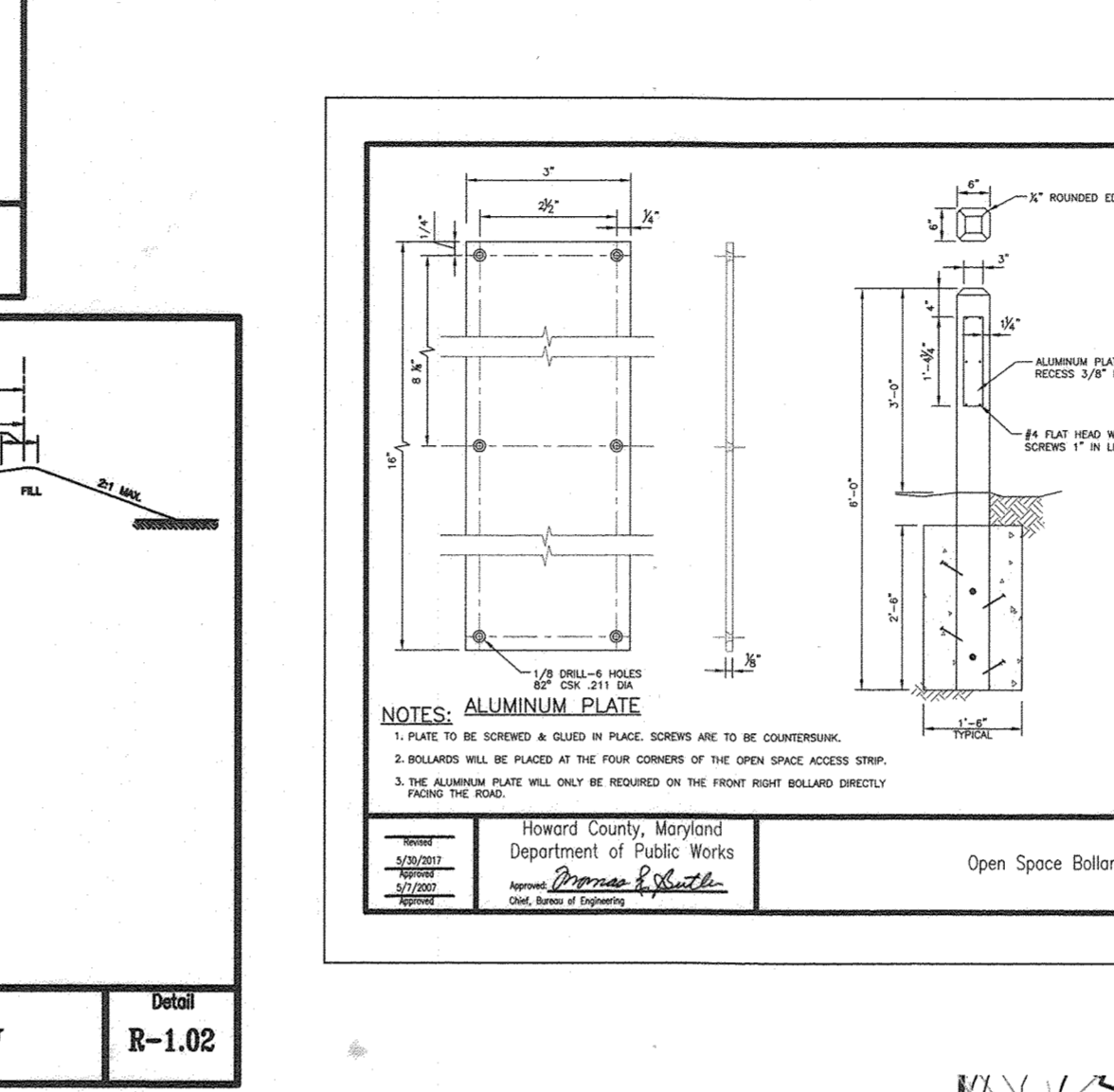
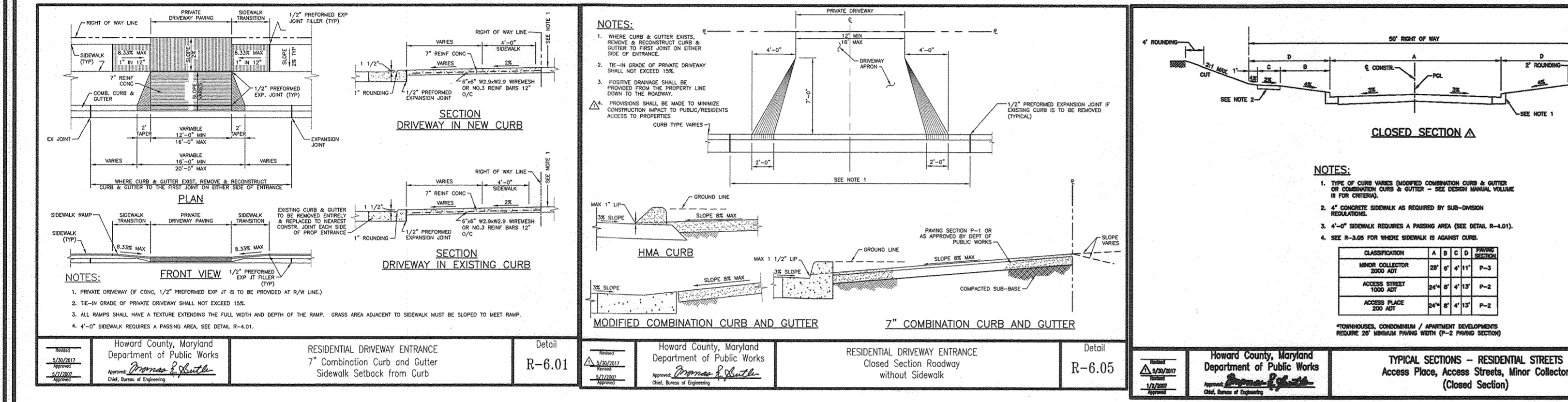
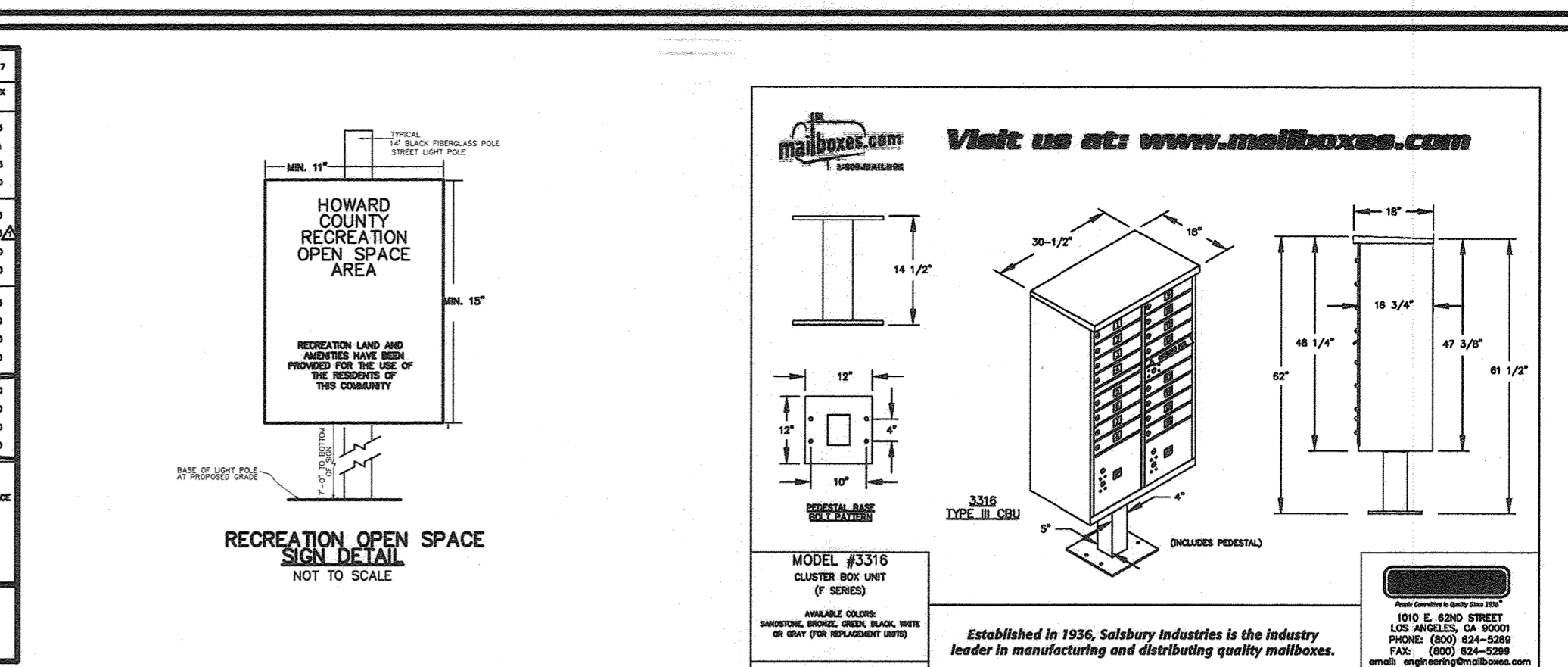
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 CHECKED BY: RHV
 DATE: AUGUST 2021
 SCALE: AS SHOWN
 W.O. NO.: 40077

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4 SHEET OF 25



SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA REARVIEW MIRROR (CRS)						
		3 TO 4	3 TO 4	2.7	3 TO 4	3 TO 4	2.7	2.7
P-1	PAVING SECTION WITH SIDEWALK	1.0	1.0	1.0	1.0	1.0	1.0	1.0
P-2	PAVING SECTION WITH SIDEWALK AND BIKEWAY	1.0	1.0	1.0	1.0	1.0	1.0	1.0
P-3	PAVING SECTION WITH SIDEWALK AND BIKEWAY WITH BIKEWAY	1.0	1.0	1.0	1.0	1.0	1.0	1.0
P-4	PAVING SECTION WITH SIDEWALK AND BIKEWAY WITH BIKEWAY AND BIKEWAY	1.0	1.0	1.0	1.0	1.0	1.0	1.0



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS MK
 DATE: 11/29/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION JR
 DATE: 1-6-22

CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 1/6/22

AS-BUILT CERTIFICATION FOR PSWM
 HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREAS ARE SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

DATE: 1/6/23
 P.E. # 16193
 DATE: 7-9-24

RECREATION OPEN SPACE AMENITY AREA
 SCALE: 1" = 20'

RECREATION OPEN SPACE TABULATION:
 RECREATION OPEN SPACE REQUIRED PER SECTION 16.121A(4)(6) GRASS MEADOWS - SINGLE FAMILY HOMES (SFH)
 = 200 SF/UNIT X 18 UNITS = 3,600 SF
 TOTAL RECREATION OPEN SPACE PROVIDED = 3,800 SF
 TOTAL RECREATION OPEN SPACE REQUIRED SHALL BE PROVIDED FOR GRASS MEADOWS UTILIZING THE JUNE 2012 POLICY.
 THE JUNE 2012 POLICY ALLOWS A MAXIMUM 50% CREDIT FOR RECREATION OPEN SPACE AMENITIES IN LIEU OF LAND AREA.
 LAND AREA: OPEN SPACE LOT 29 = 3,121 SF
 MINIMUM LAND AREA REQUIRED = 1,800 SF
 CREDITED AREA OF OPEN SPACE LOT 29 IS 2,339 SF
 PLUS AMENITIES: SEE BELOW
 - AMENITIES INCLUDE OR EQUAL:
 BENCH (1) = 200 SF
 PLAY EQUIPMENT @ 2,000SF EACH
 = 2000 X 1 = 2,000SF CREDIT
 TOTAL AMENITIES PROVIDED = 2,200 SF
 TOTAL RECREATION OPEN SPACE (INCLUDING CREDIT)
 = 2,339 SF + 2,200 SF = 4,539 SF

FINAL ROAD CONSTRUCTION PLANS
 SITE DETAILS
 GRACE MEADOWS
 LOTS 1-18 AND OPEN SPACE LOTS 19-30
 A SUBDIVISION OF TAX MAP 38 - PARCEL 731

L. 14536 / F. 269
 TAX MAP 38 BLOCK 09
 1ST ELECTION DISTRICT
 DPZ REFERENCE: SEE SITE DATA

ZONED R-121
 PARCEL 731
 HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 P: 410-461-7666 F: 410-461-8961 www.timmons.com

DESIGN BY: RHY
 DRAWN BY: MVP/IH/KG
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5 SHEET OF 25

ASBUILT APRIL 2024 F-20-076



LEGEND:

- EXISTING CONTOUR
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING TREELINE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- APPROXIMATE EXTENTS OF ELECTRICAL RIGHT OF WAY UNDER 141 F.O.D. 412
- EX. WETLANDS
- EX. WETLAND BUFFER
- EX. STREAM
- EX. STREAM BUFFER
- SOILS BOUNDARY
- M1B2
- M1D3
- MODERATE SLOPES (15-24.99%)
- STEEP SLOPES (25-99%)
- SPECIMEN TREE
- CRITICAL ROOT ZONE

SEDIMENT CONTROL LEGEND:

- SILT FENCE
- SUPER SILT FENCE
- CURB INLET PROTECTION
- STANDARD INLET PROTECTION
- LIMIT OF DISTURBANCE
- PROP. TRAP CONTOUR
- STABILIZED CONSTRUCTION ENTRANCE
- EARTH DIKE / CLEAN WATER DIKE
- PROPOSED EROSION CONTROL MATTING
- BAFFLE
- GABION PROTECTION
- PROP. DRAINAGE AREA DIVIDE
- DRAINAGE AREA DIVIDE
- POINT OF INVESTIGATION
- REMOVABLE PUMP STATION
- SPECIMEN TREE
- CRITICAL ROOT ZONE
- DISTURBANCE (SEE SHEET 7 FOR PROTECTION MEASURES)
- S1-2: 20.5% DISTURBANCE
- S1-12: 26.5% DISTURBANCE

NOTE - SEE SHEET 10
 THE PURPOSE OF THE PROPOSED ENVIRONMENTAL IMPACTS IS TO CONSTRUCT THE SEWER CONNECTION FOR LOTS 11-12.
 THE DEVELOPER HAS OBTAINED ALL NECESSARY STATE PERMITS FOR THE PROPOSED ENVIRONMENTAL IMPACTS.
 -MODE AUTHORIZATION NUMBER:
 20-NT-3216/202001634
 ALL WORK IN THE NONTIDAL WETLANDS, WETLAND BUFFERS SHALL BE COMPLETED PER THE BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS.

GRADING & SOIL EROSION AND SEDIMENT CONTROL - PHASE 1 PLAN
 SCALE: 1"=50'

CONTRACTOR NOTE:
 SPECIMEN TREE:
 1. SPECIMEN TREE #9 SHALL BE PROTECTED WITH SUPER SILT FENCE DURING ALL PHASES OF CONSTRUCTION. TREE PROTECTION MEASURES SHALL BE USED AS NECESSARY.
 2. SPECIMEN TREE #12 SHALL BE PROTECTED WITH THE USE OF TREE PROTECTION MEASURES.
 3. REFER TO SHEET 7 FOR TREE PROTECTION MEASURES.



AS-BUILT CERTIFICATION FOR PSWM
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.
 NAME: Robert H. Vogel P.E.#: 16193 DATE: 7-9-24
 NO AS-BUILT INFORMATION ON THIS SHEET

OWNER/DEVELOPER
 GRACE TAYLOR SCHULTZ
 TRUSTEE OF THE GRACE T. SCHULTZ REVOCABLE TRUST
 6132 HANOVER RD
 HANOVER, MD 21076
 443-463-6760

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 Alexander Butcher 11/02/21
 HOWARD S.C.D. DATE

OWNER/DEVELOPER CERTIFICATION:
 I/WE CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT DURING CONSTRUCTION. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE INSPECTION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND MDE.
 Nick Grose Vice President 9-27-21
 OWNER/DEVELOPER SIGNATURE DATE
 Nick Grose Vice President
 PRINTED NAME & TITLE

DESIGN CERTIFICATION:
 I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

DESIGNER'S SIGNATURE DATE
 Robert H. Vogel 8/27/24
 MD REGISTRATION NO. 16193
 PRINTED NAME (P.E., R.L.S., OR R.L.A. (circle one))

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS MK 11/29/2021
 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION JR 1-6-22
 DATE
 CHIEF, DIVISION OF LAND DEVELOPMENT ES 11/6/22
 DATE

DETAIL G-1-1 PIPE OUTLET SEDIMENT TRAP ST-I

PIPE OUTLET SEDIMENT TRAP ST-I, TRAP NO. 1	
DRAINAGE AREA - INITIAL	0.50 ACRES
DRAINAGE AREA - INTERIM	1.30 ACRES
DRAINAGE AREA - FINAL	1.30 ACRES
TOTAL STORAGE REQUIRED	4,680 CF
TOTAL STORAGE PROVIDED	9,200 CF
WET STORAGE REQUIRED	2,340 CF
WET STORAGE PROVIDED	2,770 CF
DRY STORAGE REQUIRED	2,340 CF
DRY STORAGE PROVIDED	6,429 CF
TRAP BOTTOM ELEVATION	177.00 FT
TRAP BOTTOM DIMENSIONS	29 x 57 FT x FT
RISER CREST (DRY STORAGE) ELEVATION	181.00 FT
OUTLET (NET STORAGE) ELEVATION	178.50 FT
CLEANOUT ELEVATION	177.70 FT
TOP OF EMBANKMENT ELEVATION	182.50 FT
SIDE SLOPE	2:1 HV RATIO
EMBANKMENT TOP WIDTH	4 FT
PRINCIPAL SPILLWAY MATERIAL (GABRIEL, RIBBON, AND/SEEP COLLAR)	CMP
RISER DIAMETER	27" CMP IN
BARREL DIAMETER	21" CMP IN
TRASH RACK DIAMETER	42" CMP IN
TRASH RACK HEIGHT	21" IN
ANTI-SEEP COLLAR DIMENSIONS	FT
OUTLET PROTECTION - LENGTH	32' FT
OUTLET PROTECTION - WIDTH	10' FT
OUTLET PROTECTION - DEPTH	19' IN

3 OF 3

DETAIL G-1-2 STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II

STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II, TRAP NO. 2	
DRAINAGE AREA - INITIAL	0.20 ACRES
DRAINAGE AREA - INTERIM	0.85 ACRES
DRAINAGE AREA - FINAL	0.95 ACRES
TOTAL STORAGE REQUIRED	3,420 CF
TOTAL STORAGE PROVIDED	6,552 CF
WET STORAGE REQUIRED	1,710 CF
WET STORAGE PROVIDED	1,879 CF
DRY STORAGE REQUIRED	1,710 CF
DRY STORAGE PROVIDED	4,673 CF
EXISTING GROUND ELEVATION AT OUTLET (WET STORAGE ELEVATION)	188.50 FT
TRAP BOTTOM ELEVATION	187.00 FT
TRAP BOTTOM DIMENSIONS	23 x 46 FT x FT
WEIR LENGTH	4 FT
WEIR CREST (DRY STORAGE) ELEVATION	191.00 FT
CLEANOUT ELEVATION	187.70 FT
TOP OF EMBANKMENT ELEVATION	192.00 FT
SIDE SLOPE	2:1 HV RATIO
EMBANKMENT TOP WIDTH	4 FT
OUTLET PROTECTION - LENGTH	10 FT
OUTLET PROTECTION - DEPTH	19 IN

3 OF 3

DETAIL G-1-2 STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II

STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II, TRAP NO. 3	
DRAINAGE AREA - INITIAL	0.63 ACRES
DRAINAGE AREA - INTERIM	3.21 ACRES
DRAINAGE AREA - FINAL	3.10 ACRES
TOTAL STORAGE REQUIRED	11,556 CF
TOTAL STORAGE PROVIDED	22,792 CF
WET STORAGE REQUIRED	5,778 CF
WET STORAGE PROVIDED	8,121 CF
DRY STORAGE REQUIRED	5,778 CF
DRY STORAGE PROVIDED	14,671 CF
EXISTING GROUND ELEVATION AT OUTLET (WET STORAGE ELEVATION)	181.00 FT
TRAP BOTTOM ELEVATION	179.00 FT
TRAP BOTTOM DIMENSIONS	42 x 86 FT x FT
WEIR LENGTH	13 FT
WEIR CREST (DRY STORAGE) ELEVATION	183.00 FT
CLEANOUT ELEVATION	179.70 FT
TOP OF EMBANKMENT ELEVATION	184.00 FT
SIDE SLOPE	2:1 HV RATIO
EMBANKMENT TOP WIDTH	4 FT
OUTLET PROTECTION - LENGTH	15 FT
OUTLET PROTECTION - DEPTH	19 IN

3 OF 3

MAPPED SOILS TYPES

SYMBOL / NAME / DESCRIPTION	GROUP	HYDRIC	Kw	CLAY %	PERCENTAGE
Fg	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	C	YES	0.24	NO
Rac	RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	C	NO	0.43	YES
Rhd	RUSSETT FINE SANDY LOAM, 10 TO 15 PERCENT SLOPES	C	NO	0.43	YES
Ruc	RUSSETT AND RELATIVELY SOILS, 5 TO 10 PERCENT SLOPES	C	NO	0.43	YES
Sfe	SASSAPARAS AND CROON SOILS, 15 TO 25 PERCENT SLOPES	B	NO	0.32	YES
Sfd	SASSAPARAS AND CROON SOILS, 10 TO 15 PERCENT SLOPES	B	NO	0.37	YES
Ucdz	URBAN LAND-CHILLUM-RENTON COMPLEX, 3 TO 15 PERCENT SLOPES	C	NO	-	NO

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY.

NOTE:
 HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL EROSION FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.
 1. SOURCE: HOWARD SOIL CONSERVATION DISTRICT WEBSITE: <http://www.hscd.com/soil/>
 2. HYDRIC SOILS INFORMATION ADAPTED FROM THE NATIONAL HYDRIC SOILS LIST, AT <http://soils.usda.gov/soil/hydric/>, CONSULTED ON DECEMBER 29, 2014.

GENERAL NOTES:
 -SILT FENCE RUNNING DOWNHILL SHALL BE CURLED UPHILL NO MORE THAN 35 FEET APART.
 -SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
 -DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
 -LOCATE STOCKPILES AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 16 FEET IN HEIGHT SHALL BE BENCHED. SEE STABILIZATION SPECS ON SHEET 9.
 -ALL EARTH DIKES ARE TO BE PLACED IN WORKING ORDER AT THE END OF EACH WORKING DAY.
 -SEDIMENT CONTROLS INTERRUPTED BY INSTALLATION OF UTILITY LINES ARE TO BE REPAIRED IMMEDIATELY.
 -STABILIZATION IS TO BE DONE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE INTERVALS REQUIRED BY THE 2011 STDS. & SPECS., WHICHEVER IS MORE RESTRICTIVE.
 -FOR SOILS ONSITE THAT WOULD BE CONSIDERED HIGHLY ERODIBLE BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT, MORE STRINGENT SEEDING AND STABILIZATION METHODS MAY BE EXPECTED AT SITE DEVELOPMENT STAGE.
 -REFER TO PLAN SHEETS 9 AND 10 FOR SEDIMENT TRAP STANDARD DETAILS.
 -REFER TO PLAN SHEET 8 FOR SEQUENCE OF CONSTRUCTION.
 -REFER TO PLAN SHEETS 8 AND 09 FOR STANDARD DETAILS AND STABILIZATION NOTES.

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLANS
 GRADING AND SOIL EROSION AND SEDIMENT CONTROL PHASE 1 PLAN
GRACE MEADOWS
 LOTS 1-18 AND OPEN SPACE LOTS 19-30
 A SUBDIVISION OF TAX MAP 38 - PARCEL 731
 L. 14536 / F. 269
 TAX MAP 38 BLOCK 09
 1ST ELECTION DISTRICT
 DPZ REFERENCE: SEE SITE DATA
 ZONED R-12
 PARCEL 731
 HOWARD COUNTY, MARYLAND

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

DESIGN BY: RHV
 DRAWN BY: MWP/JH/KG
 CHECKED BY: RHV
 DATE: AUGUST 2021
 SCALE: AS SHOWN
 W.O. NO.: 40077
 PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 08-27-2022
 ROBERT H. VOGEL, PE No.16193



LEGEND

	EXISTING CONTOUR
	PROPOSED CONTOUR
	EXISTING SPOT ELEVATION
	PROPOSED SPOT ELEVATION
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING FENCE
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	MICRO-BIORETENTION
	PROPOSED SIDEWALK
	EXISTING TREELINE
	PROPOSED TREELINE
	PROPOSED STORM DRAIN
	PROPOSED STORM DRAIN INLET
	EX. WETLANDS
	EX. WETLAND BUFFER
	EX. STREAM
	EX. STREAM BUFFER
	SOILS BOUNDARY
	MODERATE SLOPES (15-24.99%)
	STEEP SLOPES (>25%)
	OPEN SPACE BOLLARD (SEE DETAIL SHEET 5)

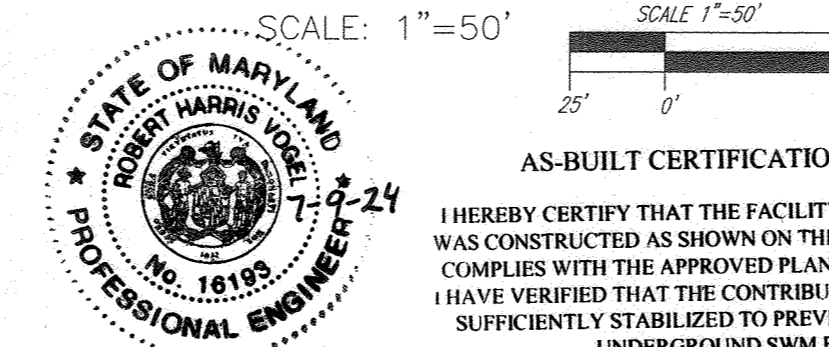
NOTE (30' BRL*)
 IN ACCORDANCE WITH SECTION 16.120(b)(9)(i) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, 30' BRL* REPRESENTS A SETBACK FROM THE EXISTING BG&E ELECTRICAL RIGHT-OF-WAY (L. 141 / F. 412)

SEDIMENT CONTROL LEGEND:

	SILT FENCE
	SUPER SILT FENCE
	CURB INLET PROTECTION
	STANDARD INLET PROTECTION
	LIMIT OF DISTURBANCE
	PROP. TRAP CONTOUR
	STABILIZED CONSTRUCTION ENTRANCE
	EARTH DIKE
	CLEAN WATER DIKE
	PROPOSED EROSION CONTROL MATTING
	BAFFLE
	GABION PROTECTION
	REMOVABLE PUMP STATION
	PROP. DRAINAGE AREA DIVIDE
	DRAINAGE AREA
	POINT OF INVESTIGATION
	SPECIMEN TREE
	CRITICAL ROOT ZONE DISTURBANCE (SEE SHEET 7 FOR PROTECTION MEASURES)

OWNER/DEVELOPER
 GRACE TAYLOR SCHULTZ TRUSTEES OF THE GRACE T. SCHULTZ REVOCABLE TRUST
 6133 SHADYWOOD ROAD
 HANOVER, MD 21076
 443-463-6760

GRADING & SOIL EROSION AND SEDIMENT CONTROL - PHASE 2 PLAN



CONTRACTOR NOTE:
 SPECIMEN TREE:
 1. SPECIMEN TREE #9 SHALL BE PROTECTED WITH SUPER SILT FENCE DURING ALL PHASES OF CONSTRUCTION. TREE PROTECTION MEASURES SHALL BE USED AS NECESSARY.
 2. SPECIMEN TREE #12 SHALL BE PROTECTED WITH THE USE OF TREE PROTECTION MEASURES.

NOTE - SEE SHEET 10
 THE PURPOSE OF THE PROPOSED ENVIRONMENTAL IMPACTS IS TO CONSTRUCT THE SEWER CONNECTION FOR LOTS 1-12.
 THE DEVELOPER HAS OBTAINED ALL NECESSARY STATE PERMITS FOR THE PROPOSED ENVIRONMENTAL IMPACTS - MDE AUTHORIZATION NUMBER: 20-NI-3216/2020/1634.
 ALL WORK IN THE NONTIDAL WETLANDS, WETLAND BUFFERS SHALL BE COMPLETED PER THE BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAIN.

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

Alexander Batchi 11/02/21
 HOWARD S.C.D. DATE

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

Nick Groseclose 8-27-21
 OWNER/DEVELOPER SIGNATURE DATE
 Nick Groseclose Vice President
 PRINTED NAME & TITLE

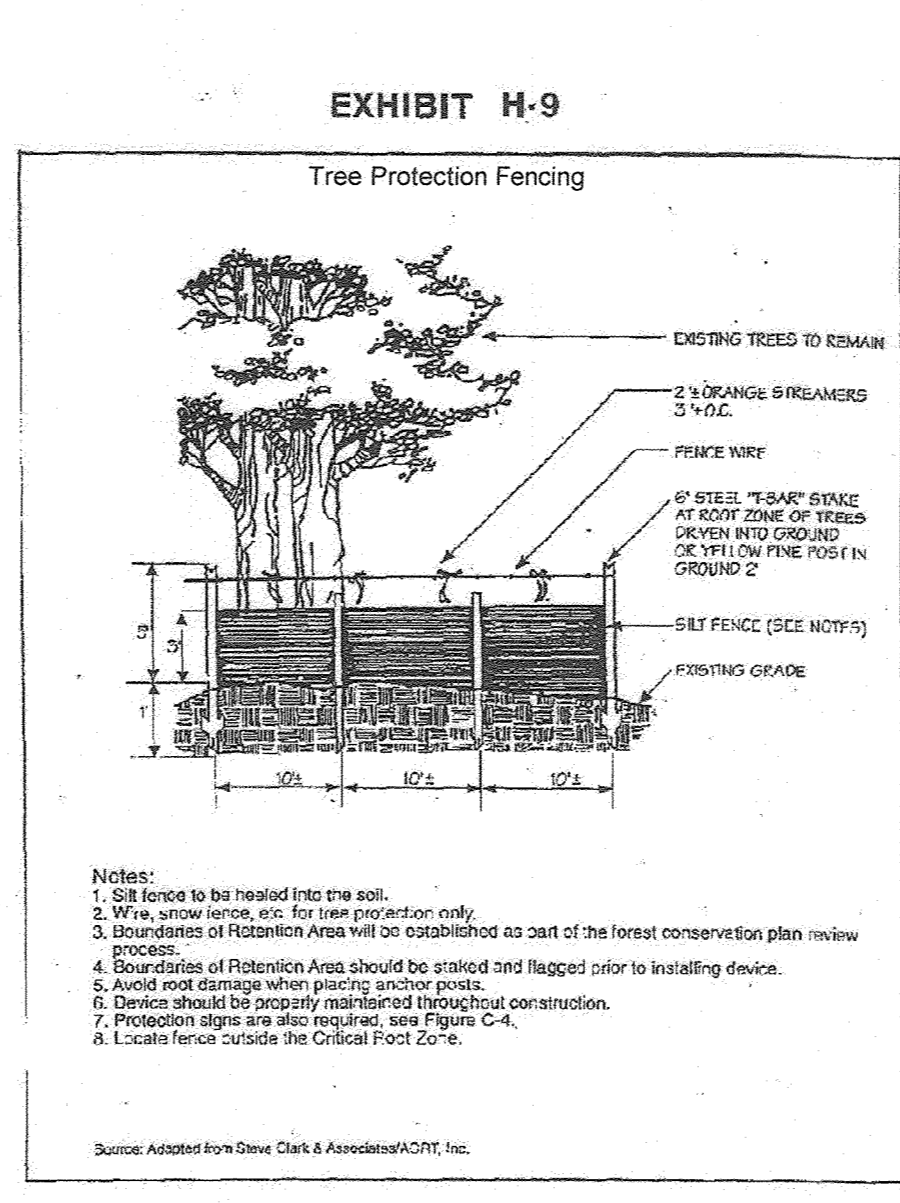
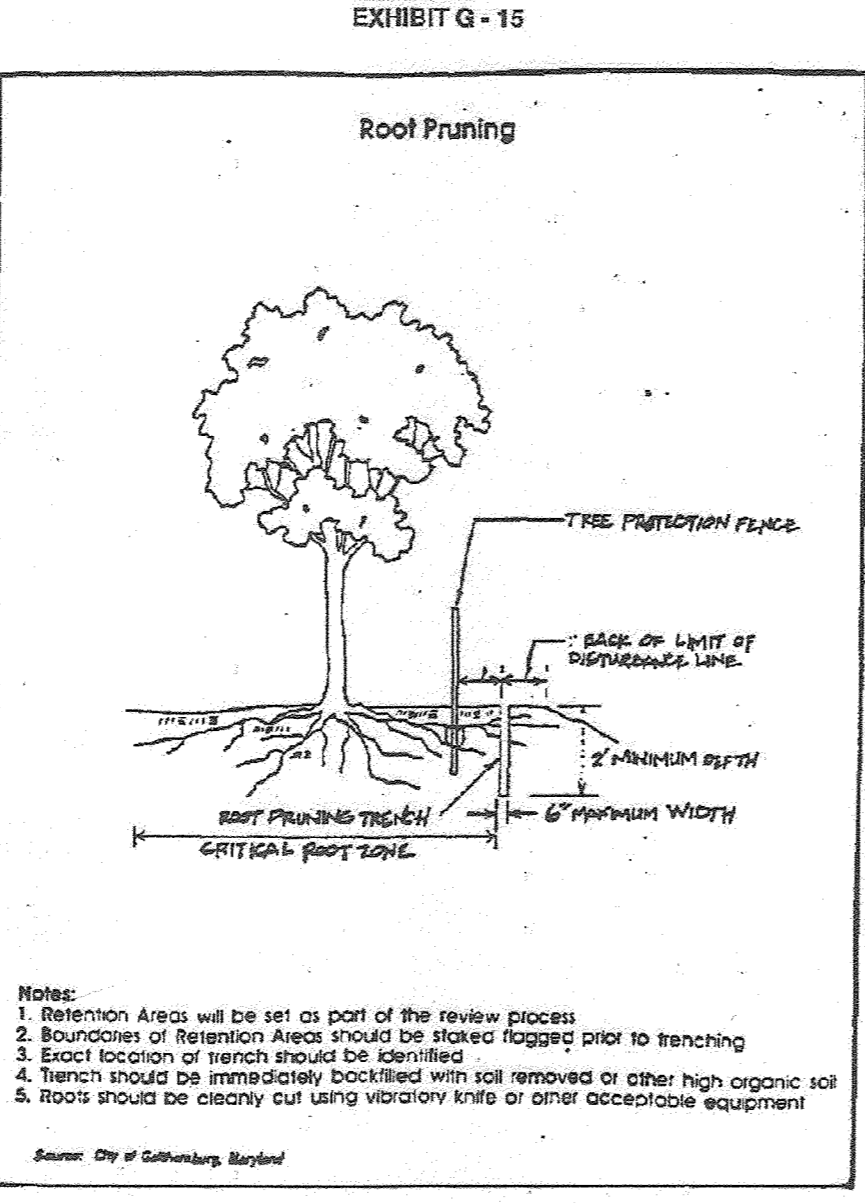
DESIGN CERTIFICATION:
 I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Robert H. Vogel 8/27/21
 DESIGNER'S SIGNATURE DATE
 ROBERT H. VOGEL MD REGISTRATION NO. 16193
 PRINTED NAME (P.E., R.L.S., OR R.L.A. (circle one))

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways MK 11/29/2021
 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division JR 1.6.22
 DATE
 Chief, Division of Land Development eb 11/6/22
 DATE

TREE PROTECTION DETAILS:



MAPPED SOILS TYPES

SYMBOL NAME / DESCRIPTION	GROUP	HYDRIC	Kw	CRITICAL ROOT ZONE
T-1 TULLINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	D	YES	0.24	NO
R-2C RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	C	NO	0.43	YES
R-2D RUSSETT FINE SANDY LOAM, 10 TO 15 PERCENT SLOPES	C	NO	0.43	YES
R-2E RUSSETT AND BERTHOLE SOILS, 5 TO 10 PERCENT SLOPES	C	NO	0.43	YES
S-1E SASSAFRAS AND CROOK SOILS, 10 TO 20 PERCENT SLOPES	B	NO	0.32	YES
S-1D SASSAFRAS AND CROOK SOILS, 10 TO 15 PERCENT SLOPES	B	NO	0.37	YES
U-1D URBAN LANE-CHILLUM-BETHLEHEM COMPLEX, 5 TO 15 PERCENT SLOPES	C	NO	-	NO

NOTE:
 HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL EROSION FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.
 1. SOURCE: HOWARD SOIL CONSERVATION DISTRICT WEBSITE: https://docs.wixstatic.com/ugd/498741_3a64e1b187e43f62105093c6d8809f.pdf
 DOCUMENTS PULLDOWN - SHARED ITEMS - DOCUMENT TITLED "K FACTOR (USE Kw)" AND THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE'S WEB SOIL SURVEY, CONSULTED ON DECEMBER 29, 2014. AVAILABLE ON-LINE AT: <HTTP://WEBSOILSURVEY.NRCS.USDA.GOV/APP/HOME.PAGE.HTM>.
 2. HYDRIC SOILS INFORMATION ADAPTED FROM THE NATIONAL HYDRIC SOILS LIST AT <HTTP://SOILS.USDA.GOV/USE/HYDRIC/>, CONSULTED ON DECEMBER 29, 2014.

GENERAL NOTES:
 -SILT FENCE RUNNING DOWNHILL SHALL BE CURLED UPHILL NO MORE THAN 35 FEET APART.
 -SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
 -DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
 -LOCATE STOCKPILES AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 16 FEET IN HEIGHT SHALL BE BENCHED. SEE STABILIZATION SPECS ON SHEET 9.
 -ALL EARTH DIKES ARE TO BE PLACED IN WORKING ORDER AT THE END OF EACH WORKING DAY.
 -SEDIMENT CONTROLS INTERRUPTED BY INSTALLATION OF UTILITY LINES ARE TO BE REPAIRED IMMEDIATELY.
 -STABILIZATION IS TO BE DONE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE INTERVALS REQUIRED BY THE 2011 STDs. & SPECS., WHICHEVER IS MORE RESTRICTIVE.
 -FOR SOILS ON SITE THAT WOULD BE CONSIDERED HIGHLY ERODIBLE BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT, MORE STRINGENT SEEDING AND STABILIZATION METHODS MAY BE EXPECTED AT SITE DEVELOPMENT STAGE.
 -REFER TO PLAN SHEETS 9 AND 10 FOR SEDIMENT TRAP STANDARD DETAILS.
 -REFER TO PLAN SHEET 8 FOR SEQUENCE OF CONSTRUCTION.
 -REFER TO PLAN SHEET 8 AND 09 FOR STANDARD DETAILS AND STABILIZATION NOTES.

NO.	REVISION TO ADD PRIVATE MONUMENT BASEMENT, FIRE HYDRANT AND ITS BASEMENT	DATE
8-3-23		

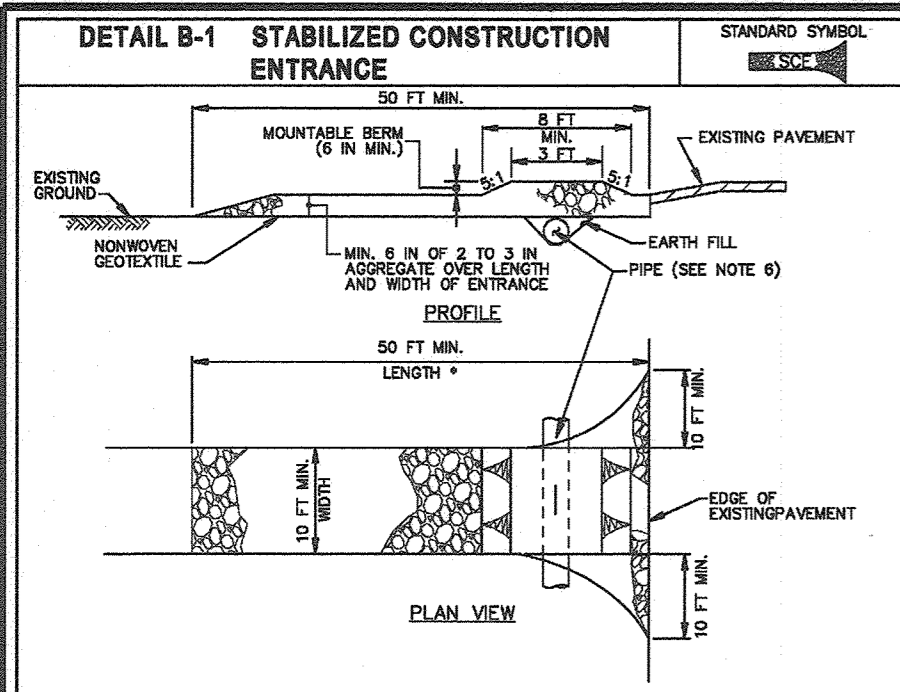
FINAL ROAD CONSTRUCTION PLANS
 GRADING AND SOIL EROSION AND SEDIMENT CONTROL - PHASE 2 PLAN
GRACE MEADOWS
 LOTS 1-18 AND OPEN SPACE LOTS 19-30
 A SUBDIVISION OF TAX MAP 38 - PARCEL 731
 L. 14536 / F. 269
 TAX MAP 38 BLOCK 09
 1ST ELECTION DISTRICT
 DPZ REFERENCE: SEE SITE DATA
 ZONED R-12
 PARCEL 731
 HOWARD COUNTY, MARYLAND

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

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 08-27-2022.

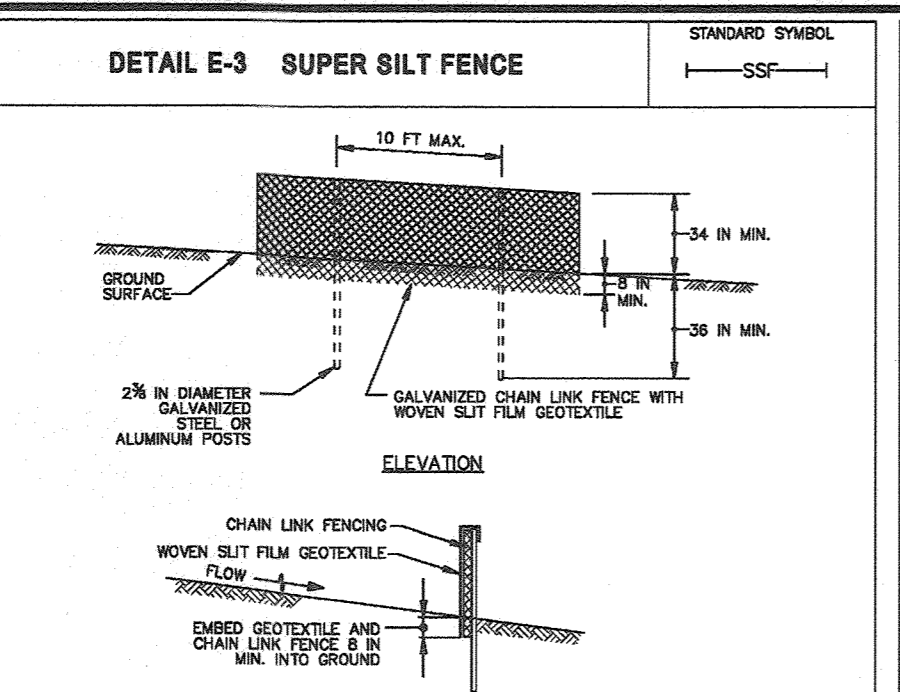
DESIGN BY: RHY
 DRAWN BY: MJP/H/KG
 CHECKED BY: RHY
 DATE: AUGUST 2021
 SCALE: AS SHOWN
 W.O. NO.: 40077

7 SHEET OF 25



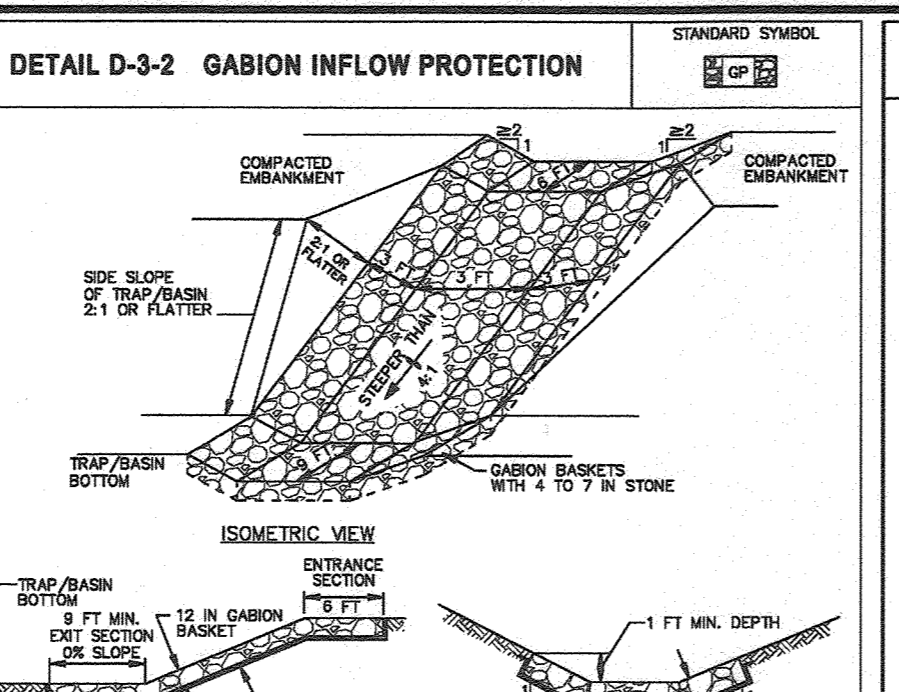
- CONSTRUCTION SPECIFICATIONS**
- PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SOE. USE MINIMUM LENGTH OF 50 FEET (30 FEET FOR SINGLE RESIDENCE LOTS). USE MINIMUM WIDTH OF 10 FEET. FLARE SIZE 10 FEET MINIMUM AT THE EXISTING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

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



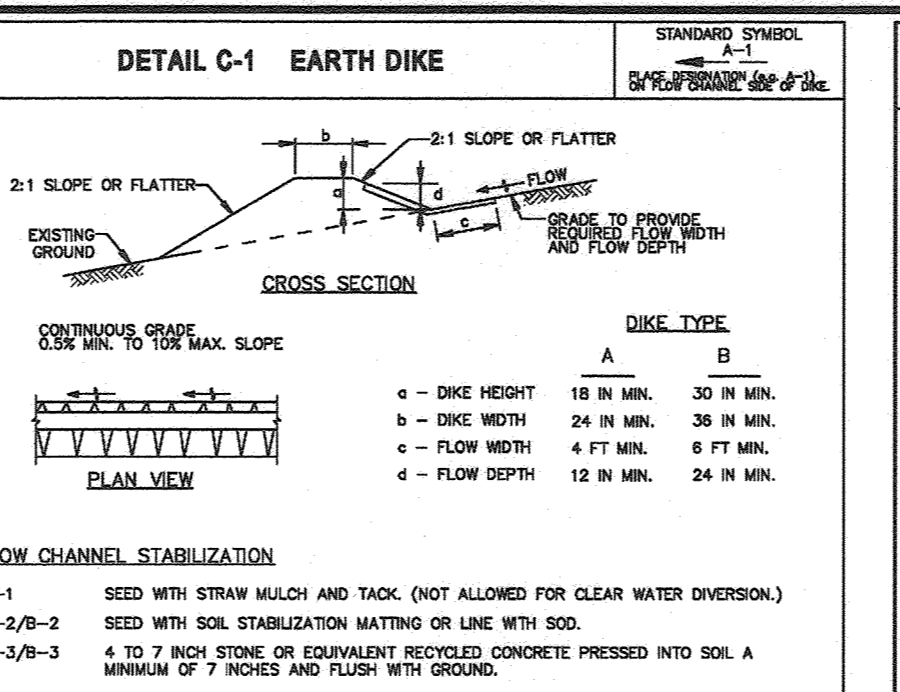
- CONSTRUCTION SPECIFICATIONS**
- INSTALL 2 1/2 INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
 - FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2 1/2 INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HARD RINGS.
 - FASTEN WOVEN SILT 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. ENDED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
 - WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
 - EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT ROUNDING AT THE ENDS OF THE SUPER SILT FENCE.
 - PROVIDE MANUFACTURER RECOMMENDATIONS TO THE INSPECTION/DEVELOPMENT AUTHORITY SHOWING THAT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN, IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.
 - REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BUILDS DEVELOPMENT IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN, IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

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



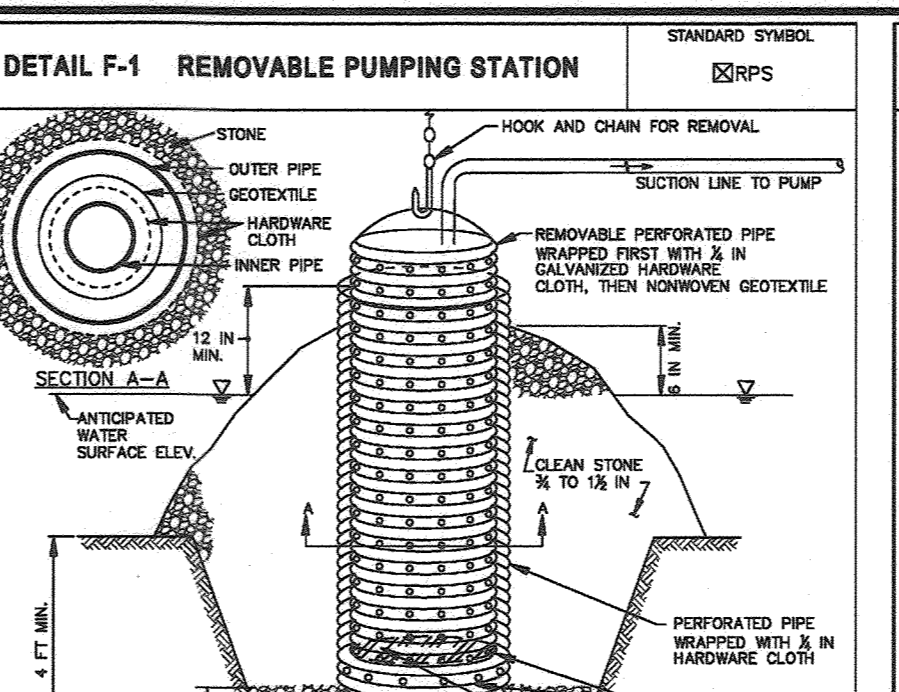
- CONSTRUCTION SPECIFICATIONS**
- REMOVE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL GABION BASKETS.
 - USE BASKETS MADE OF MINIMUM 1 1/2 GAUGE WIRE.
 - CONSTRUCT GABION FLOW PROTECTION BY ARRANGING 6 X 3 X 1 FOOT GABION BASKETS TO FORM A TRAPEZOIDAL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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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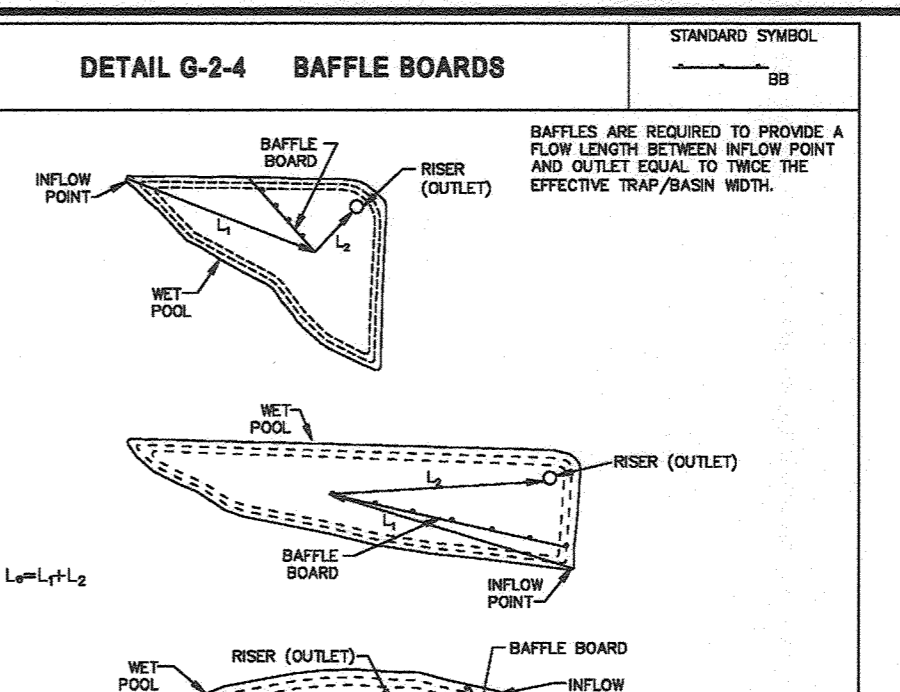
- CONSTRUCTION SPECIFICATIONS**
- REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBSTRUCTABLE MATERIAL, SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.
 - EXCAVATE OR SHARPEN EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
 - CONSTRUCT FILL.
 - CONSTRUCT FLOW CHANNELS ON AN UNDISTURBED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
 - PROVIDE CUTOFF PROTECTION AS REQUIRED ON APPROVED PLAN.
 - STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
 - MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
 - UPON REMOVAL OF EARTH DIKE, GRADE AREA WITH TOPSOIL WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL, STABILIZE DISTURBED AREA WITH PLANT, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

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- CONSTRUCTION SPECIFICATIONS**
- USE CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS 6 INCHES ON CENTER.
 - 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 WATERPROOF SEAL.
 - WRAP EACH PIPE WITH 3/8 INCH GALVANIZED HARDWARE CLOTH. ON INNER PIPE WRAP NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.
 - EXCAVATE 6 FEET X 8 FEET X 4 FEET DEEP PIT FOR PIPE PLACEMENT. PLACE CLEAN 3/8 TO 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
 - SET TOP OF INNER AND OUTER PIPES MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION (OR RISER CREST ELEVATION IN CASE OF ANTI-SIPHON).
 - BACKFILL PIT AROUND THE OUTER PIPE WITH 3/8 TO 1/2 INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE, AND EXTEND STONE A MINIMUM OF 8 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
 - DISCHARGE TO A STABLE AREA AT A NONDISBURSIVE RATE.
 - A REMOVABLE PUMPING STATION REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOS, PULL OUT INNER PIPE AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF OBSTRUCTION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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BAFFLE DESIGN TRAP #1

AREA WET STORAGE EL = 2,100 SF
We = (A/2)^0.5
We = 33'
MIN Le = We X 2 = 66'

INFLOW NORTH INFLOW SOUTH

L1 = 20' L1 = 36'
L2 = 24' L2 = 30'
L3 = 22' L3 = 30'
PROVIDED Le = 66' PROVIDED Le = 66'

BAFFLE DESIGN TRAP #2

AREA WET STORAGE EL = 1,465 SF
We = (A/2)^0.5
We = 48'
MIN Le = We X 2 = 96'

INFLOW EAST INFLOW WEST

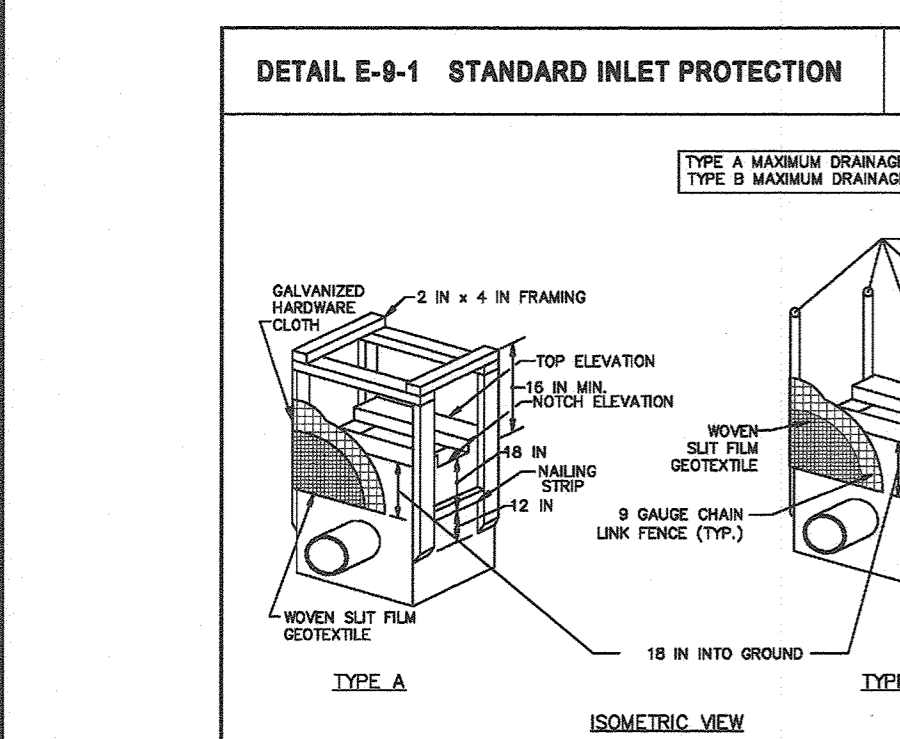
L1 = 20' L1 = 20'
L2 = 6' L2 = 6'
L3 = 30' L3 = 30'
PROVIDED Le = 56' PROVIDED Le = 56'

BAFFLE DESIGN TRAP #3

AREA WET STORAGE EL = 4,576 SF
We = (A/2)^0.5
We = 48'
MIN Le = We X 2 = 96'

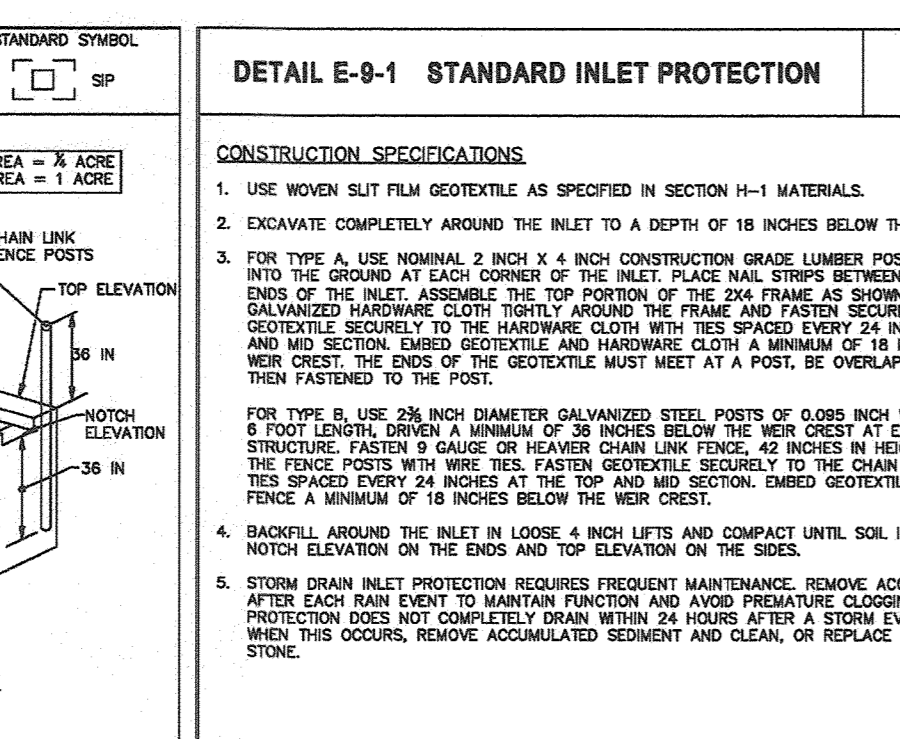
INFLOW NORTH INFLOW SOUTH

L1 = 56' L1 = 34'
L2 = 47' L2 = 26'
L3 = 36' L3 = 36'
PROVIDED Le = 103' PROVIDED Le = 96'



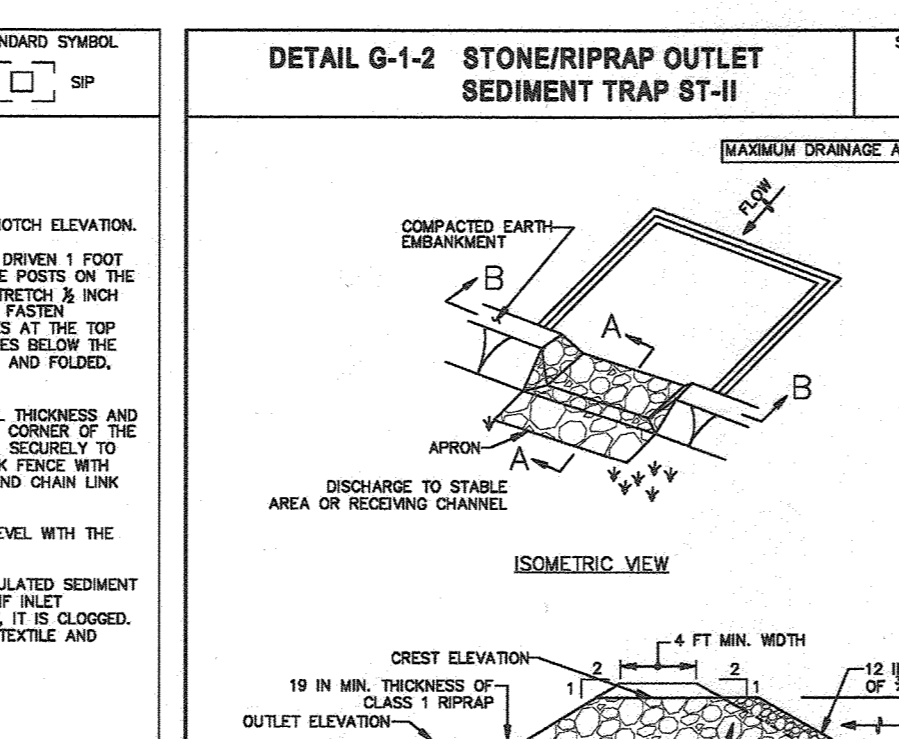
- CONSTRUCTION SPECIFICATIONS**
- EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
 - FOR TYPE A, USE NONWOVEN 2 INCH X 4 INCH CONSTRUCTION GRADE GEOTEXTILE (MINIMUM 1 FOOT) INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. SECURELY FASTEN THE GEOTEXTILE TO THE CHAIN LINK FENCE WITH WIRE TIES OR HARD RINGS. FASTEN WOVEN SILT 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. ENDED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES INTO THE GROUND.
 - BACKFILL AROUND THE INLET IN LOOSE 4 INCH SIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
 - SYSTEM INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

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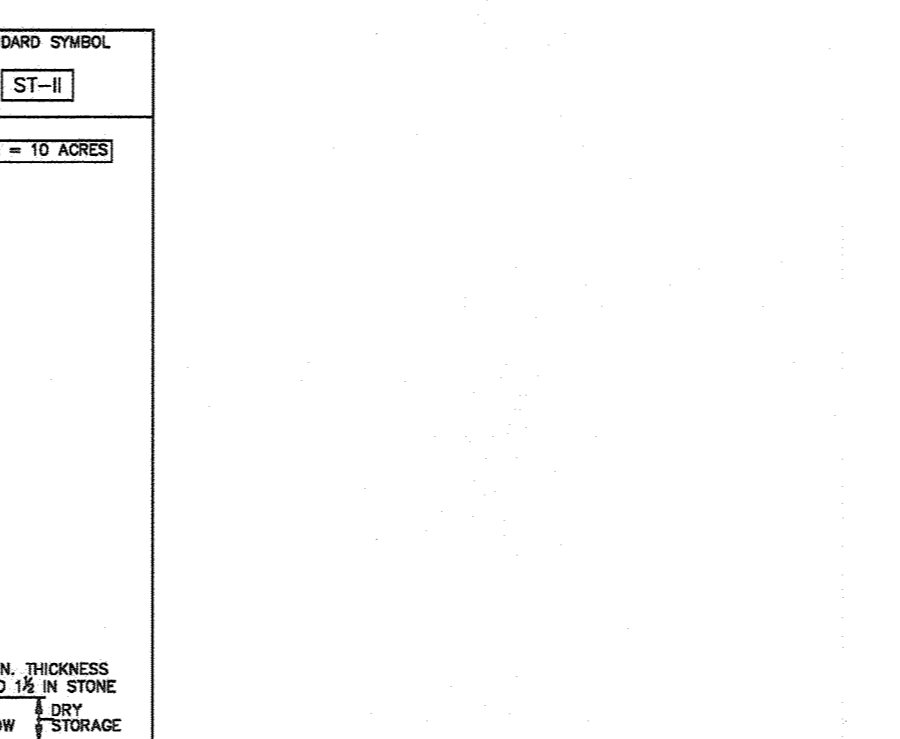
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- CONSTRUCTION SPECIFICATIONS**
- CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED.
 - CLEAR, CRUSH, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.
 - USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBSTRUCTABLE MATERIAL FOR THE EMBANKMENT.
 - CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE WEIR CREST. COMPACT THE EMBANKMENT BY TRAVELING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
 - MAKE ALL CUT AND FILL SLOPES 2:1 OR FLATTER.
 - PLACE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE BOTTOM AND SIDES OF OUTLET AND APRON PRIOR TO PLACEMENT OF RIPRAP. OVERLAP SECTIONS OF GEOTEXTILE AT LEAST 1 FOOT WITH THE SECTION NEARER TO THE TRAP PLACED ON TOP. ENDED GEOTEXTILE AT LEAST 6 INCHES INTO EXISTING GROUND AT ENTRANCE OF OUTLET CHANNEL.
 - USE CLEAN 4 TO 7 INCH RIPRAP TO CONSTRUCT THE WEIR. USE CLASS 1 RIPRAP FOR THE APRON. USE OF RECYCLED CONCRETE EQUIVALENT IS ACCEPTABLE.
 - PLACE 1 FOOT OF CLEAN 3/8 TO 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE ON THE UPSLOPE FACE OF THE WEIR.
 - CONSTRUCT AND MAINTAIN THE OUTLET ACCORDING TO APPROVED PLAN, AND IN SUCH A MANNER THAT EROSION AT OR BELOW THE OUTLET DOES NOT OCCUR.
 - STABILIZE THE EMBANKMENT AND INTERIOR SLOPES WITH SEED AND MULCH. STABILIZE POINTS OF CONCENTRATED INFLOW AS SHOWN ON APPROVED PLAN.
 - REMOVE SEDIMENT AND RESTORE TRAP TO ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO CLEANER ELEVATION. USE OF WEIR STORAGE DEPTH. OUTLET REMOVED SEDIMENT TO APPROVED AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE. KEEP POINTS OF INFLOW AND CUTOFF FREE OF OBSTRUCTION. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT.
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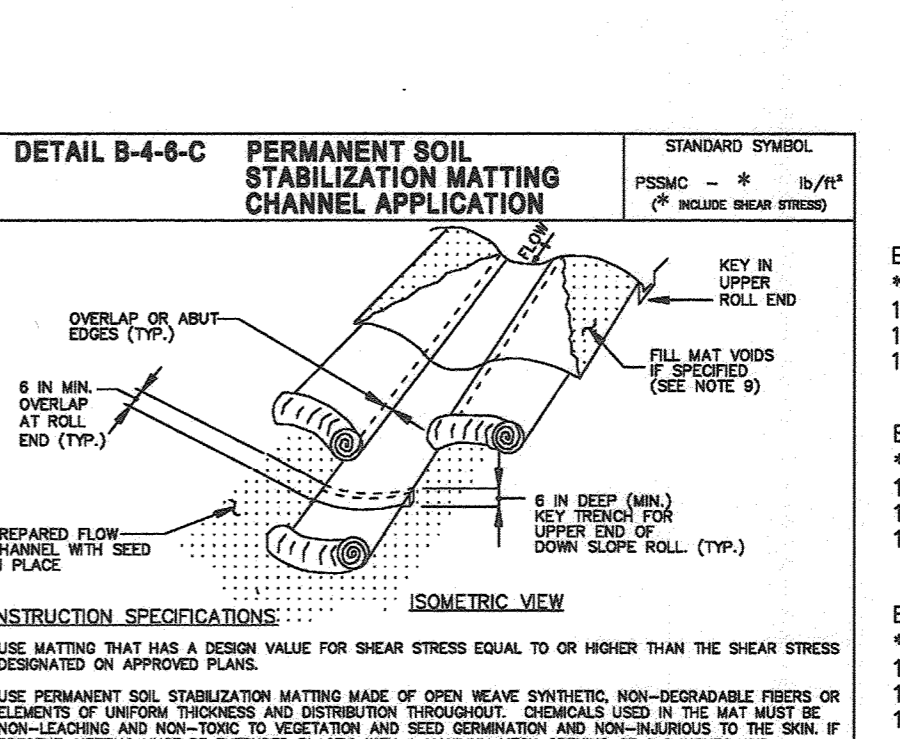
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U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



- CONSTRUCTION SPECIFICATIONS**
- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
 - USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC NON-Biodegradable FIBERS OR CLOTTED OF UNWORN FIBERS AND DISTRIBUTION THROUGHOUT. CHANNELS USED IN USE MAT MUST BE PRESENT. NETTING MUST BE EXTENDED PLASTIC WITH A MINIMUM MESH OPENING OF 22 INCHES AND 2 SUFFICIENT BOUNDS OF SEAM OR 2 INCH SPACES ALONG LONGITUDINAL AIDS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
 - SECURE MATTING USING STEEL STAPLES OR WOOD STAPLES. STAPLES MUST BE "U" OR "T" SHAPED STEEL STAPLES HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAPLES MUST BE 2x4x8-DOUBLED HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1/4 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
 - PERFORM FRONTAL TOPSOIL APPLICATION, SETBACK PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEDIMENT OPERATIONS. UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
 - UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. START FROM CENTER OF CHANNEL OUTWARD WITH BLIND ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEDIMENT SURFACE. AVOID STRETCHING THE MATTING.
 - 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.
 - 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 TRENCH.
 - STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MINIMUM) CENTERS THROUGHOUT AND 2 FOOT (MINIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
 - IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEPT AND STAPLED IN PLACE, ALL THE MAT VOIDS WITH TOP SOIL OR INSTALLED MATERIAL, LOOSELY COMPACT OR ROLL TO HARDEN SOIL THAT CONTACTS WITH MATTING.
 - ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

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



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ECM-1 COMPUTATIONS:

*SHEAR STRESS = 0.41 LB/FT²
10 YR FLOW = 0.97 CFS
10 YR VELOCITY = 1.63 FPS
10 YR DEPTH = 0.09 FT

ECM-2 COMPUTATIONS:

*SHEAR STRESS = 0.18 LB/FT²
10 YR FLOW = 0.37 CFS
10 YR VELOCITY = 0.63 FPS
10 YR DEPTH = 0.06 FT

ECM-3 COMPUTATIONS:

*SHEAR STRESS = 0.28 LB/FT²
10 YR FLOW = 0.55 CFS
10 YR VELOCITY = 2.07 FPS
10 YR DEPTH = 0.06 FT

ECM-4 COMPUTATIONS:

*SHEAR STRESS = 0.46 LB/FT²
10 YR FLOW = 1.17 CFS
10 YR VELOCITY = 2.84 FPS
10 YR DEPTH = 0.10 FT

ECM-5 COMPUTATIONS:

*SHEAR STRESS = 0.67 LB/FT²
10 YR FLOW = 1.20 CFS
10 YR VELOCITY = 2.06 FPS
10 YR DEPTH = 0.05 FT

ECM-6 COMPUTATIONS:

*SHEAR STRESS = 0.30 LB/FT²
10 YR FLOW = 0.42 CFS
10 YR VELOCITY = 2.06 FPS
10 YR DEPTH = 0.05 FT

ECM-7 COMPUTATIONS:

*SHEAR STRESS = 0.24 LB/FT²
10 YR FLOW = 0.26 CFS
10 YR VELOCITY = 1.78 FPS
10 YR DEPTH = 0.04 FT

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

Alexander Brathis 04/02/21
HOWARD S.C.D. DATE

OWNER/DEVELOPER CERTIFICATION
I HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT 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.

Alvin 8-27-21
OWNER/DEVELOPER SIGNATURE DATE

DESIGNER CERTIFICATION
I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Robert H. Vogel 8-27-21
DESIGNER SIGNATURE DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
James 11/29/2021
CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Robert H. Vogel 1-6-22
CHIEF, DEVELOPMENT ENGINEERING DIVISION JK DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF LAND DEVELOPMENT
Robert H. Vogel 11/6/22
CHIEF, DIVISION OF LAND DEVELOPMENT 69 DATE

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

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

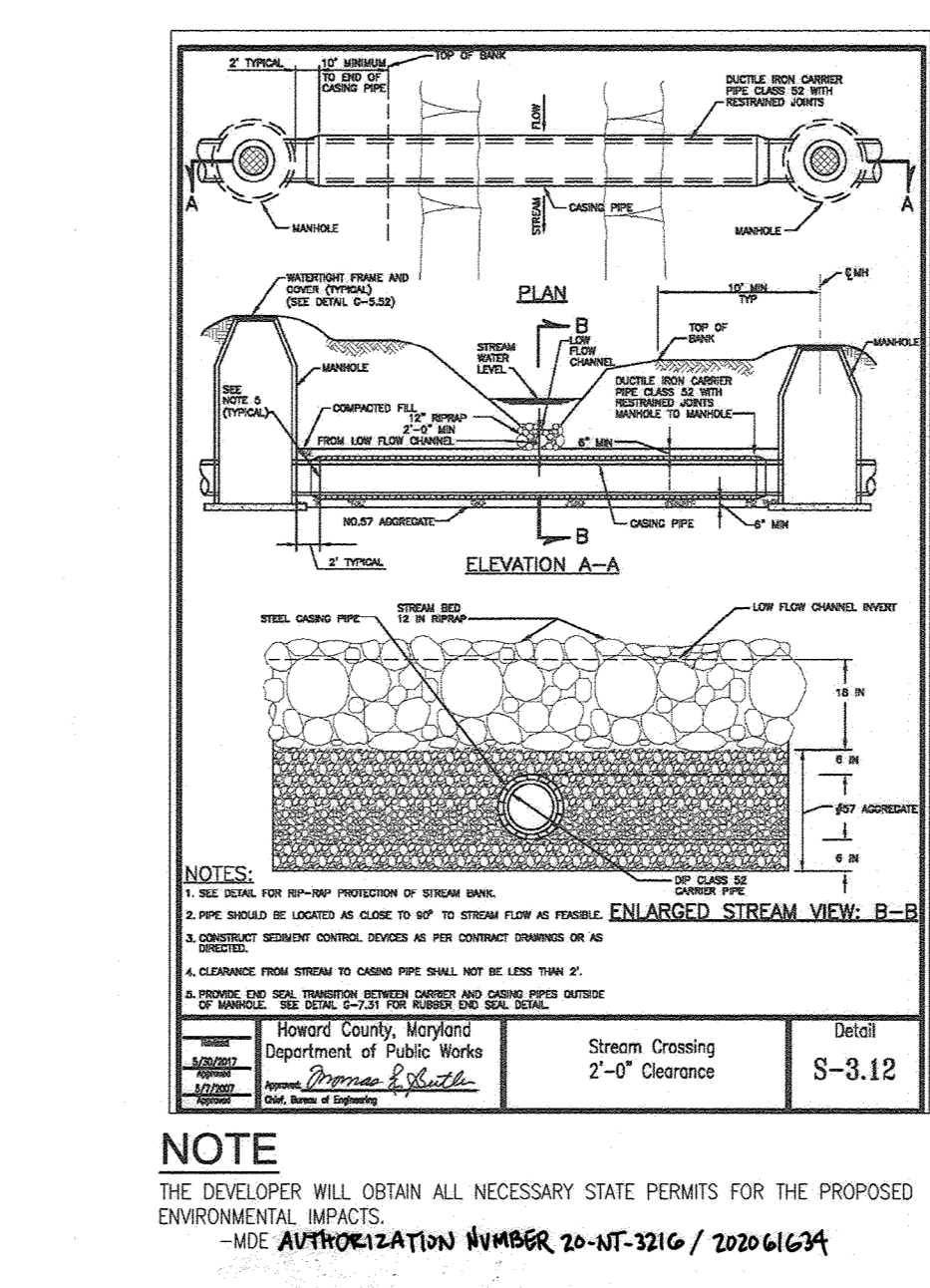
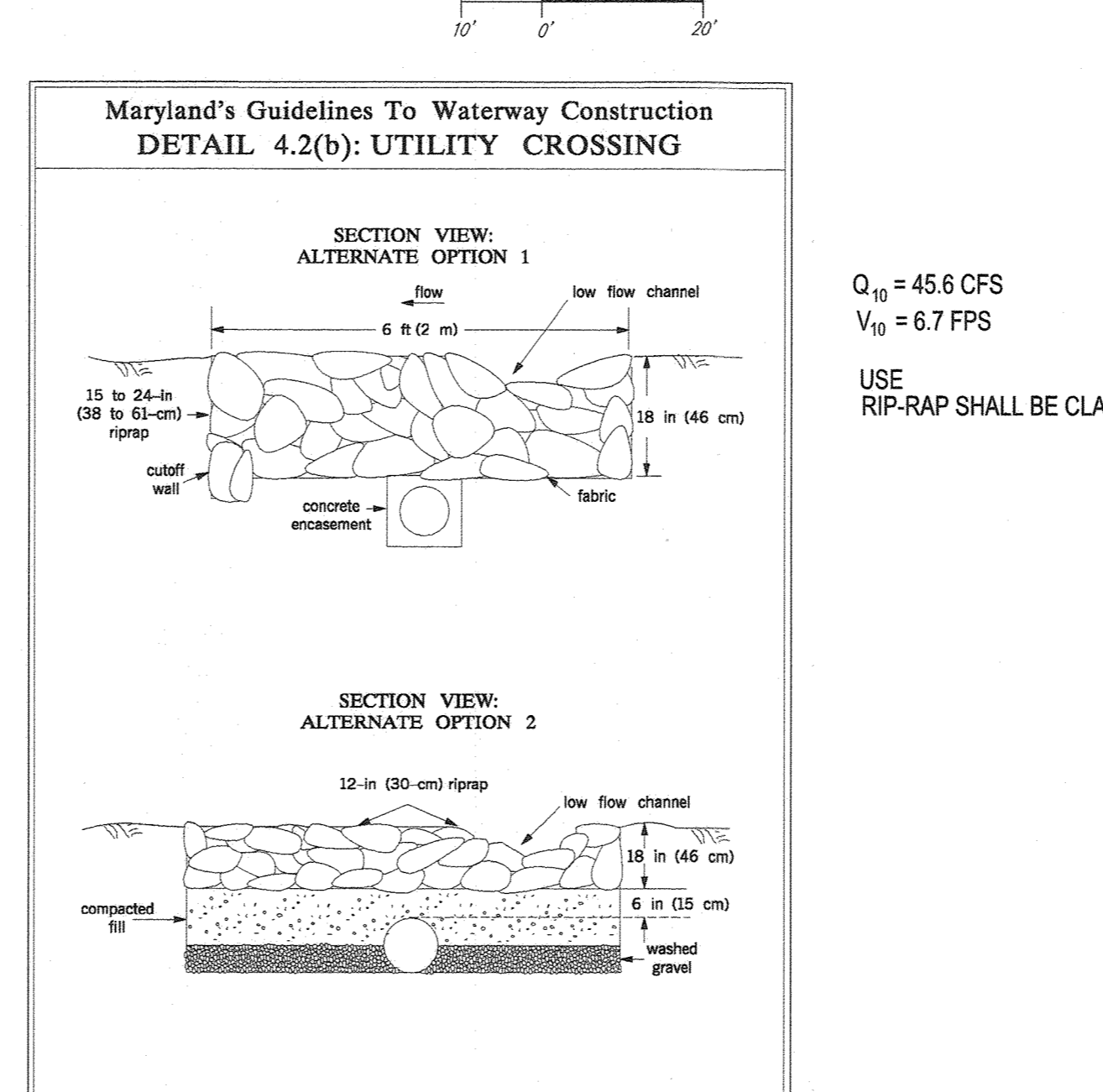
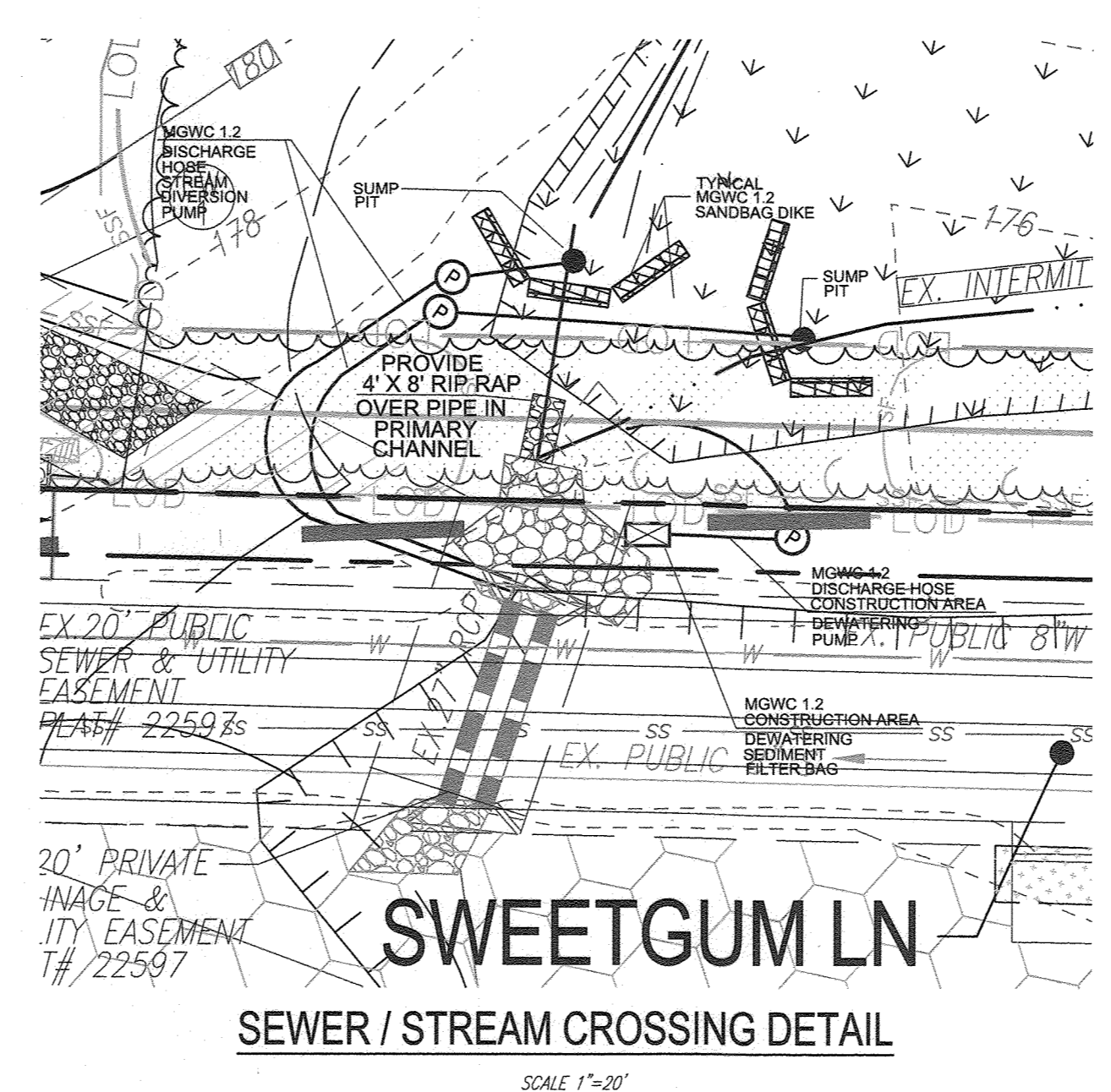
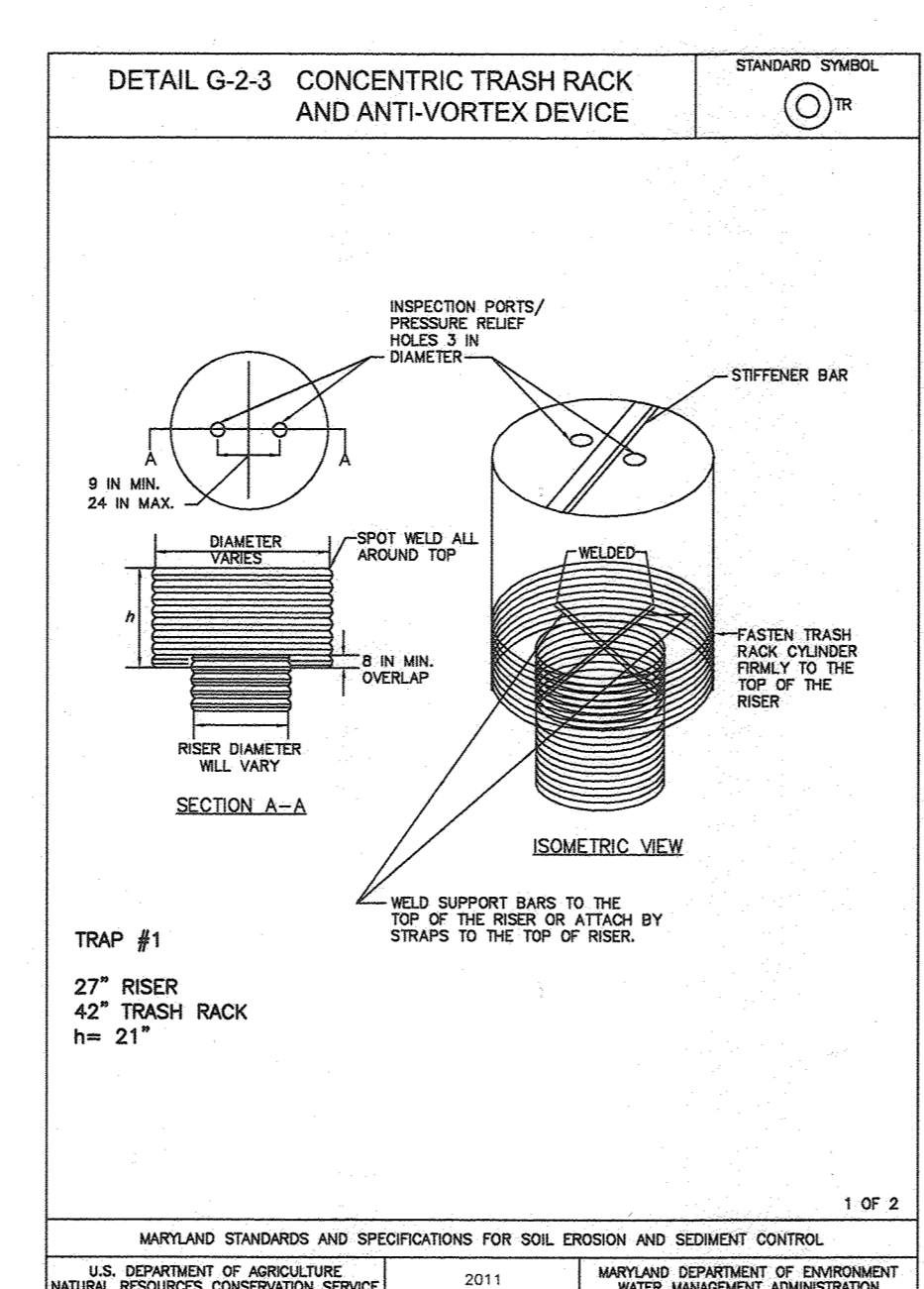
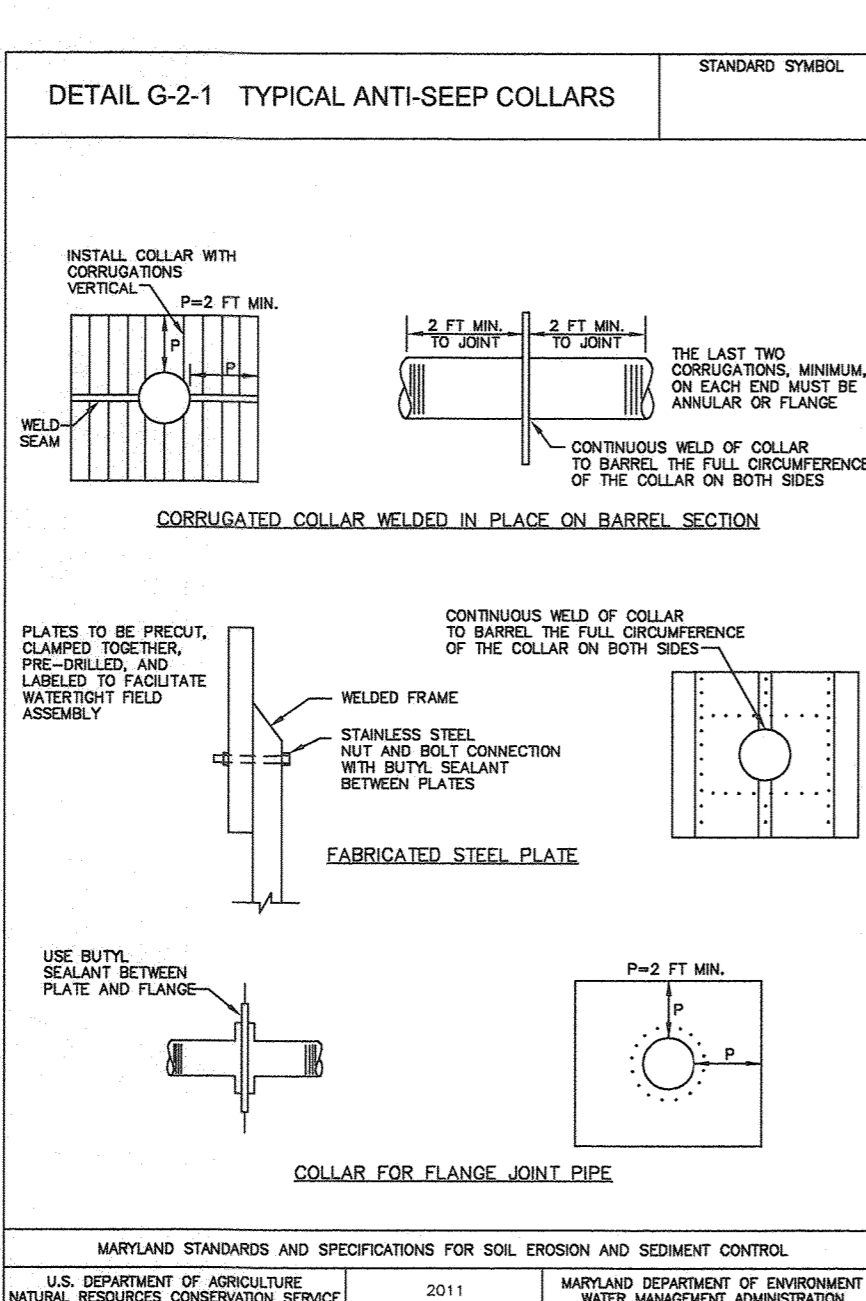
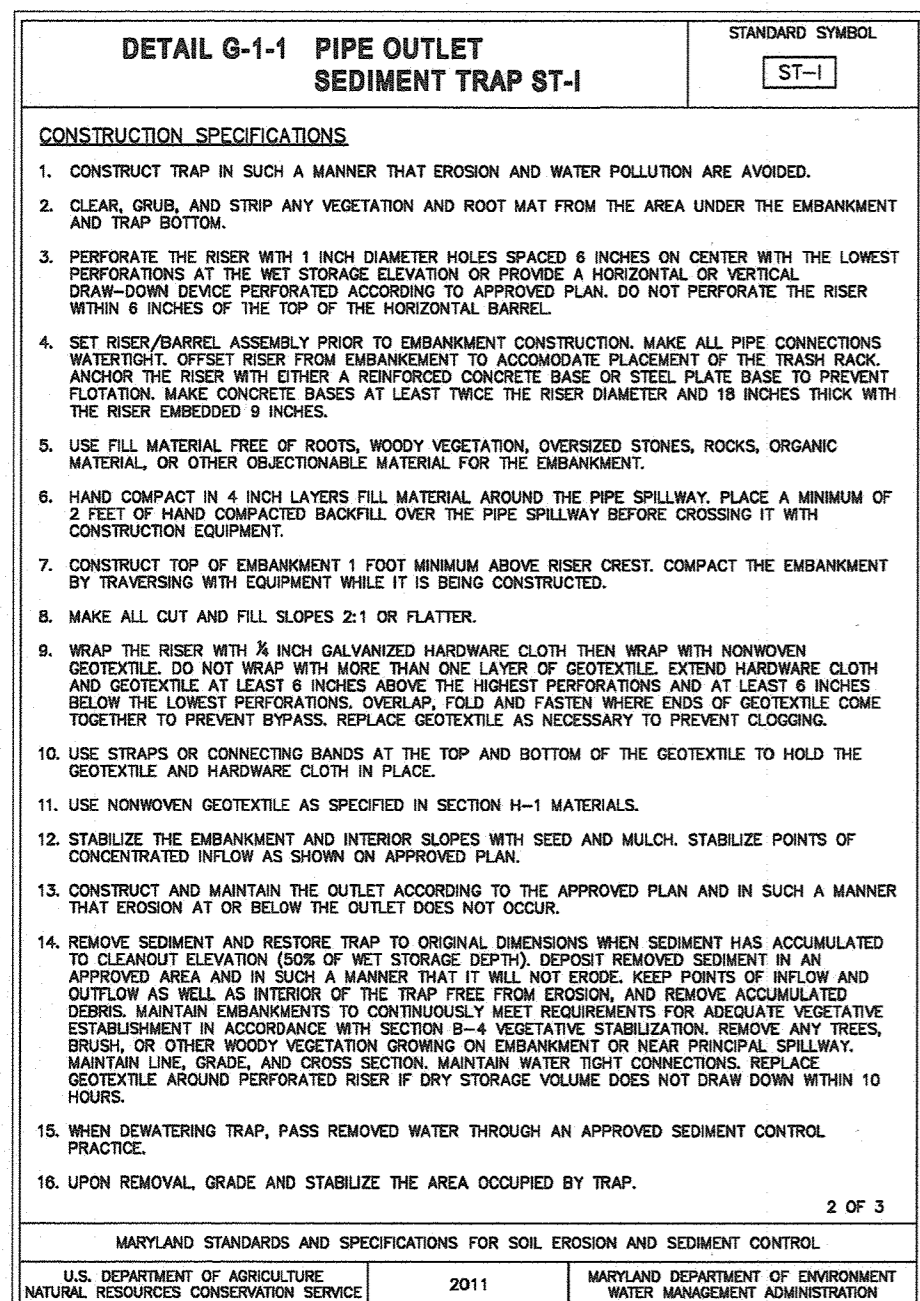
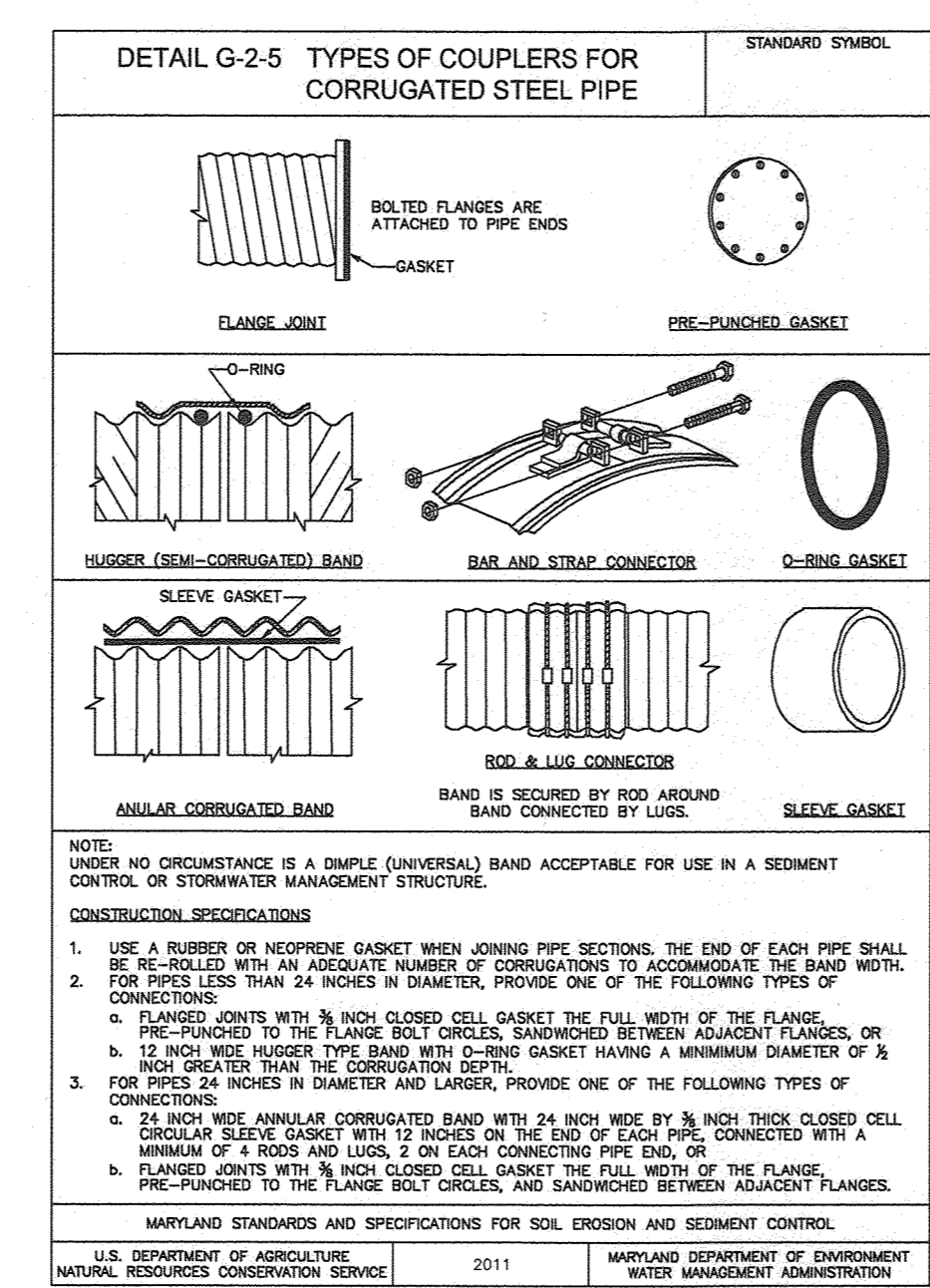
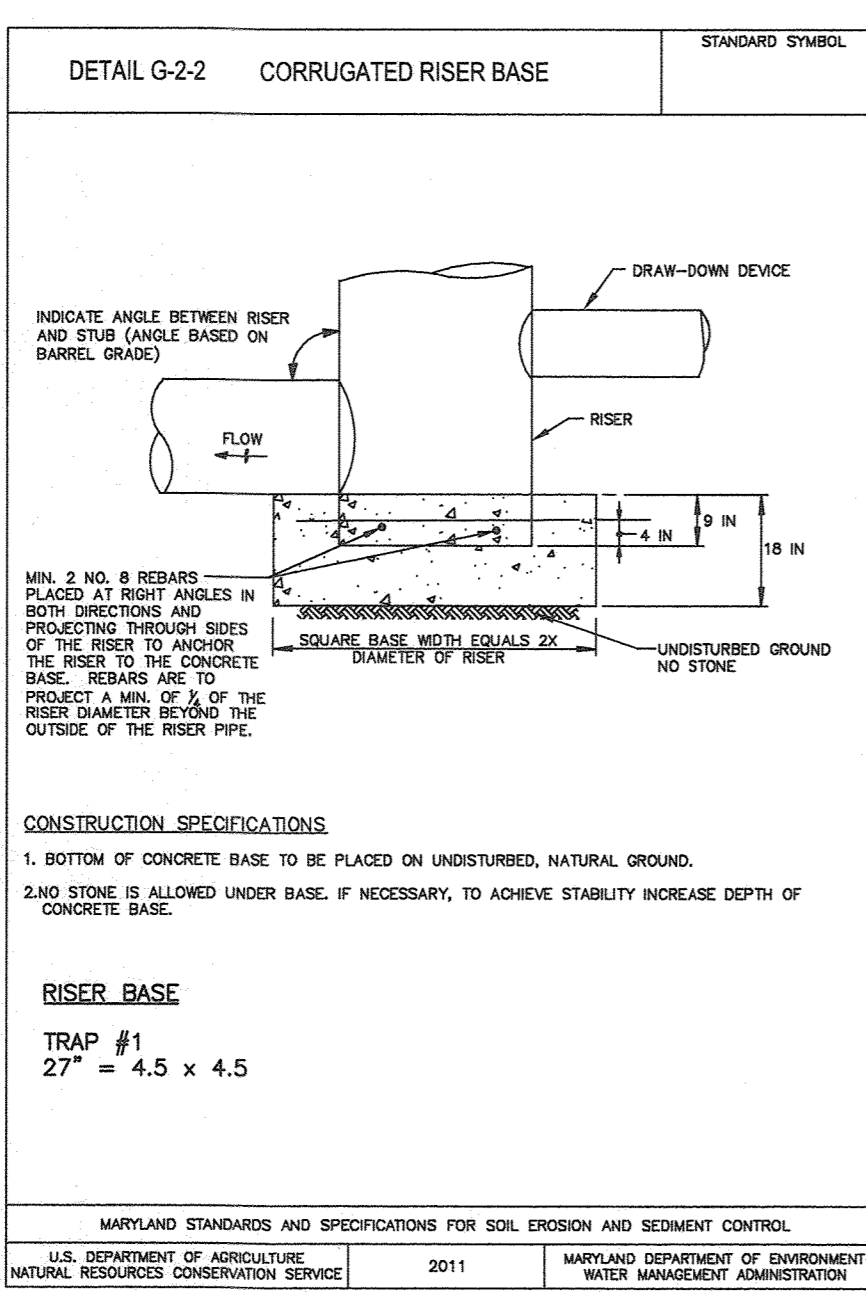
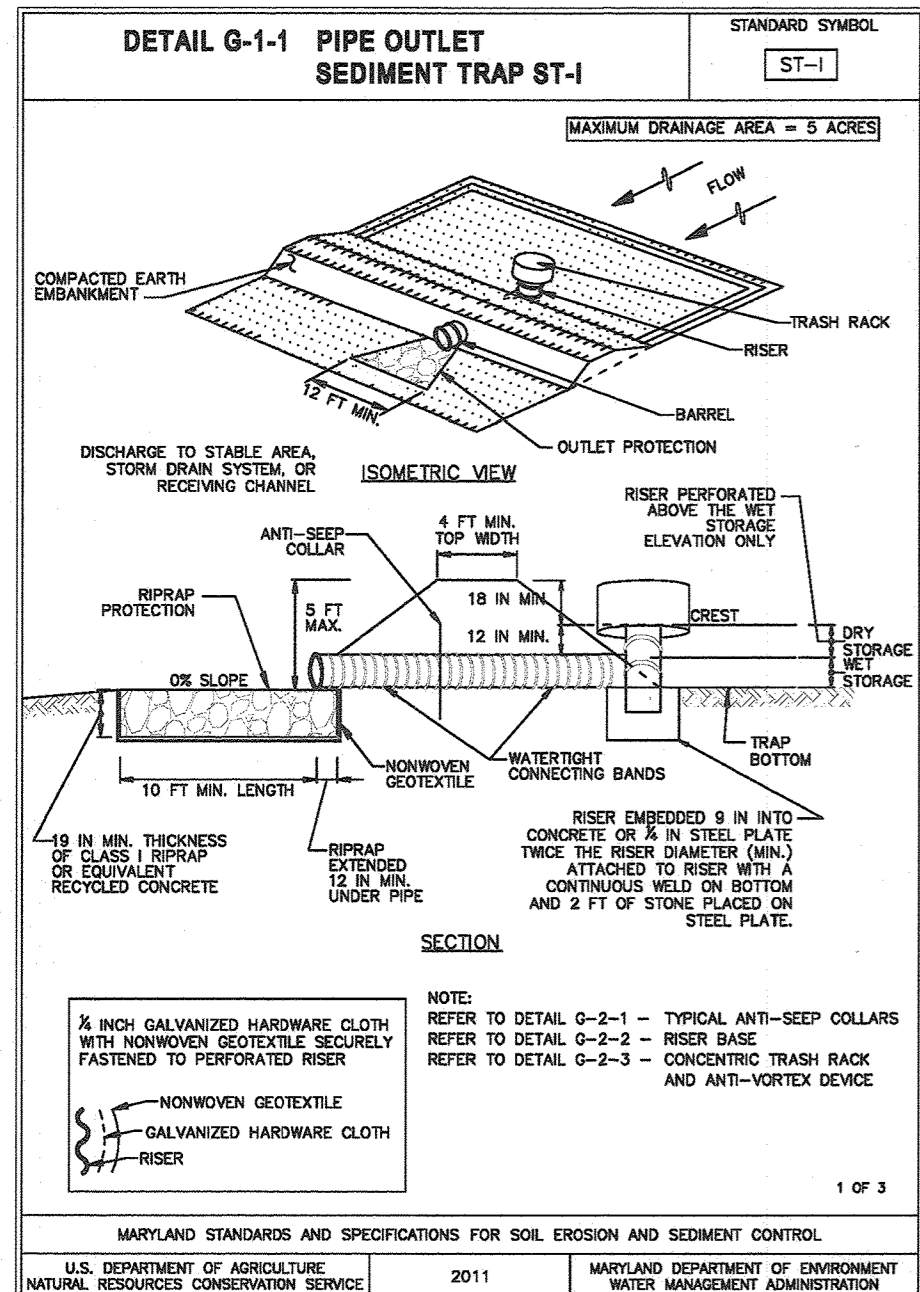
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U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



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

- NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.
- PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, OR WATERWAYS, OR PERMANENT MODIFICATION OF THE 100 YEAR FLOODPLAIN IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.
- RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
- ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES: ANNUAL PERGRASS (LOLIUM MULTIFLORUM), WILLET (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 ESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDING AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
- AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST-CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
- TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM.
 - USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
 - USE II WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE, DURING ANY YEAR.
 - USE IV WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH MAY 31, INCLUSIVE, DURING ANY YEAR.
- STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
- CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

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

Albany Butcher 09/02/22
HOWARD S.C.D. DATE

OWNER/DEVELOPER CERTIFICATION:

I HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT 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.

Nick Groves 8-27-21
OWNER/DEVELOPER SIGNATURE DATE
Vice President
PRINTED NAME & TITLE

DESIGN CERTIFICATION:

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Robert H. Vogel 8-27-21
DESIGNER'S SIGNATURE DATE
ROBERT H. VOGEL MD REGISTRATION NO. 16193
PRINTED NAME (P.E., R.L.S., OR R.L.A. (circle one))

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Michael M. K... 11/29/2024
CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Robert H. Vogel 1.6.22
CHIEF, DEVELOPMENT ENGINEERING DIVISION JR DATE
CHIEF, DIVISION OF LAND DEVELOPMENT eg DATE

TRAP #1 COLLAR SIZE

1 COLLAR 6.0' X 6.0'
21" BARREL
LOCATE 13LF FROM OUTLET END OF BARREL

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 1.2: PUMP-AROUND PRACTICE

PLAN VIEW

SECTION A-A

CONSTRUCTION SPECIFICATIONS:

- PUMPS SHOULD DISCHARGE ONTO A STABLE VELOCITY DISCHARGE MADE OF RIP-RAP OR SANDBAGS.
- WORK AREA LENGTH NOT TO EXCEED THAT WHICH CAN BE COMPLETED IN ONE DAY.
- IMPERVIOUS SHEETING.
- CROSS SECTION OF SANDBAG DIKE.

TEMPORARY STREAM CONSTRUCTION MANUALS APPROVED NOVEMBER 2000 PAGE 22-2

MARYLAND'S GUIDELINES TO WATERWAY CONSTRUCTION DETAIL 4.2(b): UTILITY CROSSING

SECTION VIEW: ALTERNATE OPTION 1

SECTION VIEW: ALTERNATE OPTION 2

USE RIP-RAP SHALL BE CLASS 1

STREAM CHANNELS APPROVED NOVEMBER 2000 PAGE 42-4

DETAIL F-4 FILTER BAG

CONSTRUCTION SPECIFICATIONS:

- THOROUGHLY SEAL SLEAVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
- PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR ON MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
- CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
- REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY. WHENEVER OCCURS FIRST, SPREAD THE DOWNSLOPED SEDIMENT FROM THE BAG AWAY, APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
- USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SEW SLEEVE TO ACCOMMODATE A MAXIMUM 1/2 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE TENSILE VALUES (MAWV) FOR THE FOLLOWING:

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

AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

Robert H. Vogel 16193 7-9-24
NAME P.E.# DATE

OWNER/DEVELOPER

GRACE TAYLOR SCHULTZ TRUSTEE OF THE GRACE T SCHULTZ REVOCABLE TRUST
6132 HANOVER ROAD
HANOVER, MD 21076
443-463-6760

NO AS-BUILT INFORMATION ON THIS SHEET

FINAL ROAD CONSTRUCTION PLANS
GRADING AND SOIL EROSION AND SEDIMENT CONTROL PLAN - NOTES & DETAILS

GRACE MEADOWS
LOTS 1-18 AND OPEN SPACE LOTS 19-30
A SUBDIVISION OF TAX MAP 38 - PARCEL 731

L. 14536 / F. 269
TAX MAP 38 BLOCK 09
1ST ELECTION DISTRICT
DPZ REFERENCE: SEE SITE DATA

ZONED R-12
PARCEL 731
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

TIMMONS GROUP

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

PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE 08-27-2022.

DESIGN BY: RHV
DRAWN BY: MVP/HK/KC
CHECKED BY: RHV
DATE: AUGUST 2021
SCALE: AS SHOWN
W.O. NO.: 40077

10 SHEET OF 25

AS-BUILT APRIL 2024 F-20-076

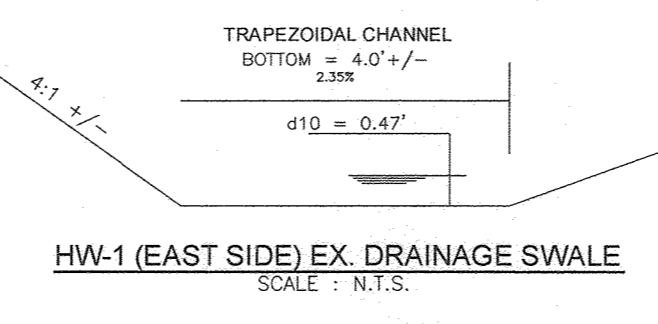
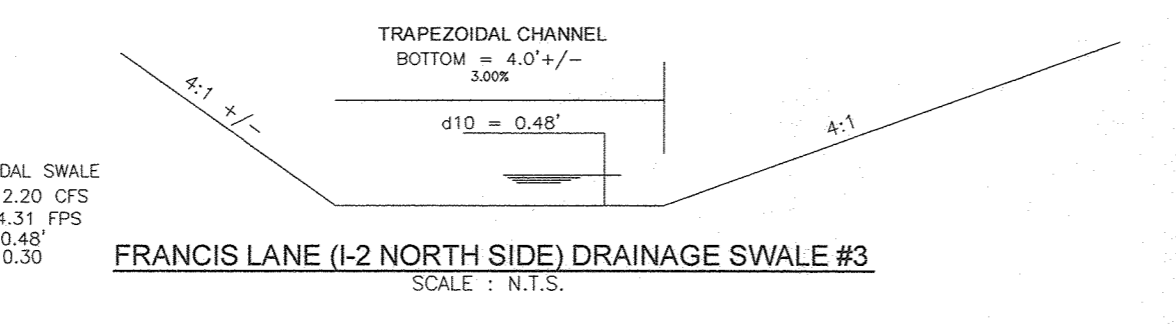
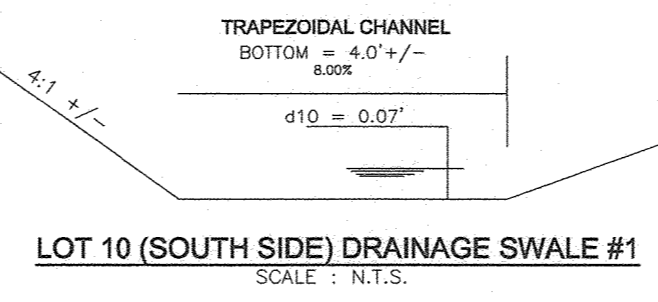
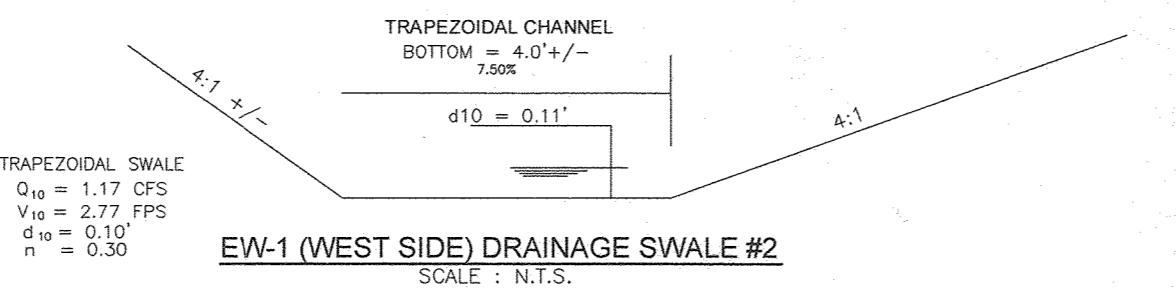
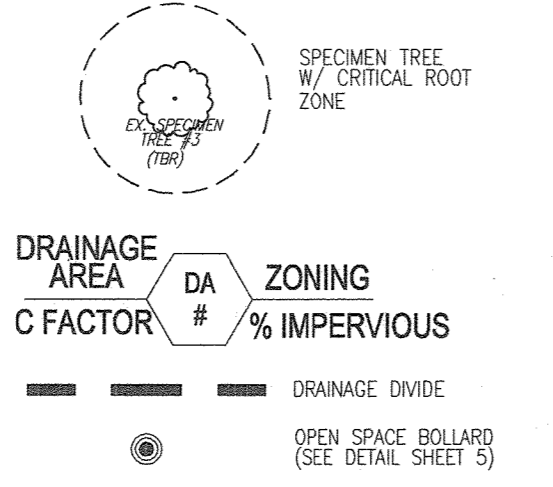


STORM DRAIN DRAINAGE AREA MAP

SCALE: 1"=50'

LEGEND

	EXISTING CONTOUR		EX. FOREST CONSERVATION EASEMENT
	PROPOSED CONTOUR		EX. WETLANDS
	PROPOSED SPOT ELEVATION		EX. WETLAND BUFFER
	EXISTING SPOT ELEVATION		EX. STREAM
	EXISTING CURB AND GUTTER		EX. STREAM BUFFER
	PROPOSED CURB AND GUTTER		EX. STREAM BUFFER
	EXISTING UTILITY POLE		M1B2 SOILS BOUNDARY
	EXISTING LIGHT POLE		M1D3 SOILS BOUNDARY
	EXISTING SIGN		20' PUBLIC WATER & UTILITY EASEMENT
	EXISTING SANITARY MANHOLE		20' PUBLIC SEWER & UTILITY EASEMENT
	EXISTING SANITARY LINE		30' PUBLIC WATER, SEWER & UTILITY EASEMENT
	EXISTING CLEANOUT		MICRO-BIORETENTION/RAIN GARDEN
	EXISTING FIRE HYDRANT		APPROXIMATE EXTENT OF ELECTRICAL RIGHT OF WAY
	EXISTING WATER LINE		PUBLIC DRAINAGE & UTILITY EASEMENT
	EXISTING FENCE		PRIVATE DRAINAGE & UTILITY EASEMENT
	PROPERTY LINE		FOREST CONSERVATION EASEMENT (RETENTION)
	RIGHT-OF-WAY LINE		
	EXISTING VEGETATION (APPROXIMATE LOCATION)		
	PROPOSED SIDEWALK		
	EXISTING TREELINE		
	PROPOSED TREELINE		
	PROPOSED STORM DRAIN		
	PROPOSED STORM DRAIN INLET		



MAPPED SOILS TYPES

SYMBOL / DESCRIPTION	GROUP	HYDRIC	Kw	ERODIBILITY
Fg	FALLOUNSON SANDY LOAM, 0 TO 2 PERCENT SLOPES	D	YES 0.24	NO
RwC	RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	C	NO 0.43	YES
RwD	RUSSETT FINE SANDY LOAM, 10 TO 15 PERCENT SLOPES	C	NO 0.43	YES
RwE	RUSSETT FINE SANDY LOAM, 15 TO 19 PERCENT SLOPES	C	NO 0.43	YES
SrE	SASSAPARILLA AND CROWN SOILS, 15 TO 25 PERCENT SLOPES	B	NO 0.32	YES
SrD	SASSAPARILLA AND CROWN SOILS, 10 TO 15 PERCENT SLOPES	B	NO 0.37	YES
UcD	URBAN-LIQUID-CHLUM-BELTSVILLE COMPLEX, 5 TO 10 PERCENT SLOPES	C	NO -	NO

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

1. SOURCE: HOWARD SOIL CONSERVATION DISTRICT WEBSITE: <https://www.howardsoil.com/>

2. WEB SOIL SURVEY, CONSULTED ON DECEMBER 29, 2014. AVAILABLE ON-LINE AT: <http://websoilsurvey.nrc.usda.gov/>

3. HYDRIC SOILS INFORMATION ADAPTED FROM THE NATIONAL HYDRIC SOILS KEY AT: <http://www.nrc.usda.gov/hydric/>, CONSULTED ON DECEMBER 29, 2014.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

John
CHIEF, BUREAU OF HIGHWAYS MK
DATE: 11/29/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

John
CHIEF, DEVELOPMENT ENGINEERING DIVISION JR
DATE: 1-6-22

CHIEF, DIVISION OF LAND DEVELOPMENT BR
DATE: 1/6/22

STATE OF MARYLAND
ROBERT HARRIS VOGEL
PROFESSIONAL ENGINEER
No. 16193
7-9-24

AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

John
P.E. NAME 16193
7-9-24
DATE

OWNER/DEVELOPER
GRACE TAYLOR SCHULTZ TRUSTEES OF THE GRACE TAYLOR SCHULTZ REVOCABLE TRUST
6132 HANOVER ROAD
HANOVER, MD 21076
443-463-6760

NO.	REVISION TO ADD PRIVATE MONUMENT EASEMENT, FIRE HYDRANT AND EASEMENT	8-3-23
NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLANS

STORM DRAIN DRAINAGE AREA MAP

GRACE MEADOWS

LOTS 1-18 AND OPEN SPACE LOTS 19-30
A SUBDIVISION OF TAX MAP 98 - PARCEL 131

L. 14536 / F. 269
TAX MAP 98 BLOCK 09
1ST ELECTION DISTRICT
DPZ REFERENCE: SEE SITE DATA

ZONED R-12
PARCEL 731
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

TIMMONS GROUP

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

DESIGN BY: RHW
DRAWN BY: MVP/HJ/KG
CHECKED BY: RHW
DATE: AUGUST 2021
SCALE: AS SHOWN
W.O. NO.: 40077

PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193
EXPIRATION DATE: 08-27-2022

ROBERT H. VOGEL, PE No. 16193

11 SHEET OF 25

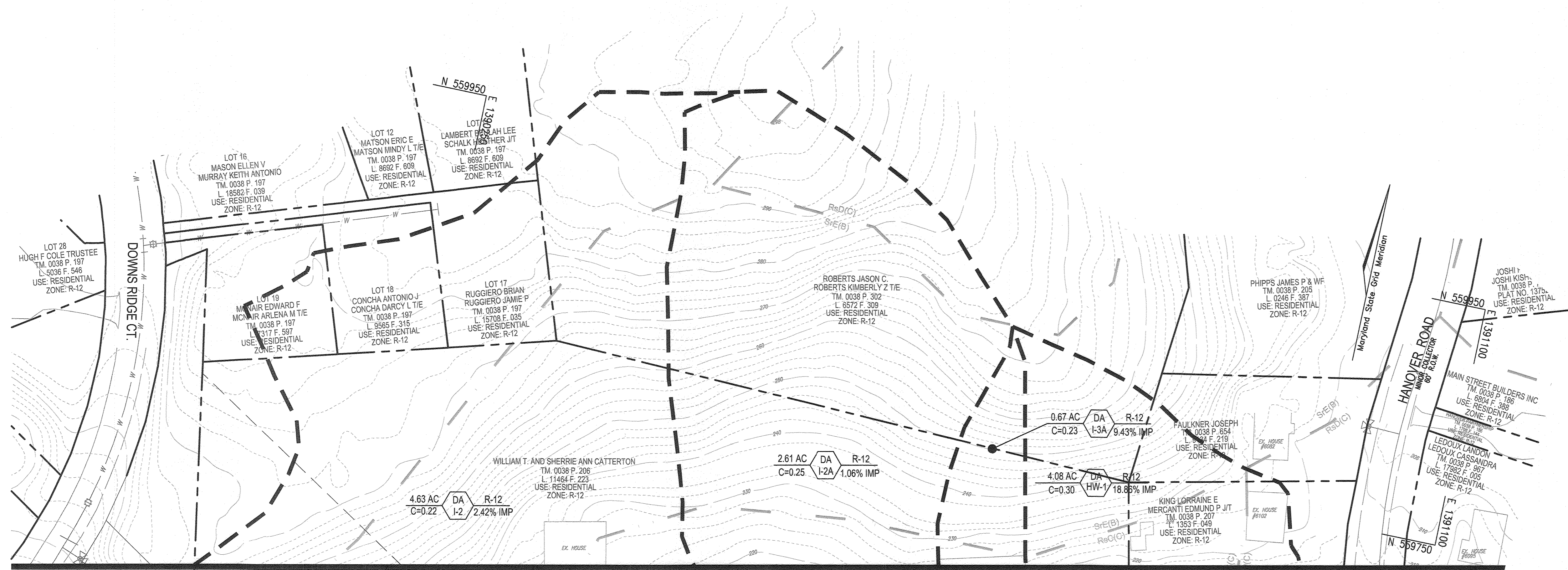
LEGEND

- 200 --- EXISTING CONTOUR
- 400 --- CONTOUR
- + 40.25 EXISTING SPOT ELEVATION
- 40.25 --- EXISTING CURB AND GUTTER
- 40.25 --- EXISTING CURB AND GUTTER
- 40.25 --- EXISTING UTILITY POLE
- 40.25 --- EXISTING LIGHT POLE
- 40.25 --- EXISTING SIGN
- 40.25 --- EXISTING SANITARY MANHOLE
- 40.25 --- EXISTING SANITARY LINE
- 40.25 --- EXISTING CLOSURE
- 40.25 --- EXISTING FIRE HYDRANT
- 40.25 --- EXISTING WATER LINE
- 40.25 --- EXISTING FENCE
- 40.25 --- PROPERTY LINE
- 40.25 --- RIGHT-OF-WAY LINE
- M1B2 SOILS BOUNDARY
- M1D3 SOILS BOUNDARY

DRAINAGE AREA INLET ZONING

C FACTOR # % IMPERVIOUS

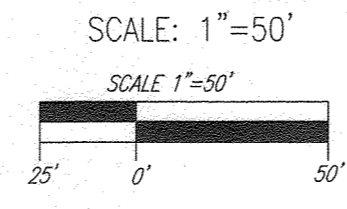
--- DRAINAGE DITCH



MATCHLINE SEE SHEET 11

STORM DRAIN DRAINAGE AREA MAP

MATCHLINE SEE SHEET 11



NO AS-BUILT INFORMATION ON THIS SHEET

AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.



NAME: *[Signature]* 16193 7-1-24
P.E. # DATE

OWNER/DEVELOPER
GRACE TAYLOR SCHUTT, TRUSTEE OF THE GRACE T. SCHUTT REVOCABLE TRUST
6132 HANOVER ROAD
HANOVER, MD 21076
443-463-6760

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLANS
STORM DRAIN DRAINAGE AREA MAP
GRACE MEADOWS
LOTS 1 - 18 AND OPEN SPACE LOTS 19 - 30
A SUBDIVISION OF TAX MAP 38 - PARCEL 731
L. 14536 / F. 269
TAX MAP 38 BLOCK 09
1ST ELECTION DISTRICT
DPZ REFERENCE: SEE SITE DATA
HOWARD COUNTY, MARYLAND
ZONED R-12
PARCEL 731

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

PROFESSIONAL CERTIFICATE

DESIGN BY: RHV
DRAWN BY: MVP/JH/KC
CHECKED BY: RHV
DATE: AUGUST 2021
SCALE: AS SHOWN
W.O. NO.: 40077

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 08-27-2022.

12 SHEET OF 25

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 11/29/2021
CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 1-6-22
CHIEF, DEVELOPMENT ENGINEERING DIVISION SP DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 1/6/22
CHIEF, DIVISION OF LAND DEVELOPMENT cr DATE

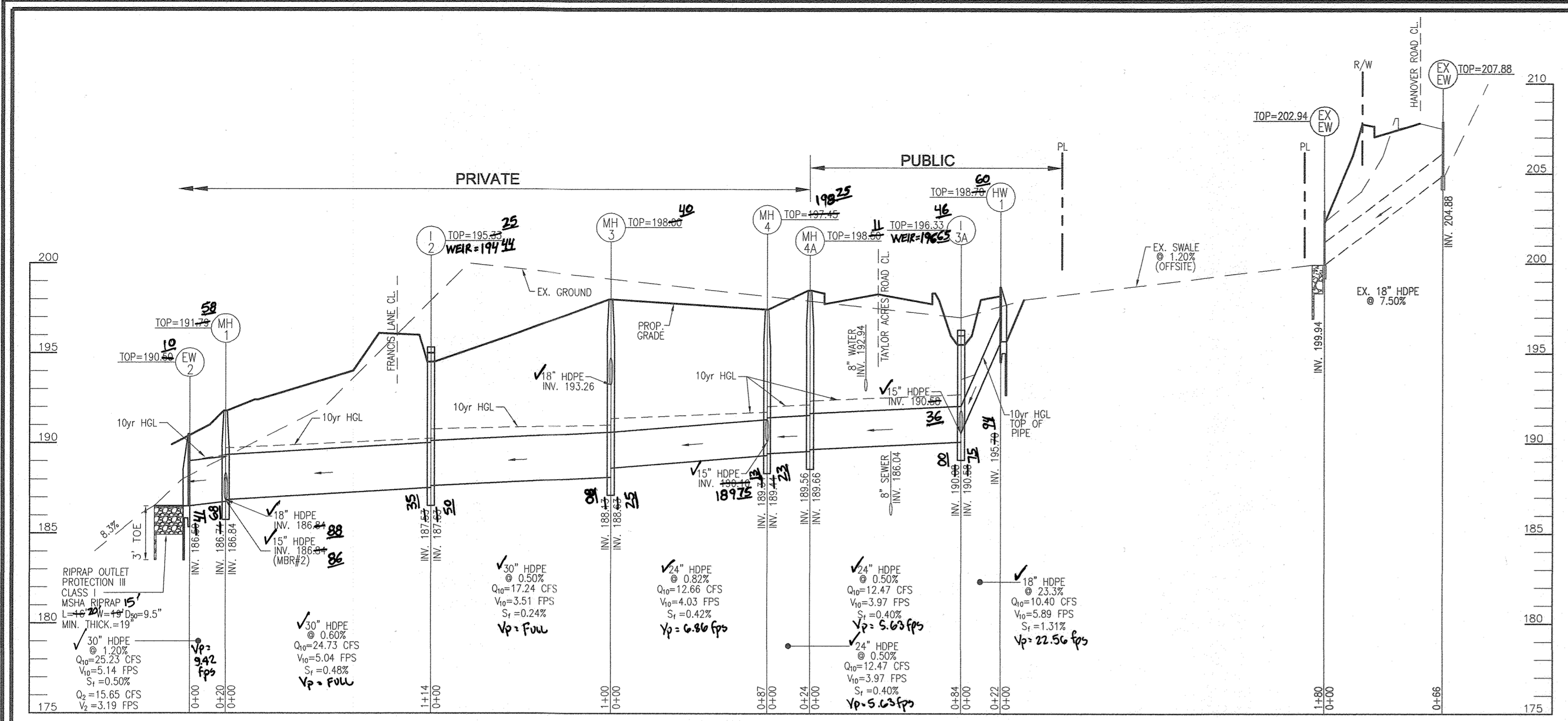
MAPPED SOILS TYPES

SYMBOL NAME / DESCRIPTION	GROUP	HYDRIC	Kw	CRK	SLOPE POTENTIAL
Fg FALLSNETON SANDY LOAM, 0 TO 2 PERCENT SLOPES	D	YES	0.24	NO	NO
RwC RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	C	NO	0.43	YES	YES
RwD RUSSETT FINE SANDY LOAM, 10 TO 15 PERCENT SLOPES	C	NO	0.43	YES	YES
RwG RUSSETT AND BELTSVILLE SOILS, 5 TO 10 PERCENT SLOPES	C	NO	0.43	YES	YES
SrE SAKSAPRAS AND CROOM SOILS, 15 TO 25 PERCENT SLOPES	B	NO	0.32	YES	YES
SrD SAKSAPRAS AND CROOM SOILS, 10 TO 15 PERCENT SLOPES	B	NO	0.37	YES	YES
UdD URBAN LAND-CILLUM-BELTSVILLE COMPLEX, 5 TO 15 PERCENT SLOPES	C	NO	-	NO	NO

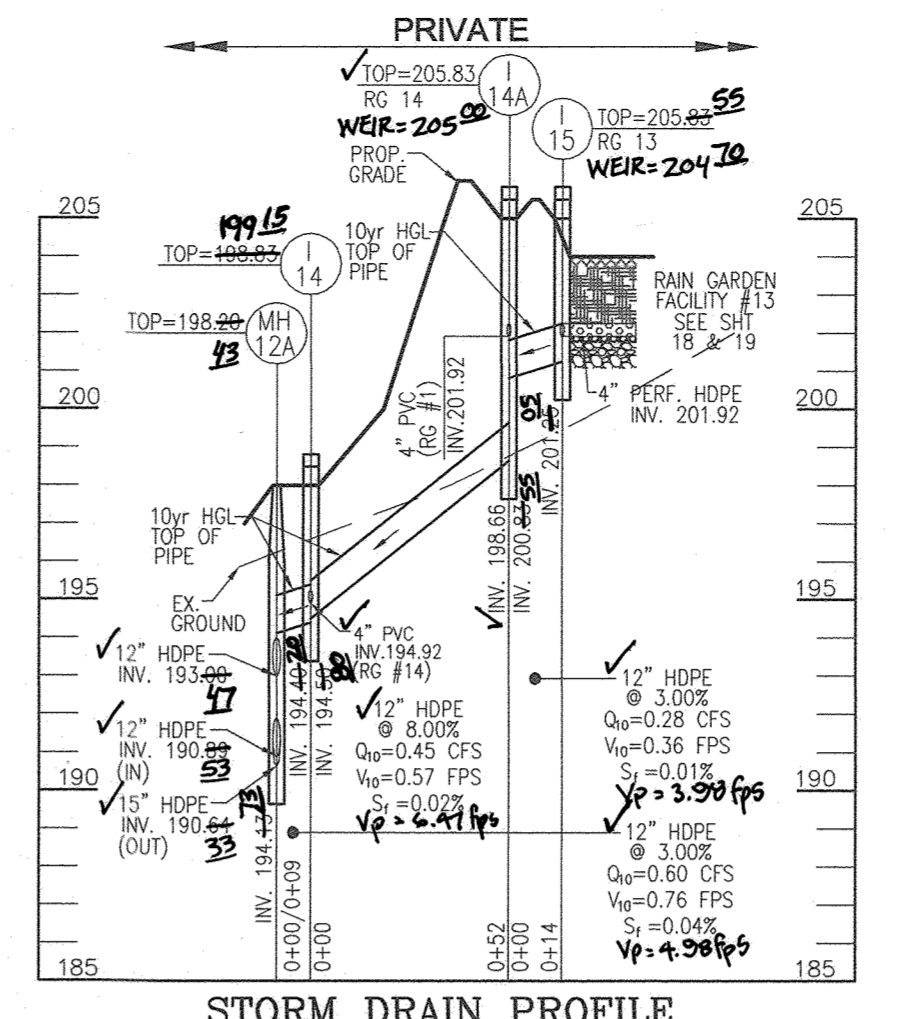
NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

1. SOURCE: HOWARD SOIL CONSERVATION DISTRICT WEBSITE: http://docs.wvnetinc.com/1997/49874f_3844a1e1874e3f6b205095c6a88091.pdf DOCUMENTS PULLDOWN - SHARED ITEMS - DOCUMENT TITLED "K FACTOR (USE Kw)" AND THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE'S WEB SOIL SURVEY, CONSULTED ON DECEMBER 29, 2014, AVAILABLE ONLINE AT <http://websoilsurvey.nrc.usda.gov/nw/home.nw>

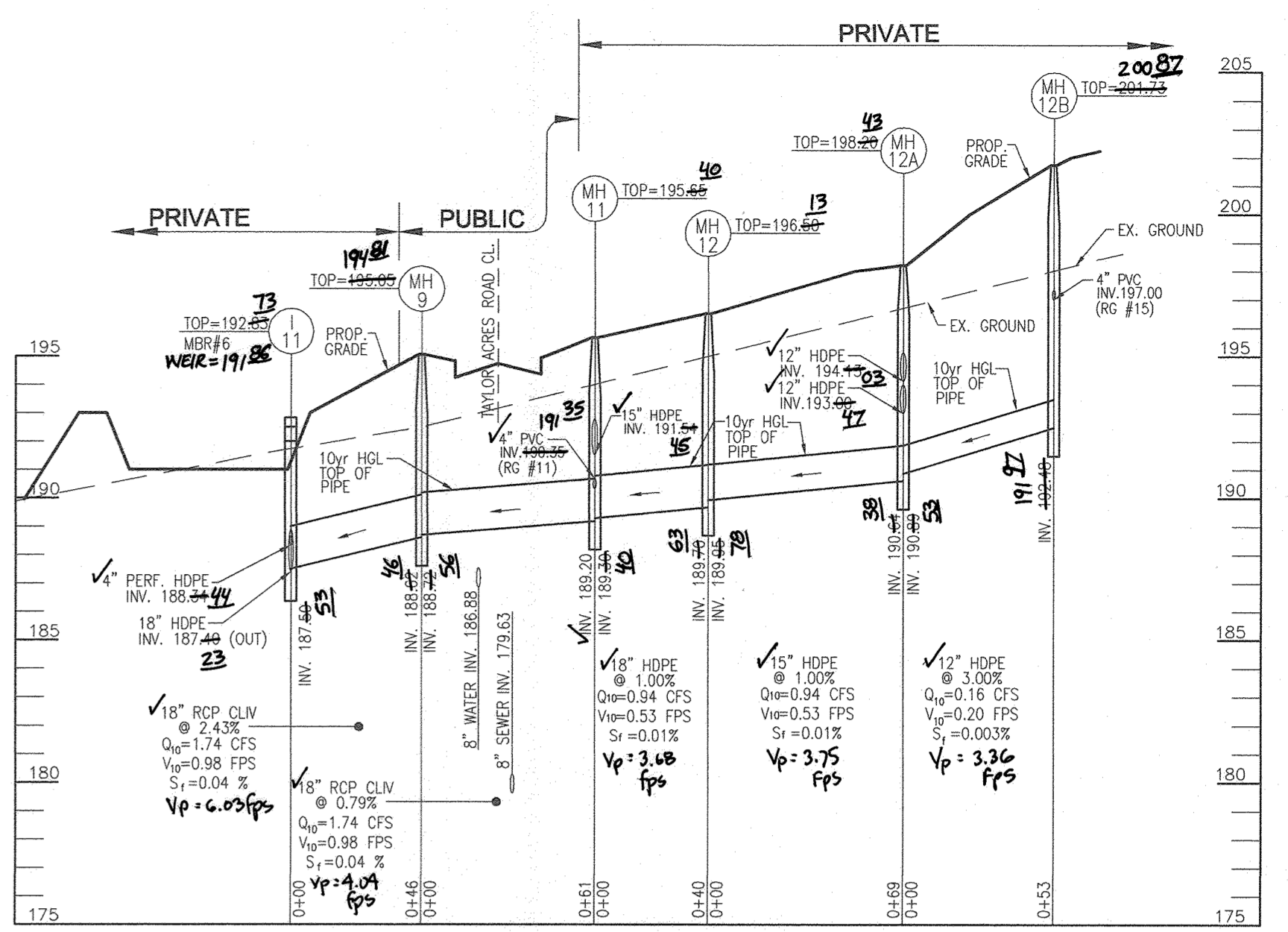
2. HYDRIC SOILS INFORMATION ADAPTED FROM THE NATIONAL HYDRIC SOILS LIST, AT <http://soils.usda.gov/use/hydric/>, CONSULTED ON DECEMBER 29, 2014.



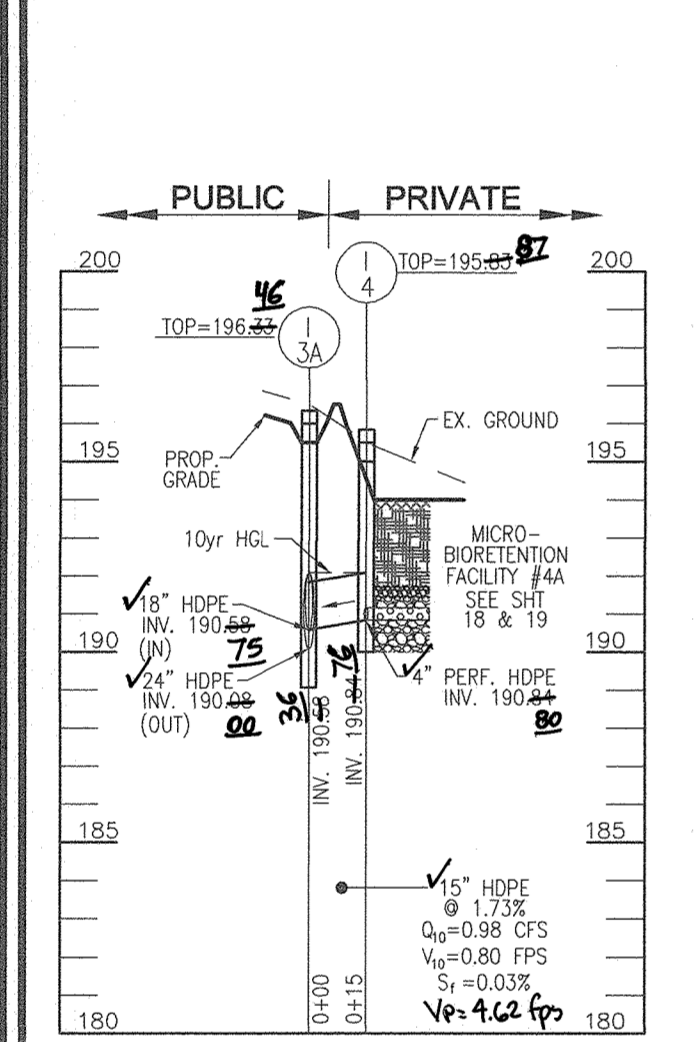
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



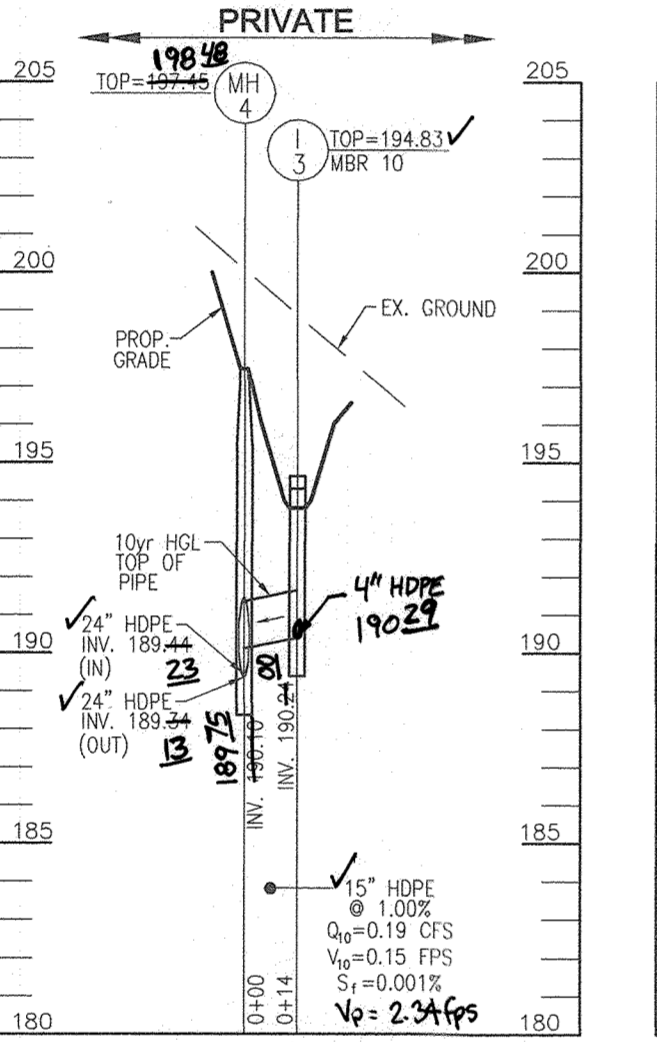
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



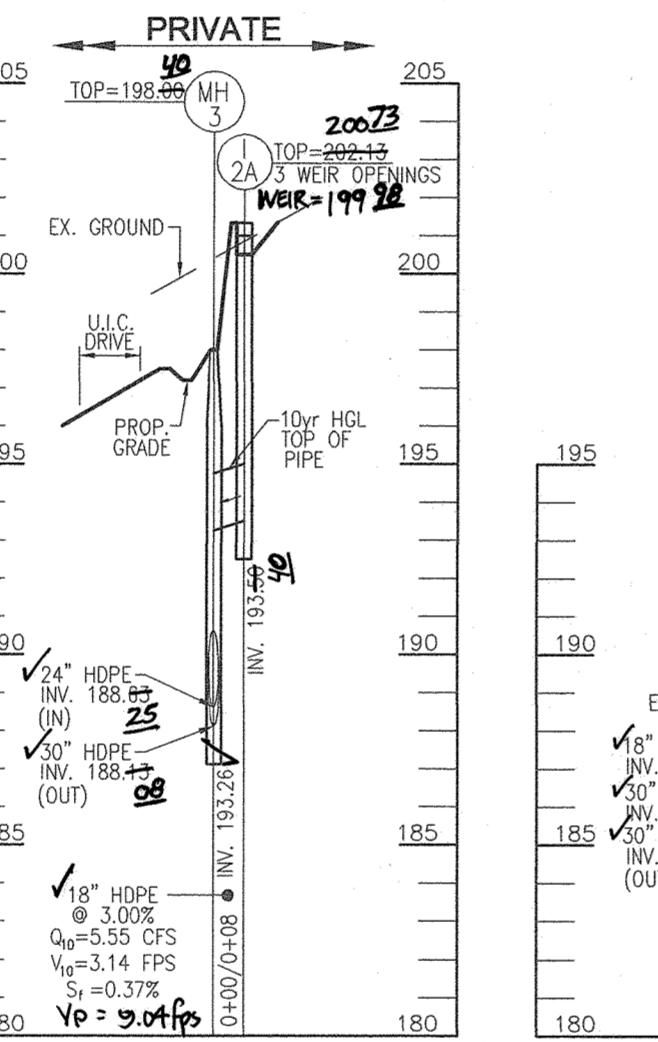
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SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



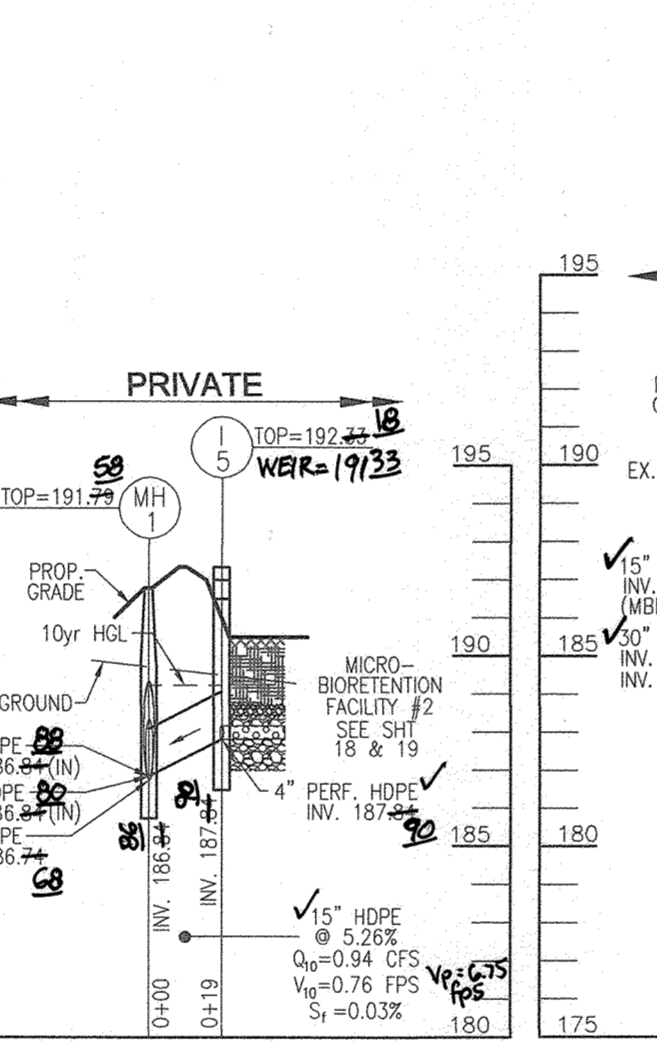
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



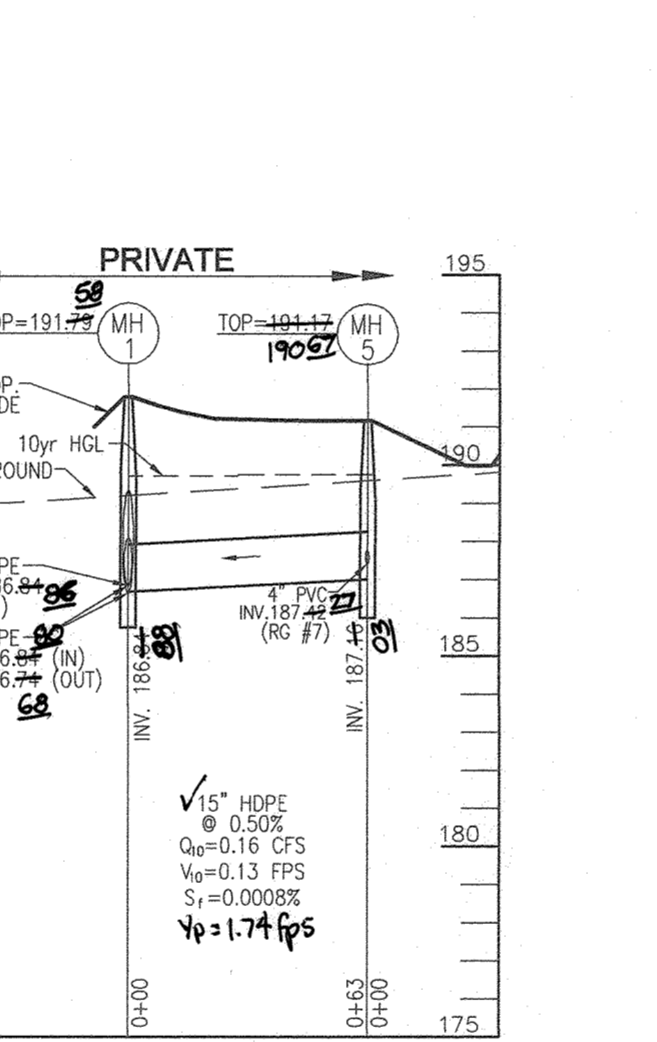
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



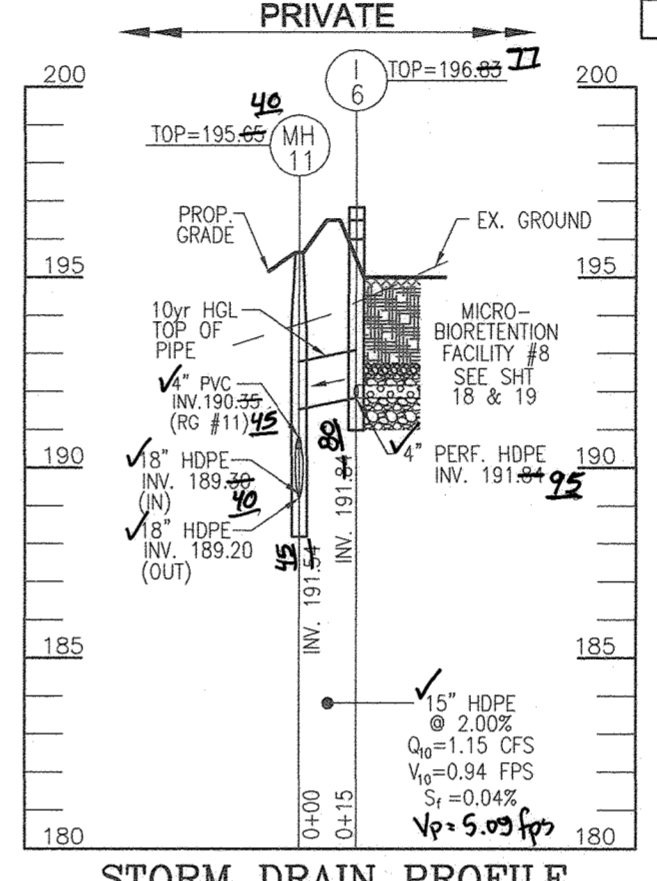
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



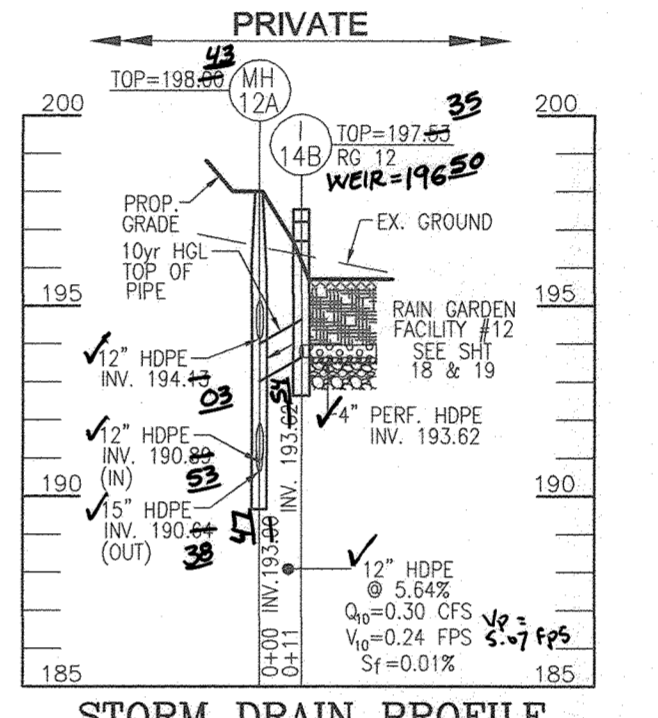
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



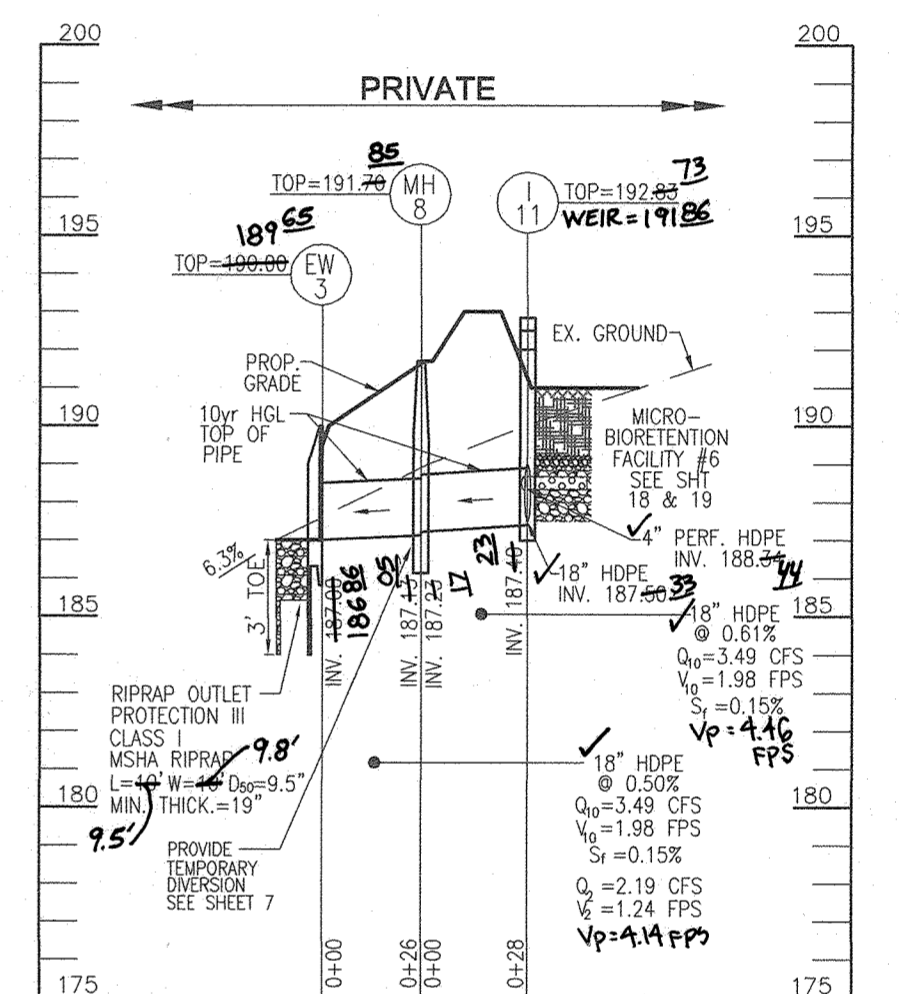
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



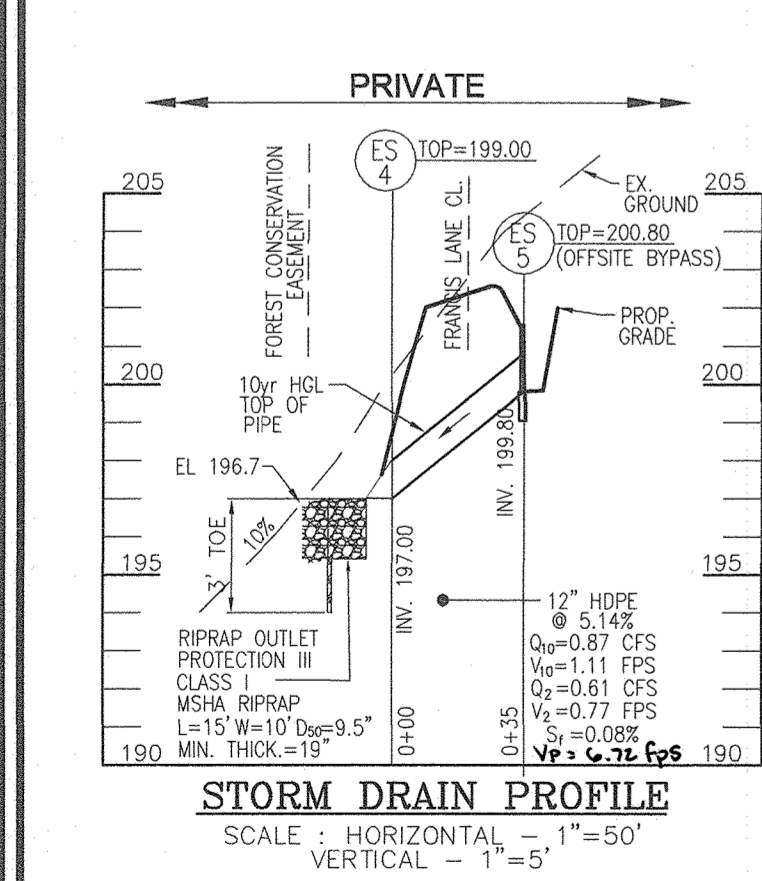
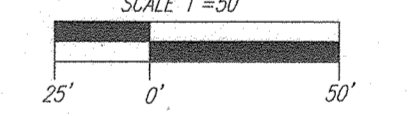
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



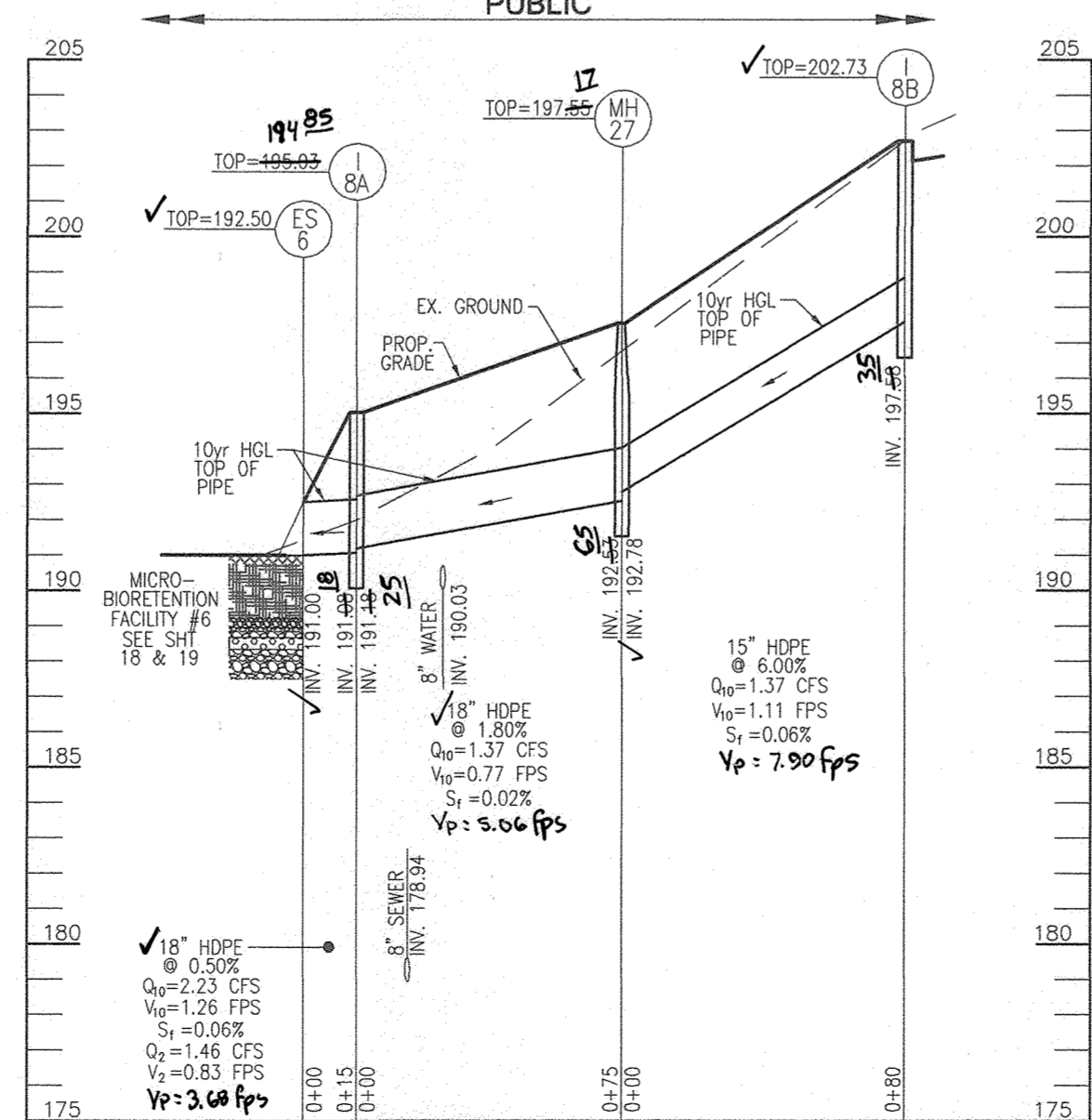
AS-BUILT CERTIFICATION FOR PSWM
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P.E. NAME: **16193** DATE: **7-9-24**

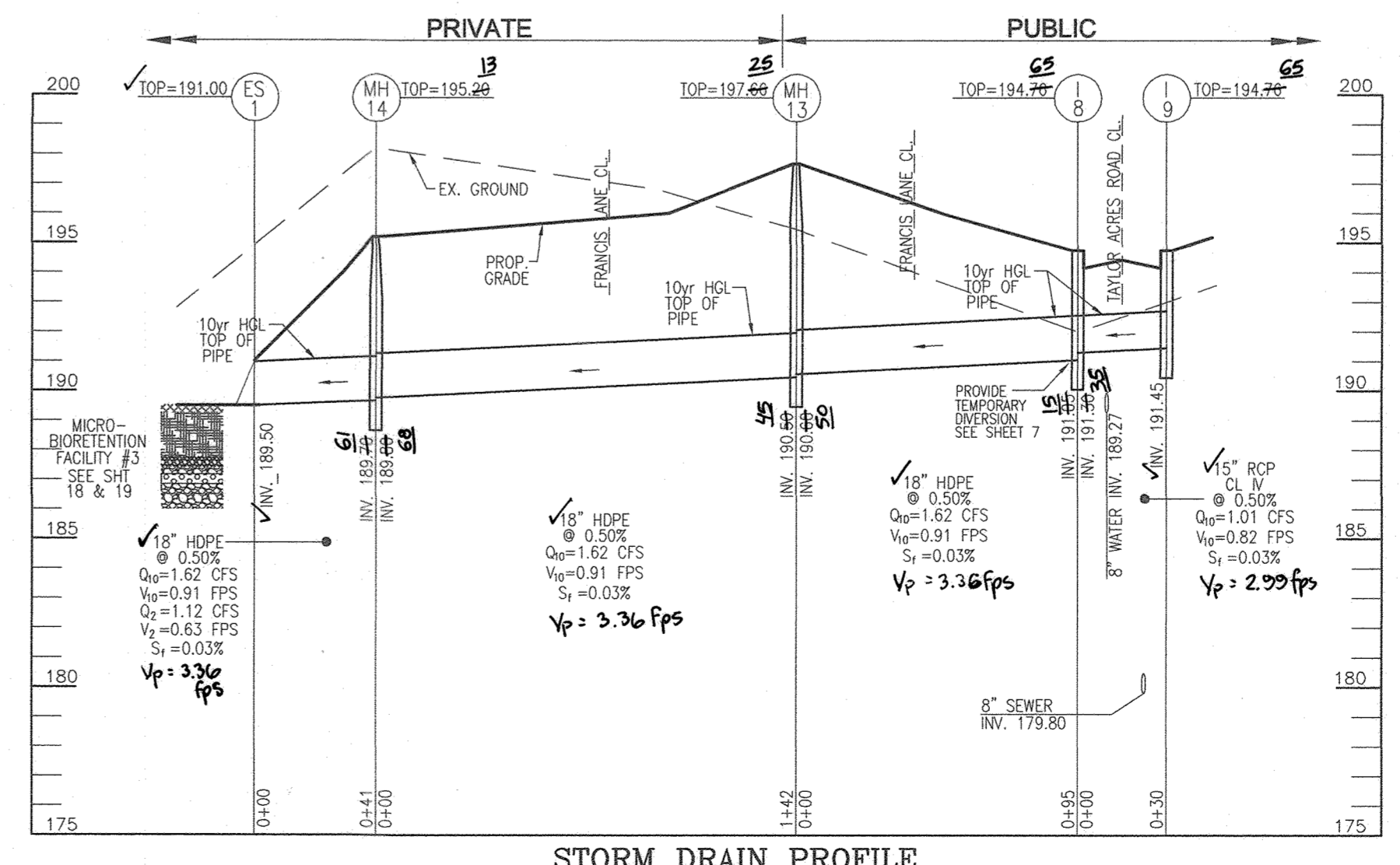
OWNER/DEVELOPER
GRACE TAYLOR SCHUTT, TRUSTEE OF THE GRACE T. SCHUTT REVOCABLE TRUST
8132 HANOVER ROAD
HANOVER, MD 21076
443-463-6760



STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways: **11/29/2021**
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division: **1-6-22**
 Chief, Division of Land Development: **1/6/22**

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLANS
STORM DRAIN PROFILES
GRACE MEADOWS
LOTS 1, 16 AND OPEN SPACE LOTS 19, 36
A SUBDIVISION OF TAX MAP 38 - PARCEL 731

L. 14536 / F. 269
TAX MAP 38 BLOCK 09
1ST ELECTION DISTRICT
DPZ REFERENCE: SEE SITE DATA

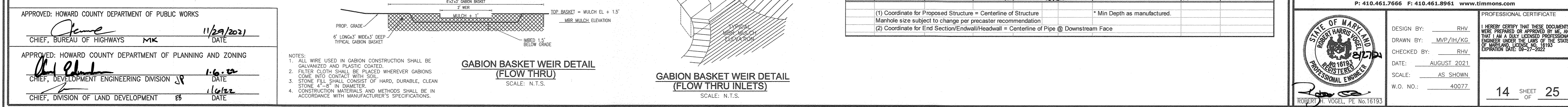
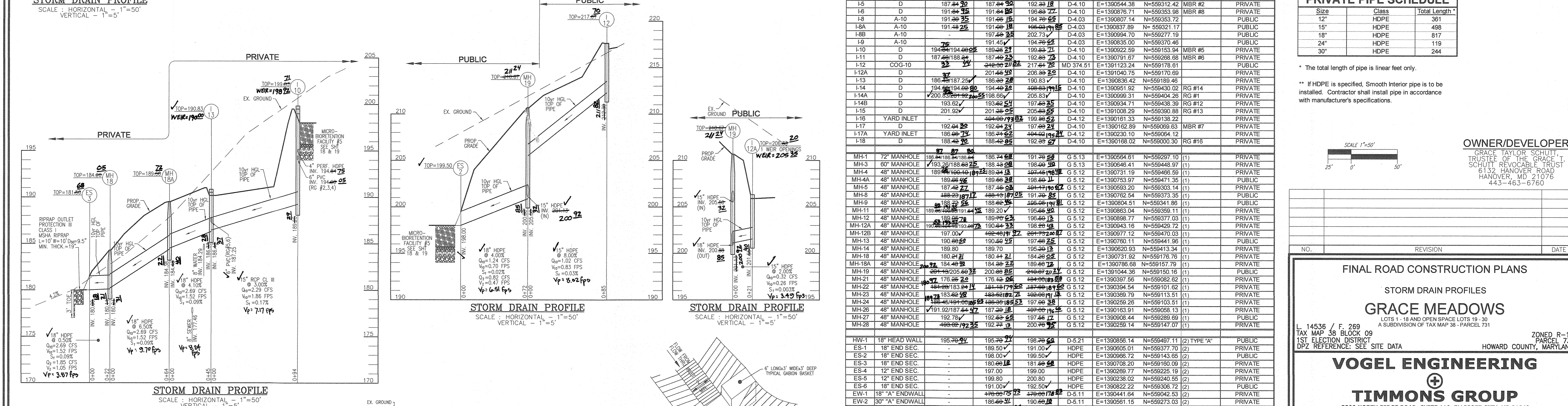
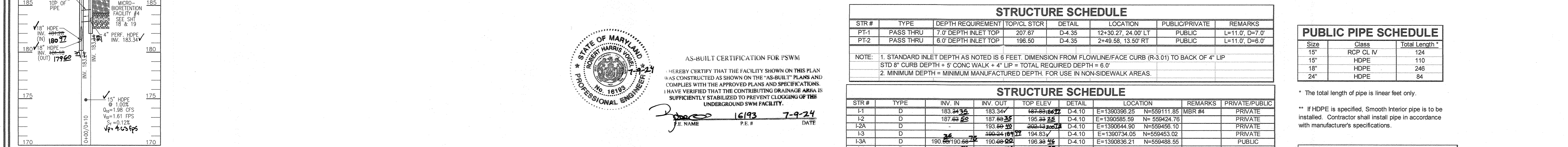
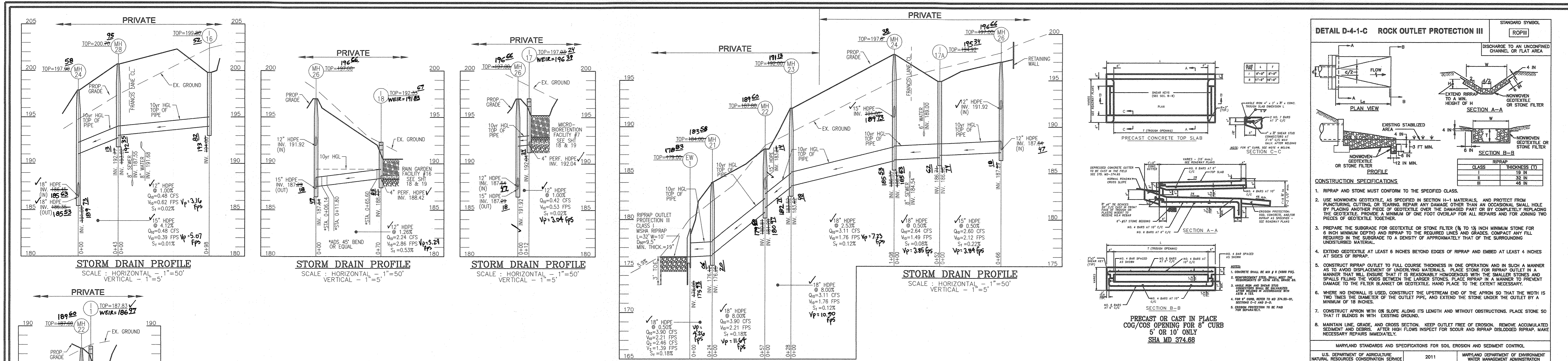
ZONED R-12
PARCEL 731
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410-461.7666 F: 410-461.8961 www.timmons.com

DESIGN BY: **RHV**
DRAWN BY: **MVP/HH/KG**
CHECKED BY: **RHV**
DATE: **AUGUST 2021**
SCALE: **AS SHOWN**
W.O. NO.: **40077**

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE 09-27-2022.

13 SHEET OF **25**



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS MK 1/29/2023 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION JR 1.6.22 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT ES 1/6/22 DATE

NOTES:
 1. ALL WIRE USED IN GABION CONSTRUCTION SHALL BE GALVANIZED AND PLASTIC COATED.
 2. FILTER CLOTH SHALL BE PLACED WHEREVER GABIONS COME INTO CONTACT WITH SOIL.
 3. STONE FILL SHALL CONSIST OF HARD, DURABLE, CLEAN STONE 4" IN DIAMETER.
 4. CONSTRUCTION MATERIALS AND METHODS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

GABION BASKET WEIR DETAIL (FLOW THRU)
 SCALE: N.T.S.

GABION BASKET WEIR DETAIL (FLOW THRU INLETS)
 SCALE: N.T.S.



AS-BUILT CERTIFICATION FOR PSWM
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

DATE: 7-9-24
 P.E. # 16193
 P.E. NAME: ROBERT HARRIS VOGEL

STRUCTURE SCHEDULE

STR #	TYPE	DEPTH REQUIREMENT	TOP/CL STCR	DETAIL	LOCATION	PUBLIC/PRIVATE	REMARKS
PT-1	PASS THRU	7'0" DEPTH INLET TOP	207.67	D-4.35	12+30.27, 24.00' LT	PUBLIC	L=11.0', D=7.0'
PT-2	PASS THRU	6'0" DEPTH INLET TOP	196.50	D-4.35	2+49.58, 13.50' RT	PUBLIC	L=11.0', D=6.0'

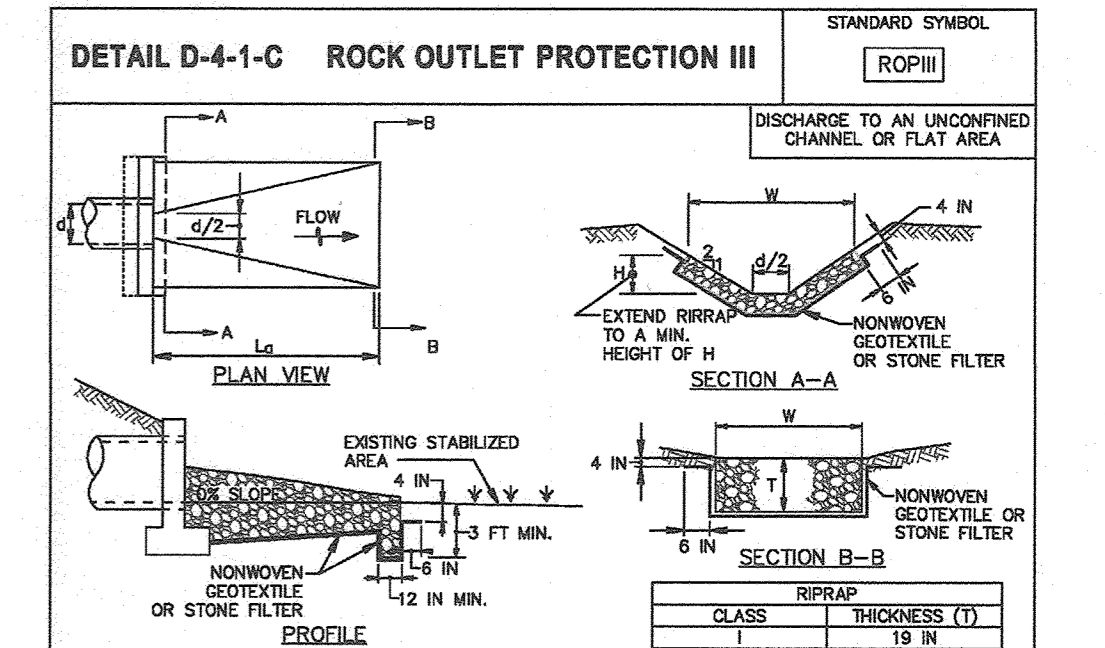
NOTE: 1. STANDARD INLET DEPTH AS NOTED IS 6 FEET. DIMENSION FROM FLOWLINE/FACE CURB (R-3.01) TO BACK OF 4" LIP STD 8" CURB DEPTH + 5" CONC WALK + 4" LIP = TOTAL REQUIRED DEPTH = 6.0'
 2. MINIMUM DEPTH = MINIMUM MANUFACTURED DEPTH. FOR USE IN NON-SIDEWALK AREAS.

STRUCTURE SCHEDULE

STR #	TYPE	INV. IN	INV. OUT	TOP ELEV	DETAIL	LOCATION	REMARKS	PRIVATE/PUBLIC
I-1	D	183.44	183.34	187.89	D-4.10	E=1390396.25 N=559111.85	MBR #4	PRIVATE
I-2	D	187.60	187.60	196.48	D-4.10	E=1390585.59 N=559424.76		PRIVATE
I-2A	D	193.60	193.60	202.19	D-4.10	E=1390644.90 N=559456.10		PRIVATE
I-3	D	190.34	189.72	194.83	D-4.10	E=1390734.05 N=559453.02		PRIVATE
I-3A	D	190.34	190.69	196.49	D-4.10	E=1390836.21 N=559486.56		PUBLIC
I-4	D	190.44	190.44	195.89	D-4.10	E=1390839.11 N=559474.03	MBR #4A	PRIVATE
I-5	D	187.44	187.44	192.23	D-4.10	E=1390544.38 N=559312.42	MBR #2	PRIVATE
I-6	D	191.44	191.44	196.42	D-4.10	E=1390876.71 N=559353.98	MBR #8	PRIVATE
I-8	A-10	191.44	191.44	194.76	D-4.03	E=1390807.14 N=559353.72		PUBLIC
I-8A	A-10	191.44	191.44	196.69	D-4.03	E=1390837.89 N=559321.17		PUBLIC
I-8B	A-10	197.44	197.44	202.73	D-4.03	E=1390994.70 N=559277.19		PUBLIC
I-8C	A-10	191.44	191.44	194.76	D-4.03	E=1390835.00 N=559370.46		PUBLIC
I-10	D	194.44	194.44	199.45	D-4.10	E=1390922.69 N=559153.94	MBR #5	PRIVATE
I-11	D	187.44	187.44	192.23	D-4.10	E=1390791.87 N=559488.59	MBR #6	PRIVATE
I-12	COG-10	201.44	201.44	217.44	MD 374.51	E=1391123.24 N=559178.61		PUBLIC
I-12A	D	201.44	201.44	206.39	D-4.10	E=1391040.76 N=559170.69		PRIVATE
I-13	D	186.44	187.25	186.44	D-4.10	E=1390836.42 N=559189.46		PRIVATE
I-14	D	194.44	194.44	194.44	D-4.10	E=1390951.92 N=559430.02	RG #14	PRIVATE
I-14A	D	200.83	200.83	205.83	D-4.10	E=1390999.31 N=559404.26	RG #1	PRIVATE
I-14B	D	193.62	193.62	197.49	D-4.10	E=1390934.71 N=559438.39	RG #12	PRIVATE
I-15	D	201.82	201.82	205.83	D-4.10	E=1391038.29 N=559430.88	RG #13	PRIVATE
I-16	YARD INLET	192.44	192.44	197.49	D-4.12	E=1390161.33 N=559138.22		PRIVATE
I-17	D	192.44	192.44	197.49	D-4.10	E=1390162.89 N=559069.63	MBR #7	PRIVATE
I-17A	YARD INLET	186.44	186.44	186.44	D-4.12	E=1390230.10 N=559064.12		PRIVATE
I-18	D	188.44	188.44	192.39	D-4.10	E=1390168.02 N=559000.30	RG #16	PRIVATE

MH-1	72" MANHOLE	186.44	186.44	186.44	G 5.13	E=1390564.61 N=559297.10	(1)	PRIVATE
MH-3	60" MANHOLE	183.20	183.20	186.44	G 5.13	E=1390546.41 N=559449.97	(1)	PRIVATE
MH-4	48" MANHOLE	189.44	189.44	192.23	G 5.12	E=1390731.19 N=559498.59	(1)	PUBLIC
MH-4A	48" MANHOLE	189.44	189.44	192.23	G 5.12	E=1390753.97 N=559471.35	(1)	PUBLIC
MH-5	48" MANHOLE	187.44	187.44	192.23	G 5.12	E=1390593.20 N=559303.14	(1)	PRIVATE
MH-8	48" MANHOLE	188.44	188.44	191.20	G 5.12	E=1390762.54 N=559373.35	(1)	PUBLIC
MH-9	48" MANHOLE	188.44	188.44	188.44	G 5.12	E=1390804.51 N=559341.86	(1)	PUBLIC
MH-11	48" MANHOLE	189.44	189.44	192.23	G 5.12	E=1390863.04 N=559359.11	(1)	PRIVATE
MH-12	48" MANHOLE	189.44	189.44	192.23	G 5.12	E=1390898.77 N=559377.03	(1)	PRIVATE
MH-12A	48" MANHOLE	189.44	189.44	192.23	G 5.12	E=1390943.16 N=559429.12	(1)	PRIVATE
MH-12B	48" MANHOLE	197.00	197.00	197.00	G 5.12	E=1390777.12 N=559470.03	(1)	PRIVATE
MH-13	48" MANHOLE	190.44	190.44	197.49	G 5.12	E=1390760.11 N=559441.96	(1)	PUBLIC
MH-14	48" MANHOLE	189.80	189.80	192.23	G 5.12	E=1390620.93 N=559413.34	(1)	PRIVATE
MH-18	48" MANHOLE	180.44	180.44	184.20	G 5.12	E=1390731.92 N=559176.76	(1)	PRIVATE
MH-18A	48" MANHOLE	184.44	184.44	188.44	G 5.12	E=1390786.68 N=559157.79	(1)	PRIVATE
MH-19	48" MANHOLE	191.44	191.44	194.20	G 5.12	E=1391044.38 N=559156.16	(1)	PUBLIC
MH-21	48" MANHOLE	178.44	178.44	182.23	G 5.12	E=1390397.56 N=559082.62	(1)	PRIVATE
MH-22	48" MANHOLE	183.44	183.44	187.23	G 5.12	E=1390394.54 N=559101.62	(1)	PRIVATE
MH-23	48" MANHOLE	183.44	183.44	187.23	G 5.12	E=1390399.79 N=559113.51	(1)	PRIVATE
MH-24	48" MANHOLE	184.44	184.44	188.23	G 5.12	E=1390299.26 N=559103.51	(1)	PRIVATE
MH-26	48" MANHOLE	191.92	191.92	194.20	G 5.12	E=1390163.91 N=559058.13	(1)	PRIVATE
MH-27	48" MANHOLE	192.78	192.78	194.20	G 5.12	E=1390608.44 N=559289.69	(1)	PUBLIC
MH-28	48" MANHOLE	192.78	192.78	194.20	G 5.12	E=1390259.14 N=559147.07	(1)	PRIVATE

(1) Coordinate for Proposed Structure = Centerline of Structure
 Manhole size subject to change per precaster recommendation
 (2) Coordinate for End Section/Endwall/Headwall = Centerline of Pipe @ Downstream Face
 * Min Depth as manufactured.



CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION 11-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (¾ TO 1½ INCH MINIMUM STONE FOR 6 INCH MINIMUM APRON) 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 BY UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS 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 ONE 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 SOIL 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

PUBLIC PIPE SCHEDULE

Size	Class	Total Length *
15"	HDPE	124
18"	HDPE	246
24"	HDPE	84

* The total length of pipe is linear feet only.
 ** If HDPE is specified, Smooth Interior pipe is to be installed. Contractor shall install pipe in accordance with manufacturer's specifications.

PRIVATE PIPE SCHEDULE

Size	Class	Total Length *
12"	HDPE	361
15"	HDPE	498
18"	HDPE	817
24"	HDPE	119
30"	HDPE	244

* The total length of pipe is linear feet only.
 ** If HDPE is specified, Smooth Interior pipe is to be installed. Contractor shall install pipe in accordance with manufacturer's specifications.

OWNER/DEVELOPER
 GRACE TAYLOR SCHULTZ TRUSTEE OF THE GRACE T. SCHULTZ REVOCABLE TRUST
 6132 HANOVER ROAD
 HANOVER, MD 21076
 443-463-6760

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLANS
STORM DRAIN PROFILES
GRACE MEADOWS
 LOTS 1 - 18 AND OPEN SPACE LOTS 19 - 30
 A SUBDIVISION OF TAX MAP 38 - PARCEL 731
 L 14536 / F. 269
 TAX MAP 38 BLOCK 09
 ELECTION DISTRICT 17
 DPZ REFERENCE: SEE SITE DATA
 ZONED R-12
 PARCEL 731
 HOWARD COUNTY, MARYLAND

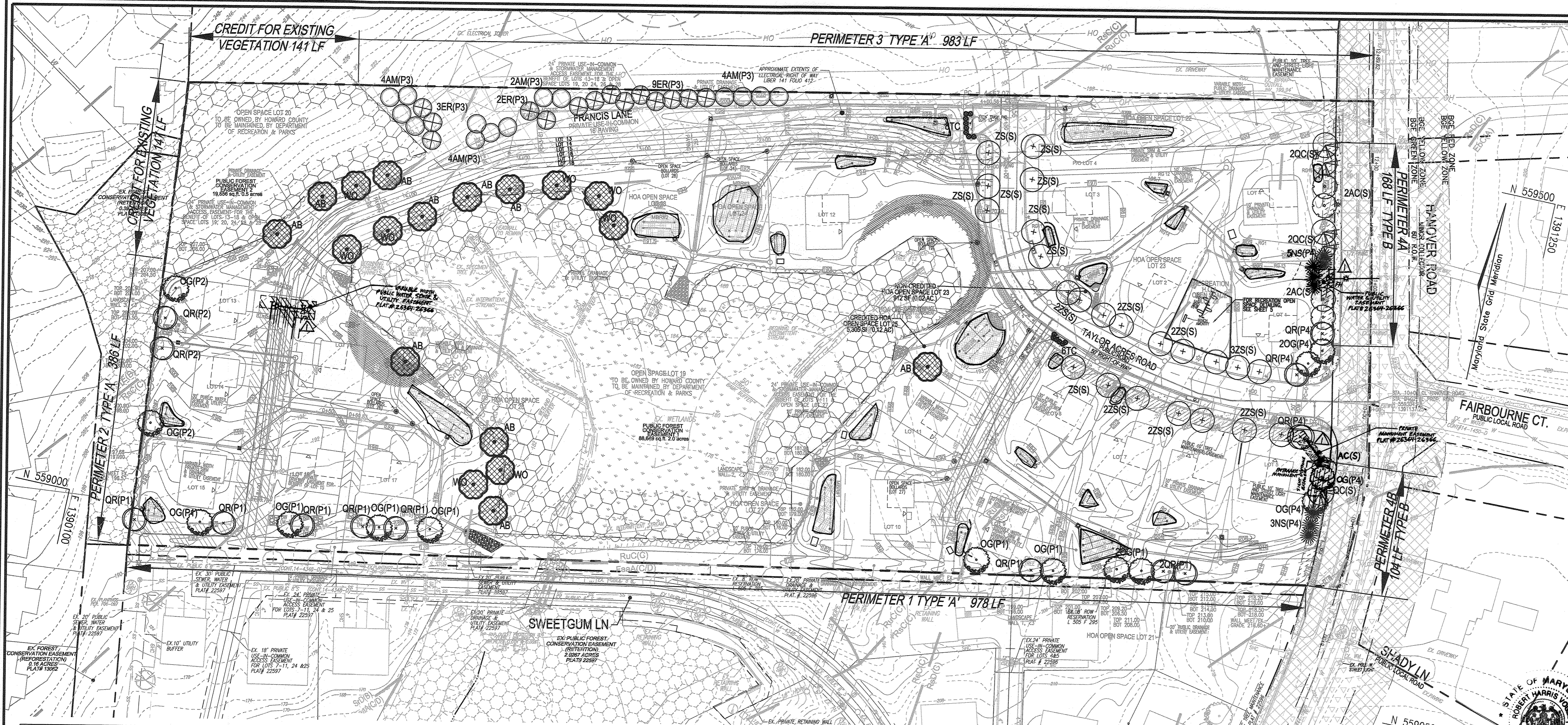
VOGEL ENGINEERING
TIMMONS GROUP
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21143
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

DESIGN BY: RHY
 DRAWN BY: MJP/JH/KG
 CHECKED BY: RHY
 DATE: AUGUST 2021
 SCALE: AS SHOWN
 W.O. NO.: 40077

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 16193 EXPIRATION DATE: 08-27-2022

14 SHEET OF 25

AS-BUILT APRIL 2024 F-20-076



LEGEND

	EXISTING CURB AND GUTTER		30' PUBLIC WATER SEWER & UTILITY EASEMENT
	CURB AND GUTTER		PUBLIC DRAINAGE & UTILITY EASEMENT
	EXISTING UTILITY POLE		PRIVATE DRAINAGE & UTILITY EASEMENT
	EXISTING LIGHT POLE		SPECIMEN TREE W/ CRITICAL ROOT ZONE
	EXISTING MAILBOX		EXISTING TREES (FIELD LOCATED)
	EXISTING SIGN		PERIMETER OR STREET TREE - PLANTING OBLIGATION
	EXISTING FENCE		SPECIMEN TREE REPLACEMENT PLANTINGS WP-19-117
	PROPERTY LINE		BGE "GREEN ZONE" TREE HEIGHT LIMITED (TREE HEIGHT 25' MAX.)
	RIGHT-OF-WAY LINE		BGE "YELLOW ZONE" TREE HEIGHT LIMITED (TREE HEIGHT 25'-40' MAX.)
	APPROXIMATE EXTENTS OF ELECTRICAL RIGHT OF WAY		FOREST CONSERVATION EASEMENT (RETENTION)
	SIDWALK		OPEN SPACE BALLIROID (SEE DETAIL SHEET 5)
	EXISTING TREE LINE		
	STREAM		
	STORM DRAIN		
	STORM DRAIN INLET		
	EX FOREST CONSERVATION EASEMENT		
	EX WETLANDS		
	EX WETLAND BUFFER		
	EX STREAM		
	EX STREAM BUFFER		
	SOILS BOUNDARY		
	LOT LINES		
	20' PUBLIC WATER & UTILITY EASEMENT		
	20' PUBLIC SEWER & UTILITY EASEMENT		

SCHEDULE A PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO ROADWAYS AND PERIMETER PROPERTIES				TOTAL
	A	B	C	D	
PERIMETER/FRONTAGE DESIGNATION	1	2	3	4	
LANDSCAPE TYPE	A	A	B	B	
LENGTH OF FRONTAGE	978	386	983	108	104
FRONTAGE/PERIMETER					
CREDIT FOR EXISTING VEGETATION (YES/NO LINEAR FEET)	NO	YES	YES	NO	NO
CREDIT FOR WALL, FENCE OR BERM (YES/NO LINEAR FEET)	NO	NO	NO	NO	NO
NUMBER OF PLANTS REQUIRED	978	239	842	108	104
SHADE TREES	1:00 = 10	1:00 = 4	1:00 = 14	1:00 = 4	41
EVERGREEN TREES					8
NUMBER OF PLANTS PROVIDED					
SHADE TREES	10	4	14(1)	4	41
EVERGREEN TREES					8
OTHER TREES (2:1 SUBSTITUTION)					8
SHRUBS (10:1 SUBSTITUTION)					8
EX SPECIMEN TREES TO REMAIN					8
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED					

NOTE: (1) TREES MUST BE BGE COMPLIANT.
 THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE LANDSCAPE MANUAL. A FINANCIAL SURETY FOR PERIMETER PLANTINGS SHALL BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT.
 -PERIMETER PLANTINGS IN THE AMOUNT OF \$13,500.00 FOR THE REQUIRED 41 SHADE TREES (\$12,000) AND 8 EVERGREENS (\$1,500).

- ### LANDSCAPE NOTES:
- 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.
 - THE OWNER, TRANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND SOILS. FINISHES 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.
 - SHOULD ANY TREE DESIGNATED FOR PRESERVATION FOR WHICH LANDSCAPING CREDIT IS GIVEN, DIE PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INCHES IN CALIPER AND INSTALLED AS REQUIRED IN THE HOWARD COUNTY LANDSCAPE MANUAL.
 - PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THE FINAL PLAN.
 - SURETY FOR THE PROPOSED LANDSCAPING SHALL BE BASED ON THE NUMBER OF PLANTINGS REQUIRED.
 - REMOVAL OF TREES 30" OR GREATER DBH IS PROHIBITED WITHOUT COUNTY APPROVAL.
 - A FINANCIAL SURETY IN THE AMOUNT OF \$18,000 FOR THE REQUIRED LANDSCAPING (REQUIRED 41 SHADE TREES \$12,000, 8 EVERGREEN TREES \$1,500, 18 SPECIMEN TREE REPLACEMENT \$5,400) SHALL BE POSTED WITH THE FINAL DEVELOPER'S AGREEMENT AS PART OF THIS PLAN.

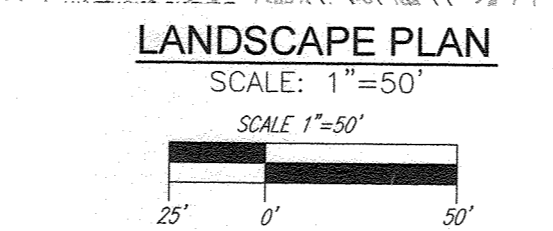
OWNER/DEVELOPER
 GRACE TAYLOR SCHULTZ TRUST OF THE GRACE TAYLOR SCHULTZ REVOCABLE TRUST
 6132 HANOVER ROAD
 HANOVER, MD 21076
 443-463-6790

STREET TREE CALCULATION & PLANTING SCHEDULE

STREET NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED
HANOVER ROAD	40340	10	10
TAYLOR ACRES ROAD	82340	23	23

TRASH PAD LANDSCAPING

SYMBOL	QTY.	DESCRIPTION	SIZE	REMARKS	LOCATION
(Symbol)	8	TAXUS CUSPIDATA 'NANA' DWARF JAPANESE YEW	18"24" SPREAD	B & B	LOTS 13-18
(Symbol)	6	TAXUS CUSPIDATA 'NANA' DWARF JAPANESE YEW	18"24" SPREAD	B & B	LOTS 9-11



PERIMETER LANDSCAPE EDGE PLANTING SCHEDULE

KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
AM	14	ACER GINNALA AMUR MAPLE (BICE COMPLIANT)	1 1/2"-2" CAL.	B & B
ER	14	CERCIS CANADENSIS EASTERN REDBUD (BICE COMPLIANT)	1 1/2"-2" CAL.	B & B
OG	14	ACER RUBRUM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	2 1/2"-3" CAL.	B & B
QR	13	QUERCUS RUBRA NORTHERN RED OAK	2 1/2"-3" CAL.	B & B
EVERGREEN = 8				
NS	8	ALEX NELLIERE STEVENS' NELLIE R. STEVENS HOLLY	5'-9" HT.	B & B

TRASH PAD PLANTINGS ARE PROVIDED FOR THIS PROJECTS USE-IN-COMMON DRIVEWAY. FINANCIAL SURETY (\$420) SHALL BE POSTED AS PART OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS COST ESTIMATE FOR THE REQUIRED 14 SHRUBS.

NOTE: WITH PERMISSION FROM HOWARD COUNTY, PLANTINGS SPECIFIED HEREON MAY BE SUBSTITUTED WITH APPROVED SPECIES LISTED IN APPENDIX B & C OF THE HOWARD COUNTY LANDSCAPE MANUAL. ALL PLANTS SHALL BE BGE COMPLIANT.
 LANDSCAPE SCHEDULE NOTES:
 1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT ANN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH H&D PLANNING SPECIFICATIONS.
 2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING. TREE LOCATIONS OF PLANT MATERIALS MAY VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN BOTTOM OF DRAINAGE SWALE UNLESS SPECIFICALLY NOTED ON LANDSCAPE SCHEDULE.
 3. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BOUGING. IF PLAN OFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL CONTROL.

MAPPED SOILS TYPES

SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	Kw	CUTS SLOPE
Fo	FALCONSTONE SANDY LOAM, 0 TO 2 PERCENT SLOPES	E	YES	0.24	NO
R3c	RUSSETT FINE SANDY LOAM, 0 TO 10 PERCENT SLOPES	E	NO	0.43	YES
R4d	RUSSETT FINE SANDY LOAM, 10 TO 15 PERCENT SLOPES	C	NO	0.43	YES
R5c	RUSSETT AND BELLOUE SOILS, 5 TO 10 PERCENT SLOPES	C	NO	0.43	YES
S1e	SASSAPARA AND CROWN SOILS, 10 TO 25 PERCENT SLOPES	B	NO	0.32	YES
S2d	SASSAPARA AND CROWN SOILS, 10 TO 15 PERCENT SLOPES	B	NO	0.37	YES
U3d	URBAN LAND-CHILLUM-BETHEL COMPLEX, 3 TO 15 PERCENT SLOPES	C	NO	-	NO

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR 'K' GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.
 1. SOURCE: HOWARD SOIL CONSERVATION DISTRICT WEBSITE: <https://www.howardsoil.com/>
 2. SOURCE: USDA, SCS-WEBSOIL SURVEY, HOWARD COUNTY.
 3. SOURCE: USDA, SCS-WEBSOIL SURVEY, HOWARD COUNTY.
 4. SOURCE: USDA, SCS-WEBSOIL SURVEY, HOWARD COUNTY.
 5. SOURCE: USDA, SCS-WEBSOIL SURVEY, HOWARD COUNTY.
 6. SOURCE: USDA, SCS-WEBSOIL SURVEY, HOWARD COUNTY.
 7. SOURCE: USDA, SCS-WEBSOIL SURVEY, HOWARD COUNTY.
 8. SOURCE: USDA, SCS-WEBSOIL SURVEY, HOWARD COUNTY.
 9. SOURCE: USDA, SCS-WEBSOIL SURVEY, HOWARD COUNTY.
 10. SOURCE: USDA, SCS-WEBSOIL SURVEY, HOWARD COUNTY.

PUBLIC STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124(a)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. FINANCIAL SURETY (\$ 9,000) SHALL BE POSTED AS PART OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS COST ESTIMATE FOR THE REQUIRED 33 STREET TREES.
 NOTE: WITH PERMISSION FROM HOWARD COUNTY AND BGE, PLANTINGS SPECIFIED HEREON MAY BE SUBSTITUTED WITH APPROVED SPECIES LISTED IN APPENDIX B & C OF THE HOWARD COUNTY LANDSCAPE MANUAL OR TREES APPROVED BY BGE AS SUITABLE FOR PLANTING IN THEIR ZONES.

- ### STREET TREE NOTES:
- WHEN THE DISTANCE BETWEEN THE CURB AND SIDEWALK IS 6 FEET OR GREATER, TREES SHALL BE LOCATED WITHIN THE RIGHT OF WAY AND SHALL BE CENTERED BETWEEN THE CURB AND THE SIDEWALK.
 - WHEN THE DISTANCE BETWEEN THE CURB AND THE SIDEWALK IS LESS THAN 6 FEET, AND WHERE TREES ARE PLANTED CLOSER THAN 3 FEET TO THE SIDEWALK, A BIOLOGIC ROOT INHIBITOR BARRIER OR PHYSICAL CONTAINER BARRIER SHALL BE REQUIRED.
 - A. AS SHOWN, WHEN TREES ARE TO BE PLANTED IN THE 10 FOOT WIDE TREE MAINTENANCE EASEMENT ALONG TAYLOR ACRES ROAD, THE TREE IS TO BE CENTERED WITHIN THE EASEMENT.
 B. AS SHOWN, WHEN TREES ARE TO BE PLANTED IN THE 10 FOOT WIDE TREE MAINTENANCE EASEMENT ALONG HANOVER ROAD, THE TREE IS TO BE PLANTED 9 FEET FROM THE SIDEWALK IN THE DIRECTION AWAY FROM THE ROAD.
 - TREES SHALL BE PLACED A MINIMUM OF 30 FEET FROM ALL SIGNS AND INTERSECTIONS WHEN PLANTED BETWEEN SIDEWALK AND CURB, AND BE LOCATED WITH CONSIDERATION OF UNDERGROUND UTILITIES AND STRUCTURES. STREET TREES MAY NOT BE PLANTED WITHIN 5 FEET OF A DRAIN INLET STRUCTURE, 5 FEET OF AN OPEN SPACE ACCESS STRIP, OR 10 FEET OF A DRIVEWAY.
 - ALL STREET TREES AND/OR SIGN SHALL BE LOCATED 5' MIN. FROM PROPOSED DRAINAGE, UTILITY STRUCTURE.
 - TREES SHALL BE A MINIMUM OF 20' BETWEEN STREET LIGHTS AND STREET TREES.
 - TREES SHALL BE A MINIMUM OF 40' BETWEEN THE SIGN FACE AND THE CLOSEST TREE FOR ALL STOP SIGNS.
 - TREES SHALL BE A MINIMUM OF 35' BETWEEN THE SIGN FACE AND CLOSEST TREE FOR ALL SIGNS OTHER THAN A STOP SIGN.
 - TREES SHALL BE A MINIMUM OF 20' SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.

- ### NOTES:
- IN THE DIRECTION FACING A TRAFFIC CONTROL SIGN: A) THERE SHALL BE A MINIMUM OF 40' BETWEEN THE SIGN FACE AND CLOSEST TREE FOR ALL STOP SIGNS. B) THERE SHALL BE A MINIMUM OF 35' BETWEEN THE SIGN FACE AND CLOSEST TREE FOR ALL SIGNS OTHER THAN A STOP SIGN. C) A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 11/29/2021
 CHIEF, BUREAU OF HIGHWAYS MK DATE

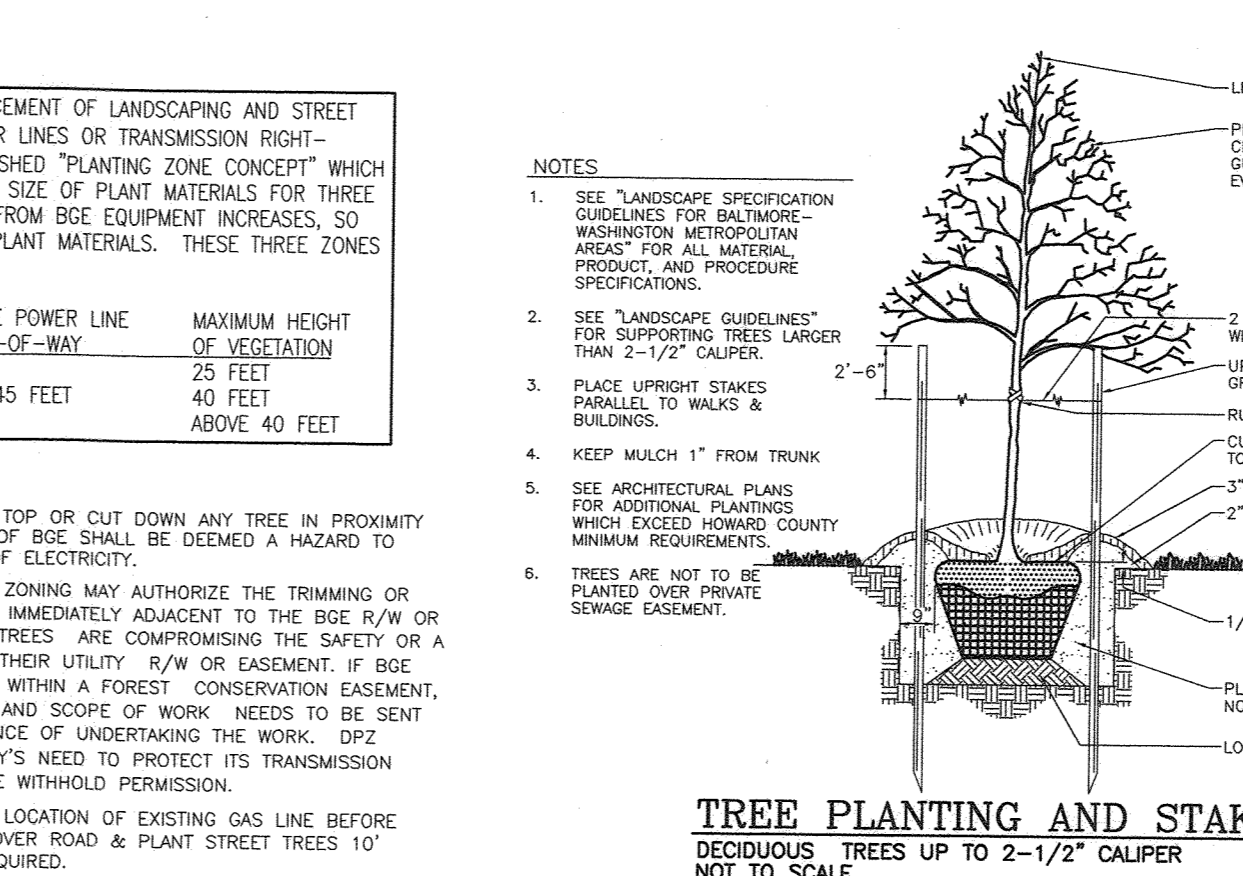
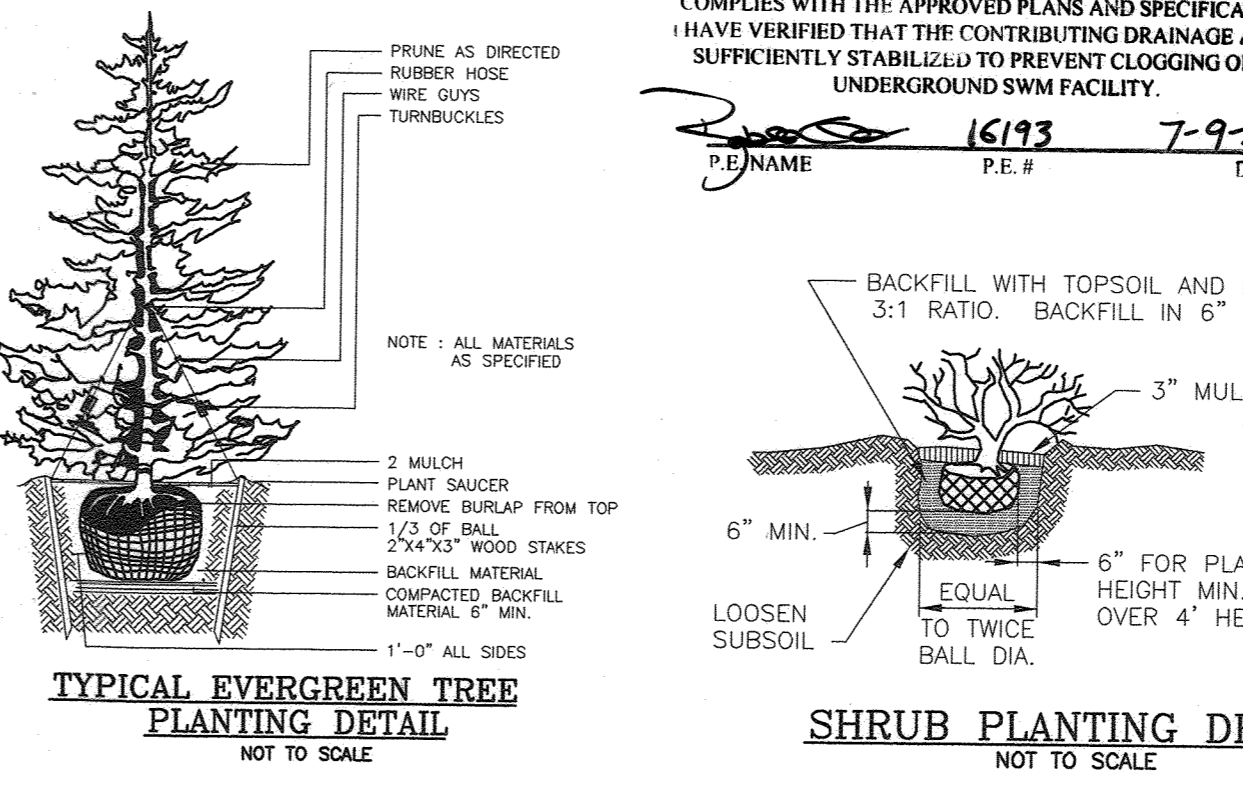
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 1-6-22
 CHIEF, DEVELOPMENT ENGINEERING DIVISION JR DATE

APPROVED: [Signature] 11/6/22
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

[Signature] 8-27-21
 SIGNATURE OF DEVELOPER DATE



DPZ'S POLICIES GOVERNING THE PLACEMENT OF LANDSCAPING AND STREET TREES IN PROXIMITY TO BGE'S POWER LINES OR TRANSMISSION RIGHT-OF-WAY ARE BASED ON BGE'S PUBLISHED "PLANTING ZONE CONCEPT" WHICH STIPULATES THE MAXIMUM ALLOWABLE SIZE OF PLANT MATERIALS FOR THREE DEFINED ZONES. AS THE DISTANCE FROM BGE EQUIPMENT INCREASES, SO DOES THE SIZE OF THE ALLOWABLE PLANT MATERIALS. THESE THREE ZONES ARE DEFINED AS FOLLOWS:

ZONE	DISTANCE FROM THE BGE POWER LINE OR TRANSMISSION RIGHT-OF-WAY	MAXIMUM HEIGHT OF VEGETATION
GREEN	UP TO 20 FEET	25 FEET
YELLOW	BETWEEN 20 FEET AND 45 FEET	40 FEET
RED	BETWEEN 45 FEET AND 50 FEET	ABOVE 40 FEET

B & E NOTES:

- BGE RESERVES THE RIGHT TO TRIM TOP OR CUT DOWN ANY TREE IN PROXIMITY TO THE LINE THAT IN THE OPINION OF BGE SHALL BE DEEMED A HAZARD TO THE SAFE AND RELIABLE DELIVERY OF ELECTRICITY.
- THE DEPARTMENT OF PLANNING AND ZONING MAY AUTHORIZE THE TRIMMING OR REMOVAL OF TREES OR VEGETATION IMMEDIATELY ADJACENT TO THE BGE R/W OR EASEMENT, IF BGE INTENDS TO TRIM OR REMOVE TREES WITHIN A FOREST CONSERVATION EASEMENT. A LETTER SPECIFYING THE LOCATION AND SCOPE OF WORK NEEDS TO BE SENT TO DPZ AT LEAST 30 DAYS IN ADVANCE OF UNDERTAKING THE WORK. DPZ UNDERSTANDS CONSTELLATION ENERGY'S NEED TO PROTECT ITS TRANSMISSION LINES AND WILL NOT UNREASONABLY WITHHOLD PERMISSION.
- CALL MISS UTILITY TO MARK UP THE LOCATION OF EXISTING GAS LINE BEFORE PLANTING STREET TREES ALONG HANOVER ROAD & PLANT STREET TREES 10' AWAY FROM EXISTING GASLINE AS REQUIRED.

FINAL ROAD CONSTRUCTION PLANS

GRACE MEADOWS

L 14536 / F 269
 TAX MAP 38 BLOCK 09
 1ST ELECTION DISTRICT
 DPZ REFERENCE: SEE SITE DATA

LANDSCAPE PLAN, NOTES & DETAILS

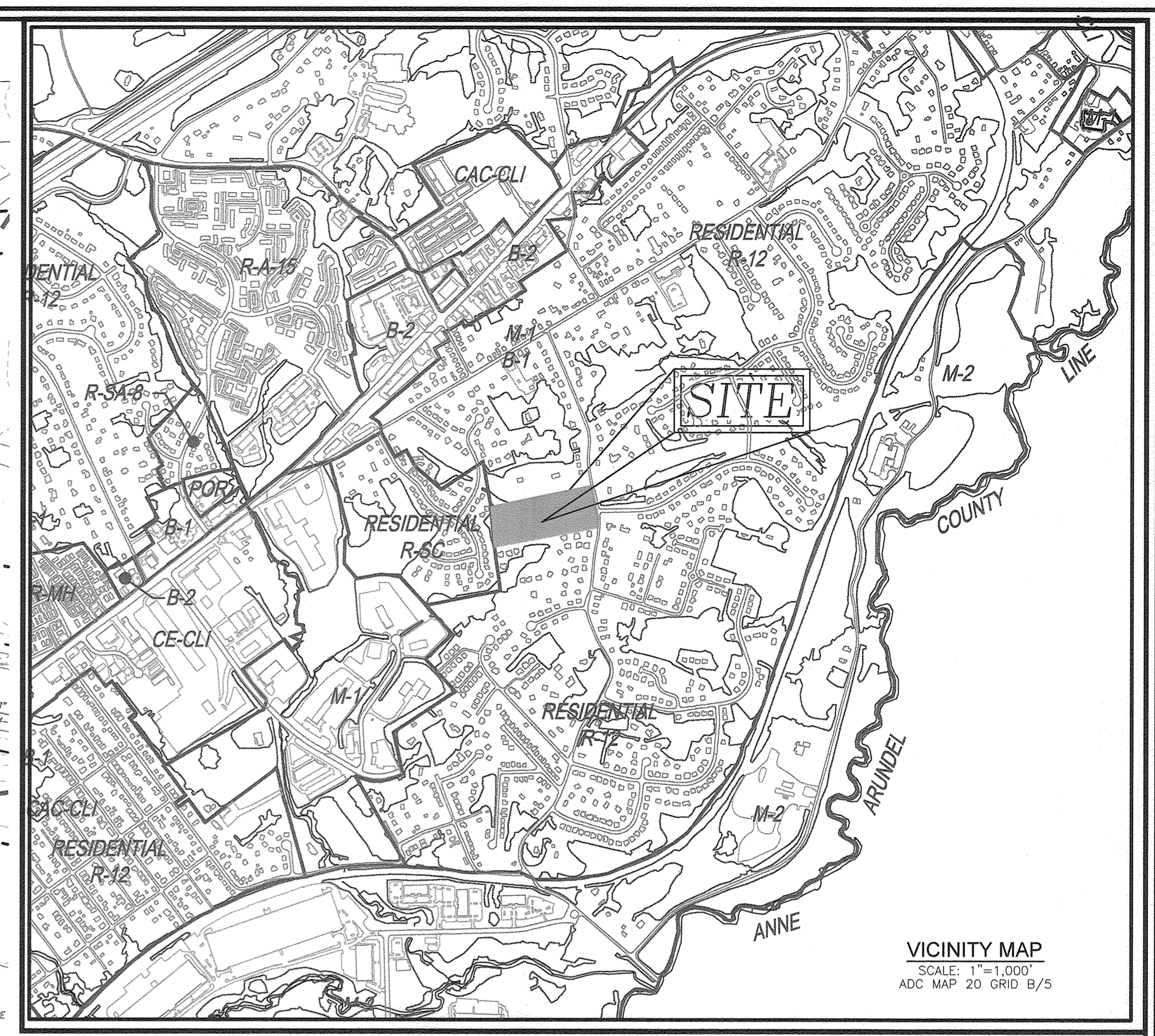
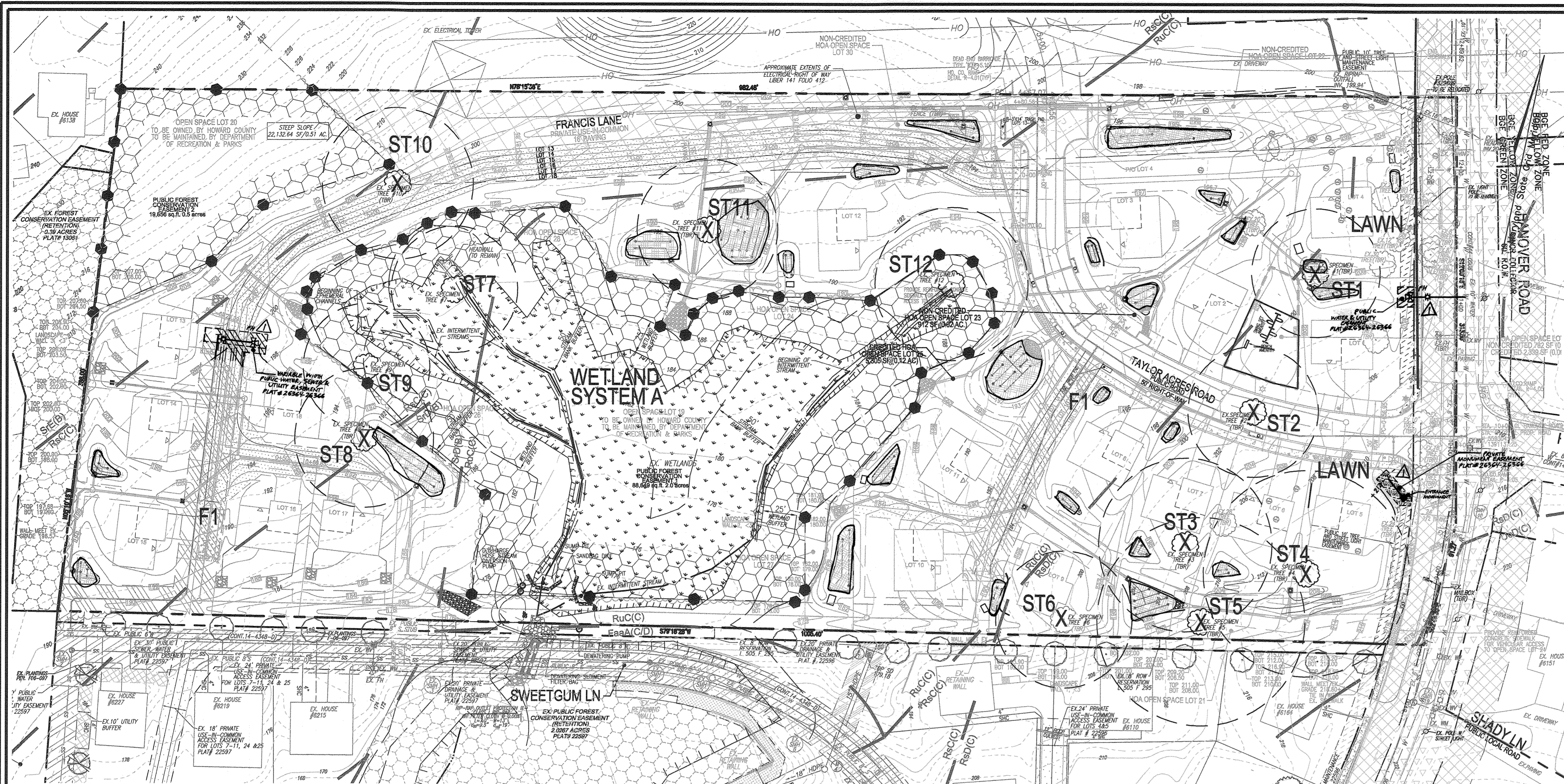
VOGEL ENGINEERING

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

TIMMONS GROUP

DESIGN BY: RHV
 DRAWN BY: MVP/JH/KG
 CHECKED BY: RHV
 DATE: AUGUST 2021
 SCALE: AS SHOWN
 W.O. NO.: 40077

15 SHEET OF 25



FOREST STAND ANALYSIS TABLE

Key	Type of Community	Area (0.1 acres)	Soil Information	Existing Vegetation	Stand Characteristics	Forest Area in Watershed Environment (0.1 acres)
#1	Upland oak/pine	8.7	Typical Forest Cover: Oak/pine 85-90% Habitat Value: 20%	Quercus rubra 20% Acer rubrum 20%	12-20 30-60 Good	2.7 acres wetlands, buffers, steep slopes
			Soil Type: Oak/pine 80-90% Habitat Value: 20%	Quercus alba 20% Quercus rubra 15%		
			Soil Type: upland hardwoods 75-90% Habitat Value: 20%	Quercus penic 10%		
			Soil Type: upland hardwoods 75-90% Habitat Value: 20%	Pinus strobus 5%		

FOREST CONSERVATION PLAN
SCALE: 1"=50'

HOWARD COUNTY FOREST CONSERVATION WORKSHEET

ZONED R-12 NET TRACT AREA:
A. TOTAL TRACT AREA: 9.1 AC.
B. AREA WITHIN 100 YEAR FLOODPLAIN: 0.0 AC.
C. AREA TO REMAIN IN AGRICULTURAL PRESERVATION: 0.0 AC.
D. NET TRACT AREA: 9.1 AC.

LAND USE CATEGORY:
INPUT THE NUMBER "1" UNDER THE APPROPRIATE LAND USE ZONING, AND LIMIT TO ONLY ONE ENTRY. ZONED R-12

ARA	MDR	IDA	HDR	MPD	CIA
0	0	0	1	0	0

E. AFFOREST THRESHOLD: 15% X 9.1 = 1.4 AC
F. CONSERVATION THRESHOLD: 20% X 9.1 = 1.8 AC

EXISTING FOREST COVER:
G. EXISTING FOREST COVER (EXCLUDING FLOODPLAIN) = 6.7 AC
H. AREA OF FOREST ABOVE AFFORESTATION THRESHOLD = 5.3 AC
I. AREA OF FOREST ABOVE CONSERVATION THRESHOLD = 4.9 AC

BREAK EVEN POINT:
(2 x I) + F = BREAK EVEN POINT (0 AC)
J. FOREST RETENTION ABOVE THRESHOLD W/ NO MITIGATION = 2.8 AC
K. CLEARING PERMITTED WITH MITIGATION = 3.9 AC

PROPOSED FOREST CLEARING:
L. TOTAL AREA OF FOREST TO BE CLEARED = 4.2 AC
M. TOTAL AREA OF FOREST TO BE RETAINED = 4.9 AC - RETENTION FOREST COVER EASEMENT

PLANTING REQUIREMENTS:
L. REFORESTATION FOR CLEARING ABOVE CONSERVATION THRESHOLD (L X 25) = 1.1 AC
M. REFORESTATION FOR CLEARING BELOW CONSERVATION THRESHOLD = 0.0 AC
N. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD (M-F) = 0.7 AC
P. TOTAL REFORESTATION REQUIRED (N+F-Q) = 0.4 AC
Q. TOTAL AFFORESTATION REQUIRED = 0.0 AC
R. TOTAL PLANTING REQUIREMENT (REFORESTATION AND AFFORESTATION) = 0.4 AC

Specimen Tree Chart

Key (X)	Species	Size (in. dbh)	CRZ (feet radius)	Comments
1	Tulip poplar	31.5	47.25	TO BE REMOVED
2	Red maple	32	48	TO BE REMOVED
3	English walnut	42.5	63.75	poor, severe trunk rot TO BE REMOVED
4	Chestnut oak	50.5	75.75	poor, stem damage TO BE REMOVED
5	Chestnut oak	51	76.5	fair, storm damage, trunk rot TO BE REMOVED
6	Chestnut oak	33.5/31	50.25	twin stems at base TO BE REMOVED
7	White oak	31	46.5	
8	White oak	34	51	poor trunk rot TO BE REMOVED
9	Tulip poplar	33	49.5	
10	Black oak	37	55.5	TO BE REMOVED
11	Tulip poplar	34.5	51.75	TO BE REMOVED
12	Tulip poplar	37.5	56.25	

FOREST RETENTION AREAS AND NOTES

1. THERE ARE WETLANDS OR WETLAND BUFFERS LOCATED ON SITE.
2. NO RARE, THREATENED OR ENDANGERED SPECIES WERE OBSERVED ON THIS SITE.
3. FORESTED AREAS ADJACENT TO FLOODPLAINS AND STREAM BUFFERS ARE SUBSTANTIALLY RETAINED IN OPEN SPACE LOTS.
4. CHANGES IN GRADING AND RUNOFF WITHIN CONSTRUCTION/INSTALLATION AREAS WILL NOT ADVERSELY AFFECT THE SOILS WITHIN THE FOREST RETENTION AREA. SEDIMENT CONTROL MEASURES WILL REDIRECT CONCENTRATED FLOW RUNOFF TO STORMWATER MANAGEMENT FACILITIES, RETAIN SEDIMENT WITHIN THE CONSTRUCTION SITE, AND/OR REDIRECT CLEAN WATER AWAY FROM CONSTRUCTION AREAS.
5. THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE. 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.

CONSTRUCTION PERIOD PROTECTION AND MANAGEMENT NOTES FOR FOREST CONSERVATION

PRE-CONSTRUCTION PHASE:

1. FOR RETENTION AREAS, INSTALL BLAZE ORANGE FENCE AND RETENTION SIGNS BEFORE CONSTRUCTION BEGINS.
2. PERSONS SHALL BE MAINTAINED IN GOOD CONDITION AND PROMPTLY REPAIRED OR RESTORED AS THE SITUATION WARRANTS.
3. A QUALIFIED TREE CARE EXPERT SHALL DETERMINE IF ROOT PRUNING IS REQUIRED ALONG THE LIMIT OF DISTURBANCE. ROOT PRUNING SHALL BE LIMITED TO REMOVAL OF ANY ROOTS THAT ARE DAMAGED OR STRESSED IMMEDIATELY AFTER ROOT-PRUNING AND MONITOR FOR SIGNS OF STRESS DURING CONSTRUCTION.

CONSTRUCTION PHASE:

1. NO DISTURBANCE OR DUMPING IS ALLOWED INSIDE THE TREE RETENTION AREA.
2. NO EQUIPMENT SHALL BE OPERATED INSIDE THE TREE RETENTION AREA.
3. INCLUDING TREE CARE EXPERTS, THE PROTECTED TREES SHALL BE MONITORED FOR SIGNS OF STRESS AND WATERED AS NEEDED.

POST-CONSTRUCTION PHASE:

1. AT THE DIRECTION OF A QUALIFIED TREE CARE EXPERT, DAMAGES TO RETAINED TREES SHALL BE REPAIRED BY THE CONTRACTOR.
2. FENCE REMOVAL AND STABILIZATION SHALL BE AS PER THE SEDIMENT AND EROSION CONTROL PLAN.
3. DO NOT REMOVE SIGNS.

MAPPED SOILS TYPES

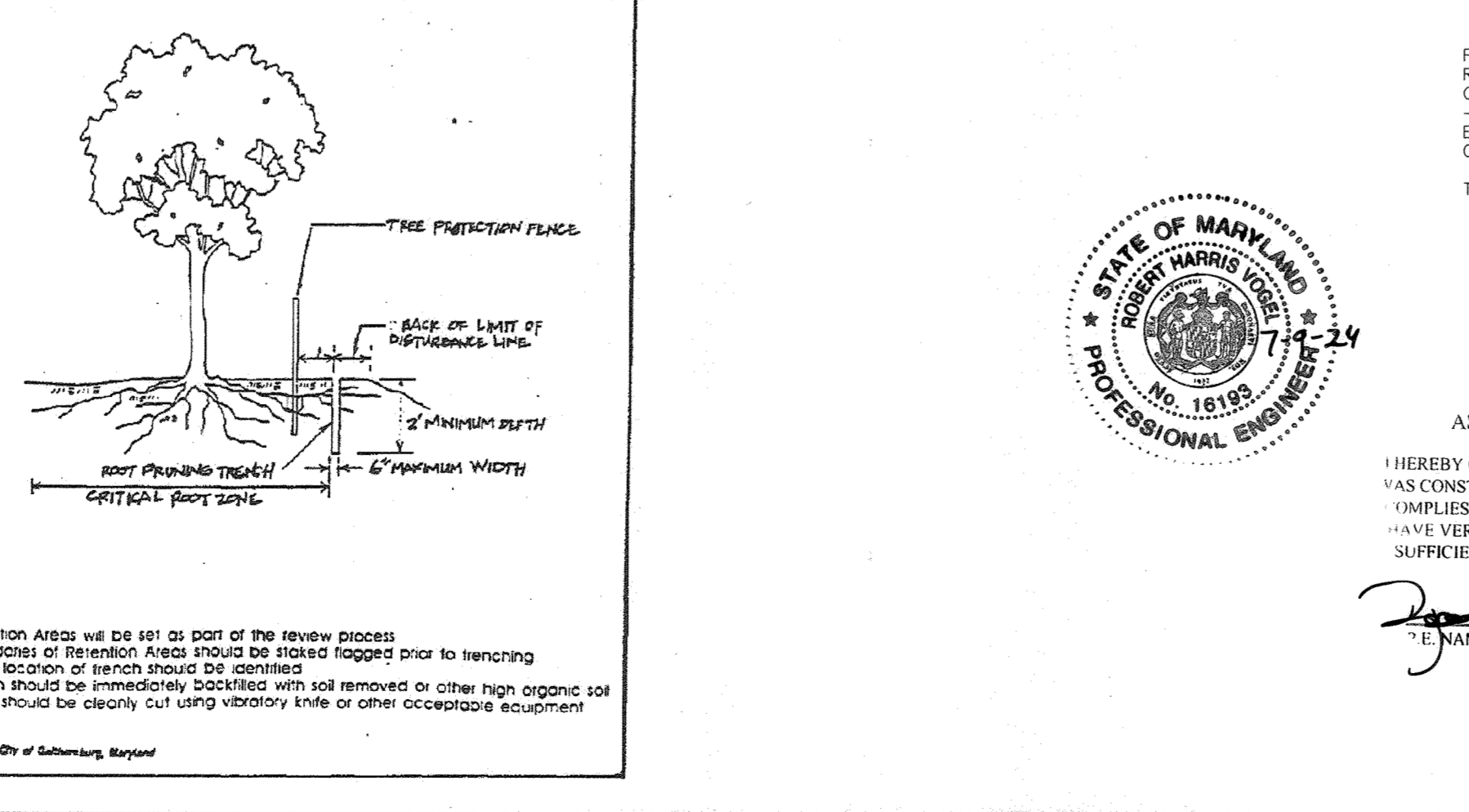
SYMBOL NAME / DESCRIPTION	GROUP	HYDRIC	Kw	CRZ SLOPE PERCENT
FALGONSON SANDY LOAM, 0 TO 2 PERCENT SLOPES	D	YES	0.24	NO
RUSSET FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	C	NO	0.43	YES
RAD RUSSET FINE SANDY LOAM, 10 TO 15 PERCENT SLOPES	C	NO	0.43	YES
RUC RUSSET AND BELLEVILLE SOILS, 5 TO 10 PERCENT SLOPES	C	NO	0.43	YES
SFC SASSAPRAS AND CROWN SOILS, 15 TO 25 PERCENT SLOPES	B	NO	0.37	YES
SFO SASSAPRAS AND CROWN SOILS, 10 TO 15 PERCENT SLOPES	B	NO	0.37	YES
USD URBAN LAND-CHILLUM-BELLEVILLE COMPLEX, 5 TO 15 PERCENT SLOPES	C	NO	-	NO

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
DATE: 1/29/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
DATE: 1-6-22

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
DATE: 1/6/22



FOREST CONSERVATION SIGNAGE

FOREST RETENTION AREA
DO NOT DISTURB
MACHINERY, DUMPING OR STORAGE OF ANY MATERIALS IS PROHIBITED

SPECIMEN TREE
DO NOT REMOVE
MACHINERY, DUMPING OR STORAGE OF ANY MATERIALS IS PROHIBITED

NOTE:
1. BOTTOM OF SIGNS TO BE HIGHER THAN TOP OF TREE PROTECTION FENCE.
2. SIGNS TO BE PLACED APPROXIMATELY 50-100 FEET APART. CONDITIONS ON SITE AFFECTING VISIBILITY MAY WARRANT PLACING SIGNS CLOSER OR FURTHER APART, WHERE SIGNS ARE TO BE PLACED AT THE REAR OF PROPOSED LOTS, SPACING SHALL BE APPROX. 25-30'/ft.
3. ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.
4. ALL FOREST CONSERVATION SIGNAGE SHALL BE IN PLACE FOR PERPETUITY.
5. SIGN LOCATION SYMBOL = ●

FOREST CONSERVATION EASEMENT TABLE

EASEMENT	CREDITED	RETENTION	NON-CREDITED	REFORESTATION	TOTAL
FCE#1	2.0 AC	0 AC	0 AC	0 AC	2.0 AC
FCE#2	0.5 AC	0 AC	0 AC	0 AC	0.5 AC
TOTAL	2.5 AC	0 AC	0 AC	0 AC	2.5 AC

AS-BUILT CERTIFICATION FOR PWSM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

DATE: 1/19/24
DATE: 7-9-24

SEQUENCE OF CONSTRUCTION-FOREST CONSERVATION

1. PRECONSTRUCTION MEETING, SITE WALK WITH CONTRACTORS AND OTHER RESPONSIBLE PARTIES TO DEFINE PROTECTION MEASURES TO BE UTILIZED AND TO POINT OUT PARTICULAR TREES TO BE SAVED.
2. STAKE OUT LIMITS OF DISTURBANCE AND TREE PROTECTION FENCING LOCATIONS.
3. INSTALL TREE PROTECTION FENCING TO BE INSPECTED BY THE PROJECT ENGINEER OR THE PROJECT ECOLOGIST AND HOWARD COUNTY PLANNING AND ZONING.
4. PROCEED WITH TREE REMOVAL AND SITE IMPROVEMENTS AS PER APPROVED SEDIMENT CONTROL PLAN - TO BE INSPECTED BY HOWARD COUNTY PLANNING AND ZONING.
5. TEMPORARY TREE PROTECTION DEVICES SHALL BE REMOVED AFTER ALL FINISHED GRADING AND UTILITY CONSTRUCTION HAS OCCURRED AND WITH APPROVAL FROM THE HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

LEGEND:

- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINES
- SIDEWALK
- APPROXIMATE EXTENTS OF ELECTRICAL RIGHT OF WAY
- LIBER 141 FOLIO 412
- EXISTING TREELINE
- STORM DRAIN
- STORM DRAIN INLET
- EX. WETLANDS
- EX. WETLAND BUFFER
- EX. STREAM
- EX. STREAM BUFFER
- SOILS BOUNDARY
- BGE "GREEN ZONE" TREE HEIGHT LIMITED (TREE HEIGHT 25'-40' MAX.)
- BGE "YELLOW ZONE" TREE HEIGHT LIMITED (TREE HEIGHT 25'-40' MAX.)
- OPEN SPACE BOLLARD (SEE DETAIL SHEET 5)
- EX. SPECIMEN TREE W/ CRITICAL ROOT ZONE
- EX. SPECIMEN TREE CRITICAL ROOT ZONE (TR)
- EX. SPECIMEN TREE W/ CRITICAL ROOT ZONE
- EX. SPECIMEN TREE CRITICAL ROOT ZONE (TR)
- EXISTING FOREST CONSERVATION EASEMENT PLAT 22597, 13061
- FOREST CONSERVATION EASEMENT (RETENTION)
- FCE SIGN LOCATION

GENERAL NOTES

WATERSHED NAME: PATAPSCO RIVER (DEEP RUN)
WATERSHED NUMBER: 02130906

A. GROSS SITE AREA: 9.05 AC.
B. NET SITE AREA: (GROSS-FLOODPLAIN-STEEP SLOPES) 8.54 AC.
C. AREA OF 100-YEAR FLOODPLAIN: 0.00 AC.
D. AREA OF WETLANDS AND BUFFERS(ONSITE): 1.94 AC.
E. AREA OF STREAM AND BUFFERS(ONSITE): 1.61 AC.
F. AREA OF > 25% STEEP SLOPES: 0.51 AC.
G. EXISTING FOREST (FSD): 6.70 AC.
H. EXISTING USE: RESIDENTIAL
I. PROPOSED USE: RESIDENTIAL

OWNER/DEVELOPER
GRACE TAYLOR SCHULTZ TRUSTEE OF THE GRACE SCHULTZ REVOCABLE TRUST
6132 HANOVER ROAD
HANOVER, MD 21076
443-463-6700

FINAL ROAD CONSTRUCTION PLANS
FOREST CONSERVATION PLAN, NOTES & DETAILS
GRACE MEADOWS
LOTS 1-18 AND OPEN SPACE LOTS 19-30
A SUBDIVISION OF TAX MAP 38 - PARCEL 731

L. 14536 / F. 269
TAX MAP 38 BLOCK 09
ST. ELECTION DISTRICT
DPZ REFERENCE: SEE SITE DATA

ZONED R-12
PARCEL 731
HOWARD COUNTY, MARYLAND

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

PROFESSIONAL CERTIFICATE

DESIGN BY: RHY
DRAWN BY: MVP/IH/KG
CHECKED BY: RHY
DATE: AUGUST 2021
SCALE: AS SHOWN
W.O. NO.: 40077

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 08-27-2022

ROBERT H. VOGEL, PE No.16193

DATE: 8-25-21

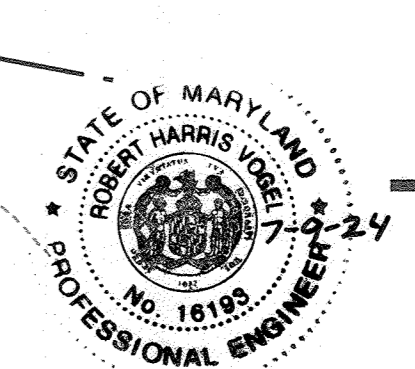
16 SHEET OF 25

AS-BUILT APRIL 2024 E-20-076



- LEGEND:**
- EXISTING CONTOUR
 - PROPOSED CONTOUR
 - EXISTING SPOT ELEVATION
 - PROPOSED SPOT ELEVATION
 - EXISTING CURB AND GUTTER
 - PROPOSED CURB AND GUTTER
 - EXISTING UTILITY POLE
 - PROPOSED UTILITY POLE
 - EXISTING LIGHT POLE
 - PROPOSED LIGHT POLE
 - EXISTING SIGN
 - PROPOSED SIGN
 - EXISTING SANITARY MANHOLE
 - PROPOSED SANITARY MANHOLE
 - EXISTING SANITARY LINE
 - PROPOSED SANITARY LINE
 - EXISTING CLEANOUT
 - PROPOSED CLEANOUT
 - EXISTING FIRE HYDRANT
 - PROPOSED FIRE HYDRANT
 - EXISTING WATER LINE
 - PROPOSED WATER LINE
 - EXISTING FENCE
 - PROPOSED FENCE
 - PROPERTY LINE
 - RIGHT-OF-WAY LINE
 - EXISTING VEGETATION
 - PROPOSED VEGETATION
 - PROPOSED SIDEWALK
 - EXISTING TREELINE
 - PROPOSED TREELINE
 - PROPOSED STORM DRAIN
 - PROPOSED STORM DRAIN INLET
 - EX. FOREST CONSERVATION EASEMENT
 - EX. WETLANDS
 - EX. WETLAND BUFFER
 - EX. STREAM
 - EX. STREAM BUFFER
 - M1B2
 - M1D3
 - 20' PUBLIC WATER & UTILITY EASEMENT
 - 20' PUBLIC SEWER & UTILITY EASEMENT
 - 30' PUBLIC WATER, SEWER & UTILITY EASEMENT
 - MICRO-BIORETENTION/RAIN GARDEN
 - APPROXIMATE EXTENTS OF ELECTRICAL RIGHT OF WAY LIBER 141 F004 412
 - PUBLIC DRAINAGE & UTILITY EASEMENT
 - PRIVATE DRAINAGE & UTILITY EASEMENT
 - OPEN SPACE BOLLARD (SEE DETAIL SHEET 5)

- ESD LEGEND:**
- TEST PIT
 - ESD DRAINAGE AREA DIVIDE
 - ESD DRAINAGE AREA DESIGNATION
 - MICRO-SCALE PRACTICE RAIN GARDEN (M-7)
 - MICRO-BIORETENTION (M-6)
 - PROPOSED DRYWELL (M-5)



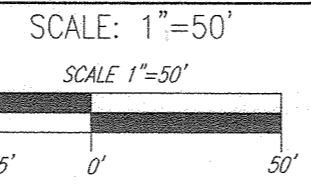
AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

P.E. NAME: **16193** P.E.#: **7-9-24** DATE

OWNER/DEVELOPER
GRACE TAYLOR SCHUTT TRUSTEE OF THE GRACE T. SCHUTT REVOCABLE TRUST
6132 HANOVER ROAD
HANOVER, MD 21076
443-463-6760

STORMWATER MANAGEMENT-DRAINAGE AREA MAP



NOTE:
REFER TO SHEET 19-22 FOR STORMWATER MANAGEMENT FACILITY CONSTRUCTION/PLANTING DETAILING AS WELL AS MBR UNDERDRAIN/OVERFLOW PIPE NETWORK DETAILS.

LOTS 1-4 AND 6-8, 11, 12 AND 15:
RAIN GARDENS ARE PROPOSED TO MEET ESDv STORMWATER REQUIREMENTS. A DECLARATION OF COVENANTS SHALL BE RECORDED FOR PROPERTY OWNER MAINTENANCE. FAILURE TO INSTALL OR MAINTAIN THESE FACILITIES MAY RESULT IN THE LOSS OF STORMWATER MANAGEMENT APPROVAL. A FUTURE SITE DEVELOPMENT PLAN WILL PROVIDE FURTHER DETAILS FOR CONSTRUCTION.

LOTS 12 AND 14:
MICRO-BIORETENTIONS ARE PROPOSED TO MEET ESDv STORMWATER REQUIREMENTS. A DECLARATION OF COVENANTS SHALL BE RECORDED FOR PROPERTY OWNER MAINTENANCE. FAILURE TO INSTALL OR MAINTAIN THESE FACILITIES MAY RESULT IN THE LOSS OF STORMWATER MANAGEMENT APPROVAL. A FUTURE SITE DEVELOPMENT PLAN WILL PROVIDE FURTHER DETAILS FOR CONSTRUCTION.

LOTS 13, 16-17:
DRY WELLS ARE PROPOSED TO MEET ESDv STORMWATER REQUIREMENTS. A DECLARATION OF COVENANTS SHALL BE RECORDED FOR PROPERTY OWNER MAINTENANCE. FAILURE TO INSTALL OR MAINTAIN THESE FACILITIES MAY RESULT IN THE LOSS OF STORMWATER MANAGEMENT APPROVAL. A FUTURE SITE DEVELOPMENT PLAN WILL PROVIDE FURTHER DETAILS FOR CONSTRUCTION.

ONLY STORMWATER MANAGEMENT PRACTICE CHART

LOT NUMBER	FACILITY TYPE	NO. OF FACILITIES
LOT 1	RAIN GARDEN (M-7)	1
LOT 2	RAIN GARDEN (M-7)	1
LOT 3	RAIN GARDEN (M-7)	2
LOT 4	RAIN GARDEN (M-7)	2
LOT 5	NO FACILITIES	NO FACILITIES
LOT 6	RAIN GARDEN (M-7)	1
LOT 7	RAIN GARDEN (M-7)	2
LOT 8	RAIN GARDEN (M-7)	2
LOT 9	RAIN GARDEN (M-7)	1
LOT 10	NO FACILITIES	NO FACILITIES
LOT 11	RAIN GARDEN (M-7)	1
LOT 12	RAIN GARDEN (M-7)	1
LOT 13	DRYWELL (M-5)	1
LOT 14	DRYWELL (M-5)	1
LOT 15	RAIN GARDEN (M-7)	1
LOT 16	DRYWELL (M-5)	2
LOT 17	DRYWELL (M-5)	2
LOT 18	NO FACILITIES	NO FACILITIES

REFER TO DETAIL SHEET 17, 18, AND 19

MAPPED SOILS TYPES

SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	Kw	CLAY	SLOPE	ERODIBILITY
T-3	TALLMORRISON SANDY LOAM, 0 TO 2 PERCENT SLOPES	D	YES	0.24	NO		
Ru(C)	RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	C	NO	0.43	YES		
Ru(D)	RUSSETT FINE SANDY LOAM, 10 TO 15 PERCENT SLOPES	C	NO	0.43	YES		
Ru(C)	RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	C	NO	0.43	YES		
S-1E	SASSAPARA AND CROOM SOILS, 15 TO 25 PERCENT SLOPES	B	NO	0.32	YES		
S-1D	SASSAPARA AND CROOM SOILS, 10 TO 15 PERCENT SLOPES	B	NO	0.37	YES		
U-1D	URBAN LAND-CULLUM-BELLEVILLE COMPLEX, 5 TO 15 PERCENT SLOPES	C	NO	-	NO		

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

SOURCE: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, 11/29/2021. SOURCE: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, 11/29/2021. SOURCE: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, 11/29/2021. SOURCE: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, 11/29/2021. SOURCE: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, 11/29/2021.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
James MK 11/29/2021
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
John JR 1/6/22
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
John JR 1/6/22
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

NO.	REVISION	DATE
1	REVISED TO ADD PRIVATE MONUMENT EASEMENT, FIRE HYDRANT AND ITS EASEMENTS	8-3-23

FINAL ROAD CONSTRUCTION PLANS
STORMWATER MANAGEMENT DRAINAGE AREA MAP
GRACE MEADOWS
LOTS 1 - 18 AND OPEN SPACE LOTS 19 - 24
A SUBDIVISION OF TAX MAP 38 - PARCEL 731

L. 14536 / F. 269
TAX MAP 38 BLOCK 09
1ST ELECTION DISTRICT
DPZ REFERENCE: SEE SITE DATA

ZONED R-12
PARCEL 731
HOWARD COUNTY, MARYLAND

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

PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 16193. EXPIRATION DATE: 08-27-2022.

DESIGN BY: RHY
DRAWN BY: MWP/HZ/KG
CHECKED BY: RHY
DATE: AUGUST 2021
SCALE: AS SHOWN
W.O. NO.: 40077

17 SHEET OF 25

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

- 1. MATERIAL SPECIFICATIONS
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.
2. FILTERING MEDIA OR PLANTING SOIL
THE SOIL SHALL BE A UNIFORM MIX...

3. COMPACTION
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE VIBRO-COMPACTORS TO REMOVE ORIGINAL SOIL...

4. PLANT MATERIAL
RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.
5. PLANT INSTALLATION
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INNER AND OTHER LOW AREAS...

6. UNDERDRAINS
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
* PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE...

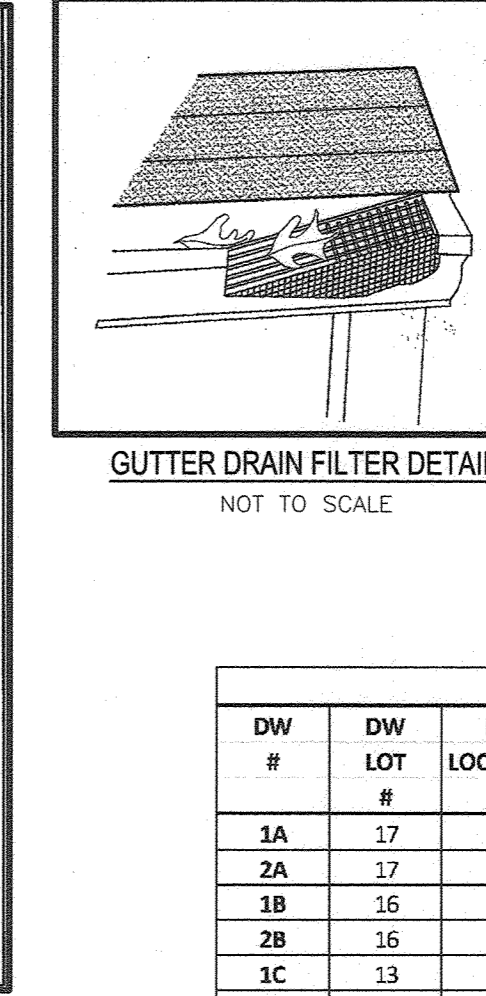
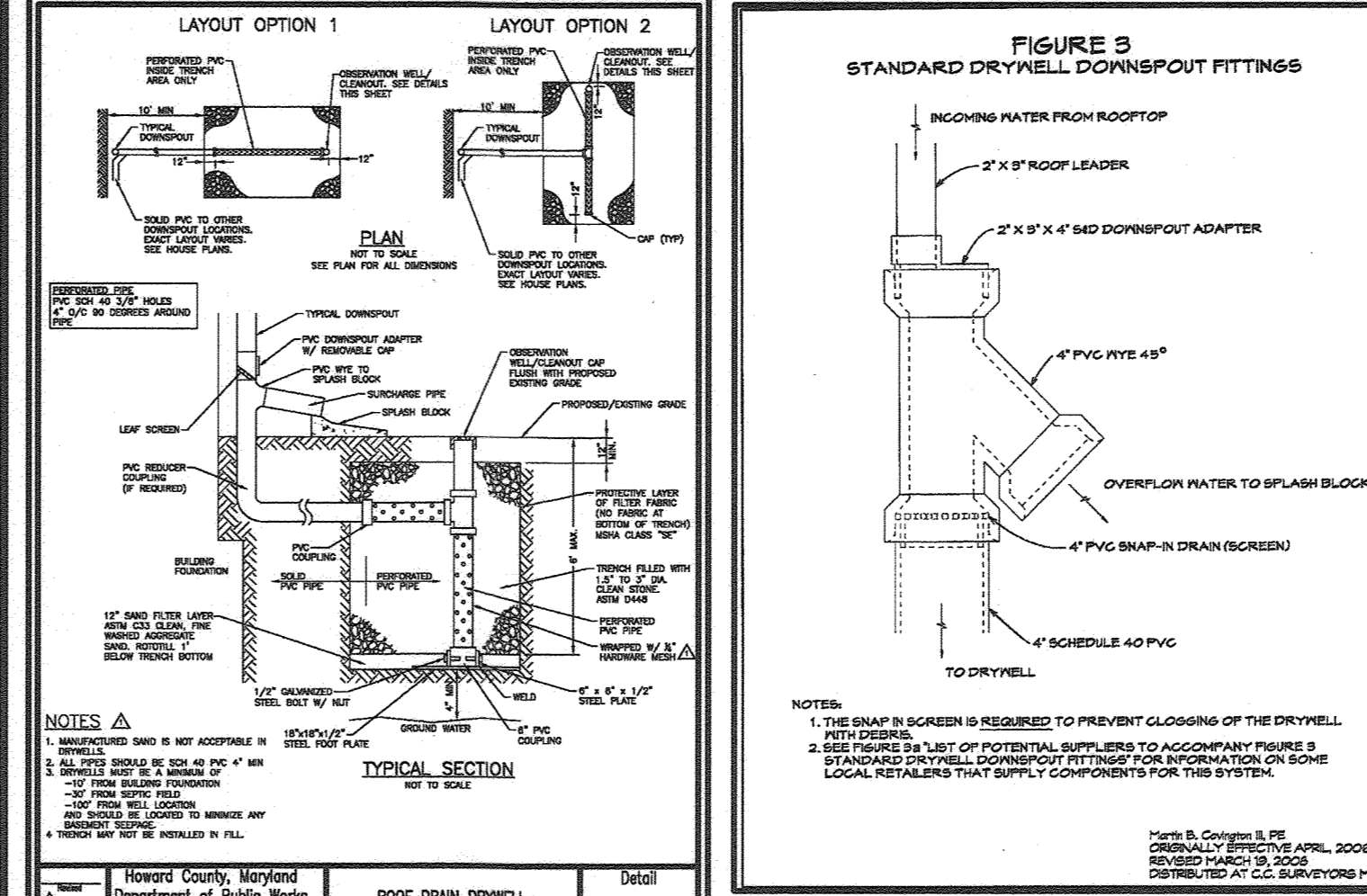
7. MISCELLANEOUS
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

OPERATION AND MAINTENANCE SCHEDULE FOR LANSCAPE INFILTRATION (M-3), MICRO-BIORETENTION (M-6), RAIN GARDENS (M-7), BIORETENTION SWALE (M-8), AND ENHANCED FILTERS (M-9)
1. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL...

GRACE MEADOWS - ESDv PER AREA COMPUTATIONS

Table with columns: DA #, DA NAME, IMPERV, RV, DA (SF), DA (AC), MINIMUM VOLUME, MAXIMUM VOLUME, VOLUME PROVIDED, IMPERV (SF), IMPERV (AC), GREEN AREA, REMARKS. Includes rows for areas 1 through 30 and a TOTALS row.

MEASURED PROJECT TOTALS



OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER DRY WELLS (M-5)
1. THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS...

ON-LOT DRYWELL - DESIGN ELEVATION CHART table with columns: DW #, DW LOCATION, DW NUMBER, NUMBER OF DW'S, PROP GRADE*, TOP STONE*, INV. STONE*, SURFACE SIZE (1) FT X FT, STONE DEPTH FT, SAND DEPTH FT.

HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS
ROOF DRAIN DRYWELL
DETAIL D-9.01

Table B.4.1 Materials Specifications for Micro-Bioretenation, Rain Gardens & Landscape Infiltration. Columns: Material, Specification, Size, Notes.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 11/29/2021
CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 1-6-24
CHIEF, DEVELOPMENT ENGINEERING DIVISION R DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 1/6/22
CHIEF, DIVISION OF LAND DEVELOPMENT B DATE

- GENERAL NOTES:
1. CONTRACTOR TO REFER TO SHEET 18 FOR MICRO-BIORETENTION CONSTRUCTION DETAILS.

NO AS-BUILT INFORMATION ON THIS SHEET

AS-BUILT CERTIFICATION FOR PSWM
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS...

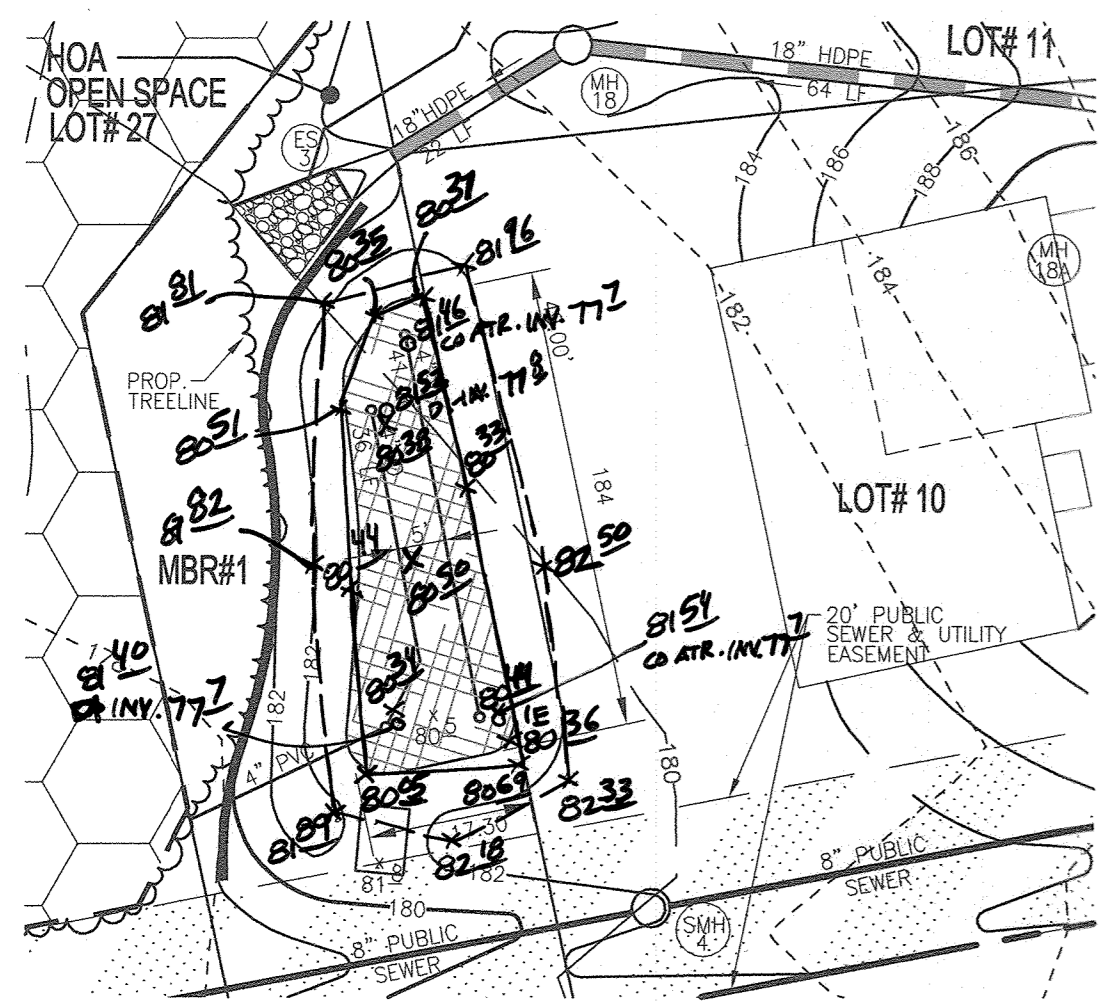
OWNER/DEVELOPER
GRACE TAYLOR SCHULTZ
TRUSTEES OF THE GRACE SCHULTZ REVOCABLE TRUST

TEST PIT DATA table with columns: BORING #, APPROX GROUND ELEV, APPROX GROUND ELEV, BOTTOM PIT.

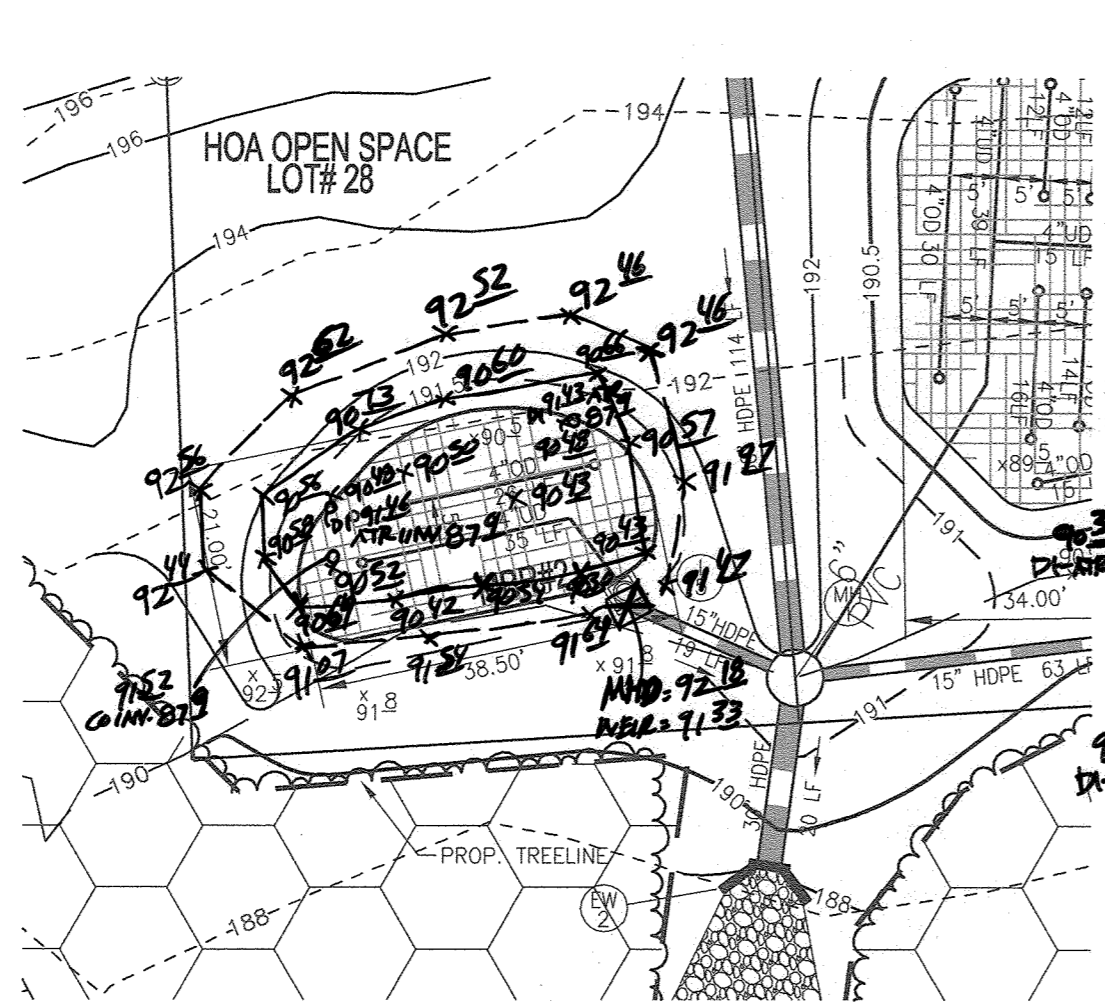
Revision table with columns: NO., REVISION, DATE.

FINAL ROAD CONSTRUCTION PLANS
STORMWATER MANAGEMENT NOTES AND DETAILS
GRACE MEADOWS
LOTS 1 - 18 AND OPEN SPACE LOTS 19 - 30
SUBDIVISION OF TAX MAP 38 - PARCEL 731

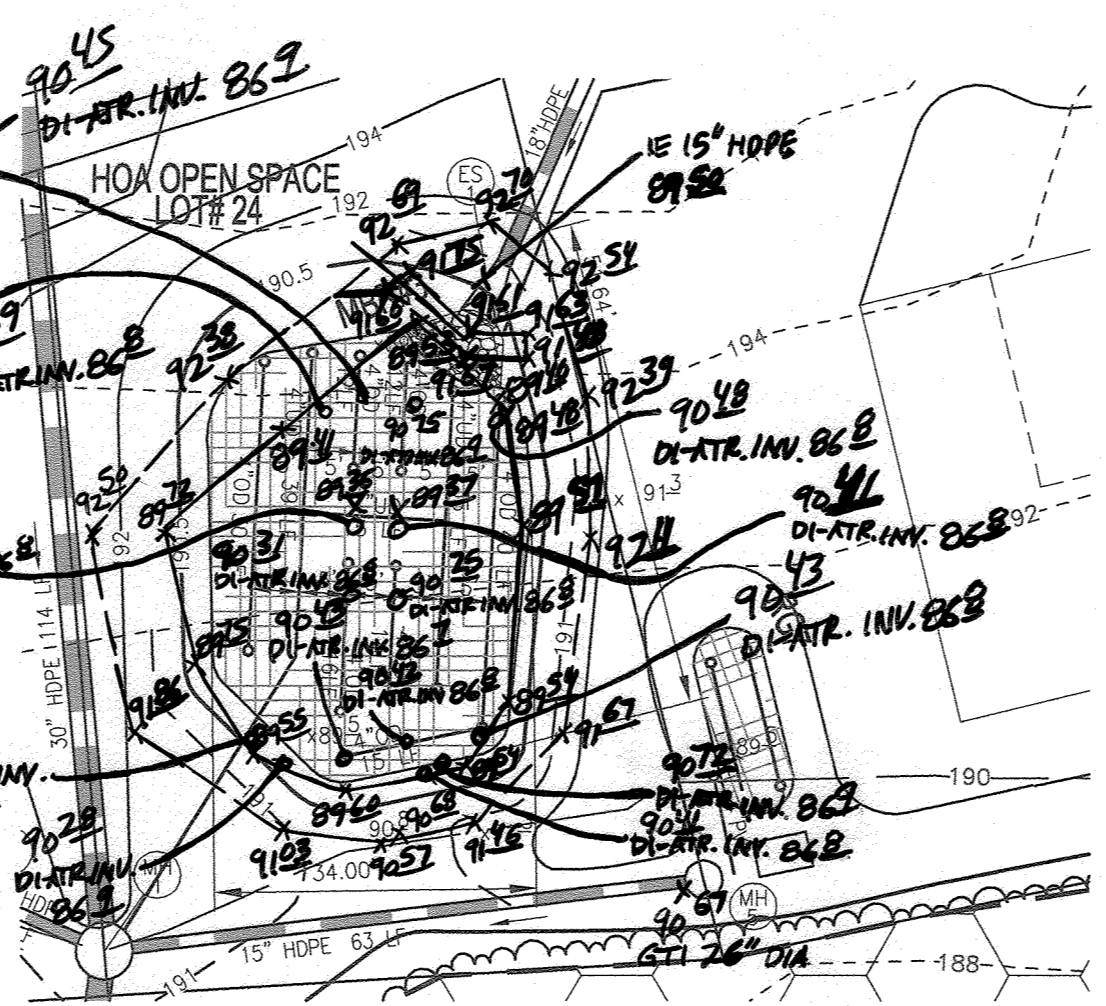
VOGEL ENGINEERING
TIMMONS GROUP
PROFESSIONAL CERTIFICATE
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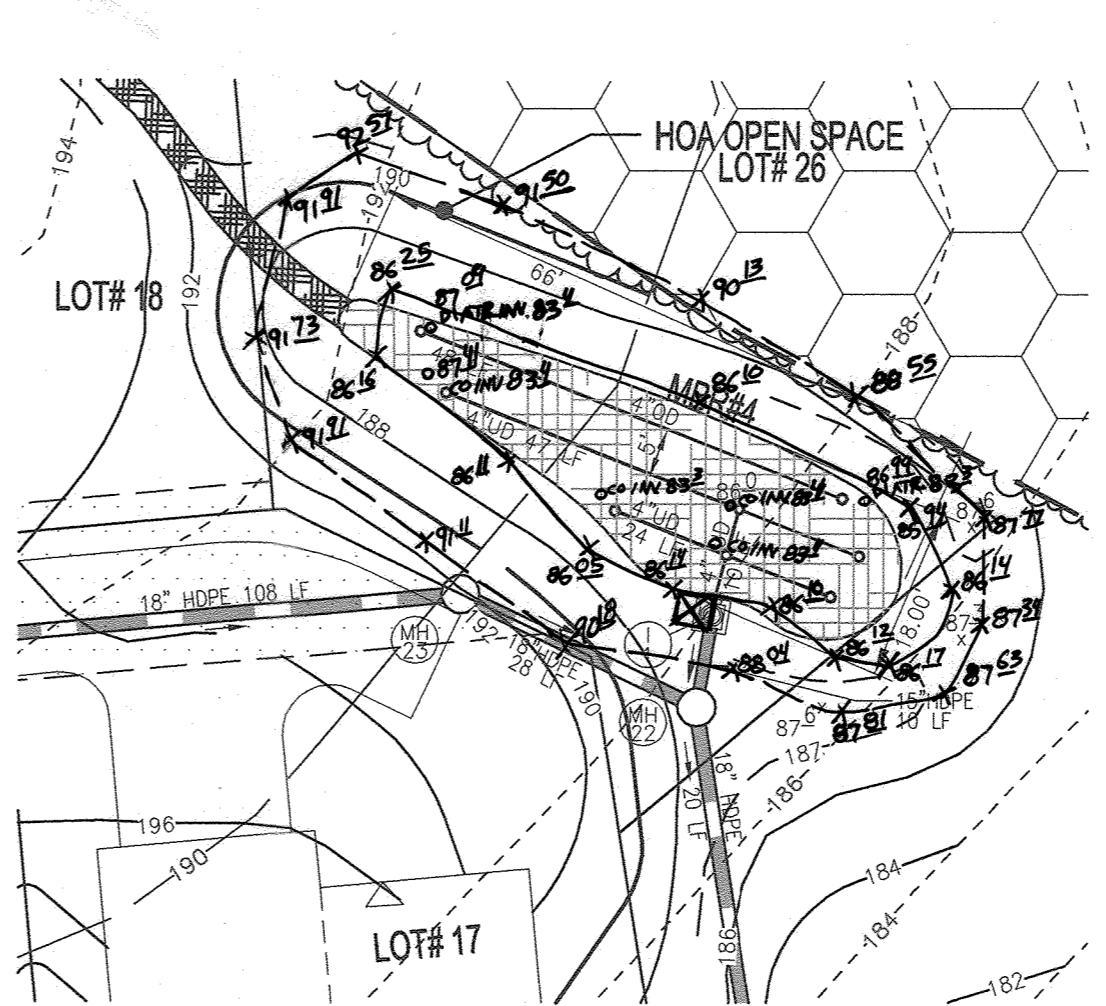
MBR #1 CONSTRUCTION PLAN
SCALE: 1" = 20'



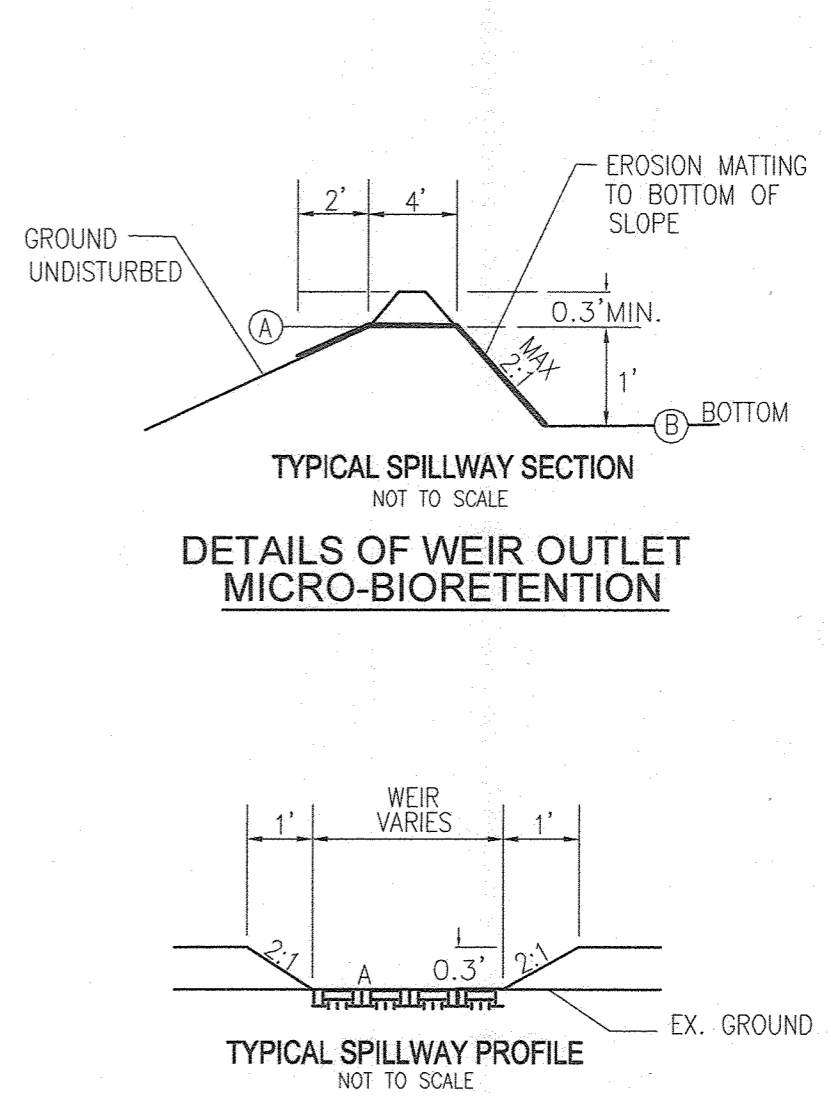
MBR #2 CONSTRUCTION PLAN
SCALE: 1" = 20'



MBR #3 CONSTRUCTION PLAN
SCALE: 1" = 20'

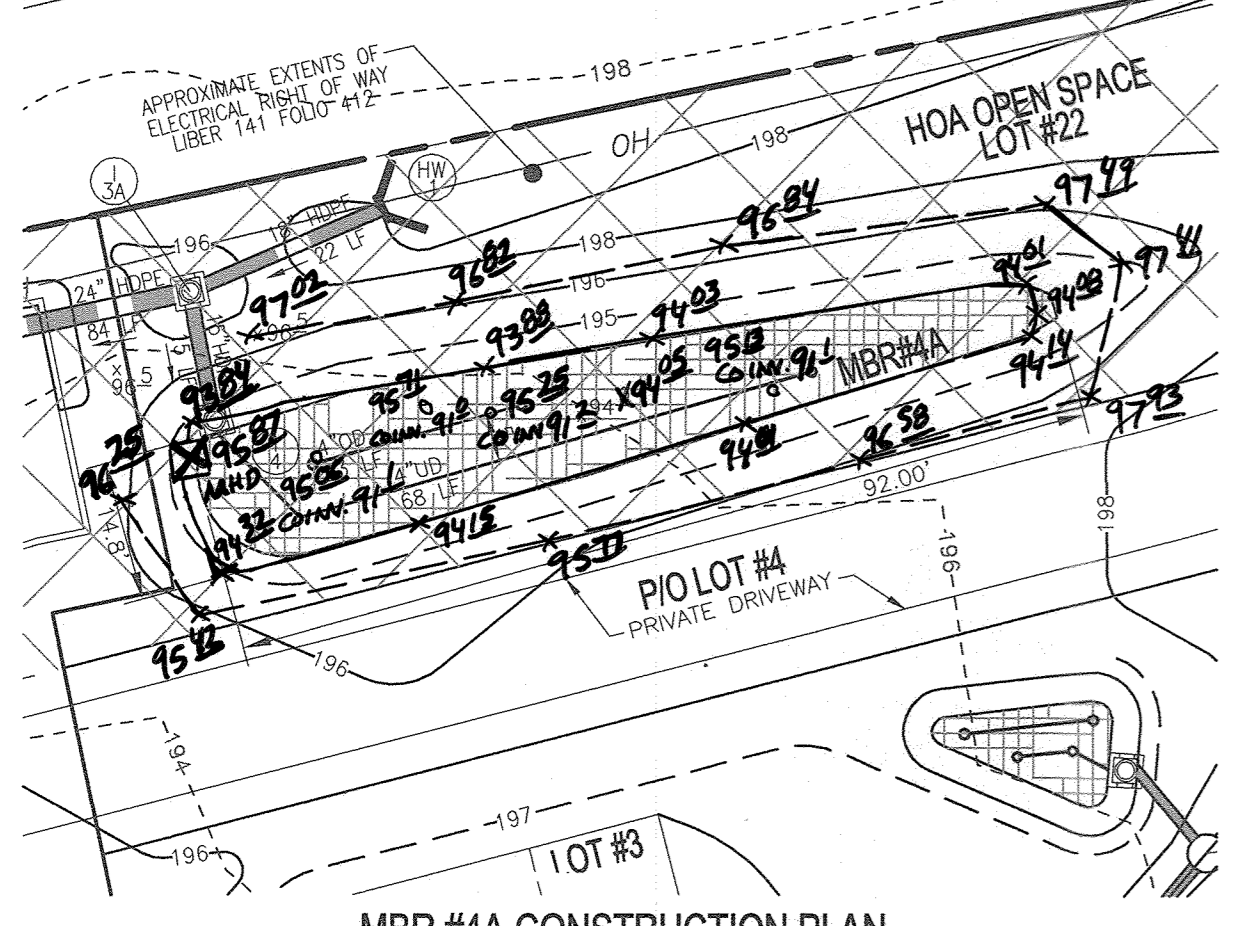
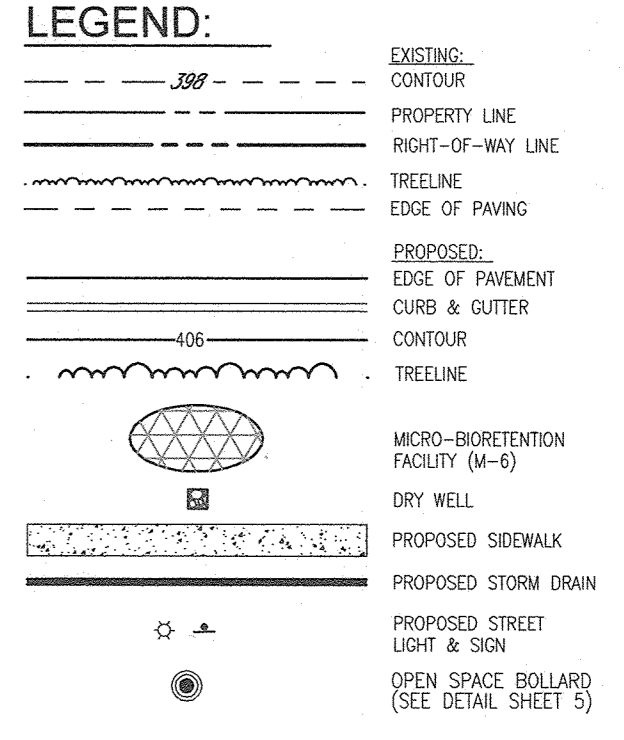


MBR #4 CONSTRUCTION PLAN
SCALE: 1" = 20'

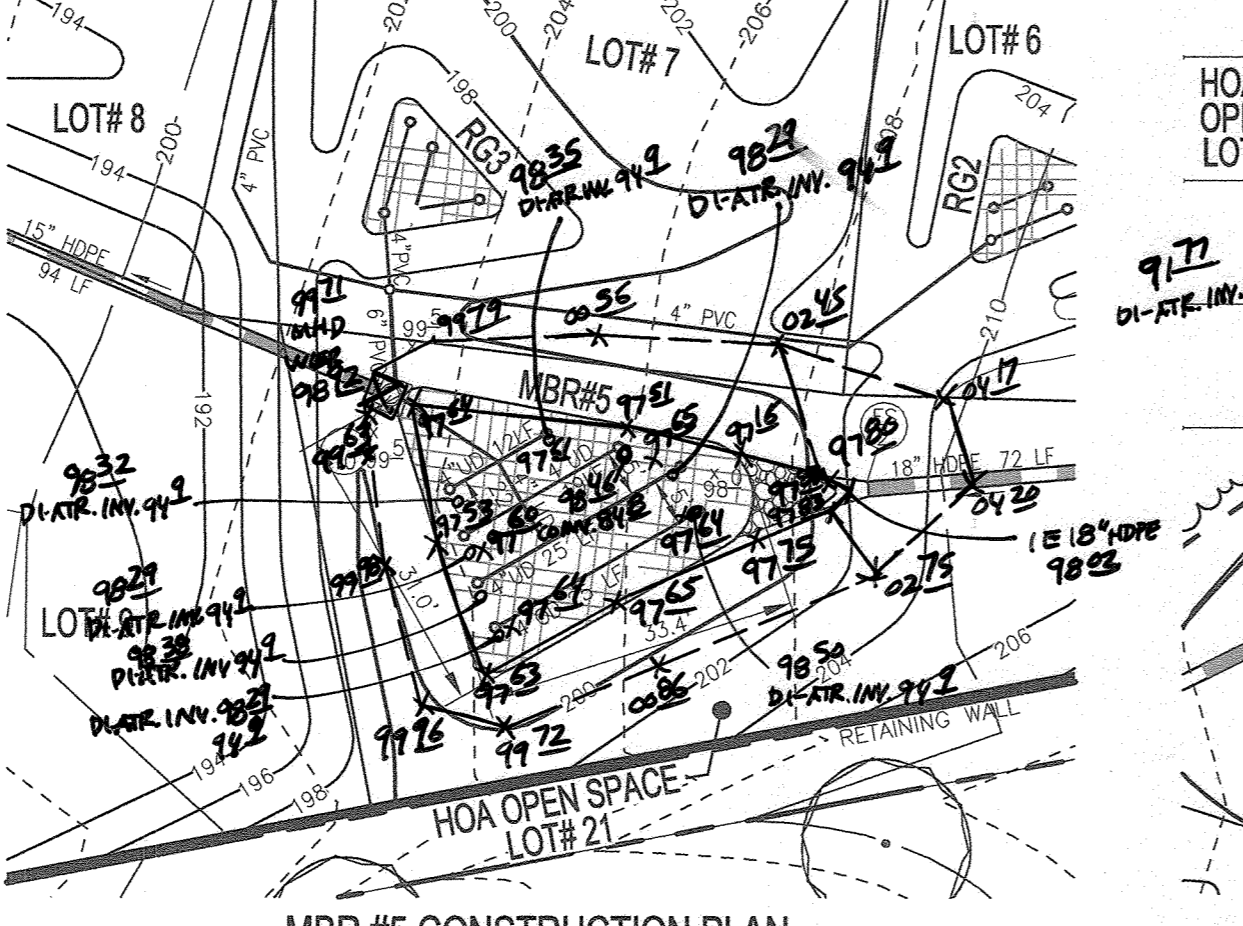


TYPICAL SPILLWAY SECTION
NOT TO SCALE

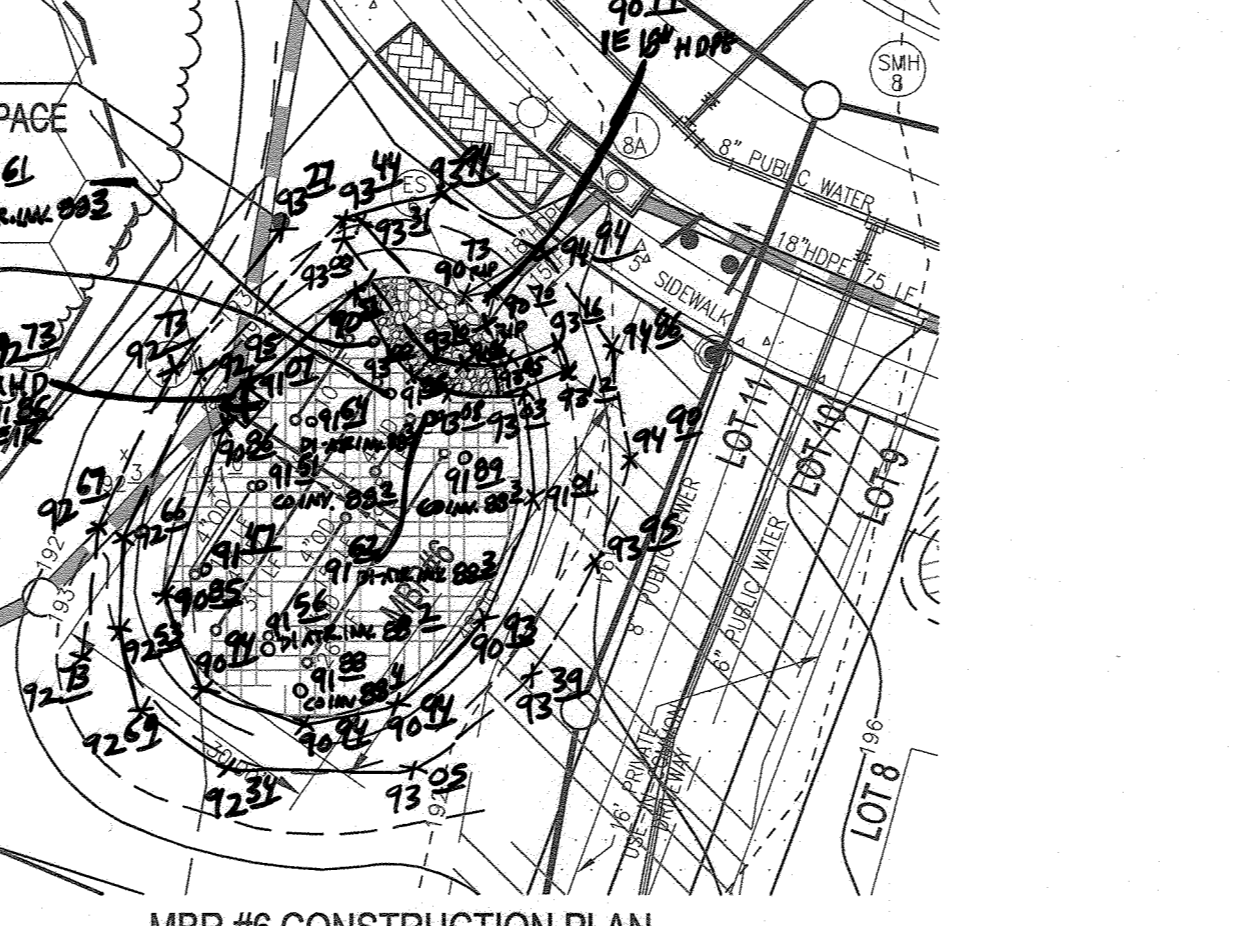
TYPICAL SPILLWAY PROFILE
NOT TO SCALE



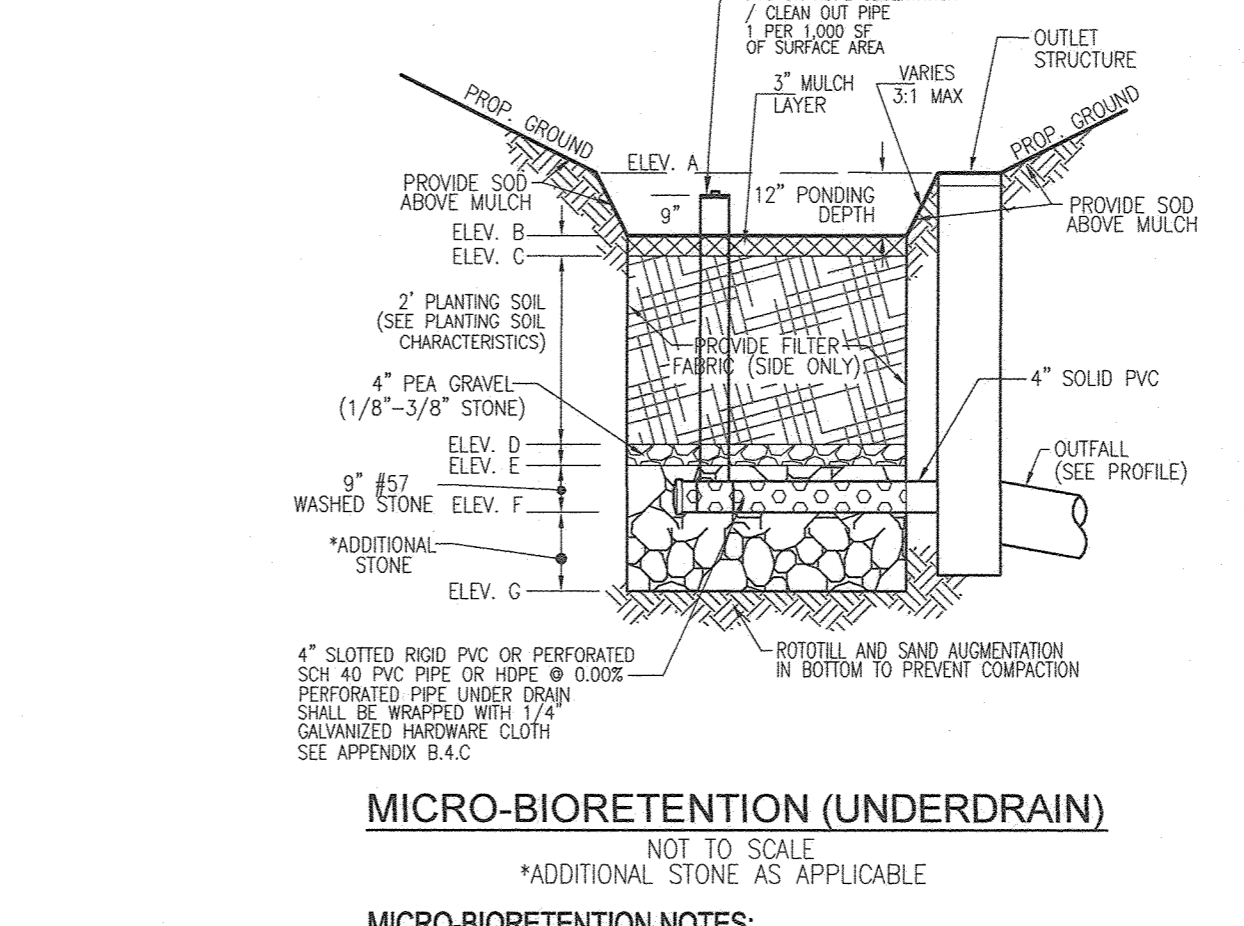
MBR #4A CONSTRUCTION PLAN
SCALE: 1" = 20'



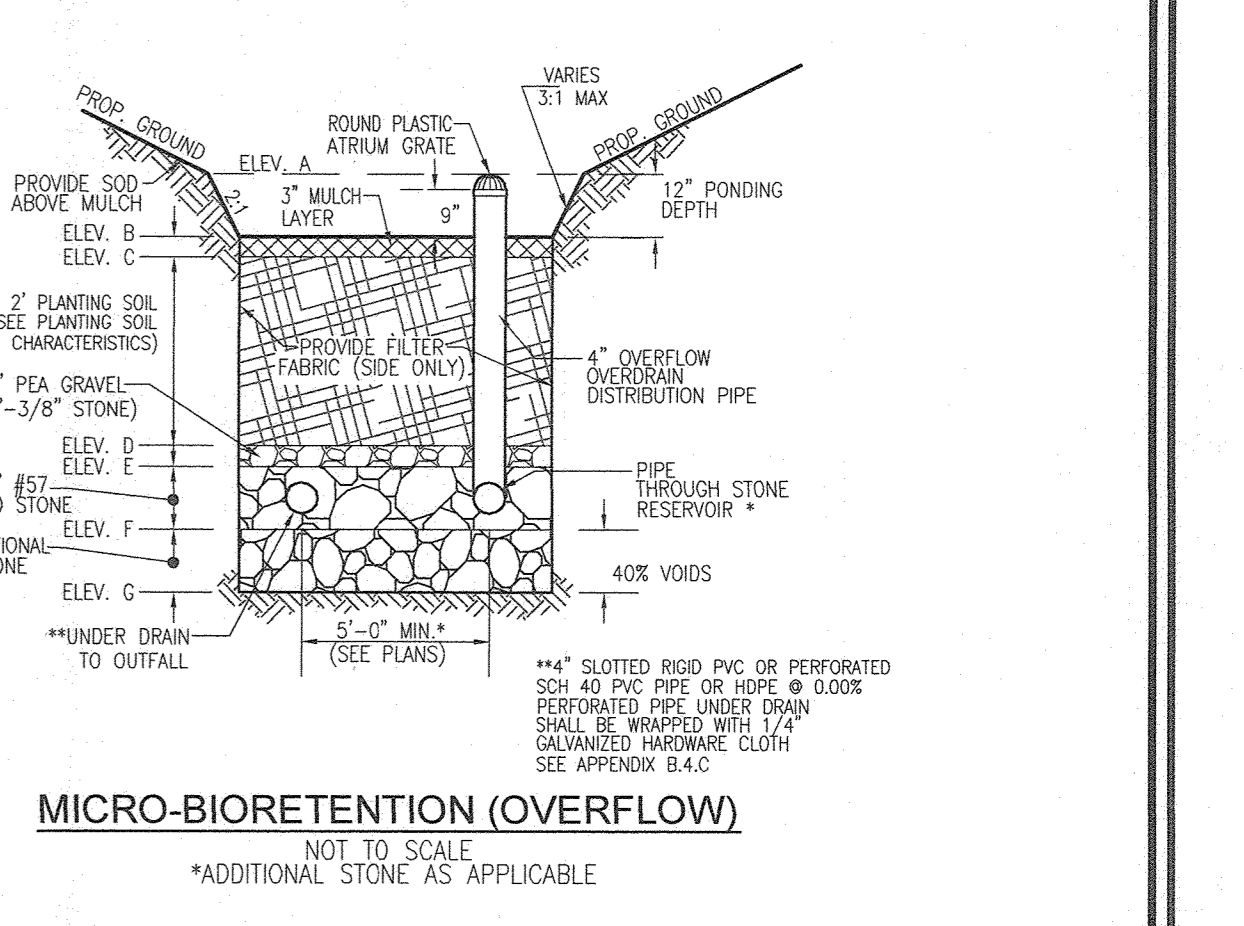
MBR #5 CONSTRUCTION PLAN
SCALE: 1" = 20'



MBR #6 CONSTRUCTION PLAN
SCALE: 1" = 20'

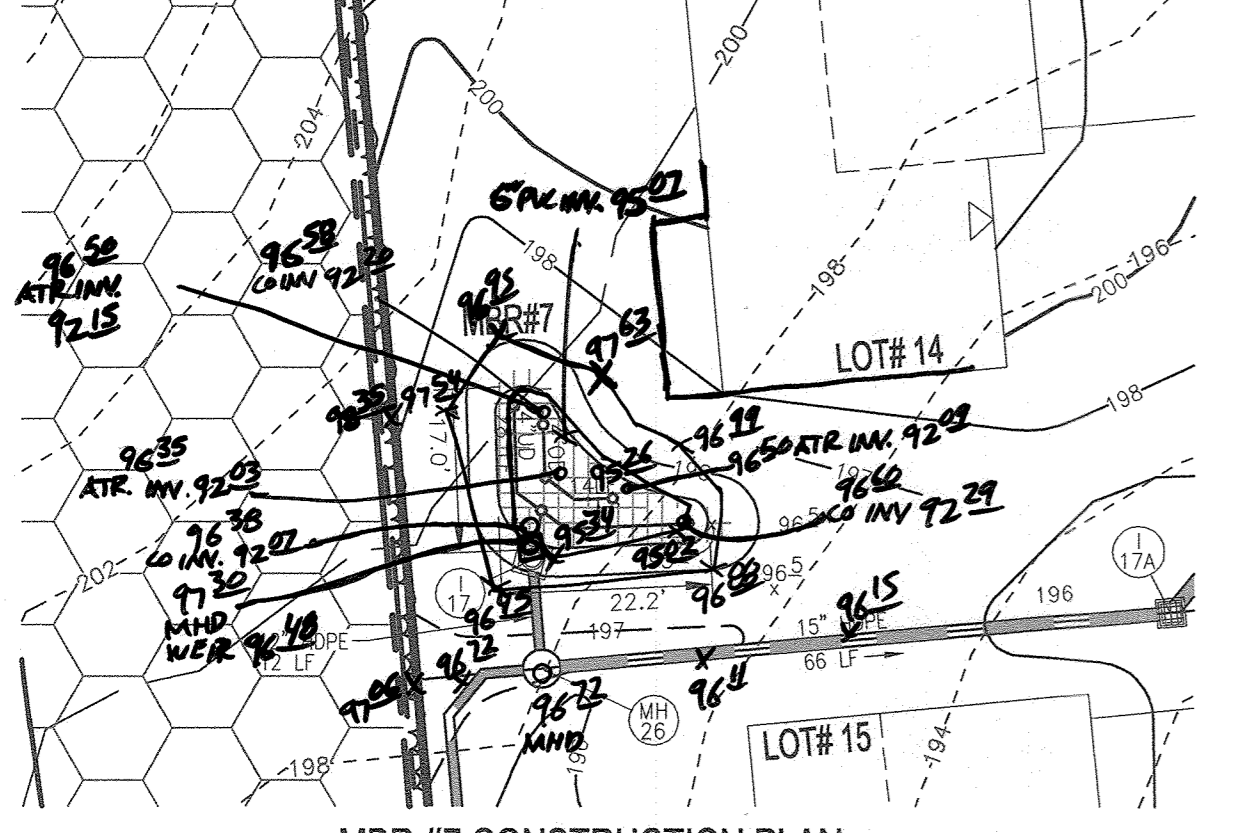


MICRO-BIORETENTION (UNDERDRAIN)
NOT TO SCALE

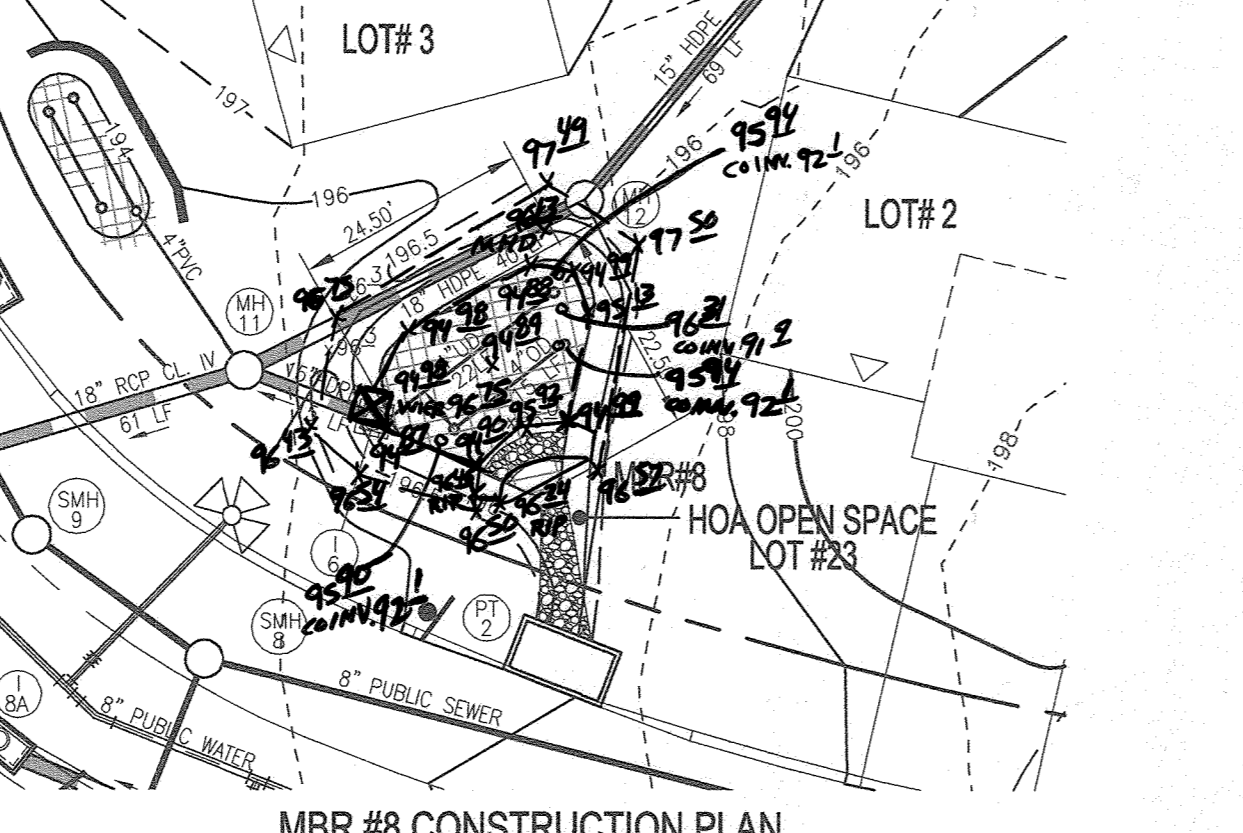


MICRO-BIORETENTION (OVERFLOW)
NOT TO SCALE

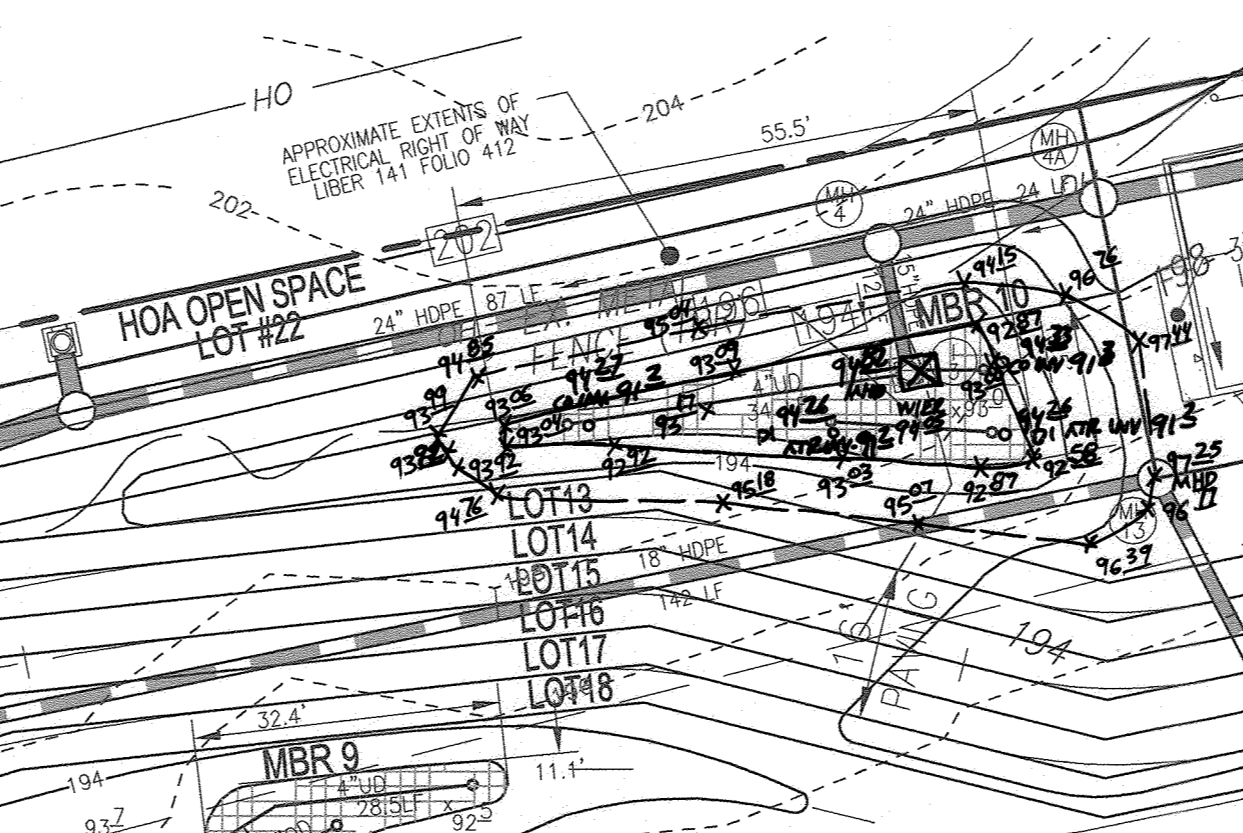
- MICRO-BIORETENTION NOTES:**
- ONLY THE SIDES OF MICRO-BIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICRO-BIORETENTION WILL CAUSE THE MBR TO FAIL AND THEREFORE SHALL NOT BE INSTALLED.
 - WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH. SEE APPENDIX B.4.C.6.
 - PROVIDE 5" MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFORATED PIPE THROUGH STONE RESERVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIOS. (SEE PLANS)



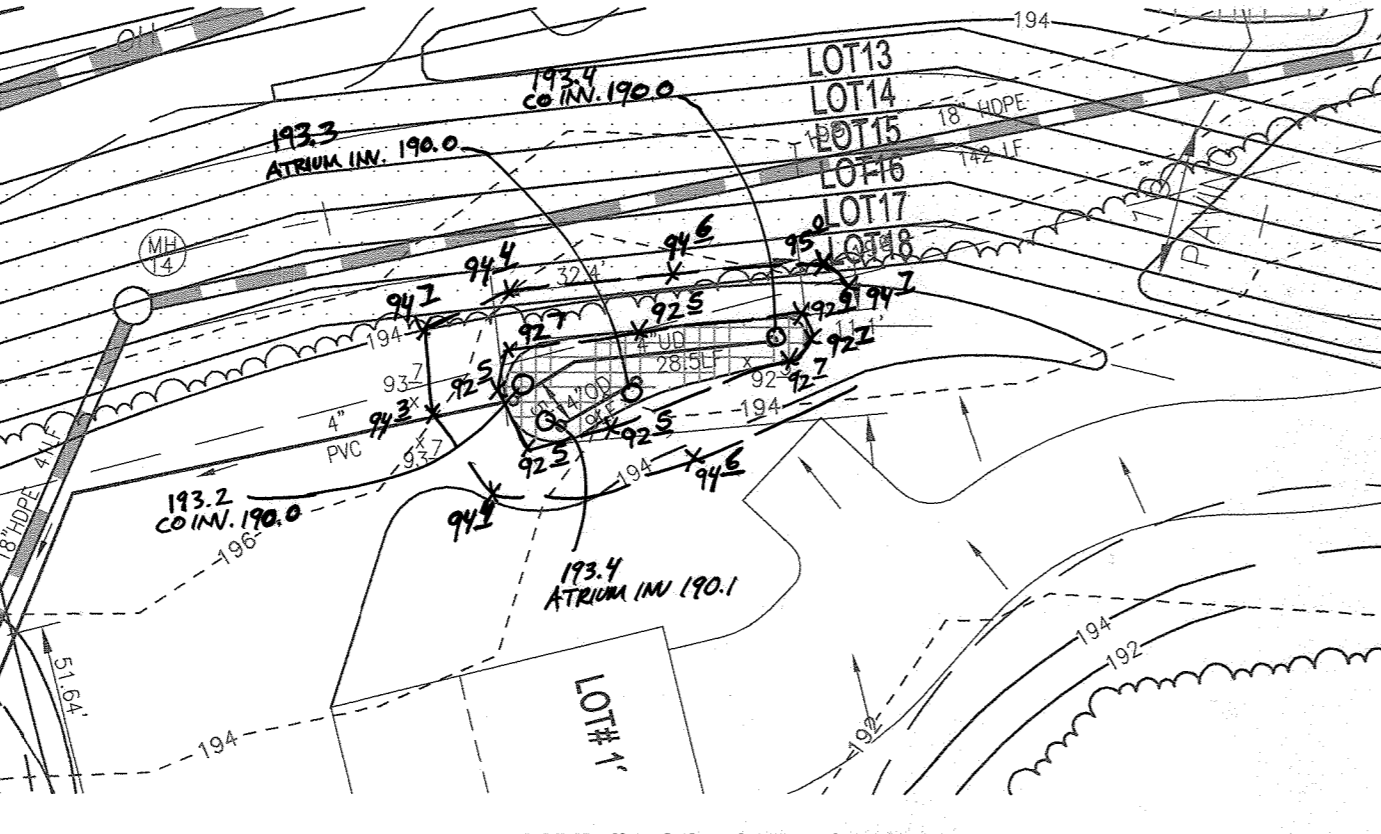
MBR #7 CONSTRUCTION PLAN
SCALE: 1" = 20'



MBR #8 CONSTRUCTION PLAN
SCALE: 1" = 20'



MBR #10 CONSTRUCTION PLAN
SCALE: 1" = 20'



MBR #9 CONSTRUCTION PLAN
SCALE: 1" = 20'

AS-BUILT CERTIFICATION FOR PSWM
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

STATE OF MARYLAND
ROBERT HARRIS VEGEL
PROFESSIONAL ENGINEER
NO. 16193
7-9-24
P.E. NAME: R.H.V. P.E. # 16193 DATE: 7-9-24

OWNER/DEVELOPER
GRACE TAYLOR SCHUTT
TRUSTEES OF THE GRACE T. SCHUTT REVOCABLE TRUST
8132 HANOVER ROAD
HANOVER, MD 21076
443-463-6760

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLANS
STORMWATER MANAGEMENT
MICRO-BIORETENTION
CONSTRUCTION PLAN AND DETAILS
GRACE MEADOWS
LOTS 1 - 18 AND OPEN SPACE LOTS 19 - 30
A SUBDIVISION OF TAX MAP 38 - PARCEL 731

L 14536 / F. 269
TAX MAP 38 BLOCK 09
1ST ELECTION DISTRICT
DPZ REFERENCE: SEE SITE DATA

ZONED R-12
PARCEL 731
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP
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DESIGN BY: R.H.V.
DRAWN BY: M.V.P./J.H.X.G.
CHECKED BY: R.H.V.
DATE: AUGUST 2021
SCALE: AS SHOWN
W.O. NO.: 40077

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193
EXPIRATION DATE: 08-27-2022

19 OF 25

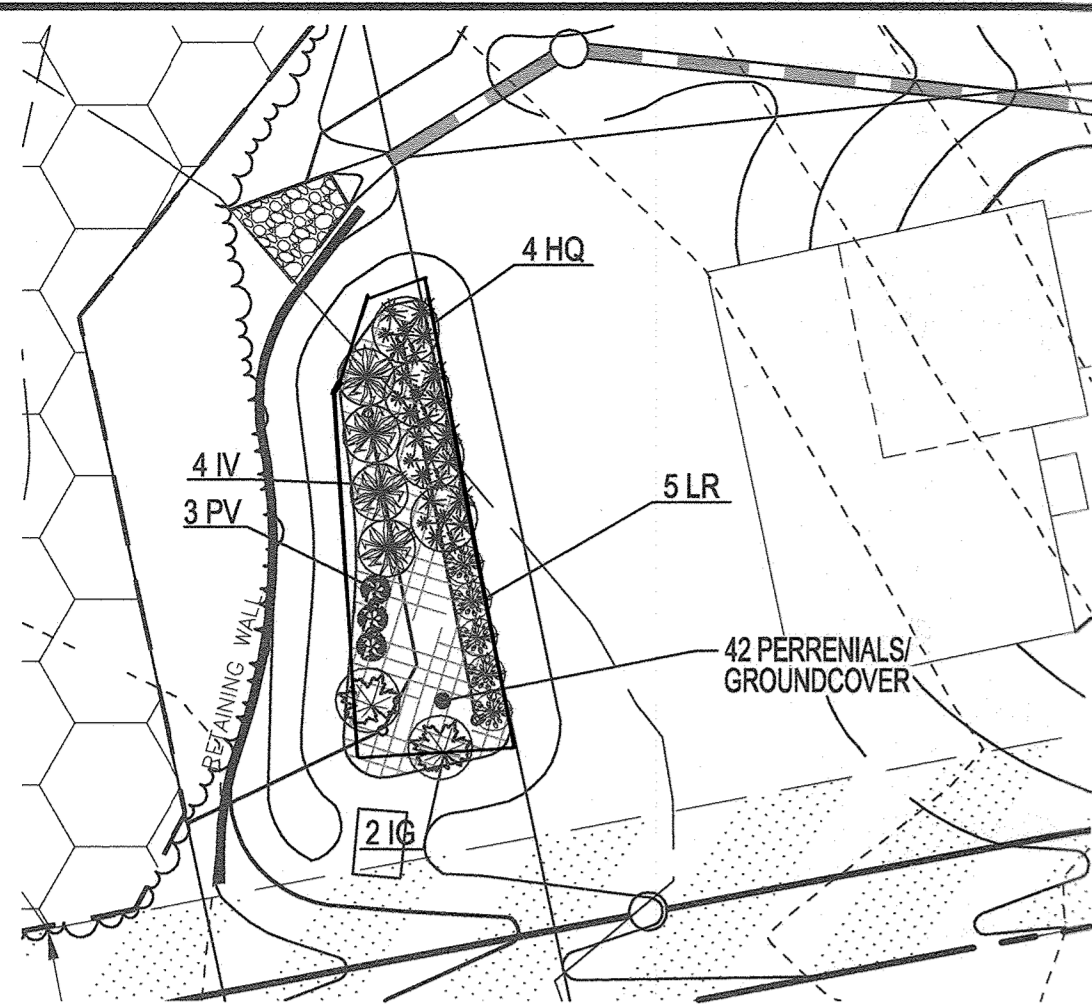
MICRO-BIORETENTION FACILITY - DESIGN ELEVATION CHART

MBR FACILITY #	ESD WSEL	TOP MULCH	TOP PLANT SOIL	BOTTOM PLANT SOIL	BOTTOM PEA GRAVEL	INV PIPE (1)	INV STONE	SURFACE AREA SF	APPROX DIM	OWNER PRIVATE/PUBLIC	MAINTENANCE PRIVATE/PUBLIC/JOINT
A	B	C	D	E	F	G	H	I	J	K	L
1	181.50	180.50	180.25	178.75	178.42	177.84	177.99	600.00	SEE PLAN	PRIVATE	PRIVATE HOA
2	191.50	190.50	190.25	188.75	188.42	187.84	187.99	661.68	SEE PLAN	PRIVATE	PRIVATE HOA
3	190.50	189.50	189.25	187.75	187.42	186.84	186.99	335.27	SEE PLAN	PRIVATE	PRIVATE HOA
4	187.00	186.00	185.75	184.25	183.92	183.34	183.09	840.98	SEE PLAN	PRIVATE	PRIVATE HOA
4A	195.00	194.00	193.75	191.75	191.42	190.84	190.99	1020.00	SEE PLAN	PRIVATE	PRIVATE HOA
5	199.00	198.00	197.75	195.75	195.42	194.84	194.99	689.00	SEE PLAN	PRIVATE	PRIVATE HOA
6	192.00	191.00	190.75	188.75	188.42	187.84	187.99	1275.00	SEE PLAN	PRIVATE	PRIVATE HOA
7	196.00	195.00	194.75	192.75	192.42	191.84	191.99	2102.15	SEE PLAN	PRIVATE	PRIVATE ONLOT
8	196.00	195.00	194.75	192.75	192.42	191.84	191.99	3081.30	SEE PLAN	PRIVATE	PRIVATE HOA
9	193.50	192.50	192.25	190.75	190.42	189.84	189.99	2252.99	SEE PLAN	PRIVATE	PRIVATE ONLOT
10	194.00	193.00	192.75	191.25	190.92	190.34	190.49	450.00	SEE PLAN	PRIVATE	PRIVATE HOA

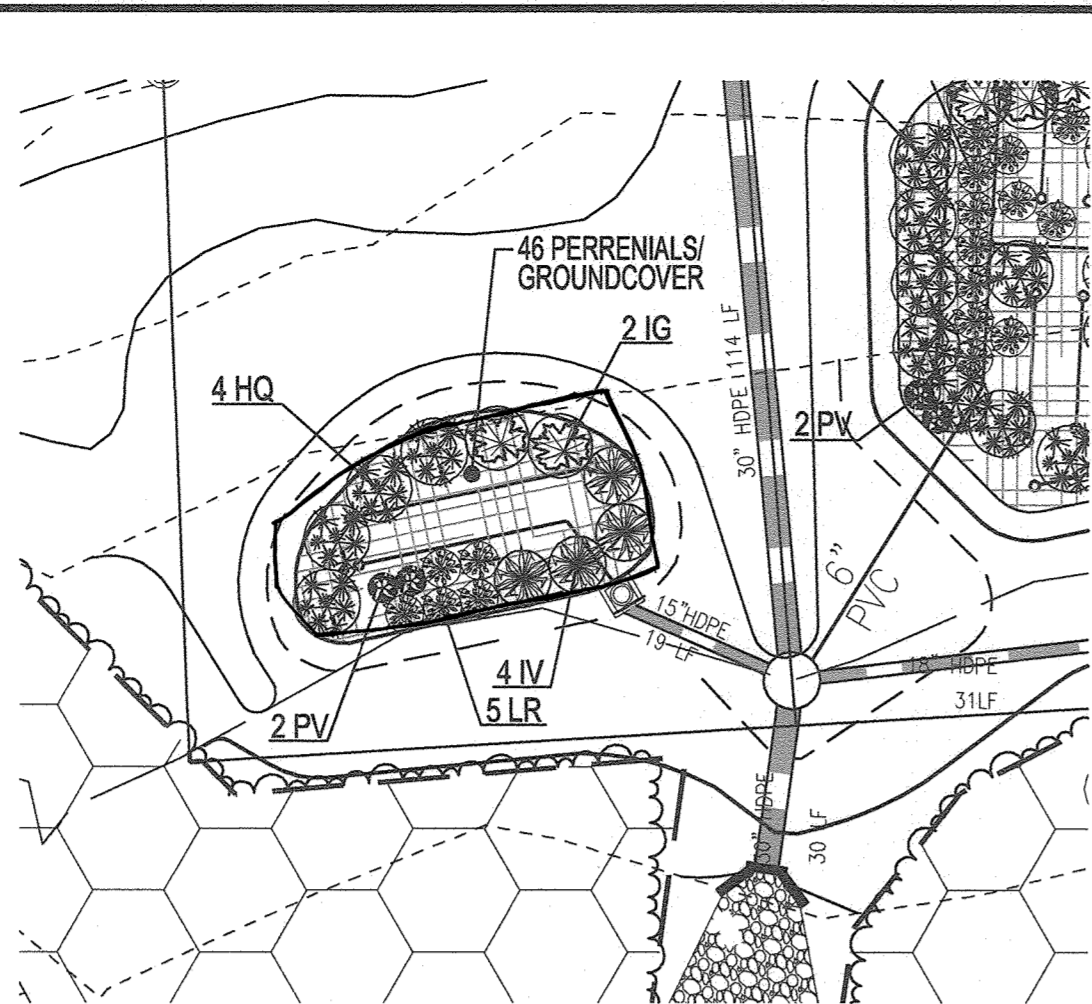
(1) UNDERDRAIN PIPE AND OVERFLOW DISTRIBUTION PIPE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS MK 11/29/2021 DATE

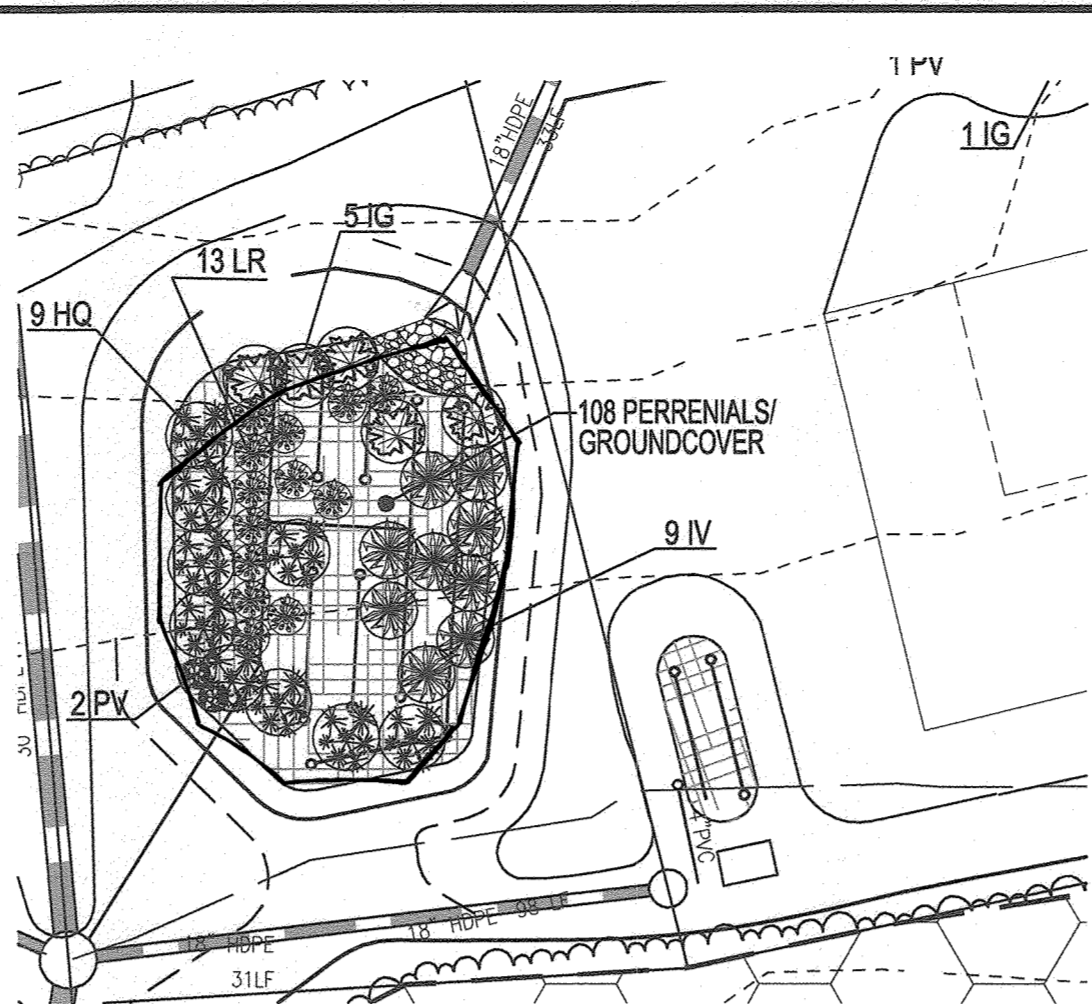
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION R 1-6-22 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT es 1/6/22 DATE



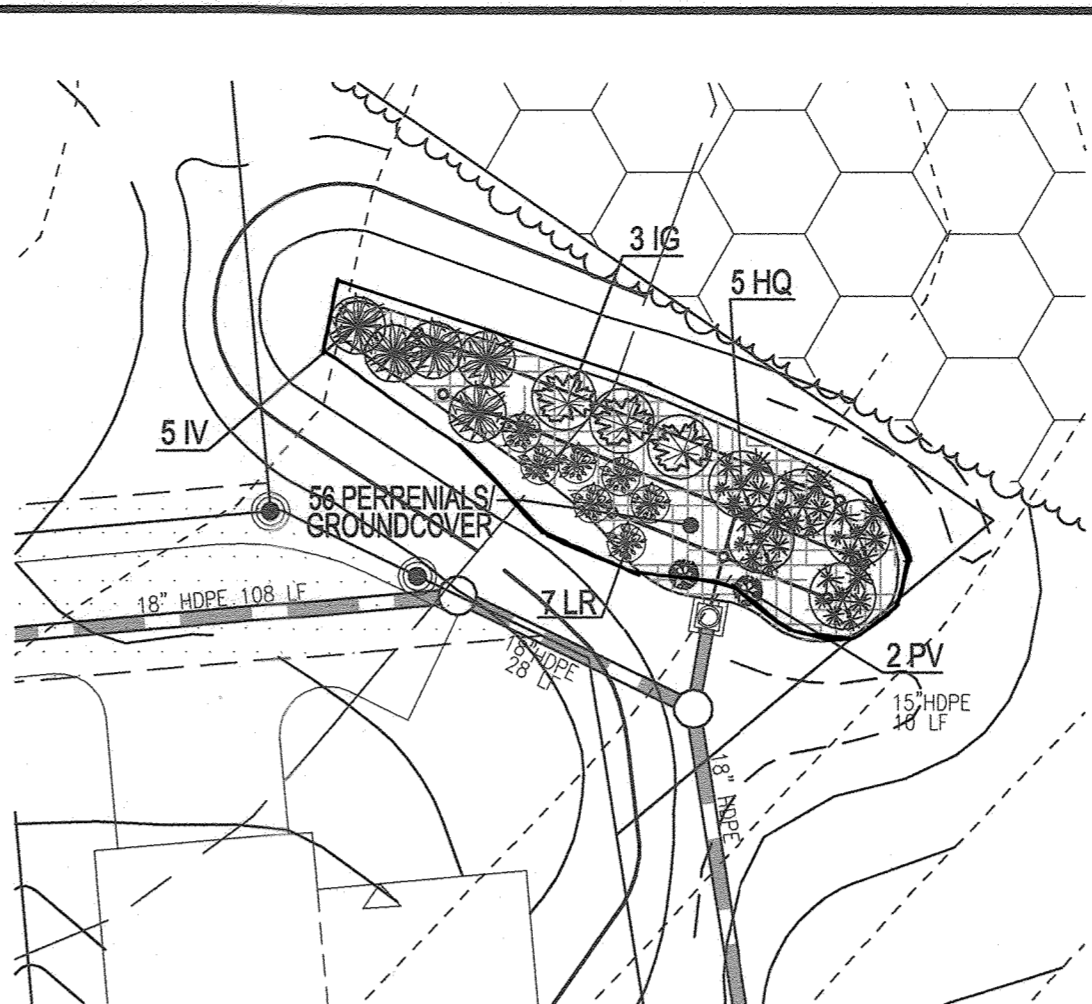
MBR#1 PLANTING PLAN
SCALE: 1" = 20'



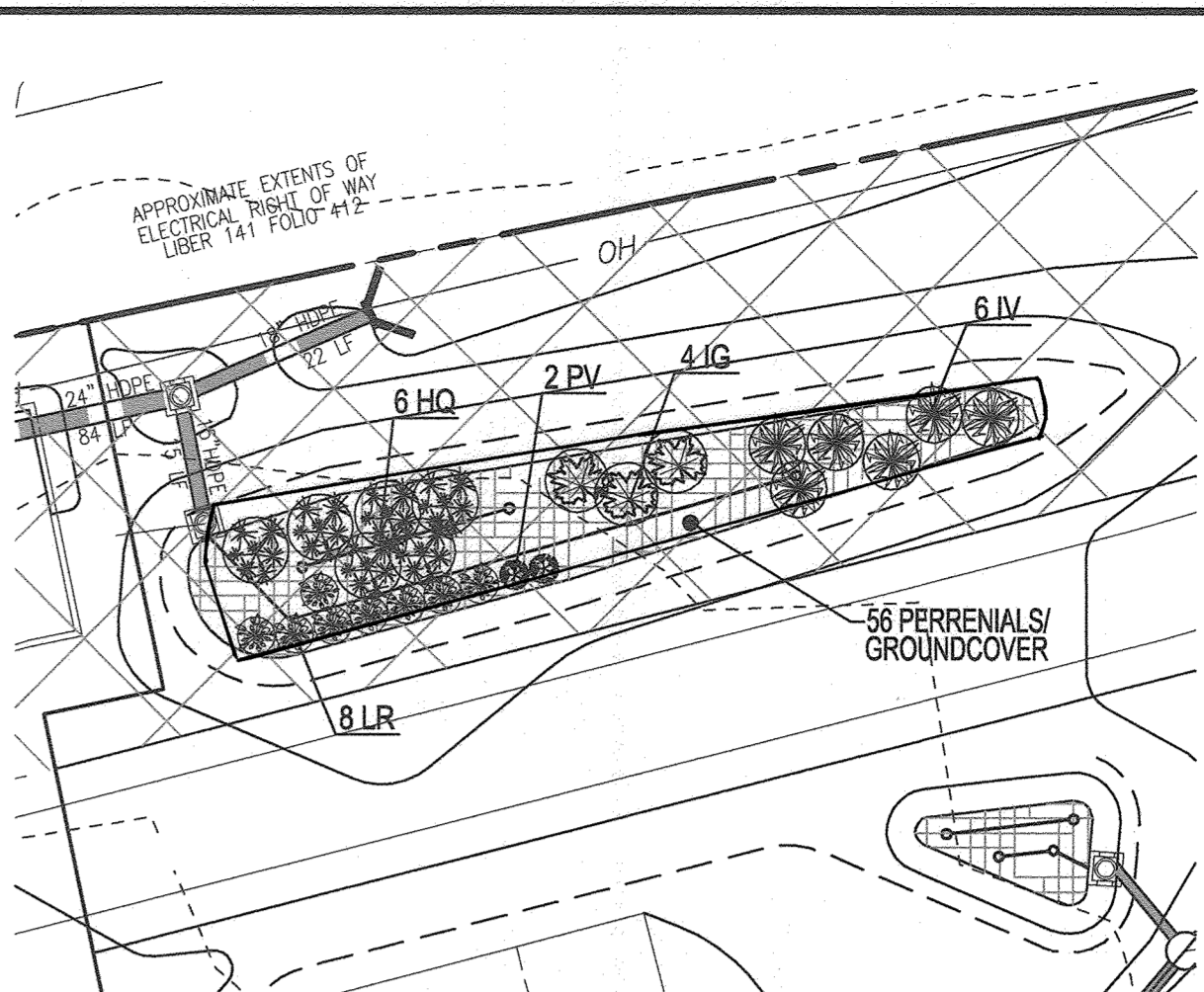
MBR#2 PLANTING PLAN
SCALE: 1" = 20'



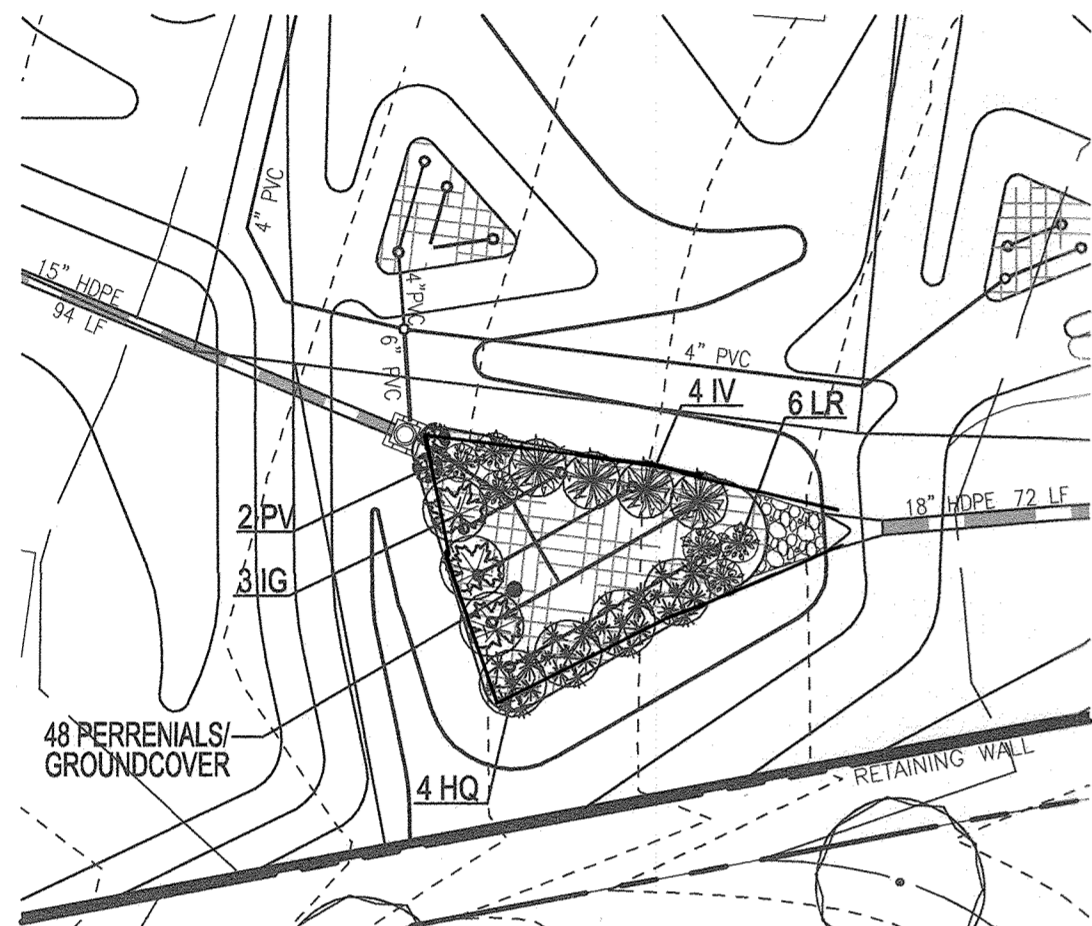
MBR#3 PLANTING PLAN
SCALE: 1" = 20'



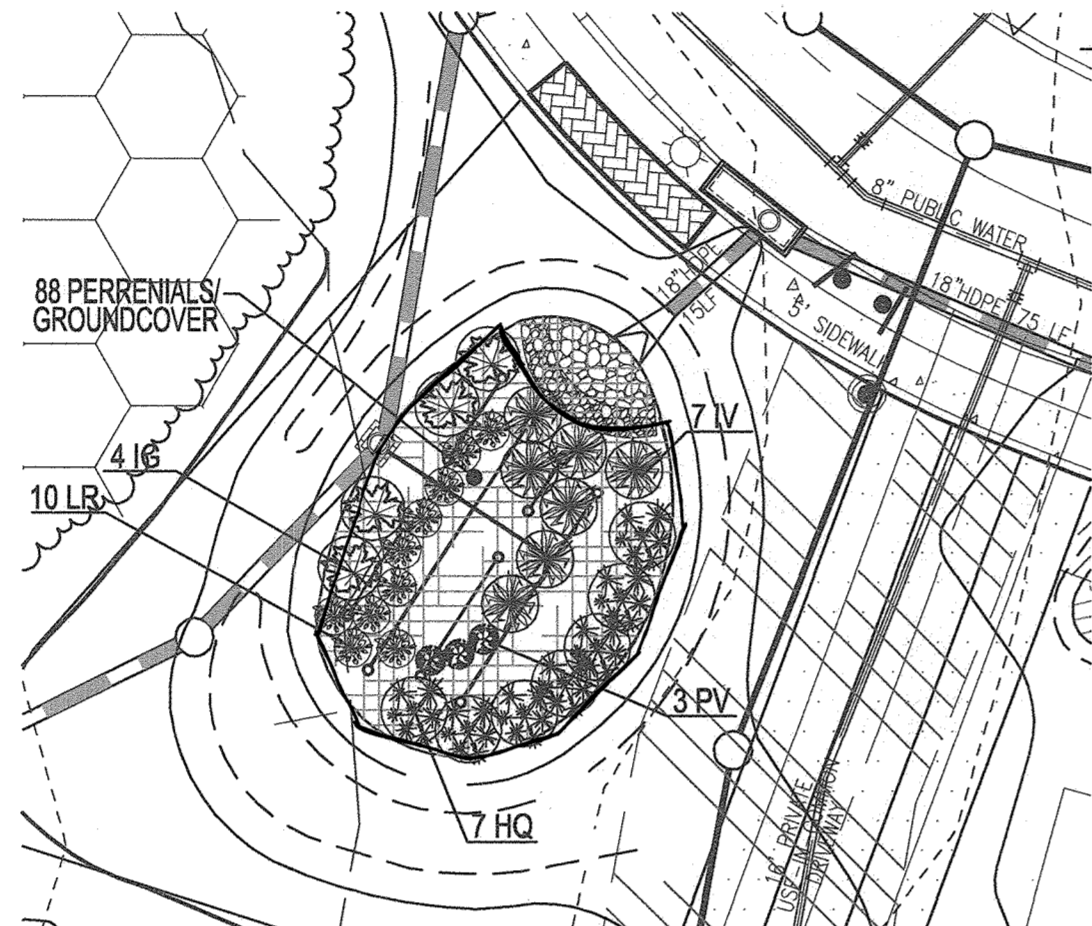
MBR#4 PLANTING PLAN
SCALE: 1" = 20'



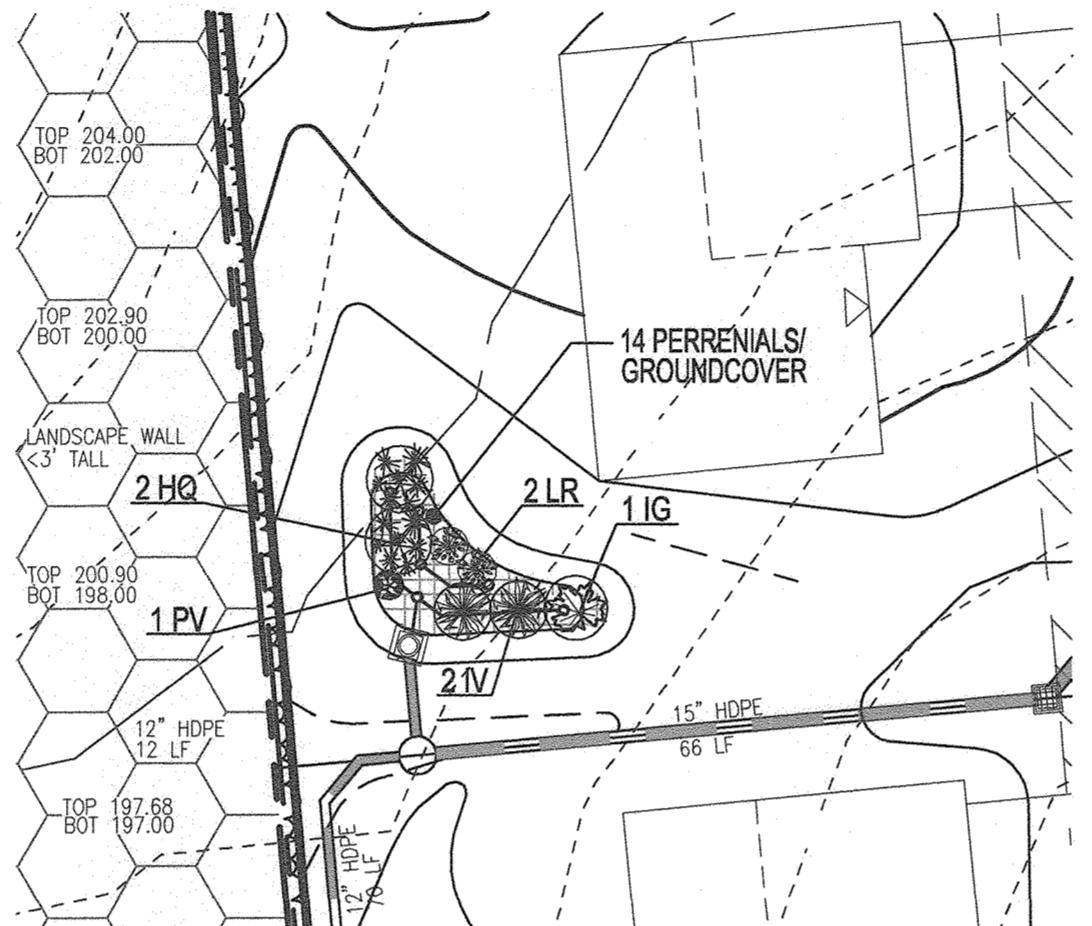
MBR#4A PLANTING PLAN
SCALE: 1" = 20'



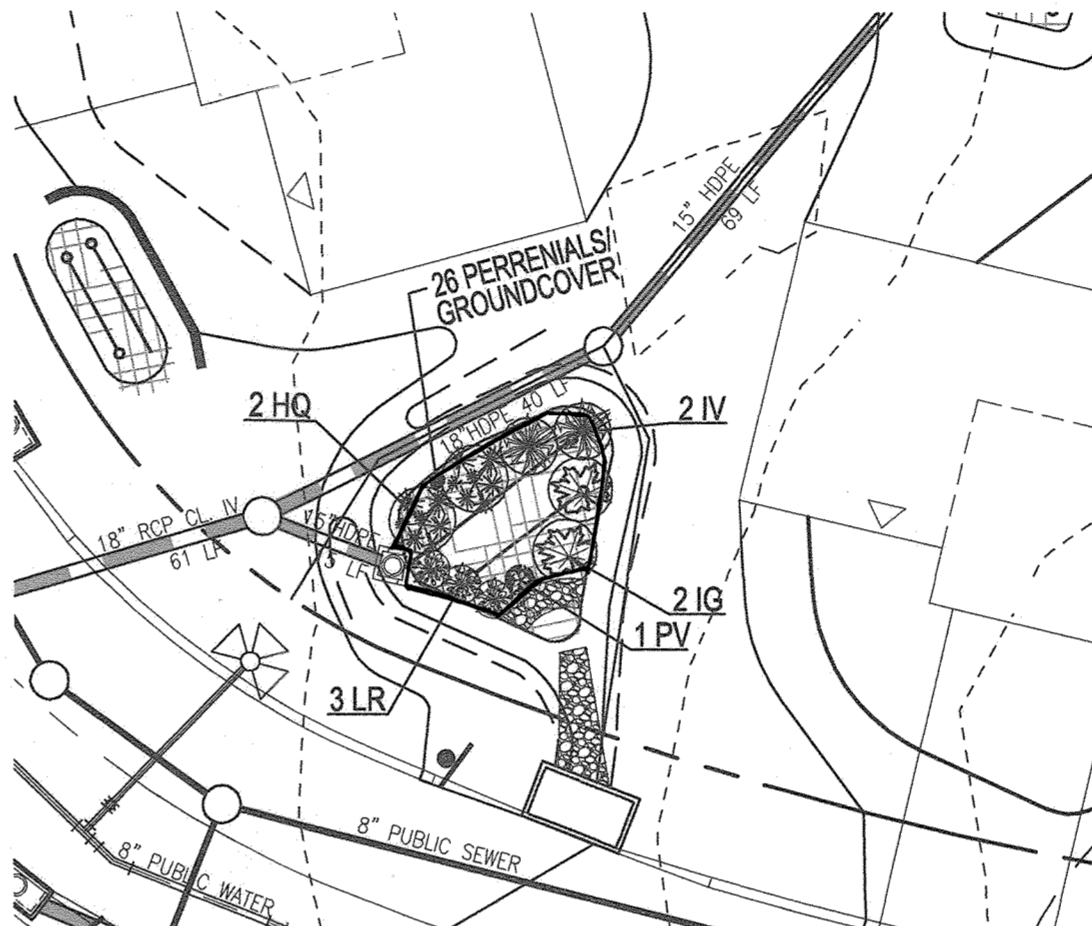
MBR#5 PLANTING PLAN
SCALE: 1" = 20'



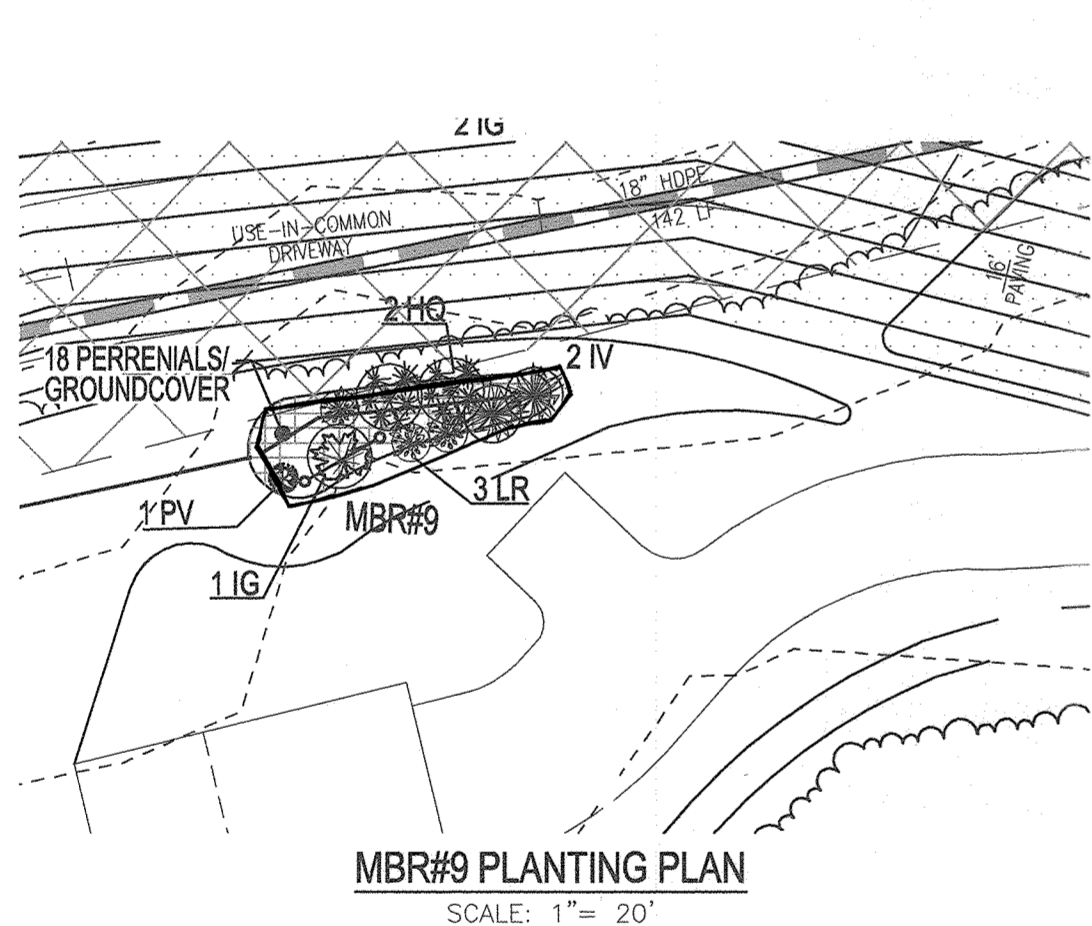
MBR#6 PLANTING PLAN
SCALE: 1" = 20'



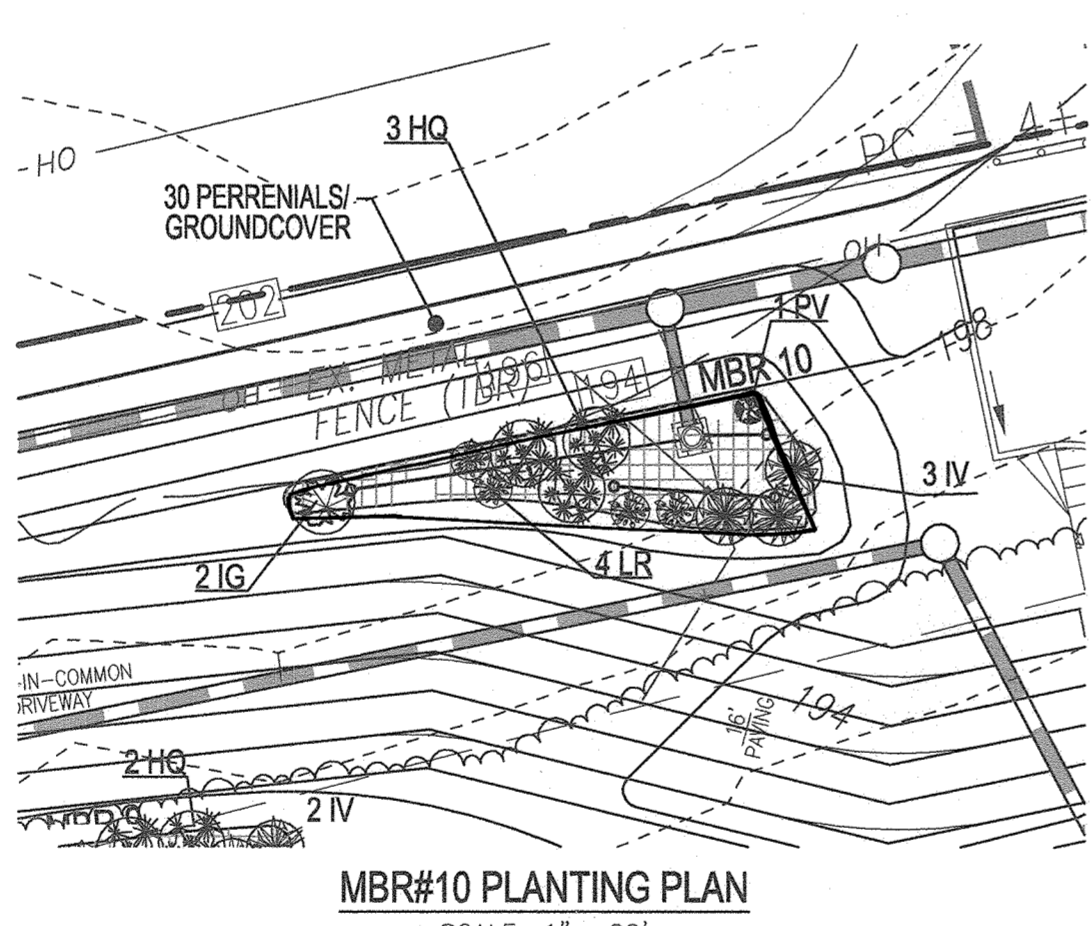
MBR#7 PLANTING PLAN
SCALE: 1" = 20'



MBR#8 PLANTING PLAN
SCALE: 1" = 20'



MBR#9 PLANTING PLAN
SCALE: 1" = 20'



MBR#10 PLANTING PLAN
SCALE: 1" = 20'

MICRO-BIORETENTION PLANTING REQUIREMENTS					PLANTINGS PROVIDED					PERENNIALS/GROUND COVER PROVIDED		
MBR #	LF	AREA	STEMS REQUIRED (0.0299)	STEMS PROVIDED	IG	IV	HQ	LR	PV	BA	AG	TOTAL
1	49	608	14	18	2	4	4	5	3	21	21	42
2	38	661	16	17	2	4	4	5	2	23	23	46
3	52	1545	36	38	5	9	9	13	2	54	54	108
4	58	810	19	22	3	5	5	7	2	28	28	56
4A	92	1020	24	26	4	6	6	8	2	35	35	70
5	34	689	16	19	3	4	4	6	2	24	24	48
6	48	1275	30	31	4	7	7	10	3	44	44	88
7	22	210	5	8	1	2	2	2	1	7	7	14
8	24	381	9	10	2	2	2	3	1	13	13	26
9	44	277	7	9	1	2	2	3	1	9	9	18
10	56	450	11	13	2	3	3	4	1	15	15	30
TOTALS:	517	7926	187	211	29	48	48	66	20	273	273	546

BIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEM PER PLANTED ACRE (0.0229 STEM PER SQUARE FOOT).

MICRO-BIORETENTION PLANTING SCHEDULE (SHRUBS/ORNAMENTAL GRASSES)

PERENNIALS/GROUNDCOVER PLANTING SCHEDULE				
LEGEND	KEY	QTY	BOTANICAL NAME/COMMON NAME	REMARKS
[Symbol]	BA	273	BAPTISIA AUSTRALIS FALSE INDIGO	4" POT 12"-15" O.C. FOR SIDES AND BOTTOM OF MBR. MIX ALL VARIETIES IN A NATURALIZED RANDOM PATTERN THROUGHOUT. PLANT IN GROUPS OF NO LESS THAN 9 PLANTS PER CLUMP
[Symbol]	AG	273	ACORUS GRAMINEUS 'OGON' GOLDEN VARIEGATED SWIFT FLAG	1 QT.

NOTE: WITH PERMISSION FROM HOWARD COUNTY, PLANTINGS SPECIFIED HEREON MAY BE SUBSTITUTED WITH APPROVED SPECIES LISTED IN TABLE A.4 AS SHOWN HEREON.

MICRO-BIORETENTION PLANTING SCHEDULE NOTES

- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT ANNUAL SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HOWARD COUNTY PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLANT DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
- MICROBIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEM PER PLANTED ACRE (0.0229 STEM PER SQUARE FOOT), ABOVE PLANTING RATIOS ARE TO BE APPLIED TO THE AREAS PROVIDED IN THE ESDV SUMMARY.
- FILTER AREA SHALL BE 50% COVERED BY PLANTINGS AT FULL GROWTH.

Appendix A. Landscaping Guidance for Stormwater BMPs..... Specific Landscaping Criteria

Trees	Shrubs	Herbaceous Species
<i>Acer rubrum</i>	<i>Aesculus parviflora</i>	<i>Andropogon virginicus</i>
<i>Rubus</i>	<i>Bottlebrush Buckeye</i>	<i>Bromus</i>
<i>Betula nigra</i>	<i>Cypripedium occidentale</i>	<i>Equisetum perperum</i>
<i>River Birch</i>	<i>Burns</i>	<i>Joe Pye Weed</i>
<i>Jambosia virginiana</i>	<i>Hemlock virginiana</i>	<i>Scirpus pungens</i>
<i>Eastern Red Cedar</i>	<i>White Hazel</i>	<i>Three Square Bulrush</i>
<i>Chionodoxa virginiana</i>	<i>Vaccinium corymbosum</i>	<i>Poa verticillata</i>
<i>Fraxinus</i>	<i>Highbush Blueberry</i>	<i>Blue Flag</i>
<i>Nyssa sylvatica</i>	<i>Ilex glabra</i>	<i>Lobelia cardinalis</i>
<i>Black Gum</i>	<i>Black Gum</i>	<i>Cattail Flower</i>
<i>Desmodium illinoense</i>	<i>Box hortensia</i>	<i>Panicum virginicum</i>
<i>Peristrophe</i>	<i>Waterberry</i>	<i>Swampgrass</i>
<i>Pistacia occidentalis</i>	<i>Viburnum dentatum</i>	<i>Dichanthium scoparium</i>
<i>Syringa</i>	<i>Aronwood</i>	<i>Broom Panic Grass</i>
<i>Quercus palustris</i>	<i>Lindera benzoin</i>	<i>Rudbeckia lactinosa</i>
<i>Pine Oak</i>	<i>Spicebush</i>	<i>Tall Coneflower</i>
<i>Quercus phellos</i>	<i>Myrica pennsylvanica</i>	<i>Scirpus caryopus</i>
<i>Willow Oak</i>	<i>Bayberry</i>	<i>Woodgrass</i>
<i>Salis nigra</i>		<i>Veronica noveboracensis</i>
<i>Black Willow</i>		<i>New York Ironweed</i>

NOTE: For more options on plant selection for bioretention, consult *Bioretention Manual* (OTAB, 1993) or the *Design of Stormwater Filtering Systems* (Clayton and Schuler, 1997).

- TABLE A.4 IS TAKEN FROM THE "2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II - APPENDIX A".
- CONTRACTOR SHALL BE FAMILIAR WITH APPENDIX B.4.C CONSTRUCTION SPECIFICATIONS AND TABLE B.4.1 MATERIAL SPECIFICATIONS. IN ADDITION THE "2000 MARYLAND STORMWATER DESIGN MANUAL - VOLUME II - APPENDIX A" OFFERS ADDITIONAL HELPFUL INFORMATION.
- NO TREES SHALL BE PLANTED WITHIN A MICRO-BIORETENTION FACILITY. USE ONLY SHRUB OR HERBACEOUS SPECIES.
- ABOVE TABLE A.4 IS FOR INFORMATIONAL PURPOSES ONLY. LANDSCAPE CONTRACTOR SHALL INSTALL PLANTINGS SPECIFIED OR USE APPROVED EQUAL SPECIES WHICH ARE TOLERANT TO FLUCTUATING WATER LEVELS.
- PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THIS FINAL PLAN.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 1/29/2021
 CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 1-6-22
 CHIEF, DEVELOPMENT ENGINEERING DIVISION 18 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT 1/6/22
 [Signature] 18 DATE



AS-BUILT CERTIFICATION FOR P-SWM
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

[Signature] 16193 7-9-24
 P.E.# DATE

LEGEND:

- EXISTING: CONTOUR, PROPERTY LINE, RIGHT-OF-WAY LINE, TREELINE, EDGE OF PAVING
- PROPOSED: EDGE OF PAVEMENT, CURB & GUTTER, CONTOUR, TREELINE
- MICRO-BIORETENTION FACILITY (M-6)
- DRY WELL
- PROPOSED SIDEWALK
- PROPOSED STORM DRAIN
- PROPOSED STREET LIGHT & SIGN
- OPEN SPACE (BOLLARD) (SEE DETAIL SHEET 5)

OWNER/DEVELOPER
 GRACE TAYLOR SCHUTT, TRUSTEES OF THE GRACE T. SCHUTT REVOCABLE TRUST
 6132 HANOVER ROAD
 HANOVER, MD 21076
 443-463-6760

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLANS
STORMWATER MANAGEMENT
MICRO-BIORETENTION
PLANTING PLAN AND DETAILS
GRACE MEADOWS
 LOTS 1 - 18 AND OPEN SPACE LOTS 19 - 30
 A SUBDIVISION OF TAX MAP 38 - PARCEL 731

L 14536 / F. 269
 TAX MAP 38 BLOCK 09
 1ST ELECTION DISTRICT
 DPZ REFERENCE: SEE SITE DATA

ZONED R-12
 PARCEL 731
 HOWARD COUNTY, MARYLAND

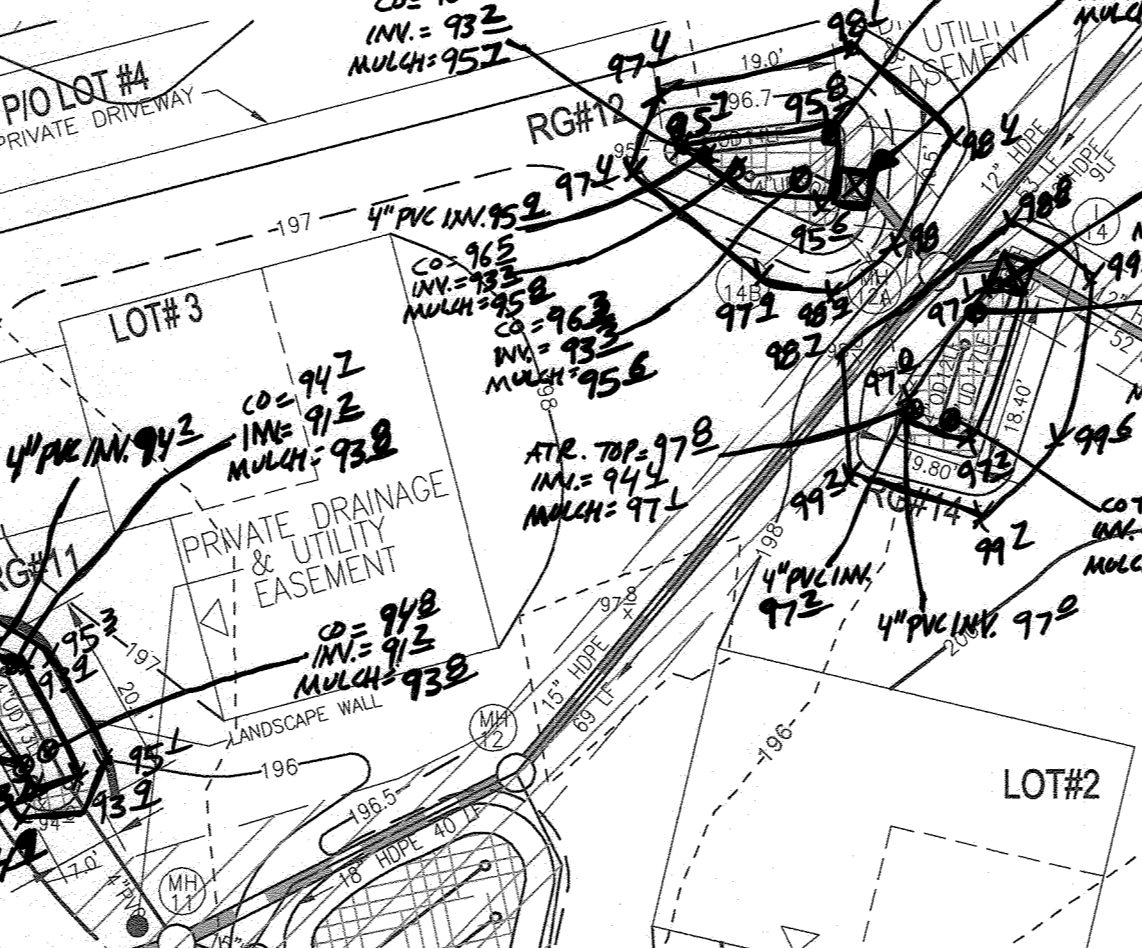
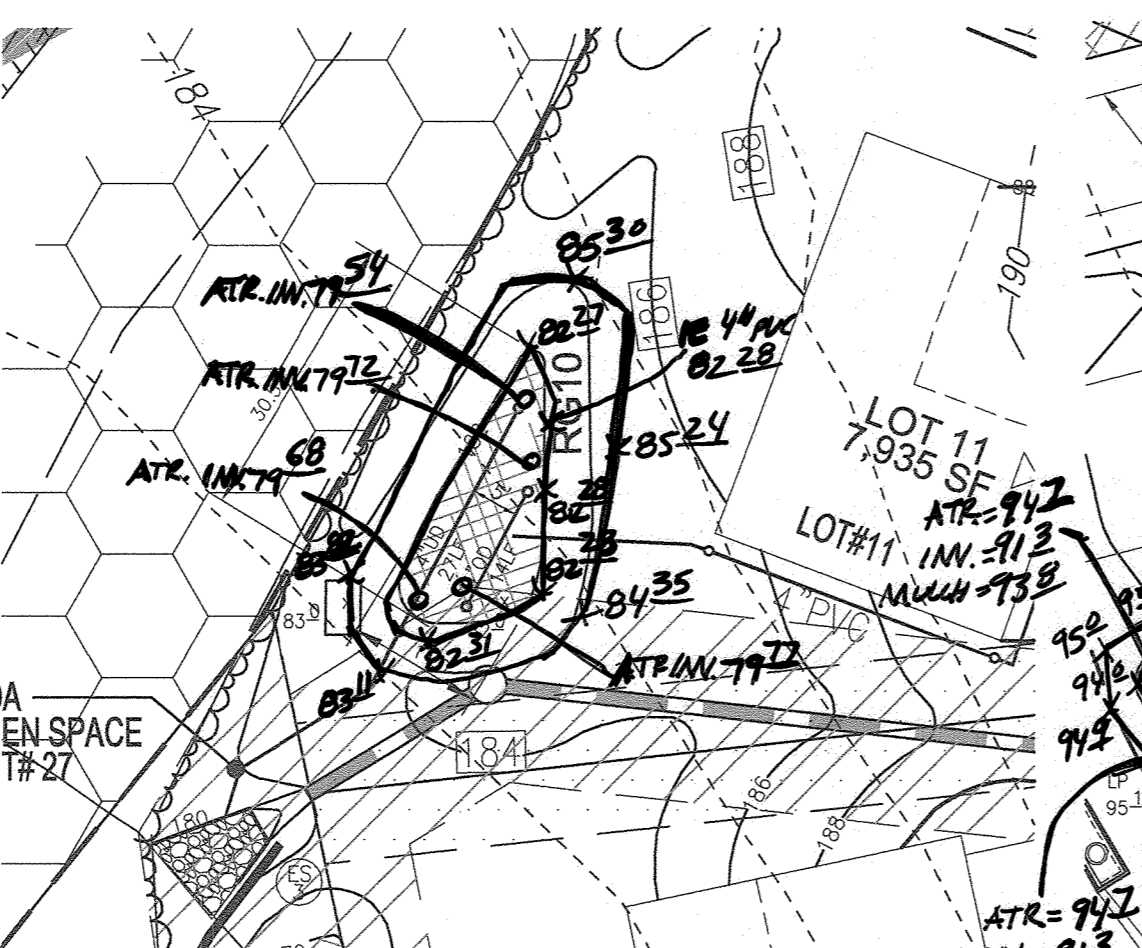
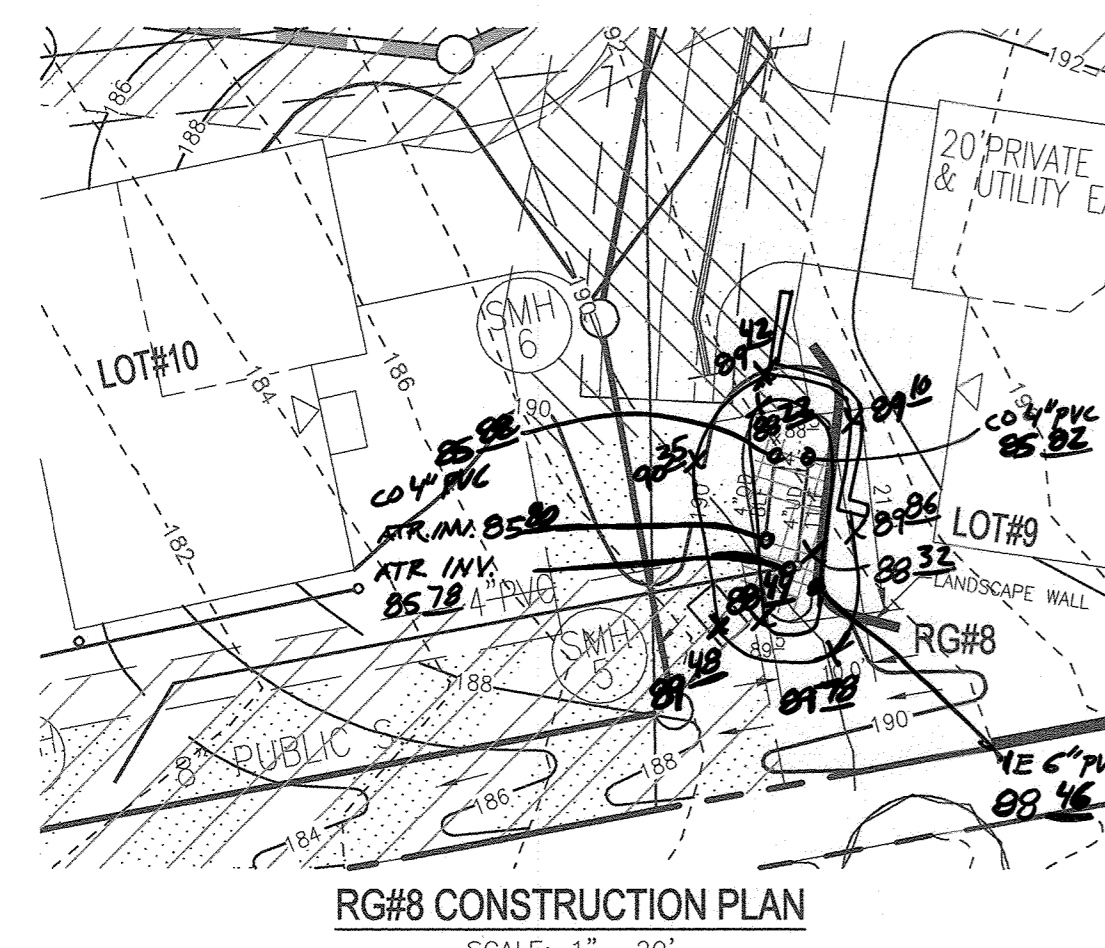
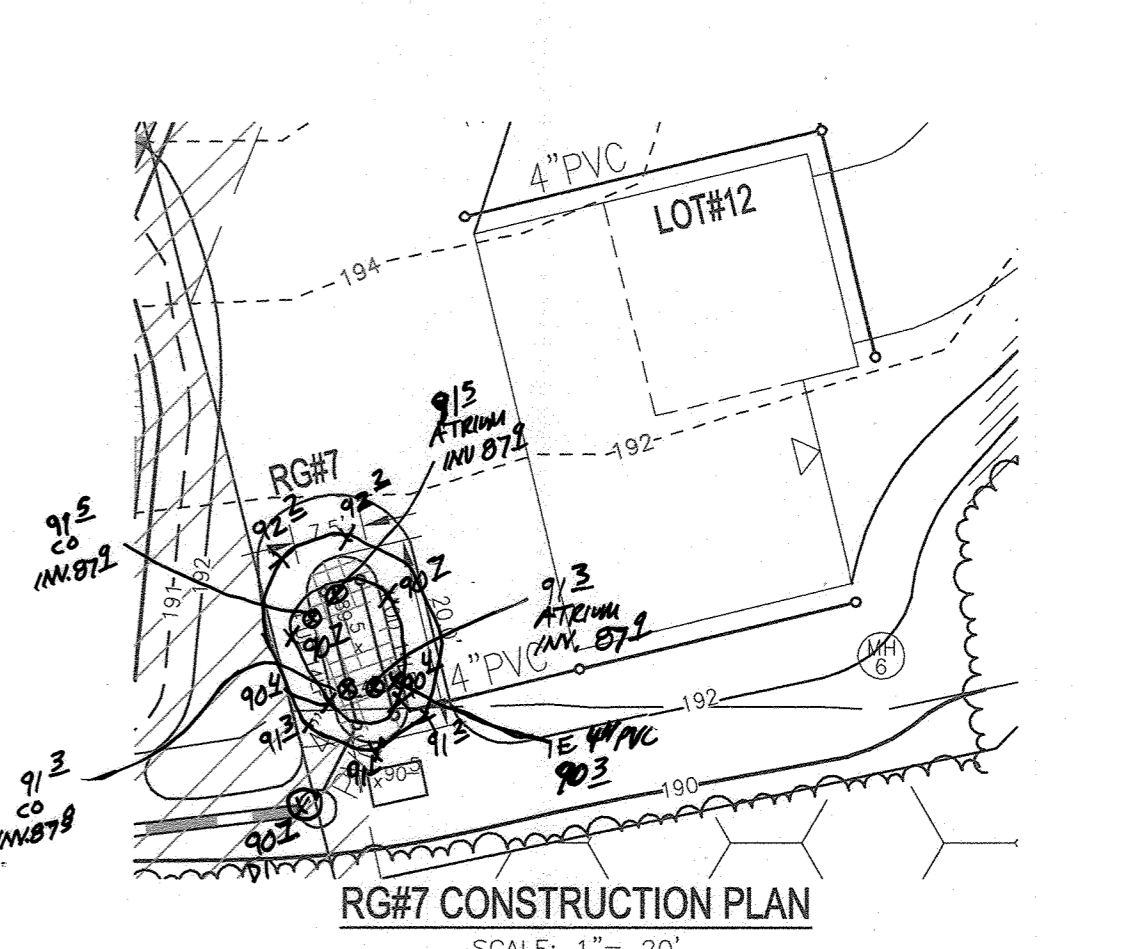
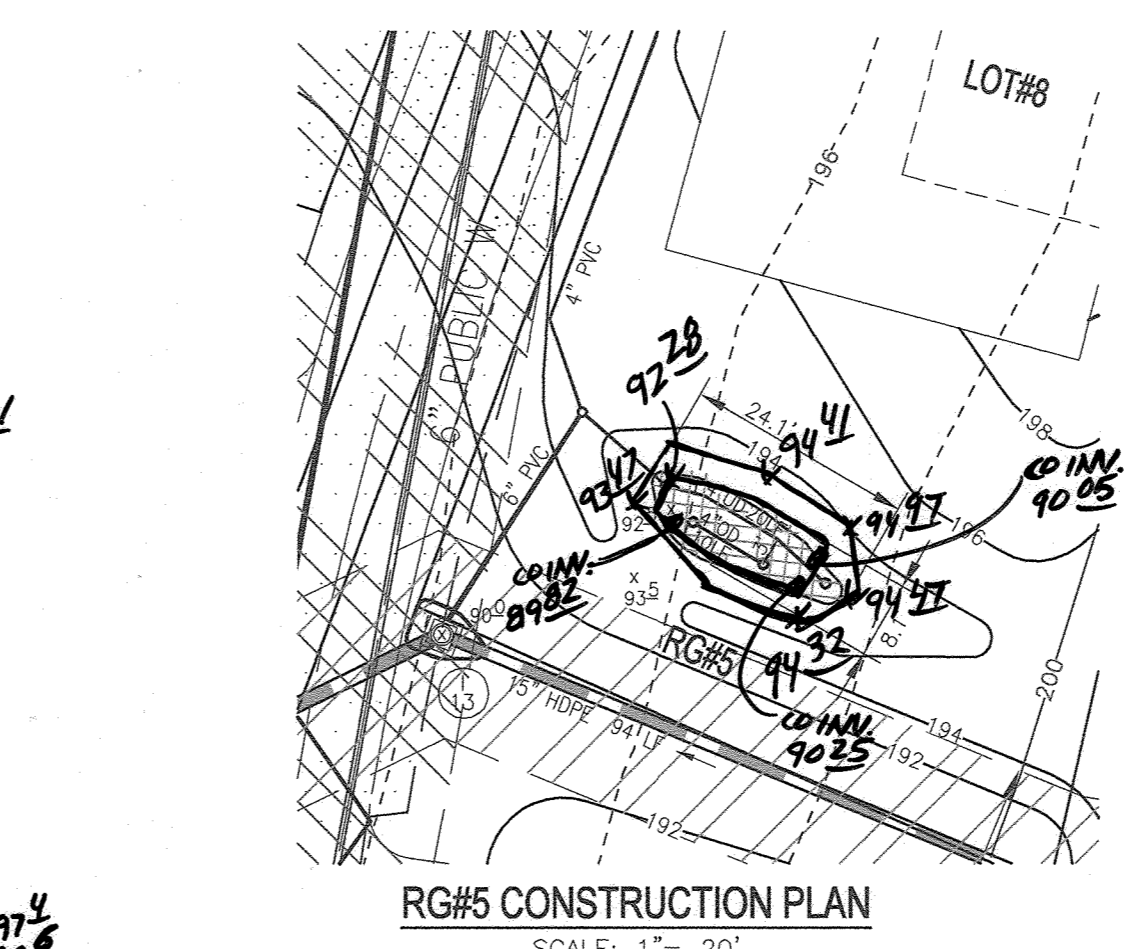
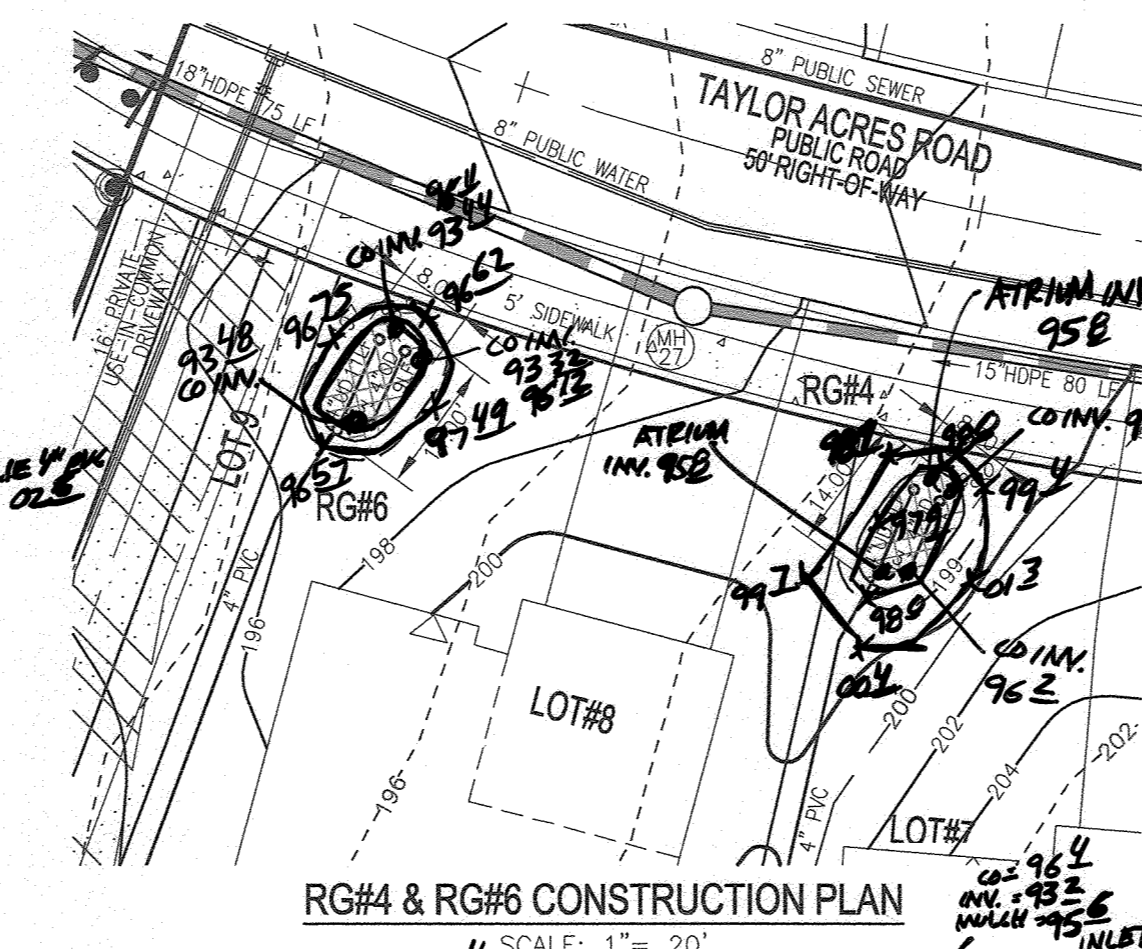
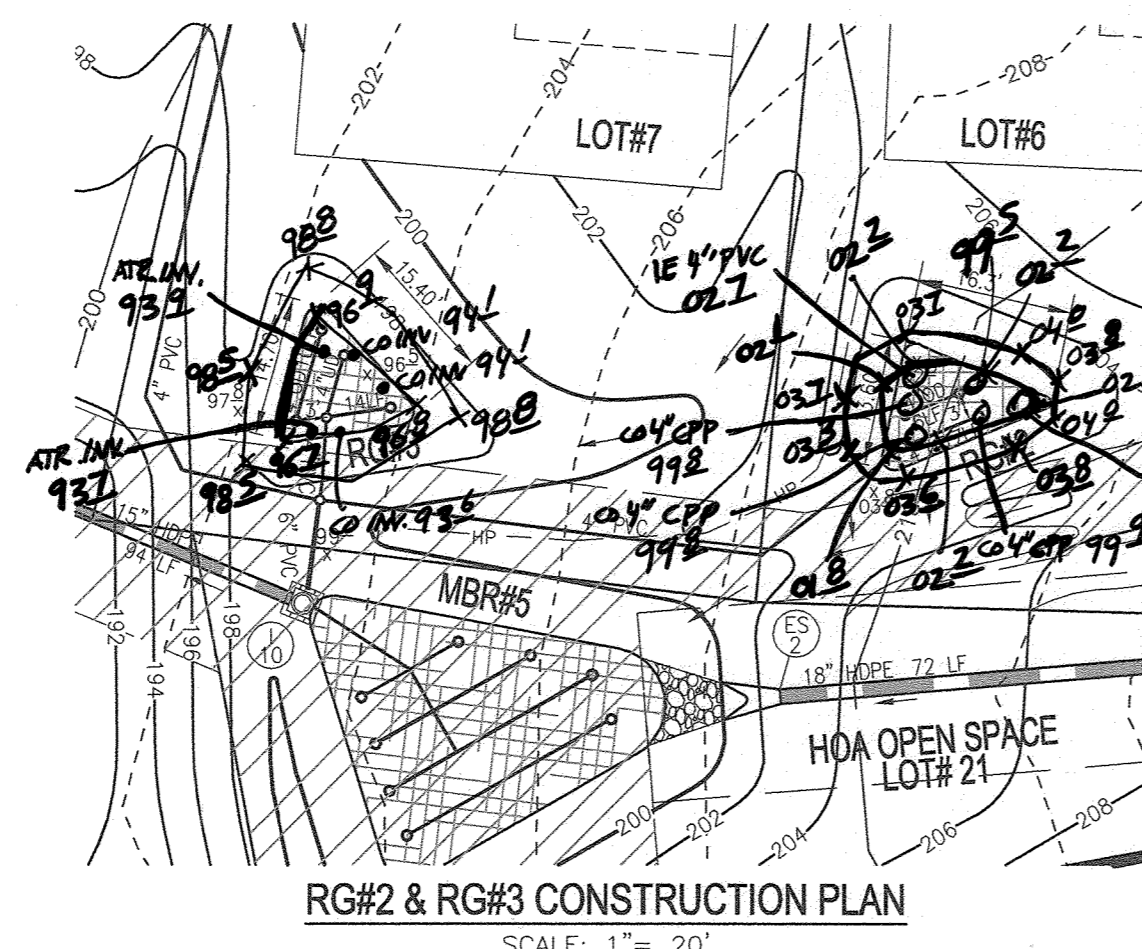
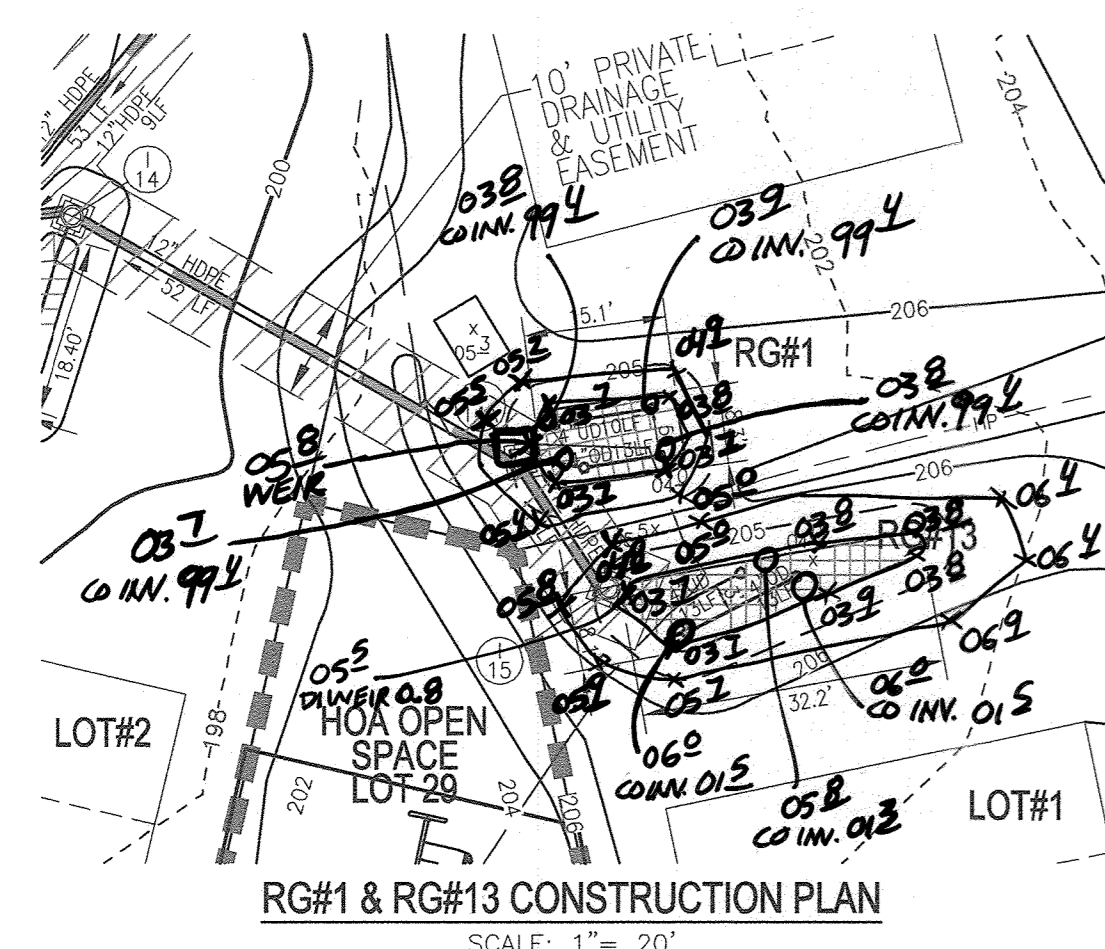
VOGEL ENGINEERING
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TIMMONS GROUP
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

DESIGN BY: RHV
 DRAWN BY: MVP/JH/KG
 CHECKED BY: RHV
 DATE: AUGUST 2021
 SCALE: AS SHOWN
 W.O. NO.: 40077

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A duly licensed PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 08-27-2022

20 SHEET OF 25



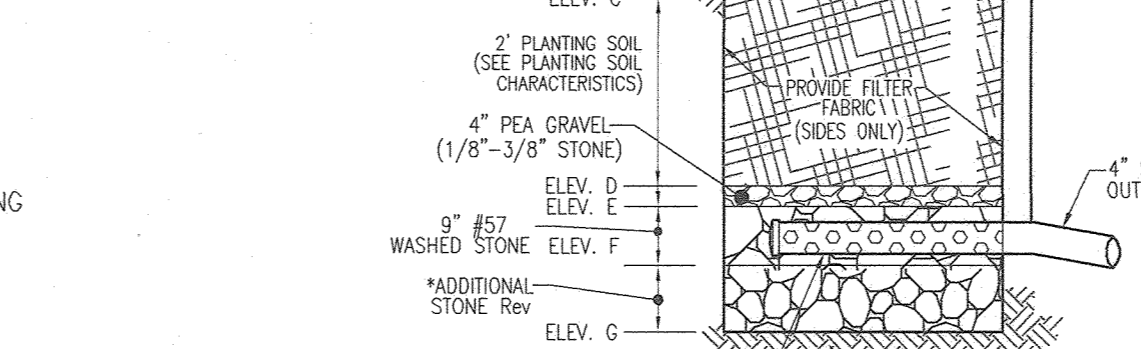
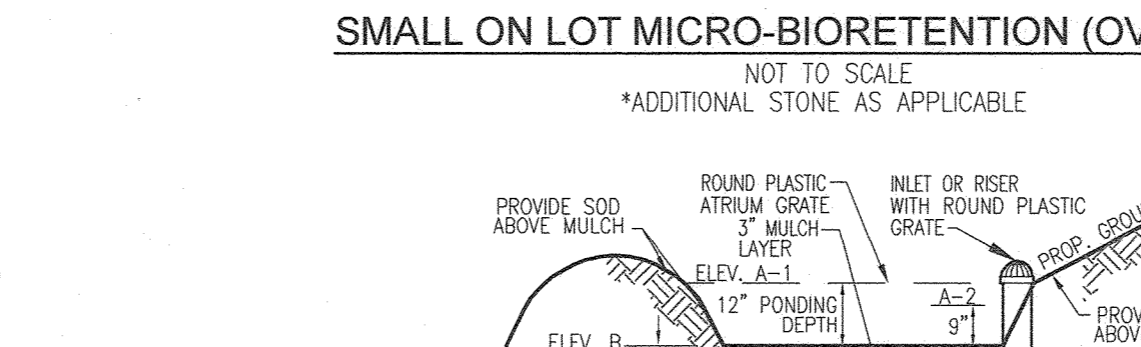
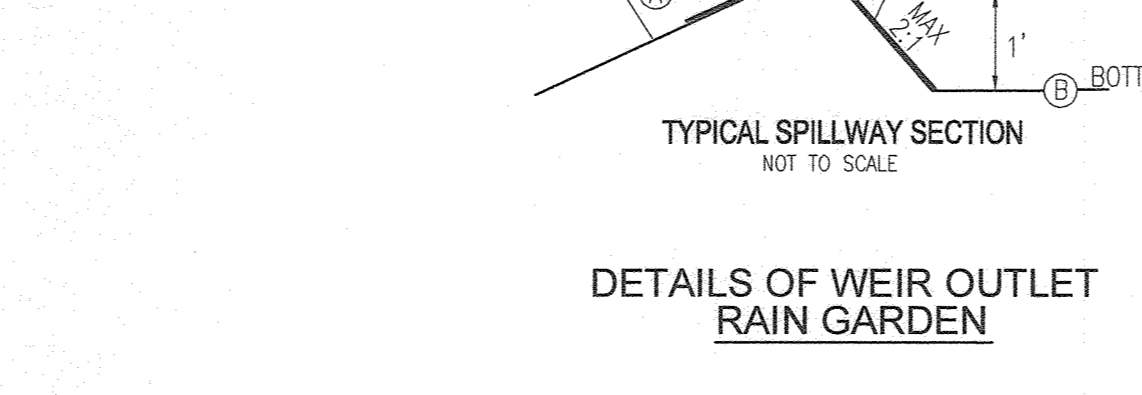
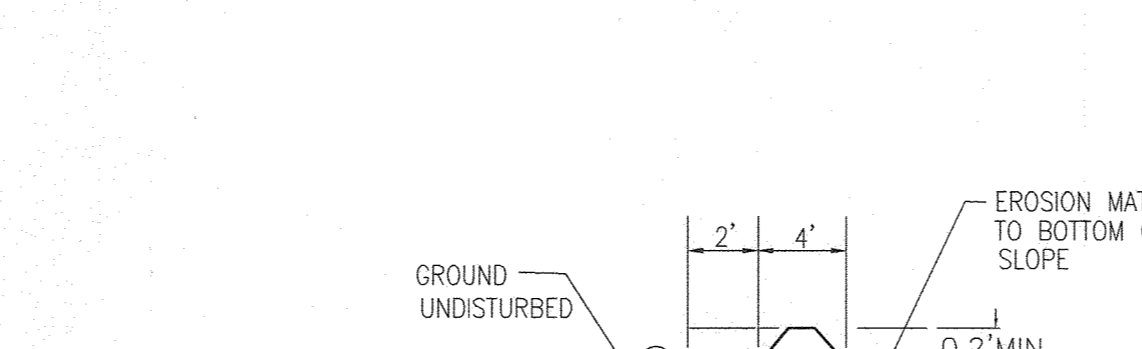
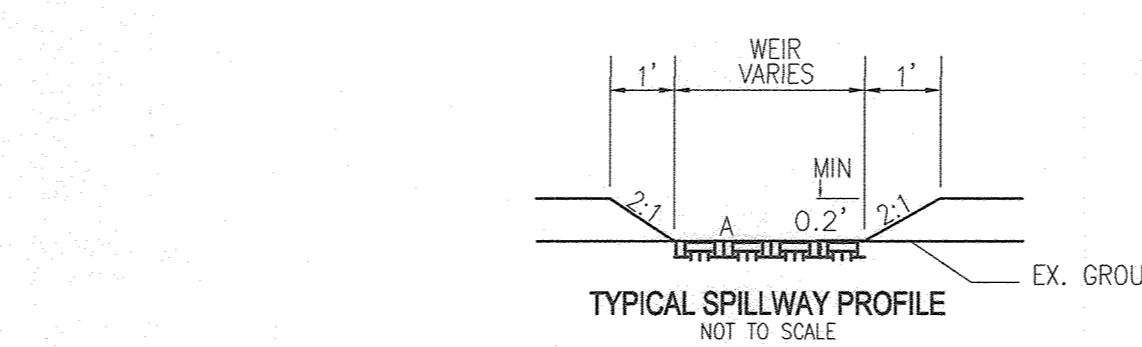
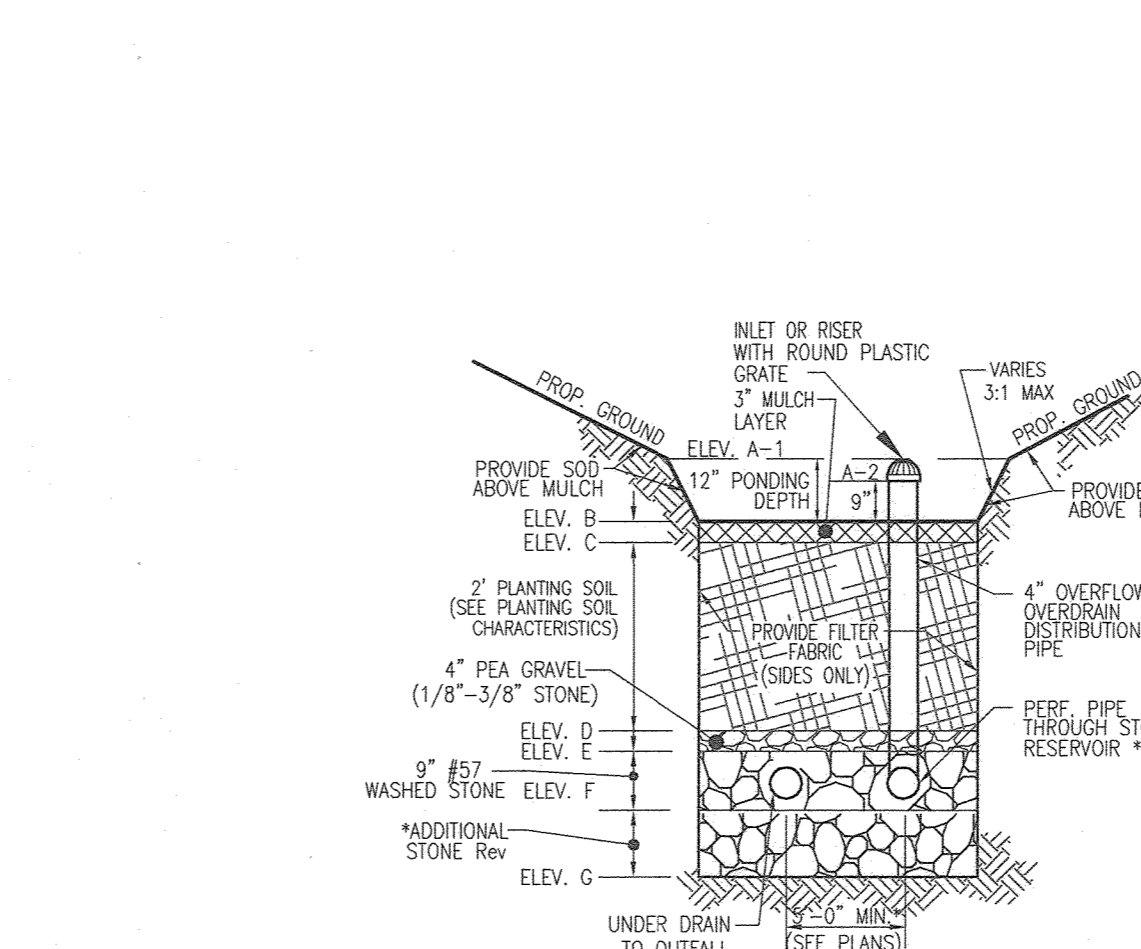
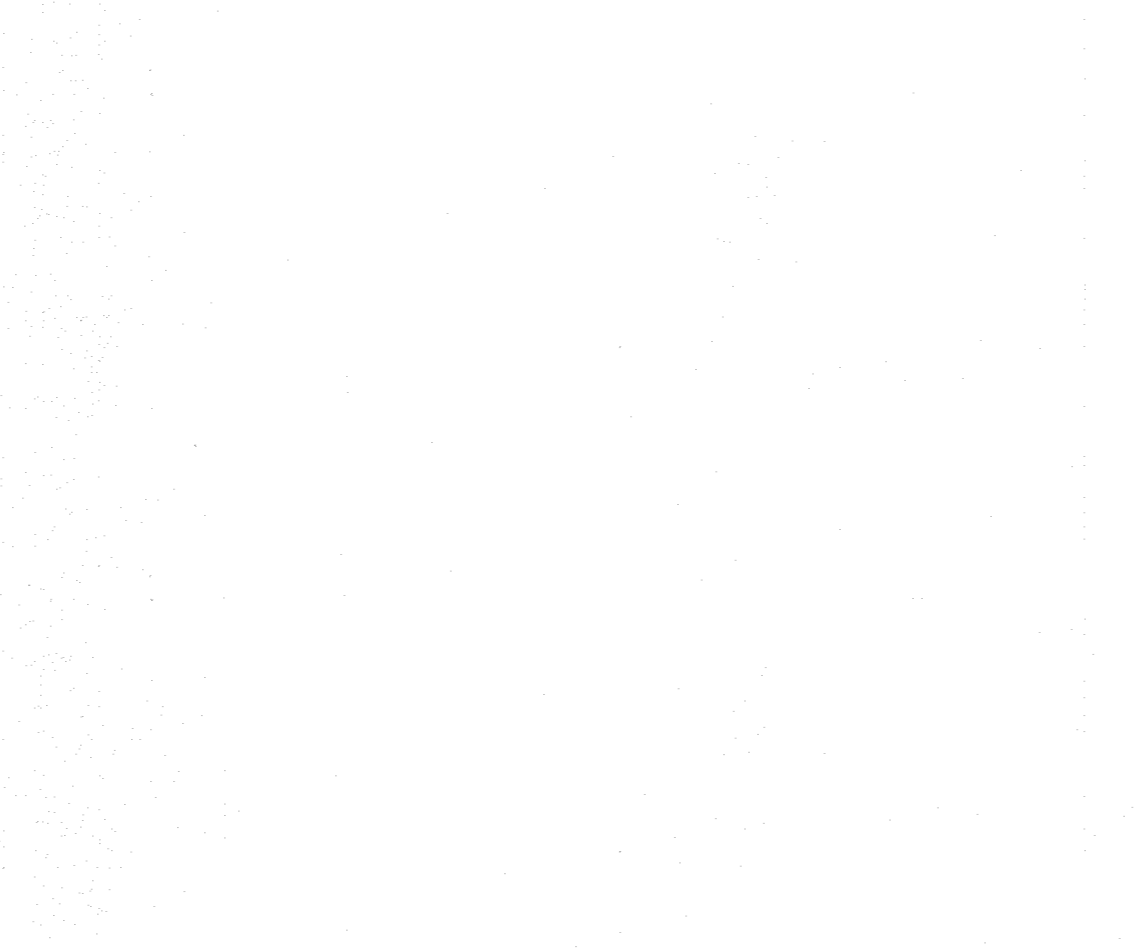
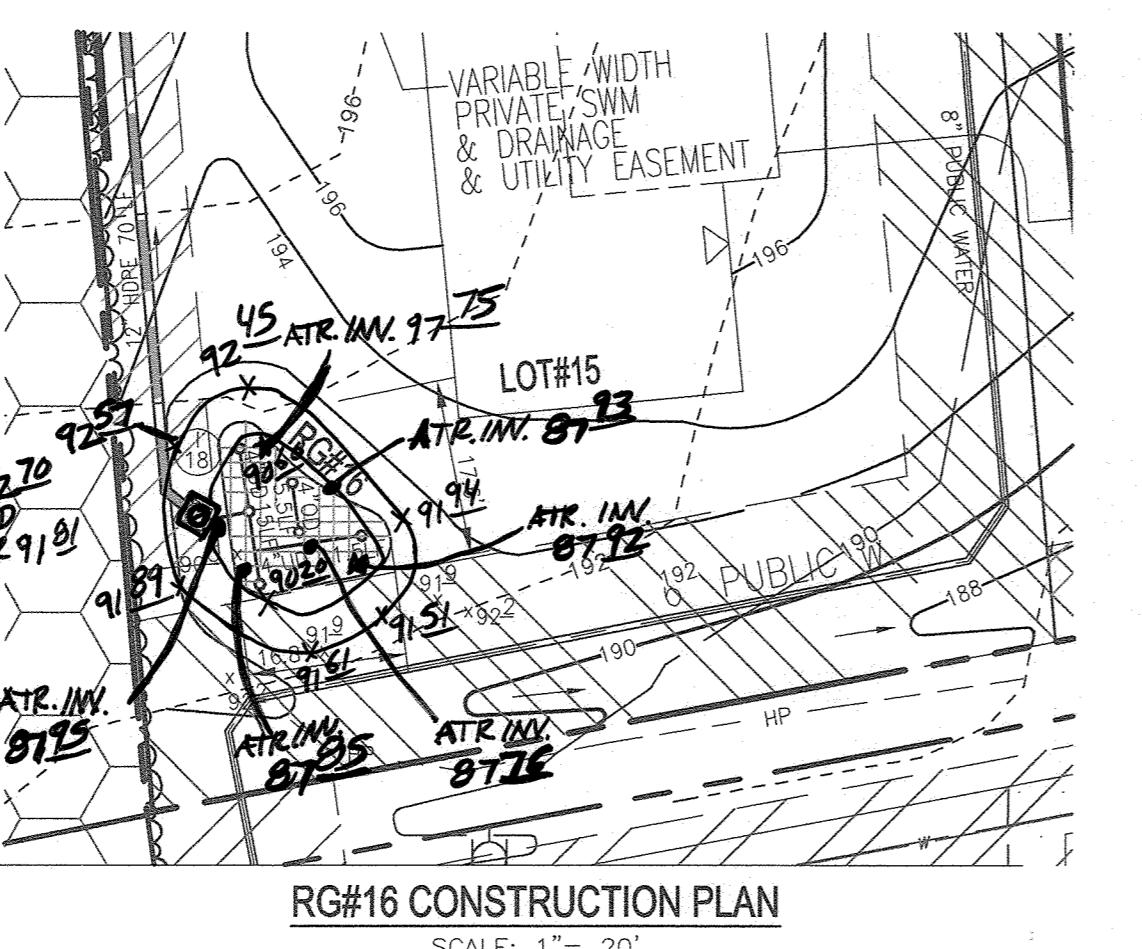
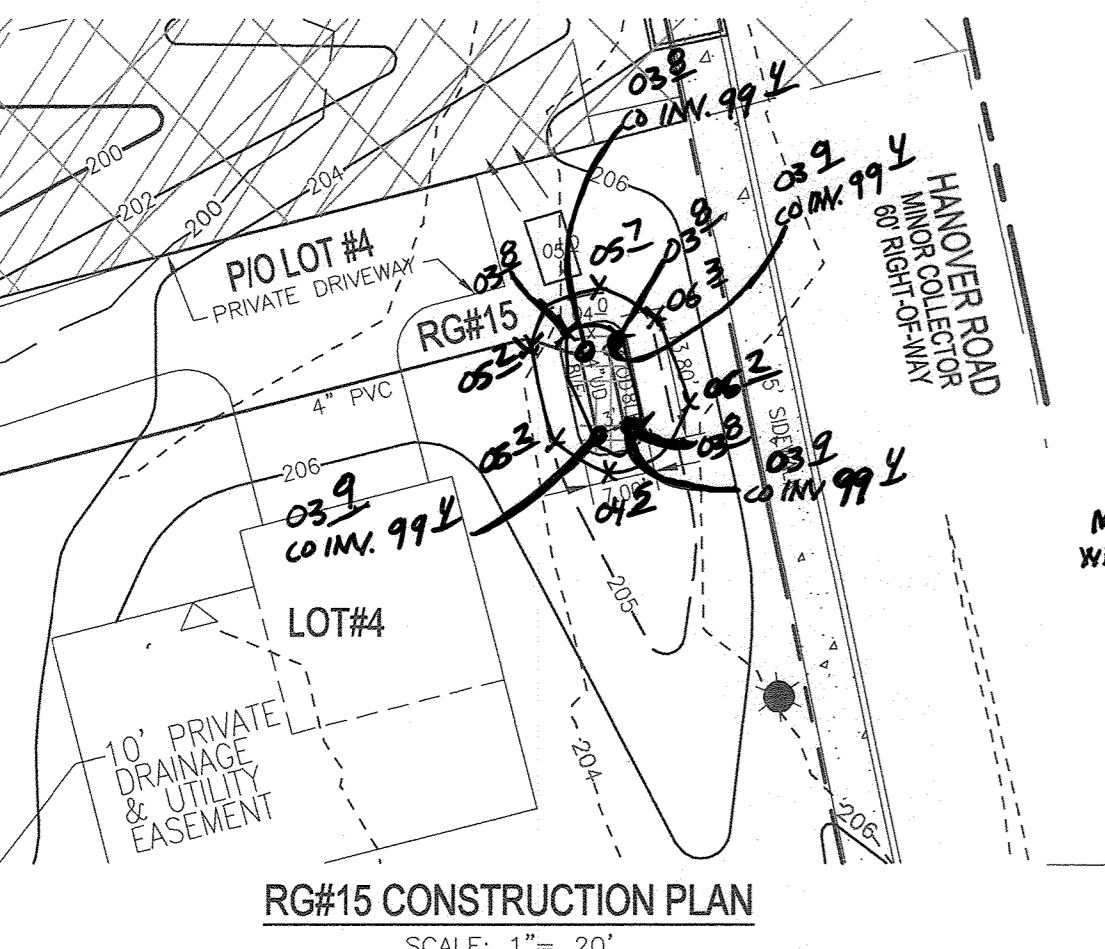
RAIN GARDEN FACILITY - DESIGN ELEVATION CHART

RG Facility	ELEV TOP	Ponding Depth (ft)	Ponding Elevation ELEV. A	Top of Mulch ELEV. B	Bottom of Mulch ELEV. C	Depth of Plant Mix ELEV. D	Bottom of Plant Mix ELEV. E	Bottom of Pea Gravel ELEV. F	Invert of Underdrain (ft) INV. ELEV. F	Bottom of Stone ELEV. G	Surface Area SF	Approx. Dim.	Owner	Maintenance
1	205.00	1.00	205.00	203.25	202.25	1.50	202.25	201.75	201.00	201.00	221.19	11' x 11'	PRIVATE LOT 4	
2	203.00	1.00	203.00	202.00	202.25	1.50	200.75	200.25	200.00	199.00	220.14	11' x 11'	PRIVATE LOT 6	
3	197.00	1.00	197.00	196.00	196.00	1.50	194.75	194.25	193.50	193.50	193.46	11' x 11'	PRIVATE LOT 7	
4	199.00	1.00	199.00	198.00	197.75	1.50	196.25	195.75	195.00	195.00	195.00	11' x 11'	PRIVATE LOT 7	
5	193.70	1.00	193.70	192.00	192.00	1.50	190.75	190.25	190.00	189.00	190.00	11' x 11'	PRIVATE LOT 8	
6	197.20	1.00	197.20	196.00	195.75	1.50	194.25	193.75	193.00	193.00	193.00	11' x 11'	PRIVATE LOT 8	
7	191.00	1.00	191.00	190.00	190.25	1.50	188.75	188.25	187.50	187.50	187.50	11' x 11'	PRIVATE LOT 12	
8	189.00	1.00	189.00	188.00	188.00	1.50	186.75	186.25	185.50	185.50	185.50	11' x 11'	PRIVATE LOT 9	
10	193.70	1.00	193.70	192.00	192.25	1.50	190.75	190.25	189.50	189.50	189.50	11' x 11'	PRIVATE LOT 11	
11	195.20	1.00	195.20	194.00	193.75	1.50	192.25	191.75	191.00	191.00	191.00	11' x 11'	PRIVATE LOT 3	
12	196.00	1.00	196.00	195.00	195.00	1.50	193.75	193.25	192.50	192.50	192.50	11' x 11'	PRIVATE LOT 3	
13	205.00	1.00	205.00	203.25	202.25	1.50	202.25	201.75	201.00	201.00	221.19	11' x 11'	PRIVATE LOT 1	
14	198.00	1.00	198.00	197.00	197.00	1.50	195.25	194.75	194.00	194.00	194.00	11' x 11'	PRIVATE LOT 2	
15	205.00	1.00	205.00	203.25	202.25	1.50	202.25	201.75	201.00	201.00	221.19	11' x 11'	PRIVATE LOT 4	
16	191.70	1.00	191.70	190.00	190.25	1.50	188.75	188.25	187.50	187.50	187.50	11' x 11'	PRIVATE LOT 15	

(1) UNDERDRAIN PIPE AND OVERFLOW DISTRIBUTION PIPE
Note: Design elevations may be refined at SDP.

LEGEND:

- EXISTING CONTOUR
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- TRELINE
- EDGE OF PAVING
- PROPOSED: EDGE OF PAVEMENT
- CURB & GUTTER
- CONTOUR
- TRELINE
- RAIN GARDEN FACILITY (4'-7')
- DRY WELL
- PROPOSED STORM DRAIN
- PROPOSED STREET LIGHT & SIGN
- OPEN SPACE BOLLARD (SEE DETAIL SHEET 5)



MICRO BIORETENTION NOTES:

- ONLY THE SIDES OF MICRO BIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICRO BIORETENTION WILL CAUSE THE MBR TO FAIL AND THEREFORE SHALL NOT BE INSTALLED.
- WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH. SEE APPENDIX B.4.C.6.
- PROVIDE 5" MINIMUM SPACING BETWEEN UNDERDRAIN AND PERFORATED PIPE THROUGH STONE RESERVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIOS. (SEE PLANS)



AS-BUILT CERTIFICATION FOR PSWM
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.
R.E. NAME: *[Signature]* P.E. # 16193 DATE: 7-9-24

OWNER/DEVELOPER
GRACE TAYLOR SCHULTZ TRUSTEE OF THE GRACE T. SCHULTZ REVOCABLE TRUST
612 HANOVER ROAD
HANOVER, MD 21076
443-463-6760

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLANS
STORMWATER MANAGEMENT
RAIN GARDEN CONSTRUCTION PLAN & DETAILS
GRACE MEADOWS
LOTS 1 - 18 AND OPEN SPACE LOTS 19 - 30
A SUBDIVISION OF TAX MAP 38 - PARCEL 731
L. 14536 / F. 269
TAX MAP 38 BLOCK 09
1ST ELECTION DISTRICT
DPZ REFERENCE: SEE SITE DATA
ZONED R-12
PARCEL 731
HOWARD COUNTY, MARYLAND

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

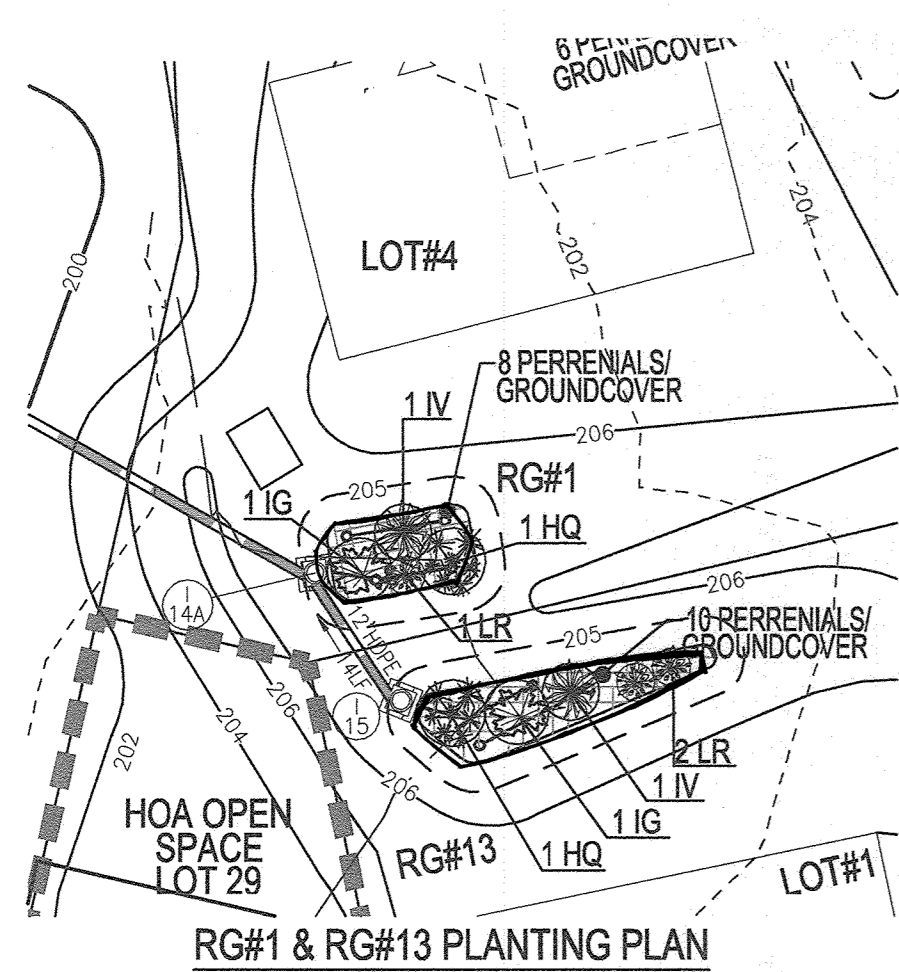
DESIGN BY: RHV
DRAWN BY: MWP/JH/KG
CHECKED BY: RHV
DATE: AUGUST 2021
SCALE: AS SHOWN
W.O. NO.: 40077

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2022

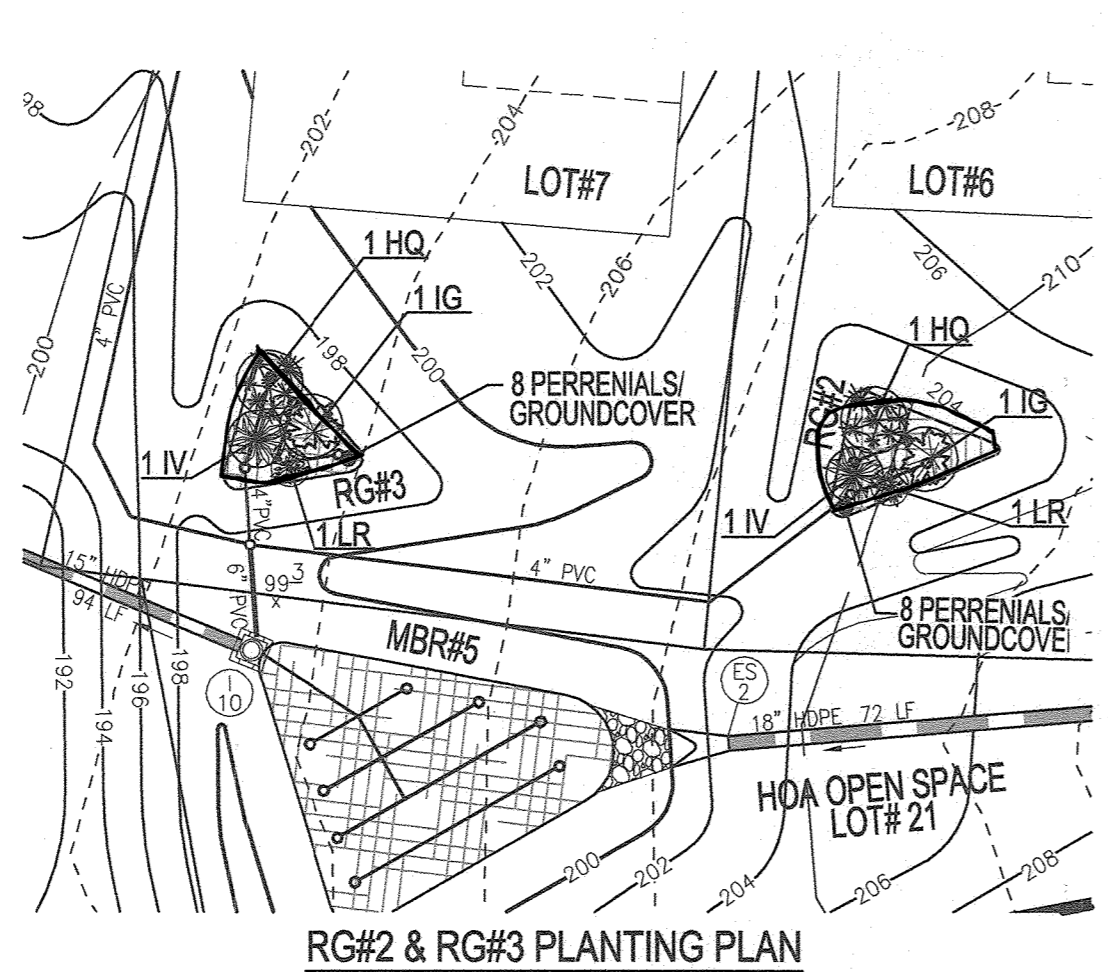
21 OF 25 SHEETS

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS MK 11/29/2021 DATE

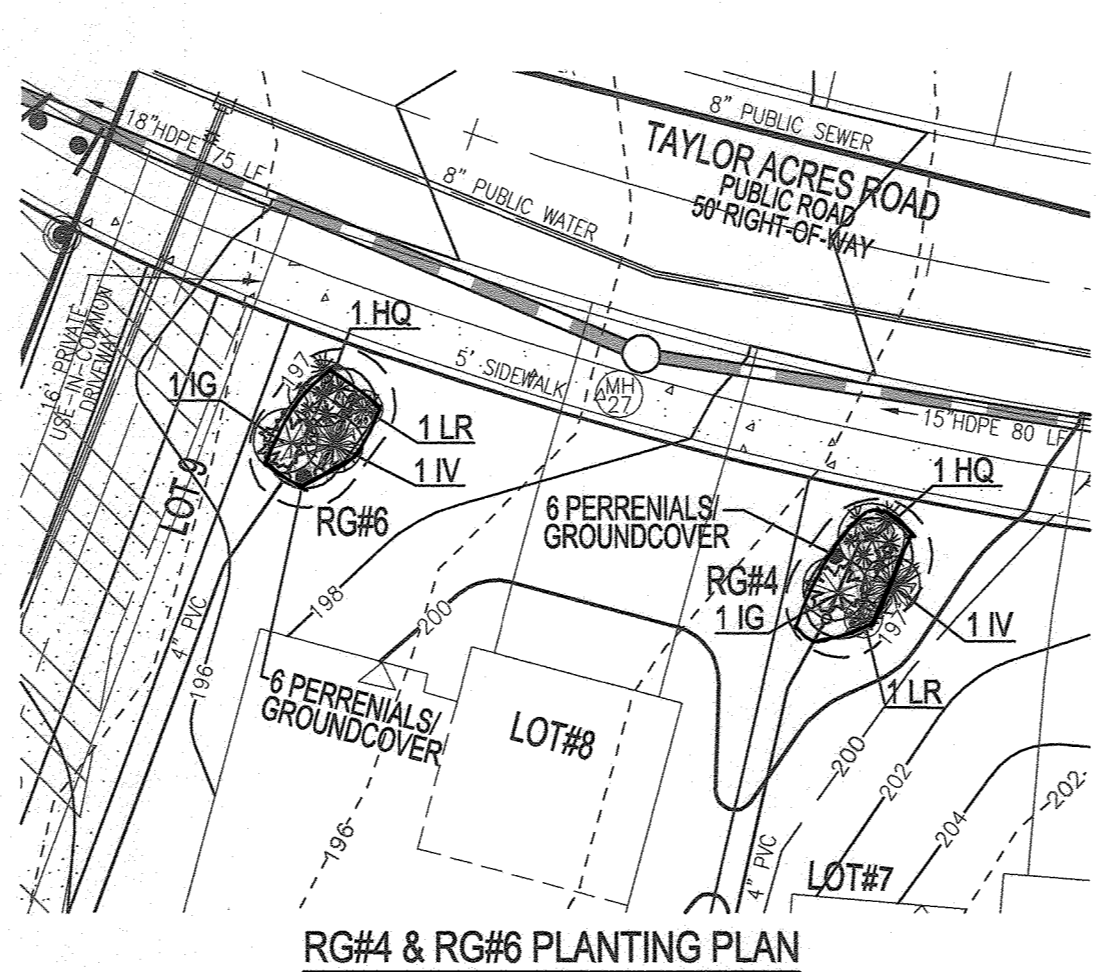
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION JR 1-8-22 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT 1/4/22 DATE



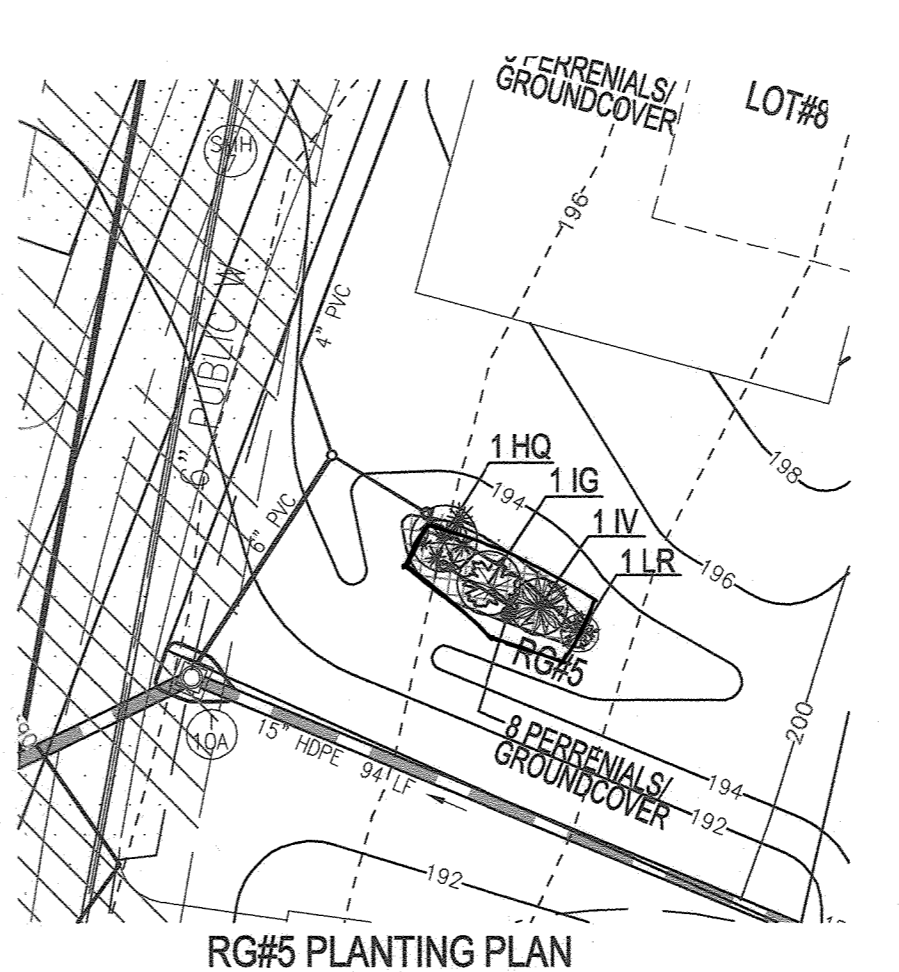
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SCALE: 1" = 20'



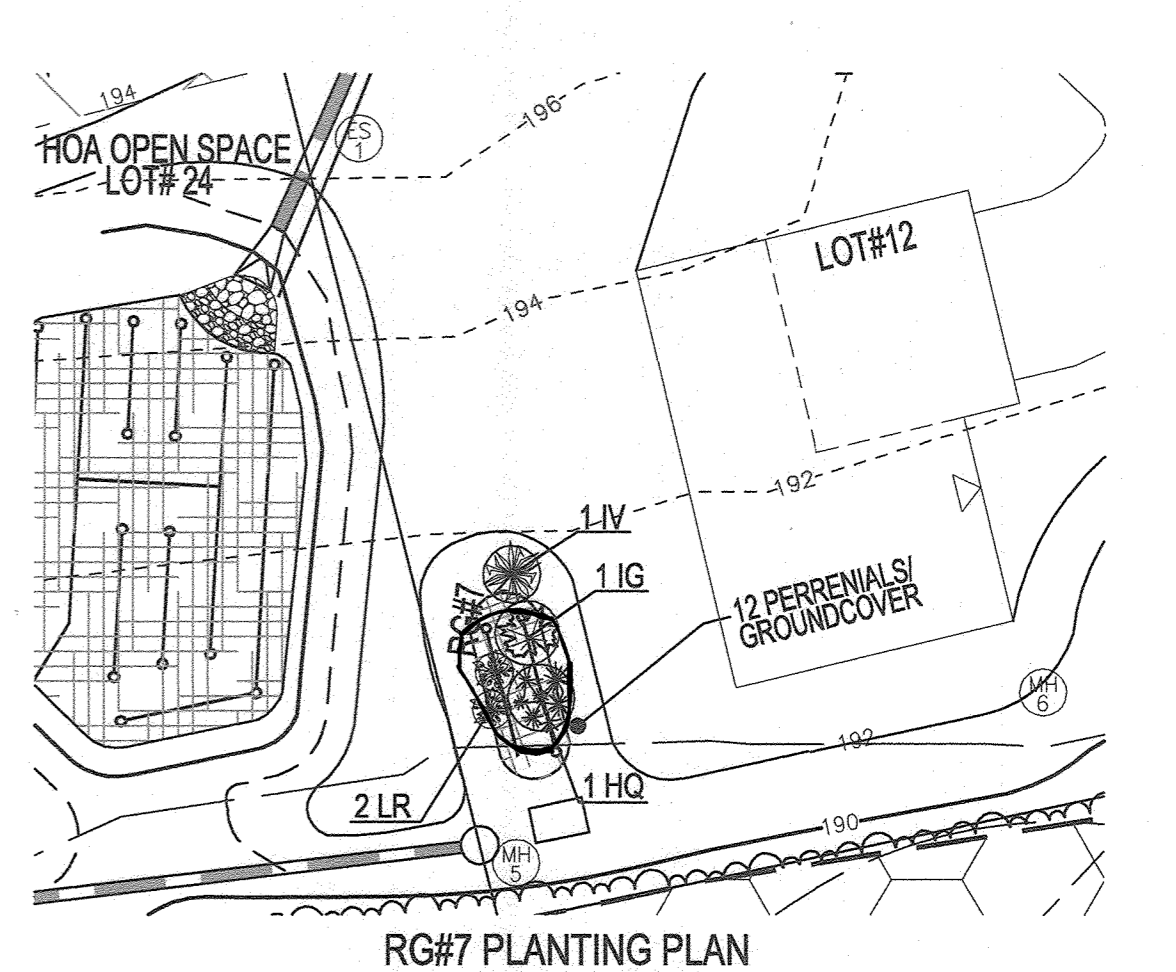
RG#2 & RG#3 PLANTING PLAN
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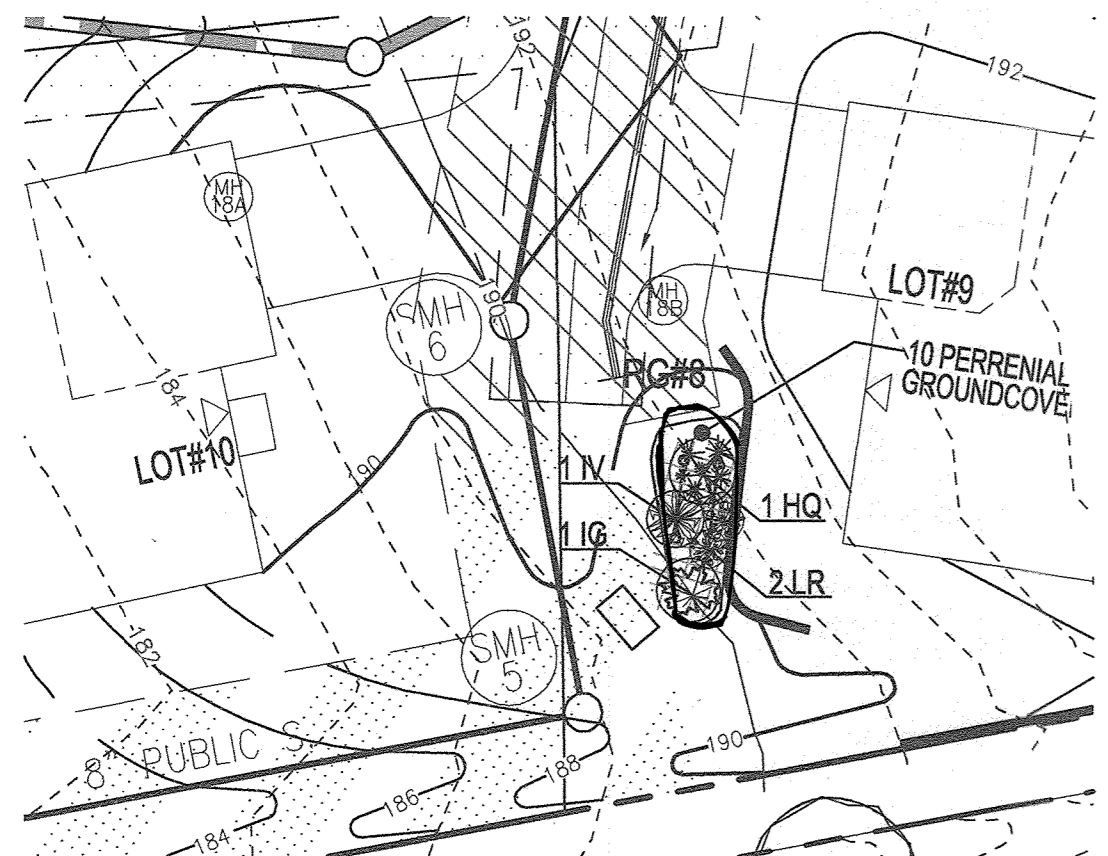
RG#4 & RG#6 PLANTING PLAN
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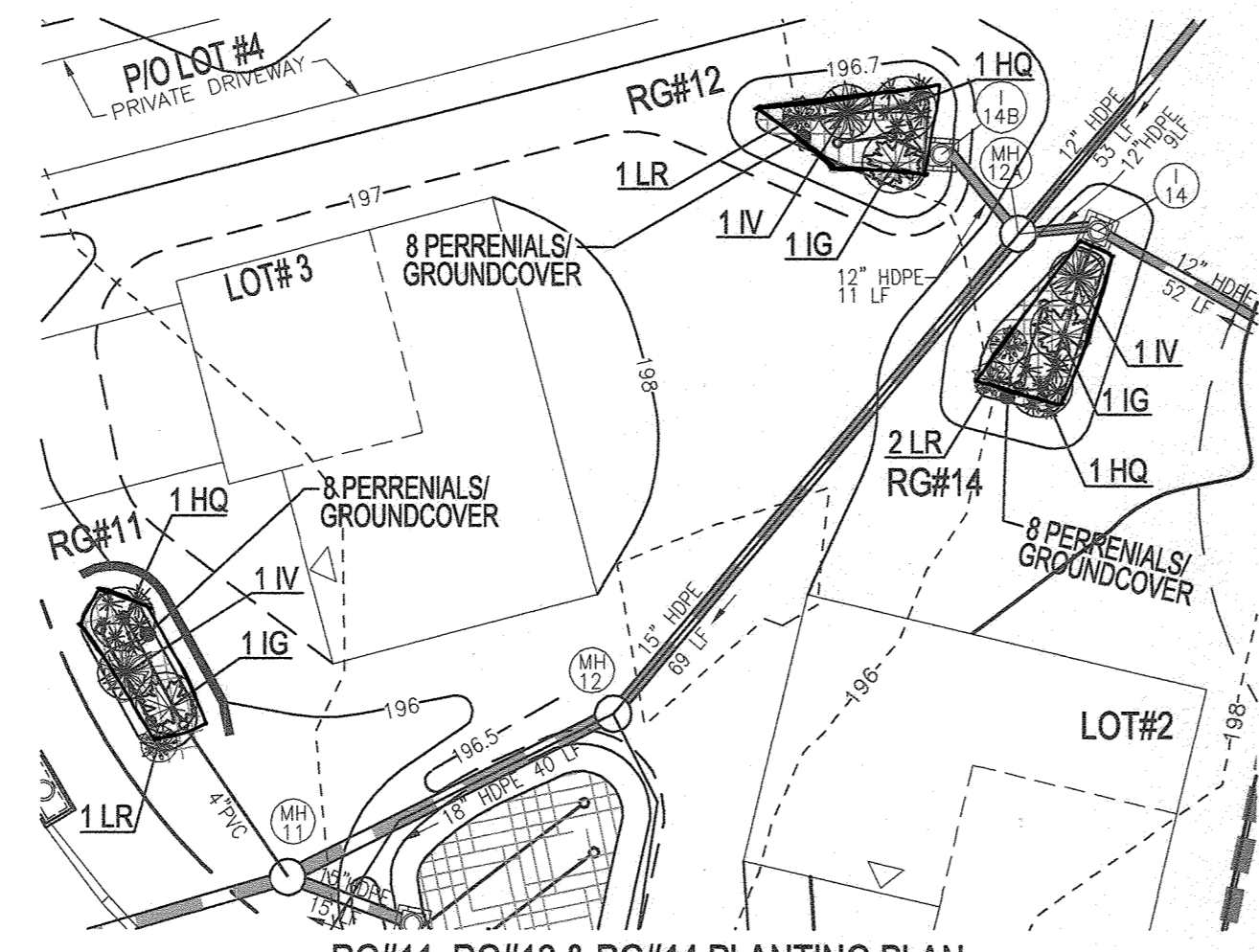
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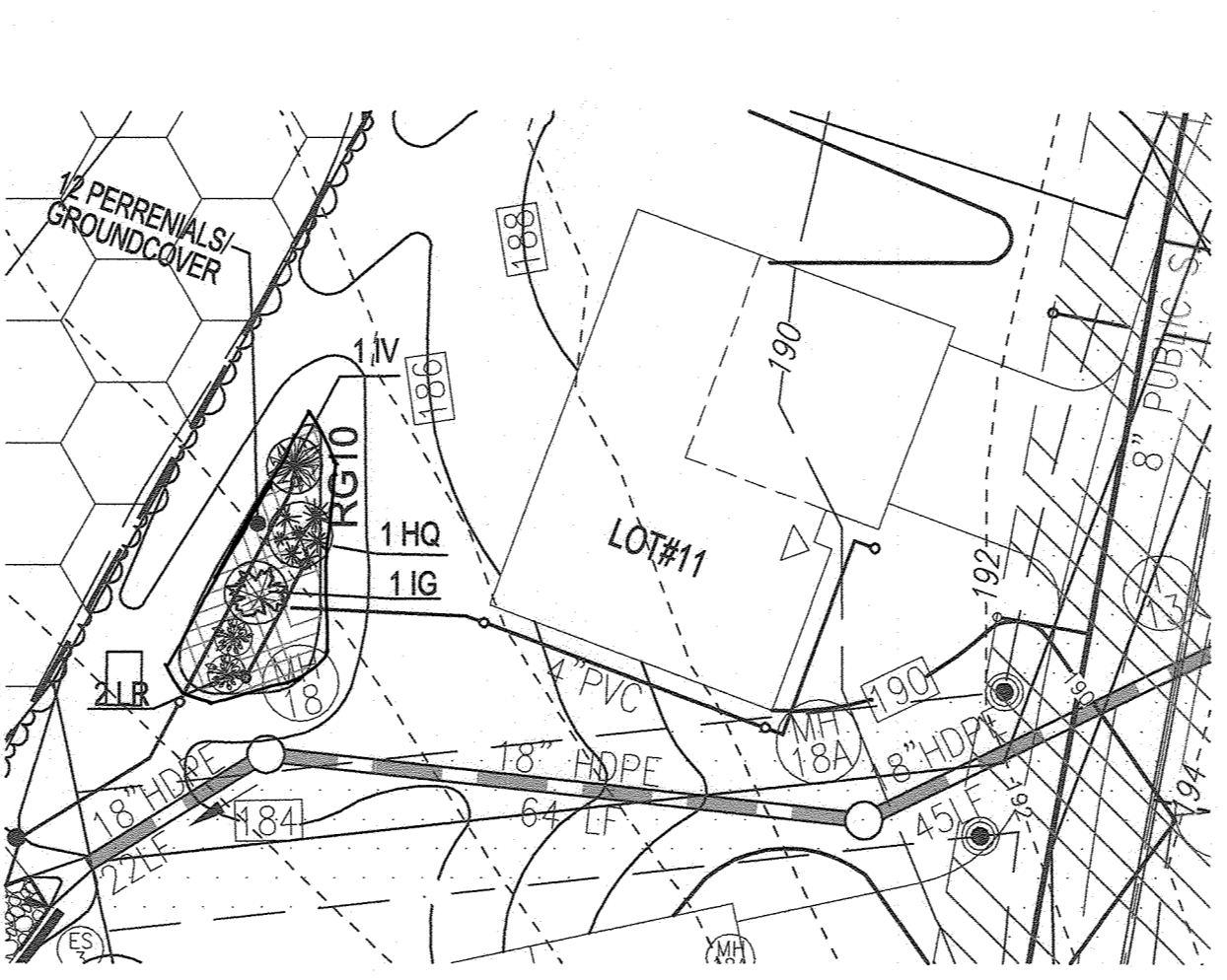
RG#7 PLANTING PLAN
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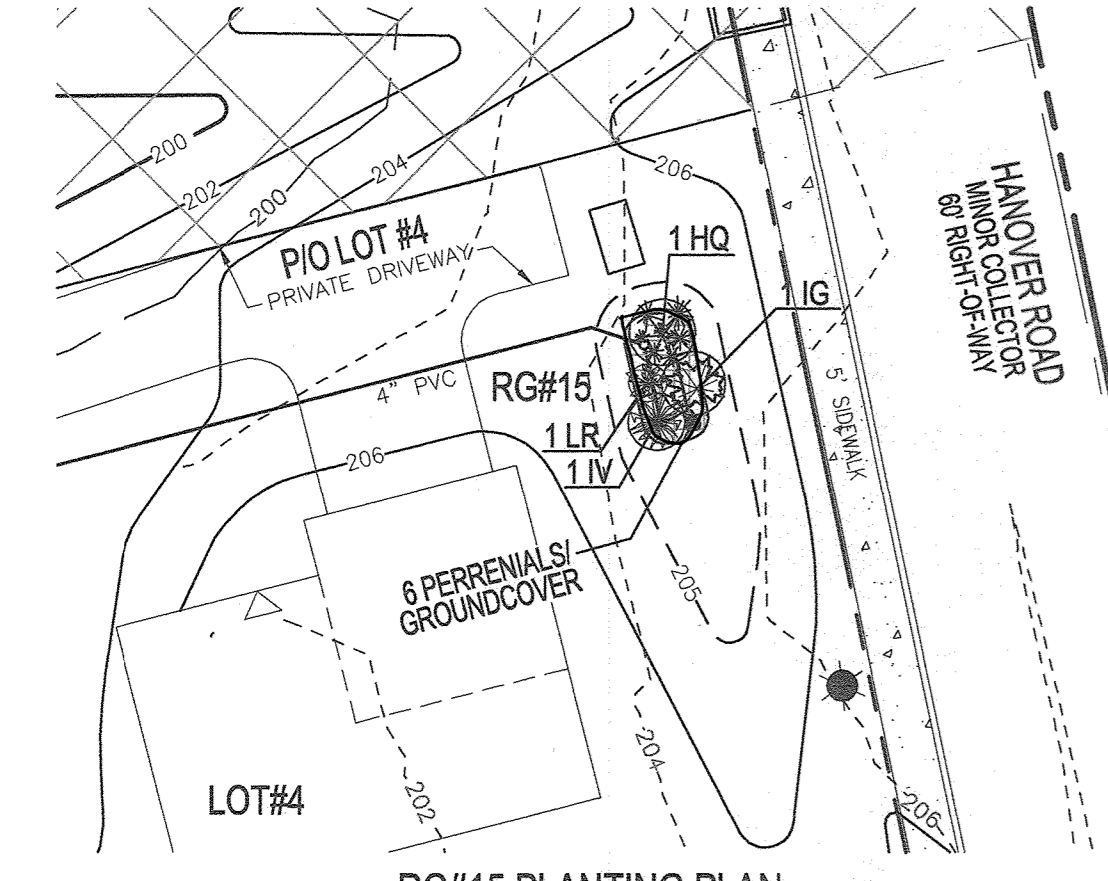
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SCALE: 1" = 20'



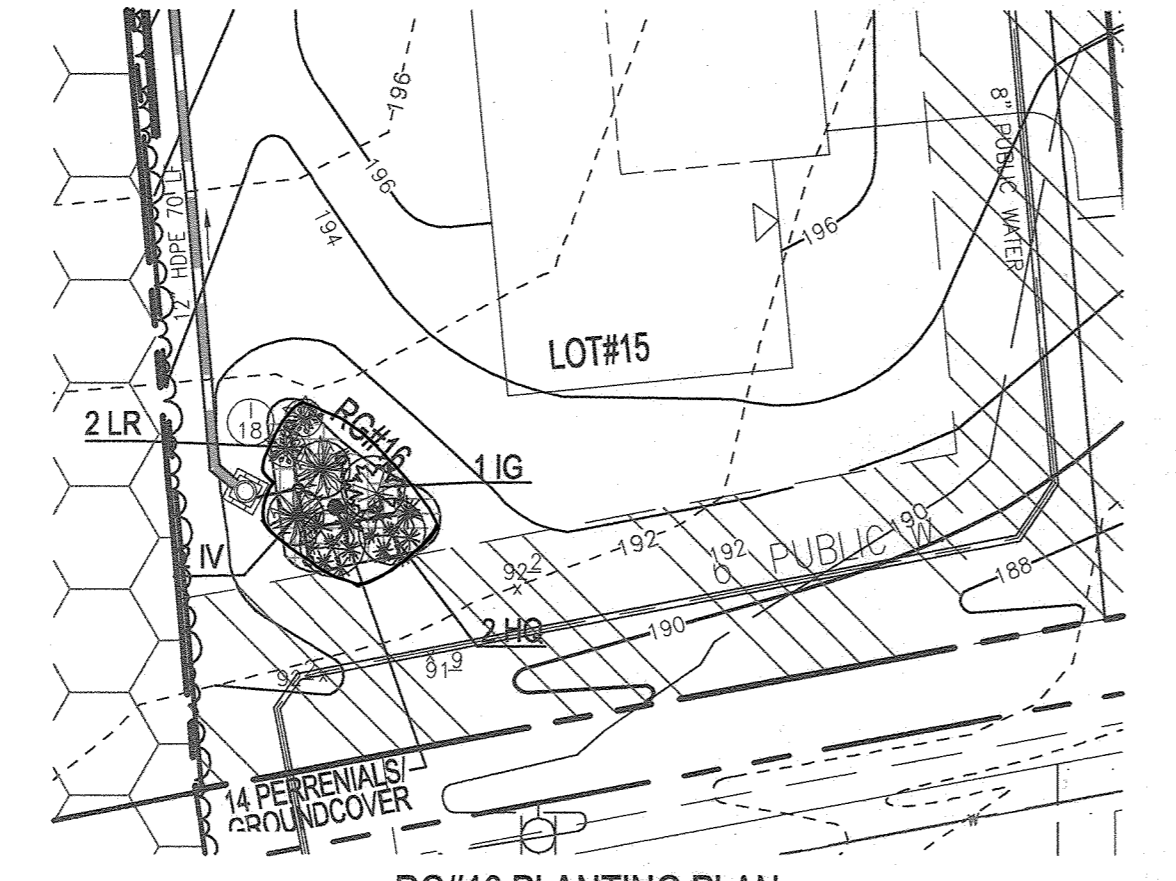
RG#11, RG#12 & RG#14 PLANTING PLAN
SCALE: 1" = 20'



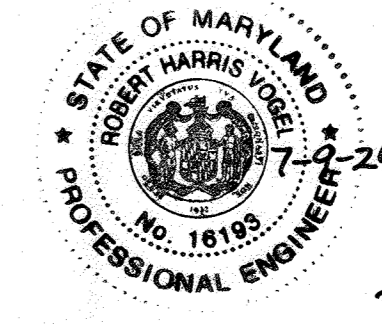
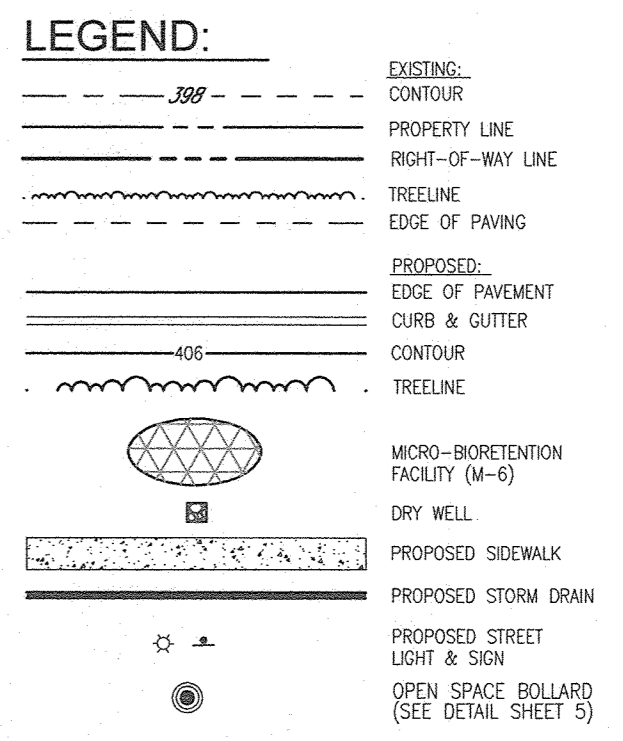
RG#10 PLANTING PLAN
SCALE: 1" = 20'



RG#15 PLANTING PLAN
SCALE: 1" = 20'



RG#16 PLANTING PLAN
SCALE: 1" = 20'



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NAME: R. H. VOGEL, P.E. # 16193, DATE: 7-9-24

OWNER/DEVELOPER
GRACE TAYLOR SCHUTT TRUSTEES OF THE GRACE T. SCHUTT REVOCABLE TRUST
6133 HANOVER ROAD
HANOVER, MD 21076
443-463-6760

Appendix A. Landscaping Guidance for Stormwater BMPs Specific Landscaping Criteria

PERENNIALS/GROUNDCOVER PLANTING SCHEDULE					
LEGEND	KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
[Symbol]	BA	69	BAPTISIA AUSTRALIS FALSE INDIGO	4" POT	12" - 15" O.C. FOR SIDES AND BOTTOM OF MBR. MIX ALL VARIETIES IN A NATURALIZED RANDOM PATTERN THROUGHOUT. PLANT IN GROUPS OF NO LESS THAN 9 PLANTS PER CLUMP
	AG	69	ACORUS GRAMINEUS 'OGON' GOLDEN VAREGATED SWEET FLAG	1 QT.	

RAIN GARDEN PLANTING SCHEDULE (SHRUB/ORNIMENTAL GRASSES)					
LEGEND	KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
[Symbol]	IG	16	ILEX GLABRA 'SHAMROCK' INKBERRY HOLLEY	1 GALLON	18" O.C.
	IV	17	ITEA VIRGINICA 'HENRY'S GARNETT' VIRGINIA SWEETSPIRE	1 GALLON	
[Symbol]	HQ	17	HYDRANGEA QUERCIFOLIA OAKLEAF HYDRANGEA	1 GALLON	30" O.C.
	LR	22	LEUCOTHEA RACEMOSA FETTERBUSH	1 GAL.	

NOTE: WITH PERMISSION FROM HOWARD COUNTY, PLANTINGS SPECIFIED HEREIN MAY BE SUBSTITUTED WITH APPROVED SPECIES LISTED IN TABLE A.4 AS SHOWN HEREIN.

RAIN GARDEN PLANTING SCHEDULE NOTES

- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT ANN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HOWARD COUNTY PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
- RAIN GARDEN AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (0.229 STEMS PER SQUARE FOOT), ABOVE PLANTING RATIOS ARE TO BE APPLIED TO THE AREAS PROVIDED IN THE ESDV SUMMARY.
- FILTER AREA SHALL BE 50% COVERED BY PLANTINGS AT FULL GROWTH

Table A.4 Commonly Used Species for Bio-retention Areas		
Trees	Shrubs	Herbaceous Species
Acer rubrum	Arctostaphylos	Andropogon virginicus
Red Maple	Banisteria	Bromus
Betula nigra	Ceanothus	Equisetum
River Birch	Cypripedium	Joe Pye Weed
Juncus virginiana	Hemlock	Scirpus
Eastern Red Cedar	Witch Hazel	Three Square Balm
Onoclea virginiana	Yucca	Inti verticillata
Fraxino-occ	Highland Blueberry	Blue Flag
Nyssa sylvatica	Ilex glabra	Cardinal Flower
Black Gum	Isopyrum	Cardinal Flower
Disopyrus	Ilex verticillata	Panicum
Persea	Winterberry	Switchgrass
Platanus	Viburnum dentatum	Dichanthium
Syringa	Artemisia	Bromus
Quercus	Lindera	Rudbeckia
Poa	Sparganium	Tall Coneflower
Quercus	Morica	Scirpus
Willow Oak	Bayberry	Woolgrass
Black willow		Veronica

Note 1: For more options on plant selection for bio-retention, consult Bio-retention Manual (ET&B, 1993) or the Design of Stormwater Filtering Systems (Clayton and Schaefer, 1997).

RAIN GARDEN PLANTING REQUIREMENTS					PLANTINGS PROVIDED				PERENNIALS/GROUND		
RG #	LF	AREA	STEMS REQUIRED	STEMS PROVIDED	IG	IV	HQ	LR	BA	AG	TOTAL
1	15.00	123	3	4	1	1	1	1	4	4	8
2	16.30	120	3	4	1	1	1	1	4	4	8
3	15.00	125	3	4	1	1	1	1	4	4	8
4	14.00	96	3	4	1	1	1	1	3	3	6
5	24.00	130	3	4	1	1	1	1	4	4	8
6	14.00	96	3	4	1	1	1	1	3	3	6
7	24.00	180	5	5	1	1	1	2	6	6	12
8	21.00	150	4	5	1	1	1	2	5	5	10
10	27.00	195	5	5	1	1	1	2	6	6	12
11	20.10	120	3	4	1	1	1	1	4	4	8
12	19.00	130	3	4	1	1	1	1	4	4	8
13	32.00	171	4	5	1	1	1	2	5	5	10
14	19.00	141	4	5	1	1	1	2	4	4	8
15	14.00	92	3	4	1	1	1	1	3	3	6
16	18.00	203	5	7	1	2	2	2	7	7	14
TOTALS:	311	2177	57	72	16	17	17	22	69	69	138

RAIN GARDEN AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (0.229 STEMS PER SQUARE FOOT).

RAIN GARDEN PLANTING SCHEDULE (SHRUBS/ORNIMENTAL GRASSES)

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 11/29/2021
CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 11-6-22
CHIEF, DEVELOPMENT ENGINEERING DIVISION R DATE

[Signature] 11/6/22
CHIEF, DIVISION OF LAND DEVELOPMENT 66 DATE

NO.	REVISION	DATE

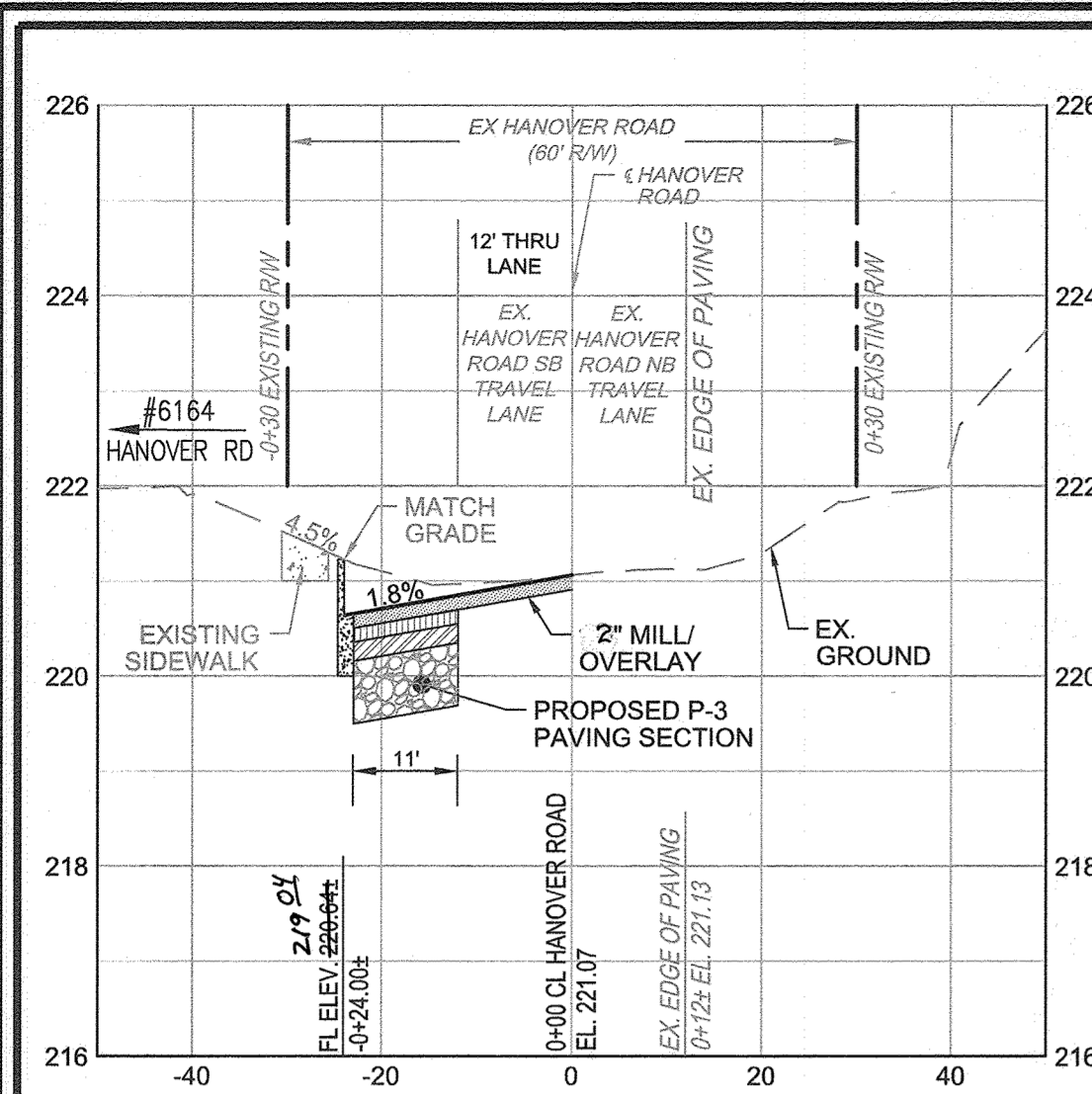
FINAL ROAD CONSTRUCTION PLANS
STORMWATER MANAGEMENT
RAIN GARDEN PLANTING PLAN & DETAILS
GRACE MEADOWS
A SUBDIVISION OF TAX MAP 38 - PARCEL 731
L. 14536 / F. 269 ZONED R-12
TAX MAP 38 BLOCK 09 PARCEL 731
1ST ELECTION DISTRICT
DP2 RELOCATION: SEE SITE DATA HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
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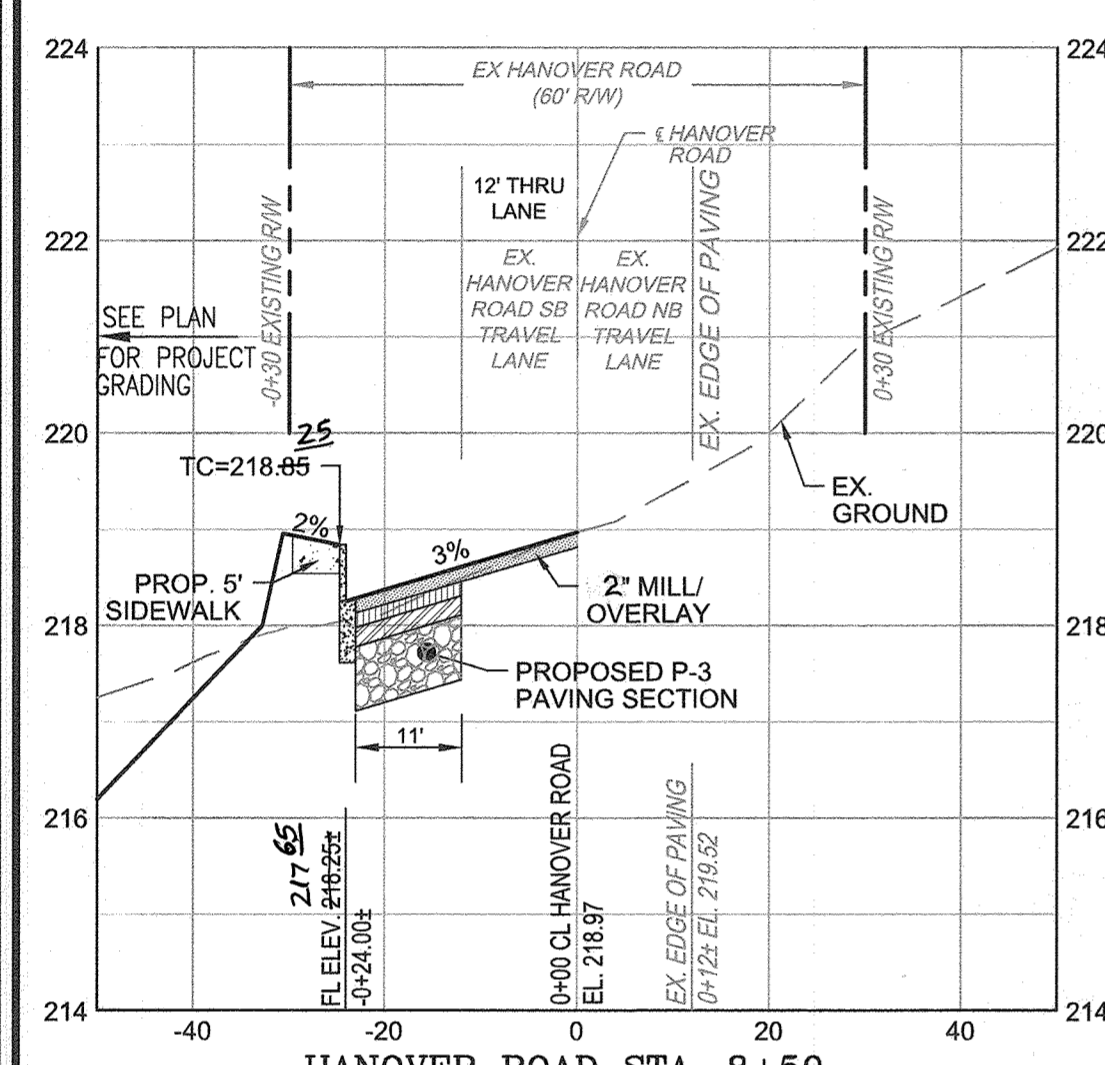
PROFESSIONAL CERTIFICATE
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DESIGN BY: RHV
DRAWN BY: MVP/JH/KG
CHECKED BY: RHV
DATE: AUGUST 2021
SCALE: AS SHOWN
W.O. NO.: 40077

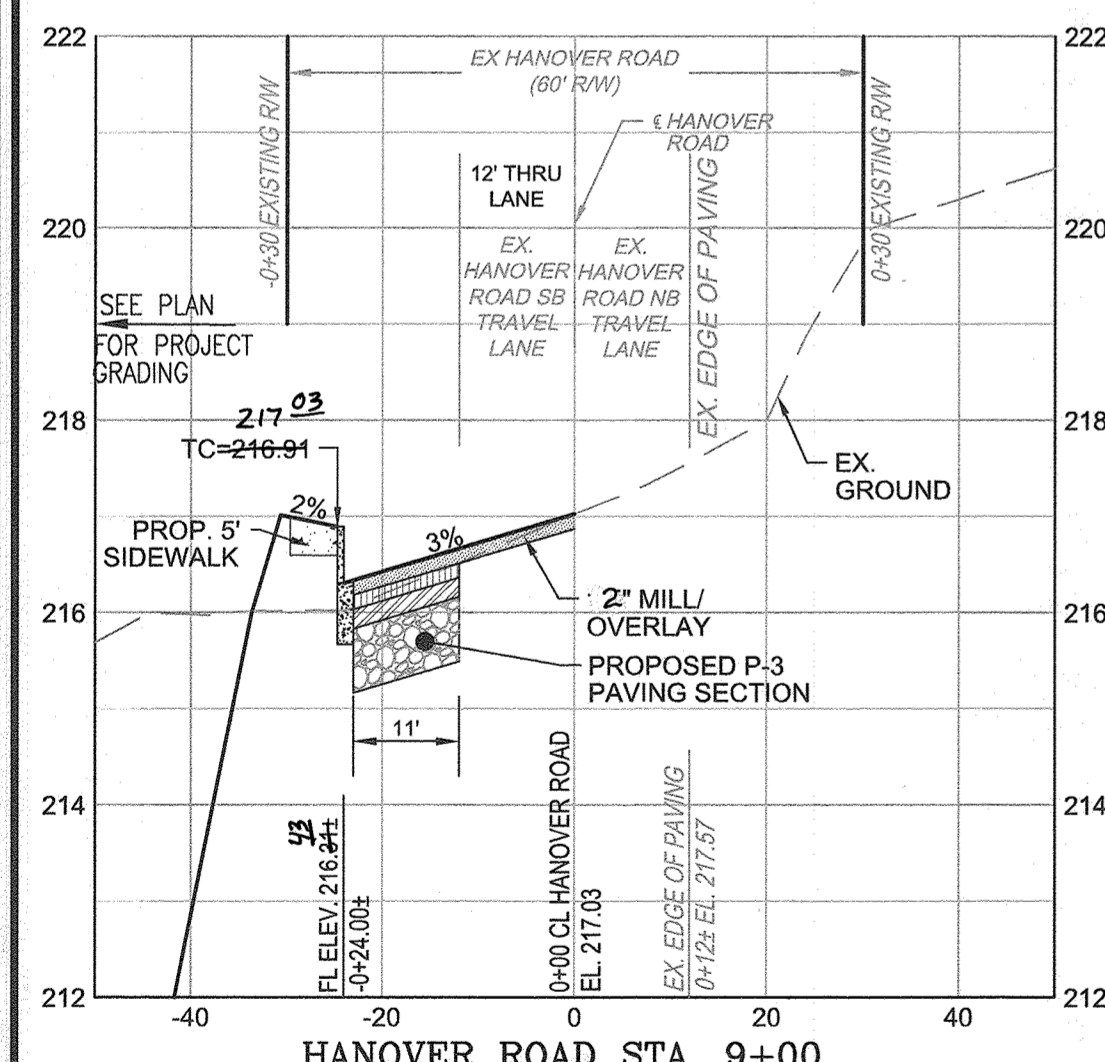
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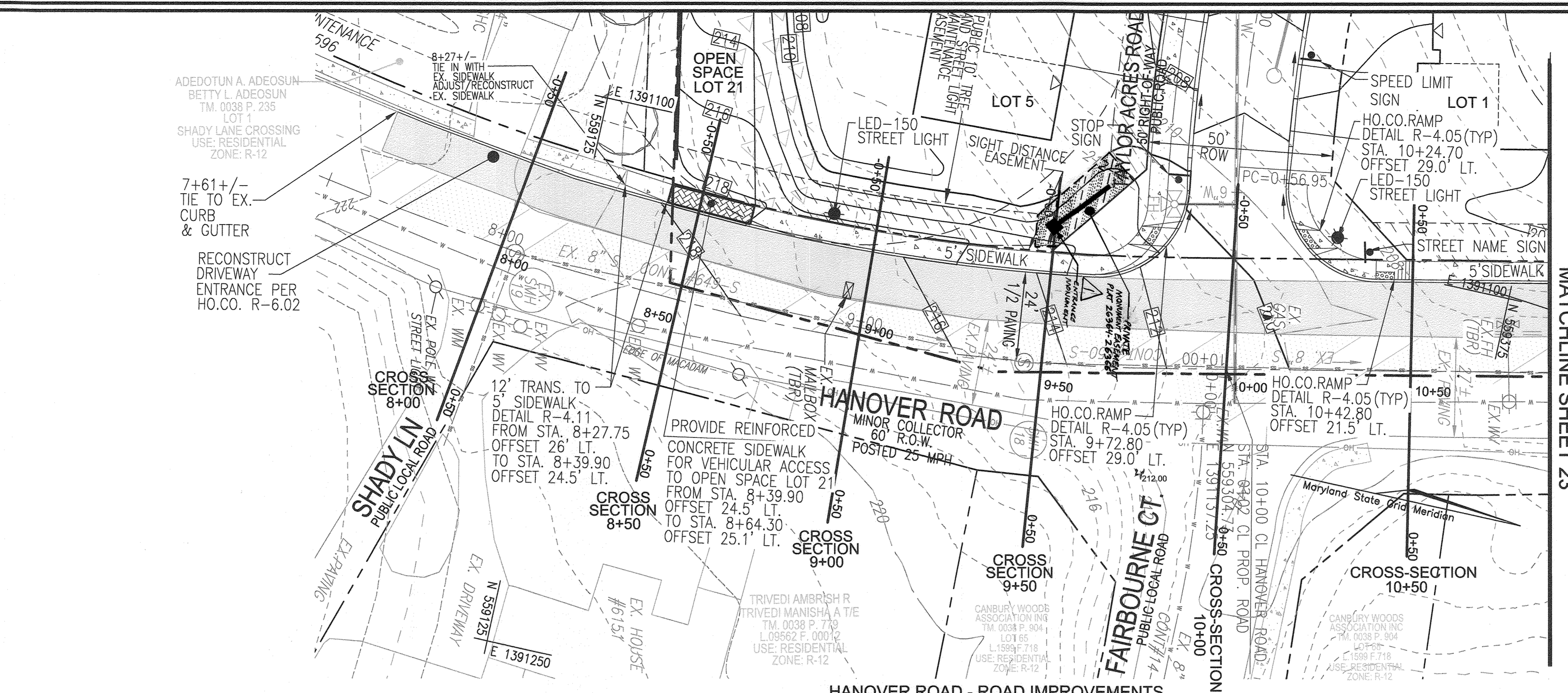
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VERTICAL - 1"=2'



HANOVER ROAD STA. 8+50
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VERTICAL - 1"=2'



HANOVER ROAD STA. 9+00
SCALE: HORIZONTAL - 1"=20'
VERTICAL - 1"=2'



HANOVER ROAD - ROAD IMPROVEMENTS
SCALE: 1"=20'

LEGEND

	EXISTING CONTOUR
	PROPOSED CONTOUR
	PROPOSED SPOT ELEVATION
	EXISTING SPOT ELEVATION
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING FENCE
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	MICRO-RETENTION/RAIN GARDEN
	PROPOSED SIDEWALK
	EXISTING TREE LINE
	PROPOSED TREE LINE
	PROPOSED STORM DRAIN
	PROPOSED STORM DRAIN INLET
	PUBLIC 10' TREE MAINTENANCE EASEMENT
	PUBLIC DRAINAGE & UTILITY EASEMENT
	PUBLIC 10' TREE AND SIDEWALK MAINTENANCE EASEMENT

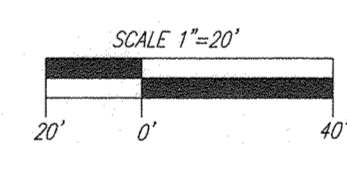
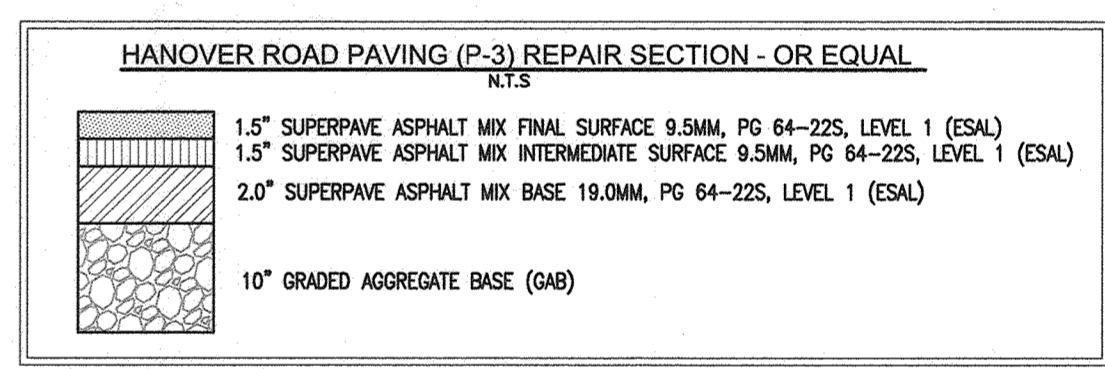
PAVEMENT LEGEND

	FULL DEPTH PAVEMENT SECTION REQUIRED REFER TO TYPICAL SECTION
	GRINDING, 0.020\"/>
	DEPTH WEDGE/LEVEL AND RESURFACING REFER TO TYPICAL SECTION

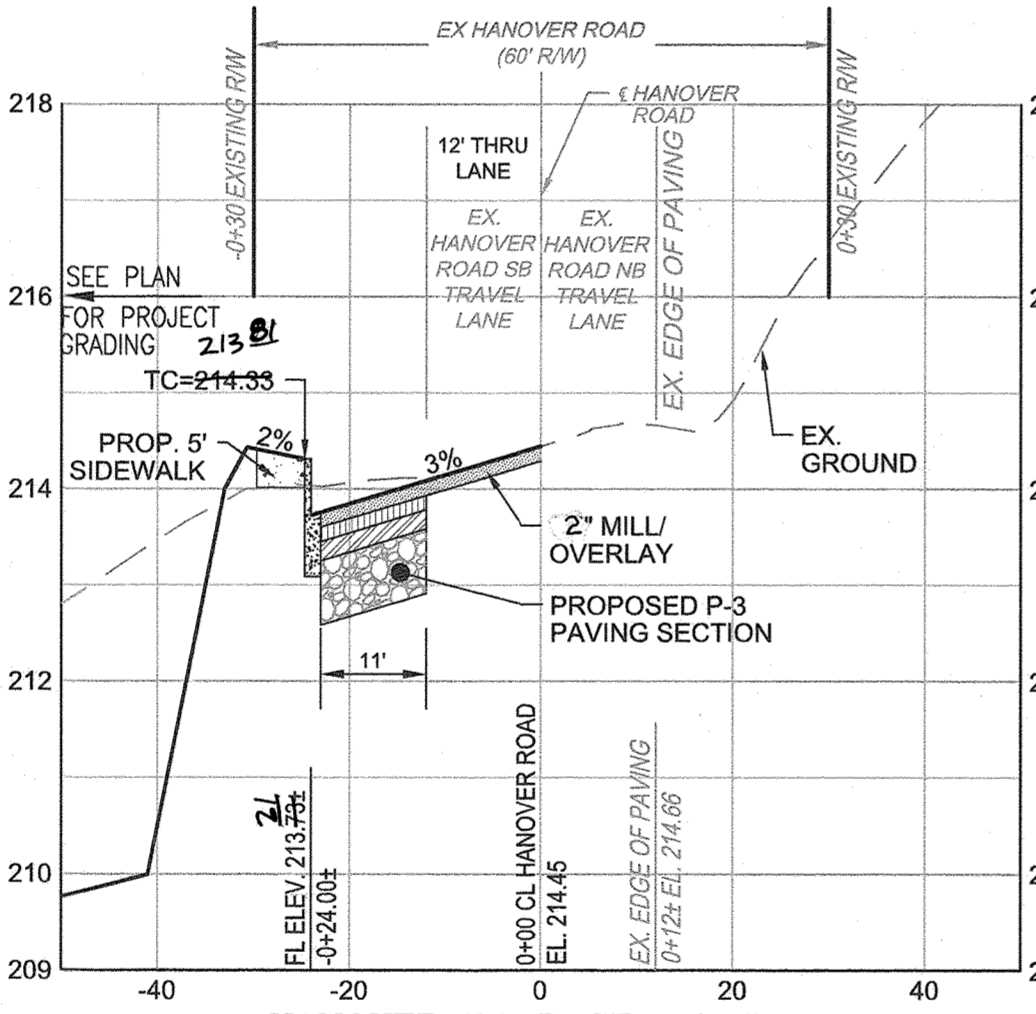
PAVEMENT CONSTRUCTION LOCATION

TYPE OF CONSTRUCTION	START STATION	FINISH STATION
FULL DEPTH PAVEMENT	7+61	12+53.5
MILL & OVERLAY	7+61	12+53.5

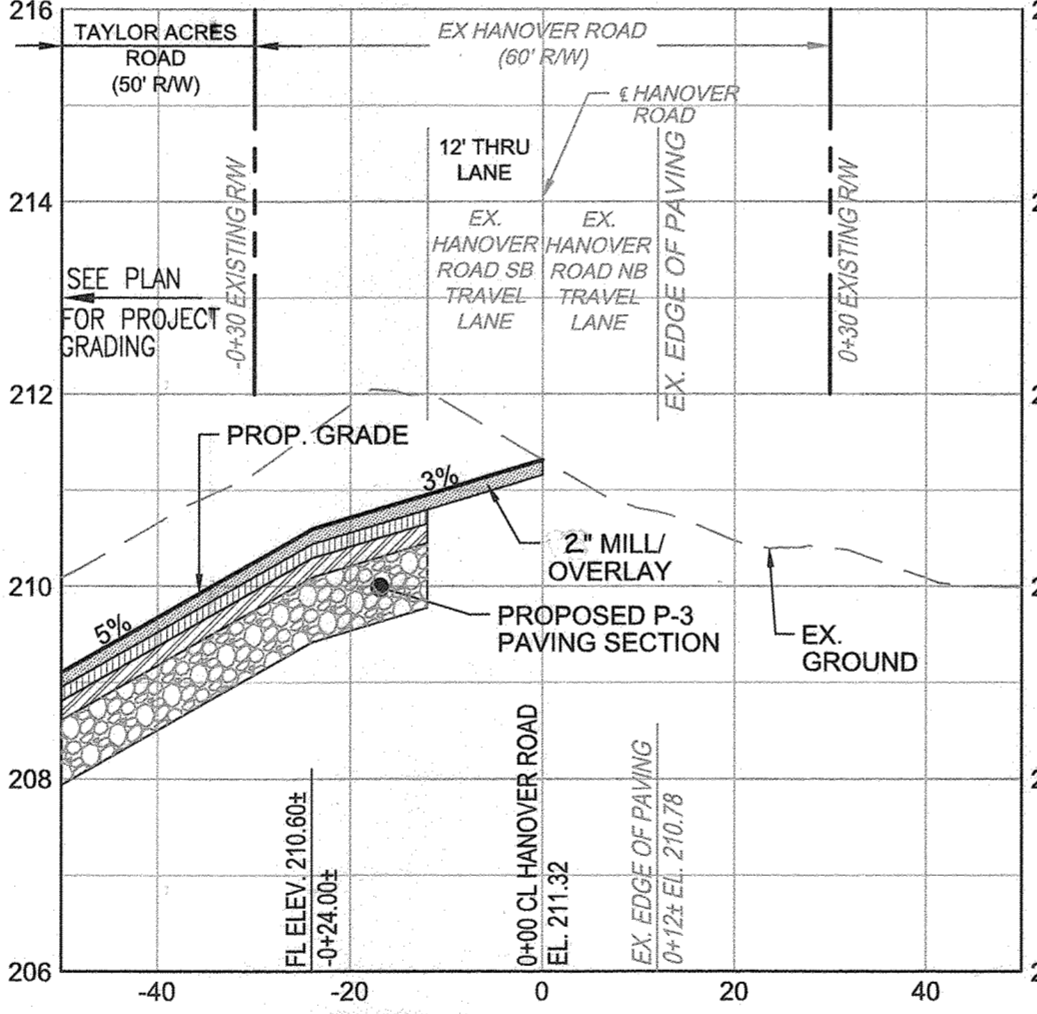
REFER TO PLAN LEGEND AND PLAN VIEW HATCH



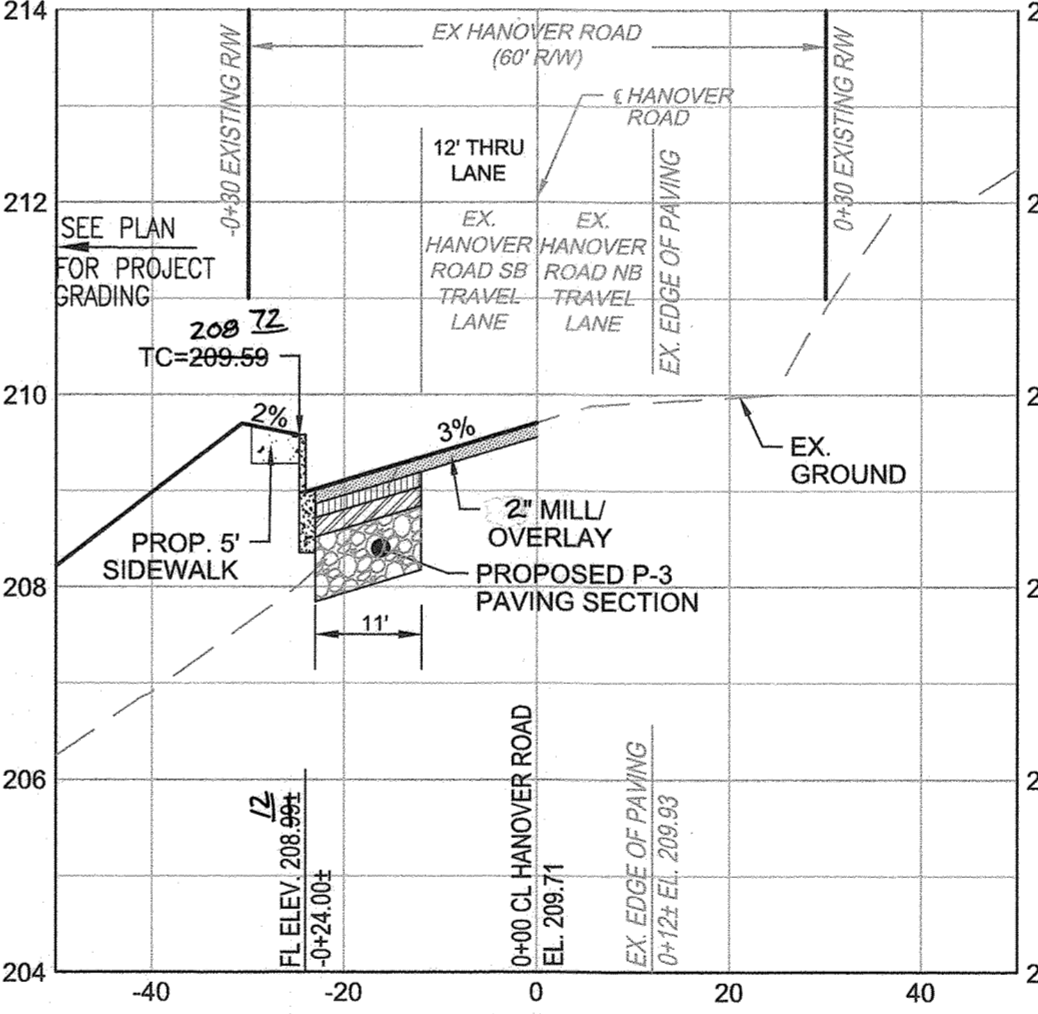
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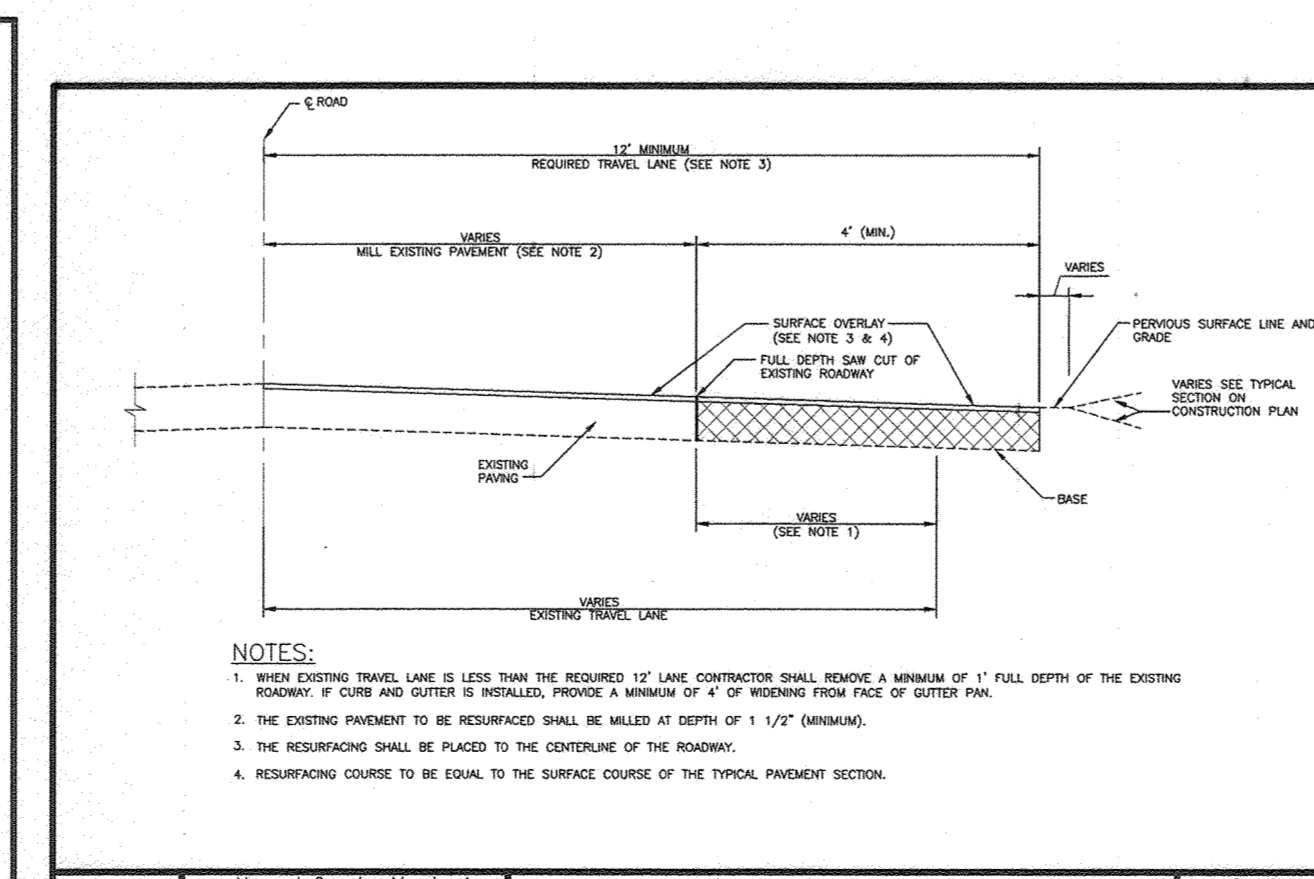
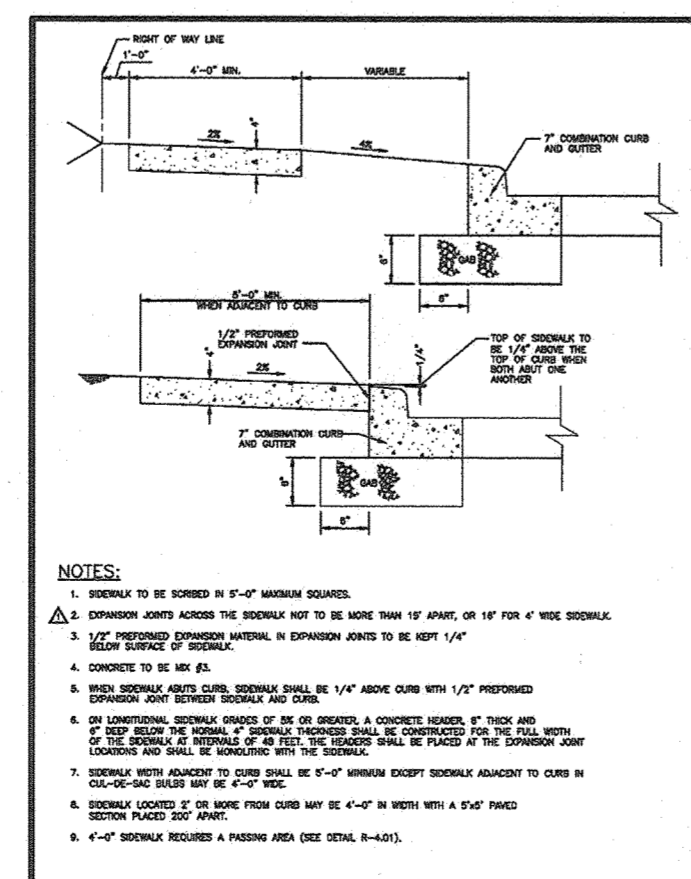
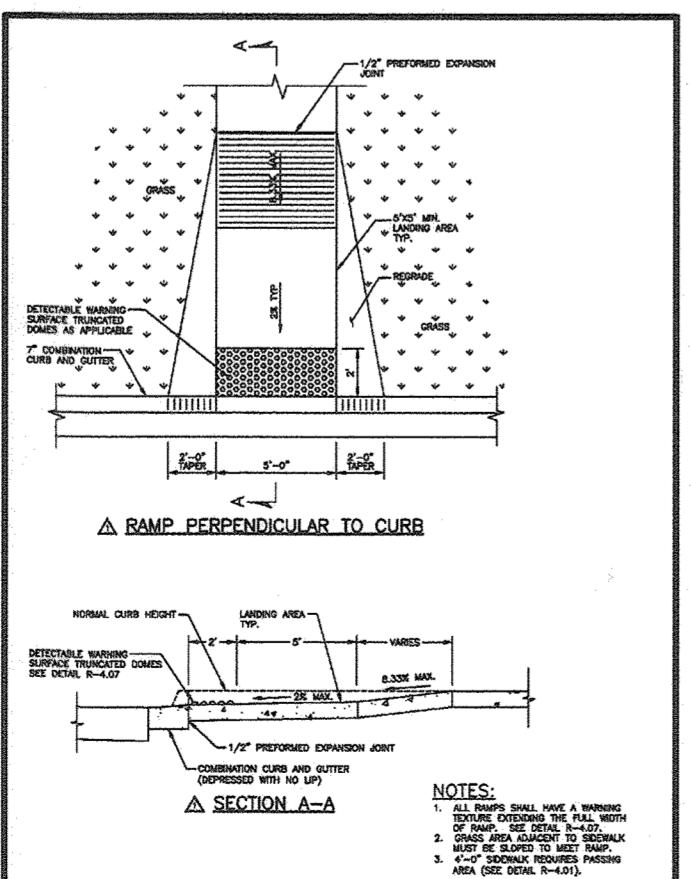
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HANOVER ROAD STA. 10+00
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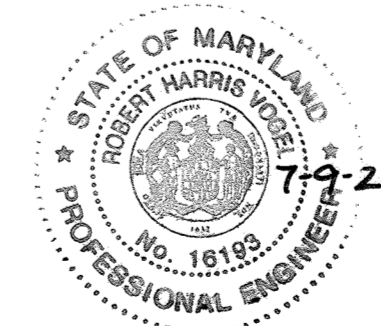


APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 11/29/2021
CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 1.6.22
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 1.6.22
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Howard County, Maryland Department of Public Works Layout & Grading Perpendicular to Curb	Detail R-4.05
Howard County, Maryland Department of Public Works Concrete Sidewalk	Detail R-3.05
Howard County, Maryland Department of Public Works Existing Roadway Widening Strip	Detail R-1.08



AS-BUILT CERTIFICATION FOR PSWM
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DATE: 16193 7-9-24
P.E.# DATE

NO.	REVISE TO AD PRIVATE MAINTENANCE EASEMENT, FIRE HYDRANT AND ITS EASEMENT	8-3-23
	REVISION	DATE

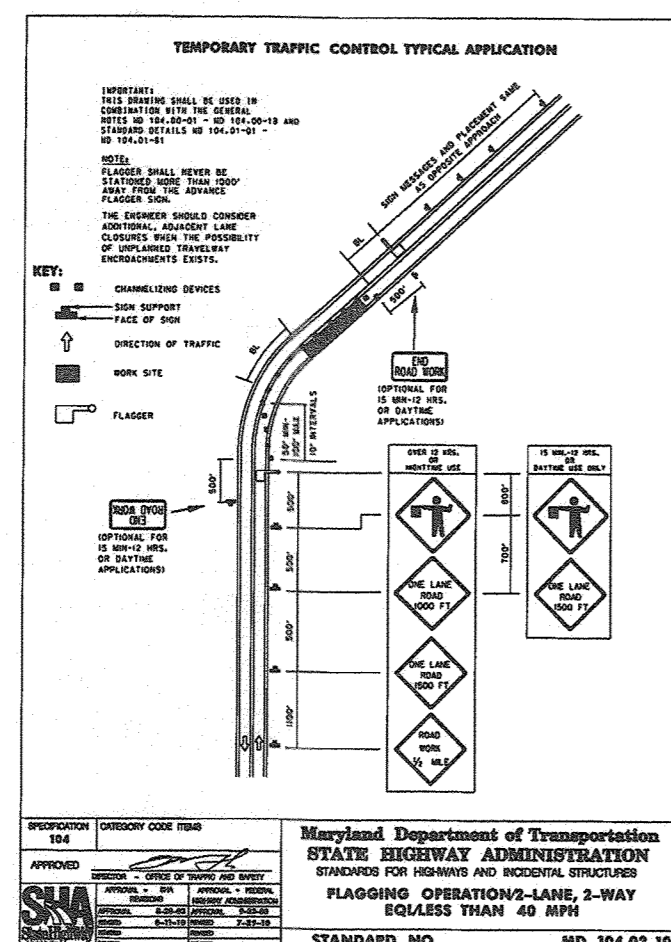
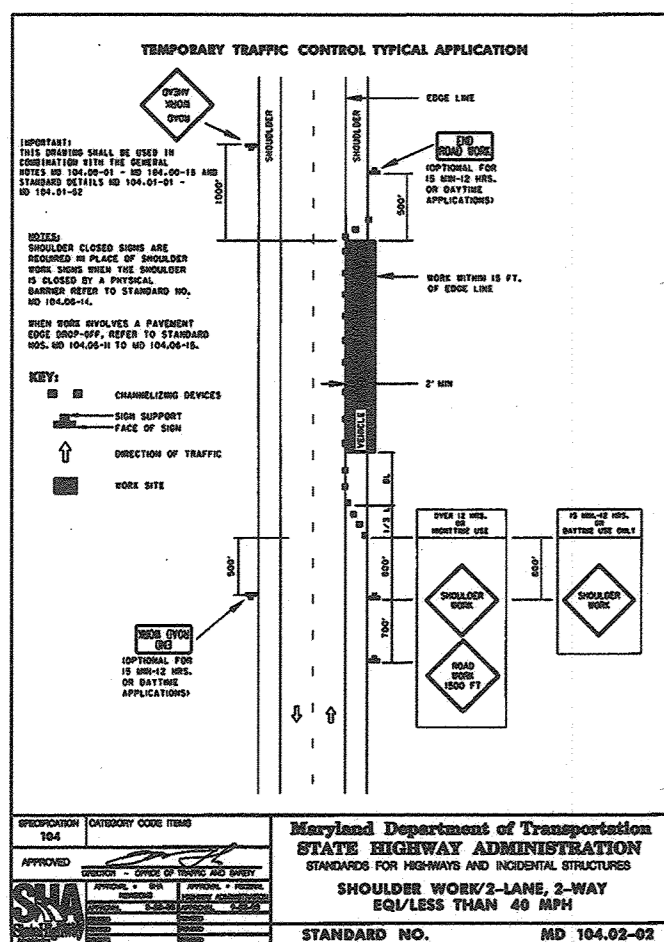
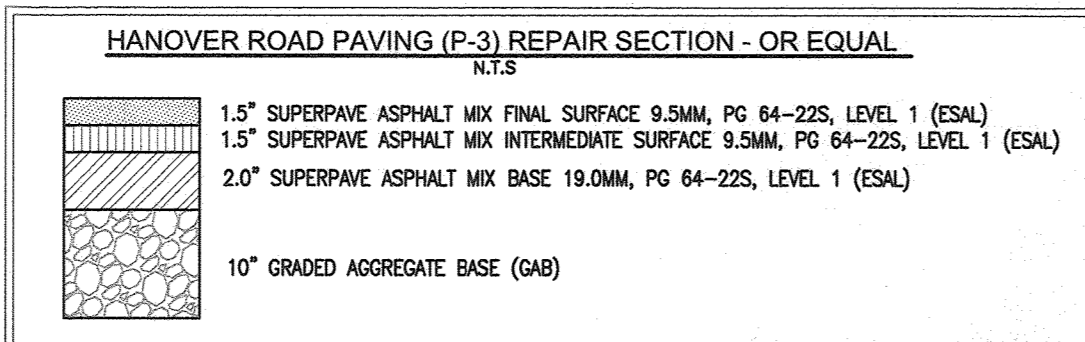
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CHECKED BY: RHV	
DATE: AUGUST 2021	
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W.O. NO.: 40077	

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TYPE OF CONSTRUCTION	START STATION	FINISH STATION
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MILL & OVERLAY	7+61	12+53.5

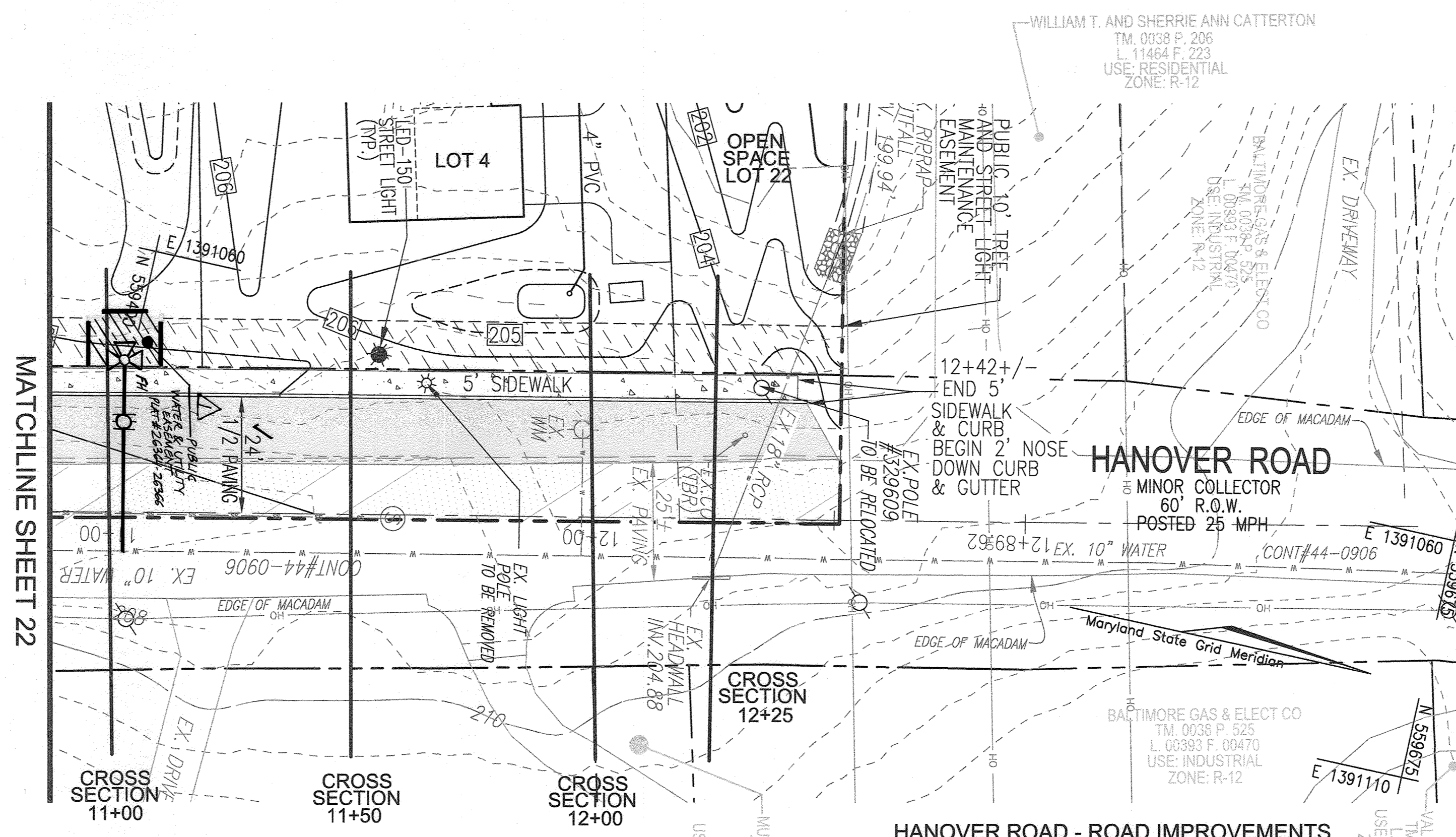
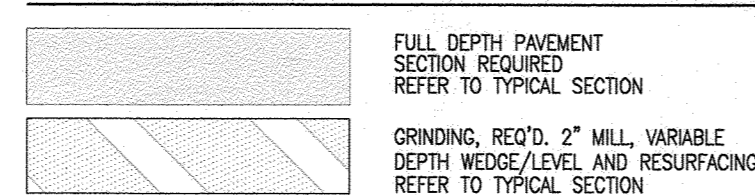
REFER TO PLAN LEGEND AND PLAN VIEW HATCH



**HANOVER ROAD
TYPICAL WORK ZONE
TRAFFIC CONTROL DETAILS**

ALL WORK WITHIN THE HANOVER ROAD PUBLIC RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH THE STANDARD MARYLAND STATE HIGHWAY ADMINISTRATION DETAILS: MD 104.02-02 & MD 104.02-10 OR AS DIRECTED BY THE HOWARD COUNTY - TRAFFIC ENGINEERING DIVISION.

PAVEMENT LEGEND



LEGEND	
	EXISTING CONTOUR
	PROPOSED CONTOUR
	PROPOSED SPOT ELEVATION
	EXISTING SPOT ELEVATION
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING FENCE
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	MICRO-RETENTION/RAIN GARDEN
	PROPOSED SIDEWALK
	EXISTING TREE LINE
	PROPOSED TREE LINE
	PROPOSED STORM DRAIN
	PROPOSED STORM DRAIN DRAIN INLET
	PRIVATE DRAINAGE & UTILITY EASEMENT
	PUBLIC 10' TREE AND STREET LIGHT MAINTENANCE EASEMENT

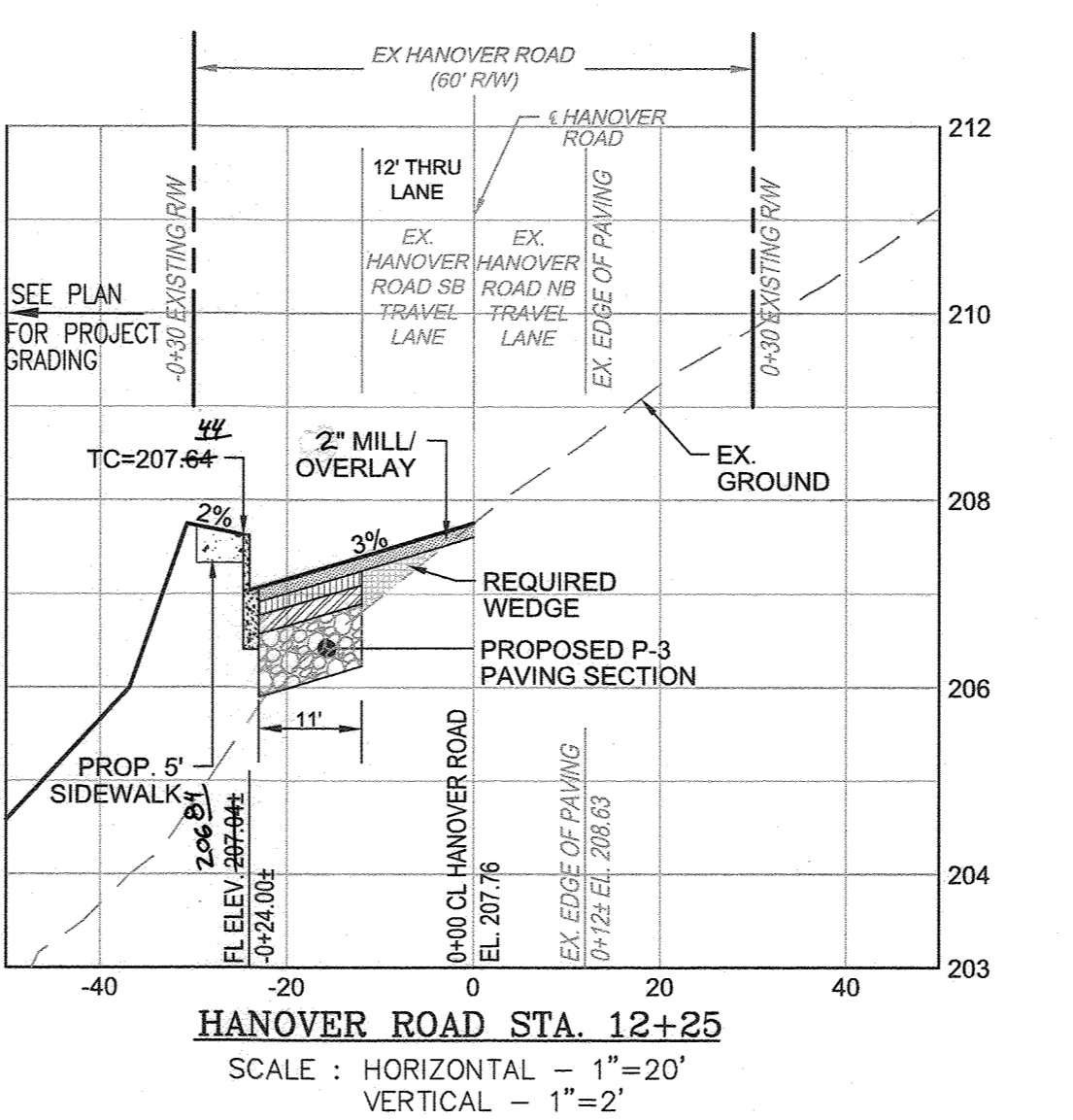
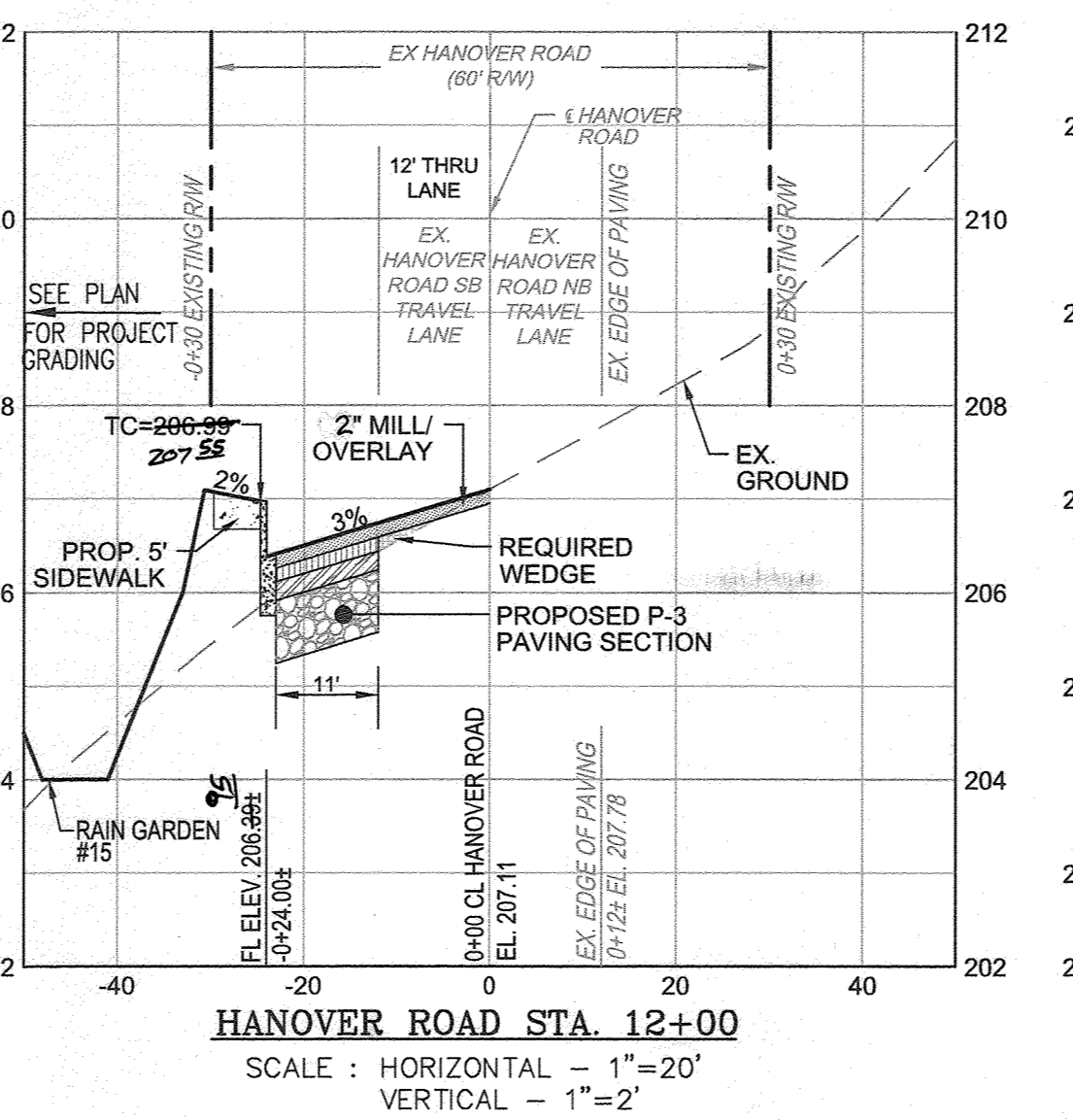
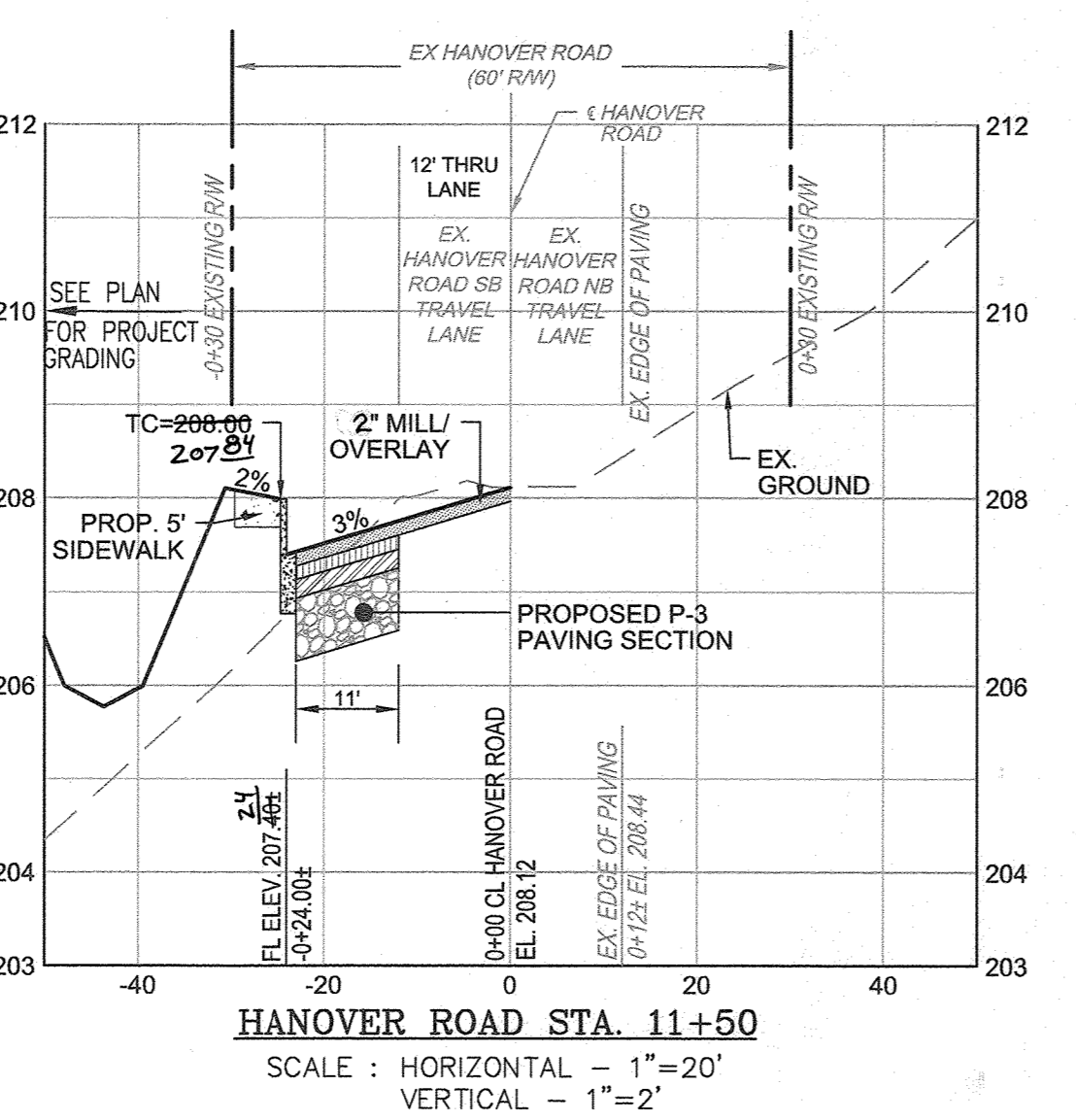
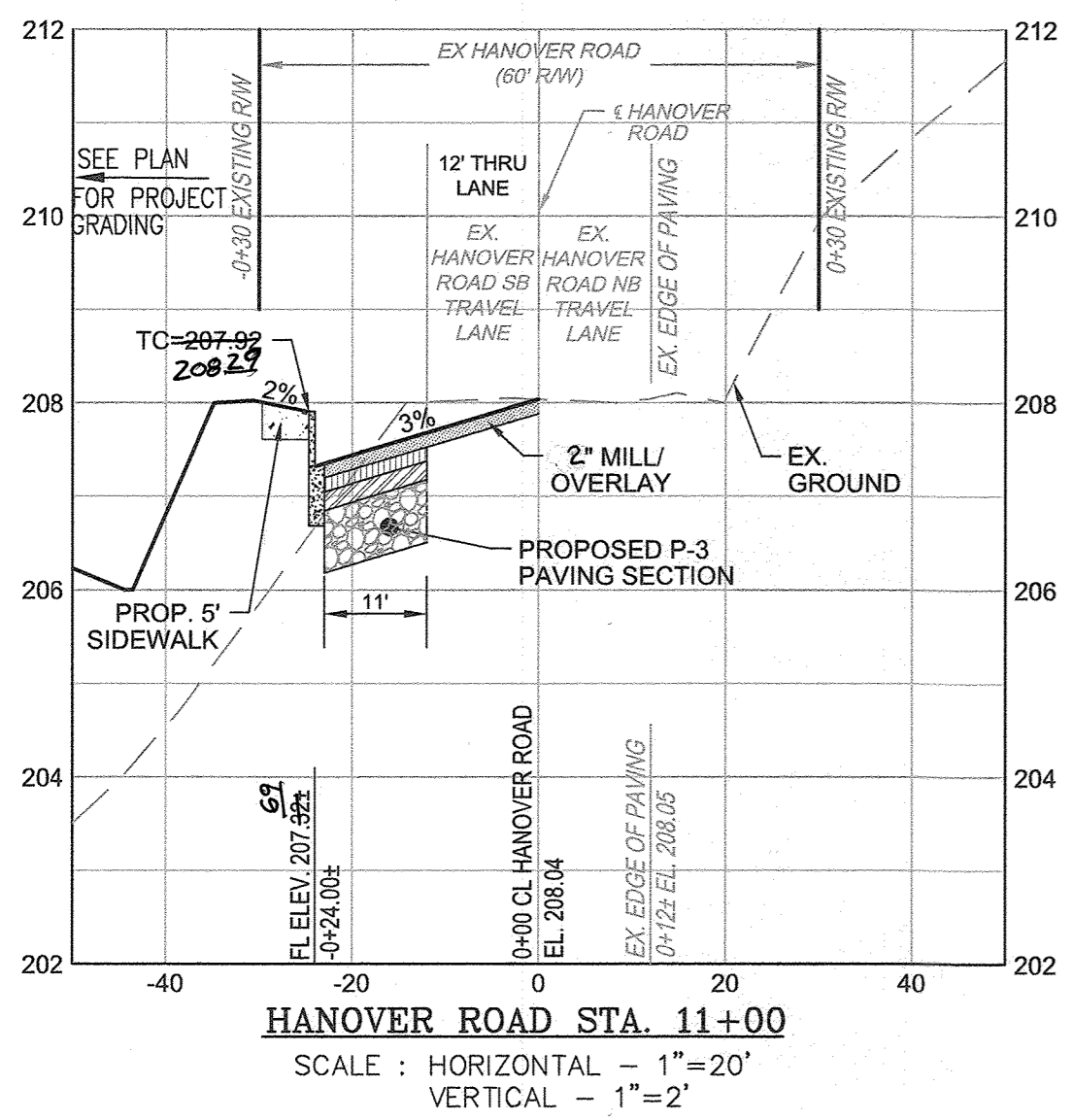
HANOVER ROAD - ROAD IMPROVEMENTS

SCALE: 1"=20'

STATE OF MARYLAND
ROBERT HARRIS JOSE
PROFESSIONAL ENGINEER
16193
7-9-24

AS-BUILT CERTIFICATION FOR PSWM
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE AS-BUILT PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

P.E. NAME: 16193 P.E.# DATE: 7-9-24



SCALE 1"=20'

OWNER/DEVELOPER
GRACE TAYLOR SCHUTT, TRUSTEE OF THE GRACE T. SCHUTT REVOCABLE TRUST
6132 HANOVER ROAD
HANOVER, MD 21076
443-463-6760

NO.	REVISION	DATE
1	REVISE TO ADD PRIVATE MONUMENT EASEMENT FIRE HYDRANT AND ITS EASEMENT	8-3-23

FINAL ROAD CONSTRUCTION PLANS
HANOVER ROAD - ROAD IMPROVEMENTS & CROSS SECTIONS
GRACE MEADOWS
LOTS 1, 18 AND OPEN SPACE LOTS 19 - 30
A SUBDIVISION OF TAX MAP 38 - PARCEL 731
ZONED R-12
FIRST ELECTION DISTRICT
DPZ REFERENCE: SEE SITE DATA
HOWARD COUNTY, MARYLAND

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

PROFESSIONAL CERTIFICATE
DESIGN BY: RHV
DRAWN BY: MVP/H/KG
CHECKED BY: RHV
DATE: AUGUST 2021
SCALE: AS SHOWN
W.O. NO.: 40077

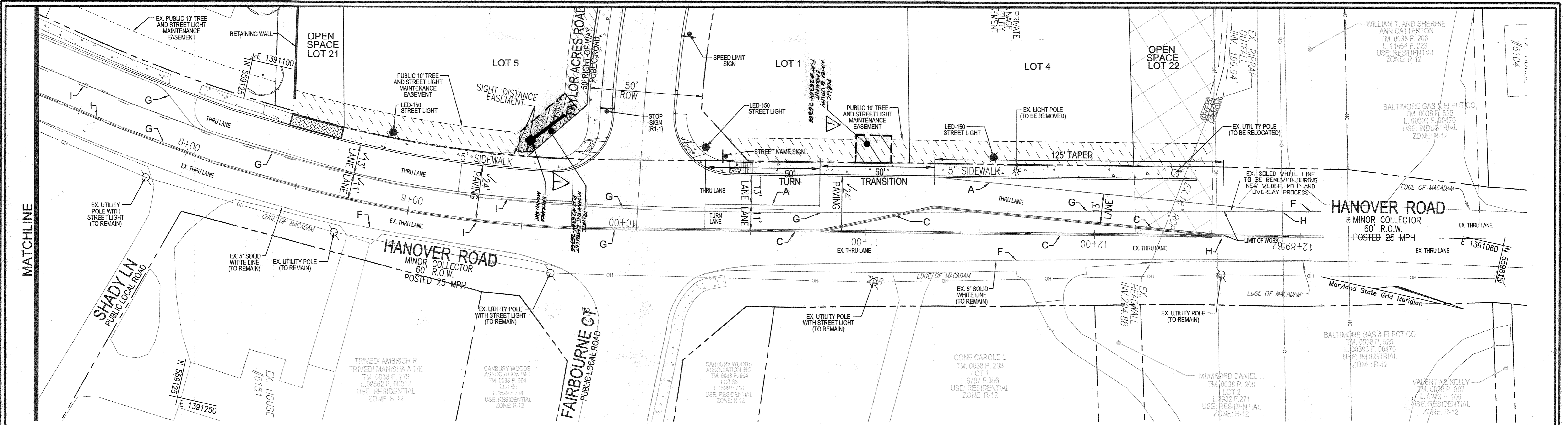
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE 08-27-2022

24 SHEET OF 25

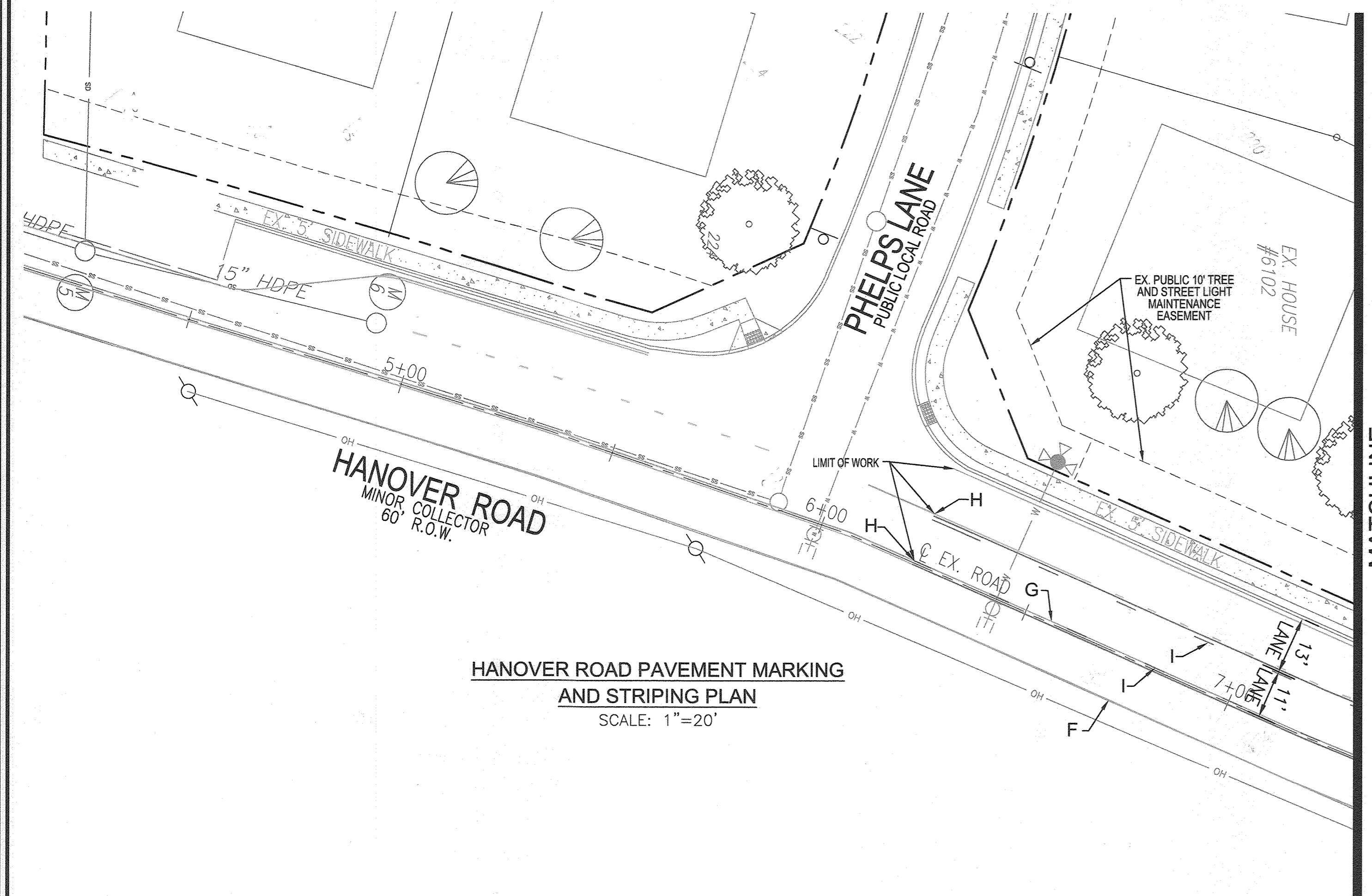
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
11/29/2021
CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
1.6.22
CHIEF, DEVELOPMENT ENGINEERING DIVISION JR DATE

CHIEF, DIVISION OF LAND DEVELOPMENT 1/16/22 DATE



HANOVER ROAD PAVEMENT MARKING AND STRIPING PLAN
SCALE: 1"=20'



HANOVER ROAD PAVEMENT MARKING AND STRIPING PLAN
SCALE: 1"=20'

LEGEND

	EXISTING CONTOUR
	PROPOSED CONTOUR
	PROPOSED SPOT ELEVATION
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
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	PROPOSED SIDEWALK
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	PROPOSED TREE LINE
	PROPOSED STORM DRAIN
	PROPOSED STORM DRAIN INLET
	PUBLIC 10' TREE MAINTENANCE EASEMENT
	PUBLIC DRAINAGE & UTILITY EASEMENT
	PUBLIC 10' TREE AND STREET LIGHT MAINTENANCE EASEMENT

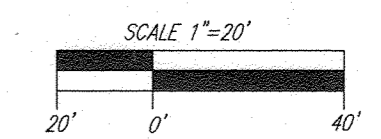
- PAVEMENT MARKING LEGEND**
- A. INSTALL 5 IN. WIDE WHITE SOLID PAVEMENT MARKING FOR LANE LINE.
 - C. INSTALL 5 IN. WIDE DOUBLE YELLOW PAVEMENT MARKING - FOR CENTER LINE.
 - F. EXISTING 5" SOLID WHITE PAINT LINE (TO REMAIN)
 - G. REMOVE EXISTING PAVEMENT MARKINGS BY GRINDING.
 - H. TIE TO EXISTING MARKINGS.
 - I. INSTALL 5 IN. WIDE DOUBLE YELLOW TWO-WAY LEFT TURN LANE LINE.

* WIDER LINES MAY BE INSTALLED AT THE DISCRETION OF THE TRAFFIC ENGINEERING DIVISION.

NOTE:
1. STOP BAR MAY BE REQUIRED AT THE GRACE DRIVE / CROSS CREEK DRIVE INTERSECTION TO BE DETERMINED IN FIELD BY THE TRAFFIC ENGINEER.
2. ALL PAVEMENT MARKINGS SHALL BE LAID OUT BY HOWARD COUNTY TRAFFIC ENGINEERING, CALL 410-313-5752.



AS-BUILT CERTIFICATION FOR PSWM
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.
16193 7-9-24
R.H. VOGEL P.E. DATE



OWNER/DEVELOPER
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TRUSTEE OF THE GRACE T. SCHULTZ REVOCABLE TRUST
6132 HANOVER ROAD
HANOVER, MD 21076
443-463-6760

NO.	REVISION	DATE
1	REVISE TO ADD PRIVATE MAINTENANCE EASEMENT, FIRE HYDRANT AND ITS EASEMENT	8-9-23

FINAL ROAD CONSTRUCTION PLANS
HANOVER ROAD PAVEMENT MARKING AND STRIPING PLAN
GRACE MEADOWS
LOTS 1-18 AND OPEN SPACE LOTS 19-30
A SUBDIVISION OF TAX MAP 38 - PARCEL 731
L: 14536 / F: 269 ZONED R-12
TAX MAP 38 BLOCK 09 PARCEL 731
1ST ELECTION DISTRICT
DP2 REFERENCE: SEE SITE DATA HOWARD COUNTY, MARYLAND

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 11/29/2021
CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 11/29/2021
CHIEF, DEVELOPMENT ENGINEERING DIVISION SR DATE

[Signature] 11/29/2021
CHIEF, DIVISION OF LAND DEVELOPMENT 65 DATE

DESIGN BY: RHY
DRAWN BY: MYP/JH/KG
CHECKED BY: RHY
DATE: AUGUST 2021
SCALE: AS SHOWN
W.D. NO.: 40077

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25 SHEET OF 25